LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 35

2021

Bate Stamp Numbers
01070503 – 01071302

Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976–2021

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX

VOLUME 35

2021

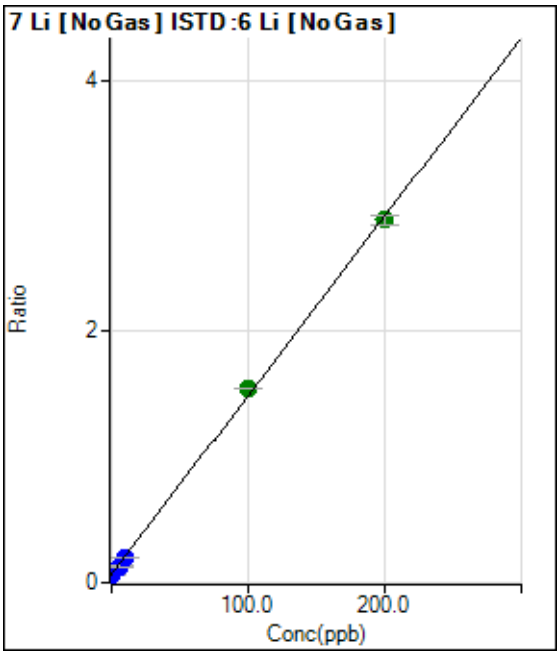
A. Title: (cont.) Report – Appendix C to Quarterly Evaluation Report, 3rd Quarter (July–September) 2021, Groundwater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas, December 2021
Author(s): Bhate Environmental Associates, Inc.
Recipient: U.S. Army Corps of Engineers
Date: December 14, 2021
Bate Stamp: 01070503 – 01070769

B. Title: Report – Final 2021 Update of the Comprehensive Land Use Control (LUC) Management Plan, Longhorn Army Ammunition Plant, Karnack, Texas 17 December 2021Plant, Longhorn Army Ammunition Plant, Karnack, Texas, September 2021
Author(s): Department of the Army
Recipient: U.S. Environmental Protection Agency and Texas Commission on Environmental Quality
Date: December 17, 2021
Bate Stamp: 01070770 – 01071298

C. Title: (cont.) Transmittal Letter – Final 2021 Update of the Comprehensive Land Use Control (LUC) Management Plan, Longhorn Army Ammunition Plant, Karnack, Texas 17 December 2021
Author(s): Department of the Army
Recipient: U.S. Environmental Protection Agency
Date: December 17, 2021
Bate Stamp: 01071299 – 01071300

D. Title: (cont.) Transmittal Letter – Final 2021 Update of the Comprehensive Land Use Control (LUC) Management Plan, Longhorn Army Ammunition Plant, Karnack, Texas 17 December 2021
Author(s): Department of the Army
Recipient: Texas Commission on Environmental Quality
Date: December 17, 2021
Bate Stamp: 01071301– 01071302

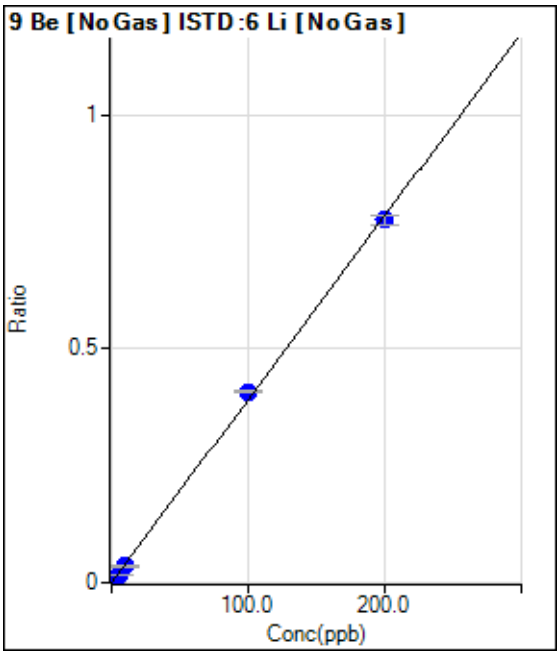
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y = 0.0142 * x + 0.0667
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BEC = 4.685

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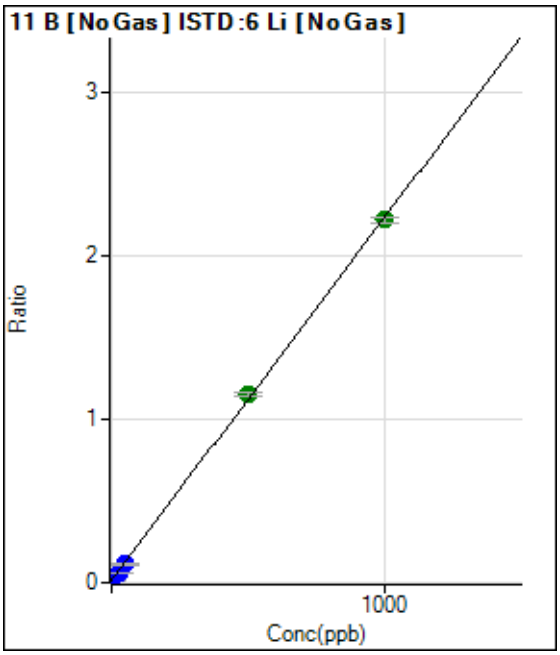


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4	☐	10.000	8.985	27603.82	0.0352	P	2.0
5	☐	100.000	104.104	307139.30	0.4074	P	1.2
6	☐	200.000	198.017	560157.11	0.7749	P	2.4

y = 0.0039 * x + 5.0333E-005
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BEC = 0.01286

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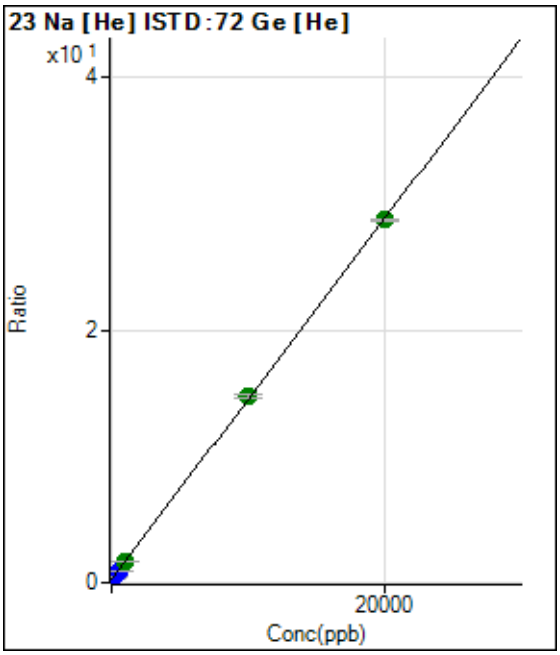
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3	☐	25.000	20.687	48259.19	0.0602	P	0.4
4	☐	50.000	43.942	87684.75	0.1118	P	2.1
5	☐	500.000	513.214	869732.83	1.1535	A	2.9
6	☐	1000.000	993.821	1605101.49	2.2203	A	1.9

y = 0.0022 * x + 0.0143
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DL = 0.7856
BEC = 6.447

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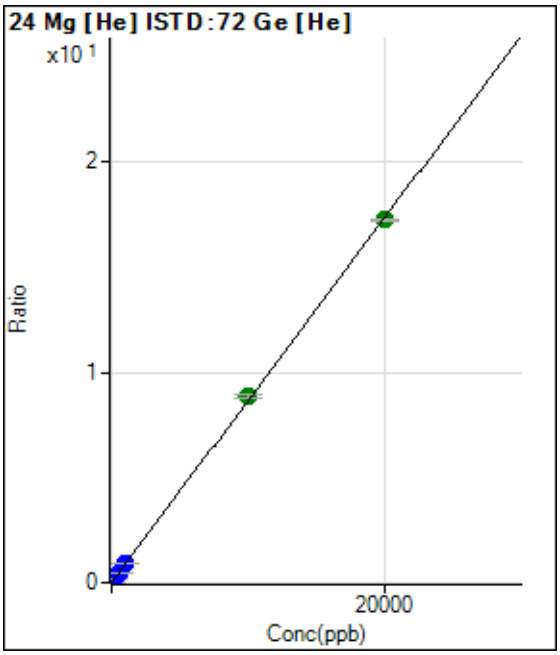


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4	☐	1000.000	986.280	826664.24	1.6468	A	3.3
5	☐	10000.000	10136.817	7359909.89	14.7302	A	1.7
6	☐	20000.000	19932.592	13715550.63	28.7361	A	0.8

y = 0.0014 * x + 0.2366
R = 1.0000
DL = 9.735
BEC = 165.5

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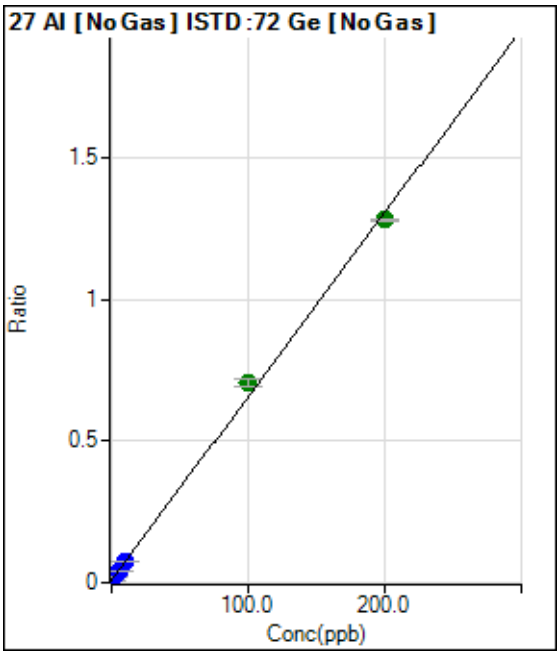
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4	☐	1000.000	1002.123	436662.06	0.8698	P	0.1
5	☐	10000.000	10203.139	4421106.18	8.8485	A	2.4
6	☐	20000.000	19898.424	8236368.00	17.2558	A	0.7

y = 8.6715E-004 * x + 8.2070E-004
R = 0.9999
DL = 0.5044
BEC = 0.9464

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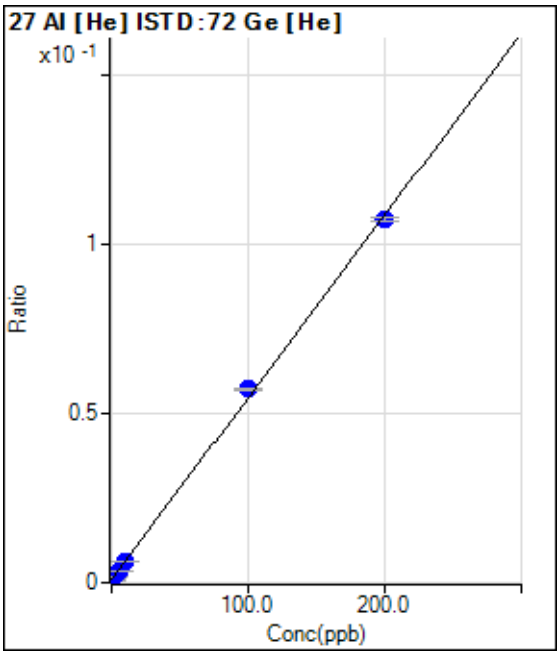


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3	☐	5.000	4.821	62252.82	0.0399	P	0.3
4	☐	10.000	9.804	110953.47	0.0722	P	1.9
5	☐	100.000	107.476	1084614.93	0.7059	A	3.7
6	☐	200.000	196.278	1889818.36	1.2821	A	0.5

y = 0.0065 * x + 0.0086
R = 0.9990
DL = 0.1338
BEC = 1.328

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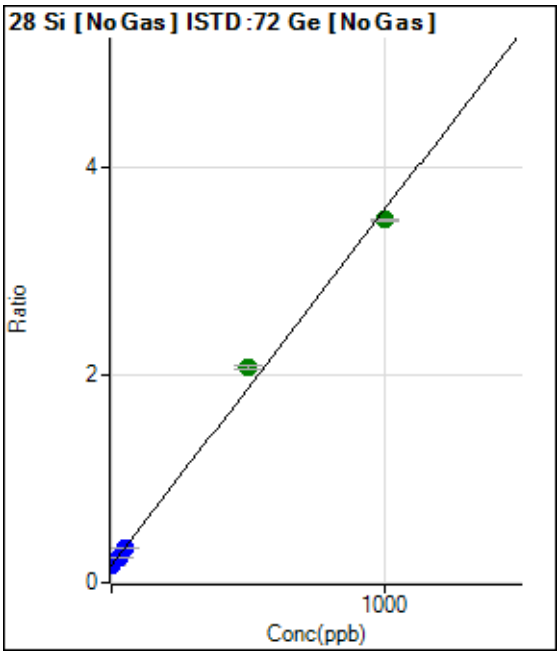
Calibration for 021_ICV.d



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3	☐	5.000	4.461	1643.47	0.0033	P	6.3
4	☐	10.000	10.032	3150.42	0.0063	P	4.5
5	☐	100.000	104.842	28586.33	0.0572	P	1.2
6	☐	200.000	197.595	51090.81	0.1070	P	1.0

y = 5.3724E-004 * x + 8.8640E-004
R = 0.9996
DL = 0.8598
BEC = 1.65

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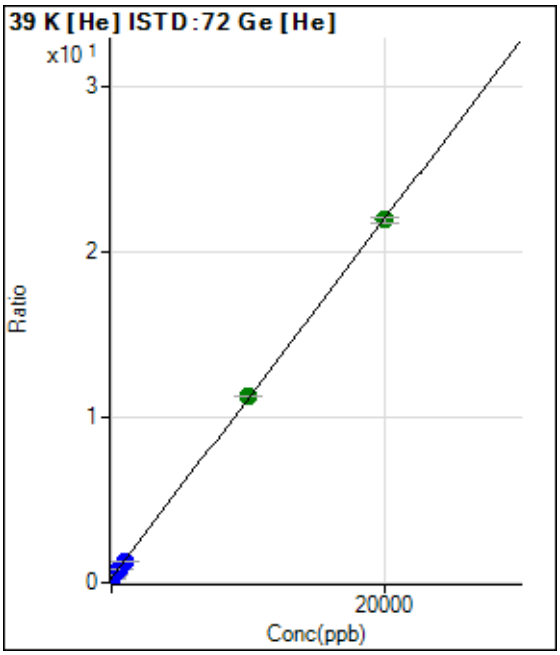


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3	☐	25.000	23.865	384876.41	0.2467	P	1.4
4	☐	50.000	49.389	512967.26	0.3339	P	1.8
5	☐	500.000	556.449	3175632.56	2.0666	A	2.3
6	☐	1000.000	971.840	5138540.86	3.4861	A	0.8

y = 0.0034 * x + 0.1651
R = 0.9977
DL = 1.558
BEC = 48.32

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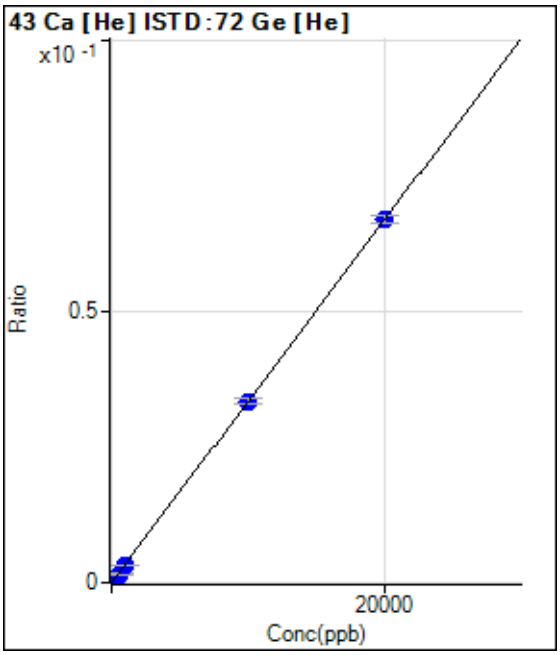
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3	☐	500.000	474.365	402881.05	0.8046	P	0.5
4	☐	1000.000	958.564	667948.12	1.3305	P	0.4
5	☐	10000.000	10101.562	5627260.96	11.2617	A	0.5
6	☐	20000.000	19951.982	10482039.22	21.9613	A	1.7

y = 0.0011 * x + 0.2893
R = 1.0000
DL = 14
BEC = 266.4

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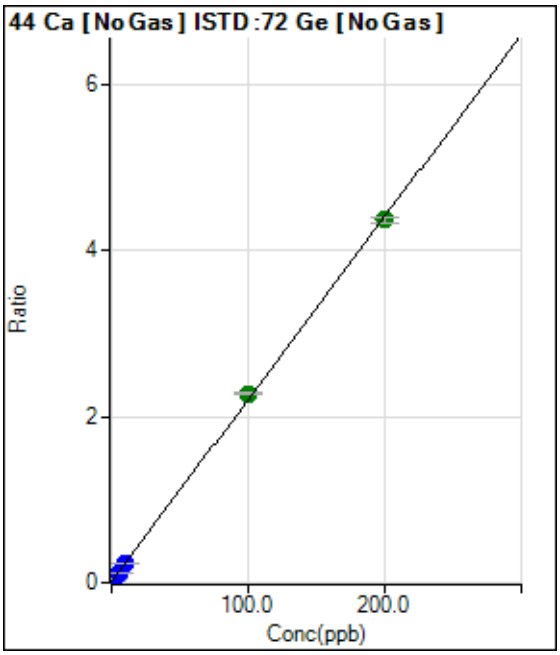


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4	☐	1000.000	953.777	1616.79	0.0032	P	5.5
5	☐	10000.000	10003.132	16720.38	0.0335	P	2.7
6	☐	20000.000	20001.798	31920.71	0.0669	P	2.2

y = 3.3418E-006 * x + 3.3048E-005
R = 1.0000
DL = 20.43
BEC = 9.889

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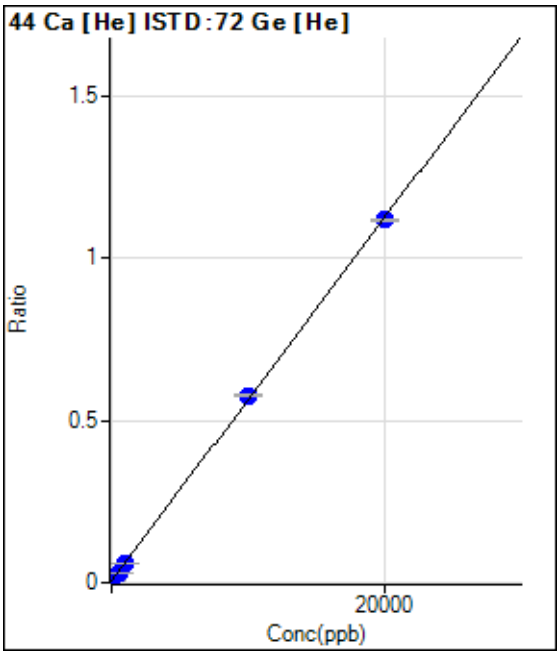
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2	☐	2.000	1.852	81979.85	0.0528	P	1.0
3	☐	5.000	4.666	178848.42	0.1146	P	0.2
4	☐	10.000	9.624	343297.04	0.2235	P	2.5
5	☐	100.000	103.195	3500709.84	2.2778	A	1.3
6	☐	200.000	198.431	6438454.69	4.3687	A	1.5

y = 0.0220 * x + 0.0122
R = 0.9998
DL = 0.03756
BEC = 0.5546

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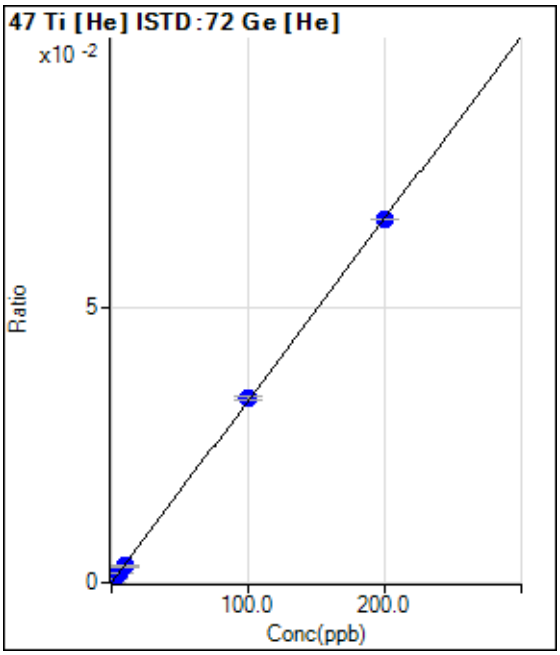


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2	☐	200.000	190.441	7865.72	0.0157	P	5.9
3	☐	500.000	483.674	16106.33	0.0322	P	2.0
4	☐	1000.000	951.947	29318.31	0.0584	P	3.1
5	☐	10000.000	10232.141	289000.37	0.5784	P	0.4
6	☐	20000.000	19886.836	534249.68	1.1193	P	0.5

y = 5.6030E-005 * x + 0.0051
R = 0.9999
DL = 0.2828
BEC = 90.41

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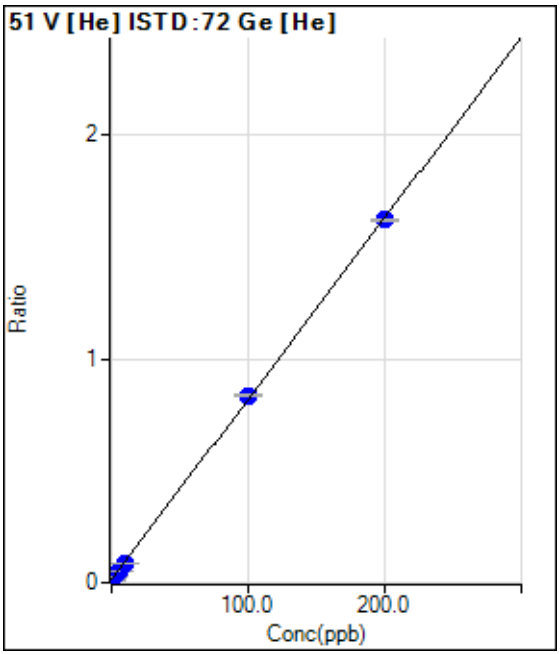
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3	☐	5.000	4.979	830.04	0.0017	P	9.0
4	☐	10.000	9.154	1526.79	0.0030	P	8.9
5	☐	100.000	101.497	16820.52	0.0337	P	2.7
6	☐	200.000	199.295	31543.28	0.0661	P	0.1

y = 3.3157E-004 * x + 6.5917E-006
R = 0.9999
DL = 0.1033
BEC = 0.01988

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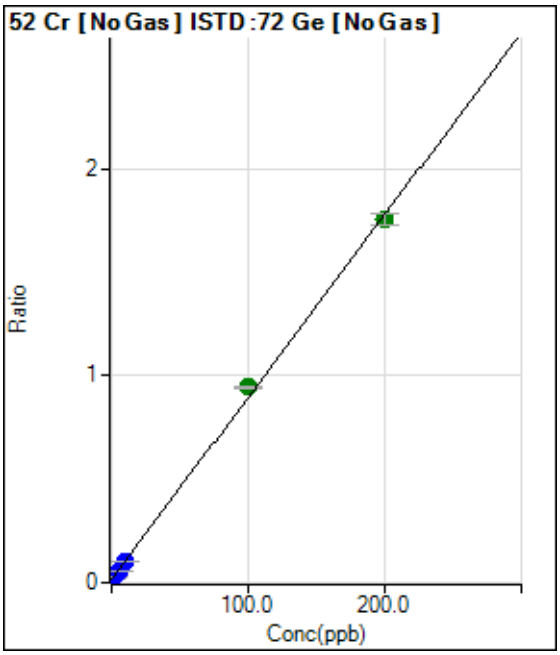


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3	☐	5.000	4.627	25233.24	0.0504	P	2.1
4	☐	10.000	9.335	44399.41	0.0884	P	0.8
5	☐	100.000	101.958	418242.99	0.8370	P	0.5
6	☐	200.000	199.065	774120.63	1.6218	P	0.6

y = 0.0081 * x + 0.0130
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DL = 0.1468
BEC = 1.608

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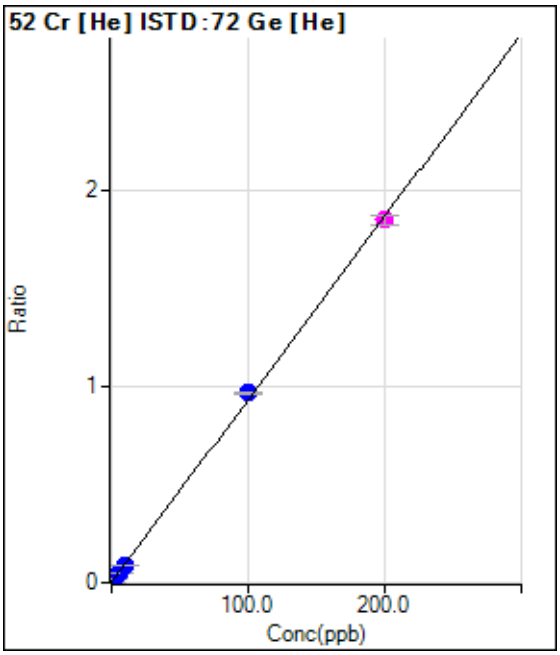
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3	☐	5.000	4.607	87471.43	0.0561	P	0.5
4	☐	10.000	9.684	154848.34	0.1008	P	1.6
5	☐	100.000	105.442	1451594.25	0.9444	A	1.5
6	☐	200.000	197.305	2583908.14	1.7538	A	3.3

y = 0.0088 * x + 0.0155
R = 0.9995
DL = 0.2357
BEC = 1.756

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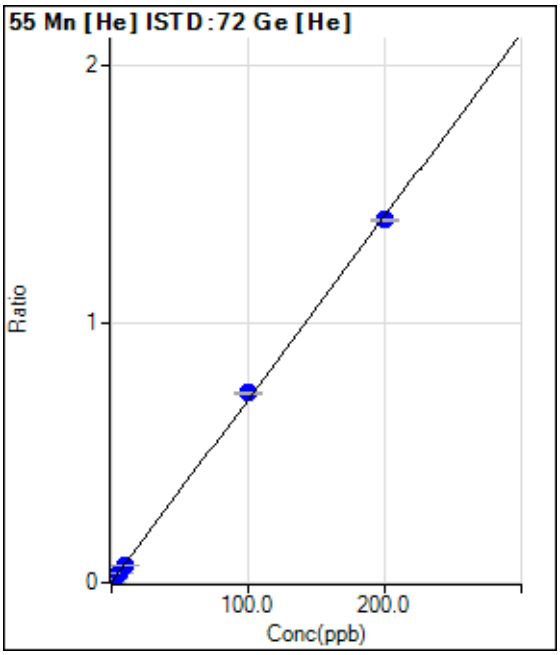


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2	☐	2.000	1.880	9506.79	0.0190	P	3.2
3	☐	5.000	4.722	22762.55	0.0455	P	1.6
4	☐	10.000	9.394	44643.16	0.0889	P	2.9
5	☐	100.000	103.501	481917.36	0.9645	P	0.9
6	☐	200.000	198.288	881195.43	1.8464	M	2.6

y = 0.0093 * x + 0.0015
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BEC = 0.1645

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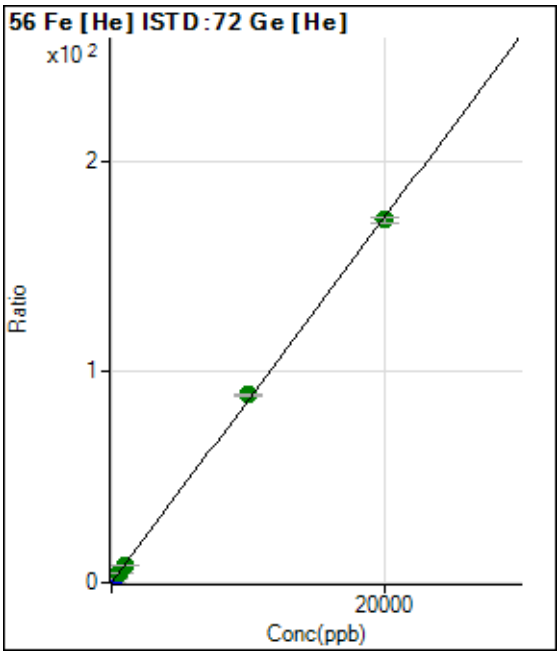
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3	☐	5.000	4.691	17030.90	0.0340	P	1.2
4	☐	10.000	9.583	34450.52	0.0686	P	0.2
5	☐	100.000	103.844	367521.95	0.7355	P	1.0
6	☐	200.000	198.108	669400.93	1.4025	P	0.3

y = 0.0071 * x + 8.2718E-004
R = 0.9997
DL = 0.07388
BEC = 0.1169

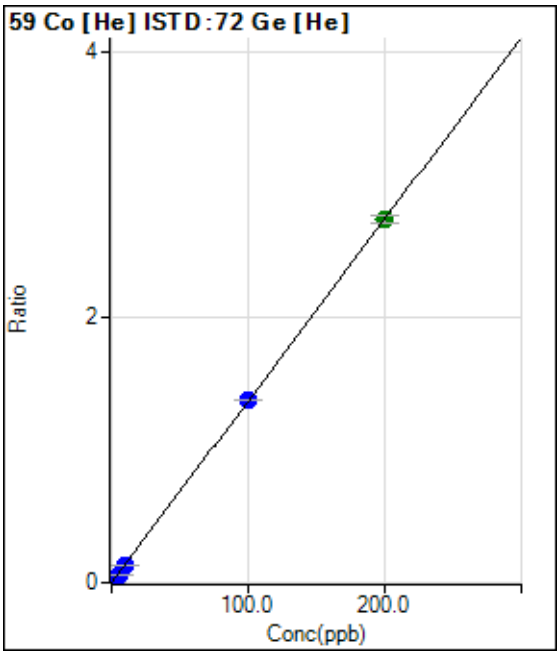
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	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
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2	☐	200.000	191.934	842365.17	1.6851	P	0.9
3	☐	500.000	488.675	2131792.67	4.2575	A	1.0
4	☐	1000.000	961.708	4195944.21	8.3583	A	0.3
5	☐	10000.000	10270.960	44503054.34	89.0604	A	0.5
6	☐	20000.000	19866.798	82217727.11	172.2470	A	1.3

y = 0.0087 * x + 0.0212
R = 0.9999
DL = 0.1479
BEC = 2.445

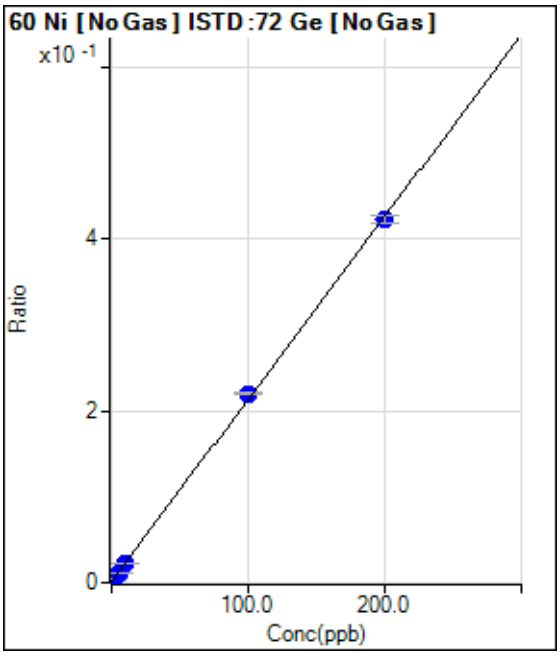
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	83.33	0.0002	P	41.3
2	☐	2.000	1.855	12792.89	0.0256	P	3.4
3	☐	5.000	4.628	31840.80	0.0636	P	0.6
4	☐	10.000	9.436	64998.10	0.1295	P	2.2
5	☐	100.000	100.652	689339.00	1.3796	P	0.6
6	☐	200.000	199.713	1306377.90	2.7372	A	2.0

y = 0.0137 * x + 1.6505E-004
R = 1.0000
DL = 0.01491
BEC = 0.01204

Weight: <None>
Min Conc: <None>

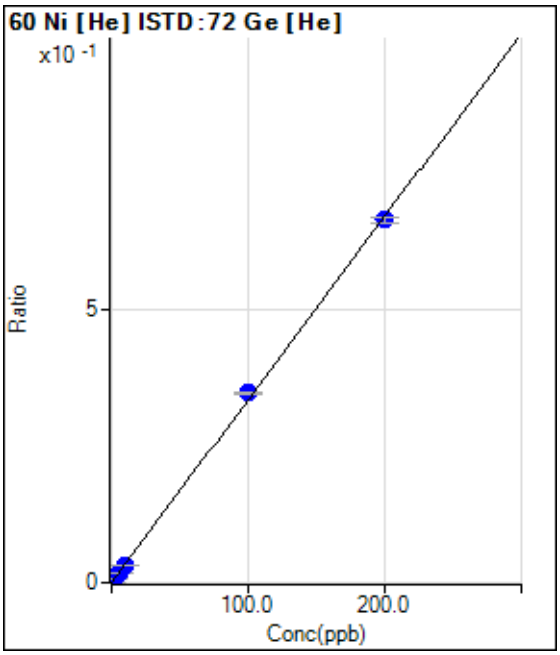


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2083.53	0.0013	P	1.6
2	☐	2.000	1.855	8169.24	0.0053	P	3.9
3	☐	5.000	4.729	17731.90	0.0114	P	0.3
4	☐	10.000	9.675	33601.86	0.0219	P	1.5
5	☐	100.000	103.249	338845.59	0.2205	P	1.2
6	☐	200.000	198.400	622534.00	0.4225	P	2.2

y = 0.0021 * x + 0.0013
R = 0.9998
DL = 0.03004
BEC = 0.625

Weight: <None>
Min Conc: <None>

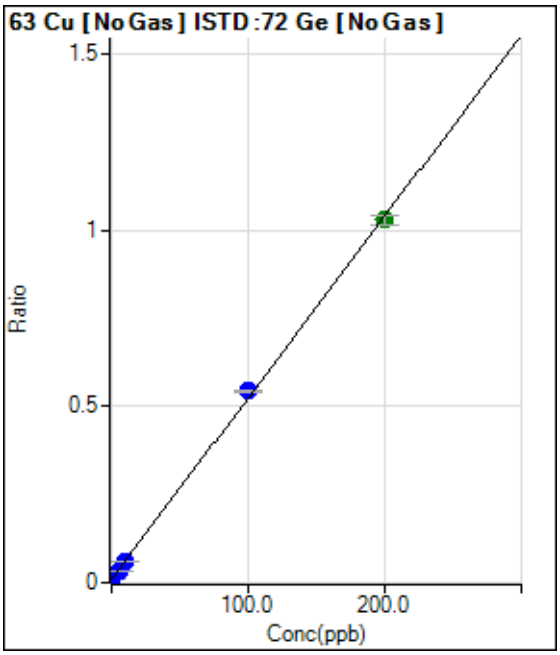
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	153.33	0.0003	P	9.5
2	☐	2.000	1.873	3280.45	0.0066	P	2.7
3	☐	5.000	4.782	8152.58	0.0163	P	5.0
4	☐	10.000	9.764	16530.35	0.0329	P	0.6
5	☐	100.000	103.504	172957.59	0.3461	P	1.1
6	☐	200.000	198.267	316333.87	0.6628	P	1.3

y = 0.0033 * x + 3.0450E-004
R = 0.9998
DL = 0.0261
BEC = 0.09113

Weight: <None>
Min Conc: <None>

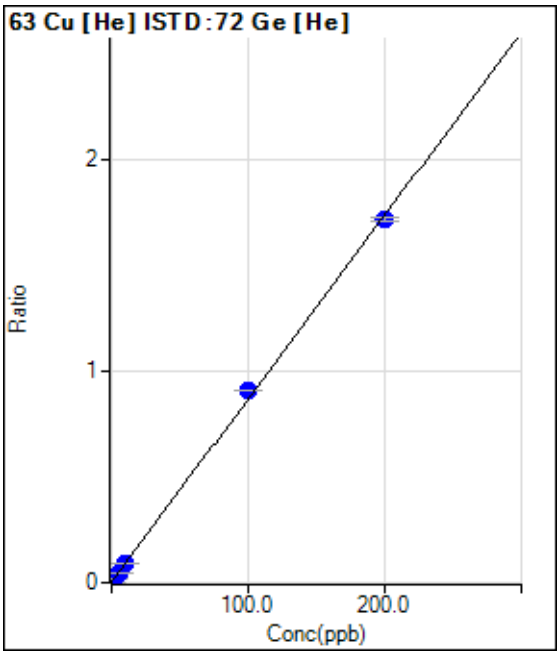


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	15212.06	0.0097	P	2.3
2	☐	2.000	1.925	30401.04	0.0196	P	4.8
3	☐	5.000	4.757	53314.66	0.0342	P	2.0
4	☐	10.000	9.750	92000.01	0.0599	P	0.8
5	☐	100.000	103.717	835515.20	0.5436	P	0.9
6	☐	200.000	198.161	1517523.47	1.0299	A	2.5

y = 0.0051 * x + 0.0097
R = 0.9997
DL = 0.1288
BEC = 1.881

Weight: <None>
Min Conc: <None>

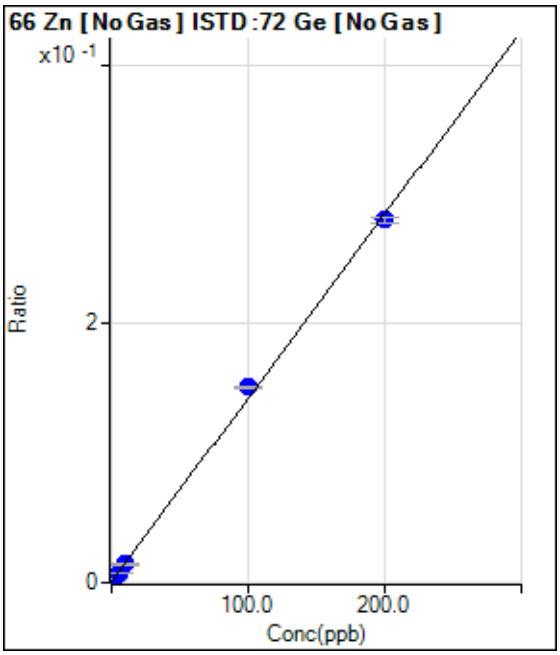
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1476.77	0.0029	P	12.4
2	☐	2.000	1.917	9770.34	0.0195	P	0.7
3	☐	5.000	4.783	22218.38	0.0444	P	1.9
4	☐	10.000	9.684	43596.80	0.0868	P	0.7
5	☐	100.000	104.720	454851.75	0.9103	P	0.3
6	☐	200.000	197.662	818826.44	1.7156	P	1.0

y = 0.0087 * x + 0.0029
R = 0.9996
DL = 0.1256
BEC = 0.3388

Weight: <None>
Min Conc: <None>

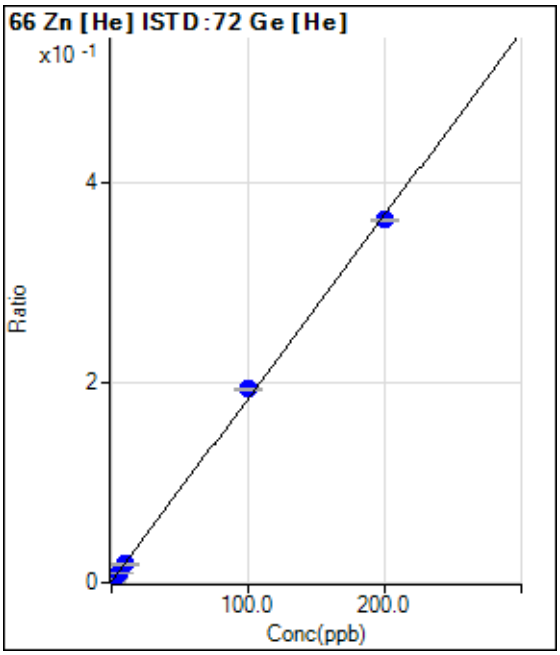


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1306.75	0.0008	P	4.3
2	☐	2.000	1.629	4874.28	0.0031	P	4.8
3	☐	5.000	4.512	11281.50	0.0072	P	0.7
4	☐	10.000	9.415	21784.51	0.0142	P	2.1
5	☐	100.000	105.858	231931.09	0.1509	P	1.4
6	☐	200.000	197.116	413106.89	0.2803	P	1.5

y = 0.0014 * x + 8.3235E-004
R = 0.9994
DL = 0.07649
BEC = 0.5871

Weight: <None>
Min Conc: <None>

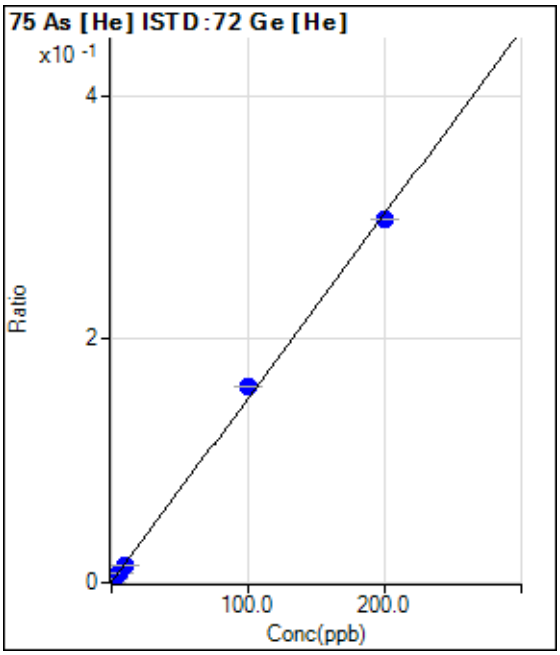
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	500.02	0.0010	P	10.3
2	☐	2.000	1.662	2016.86	0.0040	P	5.4
3	☐	5.000	4.560	4674.25	0.0093	P	3.9
4	☐	10.000	9.437	9166.59	0.0183	P	1.6
5	☐	100.000	105.257	96719.68	0.1936	P	1.0
6	☐	200.000	197.414	172864.02	0.3622	P	0.6

y = 0.0018 * x + 9.9396E-004
R = 0.9995
DL = 0.1684
BEC = 0.5433

Weight: <None>
Min Conc: <None>

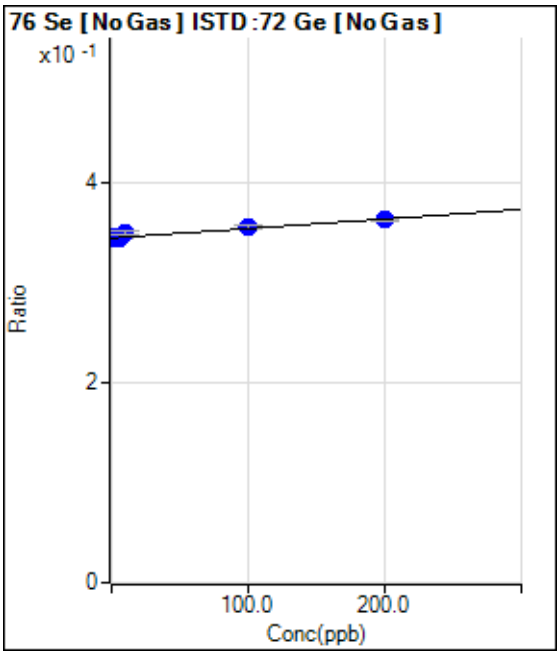


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	212.23	0.0004	P	6.0
2	☐	2.000	1.828	1592.33	0.0032	P	6.7
3	☐	5.000	4.575	3673.85	0.0073	P	2.1
4	☐	10.000	9.410	7353.14	0.0146	P	2.5
5	☐	100.000	106.428	80602.17	0.1613	P	0.3
6	☐	200.000	196.828	142218.17	0.2980	P	0.1

y = 0.0015 * x + 4.2173E-004
R = 0.9992
DL = 0.04983
BEC = 0.279

Weight: <None>
Min Conc: <None>

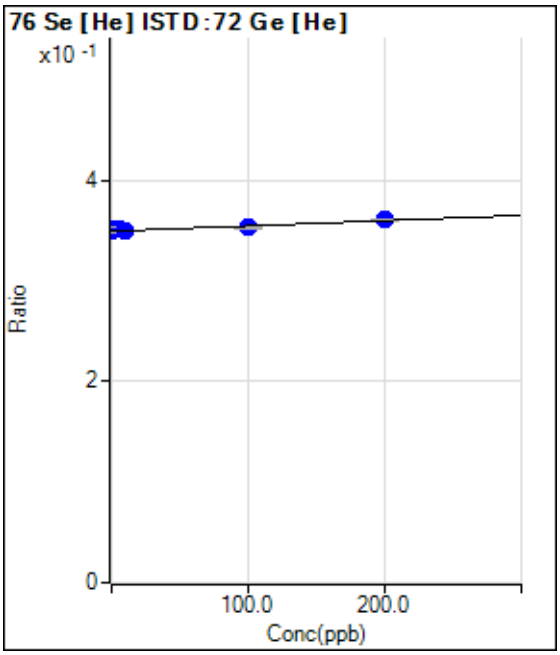
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	542569.99	0.3454	P	0.9
2	☐	2.000	11.220	537521.51	0.3465	P	3.0
3	☐	5.000	-0.267	538934.55	0.3454	P	0.2
4	☐	10.000	48.777	537885.22	0.3501	P	1.1
5	☐	100.000	116.904	548063.65	0.3566	P	1.2
6	☐	200.000	189.649	535920.11	0.3636	P	0.6

y = 9.5763E-005 * x + 0.3454
R = 0.9762
DL = 92.35
BEC = 3607

Weight: <None>
Min Conc: <None>

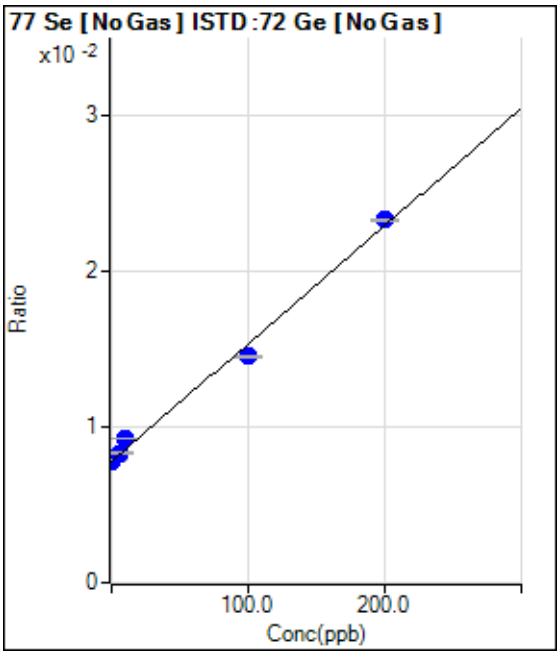


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	175863.28	0.3494	P	1.8
2	☐	2.000	58.864	176192.70	0.3525	P	0.6
3	☐	5.000	31.018	175740.44	0.3510	P	1.5
4	☐	10.000	16.661	175822.66	0.3502	P	0.2
5	☐	100.000	71.785	176456.94	0.3531	P	0.6
6	☐	200.000	212.555	172074.91	0.3605	P	0.8

y = 5.2539E-005 * x + 0.3494
R = 0.9382
DL = 368.9
BEC = 6650

Weight: <None>
Min Conc: <None>

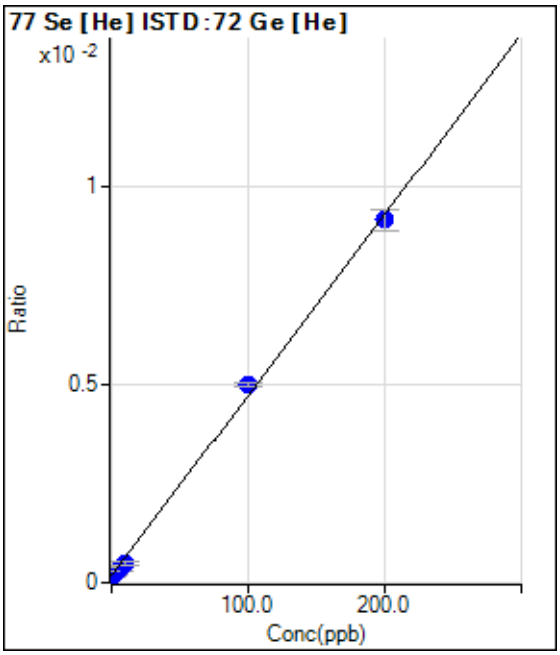
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	12245.80	0.0078	P	1.7
2	☐	2.000	3.433	12499.36	0.0081	P	3.0
3	☐	5.000	7.104	13003.16	0.0083	P	2.2
4	☐	10.000	19.210	14214.37	0.0093	P	0.9
5	☐	100.000	89.011	22335.44	0.0145	P	0.8
6	☐	200.000	204.967	34360.61	0.0233	P	0.6

y = 7.5672E-005 * x + 0.0078
R = 0.9966
DL = 5.246
BEC = 103

Weight: <None>
Min Conc: <None>

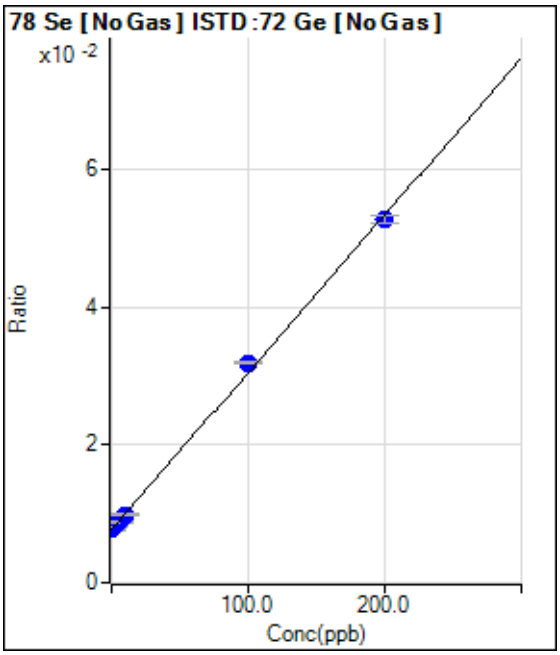


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	86.67	0.0002	P	18.6
2	☐	2.000	0.610	100.00	0.0002	P	26.7
3	☐	5.000	3.824	173.34	0.0003	P	24.0
4	☐	10.000	7.145	250.01	0.0005	P	17.0
5	☐	100.000	106.081	2500.27	0.0050	P	1.5
6	☐	200.000	197.146	4367.45	0.0092	P	5.6

y = 4.5547E-005 * x + 1.7236E-004
R = 0.9992
DL = 2.111
BEC = 3.784

Weight: <None>
Min Conc: <None>

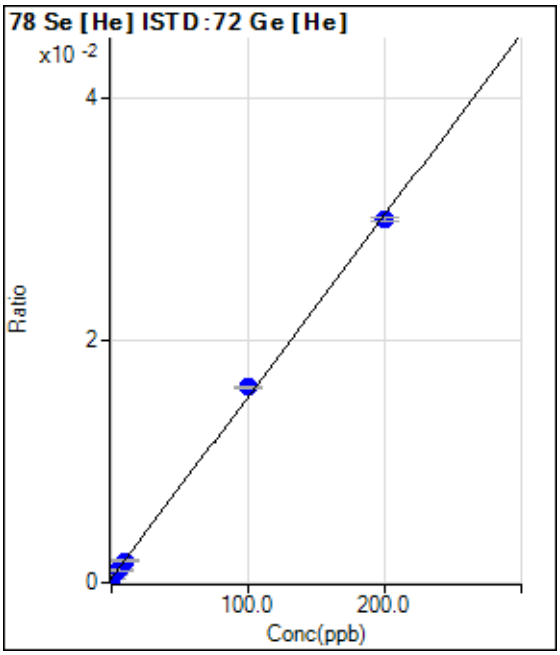
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	12112.33	0.0077	P	1.6
2	☐	2.000	1.926	12649.47	0.0082	P	1.9
3	☐	5.000	5.339	13934.11	0.0089	P	3.3
4	☐	10.000	9.425	15158.81	0.0099	P	1.8
5	☐	100.000	105.995	49079.55	0.0319	P	0.7
6	☐	200.000	197.024	77703.71	0.0527	P	2.1

y = 2.2848E-004 * x + 0.0077
R = 0.9993
DL = 1.663
BEC = 33.76

Weight: <None>
Min Conc: <None>

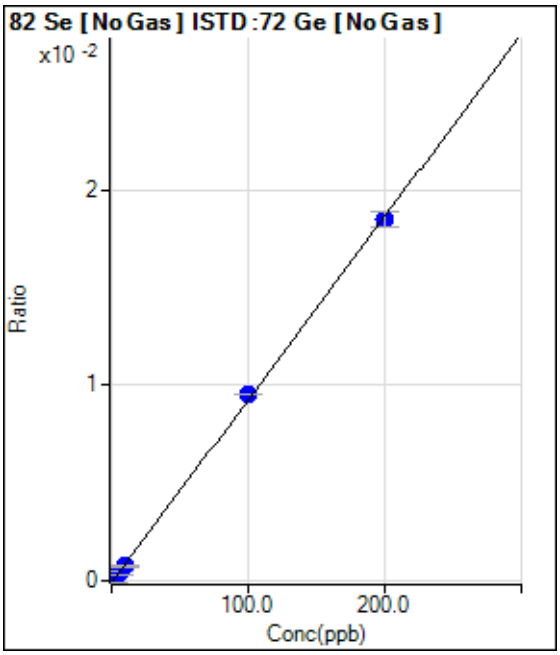


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	189.33	0.0004	P	5.4
2	☐	2.000	2.023	339.34	0.0007	P	4.4
3	☐	5.000	4.586	532.01	0.0011	P	6.6
4	☐	10.000	9.450	898.70	0.0018	P	11.4
5	☐	100.000	105.232	8052.42	0.0161	P	1.5
6	☐	200.000	197.422	14273.57	0.0299	P	1.0

y = 1.4957E-004 * x + 3.7622E-004
R = 0.9995
DL = 0.4085
BEC = 2.515

Weight: <None>
Min Conc: <None>

Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	-119.13	-0.0001	P	-87.8
2	☐	2.000	1.768	140.03	0.0001	P	277.1
3	☐	5.000	4.998	610.55	0.0004	P	44.5
4	☐	10.000	9.018	1176.89	0.0008	P	15.2
5	☐	100.000	102.819	14649.79	0.0095	P	0.6
6	☐	200.000	198.642	27230.77	0.0185	P	4.5

y = 9.3433E-005 * x - 7.5544E-005

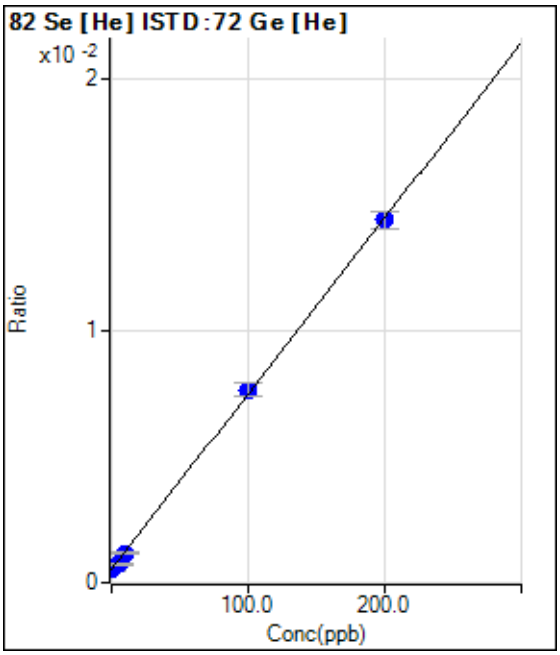
R = 0.9998

DL = 2.129

BEC = -0.8085

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	270.01	0.0005	P	15.2
2	☐	2.000	1.304	313.34	0.0006	P	7.9
3	☐	5.000	2.912	370.01	0.0007	P	17.0
4	☐	10.000	9.165	590.02	0.0012	P	10.5
5	☐	100.000	102.138	3830.62	0.0077	P	6.7
6	☐	200.000	199.032	6885.22	0.0144	P	5.1

y = 6.9797E-005 * x + 5.3573E-004

R = 0.9999

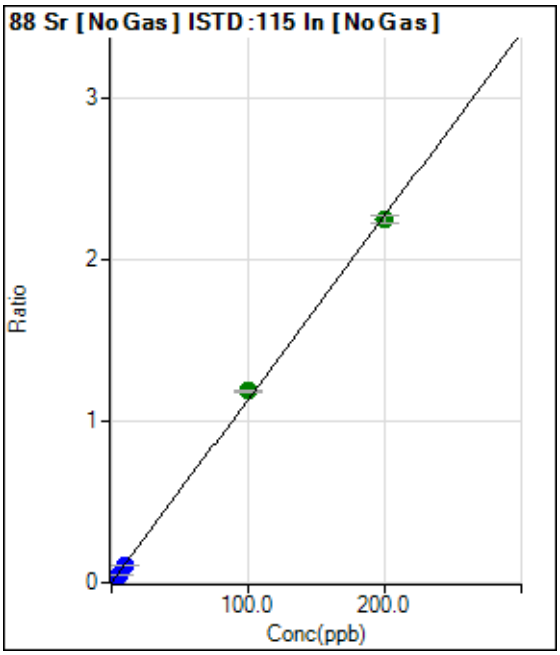
DL = 3.494

BEC = 7.676

Weight: <None>

Min Conc: <None>

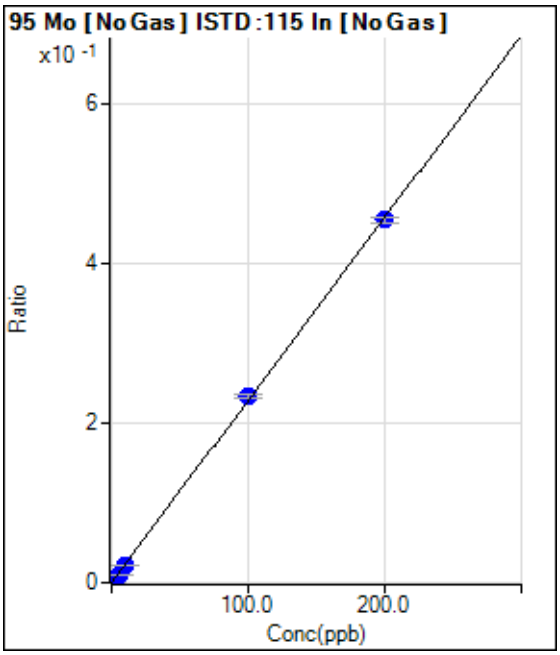
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	393.35	0.0002	P	18.6
2	☐	2.000	1.820	36550.38	0.0209	P	3.3
3	☐	5.000	4.496	90907.79	0.0513	P	1.8
4	☐	10.000	9.318	186252.45	0.1061	P	1.3
5	☐	100.000	104.482	2036502.57	1.1876	A	0.7
6	☐	200.000	197.807	3722271.09	2.2483	A	2.1

y = 0.0114 * x + 2.2152E-004
R = 0.9996
DL = 0.0109
BEC = 0.01949

Weight: <None>
Min Conc: <None>

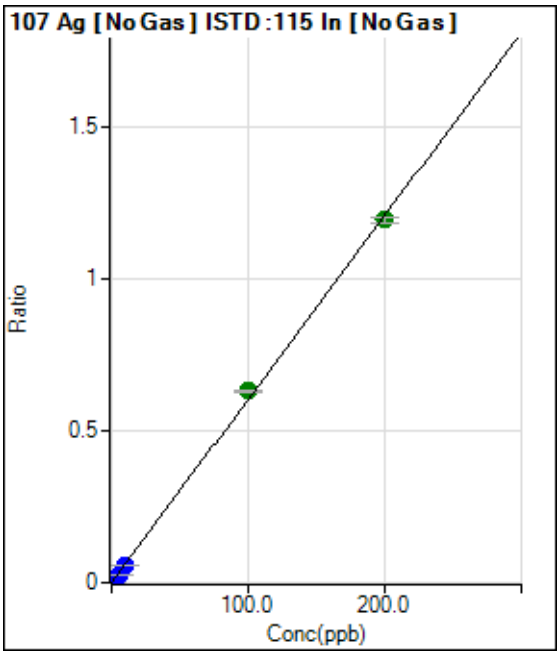


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	46.67	0.0000	P	68.5
2	☐	2.000	1.725	6955.28	0.0040	P	1.5
3	☐	5.000	4.544	18479.78	0.0104	P	1.8
4	☐	10.000	9.255	37242.37	0.0212	P	2.4
5	☐	100.000	102.367	401917.33	0.2344	P	1.8
6	☐	200.000	198.868	754063.16	0.4554	P	1.5

y = 0.0023 * x + 2.6230E-005
R = 0.9999
DL = 0.02355
BEC = 0.01145

Weight: <None>
Min Conc: <None>

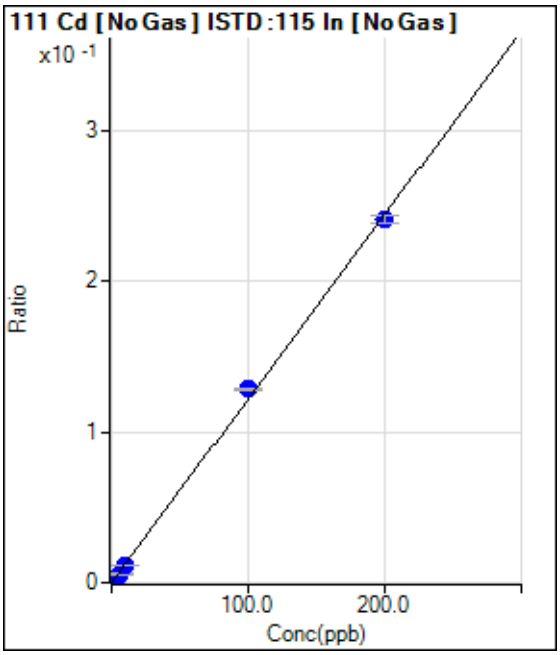
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	320.01	0.0002	P	10.3
2	☐	2.000	1.825	19591.43	0.0112	P	3.3
3	☐	5.000	4.619	49736.96	0.0281	P	1.8
4	☐	10.000	9.367	99600.14	0.0568	P	2.0
5	☐	100.000	104.432	1081674.05	0.6309	A	1.7
6	☐	200.000	197.827	1978695.23	1.1950	A	1.4

y = 0.0060 * x + 1.8051E-004
R = 0.9996
DL = 0.009219
BEC = 0.02989

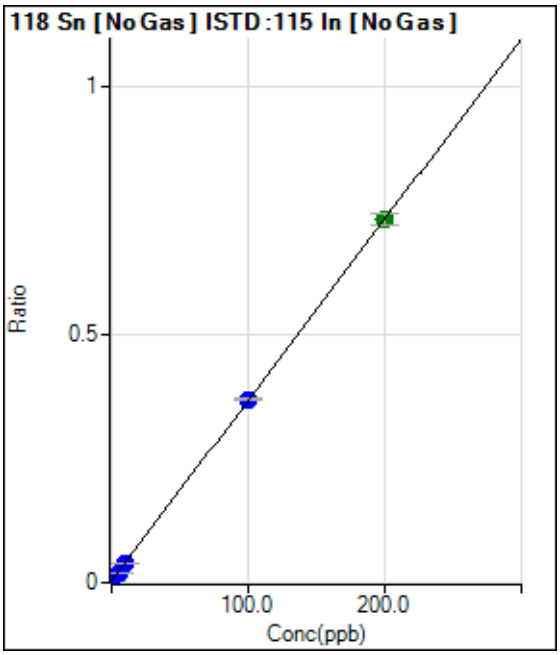
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	16.67	0.0000	P	35.4
2	☐	2.000	1.792	3837.29	0.0022	P	6.9
3	☐	5.000	4.642	10047.32	0.0057	P	2.6
4	☐	10.000	9.535	20429.47	0.0116	P	1.2
5	☐	100.000	105.348	220340.84	0.1285	P	1.1
6	☐	200.000	197.360	398622.77	0.2408	P	2.2

y = 0.0012 * x + 9.4200E-006
R = 0.9995
DL = 0.008209
BEC = 0.007722

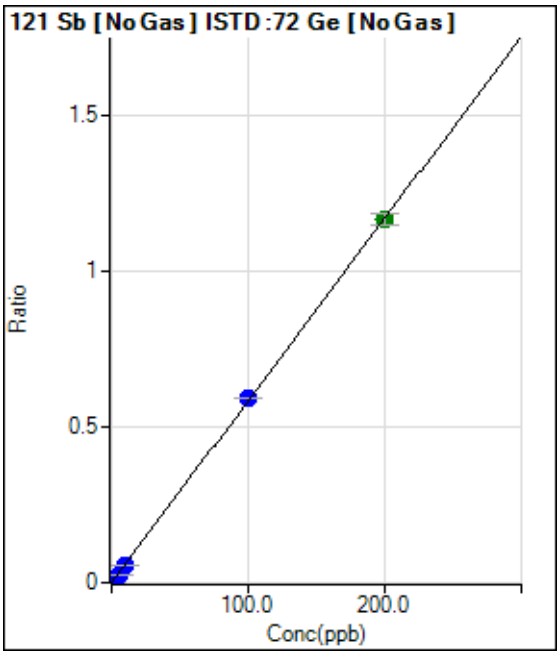
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	7082.06	0.0040	P	4.6
2	☐	2.000	1.751	18119.43	0.0104	P	2.4
3	☐	5.000	4.221	34265.09	0.0193	P	1.2
4	☐	10.000	9.263	66136.30	0.0377	P	1.7
5	☐	100.000	100.472	633349.38	0.3694	P	0.5
6	☐	200.000	199.823	1209674.23	0.7307	A	3.1

y = 0.0036 * x + 0.0040
R = 1.0000
DL = 0.1527
BEC = 1.098

Weight: <None>
Min Conc: <None>

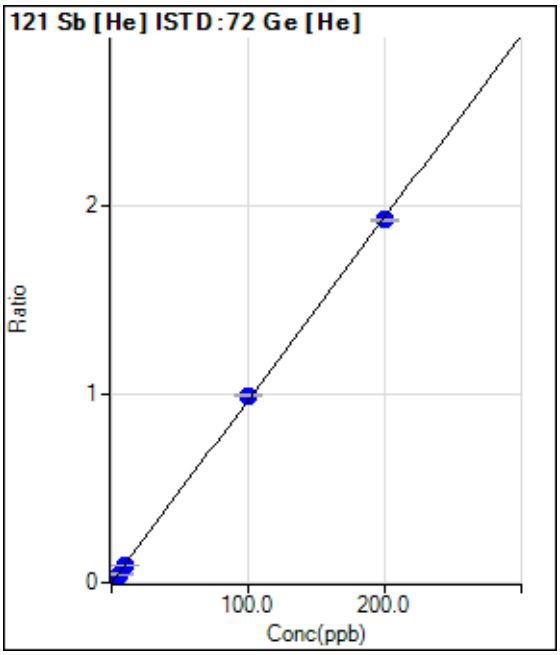


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	210.01	0.0001	P	13.4
2	☐	2.000	1.852	17001.27	0.0110	P	4.7
3	☐	5.000	4.606	42225.06	0.0271	P	2.2
4	☐	10.000	9.309	83836.92	0.0546	P	0.8
5	☐	100.000	101.390	911376.24	0.5930	P	0.6
6	☐	200.000	199.351	1717639.30	1.1658	A	3.3

y = 0.0058 * x + 1.3380E-004
R = 1.0000
DL = 0.009199
BEC = 0.02288

Weight: <None>
Min Conc: <None>

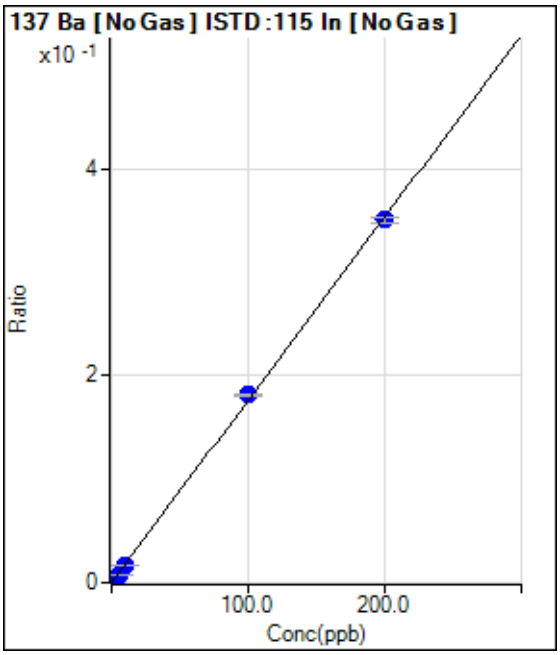
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	183.34	0.0004	P	16.4
2	☐	2.000	1.799	8906.50	0.0178	P	2.1
3	☐	5.000	4.687	22953.69	0.0458	P	1.0
4	☐	10.000	9.354	45740.03	0.0911	P	1.1
5	☐	100.000	102.593	497539.26	0.9957	P	1.5
6	☐	200.000	198.746	920519.07	1.9286	P	0.6

y = 0.0097 * x + 3.6448E-004
R = 0.9999
DL = 0.01852
BEC = 0.03757

Weight: <None>
Min Conc: <None>

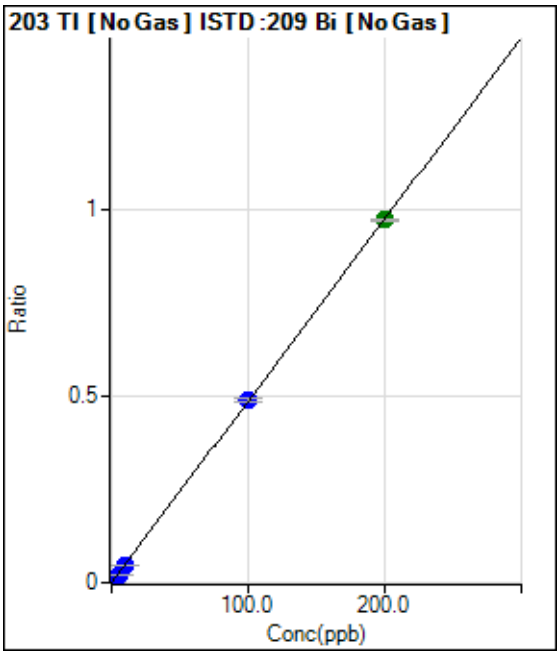


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	96.67	0.0001	P	25.1
2	☐	2.000	1.845	5781.41	0.0033	P	2.5
3	☐	5.000	4.621	14521.73	0.0082	P	2.1
4	☐	10.000	9.425	29246.73	0.0167	P	2.4
5	☐	100.000	102.691	310423.66	0.1810	P	0.4
6	☐	200.000	198.695	579936.01	0.3503	P	1.7

y = 0.0018 * x + 5.4411E-005
R = 0.9999
DL = 0.02327
BEC = 0.03087

Weight: <None>
Min Conc: <None>

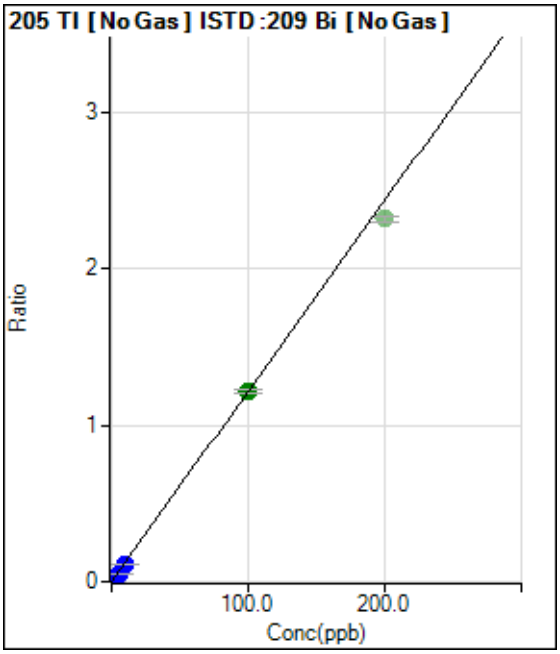
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	200.01	0.0001	P	13.2
2	☐	2.000	1.796	13557.55	0.0089	P	3.1
3	☐	5.000	4.528	34387.64	0.0222	P	2.7
4	☐	10.000	9.202	69641.40	0.0449	P	1.6
5	☐	100.000	100.668	750768.89	0.4902	P	1.9
6	☐	200.000	199.720	1416121.59	0.9723	A	0.6

y = 0.0049 * x + 1.3028E-004
R = 1.0000
DL = 0.01057
BEC = 0.02676

Weight: <None>
Min Conc: <None>

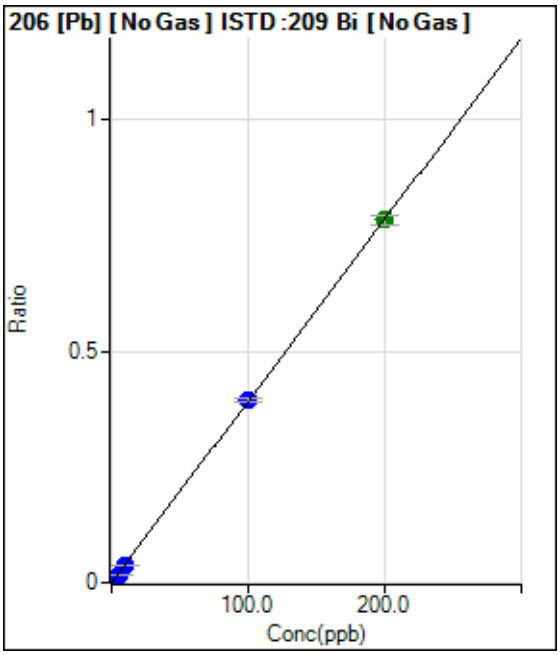


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	426.68	0.0003	P	9.9
2	☐	2.000	1.739	32746.66	0.0214	P	2.4
3	☐	5.000	4.218	79992.24	0.0516	P	3.3
4	☐	10.000	8.772	165830.01	0.1070	P	1.7
5	☐	100.000	100.167	1866711.43	1.2186	A	1.5
6	☑	200.000		3375450.37	2.3181	A	1.4

y = 0.0122 * x + 2.7803E-004
R = 0.9999
DL = 0.006801
BEC = 0.02286

Weight: <None>
Min Conc: <None>

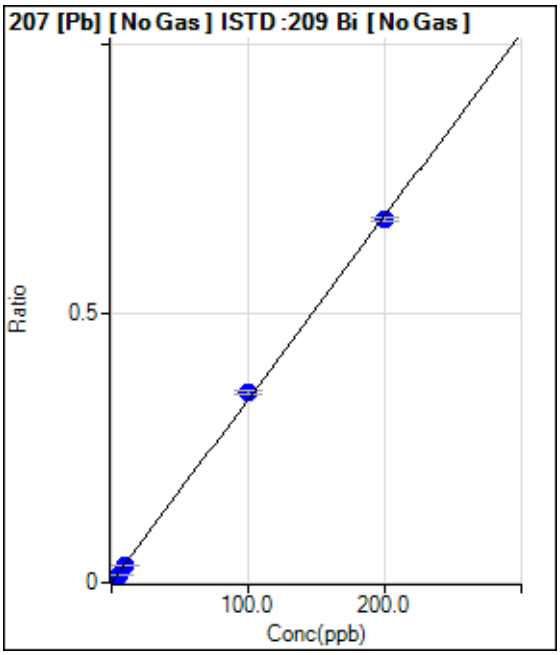
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	423.35	0.0003	P	18.5
2	☐	2.000	1.842	11442.19	0.0075	P	1.4
3	☐	5.000	4.544	28021.64	0.0181	P	5.4
4	☐	10.000	9.168	56079.53	0.0362	P	3.9
5	☐	100.000	100.327	602173.66	0.3932	P	2.2
6	☐	200.000	199.891	1140007.54	0.7830	A	2.7

y = 0.0039 * x + 2.7595E-004
R = 1.0000
DL = 0.03919
BEC = 0.07047

Weight: <None>
Min Conc: <None>

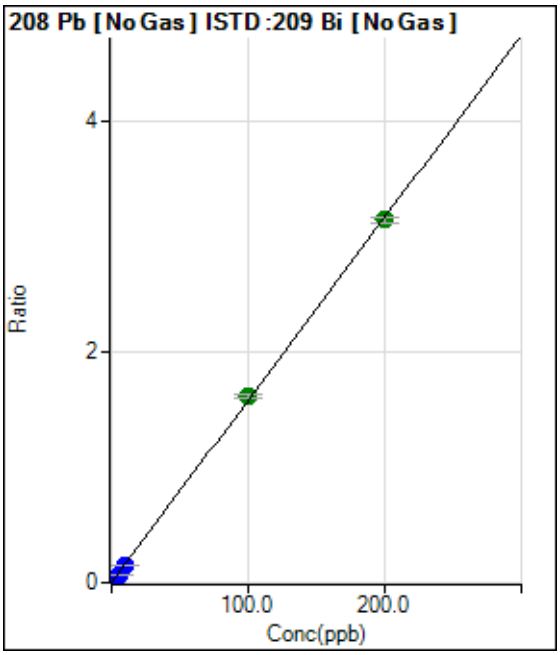


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	460.02	0.0003	P	10.0
2	☐	2.000	1.792	9774.02	0.0064	P	1.1
3	☐	5.000	4.539	24417.56	0.0157	P	2.9
4	☐	10.000	9.465	50398.98	0.0325	P	0.8
5	☐	100.000	104.044	542713.99	0.3543	P	1.4
6	☐	200.000	198.018	981570.30	0.6741	P	1.0

y = 0.0034 * x + 2.9975E-004
R = 0.9997
DL = 0.02639
BEC = 0.0881

Weight: <None>
Min Conc: <None>

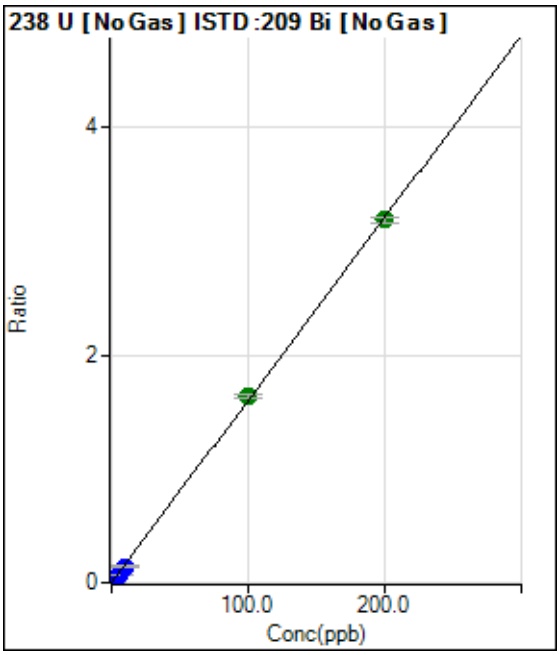
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1780.08	0.0012	P	7.2
2	☐	2.000	1.846	46308.61	0.0303	P	0.3
3	☐	5.000	4.520	112447.37	0.0725	P	3.0
4	☐	10.000	9.287	229021.53	0.1477	P	1.6
5	☐	100.000	102.521	2480118.47	1.6192	A	2.2
6	☐	200.000	198.789	4569984.31	3.1385	A	1.5

y = 0.0158 * x + 0.0012
R = 0.9999
DL = 0.0158
BEC = 0.07348

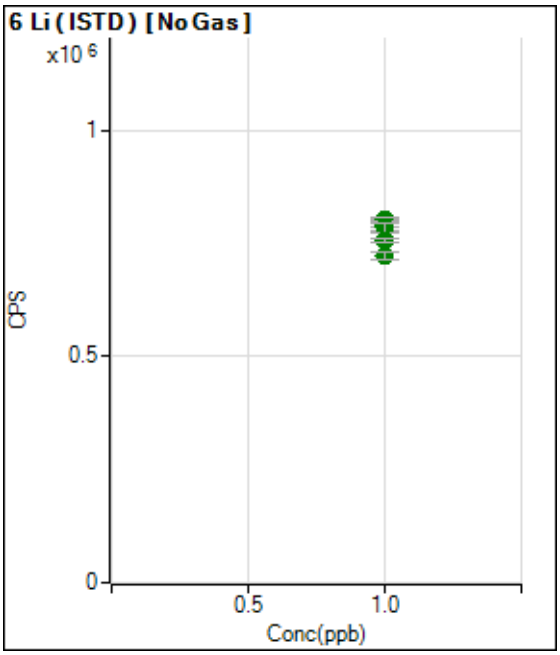
Weight: <None>
Min Conc: <None>



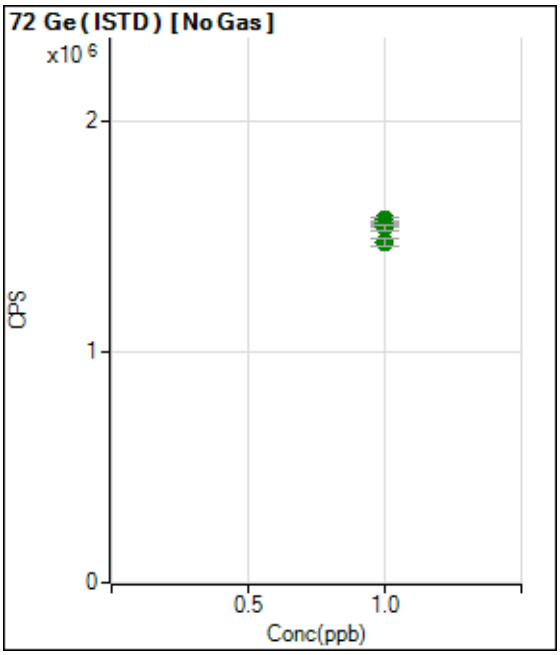
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	43.33	0.0000	P	35.2
2	☐	2.000	1.757	43083.03	0.0282	P	2.0
3	☐	5.000	4.343	108030.85	0.0696	P	1.8
4	☐	10.000	8.945	222287.96	0.1434	P	2.7
5	☐	100.000	102.340	2512376.79	1.6403	A	2.0
6	☐	200.000	198.901	4641730.87	3.1879	A	1.6

y = 0.0160 * x + 2.8217E-005
R = 0.9999
DL = 0.001858
BEC = 0.001761

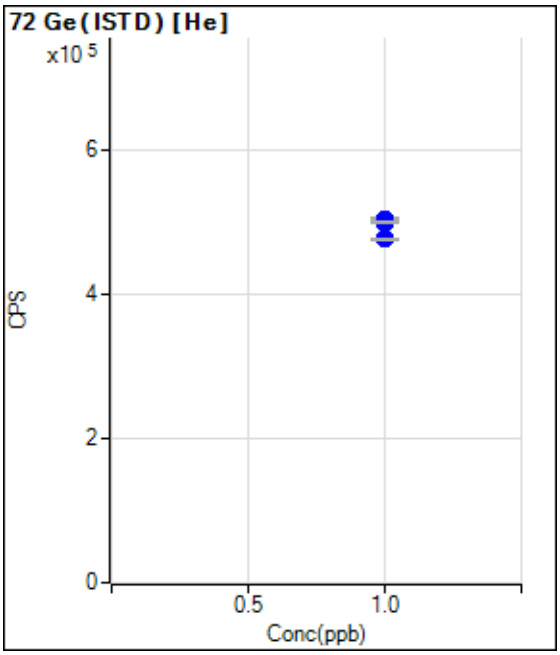
Weight: <None>
Min Conc: <None>



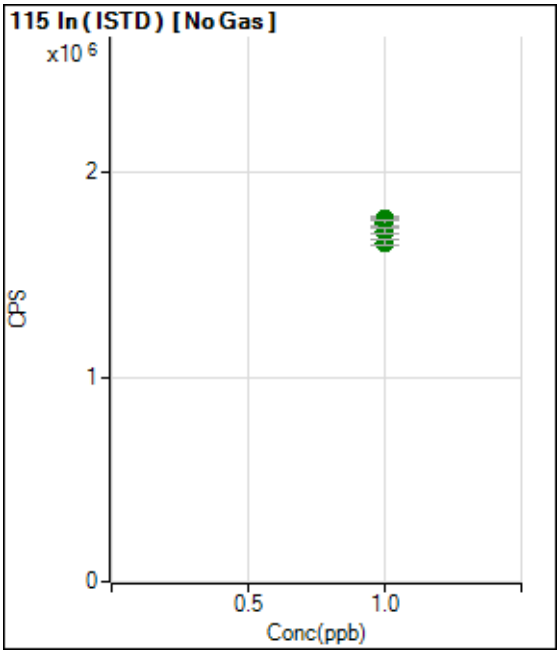
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		795953.54		A	2.1
2	☐	1.000		788538.59		A	2.9
3	☐	1.000		801244.38		A	0.9
4	☐	1.000		784234.87		A	2.7
5	☐	1.000		753921.04		A	1.1
6	☐	1.000		723147.54		A	2.5



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1570734.35		A	1.8
2	☐	1.000		1551720.08		A	1.4
3	☐	1.000		1560327.63		A	1.1
4	☐	1.000		1536623.67		A	2.0
5	☐	1.000		1536994.36		A	1.6
6	☐	1.000		1474095.71		A	2.3

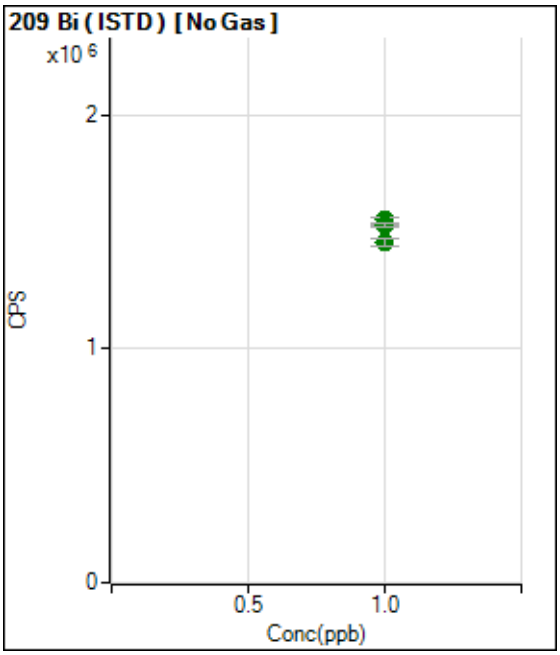


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		503456.47		P	1.1
2	☐	1.000		499903.65		P	0.3
3	☐	1.000		500733.35		P	0.9
4	☐	1.000		502014.70		P	0.4
5	☐	1.000		499685.79		P	0.7
6	☐	1.000		477301.12		P	0.6



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1773939.73		A	1.1
2	☐	1.000		1749414.32		A	2.5
3	☐	1.000		1771363.65		A	0.3
4	☐	1.000		1755208.23		A	1.6
5	☐	1.000		1714657.82		A	1.5
6	☐	1.000		1656010.99		A	1.7

Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1535146.12		A	0.5
2	☐	1.000		1528288.62		A	1.0
3	☐	1.000		1551574.56		A	1.9
4	☐	1.000		1550459.77		A	1.4
5	☐	1.000		1531909.93		A	1.2
6	☐	1.000		1456368.47		A	2.0

Calibration Blank Report

Sample Table

Sample Name	CAL BLK
Data File Name	009CALB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T11:00:53-05:00
Sample Type	CalBlk
Level	1
Dilution	1
Comment	

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Li	7	1	No Gas	53091	0.00
Be	9	1	No Gas	40	31.25
V	51	2	He	6544	0.04
Cr	52	2	He	770	1.66
Fe	56	2	He	10671	0.01
Se	78	2	He	189	2.25
As	75	2	He	212	2.26
Ca	44	2	He	2550	0.04
Na	23	2	He	119104	0.00
Mg	24	2	He	413	4.39
K	39	2	He	145655	0.00
Mn	55	2	He	417	5.16
Co	59	2	He	83	50.57
Ni	60	2	He	153	6.50
Cu	63	2	He	1477	0.76
Zn	66	2	He	500	1.83
Al	27	2	He	447	4.08
B	11	1	No Gas	11385	0.02
Al	27	1	No Gas	13534	0.03
Si	28	1	No Gas	259355	0.00
Ag	107	1	No Gas	320	2.93
Cd	111	1	No Gas	17	207.85
Sr	88	1	No Gas	393	4.94
Mo	95	1	No Gas	47	147.61
Sn	118	1	No Gas	7082	0.07
Sb	121	1	No Gas	210	6.00
Ba	137	1	No Gas	97	26.93
Tl	205	1	No Gas	427	2.22
Tl	203	1	No Gas	200	6.61
Pb	208	1	No Gas	1780	0.38
U	238	1	No Gas	43	81.35
Ca	43	2	He	17	415.69
Sb	121	2	He	183	8.59
Ti	47	2	He	3	5196.15
Cu	63	1	No Gas	15212	0.02

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD

Calibration Blank Report

Li	6	1	No Gas	795954	2.09
Ge	72	2	He	503456	1.14
Ge	72	1	No Gas	1570734	1.79
In	115	1	No Gas	1773940	1.11

Calibration Blank Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Bi	209	1	No Gas	1535146	0.54

Calibration Standard Report

Sample Table

Sample Name	2/10/200
Data File Name	010CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T11:02:51-05:00
Sample Type	CalStd
Level	2
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	5488	0.03
V	51	2	He	14046	0.02
Cr	52	2	He	9507	0.03
Fe	56	2	He	842365	0.00
Se	78	2	He	339	1.22
As	75	2	He	1592	0.43
Ca	44	2	He	7866	0.07
Na	23	2	He	256515	0.00
Mg	24	2	He	85866	0.00
K	39	2	He	250508	0.00
Mn	55	2	He	7132	0.05
Co	59	2	He	12793	0.03
Ni	60	2	He	3280	0.09
Cu	63	2	He	9770	0.00
Zn	66	2	He	2017	0.27
Al	27	2	He	883	1.99
B	11	1	No Gas	25785	0.00
Al	27	1	No Gas	32041	0.01
Si	28	1	No Gas	306526	0.00
Ag	107	1	No Gas	19591	0.01
Cd	111	1	No Gas	3837	0.15
Sr	88	1	No Gas	36550	0.00
Mo	95	1	No Gas	6955	0.05
Sn	118	1	No Gas	18119	0.01
Sb	121	1	No Gas	17001	0.02
Ba	137	1	No Gas	5781	0.01
Tl	205	1	No Gas	32747	0.00
Tl	203	1	No Gas	13558	0.02
Pb	208	1	No Gas	46309	0.00
U	238	1	No Gas	43083	0.00
Ca	43	2	He	350	2.45
Sb	121	2	He	8907	0.02
Cu	63	1	No Gas	30401	0.01

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	788539	2.94	795954	99.07	70	120	
Ge	72	2	He	499904	0.26	503456	99.29	70	120	
Ge	72	1	No Gas	1551720	1.38	1570734	98.79	70	120	

Calibration Standard Report

In	115	1	No Gas	1749414	2.53	1773940	98.62	70	120	
Bi	209	1	No Gas	1528289	1.00	1535146	99.55	70	120	

Calibration Standard Report

Sample Table

Sample Name	5/25/500
Data File Name	011CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T11:04:50-05:00
Sample Type	CalStd
Level	3
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	13752	0.01
V	51	2	He	25233	0.01
Cr	52	2	He	22763	0.00
Fe	56	2	He	2131793	0.00
Se	78	2	He	532	1.38
As	75	2	He	3674	0.03
Ca	44	2	He	16106	0.01
Na	23	2	He	469321	0.00
Mg	24	2	He	216289	0.00
K	39	2	He	402881	0.00
Mn	55	2	He	17031	0.00
Co	59	2	He	31841	0.00
Ni	60	2	He	8153	0.06
Cu	63	2	He	22218	0.00
Zn	66	2	He	4674	0.07
Al	27	2	He	1643	0.34
B	11	1	No Gas	48259	0.00
Al	27	1	No Gas	62253	0.00
Si	28	1	No Gas	384876	0.00
Ag	107	1	No Gas	49737	0.00
Cd	111	1	No Gas	10047	0.02
Sr	88	1	No Gas	90908	0.00
Mo	95	1	No Gas	18480	0.01
Sn	118	1	No Gas	34265	0.00
Sb	121	1	No Gas	42225	0.00
Ba	137	1	No Gas	14522	0.01
Tl	205	1	No Gas	79992	0.00
Tl	203	1	No Gas	34388	0.00
Pb	208	1	No Gas	112447	0.00
U	238	1	No Gas	108031	0.00
Ca	43	2	He	783	1.60
Sb	121	2	He	22954	0.01
Cu	63	1	No Gas	53315	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	801244	0.94	795954	100.66	70	120	
Ge	72	2	He	500733	0.88	503456	99.46	70	120	
Ge	72	1	No Gas	1560328	1.15	1570734	99.34	70	120	

Calibration Standard Report

In	115	1	No Gas	1771364	0.26	1773940	99.85	70	120	
Bi	209	1	No Gas	1551575	1.88	1535146	101.07	70	120	

Calibration Standard Report

Sample Table

Sample Name	10/50/100
Data File Name	012CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T11:06:48-05:00
Sample Type	CalStd
Level	4
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	27604	0.00
V	51	2	He	44399	0.00
Cr	52	2	He	44643	0.01
Fe	56	2	He	4195944	0.00
Se	78	2	He	899	1.31
As	75	2	He	7353	0.04
Ca	44	2	He	29318	0.01
Na	23	2	He	826664	0.00
Mg	24	2	He	436662	0.00
K	39	2	He	667948	0.00
Mn	55	2	He	34451	0.00
Co	59	2	He	64998	0.00
Ni	60	2	He	16530	0.00
Cu	63	2	He	43597	0.00
Zn	66	2	He	9167	0.02
Al	27	2	He	3150	0.13
B	11	1	No Gas	87685	0.00
Al	27	1	No Gas	110953	0.00
Si	28	1	No Gas	512967	0.00
Ag	107	1	No Gas	99600	0.00
Cd	111	1	No Gas	20429	0.00
Sr	88	1	No Gas	186252	0.00
Mo	95	1	No Gas	37242	0.01
Sn	118	1	No Gas	66136	0.00
Sb	121	1	No Gas	83837	0.00
Ba	137	1	No Gas	29247	0.01
Tl	205	1	No Gas	165830	0.00
Tl	203	1	No Gas	69641	0.00
Pb	208	1	No Gas	229022	0.00
U	238	1	No Gas	222288	0.00
Ca	43	2	He	1617	0.36
Sb	121	2	He	45740	0.00
Cu	63	1	No Gas	92000	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	784235	2.70	795954	98.53	70	120	
Ge	72	2	He	502015	0.41	503456	99.71	70	120	
Ge	72	1	No Gas	1536624	2.01	1570734	97.83	70	120	

Calibration Standard Report

In	115	1	No Gas	1755208	1.63	1773940	98.94	70	120	
Bi	209	1	No Gas	1550460	1.40	1535146	101.00	70	120	

Calibration Standard Report

Sample Table

Sample Name	100/500/10K
Data File Name	013CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T11:08:46-05:00
Sample Type	CalStd
Level	5
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	307139	0.00
V	51	2	He	418243	0.00
Cr	52	2	He	481917	0.00
Fe	56	2	He	44503054	0.00
Se	78	2	He	8052	0.02
As	75	2	He	80602	0.00
Ca	44	2	He	289000	0.00
Na	23	2	He	7359910	0.00
Mg	24	2	He	4421106	0.00
K	39	2	He	5627261	0.00
Mn	55	2	He	367522	0.00
Co	59	2	He	689339	0.00
Ni	60	2	He	172958	0.00
Cu	63	2	He	454852	0.00
Zn	66	2	He	96720	0.00
Al	27	2	He	28586	0.00
B	11	1	No Gas	869733	0.00
Al	27	1	No Gas	1084615	0.00
Si	28	1	No Gas	3175633	0.00
Ag	107	1	No Gas	1081674	0.00
Cd	111	1	No Gas	220341	0.00
Sr	88	1	No Gas	2036503	0.00
Mo	95	1	No Gas	401917	0.00
Sn	118	1	No Gas	633349	0.00
Sb	121	1	No Gas	911376	0.00
Ba	137	1	No Gas	310424	0.00
Tl	205	1	No Gas	1866711	0.00
Tl	203	1	No Gas	750769	0.00
Pb	208	1	No Gas	2480118	0.00
U	238	1	No Gas	2512377	0.00
Ca	43	2	He	16720	0.02
Sb	121	2	He	497539	0.00
Cu	63	1	No Gas	835515	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	753921	1.10	795954	94.72	70	120	
Ge	72	2	He	499686	0.66	503456	99.25	70	120	
Ge	72	1	No Gas	1536994	1.60	1570734	97.85	70	120	

Calibration Standard Report

In	115	1	No Gas	1714658	1.45	1773940	96.66	70	120	
Bi	209	1	No Gas	1531910	1.16	1535146	99.79	70	120	

Calibration Standard Report

Sample Table

Sample Name	200/1000/20K
Data File Name	014CALS.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T11:10:40-05:00
Sample Type	CalStd
Level	6
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	560157	0.00
V	51	2	He	774121	0.00
Cr	52	2	He	881195	0.00
Fe	56	2	He	82217727	0.00
Se	78	2	He	14274	0.01
As	75	2	He	142218	0.00
Ca	44	2	He	534250	0.00
Na	23	2	He	13715551	0.00
Mg	24	2	He	8236368	0.00
K	39	2	He	10482039	0.00
Mn	55	2	He	669401	0.00
Co	59	2	He	1306378	0.00
Ni	60	2	He	316334	0.00
Cu	63	2	He	818826	0.00
Zn	66	2	He	172864	0.00
Al	27	2	He	51091	0.00
B	11	1	No Gas	1605101	0.00
Al	27	1	No Gas	1889818	0.00
Si	28	1	No Gas	5138541	0.00
Ag	107	1	No Gas	1978695	0.00
Cd	111	1	No Gas	398623	0.00
Sr	88	1	No Gas	3722271	0.00
Mo	95	1	No Gas	754063	0.00
Sn	118	1	No Gas	1209674	0.00
Sb	121	1	No Gas	1717639	0.00
Ba	137	1	No Gas	579936	0.00
Tl	205	1	No Gas	3375450	0.00
Tl	203	1	No Gas	1416122	0.00
Pb	208	1	No Gas	4569984	0.00
U	238	1	No Gas	4641731	0.00
Ca	43	2	He	31921	0.01
Sb	121	2	He	920519	0.00
Cu	63	1	No Gas	1517523	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	723148	2.49	795954	90.85	70	120	
Ge	72	2	He	477301	0.59	503456	94.80	70	120	
Ge	72	1	No Gas	1474096	2.28	1570734	93.85	70	120	

Calibration Standard Report

In	115	1	No Gas	1656011	1.69	1773940	93.35	70	120	
Bi	209	1	No Gas	1456368	1.99	1535146	94.87	70	120	

Initial Calibration Blank (ICB) Report

Sample Table

Sample Name	ICB
Data File Name	017_ICB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T11:16:23-05:00
Sample Type	ICB
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	-0.008	-620.3	52365	0.7	0.5	
Be	9	1	No Gas	0.044	30.2	173	22.4	0.5	
V	51	2	He	-0.451	-13.0	4646	4.9	2.5	
Cr	52	2	He	0.051	44.8	997	10.7	2.5	
Fe	56	2	He	4.014	2.0	27825	2.0	100	
Se	78	2	He	-0.139	-206.9	177	12.5	1	
As	75	2	He	0.034	137.4	236	15.8	2.5	
Ca	44	2	He	9.198	67.3	2774	6.7	100	
Na	23	2	He	-0.327	-622.9	117330	0.5	100	
Mg	24	2	He	3.918	8.1	2097	7.3	100	
K	39	2	He	7.787	15.6	147979	1.1	100	
Mn	55	2	He	0.000	-3411.6	410	10.6	2.5	
Co	59	2	He	0.037	24.6	333	18.1	2.5	
Ni	60	2	He	0.019	163.4	183	28.0	2.5	
Cu	63	2	He	0.026	110.2	1570	7.1	1	
Zn	66	2	He	-0.206	-16.0	307	10.5	2.5	
Al	27	2	He	1.672	26.3	887	13.2	5	
B	11	1	No Gas	8.667	13.4	26377	7.8	0.5	ICB Main CR1 Failed
Al	27	1	No Gas	1.873	6.7	32001	4.1	5	
Si	28	1	No Gas	0.851	55.3	258931	0.6	10	
Ag	107	1	No Gas	0.032	26.6	650	13.7	2.5	
Cd	111	1	No Gas	0.041	7.0	103	5.6	1	
Sr	88	1	No Gas	0.079	8.6	1947	5.7	2.5	
Mo	95	1	No Gas	0.069	19.0	323	17.0	2.5	
Sn	118	1	No Gas	-0.588	-7.4	3237	7.5	5	
Sb	121	1	No Gas	0.079	8.3	917	5.5	2.5	
Ba	137	1	No Gas	0.051	12.8	253	9.1	2.5	
Tl	205	1	No Gas	0.085	30.2	1930	23.1	1	
Tl	203	1	No Gas	0.075	28.8	753	21.3	1	
Pb	208	1	No Gas	0.033	20.1	2543	5.5	2.5	
U	238	1	No Gas	0.043	5.6	1093	4.6	2.5	
Ca	43	2	He	-3.835	-158.3	10	100.0	100	
Sb	121	2	He	0.074	17.8	537	12.0	2.5	
Ti	47	2	He	0.061	58.4	13	43.3	2.5	
Se	82	1	No Gas	0.911	62.7	14	589.4	1	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	786235	1.62	795954	98.78	70	120	
Ge	72	2	He	496898	0.79	503456	98.70	70	120	
Ge	72	1	No Gas	1540996	1.48	1570734	98.11	70	120	
In	115	1	No Gas	1747548	1.18	1773940	98.51	70	120	
Bi	209	1	No Gas	1513801	0.94	1535146	98.61	70	120	

Sample Report

Sample Table

Sample Name	LLICV2
Data File Name	018LCV2.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T11:18:22-05:00
Sample Type	LLCCV2
Dilution	1
Comment	
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	1.641	1.641	13.16	71812	0.00	2	
Be	9	1	No Gas	1.732	1.732	6.65	5438	0.03	2	
V	51	2	He	1.411	1.411	5.60	12341	0.01	2	
Cr	52	2	He	1.882	1.882	2.80	9630	0.02	2	
Fe	56	2	He	189.872	189.872	1.97	843139	0.02	200	
Se	78	2	He	1.708	1.708	24.64	319	0.53	2	
As	75	2	He	1.804	1.804	3.86	1592	0.11	2	
Ca	44	2	He	192.478	192.478	4.28	8016	2.40	200	
Na	23	2	He	184.217	184.217	1.35	252875	0.07	200	
Mg	24	2	He	197.527	197.527	3.03	87037	0.23	200	
K	39	2	He	186.360	186.360	1.61	248715	0.07	200	
Mn	55	2	He	1.822	1.822	2.15	6939	0.03	2	
Co	59	2	He	1.839	1.839	1.71	12830	0.01	2	
Ni	60	2	He	1.819	1.819	7.77	3227	0.06	2	
Cu	63	2	He	1.873	1.873	6.85	9690	0.02	2	
Zn	66	2	He	1.730	1.730	8.25	2104	0.08	2	
Al	27	2	He	1.429	1.429	19.14	837	0.17	2	
B	11	1	No Gas	11.773	11.773	7.97	32222	0.04	10	
Al	27	1	No Gas	2.276	2.276	26.70	36192	0.01	2	
Si	28	1	No Gas	9.705	9.705	5.94	306820	0.00	10	
Ag	107	1	No Gas	1.856	1.856	1.64	19648	0.01	2	
Cd	111	1	No Gas	1.957	1.957	4.25	4141	0.05	2	
Sr	88	1	No Gas	1.853	1.853	4.24	36697	0.01	2	
Mo	95	1	No Gas	1.834	1.834	7.07	7282	0.03	2	
Sn	118	1	No Gas	1.826	1.826	6.56	18336	0.01	2	
Sb	121	1	No Gas	1.805	1.805	0.53	16534	0.01	2	
Ba	137	1	No Gas	1.895	1.895	3.80	5858	0.03	2	
Tl	205	1	No Gas	1.784	1.784	2.90	32961	0.01	2	
Tl	203	1	No Gas	1.753	1.753	4.88	13491	0.01	2	
Pb	208	1	No Gas	1.789	1.789	2.42	45777	0.00	2	
U	238	1	No Gas	1.731	1.731	1.39	43247	0.00	2	
Ca	43	2	He	189.326	189.326	9.69	337	56.23	200	
Sb	121	2	He	1.842	1.842	4.62	9223	0.02	2	
Ti	47	2	He	1.691	1.691	32.40	287	0.59	200	
Cu	63	1	No Gas	1.760	1.760	6.11	29001	0.01	2	
Se	82	1	No Gas	1.334	1.334	123.19	76	1.75	2	NewName Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	797934	4.49	795954	100.25	70	120	
Ge	72	2	He	505762	0.63	503456	100.46	70	120	
Ge	72	1	No Gas	1547239	0.33	1570734	98.50	70	120	
In	115	1	No Gas	1725814	3.61	1773940	97.29	70	120	
Bi	209	1	No Gas	1557709	1.50	1535146	101.47	70	120	

Sample Report

Sample Table

Sample Name	LLICV5
Data File Name	019LCV5.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T11:20:20-05:00
Sample Type	LLCCV5
Dilution	1
Comment	
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	4.463	4.463	5.66	101429	0.00	5	
Be	9	1	No Gas	4.410	4.410	2.47	13475	0.03	5	
V	51	2	He	4.300	4.300	3.87	23778	0.02	5	
Cr	52	2	He	4.660	4.660	1.38	22355	0.02	5	
Fe	56	2	He	486.080	486.080	1.14	2109278	0.02	500	
Se	78	2	He	4.856	4.856	13.12	549	0.88	5	
As	75	2	He	4.587	4.587	0.91	3664	0.13	5	
Ca	44	2	He	476.947	476.947	4.76	15829	3.01	500	
Na	23	2	He	484.609	484.609	1.62	462893	0.10	500	
Mg	24	2	He	499.897	499.897	2.06	216274	0.23	500	
K	39	2	He	475.880	475.880	1.75	401528	0.12	500	
Mn	55	2	He	4.729	4.729	4.44	17078	0.03	5	
Co	59	2	He	4.663	4.663	2.14	31908	0.01	5	
Ni	60	2	He	4.692	4.692	1.22	7959	0.06	5	
Cu	63	2	He	4.789	4.789	3.70	22125	0.02	5	
Zn	66	2	He	4.661	4.661	4.08	4741	0.10	5	
Al	27	2	He	4.503	4.503	7.15	1647	0.27	5	
B	11	1	No Gas	23.910	23.910	3.78	52463	0.05	25	
Al	27	1	No Gas	4.702	4.702	0.72	60930	0.01	5	
Si	28	1	No Gas	23.969	23.969	3.58	384685	0.01	25	
Ag	107	1	No Gas	4.585	4.585	2.37	49413	0.01	5	
Cd	111	1	No Gas	4.518	4.518	4.03	9784	0.05	5	
Sr	88	1	No Gas	4.492	4.492	2.04	90905	0.00	5	
Mo	95	1	No Gas	4.597	4.597	2.95	18713	0.02	5	
Sn	118	1	No Gas	4.276	4.276	4.18	34636	0.01	5	
Sb	121	1	No Gas	4.528	4.528	0.15	41442	0.01	5	
Ba	137	1	No Gas	4.642	4.642	1.81	14598	0.03	5	
Tl	205	1	No Gas	4.529	4.529	0.75	82616	0.01	5	
Tl	203	1	No Gas	4.458	4.458	2.57	33840	0.01	5	
Pb	208	1	No Gas	4.547	4.547	1.28	113053	0.00	5	
U	238	1	No Gas	4.384	4.384	1.46	108969	0.00	5	
Ca	43	2	He	424.791	424.791	12.00	723	58.72	500	
Sb	121	2	He	4.747	4.747	0.54	23121	0.02	5	
Ti	47	2	He	4.020	4.020	9.94	667	0.60	5	
Cu	63	1	No Gas	4.653	4.653	4.13	52374	0.01	5	
Se	82	1	No Gas	4.438	4.438	44.02	530	0.84	5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	778900	2.59	795954	97.86	70	120	
Ge	72	2	He	498041	1.02	503456	98.92	70	120	
Ge	72	1	No Gas	1557311	1.38	1570734	99.15	70	120	

Sample Report

In	115	1	No Gas	1772993	2.11	1773940	99.95	70	120	
Bi	209	1	No Gas	1550350	0.66	1535146	100.99	70	120	

Initial Calibration Verification (ICV) Report

Sample Table

Sample Name	ICV
Data File Name	021_ICV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T11:38:19-05:00
Sample Type	ICV
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Li	7	1	No Gas	101.121	7.277	1147009	5.97	100	101.1	90	110	
Be	9	1	No Gas	103.188	2.358	307513	0.96	100	103.2	90	110	
V	51	2	He	102.411	1.085	421562	0.78	100	102.4	90	110	
Cr	52	2	He	104.279	1.291	487269	1.10	100	104.3	90	110	
Fe	56	2	He	10305.253	1.480	44806943	0.83	10000	103.1	90	110	
Se	78	2	He	105.042	1.680	8067	1.62	100	105.0	90	110	
As	75	2	He	106.417	1.837	80880	1.73	100	106.4	90	110	
Ca	44	2	He	10308.838	0.451	292184	0.44	10000	103.1	90	110	
Na	23	2	He	10158.168	1.155	7401681	0.69	10000	101.6	90	110	
Mg	24	2	He	10370.212	1.142	4509827	1.18	10000	103.7	90	110	
K	39	2	He	10142.732	0.664	5669697	0.65	10000	101.4	90	110	
Mn	55	2	He	104.944	2.466	372722	2.10	100	104.9	90	110	
Co	59	2	He	100.570	0.753	691232	0.43	100	100.6	90	110	
Ni	60	2	He	102.784	0.248	172374	0.47	100	102.8	90	110	
Cu	63	2	He	104.828	1.211	456922	0.64	100	104.8	90	110	
Zn	66	2	He	104.751	1.131	96606	1.59	100	104.8	90	110	
Al	27	2	He	105.797	0.877	28947	1.12	100	105.8	90	110	
B	11	1	No Gas	511.249	4.005	874904	2.55	500	102.2	90	110	
Al	27	1	No Gas	107.575	2.058	1091064	1.41	100	107.6	90	110	
Si	28	1	No Gas	556.529	1.827	3191815	1.66	500	111.3	90	110	ICV Main CR1 Failed
Ag	107	1	No Gas	101.532	0.806	1055158	1.53	100	101.5	90	110	
Cd	111	1	No Gas	103.540	2.158	217225	0.58	100	103.5	90	110	
Sr	88	1	No Gas	103.133	1.870	2016225	1.18	100	103.1	90	110	
Mo	95	1	No Gas	101.669	2.109	400433	0.33	100	101.7	90	110	
Sn	118	1	No Gas	98.438	3.107	622474	1.42	100	98.4	90	110	
Sb	121	1	No Gas	99.402	0.707	897759	0.37	100	99.4	90	110	
Ba	137	1	No Gas	100.899	3.036	305889	1.17	100	100.9	90	110	
Tl	205	1	No Gas	104.603	1.455	1837829	0.82	100	104.6	90	110	
Tl	203	1	No Gas	99.481	0.834	726928	0.68	100	99.5	90	110	
Pb	208	1	No Gas	102.526	1.574	2430118	1.55	100	102.5	90	110	
U	238	1	No Gas	99.706	0.879	2398313	1.15	100	99.7	90	110	
Ca	43	2	He	9959.711	0.824	16707	1.06	10000	99.6	90	110	
Sb	121	2	He	102.549	1.064	499098	0.72	100	102.5	90	110	
Ti	47	2	He	97.488	3.419	16213	3.57	100	97.5	90	110	
Cu	63	1	No Gas	103.599	1.174	838538	0.28	100	103.6	90	110	
Se	82	1	No Gas	103.555	2.804	14823	1.96	100	103.6	90	110	

QC ISTD Table

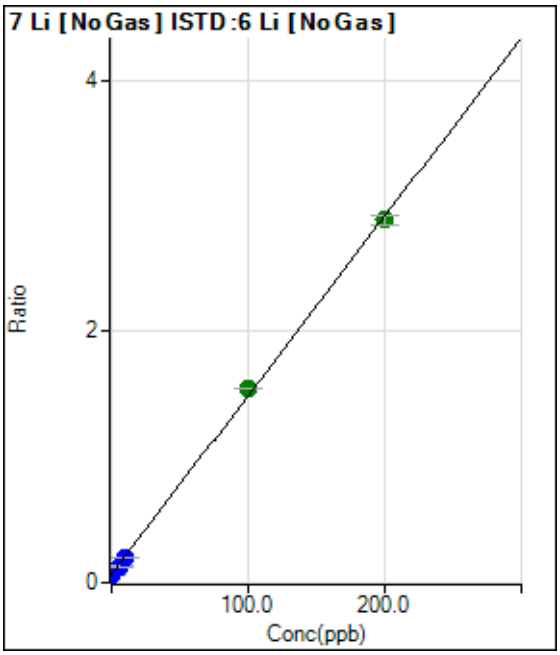
Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	761644	1.39	795954	95.69	70	120	
Ge	72	2	He	501466	0.67	503456	99.60	70	120	
Ge	72	1	No Gas	1544288	0.96	1570734	98.32	70	120	
In	115	1	No Gas	1720272	2.16	1773940	96.97	70	120	
Bi	209	1	No Gas	1500861	1.49	1535146	97.77	70	120	

Calibration for 021_ICV.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\093021A.b\
Analysis File: 093021A.batch.bin
DA Date-Time: 9/30/2021 7:27:39 PM
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	009CALB.d	CAL BLK	9/30/2021 11:00:53 AM
2	010CALS.d	2/10/200	9/30/2021 11:02:51 AM
3	011CALS.d	5/25/500	9/30/2021 11:04:50 AM
4	012CALS.d	10/50/100	9/30/2021 11:06:48 AM
5	013CALS.d	100/500/10K	9/30/2021 11:08:46 AM
6	014CALS.d	200/1000/20K	9/30/2021 11:10:40 AM

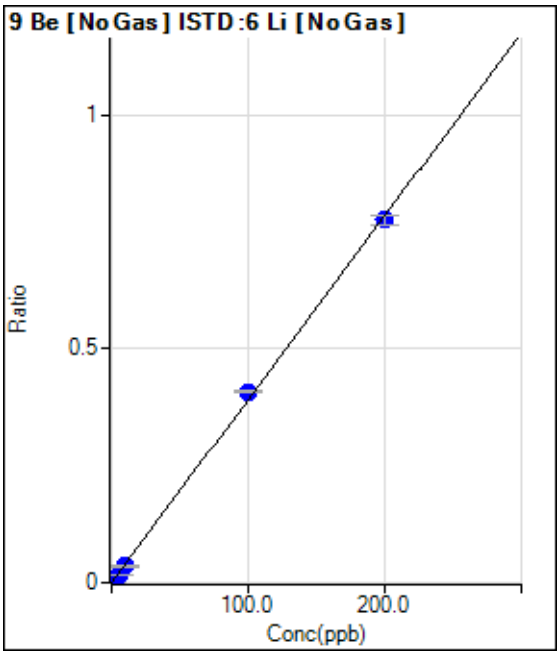
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	53091.28	0.0667	P	2.0
2	☐	2.000	1.932	74274.40	0.0942	P	2.5
3	☐	5.000	4.375	103355.99	0.1290	P	2.8
4	☐	10.000	9.158	154541.65	0.1971	P	2.3
5	☐	100.000	103.766	1164417.01	1.5444	A	0.7
6	☐	200.000	198.175	2088287.63	2.8888	A	2.7

y = 0.0142 * x + 0.0667
R = 0.9997
DL = 0.276
BEC = 4.685

Weight: <None>
Min Conc: <None>

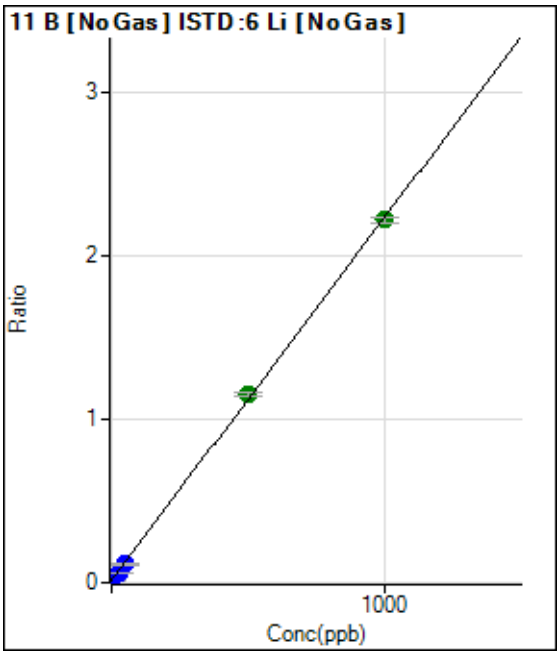


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	40.00	0.0001	P	14.2
2	☐	2.000	1.766	5487.78	0.0070	P	2.9
3	☐	5.000	4.374	13751.77	0.0172	P	2.1
4	☐	10.000	8.985	27603.82	0.0352	P	2.0
5	☐	100.000	104.104	307139.30	0.4074	P	1.2
6	☐	200.000	198.017	560157.11	0.7749	P	2.4

y = 0.0039 * x + 5.0333E-005
R = 0.9997
DL = 0.005478
BEC = 0.01286

Weight: <None>
Min Conc: <None>

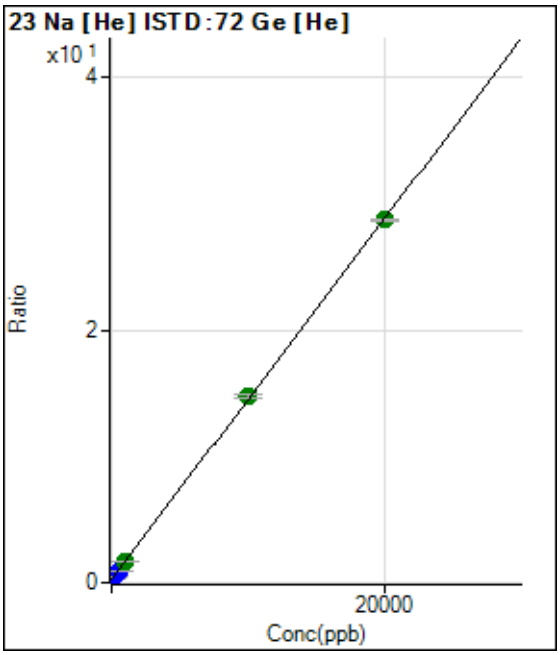
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	11384.68	0.0143	P	4.1
2	☐	10.000	8.292	25785.35	0.0327	P	2.7
3	☐	25.000	20.687	48259.19	0.0602	P	0.4
4	☐	50.000	43.942	87684.75	0.1118	P	2.1
5	☐	500.000	513.214	869732.83	1.1535	A	2.9
6	☐	1000.000	993.821	1605101.49	2.2203	A	1.9

y = 0.0022 * x + 0.0143
R = 0.9998
DL = 0.7856
BEC = 6.447

Weight: <None>
Min Conc: <None>

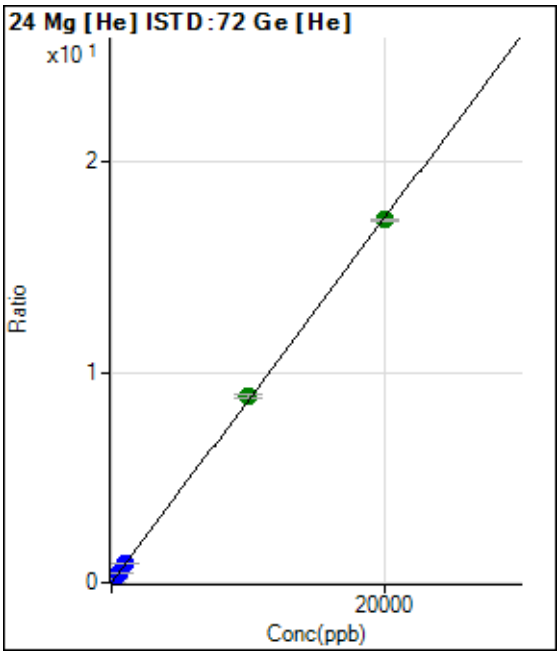


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	119104.37	0.2366	P	2.0
2	☐	200.000	193.402	256514.88	0.5131	P	0.8
3	☐	500.000	490.050	469320.53	0.9373	P	0.6
4	☐	1000.000	986.280	826664.24	1.6468	A	3.3
5	☐	10000.000	10136.817	7359909.89	14.7302	A	1.7
6	☐	20000.000	19932.592	13715550.63	28.7361	A	0.8

y = 0.0014 * x + 0.2366
R = 1.0000
DL = 9.735
BEC = 165.5

Weight: <None>
Min Conc: <None>

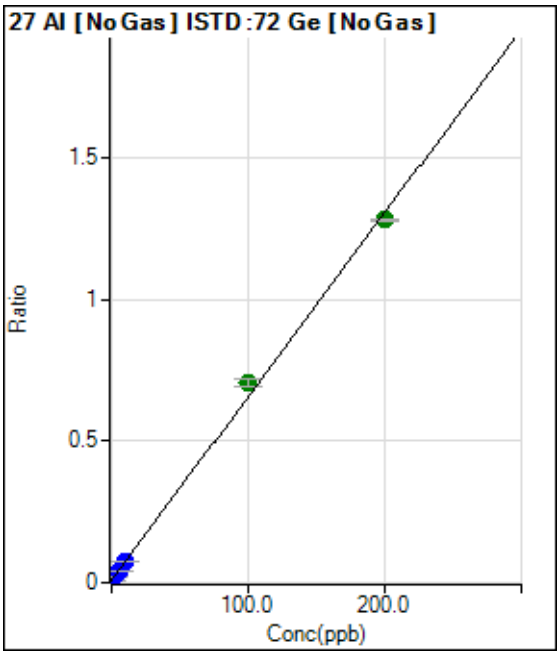
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	413.35	0.0008	P	17.8
2	☐	200.000	197.129	85866.47	0.1718	P	1.3
3	☐	500.000	497.157	216288.98	0.4319	P	0.6
4	☐	1000.000	1002.123	436662.06	0.8698	P	0.1
5	☐	10000.000	10203.139	4421106.18	8.8485	A	2.4
6	☐	20000.000	19898.424	8236368.00	17.2558	A	0.7

y = 8.6715E-004 * x + 8.2070E-004
R = 0.9999
DL = 0.5044
BEC = 0.9464

Weight: <None>
Min Conc: <None>

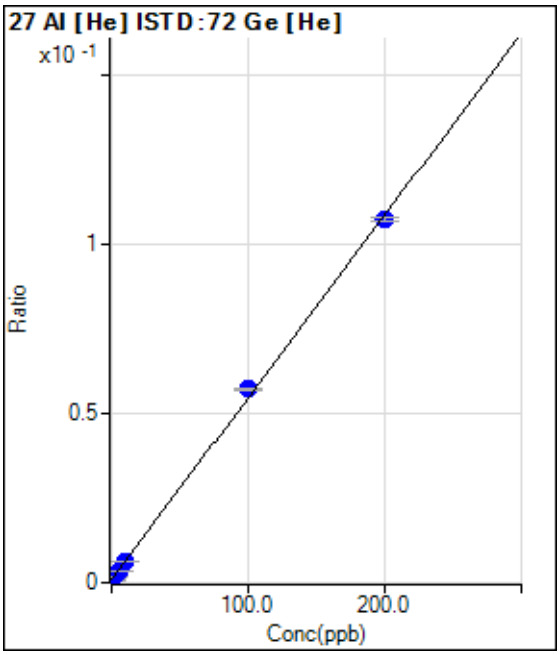


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	13533.71	0.0086	P	3.4
2	☐	2.000	1.856	32040.60	0.0207	P	4.9
3	☐	5.000	4.821	62252.82	0.0399	P	0.3
4	☐	10.000	9.804	110953.47	0.0722	P	1.9
5	☐	100.000	107.476	1084614.93	0.7059	A	3.7
6	☐	200.000	196.278	1889818.36	1.2821	A	0.5

y = 0.0065 * x + 0.0086
R = 0.9990
DL = 0.1338
BEC = 1.328

Weight: <None>
Min Conc: <None>

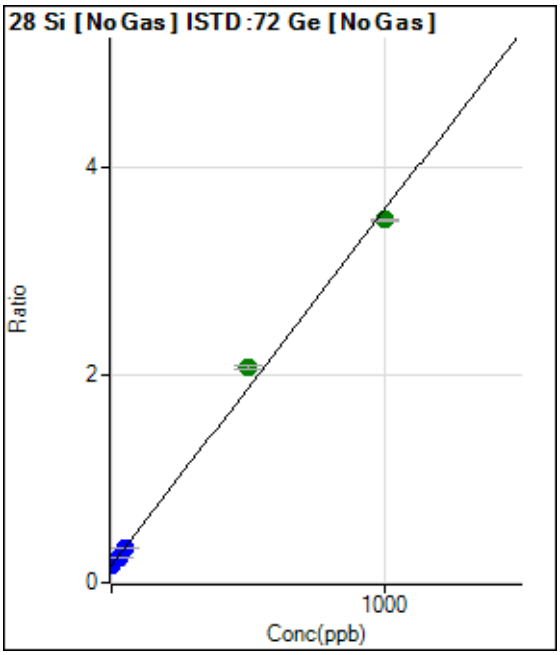
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	446.68	0.0009	P	17.4
2	☐	2.000	1.639	883.38	0.0018	P	17.5
3	☐	5.000	4.461	1643.47	0.0033	P	6.3
4	☐	10.000	10.032	3150.42	0.0063	P	4.5
5	☐	100.000	104.842	28586.33	0.0572	P	1.2
6	☐	200.000	197.595	51090.81	0.1070	P	1.0

y = 5.3724E-004 * x + 8.8640E-004
R = 0.9996
DL = 0.8598
BEC = 1.65

Weight: <None>
Min Conc: <None>

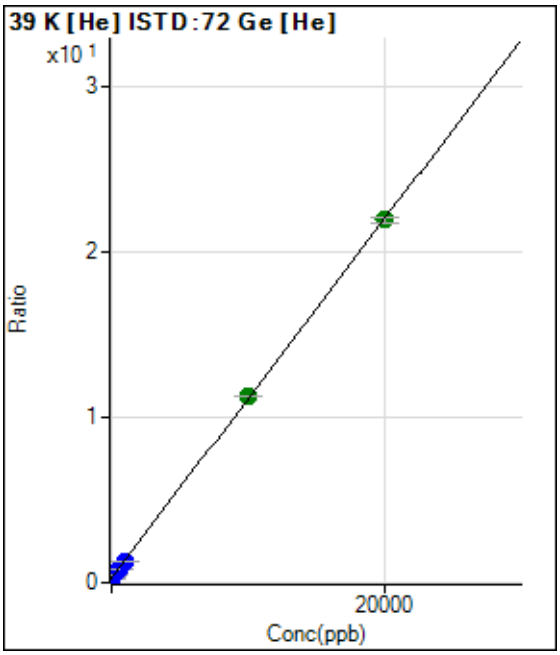


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	259355.04	0.1651	P	1.1
2	☐	10.000	9.489	306525.51	0.1976	P	1.3
3	☐	25.000	23.865	384876.41	0.2467	P	1.4
4	☐	50.000	49.389	512967.26	0.3339	P	1.8
5	☐	500.000	556.449	3175632.56	2.0666	A	2.3
6	☐	1000.000	971.840	5138540.86	3.4861	A	0.8

y = 0.0034 * x + 0.1651
R = 0.9977
DL = 1.558
BEC = 48.32

Weight: <None>
Min Conc: <None>

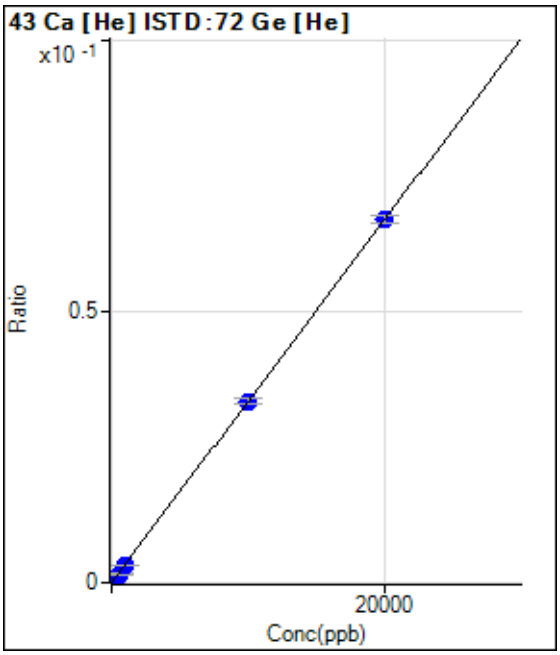
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	145655.10	0.2893	P	1.8
2	☐	200.000	194.961	250507.57	0.5011	P	0.0
3	☐	500.000	474.365	402881.05	0.8046	P	0.5
4	☐	1000.000	958.564	667948.12	1.3305	P	0.4
5	☐	10000.000	10101.562	5627260.96	11.2617	A	0.5
6	☐	20000.000	19951.982	10482039.22	21.9613	A	1.7

y = 0.0011 * x + 0.2893
R = 1.0000
DL = 14
BEC = 266.4

Weight: <None>
Min Conc: <None>

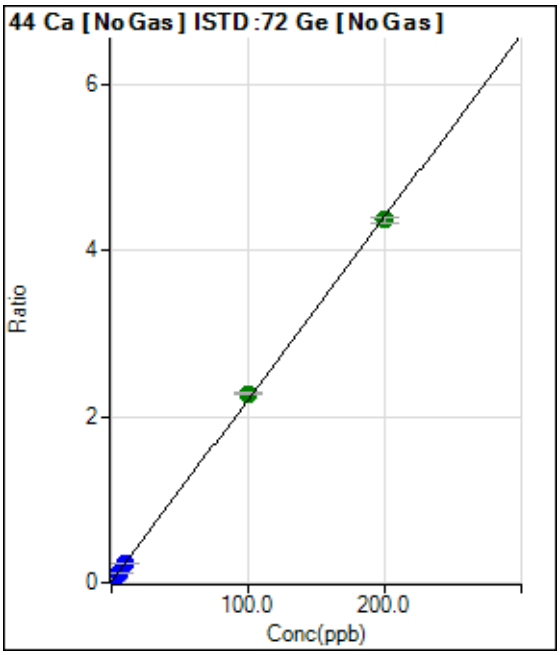


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	16.67	0.0000	P	68.9
2	☐	200.000	199.614	350.01	0.0007	P	8.5
3	☐	500.000	458.034	783.37	0.0016	P	12.0
4	☐	1000.000	953.777	1616.79	0.0032	P	5.5
5	☐	10000.000	10003.132	16720.38	0.0335	P	2.7
6	☐	20000.000	20001.798	31920.71	0.0669	P	2.2

y = 3.3418E-006 * x + 3.3048E-005
R = 1.0000
DL = 20.43
BEC = 9.889

Weight: <None>
Min Conc: <None>

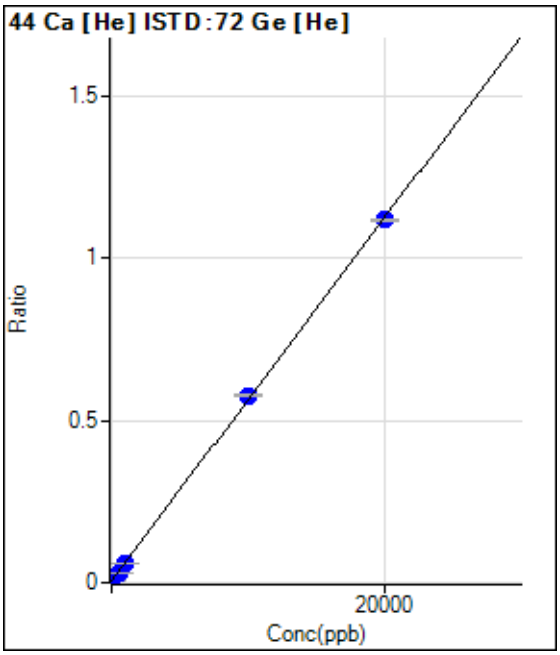
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	19120.19	0.0122	P	2.3
2	☐	2.000	1.852	81979.85	0.0528	P	1.0
3	☐	5.000	4.666	178848.42	0.1146	P	0.2
4	☐	10.000	9.624	343297.04	0.2235	P	2.5
5	☐	100.000	103.195	3500709.84	2.2778	A	1.3
6	☐	200.000	198.431	6438454.69	4.3687	A	1.5

y = 0.0220 * x + 0.0122
R = 0.9998
DL = 0.03756
BEC = 0.5546

Weight: <None>
Min Conc: <None>

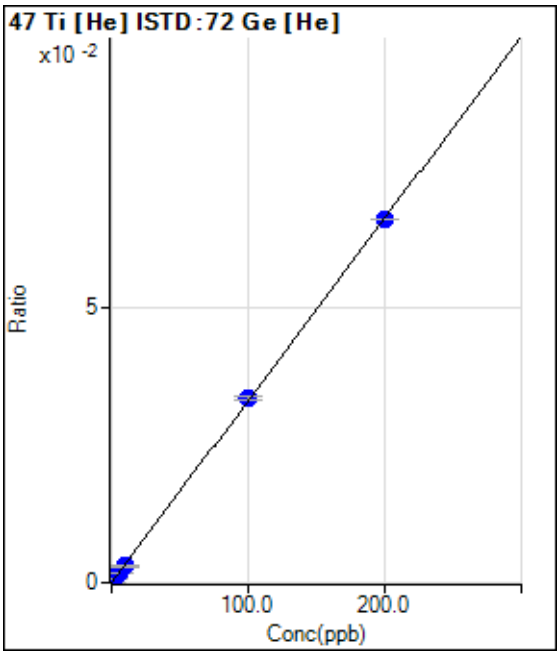


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2550.28	0.0051	P	0.1
2	☐	200.000	190.441	7865.72	0.0157	P	5.9
3	☐	500.000	483.674	16106.33	0.0322	P	2.0
4	☐	1000.000	951.947	29318.31	0.0584	P	3.1
5	☐	10000.000	10232.141	289000.37	0.5784	P	0.4
6	☐	20000.000	19886.836	534249.68	1.1193	P	0.5

y = 5.6030E-005 * x + 0.0051
R = 0.9999
DL = 0.2828
BEC = 90.41

Weight: <None>
Min Conc: <None>

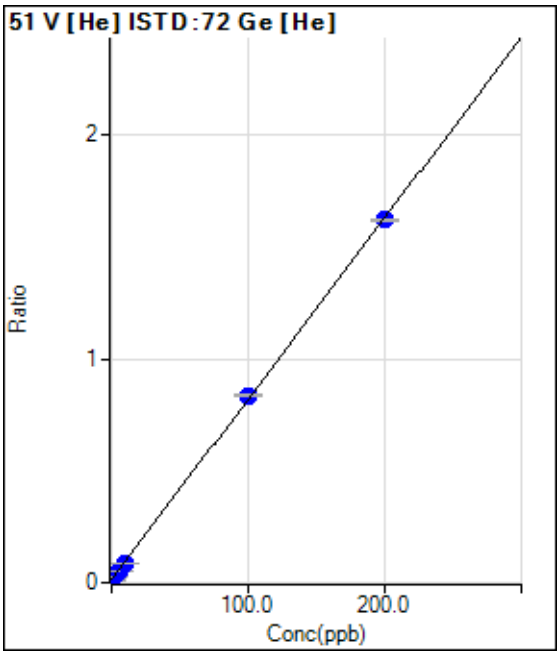
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3.33	0.0000	P	173.2
2	☐	2.000	1.951	326.68	0.0007	P	9.6
3	☐	5.000	4.979	830.04	0.0017	P	9.0
4	☐	10.000	9.154	1526.79	0.0030	P	8.9
5	☐	100.000	101.497	16820.52	0.0337	P	2.7
6	☐	200.000	199.295	31543.28	0.0661	P	0.1

y = 3.3157E-004 * x + 6.5917E-006
R = 0.9999
DL = 0.1033
BEC = 0.01988

Weight: <None>
Min Conc: <None>

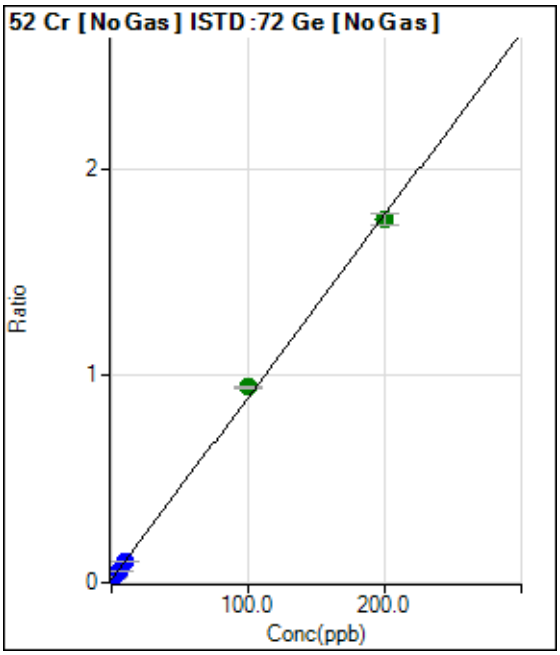


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6543.82	0.0130	P	3.0
2	☐	2.000	1.868	14046.14	0.0281	P	2.0
3	☐	5.000	4.627	25233.24	0.0504	P	2.1
4	☐	10.000	9.335	44399.41	0.0884	P	0.8
5	☐	100.000	101.958	418242.99	0.8370	P	0.5
6	☐	200.000	199.065	774120.63	1.6218	P	0.6

y = 0.0081 * x + 0.0130
R = 0.9999
DL = 0.1468
BEC = 1.608

Weight: <None>
Min Conc: <None>

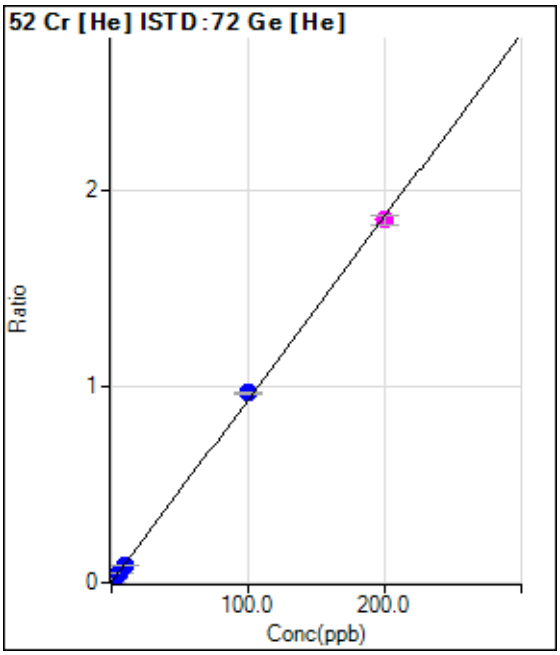
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	24285.13	0.0155	P	4.5
2	☐	2.000	1.910	50118.65	0.0323	P	0.8
3	☐	5.000	4.607	87471.43	0.0561	P	0.5
4	☐	10.000	9.684	154848.34	0.1008	P	1.6
5	☐	100.000	105.442	1451594.25	0.9444	A	1.5
6	☐	200.000	197.305	2583908.14	1.7538	A	3.3

y = 0.0088 * x + 0.0155
R = 0.9995
DL = 0.2357
BEC = 1.756

Weight: <None>
Min Conc: <None>

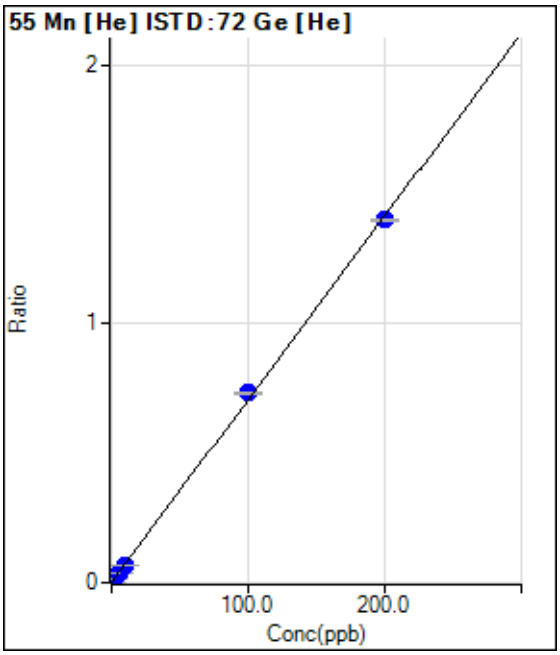


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	770.03	0.0015	P	13.2
2	☐	2.000	1.880	9506.79	0.0190	P	3.2
3	☐	5.000	4.722	22762.55	0.0455	P	1.6
4	☐	10.000	9.394	44643.16	0.0889	P	2.9
5	☐	100.000	103.501	481917.36	0.9645	P	0.9
6	☐	200.000	198.288	881195.43	1.8464	M	2.6

y = 0.0093 * x + 0.0015
R = 0.9998
DL = 0.06534
BEC = 0.1645

Weight: <None>
Min Conc: <None>

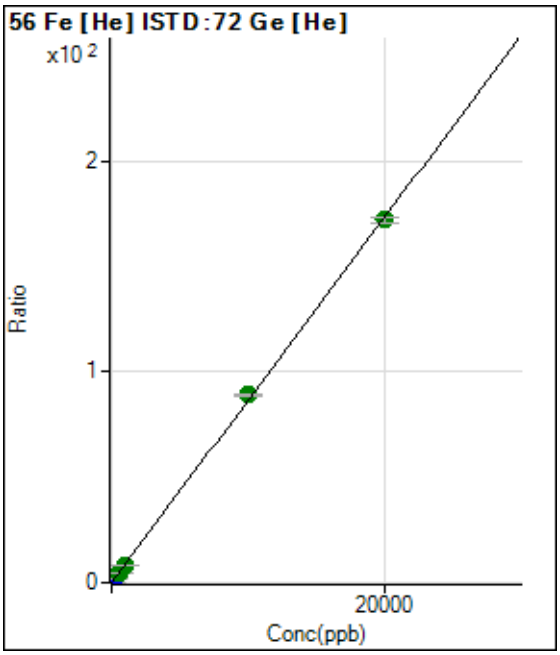
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	416.68	0.0008	P	21.1
2	☐	2.000	1.899	7131.99	0.0143	P	3.0
3	☐	5.000	4.691	17030.90	0.0340	P	1.2
4	☐	10.000	9.583	34450.52	0.0686	P	0.2
5	☐	100.000	103.844	367521.95	0.7355	P	1.0
6	☐	200.000	198.108	669400.93	1.4025	P	0.3

y = 0.0071 * x + 8.2718E-004
R = 0.9997
DL = 0.07388
BEC = 0.1169

Weight: <None>
Min Conc: <None>

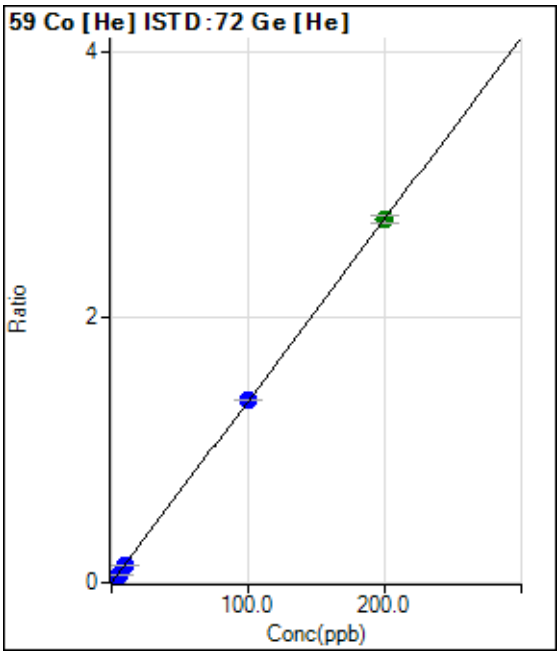


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	10671.07	0.0212	P	2.0
2	☐	200.000	191.934	842365.17	1.6851	P	0.9
3	☐	500.000	488.675	2131792.67	4.2575	A	1.0
4	☐	1000.000	961.708	4195944.21	8.3583	A	0.3
5	☐	10000.000	10270.960	44503054.34	89.0604	A	0.5
6	☐	20000.000	19866.798	82217727.11	172.2470	A	1.3

y = 0.0087 * x + 0.0212
R = 0.9999
DL = 0.1479
BEC = 2.445

Weight: <None>
Min Conc: <None>

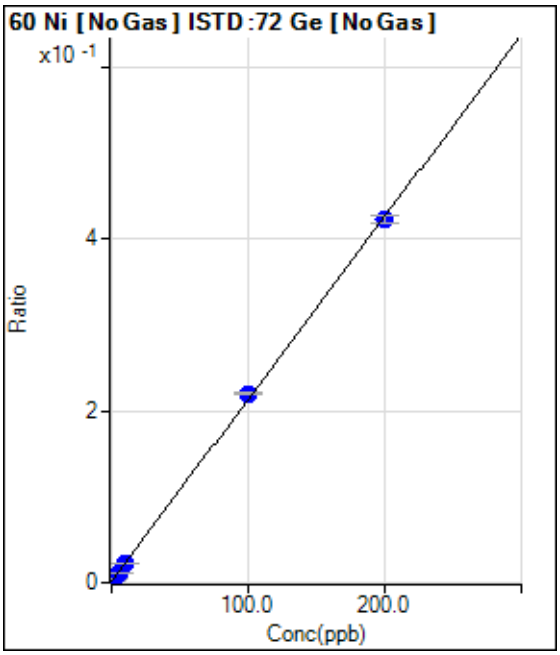
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	83.33	0.0002	P	41.3
2	☐	2.000	1.855	12792.89	0.0256	P	3.4
3	☐	5.000	4.628	31840.80	0.0636	P	0.6
4	☐	10.000	9.436	64998.10	0.1295	P	2.2
5	☐	100.000	100.652	689339.00	1.3796	P	0.6
6	☐	200.000	199.713	1306377.90	2.7372	A	2.0

y = 0.0137 * x + 1.6505E-004
R = 1.0000
DL = 0.01491
BEC = 0.01204

Weight: <None>
Min Conc: <None>

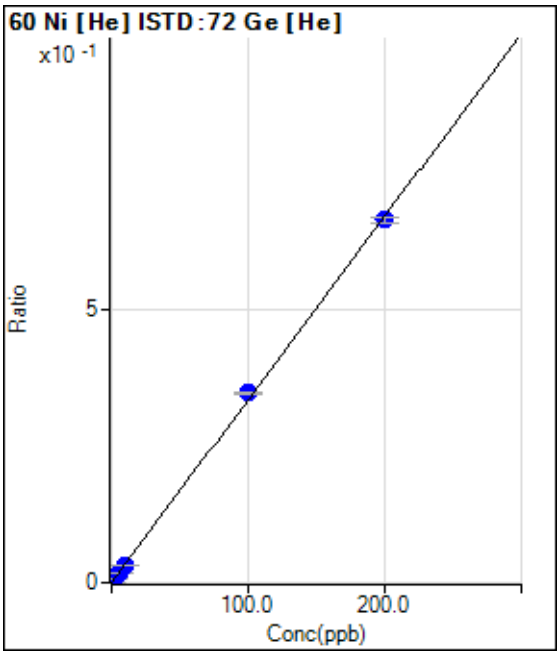


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2083.53	0.0013	P	1.6
2	☐	2.000	1.855	8169.24	0.0053	P	3.9
3	☐	5.000	4.729	17731.90	0.0114	P	0.3
4	☐	10.000	9.675	33601.86	0.0219	P	1.5
5	☐	100.000	103.249	338845.59	0.2205	P	1.2
6	☐	200.000	198.400	622534.00	0.4225	P	2.2

y = 0.0021 * x + 0.0013
R = 0.9998
DL = 0.03004
BEC = 0.625

Weight: <None>
Min Conc: <None>

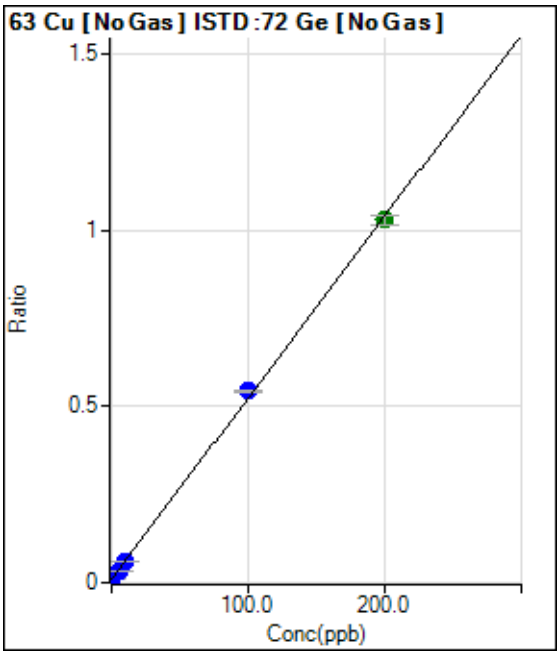
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	153.33	0.0003	P	9.5
2	☐	2.000	1.873	3280.45	0.0066	P	2.7
3	☐	5.000	4.782	8152.58	0.0163	P	5.0
4	☐	10.000	9.764	16530.35	0.0329	P	0.6
5	☐	100.000	103.504	172957.59	0.3461	P	1.1
6	☐	200.000	198.267	316333.87	0.6628	P	1.3

y = 0.0033 * x + 3.0450E-004
R = 0.9998
DL = 0.0261
BEC = 0.09113

Weight: <None>
Min Conc: <None>

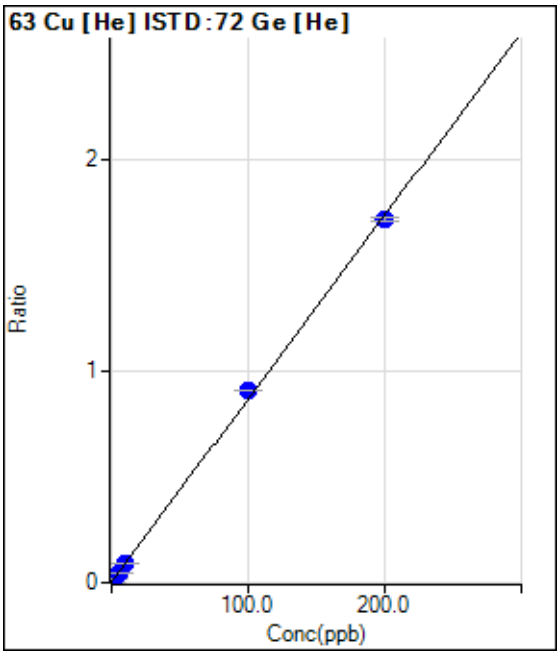


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	15212.06	0.0097	P	2.3
2	☐	2.000	1.925	30401.04	0.0196	P	4.8
3	☐	5.000	4.757	53314.66	0.0342	P	2.0
4	☐	10.000	9.750	92000.01	0.0599	P	0.8
5	☐	100.000	103.717	835515.20	0.5436	P	0.9
6	☐	200.000	198.161	1517523.47	1.0299	A	2.5

y = 0.0051 * x + 0.0097
R = 0.9997
DL = 0.1288
BEC = 1.881

Weight: <None>
Min Conc: <None>

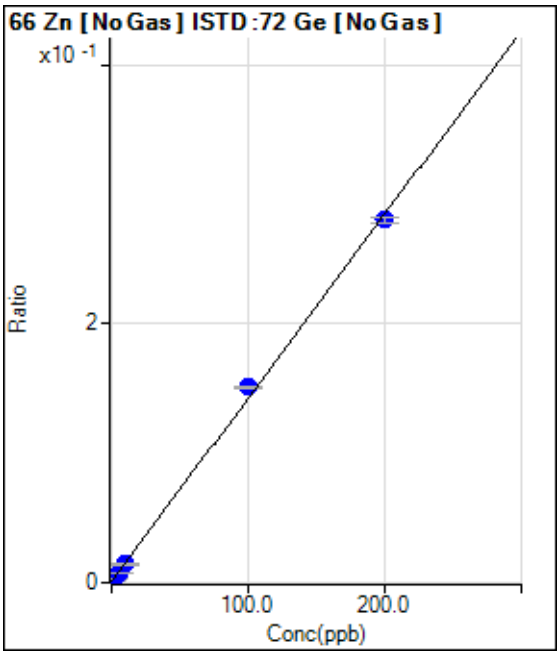
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1476.77	0.0029	P	12.4
2	☐	2.000	1.917	9770.34	0.0195	P	0.7
3	☐	5.000	4.783	22218.38	0.0444	P	1.9
4	☐	10.000	9.684	43596.80	0.0868	P	0.7
5	☐	100.000	104.720	454851.75	0.9103	P	0.3
6	☐	200.000	197.662	818826.44	1.7156	P	1.0

y = 0.0087 * x + 0.0029
R = 0.9996
DL = 0.1256
BEC = 0.3388

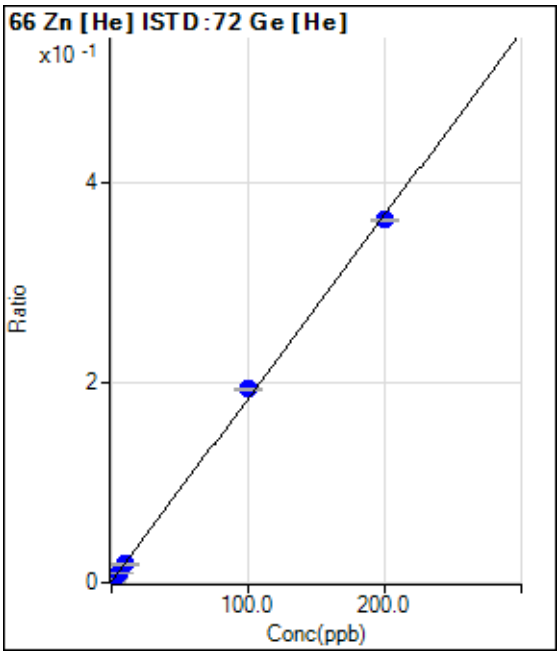
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1306.75	0.0008	P	4.3
2	☐	2.000	1.629	4874.28	0.0031	P	4.8
3	☐	5.000	4.512	11281.50	0.0072	P	0.7
4	☐	10.000	9.415	21784.51	0.0142	P	2.1
5	☐	100.000	105.858	231931.09	0.1509	P	1.4
6	☐	200.000	197.116	413106.89	0.2803	P	1.5

y = 0.0014 * x + 8.3235E-004
R = 0.9994
DL = 0.07649
BEC = 0.5871

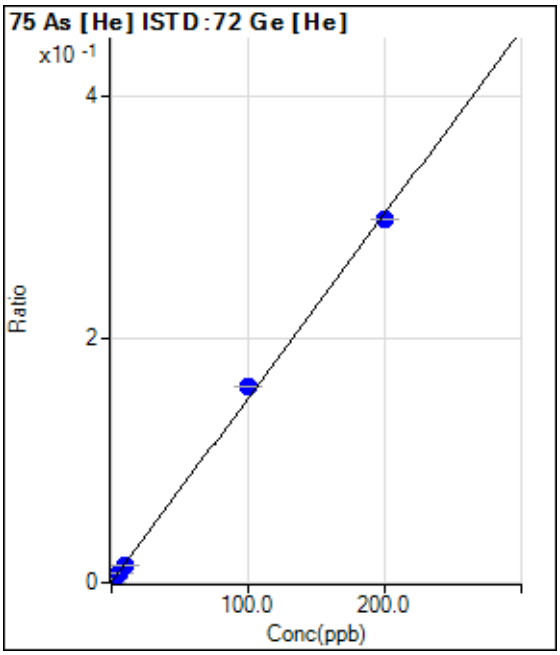
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	500.02	0.0010	P	10.3
2	☐	2.000	1.662	2016.86	0.0040	P	5.4
3	☐	5.000	4.560	4674.25	0.0093	P	3.9
4	☐	10.000	9.437	9166.59	0.0183	P	1.6
5	☐	100.000	105.257	96719.68	0.1936	P	1.0
6	☐	200.000	197.414	172864.02	0.3622	P	0.6

y = 0.0018 * x + 9.9396E-004
R = 0.9995
DL = 0.1684
BEC = 0.5433

Weight: <None>
Min Conc: <None>

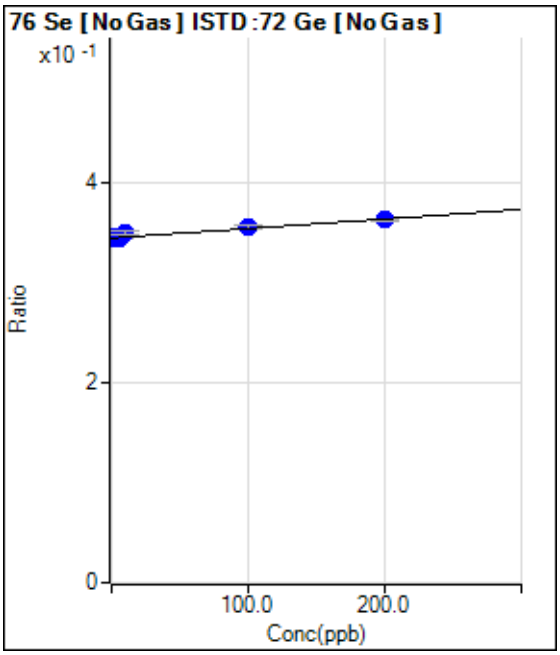


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	212.23	0.0004	P	6.0
2	☐	2.000	1.828	1592.33	0.0032	P	6.7
3	☐	5.000	4.575	3673.85	0.0073	P	2.1
4	☐	10.000	9.410	7353.14	0.0146	P	2.5
5	☐	100.000	106.428	80602.17	0.1613	P	0.3
6	☐	200.000	196.828	142218.17	0.2980	P	0.1

y = 0.0015 * x + 4.2173E-004
R = 0.9992
DL = 0.04983
BEC = 0.279

Weight: <None>
Min Conc: <None>

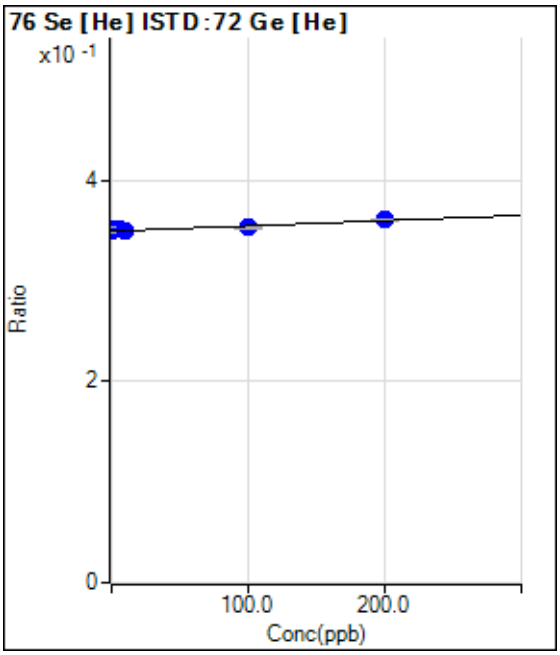
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	542569.99	0.3454	P	0.9
2	☐	2.000	11.220	537521.51	0.3465	P	3.0
3	☐	5.000	-0.267	538934.55	0.3454	P	0.2
4	☐	10.000	48.777	537885.22	0.3501	P	1.1
5	☐	100.000	116.904	548063.65	0.3566	P	1.2
6	☐	200.000	189.649	535920.11	0.3636	P	0.6

y = 9.5763E-005 * x + 0.3454
R = 0.9762
DL = 92.35
BEC = 3607

Weight: <None>
Min Conc: <None>

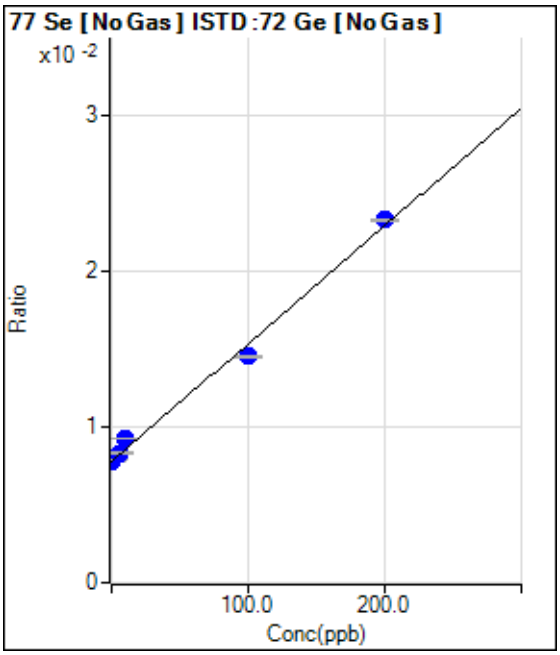


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	175863.28	0.3494	P	1.8
2	☐	2.000	58.864	176192.70	0.3525	P	0.6
3	☐	5.000	31.018	175740.44	0.3510	P	1.5
4	☐	10.000	16.661	175822.66	0.3502	P	0.2
5	☐	100.000	71.785	176456.94	0.3531	P	0.6
6	☐	200.000	212.555	172074.91	0.3605	P	0.8

y = 5.2539E-005 * x + 0.3494
R = 0.9382
DL = 368.9
BEC = 6650

Weight: <None>
Min Conc: <None>

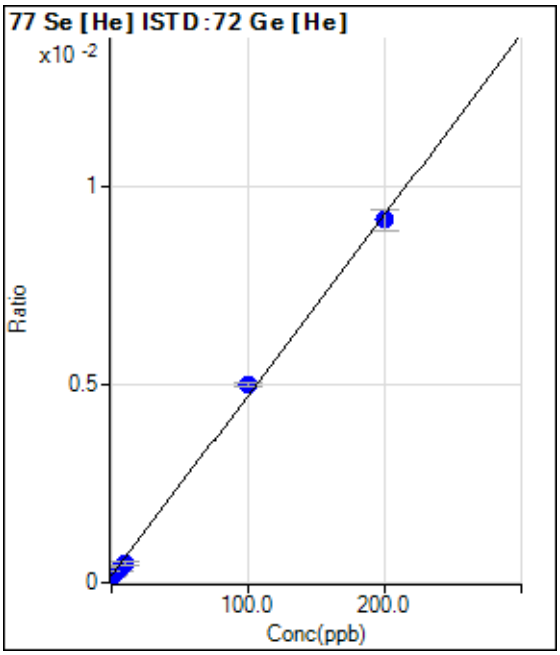
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	12245.80	0.0078	P	1.7
2	☐	2.000	3.433	12499.36	0.0081	P	3.0
3	☐	5.000	7.104	13003.16	0.0083	P	2.2
4	☐	10.000	19.210	14214.37	0.0093	P	0.9
5	☐	100.000	89.011	22335.44	0.0145	P	0.8
6	☐	200.000	204.967	34360.61	0.0233	P	0.6

y = 7.5672E-005 * x + 0.0078
R = 0.9966
DL = 5.246
BEC = 103

Weight: <None>
Min Conc: <None>

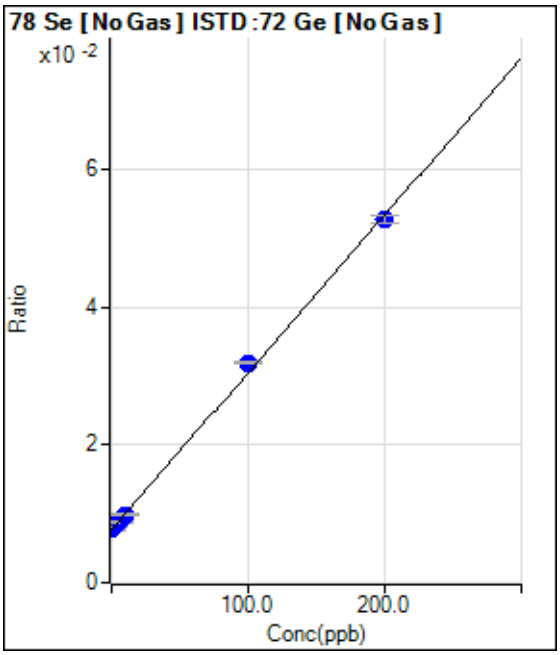


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	86.67	0.0002	P	18.6
2	☐	2.000	0.610	100.00	0.0002	P	26.7
3	☐	5.000	3.824	173.34	0.0003	P	24.0
4	☐	10.000	7.145	250.01	0.0005	P	17.0
5	☐	100.000	106.081	2500.27	0.0050	P	1.5
6	☐	200.000	197.146	4367.45	0.0092	P	5.6

y = 4.5547E-005 * x + 1.7236E-004
R = 0.9992
DL = 2.111
BEC = 3.784

Weight: <None>
Min Conc: <None>

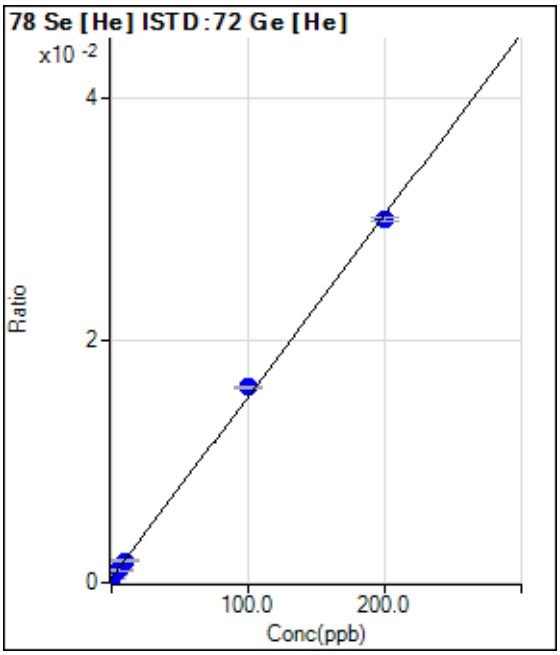
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	12112.33	0.0077	P	1.6
2	☐	2.000	1.926	12649.47	0.0082	P	1.9
3	☐	5.000	5.339	13934.11	0.0089	P	3.3
4	☐	10.000	9.425	15158.81	0.0099	P	1.8
5	☐	100.000	105.995	49079.55	0.0319	P	0.7
6	☐	200.000	197.024	77703.71	0.0527	P	2.1

y = 2.2848E-004 * x + 0.0077
R = 0.9993
DL = 1.663
BEC = 33.76

Weight: <None>
Min Conc: <None>

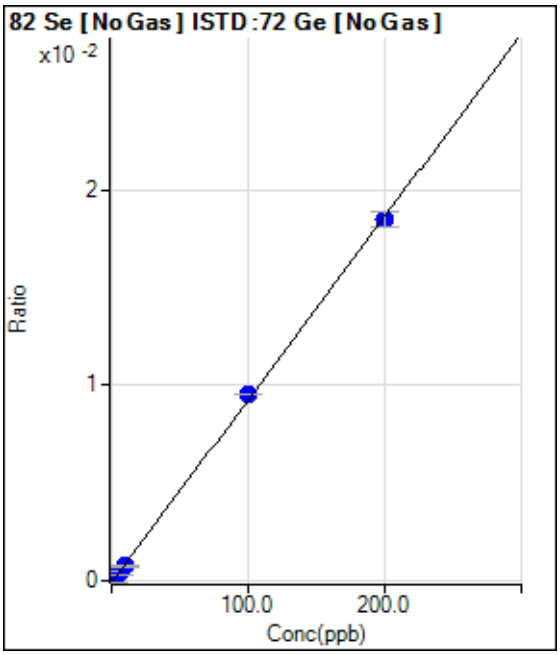


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	189.33	0.0004	P	5.4
2	☐	2.000	2.023	339.34	0.0007	P	4.4
3	☐	5.000	4.586	532.01	0.0011	P	6.6
4	☐	10.000	9.450	898.70	0.0018	P	11.4
5	☐	100.000	105.232	8052.42	0.0161	P	1.5
6	☐	200.000	197.422	14273.57	0.0299	P	1.0

y = 1.4957E-004 * x + 3.7622E-004
R = 0.9995
DL = 0.4085
BEC = 2.515

Weight: <None>
Min Conc: <None>

Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	-119.13	-0.0001	P	-87.8
2	☐	2.000	1.768	140.03	0.0001	P	277.1
3	☐	5.000	4.998	610.55	0.0004	P	44.5
4	☐	10.000	9.018	1176.89	0.0008	P	15.2
5	☐	100.000	102.819	14649.79	0.0095	P	0.6
6	☐	200.000	198.642	27230.77	0.0185	P	4.5

y = 9.3433E-005 * x - 7.5544E-005

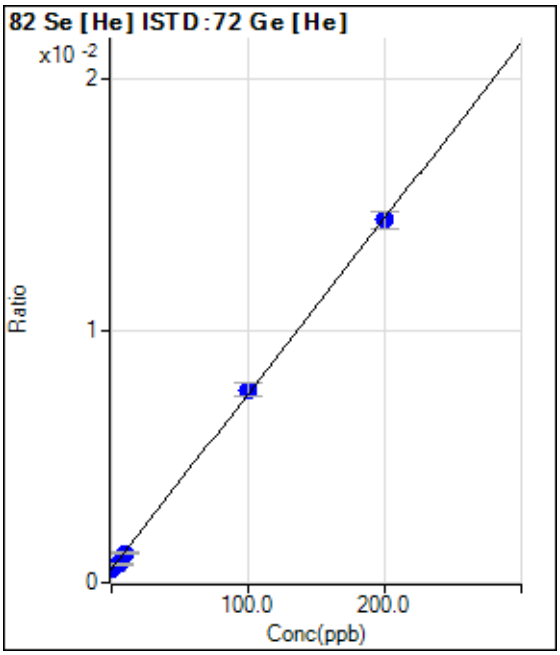
R = 0.9998

DL = 2.129

BEC = -0.8085

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	270.01	0.0005	P	15.2
2	☐	2.000	1.304	313.34	0.0006	P	7.9
3	☐	5.000	2.912	370.01	0.0007	P	17.0
4	☐	10.000	9.165	590.02	0.0012	P	10.5
5	☐	100.000	102.138	3830.62	0.0077	P	6.7
6	☐	200.000	199.032	6885.22	0.0144	P	5.1

y = 6.9797E-005 * x + 5.3573E-004

R = 0.9999

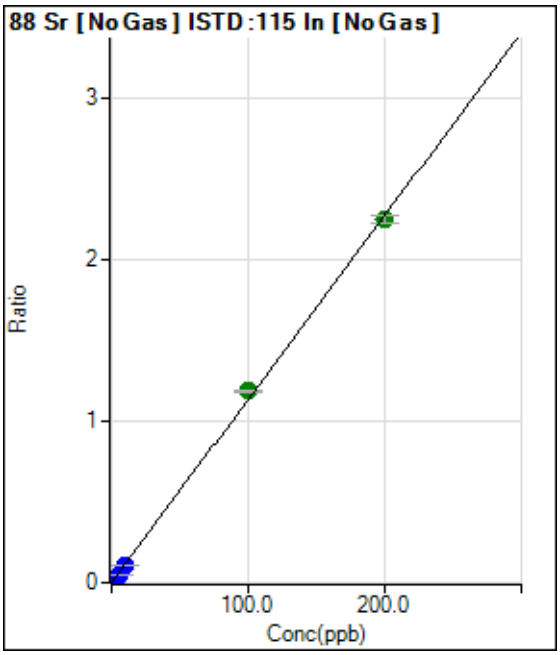
DL = 3.494

BEC = 7.676

Weight: <None>

Min Conc: <None>

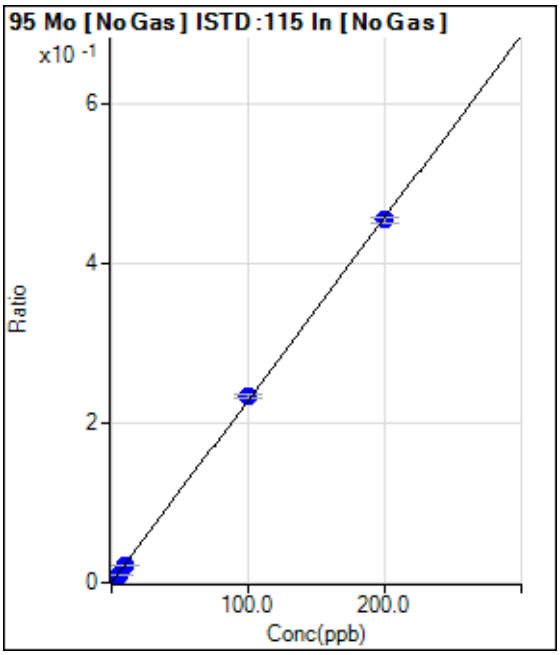
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	393.35	0.0002	P	18.6
2	☐	2.000	1.820	36550.38	0.0209	P	3.3
3	☐	5.000	4.496	90907.79	0.0513	P	1.8
4	☐	10.000	9.318	186252.45	0.1061	P	1.3
5	☐	100.000	104.482	2036502.57	1.1876	A	0.7
6	☐	200.000	197.807	3722271.09	2.2483	A	2.1

y = 0.0114 * x + 2.2152E-004
R = 0.9996
DL = 0.0109
BEC = 0.01949

Weight: <None>
Min Conc: <None>

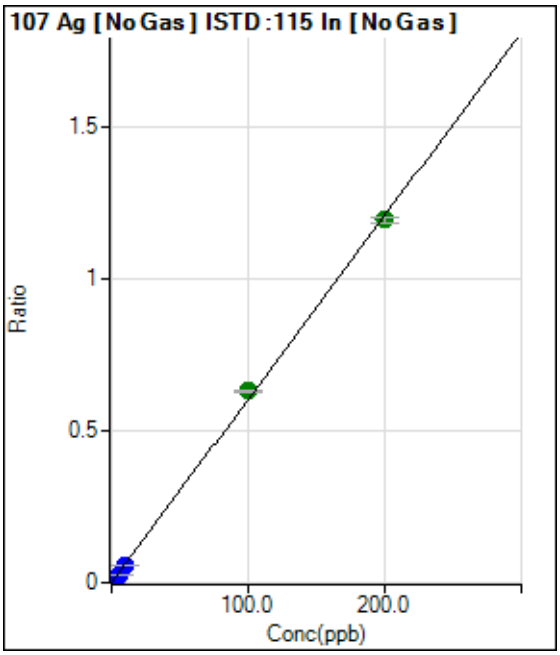


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	46.67	0.0000	P	68.5
2	☐	2.000	1.725	6955.28	0.0040	P	1.5
3	☐	5.000	4.544	18479.78	0.0104	P	1.8
4	☐	10.000	9.255	37242.37	0.0212	P	2.4
5	☐	100.000	102.367	401917.33	0.2344	P	1.8
6	☐	200.000	198.868	754063.16	0.4554	P	1.5

y = 0.0023 * x + 2.6230E-005
R = 0.9999
DL = 0.02355
BEC = 0.01145

Weight: <None>
Min Conc: <None>

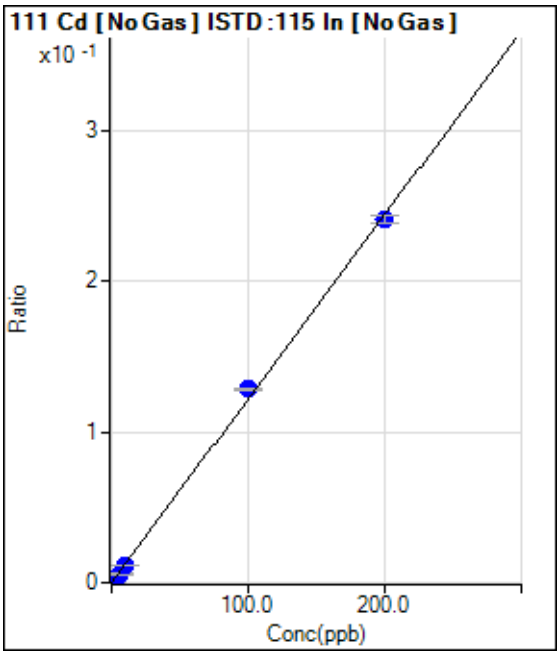
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	320.01	0.0002	P	10.3
2	☐	2.000	1.825	19591.43	0.0112	P	3.3
3	☐	5.000	4.619	49736.96	0.0281	P	1.8
4	☐	10.000	9.367	99600.14	0.0568	P	2.0
5	☐	100.000	104.432	1081674.05	0.6309	A	1.7
6	☐	200.000	197.827	1978695.23	1.1950	A	1.4

y = 0.0060 * x + 1.8051E-004
R = 0.9996
DL = 0.009219
BEC = 0.02989

Weight: <None>
Min Conc: <None>

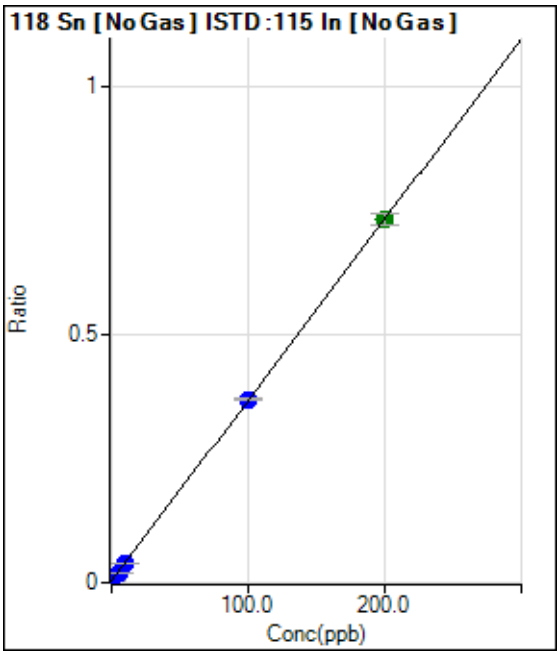


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	16.67	0.0000	P	35.4
2	☐	2.000	1.792	3837.29	0.0022	P	6.9
3	☐	5.000	4.642	10047.32	0.0057	P	2.6
4	☐	10.000	9.535	20429.47	0.0116	P	1.2
5	☐	100.000	105.348	220340.84	0.1285	P	1.1
6	☐	200.000	197.360	398622.77	0.2408	P	2.2

y = 0.0012 * x + 9.4200E-006
R = 0.9995
DL = 0.008209
BEC = 0.007722

Weight: <None>
Min Conc: <None>

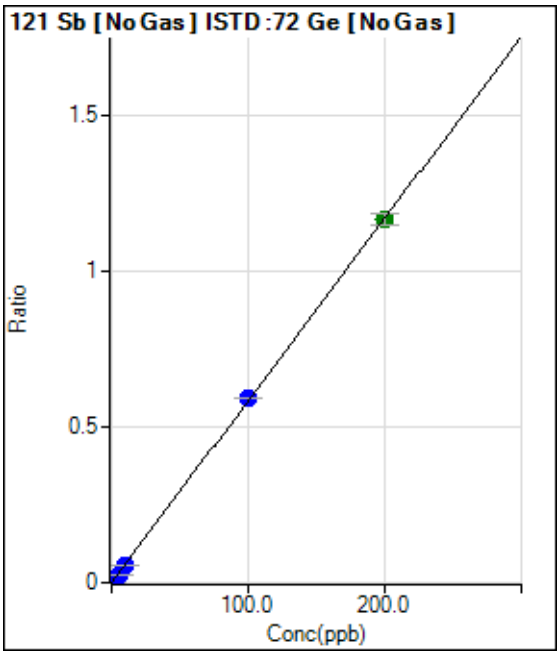
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	7082.06	0.0040	P	4.6
2	☐	2.000	1.751	18119.43	0.0104	P	2.4
3	☐	5.000	4.221	34265.09	0.0193	P	1.2
4	☐	10.000	9.263	66136.30	0.0377	P	1.7
5	☐	100.000	100.472	633349.38	0.3694	P	0.5
6	☐	200.000	199.823	1209674.23	0.7307	A	3.1

y = 0.0036 * x + 0.0040
R = 1.0000
DL = 0.1527
BEC = 1.098

Weight: <None>
Min Conc: <None>

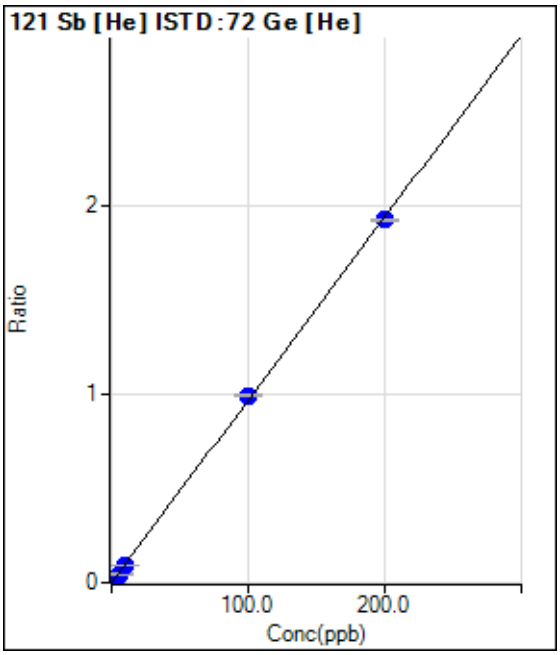


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	210.01	0.0001	P	13.4
2	☐	2.000	1.852	17001.27	0.0110	P	4.7
3	☐	5.000	4.606	42225.06	0.0271	P	2.2
4	☐	10.000	9.309	83836.92	0.0546	P	0.8
5	☐	100.000	101.390	911376.24	0.5930	P	0.6
6	☐	200.000	199.351	1717639.30	1.1658	A	3.3

y = 0.0058 * x + 1.3380E-004
R = 1.0000
DL = 0.009199
BEC = 0.02288

Weight: <None>
Min Conc: <None>

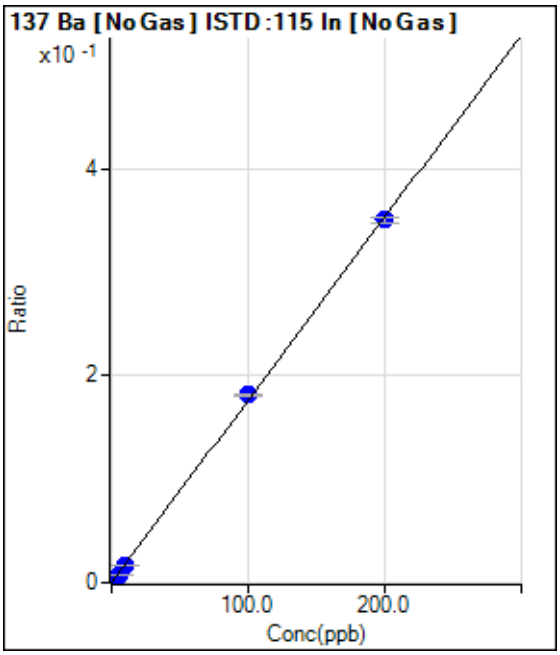
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	183.34	0.0004	P	16.4
2	☐	2.000	1.799	8906.50	0.0178	P	2.1
3	☐	5.000	4.687	22953.69	0.0458	P	1.0
4	☐	10.000	9.354	45740.03	0.0911	P	1.1
5	☐	100.000	102.593	497539.26	0.9957	P	1.5
6	☐	200.000	198.746	920519.07	1.9286	P	0.6

y = 0.0097 * x + 3.6448E-004
R = 0.9999
DL = 0.01852
BEC = 0.03757

Weight: <None>
Min Conc: <None>

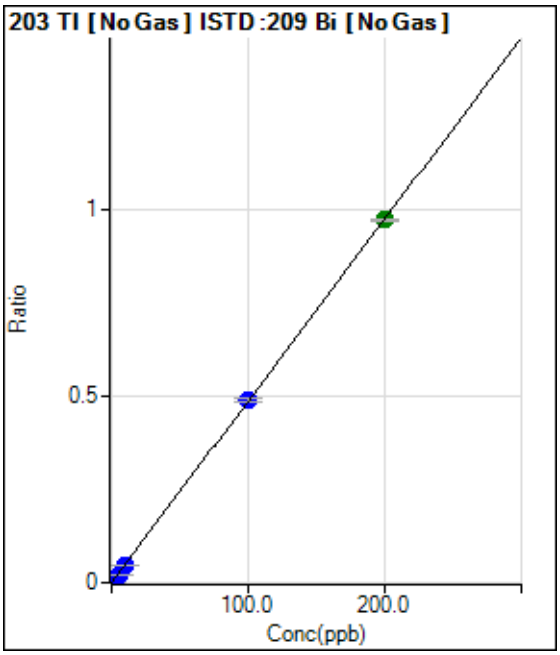


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	96.67	0.0001	P	25.1
2	☐	2.000	1.845	5781.41	0.0033	P	2.5
3	☐	5.000	4.621	14521.73	0.0082	P	2.1
4	☐	10.000	9.425	29246.73	0.0167	P	2.4
5	☐	100.000	102.691	310423.66	0.1810	P	0.4
6	☐	200.000	198.695	579936.01	0.3503	P	1.7

y = 0.0018 * x + 5.4411E-005
R = 0.9999
DL = 0.02327
BEC = 0.03087

Weight: <None>
Min Conc: <None>

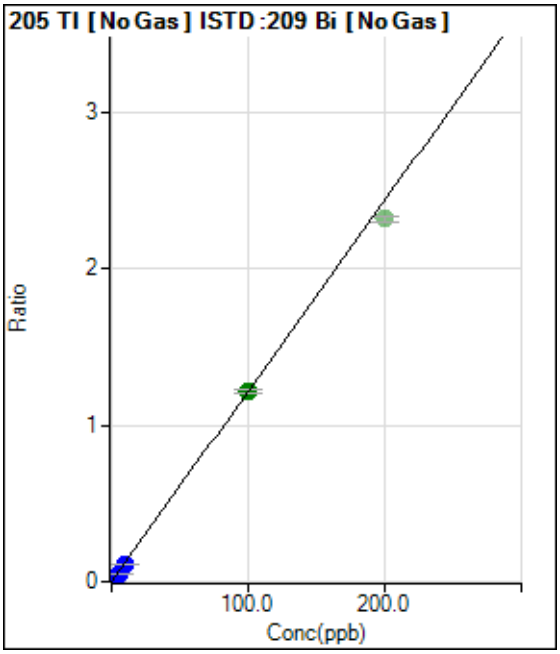
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	200.01	0.0001	P	13.2
2	☐	2.000	1.796	13557.55	0.0089	P	3.1
3	☐	5.000	4.528	34387.64	0.0222	P	2.7
4	☐	10.000	9.202	69641.40	0.0449	P	1.6
5	☐	100.000	100.668	750768.89	0.4902	P	1.9
6	☐	200.000	199.720	1416121.59	0.9723	A	0.6

y = 0.0049 * x + 1.3028E-004
R = 1.0000
DL = 0.01057
BEC = 0.02676

Weight: <None>
Min Conc: <None>

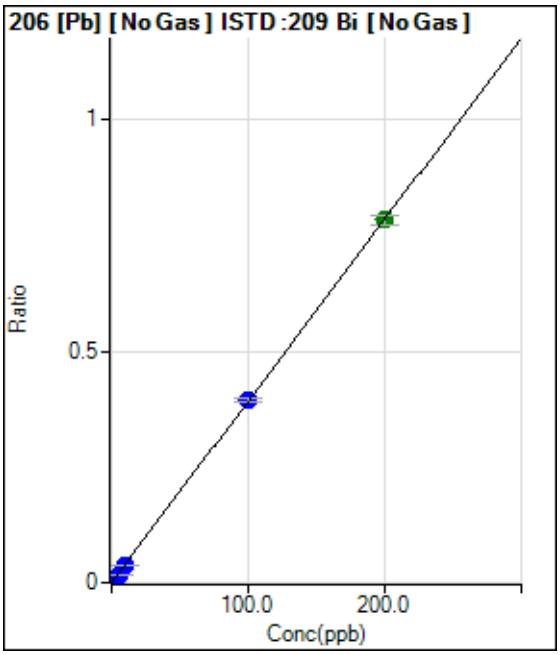


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	426.68	0.0003	P	9.9
2	☐	2.000	1.739	32746.66	0.0214	P	2.4
3	☐	5.000	4.218	79992.24	0.0516	P	3.3
4	☐	10.000	8.772	165830.01	0.1070	P	1.7
5	☐	100.000	100.167	1866711.43	1.2186	A	1.5
6	☑	200.000		3375450.37	2.3181	A	1.4

y = 0.0122 * x + 2.7803E-004
R = 0.9999
DL = 0.006801
BEC = 0.02286

Weight: <None>
Min Conc: <None>

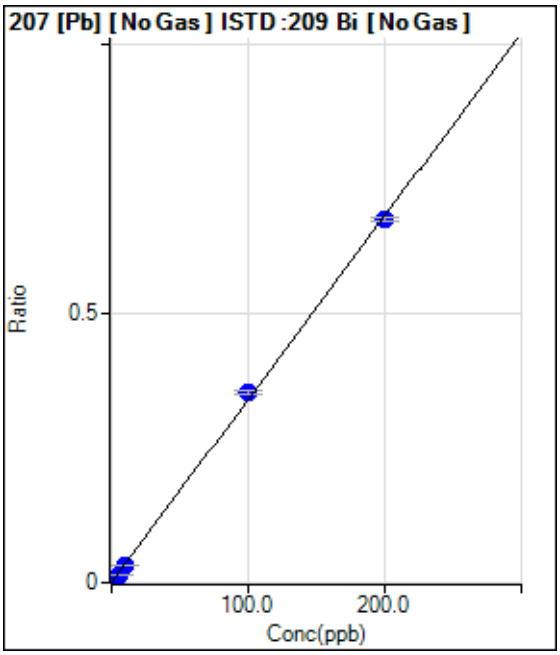
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	423.35	0.0003	P	18.5
2	☐	2.000	1.842	11442.19	0.0075	P	1.4
3	☐	5.000	4.544	28021.64	0.0181	P	5.4
4	☐	10.000	9.168	56079.53	0.0362	P	3.9
5	☐	100.000	100.327	602173.66	0.3932	P	2.2
6	☐	200.000	199.891	1140007.54	0.7830	A	2.7

y = 0.0039 * x + 2.7595E-004
R = 1.0000
DL = 0.03919
BEC = 0.07047

Weight: <None>
Min Conc: <None>

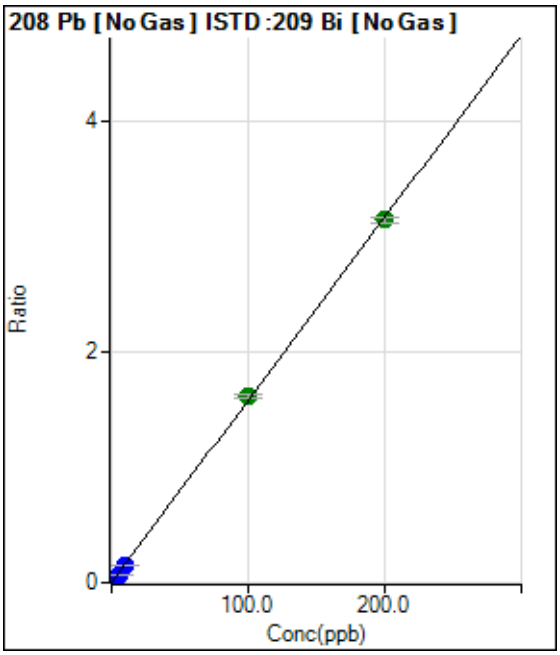


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	460.02	0.0003	P	10.0
2	☐	2.000	1.792	9774.02	0.0064	P	1.1
3	☐	5.000	4.539	24417.56	0.0157	P	2.9
4	☐	10.000	9.465	50398.98	0.0325	P	0.8
5	☐	100.000	104.044	542713.99	0.3543	P	1.4
6	☐	200.000	198.018	981570.30	0.6741	P	1.0

y = 0.0034 * x + 2.9975E-004
R = 0.9997
DL = 0.02639
BEC = 0.0881

Weight: <None>
Min Conc: <None>

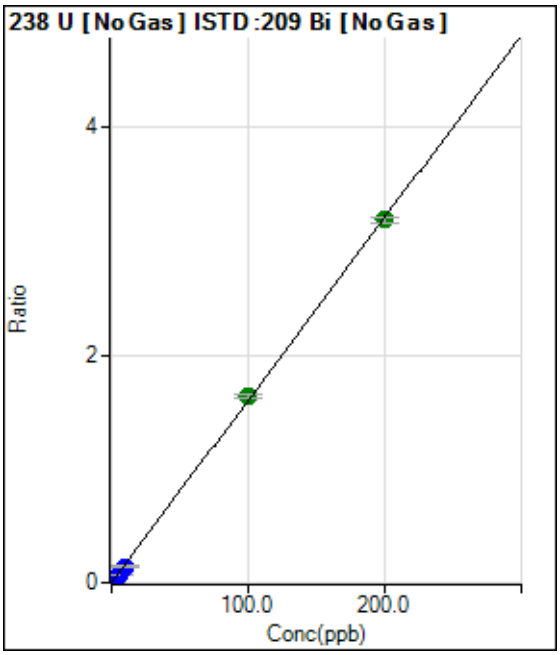
Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1780.08	0.0012	P	7.2
2	☐	2.000	1.846	46308.61	0.0303	P	0.3
3	☐	5.000	4.520	112447.37	0.0725	P	3.0
4	☐	10.000	9.287	229021.53	0.1477	P	1.6
5	☐	100.000	102.521	2480118.47	1.6192	A	2.2
6	☐	200.000	198.789	4569984.31	3.1385	A	1.5

y = 0.0158 * x + 0.0012
R = 0.9999
DL = 0.0158
BEC = 0.07348

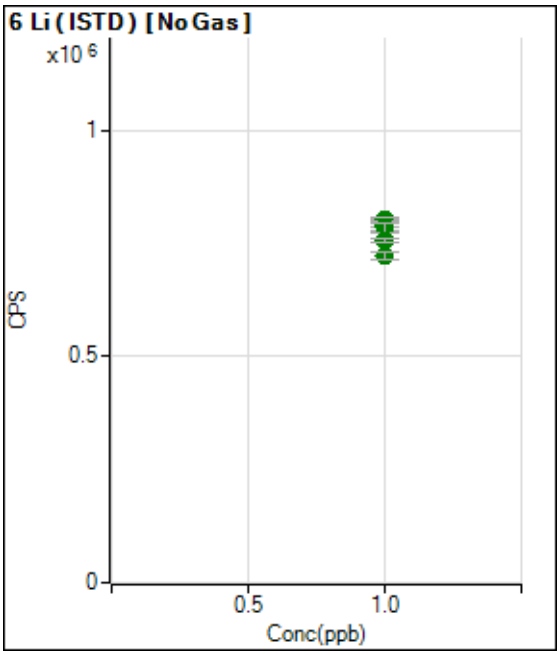
Weight: <None>
Min Conc: <None>



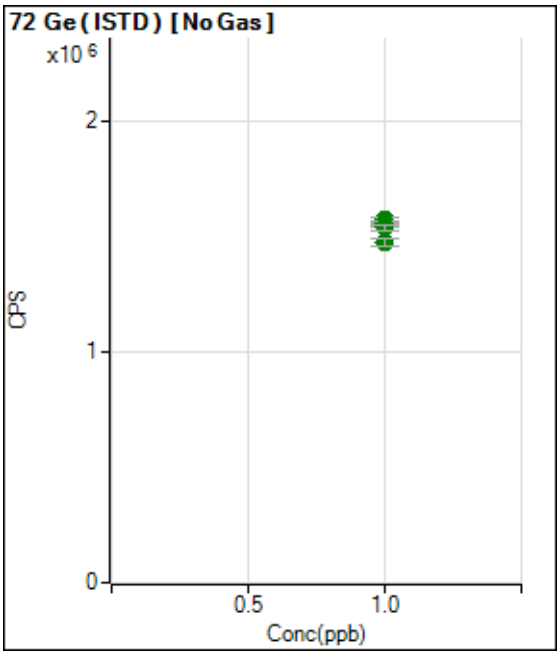
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	43.33	0.0000	P	35.2
2	☐	2.000	1.757	43083.03	0.0282	P	2.0
3	☐	5.000	4.343	108030.85	0.0696	P	1.8
4	☐	10.000	8.945	222287.96	0.1434	P	2.7
5	☐	100.000	102.340	2512376.79	1.6403	A	2.0
6	☐	200.000	198.901	4641730.87	3.1879	A	1.6

y = 0.0160 * x + 2.8217E-005
R = 0.9999
DL = 0.001858
BEC = 0.001761

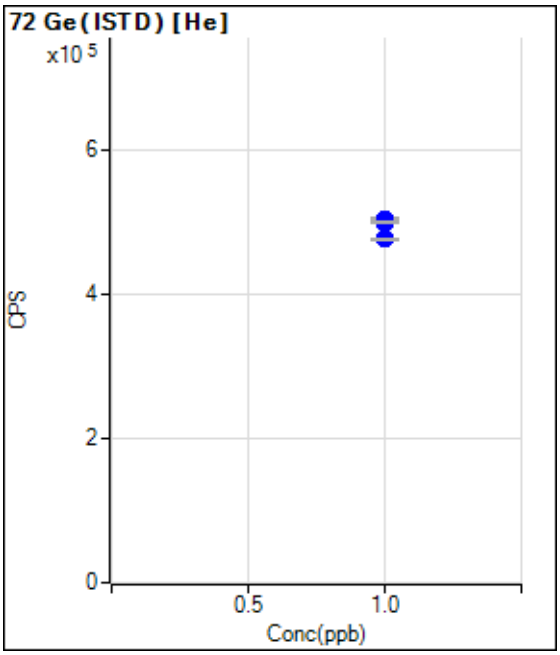
Weight: <None>
Min Conc: <None>



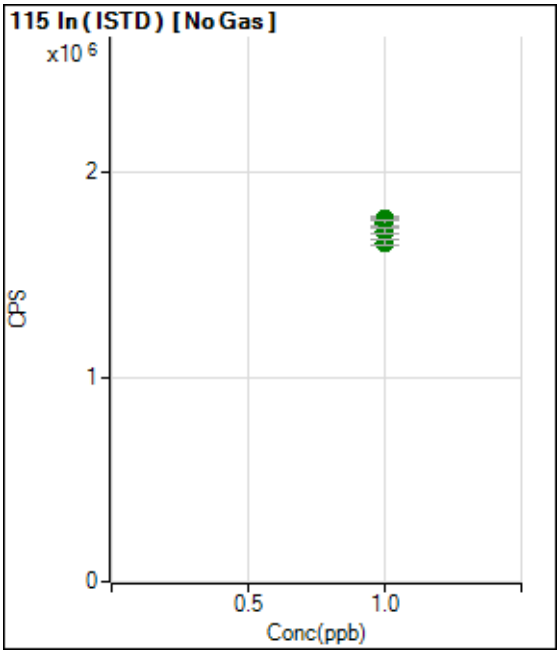
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		795953.54		A	2.1
2	☐	1.000		788538.59		A	2.9
3	☐	1.000		801244.38		A	0.9
4	☐	1.000		784234.87		A	2.7
5	☐	1.000		753921.04		A	1.1
6	☐	1.000		723147.54		A	2.5



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1570734.35		A	1.8
2	☐	1.000		1551720.08		A	1.4
3	☐	1.000		1560327.63		A	1.1
4	☐	1.000		1536623.67		A	2.0
5	☐	1.000		1536994.36		A	1.6
6	☐	1.000		1474095.71		A	2.3

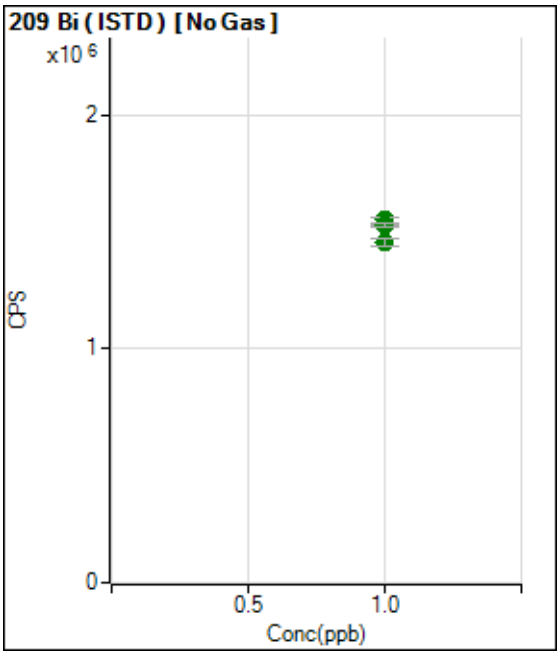


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		503456.47		P	1.1
2	☐	1.000		499903.65		P	0.3
3	☐	1.000		500733.35		P	0.9
4	☐	1.000		502014.70		P	0.4
5	☐	1.000		499685.79		P	0.7
6	☐	1.000		477301.12		P	0.6



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1773939.73		A	1.1
2	☐	1.000		1749414.32		A	2.5
3	☐	1.000		1771363.65		A	0.3
4	☐	1.000		1755208.23		A	1.6
5	☐	1.000		1714657.82		A	1.5
6	☐	1.000		1656010.99		A	1.7

Calibration for 021_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1535146.12		A	0.5
2	☐	1.000		1528288.62		A	1.0
3	☐	1.000		1551574.56		A	1.9
4	☐	1.000		1550459.77		A	1.4
5	☐	1.000		1531909.93		A	1.2
6	☐	1.000		1456368.47		A	2.0

Interference Check Solution A (ICS-A) Report

Sample Table

Sample Name	ICSA
Data File Name	022ICSA.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T11:40:13-05:00
Sample Type	ICSA
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.370	10.7	53819	1.7	0	ICSA Main CR1 Failed
Be	9	1	No Gas	0.046	20.3	172	14.7	0	ICSA Main CR1 Failed
V	51	2	He	0.345	8.1	7640	0.9	0	ICSA Main CR1 Failed
Cr	52	2	He	2.329	4.7	11225	4.1	0	ICSA Main CR1 Failed
Fe	56	2	He	101528.697	1.1	425912140	0.8	0	
Se	78	2	He	0.551	65.1	222	12.2	0	ICSA Main CR1 Failed
As	75	2	He	0.164	28.4	324	10.9	0	ICSA Main CR1 Failed
Ca	44	2	He	106186.253	0.7	2881451	0.1	0	
Na	23	2	He	103783.277	1.1	71921861	1.3	0	
Mg	24	2	He	103238.309	0.9	43320103	0.2	0	
K	39	2	He	102595.081	1.0	54065874	1.0	0	
Mn	55	2	He	0.423	9.9	1850	7.8	0	ICSA Main CR1 Failed
Co	59	2	He	0.116	15.7	847	13.7	0	ICSA Main CR1 Failed
Ni	60	2	He	0.238	23.7	533	17.8	0	ICSA Main CR1 Failed
Cu	63	2	He	0.519	14.1	3594	8.0	0	ICSA Main CR1 Failed
Zn	66	2	He	1.009	16.3	1373	9.9	0	ICSA Main CR1 Failed
Al	27	2	He	101556.224	0.7	26402264	0.8	0	
B	11	1	No Gas	5.932	18.4	20529	7.6	0	
Al	27	1	No Gas	95571.434	0.4	950251373	0.6	0	
Si	28	1	No Gas	29.985	1.7	410068	0.4	0	
Ag	107	1	No Gas	0.359	6.3	3871	6.9	0	ICSA Main CR1 Failed
Cd	111	1	No Gas	2.622	3.7	5288	2.2	0	
Sr	88	1	No Gas	1.175	2.1	22382	1.4	0	ICSA Main CR1 Failed
Mo	95	1	No Gas	2053.334	1.5	7754841	2.0	0	
Sn	118	1	No Gas	-0.166	-22.4	5591	5.5	0	ICSA Main CR1 Failed
Sb	121	1	No Gas	0.150	14.1	1553	12.4	0	ICSA Main CR1 Failed
Ba	137	1	No Gas	0.372	21.7	1170	19.0	0	ICSA Main CR1 Failed
Tl	205	1	No Gas	0.084	18.8	1824	14.3	0	ICSA Main CR1 Failed
Tl	203	1	No Gas	0.082	42.2	743	31.2	0	ICSA Main CR1 Failed
Pb	208	1	No Gas	0.134	7.0	4600	5.1	0	ICSA Main CR1 Failed
U	238	1	No Gas	0.053	11.1	1227	10.3	0	ICSA Main CR1 Failed
Ca	43	2	He	100339.569	0.5	162282	1.2	0	
Sb	121	2	He	0.105	4.4	670	2.6	0	ICSA Main CR1 Failed
Ti	47	2	He	2027.689	1.9	325354	2.2	0	
Se	82	1	No Gas	-0.090	-1623.2	-127	-162.4	0	ICSA Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	747618	1.34	795954	93.93	70	120	
Ge	72	2	He	483912	0.71	503456	96.12	70	120	
Ge	72	1	No Gas	1532451	0.97	1570734	97.56	70	120	
In	115	1	No Gas	1649320	1.71	1773940	92.97	70	120	
Bi	209	1	No Gas	1407950	1.20	1535146	91.71	70	120	

Interference Check Solution AB (ICS-AB) Report

Sample Table

Sample Name	ICSAB
Data File Name	023ICSB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T11:42:14-05:00
Sample Type	ICSB
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Li	7	1	No Gas	95.089	3.361	1065044	0.78	100	95.1	180	120	ICSB Main CR1 Failed
Be	9	1	No Gas	92.893	3.022	272519	0.06	100	92.9	80	120	
V	51	2	He	97.181	0.610	388942	0.70	100	97.2	80	120	
Cr	52	2	He	96.551	0.294	438365	1.47	100	96.6	80	120	
Fe	56	2	He	113682.379	1.596	480057020	0.59	100	113682.4	80	120	ICSB Main CR1 Failed
Se	78	2	He	97.604	0.237	7295	1.49	100	97.6	80	120	
As	75	2	He	96.336	0.630	71148	0.74	100	96.3	80	120	
Ca	44	2	He	114368.198	2.114	3123680	0.84	100	114368.2	80	120	
Na	23	2	He	114770.963	0.665	80053924	0.61	100	114771.0	80	120	
Mg	24	2	He	113505.977	0.464	47950451	1.31	100	113506.0	80	120	
K	39	2	He	113157.848	1.161	60015512	0.98	100	113157.8	80	120	
Mn	55	2	He	95.907	0.452	330980	1.66	100	95.9	80	120	
Co	59	2	He	93.085	1.140	621540	1.30	100	93.1	80	120	
Ni	60	2	He	95.129	0.868	154991	0.98	100	95.1	80	120	
Cu	63	2	He	95.184	1.333	403210	1.87	100	95.2	80	120	
Zn	66	2	He	98.075	0.296	87900	1.56	100	98.1	80	120	
Al	27	2	He	101686.651	2.087	26610040	1.11	100	101686.7	80	120	ICSB Main CR1 Failed
B	11	1	No Gas	468.108	3.553	789772	3.07	100	468.1	80	120	
Al	27	1	No Gas	98902.571	3.229	968545559	0.52	100	98902.6	80	120	ICSB Main CR1 Failed
Si	28	1	No Gas	505.559	3.732	2856749	1.18	100	505.6	80	120	
Ag	107	1	No Gas	90.748	1.275	912372	0.47	100	90.7	80	120	
Cd	111	1	No Gas	98.425	1.023	199813	1.05	100	98.4	80	120	
Sr	88	1	No Gas	99.175	1.937	1875827	1.11	100	99.2	80	120	
Mo	95	1	No Gas	2137.000	3.405	8142198	2.59	100	2137.0	80	120	
Sn	118	1	No Gas	95.391	2.360	583961	2.38	100	95.4	80	120	
Sb	121	1	No Gas	94.062	2.180	830504	0.68	100	94.1	80	120	
Ba	137	1	No Gas	96.546	1.575	283246	1.04	100	96.5	80	120	
Tl	205	1	No Gas	97.461	0.426	1642500	0.53	100	97.5	80	120	
Tl	203	1	No Gas	93.866	0.528	657888	0.44	100	93.9	80	120	
Pb	208	1	No Gas	96.416	0.683	2192021	0.84	100	96.4	80	120	
U	238	1	No Gas	99.066	1.856	2285355	1.20	100	99.1	80	120	
Ca	43	2	He	109211.643	1.333	177800	1.11	100	109211.6	80	120	
Sb	121	2	He	96.602	0.564	456761	1.11	100	96.6	80	120	
Ti	47	2	He	2144.054	0.721	346316	0.88	100	2144.1	80	120	
Cu	63	1	No Gas	95.763	2.351	758852	0.64	100	95.8	80	120	
Se	82	1	No Gas	92.182	0.711	12893	2.80	100	92.2	80	120	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	750060	3.02	795954	94.23	70	120	
Ge	72	2	He	487164	1.27	503456	96.76	70	120	
Ge	72	1	No Gas	1510194	2.72	1570734	96.15	70	120	
In	115	1	No Gas	1664139	0.83	1773940	93.81	70	120	
Bi	209	1	No Gas	1439459	0.78	1535146	93.77	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	029_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T11:58:35-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	99.668	1.392	1167155	2.06	100	99.7	90	110	
Be	9	1	No Gas	101.302	1.203	311356	1.27	100	101.3	90	110	
V	51	2	He	102.922	1.009	431764	0.16	100	102.9	90	110	
Cr	52	2	He	104.247	0.984	496484	0.80	100	104.2	90	110	
Fe	56	2	He	10302.561	0.365	45659069	0.78	10000	103.0	90	110	
Se	78	2	He	103.772	1.730	8124	0.85	100	103.8	90	110	
As	75	2	He	108.479	1.493	84024	0.91	100	108.5	90	110	
Ca	44	2	He	10210.586	0.968	294986	0.96	10000	102.1	90	110	
Na	23	2	He	10367.202	1.241	7697699	2.17	10000	103.7	90	110	
Mg	24	2	He	10233.818	1.410	4536026	1.39	10000	102.3	90	110	
K	39	2	He	10243.084	0.771	5834809	1.69	10000	102.4	90	110	
Mn	55	2	He	103.956	1.216	376323	0.81	100	104.0	90	110	
Co	59	2	He	101.739	0.987	712698	0.53	100	101.7	90	110	
Ni	60	2	He	104.121	0.372	177971	0.65	100	104.1	90	110	
Cu	63	2	He	105.718	0.187	469673	0.86	100	105.7	90	110	
Zn	66	2	He	104.675	1.323	98385	0.93	100	104.7	90	110	
Al	27	2	He	107.622	1.722	30003	1.27	100	107.6	90	110	
B	11	1	No Gas	507.397	2.046	895623	0.13	500	101.5	90	110	
Al	27	1	No Gas	108.527	1.584	1117130	1.44	100	108.5	90	110	
Si	28	1	No Gas	570.370	1.752	3313657	1.50	5000	11.4	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	106.582	2.072	1133075	1.04	100	106.6	90	110	
Cd	111	1	No Gas	105.540	1.227	226594	1.87	100	105.5	90	110	
Sr	88	1	No Gas	103.608	2.998	2071950	0.84	100	103.6	90	110	
Mo	95	1	No Gas	104.155	2.476	419715	1.34	100	104.2	90	110	
Sn	118	1	No Gas	100.093	2.015	647566	0.91	100	100.1	90	110	
Sb	121	1	No Gas	101.676	1.428	932034	1.31	100	101.7	90	110	
Ba	137	1	No Gas	101.675	1.835	315432	0.95	100	101.7	90	110	
Tl	205	1	No Gas	106.158	2.060	1914991	0.44	100	106.2	90	110	
Tl	203	1	No Gas	102.467	2.348	768725	1.31	100	102.5	90	110	
Pb	208	1	No Gas	104.583	2.321	2544882	0.62	100	104.6	90	110	
U	238	1	No Gas	104.848	3.212	2588905	1.56	100	104.8	90	110	
Ca	43	2	He	10111.186	2.080	17288	2.54	10000	101.1	90	110	
Sb	121	2	He	103.115	0.425	511515	0.77	100	103.1	90	110	
Ti	47	2	He	101.028	4.517	17121	3.86	100	101.0	90	110	
Cu	63	1	No Gas	105.755	0.727	868517	0.82	100	105.8	90	110	
Se	82	1	No Gas	105.854	1.584	15383	1.64	100	105.9	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	785449	2.01	795954	98.68	70	120	
Ge	72	2	He	511110	0.95	503456	101.52	70	120	
Ge	72	1	No Gas	1567340	0.15	1570734	99.78	70	120	
In	115	1	No Gas	1760261	2.77	1773940	99.23	70	120	
Bi	209	1	No Gas	1541166	1.83	1535146	100.39	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	030_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T12:00:29-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.002	6255.2	52753	0.5	0.5	
Be	9	1	No Gas	0.042	29.3	168	21.9	0.5	
V	51	2	He	0.021	182.2	6652	2.9	2.5	
Cr	52	2	He	0.012	161.2	830	11.5	2.5	
Fe	56	2	He	3.192	12.6	24686	7.2	100	
Se	78	2	He	0.316	87.4	214	10.3	2	
As	75	2	He	0.025	163.1	232	12.9	2.5	
Ca	44	2	He	14.910	18.9	2980	2.0	100	
Na	23	2	He	7.003	25.0	124572	1.0	100	
Mg	24	2	He	2.912	9.3	1690	7.1	100	
K	39	2	He	13.103	39.7	153341	1.9	100	
Mn	55	2	He	-0.034	-12.8	297	5.1	2.5	
Co	59	2	He	0.024	24.3	247	15.3	2.5	
Ni	60	2	He	0.002	877.5	157	16.1	2.5	
Cu	63	2	He	0.095	33.2	1900	7.4	2	
Zn	66	2	He	-0.265	-13.5	257	12.5	2.5	
Al	27	2	He	1.238	30.5	783	12.6	5	
B	11	1	No Gas	5.588	24.1	21089	9.2	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	1.465	5.4	28820	0.8	5	
Si	28	1	No Gas	-2.790	-13.1	247539	1.5	10	
Ag	107	1	No Gas	0.046	6.3	823	1.4	2.5	
Cd	111	1	No Gas	0.030	65.2	83	54.1	1	
Sr	88	1	No Gas	0.074	5.0	1914	3.2	2.5	
Mo	95	1	No Gas	0.088	8.9	410	7.3	2.5	
Sn	118	1	No Gas	-0.784	-1.2	2047	2.9	5	
Sb	121	1	No Gas	0.101	20.2	1150	14.5	2.5	
Ba	137	1	No Gas	0.055	42.4	273	29.6	2.5	
Tl	205	1	No Gas	0.083	34.0	1930	27.0	1	
Tl	203	1	No Gas	0.086	23.1	850	18.3	1	
Pb	208	1	No Gas	0.033	5.1	2607	0.6	2.5	
U	238	1	No Gas	0.043	13.9	1120	13.2	2.5	
Ca	43	2	He	11.811	103.5	37	56.8	100	
Sb	121	2	He	0.075	19.0	553	13.3	2.5	
Ti	47	2	He	0.020	172.6	7	86.6	2.5	
Cu	63	1	No Gas	0.282	10.4	17715	2.3	2.5	
Se	82	1	No Gas	-0.544	-383.6	-200	-152.8	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	790629	2.04	795954	99.33	70	120	
Ge	72	2	He	505122	0.70	503456	100.33	70	120	
Ge	72	1	No Gas	1591024	2.27	1570734	101.29	70	120	
In	115	1	No Gas	1794792	2.46	1773940	101.18	70	120	
Bi	209	1	No Gas	1549541	1.00	1535146	100.94	70	120	

Sample Report

Sample Table

Sample Name	MBLK-170607
Data File Name	031SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T12:03:18-05:00
Sample Type	Sample
Dilution	1
Comment	DOD TW 170607
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	-0.041	-0.041	-227.13	53244	0.00	2000	
Be	9	1	No Gas	0.012	0.012	55.55	80	0.02	2000	
V	51	2	He	0.134	0.134	20.79	7174	0.00	2000	
Cr	52	2	He	0.056	0.056	14.95	1043	0.01	2000	
Fe	56	2	He	2.224	2.224	4.56	20623	0.01	200000	
Se	78	2	He	-0.257	-0.257	-207.23	172	-0.15	2000	
As	75	2	He	0.033	0.033	86.35	240	0.01	2000	
Ca	44	2	He	12.138	12.138	71.23	2927	0.41	200000	
Na	23	2	He	4.785	4.785	46.75	124017	0.00	200000	
Mg	24	2	He	7.152	7.152	2.73	3577	0.20	200000	
K	39	2	He	16.766	16.766	24.24	156670	0.01	200000	
Mn	55	2	He	0.010	0.010	55.53	457	0.00	2000	
Co	59	2	He	0.006	0.006	96.38	123	0.00	2000	
Ni	60	2	He	-0.026	-0.026	-78.15	110	-0.02	2000	
Cu	63	2	He	0.188	0.188	16.84	2327	0.01	2000	
Zn	66	2	He	-0.067	-0.067	-130.96	443	-0.02	2000	
Al	27	2	He	4.123	4.123	9.50	1580	0.26	2000	
B	11	1	No Gas	1.327	1.327	19.19	13890	0.01	2000	
Al	27	1	No Gas	4.493	4.493	2.13	61221	0.01	2000	
Si	28	1	No Gas	15.573	15.573	6.21	353910	0.00	2000	
Ag	107	1	No Gas	0.011	0.011	90.81	460	0.00	2000	
Cd	111	1	No Gas	0.009	0.009	28.43	37	0.02	2000	
Sr	88	1	No Gas	0.036	0.036	19.76	1170	0.00	2000	
Mo	95	1	No Gas	0.049	0.049	17.68	257	0.02	2000	
Sn	118	1	No Gas	-0.850	-0.850	-2.86	1660	-0.05	2000	
Sb	121	1	No Gas	0.039	0.039	15.56	590	0.01	2000	
Ba	137	1	No Gas	0.065	0.065	21.87	310	0.02	2000	
Tl	205	1	No Gas	0.004	0.004	39.35	530	0.00	2000	
Tl	203	1	No Gas	0.002	0.002	297.60	227	0.00	2000	
Pb	208	1	No Gas	-0.013	-0.013	-54.22	1577	0.00	2000	
U	238	1	No Gas	0.010	0.010	17.08	300	0.00	2000	
Ca	43	2	He	1.866	1.866	315.16	20	9.33	200000	
Sb	121	2	He	0.029	0.029	32.97	327	0.01	2000	
Ti	47	2	He	0.039	0.039	150.19	10	0.39	2000	
Cu	63	1	No Gas	0.261	0.261	44.69	17879	0.00	2000	
Zn	66	1	No Gas	-0.101	-0.101	-38.22	1117	-0.01	2000	
Se	82	1	No Gas	0.128	0.128	625.04	-103	-0.13	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	805162	1.33	795954	101.16	70	120	
Ge	72	2	He	509423	0.45	503456	101.19	70	120	

Sample Report

Ge	72	1	No Gas	1621047	1.48	1570734	103.20	70	120	
In	115	1	No Gas	1844394	0.92	1773940	103.97	70	120	
Bi	209	1	No Gas	1641072	1.96	1535146	106.90	70	120	

Sample Report

Sample Table

Sample Name	LCS-170607
Data File Name	032SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T12:05:17-05:00
Sample Type	Sample
Dilution	1
Comment	DOD TW 170607
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	-0.147	-0.147	-81.51	53698	0.00	2000	
Be	9	1	No Gas	48.959	48.959	2.61	159219	0.03	2000	
V	51	2	He	51.585	51.585	1.75	226877	0.02	2000	
Cr	52	2	He	51.819	51.819	1.64	255232	0.02	2000	
Fe	56	2	He	5115.138	5115.138	2.24	23411735	0.02	200000	
Se	78	2	He	53.069	53.069	2.31	4389	1.21	2000	
As	75	2	He	51.773	51.773	1.61	41527	0.12	2000	
Ca	44	2	He	5028.903	5028.903	1.08	151380	3.32	200000	
Na	23	2	He	5141.426	5141.426	2.21	4004139	0.13	200000	
Mg	24	2	He	5164.325	5164.325	1.28	2364044	0.22	200000	
K	39	2	He	5125.452	5125.452	1.96	3090786	0.17	200000	
Mn	55	2	He	51.490	51.490	1.62	192685	0.03	2000	
Co	59	2	He	51.239	51.239	2.52	370644	0.01	2000	
Ni	60	2	He	52.807	52.807	0.74	93284	0.06	2000	
Cu	63	2	He	53.897	53.897	1.43	247999	0.02	2000	
Zn	66	2	He	54.727	54.727	2.34	53372	0.10	2000	
Al	27	2	He	112.461	112.461	4.81	32345	0.35	2000	
B	11	1	No Gas	0.278	0.278	72.52	12404	0.00	2000	
Al	27	1	No Gas	110.531	110.531	1.10	1220783	0.01	2000	
Si	28	1	No Gas	67.079	67.079	2.52	663321	0.01	2000	
Ag	107	1	No Gas	51.186	51.186	2.00	570801	0.01	2000	
Cd	111	1	No Gas	52.123	52.123	2.73	117315	0.04	2000	
Sr	88	1	No Gas	0.065	0.065	7.26	1767	0.00	2000	
Mo	95	1	No Gas	50.697	50.697	1.84	214274	0.02	2000	
Sn	118	1	No Gas	-0.920	-0.920	-1.86	1193	-0.08	2000	
Sb	121	1	No Gas	49.411	49.411	0.89	486197	0.01	2000	
Ba	137	1	No Gas	50.837	50.837	3.12	165384	0.03	2000	
Tl	205	1	No Gas	48.930	48.930	1.79	934952	0.01	2000	
Tl	203	1	No Gas	49.190	49.190	2.70	390867	0.01	2000	
Pb	208	1	No Gas	49.536	49.536	1.73	1277541	0.00	2000	
U	238	1	No Gas	0.002	0.002	71.58	90	0.00	2000	
Ca	43	2	He	5069.157	5069.157	3.35	8956	56.60	200000	
Sb	121	2	He	50.825	50.825	2.00	260417	0.02	2000	
Ti	47	2	He	49.663	49.663	2.71	8696	0.57	2000	
Cu	63	1	No Gas	51.699	51.699	1.10	463956	0.01	2000	
Zn	66	1	No Gas	52.996	52.996	1.14	127794	0.04	2000	
Se	82	1	No Gas	49.205	49.205	0.83	7606	0.65	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	831265	2.79	795954	104.44	70	120	
Ge	72	2	He	527800	1.23	503456	104.84	70	120	
Ge	72	1	No Gas	1682090	1.10	1570734	107.09	70	120	
In	115	1	No Gas	1845942	3.41	1773940	104.06	70	120	

Sample Report

Bi	209	1	No Gas	1632046	1.96	1535146	106.31	70	120	

Sample Report

Sample Table

Sample Name	HS21090680-01
Data File Name	034SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T12:09:13-05:00
Sample Type	Sample
Dilution	1
Comment	DOD TW 170607
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	18.638	18.638	2.65	250487	0.01	2000	
Be	9	1	No Gas	-0.001	-0.001	-532.72	35	0.00	2000	
V	51	2	He	0.191	0.191	28.60	7159	0.00	2000	
Cr	52	2	He	0.192	0.192	21.34	1630	0.01	2000	
Fe	56	2	He	21.834	21.834	0.87	103614	0.02	200000	
Se	78	2	He	-0.053	-0.053	-242.26	181	-0.03	2000	
As	75	2	He	0.597	0.597	3.60	652	0.09	2000	
Ca	44	2	He	211474.646	211474.646	1.53	5835262	3.62	200000	>LDR
Na	23	2	He	629238.372	629238.372	2.03	442975793	0.14	200000	>LDR
Mg	24	2	He	39027.127	39027.127	2.37	16658647	0.23	200000	
K	39	2	He	3076.445	3076.445	3.11	1787214	0.17	200000	
Mn	55	2	He	64.401	64.401	0.94	224714	0.03	2000	
Co	59	2	He	0.100	0.100	5.38	757	0.01	2000	
Ni	60	2	He	2.237	2.237	4.43	3831	0.06	2000	
Cu	63	2	He	0.885	0.885	10.27	5218	0.02	2000	
Zn	66	2	He	2.740	2.740	2.41	2957	0.09	2000	
Al	27	2	He	12.634	12.634	3.69	3777	0.33	2000	
B	11	1	No Gas	59.576	59.576	2.11	110533	0.05	2000	
Al	27	1	No Gas	12.966	12.966	1.95	142583	0.01	2000	
Si	28	1	No Gas	16951.787	16951.787	2.44	89292222	0.02	2000	>LDR
Ag	107	1	No Gas	0.020	0.020	21.17	500	0.00	2000	
Cd	111	1	No Gas	0.007	0.007	183.51	30	0.02	2000	
Sr	88	1	No Gas	3988.337	3988.337	1.34	74808637	0.01	2000	>LDR
Mo	95	1	No Gas	1.567	1.567	2.87	5965	0.03	2000	
Sn	118	1	No Gas	-0.881	-0.881	-2.01	1300	-0.07	2000	
Sb	121	1	No Gas	0.289	0.289	9.22	2800	0.01	2000	
Ba	137	1	No Gas	2723.051	2723.051	1.27	7921227	0.03	2000	>LDR
Tl	205	1	No Gas	-0.006	-0.006	-35.69	283	0.00	2000	
Tl	203	1	No Gas	-0.013	-0.013	-31.06	90	-0.01	2000	
Pb	208	1	No Gas	-0.017	-0.017	-29.49	1237	0.00	2000	
U	238	1	No Gas	0.064	0.064	6.45	1457	0.00	2000	
Ca	43	2	He	210809.318	210809.318	2.08	346798	60.79	200000	>LDR
Sb	121	2	He	0.269	0.269	14.99	1463	0.02	2000	
Ti	47	2	He	0.879	0.879	8.06	147	0.60	2000	
Cu	63	1	No Gas	5.284	5.284	2.80	56712	0.01	2000	
Zn	66	1	No Gas	2.422	2.422	7.70	6555	0.04	2000	
Se	82	1	No Gas	1.661	1.661	68.46	120	1.38	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	754473	2.84	795954	94.79	70	120	
Ge	72	2	He	492305	0.99	503456	97.78	70	120	
Ge	72	1	No Gas	1537620	2.35	1570734	97.89	70	120	
In	115	1	No Gas	1650462	0.52	1773940	93.04	70	120	
Bi	209	1	No Gas	1392713	2.47	1535146	90.72	70	120	

Sample Report

Sample Table

Sample Name	HS21091055-01SD
Data File Name	036SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T12:13:12-05:00
Sample Type	Sample
Dilution	5
Comment	DOD TW 170607
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	93.629	468.147	1.41	1210245	0.01	2000	
Be	9	1	No Gas	1.675	8.375	3.13	5710	0.03	2000	
V	51	2	He	2.982	14.911	2.94	19485	0.02	2000	
Cr	52	2	He	0.187	0.937	4.49	1720	0.01	2000	
Fe	56	2	He	41.125	205.625	2.00	198369	0.02	200000	
Se	78	2	He	8.907	44.537	4.32	897	0.99	2000	
As	75	2	He	0.442	2.208	11.62	572	0.08	2000	
Ca	44	2	He	97472.266	487361.332	3.19	2870773	3.40	200000	
Na	23	2	He	38451.408	192257.039	1.48	28998421	0.13	200000	
Mg	24	2	He	42907.368	214536.838	1.38	19541663	0.22	200000	
K	39	2	He	1825.753	9128.766	1.60	1193527	0.15	200000	
Mn	55	2	He	584.303	2921.515	0.56	2171686	0.03	2000	
Co	59	2	He	32.494	162.471	1.14	233974	0.01	2000	
Ni	60	2	He	163.331	816.654	1.90	286777	0.06	2000	
Cu	63	2	He	1.736	8.680	4.80	9440	0.02	2000	
Zn	66	2	He	112.631	563.154	1.44	108747	0.10	2000	
Al	27	2	He	5058.390	25291.948	2.42	1427664	0.35	2000	>LDR
B	11	1	No Gas	259.323	1296.614	3.04	509779	0.05	2000	
Al	27	1	No Gas	4923.506	24617.529	2.96	51717061	0.01	2000	>LDR
Si	28	1	No Gas	3083.798	15418.991	3.97	17320082	0.02	2000	>LDR
Ag	107	1	No Gas	0.040	0.200	26.11	780	0.01	2000	
Cd	111	1	No Gas	1.794	8.971	2.26	4071	0.04	2000	
Sr	88	1	No Gas	371.066	1855.329	3.79	7807007	0.00	2000	
Mo	95	1	No Gas	0.072	0.359	10.77	353	0.02	2000	
Sn	118	1	No Gas	-0.910	-4.552	-2.17	1260	-0.07	2000	
Sb	121	1	No Gas	0.046	0.230	14.11	653	0.01	2000	
Ba	137	1	No Gas	2.130	10.651	1.18	7059	0.03	2000	
Tl	205	1	No Gas	0.039	0.195	7.18	1173	0.00	2000	
Tl	203	1	No Gas	0.045	0.224	3.71	557	0.01	2000	
Pb	208	1	No Gas	0.207	1.036	5.60	7084	0.00	2000	
U	238	1	No Gas	0.462	2.308	1.43	11879	0.00	2000	
Ca	43	2	He	93357.802	466789.009	0.87	163877	56.97	200000	
Sb	121	2	He	0.029	0.146	56.19	340	0.01	2000	
Ti	47	2	He	0.191	0.957	87.76	37	0.52	2000	
Cu	63	1	No Gas	4.240	21.201	3.38	51009	0.01	2000	
Zn	66	1	No Gas	113.722	568.609	2.29	262327	0.04	2000	
Se	82	1	No Gas	8.156	40.781	7.75	1112	0.73	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	864528	2.28	795954	108.62	70	120	
Ge	72	2	He	525235	0.87	503456	104.33	70	120	
Ge	72	1	No Gas	1619196	2.36	1570734	103.09	70	120	
In	115	1	No Gas	1852738	3.40	1773940	104.44	70	120	

Sample Report

Bi	209	1	No Gas	1599935	1.16	1535146	104.22	70	120	

Sample Report

Sample Table

Sample Name	HS21091055-01MS
Data File Name	037SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T12:15:08-05:00
Sample Type	Sample
Dilution	1
Comment	DOD TW 170607
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	523.781	523.781	2.40	5682001	0.01	2000	
Be	9	1	No Gas	59.851	59.851	2.92	176840	0.03	2000	
V	51	2	He	54.504	54.504	0.24	226387	0.02	2000	
Cr	52	2	He	51.777	51.777	0.38	241238	0.02	2000	
Fe	56	2	He	5305.785	5305.785	0.15	22971553	0.02	200000	
Se	78	2	He	102.118	102.118	3.06	7812	1.31	2000	
As	75	2	He	54.785	54.785	0.64	41554	0.13	2000	
Ca	44	2	He	505287.922	505287.922	0.43	14135664	3.57	200000	>LDR
Na	23	2	He	206744.114	206744.114	0.76	147680194	0.14	200000	>LDR
Mg	24	2	He	229443.933	229443.933	1.10	99322522	0.23	200000	>LDR
K	39	2	He	14175.564	14175.564	1.10	7830742	0.18	200000	
Mn	55	2	He	3080.774	3080.774	0.36	10881333	0.03	2000	>LDR
Co	59	2	He	231.654	231.654	0.64	1584960	0.01	2000	
Ni	60	2	He	894.385	894.385	0.60	1492021	0.06	2000	
Cu	63	2	He	57.654	57.654	0.61	250842	0.02	2000	
Zn	66	2	He	618.218	618.218	0.72	565118	0.11	2000	
Al	27	2	He	25493.754	25493.754	0.85	6837365	0.37	2000	>LDR
B	11	1	No Gas	1375.256	1375.256	3.08	2315703	0.06	2000	
Al	27	1	No Gas	24434.248	24434.248	1.49	254838016	0.01	2000	>LDR
Si	28	1	No Gas	15793.490	15793.490	2.37	87009495	0.02	2000	>LDR
Ag	107	1	No Gas	47.897	47.897	0.80	514183	0.01	2000	
Cd	111	1	No Gas	61.293	61.293	1.18	132815	0.05	2000	
Sr	88	1	No Gas	1948.675	1948.675	2.03	39336031	0.00	2000	>LDR
Mo	95	1	No Gas	52.234	52.234	1.07	212491	0.02	2000	
Sn	118	1	No Gas	-0.908	-0.908	-1.84	1227	-0.07	2000	
Sb	121	1	No Gas	51.308	51.308	2.05	482541	0.01	2000	
Ba	137	1	No Gas	61.621	61.621	1.68	192975	0.03	2000	
Tl	205	1	No Gas	51.404	51.404	1.33	916722	0.01	2000	
Tl	203	1	No Gas	51.599	51.599	3.02	382729	0.01	2000	
Pb	208	1	No Gas	53.319	53.319	1.69	1283287	0.00	2000	
U	238	1	No Gas	2.450	2.450	2.43	59843	0.00	2000	
Ca	43	2	He	500445.386	500445.386	3.10	834956	59.94	200000	>LDR
Sb	121	2	He	52.942	52.942	1.30	256590	0.02	2000	
Ti	47	2	He	50.103	50.103	0.91	8296	0.60	2000	
Cu	63	1	No Gas	58.636	58.636	1.55	500806	0.01	2000	
Zn	66	1	No Gas	617.110	617.110	2.98	1407448	0.04	2000	
Se	82	1	No Gas	100.111	100.111	3.24	14915	0.67	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	755294	2.83	795954	94.89	70	120	
Ge	72	2	He	499198	0.55	503456	99.15	70	120	
Ge	72	1	No Gas	1607734	2.40	1570734	102.36	70	120	
In	115	1	No Gas	1776416	2.63	1773940	100.14	70	120	
Bi	209	1	No Gas	1522807	0.60	1535146	99.20	70	120	

Sample Report

Sample Table

Sample Name	HS21091055-01MSD
Data File Name	038SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T12:17:07-05:00
Sample Type	Sample
Dilution	1
Comment	DOD TW 170607
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	484.010	484.010	3.51	5477864	0.01	2000	
Be	9	1	No Gas	55.841	55.841	2.84	172059	0.03	2000	
V	51	2	He	53.538	53.538	1.21	224056	0.02	2000	
Cr	52	2	He	51.280	51.280	0.55	240621	0.02	2000	
Fe	56	2	He	5146.260	5146.260	0.95	22438618	0.02	200000	
Se	78	2	He	101.157	101.157	1.24	7796	1.30	2000	
As	75	2	He	53.214	53.214	0.74	40653	0.13	2000	
Ca	44	2	He	489105.491	489105.491	1.28	13779004	3.55	200000	>LDR
Na	23	2	He	198747.777	198747.777	1.18	142973458	0.14	200000	>LDR
Mg	24	2	He	219374.693	219374.693	1.91	95628152	0.23	200000	>LDR
K	39	2	He	13929.888	13929.888	1.58	7751768	0.18	200000	
Mn	55	2	He	2935.860	2935.860	0.42	10443057	0.03	2000	>LDR
Co	59	2	He	218.506	218.506	0.54	1505562	0.01	2000	
Ni	60	2	He	860.997	860.997	2.56	1446348	0.06	2000	
Cu	63	2	He	57.028	57.028	0.89	249885	0.02	2000	
Zn	66	2	He	604.586	604.586	0.96	556571	0.11	2000	
Al	27	2	He	24684.921	24684.921	2.30	6666880	0.37	2000	>LDR
B	11	1	No Gas	1326.574	1326.574	1.82	2329751	0.06	2000	
Al	27	1	No Gas	23653.106	23653.106	1.39	251244063	0.01	2000	>LDR
Si	28	1	No Gas	15228.483	15228.483	1.14	85461279	0.02	2000	>LDR
Ag	107	1	No Gas	46.145	46.145	2.13	516573	0.01	2000	
Cd	111	1	No Gas	58.667	58.667	2.13	132582	0.04	2000	
Sr	88	1	No Gas	1875.563	1875.563	3.41	39471739	0.00	2000	>LDR
Mo	95	1	No Gas	49.711	49.711	2.19	210893	0.02	2000	
Sn	118	1	No Gas	-0.905	-0.905	-2.20	1303	-0.07	2000	
Sb	121	1	No Gas	50.214	50.214	2.15	480874	0.01	2000	
Ba	137	1	No Gas	58.808	58.808	1.31	192114	0.03	2000	
Tl	205	1	No Gas	50.327	50.327	0.48	927819	0.01	2000	
Tl	203	1	No Gas	50.118	50.118	1.79	384204	0.01	2000	
Pb	208	1	No Gas	51.841	51.841	0.64	1289896	0.00	2000	
U	238	1	No Gas	2.360	2.360	1.29	59595	0.00	2000	
Ca	43	2	He	475105.214	475105.214	0.89	798189	59.52	200000	>LDR
Sb	121	2	He	51.618	51.618	1.03	251956	0.02	2000	
Ti	47	2	He	47.953	47.953	2.80	7996	0.60	2000	
Cu	63	1	No Gas	57.055	57.055	1.08	496715	0.01	2000	
Zn	66	1	No Gas	600.712	600.712	2.33	1395458	0.04	2000	
Se	82	1	No Gas	92.066	92.066	1.10	13962	0.66	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	787608	2.61	795954	98.95	70	120	
Ge	72	2	He	502751	1.04	503456	99.86	70	120	
Ge	72	1	No Gas	1637264	1.70	1570734	104.24	70	120	
In	115	1	No Gas	1852797	2.41	1773940	104.45	70	120	
Bi	209	1	No Gas	1574359	1.97	1535146	102.55	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	041_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T12:23:21-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	96.397	0.779	1217857	0.83	100	96.4	90	110	
Be	9	1	No Gas	91.671	1.386	303518	0.20	100	91.7	90	110	
V	51	2	He	105.173	0.570	439845	0.99	100	105.2	90	110	
Cr	52	2	He	105.211	0.670	499663	0.65	100	105.2	90	110	
Fe	56	2	He	10328.778	0.926	45644598	0.40	10000	103.3	90	110	
Se	78	2	He	101.190	1.948	7906	2.17	100	101.2	90	110	
As	75	2	He	106.589	1.166	82337	1.37	100	106.6	90	110	
Ca	44	2	He	10106.840	1.106	291184	0.48	10000	101.1	90	110	
Na	23	2	He	10683.145	1.063	7905777	1.54	10000	106.8	90	110	
Mg	24	2	He	10342.012	1.836	4570816	1.29	10000	103.4	90	110	
K	39	2	He	9986.154	2.041	5675896	2.24	10000	99.9	90	110	
Mn	55	2	He	104.107	0.331	375818	0.43	100	104.1	90	110	
Co	59	2	He	102.610	0.969	716801	1.19	100	102.6	90	110	
Ni	60	2	He	104.025	0.389	177309	0.97	100	104.0	90	110	
Cu	63	2	He	107.247	0.314	475101	0.87	100	107.2	90	110	
Zn	66	2	He	107.603	1.835	100840	1.79	100	107.6	90	110	
Al	27	2	He	103.953	2.287	28917	2.74	100	104.0	90	110	
B	11	1	No Gas	494.695	0.577	941201	1.63	500	98.9	90	110	
Al	27	1	No Gas	106.296	2.030	1158532	2.39	100	106.3	90	110	
Si	28	1	No Gas	544.258	2.986	3359651	3.02	5000	10.9	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	102.326	0.804	1170527	0.82	100	102.3	90	110	
Cd	111	1	No Gas	103.220	1.112	238409	0.57	100	103.2	90	110	
Sr	88	1	No Gas	100.613	1.584	2165454	1.87	100	100.6	90	110	
Mo	95	1	No Gas	99.012	1.020	429327	0.51	100	99.0	90	110	
Sn	118	1	No Gas	97.871	1.182	681476	0.92	100	97.9	90	110	
Sb	121	1	No Gas	102.795	1.107	997419	1.28	100	102.8	90	110	
Ba	137	1	No Gas	99.264	1.924	331330	1.19	100	99.3	90	110	
Tl	205	1	No Gas	102.815	0.951	2015464	1.32	100	102.8	90	110	
Tl	203	1	No Gas	99.263	1.125	809245	1.58	100	99.3	90	110	
Pb	208	1	No Gas	101.967	1.042	2696357	1.19	100	102.0	90	110	
U	238	1	No Gas	100.668	1.922	2701543	2.28	100	100.7	90	110	
Ca	43	2	He	9886.668	2.238	16857	2.87	10000	98.9	90	110	
Sb	121	2	He	103.860	0.456	513762	0.91	100	103.9	90	110	
Ti	47	2	He	99.023	4.361	16734	3.62	100	99.0	90	110	
Cu	63	1	No Gas	100.880	0.782	877679	0.87	100	100.9	90	110	
Se	82	1	No Gas	101.239	3.223	15568	3.35	100	101.2	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	846113	1.51	795954	106.30	70	120	
Ge	72	2	He	509666	0.75	503456	101.23	70	120	
Ge	72	1	No Gas	1659013	0.39	1570734	105.62	70	120	
In	115	1	No Gas	1893515	1.49	1773940	106.74	70	120	
Bi	209	1	No Gas	1674307	0.64	1535146	109.06	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	042_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T12:25:15-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	1.029	6.0	69150	1.0	0.5	CCB Main CR1 Failed
Be	9	1	No Gas	0.045	25.3	192	18.3	0.5	
V	51	2	He	1.514	2.6	12834	1.6	2.5	
Cr	52	2	He	0.058	52.3	1050	12.9	2.5	
Fe	56	2	He	3.586	10.7	26596	7.2	100	
Se	78	2	He	-0.121	-155.6	182	7.2	2	
As	75	2	He	0.209	20.5	376	9.7	2.5	
Ca	44	2	He	35.348	24.2	3584	7.4	100	
Na	23	2	He	112.160	1.5	201855	1.0	100	CCB Main CR1 Failed
Mg	24	2	He	10.722	8.0	5148	8.3	100	
K	39	2	He	21.984	22.8	159253	0.8	100	
Mn	55	2	He	0.106	2.9	803	0.7	2.5	
Co	59	2	He	0.034	21.1	320	16.5	2.5	
Ni	60	2	He	-0.003	-617.6	150	20.0	2.5	
Cu	63	2	He	0.189	18.5	2327	7.5	2	
Zn	66	2	He	-0.185	-27.9	333	15.1	2.5	
Al	27	2	He	1.327	10.8	813	5.0	5	
B	11	1	No Gas	12.792	8.6	36273	4.3	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	2.095	2.1	37274	3.2	5	
Si	28	1	No Gas	-7.652	-13.2	233128	0.6	10	
Ag	107	1	No Gas	0.036	28.4	753	16.8	2.5	
Cd	111	1	No Gas	0.037	28.8	103	22.3	1	
Sr	88	1	No Gas	0.163	10.7	3911	8.1	2.5	
Mo	95	1	No Gas	0.098	12.5	473	10.6	2.5	
Sn	118	1	No Gas	-0.796	-4.5	2070	10.9	5	
Sb	121	1	No Gas	0.177	11.8	1960	11.1	2.5	
Ba	137	1	No Gas	0.074	50.9	350	36.5	2.5	
Tl	205	1	No Gas	0.074	27.0	1887	20.4	1	
Tl	203	1	No Gas	0.069	40.1	763	28.9	1	
Pb	208	1	No Gas	0.033	41.5	2770	13.0	2.5	
U	238	1	No Gas	0.052	8.3	1403	8.3	2.5	
Ca	43	2	He	33.136	70.7	73	55.1	100	
Sb	121	2	He	0.179	33.4	1070	28.5	2.5	
Ti	47	2	He	0.000	117216.0	3	173.2	2.5	
Cu	63	1	No Gas	0.122	69.7	17298	2.5	2.5	
Se	82	1	No Gas	-0.407	-327.4	-190	-108.4	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	849872	1.45	795954	106.77	70	120	
Ge	72	2	He	508489	0.98	503456	101.00	70	120	
Ge	72	1	No Gas	1677868	1.92	1570734	106.82	70	120	
In	115	1	No Gas	1888255	1.42	1773940	106.44	70	120	
Bi	209	1	No Gas	1643777	0.29	1535146	107.08	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	053_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T12:48:13-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	97.968	2.223	1145801	0.87	100	98.0	90	110	
Be	9	1	No Gas	96.320	2.991	295418	0.54	100	96.3	90	110	
V	51	2	He	103.912	0.723	430217	0.96	100	103.9	90	110	
Cr	52	2	He	103.936	0.483	488601	1.20	100	103.9	90	110	
Fe	56	2	He	10183.680	0.707	44545351	0.58	10000	101.8	90	110	
Se	78	2	He	100.390	1.014	7764	0.64	100	100.4	90	110	
As	75	2	He	106.542	1.154	81457	0.52	100	106.5	90	110	
Ca	44	2	He	9983.499	1.291	284745	1.56	10000	99.8	90	110	
Na	23	2	He	10469.941	0.915	7670876	0.43	10000	104.7	90	110	
Mg	24	2	He	10201.037	1.129	4462695	0.79	10000	102.0	90	110	
K	39	2	He	9960.121	1.978	5604135	2.62	10000	99.6	90	110	
Mn	55	2	He	102.682	0.944	366927	1.85	100	102.7	90	110	
Co	59	2	He	101.709	0.419	703262	0.87	100	101.7	90	110	
Ni	60	2	He	104.292	0.958	175943	0.47	100	104.3	90	110	
Cu	63	2	He	106.968	0.287	469032	0.62	100	107.0	90	110	
Zn	66	2	He	106.585	1.297	98869	0.65	100	106.6	90	110	
Al	27	2	He	100.489	0.541	27681	0.68	100	100.5	90	110	
B	11	1	No Gas	510.509	1.411	899540	1.62	500	102.1	90	110	
Al	27	1	No Gas	105.508	2.276	1123906	1.20	100	105.5	90	110	
Si	28	1	No Gas	534.852	1.565	3231361	0.64	5000	10.7	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	102.889	1.467	1128602	0.36	100	102.9	90	110	
Cd	111	1	No Gas	105.754	1.559	234237	0.99	100	105.8	90	110	
Sr	88	1	No Gas	103.098	1.533	2127656	0.36	100	103.1	90	110	
Mo	95	1	No Gas	101.720	0.997	422974	0.56	100	101.7	90	110	
Sn	118	1	No Gas	99.346	0.817	663251	0.46	100	99.3	90	110	
Sb	121	1	No Gas	103.189	1.348	978593	0.65	100	103.2	90	110	
Ba	137	1	No Gas	102.100	1.461	326820	0.80	100	102.1	90	110	
Tl	205	1	No Gas	105.677	2.603	1989318	1.86	100	105.7	90	110	
Tl	203	1	No Gas	100.489	1.901	786700	0.22	100	100.5	90	110	
Pb	208	1	No Gas	104.171	1.848	2645329	0.71	100	104.2	90	110	
U	238	1	No Gas	101.262	1.561	2609672	0.69	100	101.3	90	110	
Ca	43	2	He	9891.535	2.013	16694	2.74	10000	98.9	90	110	
Sb	121	2	He	103.546	1.326	506959	0.87	100	103.5	90	110	
Ti	47	2	He	96.460	1.853	16140	2.75	100	96.5	90	110	
Cu	63	1	No Gas	103.013	1.562	875614	0.57	100	103.0	90	110	
Se	82	1	No Gas	102.938	3.275	15471	2.41	100	102.9	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	784109	2.79	795954	98.51	70	120	
Ge	72	2	He	504472	0.90	503456	100.20	70	120	
Ge	72	1	No Gas	1621629	1.05	1570734	103.24	70	120	
In	115	1	No Gas	1815771	1.18	1773940	102.36	70	120	
Bi	209	1	No Gas	1608215	1.78	1535146	104.76	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	054_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T12:50:07-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	-0.050	-86.6	51997	0.1	0.5	
Be	9	1	No Gas	0.037	5.7	153	5.0	0.5	
V	51	2	He	0.921	10.4	10244	3.3	2.5	
Cr	52	2	He	0.041	24.7	957	4.4	2.5	
Fe	56	2	He	3.158	13.1	24339	7.3	100	
Se	78	2	He	-0.158	-89.2	177	5.6	2	
As	75	2	He	0.129	19.0	309	5.9	2.5	
Ca	44	2	He	22.734	19.6	3177	4.4	100	
Na	23	2	He	54.287	7.9	157450	1.4	100	
Mg	24	2	He	2.836	6.6	1643	5.1	100	
K	39	2	He	18.038	31.0	154799	1.5	100	
Mn	55	2	He	0.009	162.2	447	11.3	2.5	
Co	59	2	He	0.020	26.4	223	17.0	2.5	
Ni	60	2	He	0.026	83.3	197	19.3	2.5	
Cu	63	2	He	0.018	77.9	1550	3.4	2	
Zn	66	2	He	-0.048	-177.2	453	16.8	2.5	
Al	27	2	He	0.194	190.6	497	20.4	5	
B	11	1	No Gas	6.406	11.0	22483	6.3	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	0.448	2.8	18369	0.7	5	
Si	28	1	No Gas	-6.035	-8.3	230421	0.5	10	
Ag	107	1	No Gas	0.029	19.8	643	8.6	2.5	
Cd	111	1	No Gas	0.037	13.2	100	10.0	1	
Sr	88	1	No Gas	0.058	16.3	1603	13.4	2.5	
Mo	95	1	No Gas	0.077	17.8	370	15.0	2.5	
Sn	118	1	No Gas	-0.787	-1.3	2060	3.9	5	
Sb	121	1	No Gas	0.124	11.5	1367	10.0	2.5	
Ba	137	1	No Gas	0.056	15.7	280	9.4	2.5	
Tl	205	1	No Gas	0.064	27.9	1677	22.8	1	
Tl	203	1	No Gas	0.061	45.0	693	33.6	1	
Pb	208	1	No Gas	0.006	148.7	2050	14.2	2.5	
U	238	1	No Gas	0.045	7.1	1213	9.2	2.5	
Ca	43	2	He	2.074	290.3	20	50.0	100	
Sb	121	2	He	0.089	22.8	613	16.7	2.5	
Ti	47	2	He	0.060	58.0	13	43.3	2.5	
Cu	63	1	No Gas	0.716	9.6	21324	2.5	2.5	
Se	82	1	No Gas	-0.804	-64.3	-241	-32.7	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	787802	0.91	795954	98.98	70	120	
Ge	72	2	He	501104	0.59	503456	99.53	70	120	
Ge	72	1	No Gas	1594603	1.11	1570734	101.52	70	120	
In	115	1	No Gas	1823442	1.19	1773940	102.79	70	120	
Bi	209	1	No Gas	1622784	2.26	1535146	105.71	70	120	

Sample Report

Sample Table

Sample Name	HS21091055-01MS
Data File Name	055SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T12:52:39-05:00
Sample Type	Sample
Dilution	1
Comment	DOD TW 170607
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	497.989	497.989	3.29	5287470	0.01	2000	
Be	9	1	No Gas	56.821	56.821	3.17	164278	0.03	2000	
V	51	2	He	53.260	53.260	1.39	218403	0.02	2000	
Cr	52	2	He	51.275	51.275	1.41	235707	0.02	2000	
Fe	56	2	He	5115.033	5115.033	1.51	21849710	0.02	200000	
Se	78	2	He	96.070	96.070	1.51	7263	1.32	2000	
As	75	2	He	53.315	53.315	1.64	39902	0.13	2000	
Ca	44	2	He	479784.758	479784.758	0.87	13242726	3.62	200000	>LDR
Na	23	2	He	196548.349	196548.349	1.21	138524418	0.14	200000	>LDR
Mg	24	2	He	215236.210	215236.210	1.15	91925215	0.23	200000	>LDR
K	39	2	He	13697.903	13697.903	1.29	7470488	0.18	200000	
Mn	55	2	He	2921.241	2921.241	0.85	10179758	0.03	2000	>LDR
Co	59	2	He	221.238	221.238	1.07	1493403	0.01	2000	
Ni	60	2	He	880.756	880.756	1.81	1449579	0.06	2000	
Cu	63	2	He	56.799	56.799	1.71	243827	0.02	2000	
Zn	66	2	He	601.510	601.510	0.82	542508	0.11	2000	
Al	27	2	He	23812.666	23812.666	2.06	6301162	0.38	2000	>LDR
B	11	1	No Gas	1372.537	1372.537	2.23	2261446	0.06	2000	
Al	27	1	No Gas	23387.622	23387.622	2.56	250242476	0.01	2000	>LDR
Si	28	1	No Gas	14861.571	14861.571	0.76	84022195	0.02	2000	>LDR
Ag	107	1	No Gas	46.704	46.704	2.17	515498	0.01	2000	
Cd	111	1	No Gas	60.254	60.254	2.66	134230	0.04	2000	
Sr	88	1	No Gas	1897.017	1897.017	3.45	39360772	0.00	2000	>LDR
Mo	95	1	No Gas	50.101	50.101	2.03	209572	0.02	2000	
Sn	118	1	No Gas	-0.882	-0.882	-1.55	1437	-0.06	2000	
Sb	121	1	No Gas	50.394	50.394	1.06	486161	0.01	2000	
Ba	137	1	No Gas	60.082	60.082	1.30	193520	0.03	2000	
Tl	205	1	No Gas	49.158	49.158	2.01	918023	0.01	2000	
Tl	203	1	No Gas	49.824	49.824	1.44	386982	0.01	2000	
Pb	208	1	No Gas	51.201	51.201	1.84	1290304	0.00	2000	
U	238	1	No Gas	2.306	2.306	1.62	58982	0.00	2000	
Ca	43	2	He	466913.863	466913.863	1.13	768511	60.76	200000	>LDR
Sb	121	2	He	51.718	51.718	2.38	247305	0.02	2000	
Ti	47	2	He	47.594	47.594	6.29	7776	0.61	2000	
Cu	63	1	No Gas	55.031	55.031	0.52	483234	0.01	2000	
Zn	66	1	No Gas	599.109	599.109	1.88	1401990	0.04	2000	
Se	82	1	No Gas	95.623	95.623	1.07	14609	0.65	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	739180	3.37	795954	92.87	70	120	
Ge	72	2	He	492524	0.29	503456	97.83	70	120	
Ge	72	1	No Gas	1649208	1.38	1570734	105.00	70	120	
In	115	1	No Gas	1827051	3.24	1773940	102.99	70	120	
Bi	209	1	No Gas	1594758	1.80	1535146	103.88	70	120	

Sample Report

Sample Table

Sample Name	HS21091055-01PDS
Data File Name	056SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T12:54:40-05:00
Sample Type	Sample
Dilution	1
Comment	DOD TW 170607
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	471.764	471.764	1.86	4932367	0.01	2000	
Be	9	1	No Gas	87.718	87.718	1.64	249571	0.04	2000	
V	51	2	He	88.993	88.993	0.80	356360	0.02	2000	
Cr	52	2	He	85.647	85.647	0.70	388559	0.02	2000	
Fe	56	2	He	8515.524	8515.524	1.64	35937327	0.02	200000	
Se	78	2	He	130.377	130.377	1.06	9673	1.35	2000	
As	75	2	He	88.587	88.587	0.94	65376	0.14	2000	
Ca	44	2	He	464361.053	464361.053	1.59	12663637	3.67	200000	>LDR
Na	23	2	He	192122.600	192122.600	1.38	133791221	0.14	200000	>LDR
Mg	24	2	He	212042.349	212042.349	1.06	89482435	0.24	200000	>LDR
K	39	2	He	16426.926	16426.926	1.13	8824088	0.19	200000	
Mn	55	2	He	2787.693	2787.693	1.00	9598996	0.03	2000	>LDR
Co	59	2	He	248.640	248.640	1.70	1658329	0.01	2000	
Ni	60	2	He	849.049	849.049	0.14	1380823	0.06	2000	
Cu	63	2	He	90.936	90.936	0.99	384903	0.02	2000	
Zn	66	2	He	607.617	607.617	0.41	541490	0.11	2000	
Al	27	2	He	22824.911	22824.911	0.72	5968259	0.38	2000	>LDR
B	11	1	No Gas	1306.582	1306.582	2.82	2118475	0.06	2000	
Al	27	1	No Gas	22295.395	22295.395	2.02	233631590	0.01	2000	>LDR
Si	28	1	No Gas	14316.365	14316.365	1.18	79280345	0.02	2000	>LDR
Ag	107	1	No Gas	76.498	76.498	1.64	850197	0.01	2000	
Cd	111	1	No Gas	91.690	91.690	2.70	205718	0.04	2000	
Sr	88	1	No Gas	1773.114	1773.114	1.93	37064642	0.00	2000	
Mo	95	1	No Gas	83.373	83.373	1.66	351193	0.02	2000	
Sn	118	1	No Gas	-0.909	-0.909	-1.20	1260	-0.07	2000	
Sb	121	1	No Gas	83.880	83.880	1.14	792385	0.01	2000	
Ba	137	1	No Gas	92.222	92.222	2.17	299050	0.03	2000	
Tl	205	1	No Gas	86.875	86.875	0.87	1602099	0.01	2000	
Tl	203	1	No Gas	84.549	84.549	1.05	648454	0.01	2000	
Pb	208	1	No Gas	86.237	86.237	1.27	2145575	0.00	2000	
U	238	1	No Gas	2.252	2.252	0.68	56899	0.00	2000	
Ca	43	2	He	448213.174	448213.174	0.57	728986	61.48	200000	>LDR
Sb	121	2	He	84.428	84.428	0.52	398816	0.02	2000	
Ti	47	2	He	79.982	79.982	1.94	12910	0.62	2000	
Cu	63	1	No Gas	87.057	87.057	0.89	739523	0.01	2000	
Zn	66	1	No Gas	614.874	614.874	2.09	1409478	0.04	2000	
Se	82	1	No Gas	127.272	127.272	2.10	19089	0.67	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	727147	2.24	795954	91.36	70	120	
Ge	72	2	He	486670	0.86	503456	96.67	70	120	
Ge	72	1	No Gas	1615291	1.67	1570734	102.84	70	120	
In	115	1	No Gas	1839455	1.39	1773940	103.69	70	120	
Bi	209	1	No Gas	1575034	0.51	1535146	102.60	70	120	

Sample Report

Sample Table

Sample Name	HS21091055-01PDS
Data File Name	059SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T13:00:37-05:00
Sample Type	Sample
Dilution	100
Comment	DOD TW 170607
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	4.606	460.577	5.54	108538	0.00	2000	
Be	9	1	No Gas	87.606	8760.639	1.37	281324	0.03	2000	
V	51	2	He	105.268	10526.768	0.90	429029	0.02	2000	
Cr	52	2	He	104.240	10423.986	1.09	482466	0.02	2000	
Fe	56	2	He	10171.579	1017157.910	1.12	43807501	0.02	200000	
Se	78	2	He	99.152	9915.209	1.71	7553	1.31	2000	
As	75	2	He	102.333	10233.333	0.74	77046	0.13	2000	
Ca	44	2	He	14586.276	1458627.585	0.66	408451	3.57	200000	
Na	23	2	He	12350.689	1235068.891	1.25	8888655	0.14	200000	
Mg	24	2	He	12515.083	1251508.264	0.41	5390839	0.23	200000	
K	39	2	He	9966.660	996665.988	1.57	5521045	0.18	200000	
Mn	55	2	He	131.536	13153.590	1.06	462646	0.03	2000	
Co	59	2	He	103.298	10329.801	1.66	703228	0.01	2000	
Ni	60	2	He	112.861	11286.089	1.22	187461	0.06	2000	
Cu	63	2	He	104.940	10494.040	1.17	453078	0.02	2000	
Zn	66	2	He	111.930	11193.032	1.69	102206	0.11	2000	
Al	27	2	He	338.346	33834.630	1.63	90725	0.37	2000	
B	11	1	No Gas	17.518	1751.829	3.10	43643	0.04	2000	
Al	27	1	No Gas	332.761	33276.104	1.17	3573425	0.01	2000	
Si	28	1	No Gas	145.615	14561.524	3.68	1092433	0.01	2000	
Ag	107	1	No Gas	99.596	9959.577	0.72	1106862	0.01	2000	
Cd	111	1	No Gas	105.486	10548.570	0.55	236683	0.04	2000	
Sr	88	1	No Gas	18.931	1893.085	1.54	396072	0.00	2000	
Mo	95	1	No Gas	101.513	10151.344	1.54	427557	0.02	2000	
Sn	118	1	No Gas	-0.893	-89.336	-0.70	1367	-0.07	2000	
Sb	121	1	No Gas	100.991	10099.144	1.37	973708	0.01	2000	
Ba	137	1	No Gas	101.773	10177.260	1.58	329985	0.03	2000	
Tl	205	1	No Gas	104.363	10436.262	3.46	1997099	0.01	2000	
Tl	203	1	No Gas	100.143	10014.280	1.10	797136	0.01	2000	
Pb	208	1	No Gas	102.806	10280.629	0.49	2654579	0.00	2000	
U	238	1	No Gas	0.022	2.231	12.14	630	0.00	2000	
Ca	43	2	He	14272.196	1427219.568	2.21	23708	60.20	200000	
Sb	121	2	He	103.846	10384.593	0.20	500628	0.02	2000	
Ti	47	2	He	96.354	9635.409	2.29	15873	0.61	2000	
Cu	63	1	No Gas	99.196	9919.649	1.22	857807	0.01	2000	
Zn	66	1	No Gas	109.559	10955.948	1.49	257429	0.04	2000	
Se	82	1	No Gas	97.872	9787.236	3.41	14949	0.65	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	820671	2.19	795954	103.11	70	120	
Ge	72	2	He	496703	0.36	503456	98.66	70	120	
Ge	72	1	No Gas	1648540	0.58	1570734	104.95	70	120	
In	115	1	No Gas	1839333	1.45	1773940	103.69	70	120	

Sample Report

Bi	209	1	No Gas	1634970	1.36	1535146	106.50	70	120	

Sample Report

Sample Table

Sample Name	HS21090680-01
Data File Name	061SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T13:04:31-05:00
Sample Type	Sample
Dilution	10
Comment	DOD TW 170607
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	1.618	16.181	3.21	72589	0.00	2000	
Be	9	1	No Gas	0.003	0.030	277.80	50	0.01	2000	
V	51	2	He	2.201	22.013	3.50	15061	0.01	2000	
Cr	52	2	He	0.019	0.194	173.38	837	0.00	2000	
Fe	56	2	He	3.404	34.043	0.85	24803	0.01	200000	
Se	78	2	He	-0.365	-3.650	-65.70	157	-0.23	2000	
As	75	2	He	0.242	2.425	13.59	386	0.06	2000	
Ca	44	2	He	19739.482	197394.819	1.06	543431	3.63	200000	
Na	23	2	He	63973.566	639735.661	1.95	44855101	0.14	200000	
Mg	24	2	He	3977.464	39774.637	1.18	1687394	0.24	200000	
K	39	2	He	292.922	2929.218	0.80	297138	0.10	200000	
Mn	55	2	He	6.411	64.107	3.21	22589	0.03	2000	
Co	59	2	He	0.013	0.133	62.59	170	0.01	2000	
Ni	60	2	He	0.329	3.290	10.03	687	0.05	2000	
Cu	63	2	He	0.080	0.796	55.23	1773	0.00	2000	
Zn	66	2	He	0.235	2.353	28.59	697	0.03	2000	
Al	27	2	He	1.573	15.727	20.01	847	0.19	2000	
B	11	1	No Gas	8.078	80.783	4.17	26068	0.03	2000	
Al	27	1	No Gas	2.173	21.729	0.45	35756	0.01	2000	
Si	28	1	No Gas	1585.665	15856.646	1.30	8789752	0.02	2000	
Ag	107	1	No Gas	-0.005	-0.055	-57.05	267	0.00	2000	
Cd	111	1	No Gas	0.009	0.088	117.29	37	0.02	2000	
Sr	88	1	No Gas	374.839	3748.389	2.32	7708396	0.00	2000	
Mo	95	1	No Gas	0.160	1.598	8.77	710	0.02	2000	
Sn	118	1	No Gas	-0.911	-9.110	-1.78	1230	-0.07	2000	
Sb	121	1	No Gas	0.160	1.598	22.96	1680	0.01	2000	
Ba	137	1	No Gas	265.706	2657.064	1.08	847568	0.03	2000	
Tl	205	1	No Gas	-0.002	-0.021	-121.09	403	0.00	2000	
Tl	203	1	No Gas	-0.005	-0.053	-81.77	167	0.00	2000	
Pb	208	1	No Gas	-0.035	-0.345	-2.92	980	0.00	2000	
U	238	1	No Gas	0.003	0.033	36.54	130	0.00	2000	
Ca	43	2	He	20030.563	200305.632	0.55	32756	61.15	200000	
Sb	121	2	He	0.139	1.394	10.43	840	0.02	2000	
Ti	47	2	He	0.103	1.034	59.64	20	0.52	2000	
Cu	63	1	No Gas	0.641	6.413	36.07	20436	0.00	2000	
Zn	66	1	No Gas	0.296	2.960	17.67	1970	0.02	2000	
Se	82	1	No Gas	0.149	1.487	223.08	-97	-0.15	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	808638	1.21	795954	101.59	70	120	
Ge	72	2	He	489105	0.23	503456	97.15	70	120	
Ge	72	1	No Gas	1574102	0.71	1570734	100.21	70	120	
In	115	1	No Gas	1809830	1.60	1773940	102.02	70	120	

Sample Report

Bi	209	1	No Gas	1594973	1.03	1535146	103.90	70	120	

Sample Report

Sample Table

Sample Name	HS21091055-01SD
Data File Name	062SMPL.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T13:06:30-05:00
Sample Type	Sample
Dilution	500
Comment	DOD TW 170607
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	0.972	485.848	8.77	65449	0.00	2000	
Be	9	1	No Gas	0.013	6.408	3.70	82	0.02	2000	
V	51	2	He	2.253	1126.723	3.16	15913	0.01	2000	
Cr	52	2	He	0.009	4.685	329.90	823	0.00	2000	
Fe	56	2	He	1.552	775.756	10.68	17662	0.01	200000	
Se	78	2	He	-0.058	-28.815	-369.75	187	-0.03	2000	
As	75	2	He	0.218	109.028	23.86	383	0.06	2000	
Ca	44	2	He	973.893	486946.636	3.72	30397	3.20	200000	
Na	23	2	He	482.562	241281.044	2.78	472381	0.10	200000	
Mg	24	2	He	464.344	232172.094	2.45	205691	0.23	200000	
K	39	2	He	27.554	13777.022	19.59	162779	0.02	200000	
Mn	55	2	He	5.772	2885.816	2.39	21240	0.03	2000	
Co	59	2	He	0.335	167.645	2.83	2427	0.01	2000	
Ni	60	2	He	1.578	788.775	5.53	2844	0.06	2000	
Cu	63	2	He	-0.006	-2.918	-480.40	1470	0.00	2000	
Zn	66	2	He	0.894	447.133	25.11	1340	0.07	2000	
Al	27	2	He	49.843	24921.691	2.25	14104	0.35	2000	
B	11	1	No Gas	4.621	2310.278	9.24	19963	0.02	2000	
Al	27	1	No Gas	51.037	25518.629	0.90	562441	0.01	2000	
Si	28	1	No Gas	24.259	12129.495	1.73	410639	0.01	2000	
Ag	107	1	No Gas	-0.009	-4.571	-47.21	233	0.00	2000	
Cd	111	1	No Gas	0.016	7.882	16.15	53	0.03	2000	
Sr	88	1	No Gas	3.971	1985.655	1.51	84429	0.00	2000	
Mo	95	1	No Gas	0.005	2.489	95.45	70	0.01	2000	
Sn	118	1	No Gas	-0.917	-458.282	-3.23	1227	-0.07	2000	
Sb	121	1	No Gas	0.061	30.453	19.46	810	0.01	2000	
Ba	137	1	No Gas	0.141	70.420	8.93	563	0.03	2000	
Tl	205	1	No Gas	-0.011	-5.680	-9.59	237	0.00	2000	
Tl	203	1	No Gas	-0.013	-6.663	-14.97	107	-0.01	2000	
Pb	208	1	No Gas	-0.041	-20.561	-1.10	833	0.00	2000	
U	238	1	No Gas	0.004	1.798	28.88	140	0.00	2000	
Ca	43	2	He	875.438	437718.823	13.40	1507	58.10	200000	
Sb	121	2	He	0.071	35.413	14.03	537	0.01	2000	
Ti	47	2	He	0.020	9.933	173.27	7	0.30	2000	
Cu	63	1	No Gas	-0.008	-3.751	-1244.55	15963	0.00	2000	
Zn	66	1	No Gas	0.904	452.246	5.03	3501	0.03	2000	
Se	82	1	No Gas	1.100	550.126	98.72	44	2.53	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	812604	1.94	795954	102.09	70	120	
Ge	72	2	He	509897	1.39	503456	101.28	70	120	
Ge	72	1	No Gas	1655542	1.43	1570734	105.40	70	120	
In	115	1	No Gas	1861590	0.37	1773940	104.94	70	120	

Sample Report

Bi	209	1	No Gas	1631660	0.56	1535146	106.29	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	065_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T13:12:25-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	99.160	1.703	1153749	0.17	100	99.2	90	110	
Be	9	1	No Gas	96.652	1.589	295118	0.11	100	96.7	90	110	
V	51	2	He	103.905	0.205	438035	0.55	100	103.9	90	110	
Cr	52	2	He	103.580	0.195	495799	0.22	100	103.6	90	110	
Fe	56	2	He	10174.000	0.994	45314416	0.59	10000	101.7	90	110	
Se	78	2	He	100.873	1.298	7943	1.06	100	100.9	90	110	
As	75	2	He	106.195	0.543	82678	0.77	100	106.2	90	110	
Ca	44	2	He	9985.161	0.792	289976	0.39	10000	99.9	90	110	
Na	23	2	He	10402.629	0.798	7761497	0.53	10000	104.0	90	110	
Mg	24	2	He	10206.814	1.035	4546921	1.36	10000	102.1	90	110	
K	39	2	He	9766.468	0.914	5597825	1.06	10000	97.7	90	110	
Mn	55	2	He	103.238	0.921	375609	0.54	100	103.2	90	110	
Co	59	2	He	101.652	0.298	715684	0.12	100	101.7	90	110	
Ni	60	2	He	103.928	0.576	178536	0.96	100	103.9	90	110	
Cu	63	2	He	106.210	1.123	474204	0.91	100	106.2	90	110	
Zn	66	2	He	106.267	0.759	100380	1.01	100	106.3	90	110	
Al	27	2	He	101.566	0.939	28483	0.51	100	101.6	90	110	
B	11	1	No Gas	514.410	3.054	901894	1.58	500	102.9	90	110	
Al	27	1	No Gas	106.323	1.566	1138252	1.22	100	106.3	90	110	
Si	28	1	No Gas	539.808	0.047	3275397	0.77	5000	10.8	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	101.428	2.019	1158192	1.64	100	101.4	90	110	
Cd	111	1	No Gas	104.622	1.425	241222	0.38	100	104.6	90	110	
Sr	88	1	No Gas	100.198	1.801	2152539	0.76	100	100.2	90	110	
Mo	95	1	No Gas	99.528	0.803	430821	0.35	100	99.5	90	110	
Sn	118	1	No Gas	98.725	1.961	686127	1.23	100	98.7	90	110	
Sb	121	1	No Gas	104.575	0.739	996790	1.31	100	104.6	90	110	
Ba	137	1	No Gas	100.905	0.753	336258	1.23	100	100.9	90	110	
Tl	205	1	No Gas	106.115	2.878	2028265	2.09	100	106.1	90	110	
Tl	203	1	No Gas	101.927	2.256	810255	1.47	100	101.9	90	110	
Pb	208	1	No Gas	104.551	1.073	2696022	0.15	100	104.6	90	110	
U	238	1	No Gas	101.080	2.097	2645306	2.21	100	101.1	90	110	
Ca	43	2	He	9650.526	2.500	16584	2.83	10000	96.5	90	110	
Sb	121	2	He	104.113	0.796	519047	0.55	100	104.1	90	110	
Ti	47	2	He	95.310	2.340	16237	2.48	100	95.3	90	110	
Cu	63	1	No Gas	102.959	0.429	879628	0.96	100	103.0	90	110	
Se	82	1	No Gas	109.490	3.146	16549	3.28	100	109.5	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	780321	1.52	795954	98.04	70	120	
Ge	72	2	He	513667	0.42	503456	102.03	70	120	
Ge	72	1	No Gas	1629729	0.78	1570734	103.76	70	120	
In	115	1	No Gas	1890177	1.13	1773940	106.55	70	120	
Bi	209	1	No Gas	1632883	1.19	1535146	106.37	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	066_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T13:14:18-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	-0.171	-77.5	52775	0.5	0.5	
Be	9	1	No Gas	0.033	24.3	148	15.2	0.5	
V	51	2	He	1.207	5.4	11530	2.4	2.5	
Cr	52	2	He	0.045	61.8	990	14.0	2.5	
Fe	56	2	He	3.121	16.0	24469	9.9	100	
Se	78	2	He	-0.019	-1220.8	189	10.0	2	
As	75	2	He	0.210	22.1	374	8.9	2.5	
Ca	44	2	He	26.741	32.4	3327	7.8	100	
Na	23	2	He	41.697	8.6	150113	0.8	100	
Mg	24	2	He	3.299	11.2	1867	9.6	100	
K	39	2	He	10.584	15.2	152470	1.3	100	
Mn	55	2	He	0.023	47.4	500	6.9	2.5	
Co	59	2	He	0.017	35.1	200	20.0	2.5	
Ni	60	2	He	0.006	777.6	163	44.3	2.5	
Cu	63	2	He	-0.006	-361.0	1460	7.5	2	
Zn	66	2	He	0.015	902.6	517	23.1	2.5	
Al	27	2	He	0.041	925.5	460	21.7	5	
B	11	1	No Gas	6.725	13.0	23994	5.0	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	0.366	10.7	18249	1.7	5	
Si	28	1	No Gas	-7.833	-17.3	229865	4.5	10	
Ag	107	1	No Gas	0.024	17.3	617	6.6	2.5	
Cd	111	1	No Gas	0.049	32.8	130	27.7	1	
Sr	88	1	No Gas	0.062	8.3	1743	7.0	2.5	
Mo	95	1	No Gas	0.075	25.5	373	23.1	2.5	
Sn	118	1	No Gas	-0.800	-3.3	2050	6.9	5	
Sb	121	1	No Gas	0.103	18.8	1223	14.4	2.5	
Ba	137	1	No Gas	0.031	46.8	207	23.9	2.5	
Tl	205	1	No Gas	0.070	31.4	1784	21.7	1	
Tl	203	1	No Gas	0.067	40.2	750	29.1	1	
Pb	208	1	No Gas	0.012	43.0	2207	6.9	2.5	
U	238	1	No Gas	0.047	11.8	1287	6.6	2.5	
Ca	43	2	He	3.914	231.4	23	65.5	100	
Sb	121	2	He	0.082	14.8	587	10.3	2.5	
Ti	47	2	He	-0.020	0.0	0	#DIV/0!	2.5	
Cu	63	1	No Gas	0.138	34.1	17265	3.5	2.5	
Se	82	1	No Gas	0.399	124.0	-64	-120.3	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	821326	2.44	795954	103.19	70	120	
Ge	72	2	He	506804	0.91	503456	100.66	70	120	
Ge	72	1	No Gas	1660827	1.22	1570734	105.74	70	120	
In	115	1	No Gas	1892977	2.06	1773940	106.71	70	120	
Bi	209	1	No Gas	1638964	4.78	1535146	106.76	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	135_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T16:04:40-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	101.737	1.390	1150492	0.36	100	101.7	90	110	
Be	9	1	No Gas	98.469	0.922	292565	0.60	100	98.5	90	110	
V	51	2	He	104.367	0.270	424794	0.67	100	104.4	90	110	
Cr	52	2	He	105.324	0.919	486745	0.38	100	105.3	90	110	
Fe	56	2	He	10505.754	1.125	45179779	1.05	10000	105.1	90	110	
Se	78	2	He	101.673	0.589	7729	0.98	100	101.7	90	110	
As	75	2	He	106.092	0.851	79749	0.30	100	106.1	90	110	
Ca	44	2	He	10235.087	1.148	286946	1.67	10000	102.4	90	110	
Na	23	2	He	10389.639	2.187	7484933	2.21	10000	103.9	90	110	
Mg	24	2	He	10281.969	1.830	4422455	1.89	10000	102.8	90	110	
K	39	2	He	10057.829	1.087	5562063	1.59	10000	100.6	90	110	
Mn	55	2	He	104.426	0.659	366831	0.08	100	104.4	90	110	
Co	59	2	He	102.947	1.310	699808	1.05	100	102.9	90	110	
Ni	60	2	He	107.107	0.729	177645	0.24	100	107.1	90	110	
Cu	63	2	He	108.252	1.685	466635	1.49	100	108.3	90	110	
Zn	66	2	He	107.117	1.371	97686	0.90	100	107.1	90	110	
Al	27	2	He	104.602	1.802	28309	1.18	100	104.6	90	110	
B	11	1	No Gas	503.888	3.329	859807	2.09	500	100.8	90	110	
Al	27	1	No Gas	105.735	2.912	1112821	0.63	100	105.7	90	110	
Si	28	1	No Gas	523.770	3.267	3132360	2.44	5000	10.5	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	102.347	1.411	1141180	1.39	100	102.3	90	110	
Cd	111	1	No Gas	104.478	3.415	235139	0.98	100	104.5	90	110	
Sr	88	1	No Gas	103.278	5.215	2165103	2.70	100	103.3	90	110	
Mo	95	1	No Gas	101.361	2.833	428304	0.25	100	101.4	90	110	
Sn	118	1	No Gas	101.577	2.200	689034	0.45	100	101.6	90	110	
Sb	121	1	No Gas	104.930	2.166	983230	0.15	100	104.9	90	110	
Ba	137	1	No Gas	103.736	1.576	337523	1.37	100	103.7	90	110	
Tl	205	1	No Gas	105.430	2.388	2038391	0.90	100	105.4	90	110	
Tl	203	1	No Gas	101.443	1.307	815806	1.38	100	101.4	90	110	
Pb	208	1	No Gas	104.794	1.293	2733743	1.80	100	104.8	90	110	
U	238	1	No Gas	104.271	1.227	2761385	3.69	100	104.3	90	110	
Ca	43	2	He	10138.294	1.162	16821	1.74	10000	101.4	90	110	
Sb	121	2	He	107.224	0.947	516120	0.55	100	107.2	90	110	
Ti	47	2	He	100.069	1.205	16460	1.68	100	100.1	90	110	
Cu	63	1	No Gas	102.150	2.130	858134	1.41	100	102.1	90	110	
Se	82	1	No Gas	103.942	4.159	15437	3.05	100	103.9	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	759244	1.52	795954	95.39	70	120	
Ge	72	2	He	495967	0.59	503456	98.51	70	120	
Ge	72	1	No Gas	1602693	2.32	1570734	102.03	70	120	
In	115	1	No Gas	1845956	2.63	1773940	104.06	70	120	
Bi	209	1	No Gas	1651992	2.46	1535146	107.61	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	136_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T16:06:33-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	-0.060	-47.5	51952	0.5	0.5	
Be	9	1	No Gas	0.030	26.7	133	18.9	0.5	
V	51	2	He	0.358	21.1	7967	3.1	2.5	
Cr	52	2	He	0.008	389.4	807	19.0	2.5	
Fe	56	2	He	4.101	12.5	28457	7.7	100	
Se	78	2	He	-0.285	-63.4	167	9.0	2	
As	75	2	He	0.095	10.5	283	3.5	2.5	
Ca	44	2	He	15.405	40.9	2974	6.4	100	
Na	23	2	He	-21.402	-15.4	103297	1.5	100	
Mg	24	2	He	2.849	8.0	1650	5.8	100	
K	39	2	He	0.665	278.0	145469	1.5	100	
Mn	55	2	He	0.010	217.9	450	16.8	2.5	
Co	59	2	He	0.019	58.0	210	34.3	2.5	
Ni	60	2	He	0.052	41.1	240	15.0	2.5	
Cu	63	2	He	0.020	208.7	1557	10.6	2	
Zn	66	2	He	0.049	185.7	543	14.9	2.5	
Al	27	2	He	1.355	27.9	810	13.4	5	
B	11	1	No Gas	3.774	23.4	17897	8.6	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	1.811	3.0	32946	0.8	5	
Si	28	1	No Gas	-7.852	-2.1	223765	2.0	10	
Ag	107	1	No Gas	0.014	39.1	500	11.1	2.5	
Cd	111	1	No Gas	0.032	60.8	90	48.4	1	
Sr	88	1	No Gas	0.051	10.7	1517	9.5	2.5	
Mo	95	1	No Gas	0.056	19.0	290	17.9	2.5	
Sn	118	1	No Gas	-0.749	-4.6	2387	9.3	5	
Sb	121	1	No Gas	0.067	6.9	847	3.8	2.5	
Ba	137	1	No Gas	0.080	18.8	367	12.3	2.5	
Tl	205	1	No Gas	0.062	48.5	1670	35.3	1	
Tl	203	1	No Gas	0.055	66.3	663	44.8	1	
Pb	208	1	No Gas	-0.004	-21.4	1840	1.9	2.5	
U	238	1	No Gas	0.039	11.4	1083	10.2	2.5	
Ca	43	2	He	4.091	304.4	23	89.2	100	
Sb	121	2	He	0.032	15.3	337	6.2	2.5	
Ti	47	2	He	0.000	10558.2	3	173.2	2.5	
Cu	63	1	No Gas	-0.518	-14.6	11348	3.6	2.5	
Se	82	1	No Gas	-0.326	-122.3	-171	-32.9	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	788845	0.27	795954	99.11	70	120	
Ge	72	2	He	501483	0.87	503456	99.61	70	120	
Ge	72	1	No Gas	1617994	2.22	1570734	103.01	70	120	
In	115	1	No Gas	1881083	2.31	1773940	106.04	70	120	
Bi	209	1	No Gas	1669058	0.77	1535146	108.72	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	147_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T16:30:30-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	99.607	0.563	1111607	1.52	100	99.6	90	110	
Be	9	1	No Gas	94.124	1.514	275675	0.59	100	94.1	90	110	
V	51	2	He	105.961	0.942	425493	0.57	100	106.0	90	110	
Cr	52	2	He	104.679	1.032	477401	0.59	100	104.7	90	110	
Fe	56	2	He	10306.479	0.831	43739066	0.46	10000	103.1	90	110	
Se	78	2	He	100.369	0.735	7531	0.32	100	100.4	90	110	
As	75	2	He	107.200	0.498	79521	0.47	100	107.2	90	110	
Ca	44	2	He	9944.711	1.972	275179	1.54	10000	99.4	90	110	
Na	23	2	He	10519.302	1.181	7477191	1.33	10000	105.2	90	110	
Mg	24	2	He	10396.276	1.225	4412659	1.04	10000	104.0	90	110	
K	39	2	He	10049.701	2.981	5484270	2.91	10000	100.5	90	110	
Mn	55	2	He	104.222	0.900	361297	0.45	100	104.2	90	110	
Co	59	2	He	102.696	0.380	688920	0.26	100	102.7	90	110	
Ni	60	2	He	107.161	0.557	175396	0.19	100	107.2	90	110	
Cu	63	2	He	108.579	0.211	461887	0.26	100	108.6	90	110	
Zn	66	2	He	108.449	1.086	97596	0.96	100	108.4	90	110	
Al	27	2	He	99.859	2.318	26693	2.66	100	99.9	90	110	
B	11	1	No Gas	530.022	1.777	891179	1.40	500	106.0	90	110	
Al	27	1	No Gas	104.614	3.470	1116659	3.31	100	104.6	90	110	
Si	28	1	No Gas	505.829	0.549	3076382	0.65	5000	10.1	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	103.946	3.182	1159531	2.18	100	103.9	90	110	
Cd	111	1	No Gas	106.301	0.645	239485	1.05	100	106.3	90	110	
Sr	88	1	No Gas	102.026	0.757	2141671	0.93	100	102.0	90	110	
Mo	95	1	No Gas	100.345	1.756	424364	1.12	100	100.3	90	110	
Sn	118	1	No Gas	101.643	1.072	689992	0.27	100	101.6	90	110	
Sb	121	1	No Gas	104.634	1.520	994149	1.33	100	104.6	90	110	
Ba	137	1	No Gas	103.187	1.739	335957	1.88	100	103.2	90	110	
Tl	205	1	No Gas	105.318	0.467	2033787	2.19	100	105.3	90	110	
Tl	203	1	No Gas	102.651	2.699	824093	1.05	100	102.7	90	110	
Pb	208	1	No Gas	104.568	2.506	2723236	1.58	100	104.6	90	110	
U	238	1	No Gas	103.348	2.752	2731102	1.04	100	103.3	90	110	
Ca	43	2	He	10074.729	1.641	16494	1.19	10000	100.7	90	110	
Sb	121	2	He	106.122	0.779	504101	0.66	100	106.1	90	110	
Ti	47	2	He	98.143	1.786	15929	1.43	100	98.1	90	110	
Cu	63	1	No Gas	101.831	0.550	867406	0.75	100	101.8	90	110	
Se	82	1	No Gas	103.637	0.642	15608	0.55	100	103.6	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	748522	2.06	795954	94.04	70	120	
Ge	72	2	He	489436	0.45	503456	97.22	70	120	
Ge	72	1	No Gas	1624567	0.49	1570734	103.43	70	120	
In	115	1	No Gas	1846745	0.99	1773940	104.10	70	120	
Bi	209	1	No Gas	1649321	1.73	1535146	107.44	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	148_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T16:32:24-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.495	33.0	57073	0.5	0.5	
Be	9	1	No Gas	0.033	14.1	140	12.9	0.5	
V	51	2	He	2.700	3.6	17124	1.2	2.5	CCB Main CR1 Failed
Cr	52	2	He	0.086	49.2	1143	15.7	2.5	
Fe	56	2	He	4.265	8.3	28621	6.0	100	
Se	78	2	He	-0.170	-114.5	173	9.3	2	
As	75	2	He	0.244	30.8	389	15.0	2.5	
Ca	44	2	He	31.829	31.4	3367	7.3	100	
Na	23	2	He	98.741	3.4	185808	1.0	100	
Mg	24	2	He	11.131	1.1	5151	1.0	100	
K	39	2	He	15.771	30.9	150725	0.7	100	
Mn	55	2	He	0.135	18.5	877	10.2	2.5	
Co	59	2	He	0.021	25.1	223	17.0	2.5	
Ni	60	2	He	0.067	15.8	260	7.7	2.5	
Cu	63	2	He	0.105	12.7	1890	3.3	2	
Zn	66	2	He	-0.059	-171.9	437	21.8	2.5	
Al	27	2	He	1.048	30.3	713	12.7	5	
B	11	1	No Gas	10.919	12.3	29817	6.3	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	1.455	6.1	29722	2.4	5	
Si	28	1	No Gas	-10.249	-8.6	214200	1.6	10	
Ag	107	1	No Gas	0.026	23.3	633	12.3	2.5	
Cd	111	1	No Gas	0.033	60.2	93	48.3	1	
Sr	88	1	No Gas	0.135	8.5	3294	8.1	2.5	
Mo	95	1	No Gas	0.065	47.0	327	38.8	2.5	
Sn	118	1	No Gas	-0.754	-3.9	2340	8.6	5	
Sb	121	1	No Gas	0.066	12.7	857	9.8	2.5	
Ba	137	1	No Gas	0.052	35.1	273	20.8	2.5	
Tl	205	1	No Gas	0.058	46.4	1603	31.2	1	
Tl	203	1	No Gas	0.063	54.3	737	36.7	1	
Pb	208	1	No Gas	0.001	100.7	1987	1.5	2.5	
U	238	1	No Gas	0.043	2.9	1203	1.7	2.5	
Ca	43	2	He	26.575	21.5	60	16.7	100	
Sb	121	2	He	0.046	7.3	400	5.0	2.5	
Ti	47	2	He	0.062	150.5	13	114.6	2.5	
Cu	63	1	No Gas	0.606	9.5	21087	2.4	2.5	
Se	82	1	No Gas	0.198	37.0	-94	-12.3	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	774173	2.64	795954	97.26	70	120	
Ge	72	2	He	491862	1.10	503456	97.70	70	120	
Ge	72	1	No Gas	1646470	0.95	1570734	104.82	70	120	
In	115	1	No Gas	1871608	1.38	1773940	105.51	70	120	
Bi	209	1	No Gas	1684853	3.24	1535146	109.75	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	152_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T17:02:18-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	100.964	1.224	1143484	2.24	100	101.0	90	110	
Be	9	1	No Gas	97.436	1.079	289782	0.33	100	97.4	90	110	
V	51	2	He	106.421	0.669	429939	0.39	100	106.4	90	110	
Cr	52	2	He	105.348	1.137	483390	0.55	100	105.3	90	110	
Fe	56	2	He	10345.261	1.731	44170606	0.92	10000	103.5	90	110	
Se	78	2	He	105.043	2.826	7924	3.69	100	105.0	90	110	
As	75	2	He	106.926	1.399	79800	0.53	100	106.9	90	110	
Ca	44	2	He	10133.444	1.432	282077	0.92	10000	101.3	90	110	
Na	23	2	He	10612.287	2.154	7587631	1.11	10000	106.1	90	110	
Mg	24	2	He	10495.483	1.299	4482087	1.05	10000	105.0	90	110	
K	39	2	He	10072.408	1.496	5529738	0.54	10000	100.7	90	110	
Mn	55	2	He	104.840	0.524	365685	1.05	100	104.8	90	110	
Co	59	2	He	102.916	0.559	694657	1.05	100	102.9	90	110	
Ni	60	2	He	105.499	1.226	173735	0.94	100	105.5	90	110	
Cu	63	2	He	106.919	0.694	457653	1.19	100	106.9	90	110	
Zn	66	2	He	107.178	0.730	97056	1.43	100	107.2	90	110	
Al	27	2	He	104.050	2.085	27968	3.06	100	104.1	90	110	
B	11	1	No Gas	526.419	1.298	898830	0.47	500	105.3	90	110	
Al	27	1	No Gas	103.137	1.454	1098081	0.93	100	103.1	90	110	
Si	28	1	No Gas	511.064	0.723	3097047	1.00	5000	10.2	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	106.762	1.889	1154491	0.64	100	106.8	90	110	
Cd	111	1	No Gas	106.535	1.600	232626	0.33	100	106.5	90	110	
Sr	88	1	No Gas	106.517	2.947	2166904	1.74	100	106.5	90	110	
Mo	95	1	No Gas	102.497	1.551	420173	0.89	100	102.5	90	110	
Sn	118	1	No Gas	103.377	1.156	680134	0.97	100	103.4	90	110	
Sb	121	1	No Gas	103.639	0.730	982033	0.67	100	103.6	90	110	
Ba	137	1	No Gas	104.860	1.580	330902	0.26	100	104.9	90	110	
Tl	205	1	No Gas	104.372	1.497	2005434	0.40	100	104.4	90	110	
Tl	203	1	No Gas	100.995	0.625	807096	0.86	100	101.0	90	110	
Pb	208	1	No Gas	103.557	0.667	2684335	0.48	100	103.6	90	110	
U	238	1	No Gas	100.342	2.663	2640006	3.49	100	100.3	90	110	
Ca	43	2	He	9880.477	1.685	16277	2.07	10000	98.8	90	110	
Sb	121	2	He	105.621	1.320	504789	0.94	100	105.6	90	110	
Ti	47	2	He	100.078	2.105	16347	3.12	100	100.1	90	110	
Cu	63	1	No Gas	99.287	0.608	843834	0.83	100	99.3	90	110	
Se	82	1	No Gas	104.668	2.064	15721	1.56	100	104.7	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	759986	1.11	795954	95.48	70	120	
Ge	72	2	He	492455	1.04	503456	97.81	70	120	
Ge	72	1	No Gas	1620169	0.75	1570734	103.15	70	120	
In	115	1	No Gas	1790151	1.33	1773940	100.91	70	120	
Bi	209	1	No Gas	1641336	1.15	1535146	106.92	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	153_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T17:04:12-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.307	61.6	55440	0.7	0.5	
Be	9	1	No Gas	0.038	6.3	155	6.5	0.5	
V	51	2	He	2.063	0.5	14726	0.9	2.5	
Cr	52	2	He	0.074	33.9	1103	10.8	2.5	
Fe	56	2	He	3.800	11.7	26870	7.0	100	
Se	78	2	He	-0.081	-193.1	181	6.1	2	
As	75	2	He	0.167	36.3	334	13.6	2.5	
Ca	44	2	He	19.863	30.6	3067	6.1	100	
Na	23	2	He	-14.024	-12.4	107471	0.4	100	
Mg	24	2	He	3.654	14.1	1980	11.4	100	
K	39	2	He	17.367	32.9	152945	1.1	100	
Mn	55	2	He	-0.001	-1351.2	407	12.1	2.5	
Co	59	2	He	0.021	43.8	223	27.0	2.5	
Ni	60	2	He	0.025	33.5	193	7.9	2.5	
Cu	63	2	He	0.027	140.6	1573	10.8	2	
Zn	66	2	He	-0.187	-19.3	323	9.4	2.5	
Al	27	2	He	1.464	9.0	830	3.2	5	
B	11	1	No Gas	5.247	14.4	20243	4.9	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	1.739	1.5	32488	2.5	5	
Si	28	1	No Gas	-10.976	-6.0	208342	0.9	10	
Ag	107	1	No Gas	0.032	29.9	677	15.2	2.5	
Cd	111	1	No Gas	0.040	13.3	107	10.8	1	
Sr	88	1	No Gas	0.082	5.7	2100	4.9	2.5	
Mo	95	1	No Gas	0.090	5.6	423	5.5	2.5	
Sn	118	1	No Gas	-0.647	-5.9	2987	8.1	5	
Sb	121	1	No Gas	0.080	12.6	980	7.7	2.5	
Ba	137	1	No Gas	0.067	16.8	313	11.2	2.5	
Tl	205	1	No Gas	0.070	31.0	1814	23.9	1	
Tl	203	1	No Gas	0.063	41.7	723	29.6	1	
Pb	208	1	No Gas	0.007	89.8	2080	8.2	2.5	
U	238	1	No Gas	0.040	13.6	1100	13.8	2.5	
Ca	43	2	He	6.236	114.9	27	43.3	100	
Sb	121	2	He	0.053	10.3	437	6.6	2.5	
Ti	47	2	He	0.041	149.2	10	100.0	2.5	
Cu	63	1	No Gas	-1.246	-4.7	5334	7.0	2.5	
Se	82	1	No Gas	0.044	1909.4	-116	-108.3	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	780577	3.47	795954	98.07	70	120	
Ge	72	2	He	496306	1.00	503456	98.58	70	120	
Ge	72	1	No Gas	1632791	2.31	1570734	103.95	70	120	
In	115	1	No Gas	1823324	0.46	1773940	102.78	70	120	
Bi	209	1	No Gas	1646193	0.95	1535146	107.23	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	164_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T17:28:32-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	99.757	1.381	1089987	2.41	100	99.8	90	110	
Be	9	1	No Gas	98.836	2.456	283385	0.64	100	98.8	90	110	
V	51	2	He	105.213	0.309	415455	0.45	100	105.2	90	110	
Cr	52	2	He	105.410	0.645	472671	0.28	100	105.4	90	110	
Fe	56	2	He	10285.494	1.613	42917953	1.50	10000	102.9	90	110	
Se	78	2	He	103.678	0.828	7644	1.08	100	103.7	90	110	
As	75	2	He	106.793	0.931	77890	0.92	100	106.8	90	110	
Ca	44	2	He	10144.301	1.486	275956	1.44	10000	101.4	90	110	
Na	23	2	He	10579.165	1.950	7392497	1.52	10000	105.8	90	110	
Mg	24	2	He	10425.705	0.388	4351021	0.69	10000	104.3	90	110	
K	39	2	He	10059.365	0.457	5397387	0.78	10000	100.6	90	110	
Mn	55	2	He	103.899	0.650	354138	0.28	100	103.9	90	110	
Co	59	2	He	103.057	0.400	679742	0.11	100	103.1	90	110	
Ni	60	2	He	104.969	1.408	168926	1.13	100	105.0	90	110	
Cu	63	2	He	107.216	0.906	448450	0.73	100	107.2	90	110	
Zn	66	2	He	107.806	0.333	95394	0.45	100	107.8	90	110	
Al	27	2	He	104.659	0.316	27484	0.35	100	104.7	90	110	
B	11	1	No Gas	488.209	3.519	804253	0.79	500	97.6	90	110	
Al	27	1	No Gas	104.582	0.628	1069743	2.17	100	104.6	90	110	
Si	28	1	No Gas	548.874	2.284	3176313	1.74	5000	11.0	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	101.904	1.693	1094147	1.58	100	101.9	90	110	
Cd	111	1	No Gas	105.543	1.502	228816	1.30	100	105.5	90	110	
Sr	88	1	No Gas	102.280	2.460	2065867	1.40	100	102.3	90	110	
Mo	95	1	No Gas	101.526	1.115	413212	0.86	100	101.5	90	110	
Sn	118	1	No Gas	100.676	1.678	657738	0.55	100	100.7	90	110	
Sb	121	1	No Gas	105.646	1.683	961645	0.49	100	105.6	90	110	
Ba	137	1	No Gas	102.072	1.321	319796	0.32	100	102.1	90	110	
Tl	205	1	No Gas	107.169	0.811	1922105	1.27	100	107.2	90	110	
Tl	203	1	No Gas	105.011	1.927	783213	1.64	100	105.0	90	110	
Pb	208	1	No Gas	107.127	0.486	2591745	0.38	100	107.1	90	110	
U	238	1	No Gas	105.707	0.938	2595269	0.37	100	105.7	90	110	
Ca	43	2	He	10037.012	1.821	16156	1.59	10000	100.4	90	110	
Sb	121	2	He	105.651	0.429	493453	0.61	100	105.7	90	110	
Ti	47	2	He	100.076	3.926	15970	3.53	100	100.1	90	110	
Cu	63	1	No Gas	102.031	1.608	832618	0.83	100	102.0	90	110	
Se	82	1	No Gas	104.950	3.506	15146	3.82	100	104.9	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	732947	2.75	795954	92.08	70	120	
Ge	72	2	He	481224	0.41	503456	95.58	70	120	
Ge	72	1	No Gas	1556629	1.55	1570734	99.10	70	120	
In	115	1	No Gas	1777252	1.16	1773940	100.19	70	120	
Bi	209	1	No Gas	1531903	0.79	1535146	99.79	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	165_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T17:30:25-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	-0.091	-118.8	48983	0.8	0.5	
Be	9	1	No Gas	0.015	57.5	83	33.0	0.5	
V	51	2	He	1.437	4.8	11935	2.7	2.5	
Cr	52	2	He	0.005	224.2	763	7.4	2.5	
Fe	56	2	He	1.671	9.7	17298	2.4	100	
Se	78	2	He	-0.153	-132.0	171	8.8	2	
As	75	2	He	0.210	22.1	358	8.0	2.5	
Ca	44	2	He	24.148	31.1	3110	5.2	100	
Na	23	2	He	24.017	17.1	131349	0.6	100	
Mg	24	2	He	2.495	3.7	1447	1.7	100	
K	39	2	He	22.271	14.4	152013	0.7	100	
Mn	55	2	He	-0.001	-2362.1	397	29.2	2.5	
Co	59	2	He	0.006	64.4	117	19.8	2.5	
Ni	60	2	He	-0.001	-2963.7	147	17.2	2.5	
Cu	63	2	He	-0.014	-191.6	1367	8.7	2	
Zn	66	2	He	0.379	31.7	817	11.4	2.5	
Al	27	2	He	1.124	40.2	723	17.3	5	
B	11	1	No Gas	8.682	8.5	25148	5.3	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	1.800	4.7	31423	2.1	5	
Si	28	1	No Gas	4.564	33.1	279753	0.8	10	
Ag	107	1	No Gas	-0.001	-386.0	310	12.9	2.5	
Cd	111	1	No Gas	0.011	87.7	40	50.0	1	
Sr	88	1	No Gas	0.058	4.4	1567	3.5	2.5	
Mo	95	1	No Gas	0.051	14.8	253	12.7	2.5	
Sn	118	1	No Gas	-0.673	-0.2	2750	1.0	5	
Sb	121	1	No Gas	0.485	9.0	4594	7.7	2.5	
Ba	137	1	No Gas	0.052	19.6	260	13.3	2.5	
Tl	205	1	No Gas	0.045	47.2	1277	31.7	1	
Tl	203	1	No Gas	0.045	59.9	553	38.4	1	
Pb	208	1	No Gas	-0.001	-1135.8	1810	16.3	2.5	
U	238	1	No Gas	0.024	20.2	650	18.1	2.5	
Ca	43	2	He	4.627	281.2	23	89.2	100	
Sb	121	2	He	0.397	1.8	2044	1.2	2.5	
Ti	47	2	He	0.001	4804.2	3	173.2	2.5	
Cu	63	1	No Gas	-1.197	-2.5	5455	4.5	2.5	
Se	82	1	No Gas	0.526	300.1	-43	-531.1	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	748816	1.60	795954	94.08	70	120	
Ge	72	2	He	484888	1.58	503456	96.31	70	120	
Ge	72	1	No Gas	1548537	2.23	1570734	98.59	70	120	
In	115	1	No Gas	1781421	1.15	1773940	100.42	70	120	
Bi	209	1	No Gas	1583251	1.20	1535146	103.13	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	174_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T17:53:37-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	100.586	3.293	1124940	1.90	100	100.6	90	110	
Be	9	1	No Gas	99.517	2.614	292274	1.40	100	99.5	90	110	
V	51	2	He	104.473	1.185	420444	0.17	100	104.5	90	110	
Cr	52	2	He	104.864	1.969	479169	0.69	100	104.9	90	110	
Fe	56	2	He	10276.828	2.698	43694653	1.43	10000	102.8	90	110	
Se	78	2	He	103.860	0.896	7804	1.91	100	103.9	90	110	
As	75	2	He	105.882	1.995	78698	1.21	100	105.9	90	110	
Ca	44	2	He	10108.135	2.218	280204	0.99	10000	101.1	90	110	
Na	23	2	He	10390.062	1.632	7401004	0.41	10000	103.9	90	110	
Mg	24	2	He	10263.895	1.788	4365383	1.84	10000	102.6	90	110	
K	39	2	He	10046.365	2.060	5493129	1.23	10000	100.5	90	110	
Mn	55	2	He	104.312	1.174	362340	0.84	100	104.3	90	110	
Co	59	2	He	102.000	1.701	685591	0.74	100	102.0	90	110	
Ni	60	2	He	105.376	0.813	172827	0.67	100	105.4	90	110	
Cu	63	2	He	106.735	0.723	455001	1.16	100	106.7	90	110	
Zn	66	2	He	106.813	1.718	96320	0.99	100	106.8	90	110	
Al	27	2	He	105.086	1.219	28125	2.22	100	105.1	90	110	
B	11	1	No Gas	480.701	2.905	811580	2.80	500	96.1	90	110	
Al	27	1	No Gas	108.441	3.465	1114678	3.33	100	108.4	90	110	
Si	28	1	No Gas	559.028	2.347	3248768	2.90	5000	11.2	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	102.548	3.217	1107820	3.84	100	102.5	90	110	
Cd	111	1	No Gas	104.584	2.012	228097	1.97	100	104.6	90	110	
Sr	88	1	No Gas	102.703	2.662	2086931	2.17	100	102.7	90	110	
Mo	95	1	No Gas	101.532	1.513	415722	1.65	100	101.5	90	110	
Sn	118	1	No Gas	101.146	0.908	664775	0.79	100	101.1	90	110	
Sb	121	1	No Gas	105.651	2.793	966893	1.14	100	105.7	90	110	
Ba	137	1	No Gas	104.780	2.300	330239	1.83	100	104.8	90	110	
Tl	205	1	No Gas	106.085	2.758	1949839	1.01	100	106.1	90	110	
Tl	203	1	No Gas	104.129	0.708	796185	1.77	100	104.1	90	110	
Pb	208	1	No Gas	106.355	2.245	2637178	1.02	100	106.4	90	110	
U	238	1	No Gas	104.085	1.926	2619797	2.61	100	104.1	90	110	
Ca	43	2	He	10110.758	3.302	16584	2.34	10000	101.1	90	110	
Sb	121	2	He	105.104	2.115	500242	1.43	100	105.1	90	110	
Ti	47	2	He	101.270	1.158	16470	0.12	100	101.3	90	110	
Cu	63	1	No Gas	102.516	1.801	841136	1.20	100	102.5	90	110	
Se	82	1	No Gas	106.176	5.935	15403	5.11	100	106.2	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	750596	1.25	795954	94.30	70	120	
Ge	72	2	He	490450	1.27	503456	97.42	70	120	
Ge	72	1	No Gas	1565407	2.33	1570734	99.66	70	120	
In	115	1	No Gas	1787820	0.62	1773940	100.78	70	120	
Bi	209	1	No Gas	1570550	2.44	1535146	102.31	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	175_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-09-30T17:55:31-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	-0.127	-110.3	49799	1.6	0.5	
Be	9	1	No Gas	0.020	68.9	98	41.1	0.5	
V	51	2	He	0.895	4.6	9897	0.3	2.5	
Cr	52	2	He	0.021	137.7	843	15.0	2.5	
Fe	56	2	He	1.725	9.8	17688	5.3	100	
Se	78	2	He	-0.030	-712.4	182	9.8	2	
As	75	2	He	0.190	19.8	347	7.9	2.5	
Ca	44	2	He	33.123	30.4	3387	9.1	100	
Na	23	2	He	-8.212	-27.5	109984	1.2	100	
Mg	24	2	He	2.406	18.2	1423	14.2	100	
K	39	2	He	21.185	21.6	152767	0.4	100	
Mn	55	2	He	0.004	692.2	417	20.1	2.5	
Co	59	2	He	0.011	30.2	157	13.3	2.5	
Ni	60	2	He	-0.008	-316.9	137	30.5	2.5	
Cu	63	2	He	-0.016	-90.5	1367	5.9	2	
Zn	66	2	He	0.489	23.5	923	11.3	2.5	
Al	27	2	He	1.305	18.4	777	8.6	5	
B	11	1	No Gas	7.066	12.1	23007	5.2	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	1.670	1.5	30490	0.6	5	
Si	28	1	No Gas	-0.099	-905.6	258256	0.7	10	
Ag	107	1	No Gas	-0.007	-57.1	250	17.4	2.5	
Cd	111	1	No Gas	0.009	77.0	37	41.7	1	
Sr	88	1	No Gas	0.070	12.5	1840	8.7	2.5	
Mo	95	1	No Gas	0.062	24.2	303	20.1	2.5	
Sn	118	1	No Gas	-0.686	-4.0	2710	5.5	5	
Sb	121	1	No Gas	0.390	4.6	3787	5.6	2.5	
Ba	137	1	No Gas	0.454	6.2	1547	4.6	2.5	
Tl	205	1	No Gas	0.041	64.5	1210	38.3	1	
Tl	203	1	No Gas	0.051	52.0	610	32.3	1	
Pb	208	1	No Gas	-0.001	-2553.5	1847	20.3	2.5	
U	238	1	No Gas	0.023	41.3	640	36.0	2.5	
Ca	43	2	He	20.547	87.7	50	60.0	100	
Sb	121	2	He	0.305	3.4	1627	4.0	2.5	
Ti	47	2	He	0.042	2.0	10	0.0	2.5	
Cu	63	1	No Gas	-1.318	-1.4	4544	3.8	2.5	
Se	82	1	No Gas	1.083	60.6	40	238.2	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	767441	2.17	795954	96.42	70	120	
Ge	72	2	He	489148	1.35	503456	97.16	70	120	
Ge	72	1	No Gas	1567339	1.22	1570734	99.78	70	120	
In	115	1	No Gas	1809590	1.26	1773940	102.01	70	120	
Bi	209	1	No Gas	1613254	2.62	1535146	105.09	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	254_CCV.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-10-01T00:19:31-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	99.127	2.422	1193341	0.76	100	99.1	90	110	
Be	9	1	No Gas	97.586	2.230	308290	0.34	100	97.6	90	110	
V	51	2	He	104.664	1.468	440160	0.27	100	104.7	90	110	
Cr	52	2	He	104.342	1.109	498303	0.67	100	104.3	90	110	
Fe	56	2	He	10254.022	1.788	45564138	0.10	10000	102.5	90	110	
Se	78	2	He	103.445	2.119	8122	1.32	100	103.4	90	110	
As	75	2	He	104.858	1.285	81453	0.89	100	104.9	90	110	
Ca	44	2	He	10413.057	2.469	301566	1.01	10000	104.1	90	110	
Na	23	2	He	10541.873	2.597	7844878	1.28	10000	105.4	90	110	
Mg	24	2	He	10558.247	0.693	4692871	1.08	10000	105.6	90	110	
K	39	2	He	10355.848	1.780	5912689	0.21	10000	103.6	90	110	
Mn	55	2	He	104.484	1.324	379286	1.21	100	104.5	90	110	
Co	59	2	He	101.235	1.594	711086	0.12	100	101.2	90	110	
Ni	60	2	He	103.092	1.528	176685	0.19	100	103.1	90	110	
Cu	63	2	He	103.149	1.198	459535	0.53	100	103.1	90	110	
Zn	66	2	He	105.267	2.410	99198	0.75	100	105.3	90	110	
Al	27	2	He	104.542	2.861	29234	1.83	100	104.5	90	110	
B	11	1	No Gas	501.496	3.249	910077	2.08	500	100.3	90	110	
Al	27	1	No Gas	108.990	1.372	1136590	0.72	100	109.0	90	110	
Si	28	1	No Gas	554.304	1.606	3270000	0.76	5000	11.1	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	102.071	2.916	1118937	1.64	100	102.1	90	110	
Cd	111	1	No Gas	104.469	2.494	231243	0.49	100	104.5	90	110	
Sr	88	1	No Gas	103.627	1.938	2137539	1.28	100	103.6	90	110	
Mo	95	1	No Gas	100.927	1.718	419465	1.37	100	100.9	90	110	
Sn	118	1	No Gas	100.195	2.638	668401	0.65	100	100.2	90	110	
Sb	121	1	No Gas	103.284	1.506	959213	1.06	100	103.3	90	110	
Ba	137	1	No Gas	102.180	1.349	326935	1.39	100	102.2	90	110	
Tl	205	1	No Gas	100.511	0.386	1933392	0.79	100	100.5	90	110	
Tl	203	1	No Gas	100.767	0.940	775769	1.12	100	100.8	90	110	
Pb	208	1	No Gas	103.374	1.051	2581429	1.12	100	103.4	90	110	
U	238	1	No Gas	100.625	0.866	2550067	1.26	100	100.6	90	110	
Ca	43	2	He	10235.874	1.313	17551	2.81	10000	102.4	90	110	
Sb	121	2	He	104.509	2.665	519751	1.13	100	104.5	90	110	
Ti	47	2	He	97.398	3.848	16550	2.62	100	97.4	90	110	
Cu	63	1	No Gas	104.627	1.586	870754	1.77	100	104.6	90	110	
Se	82	1	No Gas	102.264	2.539	15054	2.83	100	102.3	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	807443	1.91	795954	101.44	70	120	
Ge	72	2	He	512560	1.73	503456	101.81	70	120	
Ge	72	1	No Gas	1588119	1.56	1570734	101.11	70	120	
In	115	1	No Gas	1815254	2.70	1773940	102.33	70	120	
Bi	209	1	No Gas	1581127	0.44	1535146	103.00	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	255_CCB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-10-01T00:21:25-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	-0.024	-415.3	54443	1.1	0.5	
Be	9	1	No Gas	0.045	22.6	187	18.2	0.5	
V	51	2	He	1.766	6.6	14103	4.2	2.5	
Cr	52	2	He	0.076	15.2	1157	4.3	2.5	
Fe	56	2	He	3.806	17.8	28003	10.0	100	
Se	78	2	He	0.037	20.3	197	0.6	2	
As	75	2	He	0.250	21.5	413	10.9	2.5	
Ca	44	2	He	31.143	19.3	3521	4.7	100	
Na	23	2	He	31.568	13.0	145639	1.3	100	
Mg	24	2	He	3.140	21.1	1830	15.4	100	
K	39	2	He	25.834	15.3	164082	0.8	100	
Mn	55	2	He	0.014	176.0	480	18.5	2.5	
Co	59	2	He	0.019	10.6	217	7.0	2.5	
Ni	60	2	He	-0.018	-51.1	127	12.1	2.5	
Cu	63	2	He	0.229	21.1	2544	8.5	2	
Zn	66	2	He	-0.174	-48.3	350	23.4	2.5	
Al	27	2	He	0.569	50.9	617	13.8	5	
B	11	1	No Gas	11.112	6.7	31958	1.5	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	1.008	4.1	24308	0.3	5	
Si	28	1	No Gas	-7.472	-55.5	224130	11.5	10	
Ag	107	1	No Gas	0.059	15.9	977	7.4	2.5	
Cd	111	1	No Gas	0.028	39.0	80	33.1	1	
Sr	88	1	No Gas	0.072	15.5	1880	9.6	2.5	
Mo	95	1	No Gas	0.090	28.0	420	22.7	2.5	
Sn	118	1	No Gas	-0.725	-9.9	2451	16.0	5	
Sb	121	1	No Gas	0.135	3.8	1483	5.1	2.5	
Ba	137	1	No Gas	0.052	17.3	263	7.9	2.5	
Tl	205	1	No Gas	0.084	32.3	2127	25.0	1	
Tl	203	1	No Gas	0.078	13.6	833	11.5	1	
Pb	208	1	No Gas	0.050	25.1	3190	10.9	2.5	
U	238	1	No Gas	0.053	17.9	1423	17.2	2.5	
Ca	43	2	He	7.476	1.9	30	0.0	100	
Sb	121	2	He	0.091	17.6	643	11.7	2.5	
Ti	47	2	He	0.019	178.0	7	86.6	2.5	
Cu	63	1	No Gas	0.895	6.9	22926	2.6	2.5	
Se	82	1	No Gas	-0.935	-48.0	-260	-23.6	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	820623	3.11	795954	103.10	70	120	
Ge	72	2	He	516979	0.80	503456	102.69	70	120	
Ge	72	1	No Gas	1604267	2.01	1570734	102.13	70	120	
In	115	1	No Gas	1813884	3.17	1773940	102.25	70	120	
Bi	209	1	No Gas	1633229	2.07	1535146	106.39	70	120	

Sample Report

Sample Table

Sample Name	LLCCV2
Data File Name	258LCV2.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-10-01T00:27:15-05:00
Sample Type	LLCCV2
Dilution	1
Comment	
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	1.799	1.799	9.06	74000	0.00	2	
Be	9	1	No Gas	1.724	1.724	4.90	5444	0.03	2	
V	51	2	He	3.077	3.077	1.15	19473	0.02	2	NewName Main CR1 Failed
Cr	52	2	He	1.824	1.824	4.69	9513	0.02	2	
Fe	56	2	He	190.093	190.093	2.29	858202	0.02	200	
Se	78	2	He	1.481	1.481	30.23	307	0.48	2	
As	75	2	He	2.036	2.036	5.56	1799	0.11	2	
Ca	44	2	He	198.399	198.399	5.75	8323	2.38	200	
Na	23	2	He	208.534	208.534	1.71	274965	0.08	200	
Mg	24	2	He	198.744	198.744	1.64	89037	0.22	200	
K	39	2	He	203.200	203.200	0.97	262271	0.08	200	
Mn	55	2	He	1.853	1.853	4.12	7169	0.03	2	
Co	59	2	He	1.753	1.753	1.93	12439	0.01	2	
Ni	60	2	He	1.903	1.903	8.91	3427	0.06	2	
Cu	63	2	He	1.949	1.949	2.33	10191	0.02	2	
Zn	66	2	He	1.882	1.882	8.78	2280	0.08	2	
Al	27	2	He	1.425	1.425	24.75	850	0.17	2	
B	11	1	No Gas	18.391	18.391	5.35	44173	0.04	10	NewName Main CR1 Failed
Al	27	1	No Gas	1.889	1.889	0.85	33798	0.01	2	
Si	28	1	No Gas	-0.139	-0.139	-328.90	266587	0.00	10	NewName Main CR1 Failed
Ag	107	1	No Gas	1.882	1.882	3.29	21358	0.01	2	
Cd	111	1	No Gas	1.960	1.960	5.89	4441	0.04	2	
Sr	88	1	No Gas	1.876	1.876	3.50	39840	0.00	2	
Mo	95	1	No Gas	1.871	1.871	5.09	7973	0.02	2	
Sn	118	1	No Gas	1.857	1.857	6.16	19872	0.01	2	
Sb	121	1	No Gas	1.980	1.980	1.14	18964	0.01	2	
Ba	137	1	No Gas	1.858	1.858	6.15	6162	0.03	2	
Tl	205	1	No Gas	1.830	1.830	3.18	35922	0.01	2	
Tl	203	1	No Gas	1.959	1.959	1.78	15416	0.01	2	
Pb	208	1	No Gas	1.912	1.912	1.15	49964	0.00	2	
U	238	1	No Gas	1.822	1.822	2.82	46592	0.00	2	
Ca	43	2	He	162.495	162.495	21.71	297	54.77	200	
Sb	121	2	He	1.899	1.899	2.04	9660	0.02	2	
Ti	47	2	He	1.837	1.837	3.87	317	0.58	200	
Cu	63	1	No Gas	2.347	2.347	1.94	35239	0.01	2	
Se	82	1	No Gas	2.173	2.173	62.97	207	1.05	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	801748	2.66	795954	100.73	70	120	
Ge	72	2	He	514212	1.13	503456	102.14	70	120	
Ge	72	1	No Gas	1619120	1.11	1570734	103.08	70	120	
In	115	1	No Gas	1849971	0.96	1773940	104.29	70	120	
Bi	209	1	No Gas	1594624	1.26	1535146	103.87	70	120	

Sample Report

Sample Table

Sample Name	LLCCV5
Data File Name	259LCV5.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-10-01T00:29:13-05:00
Sample Type	LLCCV5
Dilution	1
Comment	
ISTD Ref FileName	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	4.425	4.425	3.77	106015	0.00	5	
Be	9	1	No Gas	4.203	4.203	2.63	13482	0.03	5	
V	51	2	He	5.952	5.952	2.50	31800	0.02	5	
Cr	52	2	He	4.488	4.488	1.69	22522	0.02	5	
Fe	56	2	He	472.101	472.101	0.24	2140898	0.02	500	
Se	78	2	He	4.267	4.267	15.55	527	0.81	5	
As	75	2	He	4.753	4.753	2.58	3959	0.12	5	
Ca	44	2	He	466.371	466.371	1.65	16233	2.87	500	
Na	23	2	He	496.497	496.497	1.93	492475	0.10	500	
Mg	24	2	He	490.008	490.008	1.70	221514	0.22	500	
K	39	2	He	471.681	471.681	3.23	417134	0.11	500	
Mn	55	2	He	4.636	4.636	2.67	17495	0.03	5	
Co	59	2	He	4.457	4.457	1.83	31868	0.01	5	
Ni	60	2	He	4.545	4.545	3.97	8059	0.06	5	
Cu	63	2	He	4.752	4.752	1.38	22953	0.02	5	
Zn	66	2	He	4.173	4.173	6.69	4491	0.09	5	
Al	27	2	He	4.236	4.236	10.72	1647	0.26	5	
B	11	1	No Gas	27.870	27.870	0.65	62254	0.04	25	
Al	27	1	No Gas	4.899	4.899	1.36	65069	0.01	5	
Si	28	1	No Gas	13.957	13.957	5.36	342754	0.00	25	NewName2 Main CR1 Failed
Ag	107	1	No Gas	4.460	4.460	0.76	51199	0.01	5	
Cd	111	1	No Gas	4.582	4.582	3.43	10571	0.04	5	
Sr	88	1	No Gas	4.540	4.540	1.32	97847	0.00	5	
Mo	95	1	No Gas	4.473	4.473	2.51	19388	0.02	5	
Sn	118	1	No Gas	4.357	4.357	2.27	37454	0.01	5	
Sb	121	1	No Gas	4.767	4.767	1.21	45114	0.01	5	
Ba	137	1	No Gas	4.614	4.614	4.91	15460	0.03	5	
Tl	205	1	No Gas	4.281	4.281	0.73	86472	0.00	5	
Tl	203	1	No Gas	4.501	4.501	1.80	36400	0.01	5	
Pb	208	1	No Gas	4.536	4.536	0.85	120175	0.00	5	
U	238	1	No Gas	4.328	4.328	1.21	114608	0.00	5	
Ca	43	2	He	469.355	469.355	10.48	833	56.32	500	
Sb	121	2	He	4.653	4.653	2.06	23685	0.02	5	
Ti	47	2	He	4.326	4.326	9.89	750	0.58	5	
Cu	63	1	No Gas	5.107	5.107	0.94	57943	0.01	5	
Se	82	1	No Gas	3.939	3.939	33.25	471	0.84	5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	817300	1.51	795954	102.68	70	120	
Ge	72	2	He	520398	1.72	503456	103.36	70	120	
Ge	72	1	No Gas	1610544	1.13	1570734	102.53	70	120	
In	115	1	No Gas	1888341	1.71	1773940	106.45	70	120	
Bi	209	1	No Gas	1651813	1.42	1535146	107.60	70	120	

Interference Check Solution A (ICS-A) Report

Sample Table

Sample Name	ICSA
Data File Name	260ICSA.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-10-01T00:31:12-05:00
Sample Type	ICSA
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.591	12.2	56013	1.3	0	ICSA Main CR1 Failed
Be	9	1	No Gas	0.001	90.8	42	6.9	0	ICSA Main CR1 Failed
V	51	2	He	1.158	3.5	11142	1.9	0	ICSA Main CR1 Failed
Cr	52	2	He	2.150	3.2	10728	3.5	0	ICSA Main CR1 Failed
Fe	56	2	He	102005.005	2.2	440547607	1.4	0	
Se	78	2	He	0.392	15.0	217	1.1	0	ICSA Main CR1 Failed
As	75	2	He	0.249	7.1	398	4.6	0	ICSA Main CR1 Failed
Ca	44	2	He	103482.954	2.0	2891315	2.0	0	
Na	23	2	He	102487.658	2.1	73119291	1.1	0	
Mg	24	2	He	101644.121	1.9	43914004	1.7	0	
K	39	2	He	101498.404	2.3	55071856	2.1	0	
Mn	55	2	He	0.418	1.7	1887	0.6	0	ICSA Main CR1 Failed
Co	59	2	He	0.097	18.3	743	17.4	0	ICSA Main CR1 Failed
Ni	60	2	He	0.199	23.1	483	15.3	0	ICSA Main CR1 Failed
Cu	63	2	He	0.124	54.3	2000	15.3	0	ICSA Main CR1 Failed
Zn	66	2	He	1.150	10.5	1543	6.4	0	ICSA Main CR1 Failed
Al	27	2	He	99185.561	0.5	26549812	0.9	0	
B	11	1	No Gas	7.274	5.2	22700	0.4	0	
Al	27	1	No Gas	97603.729	2.0	987086519	0.1	0	
Si	28	1	No Gas	22.670	27.5	377842	6.9	0	
Ag	107	1	No Gas	0.302	6.7	3437	4.7	0	ICSA Main CR1 Failed
Cd	111	1	No Gas	2.521	4.8	5291	5.0	0	
Sr	88	1	No Gas	1.158	3.6	22937	2.8	0	ICSA Main CR1 Failed
Mo	95	1	No Gas	2057.943	1.3	8081667	0.8	0	
Sn	118	1	No Gas	-0.326	-4.2	4814	3.2	0	ICSA Main CR1 Failed
Sb	121	1	No Gas	0.117	13.0	1277	12.2	0	ICSA Main CR1 Failed
Ba	137	1	No Gas	0.345	5.9	1137	4.0	0	ICSA Main CR1 Failed
Tl	205	1	No Gas	0.000	-32574.5	413	29.6	0	ICSA Main CR1 Failed
Tl	203	1	No Gas	-0.002	-437.4	180	36.4	0	ICSA Main CR1 Failed
Pb	208	1	No Gas	0.063	12.5	3217	5.3	0	ICSA Main CR1 Failed
U	238	1	No Gas	0.011	22.9	293	18.8	0	ICSA Main CR1 Failed
Ca	43	2	He	99206.379	1.3	165186	0.6	0	
Sb	121	2	He	0.101	11.2	670	7.9	0	ICSA Main CR1 Failed
Ti	47	2	He	1996.435	1.1	329801	0.4	0	
Se	82	1	No Gas	0.588	222.6	-34	-576.1	0	ICSA Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	745661	2.37	795954	93.68	70	120	
Ge	72	2	He	498263	1.41	503456	98.97	70	120	
Ge	72	1	No Gas	1559085	1.96	1570734	99.26	70	120	
In	115	1	No Gas	1715096	1.49	1773940	96.68	70	120	
Bi	209	1	No Gas	1493070	1.61	1535146	97.26	70	120	

Interference Check Solution AB (ICS-AB) Report

Sample Table

Sample Name	ICSAB
Data File Name	261ICSB.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq Date Time	2021-10-01T00:33:12-05:00
Sample Type	ICSB
Dilution	1
Comment	
ISTD Ref File Name	009CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Li	7	1	No Gas	94.613	0.052	1041315	0.11	100	94.6	180	120	ICSB Main CR1 Failed
Be	9	1	No Gas	90.834	0.852	261791	0.92	100	90.8	80	120	
V	51	2	He	96.960	0.265	395398	0.40	100	97.0	80	120	
Cr	52	2	He	95.964	0.792	443909	1.01	100	96.0	80	120	
Fe	56	2	He	111164.282	1.653	478351380	2.13	100	111164.3	80	120	
Se	78	2	He	96.889	3.199	7379	2.59	100	96.9	80	120	
As	75	2	He	95.868	0.871	72138	0.57	100	95.9	80	120	
Ca	44	2	He	114691.486	2.280	3192397	2.91	100	114691.5	80	120	
Na	23	2	He	112949.827	0.720	80274035	0.91	100	112949.8	80	120	
Mg	24	2	He	112317.963	0.437	48343629	1.09	100	112318.0	80	120	
K	39	2	He	110739.838	0.749	59844931	0.34	100	110739.8	80	120	
Mn	55	2	He	94.982	0.627	333966	1.28	100	95.0	80	120	
Co	59	2	He	91.882	1.358	625081	1.39	100	91.9	80	120	
Ni	60	2	He	93.865	0.492	155821	0.48	100	93.9	80	120	
Cu	63	2	He	92.861	0.934	400796	0.39	100	92.9	80	120	
Zn	66	2	He	96.215	0.595	87867	1.24	100	96.2	80	120	
Al	27	2	He	99844.342	0.346	26624496	0.82	100	99844.3	80	120	ICSB Main CR1 Failed
B	11	1	No Gas	469.635	2.224	778217	2.34	100	469.6	80	120	
Al	27	1	No Gas	96806.166	0.538	990055692	0.36	100	96806.2	80	120	ICSB Main CR1 Failed
Si	28	1	No Gas	480.643	1.803	2849115	1.21	100	480.6	80	120	
Ag	107	1	No Gas	92.516	3.329	959736	1.04	100	92.5	80	120	
Cd	111	1	No Gas	100.309	2.704	210151	1.93	100	100.3	80	120	
Sr	88	1	No Gas	103.128	4.007	2012359	0.81	100	103.1	80	120	
Mo	95	1	No Gas	2196.966	2.565	8640263	2.10	100	2197.0	80	120	ICSB Main CR1 Failed
Sn	118	1	No Gas	98.374	2.934	621181	0.87	100	98.4	80	120	
Sb	121	1	No Gas	95.379	1.927	879262	1.54	100	95.4	80	120	
Ba	137	1	No Gas	99.681	3.787	301702	0.28	100	99.7	80	120	
Tl	205	1	No Gas	95.567	0.680	1729406	2.03	100	95.6	80	120	
Tl	203	1	No Gas	96.451	1.976	698469	1.90	100	96.5	80	120	
Pb	208	1	No Gas	98.619	2.024	2316369	0.92	100	98.6	80	120	
U	238	1	No Gas	102.896	2.232	2452390	0.11	100	102.9	80	120	
Ca	43	2	He	109292.312	0.589	181295	0.71	100	109292.3	80	120	
Sb	121	2	He	98.431	0.656	474190	1.10	100	98.4	80	120	
Ti	47	2	He	2105.480	0.699	346518	1.34	100	2105.5	80	120	
Cu	63	1	No Gas	93.616	0.701	774948	0.77	100	93.6	80	120	
Se	82	1	No Gas	96.850	2.038	14145	2.45	100	96.9	80	120	

QC ISTD Table

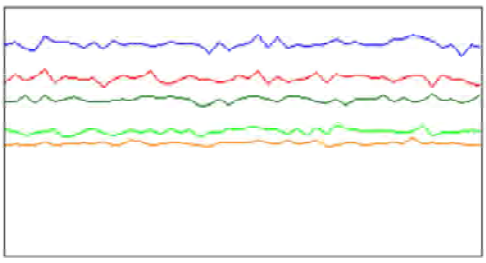
Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	736407	0.15	795954	92.52	70	120	
Ge	72	2	He	496343	0.66	503456	98.59	70	120	
Ge	72	1	No Gas	1576263	0.51	1570734	100.35	70	120	
In	115	1	No Gas	1718315	3.69	1773940	96.86	70	120	
Bi	209	1	No Gas	1487566	2.36	1535146	96.90	70	120	

Tune Check Report

Operator Name	ALSHS NoUser
Acq/Data Batch	C:\Agilent\ICPMH\1\DATA\093021A.b
Acq. Date-Time	9/30/2021 10:11:17 AM
Report Comment	---
Instrument Name	G8421A SG18523544

[No Gas]

Sensitivity



Sampling Period [sec]	0.514
Integration Time [sec]	0.1

Mass	Range	Count	Resp [cps/ug/l]	Resp (Required) [cps/ug/l]	Resp (Flag)
9	5000	3580	35798.72		
24	20000	10060	100595.12		
59	20000	17126	171261.82		
115	50000	22739	227391.90		
208	20000	12627	126266.59		

Mass	Resp Ratio	Resp Ratio (Required)	Resp Ratio (Flag)
9		-	
24		-	
59		-	
115		-	
208		-	

Mass	RSD%	RSD% (Required)	RSD% (Flag)
9	2.228	5.000	
24	2.200	5.000	
59	1.971	5.000	
115	1.804	5.000	
208	1.943	5.000	

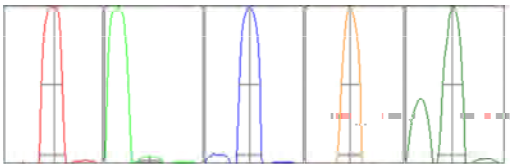
Mass	Background	Background (Required)	Background (Flag)
9	0.800		
24	0.500		
59	0.700		
115	0.400		
208	1.600		

Oxide/Doubly Charged Ratio

Oxide	156 / 140 1.257 %
Doubly Charged	70 / 140 1.099 %

Tune Check Report

Resolution/Axis



Integration Time [sec]	0.1
Acquisition Time [sec]	37.4
Y Axis	Linear

Mass	Peak Height	Axis	Axis (Required)	Axis (Flag)
9	3597.20	9.05	8.90 - 9.10	
24	10125.09	23.90	23.90 - 24.10	
59	17366.94	58.90	58.90 - 59.10	
115	24063.70	114.90	114.90 - 115.10	
208	12554.45	207.95	207.90 - 208.10	

Mass	W-50%	W-5%	W-5% (Required)	W-5% (Flag)
9	0.65	0.782		
24	0.67	0.789		
59	0.62	0.740		
115	0.56	0.730		
208	0.61	0.809		

Tune Parameters

Plasma Parameters

Plasma Mode	---	Nebulizer Gas	0.47 L/min	Dilution Gas	0.55 L/min
RF Power	1600 W	Option Gas	---	Auxiliary Gas	0.90 L/min
RF Matching	1.80 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

Lens Parameters

Extract 1	0.0 V	Omega Lens	10.0 V	Deflect	14.0 V
Extract 2	-195.0 V	Cell Entrance	-30 V	Plate Bias	-45 V
Omega Bias	-90 V	Cell Exit	-50 V		

Cell Parameters

Use Gas	No	3rd Gas Flow	---	Energy Discrimination	5.0 V
He Flow	0.0 mL/min	OctP Bias	-8.0 V		
H2 Flow	---	OctP RF	200 V		

QP Parameters

Mass Gain	133	Axis Gain	1.0004	QP Bias	-3.0 V
Mass Offset	125	Axis Offset	0.06		

Hardware Settings

Torch

Torch H	1.3 mm	Torch V	-0.6 mm

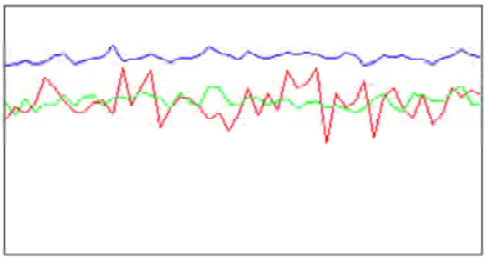
EM

Discriminator	4.4 mV	Analog HV	2600 V	Pulse HV	1337 V

[He]

Tune Check Report

Sensitivity



Sampling Period [sec]	0.306
Integration Time [sec]	0.1

Mass	Range	Count	Resp [cps/ug/l]	Resp (Required) [cps/ug/l]	Resp (Flag)
9	200	123	1227.25		
24	1000	617	6172.96		
59	10000	7946	79457.97		

Mass	Resp Ratio	Resp Ratio (Required)	Resp Ratio (Flag)
9		-	
24		-	
59		-	

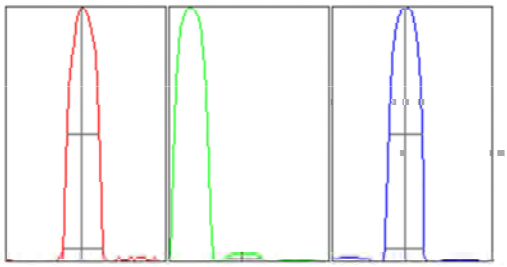
Mass	RSD%	RSD% (Required)	RSD% (Flag)
9	11.294	5.000	Fail
24	4.456	5.000	
59	2.191	5.000	

Mass	Background	Background (Required)	Background (Flag)
9	0.000		
24	0.000		
59	0.000		

Oxide/Doubly Charged Ratio

Oxide	156 / 140 0.732 %
Doubly Charged	70 / 140 0.986 %

Resolution/Axis



Integration Time [sec]	0.1
Acquisition Time [sec]	22.24
Y Axis	Linear

Mass	Peak Height	Axis	Axis (Required)	Axis (Flag)
9	137.26	8.95	8.90 - 9.10	
24	624.16	23.90	23.90 - 24.10	
59	7988.31	58.90	58.90 - 59.10	

Mass	W-50%	W-5%	W-5% (Required)	W-5% (Flag)
9	0.61	0.741		
24	0.67	0.776		

Tune Check Report

Mass	W-50%	W-5%	W-5% (Required)	W-5% (Flag)
59	0.62	0.738		

Tune Parameters

Plasma Parameters

Plasma Mode	---	Nebulizer Gas	0.47 L/min	Dilution Gas	0.55 L/min
RF Power	1600 W	Option Gas	---	Auxiliary Gas	0.90 L/min
RF Matching	1.80 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

Lens Parameters

Extract 1	0.0 V	Omega Lens	10.0 V	Deflect	0.2 V
Extract 2	-195.0 V	Cell Entrance	-40 V	Plate Bias	-60 V
Omega Bias	-80 V	Cell Exit	-60 V		

Cell Parameters

Use Gas	Yes	3rd Gas Flow	---	Energy Discrimination	3.0 V
He Flow	4.0 mL/min	OctP Bias	-18.0 V		
H2 Flow	---	OctP RF	200 V		

QP Parameters

Mass Gain	133	Axis Gain	1.0004	QP Bias	-15.0 V
Mass Offset	125	Axis Offset	0.06		

Hardware Settings

Torch

Torch H	1.3 mm	Torch V	-0.6 mm

EM

Discriminator	4.4 mV	Analog HV	2600 V	Pulse HV	1337 V

HS21090680 9056_Wetchem IC

ALS WO# HS21090680

Sequence: 092821
Last Update Operator: alshs.nouser

CD	Name	Comment	Type	Position	Dilution	Level	Instrument Method	Processing Method
	STD1		Calibration	BA1	1.00	1	Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	STD2		Calibration	BA2	1.00	2	Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	STD3		Calibration	BA3	1.00	3	Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	STD4		Calibration	BA4	1.00	4	Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	STD5		Calibration	BA5	1.00	5	Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	STD6		Calibration	BA6	1.00	6	Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	ICV		Unknown	BA7	1.00		Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	ICB		Unknown	BA8	1.00		Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	CCV		Unknown	R1	1.00		Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	CCB		Unknown	R4	1.00		Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	MBLK		Unknown	R5	1.00		Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	LCS		Unknown	R2	1.00		Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	HS21090680-01DF5		Unknown	GB2	5.00		Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	HS21090680-01DF50		Unknown	GB3	50.00		Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	CCV1		Unknown	R3	1.00		Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	CCB		Unknown	R7	1.00		Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	HS21091183-13		Unknown	GB4	1.00		Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	HS21091183-13MS		Unknown	GB5	1.00		Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	HS21091183-13MSD		Unknown	GB6	1.00		Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	CCV		Unknown	R1	1.00		Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO
	CCB		Unknown	R4	1.00		Anions Program ISO37mM 150mm short 0.	Anions Processing Method ISO

Sequence: 092821
Last Update Operator: alshs.nouser

CD	Name	me	Status	Inject Time
	STD1	5.0	Finished	9/8/2021 2:57:23 PM -05:00
	STD2	5.0	Finished	9/8/2021 3:04:47 PM -05:00
	STD3	5.0	Finished	9/8/2021 3:12:12 PM -05:00
	STD4	5.0	Finished	9/8/2021 3:19:37 PM -05:00
	STD5	5.0	Finished	9/8/2021 3:27:03 PM -05:00
	STD6	5.0	Finished	9/8/2021 3:34:27 PM -05:00
	ICV	5.0	Finished	9/8/2021 3:41:50 PM -05:00
	ICB	5.0	Finished	9/8/2021 3:56:37 PM -05:00
	CCV	5.0	Finished	9/28/2021 9:24:36 PM -05:00
	CCB	5.0	Finished	9/28/2021 9:39:24 PM -05:00
	MBLK	5.0	Finished	9/28/2021 10:01:37 PM -05:00
	LCS	5.0	Finished	9/28/2021 10:09:02 PM -05:00
	HS21090680-01DF5	5.0	Finished	9/28/2021 10:38:40 PM -05:00
	HS21090680-01DF50	5.0	Finished	9/28/2021 10:46:03 PM -05:00
	CCV1	5.0	Finished	9/28/2021 10:53:30 PM -05:00
	CCB	5.0	Finished	9/28/2021 11:08:18 PM -05:00
	HS21091183-13	5.0	Finished	9/28/2021 11:15:44 PM -05:00
	HS21091183-13MS	5.0	Finished	9/28/2021 11:23:07 PM -05:00
	HS21091183-13MSD	5.0	Finished	9/28/2021 11:30:31 PM -05:00
	CCV	5.0	Finished	9/29/2021 12:29:44 AM -05:00
	CCB	5.0	Finished	9/29/2021 12:44:32 AM -05:00

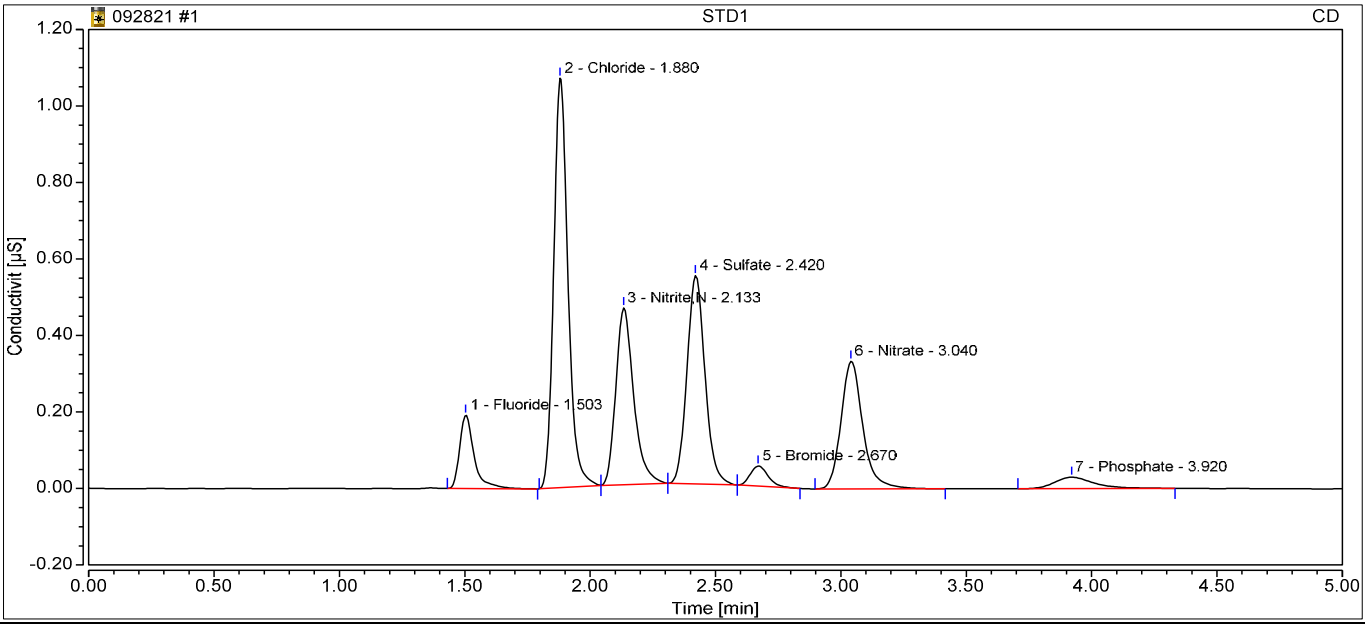
Sequence: 092821
Injection #6: STD6

Calibration

Peak No.	Peak Name	Cal.Type	Eval.Type	Number of Points	Rel.Std.Dev. %	Coeff.of Determination	C0 (Offset)	C1 (Slope)	C2 (Curve)
1	*Fluoride*	*Lin, WithOffset, 1/*	*Area*	*6*	*14.8917*	*0.99901*	*-0.0076*	*0.2037*	*0.0000*
2	Chloride	Lin, WithOffset, 1/	Area	6	6.3298	0.99978	0.0062	0.1342	0.0000
3	Nitrite,N	Quad, WithOffset,	Area	6	6.9766	0.99974	0.0102	0.2986	-0.0023
4	Sulfate	Lin, WithOffset, 1/	Area	6	6.6535	0.99977	-0.0001	0.0971	0.0000
5	Bromide	Lin, WithOffset, 1/	Area	6	8.9157	0.99963	-0.0016	0.0548	0.0000
6	Nitrate	Lin, WithOffset, 1/	Area	6	6.7024	0.99976	0.0001	0.3403	0.0000
n.a.	Chlorate	Lin, WithOffset, 1/	Area	0	n.a.	n.a.	n.a.	n.a.	n.a.
7	Phosphate	Quad, WithOffset,	Area	6	11.6511	0.99965	-0.0052	0.0981	0.0012
Maximum					**14.8917**	0.99978			
Minimum					6.3298	**0.99901**			

1 STD1			
Sample Name:	**STD1**	*Injection Volume:*	**5.00**
Vial Number:	**BA1**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/08/2021 14:57**	*Sample Weight:*	**1.0000**

Run Time:



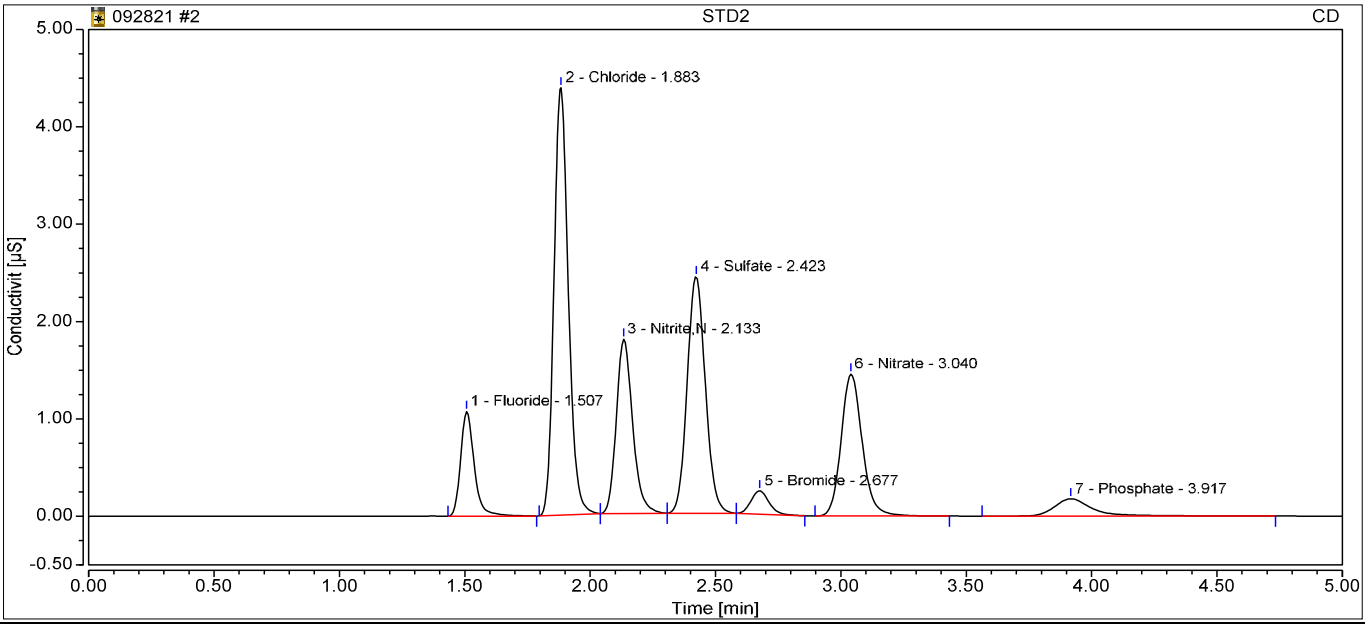
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.50	Fluoride	BMB	0.013	0.1005	0.1005	1.0000
2	1.88	Chloride	BMB	0.070	0.4785	0.4785	1.0000
3	2.13	Nitrite,N	BMB	0.038	0.0937	0.0937	1.0000
4	2.42	Sulfate	BMB	0.045	0.4684	0.4684	1.0000
5	2.67	Bromide	BMB	0.004	0.1078	0.1078	1.0000
6	3.04	Nitrate	BMB	0.034	0.0982	0.0982	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
7	3.92	Phosphate	BMB	0.005	0.1085	0.1085	1.0000
Total:			**0.000**	**0.210**		**1.46**	

2 STD2

Sample Name:	**STD2**	*Injection Volume:*	**5.00**
Vial Number:	**BA2**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/08/2021 15:04**	*Sample Weight:*	**1.0000**

Run Time:

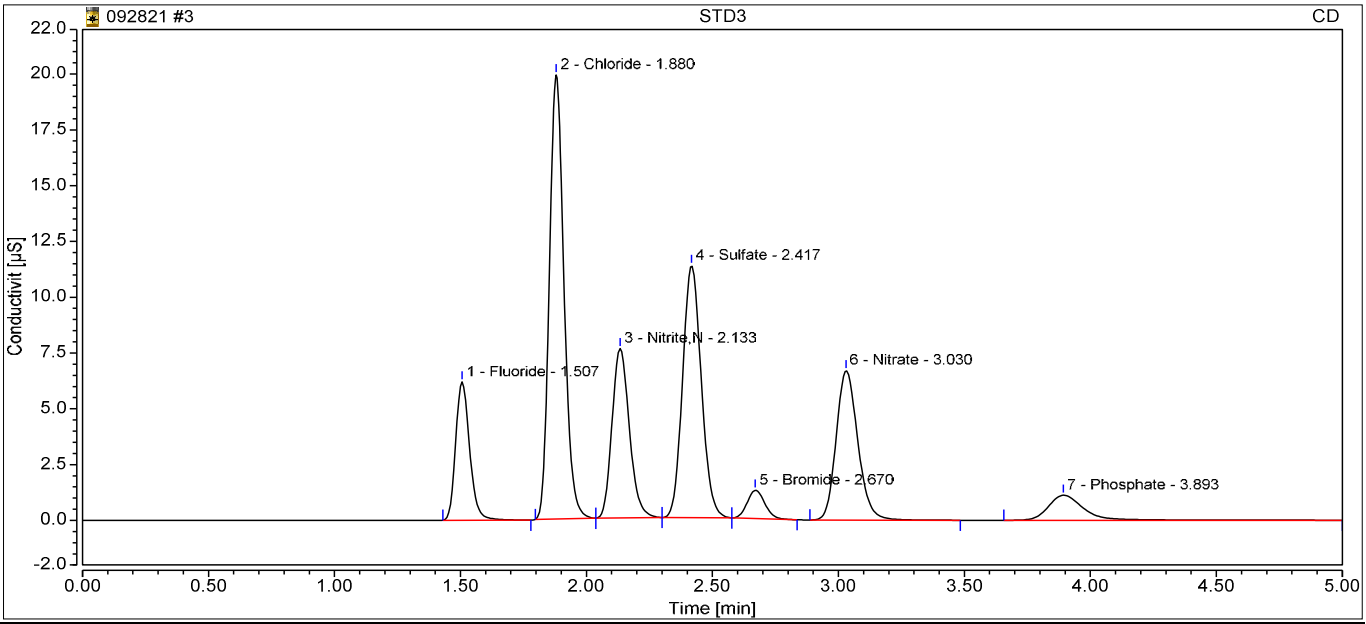


Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.068	0.3708	0.3708	1.0000
2	1.88	Chloride	BMB	0.290	2.1158	2.1158	1.0000
3	2.13	Nitrite,N	BMB	0.135	0.4190	0.4190	1.0000
4	2.42	Sulfate	BMB	0.204	2.1052	2.1052	1.0000
5	2.68	Bromide	BMB	0.020	0.3906	0.3906	1.0000
6	3.04	Nitrate	BMB	0.142	0.4172	0.4172	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
7	3.92	Phosphate	BMB	0.032	0.3731	0.3731	1.0000
Total:			**0.000**	**0.891**		**6.19**	

3 STD3			
Sample Name:	**STD3**	*Injection Volume:*	**5.00**
Vial Number:	**BA3**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/08/2021 15:12**	*Sample Weight:*	**1.0000**

Run Time:



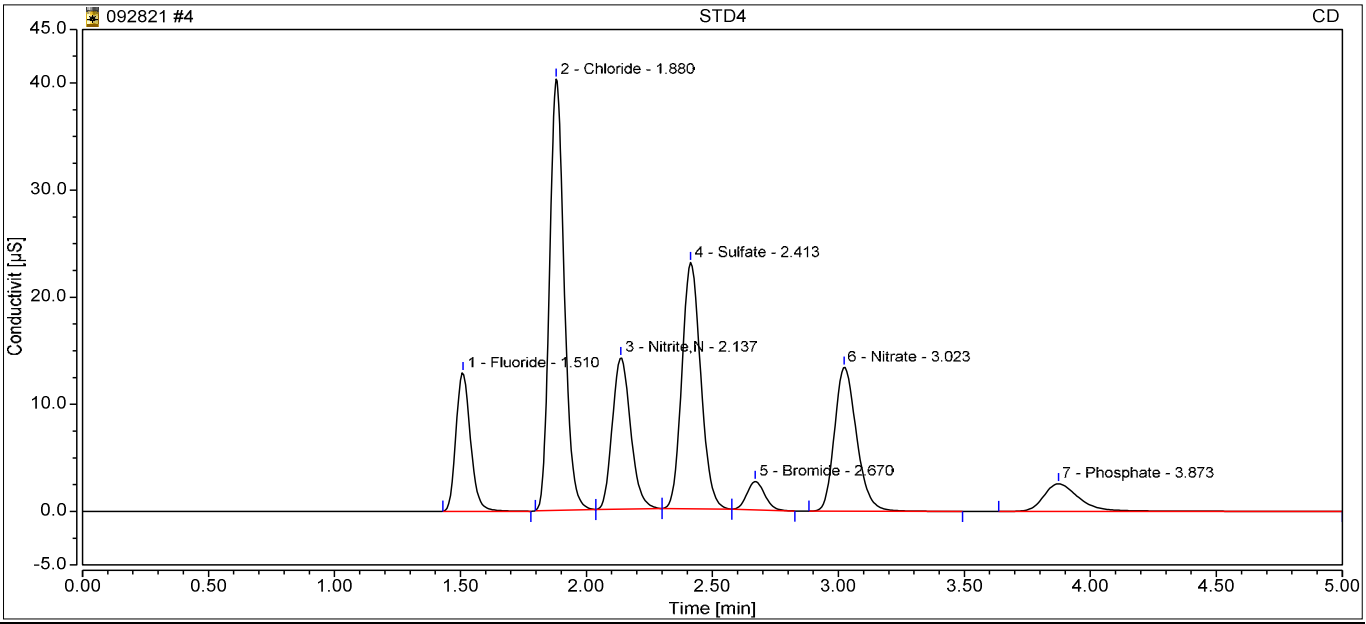
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.401	2.0041	2.0041	1.0000
2	1.88	Chloride	BMB	1.334	9.8953	9.8953	1.0000
3	2.13	Nitrite,N	BMB	0.605	2.0242	2.0242	1.0000
4	2.42	Sulfate	BMB	0.971	10.0035	10.0035	1.0000
5	2.67	Bromide	BMB	0.103	1.9116	1.9116	1.0000
6	3.03	Nitrate	BMB	0.668	1.9622	1.9622	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
7	3.89	Phosphate	BMB	0.185	1.8909	1.8909	1.0000
Total:			**0.000**	**4.266**		**29.69**	

4 STD4

Sample Name:	**STD4**	*Injection Volume:*	**5.00**
Vial Number:	**BA4**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/08/2021 15:19**	*Sample Weight:*	**1.0000**

Run Time:



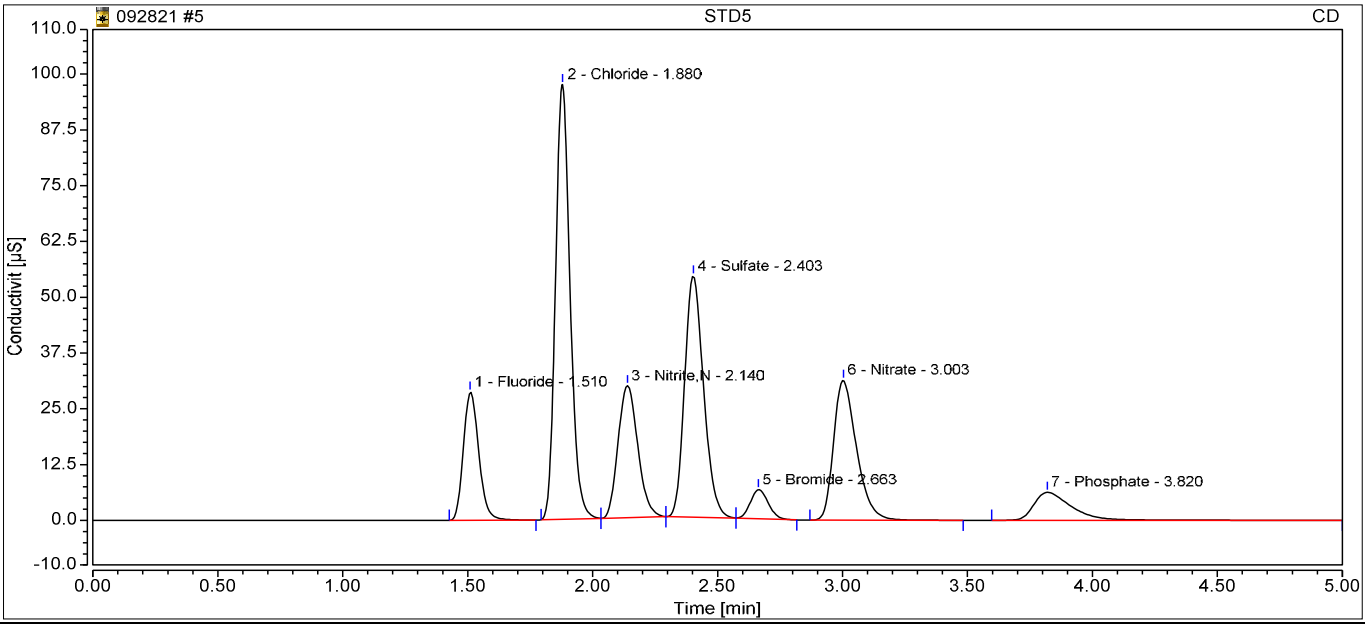
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.866	4.2910	4.2910	1.0000
2	1.88	Chloride	BMB	2.709	20.1365	20.1365	1.0000
3	2.14	Nitrite,N	BMB	1.191	4.0819	4.0819	1.0000
4	2.41	Sulfate	BMB	1.991	20.5124	20.5124	1.0000
5	2.67	Bromide	BMB	0.216	3.9679	3.9679	1.0000
6	3.02	Nitrate	BMB	1.366	4.0146	4.0146	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
7	3.87	Phosphate	BMB	0.424	4.1568	4.1568	1.0000
Total:			**0.000**	**8.762**		**61.16**	

5 STD5

Sample Name:	**STD5**	*Injection Volume:*	**5.00**
Vial Number:	**BA5**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/08/2021 15:27**	*Sample Weight:*	**1.0000**

Run Time:



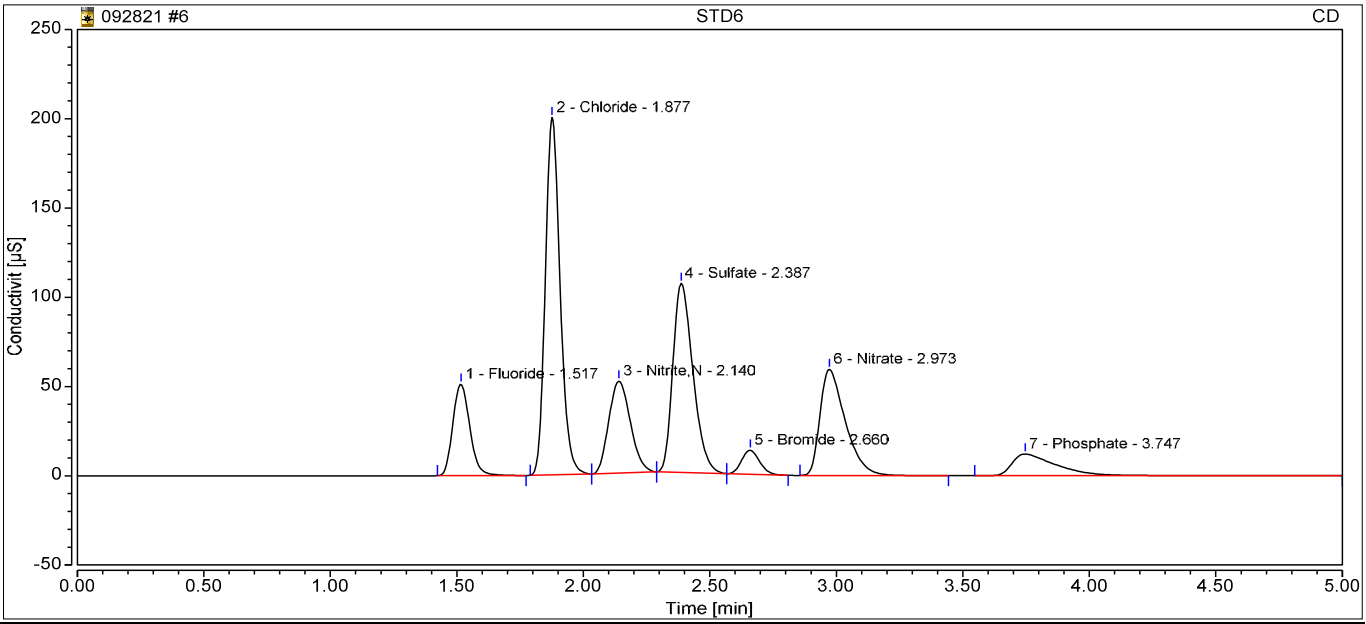
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	2.057	10.1376	10.1376	1.0000
2	1.88	Chloride	BMB	6.582	48.9987	48.9987	1.0000
3	2.14	Nitrite,N	BMB	2.709	9.7764	9.7764	1.0000
4	2.40	Sulfate	BMB	4.762	49.0593	49.0593	1.0000
5	2.66	Bromide	BMB	0.537	9.8247	9.8247	1.0000
6	3.00	Nitrate	BMB	3.333	9.7942	9.7942	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
7	3.82	Phosphate	BMB	1.095	9.9725	9.9725	1.0000
Total:			**0.000**	**21.075**		**147.56**	

6 STD6

Sample Name:	**STD6**	*Injection Volume:*	**5.00**
Vial Number:	**BA6**	*Channel:*	**CD**
Sample Type:	**Calibration Standard**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/08/2021 15:34**	*Sample Weight:*	**1.0000**

Run Time:



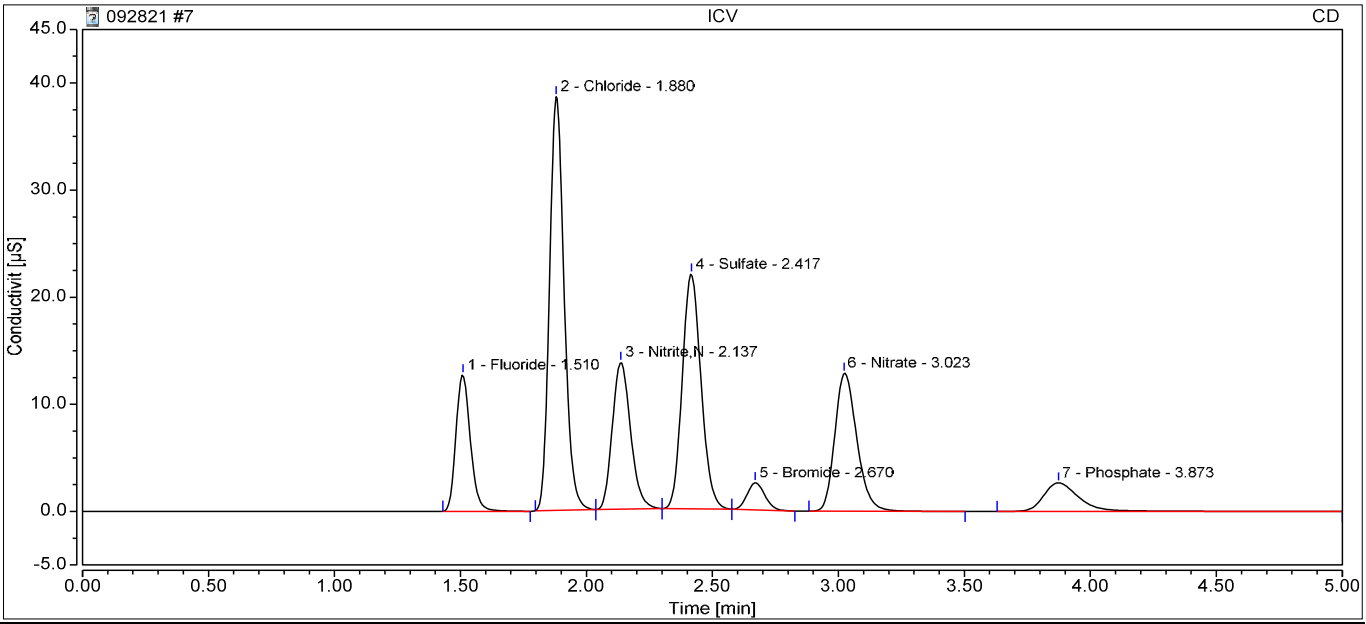
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.52	Fluoride	BMB	3.983	19.5961	19.5961	1.0000
2	1.88	Chloride	BMB	13.545	100.8752	100.8752	1.0000
3	2.14	Nitrite,N	BMB	5.085	20.1110	20.1110	1.0000
4	2.39	Sulfate	BMB	9.740	100.3513	100.3513	1.0000
5	2.66	Bromide	BMB	1.110	20.2973	20.2973	1.0000
6	2.97	Nitrate	BMB	6.879	20.2136	20.2136	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
7	3.75	Phosphate	BMB	2.448	19.9964	19.9964	1.0000
Total:			**0.000**	**42.790**		**301.44**	

7 ICV

Sample Name:	**ICV**	*Injection Volume:*	**5.00**
Vial Number:	**BA7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/08/2021 15:41**	*Sample Weight:*	**1.0000**

Run Time:



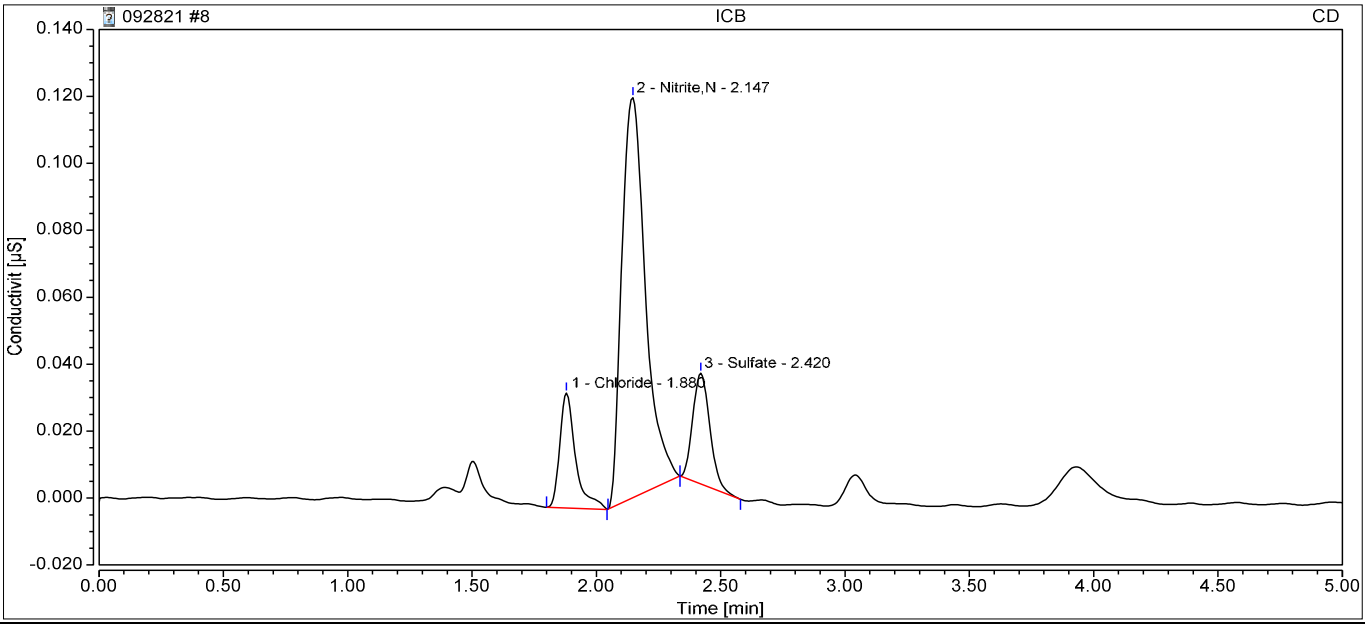
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.849	4.2062	4.2062	1.0000
2	1.88	Chloride	BMB	2.597	19.3008	19.3008	1.0000
3	2.14	Nitrite,N	BMB	1.152	3.9447	3.9447	1.0000
4	2.42	Sulfate	BMB	1.895	19.5248	19.5248	1.0000
5	2.67	Bromide	BMB	0.207	3.7999	3.7999	1.0000
6	3.02	Nitrate	BMB	1.307	3.8406	3.8406	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
7	3.87	Phosphate	BMB	0.438	4.2917	4.2917	1.0000
Total:			**0.000**	**8.445**		**58.91**	

8 ICB

Sample Name:	**ICB**	*Injection Volume:*	**5.00**
Vial Number:	**BA8**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/08/2021 15:56**	*Sample Weight:*	**1.0000**

Run Time:

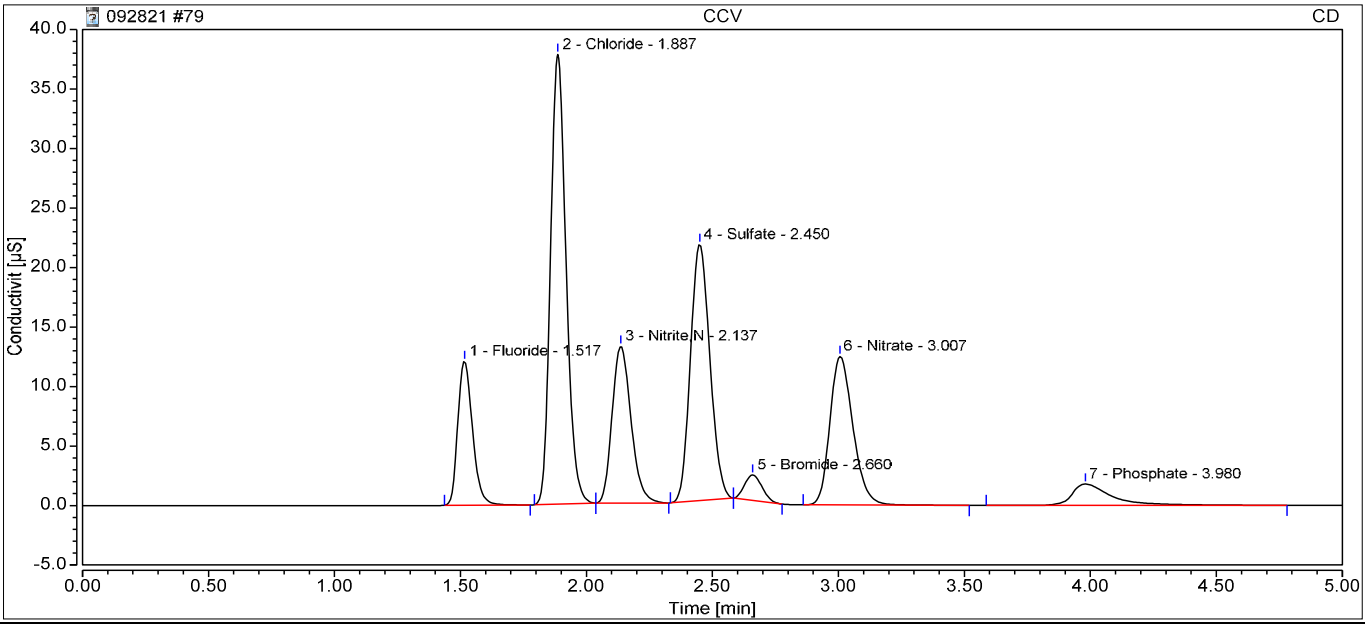


Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
1	1.88	Chloride	BMB	0.003	n.a.	n.a.	1.0000
2	2.15	Nitrite,N	BMB	0.013	0.0102	0.0102	1.0000
3	2.42	Sulfate	BMB	0.003	0.0287	0.0287	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.018**		**0.04**	

79 CCV			
Sample Name:	**CCV**	*Injection Volume:*	**5.00**
Vial Number:	**R1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/28/2021 21:24**	*Sample Weight:*	**1.0000**

Run Time:



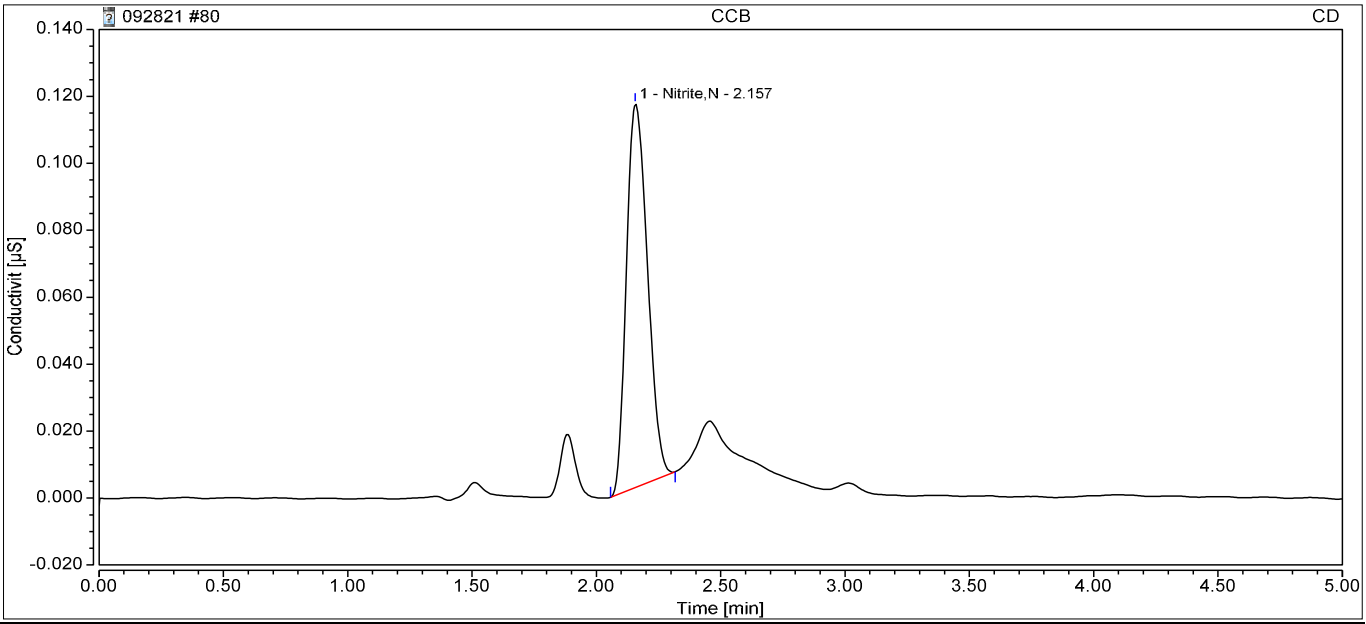
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.52	Fluoride	BMB	0.821	4.0663	4.0663	1.0000
2	1.89	Chloride	BMB	2.694	20.0289	20.0289	1.0000
3	2.14	Nitrite,N	BMB	1.149	3.9346	3.9346	1.0000
4	2.45	Sulfate	BMB	1.925	19.8354	19.8354	1.0000
5	2.66	Bromide	BMB	0.173	3.1820	3.1820	1.0000
6	3.01	Nitrate	BMB	1.325	3.8930	3.8930	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
7	3.98	Phosphate	BMB	0.329	3.2743	3.2743	1.0000
Total:			**0.000**	**8.416**		**58.21**	

80 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/28/2021 21:39**	*Sample Weight:*	**1.0000**

Run Time:



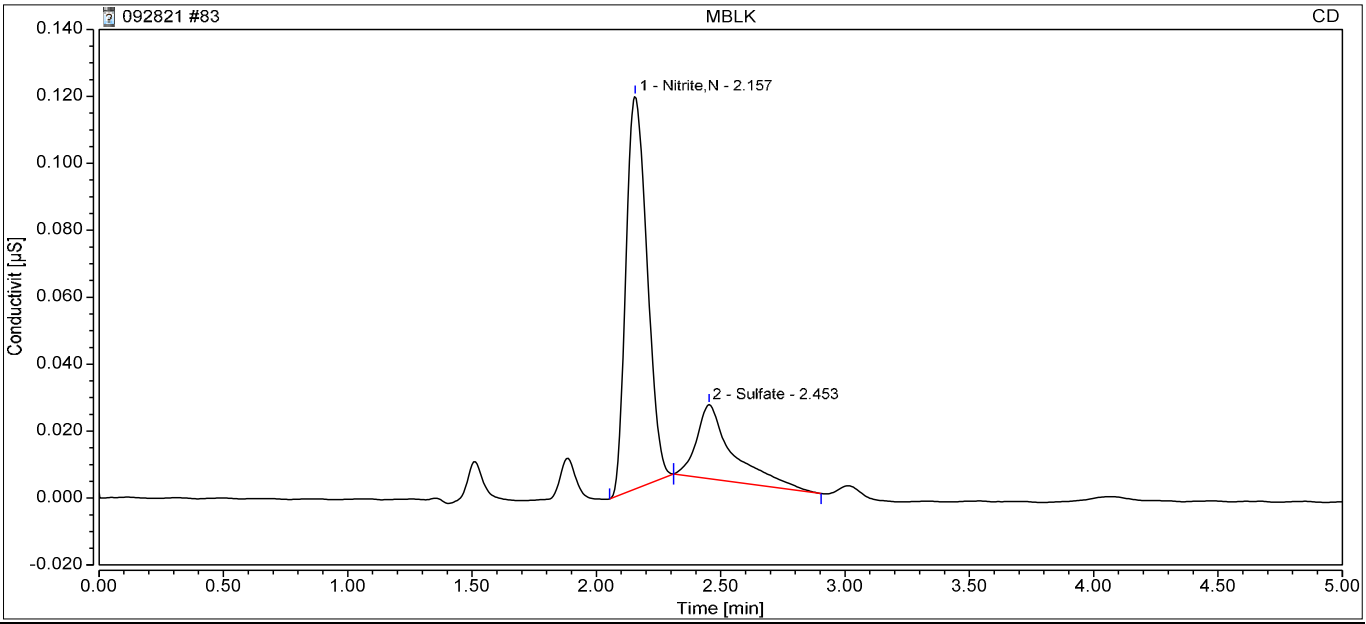
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.16	Nitrite,N	BMB	0.011	0.0037	0.0037	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.011**		**0.00**	

83 MBLK

Sample Name:	**MBLK**	*Injection Volume:*	**5.00**
Vial Number:	**R5**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/28/2021 22:01**	*Sample Weight:*	**1.0000**

Run Time:



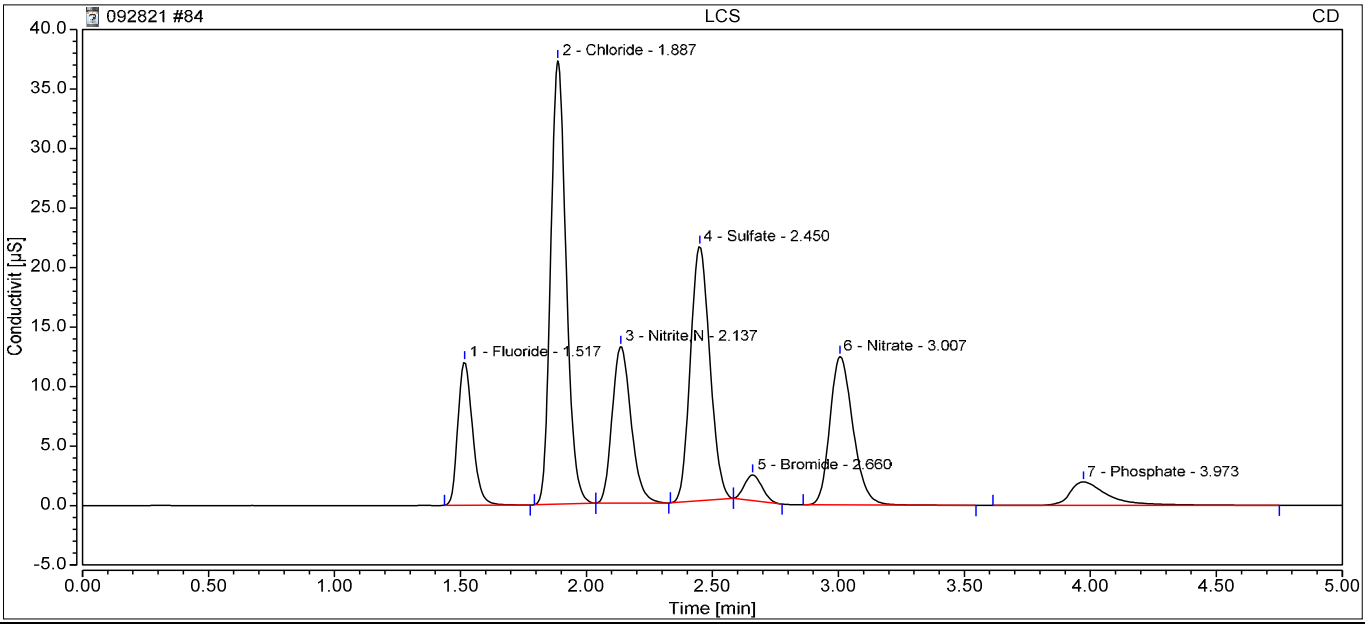
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.16	Nitrite,N	BMB	0.012	0.0047	0.0047	1.0000
2	2.45	Sulfate	BMB	0.004	0.0399	0.0399	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.015**		**0.04**	

84 LCS

Sample Name:	**LCS**	*Injection Volume:*	**5.00**
Vial Number:	**R2**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/28/2021 22:09**	*Sample Weight:*	**1.0000**

Run Time:



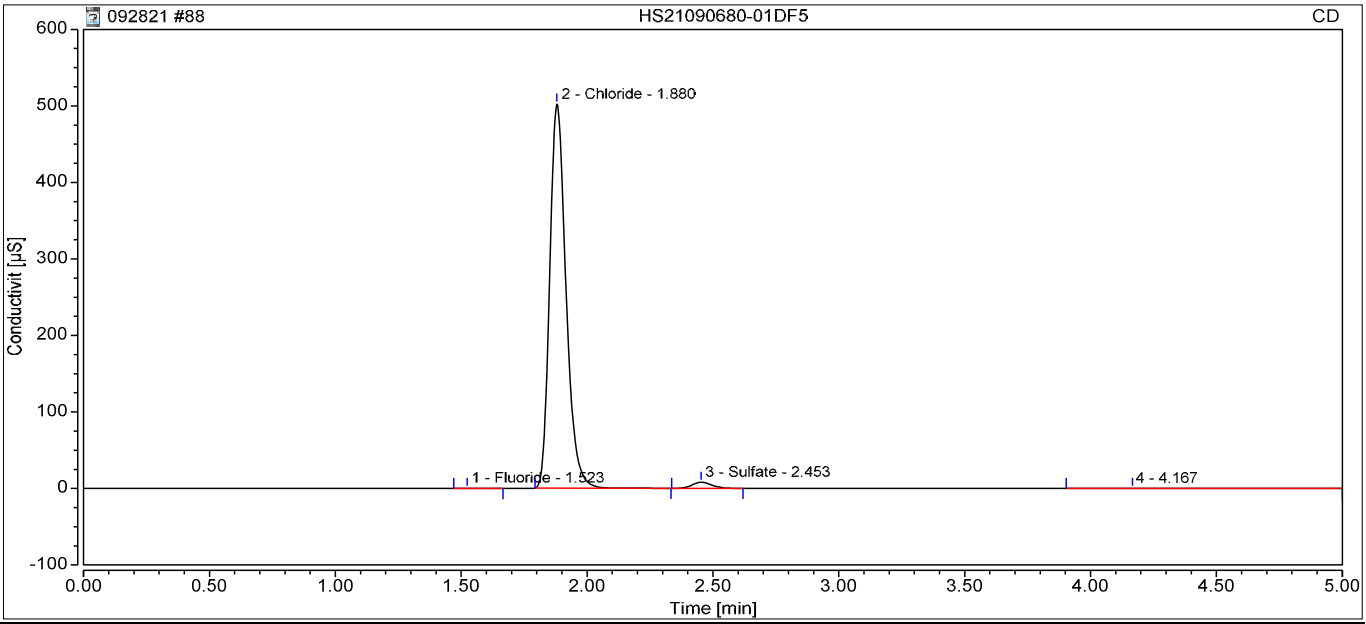
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.52	Fluoride	BMB	0.815	4.0402	4.0402	1.0000
2	1.89	Chloride	BMB	2.654	19.7289	19.7289	1.0000
3	2.14	Nitrite,N	BMB	1.145	3.9187	3.9187	1.0000
4	2.45	Sulfate	BMB	1.910	19.6832	19.6832	1.0000
5	2.66	Bromide	BMB	0.173	3.1891	3.1891	1.0000
6	3.01	Nitrate	BMB	1.325	3.8926	3.8926	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
7	3.97	Phosphate	BMB	0.348	3.4488	3.4488	1.0000
Total:			**0.000**	**8.370**		**57.90**	

88 HS21090680-01DF5

Sample Name:	**HS21090680-01DF5**	*Injection Volume:*	**5.00**
Vial Number:	**GB2**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**5.0000**
Recording Time:	**09/28/2021 22:38**	*Sample Weight:*	**1.0000**

Run Time:



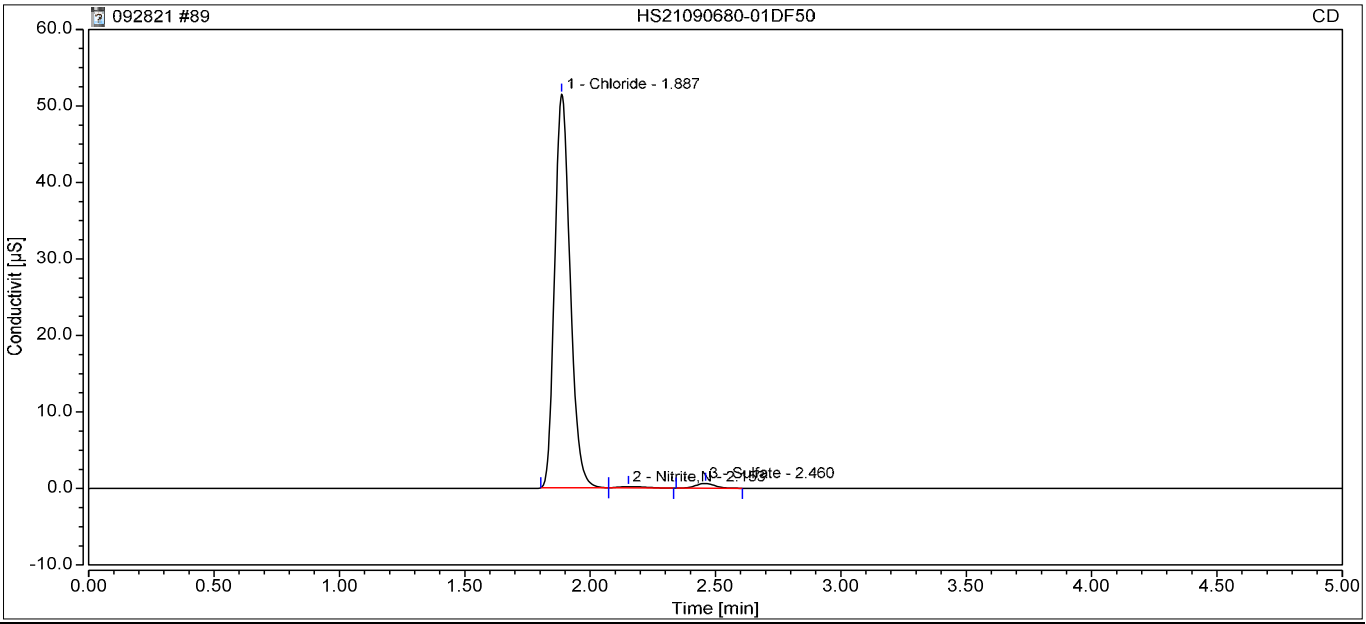
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.52	Fluoride	BMB	0.003	0.0545	0.2724	5.0000
2	1.88	Chloride	BMB	37.574	279.9080	1399.5398	5.0000
n.a.	n.a.	Nitrite,N	n.a.	n.a.	n.a.	n.a.	5.0000
3	2.45	Sulfate	BMB	0.713	7.3435	36.7177	5.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	5.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	5.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	5.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	5.0000
Total:			**0.000**	**38.290**		**1436.53**	

89 HS21090680-01DF50

Sample Name:	**HS21090680-01DF50**	*Injection Volume:*	**5.00**
Vial Number:	**GB3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**50.0000**
Recording Time:	**09/28/2021 22:46**	*Sample Weight:*	**1.0000**

Run Time:

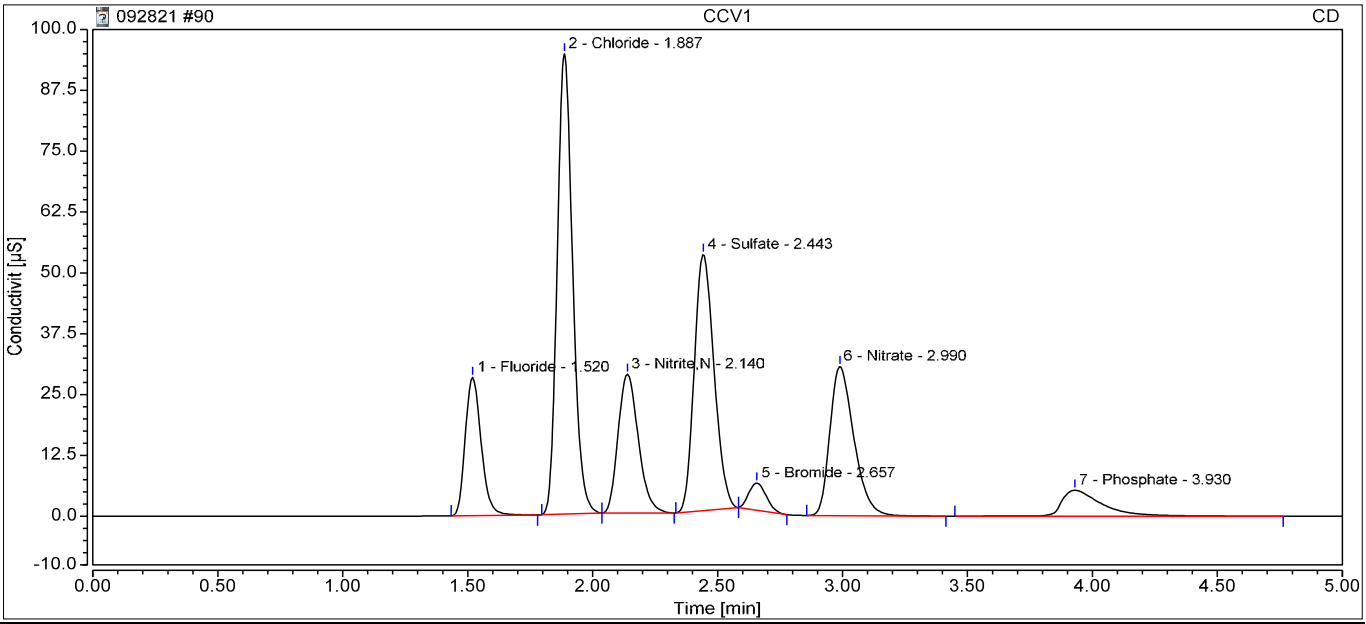


Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	50.0000
1	1.89	Chloride	BMB	3.681	27.3817	1369.0858	50.0000
2	2.15	Nitrite,N	BMB	0.020	0.0328	1.6386	50.0000
3	2.46	Sulfate	BMB	0.054	0.5597	27.9857	50.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	50.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	50.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	50.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	50.0000
Total:			**0.000**	**3.755**		**1398.71**	

90 CCV1			
Sample Name:	**CCV1**	*Injection Volume:*	**5.00**
Vial Number:	**R3**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/28/2021 22:53**	*Sample Weight:*	**1.0000**

Run Time:



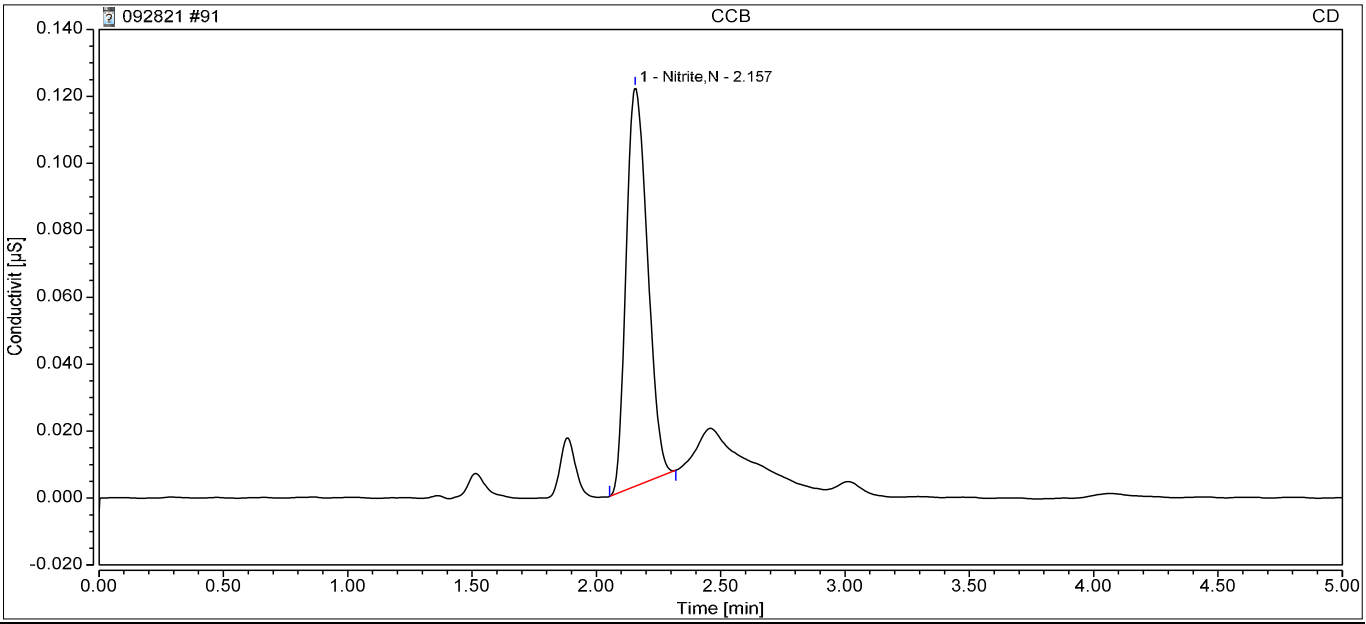
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.52	Fluoride	BMB	2.100	10.3485	10.3485	1.0000
2	1.89	Chloride	BMB	6.792	50.5617	50.5617	1.0000
3	2.14	Nitrite,N	BMB	2.674	9.6381	9.6381	1.0000
4	2.44	Sulfate	BMB	4.820	49.6599	49.6599	1.0000
5	2.66	Bromide	BMB	0.451	8.2580	8.2580	1.0000
6	2.99	Nitrate	BMB	3.411	10.0236	10.0236	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
7	3.93	Phosphate	BMB	1.000	9.1904	9.1904	1.0000
Total:			**0.000**	**21.248**		**147.68**	

91 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R7**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/28/2021 23:08**	*Sample Weight:*	**1.0000**

Run Time:



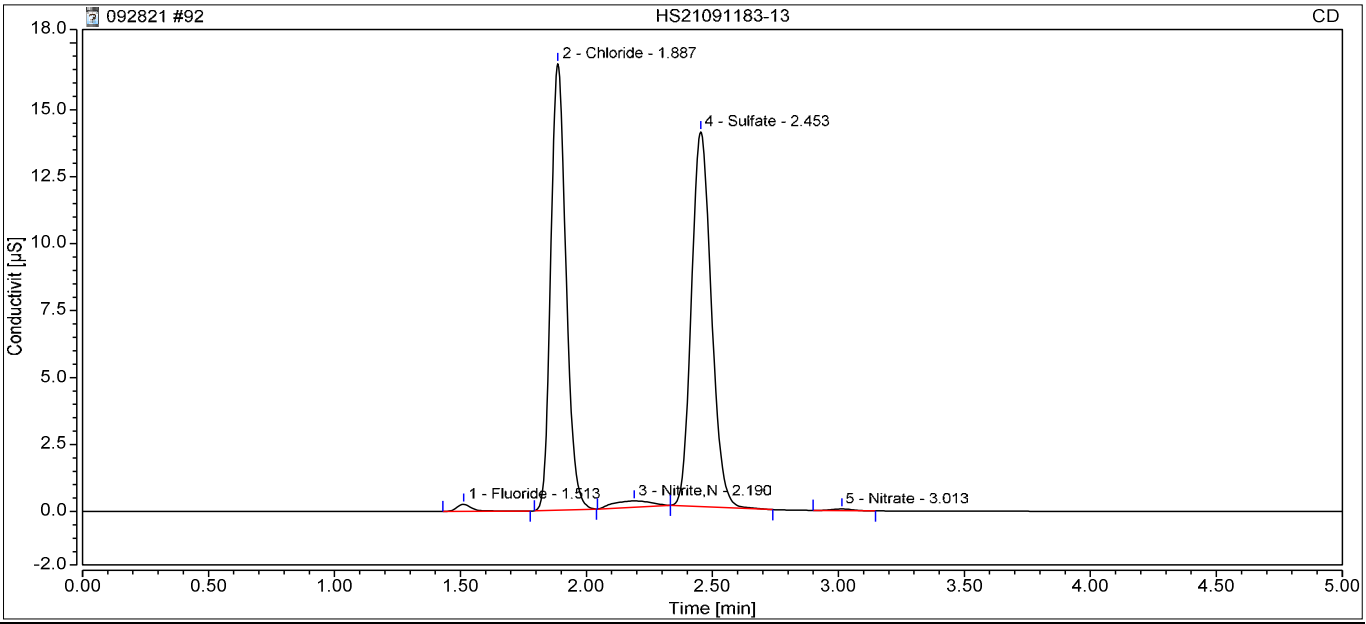
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.16	Nitrite,N	BMB	0.012	0.0057	0.0057	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.012**		**0.01**	

92 HS21091183-13

Sample Name:	**HS21091183-13**	*Injection Volume:*	**5.00**
Vial Number:	**GB4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/28/2021 23:15**	*Sample Weight:*	**1.0000**

Run Time:



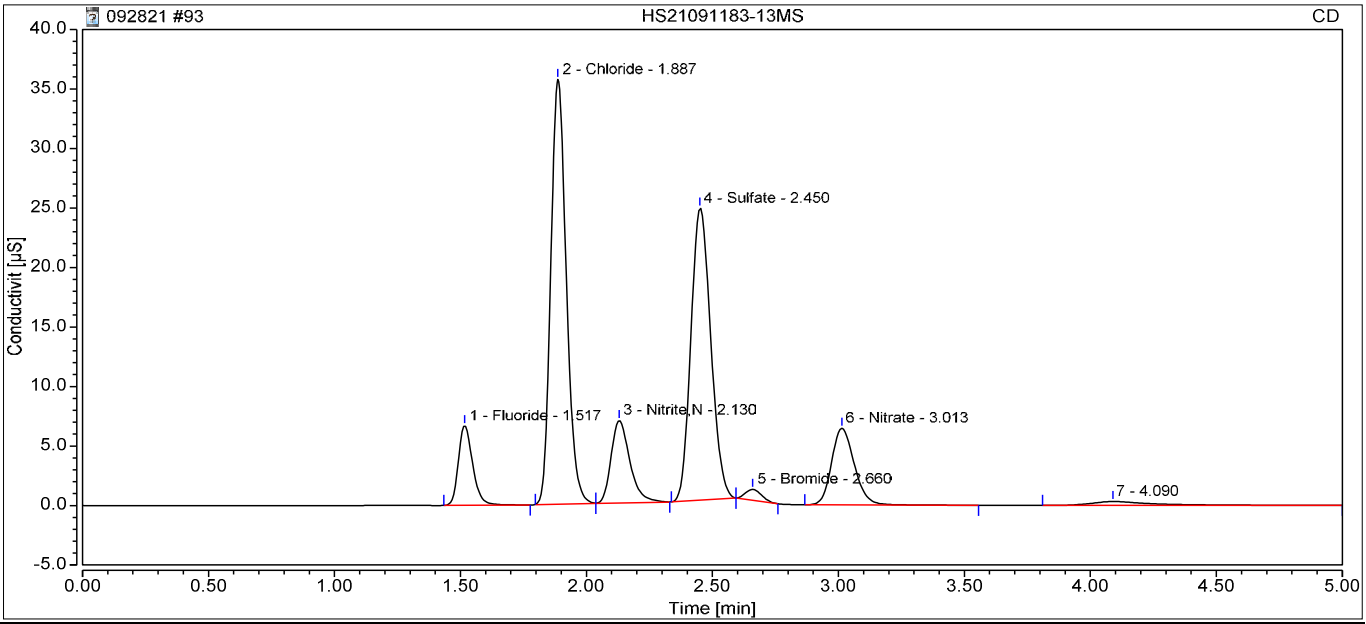
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.51	Fluoride	BMB	0.018	0.1262	0.1262	1.0000
2	1.89	Chloride	BMB	1.172	8.6843	8.6843	1.0000
3	2.19	Nitrite,N	BMB	0.042	0.1054	0.1054	1.0000
4	2.45	Sulfate	BMB	1.284	13.2271	13.2271	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
5	3.01	Nitrate	BMB	0.006	0.0169	0.0169	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**2.521**		**22.16**	

93 HS21091183-13MS

Sample Name:	**HS21091183-13MS**	*Injection Volume:*	**5.00**
Vial Number:	**GB5**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/28/2021 23:23**	*Sample Weight:*	**1.0000**

Run Time:



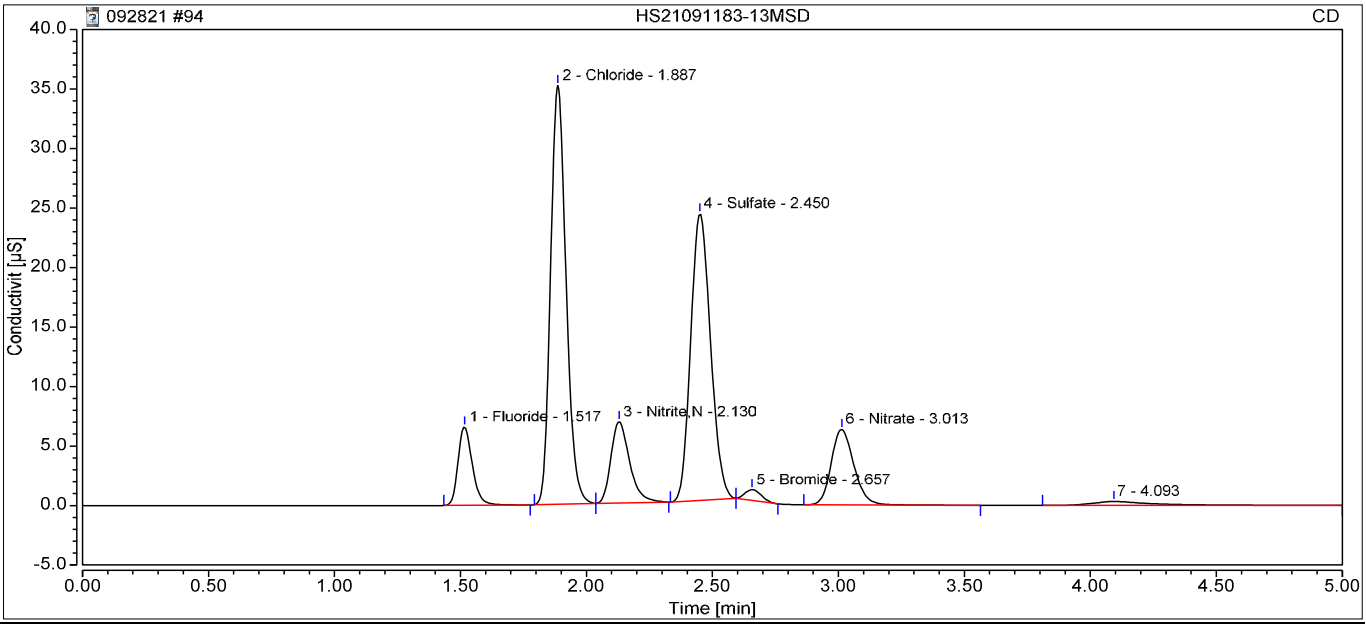
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.52	Fluoride	BMB	0.442	2.2080	2.2080	1.0000
2	1.89	Chloride	BMB	2.541	18.8862	18.8862	1.0000
3	2.13	Nitrite,N	BMB	0.596	1.9915	1.9915	1.0000
4	2.45	Sulfate	BMB	2.241	23.0857	23.0857	1.0000
5	2.66	Bromide	BMB	0.069	1.2891	1.2891	1.0000
6	3.01	Nitrate	BMB	0.672	1.9753	1.9753	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**6.561**		**49.44**	

94 HS21091183-13MSD

Sample Name:	**HS21091183-13MSD**	*Injection Volume:*	**5.00**
Vial Number:	**GB6**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/28/2021 23:30**	*Sample Weight:*	**1.0000**

Run Time:



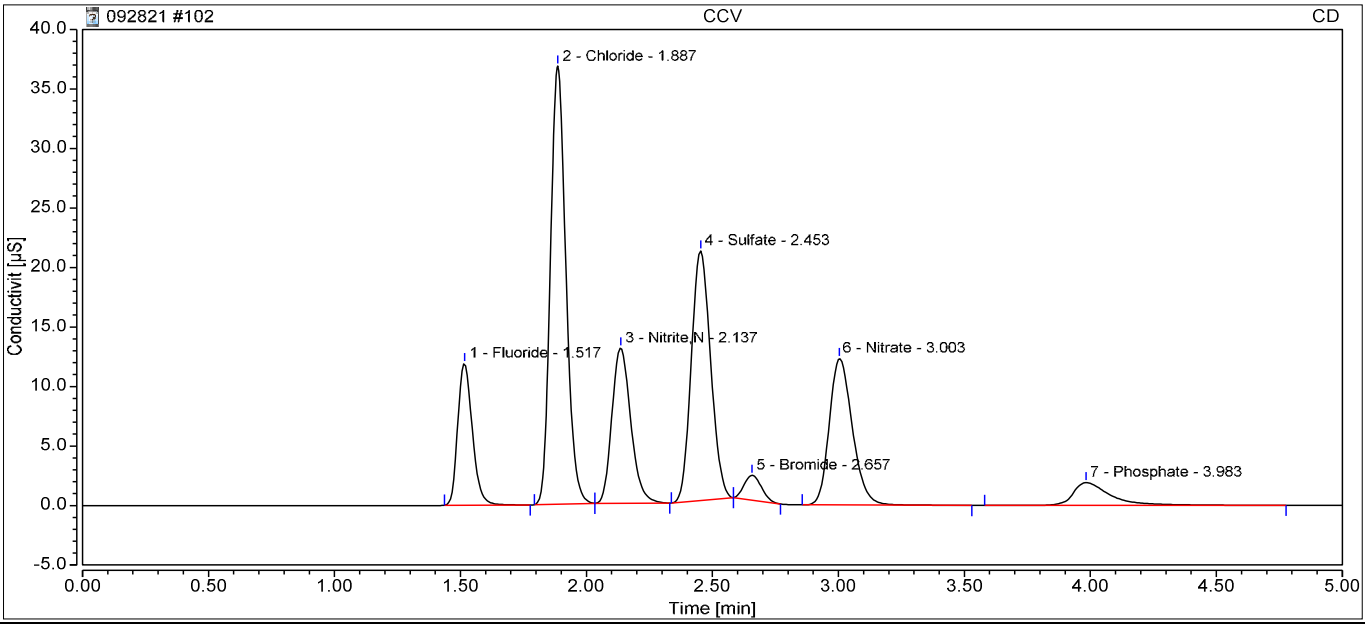
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.52	Fluoride	BMB	0.436	2.1763	2.1763	1.0000
2	1.89	Chloride	BMB	2.504	18.6078	18.6078	1.0000
3	2.13	Nitrite,N	BMB	0.587	1.9600	1.9600	1.0000
4	2.45	Sulfate	BMB	2.192	22.5872	22.5872	1.0000
5	2.66	Bromide	BMB	0.068	1.2689	1.2689	1.0000
6	3.01	Nitrate	BMB	0.662	1.9441	1.9441	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**6.448**		**48.54**	

102 CCV

Sample Name:	**CCV**	*Injection Volume:*	**5.00**
Vial Number:	**R1**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/29/2021 00:29**	*Sample Weight:*	**1.0000**

Run Time:



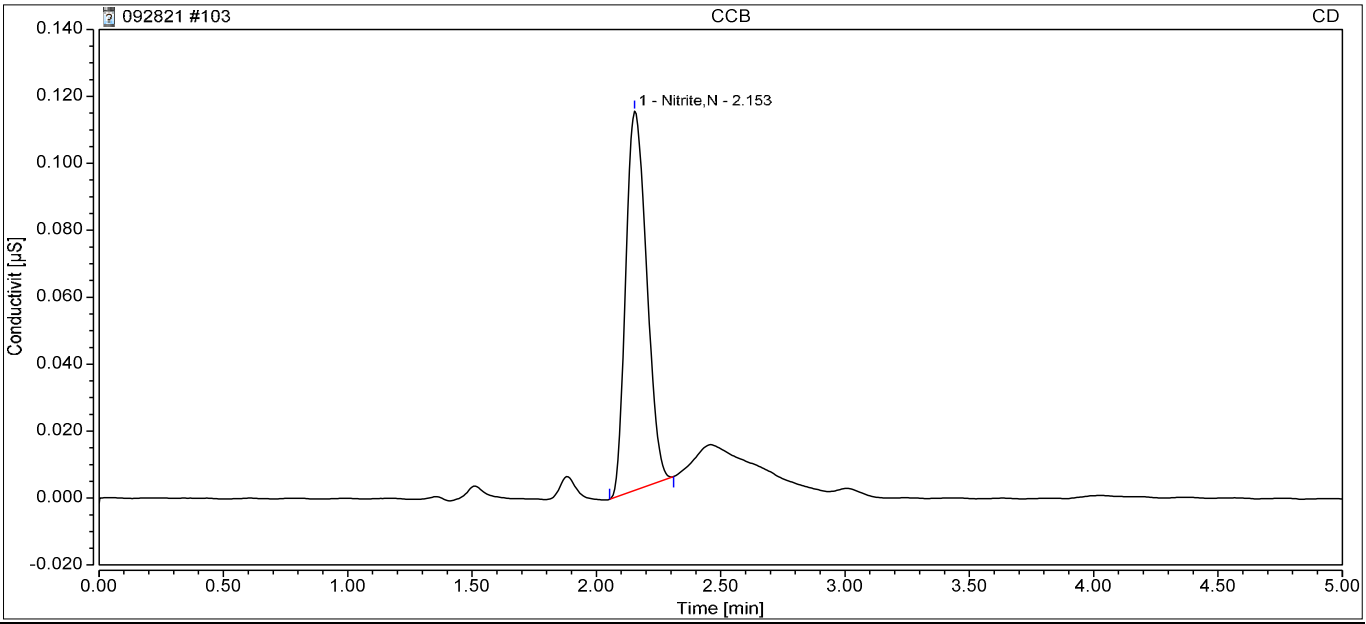
Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
1	1.52	Fluoride	BMB	0.801	3.9701	3.9701	1.0000
2	1.89	Chloride	BMB	2.619	19.4647	19.4647	1.0000
3	2.14	Nitrite,N	BMB	1.134	3.8784	3.8784	1.0000
4	2.45	Sulfate	BMB	1.865	19.2148	19.2148	1.0000
5	2.66	Bromide	BMB	0.166	3.0643	3.0643	1.0000
6	3.00	Nitrate	BMB	1.306	3.8385	3.8385	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
7	3.98	Phosphate	BMB	0.333	3.3132	3.3132	1.0000
Total:			**0.000**	**8.224**		**56.74**	

103 CCB

Sample Name:	**CCB**	*Injection Volume:*	**5.00**
Vial Number:	**R4**	*Channel:*	**CD**
Sample Type:	**Unknown**	*Wavelength:*	**210**
Control Program:	**Anions Program ISO37mM 150mm short 0.4**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Anions Processing Method ISO**	*Dilution Factor:*	**1.0000**
Recording Time:	**09/29/2021 00:44**	*Sample Weight:*	**1.0000**

Run Time:



Integration Results

No.	Retention min	Peak Name	Peak Type	Area µS*min	Amount ppm	Concentration ppm	Dilution
n.a.	n.a.	Fluoride	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	1.0000
1	2.15	Nitrite,N	BMB	0.011	0.0029	0.0029	1.0000
n.a.	n.a.	Sulfate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Bromide	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Nitrate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Chlorate	n.a.	n.a.	n.a.	n.a.	1.0000
n.a.	n.a.	Phosphate	n.a.	n.a.	n.a.	n.a.	1.0000
Total:			**0.000**	**0.011**		**0.00**	

HS21090680 Wet Chemistry Raw Data

ALS WO# HS21090680

HS2109068O

ALS Laboratory Group — **COD Analysis** — **Logbook# 31713**

Method: HACH 8000 / EPA 410.4		Date: 9-21-21		Low COD–420nm		Analyst:	
SOP #: HS-WC025		Time: 16:00		High COD–620nm		TH	
WO # / SX #	Bottle #	Init Sample Vol (mL)	Prep Final Volume (mL)	Dilution Factor	Init Conc. (mg/L)	Final Conc. (mg/L)	Comments
CCV100		2	2	1	50		
MBLK		↓	↓	↓	0		
LCS					97		
HS2109065O-01					16		
-01MS					65		
-01MSD					64		
-02					15		
HS2109039O-01					83		
HS2109040S-01					98		
HS2109041I-01		↓	↓	↓	41		
CCV100		2	2	1	94		
HS2109041З-02					28		
HS2109041Ч-02					25		
HS2109067Z-01					38		
HS2109071Ч-01					45		
HS2109045Б-01					85		
HS2109048З-01					82		
HS2109092O-01					57		
HS2109063Б-01		↓	↓	↓	91		
CCV100		2	2	1	50		
HS2109066O-01					26		
-02					25		
-03					20		
-04					33		
-05					25		
HS2109067Ъ-01					13		
HS2109068O-01		↓	↓	↓	21		
CCV100		2	2	1	94		

LCS ID #	CCV1 ID#	CCV2 ID#	Vial Lot#:	Reviewed By:
317.190.611	317.190.612	317.190.613	310.060.4421	MD
LCS Prep Date:	**Prep Date:**	**Prep Date:**	**MS ID:**	***Pipette ID:***
07-28-21	→	→	310.060.4302	WC9, COD
Digestor ID:	***Digestor Temp (°C):***	**Date/Time In Digestor:**	**Date/Time Off Digestor:**	**Batch ID:**
DRB 200	150°	9-21-21 13:00	9-21-21 15:00	391782

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O&G HS21090680-01

092721O&GW

Method: O&G, HEM by EPA 1664A (SOP HS-WC036, Current Revision)

Analyst:	KAH
Review By:	
Batch ID:	
LCS/MS Spike ID:	3100604621
Hexane ID:	3100604605
Filter Lot:	3100603513
Silica Gel:	

Methanol ID:	3100604120
1:1 HCl ID:	309116109
Na2SO4 Cartridge ID:	3100603917
Thermo HotBlock Setting (°C):	40
pH Paper ID:	3100604603
Pipette ID	TDS

Temp Ranges (°C)
Pan Drying: 105-115
Hex Evap: 68-72
HotBlock: 35-50

	grams	mg	Accept.
Init 2.0 mg wt (1.8mg to 2.2mg required):	0.0020	2.0	Yes
Init 1000 mg wt (995mg to 1005mg required):	1.0000	1000	Yes
Final 2.0 mg wt (1.8mg to 2.2mg required):	0.0020	2.0	Yes
Final 1000 mg wt (995mg to 1005mg required):	1.0000	1000	Yes

Pan	Temp Deg C	Actual Deg C	Date	Time
Pan 1st In:	105-115	105	09/27/2021	8:40AM
Pan 1st Out:	105-115	105	09/27/2021	9:40AM
Pan 2nd In:	105-115	105	09/27/2021	10:20AM
Pan 2nd Out:	105-115	105	09/27/2021	10:40AM
Pan 3rd In:	105-115			
Pan 3rd Out:	105-115			
Oven ID:	WC Oven 4			
Balance ID:	WC Balance-03			

O&G	Temp Deg C	Actual Deg C	Date	Time
O&G 1st In:	68-72	68	09/27/2021	2:15PM
O&G 1st Out:	68-72	68	09/27/2021	2:25PM
O&G 2nd In:	68-72	68	09/27/2021	2:50PM
O&G 2nd Out:	68-72	68	09/27/2021	3:00PM
O&G 3rd In:	68-72			
O&G 3rd Out:	68-72			
Oven ID:	WC Oven 1A			
Balance ID:	WC Balance-03			

$$\text{O \& G (HEM), mg/L} = \frac{\text{Weight (HEM, mg)}}{\text{Volume (Sample Extracted, L)}}$$

Dish ID	Work Order #	Bottle Number	SGT	Sample Type	pH Check	1st Dry Pan Wt (g)	2nd Dry Pan Wt (g)	3rd Dry Pan Wt (g)	Passes Difference Criteria (Change is <0.0005 g)	Passes % Weight Criteria (Change is <4%)	Pan Weight (g)	Sample Vol (mL)	70 deg C O&G 1st dry Wt (g)	70 deg C O&G 2nd dry Wt (g)	70 deg C O&G 3rd dry Wt (g)	Passes Difference Criteria (Change is <0.0005 g)	Passes % Weight Criteria (Change is <4%)	O&G Weight (g)	O&G (mg/L)
1	WBLKW-0927121	1 of 1		MBLK	<2	6.2969	6.2970		Yes	Yes	6.2970	1000	6.2970	6.2970		Yes	Yes	0.0000	0.0
2	WLCSW-092721	1 of 1		LCS	<2	6.4036	6.4038		Yes	Yes	6.4038	1000	6.4399	6.4398		Yes	Yes	0.0360	36.0
3	WLCSDW-092721	1 of 1		LCSD	<2	6.3808	6.3806		Yes	Yes	6.3806	1000	6.4156	6.4156		Yes	Yes	0.0350	35.0
4	HS21090660-01MS	2 of 2		MS	<2	6.3882	6.3882		Yes	Yes	6.3882	1000	6.4255	6.4254		Yes	Yes	0.0372	37.2
5	HS21091000-01	1 of 1		Sample	<2	6.3870	6.3871		Yes	Yes	6.3871	245	6.4684	6.4685		Yes	Yes	0.0814	332.2
6	HS21091000-02	1 of 1		Sample	<2	6.2847	6.2847		Yes	Yes	6.2847	244	6.3412	6.3412		Yes	Yes	0.0565	231.6
7	HS21091251-01	1 of 2		Sample	<2	6.3509	6.3508		Yes	Yes	6.3508	249	6.3516	6.3515		Yes	Yes	0.0007	2.8
8	HS21091251-02	1 of 2		Sample	<2	6.4013	6.4014		Yes	Yes	6.4014	248	6.4027	6.4026		Yes	Yes	0.0012	4.8
9	HS21090636-02	1 of 2		Sample	<2	6.3398	6.3398		Yes	Yes	6.3398	250	6.3407	6.3405		Yes	Yes	0.0007	2.8
10	HS21090650-01	1 of 2		Sample	<2	6.4241	6.4241		Yes	Yes	6.4241	242	6.4252	6.4250		Yes	Yes	0.0009	3.7
11	HS21090650-02	1 of 2		Sample	<2	6.2958	6.2958		Yes	Yes	6.2958	243	6.2966	6.2963		Yes	Yes	0.0005	2.1
12	HS21090660-01	1 of 2		Sample	<2	6.3076	6.3073		Yes	Yes	6.3073	244	6.3079	6.3080		Yes	Yes	0.0007	2.9
13	HS21090660-02	1 of 2		Sample	<2	6.4048	6.4048		Yes	Yes	6.4048	242	6.4050	6.4050		Yes	Yes	0.0002	0.8
14	HS21090660-03	1 of 2		Sample	<2	6.2966	6.2965		Yes	Yes	6.2965	243	6.2968	6.2968		Yes	Yes	0.0003	1.2
15	HS21090660-04	1 of 2		Sample	<2	6.2951	6.2950		Yes	Yes	6.2950	238	6.2957	6.2956		Yes	Yes	0.0006	2.5
16	HS21090660-05	1 of 2		Sample	<2	6.3329	6.3329		Yes	Yes	6.3329	242	6.3337	6.3337		Yes	Yes	0.0008	3.3
17	HS21090676-01	1 of 2		Sample	<2	6.3930	6.3931		Yes	Yes	6.3931	240	6.3930	6.3930		Yes	Yes	-0.0001	-0.4
18	HS21090676-02	1 of 2		Sample	<2	6.3066	6.3066		Yes	Yes	6.3066	241	6.3691	6.3691		Yes	Yes	0.0625	259.3
19	HS21090676-03	1 of 2		Sample	<2	6.3500	6.3502		Yes	Yes	6.3502	239	6.3992	6.3991		Yes	Yes	0.0489	204.6
20	HS21090678-01	1 of 1		Sample	<2	6.4084	6.4084		Yes	Yes	6.4084	1000	6.4084	6.4084		Yes	Yes	0.0000	0.0
21	HS21090680-01	1 of 1		Sample	<2	6.3766	6.3767		Yes	Yes	6.3767	1000	6.3781	6.3781		Yes	Yes	0.0014	1.4
22	HS21090687-01	1 of 2		Sample	<2	6.3611	6.3611		Yes	Yes	6.3611	244	6.3622	6.3619		Yes	Yes	0.0008	3.3
23	HS21090689-01	1 of 2		Sample	<2	6.3544	6.3544		Yes	Yes	6.3544	243	6.3549	6.3549		Yes	Yes	0.0005	2.1
24	HS21090698-01	1 of 2		Sample	<2	6.3811	6.3809		Yes	Yes	6.3809	242	6.3815	6.3815		Yes	Yes	0.0006	2.5

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LABORATORY REPORT

October 8, 2021

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Suite 129
Lakewood, CO 80228

RE: LHAAP-GWTP / NW01312.0150

Dear Marcia:

Enclosed are the results of the samples submitted to our laboratory on September 17, 2021. For your reference, these analyses have been assigned our service request number P2104927.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 3:34 pm, Oct 08, 2021

Sue Anderson
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: Bhate Environmental Associates, Inc. Service Request No: P2104927
Project: LHAAP-GWTP / NW01312.0150

CASE NARRATIVE

The samples were received intact under chain of custody on September 17, 2021 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

The analysis for sample LH18/24-Air_091321_GWTP (P2104927-003) was cancelled because the canister was leaking and could not pass the leak check.

Volatile Organic Compound Analysis

The samples were analyzed for volatile organic compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. This procedure is described in laboratory SOP VOA-TO15. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the NELAP or DoD-ELAP accreditation.

The containers were cleaned, prior to sampling, down to the method reporting limit (MRL) reported for this project. For projects requiring DoD QSM 5.3 compliance canisters were cleaned to <1/2 the MRL. Please note, projects which require reporting below the MRL could have results between the MRL and method detection limit (MDL) that are biased high.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-008
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272019-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Bhate Environmental Associates, Inc. Service Request: P2104927

Project ID: LHAAP-GWTP / NW01312.0150

Date Received: 9/17/2021

Time Received: 10:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pf1 (psig)	TO-15 - VOC Cans
LH18/24-Air_091321_Stripper	P2104927-001	Air	9/13/2021	14:00	AS01358	-0.68	3.72	X
LH18/24-Air_091321_Stripper_a	P2104927-002	Air	9/13/2021	14:00	AC02042	-0.20	3.62	X
LH18/24-Air_091321_Downwind_North	P2104927-004	Air	9/14/2021	06:30	AC01220	0.31	3.77	X

01070655

Air - Chain of Custody Record & Analytical Service Request

Page 1 of 1

ALS
2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard

ALS Project No. R1404927

Company Name & Address (Reporting Information)	BHATE ENVIRONMENTAL 405 UNION BLVD., STE 129 LAKEWOOD, CO. 80228
Project Manager	[redacted] Kim NEMMERS
Phone	205- 918-4000
Fax	
Email Address for Result Reporting	molive@bhate.com
Project Name	LHAAP-GWTP
Project Number	NW01312.0150
P.O. # / Billing Information	
Sampler (Print & Sign)	Scott Beggs-NGP Scott Beggs
ALS Contact:	

Analysis Method

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Canister ID (Bar code # - AC, SC, etc.)	Flow Controller ID (Bar code # - FC #)	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	Sample Volume	TO-15		Comments e.g. Actual Preservative or specific instructions
1 LH18/24-AIR_091321_STRIPPER		9/13/21	1400	AS01358		-30	0	6L	X		
2 LH18/24-AIR_091321_STRIPPER_a		9/13/21	1400	AC02042		-30	0	6L	X		
3 LH18/24-AIR_091321_GWTP		9/13/21	1430	AC01763	FCR00506	-29	0	6L	X		
4 LH18/24-AIR_091321_DOWNWIND_NORTH		9/14/21	0630	AC01220	FCR00445	-29	0	6L	X		

5 of 119

Report Tier Levels - please select

Tier I - Results (Default if not specified) _____ Tier III (Results + QC & Calibration Summaries) _____
Tier II (Results + QC Summaries) _____ Tier IV (Data Validation Package) 10% Surcharge _____

EDD required Yes / No
Type: _____ Units: _____

Chain of Custody Seal: (Circle)
INTACT BROKEN ABSENT

Project Requirements (MRLs, QAPP)

	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature) Scott Beggs	9/14/21	0700			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date: 9-17-21	Time: 1030

Cooler / Blank Temperature ____ °C

ALS Environmental

Sample Acceptance Check Form

Client: Bhate Environmental Associates, Inc. Work order: P2104927

Project: LHAAP-GWTP / NW01312.0150

Sample(s) received on: 9/17/21 Date opened: 9/17/21 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
8	Were **custody seals** on outside of cooler/Box/Container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2104927-001.01	6.0 L Silonite Can					
P2104927-002.01	6.0 L Ambient Can					
P2104927-003.01	6.0 L Ambient Can					
P2104927-004.01	6.0 L Ambient Can					

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Bhate Environmental Associates, Inc.**
Client Sample ID: **LH18/24-Air_091321_Stripper** ALS Project ID: P2104927
Client Project ID: **LHAAP-GWTP / NW01312.0150** ALS Sample ID: P2104927-001

Test Code: EPA TO-15 Date Collected: 9/13/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 9/17/21
Analyst: Wida Ang Date Analyzed: 9/30/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.15 Liter(s)
Test Notes: 0.030 Liter(s)
Container ID: AS01358

Initial Pressure (psig): -0.68 Final Pressure (psig): 3.72

Canister Dilution Factor: 1.31

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	4.5	ND	2.6	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	4.6	ND	0.94	
74-87-3	Chloromethane	ND	4.5	ND	2.2	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	4.7	ND	0.67	
75-01-4	Vinyl Chloride	**5.1**	4.5	**2.0**	1.8	
106-99-0	1,3-Butadiene	ND	4.5	ND	2.1	
74-83-9	Bromomethane	ND	4.5	ND	1.1	
75-00-3	Chloroethane	ND	4.5	ND	1.7	
64-17-5	Ethanol	ND	44	ND	23	
75-05-8	Acetonitrile	ND	8.7	ND	5.2	
107-02-8	Acrolein	ND	8.7	ND	3.8	
67-64-1	Acetone	ND	45	ND	19	
75-69-4	Trichlorofluoromethane (CFC 11)	ND	4.5	ND	0.81	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	8.7	ND	3.6	
107-13-1	Acrylonitrile	ND	8.7	ND	4.0	
75-35-4	1,1-Dichloroethene	**7.4**	4.7	**1.9**	1.2	
75-09-2	Methylene Chloride	ND	4.5	ND	1.3	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	4.6	ND	1.5	
76-13-1	Trichlorotrifluoroethane (CFC 113)	**420**	4.7	**54**	0.62	
75-15-0	Carbon Disulfide	ND	9.6	ND	3.1	
156-60-5	trans-1,2-Dichloroethene	ND	4.6	ND	1.2	
75-34-3	1,1-Dichloroethane	ND	4.6	ND	1.1	
1634-04-4	Methyl tert-Butyl Ether	ND	4.6	ND	1.3	
108-05-4	Vinyl Acetate	ND	44	ND	12	
78-93-3	2-Butanone (MEK)	**11**	8.7	**3.7**	3.0	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Bhate Environmental Associates, Inc.**
Client Sample ID: **LH18/24-Air_091321_Stripper** ALS Project ID: P2104927
Client Project ID: **LHAAP-GWTP / NW01312.0150** ALS Sample ID: P2104927-001

Test Code: EPA TO-15 Date Collected: 9/13/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 9/17/21
Analyst: Wida Ang Date Analyzed: 9/30/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.15 Liter(s)
Test Notes: 0.030 Liter(s)
Container ID: AS01358

Initial Pressure (psig): -0.68 Final Pressure (psig): 3.72

Canister Dilution Factor: 1.31

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	**390**	4.5	**98**	1.1	
141-78-6	Ethyl Acetate	ND	18	ND	5.1	
110-54-3	n-Hexane	ND	4.6	ND	1.3	
67-66-3	Chloroform	ND	4.7	ND	0.97	
109-99-9	Tetrahydrofuran (THF)	ND	8.7	ND	3.0	
107-06-2	1,2-Dichloroethane	**15**	4.6	**3.8**	1.1	
71-55-6	1,1,1-Trichloroethane	ND	4.5	ND	0.83	
71-43-2	Benzene	ND	4.4	ND	1.4	
56-23-5	Carbon Tetrachloride	ND	4.4	ND	0.69	
110-82-7	Cyclohexane	ND	9.6	ND	2.8	
78-87-5	1,2-Dichloropropane	ND	4.4	ND	0.95	
75-27-4	Bromodichloromethane	ND	4.6	ND	0.69	
79-01-6	Trichloroethene	**1,500**	23	**280**	4.2	**D**
123-91-1	1,4-Dioxane	ND	4.5	ND	1.3	
80-62-6	Methyl Methacrylate	ND	9.6	ND	2.3	
142-82-5	n-Heptane	ND	4.6	ND	1.1	
10061-01-5	cis-1,3-Dichloropropene	ND	4.4	ND	0.96	
108-10-1	4-Methyl-2-pentanone	ND	9.6	ND	2.3	
10061-02-6	trans-1,3-Dichloropropene	ND	4.5	ND	0.98	
79-00-5	1,1,2-Trichloroethane	ND	4.5	ND	0.83	
108-88-3	Toluene	ND	4.5	ND	1.2	
591-78-6	2-Hexanone	ND	9.6	ND	2.3	
124-48-1	Dibromochloromethane	ND	4.6	ND	0.54	
106-93-4	1,2-Dibromoethane	ND	4.5	ND	0.59	
123-86-4	n-Butyl Acetate	ND	9.6	ND	2.0	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
D = The reported result is from a dilution.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Bhate Environmental Associates, Inc.**
Client Sample ID: **LH18/24-Air_091321_Stripper** ALS Project ID: P2104927
Client Project ID: **LHAAP-GWTP / NW01312.0150** ALS Sample ID: P2104927-001

Test Code: EPA TO-15 Date Collected: 9/13/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 9/17/21
Analyst: Wida Ang Date Analyzed: 9/30/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.15 Liter(s)
Test Notes: 0.030 Liter(s)
Container ID: AS01358

Initial Pressure (psig): -0.68 Final Pressure (psig): 3.72

Canister Dilution Factor: 1.31

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	4.6	ND	0.99	
127-18-4	Tetrachloroethene	**6.2**	4.5	**0.91**	0.67	
108-90-7	Chlorobenzene	ND	4.5	ND	0.99	
100-41-4	Ethylbenzene	ND	4.5	ND	1.0	
179601-23-1	m,p-Xylenes	ND	9.6	ND	2.2	
75-25-2	Bromoform	ND	4.5	ND	0.44	
100-42-5	Styrene	ND	4.4	ND	1.0	
95-47-6	o-Xylene	ND	4.5	ND	1.0	
111-84-2	n-Nonane	ND	4.5	ND	0.87	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.5	ND	0.66	
98-82-8	Cumene	ND	4.5	ND	0.92	
80-56-8	alpha-Pinene	ND	4.7	ND	0.85	
103-65-1	n-Propylbenzene	ND	4.6	ND	0.94	
622-96-8	4-Ethyltoluene	ND	4.6	ND	0.94	
108-67-8	1,3,5-Trimethylbenzene	ND	4.5	ND	0.92	
95-63-6	1,2,4-Trimethylbenzene	ND	4.5	ND	0.92	
100-44-7	Benzyl Chloride	ND	9.6	ND	1.9	
541-73-1	1,3-Dichlorobenzene	ND	4.5	ND	0.76	
106-46-7	1,4-Dichlorobenzene	ND	4.5	ND	0.76	
95-50-1	1,2-Dichlorobenzene	ND	4.6	ND	0.77	
5989-27-5	d-Limonene	ND	4.4	ND	0.78	
96-12-8	1,2-Dibromo-3-chloropropane	ND	8.7	ND	0.90	
120-82-1	1,2,4-Trichlorobenzene	ND	9.6	ND	1.3	
91-20-3	Naphthalene	ND	4.5	ND	0.87	
87-68-3	Hexachlorobutadiene	ND	4.5	ND	0.43	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Bhate Environmental Associates, Inc.**
Client Sample ID: **LH18/24-Air_091321_Stripper_a** ALS Project ID: P2104927
Client Project ID: **LHAAP-GWTP / NW01312.0150** ALS Sample ID: P2104927-002

Test Code: EPA TO-15 Date Collected: 9/13/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 9/17/21
Analyst: Wida Ang Date Analyzed: 9/30/21
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.15 Liter(s)
Test Notes: 0.030 Liter(s)
Container ID: AC02042

Initial Pressure (psig): -0.20 Final Pressure (psig): 3.62

Canister Dilution Factor: 1.26

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	4.4	ND	2.5	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	4.5	ND	0.90	
74-87-3	Chloromethane	ND	4.3	ND	2.1	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	4.5	ND	0.65	
75-01-4	Vinyl Chloride	**5.3**	4.4	**2.1**	1.7	
106-99-0	1,3-Butadiene	ND	4.4	ND	2.0	
74-83-9	Bromomethane	ND	4.3	ND	1.1	
75-00-3	Chloroethane	ND	4.3	ND	1.6	
64-17-5	Ethanol	ND	42	ND	22	
75-05-8	Acetonitrile	ND	8.4	ND	5.0	
107-02-8	Acrolein	ND	8.4	ND	3.7	
67-64-1	Acetone	ND	44	ND	18	
75-69-4	Trichlorofluoromethane (CFC 11)	ND	4.4	ND	0.78	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	8.4	ND	3.4	
107-13-1	Acrylonitrile	ND	8.4	ND	3.9	
75-35-4	1,1-Dichloroethene	**7.8**	4.5	**2.0**	1.1	
75-09-2	Methylene Chloride	ND	4.4	ND	1.3	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	4.5	ND	1.4	
76-13-1	Trichlorotrifluoroethane (CFC 113)	**400**	4.5	**52**	0.59	
75-15-0	Carbon Disulfide	ND	9.2	ND	3.0	
156-60-5	trans-1,2-Dichloroethene	ND	4.5	ND	1.1	
75-34-3	1,1-Dichloroethane	ND	4.5	ND	1.1	
1634-04-4	Methyl tert-Butyl Ether	ND	4.5	ND	1.2	
108-05-4	Vinyl Acetate	ND	42	ND	12	
78-93-3	2-Butanone (MEK)	**14**	8.4	**4.7**	2.8	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Bhate Environmental Associates, Inc.**
Client Sample ID: **LH18/24-Air_091321_Stripper_a** ALS Project ID: P2104927
Client Project ID: **LHAAP-GWTP / NW01312.0150** ALS Sample ID: P2104927-002

Test Code: EPA TO-15 Date Collected: 9/13/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 9/17/21
Analyst: Wida Ang Date Analyzed: 9/30/21
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.15 Liter(s)
Test Notes: 0.030 Liter(s)
Container ID: AC02042

Initial Pressure (psig): -0.20 Final Pressure (psig): 3.62

Canister Dilution Factor: 1.26

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	**390**	4.4	**97**	1.1	
141-78-6	Ethyl Acetate	ND	18	ND	4.9	
110-54-3	n-Hexane	ND	4.5	ND	1.3	
67-66-3	Chloroform	ND	4.5	ND	0.93	
109-99-9	Tetrahydrofuran (THF)	ND	8.4	ND	2.8	
107-06-2	1,2-Dichloroethane	**15**	4.5	**3.7**	1.1	
71-55-6	1,1,1-Trichloroethane	ND	4.4	ND	0.80	
71-43-2	Benzene	ND	4.2	ND	1.3	
56-23-5	Carbon Tetrachloride	ND	4.2	ND	0.67	
110-82-7	Cyclohexane	ND	9.2	ND	2.7	
78-87-5	1,2-Dichloropropane	ND	4.2	ND	0.91	
75-27-4	Bromodichloromethane	ND	4.5	ND	0.66	
79-01-6	Trichloroethene	**1,500**	22	**280**	4.1	**D**
123-91-1	1,4-Dioxane	ND	4.4	ND	1.2	
80-62-6	Methyl Methacrylate	ND	9.2	ND	2.3	
142-82-5	n-Heptane	ND	4.5	ND	1.1	
10061-01-5	cis-1,3-Dichloropropene	ND	4.2	ND	0.93	
108-10-1	4-Methyl-2-pentanone	ND	9.2	ND	2.3	
10061-02-6	trans-1,3-Dichloropropene	ND	4.3	ND	0.94	
79-00-5	1,1,2-Trichloroethane	ND	4.4	ND	0.80	
108-88-3	Toluene	ND	4.4	ND	1.2	
591-78-6	2-Hexanone	ND	9.2	ND	2.3	
124-48-1	Dibromochloromethane	ND	4.5	ND	0.52	
106-93-4	1,2-Dibromoethane	ND	4.4	ND	0.57	
123-86-4	n-Butyl Acetate	ND	9.2	ND	1.9	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
D = The reported result is from a dilution.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Bhate Environmental Associates, Inc.**
Client Sample ID: **LH18/24-Air_091321_Stripper_a** ALS Project ID: P2104927
Client Project ID: **LHAAP-GWTP / NW01312.0150** ALS Sample ID: P2104927-002

Test Code: EPA TO-15 Date Collected: 9/13/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 9/17/21
Analyst: Wida Ang Date Analyzed: 9/30/21
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.15 Liter(s)
Test Notes: 0.030 Liter(s)
Container ID: AC02042

Initial Pressure (psig): -0.20 Final Pressure (psig): 3.62

Canister Dilution Factor: 1.26

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	4.5	ND	0.95	
127-18-4	Tetrachloroethene	**5.9**	4.4	**0.87**	0.64	
108-90-7	Chlorobenzene	ND	4.4	ND	0.95	
100-41-4	Ethylbenzene	ND	4.4	ND	1.0	
179601-23-1	m,p-Xylenes	ND	9.2	ND	2.1	
75-25-2	Bromoform	ND	4.4	ND	0.42	
100-42-5	Styrene	ND	4.2	ND	0.99	
95-47-6	o-Xylene	ND	4.4	ND	1.0	
111-84-2	n-Nonane	ND	4.4	ND	0.83	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.4	ND	0.64	
98-82-8	Cumene	ND	4.4	ND	0.89	
80-56-8	alpha-Pinene	ND	4.5	ND	0.81	
103-65-1	n-Propylbenzene	ND	4.5	ND	0.91	
622-96-8	4-Ethyltoluene	ND	4.5	ND	0.91	
108-67-8	1,3,5-Trimethylbenzene	ND	4.4	ND	0.89	
95-63-6	1,2,4-Trimethylbenzene	ND	4.4	ND	0.89	
100-44-7	Benzyl Chloride	ND	9.2	ND	1.8	
541-73-1	1,3-Dichlorobenzene	ND	4.4	ND	0.73	
106-46-7	1,4-Dichlorobenzene	ND	4.4	ND	0.73	
95-50-1	1,2-Dichlorobenzene	ND	4.5	ND	0.74	
5989-27-5	d-Limonene	ND	4.2	ND	0.75	
96-12-8	1,2-Dibromo-3-chloropropane	ND	8.4	ND	0.87	
120-82-1	1,2,4-Trichlorobenzene	ND	9.2	ND	1.2	
91-20-3	Naphthalene	ND	4.4	ND	0.83	
87-68-3	Hexachlorobutadiene	ND	4.4	ND	0.41	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Bhate Environmental Associates, Inc.**
Client Sample ID: **LH18/24-Air_091321_Downwind_North** ALS Project ID: P2104927
Client Project ID: **LHAAP-GWTP / NW01312.0150** ALS Sample ID: P2104927-004

Test Code: EPA TO-15 Date Collected: 9/14/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 9/17/21
Analyst: Wida Ang Date Analyzed: 9/30/21
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AC01220

Initial Pressure (psig): 0.31 Final Pressure (psig): 3.77

Canister Dilution Factor: 1.23

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	0.64	ND	0.37	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.0**	0.65	**0.40**	0.13	
74-87-3	Chloromethane	ND	0.63	ND	0.30	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.66	ND	0.095	
75-01-4	Vinyl Chloride	ND	0.64	ND	0.25	
106-99-0	1,3-Butadiene	ND	0.64	ND	0.29	
74-83-9	Bromomethane	ND	0.63	ND	0.16	
75-00-3	Chloroethane	ND	0.63	ND	0.24	
64-17-5	Ethanol	ND	6.2	ND	3.3	
75-05-8	Acetonitrile	ND	1.2	ND	0.73	
107-02-8	Acrolein	ND	1.2	ND	0.54	
67-64-1	Acetone	**24**	6.4	**10**	2.7	
75-69-4	Trichlorofluoromethane (CFC 11)	**1.1**	0.64	**0.20**	0.11	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.2	ND	0.50	
107-13-1	Acrylonitrile	ND	1.2	ND	0.57	
75-35-4	1,1-Dichloroethene	ND	0.66	ND	0.17	
75-09-2	Methylene Chloride	ND	0.64	ND	0.18	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.65	ND	0.21	
76-13-1	Trichlorotrifluoroethane (CFC 113)	**1.4**	0.66	**0.18**	0.087	
75-15-0	Carbon Disulfide	ND	1.4	ND	0.43	
156-60-5	trans-1,2-Dichloroethene	ND	0.65	ND	0.16	
75-34-3	1,1-Dichloroethane	ND	0.65	ND	0.16	
1634-04-4	Methyl tert-Butyl Ether	ND	0.65	ND	0.18	
108-05-4	Vinyl Acetate	ND	6.2	ND	1.7	
78-93-3	2-Butanone (MEK)	**4.4**	1.2	**1.5**	0.42	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Bhate Environmental Associates, Inc.**
Client Sample ID: **LH18/24-Air_091321_Downwind_North** ALS Project ID: P2104927
Client Project ID: **LHAAP-GWTP / NW01312.0150** ALS Sample ID: P2104927-004

Test Code: EPA TO-15 Date Collected: 9/14/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 9/17/21
Analyst: Wida Ang Date Analyzed: 9/30/21
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AC01220

Initial Pressure (psig): 0.31 Final Pressure (psig): 3.77

Canister Dilution Factor: 1.23

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.64	ND	0.16	
141-78-6	Ethyl Acetate	ND	2.6	ND	0.72	
110-54-3	n-Hexane	**1.2**	0.65	**0.34**	0.19	
67-66-3	Chloroform	ND	0.66	ND	0.14	
109-99-9	Tetrahydrofuran (THF)	**1.7**	1.2	**0.59**	0.42	
107-06-2	1,2-Dichloroethane	ND	0.65	ND	0.16	
71-55-6	1,1,1-Trichloroethane	ND	0.64	ND	0.12	
71-43-2	Benzene	ND	0.62	ND	0.19	
56-23-5	Carbon Tetrachloride	ND	0.62	ND	0.098	
110-82-7	Cyclohexane	ND	1.4	ND	0.39	
78-87-5	1,2-Dichloropropane	ND	0.62	ND	0.13	
75-27-4	Bromodichloromethane	ND	0.65	ND	0.097	
79-01-6	Trichloroethene	ND	0.64	ND	0.12	
123-91-1	1,4-Dioxane	ND	0.64	ND	0.18	
80-62-6	Methyl Methacrylate	ND	1.4	ND	0.33	
142-82-5	n-Heptane	ND	0.65	ND	0.16	
10061-01-5	cis-1,3-Dichloropropene	ND	0.62	ND	0.14	
108-10-1	4-Methyl-2-pentanone	ND	1.4	ND	0.33	
10061-02-6	trans-1,3-Dichloropropene	ND	0.63	ND	0.14	
79-00-5	1,1,2-Trichloroethane	ND	0.64	ND	0.12	
108-88-3	Toluene	**0.67**	0.64	**0.18**	0.17	
591-78-6	2-Hexanone	ND	1.4	ND	0.33	
124-48-1	Dibromochloromethane	ND	0.65	ND	0.077	
106-93-4	1,2-Dibromoethane	ND	0.64	ND	0.083	
123-86-4	n-Butyl Acetate	ND	1.4	ND	0.28	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Bhate Environmental Associates, Inc.**
Client Sample ID: **LH18/24-Air_091321_Downwind_North** ALS Project ID: P2104927
Client Project ID: **LHAAP-GWTP / NW01312.0150** ALS Sample ID: P2104927-004

Test Code: EPA TO-15 Date Collected: 9/14/21
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 9/17/21
Analyst: Wida Ang Date Analyzed: 9/30/21
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AC01220

Initial Pressure (psig): 0.31 Final Pressure (psig): 3.77

Canister Dilution Factor: 1.23

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.65	ND	0.14	
127-18-4	Tetrachloroethene	ND	0.64	ND	0.094	
108-90-7	Chlorobenzene	ND	0.64	ND	0.14	
100-41-4	Ethylbenzene	ND	0.64	ND	0.15	
179601-23-1	m,p-Xylenes	ND	1.4	ND	0.31	
75-25-2	Bromoform	ND	0.64	ND	0.062	
100-42-5	Styrene	ND	0.62	ND	0.14	
95-47-6	o-Xylene	ND	0.64	ND	0.15	
111-84-2	n-Nonane	ND	0.64	ND	0.12	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.64	ND	0.093	
98-82-8	Cumene	ND	0.64	ND	0.13	
80-56-8	alpha-Pinene	**4.3**	0.66	**0.76**	0.12	
103-65-1	n-Propylbenzene	ND	0.65	ND	0.13	
622-96-8	4-Ethyltoluene	ND	0.65	ND	0.13	
108-67-8	1,3,5-Trimethylbenzene	ND	0.64	ND	0.13	
95-63-6	1,2,4-Trimethylbenzene	ND	0.64	ND	0.13	
100-44-7	Benzyl Chloride	ND	1.4	ND	0.26	
541-73-1	1,3-Dichlorobenzene	ND	0.64	ND	0.11	
106-46-7	1,4-Dichlorobenzene	ND	0.64	ND	0.11	
95-50-1	1,2-Dichlorobenzene	ND	0.65	ND	0.11	
5989-27-5	d-Limonene	**2.0**	0.62	**0.35**	0.11	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.2	ND	0.13	
120-82-1	1,2,4-Trichlorobenzene	ND	1.4	ND	0.18	
91-20-3	Naphthalene	**1.4**	0.64	**0.27**	0.12	
87-68-3	Hexachlorobutadiene	ND	0.64	ND	0.060	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Bhate Environmental Associates, Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P2104927
Client Project ID: **LHAAP-GWTP / NW01312.0150** ALS Sample ID: P210929-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 9/29/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	0.52	ND	0.30	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.53	ND	0.11	
74-87-3	Chloromethane	ND	0.51	ND	0.25	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.54	ND	0.077	
75-01-4	Vinyl Chloride	ND	0.52	ND	0.20	
106-99-0	1,3-Butadiene	ND	0.52	ND	0.24	
74-83-9	Bromomethane	ND	0.51	ND	0.13	
75-00-3	Chloroethane	ND	0.51	ND	0.19	
64-17-5	Ethanol	ND	5.0	ND	2.7	
75-05-8	Acetonitrile	ND	1.0	ND	0.60	
107-02-8	Acrolein	ND	1.0	ND	0.44	
67-64-1	Acetone	ND	5.2	ND	2.2	
75-69-4	Trichlorofluoromethane (CFC 11)	ND	0.52	ND	0.093	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	1.0	ND	0.41	
107-13-1	Acrylonitrile	ND	1.0	ND	0.46	
75-35-4	1,1-Dichloroethene	ND	0.54	ND	0.14	
75-09-2	Methylene Chloride	ND	0.52	ND	0.15	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.53	ND	0.17	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.54	ND	0.070	
75-15-0	Carbon Disulfide	ND	1.1	ND	0.35	
156-60-5	trans-1,2-Dichloroethene	ND	0.53	ND	0.13	
75-34-3	1,1-Dichloroethane	ND	0.53	ND	0.13	
1634-04-4	Methyl tert-Butyl Ether	ND	0.53	ND	0.15	
108-05-4	Vinyl Acetate	ND	5.0	ND	1.4	
78-93-3	2-Butanone (MEK)	ND	1.0	ND	0.34	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Bhate Environmental Associates, Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P2104927
Client Project ID: **LHAAP-GWTP / NW01312.0150** ALS Sample ID: P210929-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 9/29/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.52	ND	0.13	
141-78-6	Ethyl Acetate	ND	2.1	ND	0.58	
110-54-3	n-Hexane	ND	0.53	ND	0.15	
67-66-3	Chloroform	ND	0.54	ND	0.11	
109-99-9	Tetrahydrofuran (THF)	ND	1.0	ND	0.34	
107-06-2	1,2-Dichloroethane	ND	0.53	ND	0.13	
71-55-6	1,1,1-Trichloroethane	ND	0.52	ND	0.095	
71-43-2	Benzene	ND	0.50	ND	0.16	
56-23-5	Carbon Tetrachloride	ND	0.50	ND	0.080	
110-82-7	Cyclohexane	ND	1.1	ND	0.32	
78-87-5	1,2-Dichloropropane	ND	0.50	ND	0.11	
75-27-4	Bromodichloromethane	ND	0.53	ND	0.079	
79-01-6	Trichloroethene	ND	0.52	ND	0.097	
123-91-1	1,4-Dioxane	ND	0.52	ND	0.14	
80-62-6	Methyl Methacrylate	ND	1.1	ND	0.27	
142-82-5	n-Heptane	ND	0.53	ND	0.13	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ND	0.11	
108-10-1	4-Methyl-2-pentanone	ND	1.1	ND	0.27	
10061-02-6	trans-1,3-Dichloropropene	ND	0.51	ND	0.11	
79-00-5	1,1,2-Trichloroethane	ND	0.52	ND	0.095	
108-88-3	Toluene	ND	0.52	ND	0.14	
591-78-6	2-Hexanone	ND	1.1	ND	0.27	
124-48-1	Dibromochloromethane	ND	0.53	ND	0.062	
106-93-4	1,2-Dibromoethane	ND	0.52	ND	0.068	
123-86-4	n-Butyl Acetate	ND	1.1	ND	0.23	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Bhate Environmental Associates, Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P2104927
Client Project ID: **LHAAP-GWTP / NW01312.0150** ALS Sample ID: P210929-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 9/29/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.53	ND	0.11	
127-18-4	Tetrachloroethene	ND	0.52	ND	0.077	
108-90-7	Chlorobenzene	ND	0.52	ND	0.11	
100-41-4	Ethylbenzene	ND	0.52	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.1	ND	0.25	
75-25-2	Bromoform	ND	0.52	ND	0.050	
100-42-5	Styrene	ND	0.50	ND	0.12	
95-47-6	o-Xylene	ND	0.52	ND	0.12	
111-84-2	n-Nonane	ND	0.52	ND	0.099	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.52	ND	0.076	
98-82-8	Cumene	ND	0.52	ND	0.11	
80-56-8	alpha-Pinene	ND	0.54	ND	0.097	
103-65-1	n-Propylbenzene	ND	0.53	ND	0.11	
622-96-8	4-Ethyltoluene	ND	0.53	ND	0.11	
108-67-8	1,3,5-Trimethylbenzene	ND	0.52	ND	0.11	
95-63-6	1,2,4-Trimethylbenzene	ND	0.52	ND	0.11	
100-44-7	Benzyl Chloride	ND	1.1	ND	0.21	
541-73-1	1,3-Dichlorobenzene	ND	0.52	ND	0.087	
106-46-7	1,4-Dichlorobenzene	ND	0.52	ND	0.087	
95-50-1	1,2-Dichlorobenzene	ND	0.53	ND	0.088	
5989-27-5	d-Limonene	ND	0.50	ND	0.090	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.0	ND	0.10	
120-82-1	1,2,4-Trichlorobenzene	ND	1.1	ND	0.15	
91-20-3	Naphthalene	ND	0.52	ND	0.099	
87-68-3	Hexachlorobutadiene	ND	0.52	ND	0.049	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

SURROGATE SPIKE RECOVERY RESULTS

Client: **Bhate Environmental Associates, Inc.**
Client Project ID: **LHAAP-GWTP / NW01312.0150** ALS Project ID: P2104927

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date(s) Collected: 9/13 - 9/14/21
Analyst: Wida Ang Date(s) Received: 9/17/21
Sample Type: 6.0 L Silonite Canister(s) Date(s) Analyzed: 9/29 - 9/30/21
Test Notes:

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4 Percent Recovered	Toluene-d8 Percent Recovered	Bromofluorobenzene Percent Recovered	Acceptance Limits	Data Qualifier
Method Blank	P210929-MB	**81**	**103**	**109**	70-130	
Lab Control Sample	P210929-LCS	**79**	**104**	**114**	70-130	
Duplicate Lab Control Sample	P210929-DLCS	**79**	**105**	**115**	70-130	
LH18/24-Air_091321_Stripper	P2104927-001	**81**	**101**	**110**	70-130	
LH18/24-Air_091321_Stripper_a	P2104927-002	**82**	**100**	**107**	70-130	
LH18/24-Air_091321_Downwind_North	P2104927-004	**84**	**100**	**109**	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Bhate Environmental Associates, Inc.**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2104927
Client Project ID: **LHAAP-GWTP / NW01312.0150** ALS Sample ID: P210929-DLCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 9/29/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
115-07-1	Propene	206	155	162	**75**	**79**	56-128	5	25	
75-71-8	Dichlorodifluoromethane (CFC 12)	208	159	164	**76**	**79**	71-112	4	25	
74-87-3	Chloromethane	206	173	179	**84**	**87**	53-126	4	25	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	208	191	202	**92**	**97**	62-121	5	25	
75-01-4	Vinyl Chloride	208	179	186	**86**	**89**	63-123	3	25	
106-99-0	1,3-Butadiene	206	191	196	**93**	**95**	63-135	2	25	
74-83-9	Bromomethane	206	167	175	**81**	**85**	71-112	5	25	
75-00-3	Chloroethane	206	170	178	**83**	**86**	66-117	4	25	
64-17-5	Ethanol	832	641	660	**77**	**79**	57-117	3	25	
75-05-8	Acetonitrile	202	145	147	**72**	**73**	59-131	1	25	
107-02-8	Acrolein	416	363	378	**87**	**91**	71-123	4	25	
67-64-1	Acetone	1,020	826	855	**81**	**84**	60-117	4	25	
75-69-4	Trichlorofluoromethane (CFC 11)	202	164	167	**81**	**83**	71-114	2	25	
67-63-0	2-Propanol (Isopropyl Alcohol)	400	339	340	**85**	**85**	61-124	0	25	
107-13-1	Acrylonitrile	402	373	380	**93**	**95**	65-130	2	25	
75-35-4	1,1-Dichloroethene	210	178	184	**85**	**88**	74-114	3	25	
75-09-2	Methylene Chloride	208	168	175	**81**	**84**	75-112	4	25	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	204	157	160	**77**	**78**	57-127	1	25	
76-13-1	Trichlorotrifluoroethane (CFC 113)	216	197	204	**91**	**94**	73-114	3	25	
75-15-0	Carbon Disulfide	414	314	322	**76**	**78**	70-113	3	25	
156-60-5	trans-1,2-Dichloroethene	208	186	192	**89**	**92**	76-119	3	25	
75-34-3	1,1-Dichloroethane	214	179	183	**84**	**86**	70-114	2	25	
1634-04-4	Methyl tert-Butyl Ether	206	163	168	**79**	**82**	72-118	4	25	
108-05-4	Vinyl Acetate	942	910	932	**97**	**99**	56-137	2	25	
78-93-3	2-Butanone (MEK)	408	348	359	**85**	**88**	74-121	3	25	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Bhate Environmental Associates, Inc.**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2104927
Client Project ID: **LHAAP-GWTP / NW01312.0150** ALS Sample ID: P210929-DLCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 9/29/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	206	179	181	**87**	**88**	73-117	1	25	
141-78-6	Ethyl Acetate	580	462	473	**80**	**82**	59-161	2	25	
110-54-3	n-Hexane	208	173	177	**83**	**85**	55-130	2	25	
67-66-3	Chloroform	210	170	174	**81**	**83**	71-114	2	25	
109-99-9	Tetrahydrofuran (THF)	404	325	336	**80**	**83**	73-114	4	25	
107-06-2	1,2-Dichloroethane	210	169	172	**80**	**82**	71-119	2	25	
71-55-6	1,1,1-Trichloroethane	208	179	180	**86**	**87**	73-119	1	25	
71-43-2	Benzene	208	174	177	**84**	**85**	72-113	1	25	
56-23-5	Carbon Tetrachloride	202	185	185	**92**	**92**	67-123	0	25	
110-82-7	Cyclohexane	412	368	375	**89**	**91**	70-119	2	25	
78-87-5	1,2-Dichloropropane	206	189	191	**92**	**93**	70-118	1	25	
75-27-4	Bromodichloromethane	208	184	187	**88**	**90**	74-119	2	25	
79-01-6	Trichloroethene	204	217	219	**106**	**107**	74-115	0.9	25	
123-91-1	1,4-Dioxane	206	200	204	**97**	**99**	77-124	2	25	
80-62-6	Methyl Methacrylate	410	431	443	**105**	**108**	78-126	3	25	
142-82-5	n-Heptane	206	175	177	**85**	**86**	70-119	1	25	
10061-01-5	cis-1,3-Dichloropropene	208	191	195	**92**	**94**	81-126	2	25	
108-10-1	4-Methyl-2-pentanone	412	405	408	**98**	**99**	73-129	1	25	
10061-02-6	trans-1,3-Dichloropropene	200	192	195	**96**	**98**	80-127	2	25	
79-00-5	1,1,2-Trichloroethane	208	192	194	**92**	**93**	78-117	1	25	
108-88-3	Toluene	206	202	210	**98**	**102**	70-118	4	25	
591-78-6	2-Hexanone	406	382	391	**94**	**96**	74-132	2	25	
124-48-1	Dibromochloromethane	210	233	239	**111**	**114**	69-137	3	25	
106-93-4	1,2-Dibromoethane	208	220	226	**106**	**109**	76-128	3	25	
123-86-4	n-Butyl Acetate	406	394	402	**97**	**99**	75-134	2	25	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Bhate Environmental Associates, Inc.**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2104927
Client Project ID: **LHAAP-GWTP / NW01312.0150** ALS Sample ID: P210929-DLCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 9/29/21
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/m³	Result LCS µg/m³	Result DLCS µg/m³	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
111-65-9	n-Octane	208	210	216	**101**	**104**	68-120	3	25	
127-18-4	Tetrachloroethene	212	224	232	**106**	**109**	63-130	3	25	
108-90-7	Chlorobenzene	206	215	222	**104**	**108**	70-118	4	25	
100-41-4	Ethylbenzene	206	206	212	**100**	**103**	71-123	3	25	
179601-23-1	m,p-Xylenes	416	409	421	**98**	**101**	67-127	3	25	
75-25-2	Bromoform	210	236	243	**112**	**116**	65-149	4	25	
100-42-5	Styrene	202	227	234	**112**	**116**	76-132	4	25	
95-47-6	o-Xylene	208	205	210	**99**	**101**	69-124	2	25	
111-84-2	n-Nonane	208	184	187	**88**	**90**	64-127	2	25	
79-34-5	1,1,2,2-Tetrachloroethane	208	206	212	**99**	**102**	69-128	3	25	
98-82-8	Cumene	206	213	219	**103**	**106**	69-125	3	25	
80-56-8	alpha-Pinene	210	222	228	**106**	**109**	68-129	3	25	
103-65-1	n-Propylbenzene	208	203	209	**98**	**100**	70-127	2	25	
622-96-8	4-Ethyltoluene	208	222	227	**107**	**109**	69-127	2	25	
108-67-8	1,3,5-Trimethylbenzene	208	215	221	**103**	**106**	66-129	3	25	
95-63-6	1,2,4-Trimethylbenzene	206	214	220	**104**	**107**	63-142	3	25	
100-44-7	Benzyl Chloride	416	477	491	**115**	**118**	73-145	3	25	
541-73-1	1,3-Dichlorobenzene	208	235	242	**113**	**116**	67-136	3	25	
106-46-7	1,4-Dichlorobenzene	210	231	237	**110**	**113**	63-134	3	25	
95-50-1	1,2-Dichlorobenzene	210	228	232	**109**	**110**	64-139	0.9	25	
5989-27-5	d-Limonene	206	212	217	**103**	**105**	63-137	2	25	
96-12-8	1,2-Dibromo-3-chloropropane	404	457	468	**113**	**116**	72-145	3	25	
120-82-1	1,2,4-Trichlorobenzene	420	426	440	**101**	**105**	62-154	4	25	
91-20-3	Naphthalene	210	234	240	**111**	**114**	62-156	3	25	
87-68-3	Hexachlorobutadiene	212	201	206	**95**	**97**	55-142	2	25	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Bhate Environmental Associates, Inc.** ALS Project ID: P2104927
Client Project ID: **LHAAP-GWTP / NW01312.0150**

Internal Standard Area and RT Summary

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Lab File ID: 09292101.D
Analyst: Wida Ang Date Analyzed: 9/29/21
Sample Type: 6.0 L Silonite Canister(s) Time Analyzed: 18:02
Test Notes:

		IS1 (BCM)		IS2 (DFB)		IS3 (CBZ)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	24 Hour Standard	209091	11.09	883427	13.21	167814	17.52
	Upper Limit	292727	11.42	1236798	13.54	234940	17.85
	Lower Limit	125455	10.76	530056	12.88	100688	17.19
	Client Sample ID						
01	Method Blank	196327	11.06	836377	13.20	163722	17.52
02	Lab Control Sample	205896	11.09	867018	13.20	167276	17.52
03	Duplicate Lab Control Sample	203499	11.09	868815	13.20	164660	17.52
04	LH18/24-Air_091321_Stripper	198477	11.06	840877	13.20	165412	17.51
05	LH18/24-Air_091321_Stripper (Dilution)	195690	11.06	834331	13.20	161995	17.51
06	LH18/24-Air_091321_Stripper_a	196572	11.06	833679	13.20	165446	17.51
07	LH18/24-Air_091321_Stripper_a (Dilution)	191112	11.06	808503	13.20	159807	17.51
08	LH18/24-Air_091321_Downwind_North	190619	11.07	810967	13.20	161505	17.51
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = 140% of internal standard area
AREA LOWER LIMIT = 60% of internal standard area
RT UPPER LIMIT = 0.33 minutes of internal standard RT
RT LOWER LIMIT = 0.33 minutes of internal standard RT

# Column used to flag values outside QC limits with an I.
I = Internal standard not within the specified limits.

Data File : I:\MS16\DATA\2021_09\29\09292112.D Vial: 1
Acq On : 30 Sep 2021 00:21 Operator: WA
Sample : P2104927-001 (150mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 09:38:28 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration 9/30/21
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.06	130	198477	12.500	ng		-0.03
37) 1,4-Difluorobenzene (IS2)	13.20	114	840877	12.500	ng		-0.02
56) Chlorobenzene-d5 (IS3)	17.51	54	165412	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.92	65	334889	10.187	ng		-0.03
Spiked Amount 12.500	Range 70 - 130		Recovery = 81.52%				
57) Toluene-d8 (SS2)	15.65	98	888373	12.655	ng		-0.01
Spiked Amount 12.500	Range 70 - 130		Recovery = 101.28%				
73) Bromofluorobenzene (SS3)	18.92	174	326074	13.721	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 109.76%				
Target Compounds							Qvalue
2) Propene	4.09	42	2487	N.D.			
3) Dichlorodifluoromethan...	4.23	85	11674	N.D.			
4) Chloromethane	4.52	50	6445	N.D.			
5) 1,2-Dichloro-1,1,2,2-t...	0.00	135	0	N.D.			
6) Vinyl Chloride	4.92	62	17701	0.586	ng		100
7) 1,3-Butadiene	0.00	54	0	N.D.			
8) Bromomethane	0.00	94	0	N.D.			
9) Chloroethane	0.00	64	0	N.D.			
10) Ethanol	6.31	45	8741	N.D.			
11) Acetonitrile	6.58	41	2232	N.D.			
12) Acrolein	6.78	56	2124	N.D.			
13) Acetone	6.96	58	68163	3.776	ng	#	59
14) Trichlorofluoromethane	7.18	101	5724	N.D.			
15) 2-Propanol (Isopropanol)	7.51	45	2913	N.D.			
16) Acrylonitrile	7.91	53	12512	N.D.			
17) 1,1-Dichloroethene	8.12	96	18737	0.848	ng		100
18) 2-Methyl-2-Propanol (t...	8.39	59	7437	N.D.			
19) Methylene Chloride	8.34	84	8107	N.D.			
20) 3-Chloro-1-propene (Al...	8.38	41	1707	N.D.			
21) Trichlorotrifluoroethane	8.77	151	937235	47.632	ng		91
22) Carbon Disulfide	8.61	76	5430	N.D.			
23) trans-1,2-Dichloroethene	9.62	61	8089	N.D.			
24) 1,1-Dichloroethane	9.87	63	11762	N.D.			
25) Methyl tert-Butyl Ether	10.02	73	344	N.D.			
26) Vinyl Acetate	10.12	86	1849	N.D.			
27) 2-Butanone (MEK)	10.41	72	18581	1.239	ng		94
28) cis-1,2-Dichloroethene	10.88	61	1582467	44.686	ng		100
29) Diisopropyl Ether	11.24	87	1539	N.D.			
30) Ethyl Acetate	11.35	61	106	N.D.			
31) n-Hexane	11.19	57	4298	N.D.			
32) Chloroform	11.24	83	15647	N.D.			
34) Tetrahydrofuran (THF)	11.70	72	4118	N.D.			
35) Ethyl tert-Butyl Ether	0.00	87	0	N.D.			
36) 1,2-Dichloroethane	12.04	62	63339	1.773	ng		98
38) 1,1,1-Trichloroethane	12.32	97	1082	N.D.			
39) Isopropyl Acetate	0.00	61	0	N.D.			
40) 1-Butanol	12.83	56	5234	No Calib		#	
41) Benzene	12.81	78	7945	N.D.			
42) Carbon Tetrachloride	12.96	117	5395	N.D.			
43) Cyclohexane	13.09	84	1534	N.D.			
44) tert-Amyl Methyl Ether	0.00	73	0	N.D.			
45) 1,2-Dichloropropane	0.00	63	0	N.D.			
46) Bromodichloromethane	0.00	83	0	N.D. d			
47) Trichloroethene	13.90	130	2943599	138.557	ng		99
48) 1,4-Dioxane	13.91	88	7470	N.D.			
49) 2,2,4-Trimethylpentane...	13.97	57	2205	N.D.			
50) Methyl Methacrylate	0.00	100	0	N.D. d			

Quantitation Report (QT Reviewed)

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Acq On : 30 Sep 2021 00:21 Operator: WA
Sample : P2104927-001 (150mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 09:38:28 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

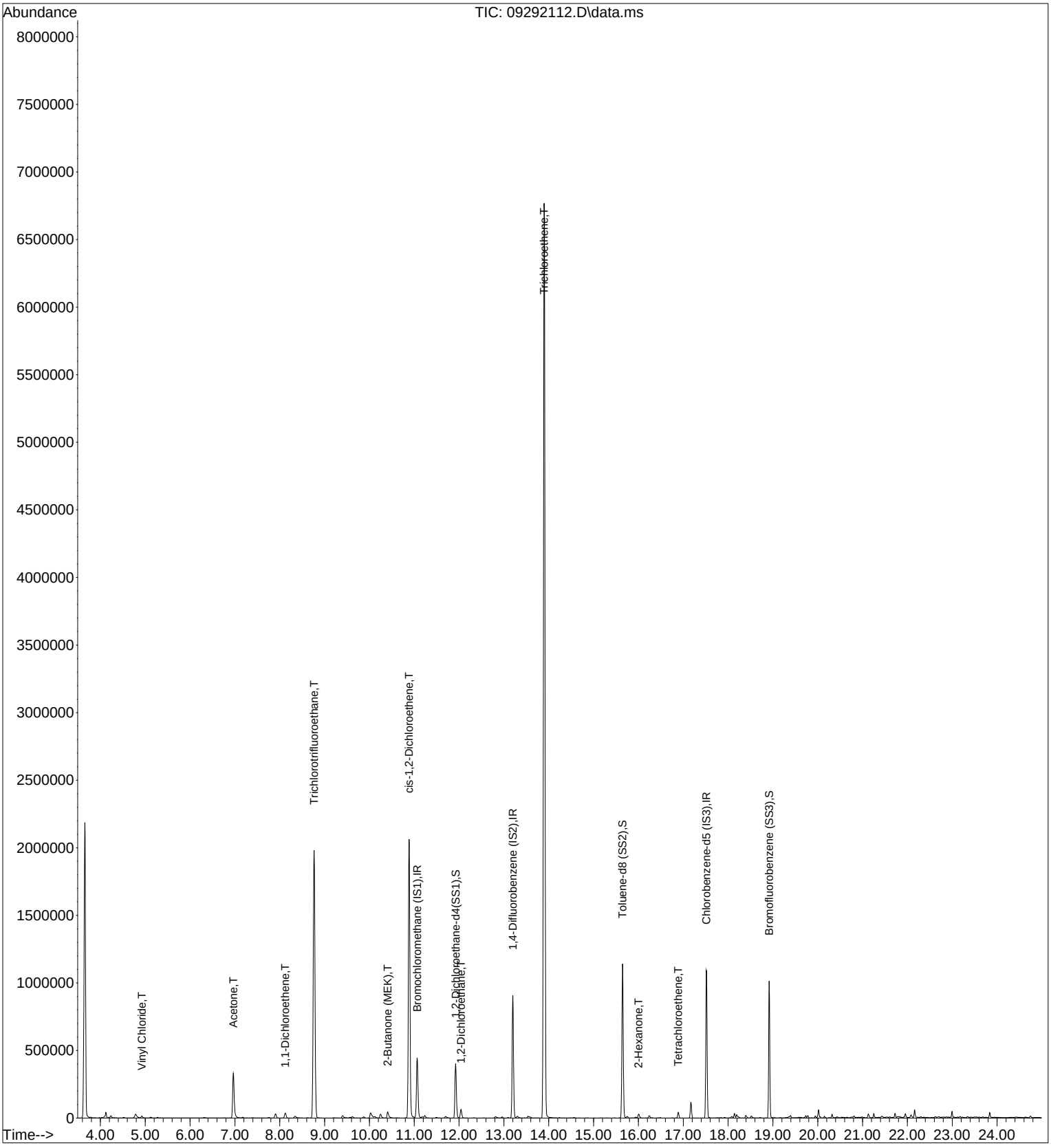
Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
51) n-Heptane	14.24	71	616	N.D.	
52) cis-1,3-Dichloropropene	0.00	75	0	N.D.	
53) 4-Methyl-2-pentanone	0.00	58	0	N.D.	
54) trans-1,3-Dichloropropene	0.00	75	0	N.D.	
55) 1,1,2-Trichloroethane	15.47	97	648	N.D.	
58) Toluene	15.75	91	10130	N.D.	
59) 2-Hexanone	16.00	43	27931	0.608 ng	97
60) Dibromochloromethane	0.00	129	0	N.D.	
61) 1,2-Dibromoethane	0.00	107	0	N.D.	
62) n-Butyl Acetate	16.66	43	544	N.D.	
63) n-Octane	16.75	57	435	N.D.	
64) Tetrachloroethene	16.89	166	16091	0.710 ng	99
65) Chlorobenzene	17.56	112	302	N.D.	
66) Ethylbenzene	17.92	91	4341	N.D.	
67) m- & p-Xylenes	18.08	91	9781	N.D.	
68) Bromoform	0.00	173	0	N.D.	
69) Styrene	18.42	104	937	N.D.	
70) o-Xylene	18.52	91	7879	N.D.	
71) n-Nonane	18.71	43	2121	N.D.	
72) 1,1,2,2-Tetrachloroethane	18.53	83	126	N.D.	
74) Cumene	19.05	105	362	N.D.	
75) alpha-Pinene	19.40	93	5906	N.D.	
76) n-Propylbenzene	19.49	91	1277	N.D.	
77) 3-Ethyltoluene	19.63	105	1528	No Calib	
78) 4-Ethyltoluene	19.63	105	1528	N.D.	
79) 1,3,5-Trimethylbenzene	19.69	105	983	N.D.	
80) alpha-Methylstyrene	0.00	118	0	N.D.	
81) 2-Ethyltoluene	19.63	105	1528	No Calib	
82) 1,2,4-Trimethylbenzene	20.06	105	4591	N.D.	
83) n-Decane	0.00	58	0	N.D.	
84) Benzyl Chloride	20.18	91	231	N.D.	
85) 1,3-Dichlorobenzene	20.25	146	967	N.D.	
86) 1,4-Dichlorobenzene	20.25	146	967	N.D.	
87) sec-Butylbenzene	20.30	105	149	N.D.	
88) 4-Isopropyltoluene (p-...	20.43	119	1261	N.D.	
89) 1,2,3-Trimethylbenzene	20.30	105	149	No Calib	#
90) 1,2-Dichlorobenzene	20.56	146	123	N.D.	
91) d-Limonene	20.56	68	967	N.D.	
92) 1,2-Dibromo-3-Chloropr...	0.00	157	0	N.D.	
93) n-Undecane	21.13	57	5648	No Calib	
94) 1,2,4-Trichlorobenzene	22.06	180	926	N.D.	
95) Naphthalene	22.16	128	6456	N.D.	
96) n-Dodecane	22.08	57	3414	No Calib	#
97) Hexachlorobutadiene	0.00	225	0	N.D.	
98) Cyclohexanone	18.05	55	247	No Calib	#
99) tert-Butylbenzene	20.06	119	599	N.D.	
100) n-Butylbenzene	20.80	91	1628	N.D.	
101) 1,1,1,2-Tetrachloroethane	0.00	131	0	N.D.	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

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Misc : S34-09132101

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9/30/21

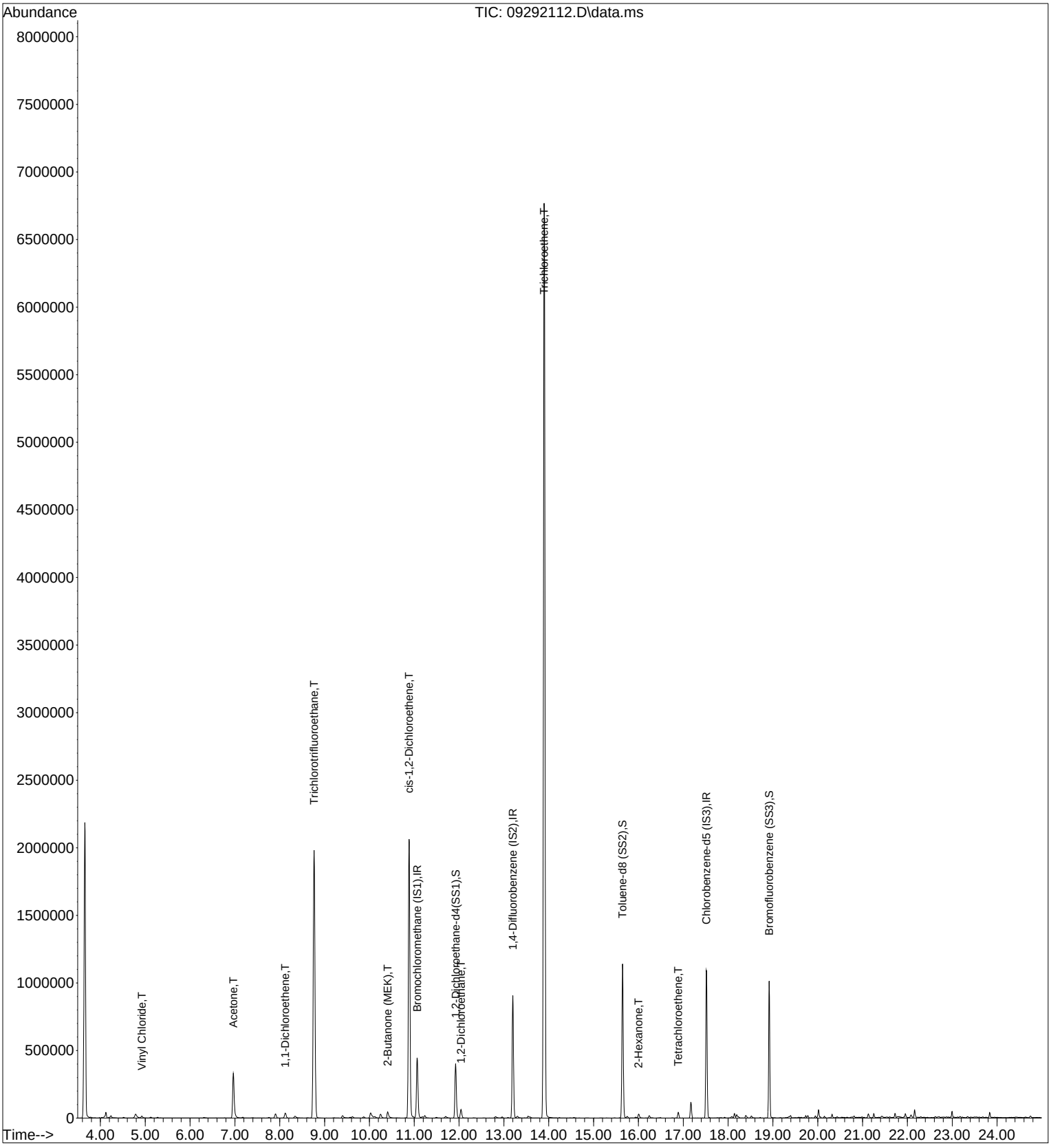
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.06	130	198477	12.500	ng		-0.03
37) 1,4-Difluorobenzene (IS2)	13.20	114	840877	12.500	ng		-0.02
56) Chlorobenzene-d5 (IS3)	17.51	54	165412	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.92	65	334889	10.187	ng		-0.03
Spiked Amount 12.500	Range 70 - 130		Recovery = 81.52%				
57) Toluene-d8 (SS2)	15.65	98	888373	12.655	ng		-0.01
Spiked Amount 12.500	Range 70 - 130		Recovery = 101.28%				
73) Bromofluorobenzene (SS3)	18.92	174	326074	13.721	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 109.76%				
Target Compounds							Qvalue
6) Vinyl Chloride	4.92	62	17701	0.586	ng		100
13) Acetone	6.96	58	68163	3.776	ng	#	59
17) 1,1-Dichloroethene	8.12	96	18737	0.848	ng		100
21) Trichlorotrifluoroethane	8.77	151	937235	47.632	ng		91
27) 2-Butanone (MEK)	10.41	72	18581	1.239	ng		94
28) cis-1,2-Dichloroethene	10.88	61	1582467	44.686	ng		100
36) 1,2-Dichloroethane	12.04	62	63339	1.773	ng		98
47) Trichloroethene	13.90	130	2943599	138.557	ng		99
59) 2-Hexanone	16.00	43	27931	0.608	ng		97
64) Tetrachloroethene	16.89	166	16091	0.710	ng		99

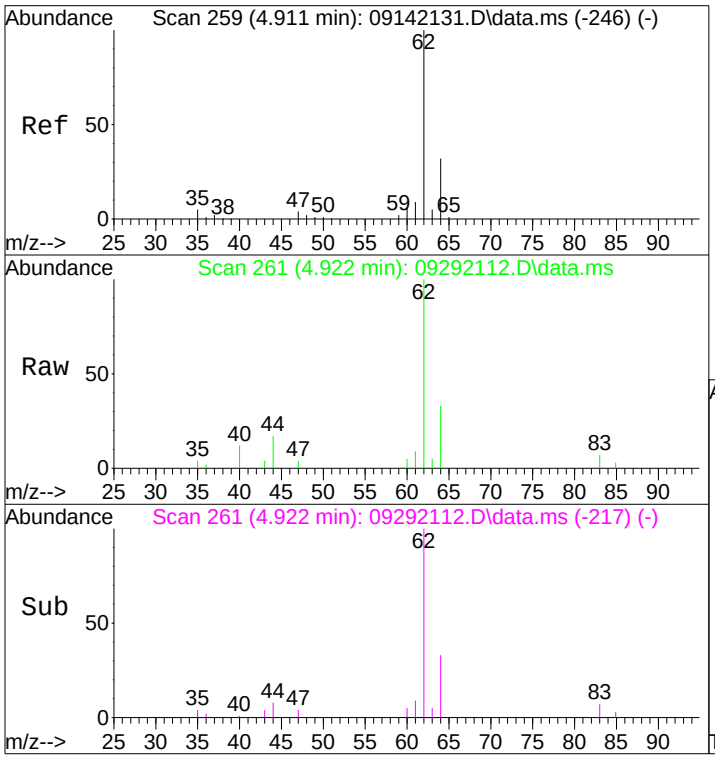
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292112.D Vial: 1
Acq On : 30 Sep 2021 00:21 Operator: WA
Sample : P2104927-001 (150mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 09:38:28 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
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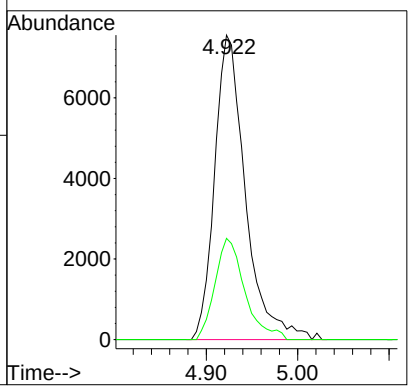


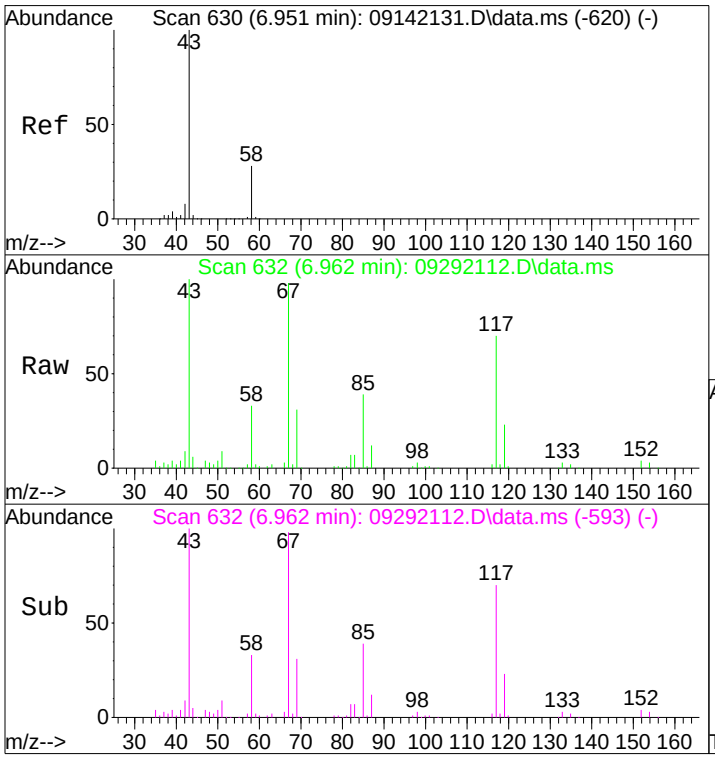


#6
Vinyl Chloride
Concen: 0.59 ng
RT: 4.92 min Scan# 261
Delta R.T. -0.006 min
Lab File: 09292112.D
Acq: 30 Sep 2021 00:21

Tgt Ion: 62 Resp: 17701

Ion	Ratio	Lower	Upper
62	100		
64	32.2	11.9	51.9

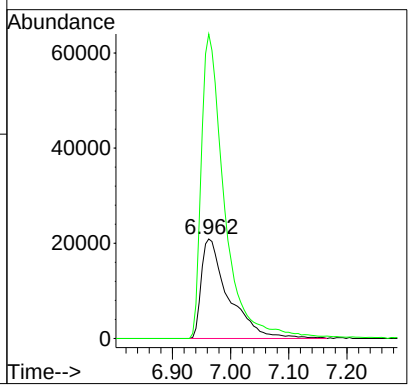


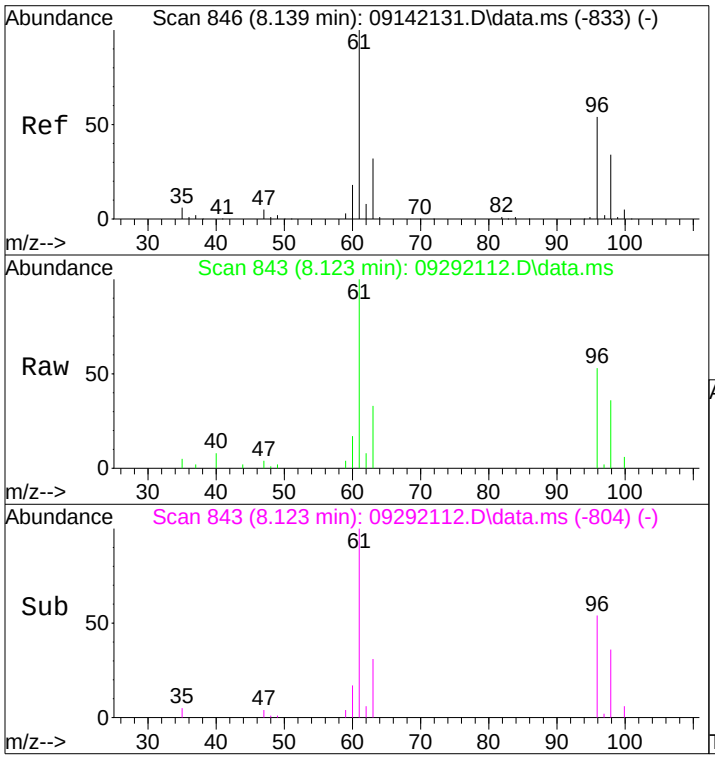


#13
Acetone
Concen: 3.78 ng
RT: 6.96 min Scan# 632
Delta R.T. -0.033 min
Lab File: 09292112.D
Acq: 30 Sep 2021 00:21

Tgt Ion: 58 Resp: 68163

Ion	Ratio	Lower	Upper
58	100		
43	260.9	319.7	379.7#

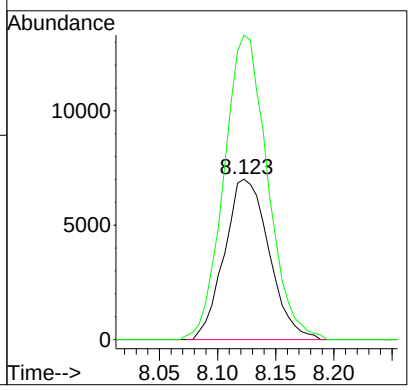


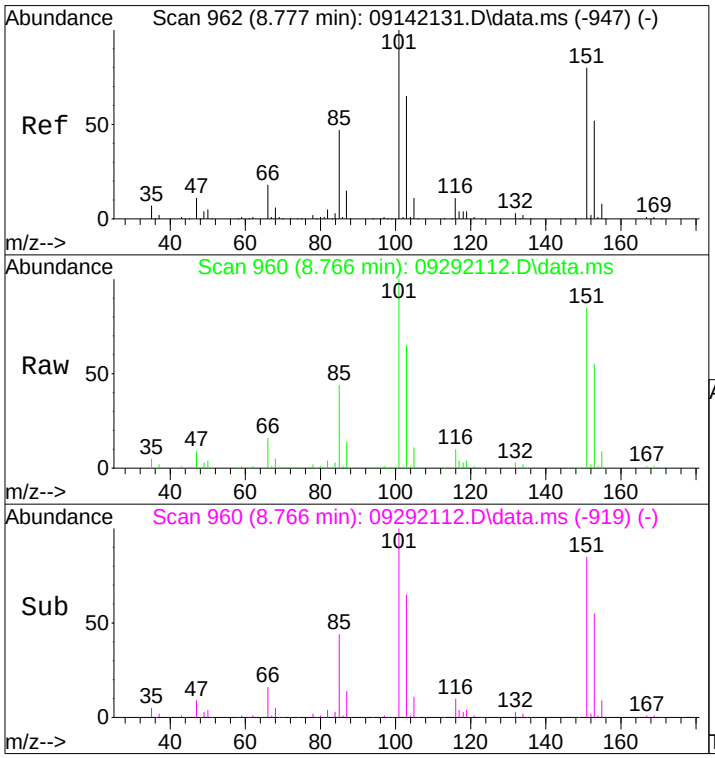


#17
1,1-Dichloroethene
Concen: 0.85 ng
RT: 8.12 min Scan# 843
Delta R.T. -0.033 min
Lab File: 09292112.D
Acq: 30 Sep 2021 00:21

Tgt Ion: 96 Resp: 18737

Ion	Ratio	Lower	Upper
96	100		
61	185.4	165.4	205.4

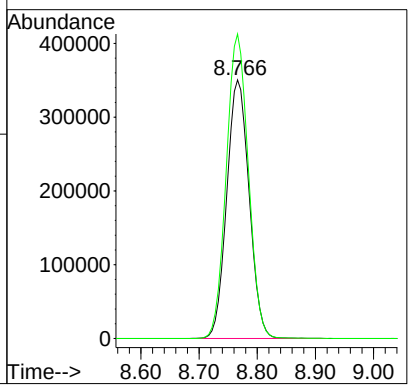


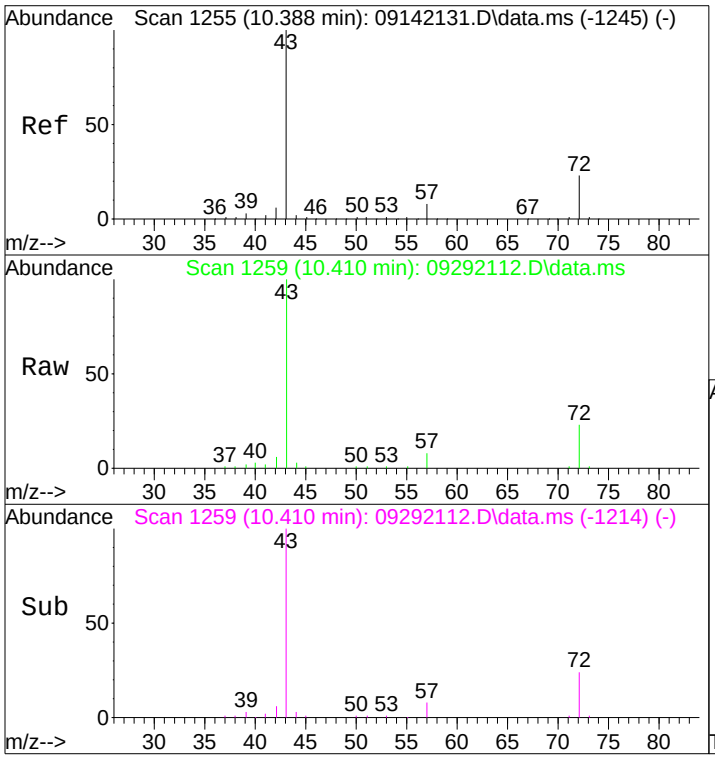


#21
Trichlorotrifluoroethane
Concen: 47.63 ng
RT: 8.77 min Scan# 960
Delta R.T. -0.022 min
Lab File: 09292112.D
Acq: 30 Sep 2021 00:21

Tgt Ion:151 Resp: 937235

Ion	Ratio	Lower	Upper
151	100		
101	116.3	107.1	147.1

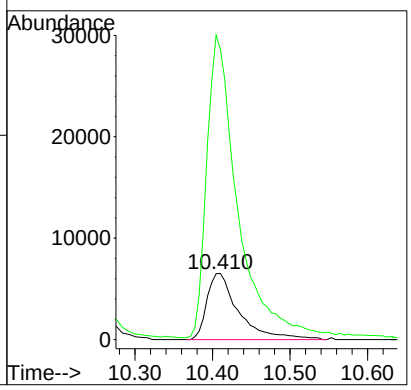


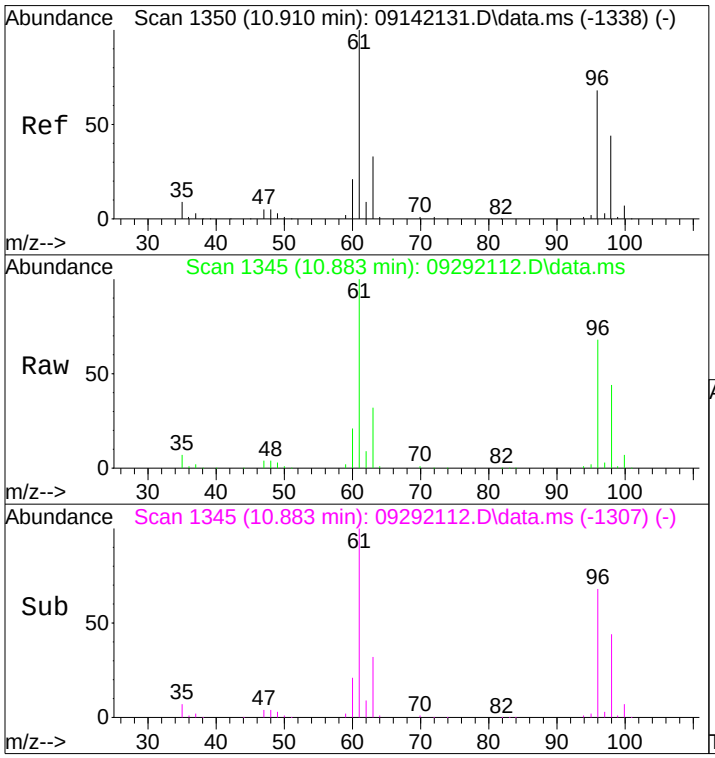


#27
2-Butanone (MEK)
Concen: 1.24 ng
RT: 10.41 min Scan# 1259
Delta R.T. -0.000 min
Lab File: 09292112.D
Acq: 30 Sep 2021 00:21

Tgt Ion: 72 Resp: 18581

Ion	Ratio	Lower	Upper
72	100		
43	450.0	415.7	455.7

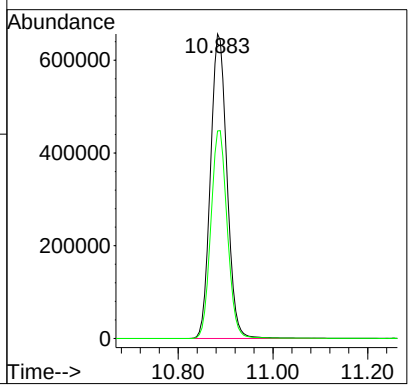


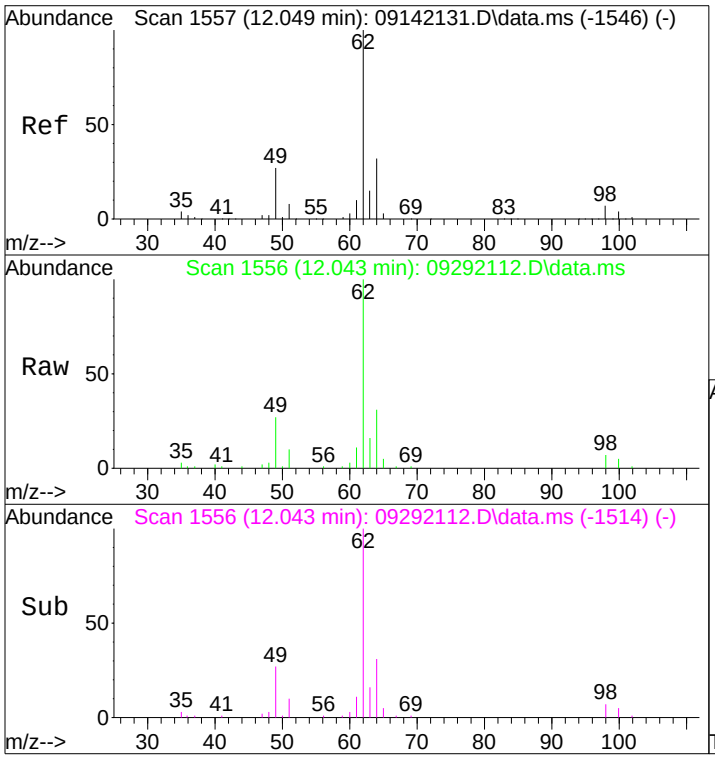


#28
cis-1,2-Dichloroethene
Concen: 44.69 ng
RT: 10.88 min Scan# 1345
Delta R.T. -0.039 min
Lab File: 09292112.D
Acq: 30 Sep 2021 00:21

Tgt Ion: 61 Resp: 1582467

Ion	Ratio	Lower	Upper
61	100		
96	68.3	47.9	87.9

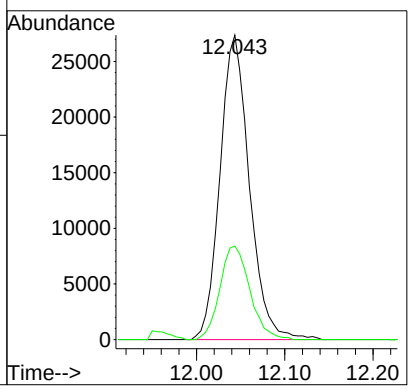


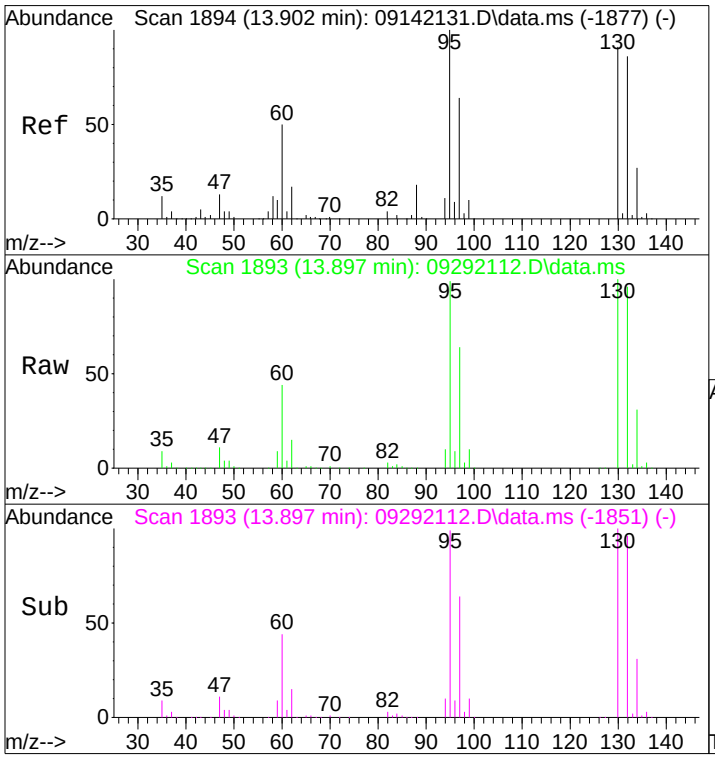


#36
1,2-Dichloroethane
Concen: 1.77 ng
RT: 12.04 min Scan# 1556
Delta R.T. -0.017 min
Lab File: 09292112.D
Acq: 30 Sep 2021 00:21

Tgt Ion: 62 Resp: 63339

Ion	Ratio	Lower	Upper
62	100		
64	31.3	12.5	52.5

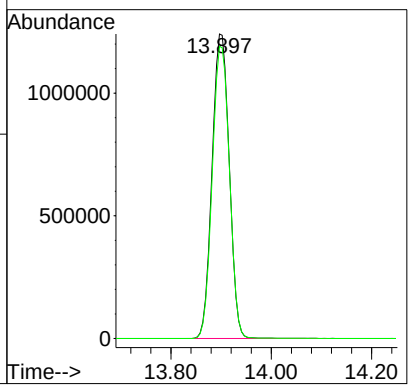


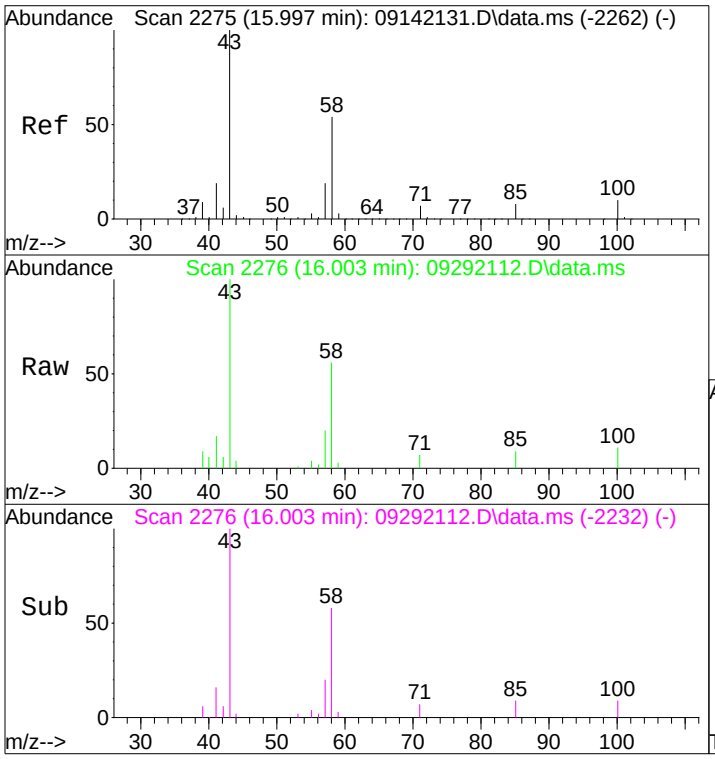


#47
Trichloroethene
Concen: 138.56 ng
RT: 13.90 min Scan# 1893
Delta R.T. -0.016 min
Lab File: 09292112.D
Acq: 30 Sep 2021 00:21

Tgt Ion:130 Resp: 2943599

Ion	Ratio	Lower	Upper
130	100		
132	96.2	75.2	115.2

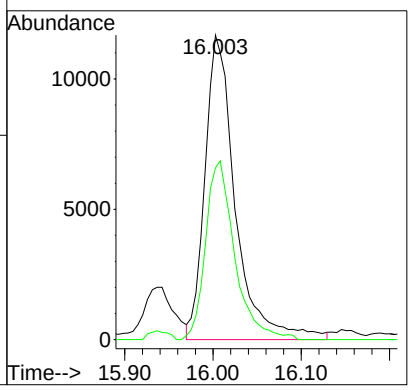


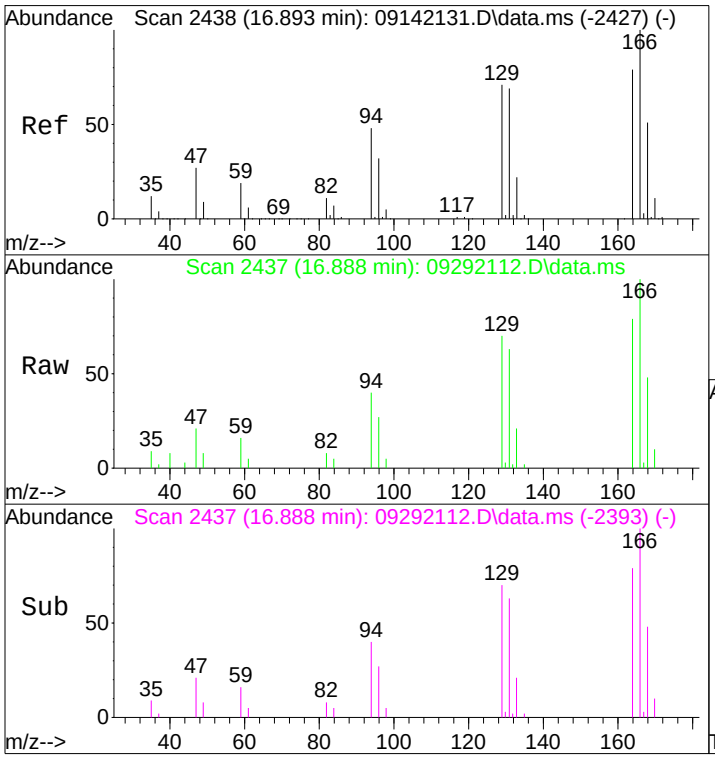


#59
2-Hexanone
Concen: 0.61 ng
RT: 16.00 min Scan# 2276
Delta R.T. -0.006 min
Lab File: 09292112.D
Acq: 30 Sep 2021 00:21

Tgt Ion: 43 Resp: 27931

Ion	Ratio	Lower	Upper
43	100		
58	56.3	34.5	74.5

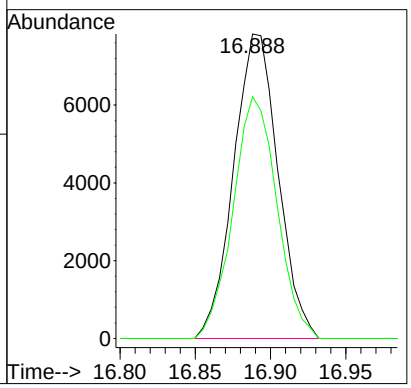




#64
Tetrachloroethene
Concen: 0.71 ng
RT: 16.89 min Scan# 2437
Delta R.T. -0.006 min
Lab File: 09292112.D
Acq: 30 Sep 2021 00:21

Tgt Ion:166 Resp: 16091

Ion	Ratio	Lower	Upper
166	100		
164	78.2	59.2	99.2



Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292113.D Vial: 1
Acq On : 30 Sep 2021 00:55 Operator: WA
Sample : P2104927-001dil (30mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 03:33:24 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021 WA 9/30/21
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.06	130	195690	12.500	ng		-0.03
37) 1,4-Difluorobenzene (IS2)	13.20	114	834331	12.500	ng		-0.02
56) Chlorobenzene-d5 (IS3)	17.51	54	161995	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.92	65	336461	10.381	ng		-0.03
Spiked Amount 12.500	Range 70 - 130		Recovery = 83.04%				
57) Toluene-d8 (SS2)	15.65	98	873891	12.711	ng		-0.01
Spiked Amount 12.500	Range 70 - 130		Recovery = 101.68%				
73) Bromofluorobenzene (SS3)	18.92	174	320633	13.777	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 110.24%				
Target Compounds							Qvalue
2) Propene	4.12	42	397	N.D.			
3) Dichlorodifluoromethan...	4.26	85	2265	N.D.			
4) Chloromethane	4.54	50	1461	N.D.			
5) 1,2-Dichloro-1,1,2,2-t...	0.00	135	0	N.D.			
6) Vinyl Chloride	4.95	62	3322	N.D.			
7) 1,3-Butadiene	0.00	54	0	N.D.			
8) Bromomethane	0.00	94	0	N.D.			
9) Chloroethane	0.00	64	0	N.D.			
10) Ethanol	6.36	45	1401	N.D.			
11) Acetonitrile	0.00	41	0	N.D.			
12) Acrolein	0.00	56	0	N.D.			
13) Acetone	7.00	58	14803	0.832	ng	#	57
14) Trichlorofluoromethane	7.18	101	1067	N.D.			
15) 2-Propanol (Isopropanol)	7.57	45	54	N.D.			
16) Acrylonitrile	7.91	53	2434	N.D.			
17) 1,1-Dichloroethene	8.13	96	3752	N.D.			
18) 2-Methyl-2-Propanol (t...	8.44	59	1154	N.D.			
19) Methylene Chloride	8.35	84	1603	N.D.			
20) 3-Chloro-1-propene (Al...	0.00	41	0	N.D.			
21) Trichlorotrifluoroethane	8.77	151	201189	10.370	ng		91
22) Carbon Disulfide	8.63	76	1565	N.D.			
23) trans-1,2-Dichloroethene	9.63	61	1250	N.D.			
24) 1,1-Dichloroethane	9.87	63	2213	N.D.			
25) Methyl tert-Butyl Ether	0.00	73	0	N.D.			
26) Vinyl Acetate	0.00	86	0	N.D.			
27) 2-Butanone (MEK)	10.43	72	3183	N.D.			
28) cis-1,2-Dichloroethene	10.88	61	337164	9.657	ng		99
29) Diisopropyl Ether	0.00	87	0	N.D.			
30) Ethyl Acetate	11.22	61	153	N.D.			
31) n-Hexane	11.18	57	772	N.D.			
32) Chloroform	11.23	83	3103	N.D.			
34) Tetrahydrofuran (THF)	11.73	72	794	N.D.			
35) Ethyl tert-Butyl Ether	0.00	87	0	N.D.			
36) 1,2-Dichloroethane	12.04	62	12405	N.D.			
38) 1,1,1-Trichloroethane	0.00	97	0	N.D.			
39) Isopropyl Acetate	0.00	61	0	N.D.			
40) 1-Butanol	12.88	56	177	No Calib		#	
41) Benzene	12.80	78	2188	N.D.			
42) Carbon Tetrachloride	12.96	117	921	N.D.			
43) Cyclohexane	13.20	84	480	N.D.			
44) tert-Amyl Methyl Ether	0.00	73	0	N.D.			
45) 1,2-Dichloropropane	0.00	63	0	N.D.			
46) Bromodichloromethane	13.90	83	8220	N.D.			
47) Trichloroethene	13.90	130	727937	34.533	ng		98
48) 1,4-Dioxane	13.93	88	1278	N.D.			
49) 2,2,4-Trimethylpentane...	13.97	57	606	N.D.			
50) Methyl Methacrylate	13.89	100	1497	N.D.			

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292113.D Vial: 1
Acq On : 30 Sep 2021 00:55 Operator: WA
Sample : P2104927-001dil (30mL) Inst : GCMS-16
Misc : S34-09132101

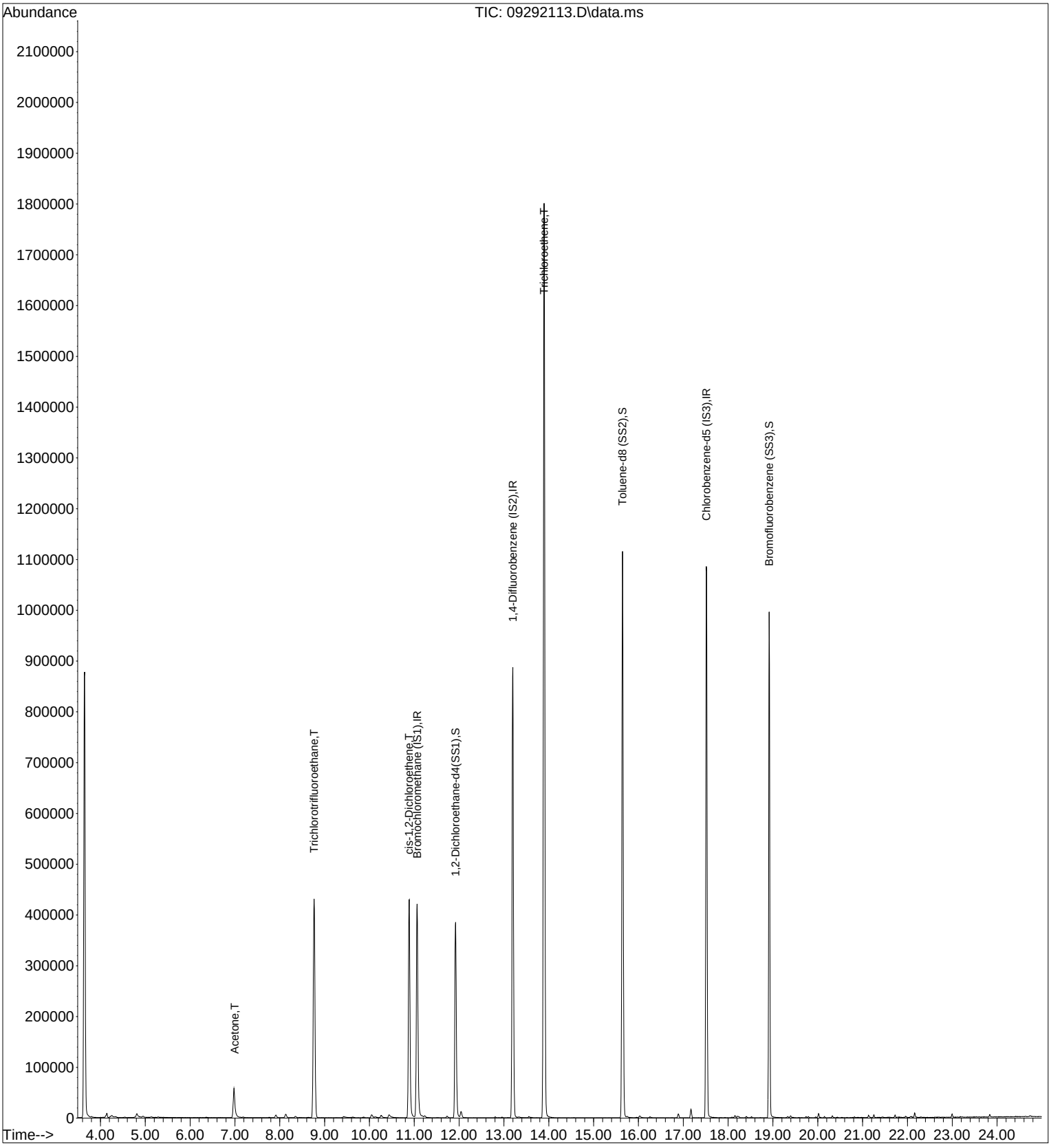
Quant Time: Sep 30 03:33:24 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
51) n-Heptane	0.00	71	0	N.D.		
52) cis-1,3-Dichloropropene	0.00	75	0	N.D.		
53) 4-Methyl-2-pentanone	0.00	58	0	N.D.		
54) trans-1,3-Dichloropropene	0.00	75	0	N.D.		
55) 1,1,2-Trichloroethane	0.00	97	0	N.D.		
58) Toluene	15.75	91	2204	N.D.		
59) 2-Hexanone	16.02	43	4637	N.D.		
60) Dibromochloromethane	0.00	129	0	N.D.		
61) 1,2-Dibromoethane	0.00	107	0	N.D.		
62) n-Butyl Acetate	16.76	43	184	N.D.		
63) n-Octane	0.00	57	0	N.D.		
64) Tetrachloroethene	16.89	166	3158	N.D.		
65) Chlorobenzene	0.00	112	0	N.D.		
66) Ethylbenzene	17.93	91	814	N.D.		
67) m- & p-Xylenes	18.08	91	1867	N.D.		
68) Bromoform	0.00	173	0	N.D.		
69) Styrene	0.00	104	0	N.D.		
70) o-Xylene	18.52	91	1509	N.D.		
71) n-Nonane	18.72	43	361	N.D.		
72) 1,1,2,2-Tetrachloroethane	0.00	83	0	N.D.		
74) Cumene	18.92	105	335	N.D.		
75) alpha-Pinene	19.40	93	1122	N.D.		
76) n-Propylbenzene	19.50	91	197	N.D.		
77) 3-Ethyltoluene	19.63	105	407	No Calib		#
78) 4-Ethyltoluene	19.63	105	407	N.D.		
79) 1,3,5-Trimethylbenzene	19.70	105	111	N.D.		
80) alpha-Methylstyrene	0.00	118	0	N.D.		
81) 2-Ethyltoluene	19.63	105	407	No Calib		#
82) 1,2,4-Trimethylbenzene	20.06	105	868	N.D.		
83) n-Decane	0.00	58	0	N.D.		
84) Benzyl Chloride	0.00	91	0	N.D.		
85) 1,3-Dichlorobenzene	20.26	146	168	N.D.		
86) 1,4-Dichlorobenzene	20.26	146	168	N.D.		
87) sec-Butylbenzene	20.43	105	200	N.D.		
88) 4-Isopropyltoluene (p-...	20.43	119	244	N.D.		
89) 1,2,3-Trimethylbenzene	20.43	105	200	No Calib		#
90) 1,2-Dichlorobenzene	0.00	146	0	N.D.		
91) d-Limonene	0.00	68	0	N.D.		
92) 1,2-Dibromo-3-Chloropr...	0.00	157	0	N.D.		
93) n-Undecane	21.13	57	1172	No Calib		#
94) 1,2,4-Trichlorobenzene	22.06	180	464	N.D.		
95) Naphthalene	22.17	128	2280	N.D.		
96) n-Dodecane	22.09	57	850	No Calib		#
97) Hexachlorobutadiene	0.00	225	0	N.D.		
98) Cyclohexanone	18.15	55	165	No Calib		#
99) tert-Butylbenzene	20.02	119	108	N.D.		
100) n-Butylbenzene	20.80	91	252	N.D.		
101) 1,1,1,2-Tetrachloroethane	0.00	131	0	N.D.		

(#) = qualifier out of range (m) = manual integration (+) = signals summed

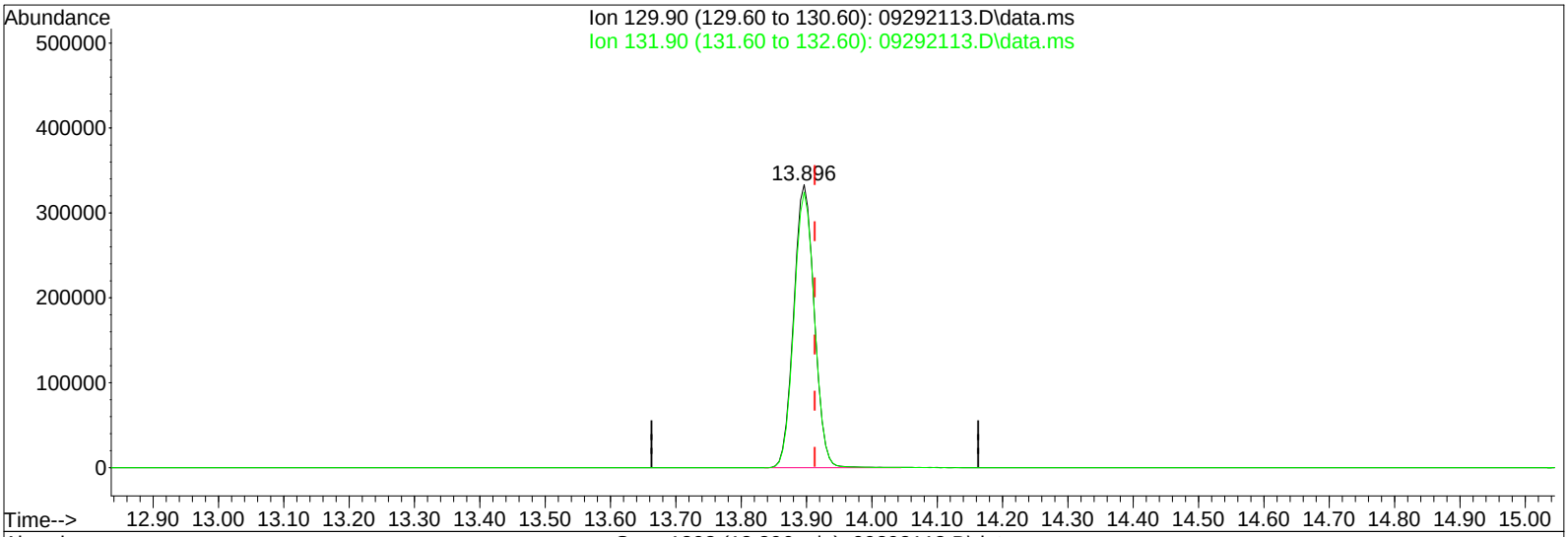
Data File : I:\MS16\DATA\2021_09\29\09292113.D Vial: 1
Acq On : 30 Sep 2021 00:55 Operator: WA
Sample : P2104927-001dil (30mL) Inst : GCMS-16
Misc : S34-09132101

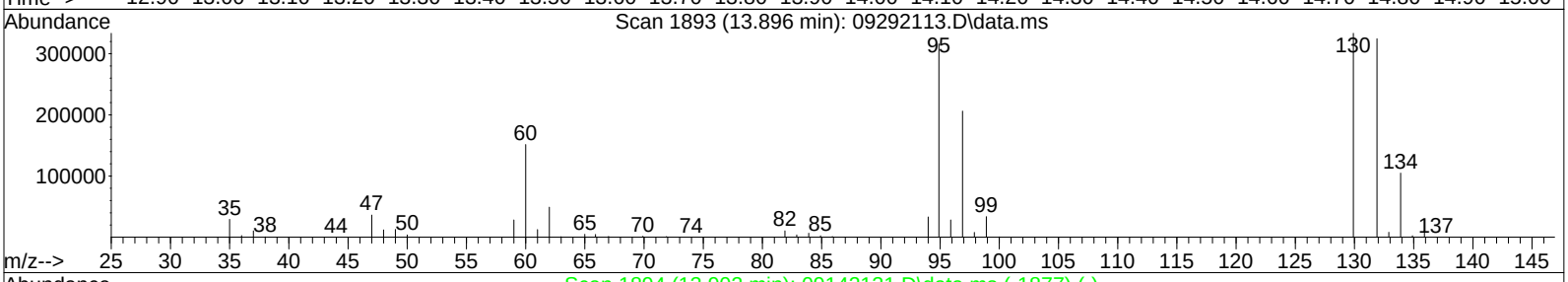
Quant Time: Sep 30 03:33:24 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

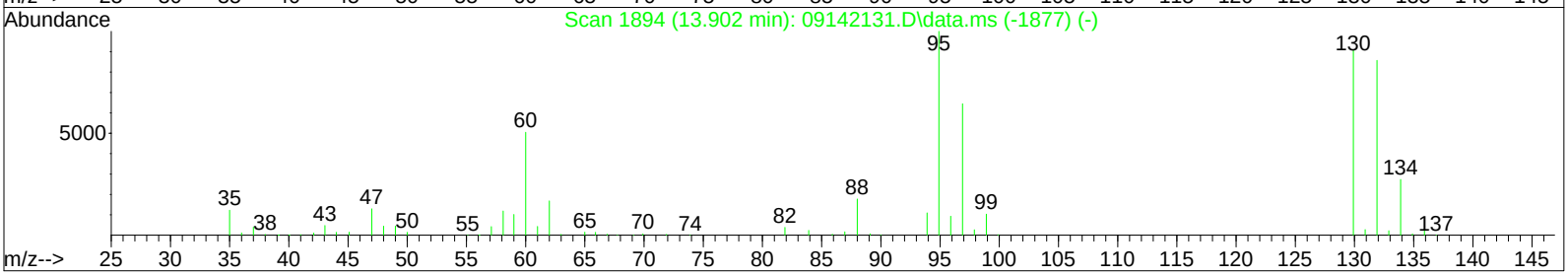


Data File : I:\MS16\DATA\2021_09\29\09292113.D Vial: 1
Acq On : 30 Sep 2021 00:55 Operator: WA
Sample : P2104927-001dil (30mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 03:33:24 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M







TIC: 09292113.D\data.ms

(47) Trichloroethene (T)

13.896min (-0.017) 34.53ng

response 727937

Ion	Exp%	Act%
129.90	100	100
131.90	95.20	97.16
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292114.D Vial: 3
Acq On : 30 Sep 2021 1:29 Operator: WA
Sample : P2104927-002 (150mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 09:40:17 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration 9/30/21
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.06	130	196572	12.500	ng		-0.03
37) 1,4-Difluorobenzene (IS2)	13.20	114	833679	12.500	ng		-0.02
56) Chlorobenzene-d5 (IS3)	17.51	54	165446	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.92	65	335552	10.306	ng		-0.03
Spiked Amount 12.500	Range 70 - 130		Recovery = 82.48%				
57) Toluene-d8 (SS2)	15.65	98	876494	12.483	ng		-0.01
Spiked Amount 12.500	Range 70 - 130		Recovery = 99.84%				
73) Bromofluorobenzene (SS3)	18.92	174	319176	13.428	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 107.44%				
Target Compounds							Qvalue
2) Propene	4.09	42	3820	N.D.			
3) Dichlorodifluoromethan...	4.23	85	11713	N.D.			
4) Chloromethane	4.50	50	9061	N.D.			
5) 1,2-Dichloro-1,1,2,2-t...	0.00	135	0	N.D.			
6) Vinyl Chloride	4.92	62	18796	0.628	ng		96
7) 1,3-Butadiene	0.00	54	0	N.D.			
8) Bromomethane	0.00	94	0	N.D.			
9) Chloroethane	5.93	64	106	N.D.			
10) Ethanol	6.30	45	10269	0.488	ng		90
11) Acetonitrile	6.57	41	3055	N.D.			
12) Acrolein	6.76	56	3290	N.D.			
13) Acetone	6.96	58	84454	4.724	ng	#	62
14) Trichlorofluoromethane	7.17	101	5838	N.D.			
15) 2-Propanol (Isopropanol)	7.51	45	4571	N.D.			
16) Acrylonitrile	0.00	53	0	N.D. d			
17) 1,1-Dichloroethene	8.12	96	20297	0.928	ng		99
18) 2-Methyl-2-Propanol (t...	8.36	59	11271	N.D.			
19) Methylene Chloride	8.34	84	9860	N.D.			
20) 3-Chloro-1-propene (Al...	8.35	41	821	N.D.			
21) Trichlorotrifluoroethane	8.77	151	926721	47.554	ng		91
22) Carbon Disulfide	8.61	76	9043	N.D.			
23) trans-1,2-Dichloroethene	9.62	61	5766	N.D.			
24) 1,1-Dichloroethane	9.87	63	11472	N.D.			
25) Methyl tert-Butyl Ether	10.03	73	491	N.D.			
26) Vinyl Acetate	0.00	86	0	N.D. d			
27) 2-Butanone (MEK)	10.40	72	24287	1.636	ng		95
28) cis-1,2-Dichloroethene	10.88	61	1608485	45.861	ng		100
29) Diisopropyl Ether	11.23	87	1597	N.D.			
30) Ethyl Acetate	0.00	61	0	N.D.			
31) n-Hexane	11.18	57	4359	N.D.			
32) Chloroform	11.23	83	16421	N.D.			
34) Tetrahydrofuran (THF)	11.70	72	4434	N.D.			
35) Ethyl tert-Butyl Ether	0.00	87	0	N.D.			
36) 1,2-Dichloroethane	12.04	62	62859	1.776	ng		99
38) 1,1,1-Trichloroethane	12.32	97	1076	N.D.			
39) Isopropyl Acetate	0.00	61	0	N.D.			
40) 1-Butanol	12.81	56	8116	No Calib		#	
41) Benzene	12.81	78	7001	N.D.			
42) Carbon Tetrachloride	12.96	117	5504	N.D.			
43) Cyclohexane	13.09	84	1563	N.D.			
44) tert-Amyl Methyl Ether	0.00	73	0	N.D.			
45) 1,2-Dichloropropane	0.00	63	0	N.D.			
46) Bromodichloromethane	0.00	83	0	N.D. d			
47) Trichloroethene	13.90	130	2966378	140.835	ng		99
48) 1,4-Dioxane	0.00	88	0	N.D. d			
49) 2,2,4-Trimethylpentane...	13.97	57	2954	N.D.			
50) Methyl Methacrylate	0.00	100	0	N.D. d			

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292114.D Vial: 3
Acq On : 30 Sep 2021 1:29 Operator: WA
Sample : P2104927-002 (150mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 09:40:17 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

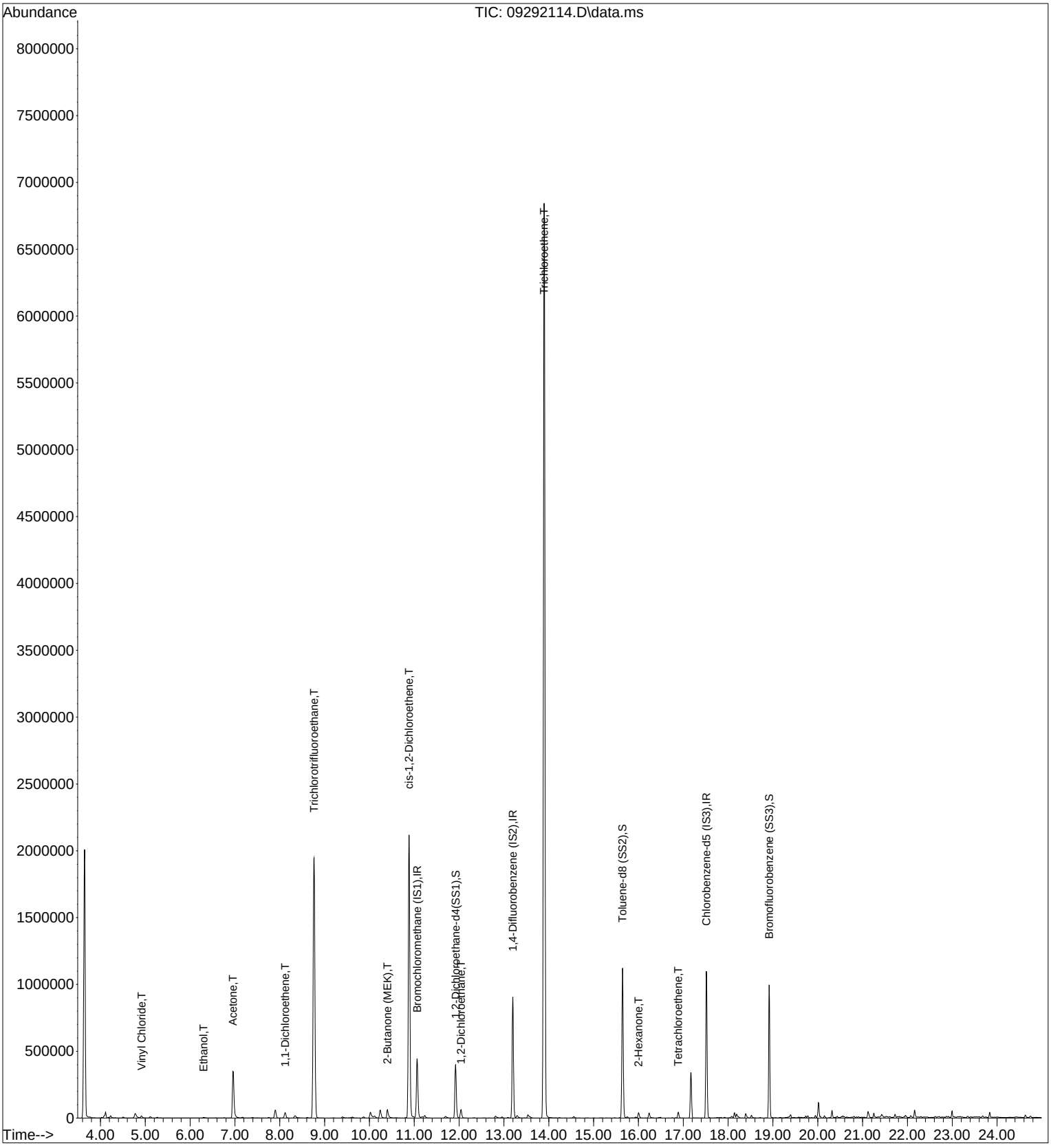
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
51) n-Heptane	14.24	71	683	N.D.		
52) cis-1,3-Dichloropropene	0.00	75	0	N.D.		
53) 4-Methyl-2-pentanone	14.83	58	104	N.D.		
54) trans-1,3-Dichloropropene	0.00	75	0	N.D.		
55) 1,1,2-Trichloroethane	15.47	97	543	N.D.		
58) Toluene	15.75	91	7585	N.D.		
59) 2-Hexanone	16.00	43	35448	0.771	ng	96
60) Dibromochloromethane	0.00	129	0	N.D.		
61) 1,2-Dibromoethane	0.00	107	0	N.D.		
62) n-Butyl Acetate	16.66	43	754	N.D.		
63) n-Octane	16.75	57	420	N.D.		
64) Tetrachloroethene	16.89	166	15881	0.700	ng	99
65) Chlorobenzene	17.55	112	109	N.D.		
66) Ethylbenzene	17.92	91	4288	N.D.		
67) m- & p-Xylenes	18.08	91	10807	N.D.		
68) Bromoform	0.00	173	0	N.D.		
69) Styrene	18.42	104	2169	N.D.		
70) o-Xylene	18.52	91	8444	N.D.		
71) n-Nonane	18.72	43	2366	N.D.		
72) 1,1,2,2-Tetrachloroethane	18.53	83	341	N.D.		
74) Cumene	19.05	105	339	N.D.		
75) alpha-Pinene	19.40	93	8509	N.D.		
76) n-Propylbenzene	19.49	91	1633	N.D.		
77) 3-Ethyltoluene	19.63	105	1528	No Calib		
78) 4-Ethyltoluene	19.63	105	1528	N.D.		
79) 1,3,5-Trimethylbenzene	19.69	105	1315	N.D.		
80) alpha-Methylstyrene	0.00	118	0	N.D.		
81) 2-Ethyltoluene	19.63	105	1528	No Calib		
82) 1,2,4-Trimethylbenzene	20.06	105	6170	N.D.		
83) n-Decane	20.04	58	104	No Calib	#	
84) Benzyl Chloride	20.25	91	175	N.D.		
85) 1,3-Dichlorobenzene	20.26	146	615	N.D.		
86) 1,4-Dichlorobenzene	20.26	146	615	N.D.		
87) sec-Butylbenzene	20.29	105	193	N.D.		
88) 4-Isopropyltoluene (p-...	20.43	119	1436	N.D.		
89) 1,2,3-Trimethylbenzene	20.29	105	193	No Calib	#	
90) 1,2-Dichlorobenzene	20.55	146	107	N.D.		
91) d-Limonene	20.56	68	3006	N.D.		
92) 1,2-Dibromo-3-Chloropr...	0.00	157	0	N.D.		
93) n-Undecane	21.13	57	5625	No Calib		
94) 1,2,4-Trichlorobenzene	22.06	180	442	N.D.		
95) Naphthalene	22.17	128	4145	N.D.		
96) n-Dodecane	22.07	57	2236	No Calib	#	
97) Hexachlorobutadiene	0.00	225	0	N.D.		
98) Cyclohexanone	18.14	55	1835	No Calib	#	
99) tert-Butylbenzene	20.06	119	571	N.D.		
100) n-Butylbenzene	20.80	91	1566	N.D.		
101) 1,1,1,2-Tetrachloroethane	0.00	131	0	N.D.		

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292114.D Vial: 3
Acq On : 30 Sep 2021 1:29 Operator: WA
Sample : P2104927-002 (150mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 09:40:17 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292114.D Vial: 3
Acq On : 30 Sep 2021 1:29 Operator: WA
Sample : P2104927-002 (150mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 09:40:17 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021 9/30/21
Response via : Initial Calibration
DataAcq Meth:TO15.M

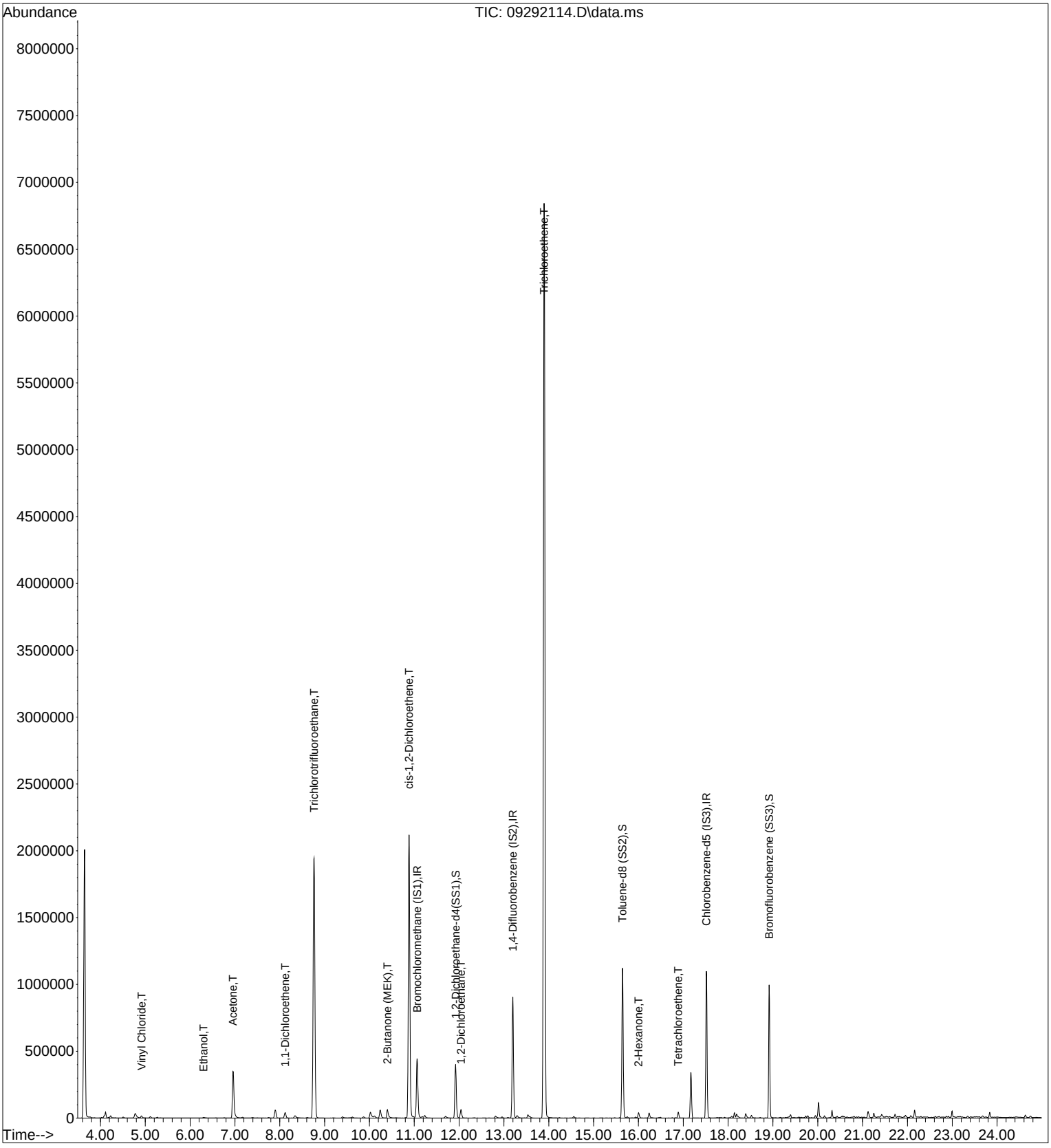
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.06	130	196572	12.500	ng		-0.03
37) 1,4-Difluorobenzene (IS2)	13.20	114	833679	12.500	ng		-0.02
56) Chlorobenzene-d5 (IS3)	17.51	54	165446	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.92	65	335552	10.306	ng		-0.03
Spiked Amount 12.500	Range 70 - 130		Recovery = 82.48%				
57) Toluene-d8 (SS2)	15.65	98	876494	12.483	ng		-0.01
Spiked Amount 12.500	Range 70 - 130		Recovery = 99.84%				
73) Bromofluorobenzene (SS3)	18.92	174	319176	13.428	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 107.44%				
Target Compounds							Qvalue
6) Vinyl Chloride	4.92	62	18796	0.628	ng		96
10) Ethanol	6.30	45	10269	0.488	ng		90
13) Acetone	6.96	58	84454	4.724	ng	#	62
17) 1,1-Dichloroethene	8.12	96	20297	0.928	ng		99
21) Trichlorotrifluoroethane	8.77	151	926721	47.554	ng		91
27) 2-Butanone (MEK)	10.40	72	24287	1.636	ng		95
28) cis-1,2-Dichloroethene	10.88	61	1608485	45.861	ng		100
36) 1,2-Dichloroethane	12.04	62	62859	1.776	ng		99
47) Trichloroethene	13.90	130	2966378	140.835	ng		99
59) 2-Hexanone	16.00	43	35448	0.771	ng		96
64) Tetrachloroethene	16.89	166	15881	0.700	ng		99

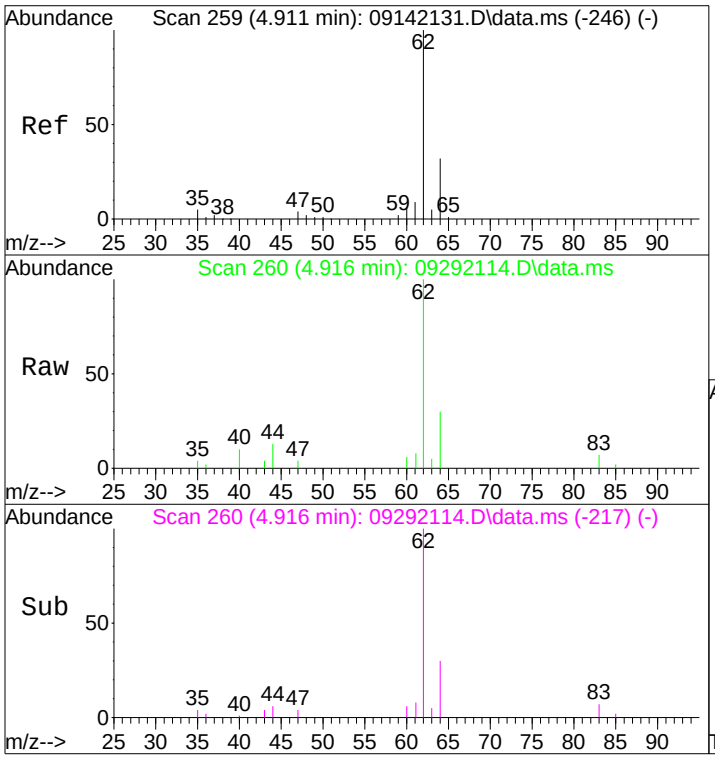
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292114.D Vial: 3
Acq On : 30 Sep 2021 1:29 Operator: WA
Sample : P2104927-002 (150mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 09:40:17 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

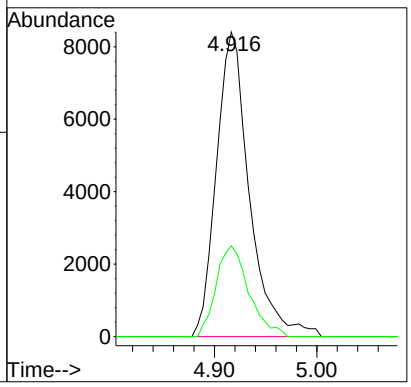


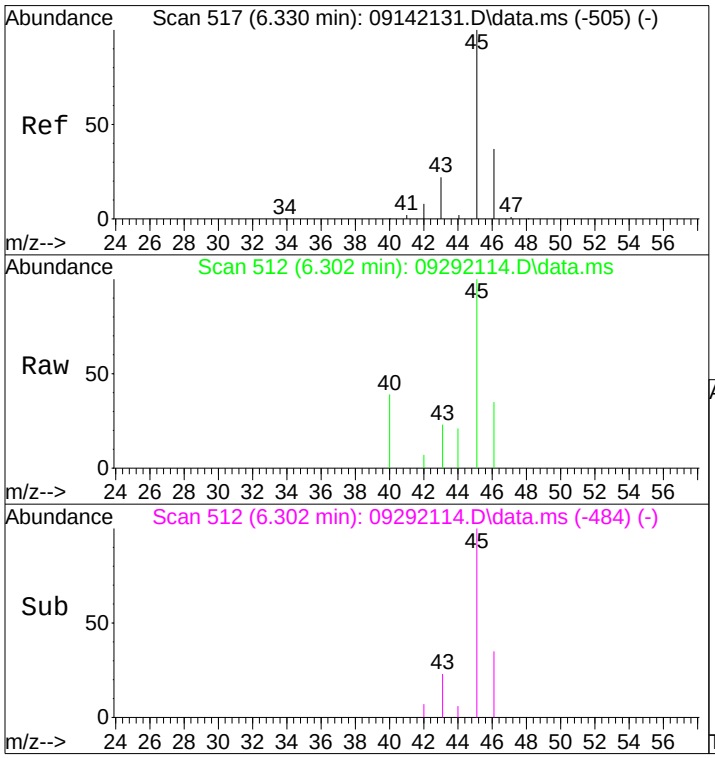


#6
Vinyl Chloride
Concen: 0.63 ng
RT: 4.92 min Scan# 260
Delta R.T. -0.011 min
Lab File: 09292114.D
Acq: 30 Sep 2021 1:29

Tgt Ion: 62 Resp: 18796

Ion	Ratio	Lower	Upper
62	100		
64	29.6	11.9	51.9

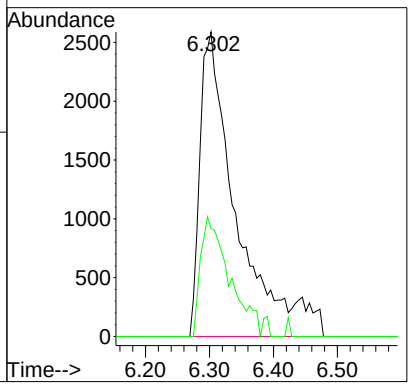


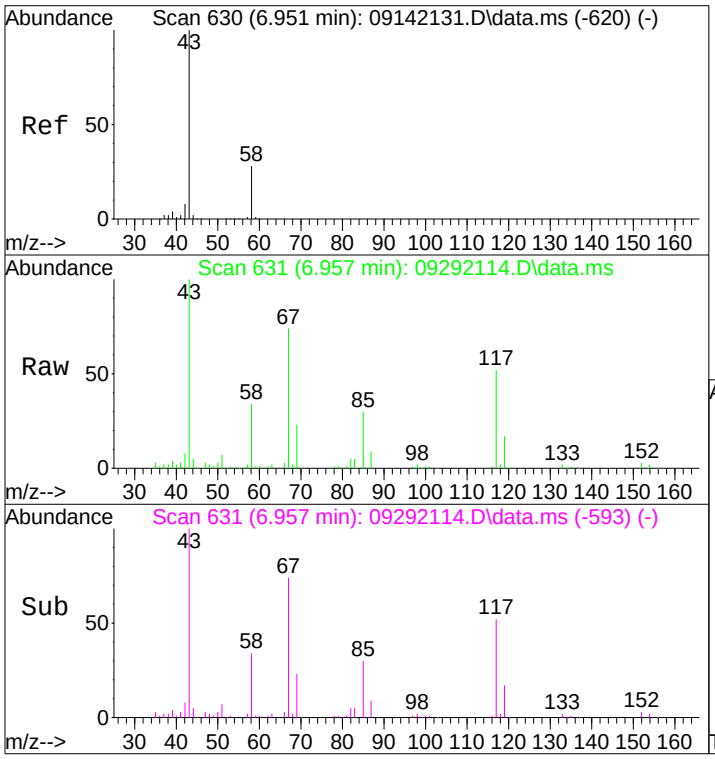


#10
Ethanol
Concen: 0.49 ng
RT: 6.30 min Scan# 512
Delta R.T. -0.094 min
Lab File: 09292114.D
Acq: 30 Sep 2021 1:29

Tgt Ion: 45 Resp: 10269

Ion	Ratio	Lower	Upper
45	100		
46	30.9	17.0	57.0

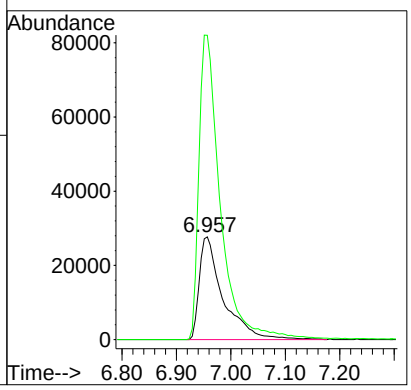


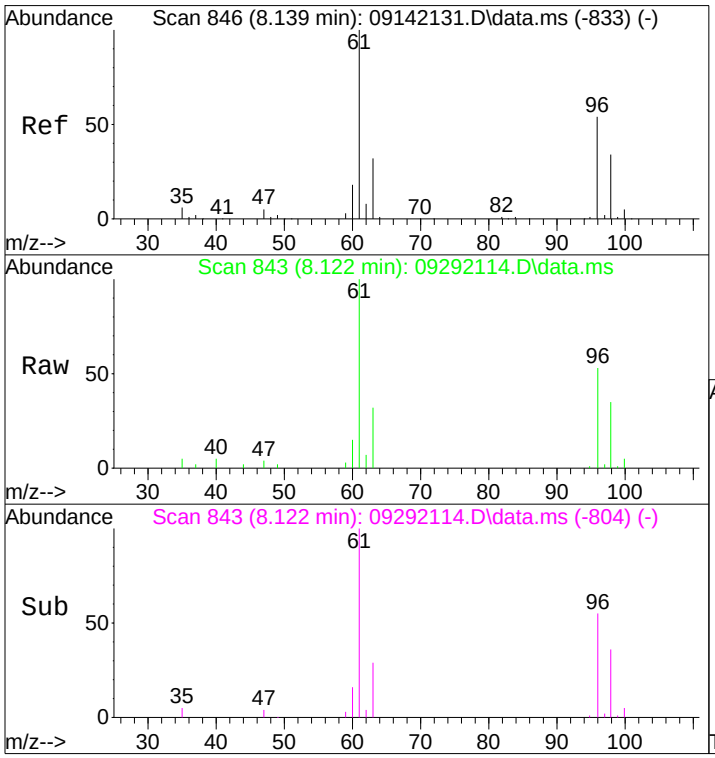


#13
Acetone
Concen: 4.72 ng
RT: 6.96 min Scan# 631
Delta R.T. -0.039 min
Lab File: 09292114.D
Acq: 30 Sep 2021 1:29

Tgt Ion: 58 Resp: 84454

Ion	Ratio	Lower	Upper
58	100		
43	266.8	319.7	379.7#

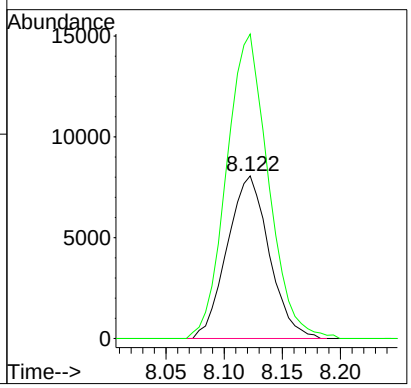


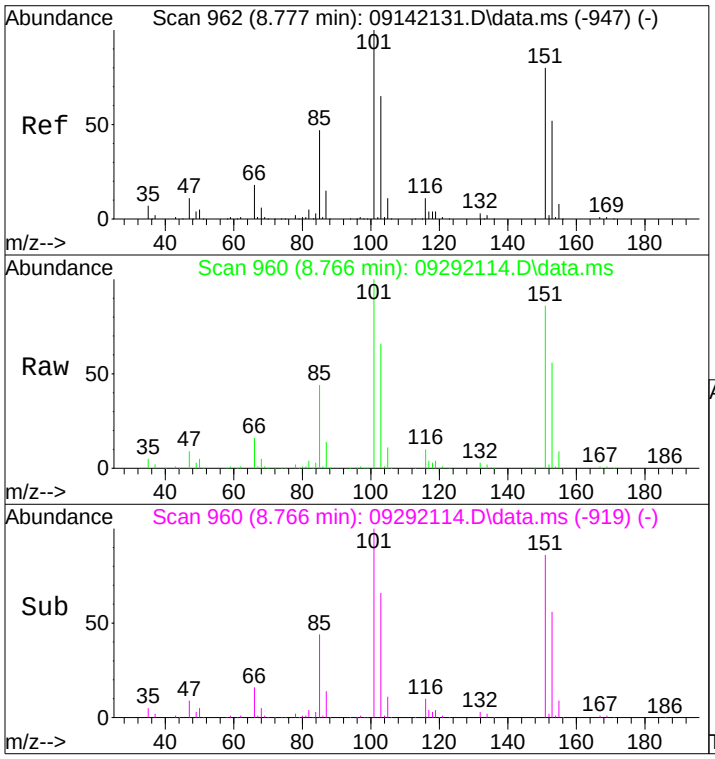


#17
1,1-Dichloroethene
Concen: 0.93 ng
RT: 8.12 min Scan# 843
Delta R.T. -0.033 min
Lab File: 09292114.D
Acq: 30 Sep 2021 1:29

Tgt Ion: 96 Resp: 20297

Ion	Ratio	Lower	Upper
96	100		
61	186.4	165.4	205.4

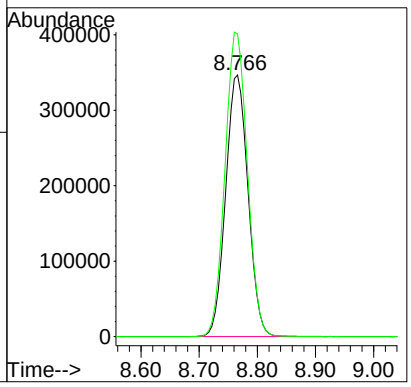


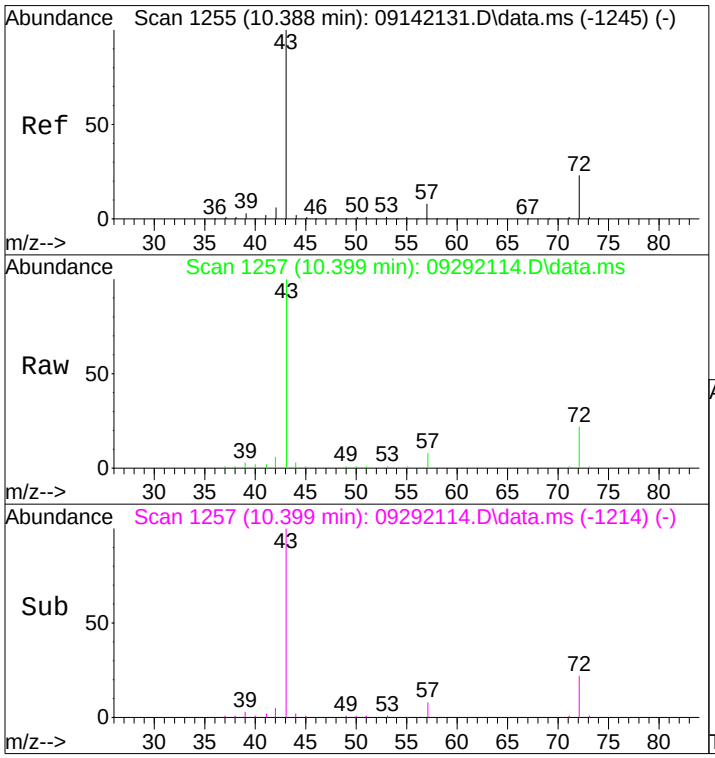


#21
Trichlorotrifluoroethane
Concen: 47.55 ng
RT: 8.77 min Scan# 960
Delta R.T. -0.022 min
Lab File: 09292114.D
Acq: 30 Sep 2021 1:29

Tgt Ion:151 Resp: 926721

Ion	Ratio	Lower	Upper
151	100		
101	116.4	107.1	147.1

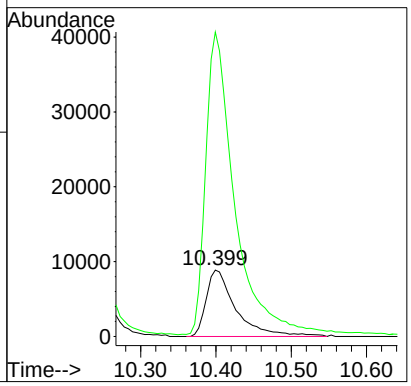


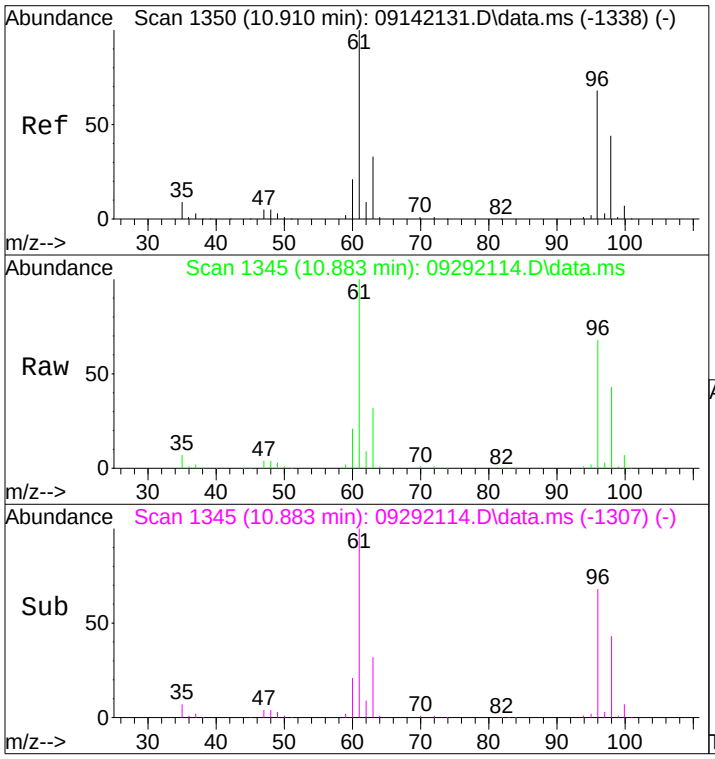


#27
2-Butanone (MEK)
Concen: 1.64 ng
RT: 10.40 min Scan# 1257
Delta R.T. -0.011 min
Lab File: 09292114.D
Acq: 30 Sep 2021 1:29

Tgt Ion: 72 Resp: 24287

Ion	Ratio	Lower	Upper
72	100		
43	447.2	415.7	455.7

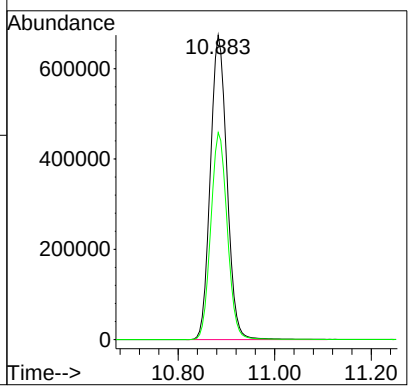


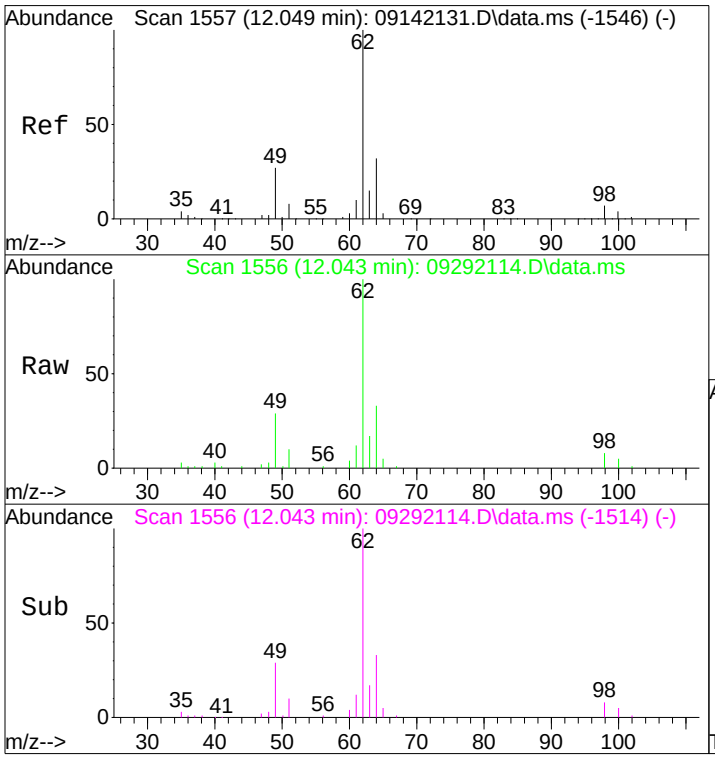


#28
cis-1,2-Dichloroethene
Concen: 45.86 ng
RT: 10.88 min Scan# 1345
Delta R.T. -0.039 min
Lab File: 09292114.D
Acq: 30 Sep 2021 1:29

Tgt Ion: 61 Resp: 1608485

Ion	Ratio	Lower	Upper
61	100		
96	67.6	47.9	87.9

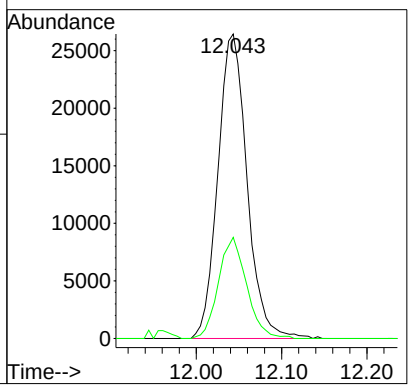


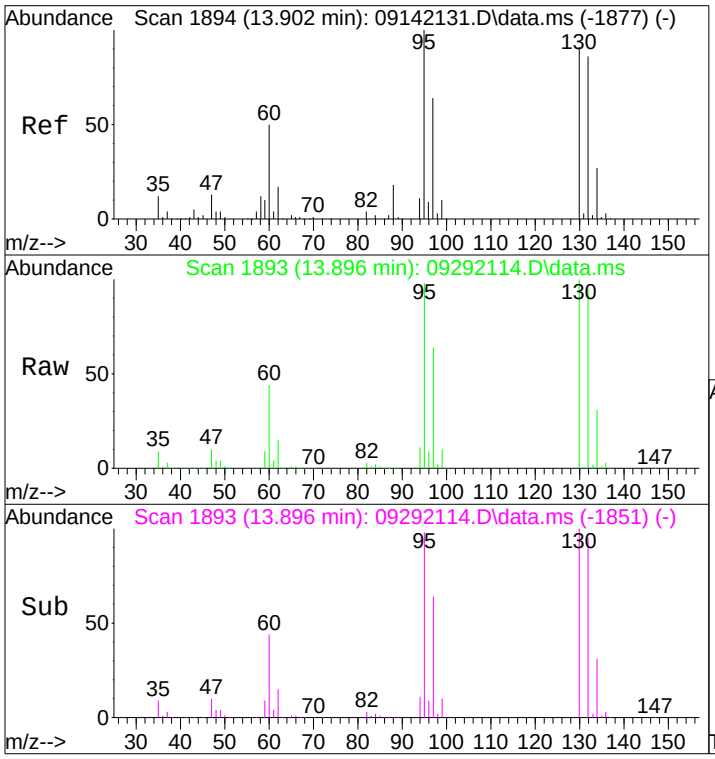


#36
1,2-Dichloroethane
Concen: 1.78 ng
RT: 12.04 min Scan# 1556
Delta R.T. -0.017 min
Lab File: 09292114.D
Acq: 30 Sep 2021 1:29

Tgt Ion: 62 Resp: 62859

Ion	Ratio	Lower	Upper
62	100		
64	32.0	12.5	52.5

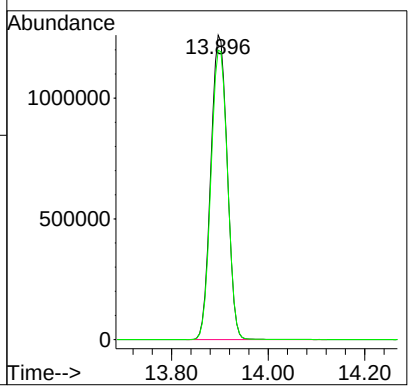


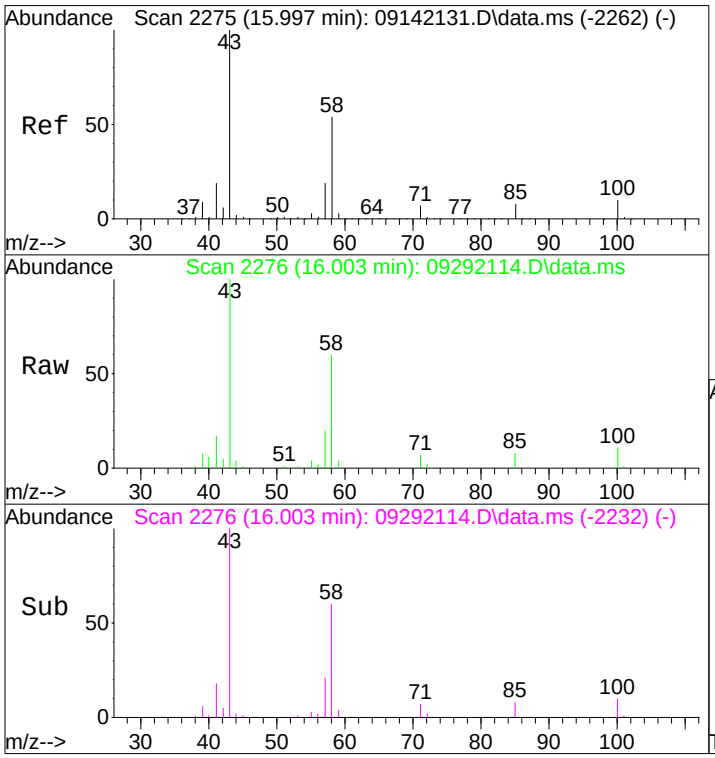


#47
Trichloroethene
Concen: 140.83 ng
RT: 13.90 min Scan# 1893
Delta R.T. -0.017 min
Lab File: 09292114.D
Acq: 30 Sep 2021 1:29

Tgt Ion:130 Resp: 2966378

Ion	Ratio	Lower	Upper
130	100		
132	96.1	75.2	115.2

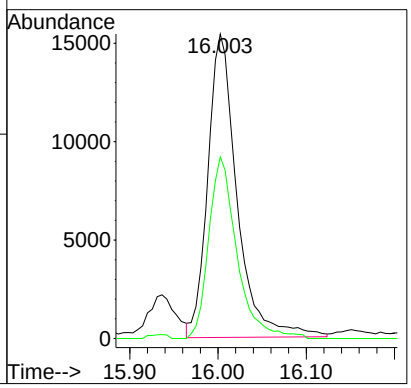


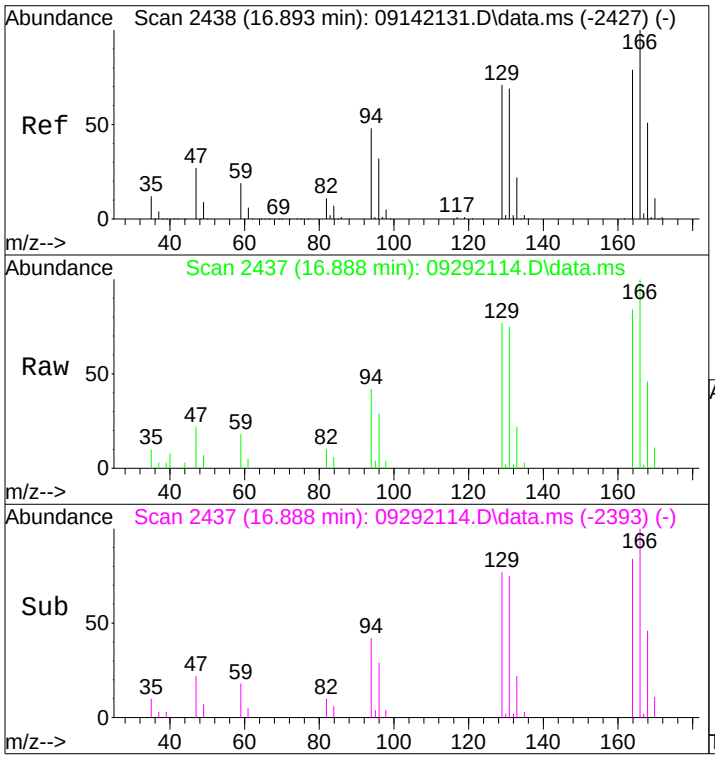


#59
2-Hexanone
Concen: 0.77 ng
RT: 16.00 min Scan# 2276
Delta R.T. -0.006 min
Lab File: 09292114.D
Acq: 30 Sep 2021 1:29

Tgt Ion: 43 Resp: 35448

Ion	Ratio	Lower	Upper
43	100		
58	57.6	34.5	74.5

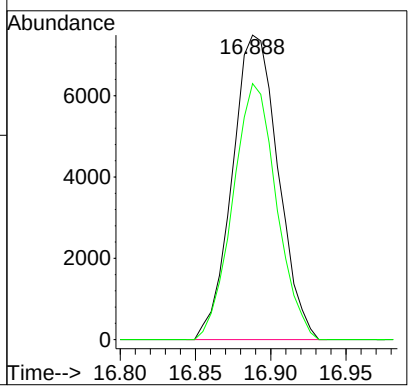




#64
Tetrachloroethene
Concen: 0.70 ng
RT: 16.89 min Scan# 2437
Delta R.T. -0.006 min
Lab File: 09292114.D
Acq: 30 Sep 2021 1:29

Tgt Ion:166 Resp: 15881

Ion	Ratio	Lower	Upper
166	100		
164	80.1	59.2	99.2



Data File : I:\MS16\DATA\2021_09\29\09292115.D Vial: 3
Acq On : 30 Sep 2021 2:03 Operator: WA
Sample : P2104927-002dil (30mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 03:33:28 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

9/30/21

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.06	130	191112	12.500	ng		-0.04
37) 1,4-Difluorobenzene (IS2)	13.20	114	808503	12.500	ng		-0.02
56) Chlorobenzene-d5 (IS3)	17.51	54	159807	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.92	65	330779	10.450	ng		-0.03
Spiked Amount 12.500	Range 70 - 130		Recovery = 83.60%				
57) Toluene-d8 (SS2)	15.65	98	850000	12.533	ng		-0.01
Spiked Amount 12.500	Range 70 - 130		Recovery = 100.24%				
73) Bromofluorobenzene (SS3)	18.92	174	310265	13.514	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 108.08%				
Target Compounds							Qvalue
2) Propene	4.11	42	704	N.D.			
3) Dichlorodifluoromethan...	4.25	85	2331	N.D.			
4) Chloromethane	4.53	50	1910	N.D.			
5) 1,2-Dichloro-1,1,2,2-t...	0.00	135	0	N.D.			
6) Vinyl Chloride	4.94	62	3341	N.D.			
7) 1,3-Butadiene	0.00	54	0	N.D.			
8) Bromomethane	0.00	94	0	N.D.			
9) Chloroethane	0.00	64	0	N.D.			
10) Ethanol	6.34	45	1523	N.D.			
11) Acetonitrile	6.61	41	64	N.D.			
12) Acrolein	6.79	56	222	N.D.			
13) Acetone	6.98	58	17865	1.028	ng	#	59
14) Trichlorofluoromethane	7.18	101	1074	N.D.			
15) 2-Propanol (Isopropanol)	7.55	45	114	N.D.			
16) Acrylonitrile	7.91	53	4870	N.D.			
17) 1,1-Dichloroethene	8.13	96	4014	N.D.			
18) 2-Methyl-2-Propanol (t...	8.43	59	2183	N.D.			
19) Methylene Chloride	8.35	84	1923	N.D.			
20) 3-Chloro-1-propene (Al...	0.00	41	0	N.D.			
21) Trichlorotrifluoroethane	8.77	151	196969	10.396	ng		90
22) Carbon Disulfide	8.62	76	2183	N.D.			
23) trans-1,2-Dichloroethene	9.62	61	851	N.D.			
24) 1,1-Dichloroethane	9.87	63	2311	N.D.			
25) Methyl tert-Butyl Ether	0.00	73	0	N.D.			
26) Vinyl Acetate	0.00	86	0	N.D.			
27) 2-Butanone (MEK)	10.43	72	4123	N.D.			
28) cis-1,2-Dichloroethene	10.88	61	340306	9.980	ng		98
29) Diisopropyl Ether	0.00	87	0	N.D.			
30) Ethyl Acetate	0.00	61	0	N.D.			
31) n-Hexane	11.19	57	758	N.D.			
32) Chloroform	11.23	83	3254	N.D.			
34) Tetrahydrofuran (THF)	11.74	72	827	N.D.			
35) Ethyl tert-Butyl Ether	0.00	87	0	N.D.			
36) 1,2-Dichloroethane	12.04	62	12105	N.D.			
38) 1,1,1-Trichloroethane	0.00	97	0	N.D.			
39) Isopropyl Acetate	0.00	61	0	N.D.			
40) 1-Butanol	12.88	56	738	No Calib		#	
41) Benzene	12.80	78	1908	N.D.			
42) Carbon Tetrachloride	12.95	117	931	N.D.			
43) Cyclohexane	13.19	84	436	N.D.			
44) tert-Amyl Methyl Ether	0.00	73	0	N.D.			
45) 1,2-Dichloropropane	0.00	63	0	N.D.			
46) Bromodichloromethane	13.90	83	8258	N.D.			
47) Trichloroethene	13.90	130	726133	35.548	ng		98
48) 1,4-Dioxane	13.92	88	1660	N.D.			
49) 2,2,4-Trimethylpentane...	13.96	57	1210	N.D.			
50) Methyl Methacrylate	13.89	100	1613	N.D.			

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292115.D Vial: 3
Acq On : 30 Sep 2021 2:03 Operator: WA
Sample : P2104927-002dil (30mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 03:33:28 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

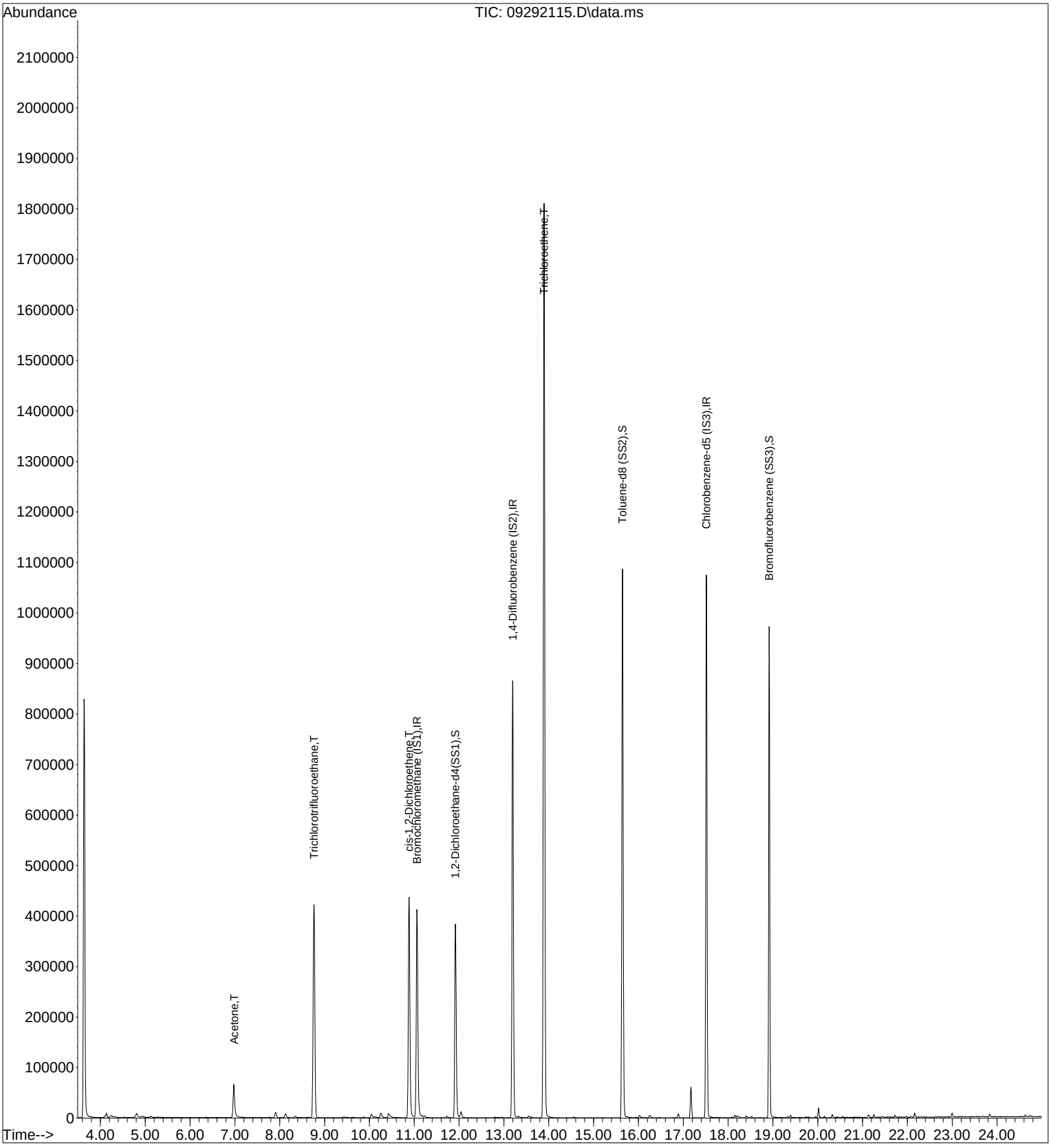
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
51) n-Heptane	0.00	71	0	N.D.		
52) cis-1,3-Dichloropropene	0.00	75	0	N.D.		
53) 4-Methyl-2-pentanone	0.00	58	0	N.D.		
54) trans-1,3-Dichloropropene	0.00	75	0	N.D.		
55) 1,1,2-Trichloroethane	0.00	97	0	N.D.		
58) Toluene	15.76	91	1730	N.D.		
59) 2-Hexanone	16.02	43	6390	N.D.		
60) Dibromochloromethane	0.00	129	0	N.D.		
61) 1,2-Dibromoethane	0.00	107	0	N.D.		
62) n-Butyl Acetate	16.76	43	259	N.D.		
63) n-Octane	0.00	57	0	N.D.		
64) Tetrachloroethene	16.89	166	3067	N.D.		
65) Chlorobenzene	0.00	112	0	N.D.		
66) Ethylbenzene	17.93	91	834	N.D.		
67) m- & p-Xylenes	18.09	91	2020	N.D.		
68) Bromoform	0.00	173	0	N.D.		
69) Styrene	18.43	104	280	N.D.		
70) o-Xylene	18.52	91	1560	N.D.		
71) n-Nonane	18.72	43	528	N.D.		
72) 1,1,2,2-Tetrachloroethane	0.00	83	0	N.D.		
74) Cumene	18.91	105	376	N.D.		
75) alpha-Pinene	19.40	93	1554	N.D.		
76) n-Propylbenzene	19.49	91	173	N.D.		
77) 3-Ethyltoluene	19.59	105	426	No Calib		#
78) 4-Ethyltoluene	19.59	105	426	N.D.		
79) 1,3,5-Trimethylbenzene	19.70	105	192	N.D.		
80) alpha-Methylstyrene	0.00	118	0	N.D.		
81) 2-Ethyltoluene	19.59	105	426	No Calib		#
82) 1,2,4-Trimethylbenzene	20.06	105	1055	N.D.		
83) n-Decane	0.00	58	0	N.D.		
84) Benzyl Chloride	20.00	91	134	N.D.		
85) 1,3-Dichlorobenzene	20.25	146	105	N.D.		
86) 1,4-Dichlorobenzene	20.25	146	105	N.D.		
87) sec-Butylbenzene	20.43	105	300	N.D.		
88) 4-Isopropyltoluene (p-...	20.44	119	242	N.D.		
89) 1,2,3-Trimethylbenzene	20.43	105	300	No Calib		#
90) 1,2-Dichlorobenzene	0.00	146	0	N.D.		
91) d-Limonene	20.56	68	569	N.D.		
92) 1,2-Dibromo-3-Chloropr...	0.00	157	0	N.D.		
93) n-Undecane	21.14	57	1352	No Calib		#
94) 1,2,4-Trichlorobenzene	22.06	180	263	N.D.		
95) Naphthalene	22.17	128	1420	N.D.		
96) n-Dodecane	22.08	57	543	No Calib		#
97) Hexachlorobutadiene	0.00	225	0	N.D.		
98) Cyclohexanone	18.15	55	297	No Calib		#
99) tert-Butylbenzene	20.03	119	247	N.D.		
100) n-Butylbenzene	0.00	91	0	N.D.		
101) 1,1,1,2-Tetrachloroethane	0.00	131	0	N.D.		

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

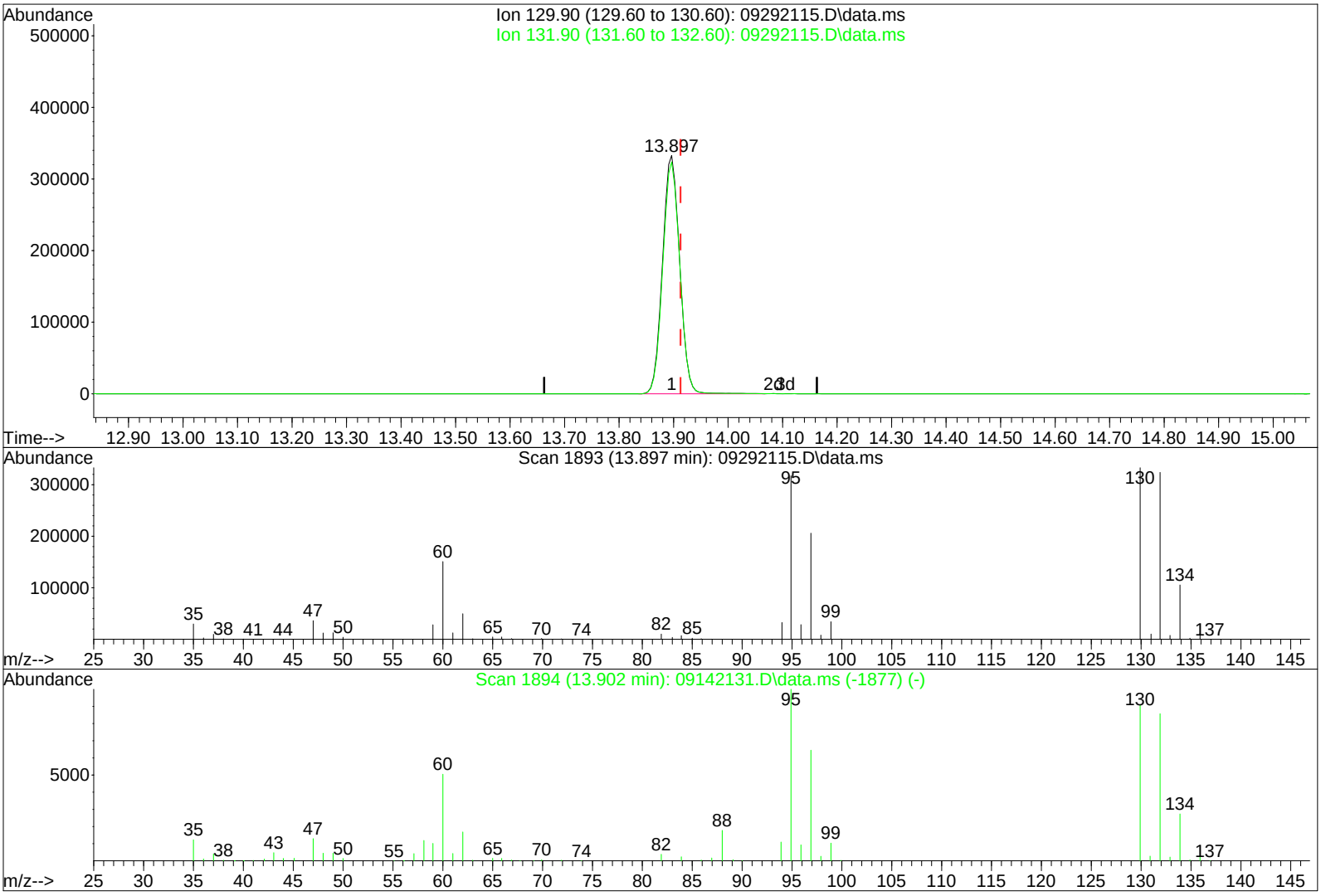
Data File : I:\MS16\DATA\2021_09\29\09292115.D Vial: 3
Acq On : 30 Sep 2021 2:03 Operator: WA
Sample : P2104927-002dil (30mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 03:33:28 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M



Data File : I:\MS16\DATA\2021_09\29\09292115.D Vial: 3
Acq On : 30 Sep 2021 2:03 Operator: WA
Sample : P2104927-002dil (30mL) Inst : GCMS-16
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Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
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Response via : Initial Calibration
DataAcq Meth:TO15.M



TIC: 09292115.D\data.ms

(47) Trichloroethene (T)

13.897min (-0.017) 35.55ng

response 726133

Ion	Exp%	Act%
129.90	100	100
131.90	95.20	96.78
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292116.D Vial: 6
Acq On : 30 Sep 2021 2:38 Operator: WA
Sample : P2104927-004 (1000mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 10:01:19 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

9/30/21

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.07	130	190619	12.500	ng		-0.03
37) 1,4-Difluorobenzene (IS2)	13.20	114	810967	12.500	ng		-0.02
56) Chlorobenzene-d5 (IS3)	17.51	54	161505	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.92	65	331436	10.498	ng		-0.03
Spiked Amount 12.500	Range 70 - 130		Recovery = 84.00%				
57) Toluene-d8 (SS2)	15.65	98	856246	12.492	ng		-0.01
Spiked Amount 12.500	Range 70 - 130		Recovery = 99.92%				
73) Bromofluorobenzene (SS3)	18.92	174	314911	13.572	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 108.56%				
Target Compounds							Qvalue
2) Propene	0.00	42	0	N.D.	d		
3) Dichlorodifluoromethan...	4.23	85	77989	1.593	ng		100
4) Chloromethane	4.51	50	7487	N.D.			
5) 1,2-Dichloro-1,1,2,2-t...	4.76	135	1591	N.D.			
6) Vinyl Chloride	0.00	62	0	N.D.			
7) 1,3-Butadiene	5.19	54	324	N.D.			
8) Bromomethane	5.61	94	476	N.D.			
9) Chloroethane	0.00	64	0	N.D.			
10) Ethanol	6.29	45	55061	2.697	ng		100
11) Acetonitrile	6.56	41	23983	0.456	ng		90
12) Acrolein	6.75	56	12295	0.769	ng		98
13) Acetone	6.93	58	342802	19.775	ng	#	73
14) Trichlorofluoromethane	7.17	101	40137	0.906	ng		99
15) 2-Propanol (Isopropanol)	7.46	45	26815	0.495	ng		77
16) Acrylonitrile	7.76	53	568	N.D.			
17) 1,1-Dichloroethene	0.00	96	0	N.D.			
18) 2-Methyl-2-Propanol (t...	8.39	59	5018	N.D.			
19) Methylene Chloride	8.35	84	2903	N.D.			
20) 3-Chloro-1-propene (Al...	8.42	41	696	N.D.			
21) Trichlorotrifluoroethane	8.78	151	21500	1.138	ng		90
22) Carbon Disulfide	8.61	76	63134	0.745	ng		98
23) trans-1,2-Dichloroethene	0.00	61	0	N.D.			
24) 1,1-Dichloroethane	0.00	63	0	N.D.			
25) Methyl tert-Butyl Ether	10.03	73	241	N.D.			
26) Vinyl Acetate	10.11	86	14989	3.664	ng	#	8
27) 2-Butanone (MEK)	10.39	72	52049	3.615	ng		95
28) cis-1,2-Dichloroethene	10.90	61	2615	N.D.			
29) Diisopropyl Ether	0.00	87	0	N.D.			
30) Ethyl Acetate	11.23	61	2495	N.D.			
31) n-Hexane	11.18	57	35806	0.987	ng		97
32) Chloroform	11.24	83	1431	N.D.			
34) Tetrahydrofuran (THF)	11.67	72	20661	1.419	ng	#	88
35) Ethyl tert-Butyl Ether	0.00	87	0	N.D.			
36) 1,2-Dichloroethane	12.05	62	1034	N.D.			
38) 1,1,1-Trichloroethane	0.00	97	0	N.D.			
39) Isopropyl Acetate	0.00	61	0	N.D.			
40) 1-Butanol	12.80	56	25276	No Calib		#	
41) Benzene	12.80	78	27680	N.D.			
42) Carbon Tetrachloride	12.96	117	9039	N.D.			
43) Cyclohexane	13.09	84	5175	N.D.			
44) tert-Amyl Methyl Ether	13.58	73	320	N.D.			
45) 1,2-Dichloropropane	13.52	63	595	N.D.			
46) Bromodichloromethane	13.62	83	106	N.D.			
47) Trichloroethene	13.90	130	6482	N.D.			
48) 1,4-Dioxane	13.93	88	470	N.D.			
49) 2,2,4-Trimethylpentane...	13.97	57	7837	N.D.			
50) Methyl Methacrylate	14.04	100	556	N.D.			

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292116.D Vial: 6
Acq On : 30 Sep 2021 2:38 Operator: WA
Sample : P2104927-004 (1000mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 10:01:19 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

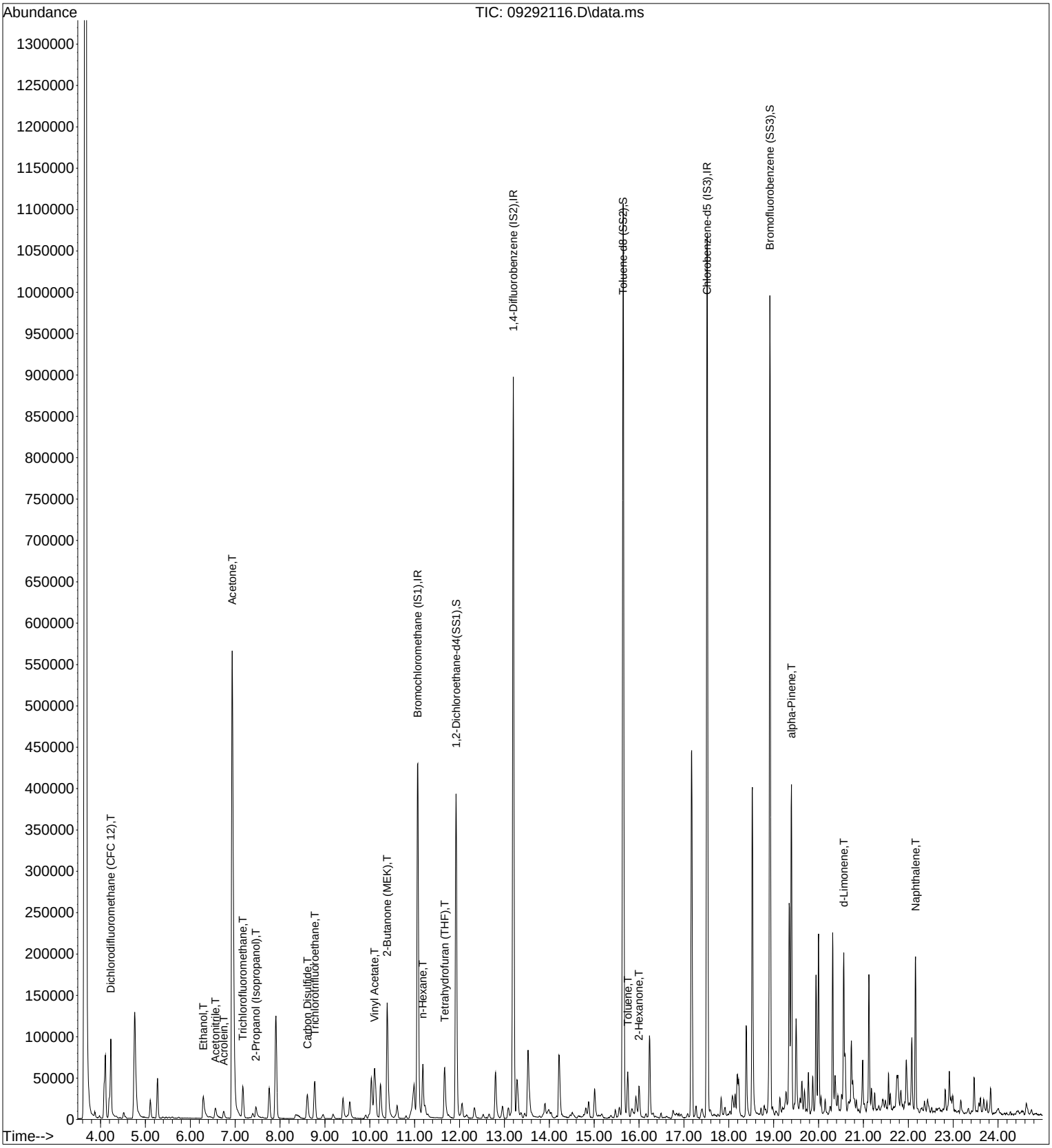
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
51) n-Heptane	14.24	71	4685	N.D.			
52) cis-1,3-Dichloropropene	0.00	75	0	N.D.			
53) 4-Methyl-2-pentanone	14.81	58	3097	N.D.			
54) trans-1,3-Dichloropropene	0.00	75	0	N.D.			
55) 1,1,2-Trichloroethane	0.00	97	0	N.D.			
58) Toluene	15.75	91	43523	0.546	ng		100
59) 2-Hexanone	16.00	43	32809	0.731	ng		100
60) Dibromochloromethane	0.00	129	0	N.D.			
61) 1,2-Dibromoethane	0.00	107	0	N.D.			
62) n-Butyl Acetate	16.64	43	1412	N.D.			
63) n-Octane	16.76	57	2004	N.D.			
64) Tetrachloroethene	16.89	166	615	N.D.			
65) Chlorobenzene	17.56	112	1055	N.D.			
66) Ethylbenzene	17.92	91	5830	N.D.			
67) m- & p-Xylenes	18.08	91	19399	N.D.			
68) Bromoform	18.15	173	227	N.D.			
69) Styrene	18.42	104	4483	N.D.			
70) o-Xylene	18.52	91	7183	N.D.			
71) n-Nonane	18.72	43	5337	N.D.			
72) 1,1,2,2-Tetrachloroethane	18.53	83	974	N.D.			
74) Cumene	19.04	105	726	N.D.			
75) alpha-Pinene	19.40	93	157798	3.464	ng		96
76) n-Propylbenzene	19.49	91	2397	N.D.			
77) 3-Ethyltoluene	19.63	105	3023	No Calib			
78) 4-Ethyltoluene	19.63	105	3023	N.D.			
79) 1,3,5-Trimethylbenzene	19.69	105	2481	N.D.			
80) alpha-Methylstyrene	19.82	118	376	No Calib		#	
81) 2-Ethyltoluene	19.63	105	3023	No Calib			
82) 1,2,4-Trimethylbenzene	20.06	105	7797	N.D.			
83) n-Decane	20.06	58	1079	No Calib		#	
84) Benzyl Chloride	20.26	91	1365	N.D.			
85) 1,3-Dichlorobenzene	20.25	146	798	N.D.			
86) 1,4-Dichlorobenzene	20.25	146	798	N.D.			
87) sec-Butylbenzene	20.30	105	1249	N.D.			
88) 4-Isopropyltoluene (p-...	20.43	119	8571	N.D.			
89) 1,2,3-Trimethylbenzene	20.30	105	1249	No Calib		#	
90) 1,2-Dichlorobenzene	20.54	146	293	N.D.			
91) d-Limonene	20.56	68	43662	1.603	ng	#	46
92) 1,2-Dibromo-3-Chloropr...	0.00	157	0	N.D.			
93) n-Undecane	21.12	57	30669	No Calib			
94) 1,2,4-Trichlorobenzene	22.06	180	3464	N.D.			
95) Naphthalene	22.16	128	109445	1.160	ng		100
96) n-Dodecane	22.08	57	12998	No Calib		#	
97) Hexachlorobutadiene	0.00	225	0	N.D.			
98) Cyclohexanone	18.14	55	1265	No Calib		#	
99) tert-Butylbenzene	20.06	119	1105	N.D.			
100) n-Butylbenzene	20.80	91	6571	N.D.			
101) 1,1,1,2-Tetrachloroethane	0.00	131	0	N.D.			

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292116.D Vial: 6
Acq On : 30 Sep 2021 2:38 Operator: WA
Sample : P2104927-004 (1000mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 10:01:19 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292116.D Vial: 6
Acq On : 30 Sep 2021 2:38 Operator: WA
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DataAcq Meth:TO15.M

WA 9/30/21

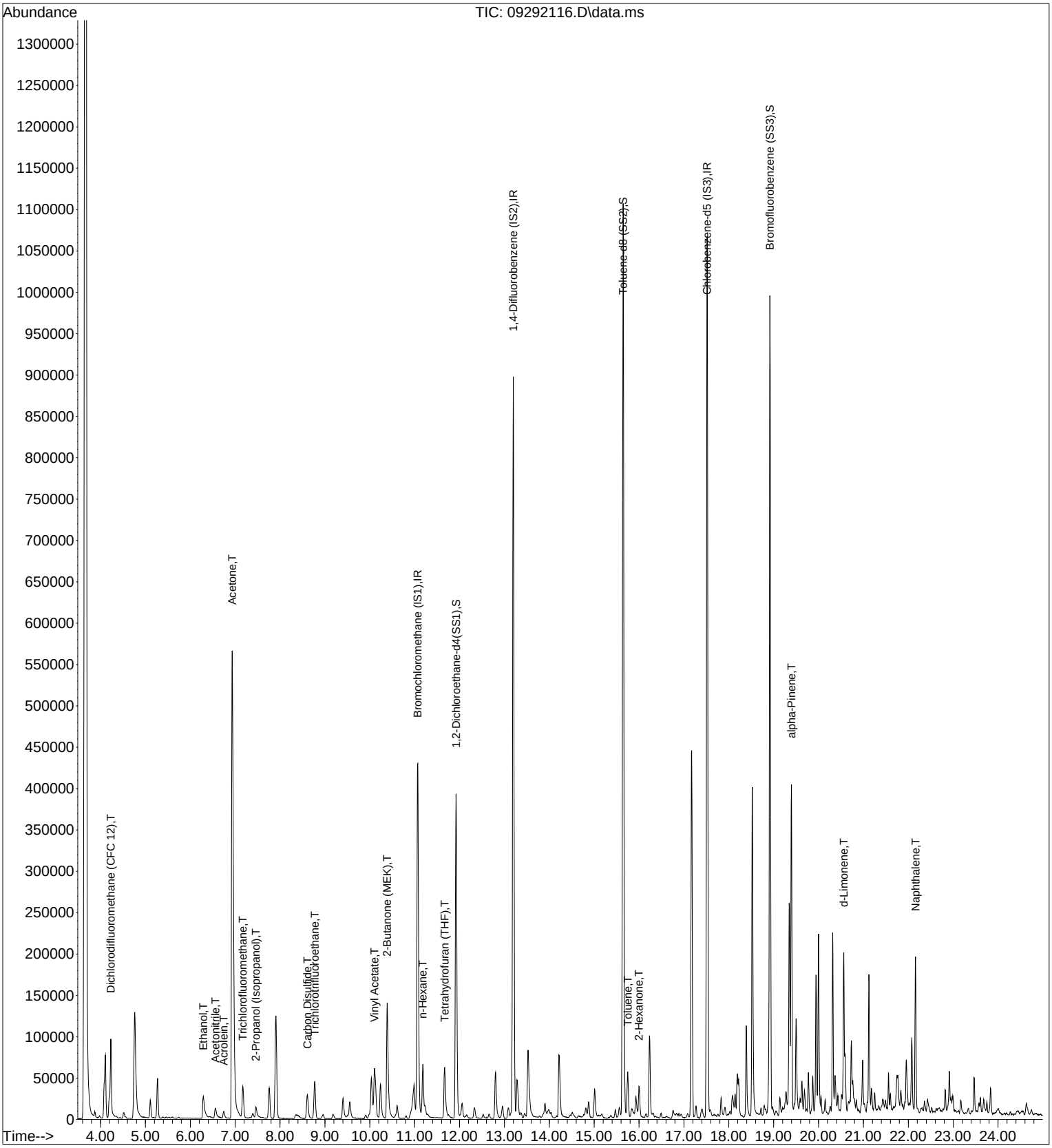
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.07	130	190619	12.500	ng		-0.03
37) 1,4-Difluorobenzene (IS2)	13.20	114	810967	12.500	ng		-0.02
56) Chlorobenzene-d5 (IS3)	17.51	54	161505	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.92	65	331436	10.498	ng		-0.03
Spiked Amount 12.500	Range 70 - 130		Recovery = 84.00%				
57) Toluene-d8 (SS2)	15.65	98	856246	12.492	ng		-0.01
Spiked Amount 12.500	Range 70 - 130		Recovery = 99.92%				
73) Bromofluorobenzene (SS3)	18.92	174	314911	13.572	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 108.56%				
Target Compounds							Qvalue
3) Dichlorodifluoromethan...	4.23	85	77989	1.593	ng		100
10) Ethanol	6.29	45	55061	2.697	ng		100
11) Acetonitrile	6.56	41	23983	0.456	ng		90
12) Acrolein	6.75	56	12295	0.769	ng		98
13) Acetone	6.93	58	342802	19.775	ng	#	73
14) Trichlorofluoromethane	7.17	101	40137	0.906	ng		99
15) 2-Propanol (Isopropanol)	7.46	45	26815	0.495	ng		77
21) Trichlorotrifluoroethane	8.78	151	21500	1.138	ng		90
22) Carbon Disulfide	8.61	76	63134	0.745	ng		98
26) Vinyl Acetate	10.11	86	14989	3.664	ng	#	8
27) 2-Butanone (MEK)	10.39	72	52049	3.615	ng		95
31) n-Hexane	11.18	57	35806	0.987	ng		97
34) Tetrahydrofuran (THF)	11.67	72	20661	1.419	ng	#	88
58) Toluene	15.75	91	43523	0.546	ng		100
59) 2-Hexanone	16.00	43	32809	0.731	ng		100
75) alpha-Pinene	19.40	93	157798	3.464	ng		96
91) d-Limonene	20.56	68	43662	1.603	ng	#	46
95) Naphthalene	22.16	128	109445	1.160	ng		100

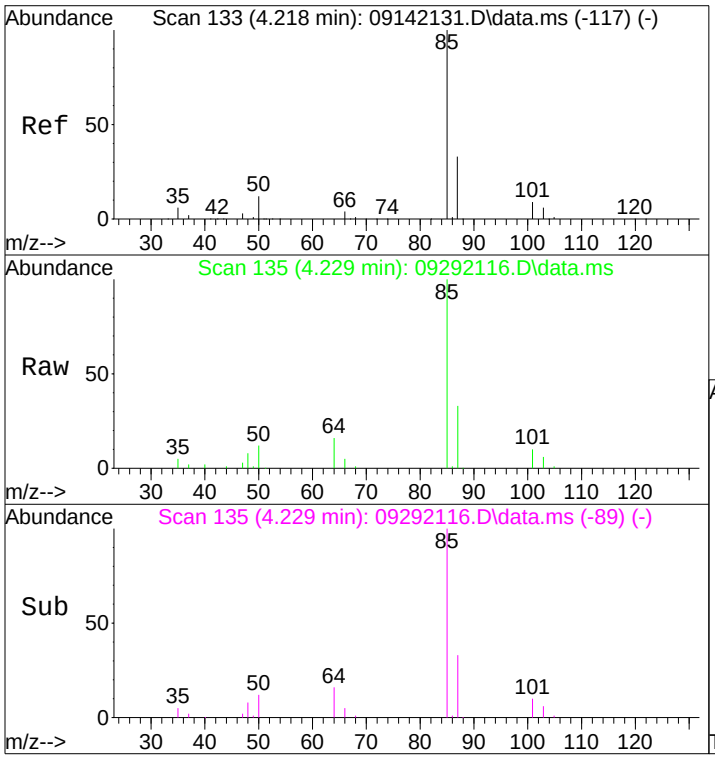
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292116.D Vial: 6
Acq On : 30 Sep 2021 2:38 Operator: WA
Sample : P2104927-004 (1000mL) Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 30 10:01:19 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

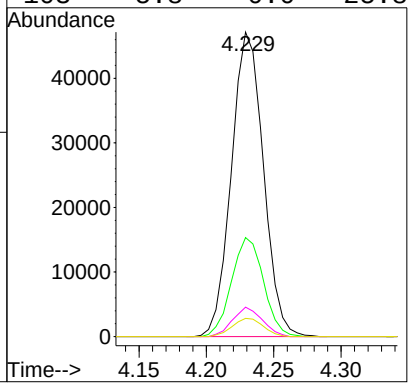


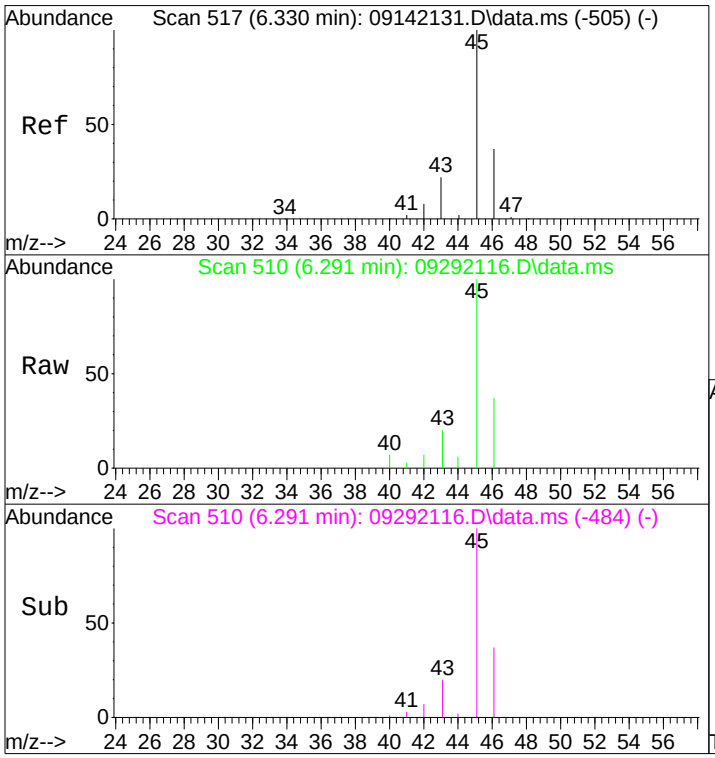


#3
Dichlorodifluoromethane (CFC 12)
Concen: 1.59 ng
RT: 4.23 min Scan# 135
Delta R.T. 0.005 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion: 85 Resp: 77989

Ion	Ratio	Lower	Upper
85	100		
87	32.4	12.6	52.6
101	9.0	0.0	28.9
103	5.8	0.0	25.8

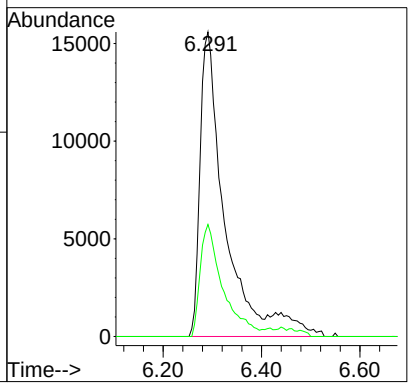


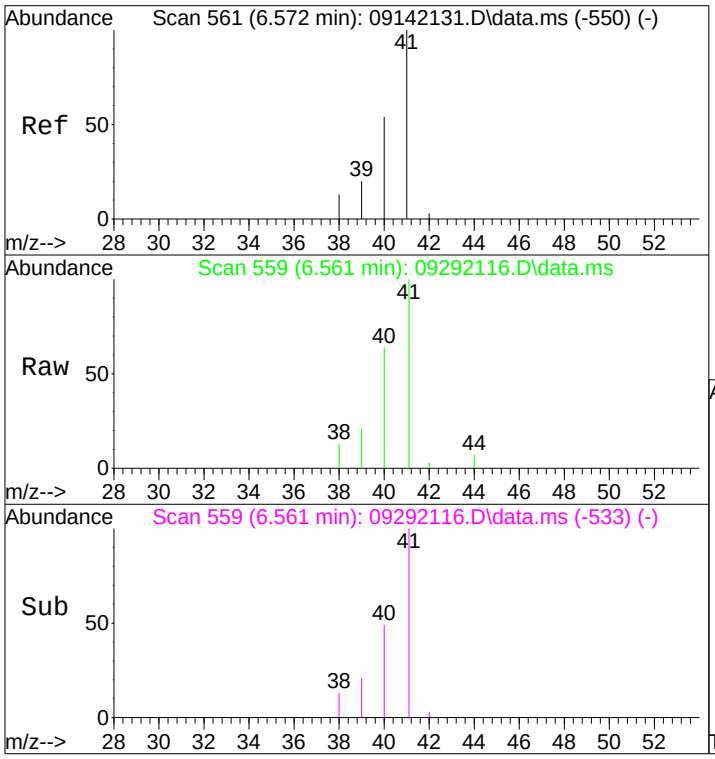


#10
Ethanol
Concen: 2.70 ng
RT: 6.29 min Scan# 510
Delta R.T. -0.105 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion: 45 Resp: 55061

Ion	Ratio	Lower	Upper
45	100		
46	36.7	17.0	57.0

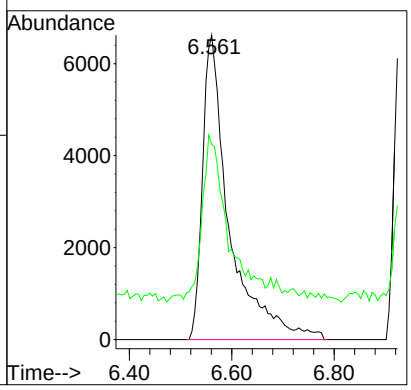


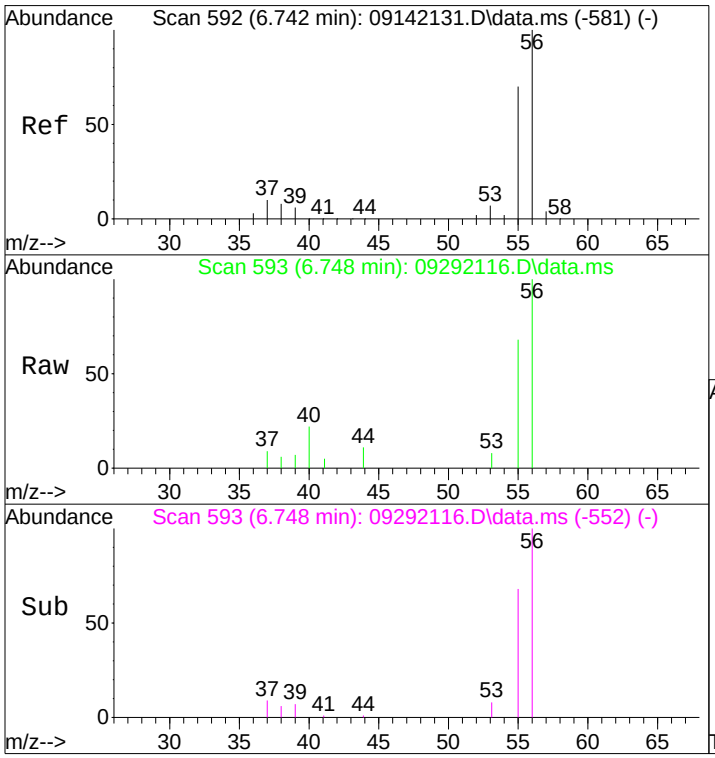


#11
Acetonitrile
Concen: 0.46 ng
RT: 6.56 min Scan# 559
Delta R.T. -0.055 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion: 41 Resp: 23983

Ion	Ratio	Lower	Upper
41	100		
40	60.4	33.5	73.5

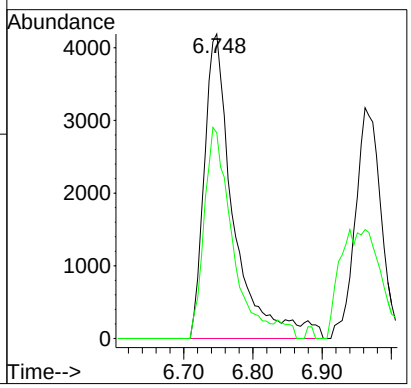


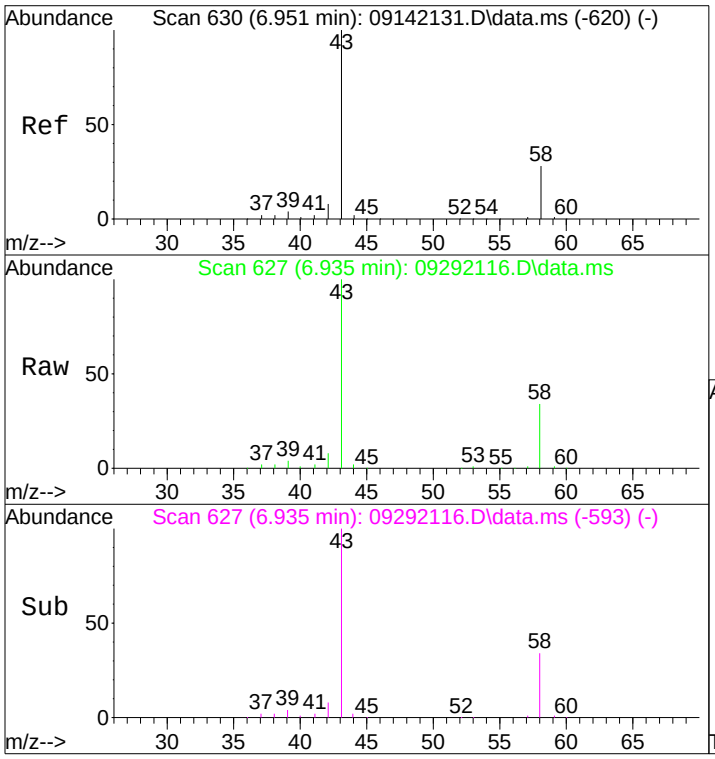


#12
Acrolein
Concen: 0.77 ng
RT: 6.75 min Scan# 593
Delta R.T. -0.022 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion: 56 Resp: 12295

Ion	Ratio	Lower	Upper
56	100		
55	68.5	50.2	90.2

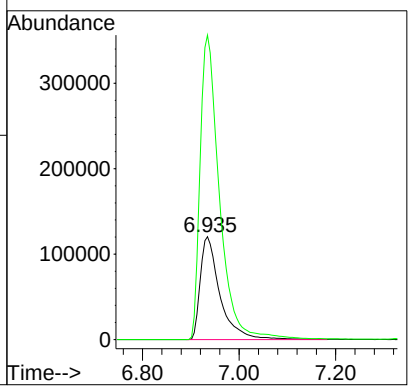


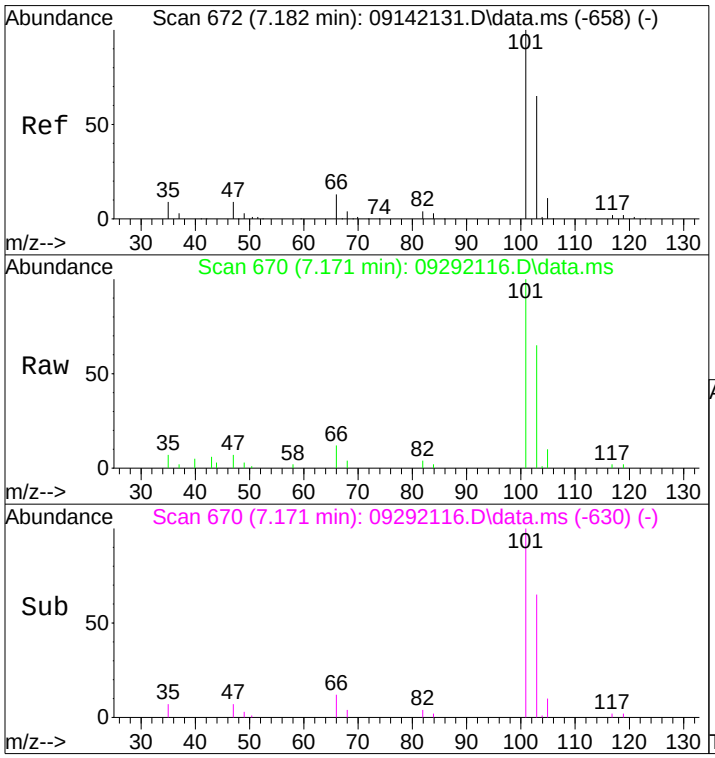


#13
Acetone
Concen: 19.78 ng
RT: 6.93 min Scan# 627
Delta R.T. -0.061 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion: 58 Resp: 342802

Ion	Ratio	Lower	Upper
58	100		
43	290.5	319.7	379.7#

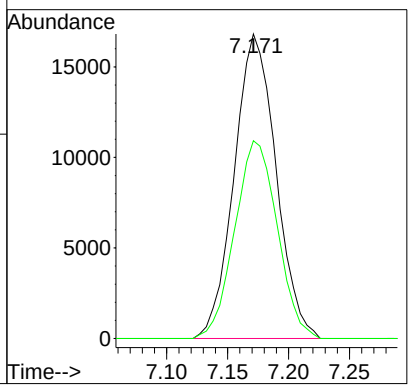


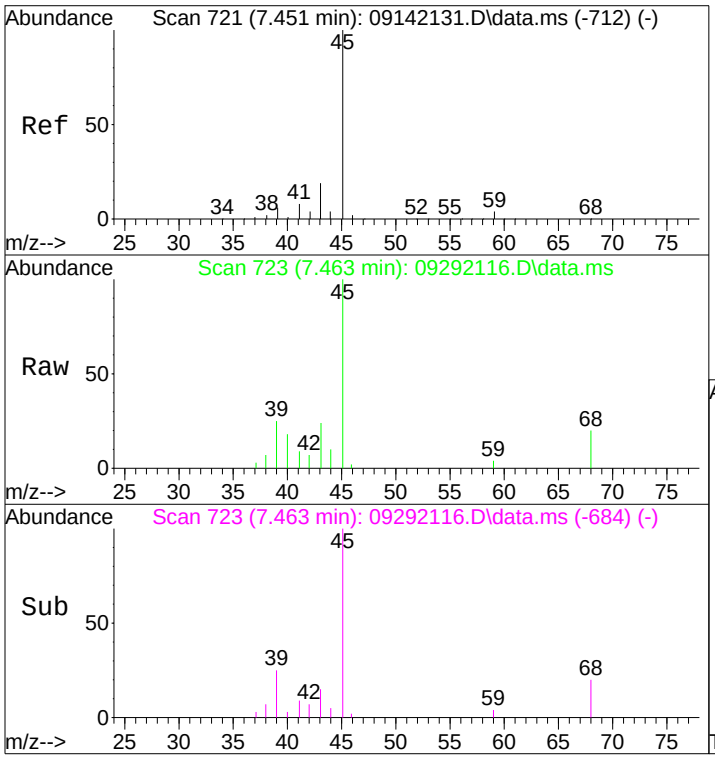


#14
Trichlorofluoromethane
Concen: 0.91 ng
RT: 7.17 min Scan# 670
Delta R.T. -0.028 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion:101 Resp: 40137

Ion	Ratio	Lower	Upper
101	100		
103	66.0	44.9	84.9

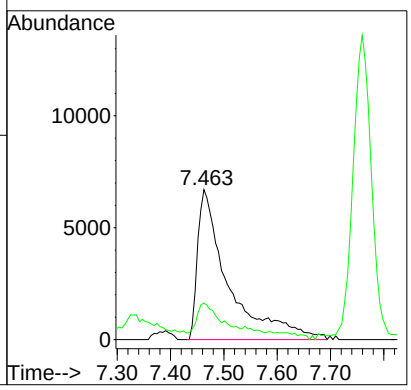


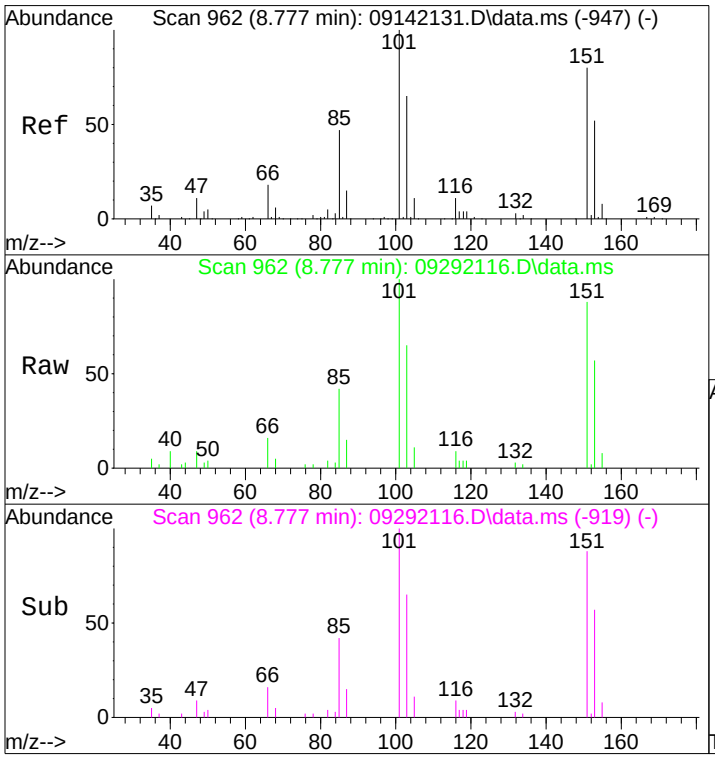


#15
2-Propanol (Isopropanol)
Concen: 0.49 ng
RT: 7.46 min Scan# 723
Delta R.T. -0.033 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion: 45 Resp: 26815

Ion	Ratio	Lower	Upper
45	100		
43	29.6	0.0	39.1

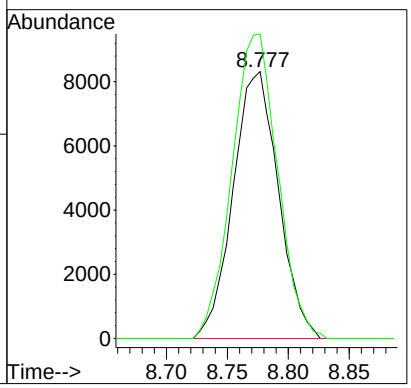


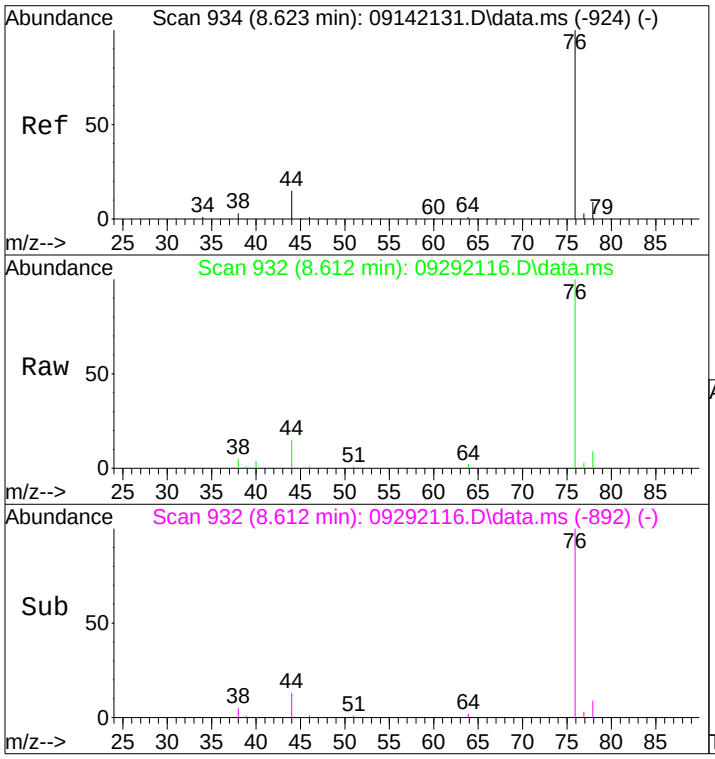


#21
Trichlorotrifluoroethane
Concen: 1.14 ng
RT: 8.78 min Scan# 962
Delta R.T. -0.011 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion:151 Resp: 21500

Ion	Ratio	Lower	Upper
151	100		
101	115.0	107.1	147.1

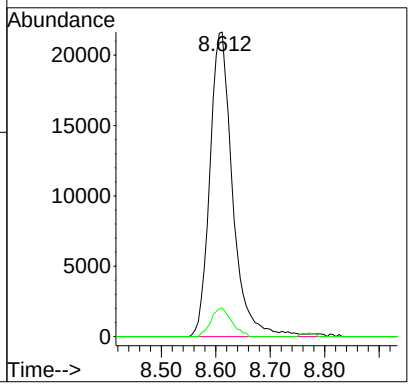


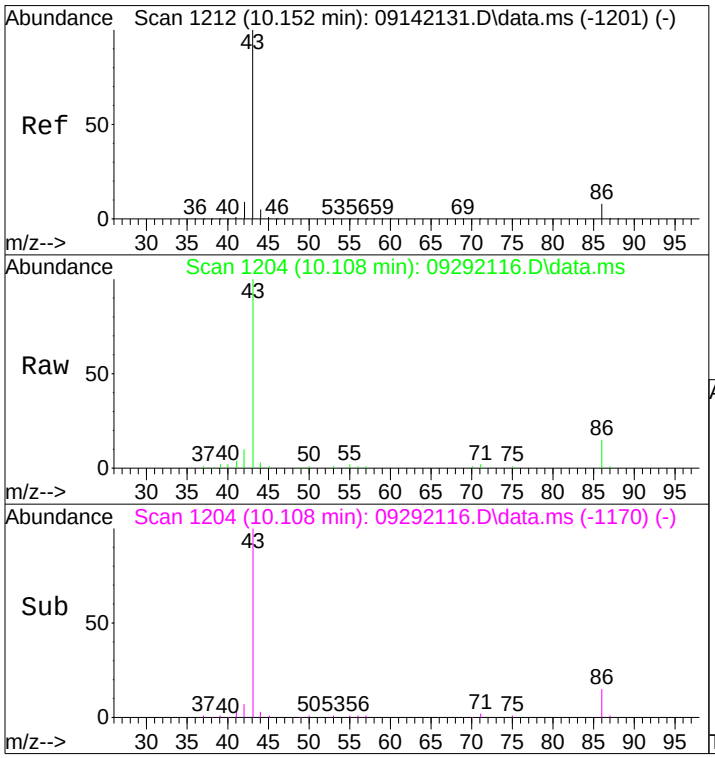


#22
Carbon Disulfide
Concen: 0.74 ng
RT: 8.61 min Scan# 932
Delta R.T. -0.028 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion: 76 Resp: 63134

Ion	Ratio	Lower	Upper
76	100		
78	8.5	0.0	29.2

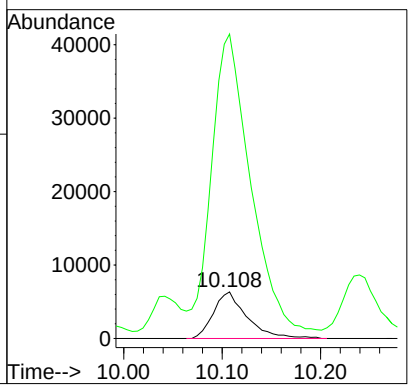


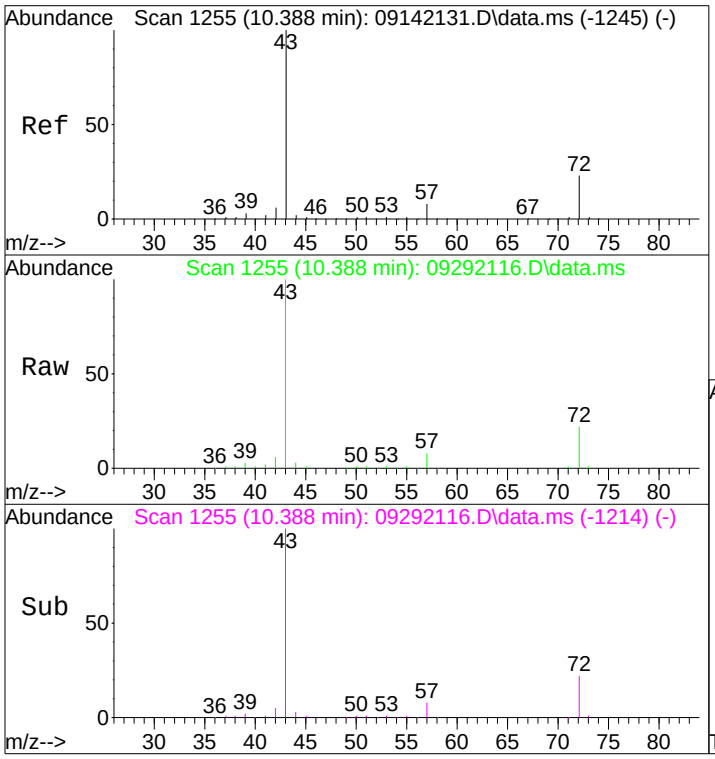


#26
Vinyl Acetate
Concen: 3.66 ng
RT: 10.11 min Scan# 1204
Delta R.T. -0.060 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion: 86 Resp: 14989

Ion	Ratio	Lower	Upper
86	100		
43	777.6	1239.3	1279.3#

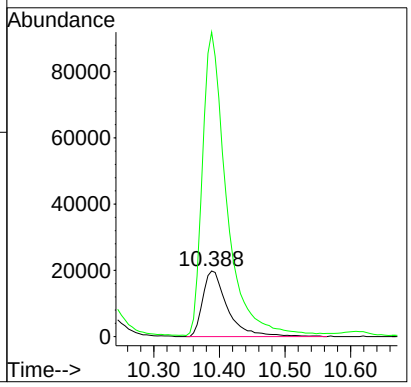


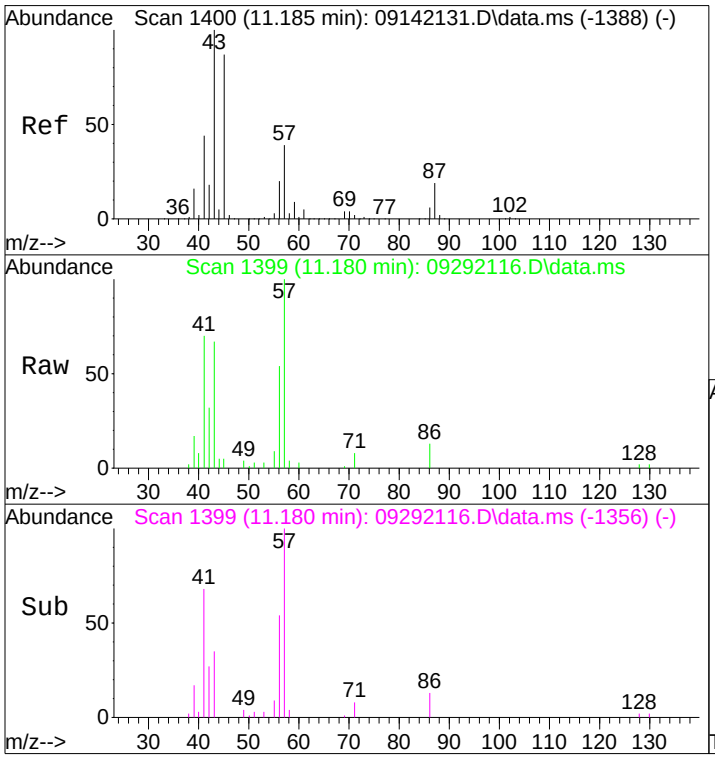


#27
2-Butanone (MEK)
Concen: 3.61 ng
RT: 10.39 min Scan# 1255
Delta R.T. -0.022 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion: 72 Resp: 52049

Ion	Ratio	Lower	Upper
72	100		
43	447.4	415.7	455.7

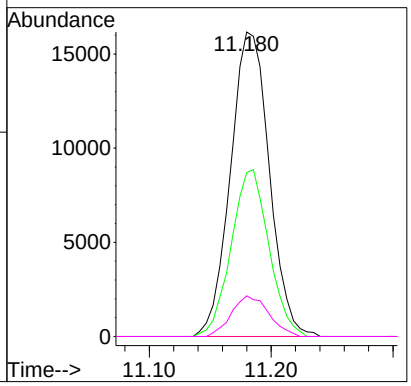


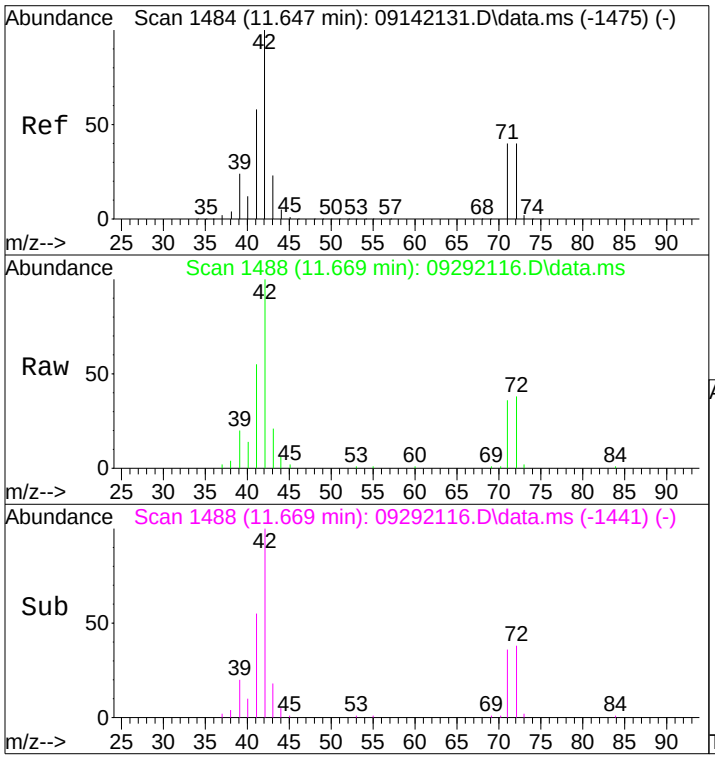


#31
n-Hexane
Concen: 0.99 ng
RT: 11.18 min Scan# 1399
Delta R.T. -0.011 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion: 57 Resp: 35806

Ion	Ratio	Lower	Upper
57	100		
56	53.1	41.5	62.3
86	12.8	12.0	18.0

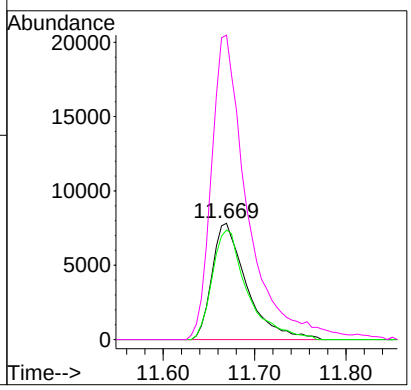


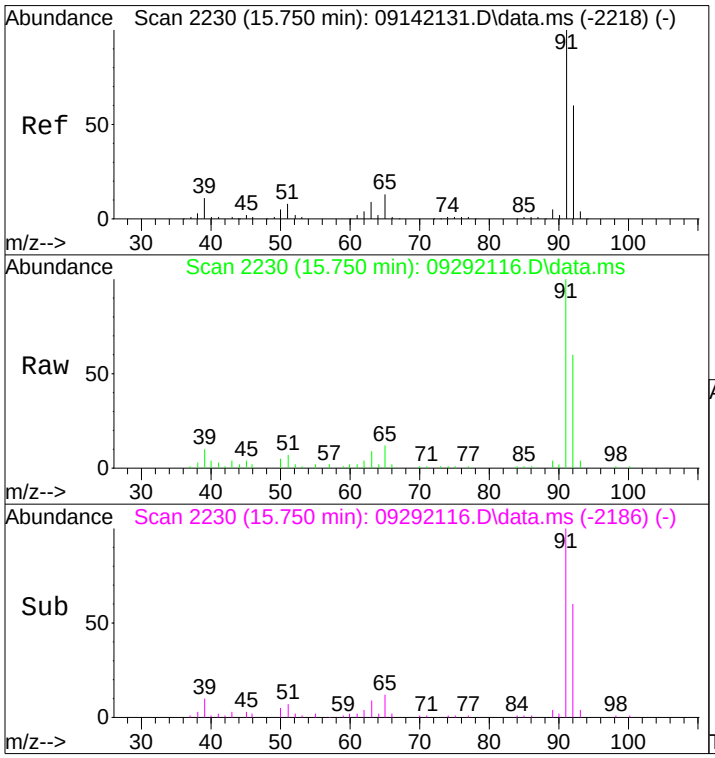


#34
Tetrahydrofuran (THF)
Concen: 1.42 ng
RT: 11.67 min Scan# 1488
Delta R.T. 0.011 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion: 72 Resp: 20661

Ion	Ratio	Lower	Upper
72	100		
71	95.5	76.9	116.9
42	274.7	227.7	267.7#

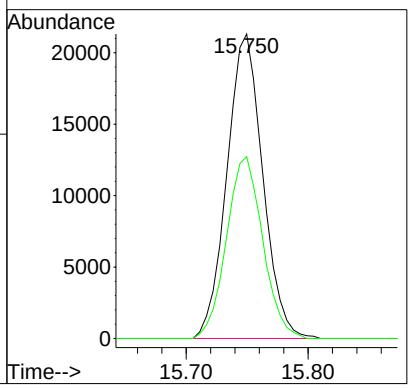


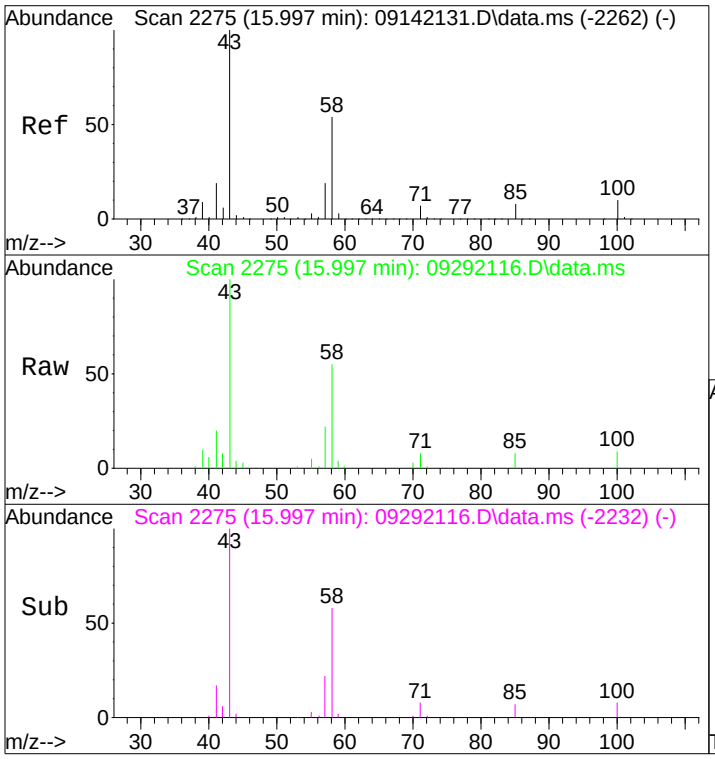


#58
Toluene
Concen: 0.55 ng
RT: 15.75 min Scan# 2230
Delta R.T. -0.006 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion: 91 Resp: 43523

Ion	Ratio	Lower	Upper
91	100		
92	60.4	40.4	80.4

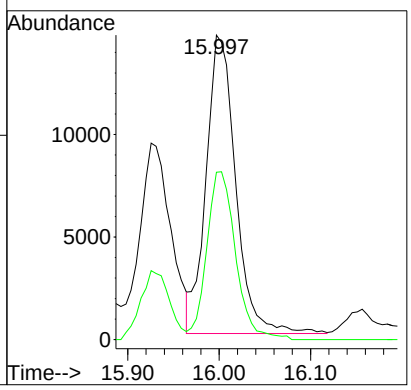


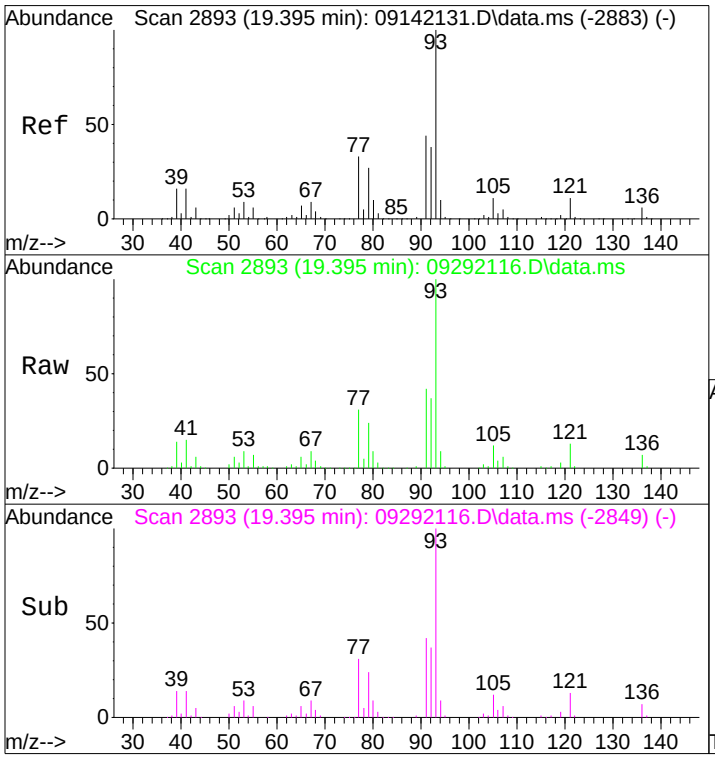


#59
2-Hexanone
Concen: 0.73 ng
RT: 16.00 min Scan# 2275
Delta R.T. -0.011 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion: 43 Resp: 32809

Ion	Ratio	Lower	Upper
43	100		
58	54.7	34.5	74.5

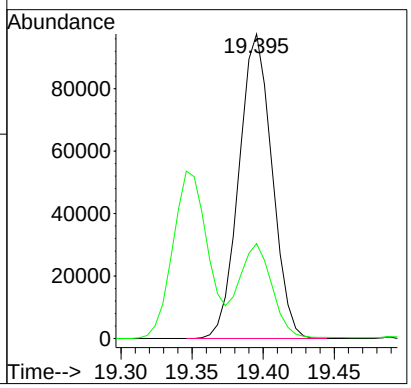


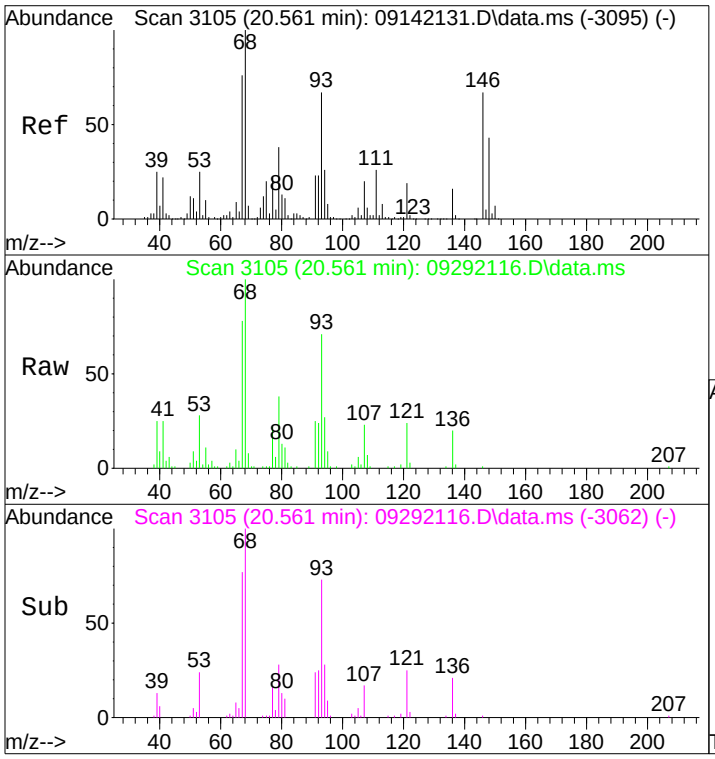


#75
alpha-Pinene
Concen: 3.46 ng
RT: 19.40 min Scan# 2893
Delta R.T. -0.006 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion: 93 Resp: 157798

Ion	Ratio	Lower	Upper
93	100		
77	30.9	13.0	53.0

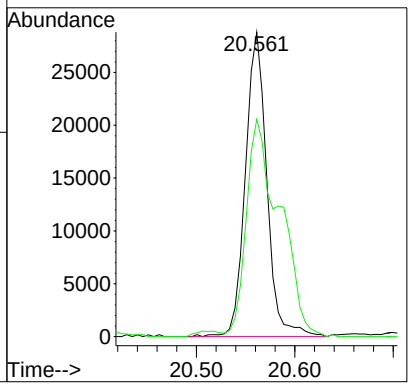


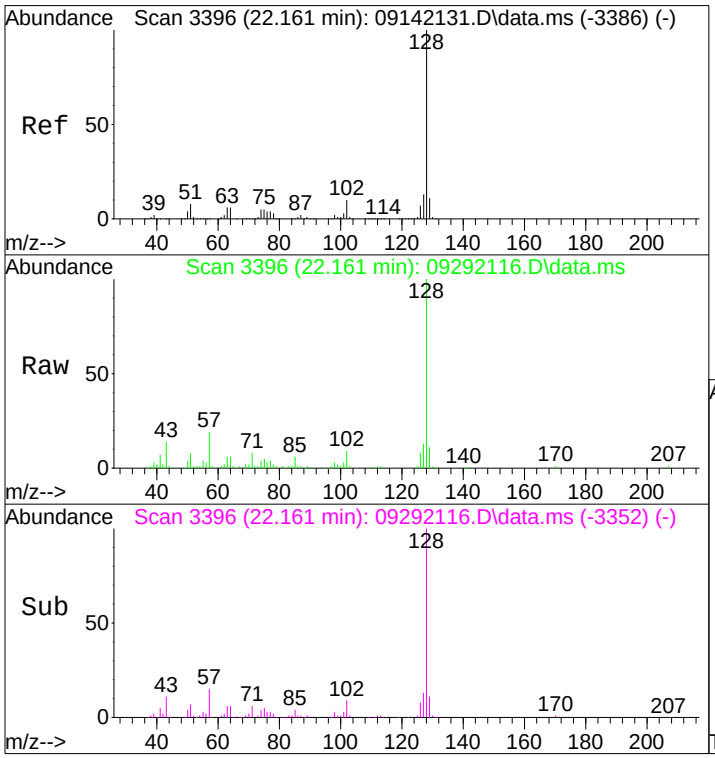


#91
d-Limonene
Concen: 1.60 ng
RT: 20.56 min Scan# 3105
Delta R.T. -0.011 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion: 68 Resp: 43662

Ion	Ratio	Lower	Upper
68	100		
93	111.0	47.4	87.4#

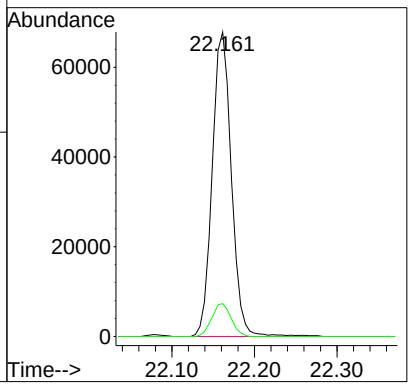




#95
Naphthalene
Concen: 1.16 ng
RT: 22.16 min Scan# 3396
Delta R.T. -0.006 min
Lab File: 09292116.D
Acq: 30 Sep 2021 2:38

Tgt Ion:128 Resp: 109445

Ion	Ratio	Lower	Upper
128	100		
129	10.9	0.0	31.0



Data File : I:\MS16\DATA\2021_09\29\09292103.D Vial: 2
Acq On : 29 Sep 2021 19:11 Operator: WA
Sample : MB R16092921_1000mL Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 29 21:08:31 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS) 9/30/21
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane (IS1)	11.06	130	196327	12.500	ng	-0.03
37) 1,4-Difluorobenzene (IS2)	13.20	114	836377	12.500	ng	-0.02
56) Chlorobenzene-d5 (IS3)	17.52	54	163722	12.500	ng	0.00
System Monitoring Compounds						
33) 1,2-Dichloroethane-d4(...	11.92	65	328695	10.108	ng	-0.03
Spiked Amount 12.500	Range 70 - 130		Recovery = 80.88%			
57) Toluene-d8 (SS2)	15.65	98	890248	12.813	ng	-0.01
Spiked Amount 12.500	Range 70 - 130		Recovery = 102.48%			
73) Bromofluorobenzene (SS3)	18.92	174	319982	13.604	ng	0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 108.80%			
Target Compounds						Qvalue
2) Propene	4.12	42	203	N.D.		
3) Dichlorodifluoromethan...	0.00	85	0	N.D.		
4) Chloromethane	0.00	50	0	N.D.		
5) 1,2-Dichloro-1,1,2,2-t...	0.00	135	0	N.D.		
6) Vinyl Chloride	0.00	62	0	N.D.		
7) 1,3-Butadiene	0.00	54	0	N.D.		
8) Bromomethane	0.00	94	0	N.D.		
9) Chloroethane	0.00	64	0	N.D.		
10) Ethanol	6.36	45	3030	0.144	ng	72
11) Acetonitrile	6.65	41	1379	N.D.		
12) Acrolein	0.00	56	0	N.D.		
13) Acetone	7.04	58	2034	0.114	ng	87
14) Trichlorofluoromethane	0.00	101	0	N.D.		
15) 2-Propanol (Isopropanol)	7.60	45	227	N.D.		
16) Acrylonitrile	0.00	53	0	N.D.		
17) 1,1-Dichloroethene	0.00	96	0	N.D.		
18) 2-Methyl-2-Propanol (t...	0.00	59	0	N.D.		
19) Methylene Chloride	0.00	84	0	N.D.		
20) 3-Chloro-1-propene (Al...	0.00	41	0	N.D.		
21) Trichlorotrifluoroethane	0.00	151	0	N.D.		
22) Carbon Disulfide	8.64	76	1017	N.D.		
23) trans-1,2-Dichloroethene	0.00	61	0	N.D.		
24) 1,1-Dichloroethane	0.00	63	0	N.D.		
25) Methyl tert-Butyl Ether	0.00	73	0	N.D.		
26) Vinyl Acetate	0.00	86	0	N.D.		
27) 2-Butanone (MEK)	0.00	72	0	N.D.		
28) cis-1,2-Dichloroethene	0.00	61	0	N.D.		
29) Diisopropyl Ether	0.00	87	0	N.D.		
30) Ethyl Acetate	0.00	61	0	N.D.		
31) n-Hexane	0.00	57	0	N.D.		
32) Chloroform	0.00	83	0	N.D.		
34) Tetrahydrofuran (THF)	0.00	72	0	N.D.		
35) Ethyl tert-Butyl Ether	0.00	87	0	N.D.		
36) 1,2-Dichloroethane	0.00	62	0	N.D.		
38) 1,1,1-Trichloroethane	0.00	97	0	N.D.		
39) Isopropyl Acetate	0.00	61	0	N.D.		
40) 1-Butanol	0.00	56	0	N.D.		
41) Benzene	12.81	78	1066	N.D.		
42) Carbon Tetrachloride	0.00	117	0	N.D.		
43) Cyclohexane	13.19	84	450	N.D.		
44) tert-Amyl Methyl Ether	0.00	73	0	N.D.		
45) 1,2-Dichloropropane	0.00	63	0	N.D.		
46) Bromodichloromethane	0.00	83	0	N.D.		
47) Trichloroethene	13.91	130	266	N.D.		
48) 1,4-Dioxane	0.00	88	0	N.D.		
49) 2,2,4-Trimethylpentane...	0.00	57	0	N.D.		
50) Methyl Methacrylate	0.00	100	0	N.D.		

Data File : I:\MS16\DATA\2021_09\29\09292103.D Vial: 2
Acq On : 29 Sep 2021 19:11 Operator: WA
Sample : MB R16092921_1000mL Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 29 21:08:31 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

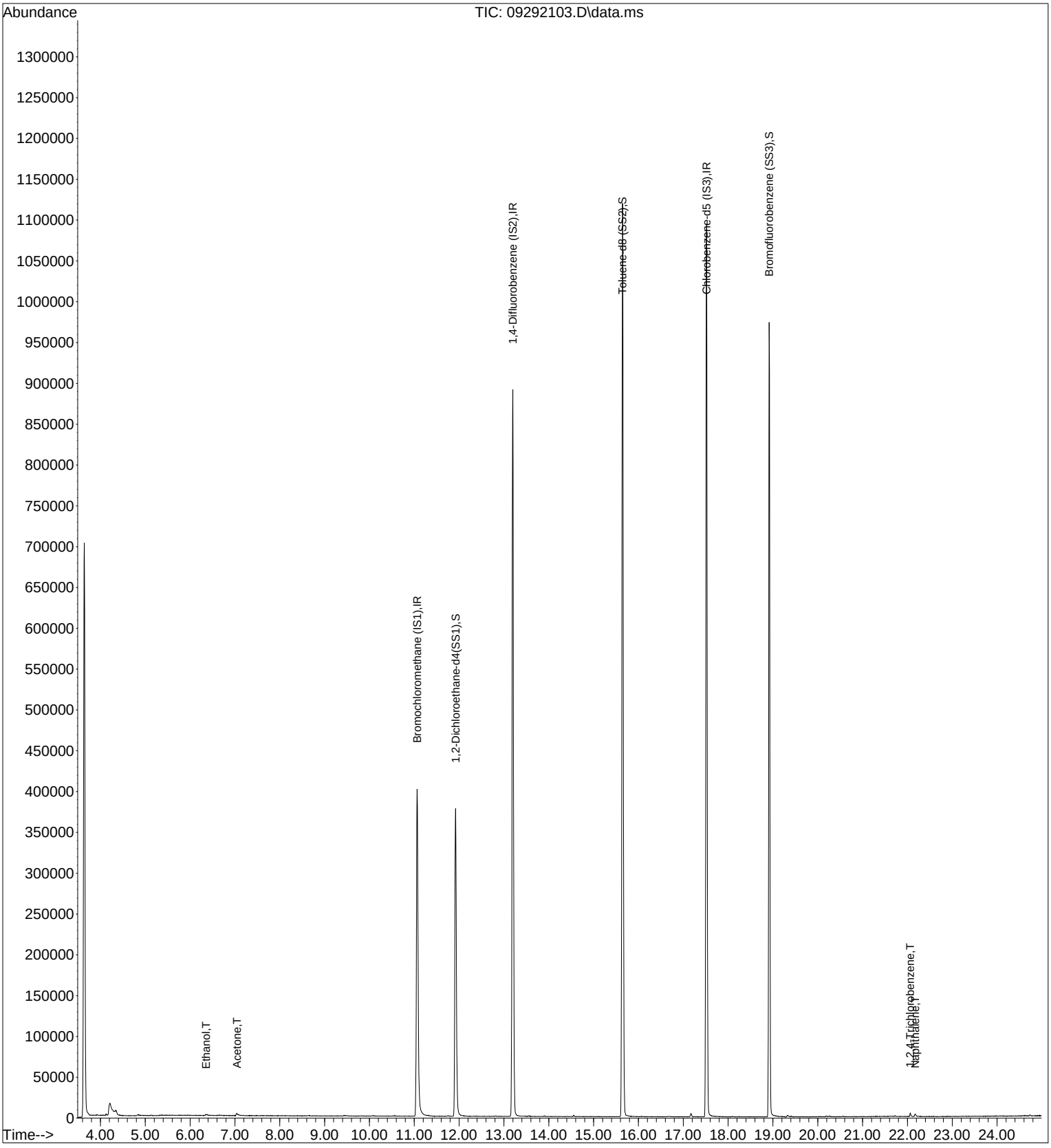
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
51) n-Heptane	0.00	71	0	N.D.		
52) cis-1,3-Dichloropropene	0.00	75	0	N.D.		
53) 4-Methyl-2-pentanone	0.00	58	0	N.D.		
54) trans-1,3-Dichloropropene	0.00	75	0	N.D.		
55) 1,1,2-Trichloroethane	0.00	97	0	N.D.		
58) Toluene	15.75	91	712	N.D.		
59) 2-Hexanone	16.07	43	404	N.D.		
60) Dibromochloromethane	0.00	129	0	N.D.		
61) 1,2-Dibromoethane	0.00	107	0	N.D.		
62) n-Butyl Acetate	16.67	43	750	N.D.		
63) n-Octane	0.00	57	0	N.D.		
64) Tetrachloroethene	0.00	166	0	N.D.		
65) Chlorobenzene	17.56	112	468	N.D.		
66) Ethylbenzene	17.93	91	232	N.D.		
67) m- & p-Xylenes	18.09	91	677	N.D.		
68) Bromoform	0.00	173	0	N.D.		
69) Styrene	0.00	104	0	N.D.		
70) o-Xylene	18.53	91	108	N.D.		
71) n-Nonane	0.00	43	0	N.D.		
72) 1,1,2,2-Tetrachloroethane	0.00	83	0	N.D.		
74) Cumene	19.06	105	242	N.D.		
75) alpha-Pinene	0.00	93	0	N.D.		
76) n-Propylbenzene	19.52	91	455	N.D.		
77) 3-Ethyltoluene	19.63	105	395	No Calib	#	
78) 4-Ethyltoluene	19.63	105	395	N.D.		
79) 1,3,5-Trimethylbenzene	19.70	105	127	N.D.		
80) alpha-Methylstyrene	0.00	118	0	N.D.		
81) 2-Ethyltoluene	19.63	105	395	No Calib	#	
82) 1,2,4-Trimethylbenzene	20.06	105	296	N.D.		
83) n-Decane	0.00	58	0	N.D.		
84) Benzyl Chloride	20.19	91	693	N.D.		
85) 1,3-Dichlorobenzene	20.20	146	460	N.D.		
86) 1,4-Dichlorobenzene	20.26	146	945	N.D.		
87) sec-Butylbenzene	20.30	105	111	N.D.		
88) 4-Isopropyltoluene (p-...	0.00	119	0	N.D.		
89) 1,2,3-Trimethylbenzene	20.30	105	111	No Calib	#	
90) 1,2-Dichlorobenzene	20.56	146	589	N.D.		
91) d-Limonene	0.00	68	0	N.D.		
92) 1,2-Dibromo-3-Chloropr...	0.00	157	0	N.D.		
93) n-Undecane	21.14	57	126	No Calib	#	
94) 1,2,4-Trichlorobenzene	22.06	180	2197	0.068 ng		96
95) Naphthalene	22.18	128	5164	0.054 ng		85
96) n-Dodecane	0.00	57	0	N.D.		
97) Hexachlorobutadiene	0.00	225	0	N.D.		
98) Cyclohexanone	18.25	55	111	No Calib	#	
99) tert-Butylbenzene	0.00	119	0	N.D.		
100) n-Butylbenzene	20.81	91	419	N.D.		
101) 1,1,1,2-Tetrachloroethane	0.00	131	0	N.D.		

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292103.D Vial: 2
Acq On : 29 Sep 2021 19:11 Operator: WA
Sample : MB R16092921_1000mL Inst : GCMS-16
Misc : S34-09132101

Quant Time: Sep 29 21:08:31 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292107.D Vial: 2
Acq On : 29 Sep 2021 21:28 Operator: WA
Sample : LCS R16092921_25ng Inst : GCMS-16
Misc : S34-09132101/S34-09242103 (10/23)

Quant Time: Sep 30 03:33:12 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration 9/30/21
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.09	130	205896	12.500	ng		-0.01
37) 1,4-Difluorobenzene (IS2)	13.20	114	867018	12.500	ng		-0.01
56) Chlorobenzene-d5 (IS3)	17.52	54	167276	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.93	65	338473	9.925	ng		-0.02
Spiked Amount 12.500	Range 70 - 130		Recovery = 79.44%				
57) Toluene-d8 (SS2)	15.65	98	918992	12.945	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 103.60%				
73) Bromofluorobenzene (SS3)	18.92	174	341882	14.226	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 113.84%				
Target Compounds							Qvalue
2) Propene	4.06	42	681972	19.415	ng		96
3) Dichlorodifluoromethan...	4.21	85	1051831	19.895	ng		100
4) Chloromethane	4.49	50	745433	21.614	ng		98
5) 1,2-Dichloro-1,1,2,2-t...	4.76	135	478509	23.894	ng		99
6) Vinyl Chloride	4.91	62	701110	22.365	ng		98
7) 1,3-Butadiene	5.17	54	552781	23.850	ng		89
8) Bromomethane	5.60	94	441236	20.830	ng		100
9) Chloroethane	5.93	64	389150	21.233	ng		99
10) Ethanol	6.33	45	1765616	80.077	ng		100
11) Acetonitrile	6.57	41	1027117	18.069	ng		98
12) Acrolein	6.74	56	784778	45.433	ng		99
13) Acetone	6.95	58	1934398	103.310	ng	#	69
14) Trichlorofluoromethane	7.18	101	983192	20.552	ng		100
15) 2-Propanol (Isopropanol)	7.45	45	2478566	42.334	ng		97
16) Acrylonitrile	7.70	53	1572688	46.617	ng		99
17) 1,1-Dichloroethene	8.13	96	509951	22.257	ng		99
18) 2-Methyl-2-Propanol (t...	8.31	59	3031156	44.849	ng		96
19) Methylene Chloride	8.37	84	528213	21.028	ng		94
20) 3-Chloro-1-propene (Al...	8.52	41	793128	19.644	ng		100
21) Trichlorotrifluoroethane	8.77	151	503135	24.649	ng		90
22) Carbon Disulfide	8.62	76	3589666	39.215	ng		100
23) trans-1,2-Dichloroethene	9.63	61	856351	23.209	ng		100
24) 1,1-Dichloroethane	9.89	63	1041301	22.326	ng		98
25) Methyl tert-Butyl Ether	9.98	73	1667341	20.384	ng		96
26) Vinyl Acetate	10.15	86	502372	113.706	ng	#	68
27) 2-Butanone (MEK)	10.39	72	677452	43.556	ng	#	90
28) cis-1,2-Dichloroethene	10.91	61	819905	22.319	ng		100
29) Diisopropyl Ether	11.20	87	859419	42.272	ng	#	32
30) Ethyl Acetate	11.21	61	505937	57.746	ng		95
31) n-Hexane	11.19	57	844911	21.564	ng		100
32) Chloroform	11.26	83	930711	21.296	ng		100
34) Tetrahydrofuran (THF)	11.65	72	638997	40.634	ng		94
35) Ethyl tert-Butyl Ether	11.80	87	1303067	44.058	ng		99
36) 1,2-Dichloroethane	12.05	62	784615	21.168	ng		99
38) 1,1,1-Trichloroethane	12.33	97	882263	22.411	ng		99
39) Isopropyl Acetate	12.80	61	28333	No Calib	#		
40) 1-Butanol	12.81	56	13083	No Calib	#		
41) Benzene	12.81	78	2052127	21.808	ng		100
42) Carbon Tetrachloride	12.97	117	743024	23.072	ng		100
43) Cyclohexane	13.10	84	1545450	45.962	ng		97
44) tert-Amyl Methyl Ether	13.45	73	2982141	44.567	ng		97
45) 1,2-Dichloropropane	13.66	63	568806	23.608	ng		98
46) Bromodichloromethane	13.85	83	761912	22.961	ng		100
47) Trichloroethene	13.90	130	594420	27.136	ng		99
48) 1,4-Dioxane	13.87	88	440249	24.941	ng		99
49) 2,2,4-Trimethylpentane...	13.97	57	2420855	23.682	ng		90
50) Methyl Methacrylate	14.11	100	444773	53.894	ng	#	81

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292107.D Vial: 2
Acq On : 29 Sep 2021 21:28 Operator: WA
Sample : LCS R16092921_25ng Inst : GCMS-16
Misc : S34-09132101/S34-09242103 (10/23)

Quant Time: Sep 30 03:33:12 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

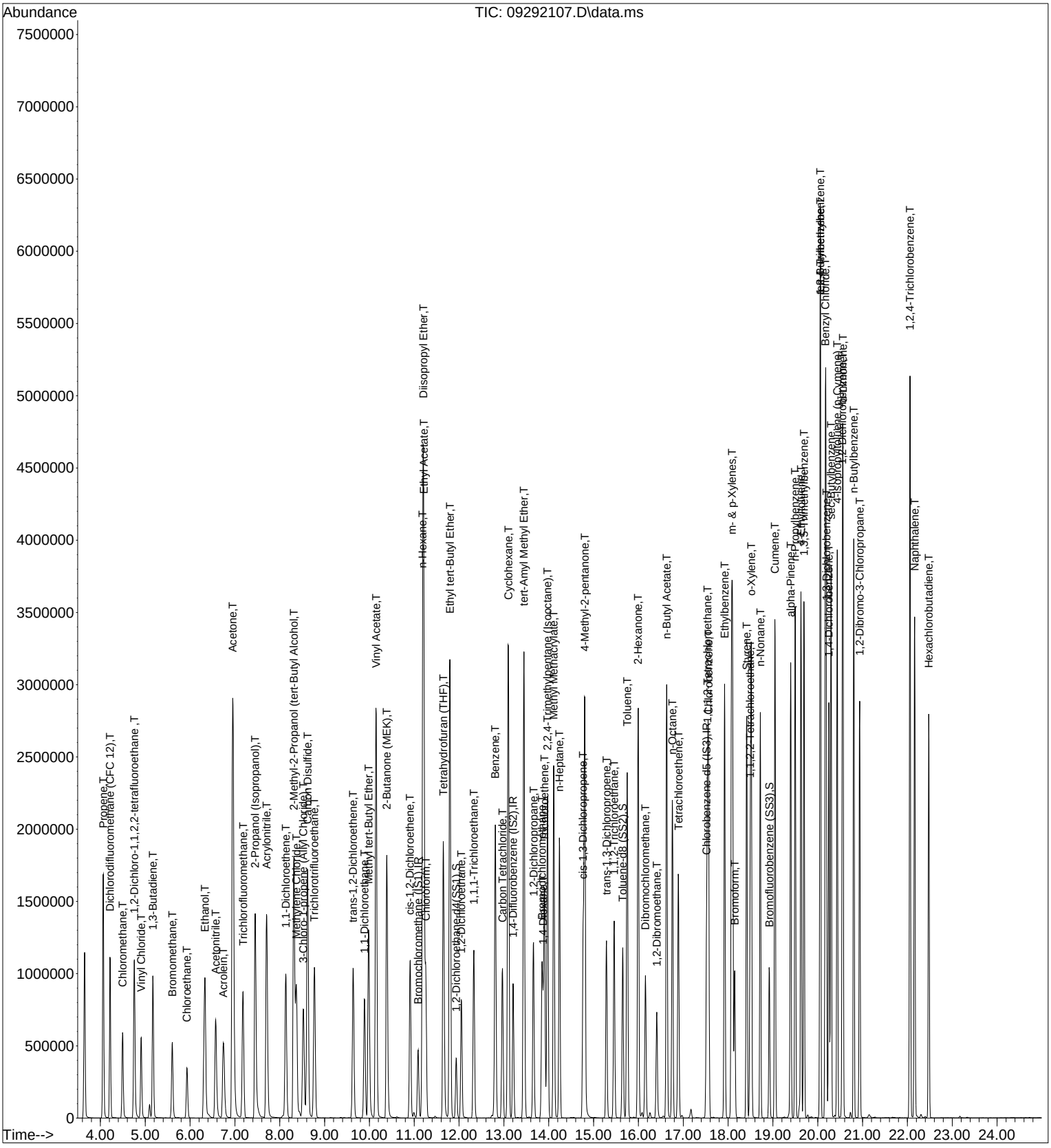
Internal Standards	R.T.	QIon	Response	Conc Units		Dev(Min)
51) n-Heptane	14.24	71	510436	21.897 ng		92
52) cis-1,3-Dichloropropene	14.77	75	872788	23.927 ng		100
53) 4-Methyl-2-pentanone	14.80	58	1041867	50.609 ng		82
54) trans-1,3-Dichloropropene	15.29	75	837953	23.959 ng		100
55) 1,1,2-Trichloroethane	15.46	97	516813	23.970 ng		97
58) Toluene	15.75	91	2088241	25.305 ng		100
59) 2-Hexanone	15.99	43	2221431	47.785 ng		87
60) Dibromochloromethane	16.16	129	662129	29.105 ng		100
61) 1,2-Dibromoethane	16.41	107	619667	27.444 ng		99
62) n-Butyl Acetate	16.63	43	2510655	49.198 ng		91
63) n-Octane	16.76	57	505750	26.301 ng		96
64) Tetrachloroethene	16.89	166	643081	28.049 ng		99
65) Chlorobenzene	17.56	112	1391873	26.895 ng		100
66) Ethylbenzene	17.92	91	2439366	25.701 ng		96
67) m- & p-Xylenes	18.09	91	3806592	51.152 ng		94
68) Bromoform	18.15	173	568935	29.533 ng		100
69) Styrene	18.42	104	1540049	28.385 ng		95
70) o-Xylene	18.52	91	1903707	25.563 ng		95
71) n-Nonane	18.72	43	994667	23.005 ng		87
72) 1,1,2,2-Tetrachloroethane	18.49	83	879284	25.707 ng		100
74) Cumene	19.04	105	2491649	26.667 ng		99
75) alpha-Pinene	19.40	93	1308444	27.729 ng		95
76) n-Propylbenzene	19.49	91	2890119	25.313 ng		97
77) 3-Ethyltoluene	19.63	105	2480855	No Calib		
78) 4-Ethyltoluene	19.63	105	2480855	27.711 ng		99
79) 1,3,5-Trimethylbenzene	19.69	105	2065372	26.870 ng		98
80) alpha-Methylstyrene	19.63	118	14410	No Calib	#	
81) 2-Ethyltoluene	19.63	105	2480855	No Calib		
82) 1,2,4-Trimethylbenzene	20.06	105	1961937	26.691 ng		97
83) n-Decane	20.06	58	80104	No Calib	#	
84) Benzyl Chloride	20.17	91	3466938	59.626 ng		93
85) 1,3-Dichlorobenzene	20.19	146	1185747	29.388 ng		100
86) 1,4-Dichlorobenzene	20.25	146	1259979	28.842 ng		100
87) sec-Butylbenzene	20.30	105	2688257	26.357 ng		97
88) 4-Isopropyltoluene (p-...	20.43	119	2315216	27.084 ng		96
89) 1,2,3-Trimethylbenzene	20.30	105	2688257	No Calib		
90) 1,2-Dichlorobenzene	20.55	146	1142742	28.469 ng		100
91) d-Limonene	20.56	68	747297	26.496 ng		94
92) 1,2-Dibromo-3-Chloropr...	20.94	157	918565	57.130 ng		79
93) n-Undecane	21.13	57	1430	No Calib	#	
94) 1,2,4-Trichlorobenzene	22.06	180	1769159	53.250 ng		99
95) Naphthalene	22.16	128	2856552	29.234 ng		100
96) n-Dodecane	22.09	57	567	No Calib	#	
97) Hexachlorobutadiene	22.48	225	582959	25.097 ng		100
98) Cyclohexanone	18.09	55	3028	No Calib		
99) tert-Butylbenzene	20.06	119	1866264	26.399 ng		97
100) n-Butylbenzene	20.80	91	2147415	25.278 ng		97
101) 1,1,1,2-Tetrachloroethane	17.54	131	528330	28.500 ng		100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292107.D Vial: 2
Acq On : 29 Sep 2021 21:28 Operator: WA
Sample : LCS R16092921_25ng Inst : GCMS-16
Misc : S34-09132101/S34-09242103 (10/23)

Quant Time: Sep 30 03:33:12 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M



Data File : I:\MS16\DATA\2021_09\29\09292108.D Vial: 2
Acq On : 29 Sep 2021 22:02 Operator: WA
Sample : LCSD R16092921_25ng Inst : GCMS-16
Misc : S34-09132101/S34-09242103 (10/23)

Quant Time: Sep 30 03:33:14 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021 9/30/21
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.09	130	203499	12.500	ng		-0.01
37) 1,4-Difluorobenzene (IS2)	13.20	114	868815	12.500	ng		-0.01
56) Chlorobenzene-d5 (IS3)	17.52	54	164660	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.93	65	333123	9.884	ng		-0.02
Spiked Amount 12.500	Range 70 - 130		Recovery = 79.04%				
57) Toluene-d8 (SS2)	15.65	98	919344	13.156	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 105.28%				
73) Bromofluorobenzene (SS3)	18.92	174	341125	14.420	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 115.36%				
Target Compounds							Qvalue
2) Propene	4.05	42	701834	20.216	ng		96
3) Dichlorodifluoromethan...	4.21	85	1069294	20.463	ng		100
4) Chloromethane	4.49	50	761875	22.351	ng		98
5) 1,2-Dichloro-1,1,2,2-t...	4.75	135	500579	25.291	ng		100
6) Vinyl Chloride	4.90	62	719624	23.226	ng		98
7) 1,3-Butadiene	5.16	54	561271	24.502	ng		88
8) Bromomethane	5.60	94	457660	21.860	ng		100
9) Chloroethane	5.92	64	403777	22.290	ng		98
10) Ethanol	6.32	45	1797123	82.466	ng		100
11) Acetonitrile	6.57	41	1033475	18.395	ng		98
12) Acrolein	6.74	56	806619	47.247	ng		99
13) Acetone	6.95	58	1976950	106.826	ng	#	68
14) Trichlorofluoromethane	7.18	101	985357	20.840	ng		100
15) 2-Propanol (Isopropanol)	7.45	45	2462459	42.554	ng		97
16) Acrylonitrile	7.70	53	1585149	47.540	ng		99
17) 1,1-Dichloroethene	8.13	96	521834	23.043	ng		98
18) 2-Methyl-2-Propanol (t...	8.31	59	3045369	45.590	ng		95
19) Methylene Chloride	8.36	84	542191	21.838	ng		93
20) 3-Chloro-1-propene (Al...	8.52	41	797926	19.996	ng		97
21) Trichlorotrifluoroethane	8.77	151	514383	25.497	ng		90
22) Carbon Disulfide	8.62	76	3641377	40.249	ng		100
23) trans-1,2-Dichloroethene	9.63	61	873918	23.964	ng		100
24) 1,1-Dichloroethane	9.89	63	1054101	22.867	ng		98
25) Methyl tert-Butyl Ether	9.98	73	1698721	21.012	ng		96
26) Vinyl Acetate	10.15	86	508562	116.463	ng	#	65
27) 2-Butanone (MEK)	10.38	72	689072	44.825	ng	#	88
28) cis-1,2-Dichloroethene	10.90	61	823208	22.672	ng		99
29) Diisopropyl Ether	11.20	87	874482	43.519	ng	#	31
30) Ethyl Acetate	11.21	61	511850	59.109	ng		95
31) n-Hexane	11.18	57	858325	22.164	ng		100
32) Chloroform	11.25	83	937837	21.711	ng		100
34) Tetrahydrofuran (THF)	11.65	72	652168	41.960	ng		92
35) Ethyl tert-Butyl Ether	11.80	87	1320894	45.187	ng		99
36) 1,2-Dichloroethane	12.05	62	787825	21.505	ng		99
38) 1,1,1-Trichloroethane	12.33	97	887441	22.495	ng		99
39) Isopropyl Acetate	12.80	61	28473	No Calib	#		
40) 1-Butanol	12.81	56	12801	No Calib	#		
41) Benzene	12.81	78	2089886	22.163	ng		100
42) Carbon Tetrachloride	12.97	117	744438	23.068	ng		99
43) Cyclohexane	13.09	84	1578152	46.838	ng		98
44) tert-Amyl Methyl Ether	13.45	73	3023032	45.085	ng		97
45) 1,2-Dichloropropane	13.65	63	576658	23.884	ng		97
46) Bromodichloromethane	13.85	83	777242	23.374	ng		99
47) Trichloroethene	13.90	130	600501	27.357	ng		99
48) 1,4-Dioxane	13.87	88	450197	25.452	ng		100
49) 2,2,4-Trimethylpentane...	13.97	57	2439983	23.819	ng		90
50) Methyl Methacrylate	14.11	100	458235	55.410	ng	#	79

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292108.D Vial: 2
Acq On : 29 Sep 2021 22:02 Operator: WA
Sample : LCSD R16092921_25ng Inst : GCMS-16
Misc : S34-09132101/S34-09242103 (10/23)

Quant Time: Sep 30 03:33:14 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

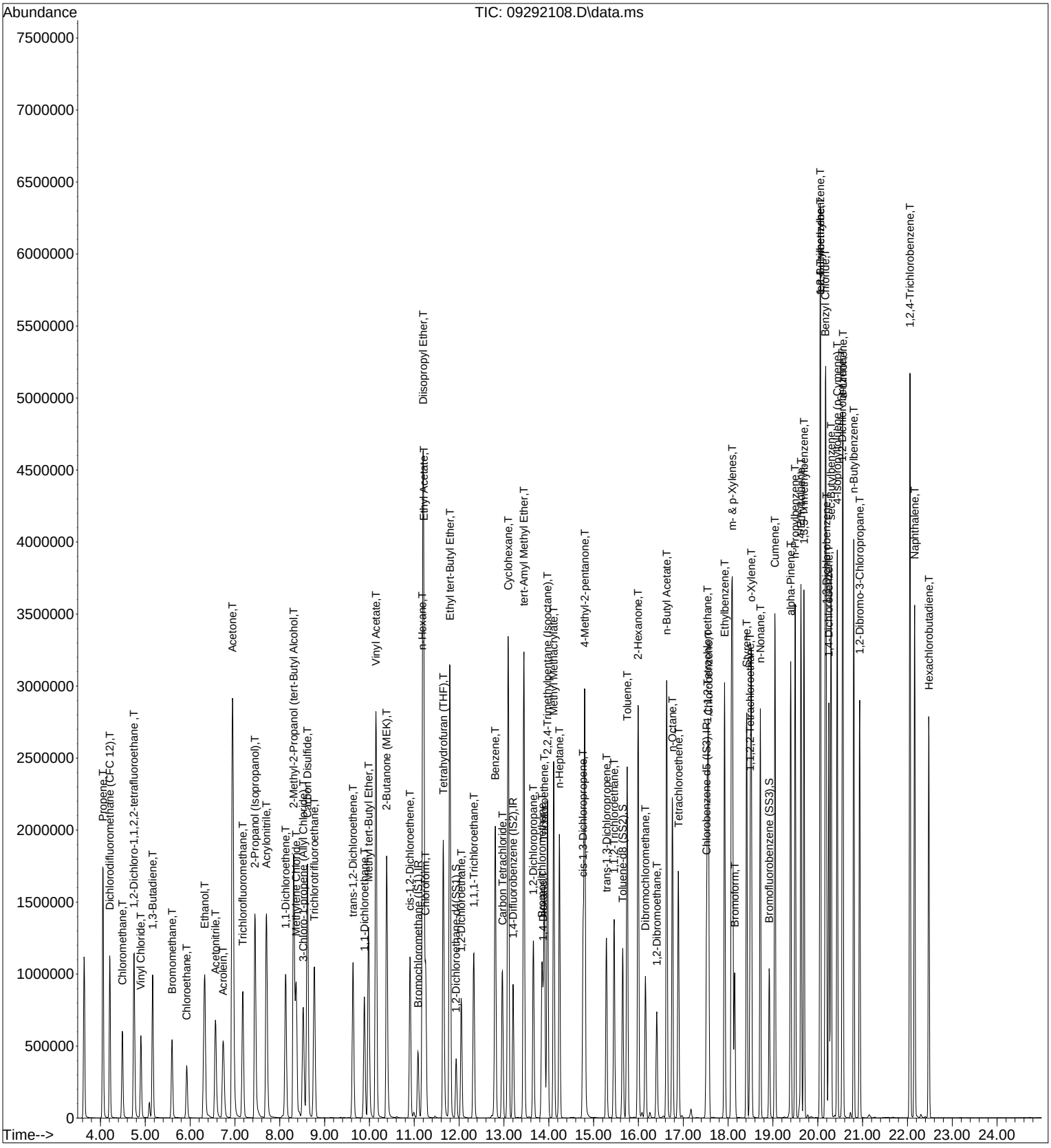
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
51) n-Heptane	14.24	71	517452	22.152	ng		92
52) cis-1,3-Dichloropropene	14.77	75	888724	24.313	ng		100
53) 4-Methyl-2-pentanone	14.80	58	1053349	51.060	ng		81
54) trans-1,3-Dichloropropene	15.29	75	854394	24.378	ng		100
55) 1,1,2-Trichloroethane	15.46	97	524416	24.273	ng		98
58) Toluene	15.75	91	2127997	26.197	ng		100
59) 2-Hexanone	15.99	43	2235041	48.842	ng		87
60) Dibromochloromethane	16.16	129	669525	29.898	ng		100
61) 1,2-Dibromoethane	16.41	107	628172	28.263	ng		100
62) n-Butyl Acetate	16.63	43	2525901	50.283	ng		91
63) n-Octane	16.76	57	510211	26.955	ng		96
64) Tetrachloroethene	16.89	166	653270	28.946	ng		100
65) Chlorobenzene	17.56	112	1411281	27.703	ng		100
66) Ethylbenzene	17.92	91	2473802	26.478	ng		96
67) m- & p-Xylenes	18.09	91	3853792	52.609	ng		94
68) Bromoform	18.15	173	576322	30.392	ng		99
69) Styrene	18.42	104	1562533	29.257	ng		95
70) o-Xylene	18.52	91	1920954	26.205	ng		95
71) n-Nonane	18.72	43	996314	23.410	ng		86
72) 1,1,2,2-Tetrachloroethane	18.49	83	893240	26.530	ng		100
74) Cumene	19.04	105	2518682	27.385	ng		99
75) alpha-Pinene	19.40	93	1322743	28.478	ng		95
76) n-Propylbenzene	19.49	91	2933098	26.098	ng		97
77) 3-Ethyltoluene	19.63	105	2499754	No Calib			
78) 4-Ethyltoluene	19.63	105	2499754	28.366	ng		99
79) 1,3,5-Trimethylbenzene	19.69	105	2093560	27.669	ng		98
80) alpha-Methylstyrene	19.63	118	14620	No Calib		#	
81) 2-Ethyltoluene	19.63	105	2499793	No Calib			
82) 1,2,4-Trimethylbenzene	20.06	105	1988722	27.486	ng		97
83) n-Decane	20.06	58	81632	No Calib		#	
84) Benzyl Chloride	20.17	91	3513727	61.390	ng		93
85) 1,3-Dichlorobenzene	20.19	146	1202494	30.276	ng		100
86) 1,4-Dichlorobenzene	20.25	146	1271679	29.573	ng		100
87) sec-Butylbenzene	20.30	105	2723145	27.123	ng		97
88) 4-Isopropyltoluene (p-...	20.43	119	2338200	27.787	ng		95
89) 1,2,3-Trimethylbenzene	20.30	105	2723145	No Calib			
90) 1,2-Dichlorobenzene	20.55	146	1148119	29.057	ng		99
91) d-Limonene	20.56	68	753059	27.125	ng		93
92) 1,2-Dibromo-3-Chloropr...	20.94	157	926544	58.542	ng		79
93) n-Undecane	21.13	57	1146	No Calib		#	
94) 1,2,4-Trichlorobenzene	22.06	180	1798346	54.988	ng		99
95) Naphthalene	22.16	128	2885532	30.000	ng		100
96) n-Dodecane	22.08	57	180	No Calib		#	
97) Hexachlorobutadiene	22.48	225	589943	25.801	ng		99
98) Cyclohexanone	18.08	55	3068	No Calib		#	
99) tert-Butylbenzene	20.06	119	1889459	27.151	ng		97
100) n-Butylbenzene	20.80	91	2172592	25.981	ng		97
101) 1,1,1,2-Tetrachloroethane	17.54	131	529610	29.022	ng		99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292108.D Vial: 2
Acq On : 29 Sep 2021 22:02 Operator: WA
Sample : LCSD R16092921_25ng Inst : GCMS-16
Misc : S34-09132101/S34-09242103 (10/23)

Quant Time: Sep 30 03:33:14 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M



01070726

Method Path : I:\MS16\METHODS\
Method File : R16091421A.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Mon Sep 20 21:10:50 2021
Response Via : Initial Calibration

Calibration Files
0.1 =09142126.D 0.2 =09142127.D 0.5 =09142135.D 1.0 =09142129.D 5.0 =09142130.D 25 =09142131.D 50 =09142132.D
100 =09142133.D

		Compound	0.1	0.2	0.5	1.0	5.0	25	50	100	Avg	%RSD
1)	IR	Bromochloromethane...	----------	ISTD	----------							
2)	T	Propene	2.180	2.355	2.290	2.197	2.602	2.083	1.901	1.453	2.133	16.05
3)	T	Dichlorodifluo...	3.656	3.567	3.137	3.774	3.464	2.983	2.761	2.336	3.210	15.49
4)	T	Chloromethane	2.364	2.132	2.008	2.438	2.003	2.075	1.636		2.094	12.61
5)	T	1,2-Dichloro-1...	1.416	1.297	1.211	1.388	1.274	1.152	1.060	0.928	1.216	13.58
6)	T	Vinyl Chloride	1.833	1.995	1.927	2.205	2.054	1.889	1.784	1.540	1.903	10.39
7)	T	1,3-Butadiene	1.183	1.392	1.355	1.667	1.588	1.513	1.385	1.173	1.407	12.59
8)	T	Bromomethane	1.391	1.396	1.286	1.435	1.311	1.250	1.162	1.057	1.286	9.95
9)	T	Chloroethane	1.153	1.148	1.170	1.248	1.167	1.083	1.016	0.916	1.113	9.38
10)	T	Ethanol	1.539	1.441	1.618	1.486	1.398	1.238	1.085	0.904	1.339	18.22
11)	T	Acetonitrile		3.557	3.833	3.774	3.590	3.365	3.174	2.865	3.451	9.95
12)	T	Acrolein	1.042	1.046	1.095	1.176	1.119	1.057	0.985	0.870	1.049	8.77
13)	T	Acetone	1.404	1.329	1.293	1.358	1.201	1.001	0.852	0.654	1.137	23.94
14)	T	Trichlorofluor...	3.249	3.159	2.758	3.264	3.039	2.828	2.617	2.322	2.904	11.50
15)	T	2-Propanol (Is...	4.465	3.831	3.607	4.729	3.415	3.389	2.751	2.249	3.554	23.01
16)	T	Acrylonitrile	1.828	2.000	2.246	2.339	2.260	2.111	1.935	1.665	2.048	11.42
17)	T	1,1-Dichloroet...	1.497	1.455	1.431	1.509	1.444	1.355	1.277	1.160	1.391	8.66
18)	T	2-Methyl-2-Pro...	4.374	4.418	4.288	4.779	4.280	4.006	2.576		4.103	17.33
19)	T	Methylene Chlo...	1.752	1.604	1.532	1.667	1.561	1.455	1.377	1.252	1.525	10.54
20)	T	3-Chloro-1-pro...	2.525	2.473	2.379	2.778	2.591	2.507	2.333	2.024	2.451	8.96
21)	T	Trichlorotrifl...	1.341	1.352	1.285	1.339	1.248	1.185	1.138	1.027	1.239	9.31
22)	T	Carbon Disulfide	6.436	6.271	5.729	6.204	5.804	5.274	4.766	3.974	5.557	15.21
23)	T	trans-1,2-Dich...	2.169	2.186	2.270	2.512	2.436	2.298	2.144	1.905	2.240	8.38
24)	T	1,1-Dichloroet...	2.993	3.043	2.838	3.154	2.958	2.763	2.590	2.314	2.832	9.64
25)	T	Methyl tert-Bu...	5.426	5.146	5.029	5.431	5.157	4.948	4.628	3.962	4.966	9.70
26)	T	Vinyl Acetate			0.226	0.274	0.292	0.305	0.280	0.233	0.268	11.83
27)	T	2-Butanone (MEK)	0.821	0.929	1.040	1.110	1.054	0.976	0.894	0.730	0.944	13.49
28)	T	cis-1,2-Dichlo...	2.384	2.257	2.233	2.483	2.353	2.216	2.079	1.836	2.230	9.00
29)	T	Diisopropyl Ether		1.392	1.417	1.489	1.328	0.979	0.801		1.234	22.48
30)	T	Ethyl Acetate	0.554	0.574	0.620	0.642	0.575	0.431	0.328		0.532	21.08
31)	T	n-Hexane		2.880	2.847	3.014	2.710	2.124	1.752	1.324	2.379	27.43
32)	T	Chloroform	2.961	2.894	2.658	3.015	2.805	2.572	2.323	1.999	2.653	13.14
33)	S	1,2-Dichloroet...	2.054	2.113	1.976	2.192	2.184	2.129	2.009	1.905	2.070	4.93
34)	T	Tetrahydrofura...	1.043	1.033	1.060	1.070	0.996	0.911	0.831	0.694	0.955	14.01
35)	T	Ethyl tert-But...	1.978	1.951	1.900	2.033	1.906	1.771	1.581	1.244	1.796	14.71
36)	T	1,2-Dichloroet...	2.344	2.354	2.152	2.582	2.407	2.276	2.089	1.799	2.250	10.54
37)	IR	1,4-Difluorobenzen...	----------	ISTD	----------							
38)	T	1,1,1-Trichlor...	0.625	0.604	0.537	0.636	0.599	0.556	0.522	0.461	0.568	10.50
39)	T	Isopropyl Acetate									0.000	-1.00
40)	T	1-Butanol									0.000	-1.00
41)	T	Benzene	1.622	1.489	1.410	1.503	1.378	1.250	1.170	1.031	1.357	14.35
42)	T	Carbon Tetrach...	0.492	0.487	0.438	0.511	0.491	0.468	0.440	0.387	0.464	8.69

9/20/21

9/21/21

01070727

Method Path : I:\MS16\METHODS\
Method File : R16091421A.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)

43)	T	Cyclohexane	0.556	0.534	0.527	0.557	0.516	0.452	0.408	0.328	0.485	16.89
44)	T	tert-Amyl Meth...	1.094	1.064	1.019	1.096	1.037	0.944	0.831	0.632	0.965	16.69
45)	T	1,2-Dichloropr...	0.391	0.362	0.365	0.386	0.362	0.333	0.310	0.270	0.347	11.77
46)	T	Bromodichlorom...	0.487	0.505	0.461	0.541	0.517	0.479	0.447	0.390	0.478	9.83
47)	T	Trichloroethene	0.354	0.332	0.329	0.346	0.331	0.305	0.285	0.245	0.316	11.48
48)	T	1,4-Dioxane	0.256	0.256	0.268	0.284	0.275	0.257	0.237	0.203	0.254	9.96
49)	T	2,2,4-Trimethy...	1.699	1.652	1.557	1.679	1.571	1.397	1.249	0.985	1.474	16.95
50)	T	Methyl Methacr...	0.101	0.111	0.130	0.137	0.137	0.124	0.113	0.097	0.119	13.14
51)	T	n-Heptane	0.386	0.352	0.353	0.378	0.356	0.322	0.295	0.247	0.336	13.80
52)	T	cis-1,3-Dichlo...	0.480	0.499	0.528	0.579	0.590	0.554	0.520	0.458	0.526	8.86
53)	T	4-Methyl-2-pen...	0.293	0.311	0.320	0.356	0.340	0.301	0.258	0.194	0.297	17.23
54)	T	trans-1,3-Dich...	0.379	0.446	0.493	0.546	0.577	0.570	0.540	0.483	0.504	13.49
55)	T	1,1,2-Trichlor...	0.314	0.323	0.325	0.350	0.329	0.304	0.284	0.256	0.311	9.42
56)	IR	Chlorobenzene-d5 (...	----------ISTD----------									
57)	S	Toluene-d8 (SS2)	5.342	5.255	5.426	5.047	4.989	5.154	5.468	5.758	5.305	4.72
58)	T	Toluene	7.257	6.662	6.675	6.485	5.947	5.618	5.587	5.103	6.167	11.65
59)	T	2-Hexanone	3.287	3.655	3.953	4.092	3.817	3.501	3.126	2.360	3.474	15.99
60)	T	Dibromochlorom...	1.682	1.722	1.635	1.798	1.706	1.703	1.736	1.617	1.700	3.37
61)	T	1,2-Dibromoethane	1.677	1.652	1.742	1.773	1.705	1.673	1.691	1.586	1.687	3.36
62)	T	n-Butyl Acetate	3.693	3.868	4.283	4.431	4.222	3.918	3.495	2.598	3.813	15.27
63)	T	n-Octane	1.643	1.577	1.561	1.584	1.449	1.349	1.280	1.052	1.437	13.92
64)	T	Tetrachloroethene	2.097	2.017	1.826	1.714	1.555	1.514	1.554	1.430	1.713	14.34
65)	T	Chlorobenzene	4.514	4.311	4.202	4.140	3.810	3.546	3.439	2.976	3.867	13.42
66)	T	Ethylbenzene	7.757	7.433	7.774	7.595	7.120	6.717	6.583	5.762	7.093	9.89
67)	T	m- & p-Xylenes	6.296	6.149	6.015	6.193	5.668	5.246	4.980	3.939	5.561	14.53
68)	T	Bromoform	1.310	1.383	1.388	1.494	1.471	1.515	1.555	1.401	1.440	5.70
69)	T	Styrene	3.916	4.053	4.302	4.324	4.210	4.054	4.003	3.572	4.054	5.99
70)	T	o-Xylene	6.282	6.092	6.158	6.193	5.660	5.201	4.955	3.979	5.565	14.51
71)	T	n-Nonane	3.569	3.481	3.559	3.866	3.534	3.100	2.738	2.002	3.231	18.68
72)	T	1,1,2,2-Tetrac...	2.773	2.757	2.752	2.800	2.642	2.425	2.324	1.973	2.556	11.49
73)	S	Bromofluoroben...	1.782	1.728	1.885	1.670	1.670	1.721	1.885	2.025	1.796	6.98
74)	T	Cumene	7.913	7.593	7.408	7.673	7.103	6.549	6.328	5.289	6.982	12.57
75)	T	alpha-Pinene	3.697	3.587	3.750	3.772	3.640	3.527	3.388	2.847	3.526	8.55
76)	T	n-Propylbenzene	9.439	9.213	9.380	9.461	8.809	8.051	7.664	6.239	8.532	13.43
77)	T	3-Ethyltoluene									0.000	-1.00
78)	T	4-Ethyltoluene	7.109	7.077	7.163	7.375	6.957	6.489	6.217	5.133	6.690	10.98
79)	T	1,3,5-Trimethy...	6.394	6.093	6.314	6.391	5.882	5.484	5.213	4.181	5.744	13.33
80)	T	alpha-Methylst...									0.000	-1.00
81)	T	2-Ethyltoluene									0.000	-1.00
82)	T	1,2,4-Trimethy...	6.142	5.981	6.304	6.443	5.932	5.262	4.613	3.266	5.493	19.70
83)	T	n-Decane									0.000	-1.00
84)	T	Benzyl Chloride	3.327	3.805	4.508	4.486	4.957	4.965	4.367		4.345	13.72
85)	T	1,3-Dichlorobe...	3.453	3.378	3.542	3.307	3.083	2.847	2.615	1.897	3.015	18.30
86)	T	1,4-Dichlorobe...	3.834	3.618	3.759	3.379	3.102	3.049	2.934	2.441	3.264	14.50
87)	T	sec-Butylbenzene	8.506	8.231	8.438	8.692	7.994	7.290	6.726	5.096	7.622	15.99
88)	T	4-Isopropyltol...	6.852	6.726	6.974	7.208	6.839	6.219	5.804	4.482	6.388	13.94
89)	T	1,2,3-Trimethy...									0.000	-1.00
90)	T	1,2-Dichlorobe...	3.478	3.458	3.495	3.289	3.021	2.746	2.553	1.956	3.000	18.35
91)	T	d-Limonene	2.063	2.173	2.253	2.521	2.450	2.282	1.907	1.212	2.108	19.55
92)	T	1,2-Dibromo-3-...	1.144	1.216	1.298	1.311	1.298	1.241	1.162	0.942	1.201	10.17
93)	T	n-Undecane									0.000	-1.00
94)	T	1,2,4-Trichlor...	2.591	2.488	2.897	2.717	2.569	2.544	2.317	1.739	2.483	13.87

Method Path : I:\MS16\METHODS\
Method File : R16091421A.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)

95)	T	Naphthalene	6.372	6.331	8.402	7.808	7.685	7.947	7.652	6.218	7.302	11.73
96)	T	n-Dodecane									0.000	-1.00
97)	T	Hexachlorobuta...	1.933	1.901	1.812	1.802	1.709	1.676	1.650	1.403	1.736	9.70
98)	T	Cyclohexanone									0.000	-1.00
99)	T	tert-Butylbenzene	6.107	6.022	6.107	6.136	5.632	4.865	4.279	3.115	5.283	21.02
100)	T	n-Butylbenzene	6.517	6.720	6.963	7.211	6.768	6.220	5.811	4.575	6.348	13.20
101)	T	1,1,1,2-Tetrac...	1.494	1.513	1.445	1.479	1.394	1.334	1.302	1.122	1.385	9.42

(#) = Out of Range

Primary Source Standards Concentrations (Working & Initial Calibration)

WA 9/15/21

1ng/L Std. ID: | 40ng/L Std. ID:
4ng/L Std. ID: S34-09102105 | 200ng/L Std. ID: S34-09082103
20ng/L Std. ID: S34-09102104 | 1000ng/L Std. ID:

Dilution Factors:		1	5	25	50	250	1000	Working STD Conc.(ng/L):	4	4	4	20	200	200	200	200
	Source Std.		Primary Working Standards					Injection (L):	0.025	0.050	0.1250	0.050	0.025	0.125	0.25	0.50
Compounds	mg/m³	1000ng/L	200ng/L	40ng/L	20ng/L	4ng/L	1ng/L	ICAL Points:	0.1ng	0.2ng	0.5ng	1ng	5ng	25ng	50ng	100ng
Propene	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
Dichlorodifluoromethane	1.05	1050	210	42.0	21.0	4.20	1.05		0.105	0.210	0.525	1.05	5.25	26.25	52.5	105
Chloromethane	1.02	1020	204	40.8	20.4	4.08	1.02		0.102	0.204	0.510	1.02	5.10	25.50	51.0	102
Freon-114	1.08	1080	216	43.2	21.6	4.32	1.08		0.108	0.216	0.540	1.08	5.40	27.00	54.0	108
Vinyl Chloride	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
1,3-Butadiene	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
Bromomethane	1.02	1020	204	40.8	20.4	4.08	1.02		0.102	0.204	0.510	1.02	5.10	25.50	51.0	102
Chloroethane	1.02	1020	204	40.8	20.4	4.08	1.02		0.102	0.204	0.510	1.02	5.10	25.50	51.0	102
Ethanol	3.62	3620	724	144.8	72.4	14.48	3.62		0.362	0.724	1.810	3.62	18.10	90.50	181.0	362
Acetonitrile	0.93	930	186	37.2	18.6	3.72	0.93		0.093	0.186	0.465	0.93	4.65	23.25	46.5	93
Acrolein	2.00	2000	400	80.0	40.0	8.00	2.00		0.200	0.400	1.000	2.00	10.00	50.00	100.0	200
Acetone	5.19	5190	1038	207.6	103.8	20.76	5.19		0.519	1.038	2.595	5.19	25.95	129.75	259.5	519
Trichlorofluoromethane	1.03	1030	206	41.2	20.6	4.12	1.03		0.103	0.206	0.515	1.03	5.15	25.75	51.5	103
Isopropanol	2.02	2020	404	80.8	40.4	8.08	2.02		0.202	0.404	1.010	2.02	10.10	50.50	101.0	202
Acrylonitrile	2.03	2030	406	81.2	40.6	8.12	2.03		0.203	0.406	1.015	2.03	10.15	50.75	101.5	203
1,1-Dichloroethene	1.07	1070	214	42.8	21.4	4.28	1.07		0.107	0.214	0.535	1.07	5.35	26.75	53.5	107
tert-Butanol	2.10	2100	420	84.0	42.0	8.40	2.10		0.210	0.420	1.050	2.10	10.50	52.50	105.0	210
Methylene Chloride	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
Allyl Chloride	1.05	1050	210	42.0	21.0	4.20	1.05		0.105	0.210	0.525	1.05	5.25	26.25	52.5	105
Trichlorotrifluoroethane	1.08	1080	216	43.2	21.6	4.32	1.08		0.108	0.216	0.540	1.08	5.40	27.00	54.0	108
Carbon Disulfide	2.10	2100	420	84.0	42.0	8.40	2.10		0.210	0.420	1.050	2.10	10.50	52.50	105.0	210
trans-1,2-Dichloroethene	1.06	1060	212	42.4	21.2	4.24	1.06		0.106	0.212	0.530	1.06	5.30	26.50	53.0	106
1,1-Dichloroethane	1.05	1050	210	42.0	21.0	4.20	1.05		0.105	0.210	0.525	1.05	5.25	26.25	52.5	105
Methyl tert-Butyl Ether	1.05	1050	210	42.0	21.0	4.20	1.05		0.105	0.210	0.525	1.05	5.25	26.25	52.5	105
Vinyl Acetate	3.40	3400	680	136.0	68.0	13.60	3.40		0.340	0.680	1.700	3.40	17.00	85.00	170.0	340
2-Butanone	2.06	2060	412	82.4	41.2	8.24	2.06		0.206	0.412	1.030	2.06	10.30	51.50	103.0	206
cis-1,2-Dichloroethene	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
Diisopropyl Ether	2.12	2120	424	84.8	42.4	8.48	2.12		0.212	0.424	1.060	2.12	10.60	53.00	106.0	212
Ethyl Acetate	4.08	4080	816	163.2	81.6	16.32	4.08		0.408	0.816	2.040	4.08	20.40	102.00	204.0	408
n-Hexane	1.05	1050	210	42.0	21.0	4.20	1.05		0.105	0.210	0.525	1.05	5.25	26.25	52.5	105
Chloroform	1.07	1070	214	42.8	21.4	4.28	1.07		0.107	0.214	0.535	1.07	5.35	26.75	53.5	107
Tetrahydrofuran	1.97	1970	394	78.8	39.4	7.88	1.97		0.197	0.394	0.985	1.97	9.85	49.25	98.5	197
Ethyl tert-Butyl Ether	2.10	2100	420	84.0	42.0	8.40	2.10		0.210	0.420	1.050	2.10	10.50	52.50	105.0	210
1,2-Dichloroethane	1.06	1060	212	42.4	21.2	4.24	1.06		0.106	0.212	0.530	1.06	5.30	26.50	53.0	106
1,1,1-Trichloroethane	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
Benzene	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
Carbon Tetrachloride	1.05	1050	210	42.0	21.0	4.20	1.05		0.105	0.210	0.525	1.05	5.25	26.25	52.5	105
Cyclohexane	2.07	2070	414	82.8	41.4	8.28	2.07		0.207	0.414	1.035	2.07	10.35	51.75	103.5	207
tert-Amyl Methyl Ether	2.09	2090	418	83.6	41.8	8.36	2.09		0.209	0.418	1.045	2.09	10.45	52.25	104.5	209
1,2-Dichloropropane	1.03	1030	206	41.2	20.6	4.12	1.03		0.103	0.206	0.515	1.03	5.15	25.75	51.5	103
Bromodichloromethane	1.05	1050	210	42.0	21.0	4.20	1.05		0.105	0.210	0.525	1.05	5.25	26.25	52.5	105
Trichloroethene	1.03	1030	206	41.2	20.6	4.12	1.03		0.103	0.206	0.515	1.03	5.15	25.75	51.5	103
1,4-Dioxane	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
Isooctane	1.06	1060	212	42.4	21.2	4.24	1.06		0.106	0.212	0.530	1.06	5.30	26.50	53.0	106
Methyl Methacrylate	2.08	2080	416	83.2	41.6	8.32	2.08		0.208	0.416	1.040	2.08	10.40	52.00	104.0	208
n-Heptane	1.05	1050	210	42.0	21.0	4.20	1.05		0.105	0.210	0.525	1.05	5.25	26.25	52.5	105

Primary Source Standards Concentrations (Working & Initial Calibration)

1ng/L Std. ID: | 40ng/L Std. ID:
4ng/L Std. ID: S34-09102105 | 200ng/L Std. ID: S34-09082103
20ng/L Std. ID: S34-09102104 | 1000ng/L Std. ID:

Dilution Factors:		1	5	25	50	250	1000	Working STD Conc.(ng/L):	4	4	4	20	200	200	200	200
	Source Std.		Primary Working Standards					Injection (L):	0.025	0.050	0.1250	0.050	0.025	0.125	0.25	0.50
Compounds	mg/m³	1000ng/L	200ng/L	40ng/L	20ng/L	4ng/L	1ng/L	ICAL Points:	0.1ng	0.2ng	0.5ng	1ng	5ng	25ng	50ng	100ng
cis-1,3-Dichloropropene	1.05	1050	210	42.0	21.0	4.20	1.05		0.105	0.210	0.525	1.05	5.25	26.25	52.5	105
4-Methyl-2-pentanone	2.08	2080	416	83.2	41.6	8.32	2.08		0.208	0.416	1.040	2.08	10.40	52.00	104.0	208
trans-1,3-Dichloropropene	1.01	1010	202	40.4	20.2	4.04	1.01		0.101	0.202	0.505	1.01	5.05	25.25	50.5	101
1,1,2-Trichloroethane	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
Toluene	1.03	1030	206	41.2	20.6	4.12	1.03		0.103	0.206	0.515	1.03	5.15	25.75	51.5	103
2-Hexanone	2.05	2050	410	82.0	41.0	8.20	2.05		0.205	0.410	1.025	2.05	10.25	51.25	102.5	205
Dibromochloromethane	1.05	1050	210	42.0	21.0	4.20	1.05		0.105	0.210	0.525	1.05	5.25	26.25	52.5	105
1,2-Dibromoethane	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
n-Butyl Acetate	2.04	2040	408	81.6	40.8	8.16	2.04		0.204	0.408	1.020	2.04	10.20	51.00	102.0	204
n-Octane	1.05	1050	210	42.0	21.0	4.20	1.05		0.105	0.210	0.525	1.05	5.25	26.25	52.5	105
Tetrachloroethene	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
Chlorobenzene	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
Ethylbenzene	1.03	1030	206	41.2	20.6	4.12	1.03		0.103	0.206	0.515	1.03	5.15	25.75	51.5	103
m-&p-Xylene	2.06	2060	412	82.4	41.2	8.24	2.06		0.206	0.412	1.030	2.06	10.30	51.50	103.0	206
Bromoform	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
Styrene	1.03	1030	206	41.2	20.6	4.12	1.03		0.103	0.206	0.515	1.03	5.15	25.75	51.5	103
o-Xylene	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
n-Nonane	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
1,1,2,2-Tetrachloroethane	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
Cumene	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
alpha-Pinene	1.08	1080	216	43.2	21.6	4.32	1.08		0.108	0.216	0.540	1.08	5.40	27.00	54.0	108
n-Propylbenzene	1.05	1050	210	42.0	21.0	4.20	1.05		0.105	0.210	0.525	1.05	5.25	26.25	52.5	105
4-Ethyltoluene	1.06	1060	212	42.4	21.2	4.24	1.06		0.106	0.212	0.530	1.06	5.30	26.50	53.0	106
1,3,5-Trimethylbenzene	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
1,2,4-Trimethylbenzene	1.03	1030	206	41.2	20.6	4.12	1.03		0.103	0.206	0.515	1.03	5.15	25.75	51.5	103
Benzyl Chloride	2.06	2060	412	82.4	41.2	8.24	2.06		0.206	0.412	1.030	2.06	10.30	51.50	103.0	206
1,3-Dichlorobenzene	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
1,4-Dichlorobenzene	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
sec-Butylbenzene	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
p-Isopropyltoluene	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
1,2-Dichlorobenzene	1.05	1050	210	42.0	21.0	4.20	1.05		0.105	0.210	0.525	1.05	5.25	26.25	52.5	105
d-Limonene	1.05	1050	210	42.0	21.0	4.20	1.05		0.105	0.210	0.525	1.05	5.25	26.25	52.5	105
1,2-Dibromo-3-chloropropane	2.00	2000	400	80.0	40.0	8.00	2.00		0.200	0.400	1.000	2.00	10.00	50.00	100.0	200
1,2,4-Trichlorobenzene	2.04	2040	408	81.6	40.8	8.16	2.04		0.204	0.408	1.020	2.04	10.20	51.00	102.0	204
Naphthalene	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
Hexachloro-1,3-butadiene	1.03	1030	206	41.2	20.6	4.12	1.03		0.103	0.206	0.515	1.03	5.15	25.75	51.5	103
tert-Butylbenzene	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
n-Butylbenzene	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104
1,1,1,2-Tetrachloroethane	1.04	1040	208	41.6	20.8	4.16	1.04		0.104	0.208	0.520	1.04	5.20	26.00	52.0	104

6.1.9.08

01070731

Method : I:\MS16\METHODS\R16091421A.M (RTE Integrator)
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	0.1	0	13	I:\MS16\DATA\2021_09\14\09142126.D
2	0.2	0	13	I:\MS16\DATA\2021_09\14\09142127.D
3	0.5	1	13	I:\MS16\DATA\2021_09\14\09142135.D
4	1.0	1	13	I:\MS16\DATA\2021_09\14\09142129.D
5	5.0	5	13	I:\MS16\DATA\2021_09\14\09142130.D
6	25	26	13	I:\MS16\DATA\2021_09\14\09142131.D
7	50	52	13	I:\MS16\DATA\2021_09\14\09142132.D
8	100	104	13	I:\MS16\DATA\2021_09\14\09142133.D

VOA 9/20/21

#	ID	Update Time	Quant Time	Acquisition Time
1	0.1	Sep 20 21:07 2021	Sep 20 20:52 2021	14 Sep 2021 17:10
2	0.2	Sep 20 21:07 2021	Sep 20 20:53 2021	14 Sep 2021 17:44
3	0.5	Sep 20 21:08 2021	Sep 20 21:05 2021	14 Sep 2021 22:16
4	1.0	Sep 20 21:09 2021	Sep 20 20:56 2021	14 Sep 2021 18:52
5	5.0	Sep 20 21:09 2021	Sep 20 20:57 2021	14 Sep 2021 19:26
6	25	Sep 20 21:10 2021	Sep 20 20:59 2021	14 Sep 2021 20:00
7	50	Sep 20 21:10 2021	Sep 20 21:01 2021	14 Sep 2021 20:34
8	100	Sep 20 21:10 2021	Sep 20 21:03 2021	14 Sep 2021 21:08

R16091421A.M Mon Sep 20 21:47:49 2021

Data File : I:\MS16\DATA\2021_09\14\09142126.D Vial: 4
Acq On : 14 Sep 2021 17:10 Operator: WA
Sample : 0.1ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09102105 (10/9)

Quant Time: Sep 20 20:52:05 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

VOA 9/20/21

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.06	130	213094	12.500	ng		-0.02
37) 1,4-Difluorobenzene (IS2)	13.20	114	964928	12.500	ng		-0.01
56) Chlorobenzene-d5 (IS3)	17.52	54	199684	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.92	65	437780	13.566	ng		-0.02
Spiked Amount 12.500	Range 70 - 130		Recovery = 108.56%				
57) Toluene-d8 (SS2)	15.65	98	1066757	13.410	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 107.28%				
73) Bromofluorobenzene (SS3)	18.92	174	355931	11.880	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 95.04%				
Target Compounds							Qvalue
2) Propene	4.11	42	3865	0.142	ng		99
3) Dichlorodifluoromethan...	4.25	85	6544	0.157	ng		99
4) Chloromethane	4.54	50	4111	0.156	ng		97
5) 1,2-Dichloro-1,1,2,2-t...	4.77	135	2607	0.115	ng		92
6) Vinyl Chloride	4.94	62	3249	0.090	ng		91
7) 1,3-Butadiene	5.20	54	2098	0.081	ng		89
8) Bromomethane	5.64	94	2418	0.143	ng		99
9) Chloroethane	5.96	64	2005	0.142	ng		92
10) Ethanol	6.34	45	9496	0.506	ng		94
11) Acetonitrile	0.00	41	0	N.D.	d		
12) Acrolein	6.79	56	3553	0.262	ng		81
13) Acetone	6.99	58	12425	0.725	ng		90
14) Trichlorofluoromethane	7.19	101	5705	0.143	ng		99
15) 2-Propanol (Isopropanol)	7.51	45	15374	0.250	ng		98
16) Acrylonitrile	7.75	53	6327	0.223	ng		99
17) 1,1-Dichloroethene	8.14	96	2731	0.150	ng		96
18) 2-Methyl-2-Propanol (t...	8.38	59	15658	0.385	ng		97
19) Methylene Chloride	8.35	84	3106	0.147	ng		99
20) 3-Chloro-1-propene (Al...	8.52	41	4519	0.128	ng		86
21) Trichlorotrifluoroethane	8.78	151	2469	0.135	ng		98
22) Carbon Disulfide	8.64	76	23039	0.276	ng		96
23) trans-1,2-Dichloroethene	9.63	61	3919	0.130	ng		93
24) 1,1-Dichloroethane	9.87	63	5357	0.145	ng		97
25) Methyl tert-Butyl Ether	10.04	73	9712	0.186	ng		95
26) Vinyl Acetate	10.17	86	441	0.091	ng	#	1
27) 2-Butanone (MEK)	10.45	72	2882	0.197	ng	#	83
28) cis-1,2-Dichloroethene	10.90	61	4227	0.140	ng		99
29) Diisopropyl Ether	11.22	87	5166	0.262	ng	#	96
30) Ethyl Acetate	11.24	61	3853	0.411	ng		92
31) n-Hexane	11.19	57	5410	0.134	ng		95
32) Chloroform	11.23	83	5401	0.144	ng		100
34) Tetrahydrofuran (THF)	11.71	72	3503	0.244	ng	#	88
35) Ethyl tert-Butyl Ether	11.81	87	7082	0.269	ng		96
36) 1,2-Dichloroethane	12.04	62	4235	0.134	ng		99
38) 1,1,1-Trichloroethane	12.32	97	5020	0.146	ng		96
39) Isopropyl Acetate	0.00	61	0	N.D.			
40) 1-Butanol	0.00	56	0	N.D.			
41) Benzene	12.81	78	13025	0.160	ng		98
42) Carbon Tetrachloride	12.96	117	3991	0.127	ng		98
43) Cyclohexane	13.09	84	8889	0.273	ng		99
44) tert-Amyl Methyl Ether	13.47	73	17655	0.277	ng		97
45) 1,2-Dichloropropane	13.66	63	3105	0.143	ng		93
46) Bromodichloromethane	13.85	83	3951	0.130	ng		99
47) Trichloroethene	13.91	130	2816	0.122	ng		100
48) 1,4-Dioxane	13.93	88	2059	0.133	ng	#	70
49) 2,2,4-Trimethylpentane...	13.97	57	13905	0.151	ng		98
50) Methyl Methacrylate	14.14	100	1621	0.200	ng	#	86

Data File : I:\MS16\DATA\2021_09\14\09142126.D Vial: 4
Acq On : 14 Sep 2021 17:10 Operator: WA
Sample : 0.1ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09102105 (10/9)

Quant Time: Sep 20 20:52:05 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

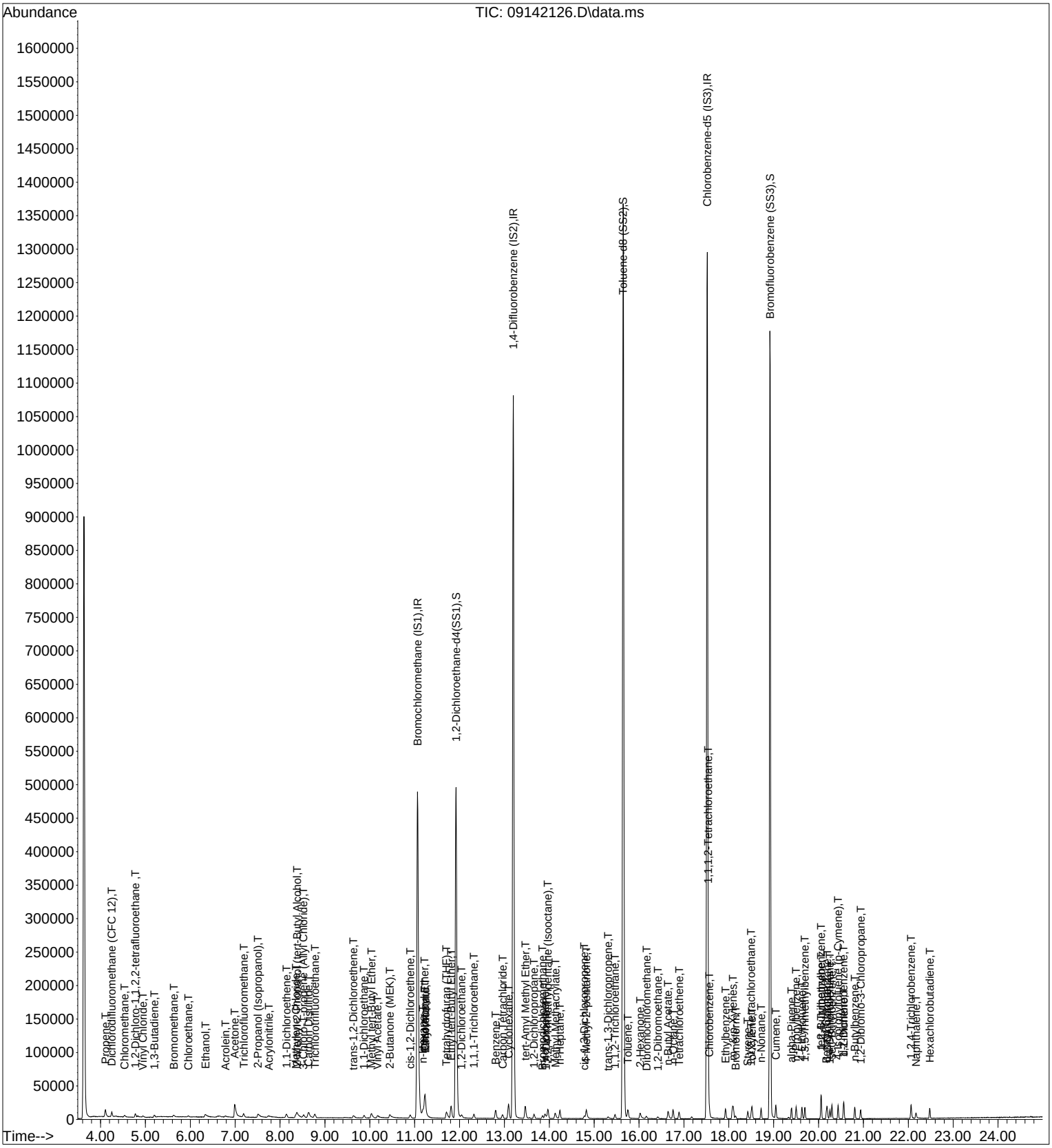
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
51) n-Heptane	14.24	71	3130	0.144	ng		98
52) cis-1,3-Dichloropropene	14.78	75	3887	0.117	ng		98
53) 4-Methyl-2-pentanone	14.83	58	4699	0.233	ng		84
54) trans-1,3-Dichloropropene	15.31	75	2956	0.096	ng		89
55) 1,1,2-Trichloroethane	15.46	97	2524	0.127	ng		98
58) Toluene	15.75	91	11941	0.150	ng		97
59) 2-Hexanone	16.02	43	10763	0.216	ng		96
60) Dibromochloromethane	16.17	129	2822	0.129	ng		96
61) 1,2-Dibromoethane	16.42	107	2786	0.138	ng		96
62) n-Butyl Acetate	16.65	43	12035	0.219	ng		99
63) n-Octane	16.76	57	2756	0.164	ng		97
64) Tetrachloroethene	16.89	166	3484	0.146	ng		100
65) Chlorobenzene	17.56	112	7499	0.138	ng		97
66) Ethylbenzene	17.93	91	12763	0.144	ng		98
67) m- & p-Xylenes	18.09	91	20719	0.286	ng		99
68) Bromoform	18.15	173	2177	0.105	ng		97
69) Styrene	18.42	104	6444	0.129	ng		96
70) o-Xylene	18.52	91	10436	0.144	ng		96
71) n-Nonane	18.72	43	5929	0.132	ng		95
72) 1,1,2,2-Tetrachloroethane	18.50	83	4607	0.138	ng		96
74) Cumene	19.05	105	13147	0.147	ng		99
75) alpha-Pinene	19.40	93	6379	0.148	ng		95
76) n-Propylbenzene	19.50	91	15833	0.144	ng		96
77) 3-Ethyltoluene	0.00	105	0	N.D.	d		
78) 4-Ethyltoluene	19.63	105	12038	0.140	ng		99
79) 1,3,5-Trimethylbenzene	19.69	105	10623	0.146	ng		97
80) alpha-Methylstyrene	0.00	118	0	N.D.			
81) 2-Ethyltoluene	0.00	105	0	N.D.	d		
82) 1,2,4-Trimethylbenzene	20.06	105	10106	0.130	ng		99
83) n-Decane	0.00	58	0	N.D.	d		
84) Benzyl Chloride	20.18	91	10949	0.169	ng		97
85) 1,3-Dichlorobenzene	20.19	146	5737	0.119	ng		100
86) 1,4-Dichlorobenzene	20.25	146	6370	0.135	ng		98
87) sec-Butylbenzene	20.30	105	14132	0.143	ng		96
88) 4-Isopropyltoluene (p-...	20.43	119	11383	0.136	ng		99
89) 1,2,3-Trimethylbenzene	0.00	105	0	N.D.	d		
90) 1,2-Dichlorobenzene	20.56	146	5834	0.126	ng		97
91) d-Limonene	20.56	68	3460	0.117	ng		97
92) 1,2-Dibromo-3-Chloropr...	20.94	157	3655	0.214	ng	#	81
93) n-Undecane	0.00	57	0	N.D.			
94) 1,2,4-Trichlorobenzene	22.06	180	8445	0.230	ng		98
95) Naphthalene	22.17	128	10586	0.122	ng		93
96) n-Dodecane	0.00	57	0	N.D.			
97) Hexachlorobutadiene	22.48	225	3180	0.122	ng		94
98) Cyclohexanone	0.00	55	0	N.D.	d		
99) tert-Butylbenzene	20.06	119	10146	0.137	ng		98
100) n-Butylbenzene	20.81	91	10827	0.133	ng		98
101) 1,1,1,2-Tetrachloroethane	17.54	131	2482	0.122	ng		99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142126.D Vial: 4
Acq On : 14 Sep 2021 17:10 Operator: WA
Sample : 0.1ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09102105 (10/9)

Quant Time: Sep 20 20:52:05 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142127.D Vial: 4
Acq On : 14 Sep 2021 17:44 Operator: WA
Sample : 0.2ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09102105 (10/9)

Quant Time: Sep 20 20:53:13 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS) 9/20/21
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.06	130	191140	12.500	ng		-0.02
37) 1,4-Difluorobenzene (IS2)	13.20	114	861280	12.500	ng		-0.01
56) Chlorobenzene-d5 (IS3)	17.52	54	180642	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.92	65	403888	13.953	ng		-0.02
Spiked Amount 12.500	Range 70 - 130		Recovery = 111.60%				
57) Toluene-d8 (SS2)	15.64	98	949343	13.192	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 105.52%				
73) Bromofluorobenzene (SS3)	18.92	174	312220	11.520	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 92.16%				
Target Compounds							Qvalue
2) Propene	4.10	42	7490	0.307	ng		97
3) Dichlorodifluoromethan...	4.25	85	11455	0.307	ng		99
4) Chloromethane	4.53	50	6652	0.282	ng		95
5) 1,2-Dichloro-1,1,2,2-t...	4.77	135	4284	0.211	ng		100
6) Vinyl Chloride	4.94	62	6346	0.197	ng		94
7) 1,3-Butadiene	5.20	54	4428	0.191	ng		97
8) Bromomethane	5.63	94	4355	0.286	ng		97
9) Chloroethane	5.95	64	3580	0.282	ng		96
10) Ethanol	6.32	45	15954	0.947	ng		97
11) Acetonitrile	6.63	41	10116	0.243	ng		88
12) Acrolein	6.76	56	6400	0.526	ng		94
13) Acetone	6.97	58	21092	1.373	ng		94
14) Trichlorofluoromethane	7.19	101	9952	0.277	ng		100
15) 2-Propanol (Isopropanol)	7.49	45	23664	0.429	ng		95
16) Acrylonitrile	7.72	53	12418	0.488	ng		97
17) 1,1-Dichloroethene	8.14	96	4762	0.291	ng		99
18) 2-Methyl-2-Propanol (t...	8.36	59	28373	0.779	ng		98
19) Methylene Chloride	8.36	84	5101	0.268	ng		98
20) 3-Chloro-1-propene (Al...	8.53	41	7942	0.251	ng		90
21) Trichlorotrifluoroethane	8.77	151	4464	0.272	ng		100
22) Carbon Disulfide	8.63	76	40274	0.538	ng		96
23) trans-1,2-Dichloroethene	9.63	61	7088	0.262	ng		100
24) 1,1-Dichloroethane	9.87	63	9773	0.294	ng		97
25) Methyl tert-Butyl Ether	10.02	73	16526	0.352	ng		97
26) Vinyl Acetate	10.16	86	1632	0.375	ng	#	30
27) 2-Butanone (MEK)	10.43	72	5854	0.446	ng		97
28) cis-1,2-Dichloroethene	10.90	61	7180	0.265	ng		94
29) Diisopropyl Ether	11.21	87	9024	0.510	ng	#	92
30) Ethyl Acetate	11.23	61	7160	0.851	ng		93
31) n-Hexane	11.18	57	9249	0.255	ng		99
32) Chloroform	11.23	83	9470	0.282	ng		100
34) Tetrahydrofuran (THF)	11.70	72	6225	0.484	ng		98
35) Ethyl tert-Butyl Ether	11.81	87	12530	0.531	ng		97
36) 1,2-Dichloroethane	12.05	62	7631	0.269	ng		99
38) 1,1,1-Trichloroethane	12.32	97	8653	0.283	ng		97
39) Isopropyl Acetate	0.00	61	0	N.D.	d		
40) 1-Butanol	0.00	56	0	N.D.			
41) Benzene	12.80	78	21339	0.294	ng		99
42) Carbon Tetrachloride	12.96	117	7041	0.251	ng		99
43) Cyclohexane	13.09	84	15226	0.524	ng		98
44) tert-Amyl Methyl Ether	13.46	73	30636	0.538	ng		99
45) 1,2-Dichloropropane	13.66	63	5142	0.266	ng		98
46) Bromodichloromethane	13.85	83	7310	0.270	ng		100
47) Trichloroethene	13.91	130	4706	0.229	ng		98
48) 1,4-Dioxane	13.92	88	3675	0.265	ng		96
49) 2,2,4-Trimethylpentane...	13.97	57	24136	0.293	ng		98
50) Methyl Methacrylate	14.13	100	3195	0.441	ng	#	88

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142127.D Vial: 4
Acq On : 14 Sep 2021 17:44 Operator: WA
Sample : 0.2ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09102105 (10/9)

Quant Time: Sep 20 20:53:13 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

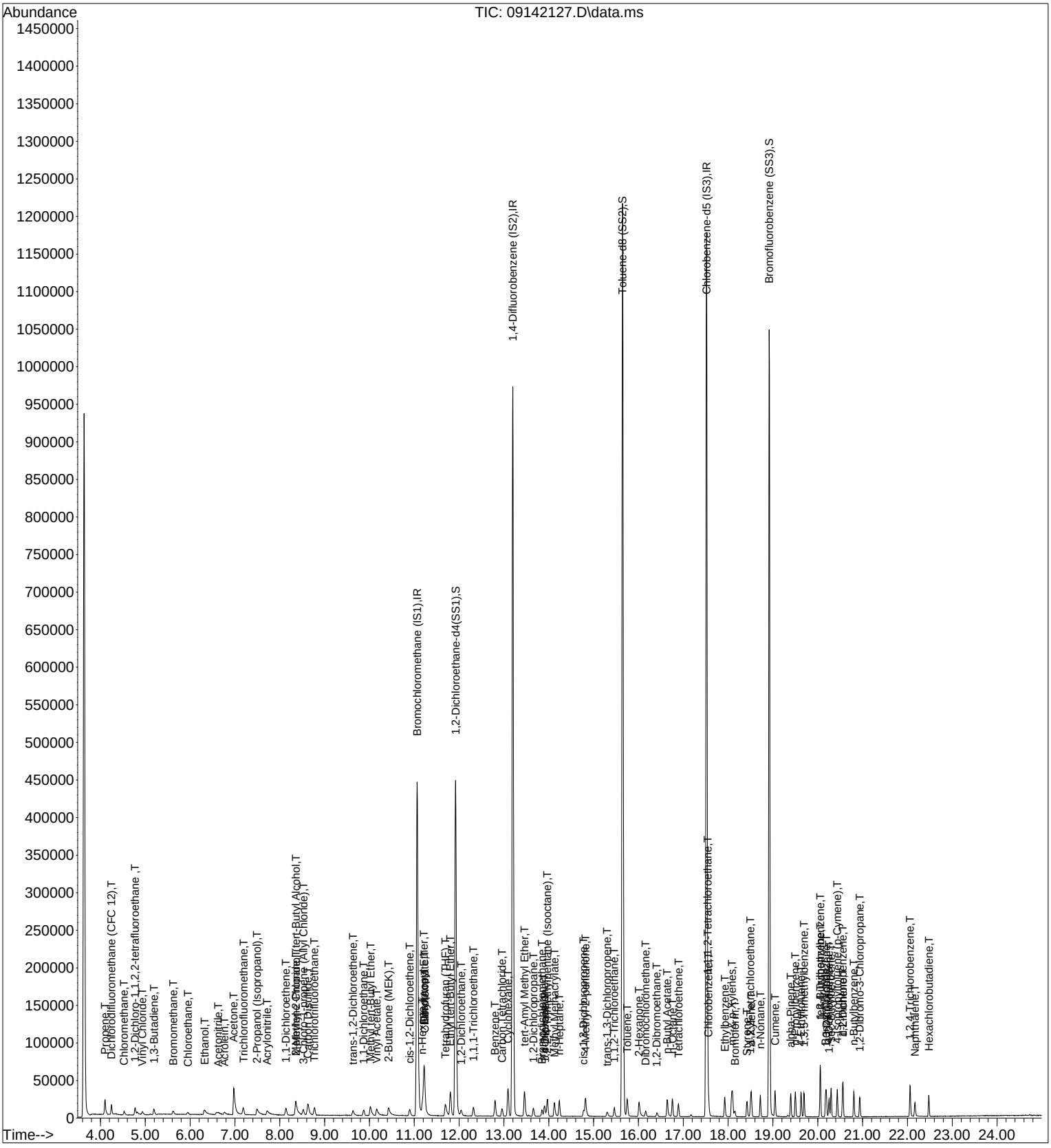
Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
51) n-Heptane	14.24	71	5098	0.262 ng	96
52) cis-1,3-Dichloropropene	14.78	75	7216	0.242 ng	96
53) 4-Methyl-2-pentanone	14.82	58	8925	0.497 ng	92
54) trans-1,3-Dichloropropene	15.30	75	6202	0.226 ng	93
55) 1,1,2-Trichloroethane	15.46	97	4634	0.261 ng	98
58) Toluene	15.75	91	19832	0.275 ng	100
59) 2-Hexanone	16.01	43	21659	0.480 ng	94
60) Dibromochloromethane	16.16	129	5227	0.265 ng	98
61) 1,2-Dibromoethane	16.41	107	4965	0.271 ng	98
62) n-Butyl Acetate	16.64	43	22809	0.459 ng	99
63) n-Octane	16.76	57	4785	0.314 ng	96
64) Tetrachloroethene	16.89	166	6062	0.280 ng	97
65) Chlorobenzene	17.56	112	12958	0.264 ng	98
66) Ethylbenzene	17.93	91	22128	0.275 ng	97
67) m- & p-Xylenes	18.09	91	36613	0.559 ng	100
68) Bromoform	18.15	173	4157	0.222 ng	98
69) Styrene	18.42	104	12067	0.267 ng	98
70) o-Xylene	18.52	91	18313	0.279 ng	98
71) n-Nonane	18.72	43	10463	0.258 ng	96
72) 1,1,2,2-Tetrachloroethane	18.50	83	8288	0.275 ng	98
74) Cumene	19.05	105	22823	0.282 ng	100
75) alpha-Pinene	19.40	93	11198	0.287 ng	88
76) n-Propylbenzene	19.50	91	27959	0.282 ng	99
77) 3-Ethyltoluene	0.00	105	0	N.D. d	
78) 4-Ethyltoluene	19.63	105	21681	0.279 ng	98
79) 1,3,5-Trimethylbenzene	19.69	105	18315	0.277 ng	100
80) alpha-Methylstyrene	0.00	118	0	N.D.	
81) 2-Ethyltoluene	0.00	105	0	N.D. d	
82) 1,2,4-Trimethylbenzene	20.06	105	17805	0.254 ng	97
83) n-Decane	0.00	58	0	N.D. d	
84) Benzyl Chloride	20.18	91	22657	0.386 ng	97
85) 1,3-Dichlorobenzene	20.19	146	10153	0.233 ng	98
86) 1,4-Dichlorobenzene	20.25	146	10876	0.254 ng	98
87) sec-Butylbenzene	20.30	105	24742	0.276 ng	97
88) 4-Isopropyltoluene (p-...	20.43	119	20218	0.267 ng	97
89) 1,2,3-Trimethylbenzene	0.00	105	0	N.D. d	
90) 1,2-Dichlorobenzene	20.56	146	10493	0.250 ng	100
91) d-Limonene	20.56	68	6596	0.246 ng	97
92) 1,2-Dibromo-3-Chloropr...	20.93	157	7029	0.456 ng	88
93) n-Undecane	0.00	57	0	N.D.	
94) 1,2,4-Trichlorobenzene	22.06	180	14668	0.441 ng	99
95) Naphthalene	22.17	128	19029	0.243 ng	94
96) n-Dodecane	0.00	57	0	N.D.	
97) Hexachlorobutadiene	22.48	225	5658	0.241 ng	98
98) Cyclohexanone	0.00	55	0	N.D.	
99) tert-Butylbenzene	20.06	119	18100	0.269 ng	100
100) n-Butylbenzene	20.80	91	20201	0.275 ng	96
101) 1,1,1,2-Tetrachloroethane	17.55	131	4547	0.248 ng	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142127.D Vial: 4
Acq On : 14 Sep 2021 17:44 Operator: WA
Sample : 0.2ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09102105 (10/9)

Quant Time: Sep 20 20:53:13 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142135.D Vial: 4
Acq On : 14 Sep 2021 22:16 Operator: WA
Sample : 0.5ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09102105 (10/9)

Quant Time: Sep 20 21:05:34 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021 9/20/21
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.06	130	222603	12.500	ng		-0.02
37) 1,4-Difluorobenzene (IS2)	13.20	114	1011014	12.500	ng		-0.01
56) Chlorobenzene-d5 (IS3)	17.51	54	209014	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.92	65	439903	13.049	ng		-0.02
Spiked Amount 12.500	Range 70 - 130		Recovery = 104.40%				
57) Toluene-d8 (SS2)	15.65	98	1134174	13.621	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 108.96%				
73) Bromofluorobenzene (SS3)	18.92	174	393913	12.561	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 100.48%				
Target Compounds							Qvalue
2) Propene	4.09	42	21207	0.747	ng		99
3) Dichlorodifluoromethan...	4.23	85	29333	0.675	ng		100
4) Chloromethane	4.51	50	18233	0.664	ng		98
5) 1,2-Dichloro-1,1,2,2-t...	4.77	135	11645	0.493	ng		100
6) Vinyl Chloride	4.93	62	17845	0.475	ng		96
7) 1,3-Butadiene	5.18	54	12544	0.466	ng		98
8) Bromomethane	5.61	94	11676	0.659	ng		99
9) Chloroethane	5.94	64	10625	0.719	ng		96
10) Ethanol	6.29	45	52148	2.658	ng		99
11) Acetonitrile	6.56	41	31740	0.654	ng		94
12) Acrolein	6.75	56	19492	1.375	ng		98
13) Acetone	6.95	58	59770	3.341	ng		87
14) Trichlorofluoromethane	7.18	101	25290	0.605	ng		99
15) 2-Propanol (Isopropanol)	7.46	45	64880	1.010	ng		94
16) Acrylonitrile	7.70	53	40600	1.371	ng		100
17) 1,1-Dichloroethene	8.13	96	13630	0.714	ng		93
18) 2-Methyl-2-Propanol (t...	8.33	59	80189	1.890	ng		99
19) Methylene Chloride	8.35	84	14190	0.641	ng		98
20) 3-Chloro-1-propene (Al...	8.51	41	22239	0.603	ng		97
21) Trichlorotrifluoroethane	8.77	151	12354	0.648	ng		97
22) Carbon Disulfide	8.62	76	107129	1.228	ng		99
23) trans-1,2-Dichloroethene	9.62	61	21429	0.679	ng		99
24) 1,1-Dichloroethane	9.87	63	26529	0.686	ng		100
25) Methyl tert-Butyl Ether	10.00	73	47014	0.861	ng		100
26) Vinyl Acetate	10.15	86	6842	1.351	ng		97
27) 2-Butanone (MEK)	10.40	72	19069	1.248	ng	#	92
28) cis-1,2-Dichloroethene	10.89	61	20677	0.655	ng		97
29) Diisopropyl Ether	11.20	87	26749	1.299	ng		97
30) Ethyl Acetate	11.21	61	22508	2.297	ng		94
31) n-Hexane	11.18	57	26622	0.630	ng		99
32) Chloroform	11.23	83	25328	0.648	ng		99
34) Tetrahydrofuran (THF)	11.67	72	18587	1.240	ng		94
35) Ethyl tert-Butyl Ether	11.80	87	35521	1.293	ng		99
36) 1,2-Dichloroethane	12.04	62	20314	0.615	ng		100
38) 1,1,1-Trichloroethane	12.32	97	22600	0.629	ng		100
39) Isopropyl Acetate	0.00	61	0	N.D.	d		
40) 1-Butanol	0.00	56	0	N.D.			
41) Benzene	12.80	78	59286	0.696	ng		99
42) Carbon Tetrachloride	12.96	117	18602	0.566	ng		100
43) Cyclohexane	13.09	84	44105	1.293	ng		100
44) tert-Amyl Methyl Ether	13.45	73	86140	1.289	ng		99
45) 1,2-Dichloropropane	13.65	63	15222	0.670	ng		97
46) Bromodichloromethane	13.85	83	19561	0.616	ng		100
47) Trichloroethene	13.90	130	13717	0.567	ng		99
48) 1,4-Dioxane	13.90	88	11265	0.692	ng		95
49) 2,2,4-Trimethylpentane...	13.97	57	66764	0.690	ng		98
50) Methyl Methacrylate	14.12	100	10972	1.290	ng		98

Data File : I:\MS16\DATA\2021_09\14\09142135.D Vial: 4
Acq On : 14 Sep 2021 22:16 Operator: WA
Sample : 0.5ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09102105 (10/9)

Quant Time: Sep 20 21:05:34 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

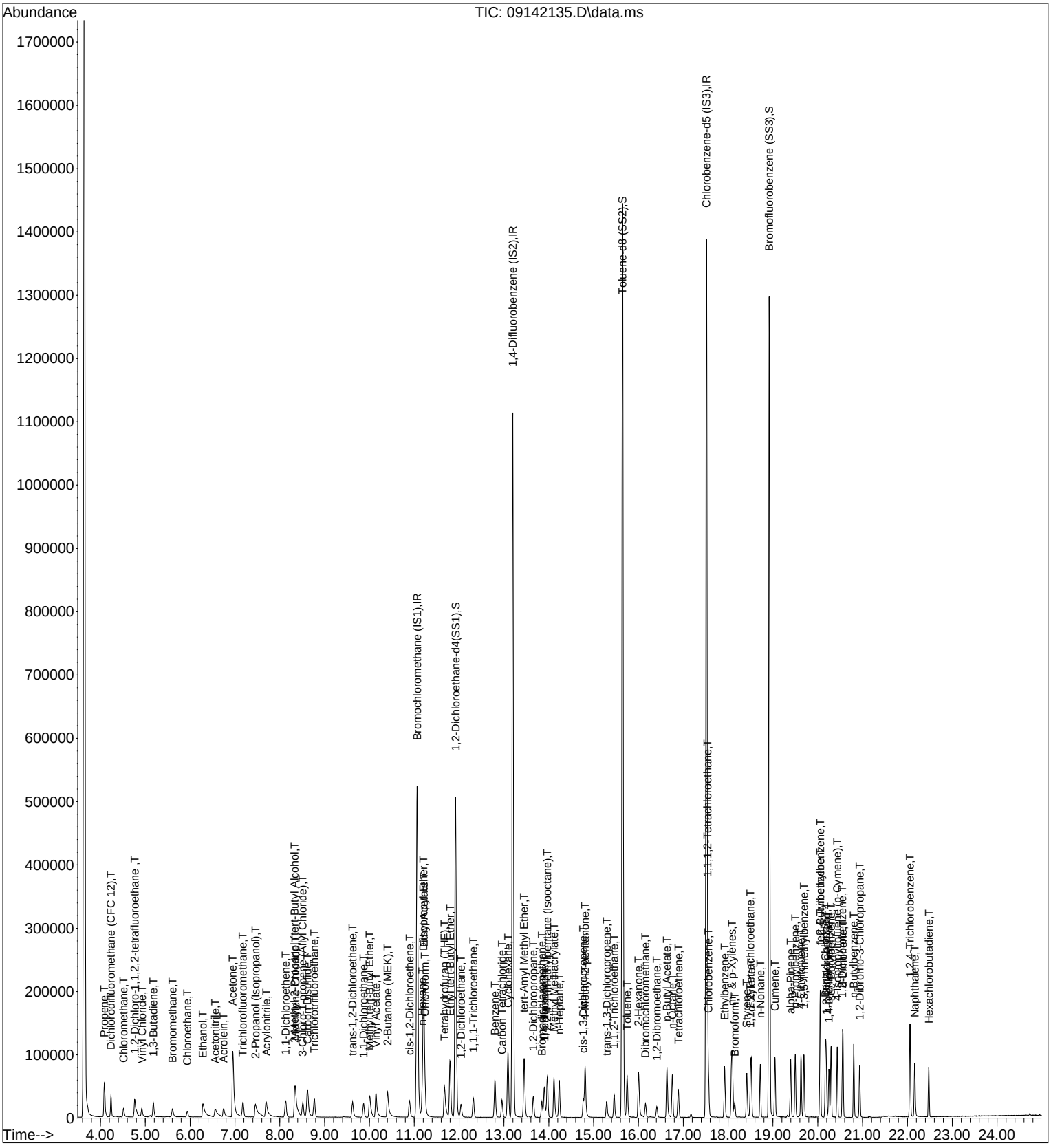
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
51) n-Heptane	14.24	71	14982	0.657	ng	98
52) cis-1,3-Dichloropropene	14.77	75	22410	0.641	ng	98
53) 4-Methyl-2-pentanone	14.81	58	26952	1.278	ng	94
54) trans-1,3-Dichloropropene	15.29	75	20131	0.625	ng	96
55) 1,1,2-Trichloroethane	15.46	97	13676	0.657	ng	99
58) Toluene	15.75	91	57480	0.689	ng	98
59) 2-Hexanone	16.00	43	67752	1.297	ng	99
60) Dibromochloromethane	16.16	129	14352	0.629	ng	100
61) 1,2-Dibromoethane	16.41	107	15145	0.715	ng	100
62) n-Butyl Acetate	16.63	43	73041	1.270	ng	100
63) n-Octane	16.76	57	13701	0.777	ng	98
64) Tetrachloroethene	16.89	166	15878	0.634	ng	99
65) Chlorobenzene	17.56	112	36533	0.642	ng	98
66) Ethylbenzene	17.92	91	66947	0.719	ng	100
67) m- & p-Xylenes	18.09	91	103601	1.368	ng	96
68) Bromoform	18.15	173	12065	0.556	ng	99
69) Styrene	18.42	104	37044	0.708	ng	98
70) o-Xylene	18.52	91	53541	0.705	ng	99
71) n-Nonane	18.72	43	30948	0.661	ng	100
72) 1,1,2,2-Tetrachloroethane	18.50	83	23931	0.685	ng	99
74) Cumene	19.04	105	64414	0.687	ng	97
75) alpha-Pinene	19.40	93	33857	0.750	ng	88
76) n-Propylbenzene	19.50	91	82340	0.718	ng	99
77) 3-Ethyltoluene	0.00	105	0	N.D.	d	
78) 4-Ethyltoluene	19.63	105	63478	0.705	ng	97
79) 1,3,5-Trimethylbenzene	19.69	105	54902	0.719	ng	99
80) alpha-Methylstyrene	0.00	118	0	N.D.	d	
81) 2-Ethyltoluene	0.00	105	0	N.D.	d	
82) 1,2,4-Trimethylbenzene	20.06	105	54288	0.669	ng	99
83) n-Decane	0.00	58	0	N.D.	d	
84) Benzyl Chloride	20.17	91	77637	1.142	ng	98
85) 1,3-Dichlorobenzene	20.19	146	30797	0.610	ng	100
86) 1,4-Dichlorobenzene	20.25	146	32683	0.659	ng	100
87) sec-Butylbenzene	20.30	105	73370	0.707	ng	99
88) 4-Isopropyltoluene (p-...	20.43	119	60635	0.693	ng	100
89) 1,2,3-Trimethylbenzene	0.00	105	0	N.D.	d	
90) 1,2-Dichlorobenzene	20.55	146	30683	0.631	ng	98
91) d-Limonene	20.56	68	19780	0.636	ng	99
92) 1,2-Dibromo-3-Chloropr...	20.94	157	21703	1.217	ng	97
93) n-Undecane	0.00	57	0	N.D.	d	
94) 1,2,4-Trichlorobenzene	22.06	180	49407	1.284	ng	99
95) Naphthalene	22.16	128	73056	0.805	ng	98
96) n-Dodecane	0.00	57	0	N.D.		
97) Hexachlorobutadiene	22.48	225	15606	0.574	ng	98
98) Cyclohexanone	0.00	55	0	N.D.	d	
99) tert-Butylbenzene	20.06	119	53097	0.683	ng	97
100) n-Butylbenzene	20.80	91	60539	0.713	ng	99
101) 1,1,1,2-Tetrachloroethane	17.54	131	12564	0.592	ng	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142135.D Vial: 4
Acq On : 14 Sep 2021 22:16 Operator: WA
Sample : 0.5ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09102105 (10/9)

Quant Time: Sep 20 21:05:34 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142129.D Vial: 16
Acq On : 14 Sep 2021 18:52 Operator: WA
Sample : 1.0ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09102104 (10/9)

Quant Time: Sep 20 20:56:11 2021
Quant Method : I:\MS16\METHODS\R16091421A.M 9/20/21
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.06	130	181730	12.500	ng		-0.02
37) 1,4-Difluorobenzene (IS2)	13.20	114	820307	12.500	ng		-0.01
56) Chlorobenzene-d5 (IS3)	17.51	54	180303	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.92	65	398413	14.477	ng		-0.02
Spiked Amount 12.500	Range 70 - 130		Recovery = 115.84%				
57) Toluene-d8 (SS2)	15.65	98	909987	12.669	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 101.36%				
73) Bromofluorobenzene (SS3)	18.92	174	301178	11.133	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 89.04%				
Target Compounds							Qvalue
2) Propene	4.09	42	33215	1.434	ng		99
3) Dichlorodifluoromethan...	4.23	85	57610	1.624	ng		100
4) Chloromethane	4.51	50	36156	1.614	ng		99
5) 1,2-Dichloro-1,1,2,2-t...	4.76	135	21799	1.131	ng		99
6) Vinyl Chloride	4.92	62	33332	1.087	ng		99
7) 1,3-Butadiene	5.17	54	25204	1.146	ng		98
8) Bromomethane	5.60	94	21275	1.472	ng		100
9) Chloroethane	5.93	64	18506	1.534	ng		98
10) Ethanol	6.29	45	78182	4.881	ng		99
11) Acetonitrile	6.56	41	51031	1.287	ng		98
12) Acrolein	6.74	56	34187	2.955	ng		97
13) Acetone	6.94	58	102496	7.017	ng		96
14) Trichlorofluoromethane	7.18	101	48874	1.432	ng		100
15) 2-Propanol (Isopropanol)	7.44	45	138875	2.647	ng		94
16) Acrylonitrile	7.69	53	69043	2.857	ng		100
17) 1,1-Dichloroethene	8.13	96	23478	1.507	ng		97
18) 2-Methyl-2-Propanol (t...	8.31	59	145910	4.212	ng		97
19) Methylene Chloride	8.34	84	25210	1.395	ng		97
20) 3-Chloro-1-propene (Al...	8.51	41	42406	1.408	ng		94
21) Trichlorotrifluoroethane	8.77	151	21022	1.350	ng		94
22) Carbon Disulfide	8.61	76	189408	2.659	ng		99
23) trans-1,2-Dichloroethene	9.62	61	38718	1.503	ng		100
24) 1,1-Dichloroethane	9.87	63	48142	1.525	ng		99
25) Methyl tert-Butyl Ether	10.00	73	82910	1.859	ng		99
26) Vinyl Acetate	10.14	86	13536	3.274	ng	#	81
27) 2-Butanone (MEK)	10.39	72	33256	2.667	ng		99
28) cis-1,2-Dichloroethene	10.89	61	37549	1.457	ng		99
29) Diisopropyl Ether	11.20	87	45886	2.729	ng	#	92
30) Ethyl Acetate	11.21	61	38052	4.757	ng		95
31) n-Hexane	11.18	57	46013	1.334	ng		100
32) Chloroform	11.23	83	46901	1.469	ng		99
34) Tetrahydrofuran (THF)	11.66	72	30640	2.504	ng		98
35) Ethyl tert-Butyl Ether	11.80	87	62079	2.769	ng		96
36) 1,2-Dichloroethane	12.04	62	39783	1.475	ng		98
38) 1,1,1-Trichloroethane	12.32	97	43428	1.491	ng		99
39) Isopropyl Acetate	0.00	61	0	N.D.	d		
40) 1-Butanol	0.00	56	0	N.D.			
41) Benzene	12.80	78	102611	1.485	ng		99
42) Carbon Tetrachloride	12.96	117	35207	1.320	ng		98
43) Cyclohexane	13.09	84	75622	2.733	ng		98
44) tert-Amyl Methyl Ether	13.45	73	150383	2.774	ng		98
45) 1,2-Dichloropropane	13.65	63	26089	1.415	ng		99
46) Bromodichloromethane	13.85	83	37302	1.448	ng		99
47) Trichloroethene	13.90	130	23384	1.192	ng		99
48) 1,4-Dioxane	13.89	88	19407	1.470	ng		95
49) 2,2,4-Trimethylpentane...	13.97	57	116809	1.489	ng		99
50) Methyl Methacrylate	14.12	100	18759	2.718	ng		97

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142129.D Vial: 16
Acq On : 14 Sep 2021 18:52 Operator: WA
Sample : 1.0ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09102104 (10/9)

Quant Time: Sep 20 20:56:11 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

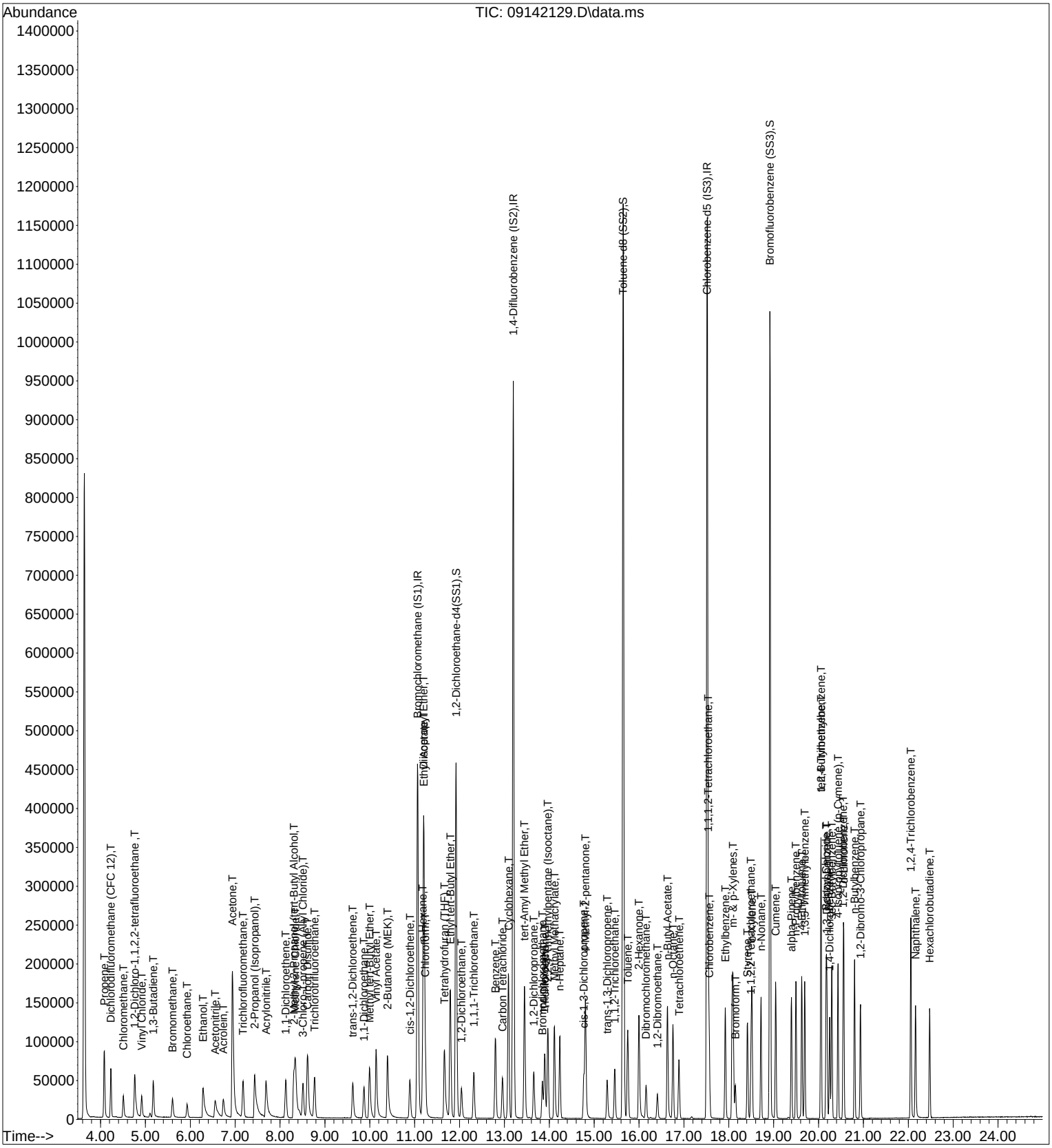
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
51) n-Heptane	14.23	71	26021	1.406	ng	98
52) cis-1,3-Dichloropropene	14.77	75	39905	1.408	ng	98
53) 4-Methyl-2-pentanone	14.80	58	48617	2.842	ng	93
54) trans-1,3-Dichloropropene	15.29	75	36204	1.385	ng	99
55) 1,1,2-Trichloroethane	15.46	97	23903	1.414	ng	99
58) Toluene	15.75	91	96352	1.339	ng	100
59) 2-Hexanone	16.00	43	121005	2.684	ng	95
60) Dibromochloromethane	16.16	129	27239	1.384	ng	99
61) 1,2-Dibromoethane	16.41	107	26598	1.457	ng	99
62) n-Butyl Acetate	16.63	43	130388	2.627	ng	98
63) n-Octane	16.76	57	23996	1.578	ng	100
64) Tetrachloroethene	16.89	166	25710	1.190	ng	99
65) Chlorobenzene	17.56	112	62111	1.266	ng	99
66) Ethylbenzene	17.92	91	112841	1.406	ng	100
67) m- & p-Xylenes	18.09	91	184024	2.816	ng	99
68) Bromoform	18.15	173	22409	1.196	ng	99
69) Styrene	18.42	104	64238	1.424	ng	98
70) o-Xylene	18.52	91	92895	1.419	ng	99
71) n-Nonane	18.72	43	57992	1.435	ng	96
72) 1,1,2,2-Tetrachloroethane	18.49	83	42002	1.394	ng	100
74) Cumene	19.04	105	115111	1.424	ng	99
75) alpha-Pinene	19.40	93	58764	1.508	ng	95
76) n-Propylbenzene	19.49	91	143290	1.448	ng	99
77) 3-Ethyltoluene	0.00	105	0	N.D.	d	
78) 4-Ethyltoluene	19.63	105	112757	1.452	ng	100
79) 1,3,5-Trimethylbenzene	19.69	105	95877	1.455	ng	100
80) alpha-Methylstyrene	0.00	118	0	N.D.	d	
81) 2-Ethyltoluene	0.00	105	0	N.D.	d	
82) 1,2,4-Trimethylbenzene	20.06	105	95717	1.367	ng	99
83) n-Decane	0.00	58	0	N.D.	d	
84) Benzyl Chloride	20.17	91	133307	2.273	ng	100
85) 1,3-Dichlorobenzene	20.19	146	49611	1.140	ng	99
86) 1,4-Dichlorobenzene	20.25	146	50685	1.186	ng	99
87) sec-Butylbenzene	20.30	105	130393	1.456	ng	99
88) 4-Isopropyltoluene (p-...	20.43	119	108130	1.433	ng	99
89) 1,2,3-Trimethylbenzene	0.00	105	0	N.D.	d	
90) 1,2-Dichlorobenzene	20.55	146	49806	1.188	ng	99
91) d-Limonene	20.56	68	38177	1.424	ng	98
92) 1,2-Dibromo-3-Chloropr...	20.94	157	37816	2.458	ng	92
93) n-Undecane	0.00	57	0	N.D.		
94) 1,2,4-Trichlorobenzene	22.06	180	79941	2.408	ng	100
95) Naphthalene	22.16	128	117129	1.496	ng	99
96) n-Dodecane	0.00	57	0	N.D.		
97) Hexachlorobutadiene	22.47	225	26771	1.141	ng	98
98) Cyclohexanone	0.00	55	0	N.D.	d	
99) tert-Butylbenzene	20.06	119	92053	1.372	ng	99
100) n-Butylbenzene	20.80	91	108174	1.476	ng	99
101) 1,1,1,2-Tetrachloroethane	17.54	131	22189	1.212	ng	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142129.D Vial: 16
Acq On : 14 Sep 2021 18:52 Operator: WA
Sample : 1.0ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09102104 (10/9)

Quant Time: Sep 20 20:56:11 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142130.D Vial: 16
Acq On : 14 Sep 2021 19:26 Operator: WA
Sample : 5.0ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09102104 (10/9)

Quant Time: Sep 20 20:57:20 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021 9/20/21
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.08	130	181871	12.500	ng		-0.01
37) 1,4-Difluorobenzene (IS2)	13.20	114	817198	12.500	ng		0.00
56) Chlorobenzene-d5 (IS3)	17.51	54	184219	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.93	65	397180	14.421	ng		-0.01
Spiked Amount 12.500	Range 70 - 130		Recovery = 115.36%				
57) Toluene-d8 (SS2)	15.65	98	919006	12.523	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 100.16%				
73) Bromofluorobenzene (SS3)	18.92	174	307656	11.131	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 89.04%				
Target Compounds							Qvalue
2) Propene	4.07	42	196896	8.493	ng		100
3) Dichlorodifluoromethan...	4.22	85	264574	7.452	ng		99
4) Chloromethane	4.50	50	148628	6.628	ng		100
5) 1,2-Dichloro-1,1,2,2-t...	4.76	135	100064	5.187	ng		100
6) Vinyl Chloride	4.91	62	155371	5.065	ng		99
7) 1,3-Butadiene	5.17	54	120173	5.461	ng		99
8) Bromomethane	5.60	94	97297	6.725	ng		100
9) Chloroethane	5.93	64	86613	7.176	ng		100
10) Ethanol	6.30	45	368162	22.968	ng		99
11) Acetonitrile	6.55	41	242865	6.122	ng		99
12) Acrolein	6.73	56	162754	14.056	ng		100
13) Acetone	6.94	58	453573	31.028	ng		99
14) Trichlorofluoromethane	7.18	101	227715	6.667	ng		100
15) 2-Propanol (Isopropanol)	7.43	45	501865	9.560	ng		97
16) Acrylonitrile	7.69	53	333732	13.797	ng		99
17) 1,1-Dichloroethene	8.13	96	112430	7.213	ng		99
18) 2-Methyl-2-Propanol (t...	8.30	59	653912	18.861	ng		98
19) Methylene Chloride	8.35	84	118112	6.529	ng		97
20) 3-Chloro-1-propene (Al...	8.52	41	197933	6.566	ng		97
21) Trichlorotrifluoroethane	8.77	151	98049	6.290	ng		97
22) Carbon Disulfide	8.61	76	886728	12.438	ng		100
23) trans-1,2-Dichloroethene	9.63	61	187820	7.287	ng		100
24) 1,1-Dichloroethane	9.88	63	225937	7.151	ng		100
25) Methyl tert-Butyl Ether	9.98	73	393935	8.828	ng		99
26) Vinyl Acetate	10.14	86	72133	17.434	ng	#	92
27) 2-Butanone (MEK)	10.38	72	157903	12.651	ng		95
28) cis-1,2-Dichloroethene	10.90	61	178040	6.903	ng		99
29) Diisopropyl Ether	11.20	87	204862	12.173	ng	#	93
30) Ethyl Acetate	11.21	61	170658	21.319	ng		96
31) n-Hexane	11.19	57	206980	5.997	ng		99
32) Chloroform	11.25	83	218309	6.834	ng		100
34) Tetrahydrofuran (THF)	11.65	72	142686	11.651	ng		97
35) Ethyl tert-Butyl Ether	11.79	87	291194	12.977	ng		97
36) 1,2-Dichloroethane	12.05	62	185617	6.879	ng		100
38) 1,1,1-Trichloroethane	12.32	97	203640	7.017	ng		99
39) Isopropyl Acetate	0.00	61	0	N.D.	d		
40) 1-Butanol	0.00	56	0	N.D.	d		
41) Benzene	12.80	78	468573	6.809	ng		100
42) Carbon Tetrachloride	12.96	117	168428	6.341	ng		99
43) Cyclohexane	13.09	84	349075	12.663	ng		98
44) tert-Amyl Methyl Ether	13.45	73	708668	13.124	ng		98
45) 1,2-Dichloropropane	13.65	63	121847	6.634	ng		100
46) Bromodichloromethane	13.85	83	177556	6.921	ng		100
47) Trichloroethene	13.90	130	111425	5.702	ng		100
48) 1,4-Dioxane	13.88	88	93410	7.102	ng		99
49) 2,2,4-Trimethylpentane...	13.97	57	544391	6.965	ng		99
50) Methyl Methacrylate	14.11	100	93069	13.534	ng		99

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142130.D Vial: 16
Acq On : 14 Sep 2021 19:26 Operator: WA
Sample : 5.0ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09102104 (10/9)

Quant Time: Sep 20 20:57:20 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

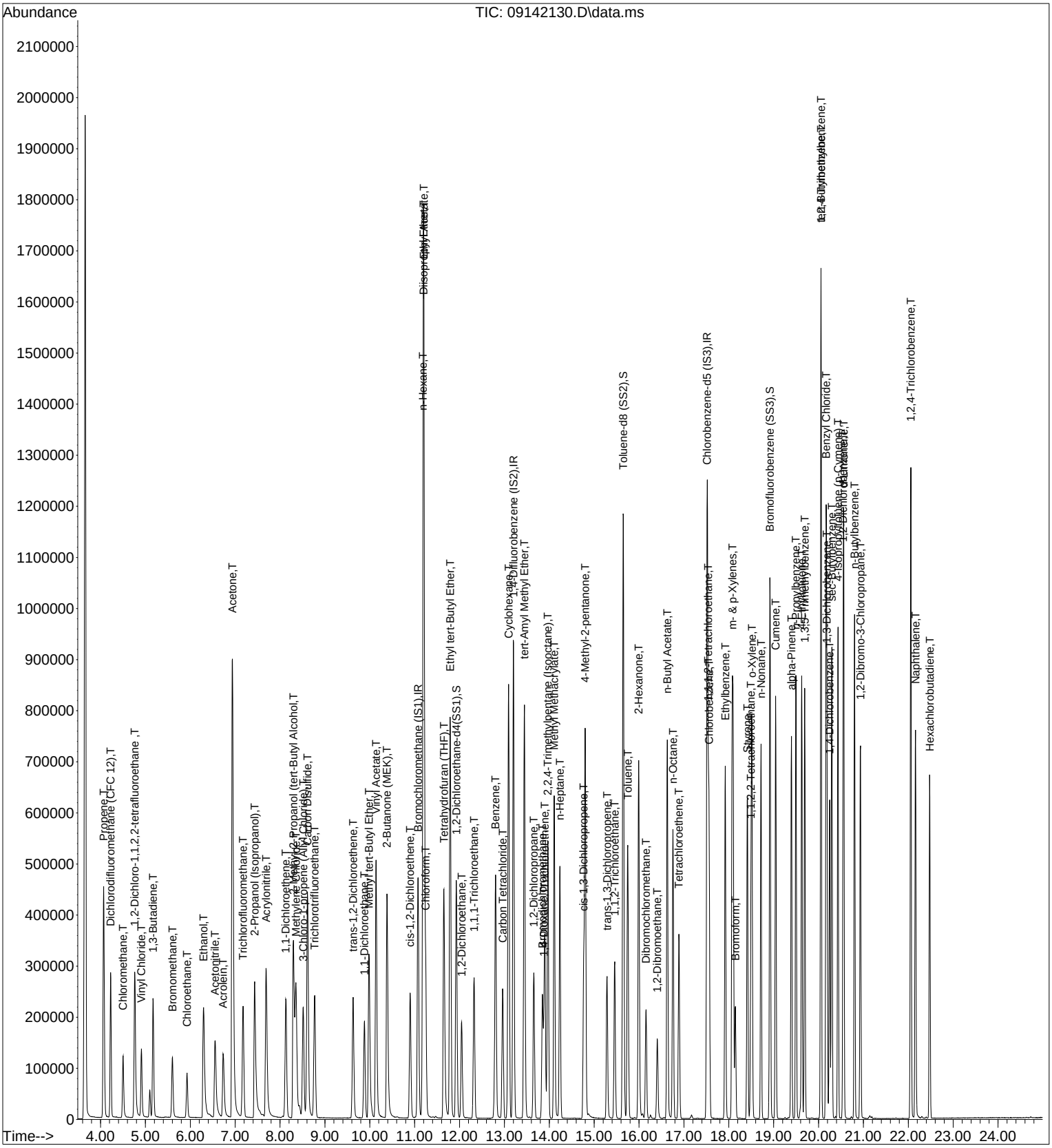
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
51) n-Heptane	14.24	71	122222	6.628	ng	99
52) cis-1,3-Dichloropropene	14.77	75	202443	7.168	ng	100
53) 4-Methyl-2-pentanone	14.80	58	231463	13.580	ng	95
54) trans-1,3-Dichloropropene	15.29	75	190532	7.315	ng	99
55) 1,1,2-Trichloroethane	15.46	97	111990	6.651	ng	100
58) Toluene	15.75	91	451339	6.138	ng	100
59) 2-Hexanone	15.99	43	576602	12.519	ng	98
60) Dibromochloromethane	16.16	129	132014	6.566	ng	99
61) 1,2-Dibromoethane	16.40	107	130639	7.002	ng	100
62) n-Butyl Acetate	16.63	43	634620	12.515	ng	99
63) n-Octane	16.76	57	112150	7.219	ng	99
64) Tetrachloroethene	16.89	166	119143	5.396	ng	99
65) Chlorobenzene	17.56	112	291990	5.826	ng	100
66) Ethylbenzene	17.92	91	540408	6.590	ng	99
67) m- & p-Xylenes	18.08	91	860399	12.888	ng	99
68) Bromoform	18.15	173	112735	5.891	ng	100
69) Styrene	18.42	104	319545	6.931	ng	99
70) o-Xylene	18.52	91	433729	6.483	ng	100
71) n-Nonane	18.72	43	270799	6.559	ng	97
72) 1,1,2,2-Tetrachloroethane	18.49	83	202480	6.577	ng	100
74) Cumene	19.04	105	544341	6.590	ng	100
75) alpha-Pinene	19.40	93	289657	7.277	ng	98
76) n-Propylbenzene	19.49	91	681576	6.742	ng	99
77) 3-Ethyltoluene	0.00	105	0	N.D.	d	
78) 4-Ethyltoluene	19.63	105	543392	6.848	ng	100
79) 1,3,5-Trimethylbenzene	19.69	105	450732	6.697	ng	99
80) alpha-Methylstyrene	0.00	118	0	N.D.	d	
81) 2-Ethyltoluene	0.00	105	0	N.D.	d	
82) 1,2,4-Trimethylbenzene	20.06	105	450201	6.295	ng	98
83) n-Decane	0.00	58	0	N.D.	d	
84) Benzyl Chloride	20.17	91	752458	12.556	ng	99
85) 1,3-Dichlorobenzene	20.19	146	236243	5.312	ng	100
86) 1,4-Dichlorobenzene	20.25	146	237728	5.442	ng	100
87) sec-Butylbenzene	20.30	105	612628	6.698	ng	99
88) 4-Isopropyltoluene (p-...	20.43	119	524089	6.796	ng	99
89) 1,2,3-Trimethylbenzene	0.00	105	0	N.D.	d	
90) 1,2-Dichlorobenzene	20.55	146	233771	5.457	ng	100
91) d-Limonene	20.56	68	189572	6.919	ng	97
92) 1,2-Dibromo-3-Chloropr...	20.94	157	191281	12.167	ng	96
93) n-Undecane	0.00	57	0	N.D.	d	
94) 1,2,4-Trichlorobenzene	22.06	180	386172	11.387	ng	99
95) Naphthalene	22.16	128	588925	7.364	ng	99
96) n-Dodecane	0.00	57	0	N.D.	d	
97) Hexachlorobutadiene	22.48	225	129726	5.411	ng	100
98) Cyclohexanone	0.00	55	0	N.D.	d	
99) tert-Butylbenzene	20.06	119	431628	6.296	ng	99
100) n-Butylbenzene	20.80	91	518658	6.927	ng	99
101) 1,1,1,2-Tetrachloroethane	17.54	131	106793	5.709	ng	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142130.D Vial: 16
Acq On : 14 Sep 2021 19:26 Operator: WA
Sample : 5.0ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09102104 (10/9)

Quant Time: Sep 20 20:57:20 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M



Data File : I:\MS16\DATA\2021_09\14\09142131.D Vial: 2
Acq On : 14 Sep 2021 20:00 Operator: WA
Sample : 25ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09082103 (10/6)

Quant Time: Sep 20 20:59:11 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021 9/20/21
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane (IS1)	11.09	130	193421	12.500	ng	0.00
37) 1,4-Difluorobenzene (IS2)	13.21	114	879297	12.500	ng	0.00
56) Chlorobenzene-d5 (IS3)	17.52	54	191159	12.500	ng	0.00
System Monitoring Compounds						
33) 1,2-Dichloroethane-d4(...	11.94	65	411698	14.055	ng	0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 112.48%			
57) Toluene-d8 (SS2)	15.65	98	985150	12.937	ng	0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 103.52%			
73) Bromofluorobenzene (SS3)	18.92	174	328997	11.471	ng	0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 91.76%			
Target Compounds						Qvalue
2) Propene	4.06	42	837929	33.986	ng	100
3) Dichlorodifluoromethan...	4.22	85	1211455	32.084	ng	100
4) Chloromethane	4.49	50	818839	34.336	ng	100
5) 1,2-Dichloro-1,1,2,2-t...	4.76	135	481232	23.454	ng	100
6) Vinyl Chloride	4.91	62	759779	23.290	ng	100
7) 1,3-Butadiene	5.17	54	608699	26.010	ng	100
8) Bromomethane	5.60	94	493282	32.059	ng	100
9) Chloroethane	5.93	64	427496	33.305	ng	100
10) Ethanol	6.33	45	1733170	101.668	ng	100
11) Acetonitrile	6.57	41	1210478	28.692	ng	100
12) Acrolein	6.74	56	817450	66.381	ng	100
13) Acetone	6.95	58	2009825	129.280	ng	100
14) Trichlorofluoromethane	7.18	101	1126785	31.018	ng	100
15) 2-Propanol (Isopropanol)	7.45	45	2648136	47.430	ng	100
16) Acrylonitrile	7.71	53	1657854	64.447	ng	100
17) 1,1-Dichloroethene	8.14	96	560788	33.827	ng	100
18) 2-Methyl-2-Propanol (t...	8.31	59	3254290	88.259	ng	100
19) Methylene Chloride	8.37	84	585430	30.431	ng	100
20) 3-Chloro-1-propene (Al...	8.53	41	1018391	31.765	ng	100
21) Trichlorotrifluoroethane	8.78	151	494906	29.854	ng	100
22) Carbon Disulfide	8.62	76	4284409	56.510	ng	100
23) trans-1,2-Dichloroethene	9.64	61	942320	34.376	ng	100
24) 1,1-Dichloroethane	9.89	63	1122325	33.402	ng	100
25) Methyl tert-Butyl Ether	9.98	73	2009823	42.350	ng	100
26) Vinyl Acetate	10.15	86	400796	91.083	ng	100
27) 2-Butanone (MEK)	10.39	72	778074	58.616	ng	100
28) cis-1,2-Dichloroethene	10.91	61	891608	32.507	ng	100
29) Diisopropyl Ether	11.20	87	802912	44.860	ng	100
30) Ethyl Acetate	11.21	61	680997	79.993	ng	100
31) n-Hexane	11.19	57	862618	23.501	ng	100
32) Chloroform	11.26	83	1064475	31.334	ng	100
34) Tetrahydrofuran (THF)	11.65	72	694412	53.318	ng	100
35) Ethyl tert-Butyl Ether	11.80	87	1439082	60.301	ng	100
36) 1,2-Dichloroethane	12.05	62	933444	32.527	ng	100
38) 1,1,1-Trichloroethane	12.33	97	1017078	32.570	ng	100
39) Isopropyl Acetate	0.00	61	0	N.D.	d	
40) 1-Butanol	0.00	56	0	N.D.	d	
41) Benzene	12.81	78	2285990	30.872	ng	100
42) Carbon Tetrachloride	12.97	117	864789	30.256	ng	100
43) Cyclohexane	13.10	84	1647098	55.531	ng	100
44) tert-Amyl Methyl Ether	13.45	73	3470685	59.736	ng	100
45) 1,2-Dichloropropane	13.66	63	602328	30.478	ng	100
46) Bromodichloromethane	13.85	83	884651	32.046	ng	100
47) Trichloroethene	13.90	130	553175	26.310	ng	100
48) 1,4-Dioxane	13.87	88	469244	33.159	ng	100
49) 2,2,4-Trimethylpentane...	13.97	57	2604462	30.968	ng	100
50) Methyl Methacrylate	14.11	100	454367	61.408	ng	100

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142131.D Vial: 2
Acq On : 14 Sep 2021 20:00 Operator: WA
Sample : 25ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09082103 (10/6)

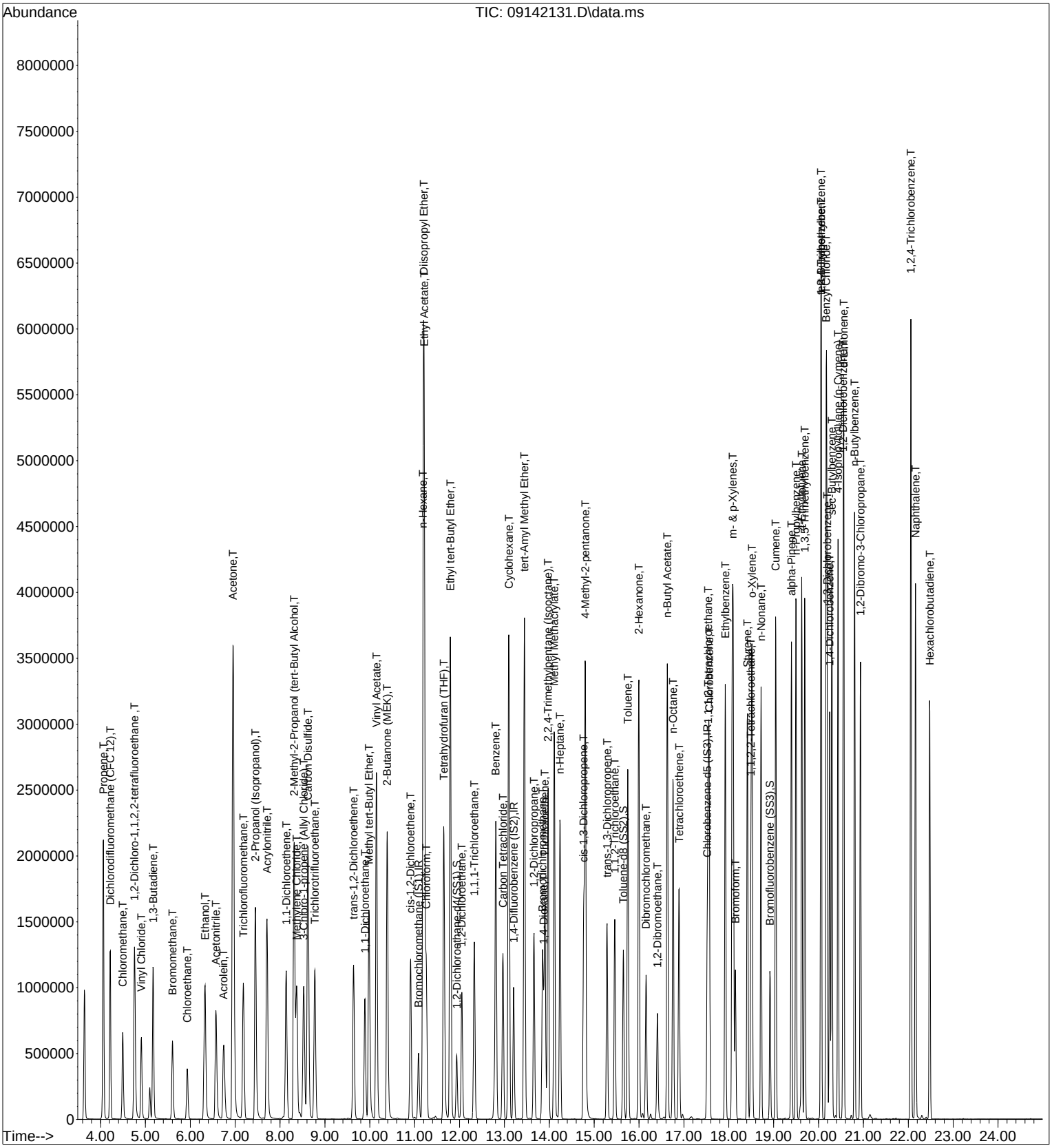
Quant Time: Sep 20 20:59:11 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
51) n-Heptane	14.24	71	594466	29.963	ng	100
52) cis-1,3-Dichloropropene	14.77	75	1022192	33.636	ng	100
53) 4-Methyl-2-pentanone	14.80	58	1102433	60.114	ng	100
54) trans-1,3-Dichloropropene	15.29	75	1012656	36.131	ng	100
55) 1,1,2-Trichloroethane	15.46	97	555134	30.642	ng	100
58) Toluene	15.75	91	2212252	28.995	ng	100
59) 2-Hexanone	16.00	43	2744249	57.420	ng	100
60) Dibromochloromethane	16.16	129	683482	32.762	ng	100
61) 1,2-Dibromoethane	16.41	107	665143	34.355	ng	100
62) n-Butyl Acetate	16.63	43	3055423	58.067	ng	100
63) n-Octane	16.76	57	541612	33.597	ng	100
64) Tetrachloroethene	16.89	166	601821	26.269	ng	100
65) Chlorobenzene	17.56	112	1410012	27.114	ng	100
66) Ethylbenzene	17.92	91	2645028	31.082	ng	100
67) m- & p-Xylenes	18.09	91	4131515	59.639	ng	100
68) Bromoform	18.15	173	602283	30.331	ng	100
69) Styrene	18.42	104	1596588	33.372	ng	100
70) o-Xylene	18.52	91	2068106	29.792	ng	100
71) n-Nonane	18.72	43	1232494	28.767	ng	100
72) 1,1,2,2-Tetrachloroethane	18.49	83	964361	30.188	ng	100
74) Cumene	19.04	105	2604062	30.379	ng	100
75) alpha-Pinene	19.40	93	1456415	35.259	ng	100
76) n-Propylbenzene	19.50	91	3231897	30.807	ng	100
77) 3-Ethyltoluene	0.00	105	0	N.D.	d	
78) 4-Ethyltoluene	19.63	105	2629851	31.940	ng	100
79) 1,3,5-Trimethylbenzene	19.69	105	2180463	31.219	ng	100
80) alpha-Methylstyrene	0.00	118	0	N.D.	d	
81) 2-Ethyltoluene	0.00	105	0	N.D.	d	
82) 1,2,4-Trimethylbenzene	20.06	105	2072041	27.920	ng	100
83) n-Decane	0.00	58	0	N.D.	d	
84) Benzyl Chloride	20.17	91	3909941	62.874	ng	100
85) 1,3-Dichlorobenzene	20.19	146	1132018	24.528	ng	100
86) 1,4-Dichlorobenzene	20.25	146	1212200	26.744	ng	100
87) sec-Butylbenzene	20.30	105	2898591	30.538	ng	100
88) 4-Isopropyltoluene (p-...	20.43	119	2472803	30.901	ng	100
89) 1,2,3-Trimethylbenzene	0.00	105	0	N.D.	d	
90) 1,2-Dichlorobenzene	20.55	146	1102466	24.800	ng	100
91) d-Limonene	20.56	68	915880	32.216	ng	100
92) 1,2-Dibromo-3-Chloropr...	20.94	157	948838	58.161	ng	100
93) n-Undecane	0.00	57	0	N.D.	d	
94) 1,2,4-Trichlorobenzene	22.06	180	1984039	56.378	ng	100
95) Naphthalene	22.16	128	3159957	38.077	ng	100
96) n-Dodecane	0.00	57	0	N.D.	d	
97) Hexachlorobutadiene	22.48	225	660083	26.532	ng	100
98) Cyclohexanone	0.00	55	0	N.D.	d	
99) tert-Butylbenzene	20.06	119	1934402	27.192	ng	100
100) n-Butylbenzene	20.80	91	2473293	31.835	ng	100
101) 1,1,1,2-Tetrachloroethane	17.54	131	530356	27.325	ng	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Data File : I:\MS16\DATA\2021_09\14\09142131.D Vial: 2
Acq On : 14 Sep 2021 20:00 Operator: WA
Sample : 25ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09082103 (10/6)

Quant Time: Sep 20 20:59:11 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M



Data File : I:\MS16\DATA\2021_09\14\09142132.D Vial: 2
Acq On : 14 Sep 2021 20:34 Operator: WA
Sample : 50ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09082103 (10/6)

Quant Time: Sep 20 21:01:20 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021 9/20/21
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.09	130	208881	12.500	ng		0.00
37) 1,4-Difluorobenzene (IS2)	13.21	114	937991	12.500	ng		0.00
56) Chlorobenzene-d5 (IS3)	17.52	54	190239	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.94	65	419609	13.265	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 106.08%				
57) Toluene-d8 (SS2)	15.65	98	1040238	13.726	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 109.84%				
73) Bromofluorobenzene (SS3)	18.92	174	358651	12.566	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 100.56%				
Target Compounds							Qvalue
2) Propene	4.06	42	1651533	62.028	ng		99
3) Dichlorodifluoromethan...	4.22	85	2422329	59.405	ng		100
4) Chloromethane	4.50	50	1394505	54.147	ng		99
5) 1,2-Dichloro-1,1,2,2-t...	4.76	135	956696	43.176	ng		99
6) Vinyl Chloride	4.92	62	1549963	43.995	ng		100
7) 1,3-Butadiene	5.18	54	1203345	47.613	ng		99
8) Bromomethane	5.61	94	990701	59.621	ng		100
9) Chloroethane	5.94	64	866081	62.480	ng		99
10) Ethanol	6.35	45	3283037	178.330	ng		100
11) Acetonitrile	6.58	41	2466578	54.139	ng		99
12) Acrolein	6.75	56	1646652	123.820	ng		100
13) Acetone	6.97	58	3696406	220.169	ng		94
14) Trichlorofluoromethane	7.19	101	2251815	57.400	ng		100
15) 2-Propanol (Isopropanol)	7.46	45	4643475	77.013	ng		99
16) Acrylonitrile	7.72	53	3281509	118.123	ng		100
17) 1,1-Dichloroethene	8.14	96	1141630	63.767	ng		99
18) 2-Methyl-2-Propanol (t...	8.33	59	4520646	113.530	ng		100
19) Methylene Chloride	8.38	84	1196509	57.592	ng		96
20) 3-Chloro-1-propene (Al...	8.53	41	2046386	59.105	ng		100
21) Trichlorotrifluoroethane	8.78	151	1026566	57.343	ng		97
22) Carbon Disulfide	8.63	76	8362415	102.134	ng		100
23) trans-1,2-Dichloroethene	9.64	61	1898720	64.139	ng		99
24) 1,1-Dichloroethane	9.89	63	2272569	62.629	ng		100
25) Methyl tert-Butyl Ether	9.99	73	4059854	79.215	ng		99
26) Vinyl Acetate	10.16	86	794634	167.219	ng	#	83
27) 2-Butanone (MEK)	10.39	72	1538584	107.330	ng	#	91
28) cis-1,2-Dichloroethene	10.91	61	1806753	60.997	ng		100
29) Diisopropyl Ether	11.20	87	1418307	73.378	ng	#	69
30) Ethyl Acetate	11.22	61	1118420	121.652	ng		95
31) n-Hexane	11.19	57	1536960	38.774	ng		100
32) Chloroform	11.27	83	2076924	56.612	ng		100
34) Tetrahydrofuran (THF)	11.65	72	1368611	97.307	ng		94
35) Ethyl tert-Butyl Ether	11.80	87	2773797	107.626	ng		94
36) 1,2-Dichloroethane	12.05	62	1849753	59.687	ng		100
38) 1,1,1-Trichloroethane	12.33	97	2036423	61.132	ng		100
39) Isopropyl Acetate	0.00	61	0	N.D.	d		
40) 1-Butanol	0.00	56	0	N.D.	d		
41) Benzene	12.81	78	4564547	57.786	ng		100
42) Carbon Tetrachloride	12.97	117	1734093	56.875	ng		100
43) Cyclohexane	13.10	84	3171075	100.220	ng		96
44) tert-Amyl Methyl Ether	13.45	73	6513204	105.087	ng		98
45) 1,2-Dichloropropane	13.66	63	1199809	56.911	ng		99
46) Bromodichloromethane	13.85	83	1759596	59.752	ng		100
47) Trichloroethene	13.91	130	1099988	49.043	ng		100
48) 1,4-Dioxane	13.88	88	924313	61.229	ng		98
49) 2,2,4-Trimethylpentane...	13.97	57	4967406	55.368	ng		99
50) Methyl Methacrylate	14.12	100	884430	112.052	ng		97

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142132.D Vial: 2
Acq On : 14 Sep 2021 20:34 Operator: WA
Sample : 50ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09082103 (10/6)

Quant Time: Sep 20 21:01:20 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

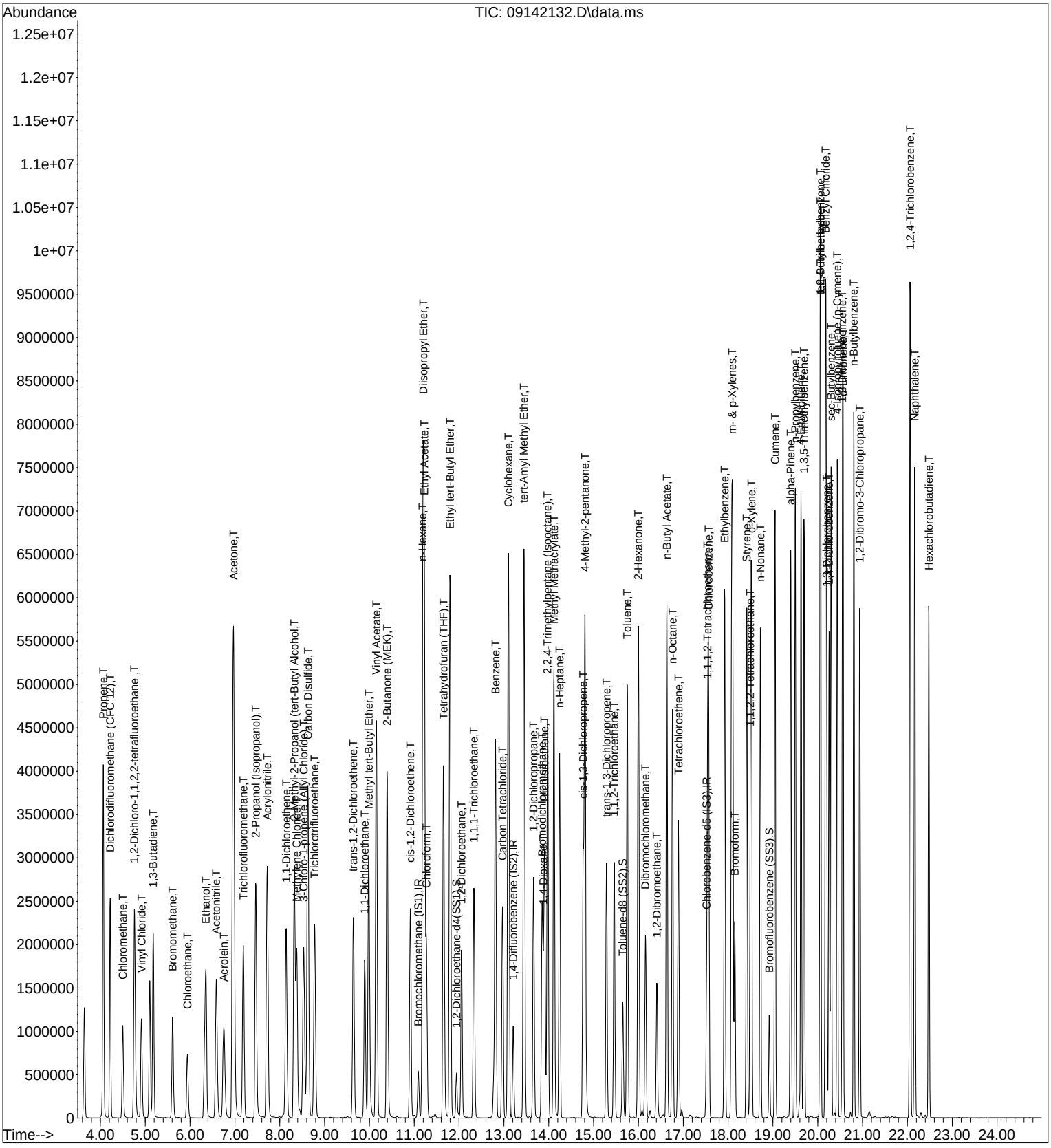
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
51) n-Heptane	14.24	71	1161883	54.898	ng	98
52) cis-1,3-Dichloropropene	14.77	75	2050271	63.243	ng	100
53) 4-Methyl-2-pentanone	14.81	58	2012680	102.881	ng	94
54) trans-1,3-Dichloropropene	15.29	75	2047570	68.484	ng	100
55) 1,1,2-Trichloroethane	15.46	97	1109743	57.422	ng	100
58) Toluene	15.75	91	4378890	57.670	ng	100
59) 2-Hexanone	16.00	43	4875733	102.513	ng	97
60) Dibromochloromethane	16.16	129	1387025	66.806	ng	100
61) 1,2-Dibromoethane	16.41	107	1338272	69.457	ng	100
62) n-Butyl Acetate	16.64	43	5425219	103.602	ng	98
63) n-Octane	16.76	57	1023054	63.769	ng	97
64) Tetrachloroethene	16.89	166	1230192	53.957	ng	100
65) Chlorobenzene	17.56	112	2721544	52.587	ng	100
66) Ethylbenzene	17.92	91	5159471	60.923	ng	100
67) m- & p-Xylenes	18.09	91	7807217	113.243	ng	100
68) Bromoform	18.15	173	1230843	62.285	ng	100
69) Styrene	18.42	104	3137300	65.893	ng	100
70) o-Xylene	18.52	91	3921290	56.760	ng	100
71) n-Nonane	18.72	43	2166520	50.813	ng	95
72) 1,1,2,2-Tetrachloroethane	18.49	83	1839257	57.853	ng	100
74) Cumene	19.05	105	5007750	58.704	ng	100
75) alpha-Pinene	19.40	93	2784555	67.739	ng	99
76) n-Propylbenzene	19.50	91	6123419	58.652	ng	100
77) 3-Ethyltoluene	0.00	105	0	N.D.	d	
78) 4-Ethyltoluene	19.63	105	5014419	61.195	ng	100
79) 1,3,5-Trimethylbenzene	19.69	105	4125406	59.353	ng	100
80) alpha-Methylstyrene	0.00	118	0	N.D.	d	
81) 2-Ethyltoluene	0.00	105	0	N.D.	d	
82) 1,2,4-Trimethylbenzene	20.06	105	3615901	48.959	ng	99
83) n-Decane	0.00	58	0	N.D.	d	
84) Benzyl Chloride	20.18	91	6845213	110.607	ng	99
85) 1,3-Dichlorobenzene	20.20	146	2069229	45.052	ng	100
86) 1,4-Dichlorobenzene	20.25	146	2322141	51.480	ng	100
87) sec-Butylbenzene	20.30	105	5323185	56.354	ng	100
88) 4-Isopropyltoluene (p-...	20.43	119	4593626	57.681	ng	100
89) 1,2,3-Trimethylbenzene	0.00	105	0	N.D.	d	
90) 1,2-Dichlorobenzene	20.55	146	2039754	46.107	ng	100
91) d-Limonene	20.57	68	1523886	53.861	ng	95
92) 1,2-Dibromo-3-Chloropr...	20.94	157	1768973	108.957	ng	94
93) n-Undecane	0.00	57	0	N.D.	d	
94) 1,2,4-Trichlorobenzene	22.06	180	3597101	102.708	ng	99
95) Naphthalene	22.16	128	6055835	73.325	ng	100
96) n-Dodecane	0.00	57	0	N.D.	d	
97) Hexachlorobutadiene	22.48	225	1293309	52.235	ng	100
98) Cyclohexanone	0.00	55	0	N.D.	d	
99) tert-Butylbenzene	20.06	119	3386108	47.829	ng	99
100) n-Butylbenzene	20.80	91	4598637	59.477	ng	99
101) 1,1,1,2-Tetrachloroethane	17.54	131	1030500	53.349	ng	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142132.D Vial: 2
Acq On : 14 Sep 2021 20:34 Operator: WA
Sample : 50ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09082103 (10/6)

Quant Time: Sep 20 21:01:20 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142133.D Vial: 2
Acq On : 14 Sep 2021 21:08 Operator: WA
Sample : 100ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09082103 (10/6)

Quant Time: Sep 20 21:03:14 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

WA 9/20/21

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.10	130	227124	12.500	ng		0.01
37) 1,4-Difluorobenzene (IS2)	13.21	114	1012126	12.500	ng		0.00
56) Chlorobenzene-d5 (IS3)	17.52	54	197423	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.95	65	432779	12.582	ng		0.01
Spiked Amount 12.500	Range 70 - 130		Recovery = 100.64%				
57) Toluene-d8 (SS2)	15.66	98	1136723	14.454	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 115.60%				
73) Bromofluorobenzene (SS3)	18.92	174	399695	13.494	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 107.92%				
Target Compounds							Qvalue
2) Propene	4.07	42	2744783	94.808	ng		99
3) Dichlorodifluoromethan...	4.22	85	4457107	100.527	ng		100
4) Chloromethane	4.50	50	1895917	67.703	ng		99
5) 1,2-Dichloro-1,1,2,2-t...	4.77	135	1821911	75.620	ng		100
6) Vinyl Chloride	4.93	62	2910219	75.971	ng		100
7) 1,3-Butadiene	5.19	54	2217514	80.694	ng		96
8) Bromomethane	5.63	94	1959398	108.447	ng		100
9) Chloroethane	5.96	64	1697838	112.645	ng		100
10) Ethanol	6.40	45	5949203	297.197	ng		100
11) Acetonitrile	6.62	41	4841335	97.727	ng		99
12) Acrolein	6.77	56	3161875	218.659	ng		99
13) Acetone	7.00	58	6170007	337.985	ng	#	85
14) Trichlorofluoromethane	7.20	101	4344893	101.857	ng		100
15) 2-Propanol (Isopropanol)	7.50	45	8255033	125.914	ng		99
16) Acrylonitrile	7.75	53	6142903	203.362	ng		100
17) 1,1-Dichloroethene	8.16	96	2254720	115.825	ng		97
18) 2-Methyl-2-Propanol (t...	8.34	59	3685955	85.133	ng		98
19) Methylene Chloride	8.39	84	2365159	104.700	ng		92
20) 3-Chloro-1-propene (Al...	8.55	41	3861232	102.566	ng		97
21) Trichlorotrifluoroethane	8.79	151	2016309	103.582	ng		95
22) Carbon Disulfide	8.64	76	15164744	170.338	ng		100
23) trans-1,2-Dichloroethene	9.65	61	3668235	113.960	ng		98
24) 1,1-Dichloroethane	9.90	63	4414072	111.875	ng		100
25) Methyl tert-Butyl Ether	9.99	73	7558401	135.632	ng		99
26) Vinyl Acetate	10.17	86	1442151	279.103	ng	#	57
27) 2-Butanone (MEK)	10.41	72	2733399	175.363	ng	#	78
28) cis-1,2-Dichloroethene	10.92	61	3468878	107.705	ng		97
29) Diisopropyl Ether	11.21	87	2219263	105.595	ng	#	48
30) Ethyl Acetate	11.24	61	1673376	167.395	ng		93
31) n-Hexane	11.19	57	2526039	58.607	ng		99
32) Chloroform	11.28	83	3886081	97.417	ng		100
34) Tetrahydrofuran (THF)	11.66	72	2482792	162.346	ng	#	85
35) Ethyl tert-Butyl Ether	11.81	87	4746228	169.367	ng	#	83
36) 1,2-Dichloroethane	12.06	62	3464599	102.814	ng		100
38) 1,1,1-Trichloroethane	12.33	97	3881324	107.981	ng		99
39) Isopropyl Acetate	0.00	61	0	N.D.	d		
40) 1-Butanol	0.00	56	0	N.D.	d		
41) Benzene	12.82	78	8681592	101.856	ng		100
42) Carbon Tetrachloride	12.97	117	3291968	100.061	ng		100
43) Cyclohexane	13.10	84	5495558	160.963	ng		89
44) tert-Amyl Methyl Ether	13.45	73	10692998	159.889	ng		95
45) 1,2-Dichloropropane	13.67	63	2250823	98.945	ng		99
46) Bromodichloromethane	13.85	83	3311943	104.228	ng		100
47) Trichloroethene	13.91	130	2039372	84.266	ng		100
48) 1,4-Dioxane	13.89	88	1705952	104.730	ng		92
49) 2,2,4-Trimethylpentane...	13.98	57	8451491	87.303	ng		97
50) Methyl Methacrylate	14.12	100	1635933	192.081	ng	#	88

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142133.D Vial: 2
Acq On : 14 Sep 2021 21:08 Operator: WA
Sample : 100ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09082103 (10/6)

Quant Time: Sep 20 21:03:14 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

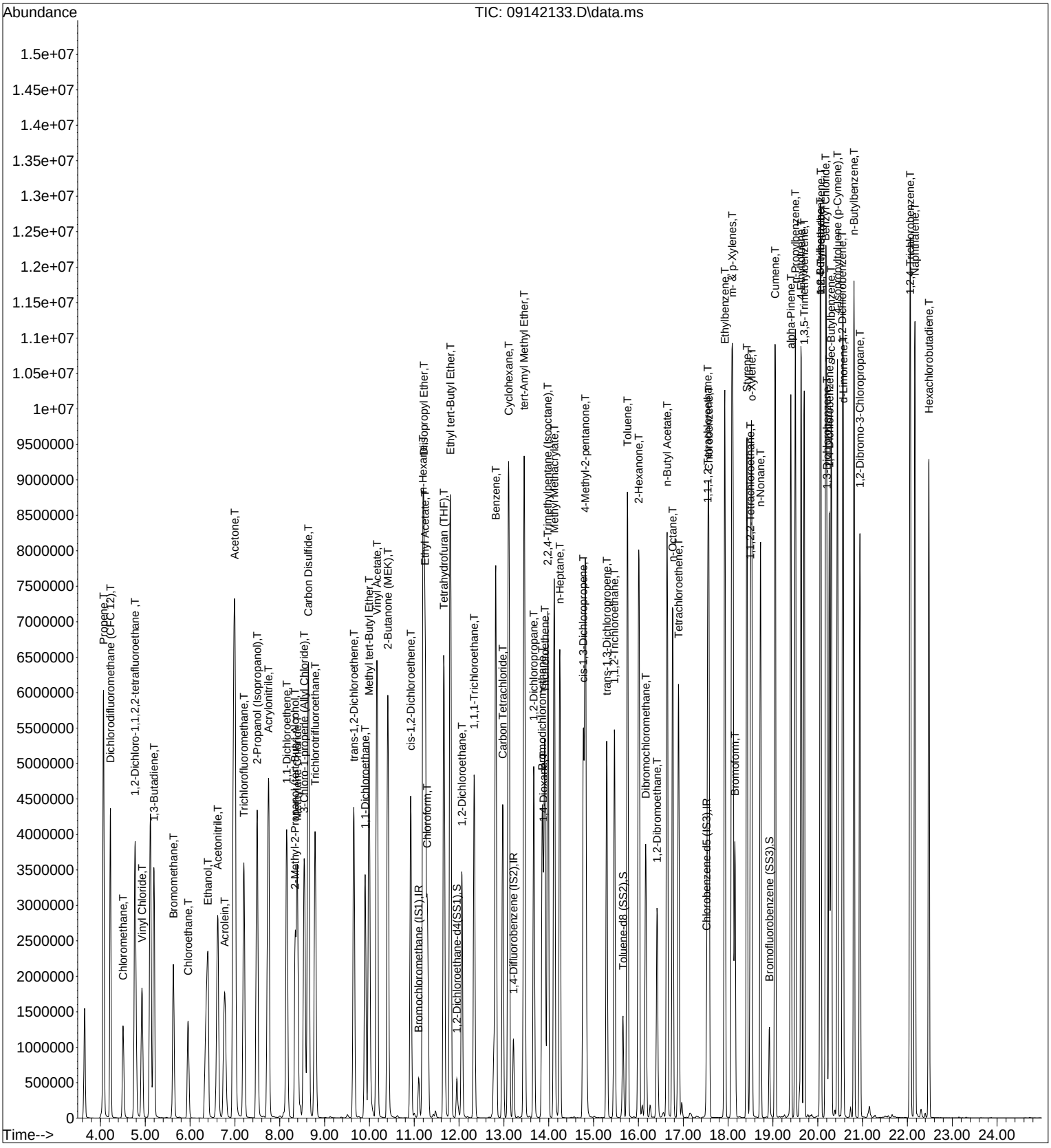
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
51) n-Heptane	14.25	71	2097871	91.861	ng	95
52) cis-1,3-Dichloropropene	14.77	75	3895661	111.365	ng	100
53) 4-Methyl-2-pentanone	14.81	58	3269045	154.862	ng	85
54) trans-1,3-Dichloropropene	15.29	75	3946157	122.318	ng	100
55) 1,1,2-Trichloroethane	15.46	97	2158022	103.484	ng	99
58) Toluene	15.76	91	8300708	105.342	ng	100
59) 2-Hexanone	16.01	43	7640361	154.794	ng	92
60) Dibromochloromethane	16.16	129	2681663	124.463	ng	100
61) 1,2-Dibromoethane	16.42	107	2605019	130.282	ng	100
62) n-Butyl Acetate	16.64	43	8371759	154.053	ng	93
63) n-Octane	16.76	57	1743820	104.741	ng	90
64) Tetrachloroethene	16.89	166	2348390	99.253	ng	100
65) Chlorobenzene	17.57	112	4888895	91.028	ng	100
66) Ethylbenzene	17.93	91	9373686	106.657	ng	99
67) m- & p-Xylenes	18.09	91	12817118	179.146	ng	98
68) Bromoform	18.15	173	2300719	112.188	ng	100
69) Styrene	18.42	104	5810379	117.595	ng	98
70) o-Xylene	18.53	91	6535911	91.164	ng	98
71) n-Nonane	18.72	43	3287655	74.302	ng	88
72) 1,1,2,2-Tetrachloroethane	18.50	83	3241385	98.247	ng	100
74) Cumene	19.05	105	8687983	98.139	ng	99
75) alpha-Pinene	19.40	93	4856178	113.835	ng	98
76) n-Propylbenzene	19.50	91	10346796	95.498	ng	98
77) 3-Ethyltoluene	0.00	105	0	N.D.	d	
78) 4-Ethyltoluene	19.63	105	8593591	101.059	ng	99
79) 1,3,5-Trimethylbenzene	19.70	105	6866993	95.201	ng	99
80) alpha-Methylstyrene	0.00	118	0	N.D.	d	
81) 2-Ethyltoluene	0.00	105	0	N.D.	d	
82) 1,2,4-Trimethylbenzene	20.07	105	5312322	69.311	ng	98
83) n-Decane	0.00	58	0	N.D.	d	
84) Benzyl Chloride	20.18	91	9487703	147.726	ng	95
85) 1,3-Dichlorobenzene	20.20	146	3115138	65.355	ng	100
86) 1,4-Dichlorobenzene	20.26	146	4008835	85.638	ng	100
87) sec-Butylbenzene	20.30	105	8370783	85.393	ng	99
88) 4-Isopropyltoluene (p-...	20.44	119	7361639	89.075	ng	99
89) 1,2,3-Trimethylbenzene	0.00	105	0	N.D.	d	
90) 1,2-Dichlorobenzene	20.55	146	3244420	70.668	ng	100
91) d-Limonene	20.57	68	2009554	68.442	ng	86
92) 1,2-Dibromo-3-Chloropr...	20.94	157	2975566	176.607	ng	86
93) n-Undecane	0.00	57	0	N.D.	d	
94) 1,2,4-Trichlorobenzene	22.06	180	5602659	154.151	ng	99
95) Naphthalene	22.17	128	10213092	119.161	ng	100
96) n-Dodecane	0.00	57	0	N.D.	d	
97) Hexachlorobutadiene	22.48	225	2282840	88.847	ng	100
98) Cyclohexanone	0.00	55	0	N.D.	d	
99) tert-Butylbenzene	20.06	119	5116863	69.646	ng	99
100) n-Butylbenzene	20.81	91	7515295	93.664	ng	99
101) 1,1,1,2-Tetrachloroethane	17.55	131	1843151	91.948	ng	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142133.D Vial: 2
Acq On : 14 Sep 2021 21:08 Operator: WA
Sample : 100ng R16091421 ICAL Std Inst : GCMS-16
Misc : S34-09132101/S34-09082103 (10/6)

Quant Time: Sep 20 21:03:14 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 20:48:23 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142136.D Vial: 2
Acq On : 14 Sep 2021 22:50 Operator: WA
Sample : 25ng R16091421 ICV Std Inst : GCMS-16
Misc : S34-09132101/S34-09092102 (10/8)

Quant Time: Sep 20 21:31:23 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

9/20/21

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.09	130	229295	12.500	ng		-0.01
37) 1,4-Difluorobenzene (IS2)	13.21	114	1040472	12.500	ng		0.00
56) Chlorobenzene-d5 (IS3)	17.52	54	208505	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.94	65	445155	11.722	ng		-0.01
Spiked Amount 12.500	Range 70 - 130		Recovery = 93.76%				
57) Toluene-d8 (SS2)	15.65	98	1162243	13.135	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 105.04%				
73) Bromofluorobenzene (SS3)	18.92	174	408737	13.645	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 109.12%				
Target Compounds							Qvalue
2) Propene	4.06	42	1006694	25.735	ng		98
3) Dichlorodifluoromethan...	4.21	85	1407137	23.899	ng		100
4) Chloromethane	4.49	50	947492	24.669	ng		100
5) 1,2-Dichloro-1,1,2,2-t...	4.76	135	553489	24.818	ng		99
6) Vinyl Chloride	4.91	62	897164	25.699	ng		100
7) 1,3-Butadiene	5.17	54	700633	27.145	ng		96
8) Bromomethane	5.60	94	602102	25.524	ng		100
9) Chloroethane	5.93	64	524503	25.697	ng		100
10) Ethanol	6.34	45	2321063	94.526	ng		100
11) Acetonitrile	6.57	41	1406147	22.212	ng		99
12) Acrolein	6.75	56	995262	51.738	ng		100
13) Acetone	6.96	58	2418930	116.004	ng	#	86
14) Trichlorofluoromethane	7.18	101	1247345	23.413	ng		100
15) 2-Propanol (Isopropanol)	7.45	45	3064381	46.999	ng		98
16) Acrylonitrile	7.71	53	1955276	52.043	ng		99
17) 1,1-Dichloroethene	8.14	96	674792	26.445	ng		94
18) 2-Methyl-2-Propanol (t...	8.32	59	3649260	48.485	ng		98
19) Methylene Chloride	8.37	84	706388	25.251	ng		94
20) 3-Chloro-1-propene (Al...	8.53	41	1100067	24.466	ng		99
21) Trichlorotrifluoroethane	8.78	151	596839	26.256	ng		97
22) Carbon Disulfide	8.62	76	4987821	48.929	ng		100
23) trans-1,2-Dichloroethene	9.64	61	1085278	26.412	ng		97
24) 1,1-Dichloroethane	9.89	63	1346469	25.923	ng		100
25) Methyl tert-Butyl Ether	9.98	73	2282388	25.056	ng		100
26) Vinyl Acetate	10.15	86	668073	135.780	ng	#	78
27) 2-Butanone (MEK)	10.39	72	936333	54.057	ng	#	89
28) cis-1,2-Dichloroethene	10.91	61	1032286	25.232	ng		96
29) Diisopropyl Ether	11.20	87	1087375	48.026	ng	#	47
30) Ethyl Acetate	11.21	61	605573	62.064	ng		98
31) n-Hexane	11.19	57	1044378	23.934	ng		99
32) Chloroform	11.26	83	1214950	24.962	ng		100
34) Tetrahydrofuran (THF)	11.65	72	878318	50.153	ng		94
35) Ethyl tert-Butyl Ether	11.80	87	1688071	51.251	ng		96
36) 1,2-Dichloroethane	12.05	62	1016278	24.620	ng		100
38) 1,1,1-Trichloroethane	12.33	97	1134826	24.020	ng		99
39) Isopropyl Acetate	0.00	61	0	N.D.	d		
40) 1-Butanol	0.00	56	0	N.D.	d		
41) Benzene	12.81	78	2827108	25.035	ng		100
42) Carbon Tetrachloride	12.97	117	919432	23.790	ng		100
43) Cyclohexane	13.10	84	2006674	49.730	ng		98
44) tert-Amyl Methyl Ether	13.45	73	4032346	50.216	ng		98
45) 1,2-Dichloropropane	13.66	63	725083	25.077	ng		99
46) Bromodichloromethane	13.85	83	1007680	25.305	ng		100
47) Trichloroethene	13.90	130	673697	25.628	ng		100
48) 1,4-Dioxane	13.87	88	571720	26.990	ng		97
49) 2,2,4-Trimethylpentane...	13.97	57	3016100	24.586	ng		96
50) Methyl Methacrylate	14.11	100	550319	55.566	ng		97

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\14\09142136.D Vial: 2
Acq On : 14 Sep 2021 22:50 Operator: WA
Sample : 25ng R16091421 ICV Std Inst : GCMS-16
Misc : S34-09132101/S34-09092102 (10/8)

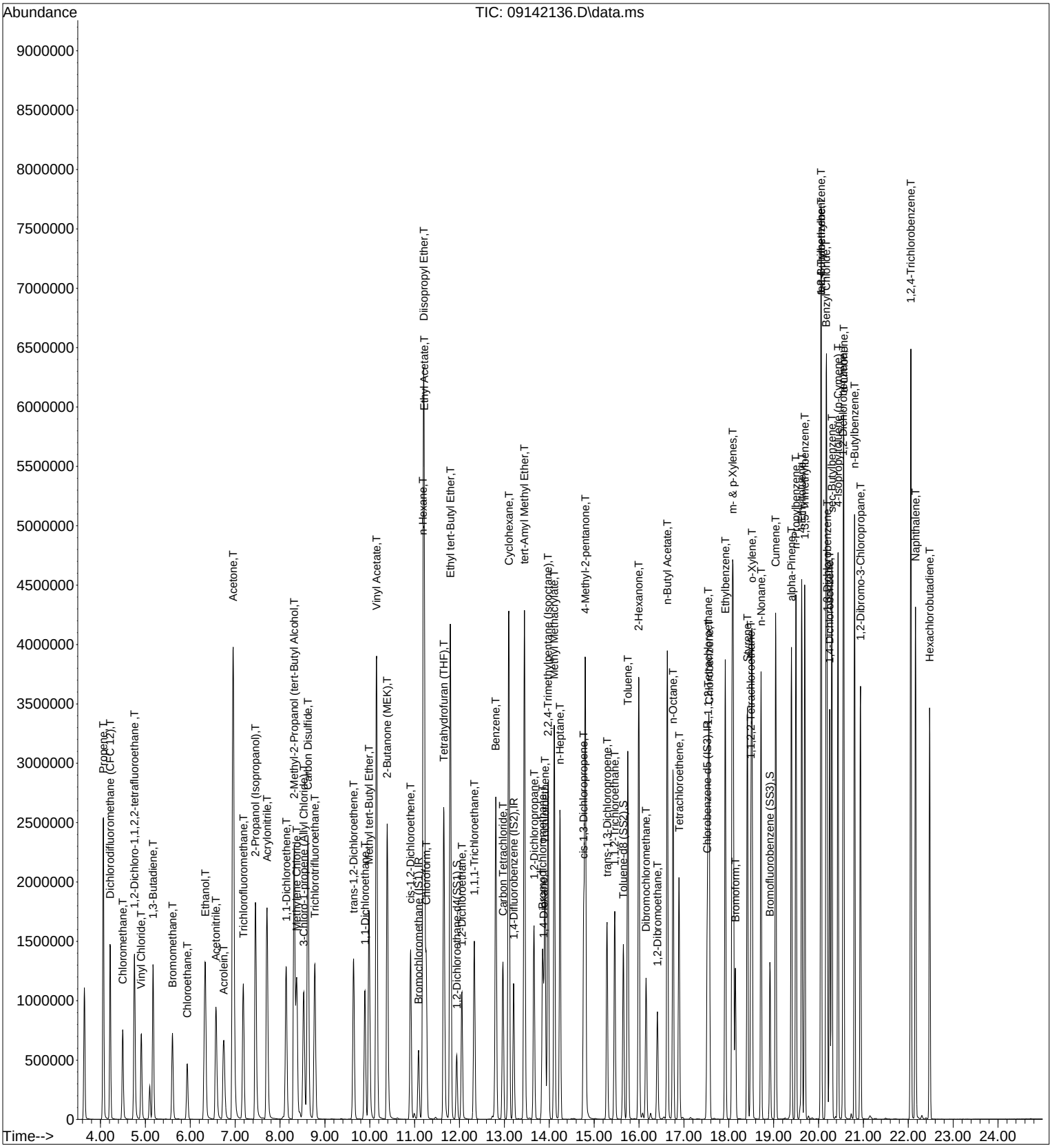
Quant Time: Sep 20 21:31:23 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
51) n-Heptane	14.24	71	709673	25.368	ng	99
52) cis-1,3-Dichloropropene	14.77	75	1199712	27.407	ng	100
53) 4-Methyl-2-pentanone	14.80	58	1283999	51.973	ng	95
54) trans-1,3-Dichloropropene	15.29	75	1148980	27.375	ng	100
55) 1,1,2-Trichloroethane	15.46	97	660169	25.515	ng	100
58) Toluene	15.75	91	2659790	25.858	ng	100
59) 2-Hexanone	15.99	43	3051865	52.667	ng	96
60) Dibromochloromethane	16.16	129	760407	26.816	ng	100
61) 1,2-Dibromoethane	16.41	107	766242	27.226	ng	100
62) n-Butyl Acetate	16.63	43	3457847	54.360	ng	98
63) n-Octane	16.76	57	627799	26.192	ng	98
64) Tetrachloroethene	16.89	166	728106	25.478	ng	100
65) Chlorobenzene	17.56	112	1660840	25.746	ng	100
66) Ethylbenzene	17.92	91	3100518	26.207	ng	100
67) m- & p-Xylenes	18.09	91	4822789	51.992	ng	99
68) Bromoform	18.15	173	689092	28.697	ng	100
69) Styrene	18.42	104	1847242	27.315	ng	98
70) o-Xylene	18.52	91	2408918	25.951	ng	98
71) n-Nonane	18.72	43	1383954	25.680	ng	97
72) 1,1,2,2-Tetrachloroethane	18.49	83	1147279	26.910	ng	100
74) Cumene	19.04	105	2999918	25.758	ng	99
75) alpha-Pinene	19.40	93	1641099	27.902	ng	99
76) n-Propylbenzene	19.49	91	3682692	25.877	ng	99
77) 3-Ethyltoluene	0.00	105	0	N.D.	d	
78) 4-Ethyltoluene	19.63	105	2983023	26.732	ng	100
79) 1,3,5-Trimethylbenzene	19.69	105	2500468	26.098	ng	99
80) alpha-Methylstyrene	0.00	118	0	N.D.	d	
81) 2-Ethyltoluene	0.00	105	0	N.D.	d	
82) 1,2,4-Trimethylbenzene	20.06	105	2359479	25.752	ng	99
83) n-Decane	0.00	58	0	N.D.	d	
84) Benzyl Chloride	20.17	91	4367308	60.258	ng	99
85) 1,3-Dichlorobenzene	20.19	146	1306303	25.974	ng	100
86) 1,4-Dichlorobenzene	20.25	146	1388206	25.494	ng	100
87) sec-Butylbenzene	20.30	105	3258063	25.627	ng	99
88) 4-Isopropyltoluene (p-...	20.43	119	2756359	25.868	ng	99
89) 1,2,3-Trimethylbenzene	0.00	105	0	N.D.	d	
90) 1,2-Dichlorobenzene	20.55	146	1256598	25.115	ng	100
91) d-Limonene	20.56	68	994426	28.286	ng	100
92) 1,2-Dibromo-3-Chloropr...	20.94	157	1060987	52.940	ng	94
93) n-Undecane	0.00	57	0	N.D.	d	
94) 1,2,4-Trichlorobenzene	22.06	180	2191429	52.917	ng	100
95) Naphthalene	22.16	128	3371931	27.685	ng	100
96) n-Dodecane	0.00	57	0	N.D.	d	
97) Hexachlorobutadiene	22.48	225	721734	24.927	ng	99
98) Cyclohexanone	0.00	55	0	N.D.	d	
99) tert-Butylbenzene	20.06	119	2192307	24.879	ng	99
100) n-Butylbenzene	20.80	91	2764127	26.104	ng	99
101) 1,1,1,2-Tetrachloroethane	17.54	131	601695	26.039	ng	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Data File : I:\MS16\DATA\2021_09\14\09142136.D Vial: 2
Acq On : 14 Sep 2021 22:50 Operator: WA
Sample : 25ng R16091421 ICV Std Inst : GCMS-16
Misc : S34-09132101/S34-09092102 (10/8)

Quant Time: Sep 20 21:31:23 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M



Initial Calibration Verification/LABORATORY CONTROL SAMPLE CHECK SHEET

WA 9/20/21

Data File Name: **09142136.D** Acq. Method File: **TO15.M**

Data File Path: **I:\MS16\DATA\2021_09\14** Sample Name: **25ng R16091421 ICV Std**

Operator: **WA** Misc Info: **S34-09132101/S34-09092102 (**

Date Acquired: **9/14/2021 22:50** Instrument Name: **GCMS-16**

#	Compound Name	Ret. Time	Amt. (ng)	Spike Amt.(ng)	% Rec.	Lower Limit	Upper Limit	* OR Fail	ICV/AZ 70-130%
2)	**Propene**	**4.06**	**25.7**	**25.75**	100	**56**	**128**	*	*
3)	**Dichlorodifluoromethane (CFC 1**	**4.21**	**23.9**	**26.00**	92	**71**	**112**	*	*
4)	**Chloromethane**	**4.49**	**24.7**	**25.75**	96	**53**	**126**	*	*
5)	**1,2-Dichloro-1,1,2,2-tetrafluoroet**	**4.76**	**24.8**	**26.00**	95	**62**	**121**	*	*
6)	**Vinyl Chloride**	**4.91**	**25.7**	**26.00**	99	**63**	**123**	*	*
7)	**1,3-Butadiene**	**5.17**	**27.1**	**25.75**	105	**63**	**135**	*	*
8)	**Bromomethane**	**5.60**	**25.5**	**25.75**	99	**71**	**112**	*	*
9)	**Chloroethane**	**5.93**	**25.7**	**25.75**	100	**66**	**117**	*	*
10)	**Ethanol**	**6.34**	**95**	**104.00**	91	**57**	**117**	*	*
11)	**Acetonitrile**	**6.57**	**22.2**	**25.25**	88	**59**	**131**	*	*
12)	**Acrolein**	**6.75**	**51.7**	**52.00**	99	**71**	**123**	*	*
13)	**Acetone**	**6.96**	**116**	**128.00**	91	**60**	**117**	*	*
14)	**Trichlorofluoromethane**	**7.18**	**23.4**	**25.25**	93	**71**	**114**	*	*
15)	**2-Propanol (Isopropanol)**	**7.45**	**47.0**	**50.00**	94	**61**	**124**	*	*
16)	**Acrylonitrile**	**7.71**	**52.0**	**50.25**	103	**65**	**130**	*	*
17)	**1,1-Dichloroethene**	**8.14**	**26.4**	**26.25**	101	**74**	**114**	*	*
18)	2-Methyl-2-Propanol (tert-Butyl Alc	8.32	48.5	51.00	95	56	135	*	*
19)	**Methylene Chloride**	**8.37**	**25.3**	**26.00**	97	**75**	**112**	*	*
20)	**3-Chloro-1-propene (Allyl Chloric**	**8.53**	**24.5**	**25.50**	96	**57**	**127**	*	*
21)	**Trichlorotrifluoroethane**	**8.78**	**26.3**	**27.00**	97	**73**	**114**	*	*
22)	**Carbon Disulfide**	**8.62**	**48.9**	**51.75**	94	**70**	**113**	*	*
23)	**trans-1,2-Dichloroethene**	**9.64**	**26.4**	**26.00**	102	**76**	**119**	*	*
24)	**1,1-Dichloroethane**	**9.89**	**25.9**	**26.75**	97	**70**	**114**	*	*
25)	**Methyl tert-Butyl Ether**	**9.98**	**25.1**	**25.75**	97	**72**	**118**	*	*
26)	**Vinyl Acetate**	**10.15**	**136**	**117.75**	115	**56**	**137**	*	*
27)	**2-Butanone (MEK)**	**10.39**	**54.1**	**51.00**	106	**74**	**121**	*	*
28)	**cis-1,2-Dichloroethene**	**10.91**	**25.2**	**25.75**	98	**73**	**117**	*	*
29)	Diisopropyl Ether	11.20	48.0	52.25	92	58	124	*	*
30)	**Ethyl Acetate**	**11.21**	**62.1**	**72.50**	86	**59**	**161**	*	*
31)	**n-Hexane**	**11.19**	**23.9**	**26.00**	92	**55**	**130**	*	*
32)	**Chloroform**	**11.26**	**25.0**	**26.25**	95	**71**	**114**	*	*
34)	**Tetrahydrofuran (THF)**	**11.65**	**50.2**	**50.50**	99	**73**	**114**	*	*
35)	Ethyl tert-Butyl Ether	11.80	51.3	51.75	99	76	119	*	*
36)	**1,2-Dichloroethane**	**12.05**	**24.6**	**26.25**	94	**71**	**119**	*	*
38)	**1,1,1-Trichloroethane**	**12.33**	**24.0**	**26.00**	92	**73**	**119**	*	*
41)	**Benzene**	**12.81**	**25.0**	**26.00**	96	**72**	**113**	*	*
42)	**Carbon Tetrachloride**	**12.97**	**23.8**	**25.25**	94	**67**	**123**	*	*
43)	**Cyclohexane**	**13.10**	**49.7**	**51.50**	97	**70**	**119**	*	*
44)	tert-Amyl Methyl Ether	13.45	50.2	**51.50**	97	74	120	*	*
45)	**1,2-Dichloropropane**	**13.66**	**25.1**	**25.75**	97	**70**	**118**	*	*
46)	**Bromodichloromethane**	**13.85**	**25.3**	**26.00**	97	**74**	**119**	*	*
47)	**Trichloroethene**	**13.90**	**25.6**	**25.50**	100	**74**	**115**	*	*
48)	**1,4-Dioxane**	**13.87**	**27.0**	**25.75**	105	**77**	**124**	*	*
49)	2,2,4-Trimethylpentane (Isooctane)	13.97	24.6	26.25	94	65	120	*	*

Initial Calibration Verification/LABORATORY CONTROL SAMPLE CHECK SHEET

Data File Name: **09142136.D** **TO15.M**
Data File Path: **I:\MS16\DATA\2021_09\14** Sample Name: **25ng R16091421 ICV Std**
Operator: **WA** Misc Info: **S34-09132101/S34-09092102 (**
Date Acquired: **9/14/2021 22:50** Instrument Name: **GCMS-16**

#	Compound Name	Ret. Time	Amt. (ng)	Spike Amt.(ng)	% Rec.	Lower Limit	Upper Limit	* OR Fail	ICV/AZ 70-130%
50)	**Methyl Methacrylate**	**14.11**	**55.6**	**51.25**	108	**78**	**126**	*	*
51)	**n-Heptane**	**14.24**	**25.4**	**25.75**	99	**70**	**119**	*	*
52)	**cis-1,3-Dichloropropene**	**14.77**	**27.4**	**26.00**	105	**81**	**126**	*	*
53)	**4-Methyl-2-pentanone**	**14.80**	**52.0**	**51.50**	101	**73**	**129**	*	*
54)	**trans-1,3-Dichloropropene**	**15.29**	**27.4**	**25.00**	110	**80**	**127**	*	*
55)	**1,1,2-Trichloroethane**	**15.46**	**25.5**	**26.00**	98	**78**	**117**	*	*
58)	**Toluene**	**15.75**	**25.9**	**25.75**	101	**70**	**118**	*	*
59)	**2-Hexanone**	**15.99**	**52.7**	**50.75**	104	**74**	**132**	*	*
60)	**Dibromochloromethane**	**16.16**	**26.8**	**26.25**	102	**69**	**137**	*	*
61)	**1,2-Dibromoethane**	**16.41**	**27.2**	**26.00**	105	**76**	**128**	*	*
62)	**n-Butyl Acetate**	**16.63**	**54.4**	**50.75**	107	**75**	**134**	*	*
63)	**n-Octane**	**16.76**	**26.2**	**26.00**	101	**68**	**120**	*	*
64)	**Tetrachloroethene**	**16.89**	**25.5**	**26.50**	96	**63**	**130**	*	*
65)	**Chlorobenzene**	**17.56**	**25.7**	**25.75**	100	**70**	**118**	*	*
66)	**Ethylbenzene**	**17.92**	**26.2**	**25.75**	102	**71**	**123**	*	*
67)	**m- & p-Xylenes**	**18.09**	**52.0**	**52.00**	100	**67**	**127**	*	*
68)	**Bromoform**	**18.15**	**28.7**	**26.25**	109	**65**	**149**	*	*
69)	**Styrene**	**18.42**	**27.3**	**25.25**	108	**76**	**132**	*	*
70)	**o-Xylene**	**18.52**	**26.0**	**26.00**	100	**69**	**124**	*	*
71)	**n-Nonane**	**18.72**	**25.7**	**26.00**	99	**64**	**127**	*	*
72)	**1,1,2,2-Tetrachloroethane**	**18.49**	**26.9**	**26.00**	103	**69**	**128**	*	*
74)	**Cumene**	**19.04**	**25.8**	**25.75**	100	**69**	**125**	*	*
75)	**alpha-Pinene**	**19.40**	**27.9**	**26.25**	106	**68**	**129**	*	*
76)	**n-Propylbenzene**	**19.49**	**25.9**	**26.00**	100	**70**	**127**	*	*
78)	**4-Ethyltoluene**	**19.63**	**26.7**	**26.00**	**103**	**69**	**127**	*	*
79)	**1,3,5-Trimethylbenzene**	**19.69**	**26.1**	**26.00**	**100**	**66**	**129**	*	*
82)	**1,2,4-Trimethylbenzene**	**20.06**	**25.8**	**25.75**	**100**	**63**	**142**	*	*
84)	**Benzyl Chloride**	**20.17**	**60.3**	**52.00**	**116**	**73**	**145**	*	*
85)	**1,3-Dichlorobenzene**	**20.19**	**26.0**	**26.00**	**100**	**67**	**136**	*	*
86)	**1,4-Dichlorobenzene**	**20.25**	**25.5**	**26.25**	**97**	**63**	**134**	*	*
87)	sec-Butylbenzene	20.30	25.6	25.50	**100**	68	130	*	*
88)	4-Isopropyltoluene (p-Cymene)	20.43	25.9	25.75	**101**	60	139	*	*
90)	**1,2-Dichlorobenzene**	**20.55**	**25.1**	**26.25**	**96**	**64**	**139**	*	*
91)	**d-Limonene**	**20.56**	**28.3**	**25.75**	**110**	**63**	**137**	*	*
92)	**1,2-Dibromo-3-Chloropropane**	**20.94**	**52.9**	**50.50**	**105**	**72**	**145**	*	*
94)	**1,2,4-Trichlorobenzene**	**22.06**	**52.9**	**52.50**	**101**	**62**	**154**	*	*
95)	**Naphthalene**	**22.16**	**27.7**	**26.25**	**106**	**62**	**156**	*	*
97)	**Hexachlorobutadiene**	**22.48**	**24.9**	**26.50**	**94**	55	142	*	*
99)	tert-Butylbenzene	20.06	24.9	25.75	97	61	140	*	*
100)	n-Butylbenzene	20.80	26.1	26.00	100	70	131	*	*
101)	1,1,1,2-Tetrachloroethane	17.54	26.0	25.75	101	70	130	*	*

Bold = 75 Compound List
*** = Pass**

01070761

Data File : I:\MS16\DATA\2021_09\29\09292101.D Vial: 2
Acq On : 29 Sep 2021 18:02 Operator: WA
Sample : CCV R16092921_25ng Inst : GCMS-16
Misc : S34-09132101/S34-09182101 (10/17)

Quant Time: Sep 29 19:02:15 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

WA 9/30/21

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	108	-0.01
2	T	Propene	2.133	1.607	24.7	83	-0.01
3	T	Dichlorodifluoromethane (CF	3.210	2.435	24.1	88	-0.01
4	T	Chloromethane	2.094	1.751	16.4	91	-0.01
5	T	1,2-Dichloro-1,1,2,2-tetraf	1.216	1.083	10.9	102	-0.02
6	T	Vinyl Chloride	1.903	1.611	15.3	92	-0.02
7	T	1,3-Butadiene	1.407	1.315	6.5	94	-0.02
8	T	Bromomethane	1.286	1.047	18.6	90	-0.02
9	T	Chloroethane	1.113	0.917	17.6	92	-0.02
10	T	Ethanol	1.339	0.982	26.7	86	-0.07
11	T	Acetonitrile	3.451	2.593	24.9	83	-0.04
12	T	Acrolein	1.049	0.945	9.9	97	-0.02
13	T	Acetone	1.137	0.906	20.3	98	-0.04
14	T	Trichlorofluoromethane	2.904	2.281	21.5	87	-0.02
15	T	2-Propanol (Isopropanol)	3.554	2.780	21.8	89	-0.04
16	T	Acrylonitrile	2.048	1.861	9.1	95	-0.04
17	T	1,1-Dichloroethene	1.391	1.144	17.8	91	-0.02
18	T	2-Methyl-2-Propanol (tert-B	4.103	3.420	16.6	92	-0.03
19	T	Methylene Chloride	1.525	1.231	19.3	91	-0.02
20	T	3-Chloro-1-propene (Allyl C	2.451	1.918	21.7	83	-0.02
21	T	Trichlorotrifluoroethane	1.239	1.131	8.7	103	-0.01
22	T	Carbon Disulfide	5.557	4.194	24.5	86	-0.02
23	T	trans-1,2-Dichloroethene	2.240	1.975	11.8	93	-0.01
24	T	1,1-Dichloroethane	2.832	2.339	17.4	92	-0.01
25	T	Methyl tert-Butyl Ether	4.966	3.902	21.4	85	-0.01
26	T	Vinyl Acetate	0.268	0.258	3.7	91	-0.02
27	T	2-Butanone (MEK)	0.944	0.789	16.4	87	-0.02
28	T	cis-1,2-Dichloroethene	2.230	1.883	15.6	92	-0.01
29	T	Diisopropyl Ether	1.234	0.960	22.2	106	-0.01
30	T	Ethyl Acetate	0.532	0.397	25.4	100	-0.03
31	T	n-Hexane	2.379	1.903	20.0	97	0.00
32	T	Chloroform	2.653	2.052	22.7	86	-0.03
33	S	1,2-Dichloroethane-d4(SS1)	2.070	1.645	20.5	84	-0.01
34	T	Tetrahydrofuran (THF)	0.955	0.742	22.3	88	-0.01
35	T	Ethyl tert-Butyl Ether	1.796	1.499	16.5	91	-0.01
36	T	1,2-Dichloroethane	2.250	1.764	21.6	84	0.00
37	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	100	0.00
38	T	1,1,1-Trichloroethane	0.568	0.476	16.2	86	0.00
39	T	Isopropyl Acetate	0.000	0.000	0.0	0#	0.00
40	T	1-Butanol	0.000	0.000	0.0	0#	0.00
41	T	Benzene	1.357	1.092	19.5	88	-0.01
42	T	Carbon Tetrachloride	0.464	0.413	11.0	89	0.00
43	T	Cyclohexane	0.485	0.428	11.8	95	0.00
44	T	tert-Amyl Methyl Ether	0.965	0.810	16.1	86	0.00
45	T	1,2-Dichloropropane	0.347	0.309	11.0	93	0.00
46	T	Bromodichloromethane	0.478	0.411	14.0	86	0.00
47	T	Trichloroethene	0.316	0.321	-1.6	106	0.00
48	T	1,4-Dioxane	0.254	0.235	7.5	92	-0.01
49	T	2,2,4-Trimethylpentane (Iso	1.474	1.317	10.7	95	0.00
50	T	Methyl Methacrylate	0.119	0.123	-3.4	99	0.00
51	T	n-Heptane	0.336	0.278	17.3	87	0.00
52	T	cis-1,3-Dichloropropene	0.526	0.472	10.3	86	0.00
53	T	4-Methyl-2-pentanone	0.297	0.281	5.4	94	-0.01
54	T	trans-1,3-Dichloropropene	0.504	0.477	5.4	84	0.00
55	T	1,1,2-Trichloroethane	0.311	0.280	10.0	93	0.00

Data File : I:\MS16\DATA\2021_09\29\09292101.D Vial: 2
Acq On : 29 Sep 2021 18:02 Operator: WA
Sample : CCV R16092921_25ng Inst : GCMS-16
Misc : S34-09132101/S34-09182101 (10/17)

Quant Time: Sep 29 19:02:15 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
56	IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	88	0.00
57	S	Toluene-d8 (SS2)	5.305	5.589	-5.4	95	0.00
58	T	Toluene	6.167	5.999	2.7	94	0.00
59	T	2-Hexanone	3.474	3.181	8.4	80	-0.02
60	T	Dibromochloromethane	1.700	1.937	-13.9	100	0.00
61	T	1,2-Dibromoethane	1.687	1.797	-6.5	94	0.00
62	T	n-Butyl Acetate	3.813	3.575	6.2	80	-0.01
63	T	n-Octane	1.437	1.440	-0.2	94	0.00
64	T	Tetrachloroethene	1.713	1.823	-6.4	106	0.00
65	T	Chlorobenzene	3.867	3.997	-3.4	99	0.00
66	T	Ethylbenzene	7.093	7.038	0.8	92	0.00
67	T	m- & p-Xylenes	5.561	5.481	1.4	92	0.00
68	T	Bromoform	1.440	1.657	-15.1	96	0.00
69	T	Styrene	4.054	4.514	-11.3	98	0.00
70	T	o-Xylene	5.565	5.403	2.9	91	-0.01
71	T	n-Nonane	3.231	2.859	11.5	81	0.00
72	T	1,1,2,2-Tetrachloroethane	2.556	2.481	2.9	90	0.00
73	S	Bromofluorobenzene (SS3)	1.796	2.056	-14.5	105	0.00
74	T	Cumene	6.982	7.172	-2.7	96	0.00
75	T	alpha-Pinene	3.526	3.645	-3.4	91	0.00
76	T	n-Propylbenzene	8.532	8.302	2.7	91	0.00
77	T	3-Ethyltoluene	0.000	0.000	0.0	0#	0.00
78	T	4-Ethyltoluene	6.690	7.059	-5.5	95	0.00
79	T	1,3,5-Trimethylbenzene	5.744	5.881	-2.4	94	0.00
80	T	alpha-Methylstyrene	0.000	0.000	0.0	0#	0.00
81	T	2-Ethyltoluene	0.000	0.000	0.0	0#	0.00
82	T	1,2,4-Trimethylbenzene	5.493	5.650	-2.9	94	-0.01
83	T	n-Decane	0.000	0.000	0.0	0#	0.00
84	T	Benzyl Chloride	4.345	5.039	-16.0	89	0.00
85	T	1,3-Dichlorobenzene	3.015	3.383	-12.2	104	-0.01
86	T	1,4-Dichlorobenzene	3.264	3.595	-10.1	104	-0.01
87	T	sec-Butylbenzene	7.622	7.781	-2.1	94	0.00
88	T	4-Isopropyltoluene (p-Cymen	6.388	6.720	-5.2	95	0.00
89	T	1,2,3-Trimethylbenzene	0.000	0.000	0.0	0#	0.00
90	T	1,2-Dichlorobenzene	3.000	3.231	-7.7	103	0.00
91	T	d-Limonene	2.108	2.110	-0.1	81	-0.01
92	T	1,2-Dibromo-3-Chloropropane	1.201	1.344	-11.9	95	0.00
93	T	n-Undecane	0.000	0.000	0.0	0#	0.00
94	T	1,2,4-Trichlorobenzene	2.483	2.672	-7.6	92	0.00
95	T	Naphthalene	7.302	8.627	-18.1	95	0.00
96	T	n-Dodecane	0.000	0.000	0.0	0#	0.07
97	T	Hexachlorobutadiene	1.736	1.714	1.3	90	0.00
98	T	Cyclohexanone	0.000	0.000	0.0	0#	0.00
99	T	tert-Butylbenzene	5.283	5.337	-1.0	96	0.00
100	T	n-Butylbenzene	6.348	6.211	2.2	88	0.00
101	T	1,1,1,2-Tetrachloroethane	1.385	1.527	-10.3	101	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292101.D Vial: 2
Acq On : 29 Sep 2021 18:02 Operator: WA
Sample : CCV R16092921_25ng Inst : GCMS-16
Misc : S34-09132101/S34-09182101 (10/17)

Quant Time: Sep 29 19:02:15 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS) 9/30/21
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.09	130	209091	12.500	ng		-0.01
37) 1,4-Difluorobenzene (IS2)	13.21	114	883427	12.500	ng		0.00
56) Chlorobenzene-d5 (IS3)	17.52	54	167814	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	11.94	65	344053	9.935	ng		-0.01
Spiked Amount 12.500	Range 70 - 130		Recovery = 79.44%				
57) Toluene-d8 (SS2)	15.65	98	937976	13.170	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 105.36%				
73) Bromofluorobenzene (SS3)	18.92	174	345005	14.310	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 114.48%				
Target Compounds							Qvalue
2) Propene	4.06	42	698834	19.591	ng		96
3) Dichlorodifluoromethan...	4.21	85	1069159	19.913	ng		100
4) Chloromethane	4.49	50	746825	21.323	ng		98
5) 1,2-Dichloro-1,1,2,2-t...	4.75	135	489252	24.057	ng		99
6) Vinyl Chloride	4.91	62	700726	22.011	ng		99
7) 1,3-Butadiene	5.17	54	571888	24.298	ng	#	88
8) Bromomethane	5.60	94	446389	20.751	ng		100
9) Chloroethane	5.93	64	391197	21.018	ng		99
10) Ethanol	6.32	45	1486602	66.392	ng		100
11) Acetonitrile	6.57	41	1008560	17.471	ng		98
12) Acrolein	6.75	56	790022	45.037	ng		99
13) Acetone	6.96	58	1966146	103.401	ng	#	69
14) Trichlorofluoromethane	7.18	101	982291	20.219	ng		100
15) 2-Propanol (Isopropanol)	7.45	45	2348270	39.496	ng		97
16) Acrylonitrile	7.71	53	1580031	46.119	ng		99
17) 1,1-Dichloroethene	8.14	96	511735	21.993	ng		98
18) 2-Methyl-2-Propanol (t...	8.31	59	3003771	43.765	ng		96
19) Methylene Chloride	8.37	84	535570	20.995	ng		93
20) 3-Chloro-1-propene (Al...	8.53	41	842066	20.537	ng		99
21) Trichlorotrifluoroethane	8.78	151	510958	24.650	ng		90
22) Carbon Disulfide	8.62	76	3682902	39.619	ng		100
23) trans-1,2-Dichloroethene	9.64	61	875584	23.368	ng		100
24) 1,1-Dichloroethane	9.89	63	1027245	21.688	ng		98
25) Methyl tert-Butyl Ether	9.98	73	1713338	20.626	ng		96
26) Vinyl Acetate	10.15	86	366131	81.603	ng	#	72
27) 2-Butanone (MEK)	10.39	72	679530	43.022	ng	#	89
28) cis-1,2-Dichloroethene	10.91	61	818876	21.950	ng		100
29) Diisopropyl Ether	11.20	87	850853	41.211	ng	#	49
30) Ethyl Acetate	11.21	61	678187	76.223	ng		95
31) n-Hexane	11.19	57	835595	21.000	ng		100
32) Chloroform	11.26	83	918279	20.690	ng		100
34) Tetrahydrofuran (THF)	11.65	72	611529	38.293	ng		94
35) Ethyl tert-Butyl Ether	11.80	87	1316286	43.825	ng		98
36) 1,2-Dichloroethane	12.05	62	781774	20.769	ng		99
38) 1,1,1-Trichloroethane	12.33	97	874541	21.802	ng		99
39) Isopropyl Acetate	12.77	61	57996	No Calib	#		
40) 1-Butanol	12.80	56	24211	No Calib	#		
41) Benzene	12.81	78	2006116	20.923	ng		100
42) Carbon Tetrachloride	12.97	117	766776	23.367	ng		99
43) Cyclohexane	13.10	84	1563665	45.640	ng		98
44) tert-Amyl Methyl Ether	13.45	73	2990987	43.869	ng		97
45) 1,2-Dichloropropane	13.66	63	563158	22.939	ng		97
46) Bromodichloromethane	13.85	83	762070	22.539	ng		100
47) Trichloroethene	13.91	130	584150	26.172	ng		99
48) 1,4-Dioxane	13.87	88	432273	24.034	ng		100
49) 2,2,4-Trimethylpentane...	13.97	57	2466315	23.678	ng		91
50) Methyl Methacrylate	14.12	100	450901	53.622	ng	#	80

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292101.D Vial: 2
Acq On : 29 Sep 2021 18:02 Operator: WA
Sample : CCV R16092921_25ng Inst : GCMS-16
Misc : S34-09132101/S34-09182101 (10/17)

Quant Time: Sep 29 19:02:15 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

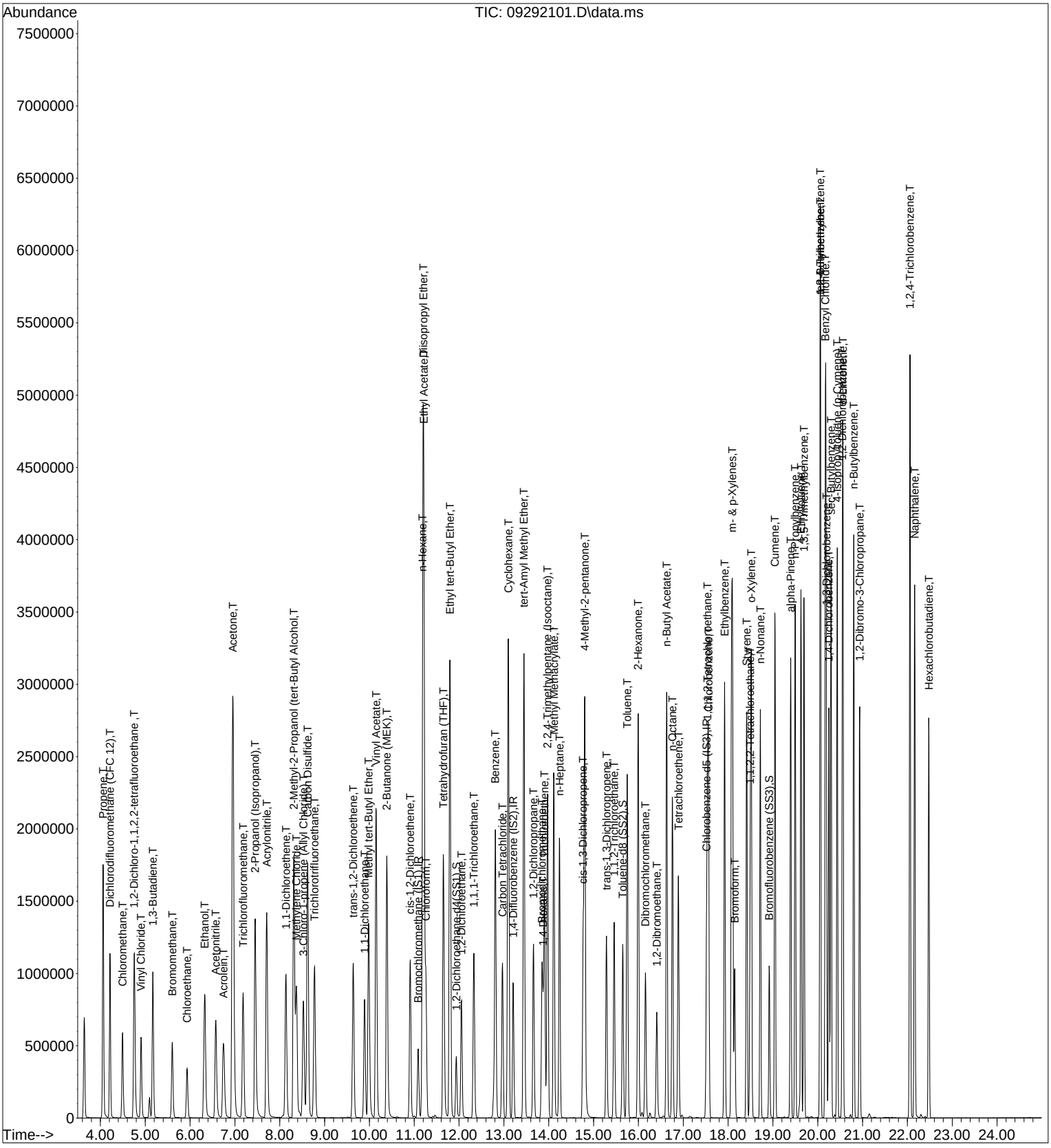
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
51) n-Heptane	14.24	71	515011	21.682	ng		92
52) cis-1,3-Dichloropropene	14.77	75	876299	23.577	ng		100
53) 4-Methyl-2-pentanone	14.80	58	1034362	49.311	ng		81
54) trans-1,3-Dichloropropene	15.29	75	851970	23.907	ng		100
55) 1,1,2-Trichloroethane	15.46	97	514228	23.407	ng		97
58) Toluene	15.75	91	2073803	25.050	ng		100
59) 2-Hexanone	15.99	43	2188977	46.936	ng		87
60) Dibromochloromethane	16.16	129	682756	29.916	ng		100
61) 1,2-Dibromoethane	16.41	107	627122	27.685	ng		100
62) n-Butyl Acetate	16.63	43	2447658	47.809	ng		91
63) n-Octane	16.76	57	507493	26.307	ng		97
64) Tetrachloroethene	16.89	166	636483	27.672	ng		100
65) Chlorobenzene	17.56	112	1395027	26.869	ng		100
66) Ethylbenzene	17.92	91	2432996	25.551	ng		96
67) m- & p-Xylenes	18.09	91	3789406	50.758	ng		95
68) Bromoform	18.15	173	578279	29.922	ng		100
69) Styrene	18.42	104	1560420	28.669	ng		95
70) o-Xylene	18.52	91	1885786	25.242	ng		95
71) n-Nonane	18.72	43	997817	23.004	ng		87
72) 1,1,2,2-Tetrachloroethane	18.49	83	866139	25.242	ng		100
74) Cumene	19.04	105	2503538	26.708	ng		99
75) alpha-Pinene	19.40	93	1321218	27.910	ng		94
76) n-Propylbenzene	19.49	91	2925828	25.544	ng		97
77) 3-Ethyltoluene	19.63	105	2511317	No Calib			
78) 4-Ethyltoluene	19.63	105	2511317	27.962	ng		99
79) 1,3,5-Trimethylbenzene	19.69	105	2052681	26.619	ng		98
80) alpha-Methylstyrene	19.63	118	14405	No Calib		#	
81) 2-Ethyltoluene	19.63	105	2511317	No Calib			
82) 1,2,4-Trimethylbenzene	20.06	105	1953062	26.485	ng		97
83) n-Decane	20.06	58	80173	No Calib		#	
84) Benzyl Chloride	20.17	91	3484115	59.729	ng		94
85) 1,3-Dichlorobenzene	20.19	146	1180709	29.169	ng		100
86) 1,4-Dichlorobenzene	20.25	146	1254820	28.632	ng		100
87) sec-Butylbenzene	20.30	105	2716093	26.544	ng		97
88) 4-Isopropyltoluene (p-...	20.43	119	2345593	27.351	ng		96
89) 1,2,3-Trimethylbenzene	20.30	105	2716093	No Calib			
90) 1,2-Dichlorobenzene	20.55	146	1138640	28.276	ng		100
91) d-Limonene	20.56	68	743664	26.283	ng		93
92) 1,2-Dibromo-3-Chloropr...	20.94	157	901979	55.919	ng		79
93) n-Undecane	21.13	57	816	No Calib		#	
94) 1,2,4-Trichlorobenzene	22.06	180	1829133	54.879	ng		99
95) Naphthalene	22.16	128	3011455	30.720	ng		100
96) n-Dodecane	22.16	57	2069	No Calib		#	
97) Hexachlorobutadiene	22.48	225	592564	25.429	ng		100
98) Cyclohexanone	18.08	55	3073	No Calib			
99) tert-Butylbenzene	20.06	119	1862879	26.266	ng		97
100) n-Butylbenzene	20.80	91	2168046	25.439	ng		97
101) 1,1,1,2-Tetrachloroethane	17.54	131	533025	28.661	ng		100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : I:\MS16\DATA\2021_09\29\09292101.D Vial: 2
Acq On : 29 Sep 2021 18:02 Operator: WA
Sample : CCV R16092921_25ng Inst : GCMS-16
Misc : S34-09132101/S34-09182101 (10/17)

Quant Time: Sep 29 19:02:15 2021
Quant Method : I:\MS16\METHODS\R16091421A.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Mon Sep 20 21:10:50 2021
Response via : Initial Calibration
DataAcq Meth:TO15.M

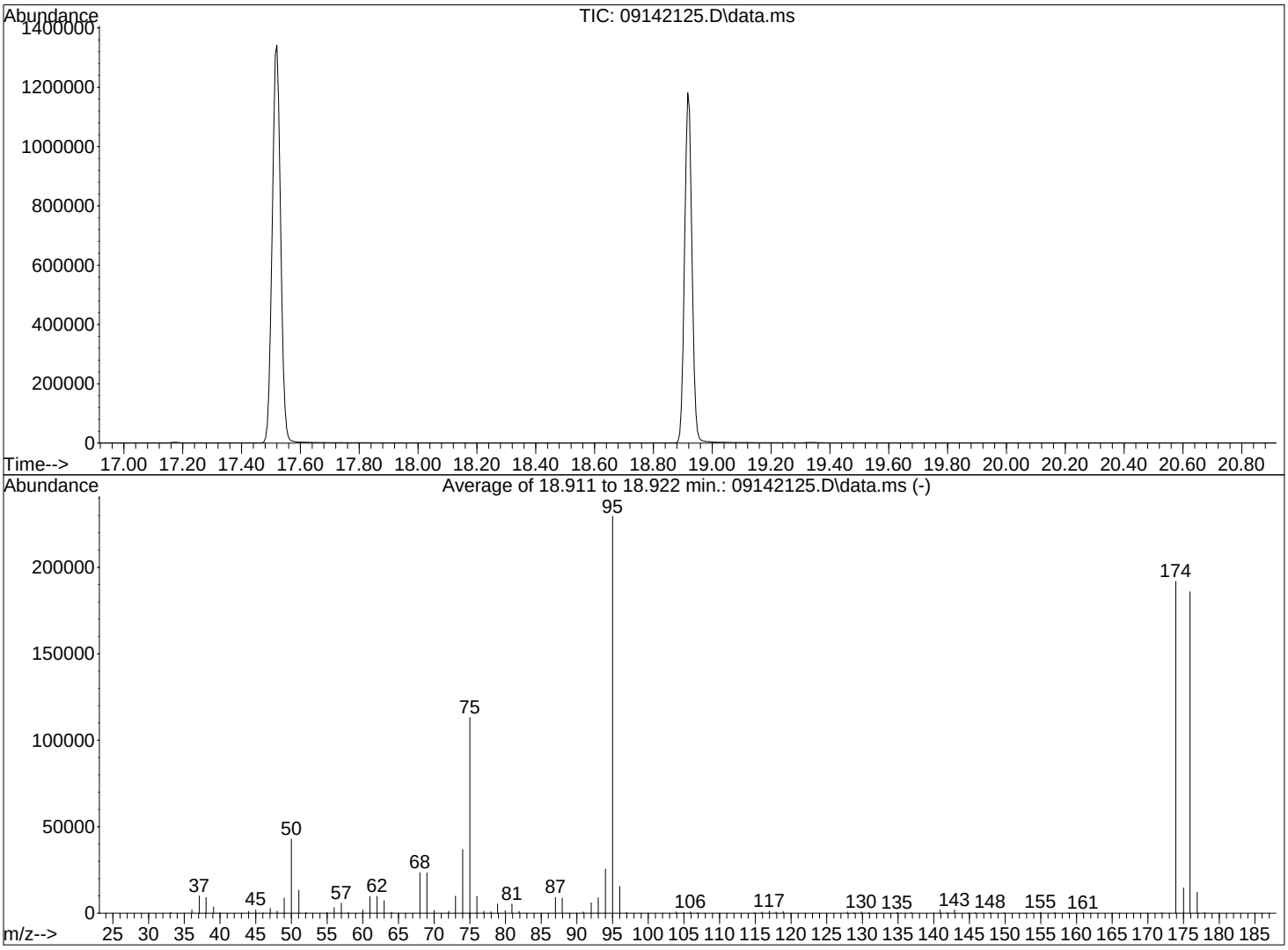


01070766

Data Path : I:\MS16\DATA\2021_09\14\
Data File : 09142125.D
Acq On : 14 Sep 2021 16:26
Operator : WA
Sample : BFB Std
Misc : S34-09132101
ALS Vial : 2 Sample Multiplier: 1

Integration File: LSCINT.P

Method : I:\MS16\METHODS\R16091421A.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Mon Sep 20 21:10:50 2021



AutoFind: Scans 2805, 2806, 2807; Background Corrected with Scan 2798

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	18.7	42888	PASS
75	95	30	66	49.3	113109	PASS
95	95	100	100	100.0	229589	PASS
96	95	5	9	6.7	15494	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	83.6	191915	PASS
175	174	4	9	7.6	14645	PASS
176	174	93	101	96.9	185877	PASS
177	176	5	9	6.5	12145	PASS

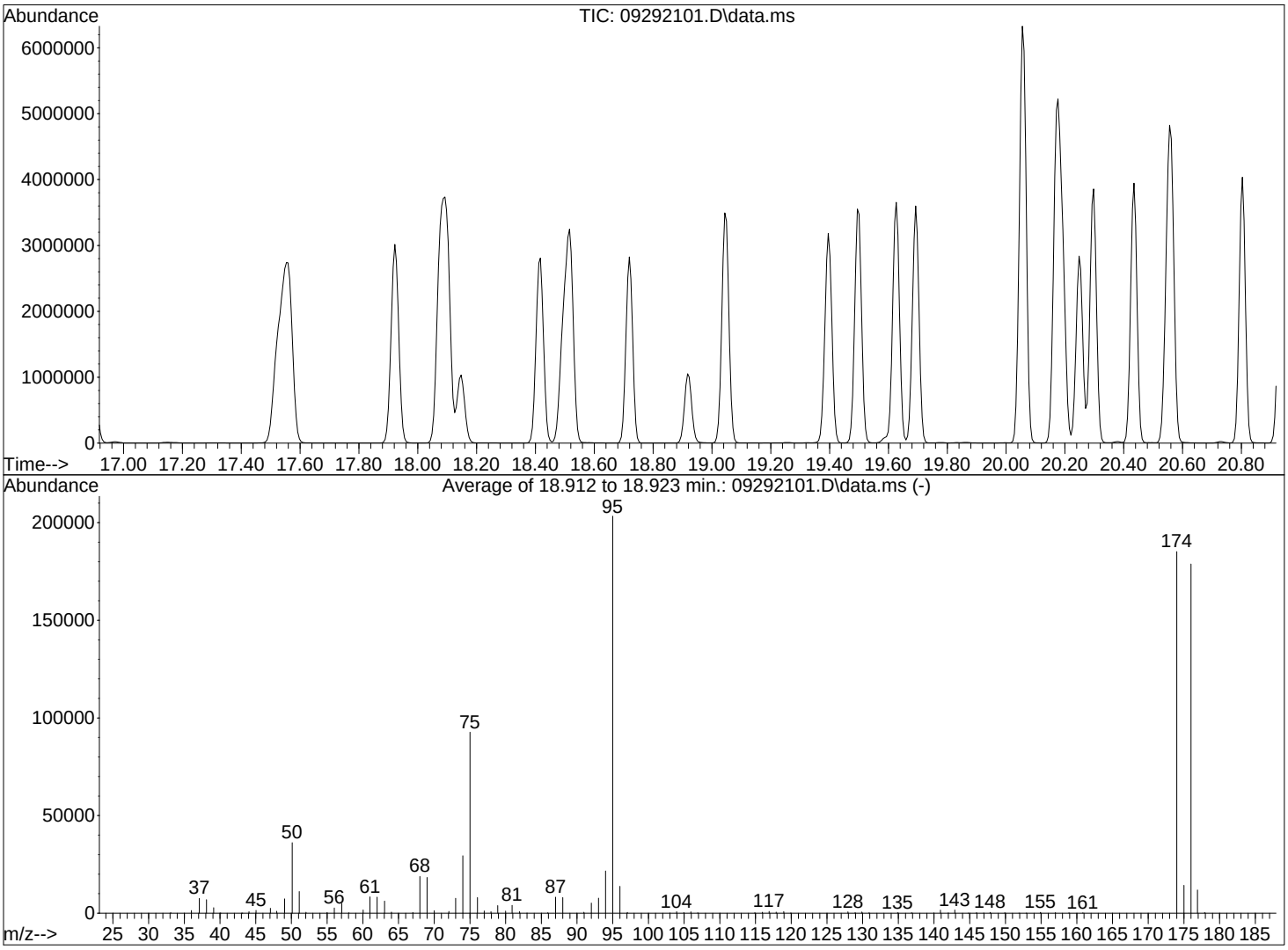
VOA 9/20/21

01070767

Data Path : I:\MS16\DATA\2021_09\29\
Data File : 09292101.D
Acq On : 29 Sep 2021 18:02
Operator : WA
Sample : CCV R16092921_25ng
Misc : S34-09132101/S34-09182101 (10/17)
ALS Vial : 2 Sample Multiplier: 1

Integration File: LSCINT.P

Method : I:\MS16\METHODS\R16091421A.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Mon Sep 20 21:10:50 2021



AutoFind: Scans 2805, 2806, 2807; Background Corrected with Scan 2798

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	17.8	36139	PASS
75	95	30	66	45.6	92693	PASS
95	95	100	100	100.0	203328	PASS
96	95	5	9	6.8	13786	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	91.1	185152	PASS
175	174	4	9	7.7	14261	PASS
176	174	93	101	96.6	178816	PASS
177	176	5	9	6.7	11925	PASS

9/30/21

Injection Log

Directory: J:\MS16\DATA\2021_09\14\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Vial	Comment
17	9/14/21 16:26	09142125.D	BFB Std	S34-09132101	WA	2	*Passed*
18	9/14/21 17:10	09142126.D	0.1ng R16091421 ICAL Std	S34-09132101/S34-09102105 (10/9)	WA	4	
19	9/14/21 17:44	09142127.D	0.2ng R16091421 ICAL Std	S34-09132101/S34-09102105 (10/9)	WA	4	
20	9/14/21 18:18	09142128.D	0.5ng R16091421 ICAL Std	S34-09132101/S34-09102105 (10/9)	WA	16	*rerun*
21	9/14/21 18:52	09142129.D	1.0ng R16091421 ICAL Std	S34-09132101/S34-09102104 (10/9)	WA	16	
22	9/14/21 19:26	09142130.D	5.0ng R16091421 ICAL Std	S34-09132101/S34-09102104 (10/9)	WA	16	
23	9/14/21 20:00	09142131.D	25ng R16091421 ICAL Std	S34-09132101/S34-09082103 (10/6)	WA	2	
24	9/14/21 20:34	09142132.D	50ng R16091421 ICAL Std	S34-09132101/S34-09082103 (10/6)	WA	2	*R16091421A.M*
25	9/14/21 21:08	09142133.D	100ng R16091421 ICAL Std	S34-09132101/S34-09082103 (10/6)	WA	2	
26	9/14/21 21:42	09142134.D	Blank	S34-09132101	WA	2	
27	9/14/21 22:16	09142135.D	0.5ng R16091421 ICAL Std	S34-09132101/S34-09102105 (10/9)	WA	4	
28	9/14/21 22:50	09142136.D	25ng R16091421 ICV Std	S34-09132101/S34-09092102 (10/8)	WA	2	*Passed*
29	9/14/21 23:24	09142137.D	25ng R16091421 ICV Std	S34-09132101/S34-09092102 (10/8)	WA	2	*Passed*
	R16091421A.M : good for low level compounds, ranges from 0.1ng --> 100ng except: chloromethane: from 0.1ng --> 50ng, DIPE: 0.2ng--> 50ng						
	acetonitrile, tert-Butanol , hexane, benzyl chloride from 0.2ng --> 100ng, Vinyl Ac. :from 2.5ng --> 500ng and Ethyl Ac : from 0.4ng --> 200ng						

9/21/21

Injection Log

01070769

Directory: I:\MS16\DATA\2021_09\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Vial	Comment
1	9/29/21 18:02	09292101.D	CCV R16092921_25ng	S34-09132101/S34-09182101 (10/17)	WA	2	*Passed*
2	9/29/21 18:36	09292102.D	RL R16092921_0.5ng	S34-09132101/S34-09182101 (10/17)	WA	16	
3	9/29/21 19:11	09292103.D	MB R16092921_1000mL	S34-09132101	WA	2	*Passed*
4	9/29/21 19:45	09292104.D	P2104828-002 (400mL)	S34-09132101	WA	7	
5	9/29/21 20:20	09292105.D	P2104828-003 (400mL)	S34-09132101	WA	8	
6	9/29/21 20:54	09292106.D	P2104828-004 (400mL)	S34-09132101	WA	9	
7	9/29/21 21:28	09292107.D	LCS R16092921_25ng	S34-09132101/S34-09242103 (10/23)	WA	2	*Passed*
8	9/29/21 22:02	09292108.D	LCSD R16092921_25ng	S34-09132101/S34-09242103 (10/23)	WA	2	*Passed*
9	9/29/21 22:37	09292109.D	P2104969-001 (1000mL)	S34-09132101	WA	4	
10	9/29/21 23:13	09292110.D	P2104969-002 (1000mL)	S34-09132101	WA	12	
11	9/29/21 23:47	09292111.D	P2104919-001 (400mL)	S34-09132101	WA	11	
12	9/30/21 0:21	09292112.D	P2104927-001 (150mL)	S34-09132101	WA	1	
13	9/30/21 0:55	09292113.D	P2104927-001dil (30mL)	S34-09132101	WA	1	
14	9/30/21 1:29	09292114.D	P2104927-002 (150mL)	S34-09132101	WA	3	
15	9/30/21 2:03	09292115.D	P2104927-002dil (30mL)	S34-09132101	WA	3	
16	9/30/21 2:38	09292116.D	P2104927-004 (1000mL)	S34-09132101	WA	6	
17	9/30/21 3:13	09292117.D	P2105029-001 (1000mL)	S34-09132101	WA	10	
18	9/30/21 3:49	09292118.D	P2105029-002 (1000mL)	S34-09132101	WA	13	
19	9/30/21 4:24	09292119.D	P2105029-003 (1000mL)	S34-09132101	WA	14	
20	9/30/21 4:59	09292120.D	P2105029-004 (1000mL)	S34-09132101	WA	15	
21	9/30/21 5:53	09292121.D	P2104828-001 (6.0mL)	S34-09132101	WA	5	
22	9/30/21 6:27	09292122.D	P2104828-005 (4.5mL)	S34-09132101	WA	5	
23	9/30/21 7:00	09292123.D	P2104828-006 (1.75mL)	S34-09132101	WA	5	
24	9/30/21 7:45	09292124.D	P2105029-005 (1000mL)	S34-09132101	WA	13	
25	9/30/21 8:19	09292125.D	CCVend R16092921_25ng	S34-09132101/S34-09182101 (10/17)	WA	2	*Passed*

WA 9/30/21

Comprehensive Land Use Control (LUC) Management Plan

Former Longhorn Army Ammunition Plant (LHAAP)
Karnack, Texas

Date: December 17, 2021

COMPREHENSIVE LUC & NOTIFICATION MANAGEMENT PLAN REVISION LOG

Fiscal Year	Date	Reason for Revision	Approved*		
			Army	EPA	TCEQ
Original	9-13-07	N/A			
2008		None Required			
2009		None Required			
2010		None Required			
2011		None Required			
2012	2-4-13	Add LHAAP-06,-07,-08,-35/36,-35B (37)/67, -46, -49, -50,-51,-55,-35A (58),-59,-60,-66,-68, Pistol Range, LHAAP-001-R-01 and LHAAP-003-R-01			
2013	10-1-13	None Required			
2014	12-17-14	Add LHAAP-02, -03, -19, -56, -65, -68, -69 and Notices for LHAAP-46, and -67			
2015	9-14-15	Add Notices for LHAAP-35B(37), -50 and -35A(58) (LHAAP-02, -03, -56, -59, -60, -65, -68, and -69 are contained within the LHAAP-58 LUC boundary)			
2016	10-20-16	None Required			

Fiscal Year	Date	Reason for Revision	Approved*		
			Army	EPA	TCEQ
2017	10-30-17	Add LUCs for LHAAP-16			
2018	9-5-18	Add LUCs and Notices for LHAAP-001-R-01 and LHAAP-003-R-01			
2019	10-3-19	Add LHAAP-04 and LHAAP-17 and Notices for LHAAP-001-R-01 and LHAAP-003-R-01			
2020	9-17-20	None Required			
2021	12-06-21	Add Notices for LHAAP-04 and LHAAP-16 Add LUCs for LHAAP-18/24 (Pending) Add LUCs for LHAAP-29 (Pending)	Rose M. Zeiler Digitally signed by Rose M. Zeiler Date: 2021.12.16 05:41:29 -06'00'	BRIAN FOLLIN Digitally signed by BRIAN FOLLIN Date: 2021.12.15 16:26:55 -06'00'	April Palmie Digitally signed by April Palmie Date: 2021.12.15 16:00:36 -06'00'

* Approval by all three parties required during the first quarter of each fiscal year.

TABLE OF CONTENTS

Revision Log…… .....……..…ii
LUC & Notification Management Plan… 1

List of Sites

LHAAP-02 Vacuum Truck Overnight Parking (LHAAP-02)

Nonresidential Land Use site included within the groundwater use restriction

LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58)

LHAAP-03 Former Waste Collection Pad Building 722-P Paint Shop (LHAAP-03)

Nonresidential Land Use site included within the groundwater use restriction

LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58)

LHAAP-04 Former Pilot Wastewater Treatment Plant (LHAAP-04)

4-1 LUCs from Draft Final Remedial Design

4-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-04 Filed in Public Records of Harrison County, Texas (including survey plat)

4-3 Land Use Control Inspection and Maintenance Checklist

4-4 Annual Land Use Control Compliance Certification Form

4-5 Land Use Control Stakeholder Notice Letters and Attachments

LHAAP-06 Building 54F Solvent (LHAAP-06)

Notice of Nonresidential Land Use for LHAAP-06 Filed in Public Records of Harrison County, Texas (including survey plat)

LHAAP-07 Building 50G Drum Processing (LHAAP-07)

Notice of Nonresidential Land Use for LHAAP-07 Filed in Public Records of Harrison County, Texas (including survey plat)

LHAAP-08 Former Sewage Treatment Plant (LHAAP-08)

Notice of Nonresidential Land Use for LHAAP-08 Filed in Public Records of Harrison County, Texas (including survey plat)

LHAAP-12 Landfill 12 (LHAAP-12)
12-1 LUC Inspection and Maintenance Log
12-2 LUCs from Final Remedial Design Addendum
12-3 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-12 Filed in Public Records of Harrison County, Texas (including survey plat)
12-4 Land Use Control Compliance Inspection Form
LHAAP-16 Old Landfill (LHAAP-16)
16-1 LUCs from Draft-Final Remedial Design
16-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-16 Filed in Public Records of Harrison County, Texas (including survey plat)
16-3 Land Use Control Inspection and Maintenance Checklist
16-4 Annual Land Use Control Compliance Certification Form
16-5 Land Use Control Stakeholder Notice Letters and Attachments
LHAAP-17 Burning Ground No. 2/ Flashing Area (LHAAP-17)
17-1 RAO Inspection and Maintenance Checklist
17-2 LUCs from Draft Final Remedial Design
17-3 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-17 Filed in Public Records of Harrison County, Texas (including survey plat) (Pending)
17-4 Land Use Control Compliance Inspection Form
LHAAP-18/24 Burning Ground No. 3 (LHAAP-18/24)
18-1 LUCs from Remedial Design (Pending)
LHAAP-19 Construction Materials Landfill (LHAAP-19)
Notice of Nonresidential Land Use at LHAAP-19, Filed in the Public Records of Harrison County, Texas (including survey plat)
LHAAP-29 Former Trinitrotoluene Production Area, Group 2 (LHAAP-29)
29-1 LUCs from Remedial Design (Pending)

LHAAP-35/36 Sumps and Waste Rack Sumps (LHAAP-35/36)
Notice of Nonresidential Land Use at Sumps/Waste Rack Sump locations (LHAAP-35/36) Filed in Public Records of Harrison County, Texas (including survey plat)
LHAAP-37 Chemical Laboratory (LHAAP-35B (37))
37-1 LUCs from Final Remedial Design
37-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-35B (37) Filed in Public Records of Harrison County, Texas (including survey plat)
37-3 Land Use Control Compliance Inspection Form
LHAAP-46 Plant 2 Area (LHAAP-46)
46-1 LUCs from Final Remedial Design
46-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-46 Filed in Public Records of Harrison County, Texas (including survey plat)
46-3 Land Use Control Compliance Inspection Form
LHAAP-49 Former Acid Storage Area (LHAAP-49)
Notice of Nonresidential Land Use for LHAAP-49 Filed in Public Records of Harrison County, Texas (including survey plat)
LHAAP-50 Sump Water Storage Tank (LHAAP-50)
50-1 LUCs from Final Remedial Design
50-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-50 Filed in Public Records of Harrison County, Texas (including survey plat)
50-3 Land Use Control Compliance Inspection Form
LHAAP-51 Building 60-B Photo Lab (LHAAP-51)
Notice of Nonresidential Land Use at LHAAP-51 Filed in Public Records of Harrison County, Texas (including survey plat)
LHAAP-55 Septic Tanks (LHAAP-55)
Notice of Nonresidential Land Use at Septic Tank locations Filed in Public Records of Harrison County, Texas (including survey plat)

LHAAP-56 Grease Rack (LHAAP-56)
Nonresidential Land Use site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58)
LHAAP-58 Shops Area (LHAAP-35A (58))
58-1 LUCs from Final Remedial Design
58-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-35A (58) Filed in Public Records of Harrison County, Texas (including survey plat)
58-3 Land Use Control Compliance Inspection Form
LHAAP-59 Former Pesticide Storage Building 725 (LHAAP-59)
Notice of Nonresidential Land Use for LHAAP-59 Filed in Public Records of Harrison County, Texas (including survey plat)
Site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58)
LHAAP-60 Former Storage Building 411 & 714 (LHAAP-60)
Notice of Nonresidential Land Use at LHAAP-60 Filed in Public Records of Harrison County, Texas (including survey plat)
Building 714 included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58)
LHAAP-64 Transformer Storage (LHAAP-64)
Notice of Nonresidential Land Use at LHAAP-64 Filed in Public Records of Harrison County, Texas (including survey plat)
LHAAP-65 Flammable Materials Storehouse Building 209 (LHAAP-65)
Nonresidential Land Use site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58)
LHAAP-66 405-L Transformer Yard (LHAAP-66)
Notice of Nonresidential Land Use at LHAAP-66 Filed in Public Records of Harrison County, Texas (including survey plat)

LHAAP-67 Aboveground Storage Tank Farm (LHAAP-67)
67-1 LUCs from Final Remedial Design
67-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-67 Filed in Public Records of Harrison County, Texas (including survey plat)
67-3 Land Use Control Compliance Inspection Form
LHAAP-68 Transformer Storage (LHAAP-68)
Notice of Nonresidential Land Use at LHAAP-68 Filed in Public Records of Harrison County, Texas (including survey plat)
Site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58)
LHAAP-69 Service Station Underground Storage Tank (LHAAP-69)
Nonresidential Land Use site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58)
Pistol Range
Notice of Nonresidential Land Use at Pistol Range Filed in Public Records of Harrison County, Texas (including survey plat)
LHAAP-001-R-01/LHAAP-003-R-01 **South Test Area (LHAAP-001-R-01) and Ground Signal Test Area (LHAAP-003-R-01)**
MMRP-1 Long Term Management Inspection and Maintenance Checklist
MMRP-2 LUCs from Final Remedial Design
MMRP-3 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-001-R-01 and LHAAP-003-R-01 Filed in Public Records of Harrison County, Texas (including survey plat)
MMRP-4 Land Use Control Compliance Inspection Form

Table 1 Summary of Land Use Controls and Notifications

Figure 1 Sites with Land Use Controls

Figure 2 Sites with Nonresidential Use Notifications

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Appendix A GSA Transfer Letters

Comprehensive Land Use Control (LUC) & Notification Management Plan, Former Longhorn Army Ammunition Plant (LHAAP), Texas

The purpose of this management plan is to ensure that all site-specific LUCs are compiled into one comprehensive location for both pre-transfer and post-transfer use. Additionally, all nonresidential use notifications required under 30 TAC §335.560(b) are included. This management plan shall be accessible to the property owner, regulators, local government, and the public and will accompany LHAAP's Administrative Record. This plan will be updated as LUC and notification requirements for additional environmental sites are identified; the revision number, date, reason for revision, and author will be documented in the Revision Log. As a document control measure, an annual approval by the three FFA parties, Army, EPA and TCEQ within the first quarter of the fiscal year will confirm the effective date. This approval is required whether or not a revision took place.

Land Use Controls

Land use controls (LUCs) include any type of physical, legal, or administrative mechanism that restricts the use of, or limits access to, real property. LUCs may be a component of an interim or final remedy selected under CERCLA and used to protect human health, the environment, and/or the integrity of an engineered remedy. The LUC performance objectives are established in the site-specific Record of Decision (ROD). The specific LUCs and implementation details are outlined in the corresponding site-specific Remedial Design (RD), a primary document of the Federal Facilities Agreement.

The land use control area is depicted on Figure 1, the site-specific performance objectives and LUCs are presented in Table 1, and the site-specific section contains a LUC Inspection and Maintenance Log, a copy of an approved LUC Remedial Design, Notice of Land Use Controls (including a survey plat) filed in Harrison County public records, and LUC compliance inspection form. Upon USEPA and TCEQ approval of each LUC RD, the LUC requirements will be effective immediately and this management plan will be updated. Once property is transferred, the plan will be amended to include a copy of the transfer letter describing specific LUC obligations assigned to the transferee.

LUCs will remain in place until applicable or relevant and appropriate requirements (ARARs) as established in accordance with the NCP (40 CFR 300) are met; or in the case of a landfill remedy it will remain in place for perpetuity unless otherwise removed by the U.S. Army per agreement with the USEPA and TCEQ. The continued effectiveness of the selected remedy, including LUCs, will be evaluated with the CERCLA 121(c) five-year review process.

Notifications

The future anticipated use of LHAAP is industrial/refuge and is, therefore, consistent with a nonresidential/industrial reuse under the Risk Reduction Rules. As required by 30 TAC §335.560(b) and in accordance with 30 TAC §335.566, a notification must be filed in the Harrison County records stating that the land is considered suitable for future non-residential use. Limited monitoring will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of the sites is consistent with the non-residential use. The non-residential use notification will remain in place until it is demonstrated that the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.

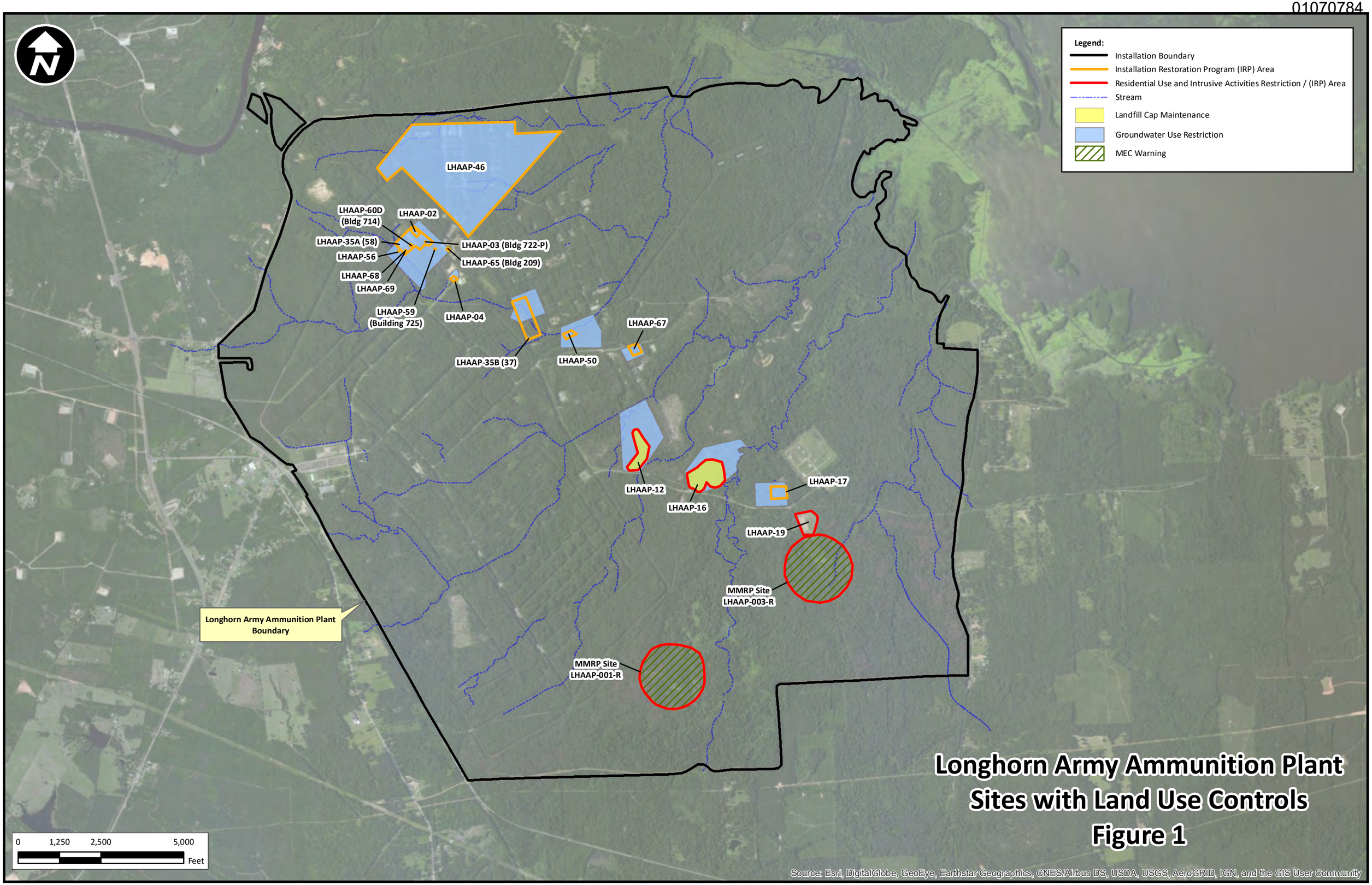
Table 1 –Summary of Land Use Controls and Notifications

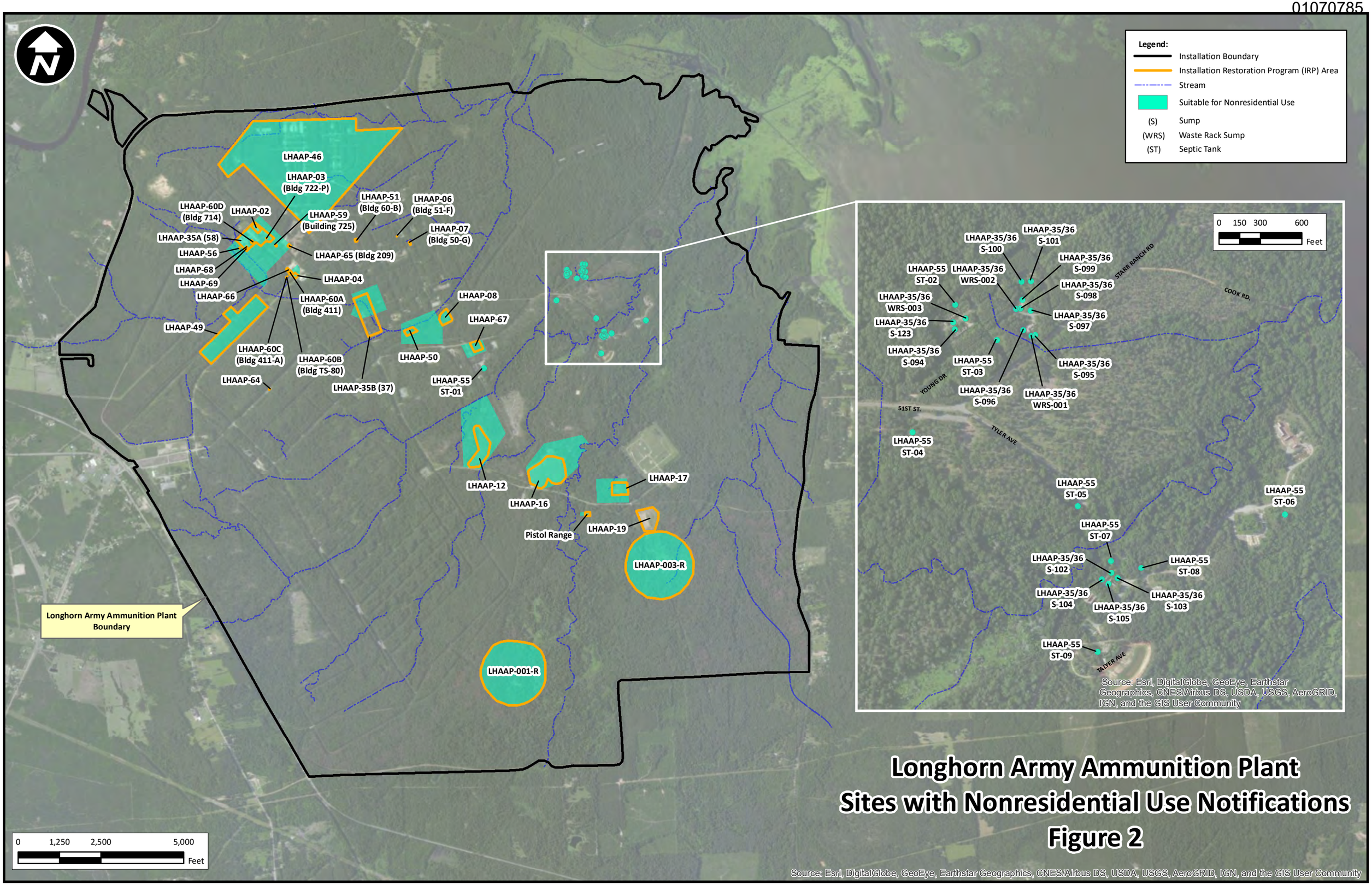
Site Name	**Transfer Documents**		**Decision Documents**		**Land Use Controls**					**Notifications**
IRP MMRP* LHAAP-	GSA Transfer To USFWS	ECP/ ECOP	ROD	DD	Groundwater Use Restriction	Nonresidential Land Use Restriction	Intrusive Activities Prohibition	MEC Warning	Landfill Cap Maintenance	Nonresidential Use Notification
2					**					**
3					**					**
4			2016		√	√				√
6				2008						√
7				2008						√
8	2015	VI		2008						√
12	2014	V	2007		√	Cap Only	Cap Only		√	√
16			2016		√	√	Cap Only		√	√
17			2016		√	√				√
18/24			2019		√	√				√
19		VII		2014		Cap Only	Cap Only			√
29			2019		√	√				√
35/36	2015	VI		2010						√
37			2010		√					√
46			2010		√					√
49	2015	VI	2010							√
50			2010		√					√
51				2008						√
55	2015	VI		2008						√
56				2014	**					**
58			2010		√					√
59				2008	**					√
60				2008	**					√

Site Name	Transfer Documents		Decision Documents		Land Use Controls					Notifications
IRP MMRP* LHAAP-	GSA Transfer To USFWS	ECP/ ECOP	ROD	DD	Groundwater Use Restriction	Nonresidential Land Use Restriction	Intrusive Activities Prohibition	MEC Warning	Landfill Cap Maintenance	Nonresidential Use Notification
64				2008						√
65				2014	**					**
66				2008						√
67			2010							√
68				2008	**					√
69				2014	**					**
Pistol Range		VII	2010							√
001-R-01/003-R-01		VII	2016			√	√	√		√

** Nonresidential Land Use site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)-see LHAAP-35A(58)

FIGURES


Legend:
Installation Boundary
Installation Restoration Program (IRP) Area
Residential Use and Intrusive Activities Restriction / (IRP) Area
Stream
Landfill Cap Maintenance
Groundwater Use Restriction
MEC Warning
LHAAP-46
LHAAP-60D (Bldg 714)
LHAAP-02
LHAAP-35A (58)
LHAAP-03 (Bldg 722-P)
LHAAP-56
LHAAP-65 (Bldg 209)
LHAAP-68
LHAAP-69
LHAAP-59 (Building 725)
LHAAP-04
LHAAP-67
LHAAP-35B (37)
LHAAP-50
LHAAP-12
LHAAP-16
LHAAP-17
LHAAP-19
MMRP Site LHAAP-003-R
MMRP Site LHAAP-001-R
Longhorn Army Ammunition Plant Boundary
0 1,250 2,500 5,000
Feet
Longhorn Army Ammunition Plant
Sites with Land Use Controls
Figure 1
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Longhorn Army Ammunition Plant
Sites with Nonresidential Use Notifications
Figure 2

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

LHAAP – 04, 4-1
LUCs FROM DRAFT FINAL REMEDIAL DESIGN

Date December 17, 2021

Draft Final
Remedial Design and Remedial Action Work Plan, LHAAP-04 Former Pilot Wastewater Treatment Plant

Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for U.S. Army Corps of Engineers, Tulsa District
Contracting Division
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Contract No. W9128F-13-D-0012
Task Order No. W9128BV17F0150
Project No. 501032
Rev 0
April 2019

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Acronyms and Abbreviations

µg/L	micrograms per liter
APTIM	Aptim Federal Services, LLC
Bhate	Bhate Environmental Associates, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COC	constituent of concern
DAP	diammonium phosphate
DNAPL	dense non-aqueous phase liquid
DO	dissolved oxygen
DPT	direct-push technology
ECP	Environmental Condition of Property
EDS-ER™	Electron Donor Solution – Extended Release
EPA	see USEPA
EVO	emulsified vegetable oil
ft bgs	feet below ground surface
GPS	global positioning system
GWTP	groundwater treatment plant
ISB	in situ bioremediation
IWWP	Installation-Wide Work Plan
Jacobs	Jacobs Engineering Group, Inc.
LHAAP	Longhorn Army Ammunition Plant
LOE	lines of evidence
LTM	long-term monitoring
LUC	land use controls
MATOC	Multiple Award Task Order Contract
MCL	maximum contaminant level
MEGA	Multiple Environmental Government Acquisition
MMRP	Military Munitions Response Program
MOA	Memorandum of Agreement
mV	millivolts
NCP	National Contingency Plan
O&M	operation and maintenance
O_2	oxygen
ORP	oxidation-reduction potential

Acronyms and Abbreviations (continued)

PCL	Protective Concentration Level
psi	pounds per square inch
RA	remedial action
RACR	Response Action Completion Report
RA-O	Remedial Action-Operation
RAOs	remedial action objectives
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RD	remedial design
ROD	Record of Decision
ROI	radius of influence
Shaw	Shaw Environmental, Inc.
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TOC	total organic carbon
TRRP	Texas Risk Reduction Program
U.S. Army	U.S. Department of the Army
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

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4.0 LAND USE CONTROLS REMEDIAL DESIGN/PLAN

This section describes the LUC RD for LHAAP-04. In accordance with the Final ROD (AECOM 2016), the LUC RD will be finalized as the land use component of the RD.

Per the Final ROD (AECOM 2016), LUCs' performance objectives are to:

- Prohibit the use of groundwater (except for environmental testing and monitoring) as a potable water source
- Restrict land use to nonresidential
- Maintain the integrity of any current or future remedial or monitoring systems

The implementation, maintenance, and inspection requirements associated with each of the performance objectives that comprise this LUC RD are described below. The proposed actions to be taken to implement the LUC objectives during the RA phase are described in **Section 6.0**. The implementation activities, as well as ongoing maintenance, monitoring and reporting requirements will be presented in the Remedial Action Completion Report (RACR), as the final LUC RD. Upon regulatory review and concurrence with the final LUC RD, it will be included as part of the Comprehensive LUC Management Plan.

For portions of the Site subject to LUCs that are not owned by the Army, the Army will monitor and report on the implementation, maintenance, and enforcement of LUCs, and coordinate with federal, state, and local governments and owners and occupants of properties subject to LUCs. The Army remains responsibility for ensuring that the remedy remains protective of human health and the environment.

4.1 LUC Implementation

The actions required to implement the LUCs for LHAAP-04 are described below. The first of these, the initial notice of LUCs, was completed on June 26, 2017. The June 26, 2017, Notice letters that were sent to relevant government officials (U.S. Army 2017) included a preliminary LUC boundary shown on **Figure 4-1**. The following actions will be undertaken to implement the LUCs for LHAAP-04:

- Finalize the boundary for the LUCs as a part of the RA.
  - Revise the boundary, if necessary, based on perchlorate results from the baseline groundwater sampling. The final boundary of the groundwater LUCs (prevent the use of groundwater contaminated above cleanup levels as a potable water source and prohibit access to the contaminated groundwater except for environmental monitoring and testing only); the remedial or monitoring system

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LUCs (maintain the integrity of any current or future remedial or monitoring systems); and, the nonresidential land use LUC (restrict land use to nonresidential) will be reviewed during RA activities after an evaluation of the baseline data has been completed and revised if necessary.

  - Survey the LUC Boundaries. The boundaries will be finalized after concurrence by USEPA and TCEQ, and the LUC boundaries will be surveyed by a State-licensed surveyor. A legal description of the surveyed areas will be appended to the survey plat.

- Record the LUCs in Harrison County. The LUC plat, legal description and LUC restriction language will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566.
- Notify the Texas Department of Licensing and Regulation of the groundwater LUCs. The Texas Department of Licensing and Regulation will be notified of the groundwater restrictions, which include the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ. The survey plat, legal boundary and description of the groundwater restriction LUCs, in conjunction with a locator map, will be provided in hard and electronic copy.
- Provide notice of the LUCs with the revised LUC boundary.
  - Prepare the notice of the groundwater and soil (surface and subsurface) contamination and any land use restrictions referenced in the ROD. The notice will consist of a brief description of the contaminants in groundwater and soil, a written description of the LUCs and a figure depicting the revised LUC boundary.
  - Transmit the notice to federal, state, and local governments involved at this site and the owners and occupants of the properties subject to those use restrictions and LUCs within 90 days of RACR acceptance by the regulators. The notices will be sent to federal, state and local officials including: both U.S. Senators, U.S. Congressman (Texas District 1), State Senator (District 1), State Representative (District 9), Harrison County Judge, Harrison County Commissioner Precinct 1, City of Uncertain Mayor, Leigh Water Supply Corporation Board Members, Caddo Lake Water Supply Corporation Board of Directors, and the Caddo Lake National Wildlife Refuge Manager.

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4.2 Maintenance and Monitoring Requirements

The LUCs will be maintained in place as follows:

- The LUCs restricting the use of groundwater to environmental monitoring and testing only and the LUC restricting land use to nonresidential will remain in place until the levels of COCs (i.e., including all hazardous substances, pollutants, and contaminants found at the Site at cleanup levels as listed in Table 2-3 of the ROD) in surface and subsurface soil and groundwater allow for unlimited use and unrestricted exposure.
- The LUC to maintain the integrity of any current or future remedial or monitoring systems will remain in place until groundwater cleanup levels of COCs (i.e., including all hazardous substances, pollutants and contaminants found at the Site at cleanup levels as listed in Table 2-3 of the ROD) are met.

Remedial or Monitoring System LUCs include physical components that require repair and maintenance. These are described in **Section 8.0**. The RAO and Extraction System Inspection and Maintenance Checklists is provided in **Appendix E**.

The administrative maintenance required to ensure the LUCs remain in place and effective until the cleanup levels of the COCs are at levels that allow unrestricted use and unlimited exposure are:

- Annual field inspections of the site to confirm that no violations of the LUCs have occurred. Documentation of the inspection will be included in the Inspection and Maintenance Checklist (see **Appendix E**).
- Annual certifications that no LUC-restricted activities have been authorized and that site conditions and use are consistent with the LUCs. The Certification Form is presented in **Appendix E**.
- Periodic transmittal of a LUC Notice to federal, state, and local authorities and to owners and occupants of LHAAP-04. The notice will include the groundwater and soil (surface and subsurface) contamination and any land use restrictions referenced in the ROD, a written description of the LUCs and a figure depicting the LUC boundaries. The transmittal will coincide with each Five-Year Review and will be documented in the report.
- The final LUC RD appendix of the RACR will be added to the Comprehensive LUC Management Plan and the plan will be provided to the owner or occupant of LHAAP-04.

The U.S. Army will address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable.

4.3 LUC Inspection and Monitoring

Beginning with finalization of this RD/RAWP and approval of the Inspection form and the Annual Certification Form, the U.S. Army will undertake inspections and certify continued compliance with the LUC objectives. The U.S. Army, or the transferee after transfer, will retain the LUC Inspection and Certification documents in the project files for incorporation into the five-year review reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the certification, the U.S. Army will provide to USEPA and TCEQ, along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations. The need to continue inspections and certifications will be revisited at five-year reviews.

4.3.1 Notice of Planned Property Conveyances

Upon transfer of Army-owned property, the Army will provide written notice to the transferee of the LHAAP-04 groundwater contamination and any land use restrictions. Within 15 days of transfer, the U.S. Army will provide written notice to USEPA and TCEQ of the division of implementation, maintenance, and enforcement responsibilities unless the information has already been provided in the LUC RD. The notice will describe the mechanism by which the LUC will continue to be implemented, maintained, inspected, reported, and enforced. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental document for transfer. Although the U.S. Army may transfer responsibility for various implementation actions, the U.S. Army will also retain ultimate responsibility for the remedy integrity. This means that the U.S. Army is responsible for addressing substantive violations of the LUC performance objectives that would undermine the U.S. Army's CERCLA remedy. The U.S. Army also will be responsible for incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation. In the event property is transferred out of Federal control, the LUCs relating to property and groundwater restrictions shall be recorded in the deed and shall be enforceable by the United States and the state of Texas.

4.3.2 Opportunity to Review Text of Intended Land Use Controls

The U.S. Army will provide a copy of the groundwater and land use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. USEPA will also receive a copy for review. The U.S. Army will produce an ECP or other environmental document for transfer of LHAAP-04, but before executing transfer, the U.S. Army will provide USEPA and TCEQ with a copy of the ECP or other environmental document for transfer so

that they may have reasonable opportunity, before transfer, to review all LUC-related provisions.

4.3.3 Notification Should Action(s) which Interfere with Land Use Control Effectiveness be Discovered Subsequent to Conveyance

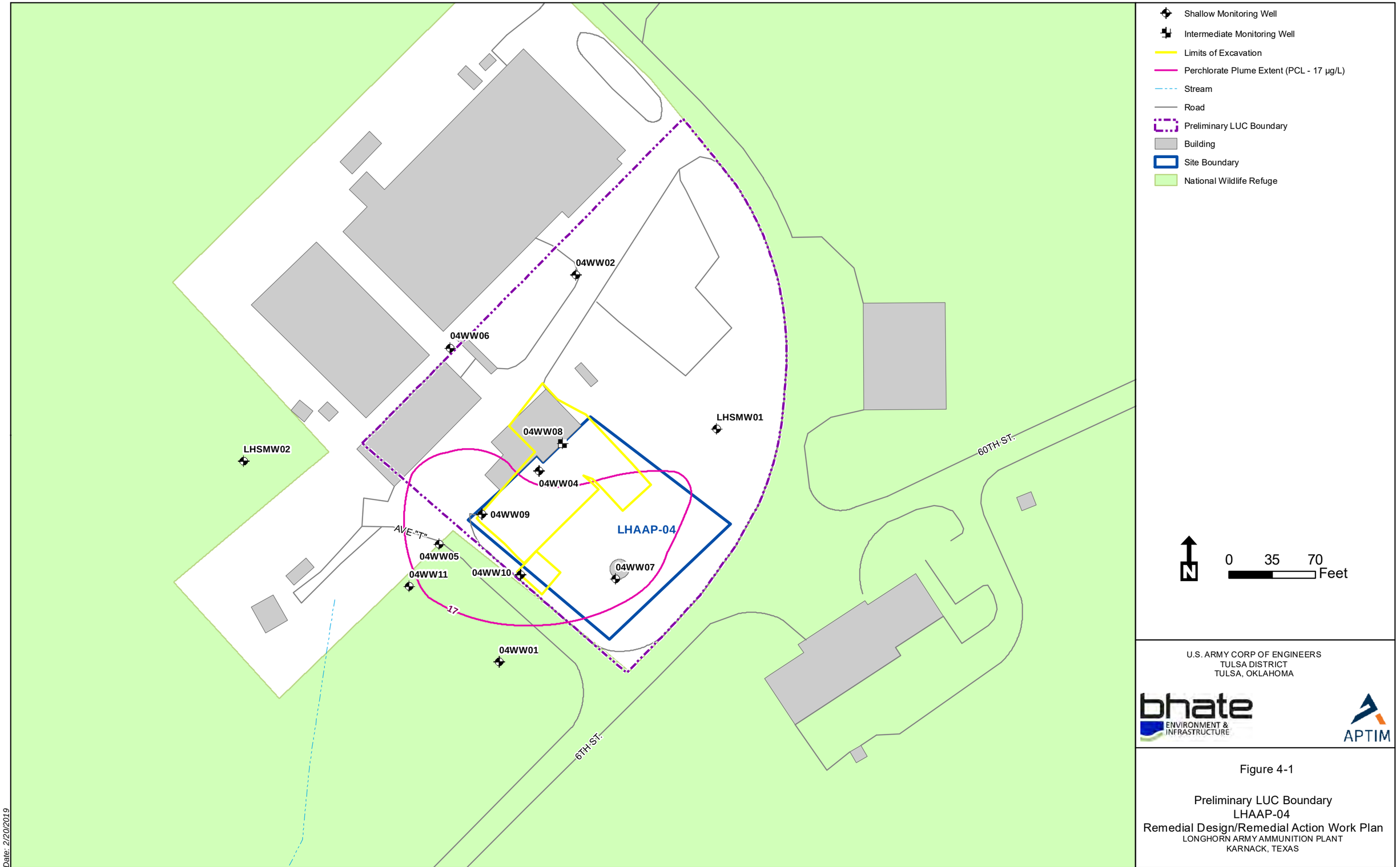
Should the U.S. Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objectives, the U.S. Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 4.3.5** below, the U.S. Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the U.S. Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

4.3.4 Land Use Control Enforcement

Should the LUC remedy reflected in this RD fail, the U.S. Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the USFWS or its lessee, to the institution of judicial action against non-federal third parties. Alternatively, should the circumstances warrant such, the U.S. Army could choose to exercise its response authorities under CERCLA. Should the U.S. Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the U.S. Army may notify those agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC.

4.3.5 Modification or Termination of Land Use Controls

The LUCs shall remain in effect until such time as the U.S. Army and USEPA agree that the concentrations of perchlorate in groundwater have met cleanup levels and allow unrestricted use. When this occurs, the LUC will be terminated as needed. The decision to terminate the LUC will be documented consistent with the NCP process for post-ROD changes, potentially including an Explanation of Significant Difference or a Remedial Action Completion Report. If the property has been transferred and a determination by the U.S. Army and USEPA has been made to terminate the LUC, the U.S. Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.



U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

bhate ENVIRONMENT & INFRASTRUCTURE

APTIM

Figure 4-1

Preliminary LUC Boundary
LHAAP-04
Remedial Design/Remedial Action Work Plan
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 2/20/2019

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP04\RD_RAWP\LHAAP04_ProposedLUCBoundary.mxd

LHAAP – 04, 4-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-04 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

Date December 17, 2021

2021-000003203

*** DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT***

NOTICE

8 Pages

FILED AND RECORDED-OPR	CLERKS NOTES
On: 03/22/2021 03:29 PM Document Number: 2021-000003203 Receipt No: 2103298 Amount: $ 50.00 By: Emily Najera, Deputy Elizabeth James, County Clerk Harrison County, Texas	

STATE OF TEXAS

COUNTY OF HARRISON

I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Elizabeth James

Elizabeth James, Harrison County Clerk

Record and Return To:

WILLIAM FOSS
2500 CITY WEST BLVD., SUITE 1700

HOUSTON, TX 77042

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROLS AT LHAAP-04

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is a former pilot wastewater treatment plant, located in the central portion of the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-04. LHAAP was placed on the National Priorities List (NPL) in August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA) and the TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-04 were performed in accordance with the FFA requirements.

Wastewater treatment operations began at LHAAP-04 in 1984. The demolition of the former pilot wastewater treatment facility structures, tanks, and piping, and the disposal of the associated wastes were completed in the summer of 1997 as part of the Resource Conservation and Recovery Act closure of the plant. The final remedy for soil was conducted in 2009 as a Non-Time-Critical Removal Action under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) program. The soil was removed to non-residential levels. The Site was not remediated to levels suitable for unrestricted use. The U.S. Department of the Army issued the Final Record of Decision (ROD) for LHAAP-04 in October 2016, and the ROD was signed by the Army on December 15, 2016, and the U.S. Environmental Protection Agency on March 30, 2017. The Texas Commission on Environmental Quality (TCEQ) issued a letter concurring with the ROD on February 7, 2017. The final remedy selected in the ROD included in-situ bioremediation for perchlorate concentrations in groundwater, long-term monitoring of groundwater, and Land Use Controls (LUCs). The LUCs at LHAAP-04 will ensure protection of human health by restricting groundwater use to environmental monitoring and testing only, requiring only non-residential

use of the site, and maintaining groundwater monitoring systems until levels of contaminants of concern (COCs) allow for unlimited use and unrestricted exposure.

Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E (Room 103. first floor) 12100 Park 35 Circle, Austin, Texas 78753, (512) 239-2900, Monday through Friday 8:00 am to 5:00 pm, or the Administrative Record available at the Marshall Public Library, 300 South Alamo Boulevard, Marshall, Texas 75670, (930) 935-4465, Monday through Friday 9:30AM – 5:30PM.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public on the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-04 site covers an area of approximately 0.44 acres, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in **Exhibit A.** The LUC boundary, which includes the LHAAP-04 site, encompasses a 1.885 acre tract, more or less, as described in **Exhibit A**. The LUC Boundary is also presented in the attached **Figure 1.**

Future use of the parcel is intended as a national wildlife refuge, consistent with non-residential use. For the purposes of this certification, residential land use includes, but is not limited to, single family to multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of education purpose for children/young adults in grades kindergarten through 12. The U.S. Department of the Army has undertaken careful environmental study of the LHAAP-04 site and concluded that the LUCs set forth below are required to ensure protection of human health and the environment:

- Groundwater Use Restriction. The groundwater use restriction boundary consists of the 1.885-acre tract, more or less. Groundwater underlying this land is contaminated with perchlorate. A prohibition of groundwater use (except for monitoring and testing) as a potable source will remain in place until the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.

- Non-Residential Use Restriction. The non-residential use restriction boundary is coincident with the boundary for Groundwater Use Restriction and consists of the 1.885-acre tract, more or less. The site is restricted to nonresidential use until it is demonstrated that surface and subsurface soil and groundwater COCs are at levels that allow for unlimited use and unrestricted exposure.

- Maintain Integrity of Monitoring Systems. The integrity of any current or future remedial or monitoring systems will remain in place until the cleanup levels of COCs in groundwater are met.

III

The owner of this site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIN-ISE-LO (H. Procter)
Program Manager/Analyst
Office of the Deputy Chief of Staff, (DAIN-ISE)
Environmental Division, BRAC Field Branch
600 Army Pentagon
Washington, D.C. 22310-0600

Or

Mr. Thomas A. Lineer
Chief
Office of the Deputy Chief of Staff, (DAIN-ISE)
Environmental Division, BRAC Field Branch
600 Army Pentagon
Washington, D.C. 22310-0600

Rose M. Zeiler
Longhorn AP Site Manager

EXECUTED this the 25th day of Feb., 2021.

BEFORE ME, on this 25th day of Feb 2021, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 25th day of February 2021.

STATE OF ARKANSAS NOTARY PUBLIC
KAREN DAVIS
MY COMMISSION # 12382216
EXPIRES: May 20, 2021
Logan County

Notary Public in and for the State of Arkansas,
County of Logan

Exhibit A

Survey and Legal Plat

G. W. LEWIS SURVEY, A–426
HARRISON COUNTY, TEXAS

Legal Description

All that certain 1.885 acre tract of land contained within Longhorn Army Ammunition Plant, Harrison County, Texas, said 1.885 acre tract more particularly described as follows:

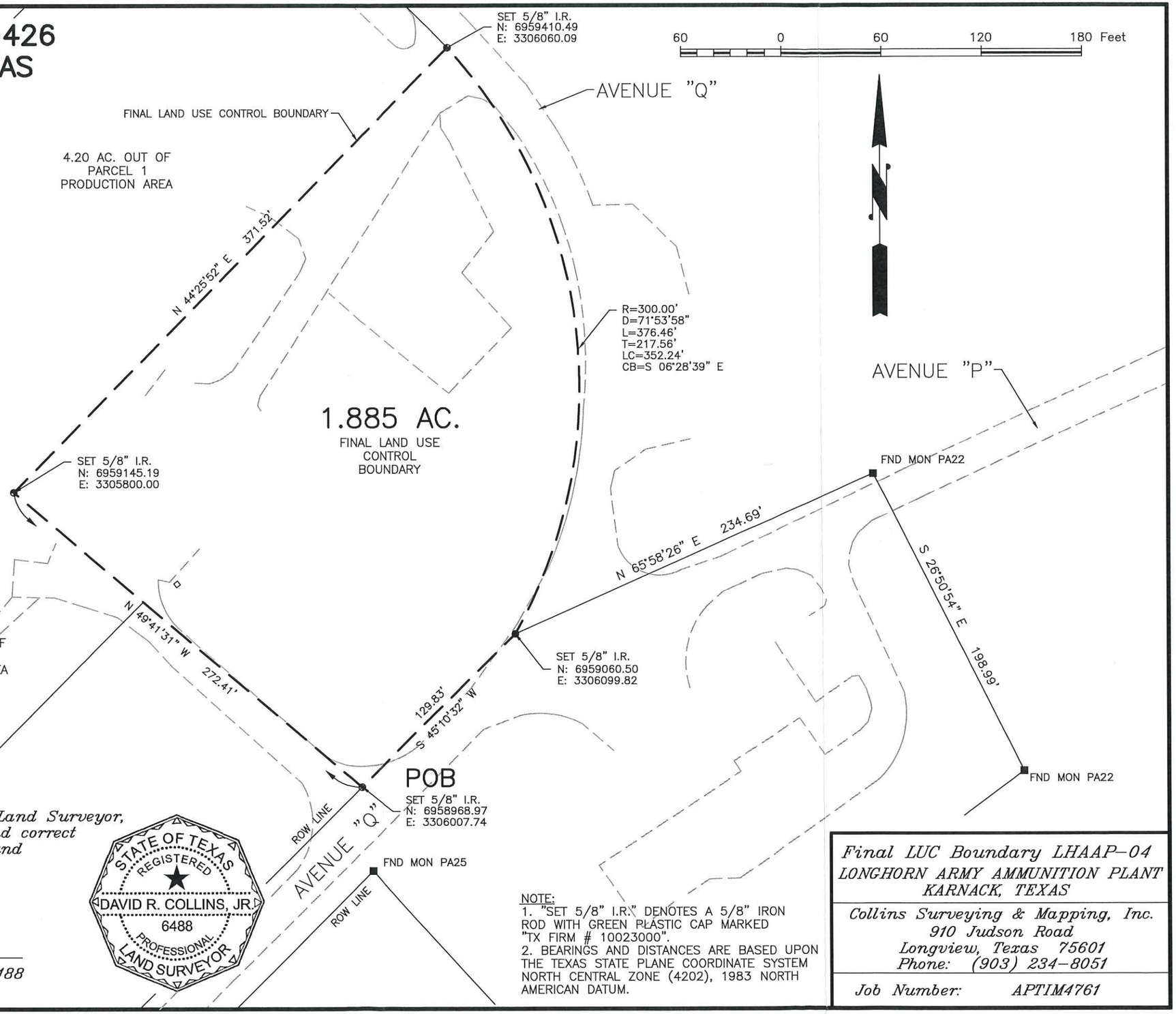
BEGINNING at a 5/8" iron rod set in the northwest right of way line of Avenue "Q" for the southeast corner of this tract with the coordinates of N: 6958968.97, E: 3306007.74;

THENCE: N 49°41'31" W with the southwest line of this tract 272.41 feet to a 5/8" iron rod set for the southwest corner of this tract with the coordinates of N: 6959145.19, E: 3305800.00;

THENCE: N 44°25'52" E with the northwest line of this tract 371.52 feet to a 5/8" iron rod set in the southwest right of way line of said Avenue "Q" for the northwest corner of this tract with the coordinates of N: 6959410.49, E: 3306060.09;

THENCE: in a southweasterly direction with said right of way line and along a cureve to the right having a radius of 300.00 feet, an arc length of 376.46 feet, and a chord bearing and destance of S 06°28'39" 352.24 feet to a 5/8" iron rod set for the end of said curve with the coordinates of N: 6959060.50, E: 3306099.82, from which a monument found in the northwest right of way line of Avenue "P" bears N 65°58'26" E 234.69 feet;

THENCE: S 45°10'32" W with said northwest right of line Avenue "Q" 129.83 feet to th e POINT OF BEGINNING, containing 1.885 acres of land, more or less.



I, David R. Collins, Jr., Reg. Professional Land Surveyor, do hereby certify that this Plat is true and correct according to a survey made upon the ground JANUARY 6, 2021.

STATE OF TEXAS
REGISTERED
DAVID R. COLLINS, JR.
6488
PROFESSIONAL
LAND SURVEYOR

David R. Collins, Jr. *R.P.L.S. #6488*
Firm License #10023000

NOTE:
1. "SET 5/8" I.R." DENOTES A 5/8" IRON ROD WITH GREEN PLASTIC CAP MARKED "TX FIRM # 10023000".
2. BEARINGS AND DISTANCES ARE BASED UPON THE TEXAS STATE PLANE COORDINATE SYSTEM NORTH CENTRAL ZONE (4202), 1983 NORTH AMERICAN DATUM.

Final LUC Boundary LHAAP–04
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Collins Surveying & Mapping, Inc.
910 Judson Road
Longview, Texas 75601
Phone: (903) 234–8051

Job Number: APTIM4761

Figure 1

Final LUC Boundary



U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

bhate APTIM

Figure 1

LHAAP-04
Final LUC Boundary Map

Remedial Action Completion Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 1/11/2021

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP04\RACR\LHAAP04_FinalLUCBoundary.mxd

LHAAP – 04, 4-3

LAND USE CONTROL INSPECTION AND MAINTENANCE CHECKLIST

Date December 17, 2021

LUC Inspection and Maintenance Checklist

General Information	
Project Name	LUC Inspection and Maintenance, LHAAP-04 Longhorn Army Ammunition Plant, Karnack, TX
Contractor	
Inspector's Name	
Inspector's Title	
Inspector's Signature	
Inspector's Contact Number	
Inspection Date	
Type of Inspection	☐ Quarterly ☐ Semiannual ☐ Annual ☐ Prior to forecast rain ☐ After a rain event ☐ Other ----------

A. Groundwater Monitoring Wells						
A.1	Are the installed groundwater monitoring wells in poor condition?					
A.2	Is the well cleared of vegetation and accessible?					
A.3	Any other relevant observations?					
A.4	Are there any significant cracks present?					
A.5	Are there any damaged areas?					

LHAAP – 04, 4-4
ANNUAL LAND USE CONTROL COMPLIANCE CERTIFICATION FORM

Date December 17, 2021

Annual Land Use Control Compliance Certification Form

In accordance with the Remedial Design dated _____ for LHAAP-04 an inspection of the site was conducted by _____ [indicate transferee] on _____.

The land use control mechanisms are:

- Groundwater restrictions - The groundwater underlying LHAAP-04 within the LUC boundary shall not be accessed or used for any purpose (except for environmental monitoring and testing) without the prior written approval of U.S. Army, the USEPA and the TCEQ. The LUC to prohibiting groundwater use shall be implemented and shall remain in place at the site until the levels of contaminants of concern (COCs) in soil and groundwater allow for unlimited use and unrestricted exposure.;
- Land use restrictions - restrict land use within the LUC boundary to nonresidential;
- Integrity of remedial and monitoring systems - maintain the integrity of any current or future remedial or monitoring systems until cleanup goals are met.

No unauthorized activities or uses have occurred. Compliance with land use controls and restrictions is as follows:

- No use of groundwater (other than environmental testing and monitoring), installation of new groundwater wells, or tampering with existing monitoring wells;
- No land use other than nonresidential; and
- No activities that would compromise the integrity of the remedial or monitoring systems.

I, the undersigned, do document that the inspection was conducted as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year, retained in the file and provided to Army, EPA and TCEQ upon request.

LHAAP – 04, 4-5
LAND USE CONTROL STAKEHOLDER NOTICE LETTERS AND ATTACHMENTS

Date December 17, 2021

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Hon. Chad L. Sims
Harrison County Judge
#1 Peter Whetstone Square, Room 314
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Judge Sims,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Attachments:
LHAAP-04 Land Use Controls for Soil and Groundwater Contamination
LHAAP-04 Site Location Map
LHAAP-04 Final Land Use Control Boundary Map
LHAAP-16 Land Use Controls for Soil and Groundwater Contamination
LHAAP-16 Site Location Map
LHAAP-16 Final Land Use Control Boundary Map

Copies furnished:
A. Palmie, TCEQ, Austin, TX
L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Mr. Thomas Speir
Chairman, Harrison County Historical Commission
200 West Houston Street
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Speir,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Longhorn AAP Site Manager

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Copies furnished:
A. Palmie, TCEQ, Austin, TX
L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Mr. William D. Hatfield
Harrison County Commissioner, Precinct 1
Waskom Sub-Courthouse
165 West Texas Avenue
Waskom, Texas 75692

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Commissioner Hatfield,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Sincerely,

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Longhorn AAP Site Manager

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Copies furnished:
A. Palmie, TCEQ, Austin, TX
L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Hon. Judye Patterson
Mayor, City of Uncertain, Texas
P.O. Box 277
Uncertain, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mayor Patterson,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Longhorn AAP Site Manager

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Mr. Eric Duerkop
Manager, Caddo Lake National Wildlife Refuge
15600 Highway 134
Karnack, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Duerkop,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Sincerely,

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Longhorn AAP Site Manager

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Mr. Terry Britt
President, Caddo Lake Water Supply Corporation
P.O. Box 136
Uncertain, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Britt,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Longhorn AAP Site Manager

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Mr. Carl Shelton
President, Leigh Water Supply Corporation
342 Byrd Circle
Karnack, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Shelton,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Longhorn AAP Site Manager

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Rep. Chris Paddie
Texas House of Representatives, District 9
102 West Houston Street
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Representative Paddie,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Sen. Bryan Hughes
Texas State Senate, District 1
201 West Houston Street, Suite 106
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Senator Hughes,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Texas Department of Licensing and Regulation
Water Well Drillers and Pump Installers Program
P.O. Box 12157
Austin, Texas 78711

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Attachments:
LHAAP-04 Land Use Controls for Soil and Groundwater Contamination
LHAAP-04 Site Location Map
LHAAP-04 Final Land Use Control Boundary Map
LHAAP-16 Land Use Controls for Soil and Groundwater Contamination
LHAAP-16 Site Location Map
LHAAP-16 Final Land Use Control Boundary Map

Copies furnished:
A. Palmie, TCEQ, Austin, TX
L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Rep. Louis Gohmert
United States House of Representatives
Texas 1st Congressional District
102 West Houston Street
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Representative Gohmert,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Attachments:
LHAAP-04 Land Use Controls for Soil and Groundwater Contamination
LHAAP-04 Site Location Map
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LHAAP-16 Land Use Controls for Soil and Groundwater Contamination
LHAAP-16 Site Location Map
LHAAP-16 Final Land Use Control Boundary Map

Copies furnished:
A. Palmie, TCEQ, Austin, TX
L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Sen. John Cornyn
United States Senate
Regions Bank Building
100 East Ferguson Street, Suite 1004
Tyler, Texas 75702

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Senator Cornyn,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Attachments:
LHAAP-04 Land Use Controls for Soil and Groundwater Contamination
LHAAP-04 Site Location Map
LHAAP-04 Final Land Use Control Boundary Map
LHAAP-16 Land Use Controls for Soil and Groundwater Contamination
LHAAP-16 Site Location Map
LHAAP-16 Final Land Use Control Boundary Map

Copies furnished:
A. Palmie, TCEQ, Austin, TX
L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Sen. Ted Cruz
United States Senate
305 South Broadway, Suite 501
Tyler, Texas 75702

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Senator Cruz,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Attachments:
LHAAP-04 Land Use Controls for Soil and Groundwater Contamination
LHAAP-04 Site Location Map
LHAAP-04 Final Land Use Control Boundary Map
LHAAP-16 Land Use Controls for Soil and Groundwater Contamination
LHAAP-16 Site Location Map
LHAAP-16 Final Land Use Control Boundary Map

Copies furnished:
A. Palmie, TCEQ, Austin, TX
L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

The following attachments were included with the letters:

LHAAP-04 Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Site Location Map

LHAAP-04 Final Land Use Control Boundary Map

Date December 17, 2021

Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Former Pilot Wastewater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

The Longhorn Army Ammunition Plant (LHAAP) is an inactive government-owned, formerly contractor-operated and maintained Department of Defense facility located in central east Texas in the northeast corner of Harrison County. LHAAP is approximately 14 miles northeast of Marshall, Texas. The facility is approximately 40 miles west of Shreveport, Louisiana. The installation occupies approximately 1,100 of its former 8,416 acres between State Highway 43 at Karnack, Texas and the southwestern shore of Caddo Lake. The installation can be accessed by State Highways 43 and 134.

LHAAP was placed on the National Priorities List (NPL) on August 9, 1990. Activities to remediate contamination began in 1990. After its listing on the NPL, the U.S. Army, the USEPA, and the Texas Water Commission (currently known as the Texas Commission of Environmental Quality [TCEQ]) entered into a CERCLA Section 120 Federal Facilities Agreement (FFA) for remedial activities at LHAAP. The FFA became effective December 30, 1991. LHAAP operated until 1997 when it was placed on inactive status and classified by the U.S. Army Armament, Munitions, and Chemical Command as excess property.

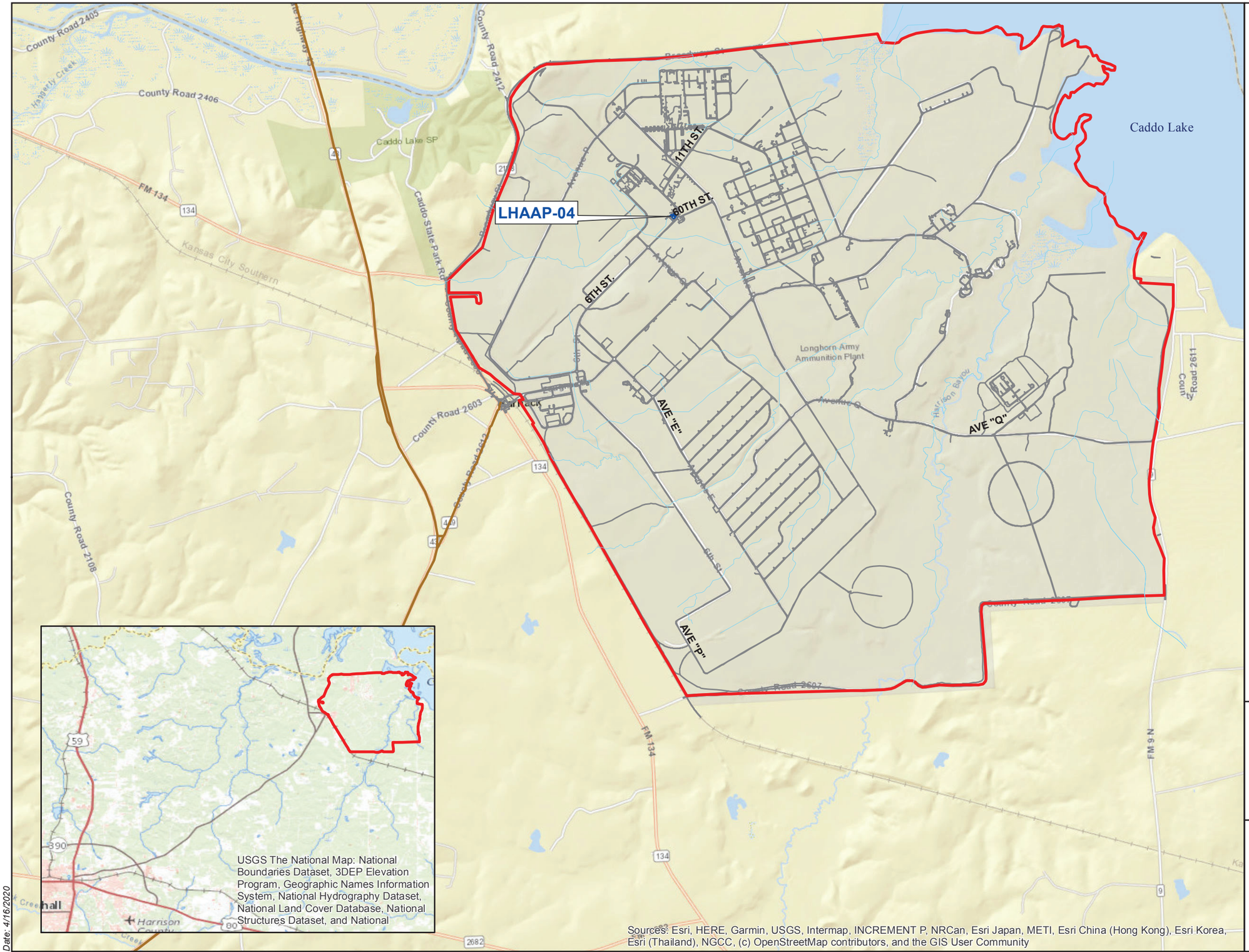
The site addressed in this Final Notice of Land Use Controls is LHAAP-04, which is shown on the attached figures (Figures 1-2 and 1-3 from the Response Action Completion Report) and discussed below. Land Use Controls (LUCs) are applied at LHAAP-04 as part of the remedy in accordance with the LHAAP-04 Record of Decision (ROD) finalized March 30, 2017. The LUCs are necessary because contaminants are present in groundwater at levels that do not support unlimited use and unrestricted exposure. The Final LUC boundary shown is the same as the preliminary boundary that was provided in the Initial Notice of LUCs provided on June 26, 2017.

Contaminants of Concern (COCs)
The only COC identified in the ROD for groundwater at LHAAP-04 was perchlorate, which was found at concentrations exceeding the TCEQ Protective Concentration Levels in the shallow zone.

Land Use Controls

- A LUC prohibiting groundwater use (except for environmental monitoring and testing) shall be implemented and shall remain in place at the site until the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.
- A LUC restricting land use to nonresidential shall be implemented and shall remain in place at the site until the levels of COCs in surface and subsurface soil, and groundwater allow for unlimited use and unrestricted exposure.
- A LUC to maintain the integrity of any current or future remedial or monitoring systems shall remain in place until groundwater cleanup levels of COCs are met.

Further information may be found in the Administrative Record at the Marshall Public Library, at www.longhornaap.com or by contacting Rose M. Zeiler (479-635-0110 or rose.m.zeiler.civ@mail.mil).



U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

bhate APTIM

Figure 1-2

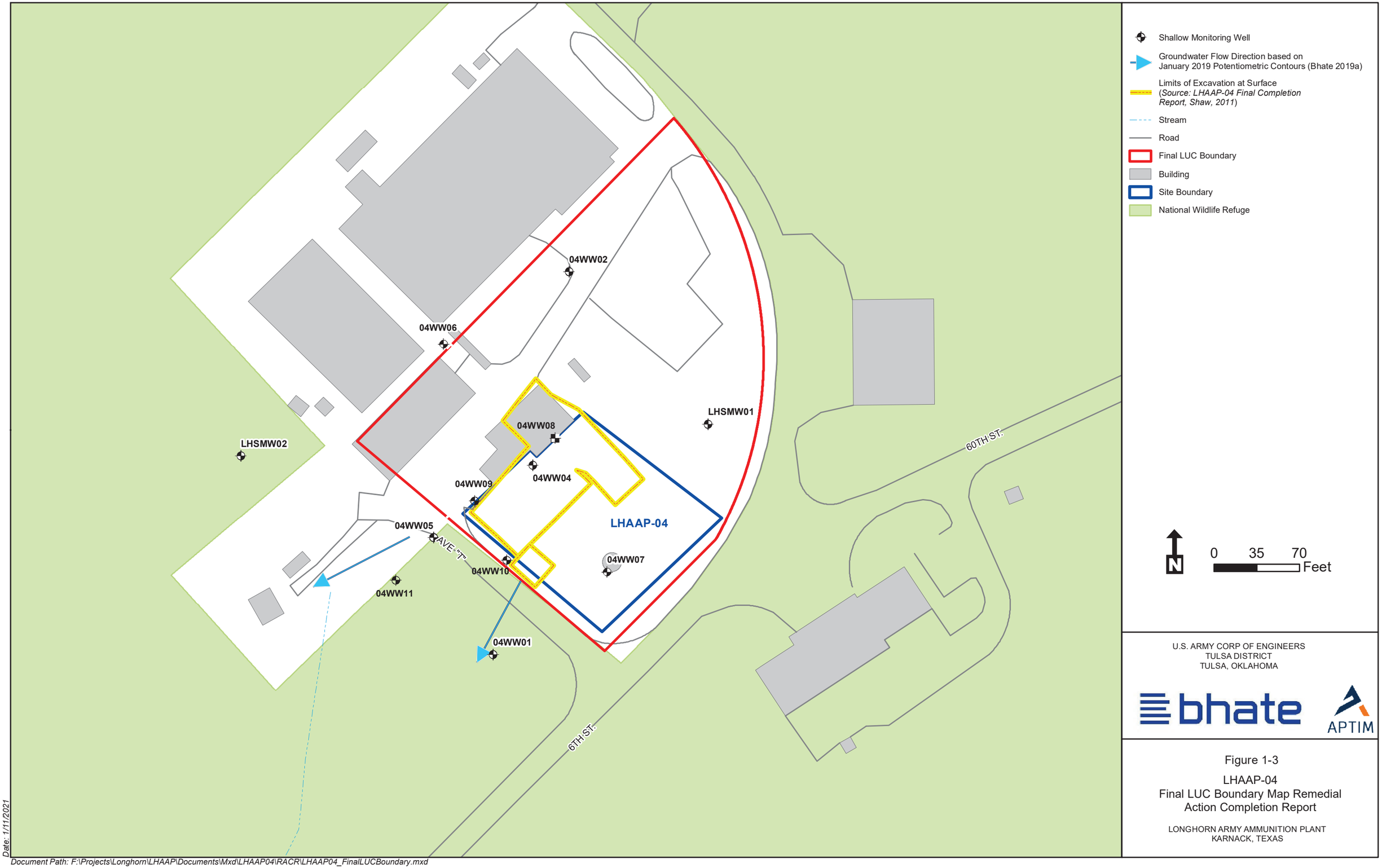
Site Location Map

LHAAP-04
Remedial Action Completion Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 4/16/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP04\RACR\Fig1-2_LHAAP_SiteLocationMap.mxd



U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

bhate APTIM

Figure 1-3

LHAAP-04
Final LUC Boundary Map Remedial Action Completion Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 1/11/2021

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP04\RACR\LHAAP04_FinalLUCBoundary.mxd

LHAAP - 06

NOTICE OF NONRESIDENTIAL LAND USE FOR LHAAP-06 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2010-000005555

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005555 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-06, is the area of a demolished building location known as Building 51-F located within the Plant 3 production area of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-06 is not itself considered an NPL site. Environmental activities at LHAAP-06 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-06 (Building 51-F) was a collection point for waste acids and solvents. Its three-sided shed contained a rack that held a single 55-gallon drum set on a 50-square foot pie-shaped concrete pad. Beginning in 1985, the drum was used to collect waste acids and solvents from bench-scale manufacture of the explosive cyclotetramethylenetetranitramine. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to

5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-06 parcel is 119 square foot, more or less, or 0.00273 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-06 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-06. Contaminants in soil samples from LHAAP-06 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-06 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-06 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
Or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

Notary Public in and for the State of Texas,
County of Harrison

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-06" TRACT
(REMAINS OF DEMOLISHED BUILDING 51-F)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-06" being defined by the four external corners of the three concrete walls remaining at demolished Building 51-F (wall defining the West edge of said building is either gone or never existed) in the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-06" being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "HORSE" (N=6960008.269 feet E=3309591.340 feet). Said traverse indicates a surface distance of 4895.70 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation E.C.C.W. indicates External Corner of Concrete Wall,

Commencing at monument "HORSE" referenced above,

THENCE N 59deg52'55"W 597.03' to an E.C.C.W. found for the S.E.C. of this tract and this POINT OF BEGINNING,

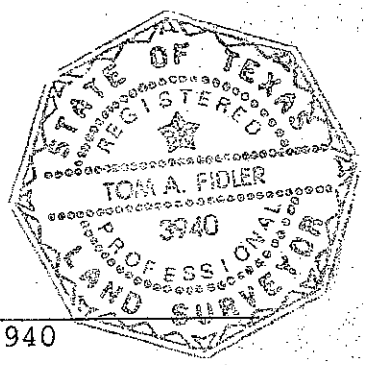
THENCE S 67deg37'19"W 10.93' along the S.B.L. of this tract to an E.C.C.W. found for this tract's S.W.C. ,

THENCE N 22deg14'24"W 10.92' along the W.B.L. of this tract to an E.C.C.W. found for this tract's N.W.C. ,

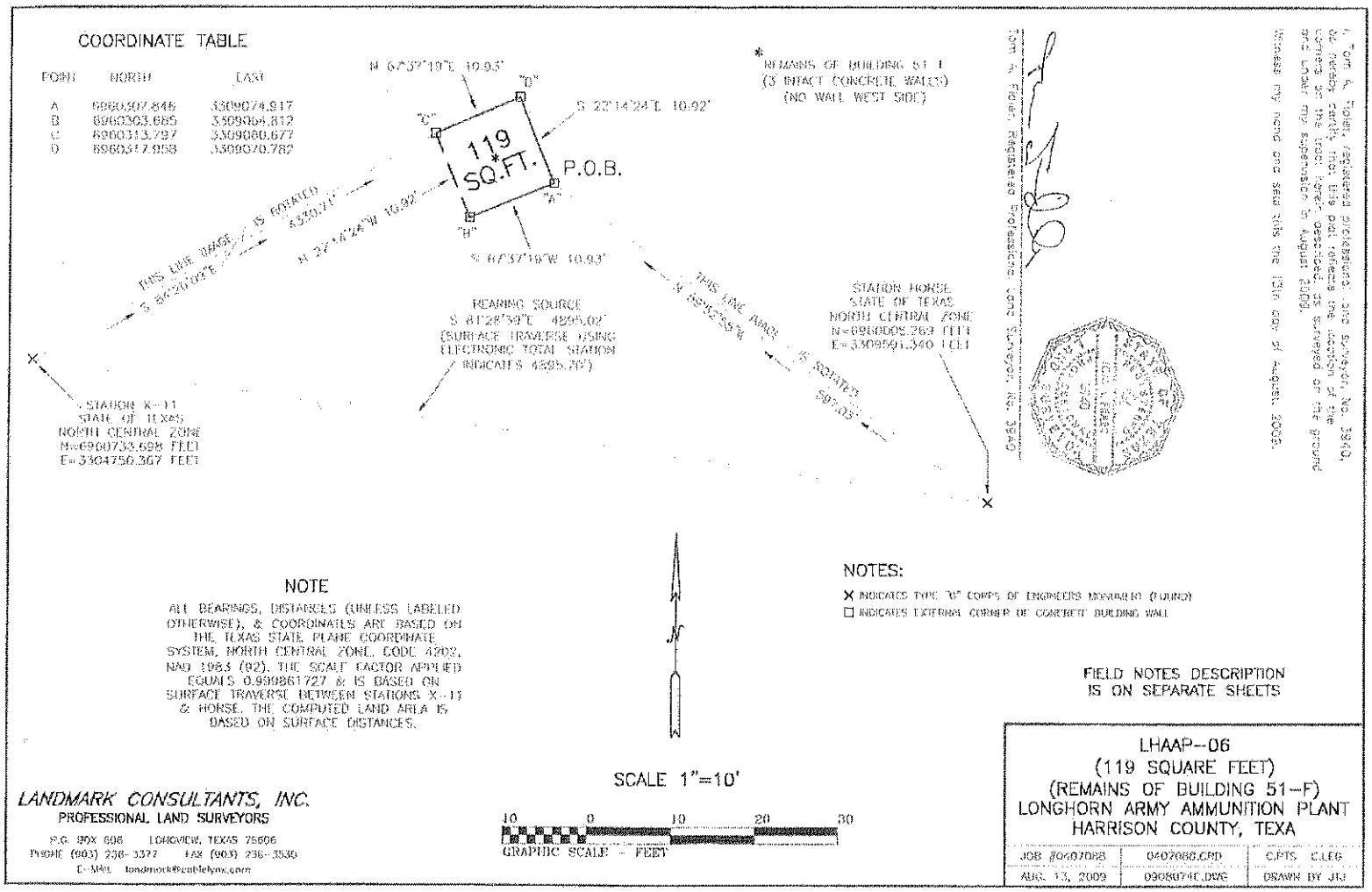
THENCE N 67deg37'19"E 10.93' along the N.B.L. of this tract to an E.C.C.W. found for this tract's N.E.C. ,

THENCE S 22deg14'24"E 10.92' along the E.B.L. of this tract to this POINT OF BEGINNING. This tract contains 119 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & HORSE. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

NOTES:

X INDICATES TYPE "B" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES EXTERNAL CORNER OF CONCRETE BUILDING WALL

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

SCALE 1"=10'

10 0 10 20 30
GRAPHIC SCALE - FEET

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 238-3377 FAX (903) 236-3536
E-MAIL landmark@cableone.com

LHAAP--06
(119 SQUARE FEET)
(REMAINS OF BUILDING 51--F)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXA

JOB #0407088	0407088.CRD	CPTS CLED
AUG. 13, 2009	0908074C.DWG	DRAWN BY JAJ

LHAAP-07

NOTICE OF NONRESIDENTIAL LAND USE FOR LHAAP-07 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2010-000005556

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005556 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-07, is the area of a demolished building location known as Building 50-G located within the Plant 3 production area of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-07 is not itself considered an NPL site. Environmental activities at LHAAP-07 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-07 (Building 50-G) was the former drum processing building which consisted of a wooden frame building 30 feet by 100 feet in size set on a concrete pad located within the boundary of LHAAP-47. Beginning in 1985, Building 50-G had a separate bay (20 by 30 feet in size) used as a washdown area for empty drums and casting equipment used in ammunition production. The washdown area was an above-grade concrete vault where empty drums were rinsed with hot water and spent sulfuric acid neutralized with limestone. The wastes handled included solvents, oils, and organic liquids. The site ceased operation in 1995. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd,

Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-07 parcel is 3,078 square foot, more or less, or 0.07066 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-07 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-07. Contaminants in soil samples from LHAAP-07 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-07 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-07 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10 th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

Notary Public in and for the State of Texas,
County of Harrison

NOTARY PUBLIC STATE OF TEXAS
ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-07" TRACT
(REMAINS OF DEMOLISHED BUILDING 50-G)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-07" being defined by the four external corners of the concrete foundation stem wall of demolished Building 50-G in the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-07" being more particularly described as follows:

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "HORSE" (N=6960008.269 feet E=3309591.340 feet). Said traverse indicates a surface distance of 4895.70 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation E.C.C.F.S.W. indicates External Corner of Concrete Foundation Stem Wall,

Commencing at monument "HORSE" referenced above,

THENCE N 87deg11'48"W 103.14' to an E.C.C.F.S.W. found for the S.E.C. of this tract and this POINT OF BEGINNING,

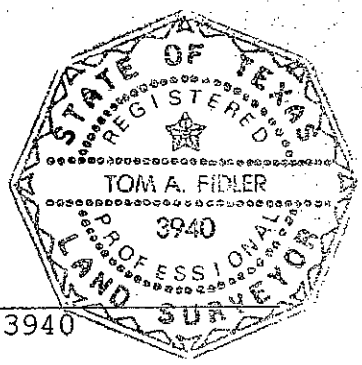
THENCE S 69deg02'55"W 30.36' along the S.B.L. of this tract to an E.C.C.F.S.W. found for this tract's S.W.C. ,

THENCE N 21deg59'26"W 101.90' along the W.B.L. of this tract to an E.C.C.F.S.W. found for this tract's N.W.C. , and being S 82deg14'17"E 4714.65' from monument "X-11" referenced above,

THENCE N 71deg43'04"E 30.53' along the N.B.L. of this tract to an E.C.C.F.S.W. found for this tract's N.E.C. ,

THENCE S 21deg55'35"E 100.48' along the E.B.L. of this tract to this POINT OF BEGINNING. This tract contains 3,078 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

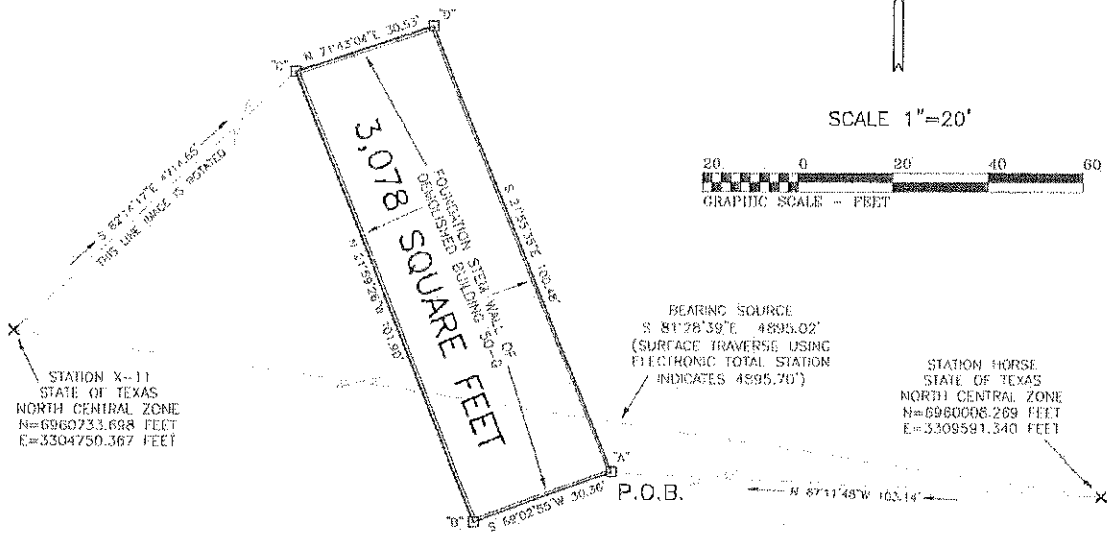
NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)

□ INDICATES EXTERNAL CORNER OF FOUNDATION STEM WALL

COORDINATE TABLE

POINT	NORTH	EAST
A	6960013.313	3309488.323
B	6960002.458	3309459.972
C	6960096.944	3309421.815
D	6960106.521	3309450.803



SCALE 1"=20'

20 0 20 40 60

GRAPHIC SCALE - FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August, 2009.

Witness my hand and seal this the 13th day of August, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & HORSE. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
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E-MAIL landmark@cablelynx.com

LHAAP-07
(3,078 SQUARE FEET)
(REMAINS OF BUILDING 50-G)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	B.PTS B.LOG
AUG. 13, 2009	09080748.DWG	DRAWN BY JTJ

LHAAP-08

NOTICE OF NONRESIDENTIAL LAND USE FOR LHAAP-08 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2011-000003377

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

NOTICE

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 03/24/2011 03:52 PM **Document Number:** 2011-000003377 **Receipt No:** 1103745 **Amount:** $ 32.00 **By:** Lauren Boyd, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AARON WILLIAMS EC-ER
1645 SOUTH 101ST EAST AVENUE

TULSA, OK 74128

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remedial investigation of the land described herein. The site, LHAAP-08, the former Sewage Treatment Plant, operated from 1942 to 1997. LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-08 is not itself considered an NPL site. Environmental activities at LHAAP-08 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-08 included stabilization ponds, Dunbar filters, sludge drying beds, and an Imhoff tank. The plant received storm water, boiler blow down, laundry waste, vehicle wash rack waste, and effluent from film development at the X-ray facility. Treated effluent was discharged into Goose Prairie Creek and Caddo Lake. Soil and groundwater investigations in 2000, 2001, and 2005 included sampling for explosives compounds, metals, semivolatile organic compounds, volatile organic compounds, dioxins and furans, pesticides and PCBs. Soil results included detections of low levels of metals, perchlorate and dioxin. Low levels of metals, dioxin and furan compounds and perchlorate were detected in groundwater. An assessment of risk to exposure to soil and groundwater at LHAAP-08, based on the

nonresidential use scenario, indicated that potential human health risks are within the acceptable range established by EPA. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-08 parcel is a 2.974 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-08 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-08. Contaminants in soil samples from LHAAP-08 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-08 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-08 is consistent with the non-residential use scenario evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multifamily residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through
12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 25 th day of January, ~~2010~~ 2011.

BEFORE ME, on this the 25 th day of Jan 2011, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 25 day of January.

Notary Public in and for the State of Texas,
County of Harrison

NOTARY PUBLIC STATE OF TEXAS
ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-08" TRACT
(PROPOSED INDUSTRIAL USE NOTIFICATION AREA)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-08" being 2.974 acre of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-08" being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998636625, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "IGNATIUS-1" (N=6957090.304 feet E=3311081.788 feet) and "IGNATIUS-2" (N=6955582.752 feet E=3311851.704 feet). Said traverse indicates a surface distance of 1693.005 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940", and the abbreviation C.N.I.B.C. indicates concrete nail in bottle cap.

Commencing at monument "IGNATIUS-1" referenced above,

THENCE N 52deg56'26"W 814.32' to an I.R.O.P.C. set for the Southmost corner of this tract and this POINT OF BEGINNING,

THENCE N 28deg08'32"W 374.05' along the S.W. B.L. of this tract to an I.R.O.P.C. set for this tract's Westmost corner,

THENCE N 62deg03'14"E 348.01' along the N.W. B.L. of this tract to a C.N.I.B.C. set (in the asphalt pavement of South Houston Road) for this tract's Northmost corner,

THENCE S 27deg43'38"E 328.00' along the N.E. B.L. of this tract to a C.N.I.B.C. set (in the asphalt pavement of South Houston Road) for the North end of a curve,

THENCE along a curve to the right (having a radius of 48.04' and an arc length of 75.57', being subtended by a chord of S 17deg20'14"W 68.02') to a C.N.I.B.C. set (in the asphalt pavement of South Houston Road) for the South end of said curve,

THENCE S 62deg24'07"W 297.15' along the S.E. B.L. of this tract to this POINT OF BEGINNING, containing 2.974 acres, more or less.

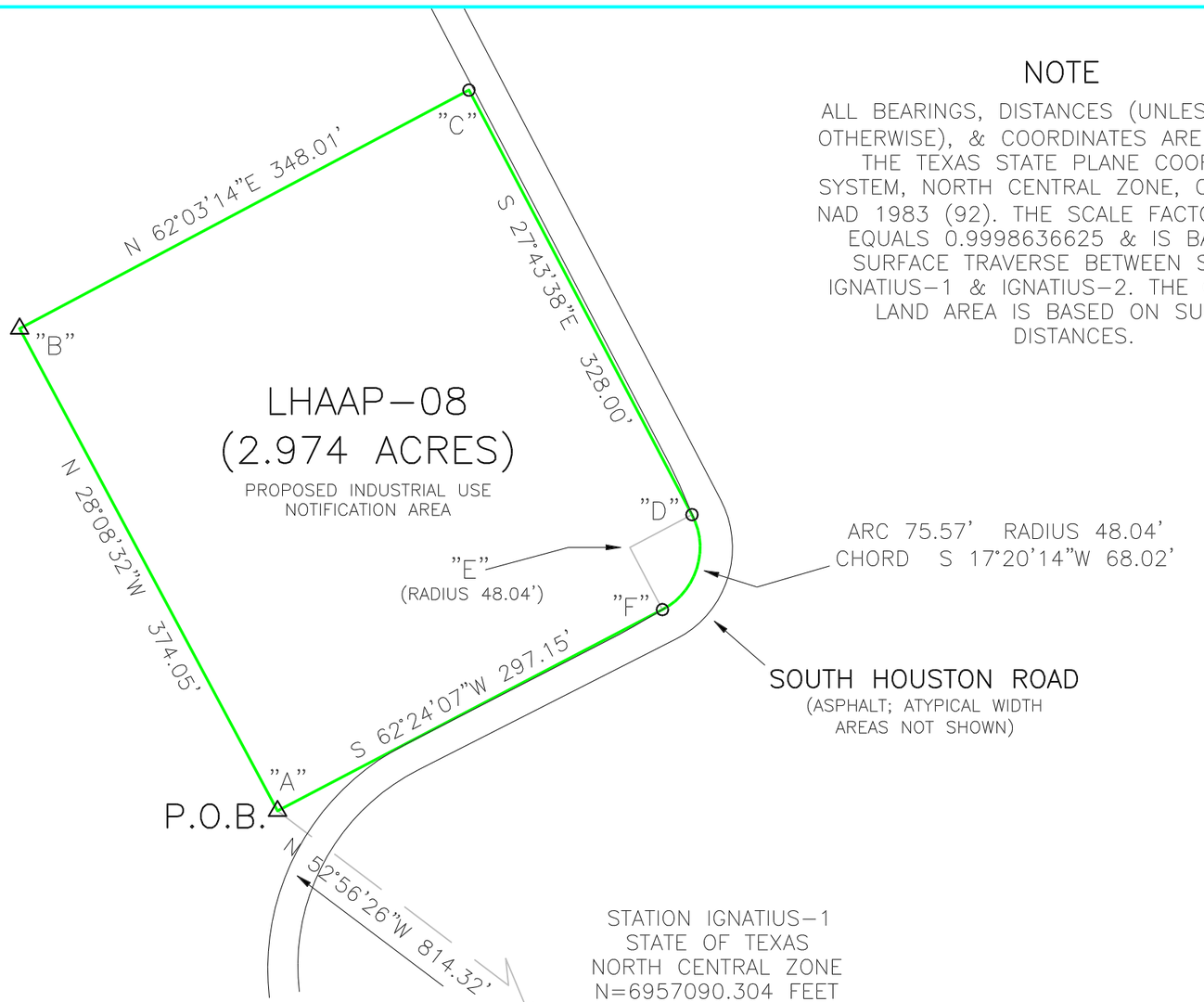
I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler

Tom A. Fidler, R.P.L.S. Number 3940

01070853



ARC 75.57' RADIUS 48.04'
CHORD S 17°20'14"W 68.02'

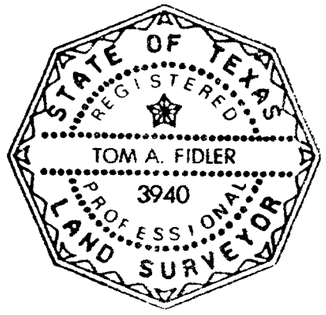
SOUTH HOUSTON ROAD
(ASPHALT; ATYPICAL WIDTH
AREAS NOT SHOWN)

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998636625 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS IGNATIUS–1 & IGNATIUS–2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in July 2008.

Witness my hand and seal this the 29th day of July, 2008



Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

STATION IGNATIUS–1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957090.304 FEET
E=3311081.788 FEET

BEARING SOURCE
S 27°03'13.2"E 1692.774'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1693.005')

STATION IGNATIUS–2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6955582.752 FEET
E=3311851.704 FEET

N

SCALE 1"=100'

100 0 100 200 300
GRAPHIC SCALE – FEET

NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- O INDICATES CONCRETE NAIL IN BOTTLE CAP (SET IN ASPHALT)
- △ INDICATES 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- ——— INDICATES BOUNDARY OF PROPOSED INDUSTRIAL USE NOTIFICATION AREA

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

COORDINATE TABLE

POINT	NORTH	EAST
A	6957581.048	3310431.952
B	6957910.879	3310255.527
C	6958073.970	3310562.954
D	6957783.633	3310715.561
E	6957761.282	3310673.037
F	6957718.708	3310695.292

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236–3377 FAX (903) 236–3530
E–MAIL landmark@cablelynx.com

LHAAP–8
(2.974 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	0605063F.DWG
07/29/2008	0605063.CRD	DRAWN BY JTJ

LHAAP-12, 12-1

LUC INSPECTION AND MAINTENANCE LOG

September 14, 2015

LUC Inspection and Maintenance Log – LHAAP 12

Date	Inspected by:	Inspection / Maintenance Activities					Corrective action or repairs required?	Repairs / Action Taken
		Protect landfill cover integrity				Prevent human exposure to groundwater		
		Vegetative Cover maintained: i.e. grass mowed	Fence and signage maintained	Observance of landfill cover degradation –e.g. desiccation cracks, erosion, or gullying	Continued compliance verified for no digging or disturbance of landfill cover or contents	Verified no withdrawal or use of groundwater (other than environmental testing)		

LHAAP-12, 12-2

LUCs FROM FINAL REMEDIAL DESIGN ADDENDUM

September 14, 2015

FINAL

REMEDIAL DESIGN ADDENDUM
LANDFILL 12 (LHAAP-12)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS



Prepared for
U.S. Army Corps of Engineers
Tulsa District
1645 South 101st Avenue
Tulsa, Oklahoma

Prepared by
Shaw Environmental, Inc.
3010 Briarpark Drive, Suite 400
Houston, Texas 77042

Contract Number DACA56-94-D-0020
Task Order No. 0109

June 2007

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Acronyms and Abbreviations ii

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4.0 Land Use Controls for the Site 4-1
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Figure 2 LHAAP-12 Land Use Control & Maintenance Map

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Appendix A Groundwater Monitoring Plan
Appendix B Sample Annual Land Use Control Compliance Inspection Documentation

4.0 Land Use Controls for the Site

The LUCs to be implemented by the Army or its representatives for LHAAP-12 include:

- Maintenance of the integrity of the landfill cap, including, at a minimum, repairs to desiccation cracks, erosion, or gullying upon observance.
- Maintenance of a vegetative cover on the landfill cap including regular mowing.
- Maintenance of fence line and signage around landfill cap.
- Prohibition of any activities that would affect the integrity of cap.
- Prohibition of any activities that would cause exposure to the contaminated groundwater.

Although groundwater monitoring is not a LUC, it was included as a component of the remedy for LHAAP-12 identified in the 2006 ROD to evaluate the effectiveness of the landfill cap (Shaw, 2006b). The groundwater monitoring plan is included in **Appendix A**.

6.0 Remedy Implementation Actions

6.1 Land Use Control Implementation Actions

Until LHAAP-12 is transferred, the Army or its representatives will be responsible for LUC implementation, maintenance, inspection, reporting and enforcement. The Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable. If periodic LUC inspections and maintenance are required to address site-specific risks, the Army will be responsible for making the results available to the appropriate regulators.

As a condition of property transfer, the Army may require the transferee to assume responsibility for various implementation actions, as indicated below. Although the Army may transfer responsibility for various implementation actions, the Army shall retain its responsibility for remedy integrity. This means that the Army is responsible for addressing substantive violations of performance objectives that would undermine the Army's CERCLA remedy. The Army also will be responsible for: 1) incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation; 2) recording survey plat and notice of restrictions for both the landfill cap and cover system boundary at the Harrison County Courthouse; 3) recording groundwater use restriction and survey plat at the Harrison County Courthouse; and 4) notifying Texas Department of Licensing and Regulation of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ.

The following LUC implementation actions shall be undertaken by the Army in order to ensure that the aforementioned LUC performance objectives for LHAAP 12 are met and maintained:

6.1.1 Comprehensive Base-wide Land Use Control Management Plan

Within 30 days of receiving USEPA and TCEQ approval of this RD Addendum, the Army will develop a Comprehensive Base-wide LUC Management Plan which shall initially consist of this document and a survey plat showing the locations where the LHAAP-12 LUCs are applied. The purpose of this Comprehensive Base-wide LUC Management Plan is to ensure the all site-specific LUCs are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document is also accessible to regulators, the local government and the public. The Army will locate the Comprehensive Base-wide LUC Management Plan in the City of Marshall Public Library to accompany LHAAP's Administrative Record.

As LUC RD documents for additional environmental sites are approved by USEPA and TCEQ, the Army shall likewise add those documents and survey plats to the Comprehensive Base-wide LUC Management Plan as well as update the previous copy of the plan placed in the City of Marshall Public Library.

6.1.2 Site Inspections and Reporting

Beginning with finalization of this RD Addendum, the Army will undertake annual physical inspections and reporting to confirm continued compliance with all LUC objectives. The Army will provide USEPA and TCEQ with an annual LUC Compliance Inspection document consistent with the form attached hereto as **Appendix B**. In addition, should any deficiency(ies) be found during the annual inspection, the Army will provide to USEPA and TCEQ along with the document, a separate written explanation indicating the specific deficiency(ies) found and what efforts or measures have or will be taken to correct those deficiencies. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECOP). The need to continue annual inspections will be revisited at five year reviews.

6.1.3 Notice of Planned Property Conveyances

Planned conveyance of LHAAP-12 acreage is to U.S. Fish and Wildlife Service for incorporation into the Caddo Lake National Wildlife Refuge. The Army shall provide notice to USEPA and TCEQ of such intended conveyance. The notice shall describe the mechanism by which LUCs will continue to be implemented, maintained, inspected, reported, and enforced.

6.1.4 Opportunity to Review Text of Intended Land Use Controls

The Army will produce an ECOP for LHAAP-12, but before executing the letter of transfer, the Army will provide USEPA and TCEQ with a draft copy of that ECOP so that they may have reasonable opportunity, before document execution, to review all LUC-related provisions.

6.1.5 Notification Should Action(s) Which Interfere with Land Use Control Effectiveness Be Discovered Subsequent to Conveyance

Should the Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objectives, the Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 6.1.6** below, the Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

6.1.6 Land Use Control Enforcement

Should the LUC remedy reflected in this LUC RD fail, the Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These

actions may range from informal resolutions with the owner or violator, to the institution of judicial action under the auspices of Texas property law or CERCLA. Alternatively, should the circumstances warrant such, the Army could choose to exercise its response authorities under CERCLA, and then seek cost recovery after the fact from the person(s) or entity(ies) who violated a given LUC. Should the Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the Army will notify these agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUCs.

6.1.7 Modification or Termination of Land Use Controls

The Army shall not, without USEPA concurrence, make a significant modification to, or terminate a LUC, or make a land use change inconsistent with the LUC objectives and use assumptions of the selected remedy. Likewise, the Army shall seek prior USEPA concurrence before commencing actions that may impact remedy integrity. In the case of an emergency action, the Army shall obtain prior USEPA concurrence as appropriate to the exigencies of the situation.

The LUCs shall remain in effect until such time as the Army and USEPA agree that the concentrations of hazardous substances have been reduced to levels that allow for unlimited exposure and unrestricted use. When this occurs, the LUCs will be terminated as needed. The decision to terminate LUCs will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the Army and USEPA has been made to terminate one or more of the LUCs, the Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

6.2 Monitored Natural Attenuation Implementation Actions

Implementation actions include development of a groundwater monitoring plan, monitoring, and reporting. Groundwater monitoring will be conducted to monitor the effectiveness of MNA in reducing contaminant concentrations over time. Monitoring will also be conducted to evaluate plume migration and ensure that TCE-contaminated groundwater does not impact nearby surface water at unacceptable levels. The Groundwater Monitoring Plan, attached as **Appendix A**, describes the wells, their locations, analytical parameters, and the frequency of the monitoring.

Annual reports will be prepared to document the monitoring program. The first year annual report will include a review of the first four quarters of data which include natural attenuation parameters and provide an evaluation for the evidence of MNA as a remedial method. The TCEQ provides guidance for MNA as a remedial action in *Monitored Natural Attenuation*

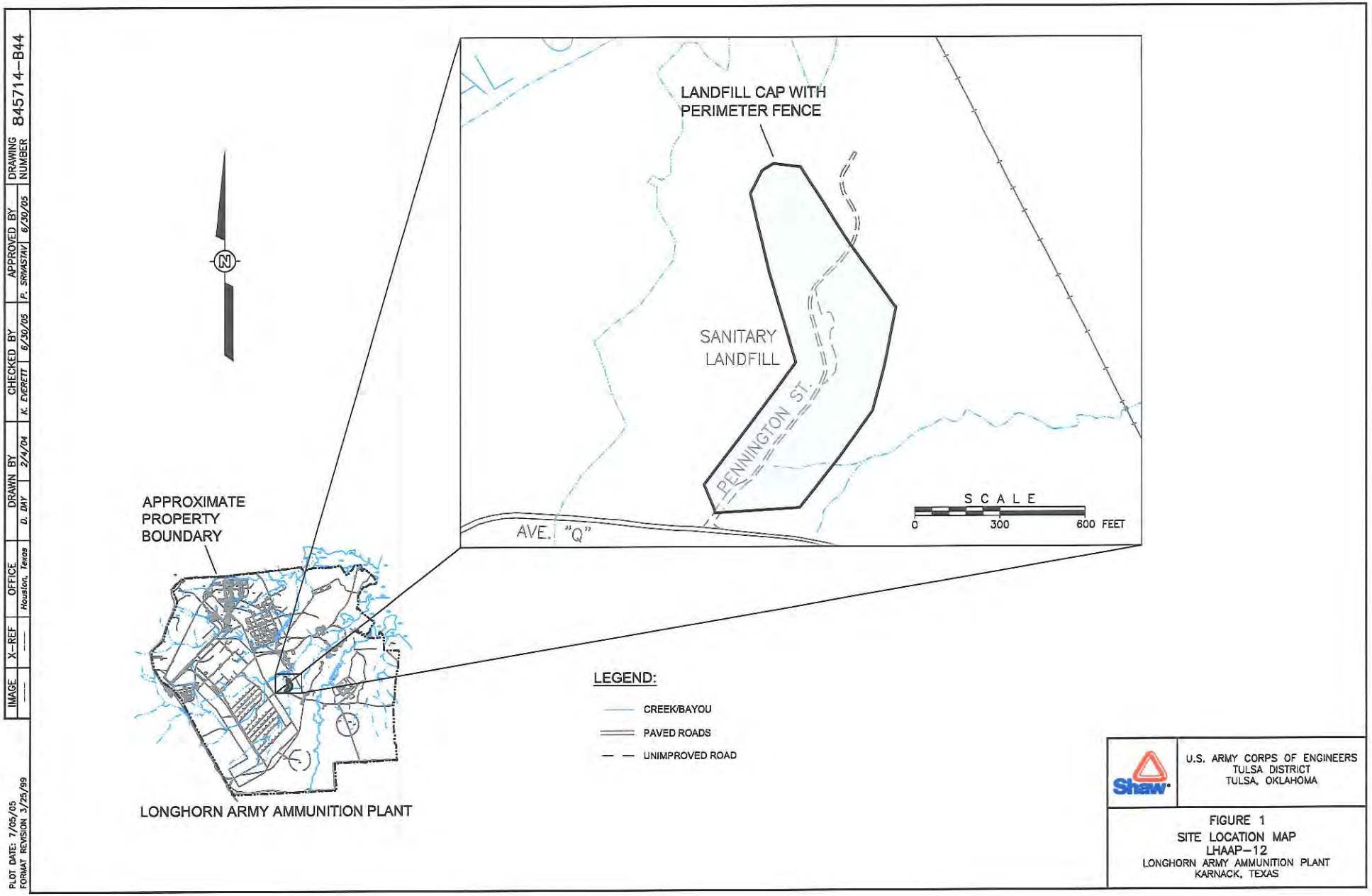
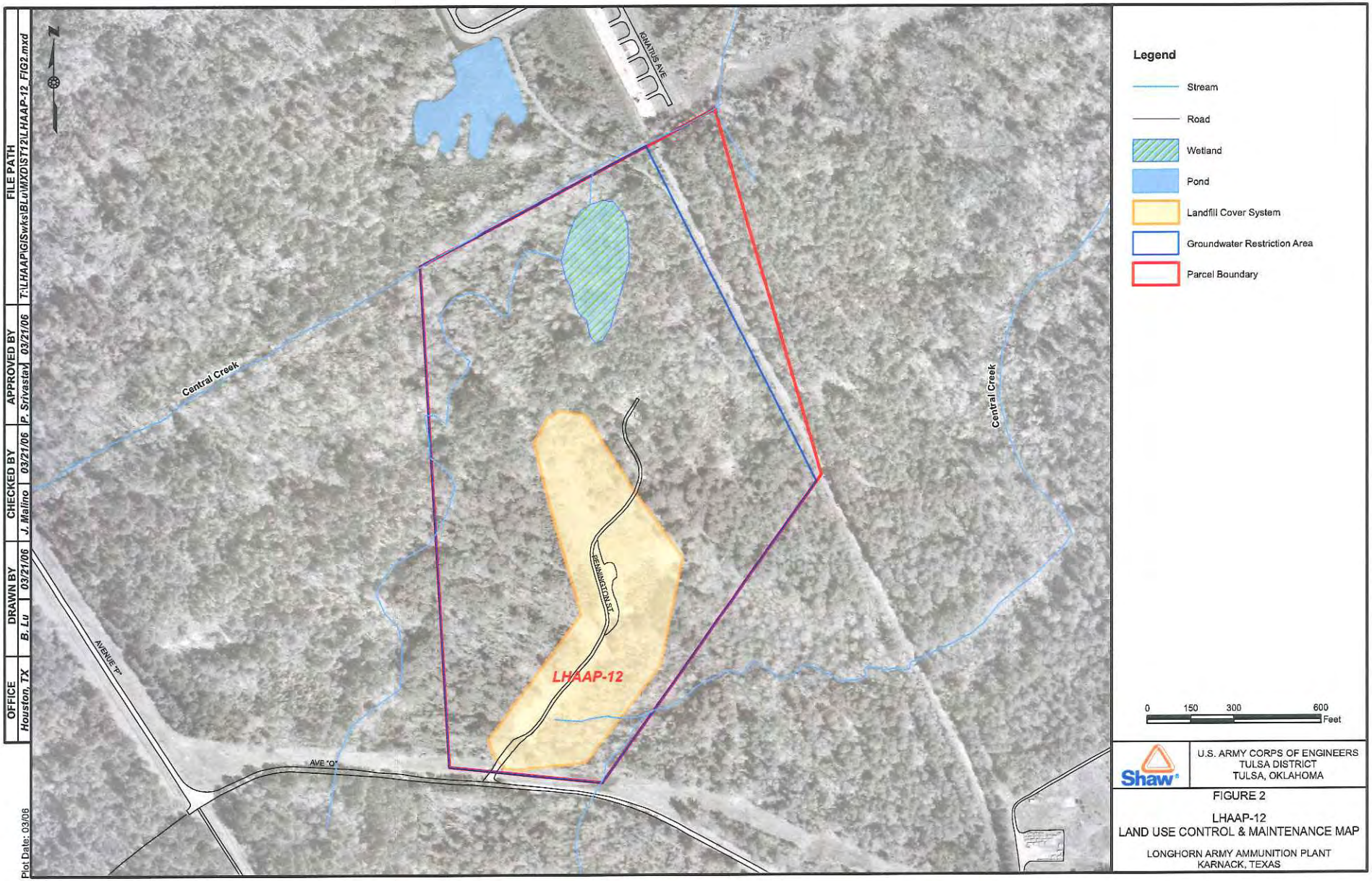


IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
		Houston, Texas	D. DAY 2/14/04	K. EVERETT 6/30/05	P. SRIVASTAV 6/30/05	845714-B44

PLOT DATE: 7/05/05
FORMAT REVISION 3/25/99

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1
SITE LOCATION MAP
LHAAP-12
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS


Legend
Stream
Road
Wetland
Pond
Landfill Cover System
Groundwater Restriction Area
Parcel Boundary
IGNATIUS AVE
Central Creek
Central Creek
REMINGTON ST
LHAAP-12
AVENUE "P"
AVE "O"
0
150
300
600
Feet
Shaw
U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA
FIGURE 2
LHAAP-12
LAND USE CONTROL & MAINTENANCE MAP
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
OFFICE Houston, TX
DRAWN BY B. Lu 03/21/06
CHECKED BY J. Malino 03/21/06
APPROVED BY P. Srivastav 03/21/06
FILE PATH T:\LHAAP\GIS\wrks\BLu\MXD\ST12\LHAAP-12_FIG2.mxd
Plot Date: 03/06

Appendix B

Sample Annual Land Use Control Compliance Inspection Documentation

Sample Annual Land Use Control Compliance Inspection Documentation

In accordance with the Remedial Design Addendum dated _____ for LHAAP-12, an inspection of site was conducted by _____ [indicate transferee] on_____.

A summary of land use control mechanisms is as follows:

- Land use and restriction covenants included in ECOP – [Indicate whether the ECOP is on file with the notice of transfer]
- Groundwater restriction – [Indicate whether groundwater restrictions are still required at LHAAP-12]

A summary of compliance with land use and restriction covenants is as follows:

- No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-12
- No reuse activity at LHAAP-12 that would adversely affect the integrity of the landfill cap
- The fence and posted signs are properly maintained at LHAAP-12
- The vegetative cover is properly maintained over the landfill
- Landfill cap is properly maintained with no evidence of erosion, cracking, settlement, or other damage to engineered components

I, the undersigned, do document that the inspection was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title _____

Signature: _____

Completed annual compliance inspection forms, with relevant annual compliance certification forms, shall be sent no later than March 1 of each year for the previous calendar year.

U.S. Department of the Army
TCEQ
USEPA Region 6

LHAAP-12, 12-3

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-12 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

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FILED FOR RECORD
07 JUN 13 AM 10: 09
PATSY COX
CO CLERK, HARRISON CO
BY DEPUTY

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROLS AT LHAAP-12

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The remediation site is a capped landfill located on the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-12. The site is included in TCEQ Notice of Registration No. 30990 as Unit Number 001. LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-12 were performed in accordance with the FFA requirements.

The landfill was used intermittently for the disposal of industrial solid waste, possibly containing small quantities of hazardous constituents generated at LHAAP. A Record of Decision (ROD) for LHAAP-12 was signed by USEPA in 1995 establishing the construction of a cap as an interim remedial action for the site to mitigate potential risks posed by the burial of landfill waste. Construction of the landfill cap was completed in 1998. The final remedy consists of land use controls (LUCs) in conjunction with monitored natural attenuation as documented in the Final ROD signed by USEPA on July 24, 2006. The site was not remediated to levels suitable for unrestricted use. LUCs at LHAAP-12 are required to ensure the integrity of the landfill cap and cover system and prevent human exposure to contaminated groundwater. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the

Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-12 parcel is a 50.541 acre tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A. Within the LHAAP-12 parcel are designated LUC boundaries including a 9.429 acre tract, more or less, and a 45.939 acre tract, more or less, as described in Exhibit A. The LUC boundaries are also presented in the attached Figure 1.

Future use of the parcel is intended as a national wildlife refuge consistent with non-residential use. The United States Department of the Army has undertaken careful environmental study of the LHAAP-12 site and concluded that the LUCs set forth below are required to ensure protection of human health and the environment.

(1) **Landfill Restriction**. A closed non-hazardous landfill (LHAAP-12) of approximately 7 acres is located within the 9.429 acre tract. The landfill restriction boundary consists of the 7-acre capped landfill and an area extending to the surrounding fence. LUCs have been established to protect the integrity of the remedy. No activity shall be conducted or permitted that would damage the integrity of the landfill cover (i.e. digging or disturbing the existing cover or contents of the landfill). The LUCs will remain in place for perpetuity unless otherwise removed by the U.S. Army per agreement with the USEPA and TCEQ.

(2) **Residential Use Restriction**. The residential use restriction boundary consists of the 9.429 acre-tract, more or less, and includes the 7-acre capped landfill and an area extending to the surrounding fence. This tract shall be used solely for the purpose of a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

(3) **Groundwater Restriction.** The groundwater use restriction boundary consists of the 45.939 acre tract, more or less, and extends beyond the landfill

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boundary. Groundwater underlying this land is contaminated with trichloroethene (TCE) and other volatile organic compounds and shall not be accessed or used for any purpose without the prior written approval of U.S. Army, the USEPA and the TCEQ. A LUC restricting the use of groundwater has been established for the protection of human health. The U.S. Army will notify the Texas Department of Licensing and Regulation of the groundwater restriction which includes prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval by the U.S. Army, the USEPA and the TCEQ. The LUC will remain in place until applicable or relevant and appropriate requirements (ARARs) as established in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulation 300) are met. Due to the potential for TCE-contaminated groundwater to migrate, monitored natural attenuation will be implemented to assure that TCE-contaminated groundwater will not migrate to nearby surface water at levels that may present an unacceptable risk to human health and the environment. The monitoring and reporting associated with this remedy will continue until ARARs are achieved.

The owner of the site is the Department of the Army, and its address where more specific information may be obtained from is as follows:

ATTN: DAIM-BD-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 13th day of June, 2007.

BEFORE ME, on this the 13th day of June, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 13 day of June, 2007.

LYNDA G. HAYS
Notary Public State of Texas
COMM. EXP. 5-02-2010

Lynda G. Hays
Notary Public in and for the State of Texas,
County of Harrison

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EXHIBIT A

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NOTE

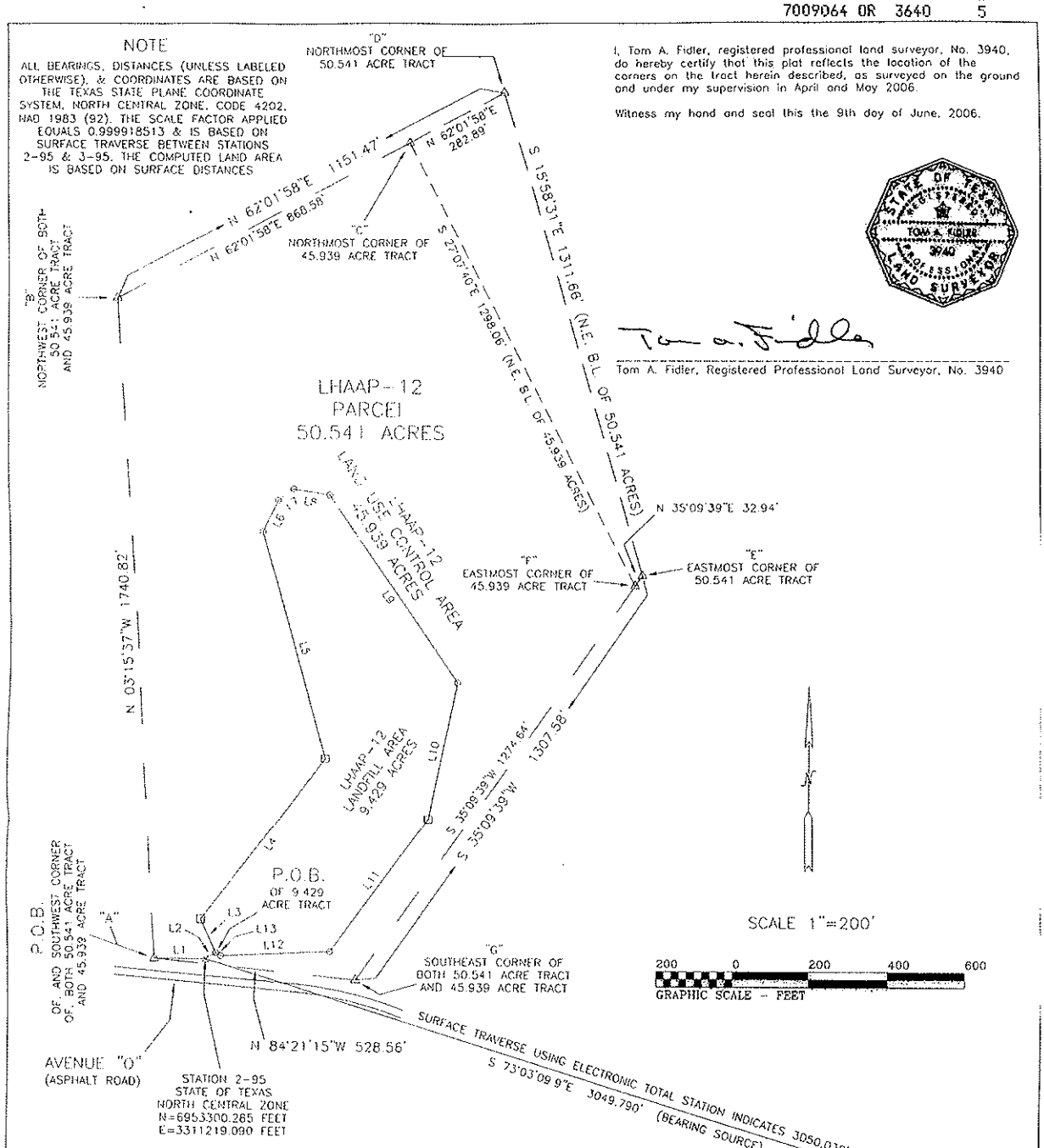
ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999918513 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS 2-95 & 3-95. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in April and May 2006.

Witness my hand and seal this the 9th day of June, 2006.

STATE OF TEXAS REGISTERED TOM A. FIDLER 3940 PROFESSIONAL LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940



LINE TABLE

COURSE	BEARING	DISTANCE
L1	S 89°52'35"W	132.09'
L2	N 58°35'33"E	31.72'
L3	N 23°52'43"W	96.81'
L4	N 37°07'57"E	537.87'
L5	N 15°28'17"W	618.92'
L6	N 26°16'28"E	90.81'
L7	N 54°00'30"E	50.67'
L8	S 81°02'29"E	96.24'
L9	S 34°25'01"E	596.16'
L10	S 12°11'35"W	370.18'
L11	S 36°09'00"W	434.64'
L12	S 87°15'04"W	286.47'
L13	N 57°18'20"W	15.33'

COORDINATE TABLE

POINT	NORTH	EAST
A	6953300.000	3311087.000
B	6955038.000	3310988.000
C	6955445.333	3311755.144
D	6955578.000	3312005.000
E	6954317.000	3312366.000
F	6954290.070	3312347.030
G	6953248.000	3311613.000

NOTES:

- O INDICATES 12" DIAMETER WOODEN FENCE CORNER POST (FOUND)
- □ INDICATES 10" DIAMETER WOODEN FENCE CORNER POST (FOUND)
- × INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- △ INDICATES 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET IN CONCRETE)
- ——— INDICATES BARBED WIRE FENCE AND PERIMETER OF 9.429 ACRE TRACT
- — — — INDICATES PERIMETER OF 50.541 ACRE TRACT ONLY
- — · — · — INDICATES PERIMETER OF 45.939 ACRE TRACT ONLY
- ——— INDICATES PERIMETER OF BOTH 50.541 ACRE TRACT AND 45.939 ACRE TRACT

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

SHEET 1 OF 4

50.541 ACRES
45.939 ACRES
9.429 ACRES
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	0605063A.DWG
06/09/2006	0605063.CRD	DRAWN BY JTJ

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FIELD NOTES DESCRIPTION OF
"LHAAP-12 PARCEL"
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The hereinafter described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-12 Parcel" being 50.541 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-12 Parcel" being more particularly described as follows:

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999918513, and is based on surface traverse (using electronic total station) between type "G" Corps of Engineers monuments "2-95"(N=6953300.285 feet & E=3311219.090 feet) and "3-95"(N=6952411.298 feet & E=3314136.438 feet). Said traverse indicates a surface distance of 3050.038 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940".

Commencing at the monument "2-95" referenced above,

THENCE S 89deg52'35"W 132.09' to an I.R.O.P.C. set in concrete for the S.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 03deg15'37"W 1740.82' along the W.B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Northwest corner,

THENCE N 62deg01'58"E 1151.47' along the N.W. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Northmost corner,

THENCE S 15deg58'31"E 1311.66' along the N.E. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Eastmost corner,

THENCE S 35deg09'39"W 1307.58' along the S.E. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Southeast corner,

THENCE N 84deg21'15"W 528.56' along the S.B.L. of this tract to this POINT OF BEGINNING, containing 50.541 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

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FIELD NOTES DESCRIPTION OF
"LHAAP-12 LAND USE CONTROL AREA"
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The hereinafter described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-12 Land Use Control Area" being 45.939 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said "LHAAP-12 Land Use Control Area" being more particularly described as follows:

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999918513, and is based on surface traverse (using electronic total station) between type "G" Corps of Engineers monuments "2-95"(N=6953300.285 feet & E=3311219.090 feet) and "3-95"(N=6952411.298 feet & E=3314136.438 feet). Said traverse indicates a surface distance of 3050.038 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940".

Commencing at the monument "2-95" referenced above,

THENCE S 89deg52'35"W 132.09' to an I.R.O.P.C. set in concrete for the S.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 03deg15'37"W 1740.82' along the W.B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Northwest corner,

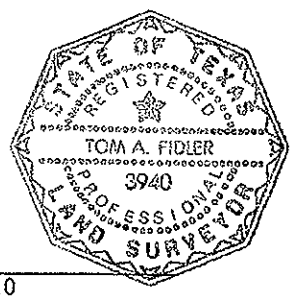
THENCE N 62deg01'58"E 868.58' along the N.W. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Northmost corner,

THENCE S 27deg07'40"E 1298.06' along the N.E. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Eastmost corner,

THENCE S 35deg09'39"W 1274.64' along the S.E. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Southeast corner,

THENCE N 84deg21'15"W 528.56' along the S.B.L. of this tract to this POINT OF BEGINNING, containing 45.939 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

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FIELD NOTES DESCRIPTION OF
"LHAAP-12 LANDFILL AREA"
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The hereinafter described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-12 Landfill Area" being 9.429 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said "LHAAP-12 Landfill Area" being more particularly described as follows:

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999918513, and is based on surface traverse (using electronic total station) between type "G" Corps of Engineers monuments "2-95"(N=6953300.285 feet & E=3311219.090 feet) and "3-95"(N=6952411.298 feet & E=3314136.438 feet). Said traverse indicates a surface distance of 3050.038 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940".

Commencing at the monument "2-95" referenced above,

THENCE N 58deg35'33"E 31.72' to a 12" diameter wooden fence corner post found for a Southwest corner of this tract and this POINT OF BEGINNING,

THENCE generally along a barbed wire fence the following eleven courses,

N 23deg52'43"W 96.81' to a 10" diameter wooden fence corner post found for the Westmost corner of this tract,

N 37deg07'57"E 537.87' to a 10" diameter wooden fence corner post,

N 15deg28'17"W 618.92' to a 12" diameter wooden fence corner post,

N 26deg16'28"E 90.81' to a 12" diameter wooden fence corner post,

N 54deg00'30"E 50.67' to a 12" diameter wooden fence corner post found for the Northmost corner of this tract,

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S 81deg02'29"E 96.24' to a 12" diameter wooden fence corner post,

S 34deg25'01"E 596.16' to a 12" diameter wooden fence corner post found for the Eastmost corner of this tract,

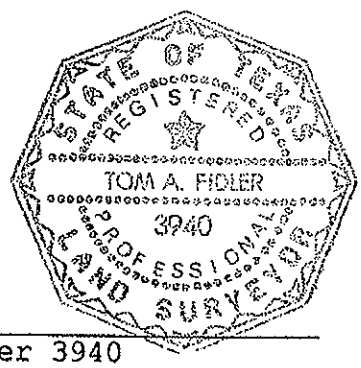
S 12deg11'35"W 370.18' to a 10" diameter wooden fence corner post,

S 36deg09'00"W 434.64' to a 12" diameter wooden fence corner post,

S 87deg15'04"W 286.47' to a 12" diameter wooden fence corner post,

N 57deg18'20"W 15.33' to this POINT OF BEGINNING, containing 9.429 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

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FIGURE 1

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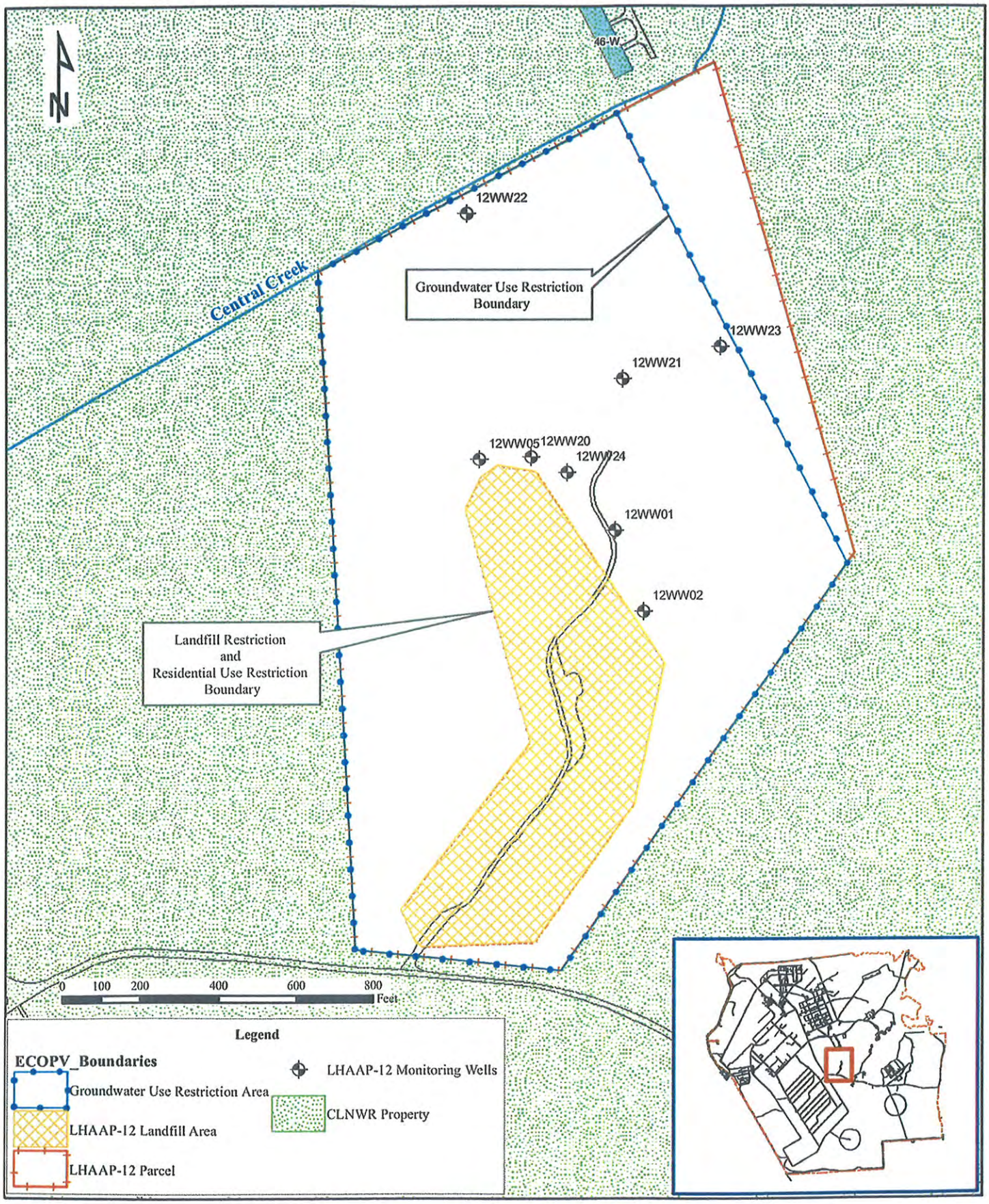


FIGURE 1

Land Use Control Boundaries

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STATE OF TEXAS COUNTY OF HARRISON

I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the volume and page of the named records of:

Harrison County

as stamped hereon by me.

Jun 13,2007

HONORABLE PATSY COX, COUNTY CLERK
Harrison County

LHAAP-12, 12-4

LAND USE CONTROL COMPLIANCE INSPECTION FORM

September 14, 2015

LHAAP-12, Landfill 12 Parcel
Annual Land Use Control Compliance Certification

Land use controls (LUC) at LHAAP-12 in the Landfill 12 Parcel:

• Land use restriction – Prohibition of any activities that would affect the integrity of the cap (i.e. no digging or disturbing the existing cover or contents of the landfill) and of residential use or residential development of the property

• Groundwater use restriction – Prohibition of any activities that would cause exposure to contaminated groundwater (i.e. no withdrawal or use of groundwater for other than environmental monitoring and testing)

Compliance with land use controls:

• No use of groundwater or installation of new groundwater wells (except that required for environmental monitoring and testing), or tampering with existing wells at LHAAP-12

• No reuse activity at LHAAP-12 that would adversely affect the integrity of the landfill cap (i.e no digging or disturbing the existing cover or contents of the landfill) and cap protective components (fencing and signage), and no residential use or residential development of the property

Inspection: In accordance with the LHAAP-12 Remedial Design Addendum dated 21 June 2007, an inspection of LHAAP-12 was conducted by _____ on_____ to visually confirm compliance with the LUCs.

I, the undersigned, do document that the inspection was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title _____

Signature: _____

Completed annual compliance form, to be kept on file at the Administrative Office of the Caddo Lake National Wildlife Refuge by the Refuge staff and available to EPA, TCEQ and Army upon request. The certification shall be conducted no later than March 1 of each year for the previous calendar year.

LHAAP-16, 16-1
LUCS FROM DRAFT-FINAL REMEDIAL DESIGN

Date December 17, 2021

DRAFT FINAL
REMEDIAL DESIGN
LHAAP-16 LANDFILL
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared For:





U.S. Army Corps of Engineers
Tulsa District

Prepared By:

AECOM

AECOM Technical Services

January 2017

DRAFT FINAL
REMEDIAL DESIGN LHAAP-16 LANDFILL
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared For:

U.S. Army Corps of Engineers

Tulsa District

Prepared By:

AECOM Technical Services

Contract No. W912DY-09-D-0059

Task Order No. DS01

January 2017

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Table 4-10: Summary of Substrate Loading/Injection – Mid-Plume ISB

Table 4-11: Pre-Remedy Groundwater Sampling Plan in the Shallow Zone – LHAAP-16

Table 4-12: Pre-Remedy Groundwater Sampling Plan in the Intermediate Zone – LHAAP-16

Table 4-13: ISB Performance Monitoring Plan (Years 1 and 2) – Landfill Biobarrier #1

Table 4-14: ISB Performance Monitoring Plan (Years 1 and 2) – Landfill Biobarrier #2

Table 4-15: ISB Performance Monitoring Plan (Years 1 and 2) – Landfill Biobarrier #3

Table 4-16: ISB Performance Monitoring Plan (Years 1 and 2) – Bayou Biobarrier

Table 4-17: ISB Performance Monitoring Plan (Years 1 and 2) – Mid-Plume ISB

Table 4-18: MNA Performance Monitoring Plan – LHAAP-16

Table 6-1: LHAAP-16 Remedial Design Implementation Schedule

List of Appendixes

APPENDIX A: LHAAP-16 INSPECTION AND MAINTENANCE CHECKLIST

APPENDIX B: CHEMICAL MANUFACURER'S LITERATURE

APPENDIX C: LHAAP-16 WELL LOGS

APPENDIX D: ESTCP SUBSTRATE CALCULATION SHEETS

APPENDIX E: ANNUAL LUC COMPLIANCE DOCUMENTATION FORM

Acronyms and Abbreviations

µg/L	microgram per liter
ABC+	Anaerobic Biochem Plus
API	American Petroleum Institute
ARAR	applicable or relevant and appropriate requirements
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cm/sec	centimeters per second
COC	contaminant of concern
DCA	Dichloroethane
DCE	Dichloroethene
DO	dissolved oxygen
DPT	direct push technology
ECP	Environmental Condition of Property
EDS-ER	Electron Donor Solution - Extended Release
ESD	Explanation of Significant Difference
ESTCP	Environmental Security Technology Certification Program
EVO	emulsified vegetable oil
FFA	Federal Facilities Agreement
FS	Feasibility Study
HDPE	high-density polyethyelene
HFCS	high-fructose corn syrup
HSA	hollow stem auger
IRA	Interim Remedial Action
ISB	in-situ bioremediation
IWWP	Installation-Wide Work Plan
lbs	pounds
LHAAP	Longhorn Army Ammunition Plant
LTM	long-term monitoring
LUC	land use control
mg/L	milligrams per liter

MNA	monitored natural attenuation
MOA	Memorandum of Agreement
msl	mean sea level
mV	millivolt
NPL	National Priorities List
O&M	operation and maintenance
ORP	Oxidation-Reduction Potential
RACR	Remedial Action Completion Report
RAO	Remedial Action Objectives
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
ROI	Radius of Influence
SARA	Superfund Amendment and Reauthorization Act
TAC	Texas Administrative Code
TCA	Trichloroethane
TCE	Trichloroethene
TCEQ	Texas Commission on Environmental Quality
U.S.	United States
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VOC	volatile organic compound
VC	Vinyl chloride
ZVI	zero valent iron

5 LAND USE CONTROL REMEDIAL DESIGN

This section describes the LUC RD for LHAAP-16. In accordance with the Final ROD (U.S. Army, 2016), the LUC RD will be finalized as the land use component of the Remedial Design.

Per the Final ROD (U.S. Army, 2016), LUCs' performance objectives are to:

- Prohibit access to the contaminated groundwater except for environmental monitoring and testing only;
- Preserve the integrity of the landfill cap, and to restrict intrusive activities (e.g., digging) that would degrade or alter the cap;
- Restrict land use to nonresidential;
- Maintain the integrity of any current or future remedial or monitoring systems; and

The implementation, maintenance, and inspection requirements associated with each of the performance objectives that comprise this LUC RD are described below. The actions taken to implement the LUC objectives during the RA phase, as well as ongoing maintenance, monitoring and reporting requirements will be presented in the Remedial Action Completion Report (RACR), as the final LUC RD. Upon regulatory review and concurrence with the final LUC RD, it will be distributed as part of the Comprehensive LUC Management Plan.

For portions of the Site subject to land use controls that are not owned by the Army, the Army will monitor and report on the implementation, maintenance, and enforcement of land use controls, and coordinate with federal, state, and local governments and owners and occupants of properties subject to land use controls. The Army remains responsible for ensuring that the remedy remains protective of human health and the environment.

5.1 LUC Implementation

The actions required to implement the LUCs for LHAAP-16 are described below. The first of these, the initial notice of LUCs, has been completed. A figure depicting the preliminary LUC boundaries is presented in **Figure 5-1**. The following actions will be undertaken to implement the LUCs for LHAAP-16:

- Provide initial notice of the LUCs before remedial action is implemented.
    - Develop the initial notice of the groundwater and soil (surface and subsurface) contamination and any land use restrictions referenced in the ROD. The notice will consist of a brief description of the contaminants in groundwater and soil, a written description of the LUCS and a figure depicting the preliminary LUC boundaries presented in **Figure 5-1**.
    - Transmit the notice to federal, state and local governments involved at this site and the owners and occupants of the properties subject to those use restrictions and land use controls within 90 days of ROD signature, which is on or before December 12, 2016. The notices will be sent to federal, state and local officials including: U.S. Senator Ted Cruz, U.S. Senator John Cornyn, U.S. Congressman Louie Gohmert, State Senator Kevin Eltiffe, State Representative Chris Paddie, Harrison County

Judge Hugh Taylor, Harrison County Commissioner Precinct 1 William D. Hatfield, City of Uncertain Mayor Sam Canup, and Karnack Water Supply Corporation Board Members. Notice will also be sent to the Caddo Lake National Wildlife Refuge Manager.

- Finalize the Boundaries for the LUCs as a part of the remedial action.
    - Revise the boundaries if necessary. The LUC boundary presented in this RD is subject to change, based on COC results from the two proposed wells to be installed on the east side of Harrison Bayou. The final boundaries of the groundwater LUCs (prevent the use of groundwater contaminated above cleanup levels as a potable water source and prohibit access to the contaminated groundwater except for environmental monitoring and testing only); the landfill LUCs (preserve the integrity of the landfill cap, and to restrict intrusive activities (e.g., digging) that would degrade or alter the cap); the remedial or monitoring system LUCs (maintain the integrity of any current or future remedial or monitoring systems); and, the nonresidential land use LUC (restrict land use to nonresidential) will be reviewed during remedial action activities after an evaluation of new data has been completed and revised if necessary.
    - Survey the LUC Boundaries. The boundaries will be finalized after concurrence by USEPA and TCEQ, and the LUC boundaries will be surveyed by a State-licensed surveyor. A legal description of the surveyed areas will be appended to the survey plat.
- Record the LUCs in Harrison County. The LUC plat, legal description and LUC restriction language will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566.
- Notify the Texas Department of Licensing and Regulation of the groundwater LUCs. The Texas Department of Licensing and Regulation will be notified of the groundwater restrictions, which include the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ. The survey plat, legal boundary and description of the groundwater restriction LUCs, in conjunction with a locator map, will be provided in hard and electronic copy.

5.2 Maintenance and Monitoring Requirements

The LUCs will be maintained in place as follows:

- The landfill LUCs will remain in place as long as the landfill waste remains at the site or until the levels of Contaminants of Concern (i.e., including all hazardous substances, pollutants, and contaminants found at the Site at cleanup levels as listed in **Table 1-1**) allow for unlimited use and unrestricted exposure;
- The LUCs restricting the use of groundwater to environmental monitoring and testing only and the LUC restricting land use to nonresidential will remain in place until the levels of COCs (i.e., including all hazardous substances, pollutants, and contaminants found at the Site

at cleanup levels as listed in **Table 1-1**) in surface and subsurface soil and groundwater allow for unlimited use and unrestricted exposure;

- The LUC to maintain the integrity of any current or future remedial or monitoring systems will remain in place until groundwater cleanup levels of COCs (i.e., including all hazardous substances, pollutants and contaminants found at the Site at cleanup levels as listed in **Table 1-1**) are met; and,
- The LUC prohibiting groundwater use (except for environmental monitoring and testing) as a potable source will remain in place until the levels of COCs (i.e., all hazardous substances, pollutants, and contaminants found at the Site at cleanup levels as listed in **Table 1-1**) in soil and groundwater allow for unlimited use and unrestricted exposure.

Landfill and Remedial or Monitoring System LUCs include physical components that require repair and maintenance. These are described in **Section 3.0.** The Inspection and Maintenance Checklist is provided in **Appendix A.**

The administrative maintenance required to ensure the five LUCs remain in place and effective until the cleanup levels of the COCs are at levels that allow unrestricted use and unlimited exposure are:

- Annual field inspections of the site to confirm that no violations of the LUCs have occurred. Documentation of the inspection will be included in the Inspection and Maintenance Checklist (see **Appendix A).**
- Annual certifications that no LUC-restricted activities have been authorized and that site conditions and use are consistent with the LUCs. The Certification Form is presented in **Appendix E).**
- Periodic transmittal of a LUC Notice to federal, state, and local authorities and to owners and occupants of LHAAP-16. The notice will include the groundwater and soil (surface and subsurface) contamination and any land use restrictions referenced in the ROD, a written description of the LUCs and a figure depicting the LUC boundaries. The transmittal will coincide with each Five Year Review and will be documented in the report.
- The final LUC RD appendix of the RACR will be added to the Comprehensive LUC Management Plan and the plan will be provided to the owner or occupant of LHAAP-16.

The U.S. Army will address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable.

5.3 Reporting of LUC Inspection and Monitoring

Beginning with finalization of this RD and approval of the Inspection and Maintenance forms and the Annual Certification Form, the U.S. Army will undertake inspections and certify continued compliance with the LUC objectives. The U.S. Army, or the transferee after transfer, will retain the LUC Inspection and Certification documents in the project files for incorporation into the five-year review reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the certification, the U.S. Army will provide to USEPA and TCEQ, along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be

taken to correct those violations. The need to continue inspections and certifications will be revisited at five year reviews.

5.3.1 Notice of Planned Property Conveyances

Upon transfer of Army-owned property, the Army will provide written notice to the transferee of the LHAAP-16 groundwater and soil (surface and subsurface) contamination and any land use restrictions. Within 15 days of transfer, the U.S. Army will provide written notice to USEPA and TCEQ of the division of implementation, maintenance, and enforcement responsibilities unless the information has already been provided in the LUC RD. The notice will describe the mechanism by which the LUC will continue to be implemented, maintained, inspected, reported, and enforced. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental document for transfer. Although the US Army may transfer responsibility for various implementation actions, the U.S. Army will also retain ultimate responsibility for the remedy integrity. This means that the U.S. Army is responsible for addressing substantive violations of the LUC performance objectives that would undermine the U.S. Army's CERCLA remedy. The US Army also will be responsible for incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation. In the event property is transferred out of Federal control, the land use controls relating to property and groundwater restrictions shall be recorded in the deed and shall be enforceable by the United States and the state of Texas.

5.3.2 Opportunity to Review Text of Intended Land Use Controls

The US Army will provide a copy of the groundwater and land use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. USEPA will also receive a copy for review. The US Army will produce an ECP or other environmental document for transfer of LHAAP-16, but before executing transfer, the US Army will provide USEPA and TCEQ with a copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before transfer, to review all LUC-related provisions.

5.3.3 Notification Should Action(s) which Interfere with land Use Control Effectiveness be Discovered Subsequent to Conveyance

Should the US Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objectives, the US Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with Section 5.2.5 below, the US Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the US Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

5.3.4 Land Use Control Enforcement

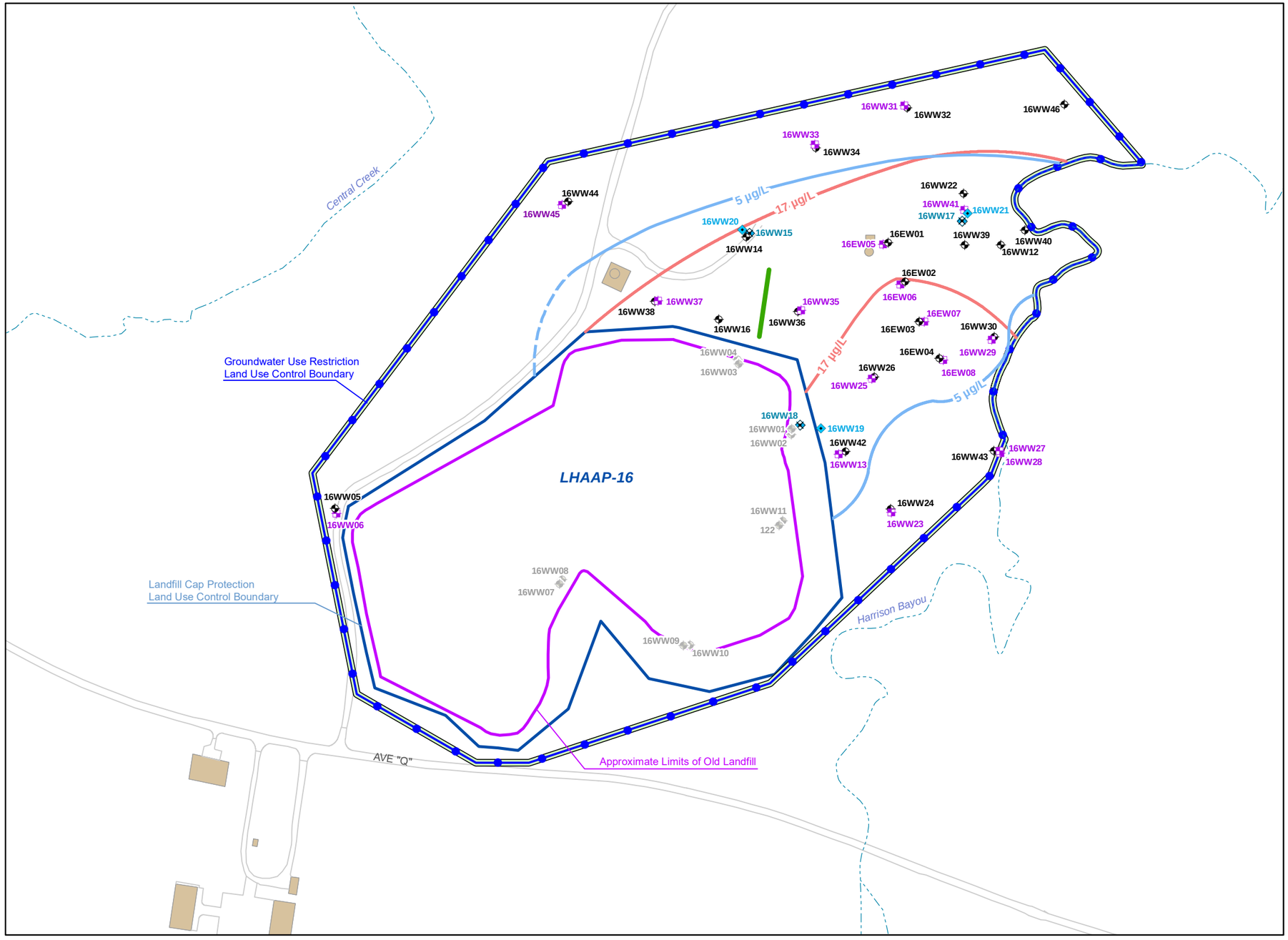
Should the LUC remedy reflected in this RD fail, the US Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the USFWS or its lessee, to the institution of judicial action against non-federal third

parties. Alternatively, should the circumstances warrant such, the US Army could choose to exercise its response authorities under CERCLA. Should the US Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the US Army may notify those agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC.

5.3.5 Modification or Termination of Land Use Controls

The LUCs shall remain in effect until such time as the US Army and USEPA agree that the concentrations of COCs in groundwater have met cleanup levels in groundwater and that surface and subsurface soil concentrations allow unrestricted use. When this occurs, the LUC will be terminated as needed. The decision to terminate the LUC will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action complete report. If the property has been transferred and a determination by the US Army and USEPA has been made to terminate the LUC, the US Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

01070895



Legend

- Existing Shallow Monitoring Well
- Existing Intermediate Monitoring Well
- Existing Upper Deep Monitoring Well
- Existing Lower Deep Monitoring Well
- Abandoned or Plugged Well
- Extent of Perchlorate Contamination > 17 ug/L in Intermediate and Shallow Zones (May 2013)
- Extent of TCE Contamination > 5 ug/L in Intermediate and Shallow Zones (Dashed Where Inferred) (May 2013)
- Location of Semi-Passive Biobarrier Demonstration (February 2004 through June 2006 [ESTCP 2009]).
- Road
- Stream
- Remedial and Monitoring System Boundary
- Groundwater Use Restriction Land Use Control Boundary
- LHAAP-16 Landfill Fence

Path: L:\AGE\GIS\AUS GIS\GIS_Projects\Longhorn_AAP\01_Reports\LHAAP-16\RAWP\Fig 5-1 LHAAP-16 Land Use Control Boundaries.mxd

AECOM

Figure 5-1
Land Use Contol Boundaries
LHAAP-16 Remedial Design

Longhorn Army Ammunition Plant
Karnack, Texas

60256135

January 2017

LHAAP – 16, 16-2
NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE FOR LHAAP-16 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

Date December 17, 2021

01070897

2021-000003204

*** DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT***

NOTICE

9 Pages

FILED AND RECORDED-OPR	CLERKS NOTES
On: 03/22/2021 03:29 PM Document Number: 2021-000003204 Receipt No: 2103298 Amount: $ 54.00 By: Emily Najera, Deputy Elizabeth James, County Clerk Harrison County, Texas	

STATE OF TEXAS

COUNTY OF HARRISON

I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Elizabeth James

Elizabeth James, Harrison County Clerk

Record and Return To:

WILLIAM FOSS
2500 CITY WEST BLVD., SUITE 1700

HOUSTON, TX 77042

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROLS AT LHAAP-16

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is a capped landfill, located in the south-central portion of the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-16. LHAAP was placed on the National Priorities List (NPL) in August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA) and the TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-16 were performed in accordance with the FFA requirements.

The LHAAP-16 landfill was established in the 1940s and was used for disposal of solid and industrial wastes until the 1980s when disposal activities were terminated. A multilayer cap was completed in 1998 as an early interim remedial action to mitigate potential risks posed by buried source material at the site. The U.S. Department of the Army issued the Final ROD for LHAAP-16, for the final remedy which includes in situ enhanced bioremediation and monitored natural attenuation for groundwater, maintenance and repair of the landfill cap, and land use controls. The ROD was cosigned by USEPA on September 13, 2016. The TCEQ issued a letter concurring with the ROD on September 6, 2016. The LUCs at LHAAP-16 will ensure protection of human health by preserving the integrity of the cap end restricting intrusive activities; restricting groundwater use to environmental monitoring and testing only, restricting use to non-residential, and maintaining groundwater monitoring and remediation systems until levels of contaminants of concern (COCs) allow for unlimited use and unrestricted exposure.

Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E (Room 103. first floor) 12100 Park 35 Circle, Austin, Texas 78753, (512) 239-2900, Monday through Friday 8:00 am to 5:00 pm, or the Administrative Record available at the Marshall Public Library, 300 South Alamo Boulevard, Marshall, Texas 75670, (930) 935-4465, Monday through Friday 9:30AM – 5:30PM.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public on the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

LHAAP-16 covers an area of approximately 13.6 acres, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in **Exhibit A**. The LUC boundaries for the landfill cover restriction and the groundwater and land use restrictions encompass 17.811 acres and 70.339 acres, more or less, respectively, as described in **Exhibit A**. The LUC boundaries are also presented in the attached **Figure 1**.

Future use of the parcel is intended as a national wildlife refuge, consistent with non-residential use. For the purposes of this certification, residential land use includes, but is not limited to, single family to multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of education purpose for children/young adults in grades kindergarten through 12. The U.S. Department of the Army has undertaken careful environmental study of the LHAAP-16 site and concluded that the LUCs set forth below are required to ensure protection of human health and the environment:

- Landfill Cover Restriction. The landfill restriction boundary consists of the 17.811-acre tract. Intrusive activities (e.g., digging) are restricted as long as landfill waste remains or until the levels of COCs allow for unlimited use and unrestricted exposure.
- Groundwater Use Restriction. The groundwater use restriction boundary consists of the 70.339-acre tract, more or less, and extends beyond the landfill and LHAAP-16 site boundary. The groundwater underlying this land is contaminated with volatile organic compounds (VOCs) (trichloroethene [TCE], cis-1,2-dichloroethene [DCE], and vinyl chloride [VC]), perchlorate, and five metals (arsenic, chromium, manganese, nickel, and thallium). A prohibition of groundwater use (except for environmental monitoring and testing) as a potable source is in place until the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.
- Non-Residential Use Restriction. The non-residential use restriction boundary is coincident with the boundary for Groundwater Use Restriction and consists of the 70.339-acre tract, more or less. The site is restricted to nonresidential use until it is demonstrated that surface and subsurface soil and groundwater COCs are at levels that allow for unlimited use and unrestricted exposure.

- Maintain Integrity of Monitoring Systems. The integrity of any current or future remedial or monitoring systems will remain in place until the cleanup levels of COCs in groundwater are met.

III

The owner of this site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIN-ISE-LO (H. Procter)
Program Manager/Analyst
Office of the Deputy Chief of Staff, (DAIN-ISE)
Environmental Division, BRAC Field Branch
600 Army Pentagon
Washington, D.C. 22310-0600

Or

Mr. Thomas A. Lineer
Chief
Office of the Deputy Chief of Staff, (DAIN-ISE)
Environmental Division, BRAC Field Branch
600 Army Pentagon
Washington, D.C. 22310-0600

Rose M. Zeiler
Longhorn AP Site Manager

EXECUTED this the 25th day of Feb, 2021.

BEFORE ME, on this 25th day of Feb 2021, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

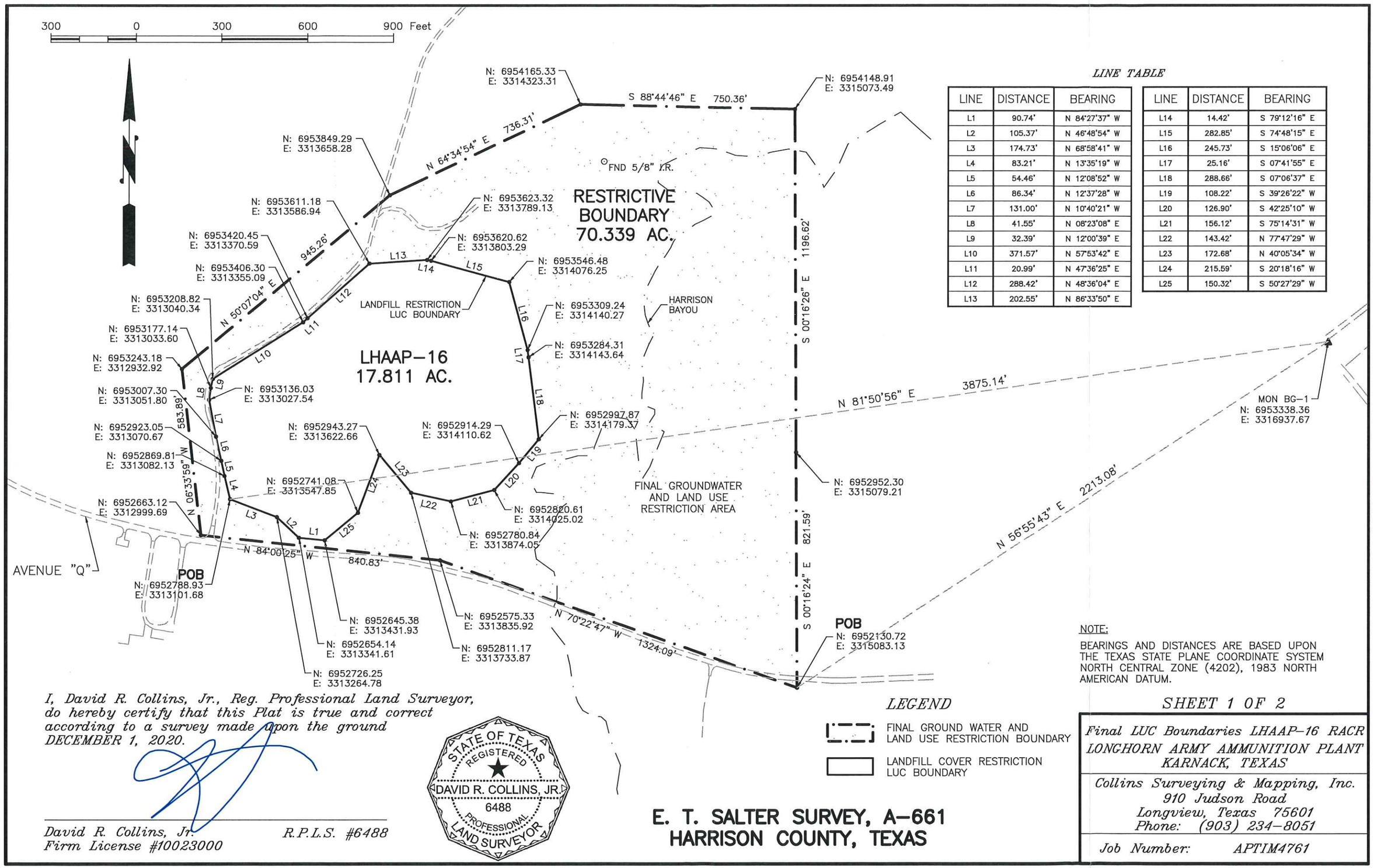
GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 25th day of February, 2021.

STATE OF ARKANSAS NOTARY PUBLIC
KAREN DAVIS
MY COMMISSION # 12382216
EXPIRES: May 20, 2021
Logan County

Notary Public in and for the State of Arkansas
County of Logan

Exhibit A

Survey and Legal Plat



LINE TABLE

LINE	DISTANCE	BEARING
L1	90.74'	N 84°27'37" W
L2	105.37'	N 46°48'54" W
L3	174.73'	N 68°58'41" W
L4	83.21'	N 13°35'19" W
L5	54.46'	N 12°08'52" W
L6	86.34'	N 12°37'28" W
L7	131.00'	N 10°40'21" W
L8	41.55'	N 08°23'08" E
L9	32.39'	N 12°00'39" E
L10	371.57'	N 57°53'42" E
L11	20.99'	N 47°36'25" E
L12	288.42'	N 48°36'04" E
L13	202.55'	N 86°33'50" E

LINE	DISTANCE	BEARING
L14	14.42'	S 79°12'16" E
L15	282.85'	S 74°48'15" E
L16	245.73'	S 15°06'06" E
L17	25.16'	S 07°41'55" E
L18	288.66'	S 07°06'37" E
L19	108.22'	S 39°26'22" W
L20	126.90'	S 42°25'10" W
L21	156.12'	S 75°14'31" W
L22	143.42'	N 77°47'29" W
L23	172.68'	N 40°05'34" W
L24	215.59'	S 20°18'16" W
L25	150.32'	S 50°27'29" W

NOTE:

BEARINGS AND DISTANCES ARE BASED UPON THE TEXAS STATE PLANE COORDINATE SYSTEM NORTH CENTRAL ZONE (4202), 1983 NORTH AMERICAN DATUM.

I, David R. Collins, Jr., Reg. Professional Land Surveyor, do hereby certify that this Plat is true and correct according to a survey made upon the ground DECEMBER 1, 2020.

David R. Collins, Jr. *R.P.L.S. #6488*
Firm License #10023000

STATE OF TEXAS
REGISTERED
DAVID R. COLLINS, JR.
6488
PROFESSIONAL
LAND SURVEYOR

LEGEND

FINAL GROUND WATER AND LAND USE RESTRICTION BOUNDARY

LANDFILL COVER RESTRICTION LUC BOUNDARY

E. T. SALTER SURVEY, A-661
HARRISON COUNTY, TEXAS

SHEET 1 OF 2

Final LUC Boundaries LHAAP-16 RACR
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Collins Surveying & Mapping, Inc.
910 Judson Road
Longview, Texas 75601
Phone: (903) 234-8051

Job Number: APTIM4761

LEGAL DESCRIPTION
LANDFILL COVER RESTRICTION LUC BOUNDARY:

All that certain 17.811 acre tract of land contained within Longhorn Army Ammunition Plant, Harrison County, Texas, said 17.811 acre tract more particularly described as follows:

BEGINNING at a point north of Avenue "Q" and east of a gravel lease road said point with the coordinates of N: 6952788.93, E: 3313101.68, from which a corps of engineers monument BG–1 found at the east corner of the roadway intersection at the entrance of Longhorn Army Ammunition Plant Burning Grounds said monument with the coordinates of N: 6953338.36, E: 3316937.67, and bears N 81°50'56" E 3875.14 feet;

THENCE: N 12°08'52" W 83.21 feet; THENCE: N 12°08'52" W 54.46 feet; N 12°37'28" W 86.34 feet; THENCE: N 10°40'21" W 131.00 feet; THENCE: N 08°23'08" E 41.55 feet; THENCE: N 12°00'39" E 32.39 feet; THENCE: N 57°53'42" E 371.57 feet; THENCE: N 47°36'25" E 20.99 feet; THENCE: N 48°36'04" E 288.42 feet; THENCE: N 86°33'50" E 202.55 feet; THENCE: S 79°12'16" E 14.42 feet; THENCE: S 74°48'15" E 282.85 feet; THENCE: S 15°06'06" E 245.73 feet; THENCE: S 07°41'55" E 25.16 feet; THENCE: S 07°06'37" E 288.66 feet; THENCE: S 39°26'22" W 108.22 feet; THENCE: S 42°25'10" W 126.90 feet; THENCE: S 75°14'31" W 156.12 feet; THENCE: N 77°47'29" W 143.42 feet; THENCE: N 40°05'34" W 172.68 feet; THENCE: S 20°18'16" W 215.59 feet; THENCE: S 50°27'29" W 150.32 feet; THENCE: N 84°27'37" W 90.74 feet; THENCE: N 46°48'54" W 105.37 feet;

THENCE: N 68°58'41" W 174.73 feet to the POINT OF BEGINNING, containing 17.811 acres of land, more or less.

LEGAL DESCRIPTION
FINAL GROUND WATER AND LAND USE RESTRICTION BOUNDARY:

All that certain 70.339 acre tract of land contained within Longhorn Army Ammunition Plant, Harrison County, Texas, said 17.811 acre tract more particularly described as follows:
BEGINNING at a point south of Avenue "Q" with the coordinates of N: 6952130.72, E: 3315083.13, from which a corps of engineers monument BG–1 found at the east corner of the roadway intersection at the entrance of Longhorn Army Ammunition Plant Burning Grounds said monument with the coordinates of N: 6953338.36, E: 3316937.67, and bears N 56°55'43" E 2213.08 feet;
THENCE: N 70°22'47" W generally along said Avenue "Q" 1324.09 feet to a point north of said Avenue "Q" for an angle point;
THENCE: N 84°00'25" W generally along the north edge of said Avenue "Q" 840.83 feet to a point for the southwest corner of this tract; THENCE: N 06°33'59" W 583.89 feet; THENCE: N 50°07'04" E 945.26 feet; THENCE: N 64°34'54" E 736.31 feet; THENCE: S 88°44'46" E 750.36 feet to a point for the northeast corner of this tract; THENCE: S 00°16'26" E 1196.62 feet;
THENCE: S 00°16'24" E 821.59 feet to the POINT OF BEGINNING, containing 70.339 acres of land, more or less.

SHEET 2 OF 2

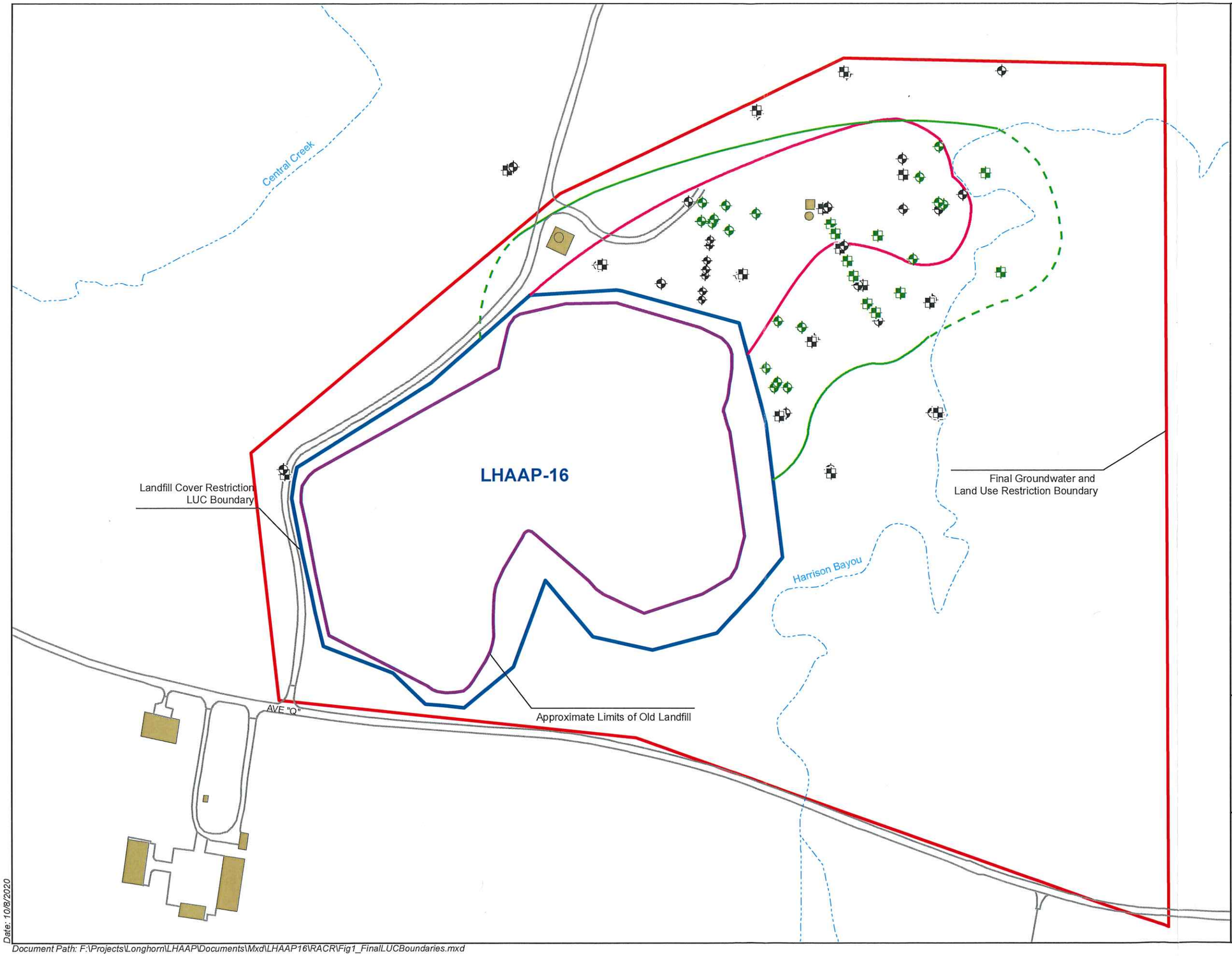
Final LUC Boundaries LHAAP–16 RACR
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Collins Surveying & Mapping, Inc.
910 Judson Road
Longview, Texas 75601
Phone: (903) 234–8051

Job Number: APTIM4761

Figure 1

Final LUC Boundaries



Shallow Well Installed 2018 or 2019

Intermediate Well Installed 2018 or 2019

Existing Shallow Monitoring Well

Existing Intermediate Monitoring Well

Extent of Perchlorate Contamination > 17 µg/L in Intermediate and Shallow Zones (September 2019)

Extent of TCE Contamination > 5 µg/L in Intermediate and Shallow Zones (Dashed Where Inferred) (September 2019)

Stream

Road

Final Groundwater and Land Use Restriction Boundary

Landfill Cover Restriction LUC Boundary

Approximate Limits of Old Landfill

Building or Tank

Notes:
1. µg/L - micrograms per liter
2. LUC - land use control
3. TCE - trichloroethene
4. The eastern side of the Final Groundwater and Land Use Restriction Boundary is shared with the western edge of a similar land use restriction that will cover LHAAP-17 and LHAAP-18/24 located to the east of LHAAP-16.

N

0 110 220 Feet

U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

bhate APTIM

Figure 1

Final LUC Boundaries
LHAAP-16 RACR

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 10/8/2020

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP16\RACR\Fig1_FinalLUCBoundaries.mxd

LHAAP – 16, 16-3
LAND USE CONTROL INSPECTION AND MAINTENANCE CHECKLIST

Date December 17, 2021

Inspection and Maintenance Checklist

General Information	
Project Name	Inspection and Maintenance, LHAAP-16 Landfill, Longhorn Army Ammunition Plant, Karnack, TX
Contractor	
Inspector's Name	
Inspector's Title	
Inspector's Signature	
Inspector's Contact Number	
Inspection Date	
Type of Inspection	☐ Quarterly ☐ Semiannual ☐ Annual ☐ Prior to forecast rain ☐ After a rain event ☐ Other ----------

Description		**Yes**	**No**	**N/A**	**Comments** (Attach photos/location sketches)	**Corrective Action** (Attach photos)
A. CAP Cover Surface						
A.1	Are there any significant cracks present?					
A.2.	Are there any damaged areas?					
A.3	Is there any ponded water present?					
A.4	Any other relevant observations?					
B. CAP Vegetation and Animal Burrows						
B.1	Are there signs of stressed/ dead vegetation?					
B.2	Are there any significant bare spots?					
B.3	Are deep-rooted plants present?					
B.4	Are there signs of animal burrows?					
B. 5	Any other relevant observations?					

Description		Yes	No	N/A	**Comments** (Attach photos/location sketches)	**Corrective Action** (Attach photos)
C. CAP Erosion and Drainage System						
C.1	Is there any evidence of significant/ clearly visible erosion, settlement, or other deterioration?					
C.2	Are the drainage systems in poor condition?					
C.3	Is there excessive silting or debris clogging?					
C.4	Is there erosion of banks and slopes?					
C.5	Are there areas of choking by overgrown vegetation?					
C.6	Is there pooling of water in or along side a channel or berm?					
C.7	Any other relevant observations?					
D. Groundwater Monitoring Wells						
D.1	Are the installed groundwater monitoring wells in poor condition?					
D.2	Are there any signs of damage, unusual wear, rust and corrosion, vandalism, unauthorized entry/use, or settlement?					
D.3	Is well cap and/or locking mechanism not properly functioning?					
D.4	Are the well heads and protective casings damaged?					
D.5	Is the well cleared of vegetation and accessible?					
D.6	Any other relevant observations?					

Description		Yes	No	N/A	**Comments** (Attach photos/location sketches)	**Corrective Action** (Attach photos)
E. Site Access Features						
E.1	Are the perimeter fence and gates damaged?					
E.2	Gate(s) damaged?					
E.3	Litter encountered within the area?					
E.4	Are the gate locks missing?					
E.5	Are signs to prevent unauthorized entry missing?					
E.6	Are the access roads in unusable or poor condition?					
E.7	Any other relevant observations?					
F. Concrete Aprons and Bollards						
F.1	Are there any significant cracks present?					
F.2	Are there any damaged areas?					
F.3	Any other relevant observations?					

LHAAP – 16, 16-4
ANNUAL LAND USE CONTROL COMPLIANCE CERTIFICATION FORM

Date December 17, 2021

Annual Land Use Control Compliance Certification Form

In accordance with the Remedial Design dated _____ for LHAAP-16 an inspection of the site was conducted by _____ [indicate transferee] on _____.

The land use control mechanisms are:

- Groundwater restrictions - prohibit access to the contaminated groundwater except for environmental monitoring and testing only until cleanup goals are met;
- Landfill integrity - preserve the integrity of the landfill cap and restrict intrusive activities (e.g., digging) that would degrade or alter the cap;
- Land use restrictions - restrict land use to nonresidential;
- Integrity of remedial and monitoring systems - maintain the integrity of any current or future remedial or monitoring systems until cleanup goals are met.

No unauthorized activities or uses have occurred. Compliance with land use controls and restrictions is as follows:

- No use of groundwater (other than environmental testing and monitoring), installation of new groundwater wells, or tampering with existing monitoring wells;
- No landfill intrusive activities (e.g., digging) that would degrade or alter the landfill cap; maintenance of vegetative cover and repair of soil subsidence or erosion areas on the cap;
- No land use other than nonresidential; and
- No activities that would compromise the integrity of the remedial or monitoring systems.

I, the undersigned, do document that the inspection was conducted as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year, retained in the file and provided to Army, EPA and TCEQ upon request.

LHAAP – 16, 16-5
LAND USE CONTROL STAKEHOLDER NOTICE LETTERS AND ATTACHMENTS

Date December 17, 2021

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Hon. Chad L. Sims
Harrison County Judge
#1 Peter Whetstone Square, Room 314
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Judge Sims,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Attachments:
LHAAP-04 Land Use Controls for Soil and Groundwater Contamination
LHAAP-04 Site Location Map
LHAAP-04 Final Land Use Control Boundary Map
LHAAP-16 Land Use Controls for Soil and Groundwater Contamination
LHAAP-16 Site Location Map
LHAAP-16 Final Land Use Control Boundary Map

Copies furnished:
A. Palmie, TCEQ, Austin, TX
L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Mr. Thomas Speir
Chairman, Harrison County Historical Commission
200 West Houston Street
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Speir,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Sincerely,

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Longhorn AAP Site Manager

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L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Mr. William D. Hatfield
Harrison County Commissioner, Precinct 1
Waskom Sub-Courthouse
165 West Texas Avenue
Waskom, Texas 75692

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Commissioner Hatfield,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Hon. Judye Patterson
Mayor, City of Uncertain, Texas
P.O. Box 277
Uncertain, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mayor Patterson,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Longhorn AAP Site Manager

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L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Mr. Eric Duerkop
Manager, Caddo Lake National Wildlife Refuge
15600 Highway 134
Karnack, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Duerkop,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Mr. Terry Britt
President, Caddo Lake Water Supply Corporation
P.O. Box 136
Uncertain, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Britt,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Longhorn AAP Site Manager

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Mr. Carl Shelton
President, Leigh Water Supply Corporation
342 Byrd Circle
Karnack, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Shelton,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Longhorn AAP Site Manager

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Rep. Chris Paddie
Texas House of Representatives, District 9
102 West Houston Street
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Representative Paddie,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Sen. Bryan Hughes
Texas State Senate, District 1
201 West Houston Street, Suite 106
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Senator Hughes,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Texas Department of Licensing and Regulation
Water Well Drillers and Pump Installers Program
P.O. Box 12157
Austin, Texas 78711

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Rep. Louis Gohmert
United States House of Representatives
Texas 1st Congressional District
102 West Houston Street
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Representative Gohmert,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Sen. John Cornyn
United States Senate
Regions Bank Building
100 East Ferguson Street, Suite 1004
Tyler, Texas 75702

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Senator Cornyn,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

February 23, 2021

DAIN-ODB-LO

Sen. Ted Cruz
United States Senate
305 South Broadway, Suite 501
Tyler, Texas 75702

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Senator Cruz,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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A. Palmie, TCEQ, Austin, TX
L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

The following attachments were included with the letters:

LHAAP-16 Land Use Controls for Soil and Groundwater Contamination

LHAAP-16 Site Location Map

LHAAP-16 Final Land Use Control Boundary Map

Date December 17, 2021

Land Use Controls for Soil and Groundwater Contamination
Landfill 16 (LHAAP-16)
Longhorn Army Ammunition Plant, Karnack, Texas

The former Longhorn Army Ammunition Plant (LHAAP) is an inactive government-owned, formerly contractor-operated and maintained Department of Defense facility located in central east Texas in the northeast corner of Harrison County. LHAAP is approximately 14 miles northeast of Marshall, Texas. The facility is approximately 40 miles west of Shreveport, Louisiana. The former U.S. Army installation occupied nearly 8,416 acres between State Highway 43 at Karnack, Texas, and the southwestern shore of Caddo Lake and is accessed by State Highways 43 and 134.

LHAAP was placed on the National Priorities List (NPL) on August 9, 1990. Activities to remediate contamination began in 1990. After its listing on the NPL, the U.S. Army, the USEPA, and the Texas Water Commission (currently known as the Texas Commission on Environmental Quality [TCEQ]) entered into a CERCLA Section 120 Federal Facilities Agreement (FFA) for remedial activities at LHAAP. The FFA became effective December 30, 1991. LHAAP operated until 1997 when it was placed on inactive status and classified by the U.S. Army Armament, Munitions, and Chemical Command as excess property.

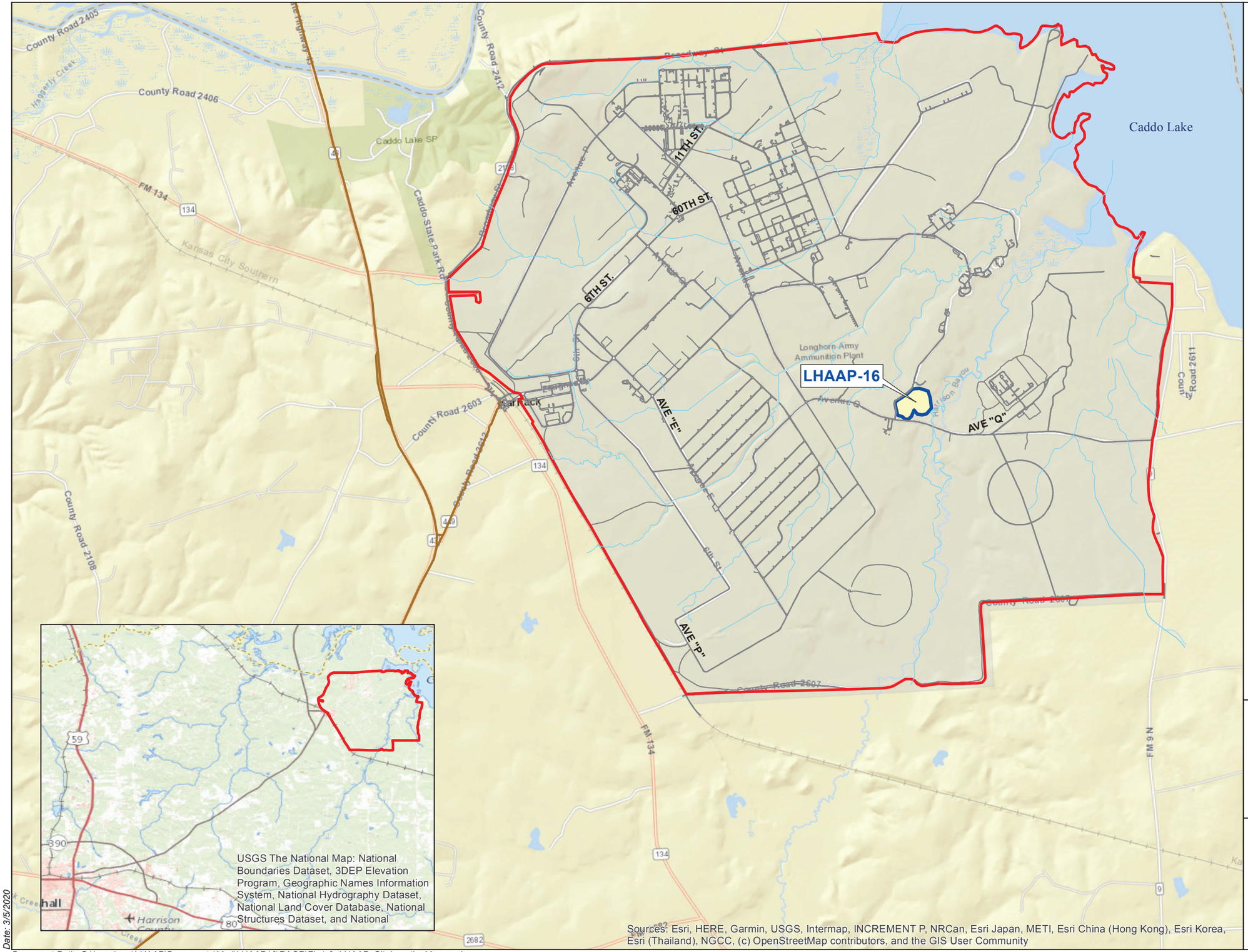
Land Use Controls (LUCs) are applied at LHAAP-16 as part of the remedy in accordance with the LHAAP-16 Record of Decision signed September 13, 2016. The LUCs are necessary because contaminants are present in groundwater at levels that do not support unlimited use and unrestricted exposure and landfill waste remains at the site under the existing landfill cap.

Contaminants of Concern (COCs)
In the shallow and intermediate groundwater zones, the COCs are volatile organic compounds (VOCs) (trichloroethene [TCE], cis-1,2-dichloroethene [DCE], 1,1-DCE, 1,2-dichloroethane, 1,1,2-trichloroethane, methylene chloride, and vinyl chloride [VC]), perchlorate, and five metals (arsenic, chromium, manganese, nickel, and thallium).

Land Use Controls

- The LUC to preserve the integrity of the landfill cap and restrict intrusive activities (e.g., digging) that would degrade or alter the cap shall remain in place as long as the landfill waste remains at the site or until the levels of COCs allow for unlimited use and unrestricted exposure.
- The LUC prohibiting groundwater use (except for environmental monitoring and testing) as a potable source shall be implemented and shall remain in place at the site until the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.
- The LUC restricting land use to nonresidential shall be implemented and shall remain in place at the site until the levels of COCs in surface and subsurface soil and groundwater allow for unlimited use and unrestricted exposure.
- The LUC to maintain the integrity of any current or future remedial or monitoring systems shall remain in place until groundwater cleanup levels of COCs are met.

Further information may be found in the Administrative Record at the Marshall Public Library, at www.longhornaap.com or by contacting Rose M. Zeiler (479-635-0110 or rose.m.zeiler.civ@mail.mil).



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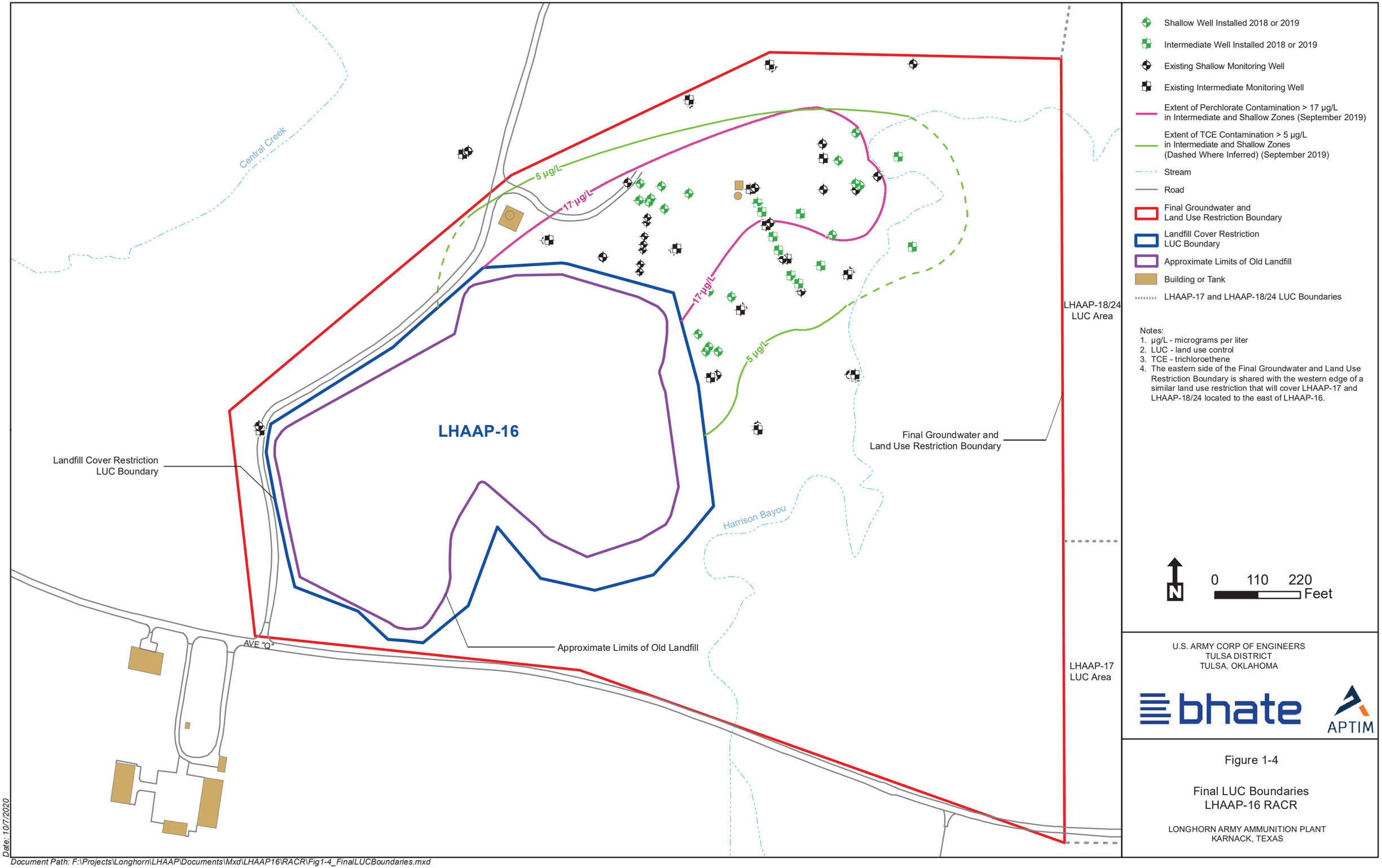
Figure 1-2

LHAAP Site Location Map
LHAAP-16 RACR

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/5/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP16\RACR\Fig1-2_LHAAP_SiteLocationMap.mxd



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Figure 1-4

Final LUC Boundaries
LHAAP-16 RACR

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 10/7/2020

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP16\RACR\Fig1-4_FinalLUCBoundaries.mxd

LHAAP – 17, 17-1
DRAFT LUC INSPECTION AND MAINTENANCE LOG
(RAO Inspection and Maintenance Checklist)
(Well Inspection Form)

Date October 4, 2019

RAO Inspection and Maintenance Checklist

General Information	
Project Name	RAO Inspection and Maintenance, LHAAP-17 Longhorn Army Ammunition Plant, Karnack, TX
Contractor	
Inspector's Name	
Inspector's Title	
Inspector's Signature	
Inspector's Contact Number	
Inspection Date	
Type of Inspection	☐ Quarterly ☐ Semiannual ☐ Annual ☐ Prior to forecast rain ☐ After a rain event ☐ Other ----------

A. Groundwater Monitoring Wells						
A.1	Are the installed groundwater monitoring wells in poor condition?					
A.2	Is the well cleared of vegetation and accessible?					
A.3	Any other relevant observations?					
A.4	Are there any significant cracks present?					
A.5	Are there any damaged areas?					

WELL INSPECTION FORM

Job Name: _____ Well ID: _____

Job No.: _____ Completed Date: _____

Client: _____ Measured Depth: _____

Site Location: _____ Inspector: _____

☐ **ABOVE GROUND**

Protective casing? ☐ Yes ☐ No

Material _____

Condition: ☐ Good ☐ Broken ☐ Cracked

Lid Condition: ☐ Good ☐ Broken ☐ Cracked

Hinge Condition: ☐ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ **FLUSH MOUNTED**

Well cover present? ☐ Yes ☐ No

Condition: ☐ Good ☐ Broken ☐ Cracked

Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Visible? ☐ Yes ☐ No

Dimensions _____ Thickness _____

Sloped away from casing? ☐ Yes ☐ No

Check any of the following features that apply:

☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

CONCRETE PAD:

Inner Diameter (inches) _____

Condition: ☐ Good ☐ Broken ☐ Cracked ☐ Other (describe) _____

Cap present? ☐ Yes ☐ No

Well lock present? ☐ Yes ☐ No

Lock functioning properly? ☐ Yes ☐ No

Bump post? ☐ Yes ☐ No

Well ID visible? ☐ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☐ No

Visual obstruction? ☐ Yes ☐ No

Is well open to completed depth? ☐ Yes ☐ No

Is silt present in well? ☐ Yes ☐ No

Is silt greater than 25% of well screen length? ☐ Yes ☐ No

COMMENTS:

LHAAP – 17, 17-2
LUCs FROM DRAFT FINAL REMEDIAL DESIGN

Date October 4, 2019

Draft Final
Remedial Design and Remedial Action Work Plan, LHAAP-17 Burning Ground No. 2 / Flashing Area, Group 2

Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for U.S. Army Corps of Engineers, Tulsa District
Contracting Division
2488 East 81st Street
Tulsa, Oklahoma 74137-4290

Prepared by

bhate ENVIRONMENT & INFRASTRUCTURE

1608 13th Avenue south, Suite 300
Birmingham, Alabama 35205
1-800-806-4001 • www.bhate.com

Prepared by

APTIM

Aptim Federal Services, LLC
2500 CityWest, Suite 1700
Houston, Texas 77042

Contract No. W9128F-13-D-0012
Task Order No. W9128BV17F0150
Project No. 501032
Rev 0
March 2019

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Acronyms and Abbreviations

µg/L	micrograms per liter
AECOM	AECOM Engineering Company
APTIM	Aptim Federal Services, LLC
Bgs	below ground surface
Bhate	Bhate Environmental, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COC	chemical of concern
COPEC	chemical of potential ecological concern
CY	cubic yards
DCE	dichloroethene
DNT	dinitrotoluene
ESD	Explanation of Significant Differences
FFA	Federal Facility Agreement
gpm	gallons per minute
GPS	global positioning system
GWTP	groundwater treatment plant
HDPE	high density polyethylene pipe
IWWP	Installation-Wide Work Plan
LHAAP	Longhorn Army Ammunition Plant
LOE	line of evidence
LTM	long-term monitoring
LUC	land use control
mg/kg	milligrams per kilogram
MNA	monitored natural attenuation
MOA	Memorandum of Agreement
NCP	National Contingency Plan
NPL	National Priorities List
O&M	operation and maintenance
PDI	Pre-Design Investigation
RA	remedial action
RACR	Response Action Completion Report
RA-O	Remedial Action-Operation
RAOs	remedial action objectives
RAWP	Remedial Action Work Plan
RD	remedial design
ROD	Record of Decision
Shaw	Shaw Environmental, Inc.
TAC	Texas Administrative Code
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin

Acronyms and Abbreviations (continued)

TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
TNT	2,4,6-trinitrotoluene
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • March 2019

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • March 2019

6.0 LAND USE CONTROL PLAN

The U.S. Army or its representative will be responsible for LUC implementation and certification, reporting and enforcement. The U.S. Army will address the LUC problems within its control that are likely to impact remedy integrity and will address problems as soon as practicable. Per the Final ROD (Shaw 2016), the LUCs' performance objectives are to:

- Prohibit the use of groundwater contaminated as a potable water source;
- Restrict land use to nonresidential; and
- Maintain the integrity of any current or future remedial or monitoring systems.

The implementation, maintenance, and inspection requirements associated with each of the performance objectives that comprise this LUC RD are described below. The proposed actions to be taken to implement the LUC objectives during the RA phase are described in **Section 8.0**. The implementation activities, as well as ongoing maintenance, monitoring, and reporting requirements will be presented in the Remedial Action Completion Report (RACR), as the final LUC RD. Upon regulatory review and concurrence with the final LUC RD, it will be included as part of the Comprehensive LUC Management Plan.

For portions of the Site subject to land use controls that are not owned by the Army, the Army will monitor and report on the implementation, maintenance, and enforcement of land use controls, and coordinate with federal, state, and local governments and owners and occupants of properties subject to land use controls. The Army retains responsibility for ensuring that the remedy remains protective of human health and the environment.

6.1 LUC Implementation

The actions required to implement the LUCs for LHAAP-17 are described below. The first of these, the initial notice of LUCs was completed on December 8, 2016. The December 8, 2016 notice letters that were sent to relevant officials (U.S. Army 2016) included a preliminary LUC boundary. The proposed LUC boundary for the groundwater use restriction is shown in red on **Figure 6-1**. The LUC boundary for the non-residential site use will be the "Site Boundary" shown in blue on **Figure 6-1**. The following actions will be undertaken to implement the LUCs for LHAAP-17:

- Finalize the boundary for the LUCs as a part of the remedial action.
  - Revise the boundary, if necessary, based on groundwater sampling results. The final boundary of the groundwater LUCs (prevent the use of groundwater contaminated above cleanup levels as a potable water source and prohibit access to the contaminated groundwater except for environmental monitoring and testing

only); the remedial or monitoring system LUCs (maintain the integrity of any current or future remedial or monitoring systems); and the nonresidential land use LUC (restrict land use to nonresidential) will be reviewed during RA activities after an evaluation of the monitoring data has been completed and revised if necessary.

  - Survey the groundwater use and land use restriction LUC boundaries. The boundaries will be finalized after concurrence by USEPA and TCEQ, and will be surveyed by a State-licensed surveyor. A legal description of the surveyed areas will be appended to the survey plat.

- Record the LUCs in Harrison County. The LUC plat, legal description, and LUC restriction language will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566.
- Notify the Texas Department of Licensing and Regulation of the groundwater LUCs. The Texas Department of Licensing and Regulation will be notified of the groundwater restrictions, which include the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ. The survey plat, legal boundary, and description of the groundwater restriction LUCs, in conjunction with a locator map, will be provided in hard and electronic copy.
- Provide notice after finalizing LUC boundary as part of the RA. The notice will consist of a brief description of the contaminants in groundwater and soil, a written description of the LUCs and a figure depicting the revised LUC boundaries. The notices will be sent to federal, state, and local officials including: U.S. Senators, U.S. Congressman, State Senator, State Representative, Harrison County Judge, Harrison County Commissioner Precinct 1, City of Uncertain Mayor, and Karnack Water Supply Corporation Board Members. Notice will also be sent to the Caddo Lake National Wildlife Refuge Manager.
- Periodically transmit the notice to federal, state, and local governments involved at this site and the owners and occupants of the properties subject to those use restrictions and LUCs. The transmittal will coincide with each Five Year Review and will be documented in the report.

6.2 Maintenance and Monitoring Requirements

The LUCs will be maintained in place as follows:

- The LUCs restricting the use of groundwater to environmental monitoring and testing only and the LUC restricting land use to nonresidential will remain in place until the levels of COCs (i.e., including all hazardous substances, pollutants, and contaminants found at the Site at cleanup levels as listed in **Tables 1-2 and 1-3**) in surface and subsurface soil and groundwater allow for unlimited use and unrestricted exposure;

- The LUC to maintain the integrity of any current or future remedial or monitoring systems will remain in place until groundwater cleanup levels of COCs (i.e., including all hazardous substances, pollutants and contaminants found at the Site at cleanup levels as listed in **Table 1-2**) are met; and,

- The LUC prohibiting groundwater use (except for environmental monitoring and testing) as a potable source will remain in place until the levels of COCs (i.e., all hazardous substances, pollutants, and contaminants found at the Site at cleanup levels as listed in **Tables 1-2 and 1-3**) in soil and groundwater allow for unlimited use and unrestricted exposure.

Remedial or Monitoring System LUCs include physical components that require repair and maintenance. These are described in **Section 10.0.** The RAO and Extraction System Inspection and Maintenance Checklists is provided in **Appendix D.**

The administrative maintenance required to ensure the LUCs remain in place and effective until the cleanup levels of the COCs are at levels that allow unrestricted use and unlimited exposure are:

- Annual field inspections of the site to confirm that no violations of the LUCs have occurred. Documentation of the inspection will be included in the Inspection and Maintenance Checklist (see **Appendix D).**

- Annual certifications that no LUC-restricted activities have been authorized and that site conditions and use are consistent with the LUCs. The Certification Form is presented in **Appendix E).**

- Periodic transmittal of a LUC Notice to federal, state, and local authorities and to owners and occupants of LHAAP-17. The notice will include the groundwater and soil (surface and subsurface) contamination and any land use restrictions referenced in the ROD, a written description of the LUCs and a figure depicting the LUC boundaries. The transmittal will coincide with each Five Year Review and will be documented in the report.

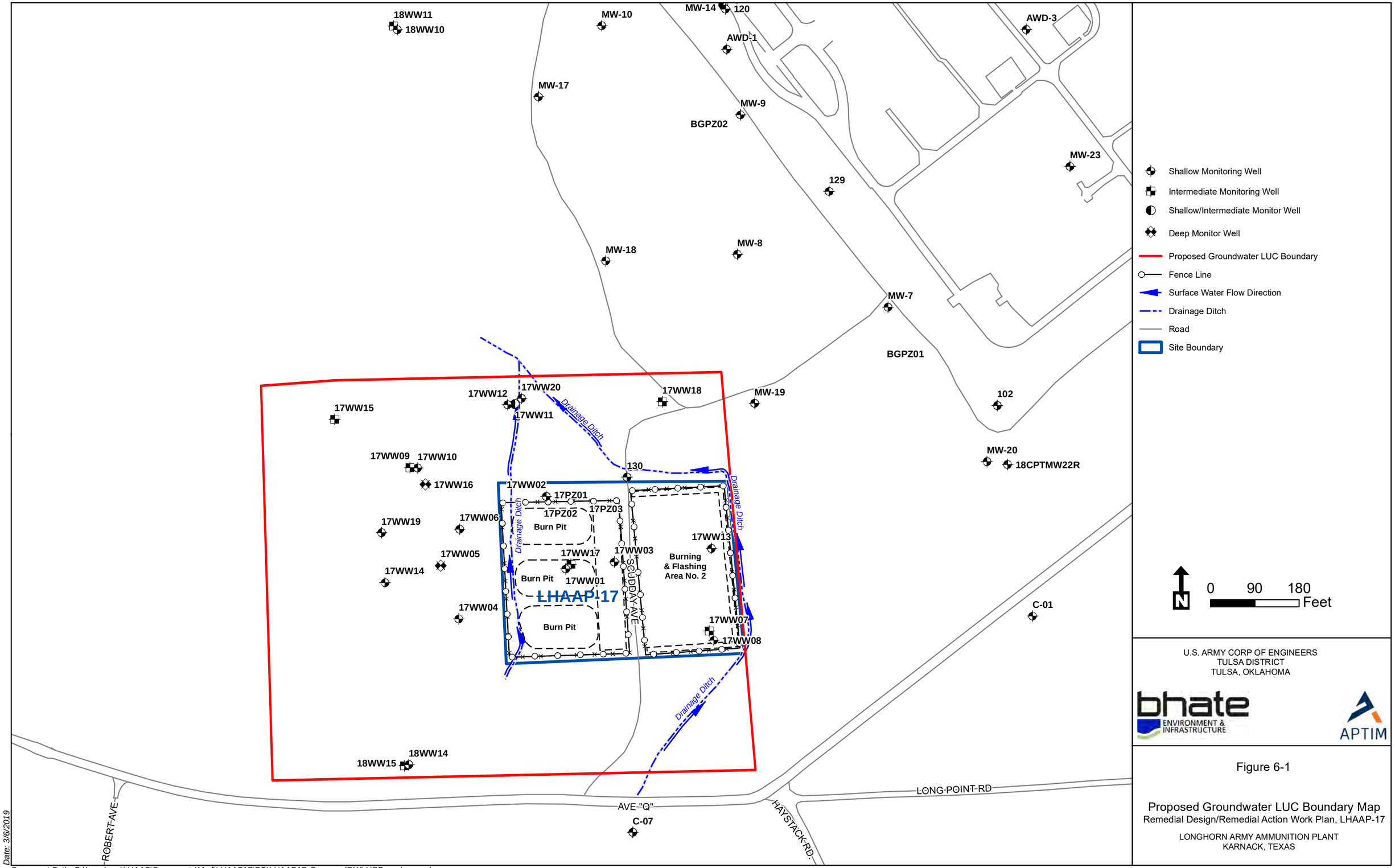
- The final LUC RD appendix of the RACR will be added to the Comprehensive LUC Management Plan and the plan will be provided to the owner or occupant of LHAAP-17.

The U.S. Army will address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable.

6.3 LUC Inspection and Monitoring

Upon finalization of this LUC RA, the amended LUC boundary map and legal description recordation will be inserted into the Comprehensive LUC Management Plan for LHAAP. The Comprehensive LUC Management Plan figure and table will be updated to reflect the inclusion of LHAAP-17.

Beginning with finalization of this RD/RAWP and approval of the Inspection and Maintenance form and the Annual Certification Form, the U.S. Army will undertake inspections and certify continued compliance with the LUC objectives. The U.S. Army, or the transferee after transfer, will retain the LUC Inspection and Certification documents in the project files for incorporation into the Five Year Review reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the certification, the U.S. Army will provide to USEPA and TCEQ, along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations. The need to continue inspections and certifications will be revisited at Five Year Reviews.



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TULSA, OKLAHOMA

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Figure 6-1

Proposed Groundwater LUC Boundary Map
Remedial Design/Remedial Action Work Plan, LHAAP-17

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/6/2019

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP17\RD\LHAAP17_ProposedGWLUCBoundary.mxd

LHAAP – 17, 17-3
NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-17 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT) (PENDING)

Date October 4, 2019

LHAAP – 17, 17-4
LAND USE CONTROL COMPLIANCE INSPECTION FORM

Date October 4, 2019

Annual Land Use Control Compliance Certification Form

In accordance with the Remedial Design dated_____for LHAAP-17 an inspection of the site was conducted by_____[indicate transferee] on _____.

The land use control mechanisms are:

- Groundwater restrictions - prohibit access to the contaminated groundwater except for environmental monitoring and testing only until cleanup goals are met;
- Land use restrictions - restrict land use to nonresidential;
- Integrity of remedial and monitoring systems - maintain the integrity of any current or future remedial or monitoring systems until cleanup goals are met.

No unauthorized activities or uses have occurred. Compliance with land use controls and restrictions is as follows:

- No use of groundwater (other than environmental testing and monitoring), installation of new groundwater wells, or tampering with existing monitoring wells;
- No land use other than nonresidential; and
- No activities that would compromise the integrity of the remedial or monitoring systems.

I, the undersigned, do document that the inspection was conducted as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year, retained in the file and provided to Army, EPA and TCEQ upon request.

LHAAP-18/24, 18-1
LUCS FROM REMEDIAL DESIGN (PENDING)

Date December 17, 2021

LHAAP-19

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-19 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2013-000013785

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

MISCELLANEOUS

5 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 11/14/2013 04:23 PM **Document Number:** 2013-000013785 **Receipt No:** 1313735 **Amount:** $ 28.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AARON WILLIAMS
1645 SOUTH 100 FIRST EAST AVE

TULSA, OK 74128

STATE OF TEXAS
HARRISON COUNTY

INDUSTRIAL SOLID WASTE
CERTIFICATION OF REMEDIATION

KNOW ALL MEN BY THESE PRESENT THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-19, is a C&D Landfill located within the former Longhorn Army Ammunition Plant (LHAAP) in the northeast corner of Harrison County, Texas approximately 14 miles northeast of Marshall, Texas, and approximately 40 miles west of Shreveport, Louisiana. LHAAP was placed on the National Priorities (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-19 is not itself considered an NPL site. The TCEQ, the lead regulatory agency concurs that the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 3.

The C&D landfill, designated LHAAP-19, covers a 7.91 acre tract of land. The maximum depth of the landfill is believed to be less than 15 feet below ground surface. The C&D landfill was sporadically active from 1985 until recent closure activities were conducted. The C&D landfill was permitted by rule to receive non-friable asbestos and other demolition debris. During periods of activity, the monthly disposal rate ranged from 35 to 400 cubic yards of waste. The C&D landfill (formerly referred to as LHAAP-26) was evaluated in 1988. From the landfill evaluation dated 1988, and the buildings description dated 2004, it is concluded that all of the materials deposited in this landfill were what is normally classified as Construction and Demolition Debris (C&D) consisting of wood and metal studs, corrugated metal walls and roofs, concrete rubble, steel re-bar, dry-wall, transite (non-friable asbestos) siding, cardboard, Class 2 paper, packing, plastics, foil, wood packaging, wood debris, bricks, cement and other inert constituents. Records provided by the site manager indicate that hazardous materials such as friable asbestos were disposed of in other permitted landfills. Based on this information and certification of process knowledge by the owner, this landfill is classified as Non-Hazardous Class 2. The final closure assessment report and its supporting documentation demonstrate that the threat to human health or the environment is at or below those required for Risk Reduction Standard Number 2. However, due to the fact that waste was left in place, a cap was constructed to cover the footprint of the landfill and closure of the landfill meets Risk Reduction Standard Number 3.

Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The Texas Commission on Environmental Quality requires certain persons to provide certification and/or recordation in the real property records to notify the public of the conditions of the land and/or the

occurrence of remediation. This certification is not a representation or warranty by the Texas Commission on Environmental Quality of the suitability of this land for any purpose.

II

Being a 7.91 acre tract of land situated in Harrison County, Texas, being out of and a part of a 8,493 acres tract of land known as the former Longhorn Army Ammunition Plant, situated between Highway 43 at Karnack, Texas, and the southwestern shore of Caddo Lake, and being more particularly described by metes and bounds as follows:

(All coordinates shown here on are NAD 83, Texas State Plane North Central Zone 4202, based on GPS Static Processing verified with OPUS).

Beginning at the northwest corner of the herein described tract with coordinates of North: 6951971.54, East: 3316288.74, from which an iron pin set for a GPS Base Point with coordinates of North 6951987.74, East 3316281.35 bears N 24-31-50 E a distance of 17.81 feet;

Thence N 78-23-54 E, 504.61 feet to a point for an angle point with coordinates of North: 6952073.02, East: 3316783.04

Thence S 52-47-27 E, 137.20 feet to a point for an angle point with coordinates of North: 6951990.05, East: 3316892.31;

Thence S 44-12-24 E, 108.04 feet to a point for an angle point with coordinates of North: 6951912.60, East: 3316967.64;

Thence S 01-33-58 W, 110.10 feet to a point for an angle point with coordinates of North: 6951802.55, East: 3316964.63;

Thence S 11-28-04 W, 121.11 feet to a point for an angle point with coordinates of North: 6951683.85, East: 3316940.56;

Thence S 17-11-28 W, 349.04 feet to a point for the southeast corner of the herein described tract with coordinates of North: 6951350.41, East: 3316837.39;

Thence N 89-11-23 W, 294.12 feet to a point for the southwest corner of the herein described tract with coordinates of North: 6951354.57, East: 3316543.30;

Thence N 22-57-01 W, 332.88 feet to an angle point with coordinates of North: 6951661.10, East: 3316413.50;

Thence N 21-53-42 W , 334.57 feet to the place of beginning and containing 7.91 acres of land according to a survey made on the ground on November 12, 2009 by Ace Surveying, Inc.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-19 site and the TCEQ concluded that no further investigation or remedial action is required for LHAAP-19.

Limited monitoring will take place in the form of inspections of the landfill cap and any maintenance required to maintain the cap integrity for a period of five years. The Army shall correct, as needed, erosion of cover material, lack of vegetative growth, and subsidence or ponding of water. If any of these problems occur after the end of the five-year post-closure period or persist for longer than the first five years of post-closure care, the owner or operator shall be responsible for their correction until all problems have been adequately resolved. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multifamily residences;

child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

Institutional controls placed on the property to ensure appropriate future use include: (1) Use must remain non-residential as described above; and (2) No activity shall be conducted or permitted that would damage the integrity of the landfill cover (i.e. unauthorized digging or disturbing the existing cover or contents of the landfill). These restrictions will be placed in the deed transferring any part of the property out of federal ownership.

III

The owner of the site is the Department of the Army and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington, D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 14th day of November 2013.

STATE OF TEXAS
COUNTY OF Gregg

BEFORE ME, on this the 14th day of Nov, 2013, personally appeared Rose M. Zeiler, of The United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

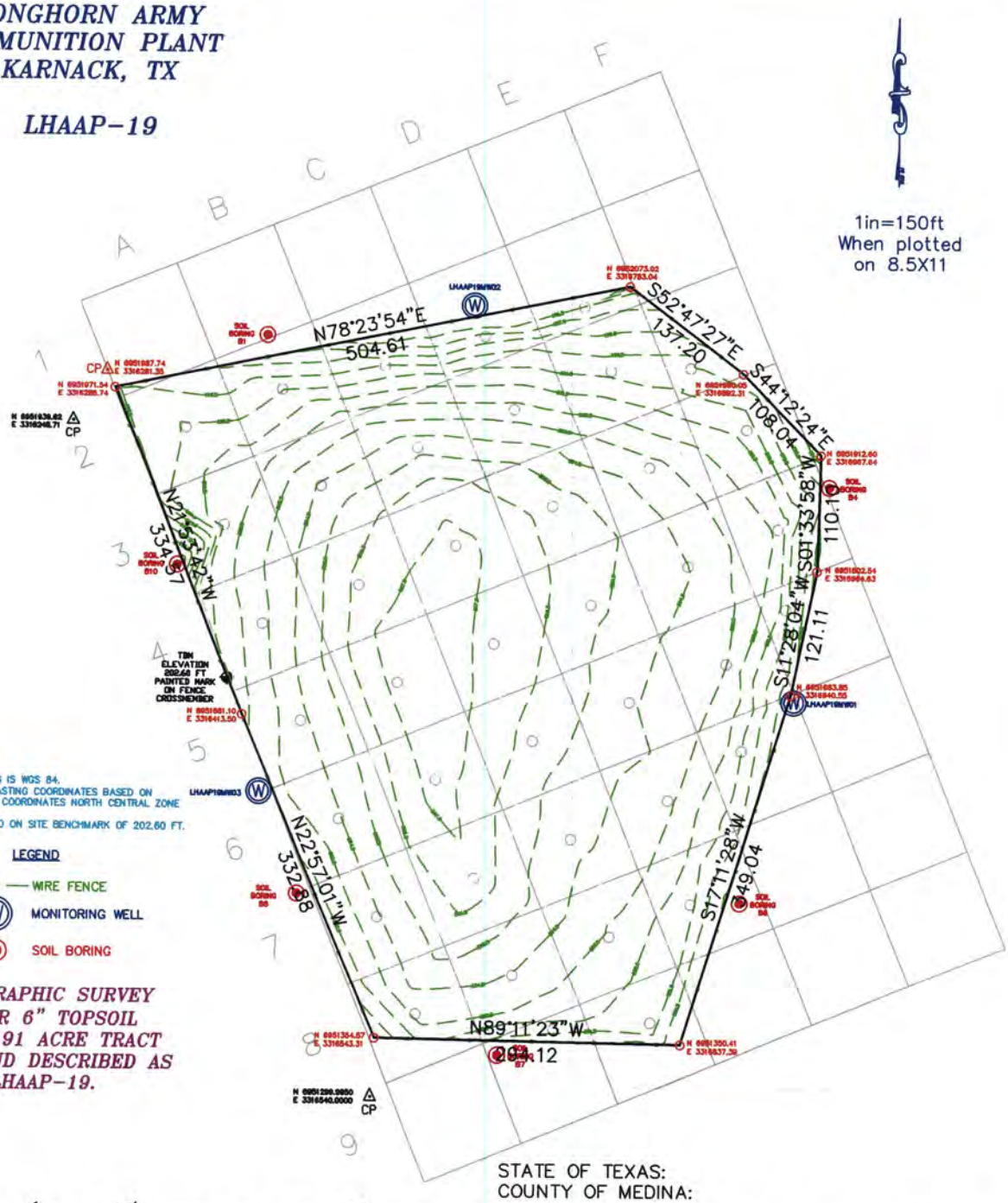
GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 14th day of Nov, 2013.

Notary Public in and for the State of Texas,
County of Harrison

BRENDA McBRIDE
Notary Public State of Texas
COMM. EXP. 5-4-2014

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TX

LHAAP-19



NOTES:
1) BASIS OF BEARING IS WGS 84.
2) NORTHING AND EASTING COORDINATES BASED ON TEXAS STATE PLANE COORDINATES NORTH CENTRAL ZONE #4202, NAD83.
3) ELEVATIONS BASED ON SITE BENCHMARK OF 202.60 FT.

LEGEND

— x — WIRE FENCE

(W) MONITORING WELL

SOIL BORING

TOPOGRAPHIC SURVEY AFTER 6" TOPSOIL OF A 7.91 ACRE TRACT OF LAND DESCRIBED AS LHAAP-19.

Ace Surveying, Inc.
P. O. BOX 597
DEVINE, TEXAS 78016
830-334-7264
830-665-5796 FAX
acesurveying@sbcglobal.net

THIS DRAWING IS THE PROPERTY OF ACE LAND SERVICES AND SHALL NOT BE USED FOR ANY PURPOSE WITHOUT THE WRITTEN CONSENT OF AN AUTHORIZED AGENT OF ACE LAND SERVICES. ACE LAND SERVICES ACCEPTS NO RESPONSIBILITY FOR THE USE OF THIS DRAWING FOR ANY PURPOSE AFTER SIX MONTHS FROM THE DATE SHOWN HEREON. ALL RIGHTS RESERVED. COPYRIGHT 2009, ACE SURVEYING, INC. ©

STATE OF TEXAS
REGISTERED
RHONDA K. BUTLER
5409
PROFESSIONAL
LAND SURVEYOR

STATE OF TEXAS:
COUNTY OF MEDINA:

I, RHONDA K. BUTLER, DO HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM AN ACTUAL SURVEY MADE ON THE GROUND BY MEN WORKING UNDER MY SUPERVISION.

RHONDA K. BUTLER
REGISTERED PROFESSIONAL LAND SURVEYOR #5409

SURVEYED: NOVEMBER 12, 2009
FILE NO: ALAMO 1, KARNACK

LHAAP-29, 29-1
LUCS FROM REMEDIAL DESIGN (PENDING)

Date December 17, 2021

LHAAP-35/36

NOTICE OF NONRESIDENTIAL LAND USE AT SUMPS/WASTE RACK SUMP LOCATIONS (LHAAP-35/36) FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2012-000000706

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000706 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump094 (called Sump 094 on the attached Exhibit A) is part of LHAAP-35/36. Sump094 is a former sump location near Building 16-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump094 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump094) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump094 parcel is 64 square feet, more or less, or 0.00146 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump094 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump094 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump094 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump094 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the ____th day of _____, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 094
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 64.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

THENCE N 07deg59'31"W 569.56' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following four courses :

(01) N 37deg59'57"W 8.00' to a point for the Westmost corner of this tract,
(02) N 52deg00'03"E 8.00' to a point for the Northmost corner of this tract,
(03) S 37deg59'57"E 8.00' to a point for the Eastmost corner of this tract,
(04) S 52deg00'03"W 8.00' to this POINT OF BEGINNING.

This tract contains 64.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

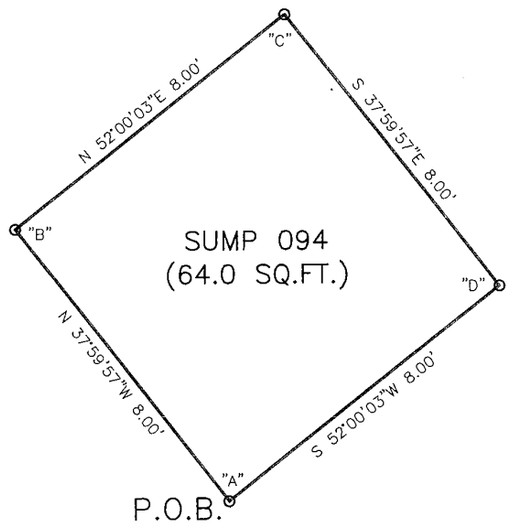
LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

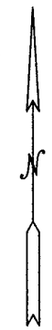
NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP



COORDINATE TABLE

POINT	NORTH	EAST
A	6959071.485	3314200.311
B	6959077.789	3314195.385
C	6959082.715	3314201.689
D	6959076.411	3314206.615



SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE - FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.

N 07°59'31"W 569.56'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 094
(64.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	H.PTS H.LEG
03/14/2011	1103025H.DWG	DRAWN BY JTJ

2012-000000707

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000707 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump095 (called Sump 095 on the attached Exhibit A) is part of LHAAP-35/36. Sump095 is a former sump location near Building 34-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump095 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump095) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump095 parcel is 69.6 square feet, more or less, or 0.00159 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump095 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump095 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump095 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump095 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM- ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 095
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 69.6 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

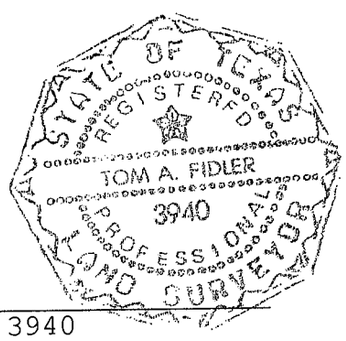
THENCE N 43deg48'28"E 725.22' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following eight courses :

(01)	N 37deg59'57"W	12.00'	to a point for tract corner,
(02)	S 52deg00'03"W	3.10'	to a point for tract corner,
(03)	N 37deg59'57"W	6.00'	to a point for the Westmost corner of this tract,
(04)	N 52deg00'03"E	8.00'	to a point for the Northmost corner of this tract,
(05)	S 37deg59'57"E	6.00'	to a point for tract corner,
(06)	S 52deg00'03"W	3.10'	to a point for tract corner,
(07)	S 37deg59'57"E	12.00'	to a point for the Eastmost corner of this tract,
(08)	S 52deg00'03"W	1.80'	to this POINT OF BEGINNING.

This tract contains 69.6 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

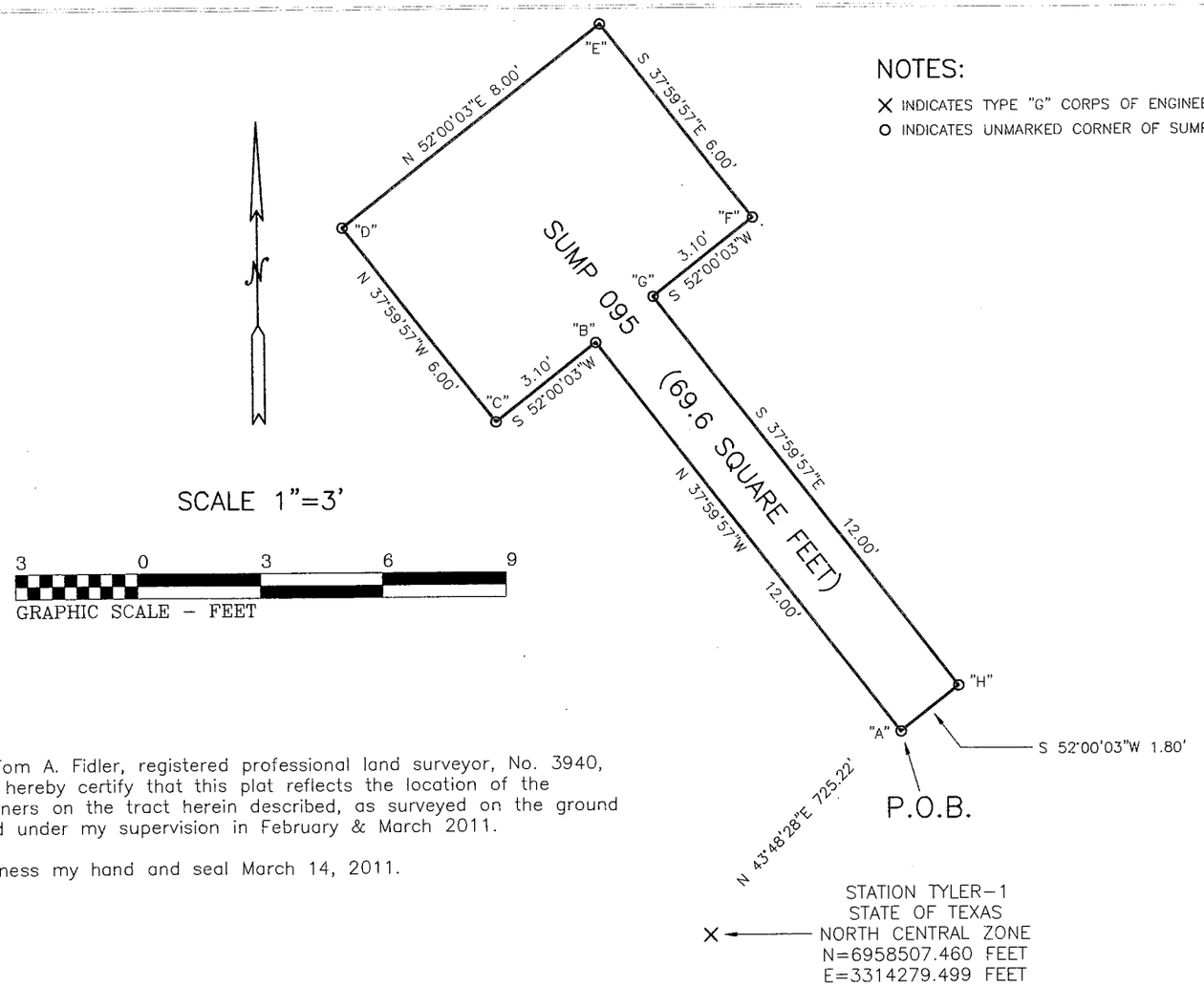


Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@coblelynx.com

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP



NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6959030.826	3314781.526
B	6959040.282	3314774.138
C	6959038.373	3314771.695
D	6959043.101	3314768.001
E	6959048.027	3314774.305
F	6959043.299	3314777.999
G	6959041.390	3314775.556
H	6959031.934	3314782.944

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

SUMP 095
(69.6 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	F.PTS F.LEG
03/14/2011	1103025F.DWG	DRAWN BY JTJ

2012-000000708

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000708 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump096 (called Sump 096 on the attached Exhibit A) is part of LHAAP-35/36. Sump096 is a former sump location near Building 34-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump096 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump096) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump096 parcel is 64 square feet, more or less, or 0.00146 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump096 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump096 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump096 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump096 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM- ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 096
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 64.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

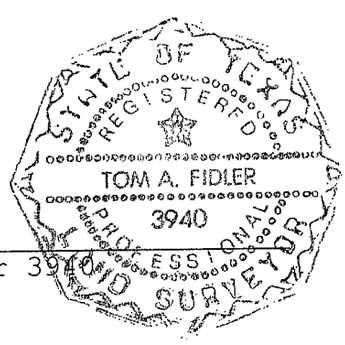
THENCE N 36deg34'53"E 696.04' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following four courses :

(01) N 37deg59'57"W 8.00' to a point for the Westmost corner of this tract,
(02) N 52deg00'03"E 8.00' to a point for the Northmost corner of this tract,
(03) S 37deg59'57"E 8.00' to a point for the Eastmost corner of this tract,
(04) S 52deg00'03"W 8.00' to this POINT OF BEGINNING.

This tract contains 64.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

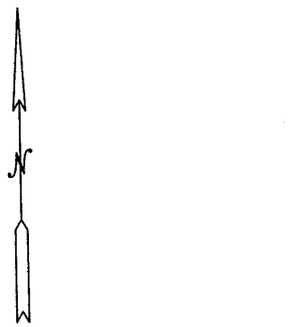


Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

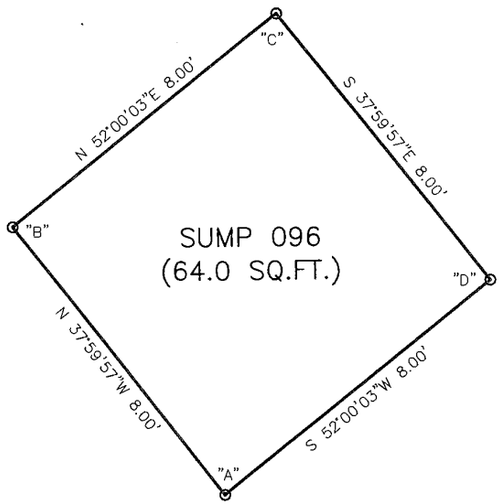
NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP



SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE - FEET



P.O.B.

N 36°34'53"E 696.04'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6959066.385	3314694.311
B	6959072.689	3314689.385
C	6959077.615	3314695.689
D	6959071.311	3314700.615

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.



Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

SUMP 096
(64.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	G.PTS G.LEG
03/14/2011	1103025G.DWG	DRAWN BY JTJ

2012-000000709

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MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000709 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump097 (called Sump 097 on the attached Exhibit A) is part of LHAAP-35/36. Sump097 is a former sump location near Building 38-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump097 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump097) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump097 parcel is 76.6 square feet, more or less, or 0.00175 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump097 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump097 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump097 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump097 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30 th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 097
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 76.6 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

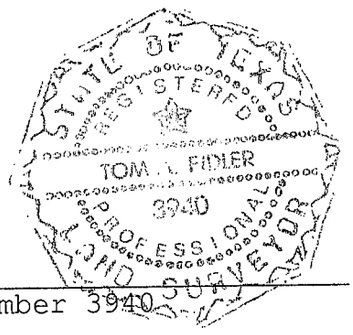
THENCE N 33deg53'28"E 842.86' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete which defines this sump,

THENCE along the external face of the concrete which defines this sump the following four courses, each course ending at a corner of the external face of said concrete :

(01)	N 58deg18'32"W	6.20',	being this sump's Westmost corner,
(02)	N 37deg53'34"E	12.45',	being this sump's Northmost corner,
(03)	S 58deg06'49"E	6.18',	being this sump's Eastmost corner,
(04)	S 37deg47'39"W	12.43',	being the aforementioned POINT OF BEGINNING.

This tract contains 76.6 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

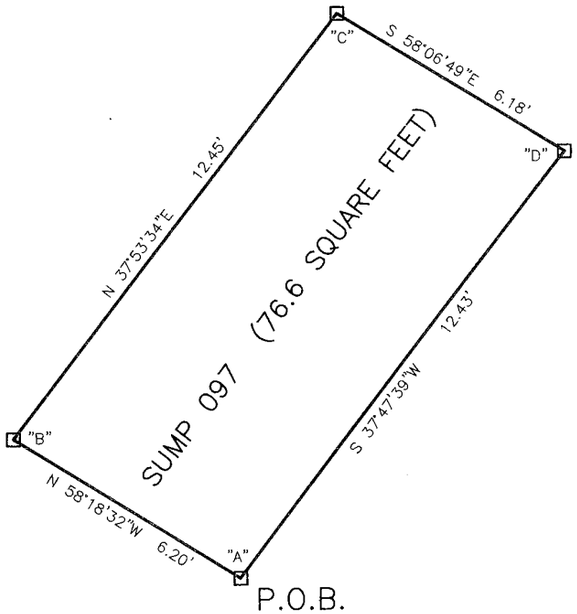
LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

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NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE
- O INDICATES UNMARKED POINT



COORDINATE TABLE

POINT	NORTH	EAST
A	6959207.120	3314749.495
B	6959210.377	3314744.219
C	6959220.206	3314751.868
D	6959216.943	3314757.113



SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE - FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 4, 2011.

N 33°53'28"E 842.86'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 097
(76.6 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	Z.PTS Z.LEG
MAR. 4, 2011	0908074Z.DWG	DRAWN BY JTJ

2012-000000710

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000710 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump098 (called Sump 098 on the attached Exhibit A) is part of LHAAP-35/36. Sump098 is a former sump location near Building 38-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump098 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump098) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump098 parcel is 39.4 square feet, more or less, or 0.0009 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump098 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump098 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump098 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump098 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.



Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 098
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 39.4 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

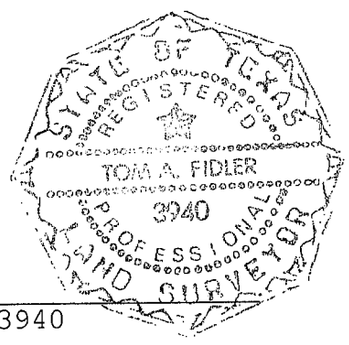
THENCE N 28deg58'18"E 815.98' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete which defines this sump,

THENCE along the external face of the concrete which defines this sump the following four courses, each course ending at a corner of the external face of said concrete :

(01)	N 51deg59'37"W	9.74',	being this sump's Westmost corner,
(02)	N 43deg01'55"E	4.05',	being this sump's Northmost corner,
(03)	S 52deg06'01"E	9.75',	being this sump's Eastmost corner,
(04)	S 43deg15'56"W	4.07',	being the aforementioned POINT OF BEGINNING.

This tract contains 39.4 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

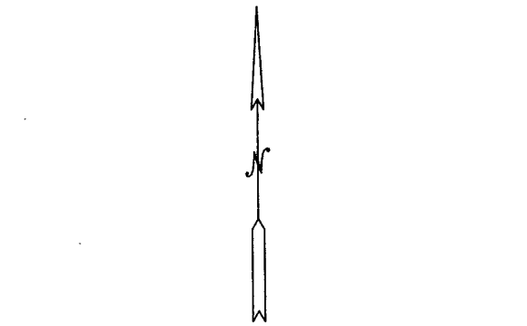


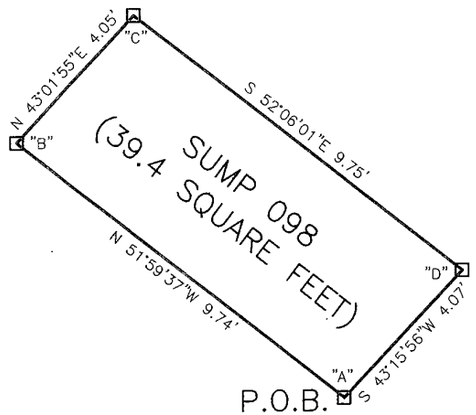
Tom A. Fidler, R.P.L.S. Number 3940

NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE
- O INDICATES UNMARKED POINT

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com





NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6959221.331	3314674.744
B	6959227.327	3314667.072
C	6959230.288	3314669.837
D	6959224.296	3314677.534

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 4, 2011.

N 28°58'18"E 815.98'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 098
(39.4 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	Y.PTS Y.LEG
MAR. 4, 2011	0908074Y.DWG	DRAWN BY JTJ

2012-000000711

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000711 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump099 (called Sump 099 on the attached Exhibit A) is part of LHAAP-35/36. Sump099 is a former sump location near Building 38-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump099 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump099) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump099 parcel is 48 square feet, more or less, or 0.0011 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump099 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump099 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump099 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump099 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 099
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 48.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

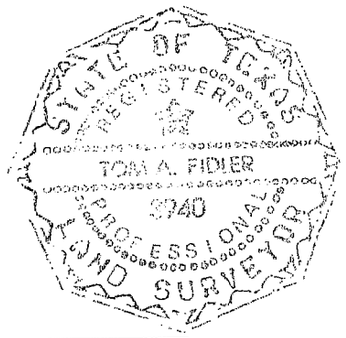
THENCE N 27deg36'35"E 879.49' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following four courses :

(01) N 37deg59'57"W 8.00' to a point for the Westmost corner of this tract,
(02) N 52deg00'03"E 6.00' to a point for the Northmost corner of this tract,
(03) S 37deg59'57"E 8.00' to a point for the Eastmost corner of this tract,
(04) S 52deg00'03"W 6.00' to this POINT OF BEGINNING.

This tract contains 48.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER–1 & TYLER–2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

NOTES

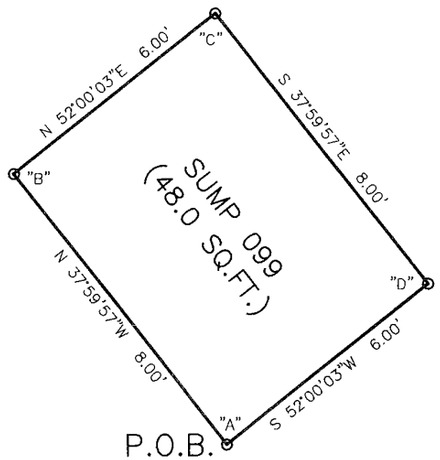
X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)

O INDICATES UNMARKED CORNER OF SUMP

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236–3377 FAX (903) 236–3530
E–MAIL landmark@cablelynx.com

COORDINATE TABLE

POINT	NORTH	EAST
A	6959286.801	3314687.099
B	6959293.105	3314682.173
C	6959296.799	3314686.901
D	6959290.495	3314691.827





SCALE 1"=3'

3 0 3 6 9

GRAPHIC SCALE – FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.

N 27°36'35"E 879.49'

STATION TYLER–1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET



Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER–2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 099
(48.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	J.PTS J.LEG
03/14/2011	1103025J.DWG	DRAWN BY JTJ

2012-000000712

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

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FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000712 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump100 (called Sump 100 on the attached Exhibit A) is part of LHAAP-35/36. Sump100 is a former sump location near Building 45-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump100 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump100) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump100 parcel is 80 square feet, more or less, or 0.00183 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump100 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump100 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump100 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump100 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of JUNE, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 100
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 80.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

THENCE N 23deg52'16"E 995.90' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following four courses :

(01) N 37deg59'57"W 8.00' to a point for the Westmost corner of this tract,
(02) N 52deg00'03"E 10.00' to a point for the Northmost corner of this tract,
(03) S 37deg59'57"E 8.00' to a point for the Eastmost corner of this tract,
(04) S 52deg00'03"W 10.00' to this POINT OF BEGINNING.

This tract contains 80.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

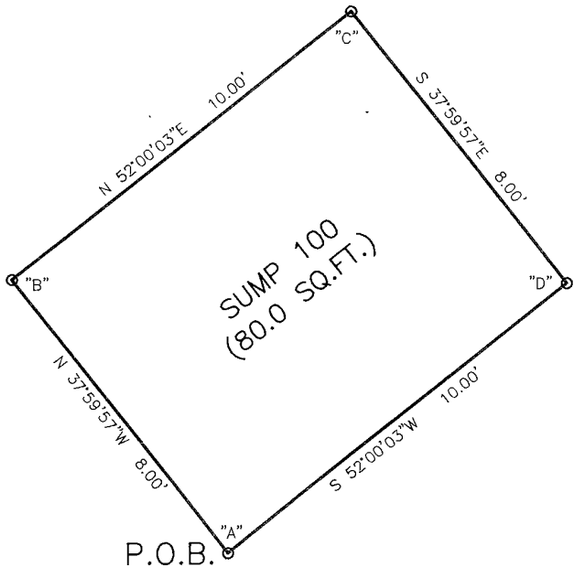
STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3539
E-MAIL landmark@cablelynx.com

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.



NOTES

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP



SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE - FEET

COORDINATE TABLE

POINT	NORTH	EAST
A	6959418.170	3314682.523
B	6959424.474	3314677.597
C	6959430.630	3314685.477
D	6959424.326	3314690.403

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.

N 23°52'16"E 995.90'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 100
(80.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	K.PTS K.LEG
03/14/2011	1103025K.DWG	DRAWN BY JTJ

2012-000000713

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000713 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump101 (called Sump 101 on the attached Exhibit A) is part of LHAAP-35/36. Sump101 is a former sump location near Building 45-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump101 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump101) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump101 parcel is 67 square feet, more or less, or 0.00153 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump101 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump101 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump101 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump101 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30 th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 101
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 67.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

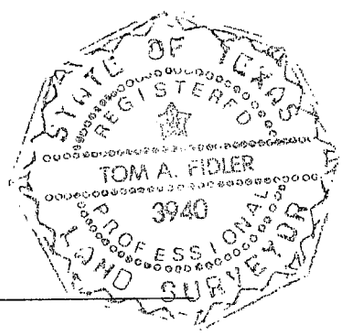
THENCE N 27deg18'47"E 1027.58' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete which defines this sump,

THENCE along the external face of the concrete which defines this sump the following four courses, each course ending at a corner of the external face of said concrete :

(01)	N 38deg59'52"W	11.24',	being this sump's Westmost corner,
(02)	N 57deg48'20"E	5.99',	being this sump's Northmost corner,
(03)	S 39deg05'42"E	11.26',	being this sump's Eastmost corner,
(04)	S 57deg59'19"W	6.01',	being the aforementioned POINT OF BEGINNING.

This tract contains 67.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

NOTES:

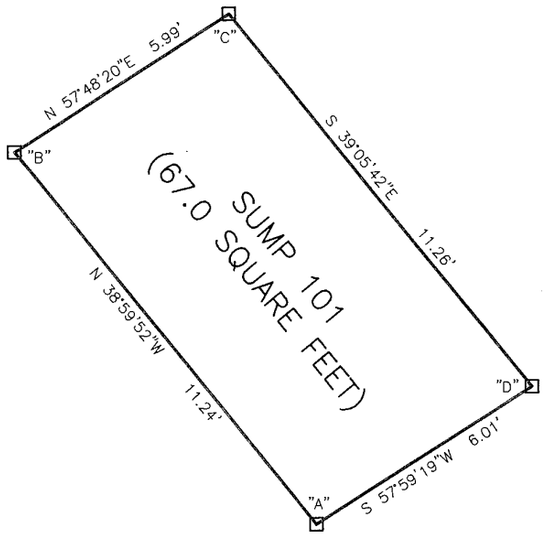
- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE
- O INDICATES UNMARKED POINT

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com



SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE – FEET



P.O.B.

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6959420.476	3314751.003
B	6959429.211	3314743.930
C	6959432.404	3314749.001
D	6959423.663	3314756.102

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 4, 2011.

N 27°18'47"E 1027.58'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 101
(67.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	A.PTS A.LEG
MAR. 4, 2011	1103025A.DWG	DRAWN BY JTJ

2012-000000714

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000714 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump102 (called Sump 102 on the attached Exhibit A) is part of LHAAP-35/36. Sump102 is a former sump location near Building 16-T physically located within site boundary of LHAAP-35C(53) of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump102 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump102) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump102 parcel is 154.4 square feet, more or less, or 0.00354 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump102 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump102 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump102 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump102 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 102
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 154.4 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-2" referenced above,

THENCE S 17deg29'41"E 550.28' to a point for the Northmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following ten courses :

(01)	S 15deg52'38"E	7.67'	to a point for the Eastmost corner of this tract,
(02)	S 74deg07'22"W	6.94'	to a point for tract corner,
(03)	N 15deg52'38"W	5.54'	to a point for tract corner,
(04)	S 74deg07'22"W	12.94'	to a point for tract corner,
(05)	S 36deg37'46"W	24.51'	to a point for tract corner,
(06)	S 53deg22'14"E	7.10'	to a point for tract corner,
(07)	S 36deg37'46"W	2.10'	to a point for the Southmost corner of this tract,
(08)	N 53deg22'14"W	9.25'	to a point for the Westmost corner of this tract,
(09)	N 36deg37'46"E	27.31'	to a point for tract corner,
(10)	N 74deg07'22"E	20.63'	to this POINT OF BEGINNING.

This tract contains 154.4 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)

O INDICATES UNMARKED CORNER OF SUMP

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1116.219')

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

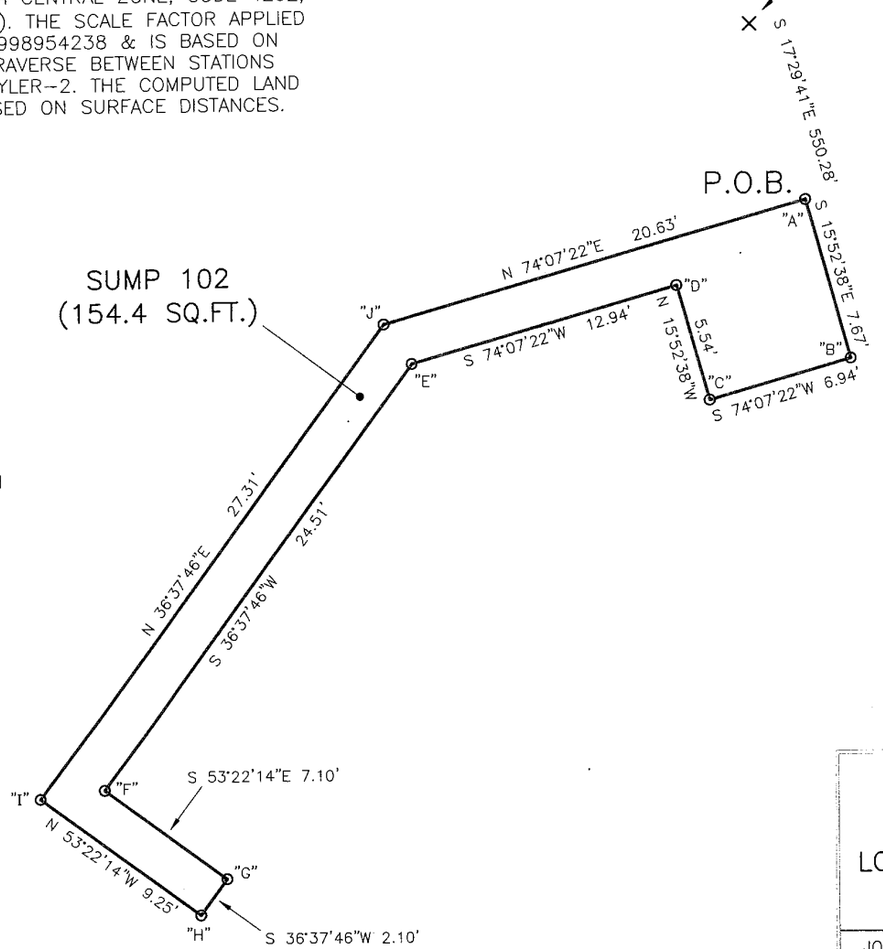
NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

SCALE 1"=6'

6 0 6 12 18

GRAPHIC SCALE - FEET



COORDINATE TABLE

POINT	NORTH	EAST
A	6957307.354	3315333.565
B	6957299.975	3315335.664
C	6957298.077	3315328.991
D	6957303.409	3315327.474
E	6957299.870	3315315.030
F	6957280.203	3315300.409
G	6957275.965	3315306.110
H	6957274.278	3315304.856
I	6957279.797	3315297.433
J	6957301.711	3315313.725

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 11, 2011.

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

SUMP 102
(154.4 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1101007	0407088.CRD	B.PTS B.LEG
MAR. 11, 2011	1103025B.DWG	DRAWN BY JTJ

2012-000000715

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000715 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump103 (called Sump 103 on the attached Exhibit A) is part of LHAAP-35/36. Sump103 is a former sump location near Building 16-T physically located within site boundary of LHAAP-35C(53) of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump103 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump103) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump103 parcel is 209.1 square feet, more or less, or 0.0048 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump103 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump103 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump103 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump103 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 103
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 209.1 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-2" referenced above,

THENCE S 20deg31'34"E 601.43' to a point for the Northmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following ten courses :

(01)	S 16deg10'14"E	10.01'	to a point for the Eastmost corner of this tract,
(02)	S 73deg49'46"W	9.99'	to a point for tract corner,
(03)	N 16deg10'14"W	2.67'	to a point for tract corner,
(04)	S 36deg37'46"W	27.57'	to a point for the Southmost corner of this tract,
(05)	N 53deg22'14"W	29.02'	to a point for the Westmost corner of this tract,
(06)	N 36deg37'46"E	2.10'	to a point for tract corner,
(07)	S 53deg22'14"E	27.18'	to a point for tract corner,
(08)	N 36deg37'46"E	26.86'	to a point for tract corner,
(09)	N 16deg10'14"W	5.03'	to a point for tract corner,
(10)	N 73deg49'46"E	9.99'	to this POINT OF BEGINNING.

This tract contains 209.1 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 11, 2011.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@coblelynx.com

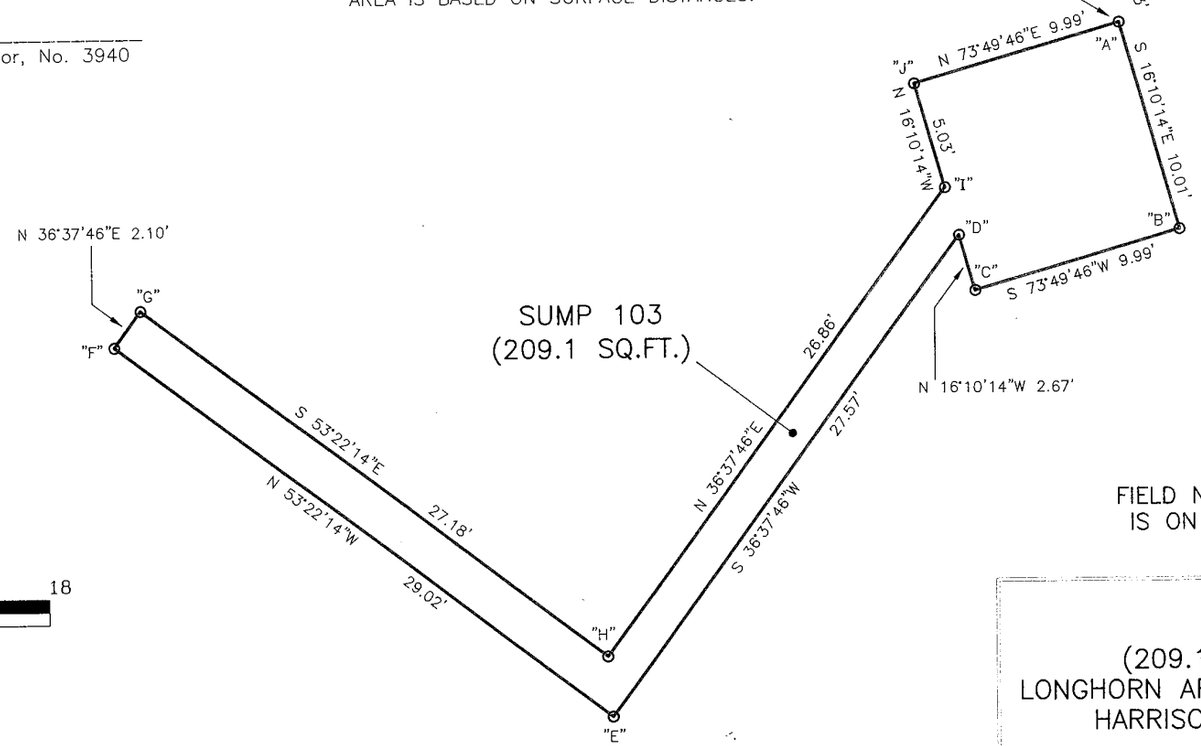
STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6957268.937	3315379.021
B	6957259.319	3315381.810
C	6957256.536	3315372.213
D	6957259.104	3315371.468
E	6957236.982	3315355.021
F	6957254.297	3315331.731
G	6957255.984	3315332.985
H	6957239.765	3315354.800
I	6957261.320	3315370.825
J	6957266.154	3315369.424



SCALE 1"=6'

6 0 6 12 18
GRAPHIC SCALE - FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP

SUMP 103
(209.1 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1101007	0407088.CRD	C.PTS C.LEG
MAR. 11, 2011	1103025C.DWG	DRAWN BY JTJ

2012-000000716

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MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000716 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump104 (called Sump 104 on the attached Exhibit A) is part of LHAAP-35/36. Sump104 is a former sump location near Building 16-T physically located within site boundary of LHAAP-35C(53) of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump104 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump104) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump104 parcel is 149.2 square feet, more or less, or 0.00342 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump104 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump104 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump104 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump104 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of JUNE, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 104
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 149.2 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-2" referenced above,

THENCE S 09deg38'40"E 580.62' to a point for the Northmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following eight courses :

(01)	S 53deg22'14"E	23.26'	to a point for the Eastmost corner of this tract,
(02)	S 36deg37'46"W	2.24'	to a point for tract corner,
(03)	N 53deg22'14"W	20.93'	to a point for tract corner,
(04)	S 36deg37'46"W	24.04'	to a point for the Southmost corner of this tract,
(05)	N 53deg22'14"W	7.69'	to a point for the Westmost corner of this tract,
(06)	N 36deg37'46"E	7.70'	to a point for tract corner,
(07)	S 53deg22'14"E	5.37'	to a point for tract corner,
(08)	N 36deg37'46"E	18.58'	to this POINT OF BEGINNING.

This tract contains 149.2 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 11, 2011.

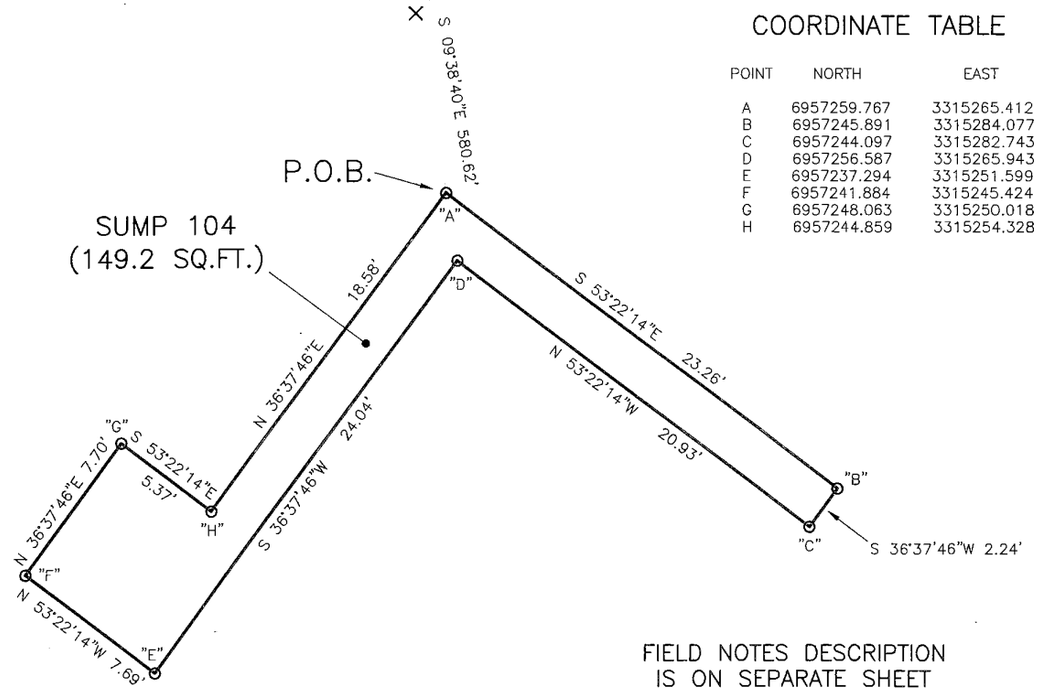
Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET



COORDINATE TABLE

POINT	NORTH	EAST
A	6957259.767	3315265.412
B	6957245.891	3315284.077
C	6957244.097	3315282.743
D	6957256.587	3315265.943
E	6957237.294	3315251.599
F	6957241.884	3315245.424
G	6957248.063	3315250.018
H	6957244.859	3315254.328

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

SCALE 1"=6'

6 0 6 12 18
GRAPHIC SCALE – FEET

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

SUMP 104
(149.2 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1101007	0407088.CRD	D.PTS D.LEG
MAR. 11, 2011	1103025D.DWG	DRAWN BY JTJ

2012-000000717

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FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000717 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump105 (called Sump 105 on the attached Exhibit A) is part of LHAAP-35/36. Sump105 is a former sump location near Building 16-T physically located within site boundary of LHAAP-35C(53) of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump105 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump105) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump105 parcel is 201.7 square feet, more or less, or 0.00463 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump105 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump105 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump105 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump105 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30 th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 105
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 201.7 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-2" referenced above,

THENCE S 13deg17'42"E 623.38' to a point for the Northmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following eight courses :

(01)	S 53deg22'14"E	26.51'	to a point for the Eastmost corner of this tract,
(02)	S 36deg37'46"W	15.65'	to a point for tract corner,
(03)	S 53deg22'14"E	8.85'	to a point for tract corner,
(04)	S 36deg37'46"W	10.63'	to a point for the Southmost corner of this tract,
(05)	N 53deg22'14"W	10.86'	to a point for tract corner,
(06)	N 36deg37'46"E	24.04'	to a point for tract corner,
(07)	N 53deg22'14"W	24.50'	to a point for the Westmost corner of this tract,
(08)	N 36deg37'46"E	2.24'	to this POINT OF BEGINNING.

This tract contains 201.7 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

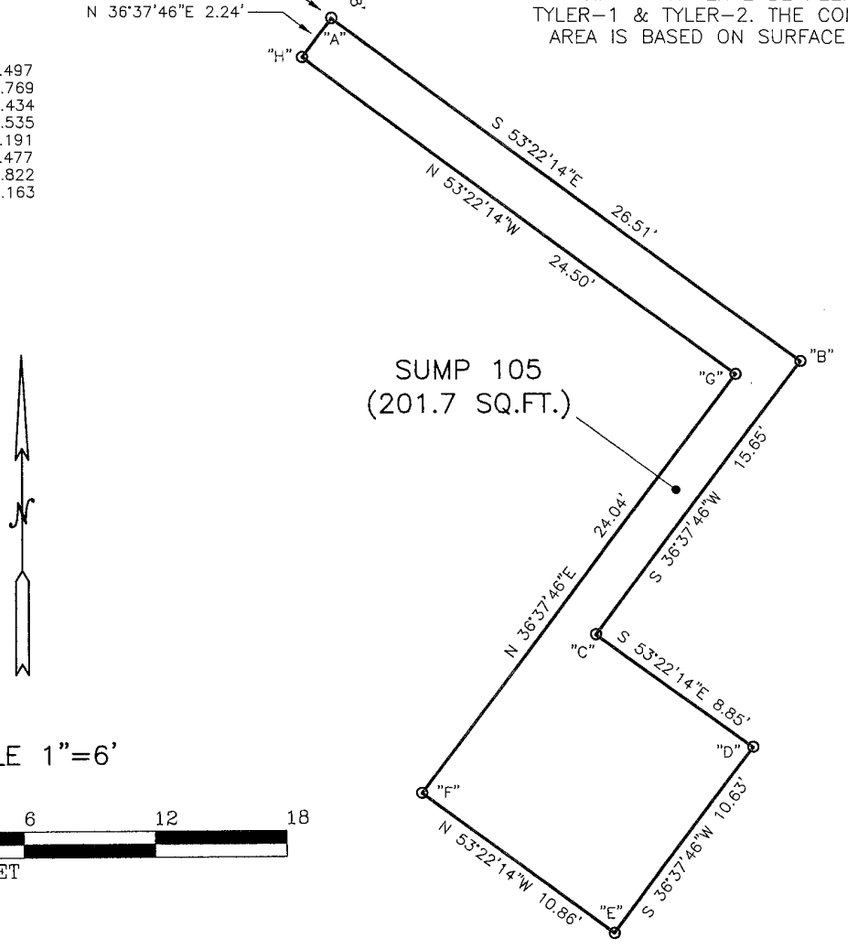
S 13°17'42"E 623.38'

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6957225.505	3315311.497
B	6957209.690	3315332.769
C	6957197.135	3315323.434
D	6957191.856	3315330.535
E	6957183.323	3315324.191
F	6957189.801	3315315.477
G	6957209.095	3315329.822
H	6957223.711	3315310.163



SCALE 1"=6'

6 0 6 12 18
GRAPHIC SCALE - FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 11, 2011.

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

SUMP 105
(201.7 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1101007	0407088.CRD	E.PTS E.LEG
MAR. 11, 2011	1103025E.DWG	DRAWN BY JTJ

2012-000000718

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000718 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump123 (called Sump 123 on the attached Exhibit A) is part of LHAAP-35/36. Sump123 is a former sump location near Building 18-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump123 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump123) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump123 parcel is 60 square feet, more or less, or 0.00137 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump123 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump123 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump123 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump123 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
SUMP 123
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 60.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

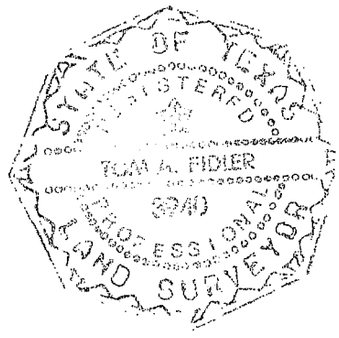
THENCE N 07deg59'31"W 569.56' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following four courses :

(01) N 37deg59'57"W 6.00' to a point for the Westmost corner of this tract,
(02) N 52deg00'03"E 10.00' to a point for the Northmost corner of this tract,
(03) S 37deg59'57"E 6.00' to a point for the Eastmost corner of this tract,
(04) S 52deg00'03"W 10.00' to this POINT OF BEGINNING.

This tract contains 60.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

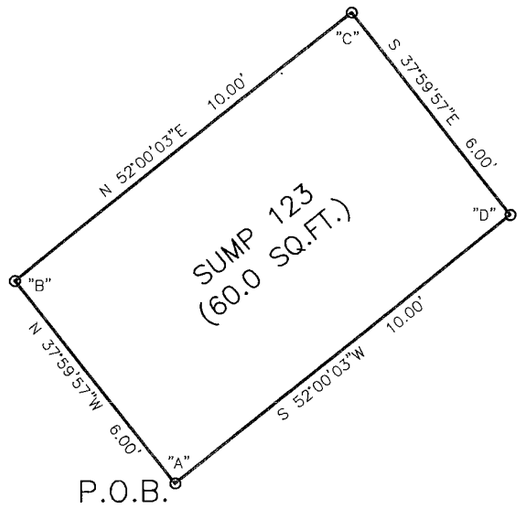
LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

NOTES

X INDICATES TYPE "C" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP



COORDINATE TABLE

POINT	NORTH	EAST
A	6959122.758	3314187.907
B	6959127.486	3314184.213
C	6959133.642	3314192.093
D	6959128.914	3314195.787



SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE - FEET

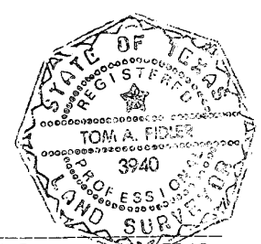
I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.

N 08°28'00"W 622.08'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET



Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 123
(60.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	I.PTS I.LEG
03/14/2011	1103025I.DWG	DRAWN BY JTJ

2012-000000719

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000719 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. WRSump001 (called W.R. Sump 001 on the attached Exhibit A) is part of LHAAP-35/36. WRSump001 is a former waste rack sump location near Building 34-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36 of which WRSump001 is a part is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2, no further action.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps were also associated with wash racks (waste rack sumps including WRSump001) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The WRSump001 parcel is 57.1 square feet, more or less, or 0.00131 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the WRSump001 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from WRSump001 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of WRSump001 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of WRSump001 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
W.R. SUMP 001
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 57.1 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

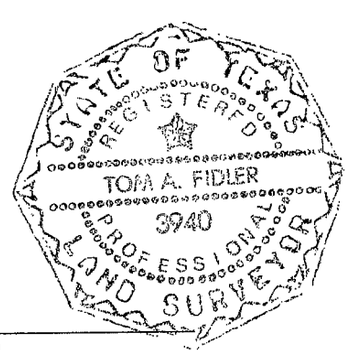
THENCE N 42deg37'08"E 700.32' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete wall which defines this sump,

THENCE along the external face of the concrete wall which defines this sump the following twelve courses, each course ending at a corner of the external face of said concrete wall :

(01)	N 36deg36'16"W	4.50',	
(02)	N 51deg51'25"E	1.07',	
(03)	N 38deg08'35"W	2.46',	
(04)	S 63deg07'08"W	0.85',	
(05)	N 38deg08'35"W	7.98',	being this sump's Westmost corner,
(06)	N 51deg51'25"E	3.70',	being this sump's Northmost corner,
(07)	S 39deg59'44"E	8.17',	
(08)	S 52deg07'09"W	1.00',	
(09)	S 39deg59'44"E	2.34',	
(10)	N 50deg00'16"E	1.14',	
(11)	S 39deg59'44"E	4.67',	being this sump's Eastmost corner,
(12)	S 52deg10'33"W	4.68',	being the aforementioned POINT OF BEGINNING.

This tract contains 57.1 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

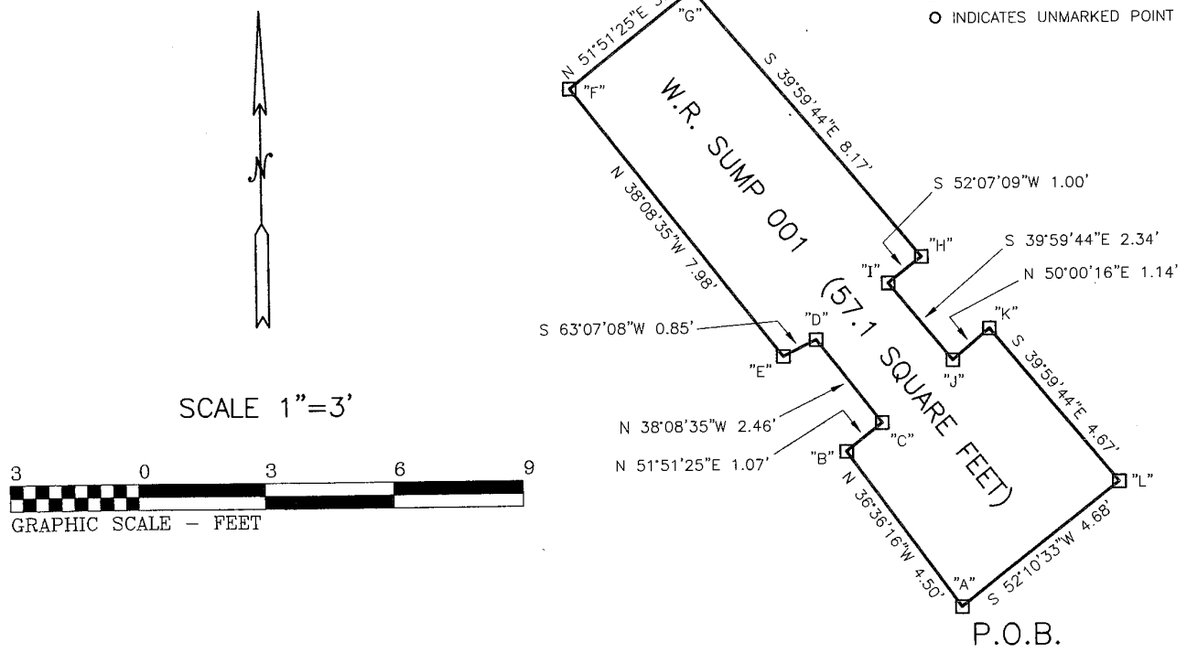


Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE WALL
O INDICATES UNMARKED POINT



NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6959022.804	3314753.696
B	6959026.415	3314751.014
C	6959027.074	3314751.854
D	6959029.012	3314750.332
E	6959028.627	3314749.573
F	6959034.899	3314744.647
G	6959037.183	3314747.555
H	6959030.925	3314752.805
I	6959030.313	3314752.018
J	6959028.519	3314753.523
K	6959029.252	3314754.396
L	6959025.676	3314757.396
M	6959022.804	3314753.696

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the carners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 1, 2011.

N 42°37'08"E 700.32'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

W.R. SUMP 001
(57.1 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	W.PTS W.LEG
MAR. 1, 2011	0908074W.DWG	DRAWN BY JTJ

2012-000000720

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000720 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. WRSump002 (called W.R. Sump 002 on the attached Exhibit A) is part of LHAAP-35/36. WRSump002 is a former waste rack sump location near Building 38-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which WRSump002 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2, no further action.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps were also associated with wash racks (waste rack sumps including WRSump002) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The WRSump002 parcel is 61.1 square feet, more or less, or 0.00140 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the WRSump002 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from WRSump002 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of WRSump002 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of WRSump002 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
W.R. SUMP 002
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 61.1 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

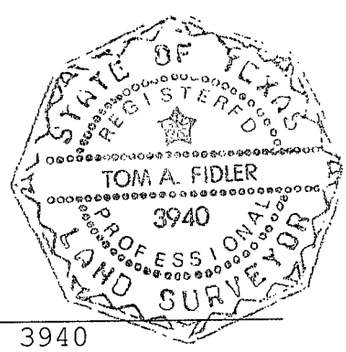
THENCE N 27deg03'19"E 797.78' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete wall which defines this sump,

THENCE along the external face of the concrete wall which defines this sump the following twelve courses, each course ending at a corner of the external face of said concrete wall :

(01)	N 50deg15'02"W	4.01',	being this sump's Westmost corner,
(02)	N 38deg19'51"E	7.83',	
(03)	S 58deg29'13"E	0.84',	
(04)	N 41deg11'11"E	3.09',	
(05)	N 51deg30'19"W	1.32',	
(06)	N 40deg19'40"E	4.55',	being this sump's Northmost corner,
(07)	S 54deg31'45"E	4.65',	being this sump's Eastmost corner,
(08)	S 38deg16'58"W	4.65',	
(09)	N 53deg12'50"W	1.23',	
(10)	S 39deg42'05"W	3.32',	
(11)	S 51deg04'42"E	0.79',	
(12)	S 38deg16'58"W	7.89',	being the aforementioned POINT OF BEGINNING.

This tract contains 61.1 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

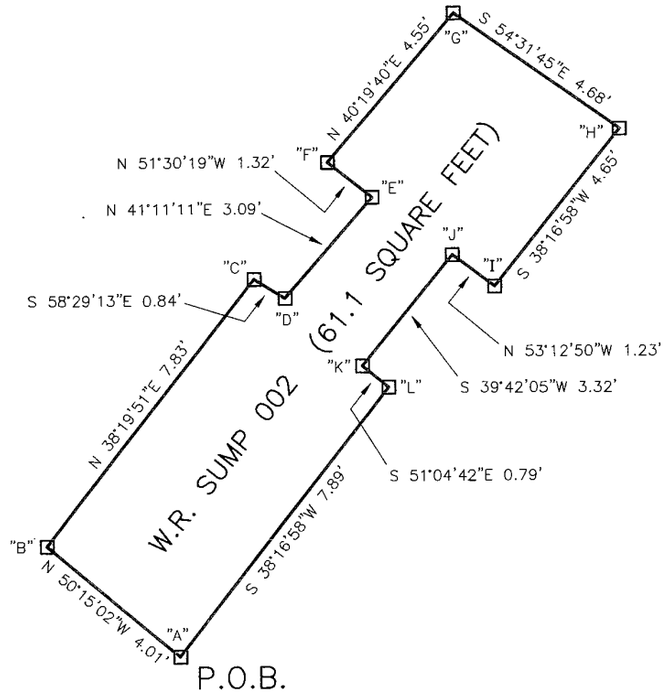


Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.



COORDINATE TABLE

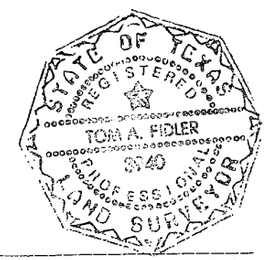
POINT	NORTH	EAST
A	6959217.937	3314642.369
B	6959220.500	3314639.287
C	6959226.642	3314644.143
D	6959226.201	3314644.863
E	6959228.524	3314646.896
F	6959229.343	3314645.866
G	6959232.815	3314648.814
H	6959230.097	3314652.628
I	6959226.443	3314649.744
J	6959227.177	3314648.763
K	6959224.624	3314646.643
L	6959224.129	3314647.256
M	6959217.937	3314642.369

NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE WALL
- O INDICATES UNMARKED POINT

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 1, 2011.



Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

N 27°03'19"E 797.78'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE - FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

W.R. SUMP 002
(61.1 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	X.PTS X.LEG
MAR. 1, 2011	0908074X.DWG	DRAWN BY JTJ

2012-000000721

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000721 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. WRSump003 (called W.R. Sump 003 on the attached Exhibit A) is part of LHAAP-35/36. WRSump003 is a former waste rack sump location near Building 16-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which WRSump003 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2, no further action.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps were also associated with wash racks (waste rack sumps including WRSump003) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The WRSump003 parcel is 69.5 square feet, more or less, or 0.00159 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the WRSump003 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from WRSump003 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of WRSump003 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of WRSump003 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30 th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
W.R. SUMP 003
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 69.5 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

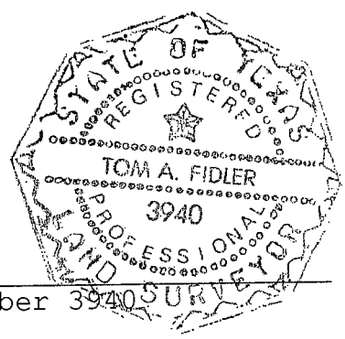
THENCE N 00deg06'48"W 643.61' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete wall which defines this sump,

THENCE along the external face of the concrete wall which defines this sump the following twelve courses, each course ending at a corner of the external face of said concrete wall :

(01)	N 37deg49'35"W	4.09',	being this sump's Westmost corner,
(02)	N 48deg49'52"E	10.08',	
(03)	S 40deg22'17"E	0.96',	
(04)	N 51deg37'59"E	1.64',	
(05)	N 32deg53'50"W	1.27',	
(06)	N 49deg58'25"E	4.65',	being this sump's Northmost corner,
(07)	S 41deg50'19"E	4.65',	being this sump's Eastmost corner,
(08)	S 43deg56'08"W	4.79',	
(09)	N 44deg10'19"W	1.61',	
(10)	S 52deg56'11"W	1.74',	
(11)	S 39deg31'31"E	1.01',	
(12)	S 49deg33'58"W	10.21',	being the aforementioned POINT OF BEGINNING.

This tract contains 69.5 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

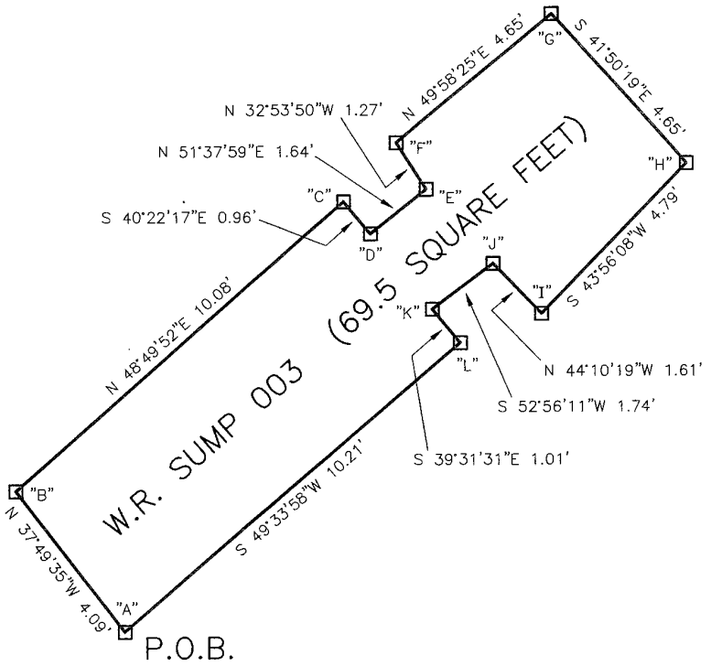


Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

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NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE WALL
- O INDICATES UNMARKED POINT

COORDINATE TABLE

POINT	NORTH	EAST
A	6959151.071	3314278.227
B	6959154.302	3314275.719
C	6959160.937	3314283.306
D	6959160.202	3314283.931
E	6959161.221	3314285.218
F	6959162.288	3314284.528
G	6959165.278	3314288.088
H	6959161.816	3314291.188
I	6959158.365	3314287.863
J	6959159.516	3314286.744
K	6959158.468	3314285.356
L	6959157.691	3314285.996

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 1, 2011.

N 00°06'48"W 643.61'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE - FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

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STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

W.R. SUMP 003
(69.5 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	V.PTS V.LEG
MAR. 1, 2011	0908074V.DWG	DRAWN BY JTJ

LHAAP-37, 37-1

LUCs FROM FINAL REMEDIAL DESIGN

September 14, 2015

FINAL
REMEDIAL DESIGN
LHAAP-35B (37), CHEMICAL LABORATORY AND LHAAP-67, ABOVEGROUND STORAGE TANK FARM
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS



Prepared by

U.S. Army Corps of Engineers
Tulsa District
1645 South 101st East Avenue
Tulsa, Oklahoma

August 1, 2011

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4.0 Land Use Controls for the Site

The LUCs to be implemented by the Army or its representatives for LHAAP-35B(37) and LHAAP-67 to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health include:

- Ensure no withdrawal or use of groundwater beneath the sites for anything other than environmental monitoring and testing until cleanup goals are met

Notification of the groundwater use restriction will accompany all transfer documents and will be recorded at the Harrison County Courthouse in accordance with Texas Administrative Code (TAC) Title 30, §335.566.The LUC addresses the areas of LHAAP-35B(37) and LHAAP-67 that include groundwater plumes at LHAAP-35B(37) and LHAAP-67 with levels of contamination that require implementation of a remedy (see **Section 2.0**). The U.S. Army is responsible for implementing, maintaining, monitoring, reporting on, and enforcing the LUC.

U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of an LUC objective at this site after it has transferred. U.S. Army shall obtain USEPA and TCEQ concurrence prior to termination or significant modification of the LUC, or implementation of a change in land use inconsistent with the LUC objectives and use assumptions of the remedy. Although not a remedy, the land use assumption for LHAAP-35B(37) and LHAAP-67 forms the basis for the remedy. The reasonably anticipated future use of the site as part of a national wildlife refuge is consistent with an industrial risk exposure scenario. Notification of the land use assumption of this site will be made in transfer documentation, will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566 and compliance with the use assumption will be documented in the Five-Year Review reports.

6.2 Land Use Control Implementation Actions

The Army or its representatives will be responsible for LUC implementation and certification, reporting and enforcement. The Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable.

As a condition of property transfer, the Army may require the transferee to assume responsibility for various implementation actions, as indicated below. Although the Army may transfer responsibility for various implementation actions, the Army shall retain its responsibility for remedy integrity. This means that the Army is responsible for addressing substantive violations of performance objectives that would undermine the Army's CERCLA remedy. The Army also will be responsible for: 1) incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation; 2) recording groundwater use restriction and survey plat at the Harrison County Courthouse; and 3) notifying Texas Department of Licensing and Regulation of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ. The following LUC implementation actions shall be undertaken by the Army in order to ensure that the aforementioned LUC performance objectives for LHAAP-35B(37) and LHAAP-67 are met and maintained:

6.2.1 Comprehensive Land Use Control Management Plan

Within 30 days of receiving USEPA and TCEQ approval of this RD, the Army will incorporate this document into the Comprehensive LUC Management Plan. The Comprehensive LUC Management Plan consists of LHAAP RD documents and a survey plat showing the locations where LUCs being implemented at LHAAP are applied. The purpose of this Comprehensive LUC Management Plan is to ensure all site specific LUCs are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document is also accessible to regulators, the local government and the public. The Comprehensive LUC Management Plan is located in the Marshall Public Library to accompany LHAAP's Administrative Record. As LUC RD documents for additional environmental sites are approved by USEPA and TCEQ, the Army shall likewise add those documents and survey plats to the Comprehensive LUC Management Plan as well as update the previous copy of the plan placed in the Marshall Public Library.

6.2.2 Site Certifications and Reporting

Beginning with finalization of this RD, the Army will undertake annual certifications to confirm continued compliance with the LUC objectives. The Army will retain the annual LUC Compliance Certification documents in the project files for incorporation into the Five-Year Review Reports, and these documents will be made available to USEPA and TCEQ upon request. The certification form will be consistent with the form attached as **Appendix B**. In addition, should any violations be found during the annual certification, the Army will provide to USEPA and TCEQ along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations**.** Upon transfer, such responsibilities may shift to the transferee via

appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental transfer document. The need to continue annual certifications will be revisited at Five-Year Reviews.

6.2.3 Notice of Planned Property Conveyances

The Army shall provide notice to USEPA and TCEQ of plans to convey LHAAP-35B(37) and LHAAP-67 acreage. The notice shall describe the mechanism by which LUCs will continue to be implemented, maintained, inspected, reported, and enforced.

6.2.4 Opportunity to Review Text of Intended Land Use Controls

Army will provide a copy of the groundwater use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. In addition, the Army will produce an ECP or other environmental document for transfer of LHAAP-35B(37) and LHAAP-67, but before executing transfer, the Army will provide USEPA and TCEQ with a draft copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before document execution, to review all LUC-related provisions.

6.2.5 Notification Should Action(s) Which Interfere with Land Use Control Effectiveness Be Discovered Subsequent to Conveyance

Should the Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objectives, the Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 6.2.6** below, the Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

6.2.6 Land Use Control Enforcement

Should the LUC remedy reflected in this LUC RD fail, the Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the owner or violator, to the institution of judicial action under the auspices of Texas property law or CERCLA. Alternatively, should the circumstances warrant such, the Army could choose to exercise its response authorities under CERCLA, and then seek cost recovery after the fact from the person(s) or entity(ies) who violated a given LUC. Should the Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the Army will notify these agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUCs.

6.2.7 Modification or Termination of Land Use Controls

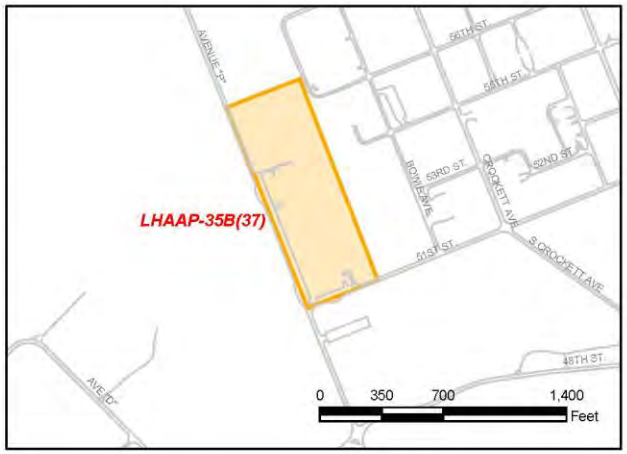
The Army shall not, without USEPA and TCEQ concurrence, make a significant modification to, or terminate a LUC, or make a land use change inconsistent with the LUC objectives and use assumptions of the selected remedy. Likewise, the Army shall seek prior USEPA and TCEQ concurrence before commencing actions that may impact remedy integrity. In the case of an emergency action, the Army shall obtain prior USEPA and TCEQ concurrence as appropriate to the exigencies of the situation.

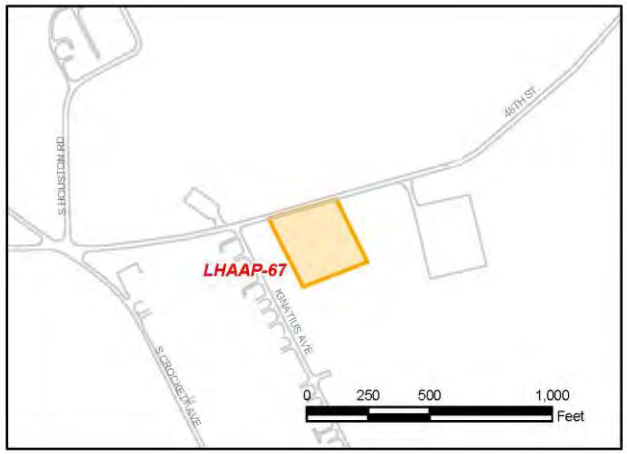
The LUCs shall remain in effect until such time as the Army, TCEQ and USEPA agree that the concentrations of COCs have met cleanup levels. When this occurs, the LUCs will be terminated as needed. The decision to terminate LUCs will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the Army, TCEQ and USEPA has been made to terminate one or more of the LUCs, the Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

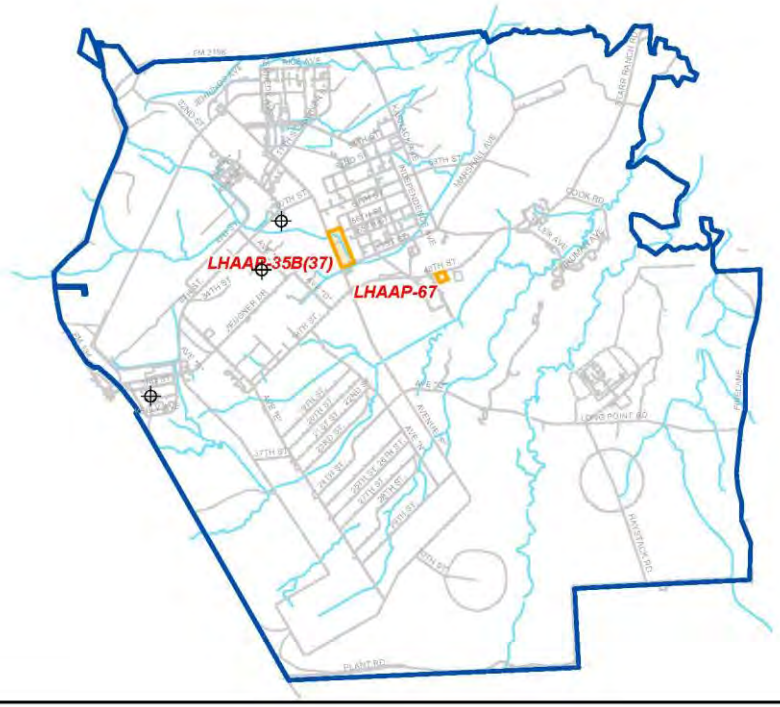
6.3 Monitored Natural Attenuation Implementation Actions

Implementation actions include installation of additional monitoring wells, plugging and abandonment of monitoring wells not designated for long-term monitoring, implementation of a groundwater monitoring plan, monitoring, and reporting. The project schedule and cost summary for implementation actions are provided in **Appendix H**. Groundwater monitoring will be conducted to monitor the effectiveness of MNA in reducing contaminant concentrations over time. Monitoring will also be conducted to evaluate plume migration and ensure that chlorinated solvents-contaminated groundwater does not impact nearby surface water at unacceptable levels. Surface water sampling will be conducted to confirm contaminated groundwater is not migrating to surface water. The Groundwater Monitoring Plan, attached as **Appendix A**, describes the wells, their locations, analytical parameters, the frequency of the monitoring, surface water sampling, and presents a list of the monitored constituents and their respective MCLs. Groundwater monitoring and surface water sampling conducted at LHAAP-35B(37) and LHAAP-67 will follow the Health and Safety Plan (**Appendix E**), the Contractor Quality Control Plan (**Appendix F**), the Chemical Data Acquisition Plan (**Appendix G**), Field Activities (**Appendix C**) and Field Procedures (**Appendix D**) as contained in the appendices of the Remedial Design LHAAP-35B(37) and LHAAP-67.

Annual reports will be prepared for any year in which sampling occurs to document the monitoring program. The first year's annual report will include a review of the first four quarters of data, which include natural attenuation parameters and provide an evaluation for the evidence of MNA as a remedial method and a review of the first year's surface water sample data. The TCEQ provides guidance for MNA as a remedial action in *Monitored Natural Attenuation Demonstrations* (Texas Natural Resource Conservation Commission [TNRCC], RG-366/TRRP-33, October 2001). Although LHAAP is being addressed under the Risk Reduction Standards rather than Texas Risk Reduction Program (TRRP), this guidance is comparable to USEPA guidance and may be used as a guideline for the evaluation of the groundwater data. TRRP guidance specifies recommended lines of evidence to document the occurrence of natural attenuation at a site. For the first annual report, primary and secondary lines of evidence will be evaluated to document that attenuation is occurring at LHAAP-35B(37) and LHAAP-67. The primary line







LEGEND

- Approximate LHAAP Boundary
- Road
- Stream
- Site
- LHAAP Water Supply Well

LEGEND

- Road
- Stream
- Site
- Approximate LHAAP Boundary
- LHAAP Water Supply Well

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	FILE PATH
Houston, TX	B. Lu 10/12/07	N. Olson 10/31/07	P. Srivastav 10/31/07	T:\GIS\Longhorn\MXD\ST35B67\RODISiteLocs.mxd

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-2
SITE LOCATION MAP
REMEDIAL DESIGN
LHAAP-35B(37) AND LHAAP-67, GROUP 4
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

LHAAP-37, 37-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-35B (37) FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2015-000002401

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

NOTICE

8 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 03/16/2015 11:17 AM **Document Number:** 2015-000002401 **Receipt No:** 1502837 **Amount:** $ 50.00 **By:** Denise Kio, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AECOM
112 E. PECAN ST,STE 400
FED-EX ENVELOPE
SAN ANTONIO, TX 78205

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROL AT LHAAP-35B (37)

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is in a former industrial area, located on the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-35B (37) (Chemical Laboratory). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-35B (37) were performed in accordance with the FFA requirements.

The LHAAP-35B (37) was built during the construction of Plant 3 (1953-1955) and was originally used to support the production activities at LHAAP. A Record of Decision (ROD) for LHAAP-35B (37) was signed by the USEPA in 2010 establishing the final remedy which consists of land use control (LUC) in conjunction with monitored natural attenuation (MNA). The site was not remediated to levels suitable for unrestricted use. The LUC at LHAAP-35B (37) is required to prevent human exposure to contaminated groundwater. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-35B (37) parcel is a 12.2-acre tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A. Within the LHAAP-35B (37) parcel is designated a LUC boundary which is a 16.578-acre tract, more or less, as described in Exhibit A. The LUC boundary is also presented in the attached Figure 1.

Future use of the parcel is intended as a national wildlife refuge consistent with non-residential use. For purposes of this certification, residential use includes, but is not limited to, single family or multifamily residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12. The United States Department of the Army has undertaken careful environmental study of the LHAAP-35B (37) site and concluded that the LUC set forth below is required to ensure protection of human health and the environment.

(1) Groundwater Restriction. The groundwater use restriction boundary consists of the 16.578-acre tract, more or less. Groundwater underlying this land is contaminated with trichloroethene (TCE), tetrachloroethene (PCE), and 1,1-dichloroethene (1,1-DCE) and shall not be accessed or used for any purpose without the prior written approval of the U.S. Army, the USEPA, and the TCEQ. A LUC restricting the use of groundwater has been established for the protection of human health. The U.S. Army will notify the Texas Department of Licensing and Regulation of the groundwater restriction which includes prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval by the U.S. Army, the USEPA, and the TCEQ. A restriction against the residential use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE).

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

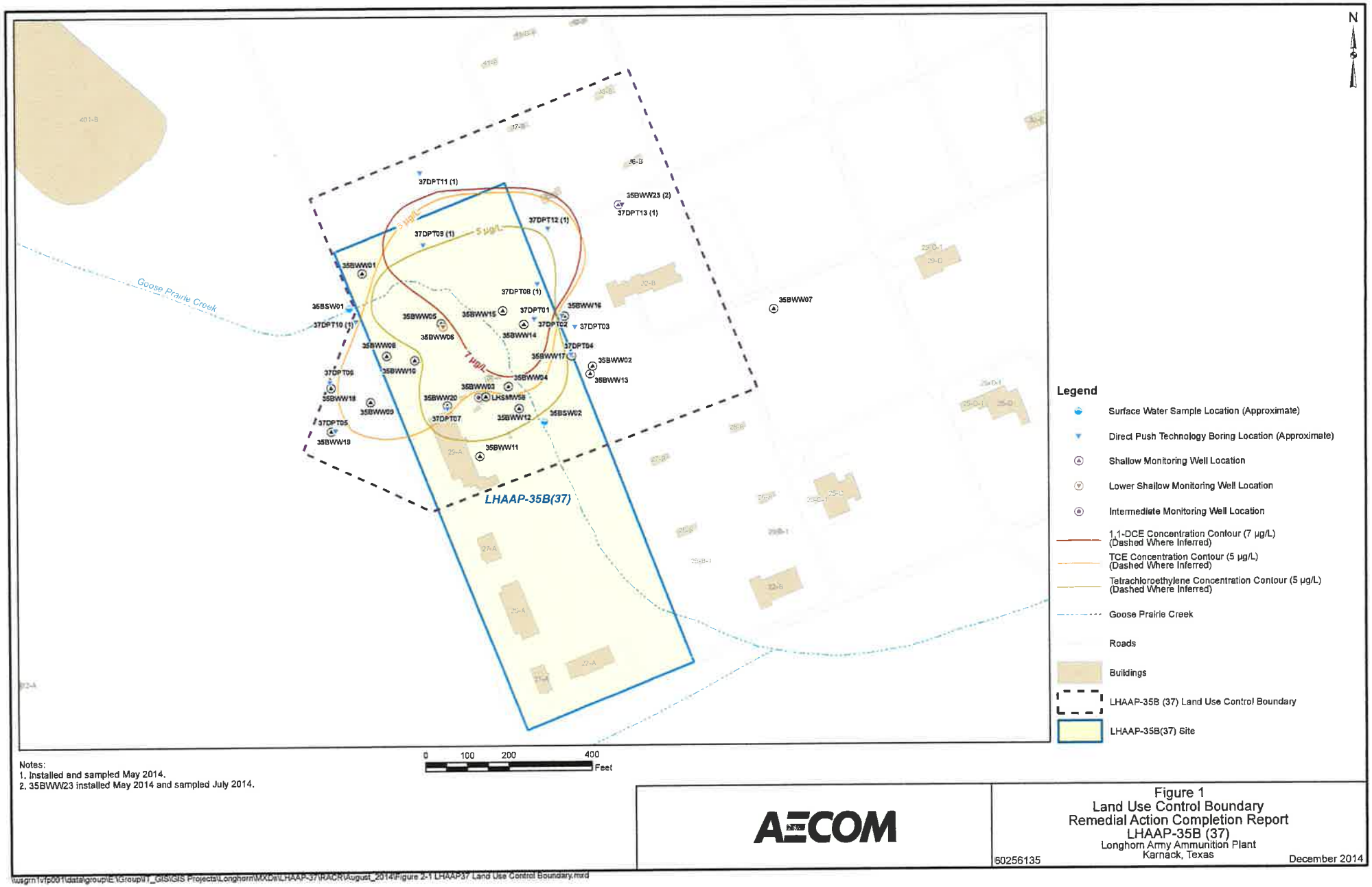
EXECUTED this the 19 th day of February, 2015.

BEFORE ME, on this the 19 th day of February 2015 personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 19th day of February, 2015.

Notary Public in and for the State of Texas,
County of Harrison

GENIE WARNER
Notary Public State of Texas
COMM. EXP. 8/1/2018



Notes:
1. Installed and sampled May 2014.
2. 35BWW23 installed May 2014 and sampled July 2014.

AECOM

Figure 1
Land Use Control Boundary
Remedial Action Completion Report
LHAAP-35B (37)
Longhorn Army Ammunition Plant
Karnack, Texas

60256135 December 2014

\\usgrn1vfp001\data\group\E:\Group\IT_GIS\GIS Projects\Longhorn\MXDs\LHAAP-37\RACR\August_2014\Figure 2-1 LHAAP37 Land Use Control Boundary.mxd

EXHIBIT A
SURVEY PLAT

FIELD NOTES DESCRIPTION OF
"LHAAP-35B(37)" LAND USE CONTROL AREA
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, "LHAAP-35B(37)" Land Use Control Area being 16.578 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), "LHAAP-35B(37)" Land Use Control Area being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.99986172702, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "C-21" (N=6956579.781 feet E=3308499.969 feet) and "X-11" (N=6960733.698 feet E=3304750.367 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on State Plane distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" and "RPLS 3940" .

Commencing at monument "C-21" referenced above,

THENCE N 22deg47'20"W 1290.84' to a concrete nail set (near the centerline of the asphalt pavement of "Avenue P") for the Southmost corner of this tract and this POINT OF BEGINNING,

THENCE N 67deg25'22"W 354.97' along a S.B.L. of this tract to an I.R.O.P.C. set for this tract's Westmost corner,

THENCE N 20deg54'22"E 363.80' along a W.B.L. of this tract to a concrete nail set (near the centerline of the asphalt pavement of "Avenue P") for this tract's Westerly reentrant corner,

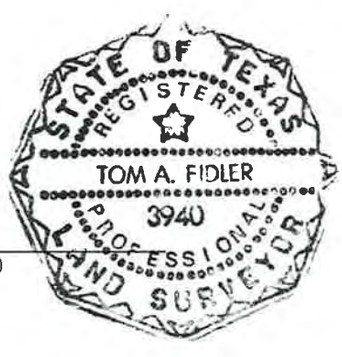
THENCE N 22deg33'04"W 285.83' along a W.B.L. of this tract to a concrete nail set (near the centerline of the asphalt pavement of "Avenue P") for this tract's N.W.C., said nail being S 52deg54'59"E 3687.90' from the aforementioned "X-11" monument,

THENCE N 68deg33'30"E 817.56' along the N.B.L. of this tract to a concrete nail set (near the centerline of the asphalt pavement of "Bowie Avenue") for this tract's Northmost corner,

THENCE S 21deg48'41"E 817.92' along the E.B.L. of this tract to a concrete nail set (near the centerline of the asphalt pavement of "Bowie Avenue") for this tract's Eastmost corner,

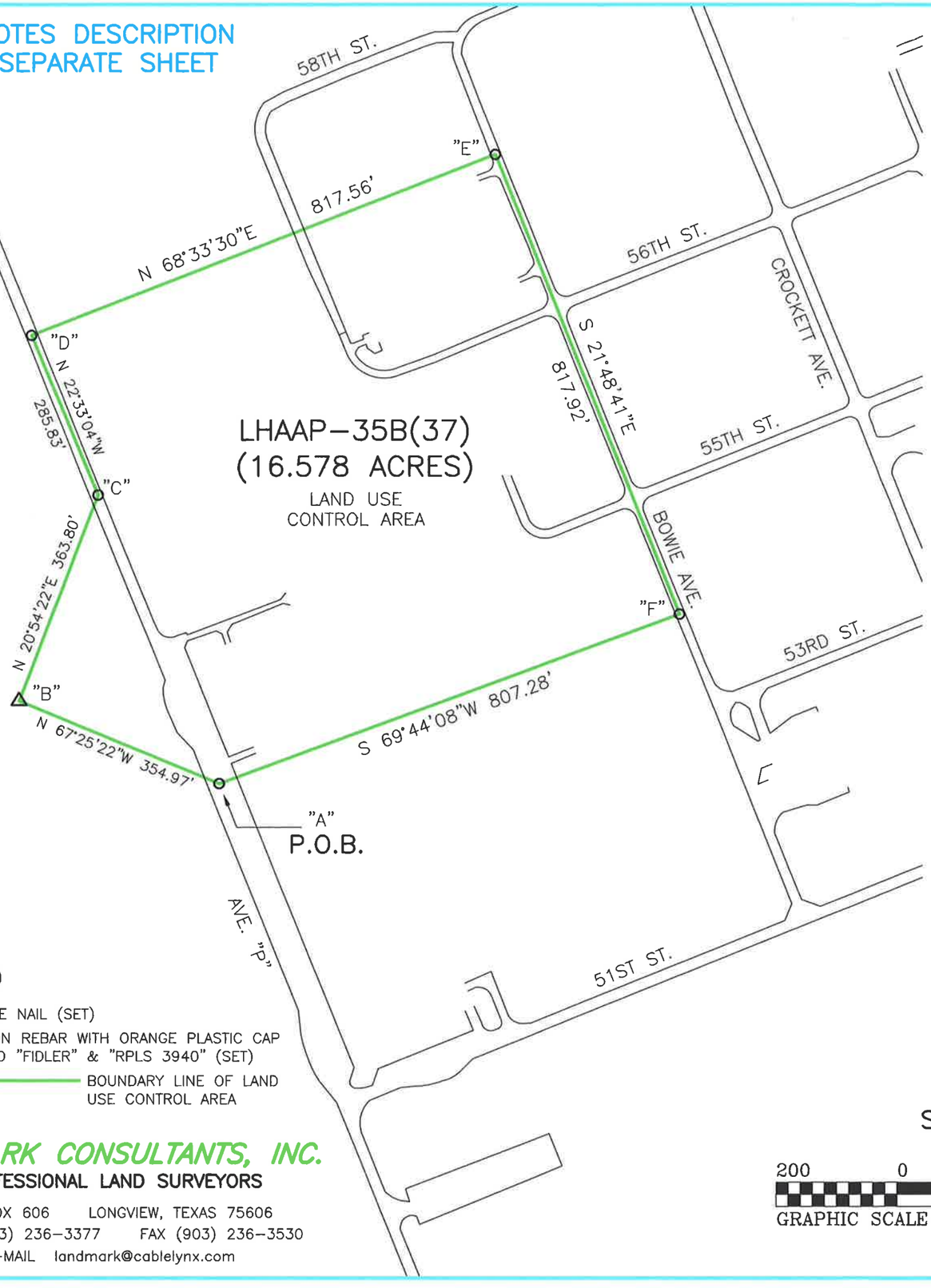
THENCE S 69deg44'08"W 807.28' along a S.B.L. of this tract to this POINT OF BEGINNING, containing 16.578 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in January, 2015.

Witness my hand and seal this the 21st day of January, 2015.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), AND COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.99986172702 & IS BASED ON CALCULATED DISTANCE BETWEEN PUBLISHED STATE PLANE COORDINATES OF STATIONS C-21 & X-11 DIVIDED BY SURFACE TRAVERSE CALCULATED DISTANCE BETWEEN SAME TWO STATIONS. THE COMPUTED LAND AREA IS BASED ON STATE PLANE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6957769.855	3307999.979
B	6957906.138	3307672.216
C	6958245.983	3307802.032
D	6958509.961	3307692.413
E	6958808.823	3308453.390
F	6958049.461	3308757.289

LEGEND

- ○ CONCRETE NAIL (SET)
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- BOUNDARY LINE OF LAND USE CONTROL AREA

SCALE 1"=200'

200 0 200 400 600

GRAPHIC SCALE - FEET

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

LHAAP-35B(37) L.U.C.A.
(16.578 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	I.PTS I.LEG
01/21/2015	0605063I.DWG	DRAWN BY JTJ

LHAAP-37, 37-3

LAND USE CONTROL COMPLIANCE INSPECTION FORM

September 14, 2015

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated 8/1/11 for LHAAP-35B (37), a certification of site was conducted by _____ [indicate transferee] on _____.

A summary of land use control mechanisms is as follows:

- Groundwater restriction – A restriction against use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE). [Indicate whether groundwater restrictions are still required at LHAAP-35B (37)]

A summary of compliance with land use and restriction covenants is as follows:

- No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-35B (37).

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year.

LHAAP-46, 46-1

LUCs FROM FINAL REMEDIAL DESIGN

September 14, 2015

Final
Remedial Design
LHAAP-46, Plant 2 Area, Group 4
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for U.S. Army Corps of Engineers – Tulsa District
1645 South 101st, East Avenue
Tulsa, Oklahoma 74128

Prepared by Shaw Environmental, Inc.
1401 Enclave Parkway, Suite 250
Houston, Texas 77077

Contract No. W912QR-04-D-0027, Task Order No. DS02
Shaw Project No. 117591
Rev 0
September 2011

Shaw® a world of Solutions™

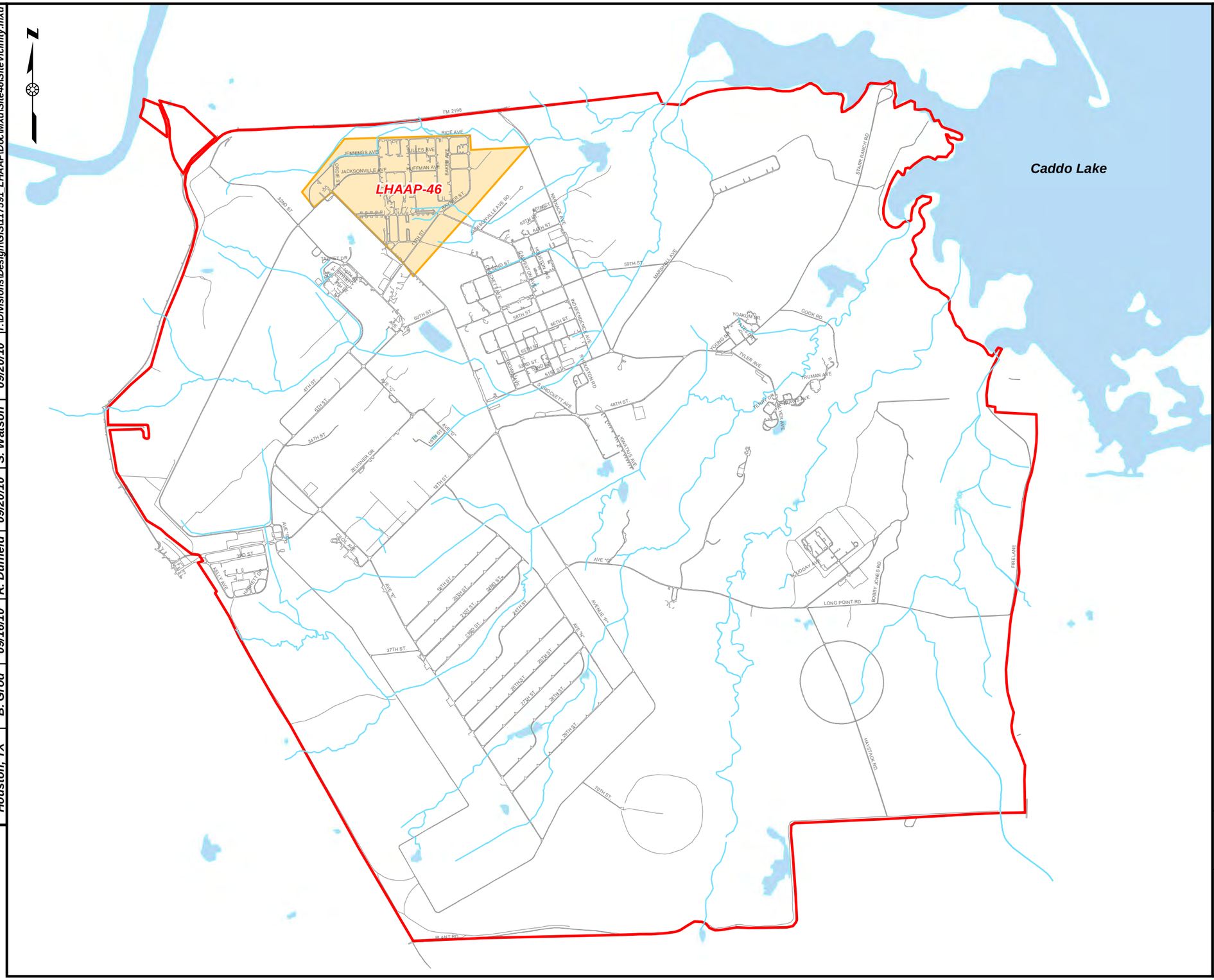
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OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		FILE PATH
Houston, TX	B. Grod	09/16/10	R. Duffield	09/20/10	S. Watson	09/20/10	T:\Divisions\Design\GIS\117591_LHAAP\Doc\Mxd\Site46\SiteVicinity.mxd



Shaw

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1-2

SITE VICINITY MAP
LHAAP-46, REMEDIAL DESIGN

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

2.0 LAND USE CONTROL

The objective of the LUC at LHAAP-46 is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the sites for anything other than environmental monitoring and testing until cleanup goals are met Notification of the groundwater use restriction will accompany all transfer documents and will be recorded at the Harrison County Courthouse in accordance with Texas Administrative Code (TAC) Title 30, §335.566. **Appendix A** provides sample LUC compliance certification documentation.

The LUC addresses the area of LHAAP-46 that includes two groundwater plumes at LHAAP-46 with levels of contamination that require implementation of a remedy (see **Section 1.3**). The U.S. Army is responsible for implementing, maintaining, monitoring, reporting on, and enforcing the LUC.

U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of an LUC objective at this site after it has transferred. U.S. Army shall obtain USEPA and Texas Commission on Environmental Quality (TCEQ) concurrence prior to termination or significant modification of the LUC, or implementation of a change in land use inconsistent with the LUC objectives and use assumptions of the remedy. Although not a remedy, the land use assumption for LHAAP-46 forms the basis for the remedy. The future use of the site as part of a national wildlife refuge is consistent with an industrial risk exposure scenario. Notification of the land use assumption of this site will be made in transfer documentation and will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566. Compliance with the use assumption will be documented in the five-year review reports.

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4.0 LAND USE CONTROL DESIGN AND IMPLEMENTATION PLAN

This section describes the LUC design and implementation activities for LHAAP-46. The activities will result in a surveyed and recorded groundwater use restriction boundary and an operation and maintenance plan for the LUC.

The objective of the LUC at LHAAP-46 is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the sites for anything other than environmental monitoring and testing until cleanup goals are met. Notification of the groundwater use restriction will accompany all transfer documents. The U.S. Army is responsible for long-term implementation, maintenance, inspection, reporting, and enforcement of the LUC.

The LUC will address the area of LHAAP-46 that includes two groundwater plumes with levels of contamination that require implementation of a remedy (see **Section 1.3**). The Land Use Control Operation and Maintenance (LUC O&M) Plan will identify the measures required for the monitoring and enforcement of the groundwater use restriction.

Upon review and concurrence of this RD, the LUC O&M Plan will be coordinated with regulators, finalized and distributed as part of the Comprehensive LUC Management Plan.

4.1 Land Use Control Implementation

The U.S. Army will undertake the following actions to implement the groundwater restriction LUC for LHAAP-46:

- Define the Area of the Groundwater Use Restriction. The groundwater use restriction boundary will be defined based on the review of the first round of groundwater sampling data in conjunction with historic data. The extent of plume will be bounded by a buffer and may extend to natural groundwater and surface water boundaries.
- Survey the LUC Boundary. The proposed boundary will be finalized after all wells are installed and sampled. Concurrence by USEPA and TCEQ will be obtained, and the LUC boundary will be surveyed by a State-licensed surveyor. A legal description of the surveyed area will be appended to the survey plat.
- Record the LUC in Harrison County. The LUC plat, legal description and groundwater use restriction language will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.56.

- Notify the Texas Department of Licensing and Regulation of the LUC. The Texas Department of Licensing and Regulation will be notified of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the U.S. Army, the USEPA, and the TCEQ. The survey plat, legal boundary and description of the groundwater restriction, in conjunction with a locator map, will be provided in hard and electronic copy.

- Develop the LUC O&M Plan. A LUC O&M Plan for LHAAP-46 will be developed. It will include the elements presented in **Section 4.2** below, the county recordation of the LUC survey plat, legal description and restriction language and the annual inspection/certification form.

4.2 Land Use Control Operation and Maintenance

The U.S. Army or its representatives will be responsible for the operation and maintenance of the LHAAP-46 LUC. This includes certification, reporting and enforcement activities. The U.S. Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable. To facilitate long-term operation and maintenance of the groundwater use restriction LUC remedy, U.S. Army will develop a plan that will encompass the elements described in the following subsections.

4.2.1 Site Certification and Reporting

Beginning with finalization of this RD and approval of the annual inspection form, the U.S. Army will undertake annual inspections and certify continued compliance with the LUC objectives. The U.S. Army, or the transferee after transfer, will retain the annual LUC Inspection/Certification documents in the project files for incorporation into the Five Year Review Reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the annual certification, the U.S. Army will provide to USEPA and TCEQ along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations. The need to continue annual certifications will be revisited at five year reviews.

4.2.2 Notice of Planned Property Conveyances

The U.S. Army shall provide notice to USEPA and TCEQ of plans to convey the LHAAP-46 acreage. The notice shall describe the mechanism by which the LUC will continue to be implemented, maintained, inspected, reported, and enforced. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental document for transfer. Although the U.S. Army may transfer responsibility for various implementation actions, the

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U.S. Army shall retain its responsibility for remedy integrity. This means that the U.S. Army is responsible for addressing substantive violations of the LUC performance objective that would undermine the U.S. Army's CERCLA remedy. The U.S. Army also will be responsible for incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation.

4.2.3 Opportunity to Review Text of Intended Land Use Controls

U.S. Army will provide a copy of the groundwater use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. USEPA will also receive a copy for review. In addition, the U.S. Army will produce an ECP or other environmental document for transfer of LHAAP-46, but before executing transfer, the U.S. Army will provide USEPA and TCEQ with a copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before transfer, to review all LUC-related provisions.

4.2.4 Notification Should Action(s) which Interfere with Land Use Control Effectiveness be Discovered Subsequent to Conveyance

Should the U.S. Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objective, the U.S. Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 4.2.5** below, the U.S. Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the U.S. Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

4.2.5 Land Use Control Enforcement

Should the LUC remedy reflected in this LUC RD fail, the U.S. Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the U.S. Fish and Wildlife Service or its lessee, to the institution of judicial action against nonfederal third parties. Alternatively, should the circumstances warrant such, the U.S. Army could choose to exercise its response authorities under CERCLA. Should the U.S. Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the U.S. Army may notify those agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC.

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4.2.6 Modification or Termination of Land Use Controls

The U.S. Army shall not, without USEPA and TCEQ concurrence, make a significant modification to, or terminate a LUC, or make a land use change inconsistent with the LUC objective. Likewise, the U.S. Army shall seek prior USEPA and TCEQ concurrence before commencing actions that may impact remedy integrity. In the case of an emergency action, the U.S. Army shall obtain prior USEPA and TCEQ concurrence as appropriate to the exigencies of the situation.

The LUCs shall remain in effect until such time as the U.S. Army and USEPA agree that the concentrations of COCs have met cleanup levels. When this occurs, the LUC will be terminated as needed. The decision to terminate the LUC will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the U.S. Army and USEPA has been made to terminate the LUC, the U.S. Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

4.2.7 Comprehensive Land Use Control Management Plan

Upon finalization of the LUC O&M Plan a copy will be inserted into the Comprehensive LUC Management Plan for Longhorn. The Comprehensive LUC Management Plan figure and table will be updated to reflect the inclusion of LHAAP-46.

The Comprehensive LUC Management Plan consists of LHAAP RD documents and a survey plat showing the locations where LUCs being implemented at LHAAP are applied. The purpose of this Comprehensive LUC Management Plan is to ensure all site-specific LUCs are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document will be provided to USEPA and TCEQ, and will also be accessible to the local government and the public. The Comprehensive LUC Management Plan is located in the Marshall Public Library to accompany LHAAP's Administrative Record.

The land use assumption of industrial reuse as part of a national wildlife refuge forms the basis for the remedy at LHAAP-46 and this land use assumption will be in included in the Comprehensive LUC Management Plan with supporting documentation.

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LHAAP-46, 46-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-46 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2014-000013307

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

NOTICE

8 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 12/09/2014 10:42 AM **Document Number:** 2014-000013307 **Receipt No:** 1415412 **Amount:** $ 50.00 **By:** Pam Rockwell, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AECOM
ATTN: AMANDA LAGARDE (FEDEX ENV)
112 E PECAN ST., SUITE 400
SAN ANTONIO, TX 78205

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROL AT LHAAP-46

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is in a former industrial area, located on the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-46 (Plant 2 Area). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-46 were performed in accordance with the FFA requirements.

The LHAAP-46 site was used for production of pyrotechnic and illumination devices until 1997. A Record of Decision (ROD) for LHAAP-46 was signed by U.S. Army and USEPA with TCEQ concurrence in 2010 establishing the final remedy which consists of land use control (LUC) in conjunction with monitored natural attenuation (MNA). The LUC will ensure protection of human health by restricting the use of groundwater to environmental monitoring and testing only. MNA will be implemented to establish confidence in attenuation trends and verify that the constituents of concern (COCs) are stable or shrinking and will not migrate to nearby surface water at levels that may present an unacceptable risk to human health or the environment. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at

the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-46 parcel is a 190 acre tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A. Within the LHAAP-46 parcel are designated LUC boundaries including a 63.772-acre tract, more or less, as described in Exhibit A. The LUC boundaries are also presented in the attached Figure 1.

Future use of the parcel is intended as a national wildlife refuge consistent with non-residential use. The United States Department of the Army has undertaken careful environmental study of the LHAAP-46 site and concluded that the LUC set forth below is required to ensure protection of human health and the environment.

(1) Groundwater Restriction. The groundwater use restriction boundary consists of the 63.772-acre tract, more or less. Groundwater underlying this land is contaminated with trichloroethene (TCE) and other volatile organic compounds (VOCs) and shall not be accessed or used for any purpose without the prior written approval of the U.S. Army, the USEPA, and the TCEQ. A LUC restricting the use of groundwater has been established for the protection of human health. The U.S. Army will notify the Texas Department of Licensing and Regulation of the groundwater restriction which includes prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval by the U.S. Army, the USEPA, and the TCEQ. A restriction against the residential use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE).

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 20 th day of November, 2014.

BEFORE ME, on this the 20 th day of November, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

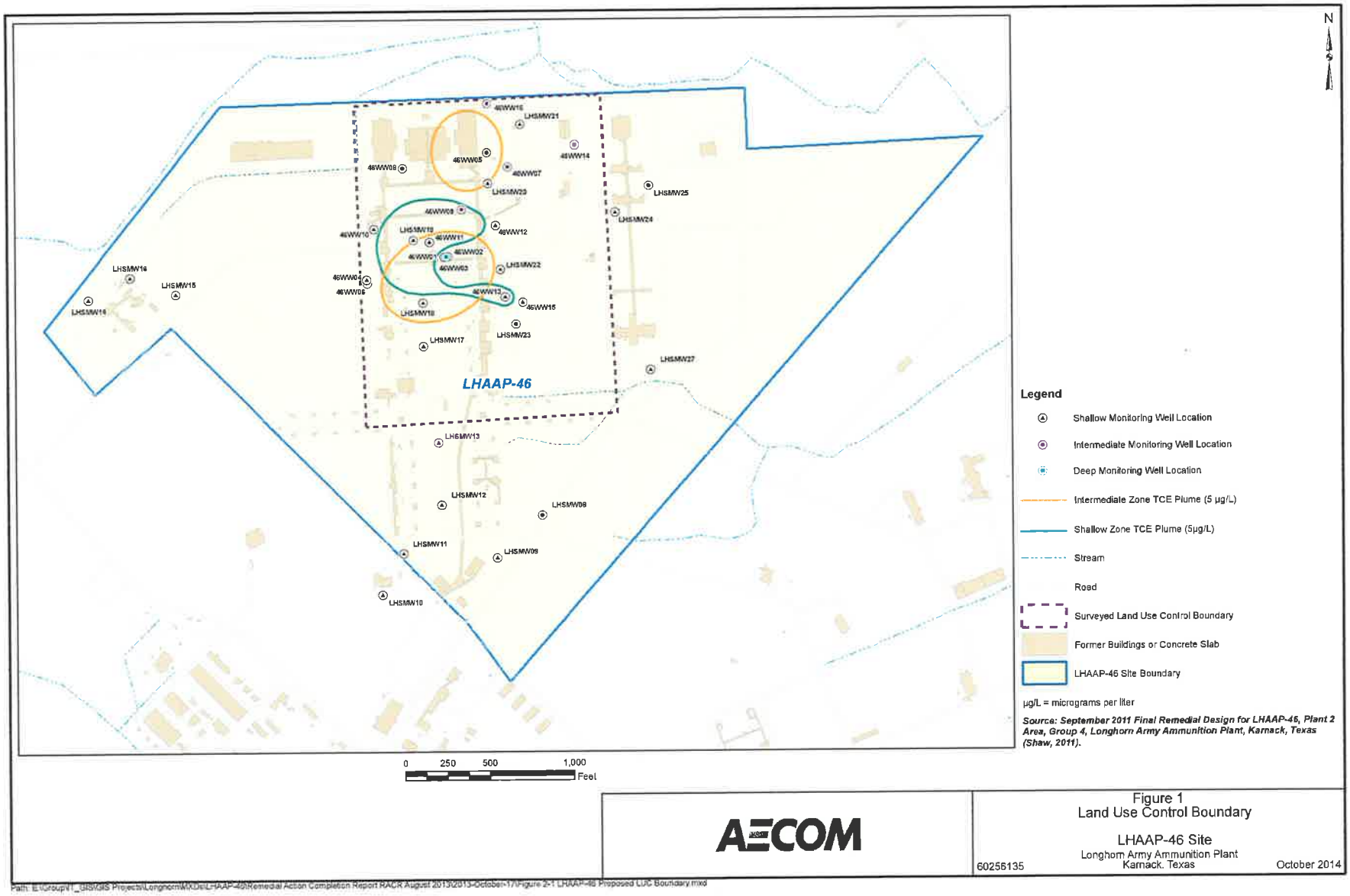
GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 20 day of November, 2014.

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 03-17-2015

Notary Public in and for the State of Texas,
County of Harrison

EXHIBIT A

COUNTY CLERK'S MEMO
PORTIONS OF THIS
DOCUMENT NOT
REPRODUCIBLE
WHEN RECORDED



AECOM

Figure 1
Land Use Control Boundary

LHAAP-46 Site
Longhorn Army Ammunition Plant
Karnack, Texas

60256135 October 2014

Path: E:\Group\1_GIS\GIS Projects\LonghornMXDs\LHAAP-46\Remedial Action Completion Report RACR August 2013\2013-October-17\Figure 2-1 LHAAP-46 Proposed LUC Boundary.mxd

FIELD NOTES DESCRIPTION OF
"LHAAP-46" LAND USE CONTROL AREA
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, "LHAAP-46" Land Use Control Area being 63.772 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), "LHAAP-46" Land Use Control Area being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861858, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "HORSE" (N=6960008.269 feet E=3309591.340 feet). Said traverse indicates a surface distance of 4895.701 feet between said monuments. The computed land area is based on grid distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940" .

Commencing at monument "X-11" referenced above,

THENCE N 36deg34'22"E 1386.89' to a concrete nail set (in white paint on asphalt) for the S.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 01deg52'33"W 1886.35' along the W.B.L. of this tract to an I.R.O.P.C. set (in a 6' tall chain link fence running Easterly and Westerly) for this tract's N.W.C. ,

THENCE along said fence, which defines the Northerly Boundary Lines of this tract, the following eleven courses :

(01) N 86deg41'48"E 82.30' to a fence corner post,
(02) N 39deg20'47"E 18.62' to a bent fence corner post,
(03) N 86deg29'33"E 97.31' to a fence corner post,
(04) S 38deg05'14"E 19.89' to a fence corner post,
(05) N 87deg17'05"E 337.52' to a point in said fence,
(06) N 87deg22'07"E 699.24' to a point in said fence,
(07) N 87deg22'02"E 139.25' to a fence corner post,
(08) S 59deg03'44"E 20.98' to a fence corner post,
(09) N 86deg53'55"E 29.32' to a fence corner post,
(10) N 55deg19'37"E 21.12' to a fence corner post,
(11) N 86deg05'43"E 16.55' to an I.R.O.P.C. set in said fence for this tract's N.E.C. ,

THENCE S 02deg42'36"E 1879.91' along the E.B.L. of this tract to a concrete nail set (in white paint on asphalt) for this tract's S.E.C., from which monument "HORSE" referenced above bears S 52deg51'46"E 3171.37',

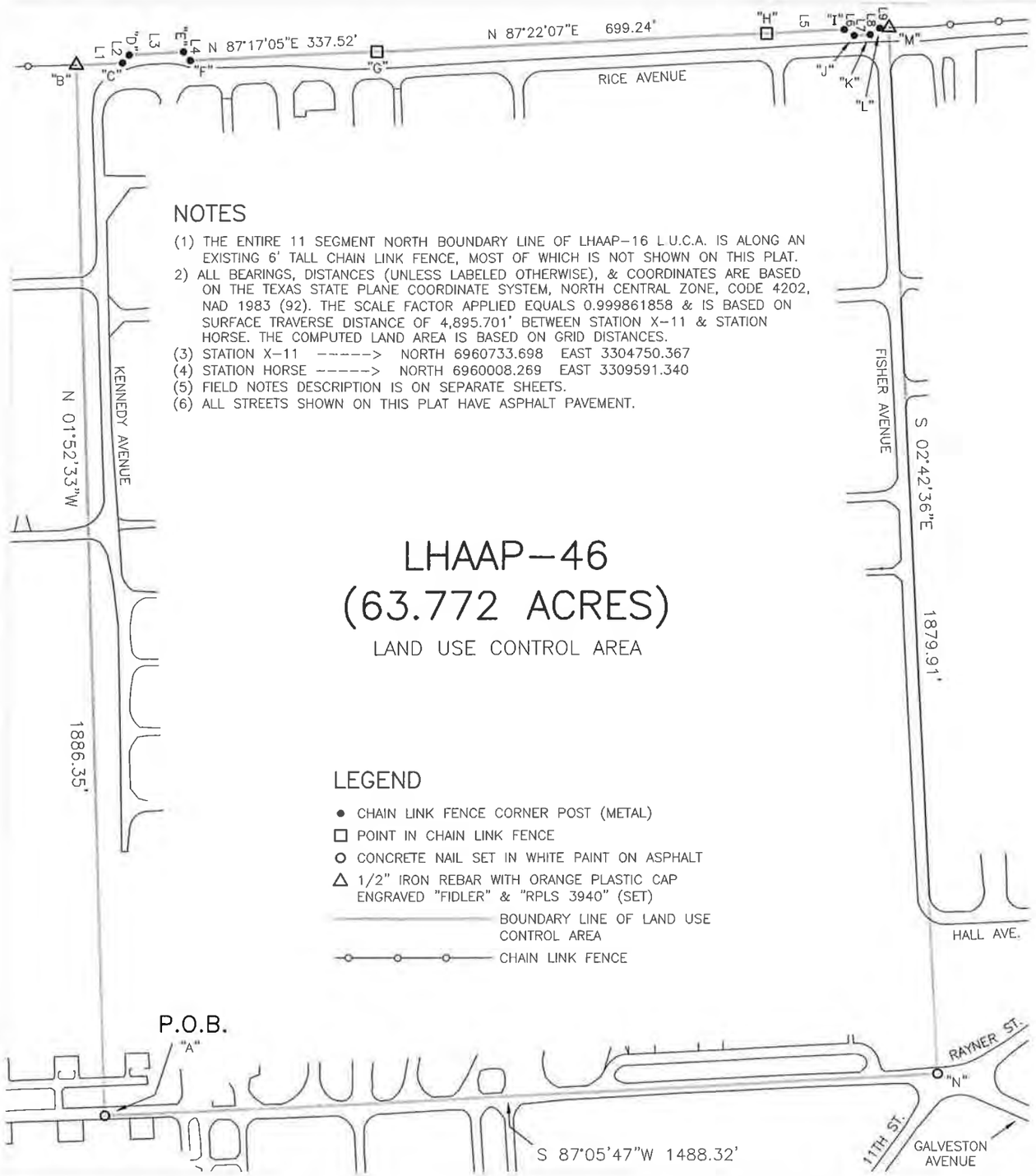
THENCE S 87deg05'47"W 1488.32' along the S.B.L. of this tract to this POINT OF BEGINNING. This tract contains 63.772 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

01071090



NOTES

(1) THE ENTIRE 11 SEGMENT NORTH BOUNDARY LINE OF LHAAP-16 L.U.C.A. IS ALONG AN EXISTING 6' TALL CHAIN LINK FENCE, MOST OF WHICH IS NOT SHOWN ON THIS PLAT.
2) ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861858 & IS BASED ON SURFACE TRAVERSE DISTANCE OF 4,895.701' BETWEEN STATION X-11 & STATION HORSE. THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.
(3) STATION X-11 -----> NORTH 6960733.698 EAST 3304750.367
(4) STATION HORSE -----> NORTH 6960008.269 EAST 3309591.340
(5) FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS.
(6) ALL STREETS SHOWN ON THIS PLAT HAVE ASPHALT PAVEMENT.

LHAAP-46
(63.772 ACRES)
LAND USE CONTROL AREA

LEGEND

- ● CHAIN LINK FENCE CORNER POST (METAL)
- □ POINT IN CHAIN LINK FENCE
- ○ CONCRETE NAIL SET IN WHITE PAINT ON ASPHALT
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- BOUNDARY LINE OF LAND USE CONTROL AREA
- CHAIN LINK FENCE

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in October, 2014.

Witness my hand and seal this the 20th day of October, 2014.

STATE OF TEXAS REGISTERED TOM A. FIDLER 3940 PROFESSIONAL LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

LINE TABLE

LINE	BEARING	DISTANCE
L1	N 86°41'48"E	82.30'
L2	N 39°20'47"E	18.62'
L3	N 86°29'33"E	97.31'
L4	S 38°05'14"E	19.89'
L5	N 87°22'02"E	139.25'
L6	S 59°03'44"E	20.98'
L7	N 86°53'55"E	29.32'
L8	N 55°19'37"E	21.12'
L9	N 86°05'43"E	16.55'

N

SCALE 1"=200'

200 0 200 400 600
GRAPHIC SCALE - FEET

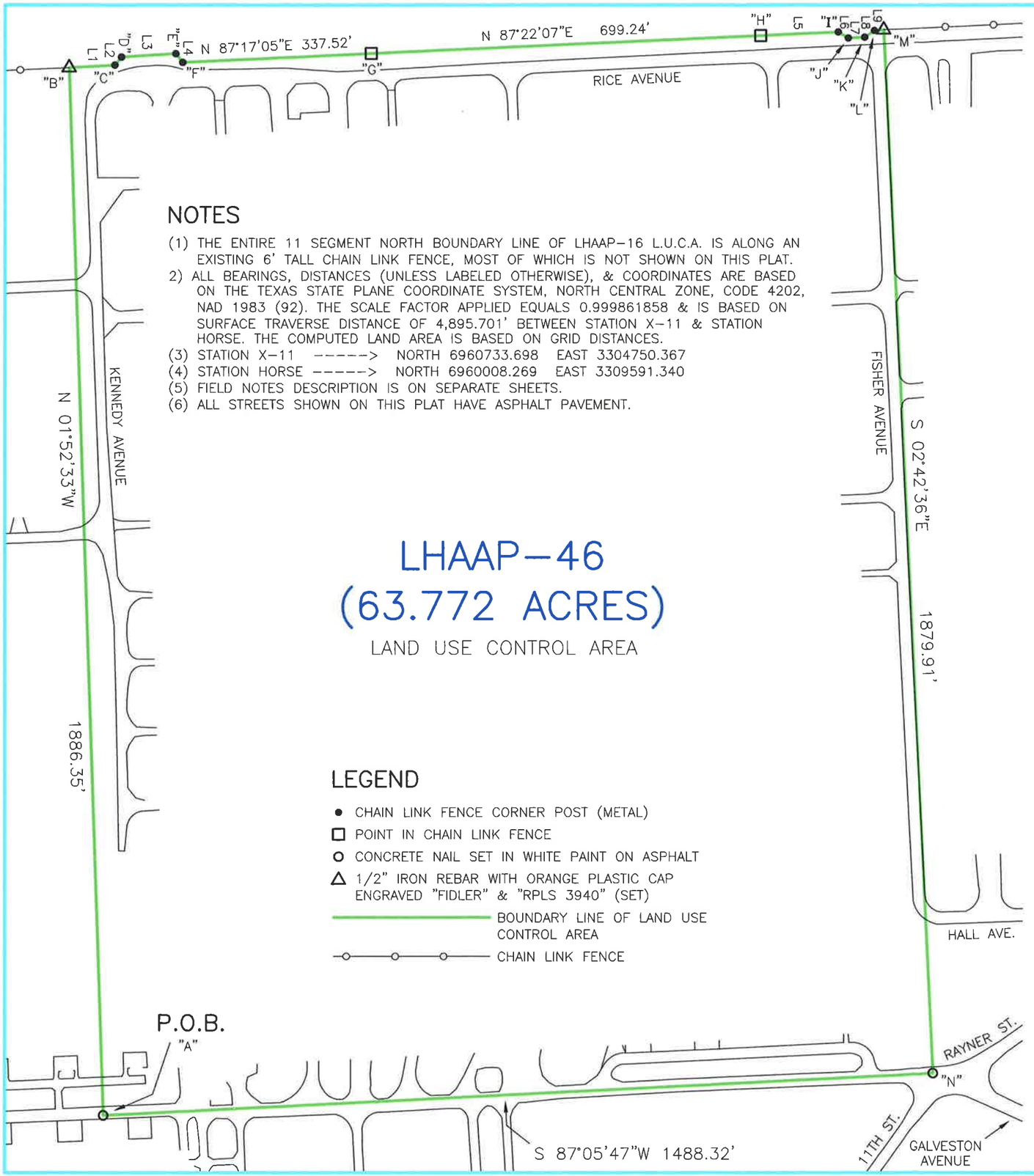
COORDINATE TABLE

POINT	NORTH	EAST
A	6961847.512	3305576.740
B	6963732.849	3305514.995
C	6963737.591	3305597.161
D	6963751.988	3305608.964
E	6963757.942	3305706.095
F	6963742.285	3305718.366
G	6963758.275	3306055.508
H	6963790.379	3306754.008
I	6963796.775	3306893.111
J	6963785.987	3306911.111
K	6963787.573	3306940.387
L	6963799.588	3306957.756
M	6963800.715	3306974.265
N	6961922.907	3307063.146

LHAAP-46 L.U.C.A.
(63.772 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	U.PTS U.LEG
10/20/2014	1103025U.DWG	DRAWN BY JTJ

01071091



LHAAP-46
(63.772 ACRES)
LAND USE CONTROL AREA

NOTES

(1) THE ENTIRE 11 SEGMENT NORTH BOUNDARY LINE OF LHAAP-16 L.U.C.A. IS ALONG AN EXISTING 6' TALL CHAIN LINK FENCE, MOST OF WHICH IS NOT SHOWN ON THIS PLAT.
2) ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861858 & IS BASED ON SURFACE TRAVERSE DISTANCE OF 4,895.701' BETWEEN STATION X-11 & STATION HORSE. THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.
(3) STATION X-11 -----> NORTH 6960733.698 EAST 3304750.367
(4) STATION HORSE -----> NORTH 6960008.269 EAST 3309591.340
(5) FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS.
(6) ALL STREETS SHOWN ON THIS PLAT HAVE ASPHALT PAVEMENT.

LEGEND

- ● CHAIN LINK FENCE CORNER POST (METAL)
- □ POINT IN CHAIN LINK FENCE
- ○ CONCRETE NAIL SET IN WHITE PAINT ON ASPHALT
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- BOUNDARY LINE OF LAND USE CONTROL AREA
- CHAIN LINK FENCE

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in October, 2014.

Witness my hand and seal this the 20th day of October, 2014.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

LINE TABLE

LINE	BEARING	DISTANCE
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SCALE 1"=200'

200 0 200 400 600
GRAPHIC SCALE - FEET

COORDINATE TABLE

POINT	NORTH	EAST
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E	6963757.942	3305706.095
F	6963742.285	3305718.366
G	6963758.275	3306055.508
H	6963790.379	3306754.008
I	6963796.775	3306893.111
J	6963785.987	3306911.111
K	6963787.573	3306940.387
L	6963799.588	3306957.756
M	6963800.715	3306974.265
N	6961922.907	3307063.146

LHAAP-46 L.U.C.A.
(63.772 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	U.PTS U.LEG
10/20/2014	1103025U.DWG	DRAWN BY JTJ

LHAAP-46, 46-3

LAND USE CONTROL COMPLIANCE INSPECTION FORM

September 14, 2015

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated 9/30/11 for LHAAP-46 a certification of site was conducted by _____ [indicate transferee] on _____.

A summary of land use control mechanisms is as follows:

- Groundwater restriction – A restriction against use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE). [Indicate whether groundwater restrictions are still required at LHAAP-46]

A summary of compliance with land use and restriction covenants is as follows:

- No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-46.

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year.

LHAAP-49

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-49 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2012-000000704

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000704 **Receipt No:** 1200645 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas, in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. LHAAP-49 is a former Acid Storage location at the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA) became effective on December 30, 1991. LHAAP-49 is considered an NPL listed site, and remedial activities at LHAAP-49 were performed in accordance with the FFA requirements.

LHAAP-49 is located in the west-central portion of LHAAP. LHAAP-49 is the former Acid Storage Area, which was used from 1942 to 1945 for storage and formulation of acids and acid mixtures in support of trinitrotoluene production during World War II. Nitric acid and sulfuric acid were manufactured and handled in large quantities in this area. A no further action Record of Decision for LHAAP-49 was signed by USEPA in 2010 establishing no remedy was required. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or

in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

LHAAP-49 is a 30.540 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of LHAAP-49 and USEPA and TCEQ concluded that no further investigation or action is required.

Limited monitoring of LHAAP-49 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-49 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 21 th day of July, 2011.

BEFORE ME, on this the 21 th day of July, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 21 day of July, 2011.

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 03-17-2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
LHAAP-49
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 30.540 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998768897, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "HMX-3" (N=6956487.252 feet E=3303483.509 feet) and "HMX-5" (N=6958206.213 feet E=3305201.721 feet). Said traverse indicates a surface distance of 2430.748 feet between said monuments. The computed land area is based on grid (State Plane) distances.

BEGINNING at a 60d nail set for the Southmost corner of this tract, said nail being in asphalt pavement at the intersection of 6th Street and 4th Street, from which nail the monument "HMX-3" referenced above bears N 09deg00'02"E 74.61' ,

THENCE N 46deg42'14"W crossing some of said asphalt pavement, then generally along 4th Street's Northeast edge of asphalt, then crossing a curved section of 4th Street's asphalt, and continuing beyond 4th Street's asphalt, for a total distance of 509.81', to a 60d nail set for the Southmost West corner of this tract,

THENCE N 45deg04'42"E eventually crossing 4th Street's asphalt, then generally along 4th Street's Southeast edge of asphalt, for a total distance of 1323.80', to a 60d nail set (in the Southeast edge of said asphalt pavement) for the Westerly reentrant corner of this tract,

THENCE N 45deg22'03"W crossing 4th Street's asphalt pavement and continuing for a total distance of 308.18' to a point (in the Southeasterly edge of flowing water [May 3, 2011] of Goose Prairie Creek) for the Northmost West corner of this tract, from which point a 1/2" iron rod with Tom Fidler orange plastic cap set for reference bears S 45deg22'03"E 11.34', said rod being at the top of the Southeasterly bank of Goose Prairie Creek,

THENCE N 47deg40'44"E 331.25' along a N.W. B.L. of this tract to a point (in the Southeasterly edge of flowing water [May 3, 2011] of Goose Prairie Creek) for the Westmost North corner of this tract, from which point a 1/2" iron rod with Tom Fidler orange plastic cap set for reference bears S 44deg45'45"E 13.46', said rod being at the top of the Southeasterly bank of Goose Prairie Creek,

THENCE S 44deg45'45"E along a N.E. B.L. of this tract, and eventually crossing 4th Street's asphalt pavement, for a total distance of 292.85' to a 60d nail set in the Southeast edge of said asphalt pavement for the Northerly reentrant corner of this tract,

THENCE N 44deg47'09"E generally along 4th Street's Southeast edge of asphalt pavement, then entering said pavement at the

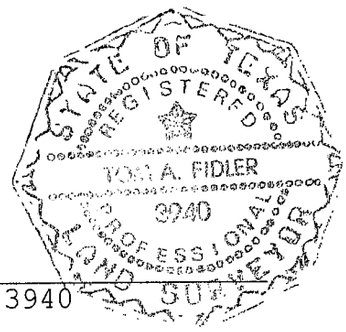
intersection of 4th Street and Avenue "C", for a total distance of 781.21' to a 60d nail set in said asphalt pavement for the Eastmost North corner of this tract,

THENCE S 45deg47'29"E crossing some of said pavement, then generally along the Southwest edge of the asphalt pavement of Avenue "C", then entering said pavement at the intersection of Avenue "C" and 6th Street, for a total distance of 507.27' to a 60d nail set for the Eastmost corner of this tract, from which the monument "HMX-5" referenced above bears N 13deg12'58"E 77.94' ,

THENCE S 44deg55'17"W crossing some of said pavement, then generally along the Northwest edge of the asphalt pavement of 6th Street, then entering said pavement at the aforementioned intersection of 6th Street and 4th Street, for a total distance of 2424.55' to this POINT OF BEGINNING.

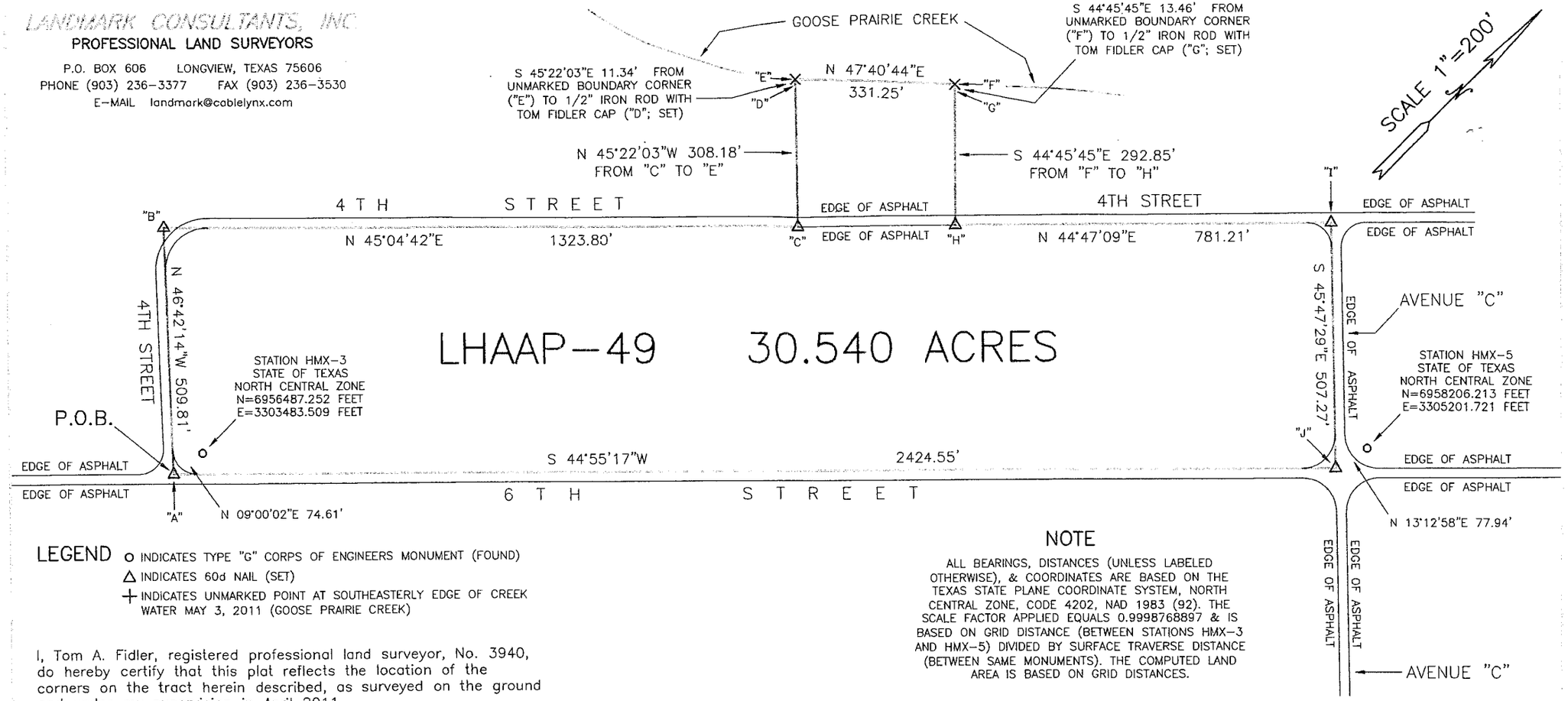
This tract contains 30.540 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com



LEGEND
- o INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- △ INDICATES 60d NAIL (SET)
- + INDICATES UNMARKED POINT AT SOUTHEASTERLY EDGE OF CREEK WATER MAY 3, 2011 (GOOSE PRAIRIE CREEK)

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in April 2011.

Witness my hand and seal May 5, 2011.

STATE OF TEXAS REGISTERED TOM A. FIDLER 3940 PROFESSIONAL LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998768897 & IS BASED ON GRID DISTANCE (BETWEEN STATIONS HMX-3 AND HMX-5) DIVIDED BY SURFACE TRAVERSE DISTANCE (BETWEEN SAME MONUMENTS). THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6956413.564	3303471.837
B	6956763.174	3303100.790
C	6957697.967	3304038.137
D(ROD)	6957906.516	3303826.894
E	6957914.483	3303818.824
F	6958137.506	3304063.741
G(ROD)	6958127.951	3304073.216
H	6957929.573	3304269.956
I	6958484.036	3304820.288
J	6958130.332	3305183.901

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

LHAAP-49
(30.540 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1104040	0407088.CRD	M.PTS	M.LEG
MAY 5, 2011	1103025M.DWG	DRAWN BY JTJ	

LHAAP-50, 50-1

LUCs FROM FINAL REMEDIAL DESIGN

September 14, 2015

Final
Remedial Design
LHAAP-50
Former Sump Water Tank, Group 4
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for U.S. Army Corps of Engineers – Tulsa District
1645 South 101st East Avenue
Tulsa, Oklahoma 74128

Prepared by Shaw Environmental, Inc.
1401 Enclave Parkway, Suite 250
Houston, Texas 77077

Contract No. W912QR-04-D-0027, Task Order No. DS02
Project No. 117591
Rev 0
September 2011

Shaw® a world of Solutions™

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FILE PATH	T:\Divisions\Design\GIS\117591_LHAAP\Doc\Mxd\SiteVicinity.mxd
APPROVED BY	P. Srivastav 11/05/10
CHECKED BY	S. Suryanarayanan 11/03/10
DRAWN BY	B. Muske 11/03/10
OFFICE	Houston, TX

N

Caddo Lake

LHAAP-46
LHAAP-47
LHAAP-02
LHAAP-35A(58)
LHAAP-60
LHAAP-35B(37)
LHAAP-50
LHAAP-08
LHAAP-67
LHAAP-48
LHAAP-35C(53)

FM 2198
RICE AVE
JACKSONVILLE AVE
GARDNER AVE
GALVESTON AVE
11TH ST
3RD ST
60TH ST
59TH ST
58TH ST
57TH ST
56TH ST
55TH ST
54TH ST
53RD ST
52ND ST
51ST ST
50TH ST
49TH ST
48TH ST
47TH ST
46TH ST
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44TH ST
43RD ST
42ND ST
41ST ST
40TH ST
39TH ST
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33RD ST
32ND ST
31ST ST
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7TH ST
6TH ST
5TH ST
4TH ST
3RD ST
2ND ST
1ST ST
AVENUE A
AVE B
AVE C
AVE D
AVE E
AVE F
AVE G
AVE H
AVE I
AVE J
AVE K
AVE L
AVE M
AVE N
AVE O
AVE P
AVENUE P
AVE R
AVE S
AVE T
AVE U
AVE V
AVE W
AVE X
AVE Y
AVE Z
ZEUNER DR
NARONA AVE
KARNACK AVE
IMPERIAL MORGAN AVE
S ROCKETT AVE
MARSHALL AVE
STARR BRIDGE RD
COOKE RD
YUCCA ST
PECAN ST
PENNINGTON ST
RIDDLE AVE
BOBBY JONES RD
LONG POINT RD
HAVEACH RD
PLANT RD
FIRE AVE
CEDAR AVE
MAPLE DR
HOLLY AVE

LEGEND

- Stream
- Road
- Sites
- Lake
- LHAAP Boundary

0 1,200 2,400 4,800 Feet

Shaw

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1-2

SITE VICINITY MAP
LHAAP-50 REMEDIAL DESIGN

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

3.0 LAND USE CONTROL

The objective of LUC at LHAAP-50 is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the sites for anything other than environmental monitoring and testing until cleanup levels are met. Notification of the groundwater use restriction will accompany all transfer documents and will be recorded at the Harrison County Courthouse in accordance with Texas Administrative Code (TAC) Title 30, §335.566. **Appendix B** provides sample LUC compliance certification documentation.

The LUC addresses the area of LHAAP-50 that has groundwater plumes (in both the shallow and intermediate groundwater zones) with levels of contamination that require implementation of a remedy (see **Section 2.3**). The groundwater restriction LUC would be maintained until the concentration of contaminants and by-product contaminants have been reduced to below their respective cleanup levels.

The U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of an LUC objective at this site after it has transferred. The U.S. Army shall obtain USEPA and TCEQ concurrence prior to termination or significant modification of the LUC, or implementation of a change in land use inconsistent with the LUC objectives and use assumptions of the remedy. Although not a remedy, the land use assumption for LHAAP-50 forms the basis for the remedy. The future use of the site as part of a national wildlife refuge is consistent with an industrial risk exposure scenario. Notification of the land use assumption of this site will be made in transfer documentation and will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566. Compliance with the use assumption will be documented in the five-year review reports.

6.0 LAND USE CONTROL DESIGN AND IMPLEMENTATION PLAN

This section describes the LUC design and implementation activities for LHAAP-50. The activities will result in a surveyed and recorded groundwater use restriction boundary and an operation and maintenance plan for the LUC.

The objective of the LUC at LHAAP-50 is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the site for anything other than environmental monitoring and testing until cleanup levels are met. Notification of the groundwater use restriction will accompany all transfer documents. The U.S. Army is responsible for long-term implementation, maintenance, inspection, reporting, and enforcement of the LUC.

The LUC will address the area of LHAAP-50 that includes two groundwater plumes with levels of contamination that require implementation of a remedy (see **Section 1.3**). The Land Use Control Operation and Maintenance Plan (LUC O&M) will identify the measures required for monitoring and enforcement of the groundwater use restriction. Upon review and concurrence of this RD, the LUC O&M Plan will be coordinated with regulators, finalized, and distributed as part of the Comprehensive LUC Management Plan for LHAAP.

6.1 Land Use Control Implementation

The U.S. Army will undertake the following actions to implement the groundwater restriction LUC for LHAAP-50:

- ***Define the Area of the Groundwater Use Restriction.*** The groundwater use restriction boundary will be defined based on the review of the first round of groundwater sampling data in conjunction with historic data. The extent of plume will be bounded by a buffer and may extend to natural groundwater and surface water boundaries.
- ***Survey the LUC Boundary.*** The proposed boundary will be finalized after all wells are installed and sampled. Concurrence by USEPA and TCEQ will be obtained, and the LUC boundary will be surveyed by a State-licensed surveyor. A legal description of the surveyed area will be appended to the survey plat.
- ***Record the LUC in Harrison County.*** The LUC plat, legal description and groundwater use restriction language will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566.

- ***Notify the Texas Department of Licensing and Regulation of the LUC.*** The Texas Department of Licensing and Regulation will be notified of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the U.S. Army, the USEPA, and the TCEQ. The survey plat, legal boundary and description of the groundwater restriction, in conjunction with a locator map, will be provided in hard and electronic copy.
- ***Develop the LUC O&M Plan.*** An LUC O&M Plan for LHAAP-50 will be developed. It will include the elements presented in **Section 6.2**, the county recordation of the LUC survey plat, legal description and restriction language, and the inspection/certification form.

6.2 Land Use Control Operation and Maintenance

The U.S. Army or its representatives will be responsible for the operation and maintenance of the LHAAP-50 LUC. This includes certification, reporting, and enforcement activities. The U.S. Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable. To facilitate long-term operation and maintenance of the groundwater use restriction LUC remedy, the U.S. Army will develop a plan that will encompass the elements described in the following subsections.

6.2.1 Site Certification and Reporting

Beginning with finalization of this RD and approval of the inspection form, the U.S. Army will undertake inspections and certify continued compliance with the LUC objectives. The U.S. Army or the transferee after transfer will retain the LUC Inspection Certification documents in the project files for incorporation into the five-year review reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the certification, the U.S. Army will provide to USEPA and TCEQ, along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations. The need to continue certifications will be revisited at five year reviews.

6.2.2 Notice of Planned Property Conveyances

The U.S. Army shall provide notice to USEPA and TCEQ of plans to convey the LHAAP-50 acreage. The notice shall describe the mechanism by which the LUC will continue to be implemented, maintained, inspected, reported, and enforced. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental document for transfer. Although the U.S. Army may transfer responsibility for various implementation actions, the U.S. Army shall retain its responsibility for remedy integrity. This means that the U.S. Army

is responsible for addressing substantive violations of the LUC performance objective that would undermine the U.S. Army's CERCLA remedy. The U.S. Army also will be responsible for incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation.

6.2.3 Opportunity to Review Text of Intended Land Use Controls

The U.S. Army will provide a copy of the groundwater use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. The USEPA will also receive a copy for review. In addition, the U.S. Army will produce an ECP or other environmental document for transfer of LHAAP-50, but before executing transfer, the U.S. Army will provide USEPA and TCEQ with a copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before transfer, to review all LUC-related provisions.

6.2.4 Notification Should Action(s) which Interfere with Land Use Control Effectiveness be Discovered Subsequent to Conveyance

Should the U.S. Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objective, the U.S. Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 6.2.5** below, the U.S. Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the U.S. Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

6.2.5 Land Use Control Enforcement

Should the LUC remedy reflected in this RD fail, the U.S. Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the USFWS or its lessee, to the institution of judicial action against non-federal third parties. Alternatively, should the circumstances warrant such, the U.S. Army could choose to exercise its response authorities under CERCLA. Should the U.S. Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction; the U.S. Army may notify those agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC.

6.2.6 Modification or Termination of Land Use Controls

The U.S. Army shall not, without USEPA and TCEQ concurrence, make a significant modification to, or terminate an LUC, or make a land use change inconsistent with the LUC objective. Likewise, the U.S. Army shall seek prior USEPA and TCEQ concurrence before

commencing actions that may impact remedy integrity. In the case of an emergency action, the U.S. Army shall obtain prior USEPA and TCEQ concurrence as appropriate to the exigencies of the situation.

The LUC shall remain in effect until such time as the U.S. Army and USEPA agree that the concentrations of COCs have met cleanup levels. When this occurs, the LUC will be terminated as needed. The decision to terminate the LUC will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the U.S. Army and USEPA has been made to terminate the LUC, the U.S. Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

6.2.7 Comprehensive Land Use Control Management Plan

Upon finalization of the LUC O&M Plan, a copy will be inserted into the Comprehensive LUC Management Plan for Longhorn. The Comprehensive LUC Management Plan figure and table will be updated to reflect the inclusion of LHAAP-50.

The Comprehensive LUC Management Plan consists of LHAAP RD documents and a survey plat showing the locations where LUC being implemented at LHAAP are applied. The purpose of this Comprehensive LUC Management Plan is to ensure all site-specific LUC are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document will be provided to USEPA and TCEQ and is also accessible to the public. The Comprehensive LUC Management Plan is located in the Marshall Public Library to accompany LHAAP's Administrative Record.

The land use assumption of industrial use as part of a national wildlife refuge forms the basis for the remedy at LHAAP-50 and this land use assumption will be included in the Comprehensive LUC Management Plan with supporting documentation.

LHAAP-50, 50-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-50 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2015-000006109

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

NOTICE

8 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 06/18/2015 01:32 PM **Document Number:** 2015-000006109 **Receipt No:** 1507040 **Amount:** $ 50.00 **By:** Vickie Gagnard, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

AMANDA LAGARDE
112 EAST PECAN ST
SUITE 400
SAN ANTONIO, TX 78205

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROL AT LHAAP-50

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is in a former industrial area, located on the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-50 (Former Sump Water Tank). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-50 were performed in accordance with the FFA requirements.

The LHAAP-50 site, when operational, contained a 47,000-gallon capacity aboveground storage tank (AST) which received industrial wastewater from various industrial waste production sumps throughout LHAAP from 1955 to 1988. After the solids were filtered, the storage tank contents were discharged up stream of the bridge on Crockett Avenue, south of 51st Street into Goose Prairie Creek. The AST has been removed. A Record of Decision (ROD) for LHAAP-50 was signed by the U.S. Army and USEPA with TCEQ concurrence in 2010 establishing the final remedy which consists of a land use control (LUC) in conjunction with monitored natural attenuation (MNA) and limited perchlorate-impacted soil removal. The soil was removed to non-residential levels. The site was not remediated to levels suitable for unrestricted use. The LUC at LHAAP-50 will ensure protection of human health by restricting the use of contaminated groundwater to environmental monitoring and testing only. MNA will be implemented to establish confidence in attenuation trends and verify that the constituents of

concern (COCs) are stable or shrinking and will not migrate to nearby surface water at levels that may present an unacceptable risk to human health or the environment. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8:00 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-50 parcel is a 1 acre tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in **Exhibit A**. Within the LHAAP-50 parcel is designated a LUC boundary which is a 23.891-acre tract, more or less, as described in **Exhibit A**. The LUC boundary is also presented in the attached **Figure 1**.

Future use of the parcel is intended as a national wildlife refuge consistent with non-residential use. For purposes of this certification, residential land use includes, but is not limited to, single family to multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12. The United States Department of the Army has undertaken careful environmental study of the LHAAP-50 site and concluded that the LUC set forth below is required to ensure protection of human health and the environment.

(1) Groundwater Restriction. The groundwater use restriction boundary consists of the 23.891-acre tract, more or less. Groundwater underlying this land is contaminated with tetrachloroethylene (PCE), trichloroethylene (TCE), 1,1-dichloroethylene (1,1-DCE), 1,2-dichloroethane (1,2-DCA), cis-1,2-dichloroethylene (cis-1,2-DCE), vinyl chloride and other volatile organic compounds (VOCs) and perchlorate and shall not be accessed or used for any purpose without the prior written approval of the U.S. Army, the USEPA, and the TCEQ. A LUC restricting the use of groundwater has been established for the protection of human health. The U.S. Army will notify the Texas Department of Licensing and Regulation of the groundwater restriction which includes prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval by the U.S. Army, the USEPA, and the TCEQ. A restriction against the residential use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE).

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

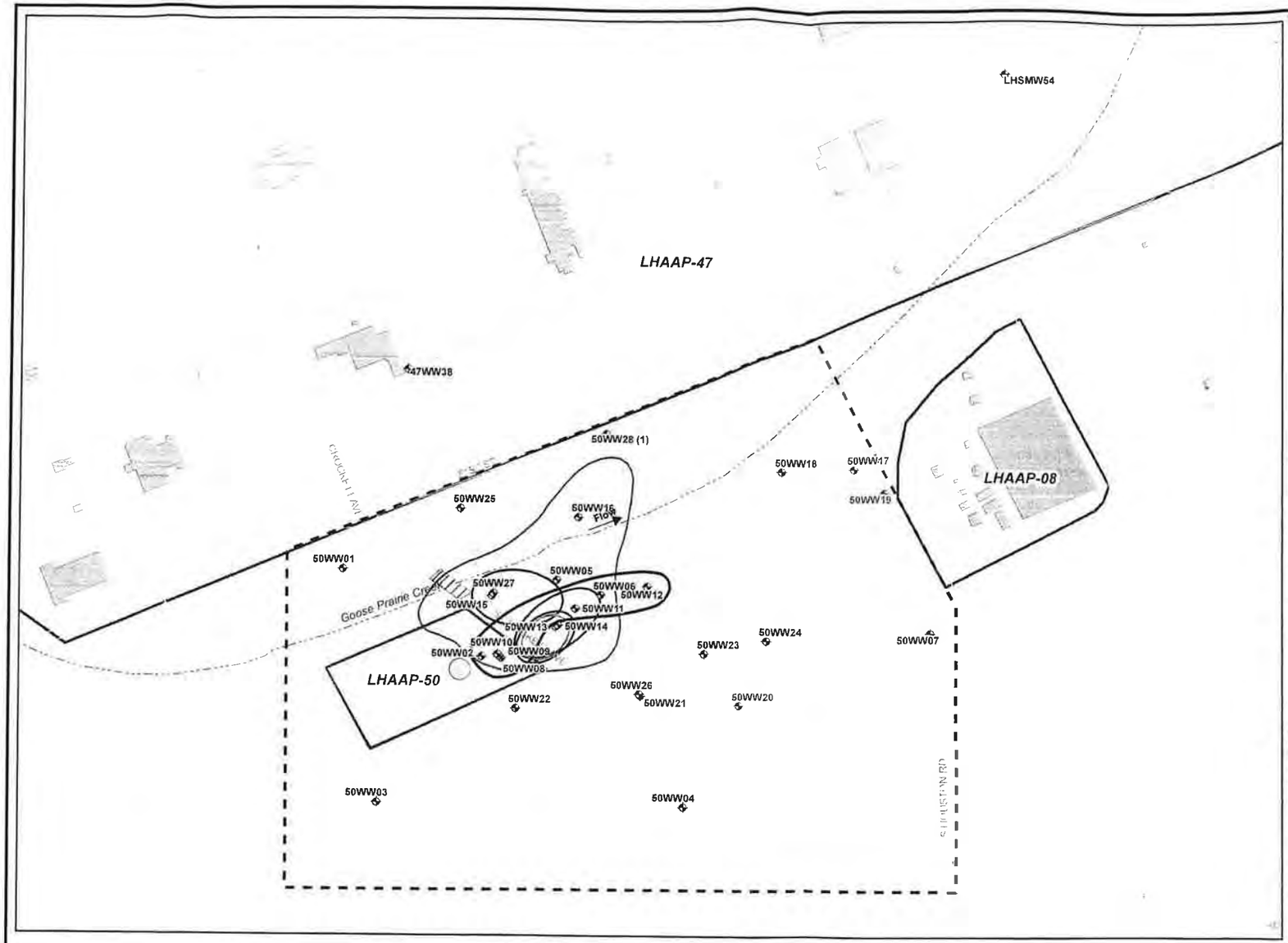
EXECUTED this the 18 th day of June, 2015.

BEFORE ME, on this the 18 th day of June, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 18th day of June, 2015.

GENIE WARNER
Notary Public State of Texas
COMM. EXP. 8/1/2018

Notary Public in and for the State of Texas,
County of Harrison



N

Legend

- Lower Shallow Monitoring Well
- Upper Shallow Monitoring Well
- Fully Penetrating Shallow Monitoring Well
- Intermediate Monitoring Well
- Perchlorate Exceeding GW-Industrial (72 • µg/L)
- cis-1,2-DCE Plume (70 µg/L Extent)
- 1,1-DCE (7 µg/L Extent) and 1,2-DCA (5 µg/L Extent) Plumes
- PCE Plume (5 µg/L Extent)
- TCE Plume (5 µg/L Extent)
- VC Plume (2 µg/L Extent)
- Roads
- Goose Prairie Creek
- Proposed Land Use Control Boundary
- Bridges
- Buildings
- Former Storage Tank Location
- Site Boundaries

Note:
1. 50WW28 installed in May 2014 and sampled in July 2014.

AECOM

Figure 1
Land Use Control Boundary
LHAAP-50 Site
Longhorn Army Ammunition Plant
Karnack, Texas

60256135 June 2015

Path: E:\Group\IT_GIS\GIS Projects\Longhorn\MXDs\LHAAP-50\RAO Report\2015-Jan-20\Figure 2-1_LHAAP50_Land Use Control Boundary.mxd

EXHIBIT A

FIELD NOTES DESCRIPTION OF
"LHAAP-50" LAND USE CONTROL AREA
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, "LHAAP-50" Land Use Control Area being 23.891 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), "LHAAP-50" Land Use Control Area being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999968791070, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "C-21" (N=6956579.781 feet E=3308499.969 feet), "IGNATIUS-1" (N=6957090.304 feet E=3311081.788 feet), and "RACE" (N=6958817.935 feet E=3310081.598 feet). The computed land area is based on State Plane distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" and "RPLS 3940" .

Commencing at monument "C-21" referenced above,

THENCE N 59deg10'26"E 819.91' to an I.R.O.P.C. set for the Southwest corner of this tract and this POINT OF BEGINNING,

THENCE N 00deg00'15"E 644.05' along the W.B.L. of this tract to a concrete nail set in asphalt pavement for this tract's N.W.C.,

THENCE N 67deg57'46"E 1061.76' along the N.W. B.L. of this tract to a 60d nail set in asphalt pavement for the Northmost corner of this tract,

THENCE S 27deg45'58"E 573.94' along the N.E. B.L. of this tract to a 60d nail set for one of this tract's two Eastmost corners,

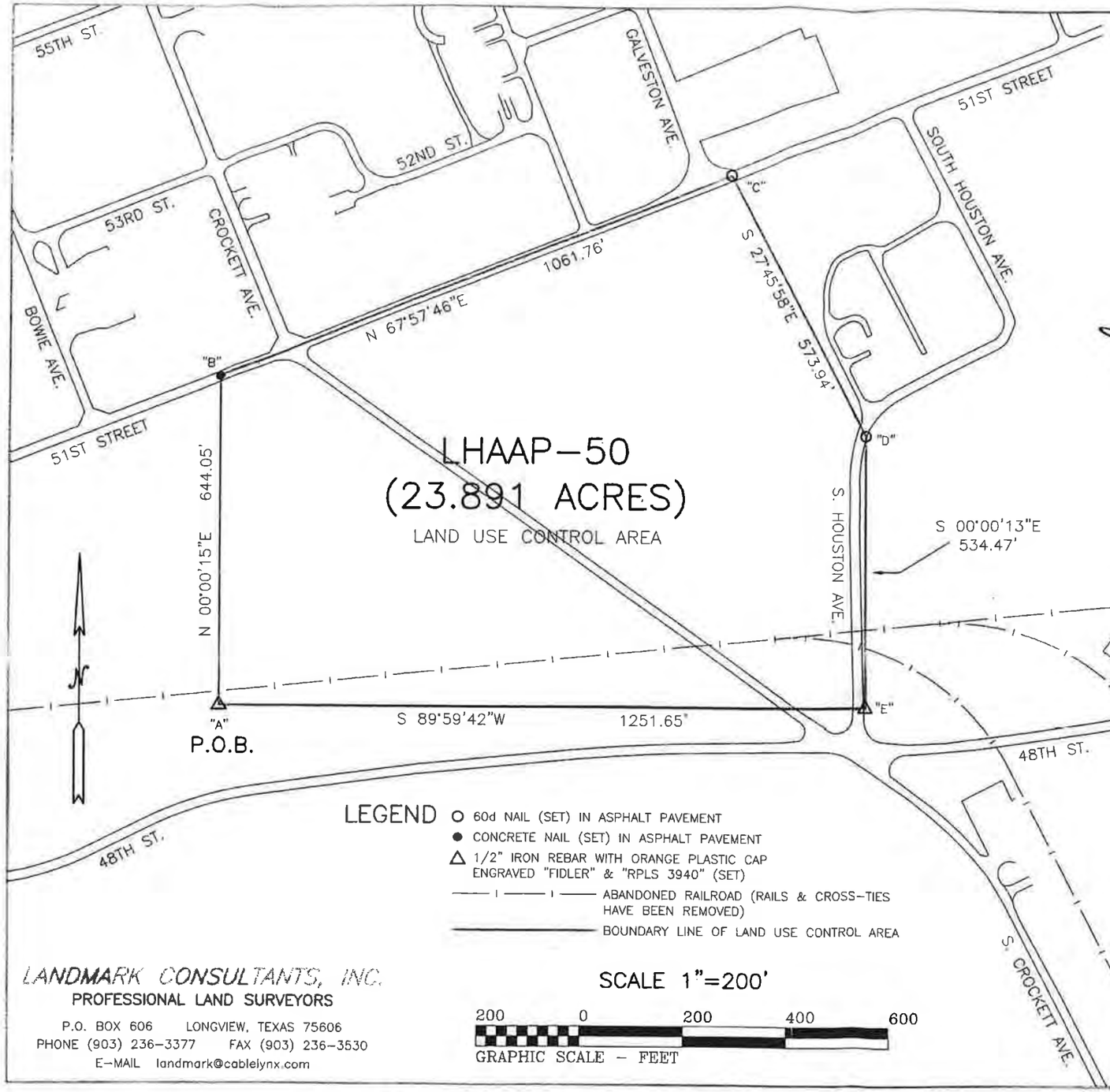
THENCE S 00deg00'13"E 534.47' along the E.B.L. of this tract to an I.R.O.P.C. set for this tract's S.E.C., from which "IGNATIUS-1" referenced above bears N 81deg47'47"E 632.57',

THENCE S 89deg59'42"W 1251.65' along the S.B.L. of this tract to this POINT OF BEGINNING, containing 23.891 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision on April 29 & 30, 2015.

Witness my hand and seal this the 4th day of May, 2015.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), AND COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999968791070 AND IS BASED ON CALCULATED DISTANCE BETWEEN PUBLISHED STATE PLANE COORDINATES (OF STATIONS C-21, IGNATIUS-1, & RACE) DIVIDED BY SURFACE TRAVERSE CALCULATED DISTANCE BETWEEN SAME THREE STATIONS. THE COMPUTED LAND AREA IS BASED ON STATE PLANE DISTANCES.

COORDINATE TABLE

	NORTH	EAST
A	6956999.929	3309204.044
B	6957643.979	3309204.091
C	6958042.360	3310188.284
D	6957534.507	3310455.661
E	6957000.041	3310455.696

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEET

LEGEND
- O 60d NAIL (SET) IN ASPHALT PAVEMENT
- ● CONCRETE NAIL (SET) IN ASPHALT PAVEMENT
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- ABANDONED RAILROAD (RAILS & CROSS-TIES HAVE BEEN REMOVED)
- BOUNDARY LINE OF LAND USE CONTROL AREA

SCALE 1"=200'

200 0 200 400 600
GRAPHIC SCALE - FEET

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

LHAAP-50 L.U.C.A.
(23.891 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	W.PTS W.LEG
05/04/2015	1103025W.DWG	DRAWN BY JTJ

LHAAP-50, 50-3

LAND USE CONTROL COMPLIANCE INSPECTION FORM

September 14, 2015

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated 9/30/11 for LHAAP-50 a certification of site was conducted by _____ [indicate transferee] on _____.

A summary of land use control mechanisms is as follows:

- Groundwater restriction – A restriction against use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE). [Indicate whether groundwater restrictions are still required at LHAAP-50]

A summary of compliance with land use and restriction covenants is as follows:

- No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-50.

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year.

LHAAP-51

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-51 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2010-000005557

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005557 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-51, is the area of a demolished building location known as Building 60-B, former photographic lab, located within the Plant 3 production area of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-51 is not itself considered an NPL site. Environmental activities at LHAAP-51 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-51 (Building 60-B) was constructed in 1945 for the processing of X-ray film. The building had a concrete floor without a floor drain. Spent developing waste was drummed and transferred to another building for disposal. Small quantities of black and white developer and fixer solutions were generated by the X-ray lab. Activities ceased in the late 1970s or early 1980s. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-51 parcel is 5,754 square foot, more or less, or 0.13209 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-51 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-51. Contaminants in soil samples from LHAAP-51 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-51 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-51 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

Notary Public in and for the State of Texas,
County of Harrison

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-51" TRACT
(INCLUDES THE REMAINS OF A DEMOLISHED BUILDING)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-51" including, but not being limited to, the concrete slab of a demolished building in the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-51" being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "HORSE" (N=6960008.269 feet E=3309591.340 feet). Said traverse indicates a surface distance of 4895.70 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied (in the form of an Autocad DXF file) by Shaw Environmental & Infrastructure Group.

Commencing at monument "HORSE" referenced above,

THENCE N 86deg33'08"W 1716.42' to a concrete nail with head dimple set for the S.E.C. of this tract and this POINT OF BEGINNING,

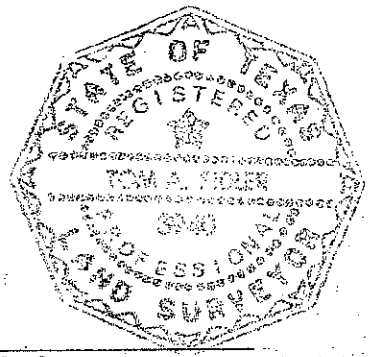
THENCE S 68deg51'01"W 68.17' along the S.B.L. of this tract to a 60d nail set for this tract's S.W.C. ,

THENCE N 21deg08'59"W 84.39' along the W.B.L. of this tract to a 60d nail set for this tract's N.W.C. , said nail being S 79deg23'36"E 3086.37' from said monument "X-11" ,

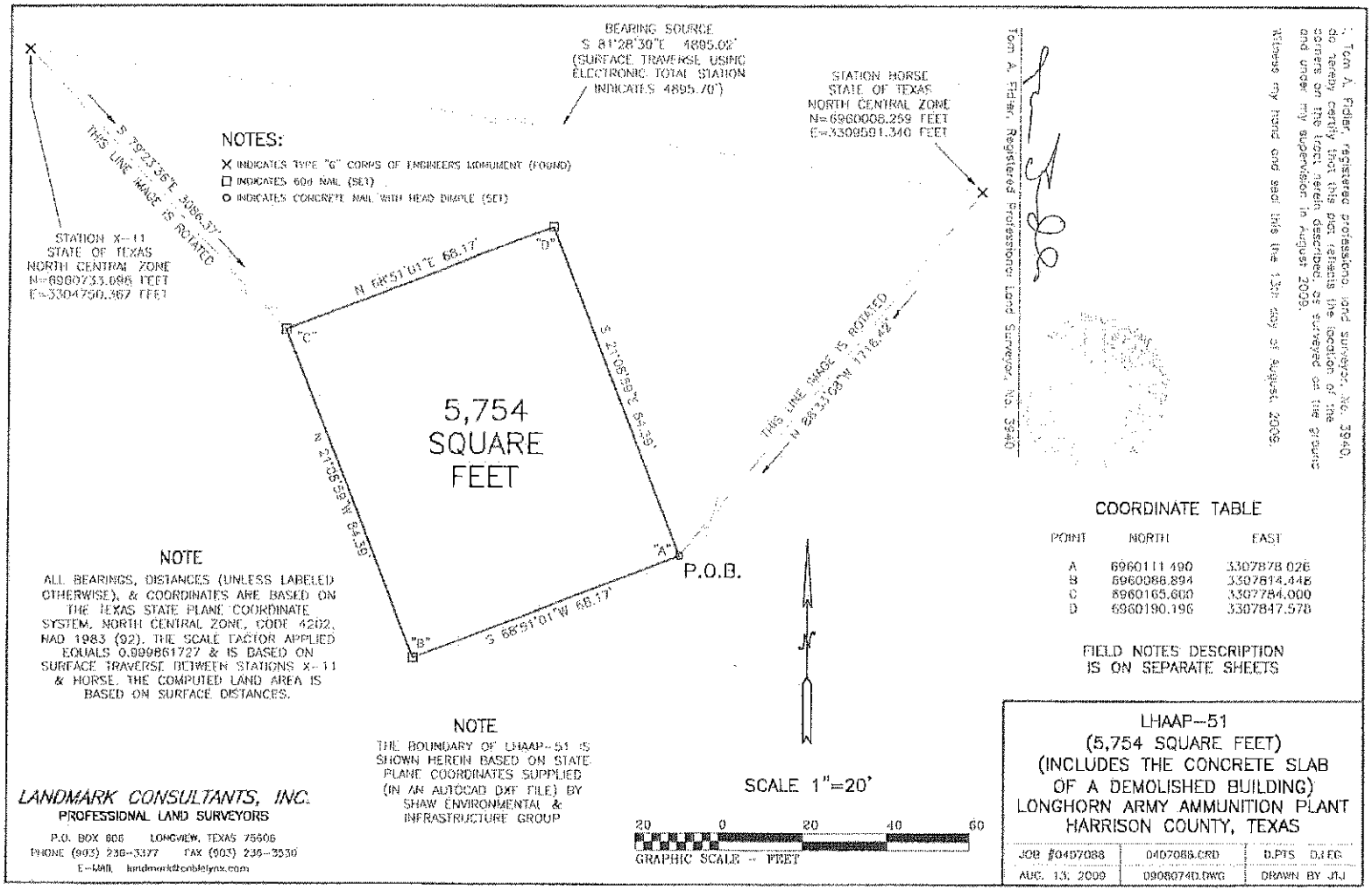
THENCE N 68deg51'01"E 68.17' along the N.B.L. of this tract to a 60d nail set for this tract's N.E.C. ,

THENCE S 21deg08'59"E 84.39' along the E.B.L. of this tract to this POINT OF BEGINNING. This tract contains 5,754 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal this the 13th day of August, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & HORSE. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

NOTE

THE BOUNDARY OF LHAAP-51 IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP

COORDINATE TABLE

POINT	NORTH	EAST
A	6960111.490	3307878.026
B	6960086.894	3307814.448
C	6960165.600	3307784.000
D	6960190.196	3307847.578

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 806 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3539
E-MAIL landmark@cablelynx.com

LHAAP--51
(5,754 SQUARE FEET)
(INCLUDES THE CONCRETE SLAB
OF A DEMOLISHED BUILDING)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	D.PTS	D.FB
AUG. 13, 2009	0908074D.DWG	DRAWN BY JTJ	

LHAAP-55

NOTICE OF NONRESIDENTIAL LAND USE AT SEPTIC TANK LOCATIONS FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2010-000005562

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

MISCELLANEOUS

34 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005562 **Receipt No:** 1006195 **Amount:** $ 144.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify tbat this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-55, consisted of 10 septic tank and leachate field systems that served outlying areas of the former Longhorn Army Ammunition Plant (LHAAP) within or near LHAAP-48 and LHAAP-35C(53). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-55 is not itself considered an NPL site. Environmental activities at LHAAP-55 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-55 consisted of 10 septic tank and leachate field systems that served outlying areas of LHAAP that could not be connected to the plant sanitary sewer system. Although there was no history of industrial waste being placed into these septic tanks, soil samples were collected from borings installed at septic systems that were associated with industrial processes and analyzed for metals, explosives, semi volatile organic compounds, and volatile organic compounds where appropriate. Further information

may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-55 parcel include: ST-01 with 1,807 square feet, more or less, or 0.04148 acre tract; ST-02 with 1,791 square feet, more or less, or 0.04111 acre tract; ST-03 with 1,784 square feet, more or less, or 0.04095 acre tract; ST-04 with 1,789 square feet, more or less, or 0.04106 acre tract; ST-05 with 1,825 square feet more or less, or 0.04189 acre tract; ST-06 with 1,800 square feet, more or less, or 0.04132 acre tract; ST-07 with 1,865 square feet, more or less, or 0.04281 acre tract; ST-08 with 1,785 square feet, more or less, or 0.04097 acre tract; ST-09 with 2,004 square feet, more or less, or 0.04600 acre tract; and ST-10 with 1,804 square feet, more or less, or 0.04141 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-55 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-55. Contaminants in soil samples from LHAAP-55 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-55 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-55 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10 th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

Notary Public in and for the State of Texas,
County of Harrison

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-01, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,807 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998636625, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "IGNATIUS-1" (N=6957090.304 feet E=3311081.788 feet) and "IGNATIUS-2" (N=6955582.752 feet E=3311851.704 feet). Said traverse indicates a surface distance of 1693.005 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-01, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "IGNATIUS-1" referenced above,

THENCE S 37deg17'23"E 1017.21' to a 60d nail set for the Westmost N.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 63deg19'52"E 19.74' along a N.B.L. of this tract to a 60d nail set for this tract's Westmost N.E.C. ,

THENCE S 26deg40'08"E 4.90' along an E.B.L. of this tract to a 60d nail set for this tract's Northeast reentrant corner ,

THENCE N 89deg25'37"E 24.40' along a N.B.L. of this tract to a 60d nail set for this tract's Northwest reentrant corner ,

THENCE N 00deg00'00"E 18.03' along a W.B.L. of this tract to a 60d nail set for this tract's Eastmost N.W.C. ,

THENCE N 90deg00'00"E 46.53' along a N.B.L. of this tract to a 60d nail set for this tract's Eastmost N.E.C. ,

THENCE S 00deg00'00"E 32.43' along an E.B.L. of this tract to a 60d nail set for this tract's Eastmost S.E.C. ,

THENCE N 90deg00'00"W 46.53' along a S.B.L. of this tract to a 60d nail set for this tract's Eastmost S.W.C. ,

THENCE N 00deg00'00"E 12.40' along a W.B.L. of this tract to a 60d nail set for this tract's Southwest reentrant corner,

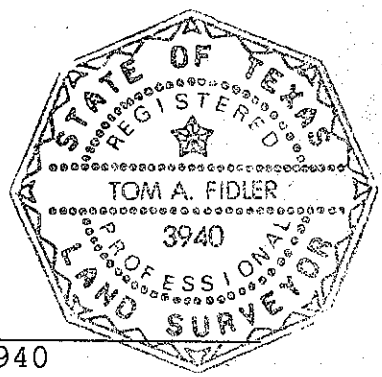
THENCE S 89deg25'37"W 23.40' along a S.B.L. of this tract to a 60d nail set for this tract's Southeast reentrant corner,

THENCE S 26deg40'08"E 5.57' along an E.B.L. of this tract to a 60d nail set for this tract's Westmost S.E.C. ,

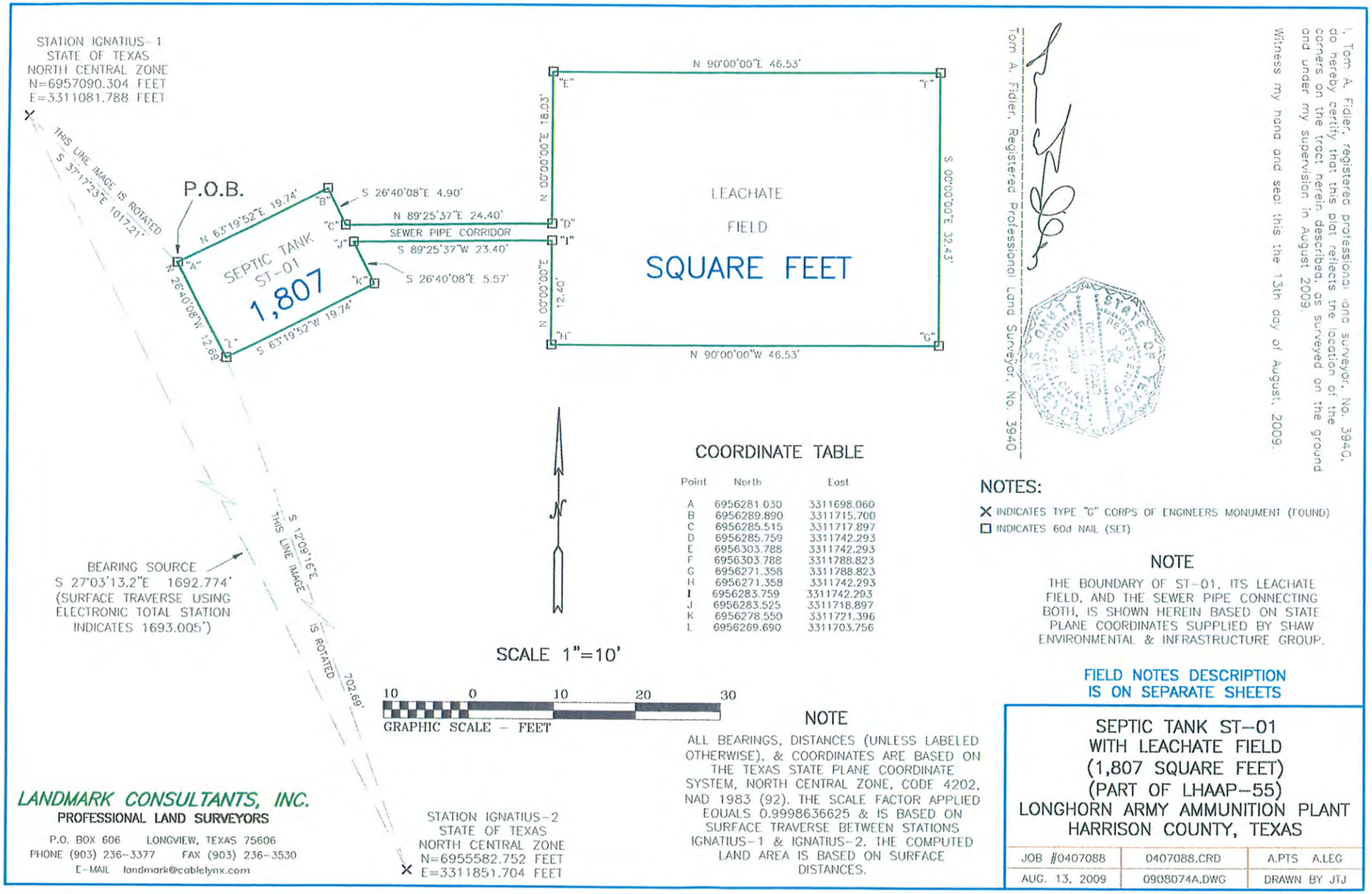
THENCE S 63deg19'52"W 19.74' along a S.B.L. of this tract to a 60d nail set for this tract's Westmost S.W.C., from which station "IGNATIUS-2" referenced above bears S 12deg09'16"E 702.69' ,

THENCE N 26deg40'08"W 12.69' along a W.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,807 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



COORDINATE TABLE

Point	North	East
A	6956281.030	3311698.060
B	6956289.890	3311715.700
C	6956285.515	3311717.897
D	6956285.759	3311742.293
E	6956303.788	3311742.293
F	6956303.788	3311788.823
G	6956271.358	3311788.823
H	6956271.358	3311742.293
I	6956283.759	3311742.293
J	6956283.525	3311718.897
K	6956278.550	3311721.396
L	6956269.690	3311703.756

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal this the 13th day of August, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

STATE OF TEXAS
TOM A. FIDLER
REGISTERED
SURVEYOR

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES 60d NAIL (SET)

NOTE

THE BOUNDARY OF ST-01, ITS LEACHATE FIELD, AND THE SEWER PIPE CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998636625 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS IGNATIUS-1 & IGNATIUS-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

SEPTIC TANK ST-01 WITH LEACHATE FIELD (1,807 SQUARE FEET) (PART OF LHAAP-55) LONGHORN ARMY AMMUNITION PLANT HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	A.PTS A.LEG
AUG. 13, 2009	0908074A.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-02, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,791 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-02, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-1" referenced above,

THENCE N 05deg57'31"W 746.36' to a 60d nail set for the Eastmost S.E.C. of this tract and this POINT OF BEGINNING,

THENCE N 90deg00'00"W 19.74' along a S.B.L. of this tract to a 60d nail set (in an abandoned utility pole lying on the ground) for this tract's Eastmost S.W.C. ,

THENCE N 00deg00'00"E 5.36' along a W.B.L. of this tract to a 60d nail set for this tract's Southwest reentrant corner,

THENCE N 90deg00'00"W 15.73' along a S.B.L. of this tract to a 60d nail set for this tract's Southeast reentrant corner,

THENCE S 00deg00'00"W 15.91' along an E.B.L. of this tract to a 60d nail set for this tract's Westmost S.E.C. ,

THENCE N 90deg00'00"W 46.53' along a S.B.L. of this tract to a 60d nail set for this tract's Westmost S.W.C. ,

THENCE N 00deg00'00"E 32.43' along a W.B.L. of this tract to a 60d nail set for this tract's Westmost N.W.C. ,

THENCE N 90deg00'00"E 46.53' along a N.B.L. of this tract to a 60d nail set for this tract's Westmost N.E.C. ,

THENCE S 00deg00'00"E 14.52' along an E.B.L. of this tract to a 60d nail set for this tract's Northeast reentrant corner,

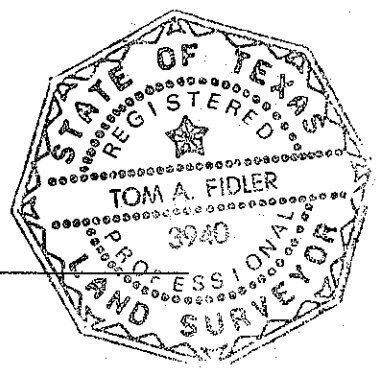
THENCE S 90deg00'00"E 15.73' along a N.B.L. of this tract to a 60d nail set for this tract's Northwest reentrant corner,

THENCE N 00deg00'00"W 5.33' along a W.B.L. of this tract to a 60d nail set for this tract's Eastmost N.W.C. ,

THENCE N 90deg00'00"E 19.74' along a N.B.L. of this tract to a 60d nail set for this tract's Eastmost N.E.C. ,

THENCE S 00deg00'00"E 12.69' along an E.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,791 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

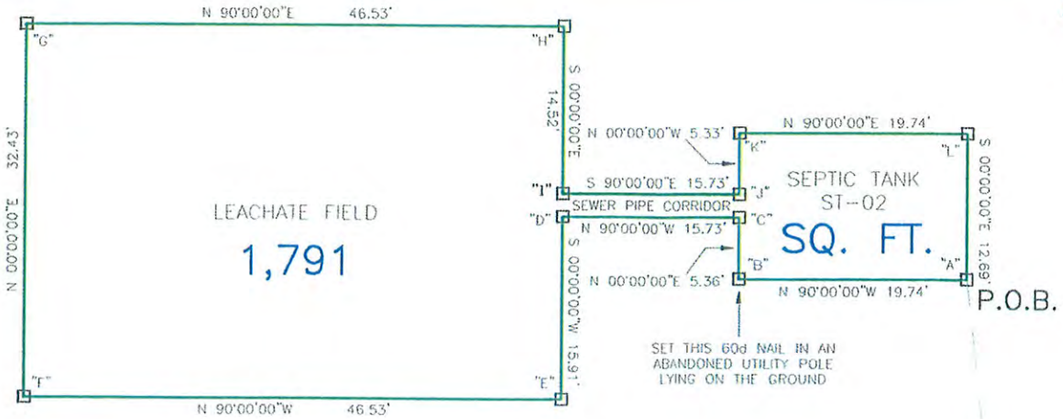


Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

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COORDINATE TABLE

Point	North	East
A	6959249.790	3314202.020
B	6959249.790	3314182.280
C	6959255.150	3314182.280
D	6959255.150	3314166.552
E	6959239.240	3314166.552
F	6959239.240	3314120.022
G	6959271.670	3314120.022
H	6959271.670	3314166.552
I	6959257.150	3314166.552
J	6959257.150	3314182.280
K	6959262.480	3314182.280
L	6959262.480	3314202.020

NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES 60d NAIL (SET)
- O INDICATES UNMARKED POINT

NOTE

THE BOUNDARY OF ST-02, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

SCALE 1"=10'



N 05°57'31"W 746.36'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October 2009.

Witness my hand and seal October 26, 2009.

STATE OF TEXAS REGISTERED TOM A. FIDLER 3940 PROFESSIONAL LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

SEPTIC TANK ST-02
WITH LEACHATE FIELD
(1,791 SQUARE FEET)
(PART OF LHAAP-55)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	J.PTS J.LEG
10/26/2009	0908074J.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-03, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,784 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-03, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-1" referenced above,

THENCE N 24deg50'41"E 537.01' to a 60d nail set for the Southmost South corner of this tract and this POINT OF BEGINNING,

THENCE N 35deg57'31"W 30.43' along a S.W. B.L. of this tract to a 60d nail set for a South reentrant corner of this tract,

THENCE S 54deg02'29"W 1.92' along a S.E. B.L. of this tract to a 60d nail set for a South corner of this tract,

THENCE N 38deg10'26"W 12.26' along a S.W. B.L. of this tract to a 60d nail set for a South reentrant corner of this tract,

THENCE S 50deg49'08"W 5.10' along a S.E. B.L. of this tract to a 60d nail set for this tract's Northmost South corner,

THENCE N 39deg10'52"W 19.74' along a S.W. B.L. of this tract to a 60d nail set for this tract's Westmost corner,

THENCE N 50deg49'08"E 12.69' along a N.W. B.L. of this tract to a 60d nail set for this tract's Westmost North corner,

THENCE S 39deg10'52"E 19.74' along a N.E. B.L. of this tract to a 60d nail set for this tract's Westmost East corner,

THENCE S 50deg49'08"W 5.58' along a S.E. B.L. of this tract to a 60d nail set for this tract's East reentrant corner,

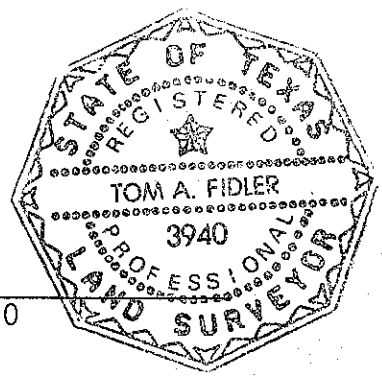
THENCE S 38deg10'26"E 10.37' along a N.E. B.L. of this tract to a 60d nail set for this tract's North reentrant corner,

THENCE N 54deg02'29"E 46.53' along a N.W. B.L. of this tract to a 60d nail set for this tract's Eastmost North corner,

THENCE S 35deg57'31"E 32.43' along a N.E. B.L. of this tract to a 60d nail set for this tract's Eastmost East corner,

THENCE S 54deg02'29"W 46.53' along a S.E. B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,784 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

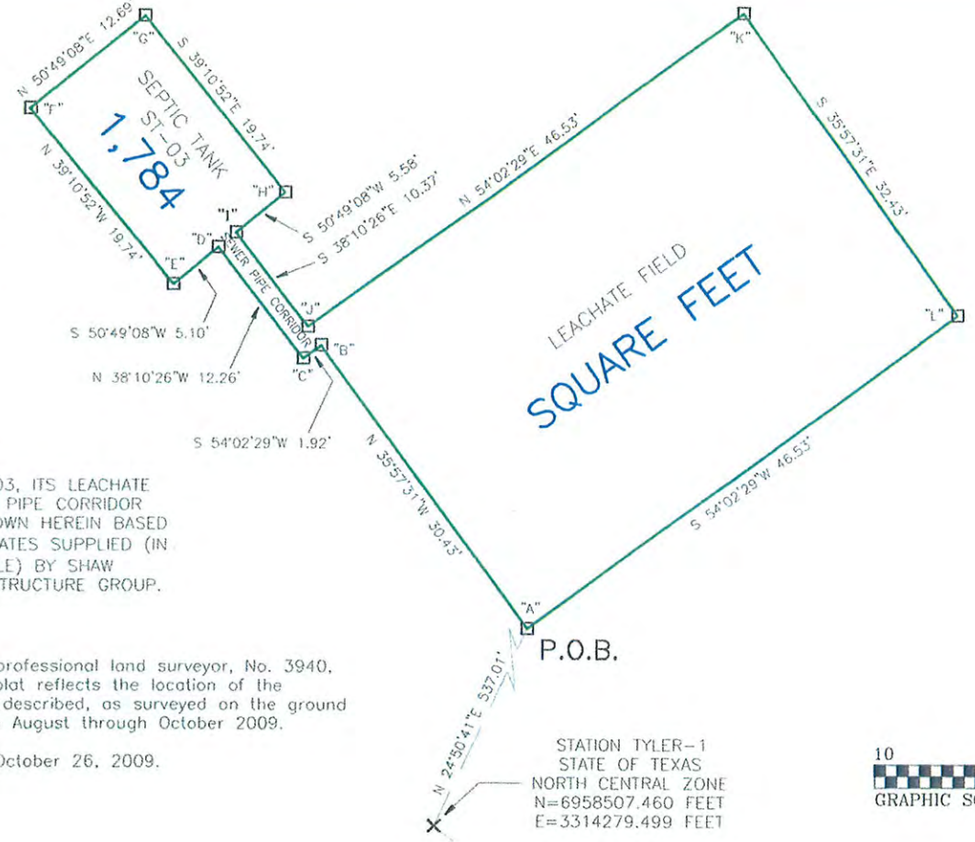
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NOTE

THE BOUNDARY OF ST-03, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.



NOTES:

- ✕ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES 60d NAIL (SET)
- o INDICATES UNMARKED POINT

COORDINATE TABLE

Point	North	East
A	6958994.769	3314505.128
B	6959019.400	3314487.259
C	6959018.270	3314485.702
D	6959027.905	3314478.127
E	6959024.680	3314474.170
F	6959039.982	3314461.699
G	6959047.999	3314471.535
H	6959032.697	3314484.007
I	6959029.169	3314479.678
J	6959021.019	3314486.085
K	6959048.342	3314523.748
L	6959022.091	3314542.791

N

SCALE 1"=10'

10 0 10 20 30
GRAPHIC SCALE - FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October 2009.

Witness my hand and seal October 26, 2009.

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

SEPTIC TANK ST-03
WITH LEACHATE FIELD
(1,784 SQUARE FEET)
(PART OF LHAAP-55)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	K.PTS K.LEG
10/26/2009	0908074K.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-04, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,789 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-04, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-1" referenced above,

THENCE S 64deg44'32"W 426.66' to a 60d nail set for the Southmost S.E.C. of this tract and this POINT OF BEGINNING,

THENCE N 89deg51'08"W 32.43' along a S.B.L. of this tract to a 60d nail set for this tract's Southmost S.W.C. ,

THENCE N 00deg08'52"E 46.53' along a W.B.L. of this tract to a 60d nail set for this tract's Southmost N.W.C. ,

THENCE S 89deg51'08"E 14.56' along a N.B.L. of this tract to a 60d nail set for this tract's Northwest reentrant corner,

THENCE N 00deg00'00"W 14.73' along a W.B.L. of this tract to a 60d nail set for this tract's Southwest reentrant corner,

THENCE N 89deg42'35"W 5.65' along a S.B.L. of this tract to a 60d nail set for this tract's Northmost S.W.C. ,

THENCE N 00deg17'25"E 19.74' along a W.B.L. of this tract to a concrete nail with head dimple set (in old asphalt) for this tract's Northmost N.W.C. ,

THENCE S 89deg42'35"E 12.69' along a N.B.L. of this tract to a 60d nail set for this tract's Northmost N.E.C. ,

THENCE S 00deg17'25"W 19.74' along an E.B.L. of this tract to a 60d nail set for this tract's Northmost S.E.C. ,

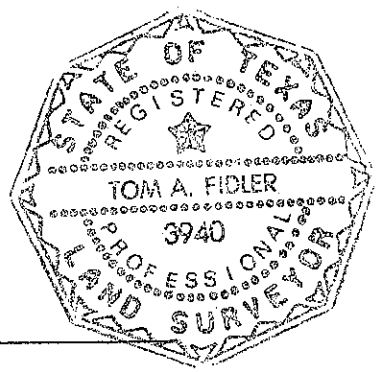
THENCE N 89deg42'35"W 5.04' along a S.B.L. of this tract to a 60d nail set for this tract's Southeast reentrant corner,

THENCE S 00deg00'00"E 14.73' along an E.B.L. of this tract to a 60d nail set for this tract's Northeast reentrant corner,

THENCE S 89deg51'08"E 15.87' along a N.B.L. of this tract to a 60d nail set for this tract's Southmost N.E.C. ,

THENCE S 00deg08'52"W 46.53' along an E.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,789 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October 2009.

Witness my hand and seal October 26, 2009.

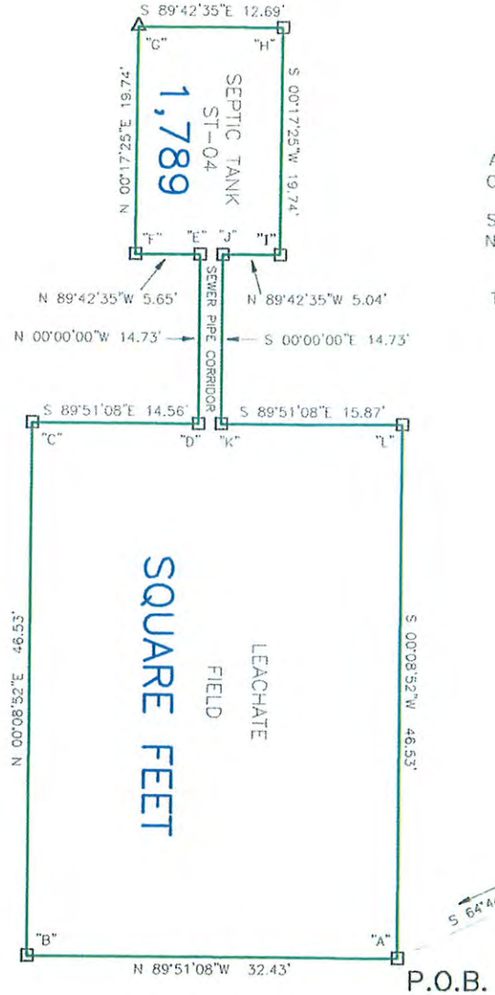
STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

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NOTE

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NOTE

THE BOUNDARY OF ST-04, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

COORDINATE TABLE

Point	North	East
A	6958325.408	3313893.629
B	6958325.492	3313861.199
C	6958372.022	3313861.319
D	6958371.984	3313875.880
E	6958386.716	3313875.880
F	6958386.744	3313870.230
G	6958406.484	3313870.330
H	6958406.420	3313883.020
I	6958386.680	3313882.920
J	6958386.706	3313877.880
K	6958371.979	3313877.880
L	6958371.938	3313893.749

NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES 60d NAIL (SET)
- △ INDICATES CONCRETE NAIL WITH HEAD DIMPLE (SET)

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

S 64°44'32"W 426.66'

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

SCALE 1"=10'

10 0 10 20 30
GRAPHIC SCALE - FEET

SEPTIC TANK ST-04 WITH LEACHATE FIELD (1,789 SQUARE FEET) (PART OF LHAAP-55) LONGHORN ARMY AMMUNITION PLANT HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	1.PTS 1.LEG
10/26/2009	09080741.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-05, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,825 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-05, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE N 52deg46'07.6"W 36.82' to a point, said point being S 52deg46'07.6"E 1079.28' from said monument "TYLER-1" ,

THENCE S 37deg13'52"W 81.68' to a 60d nail set for the Northmost East corner of this tract and this POINT OF BEGINNING ,

THENCE S 33deg39'28"W 12.69' along a S.E. B.L. of this tract to a 60d nail set for this tract's Northmost South corner,

THENCE N 56deg20'32"W 17.74' along a S.W. B.L. of this tract to a chisled "X" set in concrete for this tract's South reentrant corner,

THENCE S 36deg51'06"W 32.79' along a S.E. B.L. of this tract to a 60d nail set for this tract's East reentrant corner,

THENCE S 57deg33'12"E 44.52' along a N.E. B.L. of this tract to a 60d nail set for this tract's Southmost East corner,

THENCE S 32deg26'48"W 32.43' along a S.E. B.L. of this tract to a 60d nail set for this tract's Southmost South corner,

THENCE N 57deg33'12"W 46.53' along a S.W. B.L. of this tract to a 60d nail set for this tract's West corner,

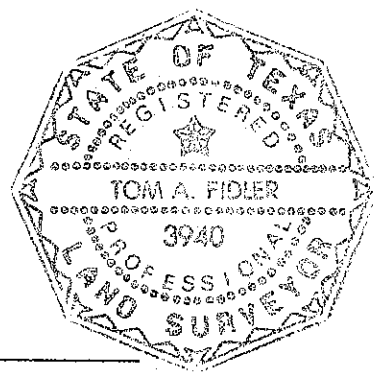
THENCE N 32deg26'48"E 32.43' along a N.W. B.L. of this tract to a 60d nail set for deflection corner,

THENCE N 36deg51'06"E 32.84' along a N.W. B.L. of this tract to a chisled "X" set in concrete for deflection corner,

THENCE N 33deg39'28"E 12.69' along a N.W. B.L. of this tract to a 60d nail set for this tract's North corner,

THENCE S 56deg20'32"E 19.74' along a N.E. B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,825 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

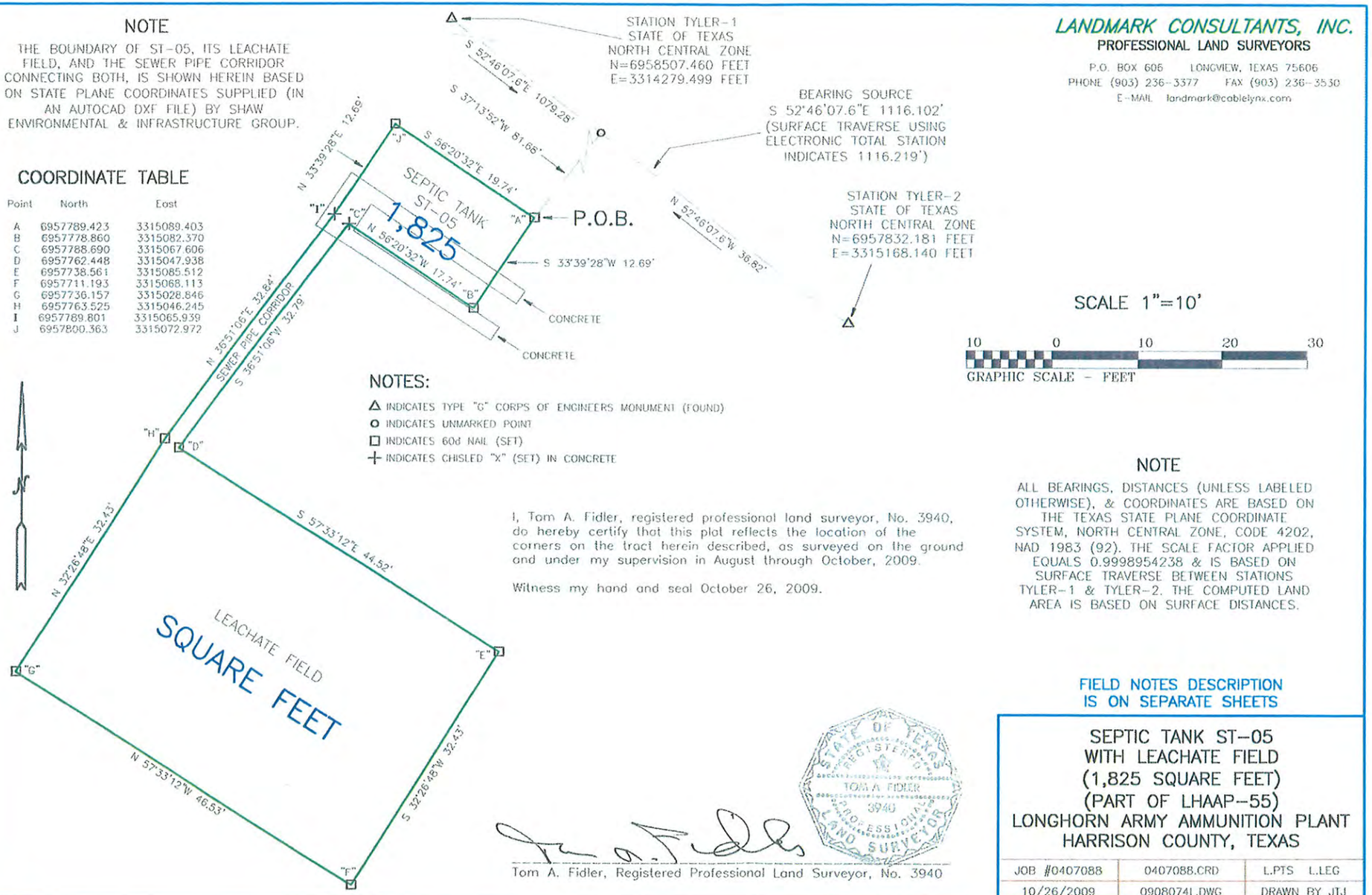
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E-MAIL landmark@cablelynx.com

NOTE

THE BOUNDARY OF ST-05, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

COORDINATE TABLE

Point	North	East
A	6957789.423	3315089.403
B	6957778.860	3315082.370
C	6957788.690	3315067.606
D	6957762.448	3315047.938
E	6957738.561	3315085.512
F	6957711.193	3315068.113
G	6957736.157	3315028.846
H	6957763.525	3315046.245
I	6957789.801	3315065.939
J	6957800.363	3315072.972



NOTES:

- △ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- o INDICATES UNMARKED POINT
- □ INDICATES 60d NAIL (SET)
- + INDICATES CHISLED "X" (SET) IN CONCRETE

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

STATE OF TEXAS
REGISTERED
TOM A FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

SEPTIC TANK ST-05 WITH LEACHATE FIELD (1,825 SQUARE FEET) (PART OF LHAAP-55) LONGHORN ARMY AMMUNITION PLANT HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	L.PTS L.LEG
10/26/2009	0908074L.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-06, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,800 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-06, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE S 85deg57'52"E 1425.64' to a 60d nail set for the Northmost N.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 67deg08'12"E 12.69' along a N.B.L. of this tract to a 60d nail set for this tract's Northmost N.E.C. ,

THENCE S 22deg51'48"E 19.74' along an E.B.L. of this tract to a 60d nail set for this tract's Northmost S.E.C. ,

THENCE S 67deg08'12"W 4.97' along a S.B.L. of this tract to a 60d nail set for this tract's S.E. reentrant corner,

THENCE S 22deg49'50"E 19.87' along an E.B.L. of this tract to a 60d nail set for this tract's N.E. reentrant corner,

THENCE N 64deg30'12"E 16.55' along a N.B.L. of this tract to a

60d nail set for this tract's Southmost N.E.C. ,

THENCE S 25deg29'48"E 46.53' along an E.B.L. of this tract to a 60d nail set for this tract's Southmost S.E.C. ,

THENCE S 64deg30'12"W 32.43' along a S.B.L. of this tract to a 60d nail set for this tract's Southmost S.W.C. ,

THENCE N 25deg29'48"W 46.53' along a W.B.L. of this tract to a 60d nail set for this tract's Southmost N.W.C. ,

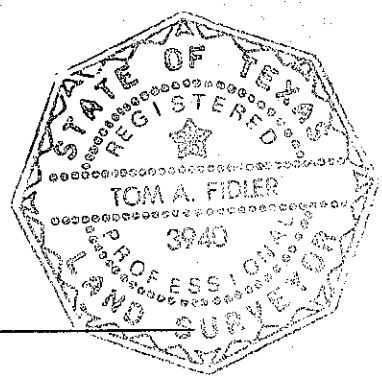
THENCE N 64deg30'12"E 13.88' along a N.B.L. of this tract to a 60d nail set for this tract's N.W. reentrant corner,

THENCE N 22deg49'50"W 19.96' along a W.B.L. of this tract to a 60d nail set for this tract's S.W. reentrant corner,

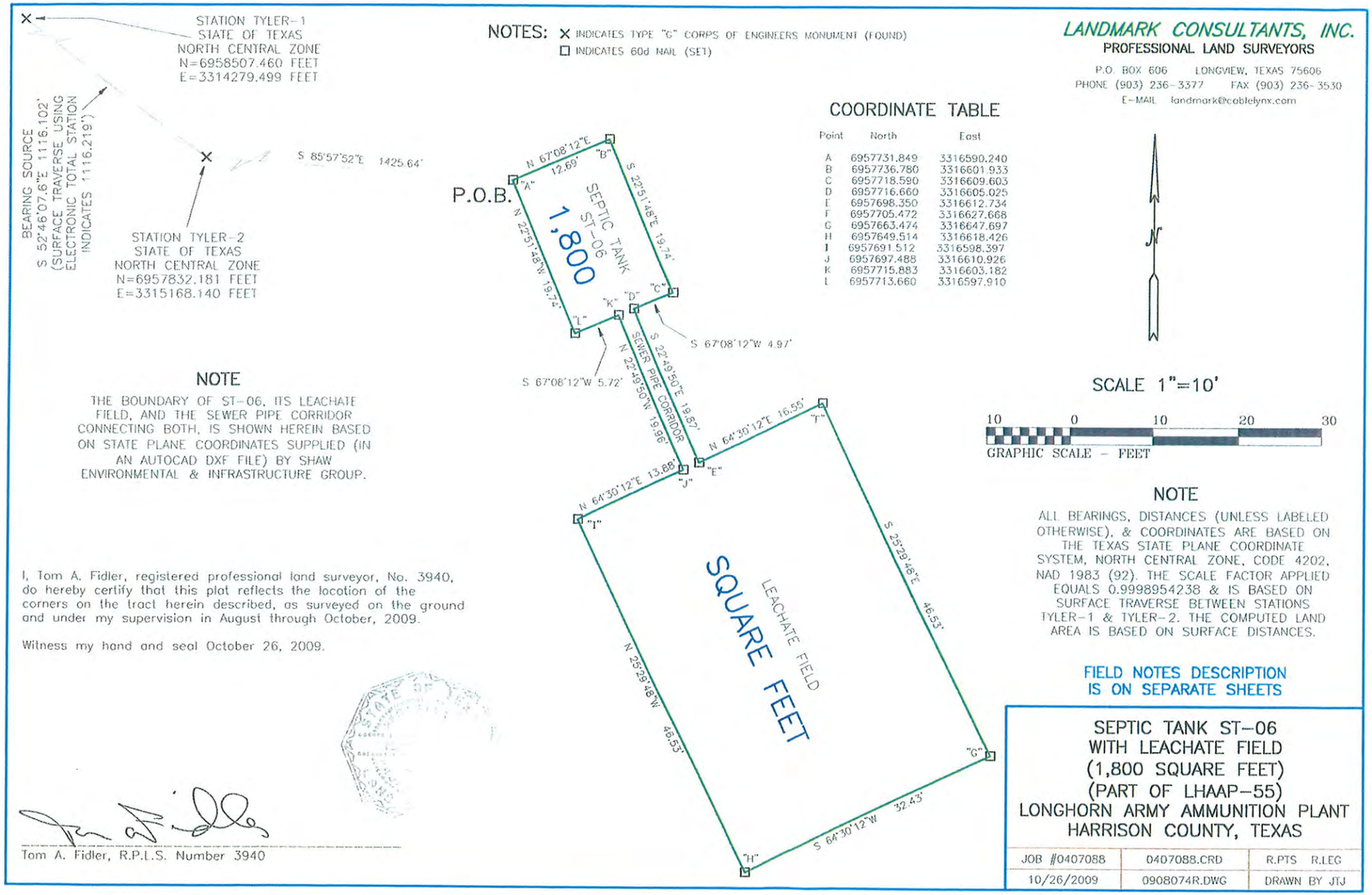
THENCE S 67deg08'12"W 5.72' along a S.B.L. of this tract to a 60d nail set for this tract's Northmost S.W.C. ,

THENCE N 22deg51'48"W 19.74' along a W.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,800 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



COORDINATE TABLE

Point	North	East
A	6957731.849	3316590.240
B	6957736.780	3316601.933
C	6957718.590	3316609.603
D	6957716.660	3316605.025
E	6957698.350	3316612.734
F	6957705.472	3316627.668
G	6957663.474	3316647.697
H	6957649.514	3316618.426
I	6957691.512	3316598.397
J	6957697.488	3316610.926
K	6957715.883	3316603.182
L	6957713.660	3316597.910

SCALE 1"=10'

10 0 10 20 30

GRAPHIC SCALE – FEET

NOTE

THE BOUNDARY OF ST-06, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

SEPTIC TANK ST-06 WITH LEACHATE FIELD (1,800 SQUARE FEET) (PART OF LHAAP-55) LONGHORN ARMY AMMUNITION PLANT HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	R.PTS R.LEG
10/26/2009	0908074R.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-07, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,865 square feet of land out of the Longhorn Ordance Works Reservation, (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-07, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE S 20deg14'47"E 467.25' to a 60d nail set for the N.E.C. corner of this tract and this POINT OF BEGINNING ,

THENCE S 13deg37'37"E 32.43' along an E.B.L. of this tract to a 60d nail set for this tract's S.E.C. ,

THENCE S 76deg22'23"W 46.53' along a S.B.L. of this tract to a 60d nail set for this tract's S.W.C. ,

THENCE N 13deg37'37"W 14.74' along a W.B.L. of this tract to a 60d nail set for this tract's Eastmost reentrant corner,

THENCE S 77deg04'57"W 23.21' along a S.B.L. of this tract to a 60d nail set for a somewhat reentrant corner of this tract,

THENCE S 29deg56'20"W 28.62' along a S.E. B.L. of this tract

to a 60d nail set for this tract's Southmost reentrant corner,

THENCE S 54deg24'06"E 5.82' along a N.E. B.L. of this tract to a 60d nail set for this tract's East corner,

THENCE S 35deg35'54"W 19.74' along a S.E. B.L. of this tract to a 60d nail set for this tract's South corner,

THENCE N 54deg24'06"W 12.69' along a S.W. B.L. of this tract to a 60d nail set for this tract's West corner,

THENCE N 35deg35'54"E 19.74' along a N.W. B.L. of this tract to a 60d nail set for this tract's North corner,

THENCE S 54deg24'06"E 4.86' along a N.E. B.L. of this tract to a 60d nail set for this tract's Westmost reentrant corner,

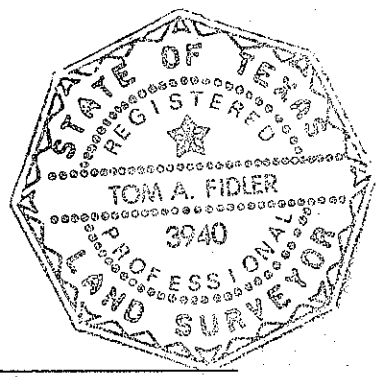
THENCE N 29deg56'20"E 29.29' along a N.W. B.L. of this tract to a 60d nail set for this tract's Southmost N.W.C. ,

THENCE N 77deg04'57"E 24.06' along a N.B.L. of this tract to a 60d nail set for this tract's Northmost reentrant corner,

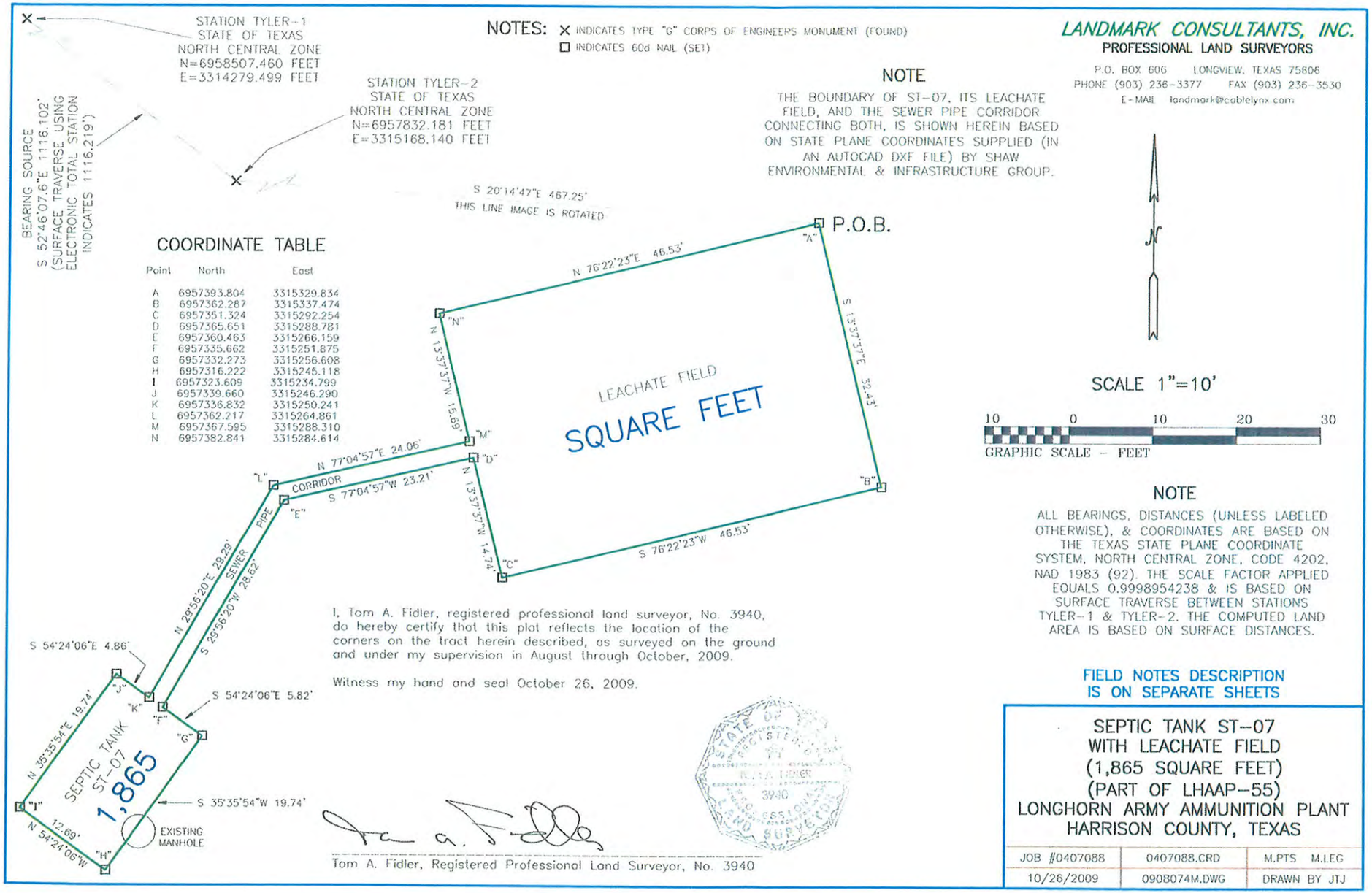
THENCE N 13deg37'37"W 15.69' along a W.B.L. of this tract to a 60d nail set for this tract's Northmost N.W.C. ,

THENCE N 76deg22'23"E 46.53' along a N.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,865 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



NOTES: ✕ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES 60d NAIL (SET)

NOTE

THE BOUNDARY OF ST-07, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

COORDINATE TABLE

Point	North	East
A	6957393.804	3315329.834
B	6957362.287	3315337.474
C	6957351.324	3315292.254
D	6957365.651	3315288.781
E	6957360.463	3315266.159
F	6957335.662	3315251.875
G	6957332.273	3315256.608
H	6957316.222	3315245.118
I	6957323.609	3315234.799
J	6957339.660	3315246.290
K	6957336.832	3315250.241
L	6957362.217	3315264.861
M	6957367.595	3315288.310
N	6957382.841	3315284.614

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

SEPTIC TANK ST-07 WITH LEACHATE FIELD (1,865 SQUARE FEET) (PART OF LHAAP-55) LONGHORN ARMY AMMUNITION PLANT HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	M.PTS M.LEG
10/26/2009	0908074M.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-08, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,785 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-08, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE S 37deg52'57"E 620.24' to a 60d nail set for the Northmost N.E.C. corner of this tract and this POINT OF BEGINNING,

THENCE S 16deg08'12"E 46.53' along an E.B.L. of this tract to a 60d nail set for this tract's Eastmost S.E.C. ,

THENCE S 73deg51'48"W 32.43' along a S.B.L. of this tract to a 60d nail set for slight deflection corner,

THENCE S 70deg49'57"W 12.79' along a S.B.L. of this tract to a 60d nail set for this tract's Southmost reentrant corner,

THENCE S 17deg16'09"E 6.37' along an E.B.L. of this tract to a 60d nail set for this tract's Westmost S.E.C. ,

THENCE S 72deg43'51"W 19.74' along a S.B.L. of this tract to a 60d nail set for this tract's only S.W.C. ,

THENCE N 17deg16'09"W 12.69' along a W.B.L. of this tract to a chisled "X" set in concrete for this tract's Southmost N.W.C. ,

THENCE N 72deg43'51"E 19.74' along a N.B.L. of this tract to a 60d nail set for this tract's Southmost N.E.C. ,

THENCE S 17deg16'09"E 4.32' along an E.B.L. of this tract to a 60d nail set for this tract's Westmost reentrant corner,

THENCE N 70deg49'57"E 12.83' along a N.B.L. of this tract to a 60d nail set for this tract's Eastmost reentrant corner,

THENCE N 16deg08'12"W 44.52' along a W.B.L. of this tract to a 60d nail set for this tract's Northmost N.W.C. ,

THENCE N 73deg51'03"E 32.43' along a N.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,785 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, R.P.L.S. Number 3940

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1116.219')

S 37°52'57"E 620.24'
THIS LINE IMAGE IS ROTATED

NOTES: o INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES 60d NAIL (SET)
X INDICATES CHISLED "X" SET IN CONCRETE

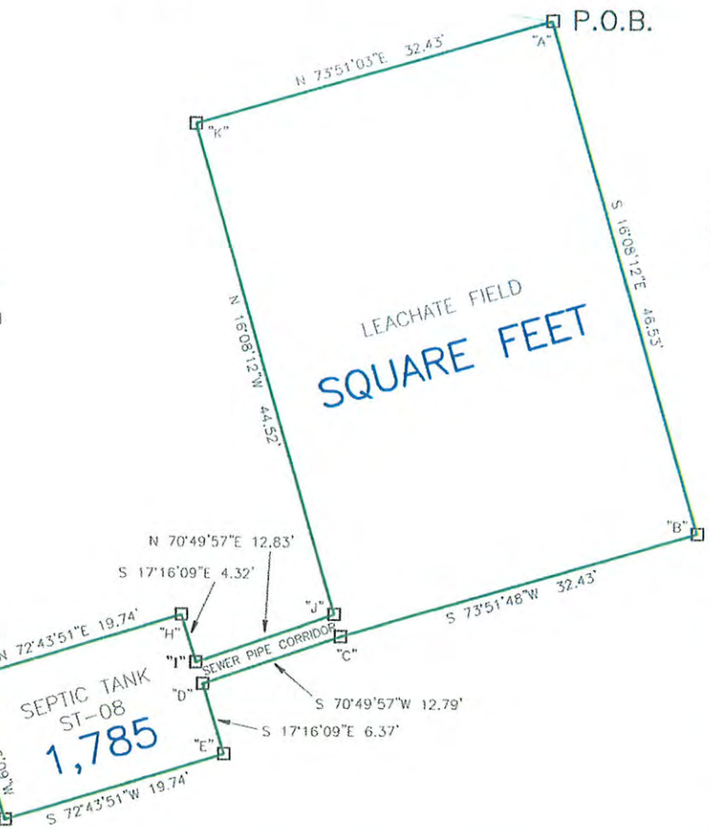
NOTE

THE BOUNDARY OF ST-08, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

COORDINATE TABLE

Point	North	East
A	6957342.644	3315548.994
B	6957297.947	3315561.926
C	6957288.934	3315530.774
D	6957284.733	3315518.689
E	6957278.650	3315520.580
F	6957272.790	3315501.730
G	6957284.908	3315497.963
H	6957290.768	3315516.813
I	6957286.644	3315518.095
J	6957290.858	3315530.217
K	6957333.624	3315517.844



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plot reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, R.P.L.S. Number 3940

SCALE 1"=10'

10 0 10 20 30
GRAPHIC SCALE - FEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

SEPTIC TANK ST-08
WITH LEACHATE FIELD
(1,785 SQUARE FEET)
(PART OF LHAAP-55)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	N.PTS N.LEG
10/26/2009	0908074N.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-09, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 2,004 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-09, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE S 03deg30'04"E 1101.12' to a 60d nail set for the North corner of this tract and this POINT OF BEGINNING,

THENCE S 47deg56'14"E 12.69' along a N.E. B.L. of this tract to a 60d nail set for this tract's East corner,

THENCE S 42deg03'46"W 19.74' along a S.E. B.L. of this tract to a 60d nail set for this tract's South corner,

THENCE N 47deg56'14"W 4.08' along a S.W. B.L. of this tract to a 60d nail set for this tract's S.E. reentrant corner,

THENCE S 18deg07'53"E 120.09' along an E.B.L. of this tract to a 60d nail set for this tract's N.E. reentrant corner,

THENCE N 67deg40'46"E 15.01' along a N.B.L. of this tract to a

60d nail set for this tract's N.E.C. ,

THENCE S 22deg19'14"E 46.53' along an E.B.L. of this tract to a 60d nail set for this tract's S.E.C. ,

THENCE S 67deg40'46"W 32.43' along a S.B.L. of this tract to a 60d nail set for this tract's S.W.C. ,

THENCE N 22deg19'14"W 46.53' along a W.B.L. of this tract to a 60d nail set for this tract's N.W.C. ,

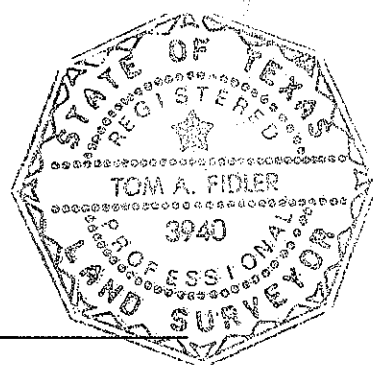
THENCE N 67deg40'46"E 15.42' along a N.B.L. of this tract to a 60d nail set for this tract's N.W. reentrant corner,

THENCE N 18deg07'53"W 123.73' along a W.B.L. of this tract to a 60d nail set for this tract's S.W. reentrant corner,

THENCE N 47deg56'14"W 4.59' along a S.W. B.L. of this tract to a 60d nail set for this tract's West corner,

THENCE N 42deg03'46"E 19.74' along a N.W. B.L. of this tract to this POINT OF BEGINNING. This tract contains 2,004 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

SEPTIC TANK ST-09 WITH LEACHATE FIELD (2,004 SQUARE FEET) (PART OF LHAAP-55) LONGHORN ARMY AMMUNITION PLANT HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	P.PTS P.LEG
10/26/2009	0908074P.DWG	DRAWN BY JTJ

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

S 03°30'04"E 1101.12'

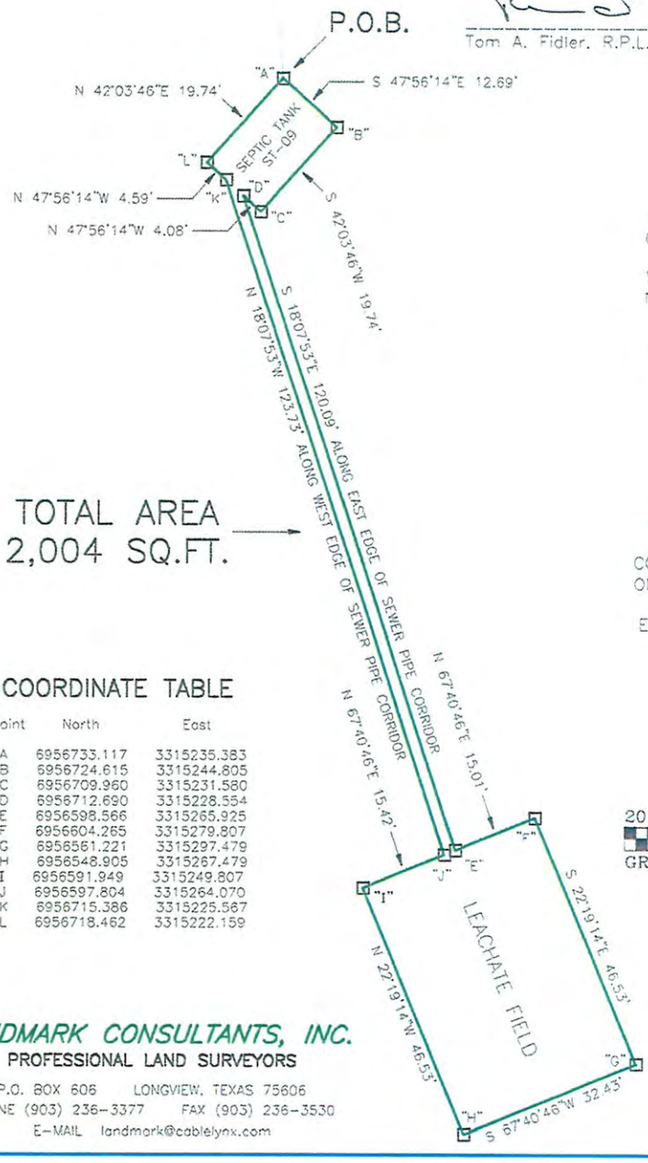
FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, R.P.L.S. Number 3940





NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

NOTE

THE BOUNDARY OF ST-09, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

TOTAL AREA
2,004 SQ.FT.

COORDINATE TABLE

Point	North	East
A	6956733.117	3315235.383
B	6956724.615	3315244.805
C	6956709.960	3315231.580
D	6956712.690	3315228.554
E	6956598.566	3315265.925
F	6956604.265	3315279.807
G	6956561.221	3315297.479
H	6956548.905	3315267.479
I	6956591.949	3315249.807
J	6956597.804	3315264.070
K	6956715.386	3315225.567
L	6956718.462	3315222.159

SCALE 1"=20'

20 0 20 40 60
GRAPHIC SCALE - FEET

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTES: × INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES 60d NAIL (SET)

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-10, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,804 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-10, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE S 34deg34'49"E 861.93' to a 60d nail set for the Westmost N.W.C. of this tract and this POINT OF BEGINNING,

THENCE S 81deg33'36"E 46.53' along a N.B.L. of this tract to a 60d nail set for this tract's Westmost N.E.C. ,

THENCE S 08deg26'24"W 13.21' along an E.B.L. of this tract to a 60d nail set for this tract's N.E. reentrant corner,

THENCE S 82deg30'08"E 21.87' along a N.B.L. of this tract to a 60d nail set for this tract's N.W. reentrant corner,

THENCE N 08deg55'06"E 4.34' along a W.B.L. of this tract to a 60d nail set for this tract's Eastmost N.W.C. ,

THENCE S 81deg04'54"E 19.74' along a N.B.L. of this tract to a 60d nail set for this tract's Eastmost N.E.C. ,

THENCE S 08deg55'06"W 12.69' along an E.B.L. of this tract to a 60d nail set for this tract's Eastmost S.E.C. ,

THENCE N 81deg04'54"W 19.74' along a S.B.L. of this tract to a 60d nail set for this tract's Eastmost S.W.C. ,

THENCE N 08deg55'06"E 6.34' along a W.B.L. of this tract to a 60d nail set for this tract's S.W. reentrant corner,

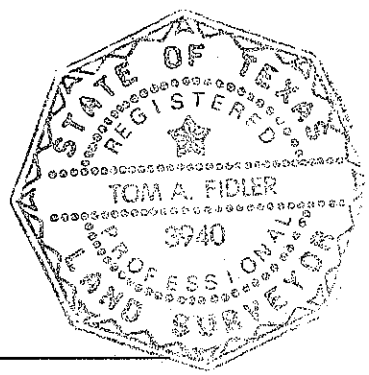
THENCE N 82deg30'08"W 21.85' along a S.B.L. of this tract to a 60d nail set for this tract's S.E. reentrant corner,

THENCE S 08deg26'24"W 17.22' along an E.B.L. of this tract to a 60d nail set for this tract's Westmost S.E.C. ,

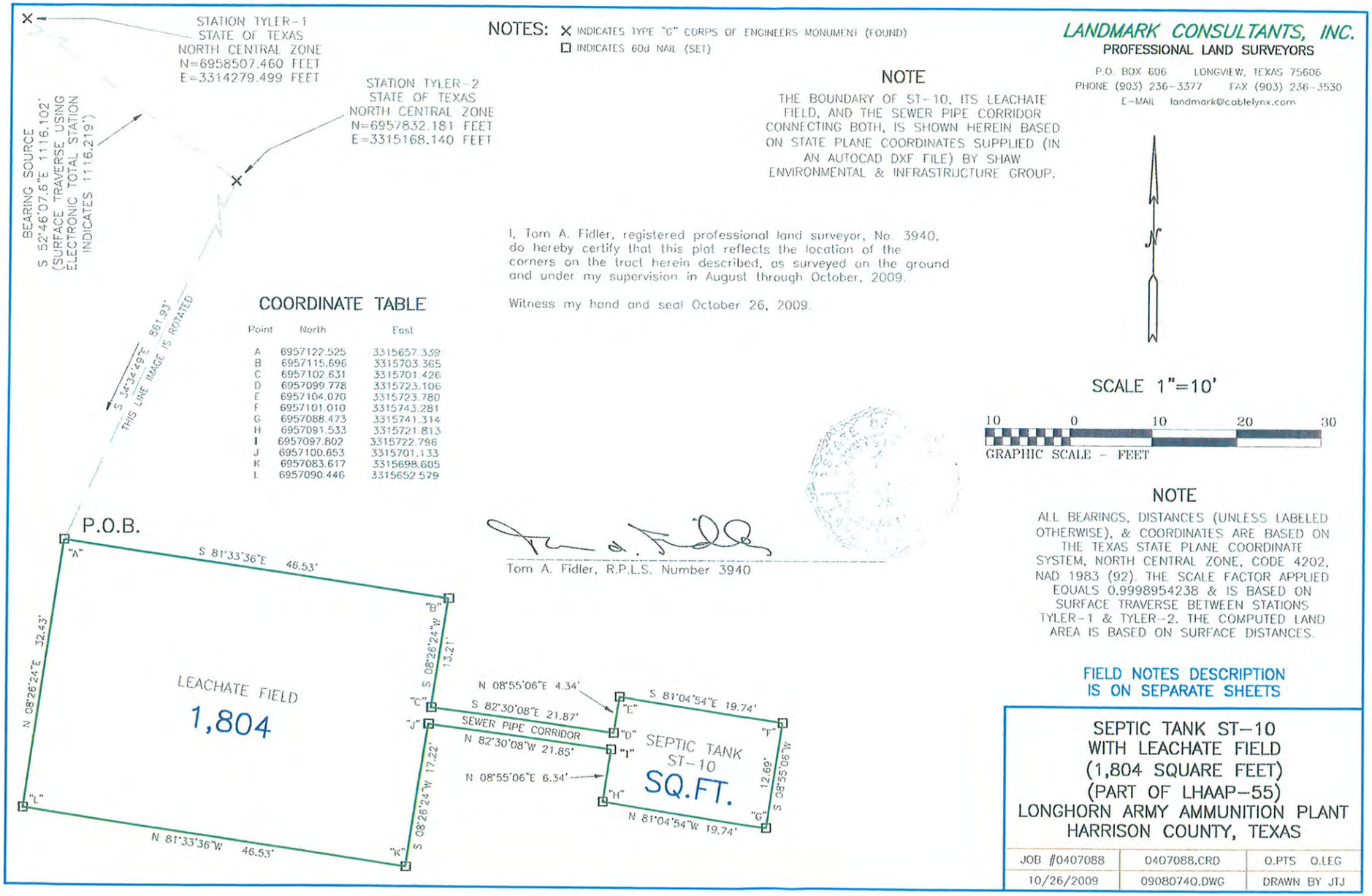
THENCE N 81deg33'36"W 46.53' along a S.B.L. of this tract to a 60d nail set for this tract's Westmost S.W.C. ,

THENCE N 08deg26'24"E 32.43' along a W.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,804 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



NOTES: X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
☐ INDICATES 60d NAIL (SET)

NOTE

THE BOUNDARY OF ST-10, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

COORDINATE TABLE

Point	North	East
A	6957122.525	3315657.339
B	6957115.896	3315703.365
C	6957102.631	3315701.426
D	6957099.778	3315723.106
E	6957104.070	3315723.780
F	6957101.010	3315743.281
G	6957088.473	3315741.314
H	6957091.533	3315721.813
I	6957097.802	3315722.796
J	6957100.653	3315701.133
K	6957083.617	3315698.605
L	6957090.446	3315652.579

Tom A. Fidler, R.P.L.S. Number 3940

SCALE 1"=10'

10 0 10 20 30
GRAPHIC SCALE - FEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

SEPTIC TANK ST-10
WITH LEACHATE FIELD
(1,804 SQUARE FEET)
(PART OF LHAAP-55)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	0.PTS 0.LEG
10/26/2009	0908074O.DWG	DRAWN BY JTJ

LHAAP-35A(58), 58-1

LUCs FROM FINAL REMEDIAL DESIGN

September 14, 2015

Final
Remedial Design
LHAAP-35A(58), Shops Area, Group 4
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for U.S. Army Corps of Engineers – Tulsa District
1645 South 101st East Avenue
Tulsa, Oklahoma 74128

Prepared by Shaw Environmental, Inc.
1401 Enclave Parkway, Suite 250
Houston, Texas 77077

Contract No. W912QR-04-D-0027, Task Order No. DS02
Project No. 117591
Rev 0
September 2011

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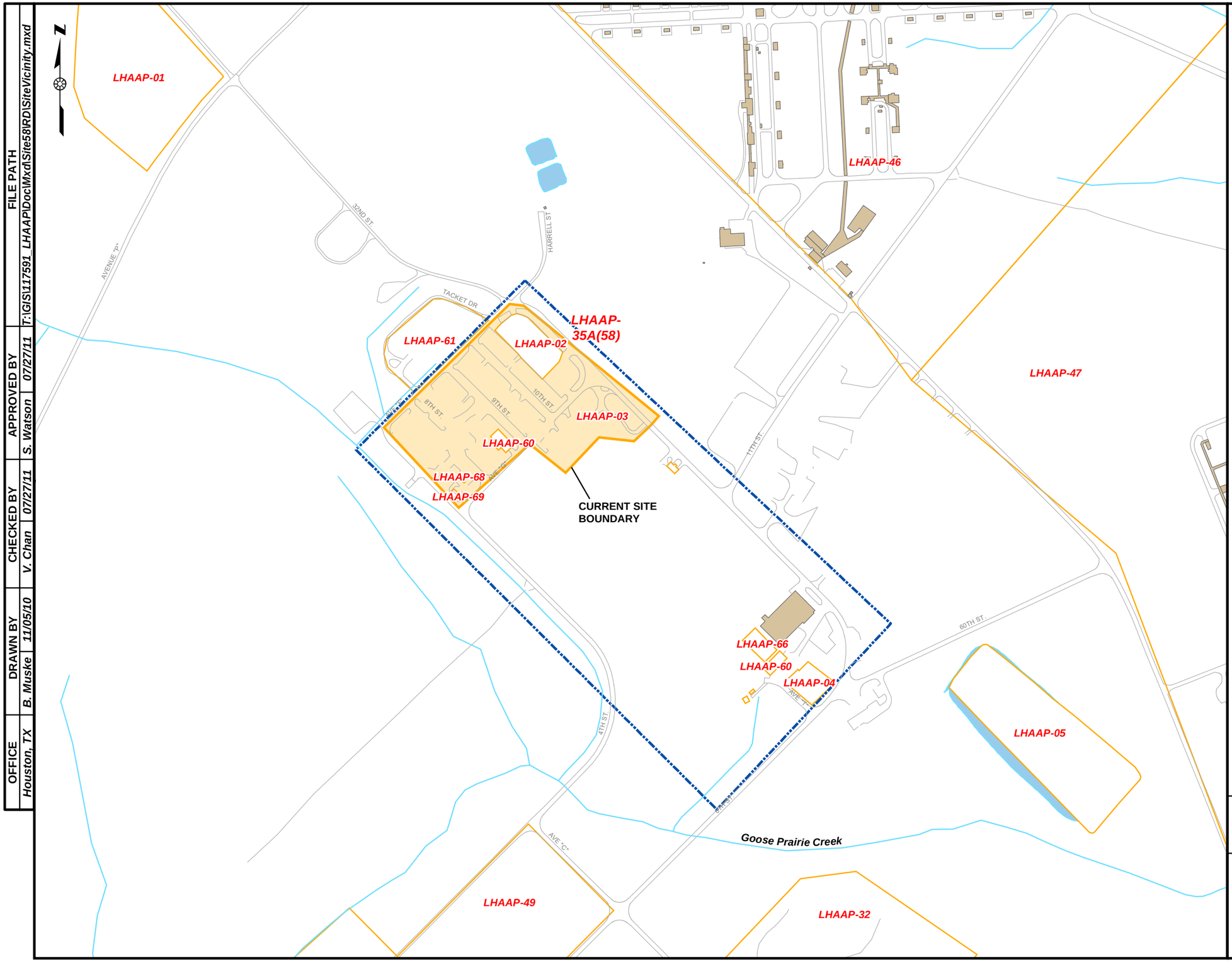
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Contract No. W912QR-04-D-0027, Task Order No. DS02• Final • Rev 0 • September 2011

OFFICE	DRAWN BY	CHECKED BY
Houston, TX	B. Muske	V. Chan
	11/05/10	07/27/11

APPROVED BY	FILE PATH
S. Watson	T:\GIS\117591_LHAAP\Doc\Mxd\Site58\RD\SiteVicinity.mxd
07/27/11	



LEGEND

- Stream
- Road
- Existing Building
- Historic LHAAP-35A(58) Site Boundary
- Other LHAAP Site
- LHAAP-35A(58) Site
- Lake/Pond

0 200 400 800 Feet

Shaw

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1-2

SITE VICINITY MAP
LHAAP-35A(58) GROUP 4

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

2.0 LAND USE CONTROL

The objective of the LUC at LHAAP-35A(58) is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the site for anything other than environmental monitoring and testing until cleanup goals are met. Notification of the groundwater use restriction will accompany all transfer documents and will be recorded at the Harrison County Courthouse in accordance with Texas Administrative Code (TAC) Title 30, §335.566. **Appendix A** provides sample LUC compliance certification documentation.

The LUC addresses the two groundwater plumes at LHAAP-35A(58) with levels of contamination that require implementation of a remedy (see **Section 1.3**). The U.S. Army is responsible for implementing, maintaining, monitoring, reporting on, and enforcing the LUC.

U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of an LUC objective at this site after it has transferred. U.S. Army shall obtain USEPA and Texas Commission on Environmental Quality (TCEQ) concurrence prior to termination or significant modification of the LUC, or implementation of a change in land use inconsistent with the LUC objectives and use assumptions of the remedy. Although not a remedy, the land use assumption for LHAAP-35A(58) forms the basis for the remedy. The future use of the site as part of a national wildlife refuge is consistent with the industrial risk exposure scenario. Notification of the land use assumption of this site will be made in transfer documentation and will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566. Compliance with the use assumption will be documented in the five-year review reports.

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4.0 LAND USE CONTROL DESIGN AND IMPLEMENTATION PLAN

This section describes the LUC design and implementation activities for LHAAP-35A(58). The activities will result in a surveyed and recorded groundwater use restriction boundary and an operation and maintenance plan for the LUC.

The objective of the LUC at LHAAP-35A(58) is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the site for anything other than environmental monitoring and testing until cleanup goals are met. Notification of the groundwater use restriction will accompany all transfer documents. The U.S. Army is responsible for long-term implementation, maintenance, inspection, reporting, and enforcement of the LUC.

The LUC will address the area of LHAAP-35A(58) that includes two groundwater plumes with levels of contamination that require implementation of a remedy (see **Section 1.3**). The Land Use Control Operation and Maintenance (LUC O&M) Plan will identify the measures required for monitoring and enforcement of the groundwater use restriction. Upon review and concurrence of this RD, the LUC O&M Plan will be coordinated with regulators, finalized, and distributed as part of the Comprehensive LUC Management Plan.

4.1 Land Use Control Implementation

The U.S. Army will undertake the following actions to implement the groundwater restriction LUC for LHAAP-35A(58):

- Define the Area of the Groundwater Use Restriction. The groundwater use restriction boundary will be defined based on the review of the first round of groundwater sampling data in conjunction with historic data. The extent of plume will be bounded by a buffer and may extend to natural groundwater and surface water boundaries.

- Survey the LUC Boundary. The proposed boundary will be finalized after all wells are installed and sampled. Concurrence by USEPA and TCEQ will be obtained, and the LUC boundary will be surveyed by a State-licensed surveyor. A legal description of the surveyed area will be appended to the survey plat.

- Record the LUC in Harrison County. The LUC plat, legal description and groundwater use restriction language will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566.

- Notify the Texas Department of Licensing and Regulation of the LUC. The Texas Department of Licensing and Regulation will be notified of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ. The survey plat, legal boundary and description of the groundwater restriction, in conjunction with a locator map, will be provided in hard and electronic copy.

- Develop the LUC O&M Plan. A LUC O&M Plan for LHAAP-35A(58) will be developed. It will include the elements presented in **Section 4.2**, the county recordation of the LUC survey plat, legal description and restriction language, and the inspection/certification form.

4.2 Land Use Control Operation and Maintenance

The U.S. Army or its representatives will be responsible for the operation and maintenance of the LHAAP-35A(58) LUC. This includes certification, reporting and enforcement activities. The U.S. Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable. To facilitate long-term operation and maintenance of the groundwater use restriction LUC remedy, the U.S. Army will develop a plan that will encompass the elements described in the following subsections.

4.2.1 Site Certification and Reporting

Beginning with finalization of this RD and approval of the inspection form, the U.S. Army will undertake inspections and certify continued compliance with the LUC objectives. The U.S. Army, or the transferee after transfer, will retain the LUC Inspection Certification documents in the project files for incorporation into the five-year review reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the certification, the U.S. Army will provide to USEPA and TCEQ, along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations. The need to continue certifications will be revisited at five year reviews.

4.2.2 Notice of Planned Property Conveyances

The U.S. Army shall provide notice to USEPA and TCEQ of plans to convey the LHAAP-35A(58) acreage. The notice shall describe the mechanism by which the LUC will continue to be implemented, maintained, inspected, reported, and enforced. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental document for transfer. Although the U.S. Army may transfer responsibility for various implementation actions, the U.S. Army shall retain its responsibility for remedy integrity. This means that the U.S. Army

Contract No. W912QR-04-D-0027, Task Order No. DS02• Final • Rev 0 • September 2011

is responsible for addressing substantive violations of the LUC performance objective that would undermine the U.S. Army's CERCLA remedy. The U.S. Army also will be responsible for incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation.

4.2.3 Opportunity to Review Text of Intended Land Use Controls

U.S. Army will provide a copy of the groundwater use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. USEPA will also receive a copy for review. In addition, the U.S. Army will produce an ECP or other environmental document for transfer of LHAAP-35A(58), but before executing transfer, the U.S. Army will provide USEPA and TCEQ with a copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before transfer, to review all LUC-related provisions.

4.2.4 Notification Should Action(s) Which Interfere with Land Use Control Effectiveness be Discovered Subsequent to Conveyance

Should the U.S. Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objective, the U.S. Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 4.2.5** below, the U.S. Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the U.S. Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

4.2.5 Land Use Control Enforcement

Should the LUC remedy reflected in this RD fail, the U.S. Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the United States Fish and Wildlife Service (USFWS) or its lessee, to the institution of judicial action against non-federal third-parties. Alternatively, should the circumstances warrant such, the U.S. Army could choose to exercise its response authorities under CERCLA. Should the U.S. Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the U.S. Army may notify those agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC.

4.2.6 Modification or Termination of Land Use Controls

The U.S. Army shall not, without USEPA and TCEQ concurrence, make a significant modification to, or terminate a LUC, or make a land use change inconsistent with the LUC

objective. Likewise, the U.S. Army shall seek prior USEPA and TCEQ concurrence before commencing actions that may impact remedy integrity. In the case of an emergency action, the U.S. Army shall obtain prior USEPA and TCEQ concurrence as appropriate to the exigencies of the situation.

The LUC shall remain in effect until such time as the U.S. Army and USEPA agree that the concentrations of COCs have met cleanup levels. When this occurs, the LUC will be terminated as needed. The decision to terminate the LUC will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the U.S. Army and USEPA has been made to terminate the LUC, the U.S. Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

4.2.7 Comprehensive Land Use Control Management Plan

Upon finalization of the LUC O&M Plan, a copy will be inserted into the Comprehensive LUC Management Plan for Longhorn. The Comprehensive LUC Management Plan figure and table will be updated to reflect the inclusion of LHAAP-35A(58).

The Comprehensive LUC Management Plan consists of LHAAP RD documents and a survey plat showing the locations where LUCs being implemented at LHAAP are applied. The purpose of this Comprehensive LUC Management Plan is to ensure all site specific LUCs are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document will be provided to USEPA and TCEQ, and is also accessible to the local government and the public. The Comprehensive LUC Management Plan is located in the Marshall Public Library to accompany LHAAP's Administrative Record.

The land use assumption of industrial use as part of a national wildlife refuge forms the basis for the remedy at LHAAP-35A(58) and this land use assumption will be included in the Comprehensive LUC Management Plan with supporting documentation.

LHAAP-35A(58), 58-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-35A (58) FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2015-000002402

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

NOTICE

8 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 03/16/2015 11:17 AM **Document Number:** 2015-000002402 **Receipt No:** 1502837 **Amount:** $ 50.00 **By:** Denise Kio, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AECOM
112 E. PECAN ST,STE 400
FED-EX ENVELOPE
SAN ANTONIO, TX 78205

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROL AT LHAAP-35A (58)

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is in a former industrial area, located on the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-35A (58) (Shops Area). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-35A (58) were performed in accordance with the FFA requirements.

The Shops Area now designated as LHAAP-35A (58) was established in 1942 as part of the installation's initial construction (Shaw, 2011). The facility was used to provide plant-operated laundry, automotive, woodworking, metalworking, painting, refrigeration, and electrical services. The site was active throughout LHAAP's mission and was deactivated along with the rest of the installation in 1996-1997. A Record of Decision (ROD) for LHAAP-35A (58) was signed by the U.S. Army and USEPA with TCEQ concurrence in 2010 establishing the final remedy which is separated into two areas: 1) eastern plume; and 2) western plume. The eastern plume remedy includes land use control (LUC); enhanced in-situ bioremediation (EISB) in the area of highest levels of constituents of concern (COCs) followed by monitored natural attenuation (MNA). The western plume remedy consists of LUC and MNA. The site was not remediated to levels suitable for unrestricted use. The LUC at LHAAP-35A (58) is required to prevent human exposure to contaminated groundwater. Further information may be found by

examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-35A (58) parcel is a 11-acre tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A. Associated with the LHAAP-35A (58) parcel is designated a LUC boundary which is a 46.524-acre tract, more or less, as described in Exhibit A. The LUC boundary is also presented in the attached Figure 1. Contained within the LHAAP-35A (58) LUC boundary are sites LHAAP-02, LHAAP-03, LHAAP-56, LHAAP-59, LHAAP-60, LHAAP-65, LHAAP-68 and LHAAP-69.

Future use of the parcel is intended as a national wildlife refuge consistent with non-residential use. For purposes of this certification, residential use includes, but is not limited to, single family or multifamily residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12. The United States Department of the Army has undertaken careful environmental study of the LHAAP-35A (58) site and concluded that the LUC set forth below is required to ensure protection of human health and the environment.

(1) Groundwater Restriction. The groundwater use restriction boundary consists of the 46.524-acre tract, more or less. Groundwater underlying this land is contaminated with tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), cis-1,2-DCE), trans-1,2-DCE, and vinyl chloride (VC) and shall not be accessed or used for any purpose without the prior written approval of the U.S. Army, the USEPA, and the TCEQ. A LUC restricting the use of groundwater has been established for the protection of human health. The U.S. Army will notify the Texas Department of Licensing and Regulation of the groundwater restriction which includes prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval by the U.S. Army, the USEPA, and the TCEQ. A restriction against the residential use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE).

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

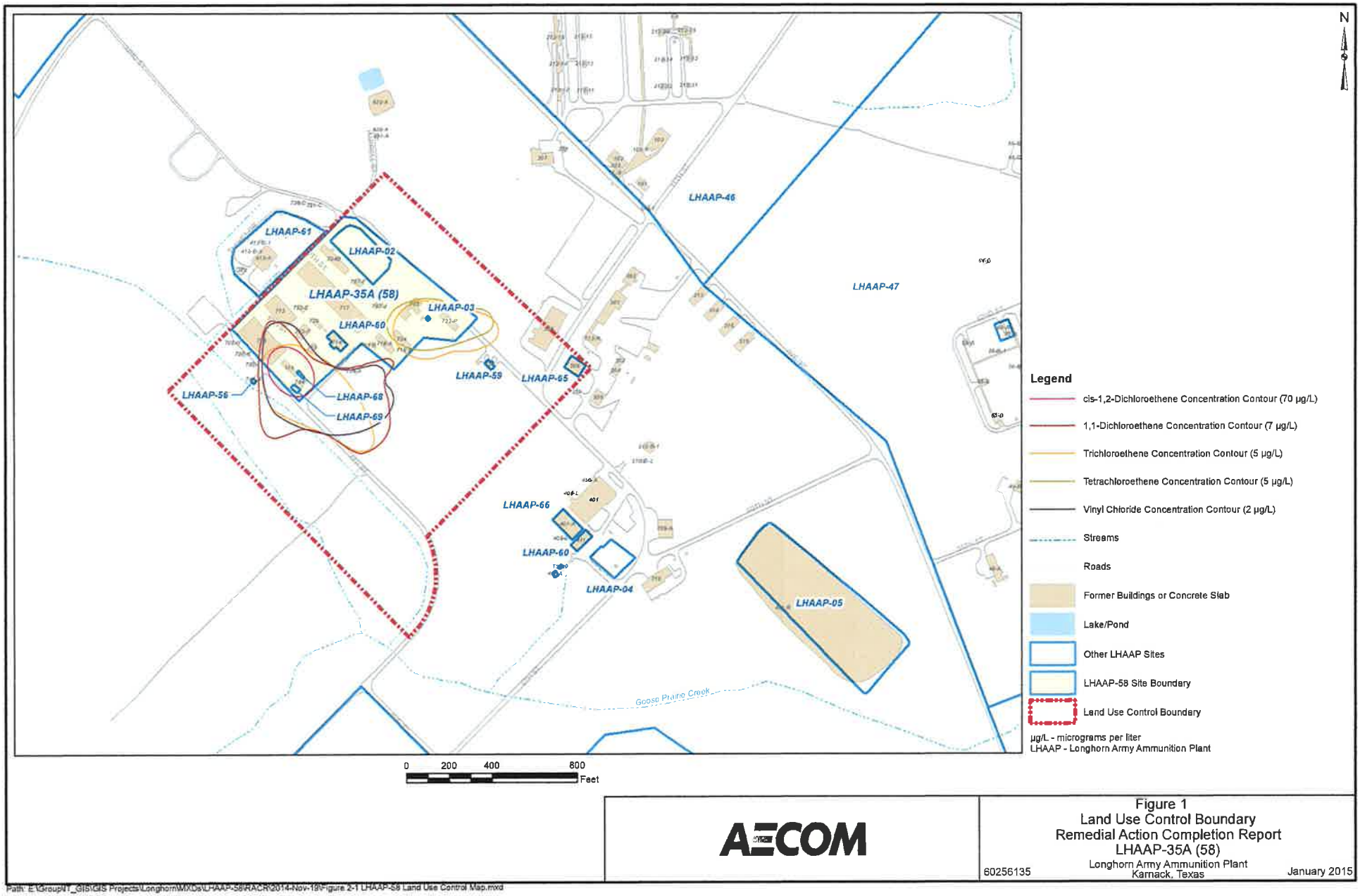
EXECUTED this the ____th day of _____, 2015.

BEFORE ME, on this the 19 th day of February 2015, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 19th day of February, 2015.

Notary Public in and for the State of Texas,
County of Harrison

GENIE WARNER
Notary Public State of Texas
COMM. EXP. 8/1/2018



AECOM

Figure 1
Land Use Control Boundary
Remedial Action Completion Report
LHAAP-35A (58)
Longhorn Army Ammunition Plant
Karnack, Texas

60256135

January 2015

Path: E:\Group\IT_GIS\GIS Projects\Longhorn\MXDs\LHAAP-58\RACR\2014-Nov-19\Figure 2-1 LHAAP-58 Land Use Control Map.mxd

EXHIBIT A
SURVEY PLAT

FIELD NOTES DESCRIPTION OF
"LHAAP-35A(58)" LAND USE CONTROL AREA
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, "LHAAP-35A(58)" Land Use Control Area being 46.524 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), "LHAAP-35A(58)" Land Use Control Area being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.99991470929, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "HMX-5" (N=6958206.213 feet E=3305201.721 feet). Said traverse indicates a surface distance of 2567.689 feet between said monuments. The computed land area is based on State Plane distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" and "RPLS 3940" .

Commencing at monument "X-11" referenced above,

THENCE N 52deg16'47"E 216.98' to an I.R.O.P.C. set for the North corner of this tract and this POINT OF BEGINNING,

THENCE S 47deg09'34"E 1327.84' along the N.E. B.L. of this tract to an I.R.O.P.C. set for this tract's East corner,

THENCE S 44deg05'45"W 1089.57' along a S.E. B.L. of this tract to a 60d nail set (near the Easterly edge of the asphalt pavement of "4th Street") for this tract's only reentrant corner,

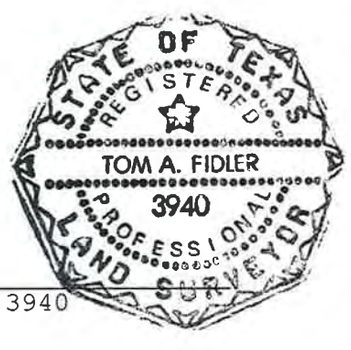
THENCE along a curve to the right (having a radius of 397.10' and an arc length of 496.33', being subtended by a chord of S 09deg27'29"W 464.64') defining this tract's E.B.L., said curve approximating the curved Easterly edge of the asphalt pavement of "4th Street", to a 60d nail found for the South end of said curve,

THENCE S 45deg14'57"W 21.48' along a S.E. B.L. of this tract to a point for this tract's Southmost corner, said point being N 17deg16'14"W 525.07' from the aforementioned "HMX-5" monument and S 44deg25'14"E 8.86' from a concrete nail set for reference near the centerline of the asphalt pavement of "4th Street",

THENCE N 44deg25'14"W 1614.70' along the S.W. B.L. of this tract to an I.R.O.P.C. set for this tract's West corner,

THENCE N 45deg01'15"E 1422.64' along the N.W. B.L. of this tract to this POINT OF BEGINNING, containing 46.524 acres, more or less.

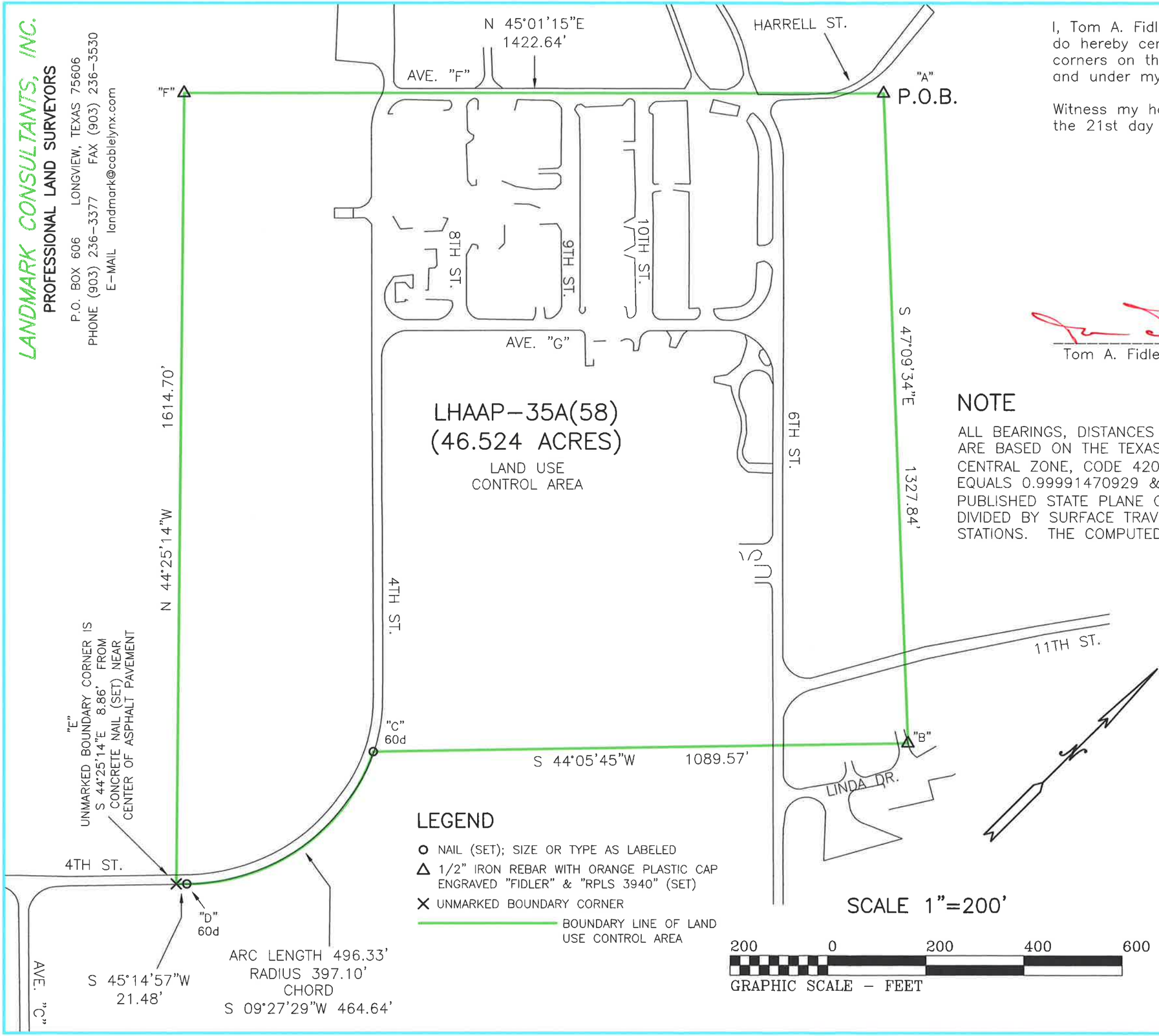
I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

01071182

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com



LEGEND

- NAIL (SET); SIZE OR TYPE AS LABELED
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- X UNMARKED BOUNDARY CORNER
- BOUNDARY LINE OF LAND USE CONTROL AREA

SCALE 1"=200'

200 0 200 400 600
GRAPHIC SCALE – FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in January, 2015.

Witness my hand and seal this the 21st day of January, 2015.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), AND COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.99991470929 & IS BASED ON CALCULATED DISTANCE BETWEEN PUBLISHED STATE PLANE COORDINATES (OF STATIONS X-11 & HMX-5) DIVIDED BY SURFACE TRAVERSE CALCULATED DISTANCE BETWEEN SAME TWO STATIONS. THE COMPUTED LAND AREA IS BASED ON STATE PLANE DISTANCES.

COORDINATE TABLE

	NORTH	EAST
A	6960866.446	3304921.998
B	6959963.566	3305895.634
C	6959181.058	3305137.444
D	6958722.729	3305061.091
E	6958707.606	3305045.836
F	6959860.854	3303915.676

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

LHAAP-35A(58) L.U.C.A.
(46.524 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	V.PTS V.LEG
01/21/2015	1103025V.DWG	DRAWN BY JTJ

LHAAP-35A(58), 58-3

LAND USE CONTROL COMPLIANCE INSPECTION FORM

September 14, 2015

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated 9/30/11 for LHAAP-35A (58) a certification of site was conducted by _____ [indicate transferee] on _____.

A summary of land use control mechanisms is as follows:

- Groundwater restriction – A restriction against use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE). [Indicate whether groundwater restrictions are still required at LHAAP-35A (58)]

A summary of compliance with land use and restriction covenants is as follows:

- No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-35A (58).

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year.

LHAAP-59

NOTICE OF NONRESIDENTIAL LAND USE FOR LHAAP-59 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2011-000003378

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

NOTICE

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 03/24/2011 03:52 PM **Document Number:** 2011-000003378 **Receipt No:** 1103745 **Amount:** $ 32.00 **By:** Lauren Boyd, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AARON WILLIAMS EC-ER
1645 SOUTH 101ST EAST AVENUE

[redacted]

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remedial investigation of the land described herein. The site, LHAAP-59, the former Pesticide Storage Building 725, was constructed in 1984 to support maintenance activities at the plant as a pesticide storage building. LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-59 is not itself considered an NPL site. Environmental activities at LHAAP-59 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-59 consists of a Building 725 and the surrounding area. The building, now removed, contained a concrete floor with floor drains that discharged to two nearby sumps. Soil samples were collected near the building and sumps and analyzed for metals, semivolatile organic compounds, volatile organic compounds, dioxins and furans in the 1990s and in 2007 additional samples were collected and analyzed for pesticides and herbicides near the sumps and at the building. Low levels of pesticides were detected. An analysis demonstrated that

these chemicals in soil did not exhibit a potential for release to the groundwater in excess of the groundwater MSC (GW-Ind) and were considered to be protective for nonresidential worker exposure, as specified in 30 TAC §335.559(g)(2)(B). Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30
p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-59 parcel is a 0.2537 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-59 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-59. Contaminants in soil samples from LHAAP-59 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-59 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-59 is consistent with the non-residential use scenario evaluated in the risk screening. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multifamily residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through
12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 25 th day of January, 2011.

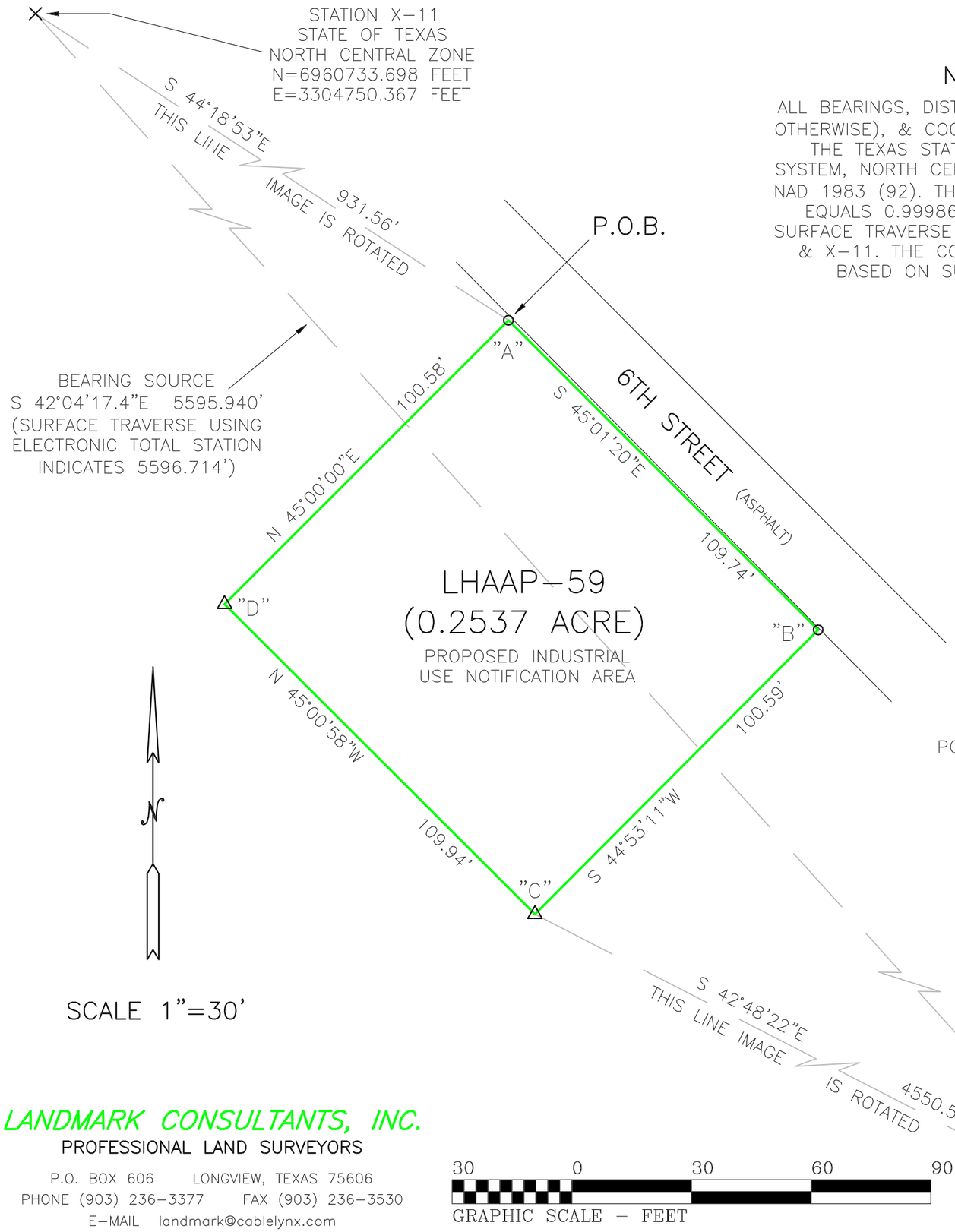
BEFORE ME, on this the 25 th day of Jan 2011, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 25 day of January, 2011.

Notary Public in and for the State of Texas,
County of Harrison

ANGELA I UMPHRIES
Notary Public State of Texas
COMM EXP. 3-17-2011

01071190

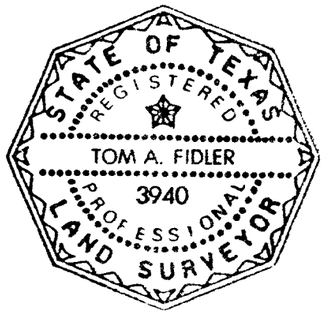


NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS C–21 & X–11. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in July 2008.

Witness my hand and seal this the 29th day of July, 2008



Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

COORDINATE TABLE

POINT	NORTH	EAST
A	6960067.154	3305401.154
B	6959989.588	3305478.780
C	6959918.320	3305407.794
D	6959996.035	3305330.035

NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- O INDICATES CONCRETE NAIL IN BOTTLE CAP (SET IN ASPHALT)
- △ INDICATES 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- ——— INDICATES BOUNDARY OF PROPOSED INDUSTRIAL USE NOTIFICATION AREA

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236–3377 FAX (903) 236–3530
E–MAIL landmark@cablelynx.com

LHAAP–59
(0.2537 ACRE)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	0605063D.DWG
07/29/2008	0605063.CRD	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
"LHAAP–59" TRACT
(PROPOSED INDUSTRIAL USE NOTIFICATION AREA)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP–59" being 0.2537 acre of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP–59" being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X–11" (N=6960733.698 feet E=3304750.367 feet) and "C–21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940", and the abbreviation C.N.I.B.C. indicates concrete nail in bottle cap.

Commencing at monument "X–11" referenced above,

THENCE S 44deg18'53"E 931.56' to a C.N.I.B.C. set (in the asphalt pavement of the road known as 6th Street) for the North corner of this tract and this POINT OF BEGINNING,

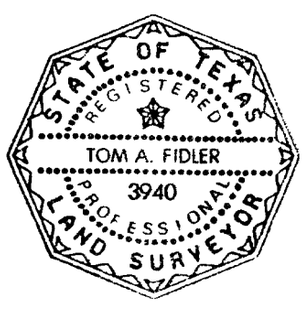
THENCE S 45deg01'20"E 109.74' along the N.E. B.L. of this tract to a C.N.I.B.C. set (in the asphalt pavement of the road known as 6th Street) for this tract's East corner,

THENCE S 44deg53'11"W 100.59' along the S.E. B.L. of this tract to an I.R.O.P.C. set for this tract's South corner, from which the monument "C–21" referenced above bears S 42deg48'22"E 4550.54',

THENCE N 45deg00'58"W 109.94' along the S.W. B.L. of this tract to an I.R.O.P.C. set for this tract's West corner,

THENCE N 45deg00'00"E 100.58' along the N.W. B.L. of this tract to this POINT OF BEGINNING, containing 0.2537 acre, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler

Tom A. Fidler, R.P.L.S. Number 3940

LHAAP-60

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-60 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2010-000005561

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

16 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005561 **Receipt No:** 1006195 **Amount:** $ 72.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-60, consisted of four pesticide storage buildings located in the steam plant and shops area of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-60 is not itself considered an NPL site. Environmental activities at LHAAP-60 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-60 consisted of buildings 411, 411-A, 714, and shed TS-80, which were located in the northwestern portion of LHAAP near the steam plant and shops area in the general vicinity of sites LHAAP-02, LHAAP-04, LHAAP-35A(58), and LHAAP-66. Pesticides and herbicides were stored in the now demolished buildings. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at

the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-60 parcels include: Building 411 with 4,242 square feet, more or less, or 0.09738 acre tract; Building TS-80 with 186 square feet, more or less, or 0.00426 acre tract; Building 411-A with 484 square feet, more or less, or 0.01111 acre tract; and Building 714 with 4,468 square feet, more or less, or 0.10463 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-60 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-60. Contaminants in soil samples from LHAAP-60 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-60 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-60 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10 th day of March 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

Notary Public in and for the State of Texas,
County of Harrison

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-60A" TRACT
(FOUNDATION SLAB OF DEMOLISHED BUILDING 411)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-60A" being the concrete foundation slab of demolished Building 411, "LHAAP-60A" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-60A" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 1875.89' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 3720.05',

(as used below, the abbreviation C.C.F.S. indicates corner of concrete foundation slab)

THENCE S 47deg55'43"W 188.47' to a C.C.F.S. found for the Northmost corner of this tract and this description's POINT OF BEGINNING,

THENCE S 45deg09'46"E 41.80' along the Northeast B.L. of this tract to a C.C.F.S. found for this tract's Eastmost corner,

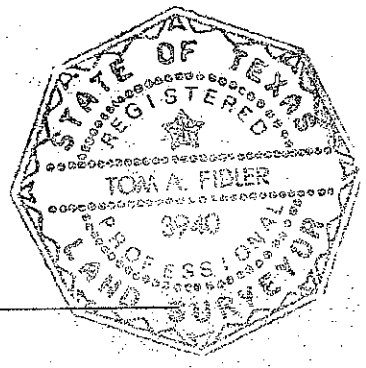
THENCE S 44deg51'53"W 101.29' along the Southeast B.L. of this

tract to a C.C.F.S. found for this tract's Southmost corner,

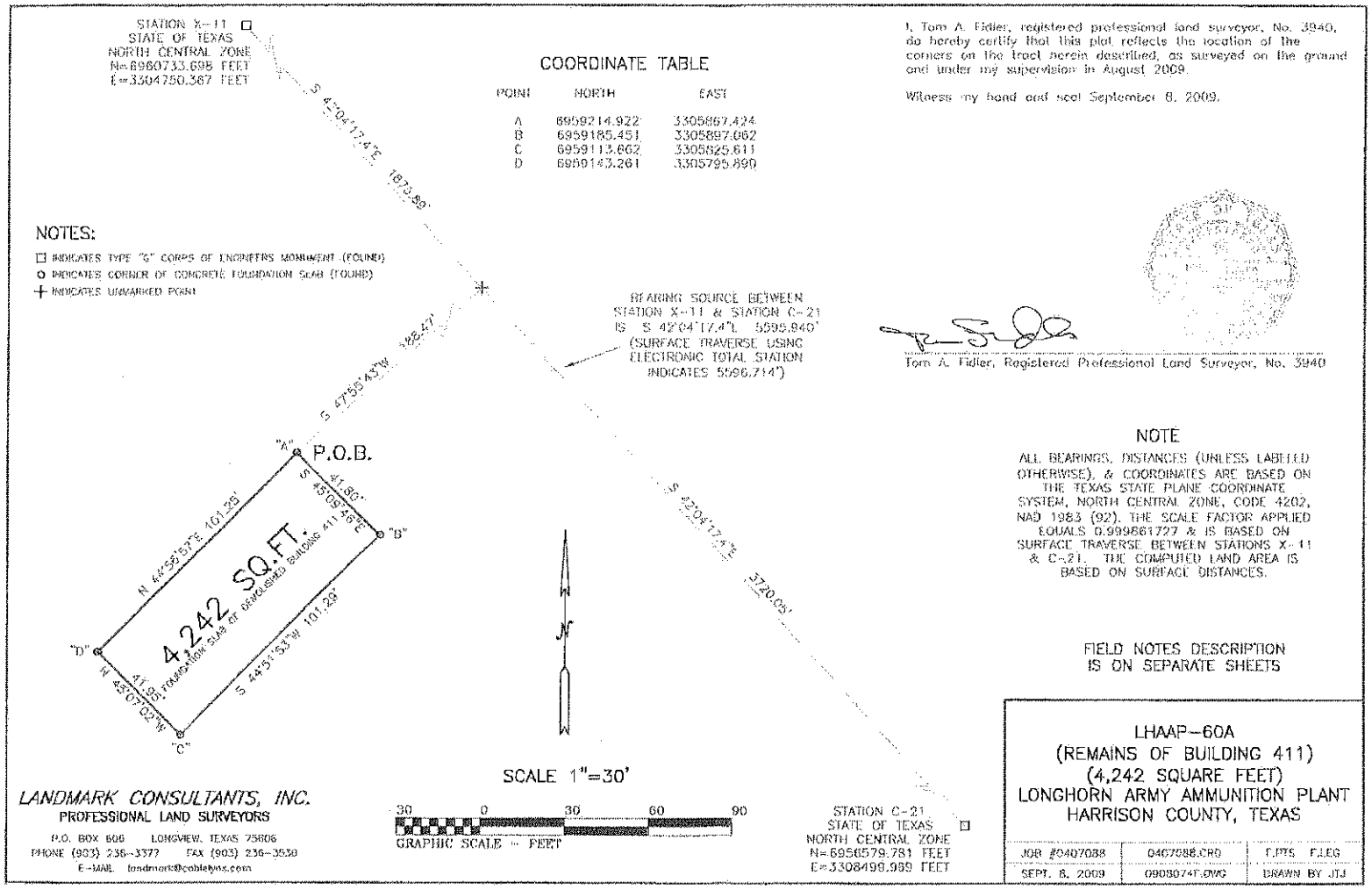
THENCE N 45deg07'02"W 41.95' along the Southwest B.L. of this tract to a C.C.F.S. found for this tract's Westmost corner,

THENCE N 44deg56'57"E 101.25' along the Northwest B.L. of this tract to this POINT OF BEGINNING. This tract contains 4,242 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



COORDINATE TABLE

POINT	NORTH	EAST
A	6959214.922	3305867.424
B	6959185.451	3305897.062
C	6959113.662	3305825.611
D	6959143.261	3305795.890

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal September 8, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTES:

- ☐ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- O INDICATES CORNER OF CONCRETE FOUNDATION SLAB (FOUND)
- + INDICATES UNMARKED POINT

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.99986727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 806 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cableone.com

LHAAP-60A
(REMAINS OF BUILDING 411)
(4,242 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	F.PTS F.LEG
SEPT. 8, 2009	0908074F.DWG	DRAWN BY JTJ

"LHAAP-60B" TRACT
(BUILDING TS-80)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, the perimeter of tract "LHAAP-60B" being defined by the four corners of the external face of the exterior walls of Building TS-80 (said Building is constructed of galvanized corrugated sheet metal), tract "LHAAP-60B" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-60B" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 1919.72' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 3676.22',

(as used below, the abbreviation C.E.F.E.W. indicates Corner of the External Face of the Exterior Walls of Building TS-80)

THENCE S 47deg55'43"W 378.14' to a C.E.F.E.W. found for the Northmost corner of this tract and this description's POINT OF BEGINNING,

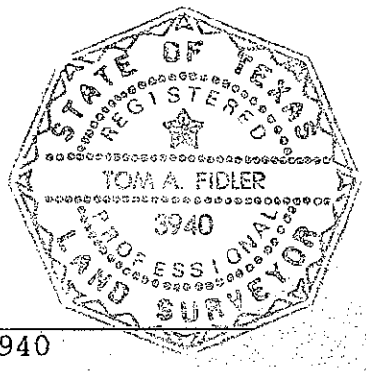
THENCE S 41deg54'33"E 8.55' along the Northeast B.L. of this tract to a C.E.F.E.W. found for this tract's Eastmost corner,

THENCE S 48deg12'22"W 22.54' along the Southeast B.L. of this tract to a C.E.F.E.W. found for this tract's Southmost corner,

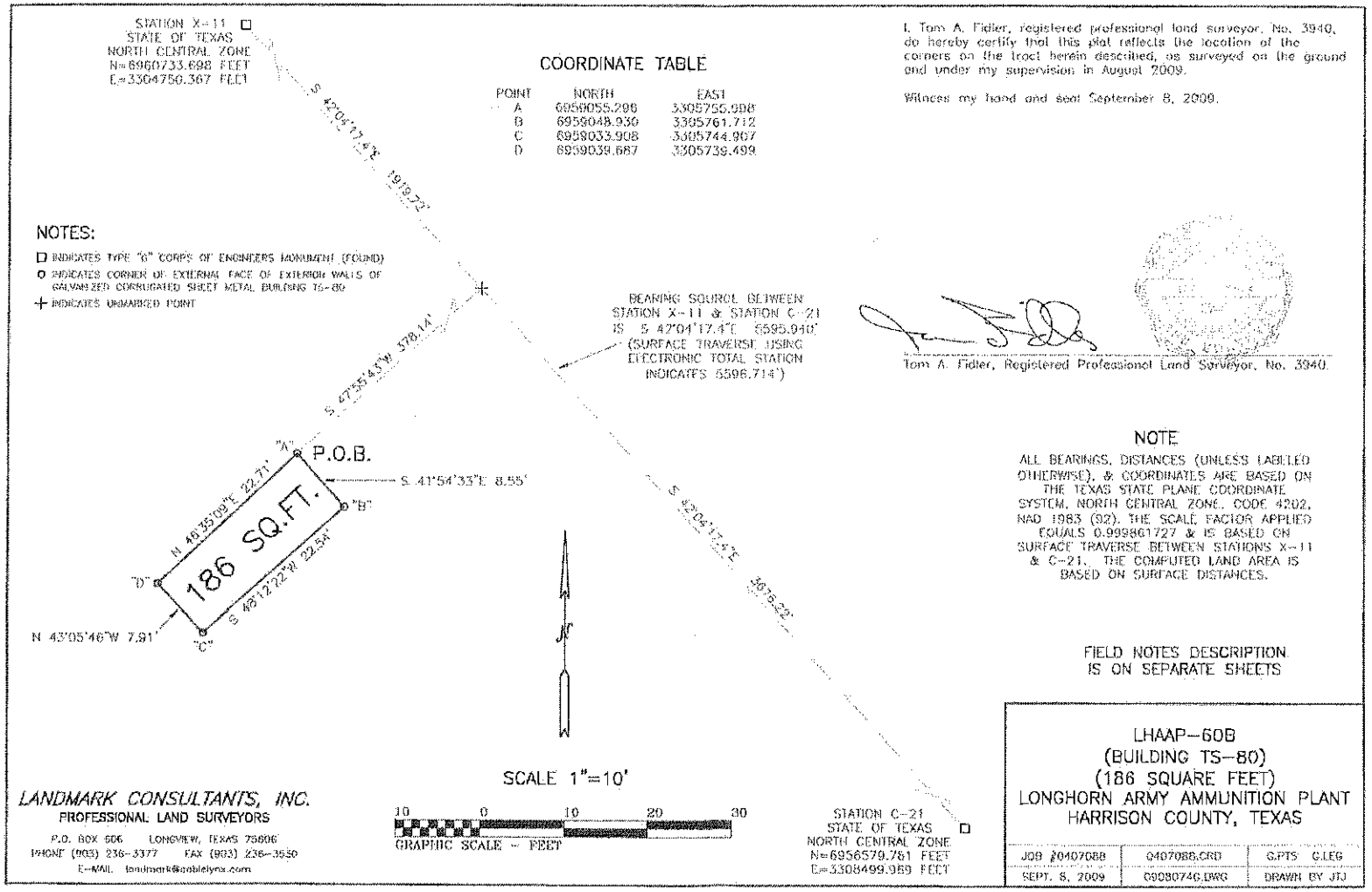
THENCE N 43deg05'46"W 7.91' along the Southwest B.L. of this tract to a C.E.F.E.W. found for this tract's Westmost corner,

THENCE N 46deg35'09"E 22.71' along the Northwest B.L. of this tract to this POINT OF BEGINNING. This tract contains 186 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



COORDINATE TABLE

POINT	NORTH	EAST
A	6959055.296	3305755.988
B	6959048.930	3305761.712
C	6959033.908	3305744.907
D	6959039.687	3305739.499

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal September 8, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940.

NOTES:

- ☐ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- O INDICATES CORNER OF EXTERNAL FACE OF EXTERIOR WALLS OF GALVANIZED CORRUGATED SHEET METAL BUILDING TS-80
- + INDICATES UNMARKED POINT

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 506 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3550
E-MAIL landmark@cablelynx.com

LHAAP-60B
(BUILDING TS-80)
(186 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	G.PTS C.LEG
SEPT. 8, 2009	0908074C.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
"LHAAP-60C" TRACT
(FOUNDATION SLAB OF DEMOLISHED BUILDING 411-A)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-60C" being the concrete foundation slab of demolished Building 411-A, tract "LHAAP-60C" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-60C" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 1924.12' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 3671.82',

(as used below, the abbreviation C.C.F.S. indicates corner of concrete foundation slab)

THENCE S 47deg55'43"W 418.77' to a C.C.F.S. found for the Northmost corner of this tract and this description's POINT OF BEGINNING,

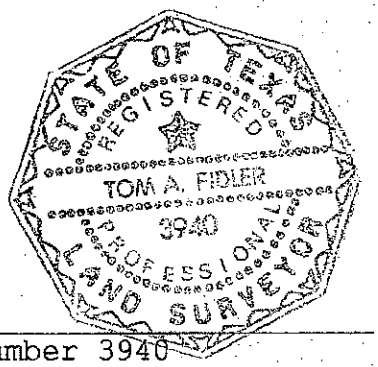
THENCE S 28deg26'16"E 24.08' along the Northeast B.L. of this tract to a C.C.F.S. found for this tract's Eastmost corner,

THENCE S 61deg38'48"W 20.15' along the Southeast B.L. of this tract to a C.C.F.S. found for this tract's Southmost corner,

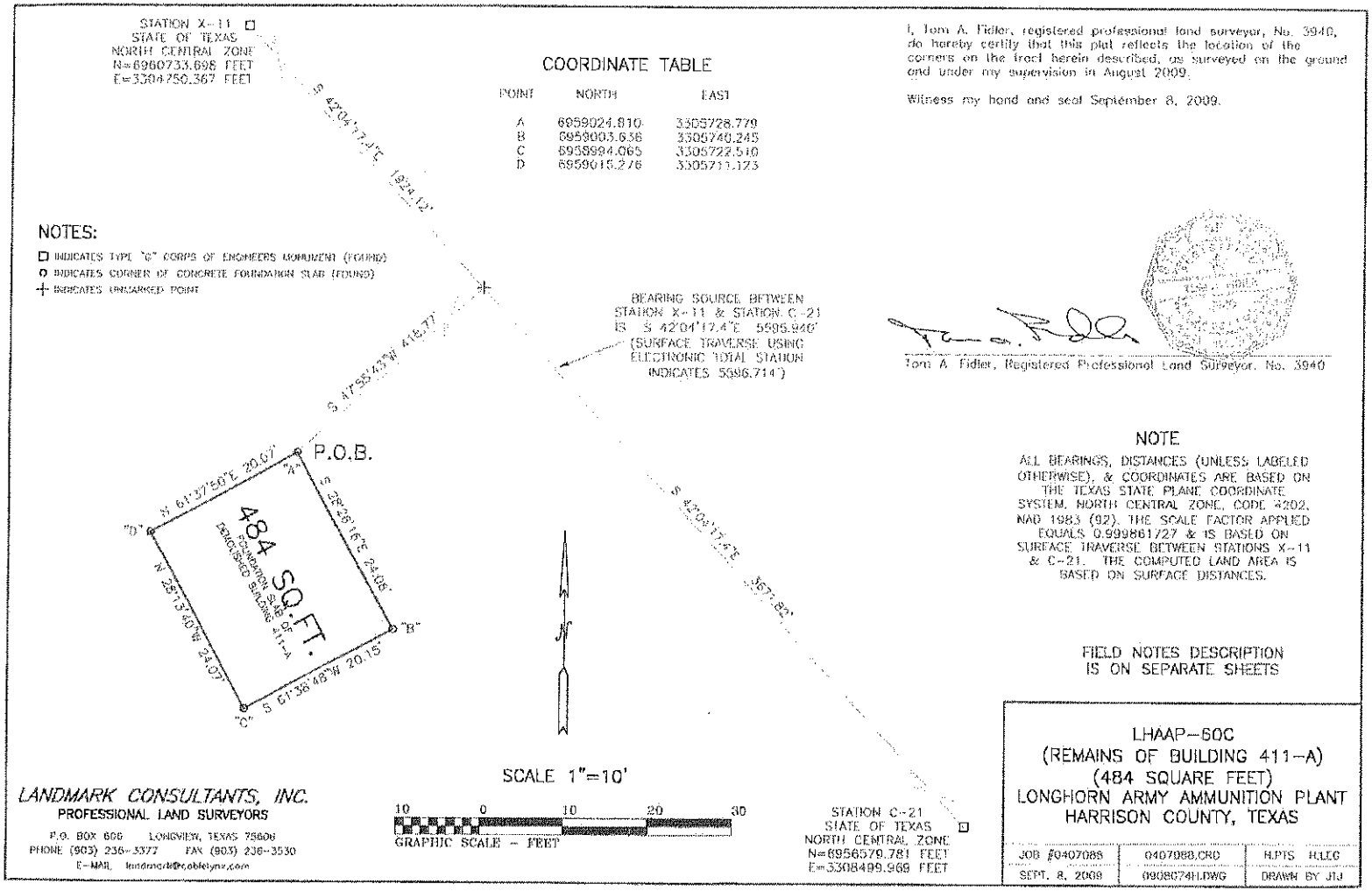
THENCE N 28deg13'40"W 24.07' along the Southwest B.L. of this tract to a C.C.F.S. found for this tract's Westmost corner,

THENCE N 61deg37'50"E 20.07' along the Northwest B.L. of this tract to this POINT OF BEGINNING. This tract contains 484 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



COORDINATE TABLE

POINT	NORTH	EAST
A	6959024.810	3305728.779
B	6959003.636	3305740.245
C	6958994.065	3305722.510
D	6959015.276	3305711.173

NOTES:

- ☐ INDICATES TYPE "C" CORPS OF ENGINEERS MONUMENT (FOUND)
- O INDICATES CORNER OF CONCRETE FOUNDATION SLAB (FOUND)
- ⊕ INDICATES UNMARKED POINT

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal September 8, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cobblynx.com

LHAAP-60C
(REMAINS OF BUILDING 411-A)
(484 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	H.PTS H.LLG
SEPT. 8, 2009	0908074HLDWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
"LHAAP-60D" TRACT
(INCLUDES FOUNDATION SLAB OF DEMOLISHED BUILDING #714)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-60D" including the concrete foundation slab of demolished Building #714 plus an area adjacent to the Southwest edge of said slab, "LHAAP-60D" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-60D" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 395.512' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 5200.428'

(as used below, the abbreviation C.C.F.S. indicates corner of concrete foundation slab)

THENCE S 47deg55'43"W 442.92' to a C.C.F.S. found for the Northmost corner of this tract and this description's POINT OF BEGINNING,

THENCE S 44deg51'26"E 91.43' along the Northeast B.L. of this tract, and generally along the Northeast edge of said concrete slab, to a C.C.F.S. found for this tract's Eastmost corner,

THENCE S 44deg50'54"W 44.35' along a Southeast B.L. of this tract, and generally along the Southeast edge of said concrete slab, to a C.C.F.S. found for this tract's Southmost corner,

THENCE N 44deg59'57"W 29.43' along a Southwest B.L. of this tract, and generally along the Southwest edge of said concrete slab, to a point for this tract's Southmost reentrant corner,

THENCE S 45deg00'03"W 14.90' along a Southeast B.L. of this tract to a 60d nail set for this tract's Westmost South corner,

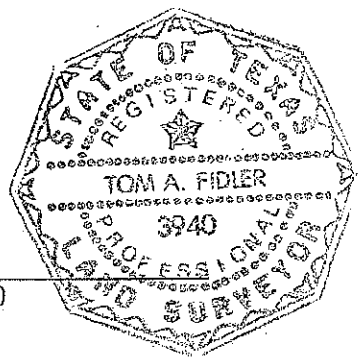
THENCE N 44deg59'57"W 32.36' along a Southwest B.L. of this tract to a 60d nail set for this tract's Southmost West corner,

THENCE N 45deg00'03"E 14.90' along a Northwest B.L. of this tract to a point for this tract's Northmost reentrant corner,

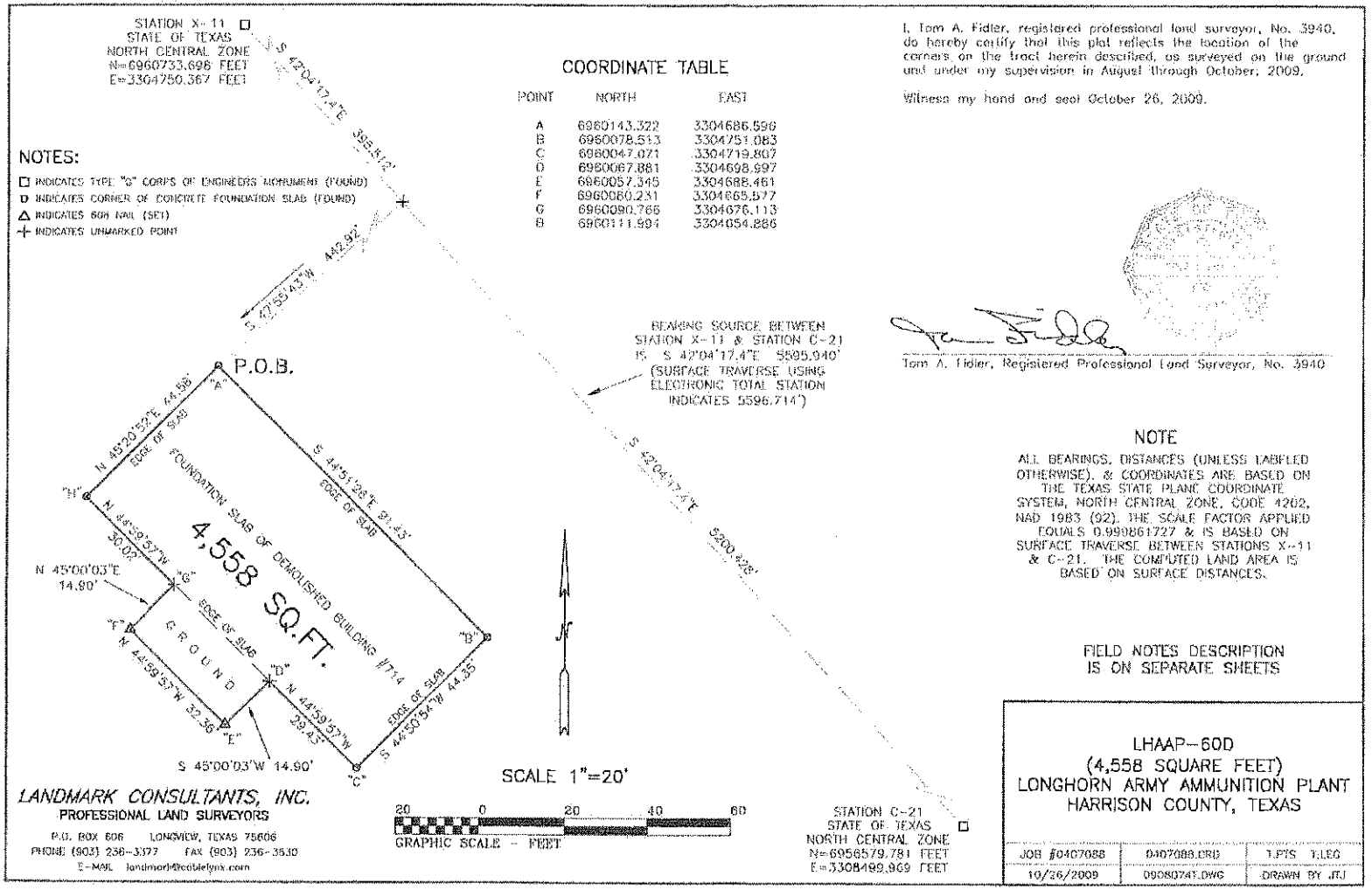
THENCE N 44deg59'57"W 30.02' along a Southwest B.L. of this tract, and generally along the Southwest edge of said concrete slab, to a C.C.F.S. found for this tract's Northmost West corner,

THENCE N 45deg20'52"E 44.58' along a Northwest B.L. of this tract, and generally along the Northwest edge of said concrete slab, to this POINT OF BEGINNING. This tract contains 4,558 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



NOTES:

- □ INDICATES TYPE "B" CORPS OF ENGINEERS MONUMENT (FOUND)
- ■ INDICATES CORNER OF CONCRETE FOUNDATION SLAB (FOUND)
- △ INDICATES 60d NAIL (SET)
- ┼ INDICATES UNMARKED POINT

COORDINATE TABLE

POINT	NORTH	EAST
A	6960143.322	3304686.596
B	6960078.513	3304751.083
C	6960047.071	3304719.807
D	6960067.881	3304698.997
E	6960057.345	3304688.461
F	6960080.231	3304665.577
G	6960090.766	3304676.113
B	6960111.994	3304654.886

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cebridgelynx.com

LHAAP-60D
(4,558 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.DRJ	1 PTS 1 LEG
10/26/2009	09080747.DWG	DRAWN BY JRJ

LHAAP-64

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-64 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2010-000005558

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005558 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-64, is the location of a former transformer storage area located in the western portion of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-64 is not itself considered an NPL site. Environmental activities at LHAAP-64 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-64 is located next to site LHAAP-29. Polychlorinated biphenyl (PCB)-containing transformers were stored on a pad on Zeugner Drive immediately southwest of Building 707-B. Approximately 20 out-of-service non-PCB transformers were stored on pallets with no curbs or other containment. The site was used for the storage of transformer oil. The contaminants of concern were petroleum and oil lubricants and PCBs. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas

75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-64 parcel is 847 square feet, more or less, or 0.01944 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-64 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-64. Contaminants in soil samples from LHAAP-64 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-64 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-64 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

Notary Public in and for the State of Texas,
County of Harrison

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-64" TRACT
(ADJACENT TO FOUNDATION SLAB OF DEMOLISHED BUILDING #707-B)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-64" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), tract "LHAAP-64" being adjacent to the Southwest edge of the concrete foundation slab of demolished Building #707-B, tract "LHAAP-64" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998463585, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "C-1" (N=6955947.067 feet E=3305400.600 feet) and "C-22" (N=6955892.461 feet E=3307823.958 feet). Said traverse indicates a surface distance of 2424.346 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "C-1" referenced above,

THENCE S 32deg52'16"W 338.58' to the West corner of the concrete slab of demolished building 707-B, said slab corner marking the North corner of this tract and this POINT OF BEGINNING,

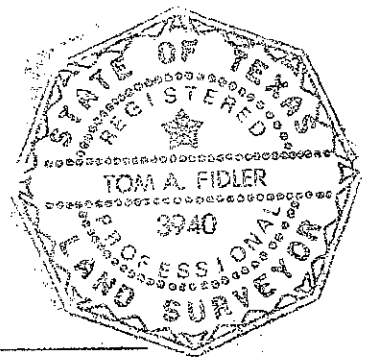
THENCE S 45deg00'47"E 29.76' along the N.E. B.L. of this tract, and generally along the Southwest edge of said concrete slab, to the South corner of said concrete slab, said slab corner marking the East corner of this tract,

THENCE S 44deg55'45"W 28.44' along the S.E. B.L. of this tract to a concrete nail with head dimple set (in asphalt) for the South corner of this tract,

THENCE N 45deg00'47"W 29.75' along the S.W. B.L. of this tract to a concrete nail with head dimple set (in asphalt) for the West corner of this tract,

THENCE N 44deg54'27"E 28.44' along the N.W. B.L. of this tract to this POINT OF BEGINNING. This tract contains 847 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

NOTES:

□ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES CORNER OF CONCRETE FOUNDATION SLAB (FOUND)
△ INDICATES 60d NAIL (SET)
+ INDICATES CONCRETE NAIL WITH HEAD DIMPLE (SET)

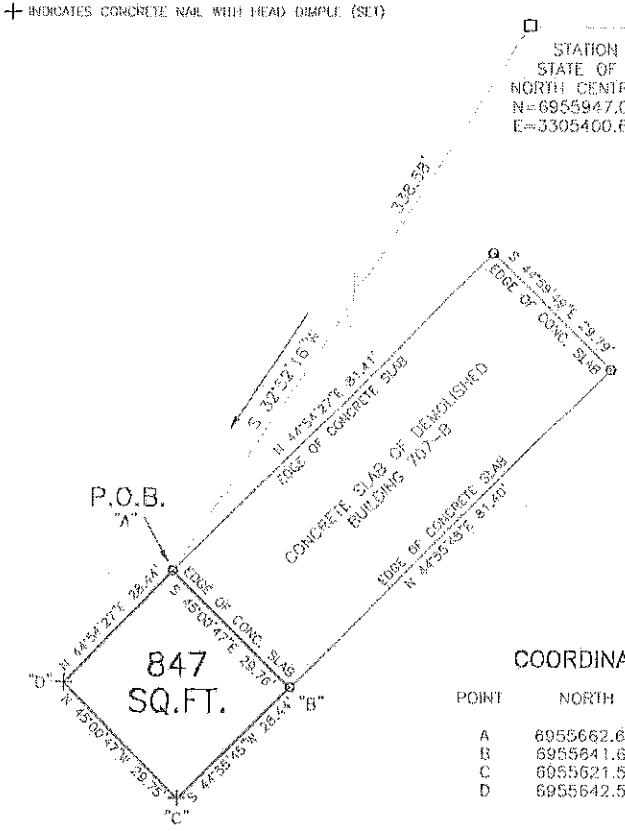
I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through November, 2009.

Witness my hand and seal November 12, 2009.

STATION C-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6955947.067 FEET
E=3305400.600 FEET

BEARING SOURCE BETWEEN STATION C-1 & STATION C-22 IS S 88°42'33.0"E 2423.973' (SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 2424.346')

STATION C-22
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6955892.461 FEET
E=3307823.958 FEET





COORDINATE TABLE

POINT	NORTH	EAST
A	6955662.694	3305216.833
B	6955641.654	3305237.884
C	6955621.519	3305217.798
D	6955642.552	3305196.756

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999846358S & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS C-1 & C-22. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

SCALE 1"=20'



GRAPHIC SCALE – FEET

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-5377 FAX (903) 236-5530
E-MAIL landmark@cableone.com

LHAAP-64
(847 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	0 PTS 0 LEG
NOV. 12, 2009	090807AU.DWG	DRAWN BY JDJ

LHAAP-66

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-66 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2010-000005559

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005559 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-66, is the location of a leaking transformer from the electric power substation and transformer area, near Building 401. Building 401 housed gas-fired boilers that generated steam for distribution throughout the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-66 is not itself considered an NPL site. Environmental activities at LHAAP-66 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-66 is located at the electric power substation and includes several transformers. One of these transformers was reported to be leaking, but subsequent environmental activities confirmed there was no release to the soil from polychlorinated biphenyls. The electric power substation still provides power to parts of LHAAP. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465,

Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-66 parcel is 8,616 square foot, more or less, or 0.19779 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-66 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-66. Contaminants in soil samples from LHAAP-66 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-66 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-66 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D:C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

Notary Public in and for the State of Texas,
County of Harrison

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-66" TRACT
(CONTAINS AN ELECTRIC POWER SUBSTATION)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-66" containing an electric power substation, including transformers, "LHAAP-66" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-66" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 1722.19' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 3873.75',

(as used below, the abbreviation F.C.P. indicates 2-1/2" diameter chain link fence corner pipe)

THENCE S 47deg55'43"W 210.22' to an F.C.P. found (leaning approximately 15 degrees) for the Northmost corner of this tract and this description's POINT OF BEGINNING,

THENCE S 45deg10'23"E 130.14' along a chain link fence found for the Northeast B.L. of this tract to an F.C.P. found for this tract's Eastmost corner,

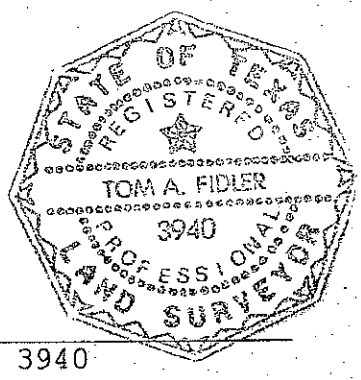
THENCE S 44deg46'19"W 65.93' along a chain link fence found for

the Southeast B.L. of this tract to an F.C.P. found for this tract's Southmost corner,

THENCE N 45deg18'44"W 130.52' along a chain link fence found for the Southwest B.L. of this tract to an F.C.P. found for this tract's Westmost corner,

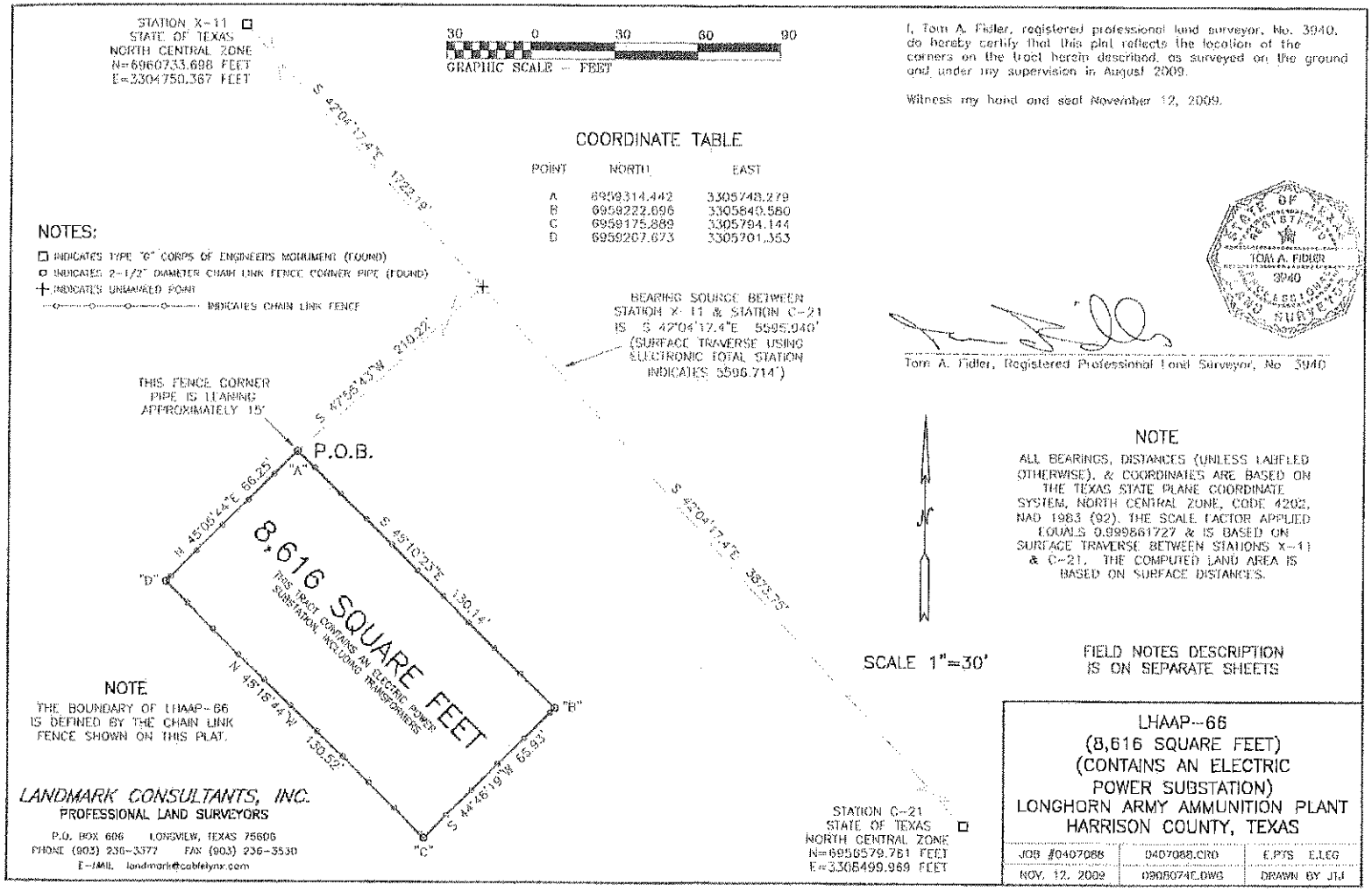
THENCE N 45deg05'44"E 66.25' along a chain link fence found for the Northwest B.L. of this tract to this POINT OF BEGINNING. This tract contains 8,616 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

01071224



COORDINATE TABLE

POINT	NORTH	EAST
A	6959314.442	3305748.279
B	6959222.696	3305840.580
C	6959175.889	3305794.144
D	6959267.673	3305701.353

NOTES:

- ☐ INDICATES TYPE "C" CORPS OF ENGINEERS MONUMENT (FOUND)
- ○ INDICATES 2-1/2" DIAMETER CHAIN LINK FENCE CORNER PIPE (FOUND)
- ┼ INDICATES UNMARKED POINT
- ——o——o—— INDICATES CHAIN LINK FENCE

NOTE

THE BOUNDARY OF LHAAP-66 IS DEFINED BY THE CHAIN LINK FENCE SHOWN ON THIS PLAT.

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal November 12, 2009.

STATE OF TEXAS REGISTERED TOM A. FIDLER 3940 LICENSED LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

SCALE 1"=30'

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

LHAAP-66
(8,616 SQUARE FEET)
(CONTAINS AN ELECTRIC POWER SUBSTATION)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	E,P'S E,LEG
NOV. 12, 2009	0908074C.DWG	DRAWN BY JTJ

LHAAP-67, 67-1

LUCs FROM FINAL REMEDIAL DESIGN

September 14, 2015

FINAL
REMEDIAL DESIGN
LHAAP-35B (37), CHEMICAL LABORATORY AND LHAAP-67, ABOVEGROUND STORAGE TANK FARM
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS



Prepared by

U.S. Army Corps of Engineers
Tulsa District
1645 South 101st East Avenue
Tulsa, Oklahoma

August 1, 2011

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4.0 Land Use Controls for the Site

The LUCs to be implemented by the Army or its representatives for LHAAP-35B(37) and LHAAP-67 to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health include:

- Ensure no withdrawal or use of groundwater beneath the sites for anything other than environmental monitoring and testing until cleanup goals are met

Notification of the groundwater use restriction will accompany all transfer documents and will be recorded at the Harrison County Courthouse in accordance with Texas Administrative Code (TAC) Title 30, §335.566.The LUC addresses the areas of LHAAP-35B(37) and LHAAP-67 that include groundwater plumes at LHAAP-35B(37) and LHAAP-67 with levels of contamination that require implementation of a remedy (see **Section 2.0**). The U.S. Army is responsible for implementing, maintaining, monitoring, reporting on, and enforcing the LUC.

U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of an LUC objective at this site after it has transferred. U.S. Army shall obtain USEPA and TCEQ concurrence prior to termination or significant modification of the LUC, or implementation of a change in land use inconsistent with the LUC objectives and use assumptions of the remedy. Although not a remedy, the land use assumption for LHAAP-35B(37) and LHAAP-67 forms the basis for the remedy. The reasonably anticipated future use of the site as part of a national wildlife refuge is consistent with an industrial risk exposure scenario. Notification of the land use assumption of this site will be made in transfer documentation, will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566 and compliance with the use assumption will be documented in the Five-Year Review reports.

6.2 Land Use Control Implementation Actions

The Army or its representatives will be responsible for LUC implementation and certification, reporting and enforcement. The Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable.

As a condition of property transfer, the Army may require the transferee to assume responsibility for various implementation actions, as indicated below. Although the Army may transfer responsibility for various implementation actions, the Army shall retain its responsibility for remedy integrity. This means that the Army is responsible for addressing substantive violations of performance objectives that would undermine the Army's CERCLA remedy. The Army also will be responsible for: 1) incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation; 2) recording groundwater use restriction and survey plat at the Harrison County Courthouse; and 3) notifying Texas Department of Licensing and Regulation of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ. The following LUC implementation actions shall be undertaken by the Army in order to ensure that the aforementioned LUC performance objectives for LHAAP-35B(37) and LHAAP-67 are met and maintained:

6.2.1 Comprehensive Land Use Control Management Plan

Within 30 days of receiving USEPA and TCEQ approval of this RD, the Army will incorporate this document into the Comprehensive LUC Management Plan. The Comprehensive LUC Management Plan consists of LHAAP RD documents and a survey plat showing the locations where LUCs being implemented at LHAAP are applied. The purpose of this Comprehensive LUC Management Plan is to ensure all site specific LUCs are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document is also accessible to regulators, the local government and the public. The Comprehensive LUC Management Plan is located in the Marshall Public Library to accompany LHAAP's Administrative Record. As LUC RD documents for additional environmental sites are approved by USEPA and TCEQ, the Army shall likewise add those documents and survey plats to the Comprehensive LUC Management Plan as well as update the previous copy of the plan placed in the Marshall Public Library.

6.2.2 Site Certifications and Reporting

Beginning with finalization of this RD, the Army will undertake annual certifications to confirm continued compliance with the LUC objectives. The Army will retain the annual LUC Compliance Certification documents in the project files for incorporation into the Five-Year Review Reports, and these documents will be made available to USEPA and TCEQ upon request. The certification form will be consistent with the form attached as **Appendix B**. In addition, should any violations be found during the annual certification, the Army will provide to USEPA and TCEQ along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations**.** Upon transfer, such responsibilities may shift to the transferee via

appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental transfer document. The need to continue annual certifications will be revisited at Five-Year Reviews.

6.2.3 Notice of Planned Property Conveyances

The Army shall provide notice to USEPA and TCEQ of plans to convey LHAAP-35B(37) and LHAAP-67 acreage. The notice shall describe the mechanism by which LUCs will continue to be implemented, maintained, inspected, reported, and enforced.

6.2.4 Opportunity to Review Text of Intended Land Use Controls

Army will provide a copy of the groundwater use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. In addition, the Army will produce an ECP or other environmental document for transfer of LHAAP-35B(37) and LHAAP-67, but before executing transfer, the Army will provide USEPA and TCEQ with a draft copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before document execution, to review all LUC-related provisions.

6.2.5 Notification Should Action(s) Which Interfere with Land Use Control Effectiveness Be Discovered Subsequent to Conveyance

Should the Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objectives, the Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 6.2.6** below, the Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

6.2.6 Land Use Control Enforcement

Should the LUC remedy reflected in this LUC RD fail, the Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the owner or violator, to the institution of judicial action under the auspices of Texas property law or CERCLA. Alternatively, should the circumstances warrant such, the Army could choose to exercise its response authorities under CERCLA, and then seek cost recovery after the fact from the person(s) or entity(ies) who violated a given LUC. Should the Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the Army will notify these agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUCs.

6.2.7 Modification or Termination of Land Use Controls

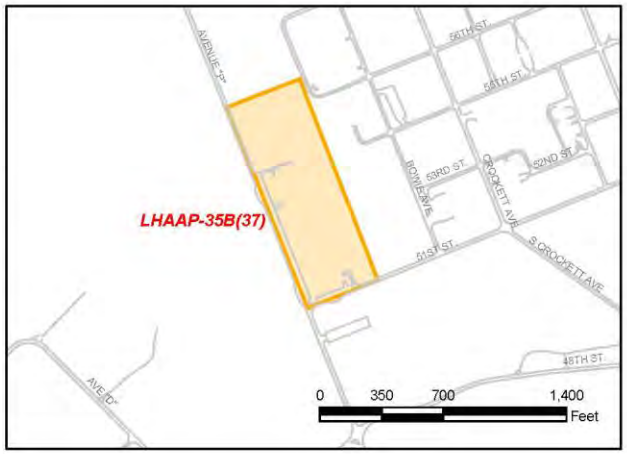
The Army shall not, without USEPA and TCEQ concurrence, make a significant modification to, or terminate a LUC, or make a land use change inconsistent with the LUC objectives and use assumptions of the selected remedy. Likewise, the Army shall seek prior USEPA and TCEQ concurrence before commencing actions that may impact remedy integrity. In the case of an emergency action, the Army shall obtain prior USEPA and TCEQ concurrence as appropriate to the exigencies of the situation.

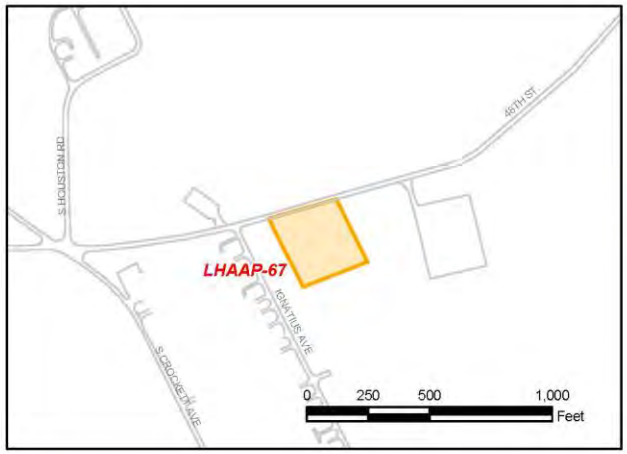
The LUCs shall remain in effect until such time as the Army, TCEQ and USEPA agree that the concentrations of COCs have met cleanup levels. When this occurs, the LUCs will be terminated as needed. The decision to terminate LUCs will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the Army, TCEQ and USEPA has been made to terminate one or more of the LUCs, the Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

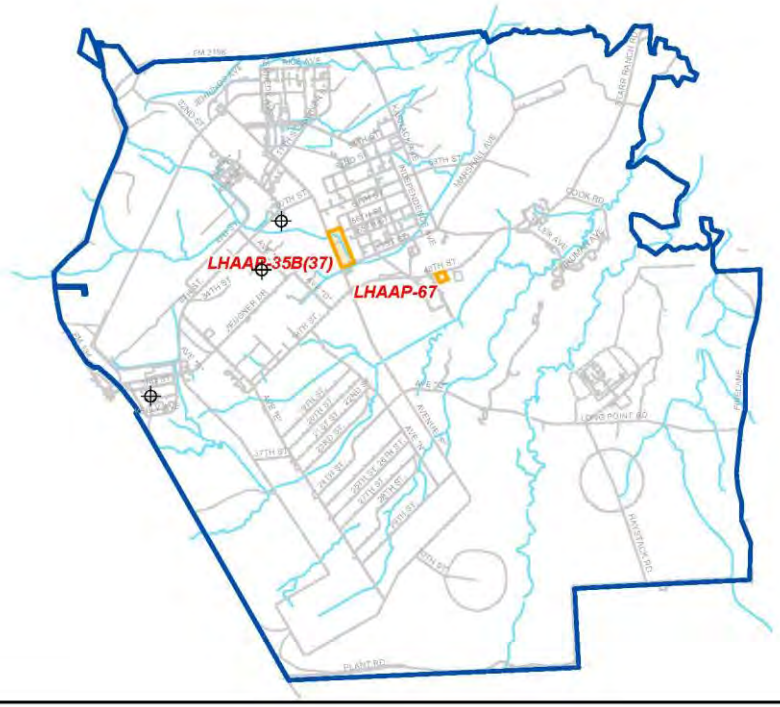
6.3 Monitored Natural Attenuation Implementation Actions

Implementation actions include installation of additional monitoring wells, plugging and abandonment of monitoring wells not designated for long-term monitoring, implementation of a groundwater monitoring plan, monitoring, and reporting. The project schedule and cost summary for implementation actions are provided in **Appendix H**. Groundwater monitoring will be conducted to monitor the effectiveness of MNA in reducing contaminant concentrations over time. Monitoring will also be conducted to evaluate plume migration and ensure that chlorinated solvents-contaminated groundwater does not impact nearby surface water at unacceptable levels. Surface water sampling will be conducted to confirm contaminated groundwater is not migrating to surface water. The Groundwater Monitoring Plan, attached as **Appendix A**, describes the wells, their locations, analytical parameters, the frequency of the monitoring, surface water sampling, and presents a list of the monitored constituents and their respective MCLs. Groundwater monitoring and surface water sampling conducted at LHAAP-35B(37) and LHAAP-67 will follow the Health and Safety Plan (**Appendix E**), the Contractor Quality Control Plan (**Appendix F**), the Chemical Data Acquisition Plan (**Appendix G**), Field Activities (**Appendix C**) and Field Procedures (**Appendix D**) as contained in the appendices of the Remedial Design LHAAP-35B(37) and LHAAP-67.

Annual reports will be prepared for any year in which sampling occurs to document the monitoring program. The first year's annual report will include a review of the first four quarters of data, which include natural attenuation parameters and provide an evaluation for the evidence of MNA as a remedial method and a review of the first year's surface water sample data. The TCEQ provides guidance for MNA as a remedial action in *Monitored Natural Attenuation Demonstrations* (Texas Natural Resource Conservation Commission [TNRCC], RG-366/TRRP-33, October 2001). Although LHAAP is being addressed under the Risk Reduction Standards rather than Texas Risk Reduction Program (TRRP), this guidance is comparable to USEPA guidance and may be used as a guideline for the evaluation of the groundwater data. TRRP guidance specifies recommended lines of evidence to document the occurrence of natural attenuation at a site. For the first annual report, primary and secondary lines of evidence will be evaluated to document that attenuation is occurring at LHAAP-35B(37) and LHAAP-67. The primary line







LEGEND

- Approximate LHAAP Boundary
- Road
- Stream
- Site
- LHAAP Water Supply Well

LEGEND

- Road
- Stream
- Site
- Approximate LHAAP Boundary
- LHAAP Water Supply Well

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	FILE PATH
Houston, TX	B. Lu 10/12/07	N. Olson 10/31/07	P. Srivastav 10/31/07	T:\GIS\Longhorn\MXD\ST35B67\ROD\SiteLocs.mxd

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-2
SITE LOCATION MAP
REMEDIAL DESIGN
LHAAP-35B(37) AND LHAAP-67, GROUP 4
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

LHAAP-67, 67-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-67 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2014-000013308

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

NOTICE

8 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 12/09/2014 10:42 AM **Document Number:** 2014-000013308 **Receipt No:** 1415412 **Amount:** $ 50.00 **By:** Pam Rockwell, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AECOM
ATTN: AMANDA LAGARDE (FEDEX ENV)
112 E PECAN ST., SUITE 400
SAN ANTONIO, TX 78205

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROL AT LHAAP-67

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is in a former industrial area, located on the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-67 (Underground Storage Tank Farm Area). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-67 were performed in accordance with the FFA requirements.

The LHAAP-67 site, when operational, consisted of seven aboveground storage tanks used for storage of No. 2 fuel oil, kerosene, and solvents. The tanks were surrounded by earthen dikes designed to contain potential spills. A Record of Decision (ROD) for LHAAP-67 was signed by the U.S. Army and USEPA with TCEQ concurrence in 2010 establishing the final remedy which consists of a land use control (LUC) in conjunction with monitored natural attenuation (MNA). The site was not remediated to levels suitable for unrestricted use. The LUC at LHAAP-67 is required to prevent human exposure to contaminated groundwater. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public

Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-67 parcel is a 4 acre tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A. Within the LHAAP-67 parcel is designated a LUC boundary which is a 6.088-acre tract, more or less, as described in Exhibit A. The LUC boundary is also presented in the attached Figure 1.

Future use of the parcel is intended as a national wildlife refuge consistent with non-residential use. For purposes of this certification, residential use includes, but is not limited to, single family or multifamily residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.The United States Department of the Army has undertaken careful environmental study of the LHAAP-67 site and concluded that the LUC set forth below is required to ensure protection of human health and the environment.

(1) Groundwater Restriction. The groundwater use restriction boundary consists of the 6.088-acre tract, more or less. Groundwater underlying this land is contaminated with trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethane (1,2-DCA), 1,1,1-trichloroethane (1,1,1-TCA), and 1,1,2-trichloroethane (1,1,2-TCA), and other volatile organic compounds (VOCs) and shall not be accessed or used for any purpose without the prior written approval of the U.S. Army, the USEPA, and the TCEQ. A LUC restricting the use of groundwater has been established for the protection of human health. The U.S. Army will notify the Texas Department of Licensing and Regulation of the groundwater restriction which includes prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval by the U.S. Army, the USEPA, and the TCEQ. A restriction against the residential use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE).

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 20 th day of November, 2014.

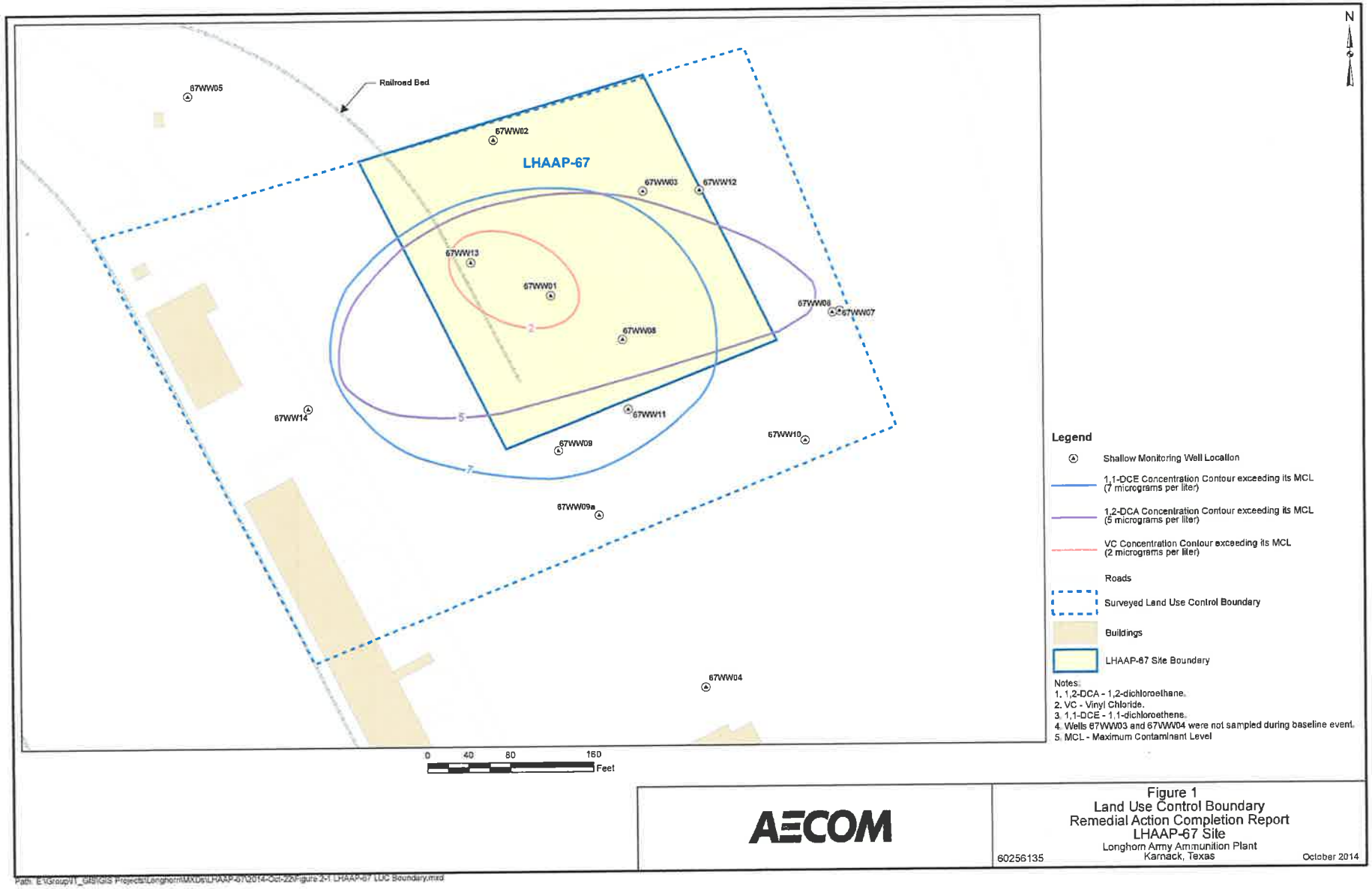
BEFORE ME, on this the 20 th day of November, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 20 day of November, 2014.

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 03-17-2015

Notary Public in and for the State of Texas,
County of Harrison

EXHIBIT A
SURVEY PLAT



AECOM

Figure 1
Land Use Control Boundary
Remedial Action Completion Report
LHAAP-67 Site
Longhorn Army Ammunition Plant
Karnack, Texas

60256135 October 2014

Path: E:\Group\1_GIS\GIS Projects\Longhorn\MXDs\LHAAP-67\2014-Oct-22\Figure 2-1 LHAAP-67 LUC Boundary.mxd

COUNTY CLERK'S MEMO
PORTIONS OF THIS
DOCUMENT NOT
REPRODUCIBLE
WHEN RECORDED

FIELD NOTES DESCRIPTION OF
"LHAAP-67" LAND USE CONTROL AREA
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, "LHAAP-67" Land Use Control Area being 6.088 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), "LHAAP-67" Land Use Control Area being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998636625, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "IGNATIUS-1" (N=6957090.304 feet E=3311081.788 feet) and "IGNATIUS-2" (N=6955582.752 feet E=3311851.704 feet). Said traverse indicates a surface distance of 1693.005 feet between said monuments. The computed land area is based on grid distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940" .

Commencing at monument "IGNATIUS-1" referenced above,

THENCE S 32deg49'15"W 145.39' to an I.R.O.P.C. set for the N.W.C. of this tract and this POINT OF BEGINNING,

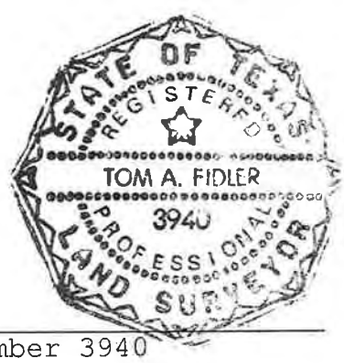
THENCE N 74deg08'33"E 654.97' along the N.B.L. of this tract to an I.R.O.P.C. set for this tract's N.E.C. ,

THENCE S 21deg34'17"E 390.25' along the E.B.L. of this tract to an I.R.O.P.C. set for this tract's S.E.C. ,

THENCE S 68deg21'49"W 605.17' along the S.B.L. of this tract to an I.R.O.P.C. set for this tract's S.W.C., from which monument "IGNATIUS-2" referenced above bears S 33deg05'59"E 1167.80' ,

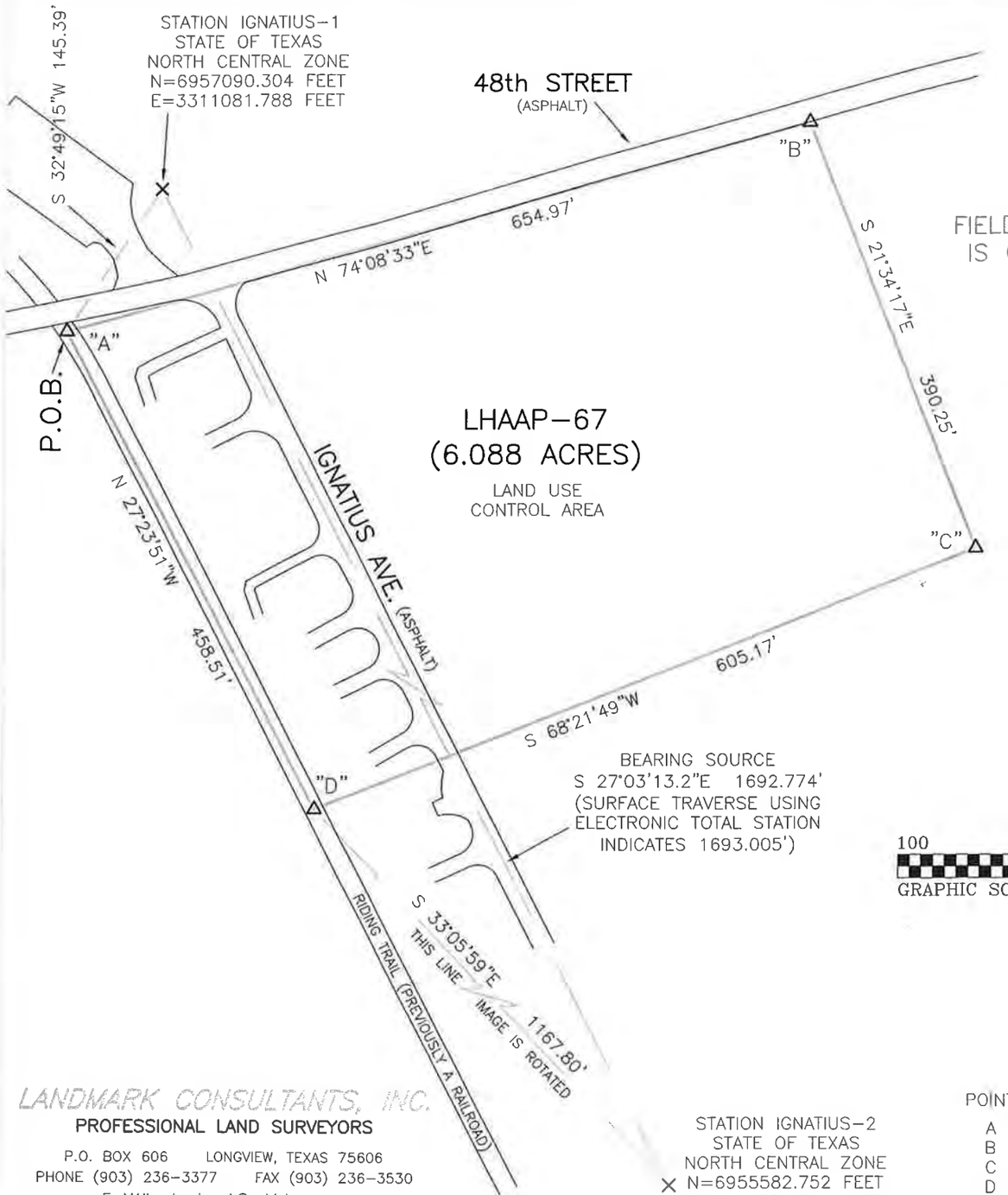
THENCE N 27deg23'51"W 458.51' along the W.B.L. of this tract to this POINT OF BEGINNING, containing 6.088 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

01071241



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in October, 2014.

Witness my hand and seal this the 16th day of October, 2014.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEET



Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998636625 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS IGNATIUS-1 & IGNATIUS-2. THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.

SCALE 1"=100'

100 0 100 200 300

GRAPHIC SCALE - FEET

LEGEND

- X TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- O CONCRETE NAIL IN BOTTLE CAP (SET IN ASPHALT)
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- BOUNDARY LINE OF LAND USE CONTROL AREA

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

STATION IGNATIUS-2
STATE OF TEXAS
NORTH CENTRAL ZONE
X N=6955582.752 FEET
E=3311851.704 FEET

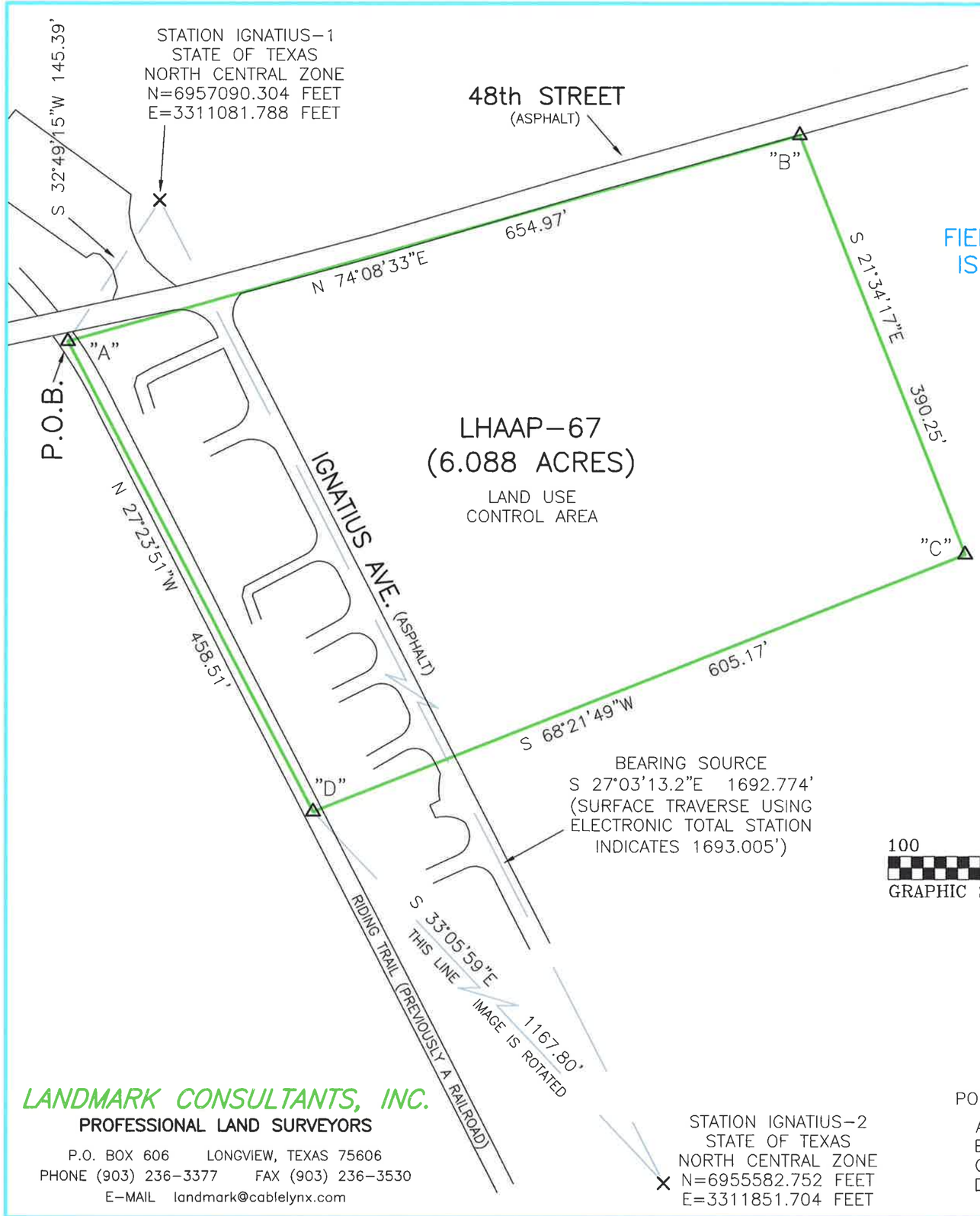
COORDINATE TABLE

POINT	NORTH	EAST
A	6956968.123	3311002.985
B	6957147.091	3311633.031
C	6956784.178	3311776.509
D	6956561.041	3311213.974

LHAAP-67 L.U.C.A.
(6.088 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	H.PTS H.LEG
10/16/2014	0605063H.DWG	DRAWN BY JTJ

01071242



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in October, 2014.

Witness my hand and seal this the 16th day of October, 2014.

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

SCALE 1"=100'

100 0 100 200 300
GRAPHIC SCALE - FEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998636625 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS IGNATIUS-1 & IGNATIUS-2. THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.

LEGEND

- X TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- o CONCRETE NAIL IN BOTTLE CAP (SET IN ASPHALT)
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- BOUNDARY LINE OF LAND USE CONTROL AREA

COORDINATE TABLE

POINT	NORTH	EAST
A	6956968.123	3311002.985
B	6957147.091	3311633.031
C	6956784.178	3311776.509
D	6956561.041	3311213.974

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

LHAAP-67 L.U.C.A.
(6.088 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	H.PTS H.LEG
10/16/2014	0605063H.DWG	DRAWN BY JTJ

LHAAP-67, 67-3

LAND USE CONTROL COMPLIANCE INSPECTION FORM

September 14, 2015

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated 8/1/11 for LHAAP-67, a certification of site was conducted by _____ [indicate transferee] on _____.

A summary of land use control mechanisms is as follows:

- Groundwater restriction - A restriction against use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE). [Indicate whether groundwater restrictions are still required at LHAAP-67]

A summary of compliance with land use and restriction covenants is as follows:

- No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-67.

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year.

LHAAP-68

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-68 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2010-000005560

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005560 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-68, is located near the service station in the maintenance shops and power area of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP-68 consisted of two mobile 600-gallon storage tanks on trucks that were parked on the asphalt surface at the service station of the maintenance complex. LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-68 is not itself considered an NPL site. Environmental activities at LHAAP-68 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-68 is located at the maintenance complex next to the service station. Two mobile 600-gallon storage tanks on trucks were parked on the asphalt surface with no curb or other containment present. The mobile storage tanks contained No. 2 diesel and gasoline fuel. In 2006, six soil samples were collected, two from each of three borings that were installed at the site, and analyzed for semi volatile organic compounds, volatile organic compounds, and total petroleum hydrocarbons. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday

through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-68 parcel is 426 square foot, more or less, or 0.00977 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-68 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-68. Contaminants in soil samples from LHAAP-68 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-68 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-68 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10 th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

Notary Public in and for the State of Texas,
County of Harrison

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-68" TRACT
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-68" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-68" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 428.46' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 5167.48',

THENCE S 47deg55'43"W 686.07' to a concrete nail (with head dimple) set in asphalt for the Northmost corner of this tract and this description's POINT OF BEGINNING,

THENCE S 44deg35'24"E 41.58' along the Northeast B.L. of this tract to an "X" set (chisled in concrete) for this tract's Eastmost corner,

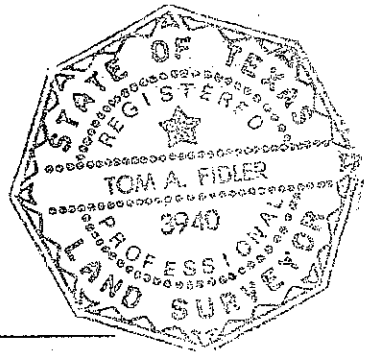
THENCE S 41deg38'18"W 9.34' along the Southeast B.L. of this tract to an "X" set (chisled in concrete) for this tract's Southmost corner,

THENCE N 46deg59'28"W 41.90' along the Southwest B.L. of this tract to a concrete nail (with head dimple) set in asphalt for this tract's Westmost corner,

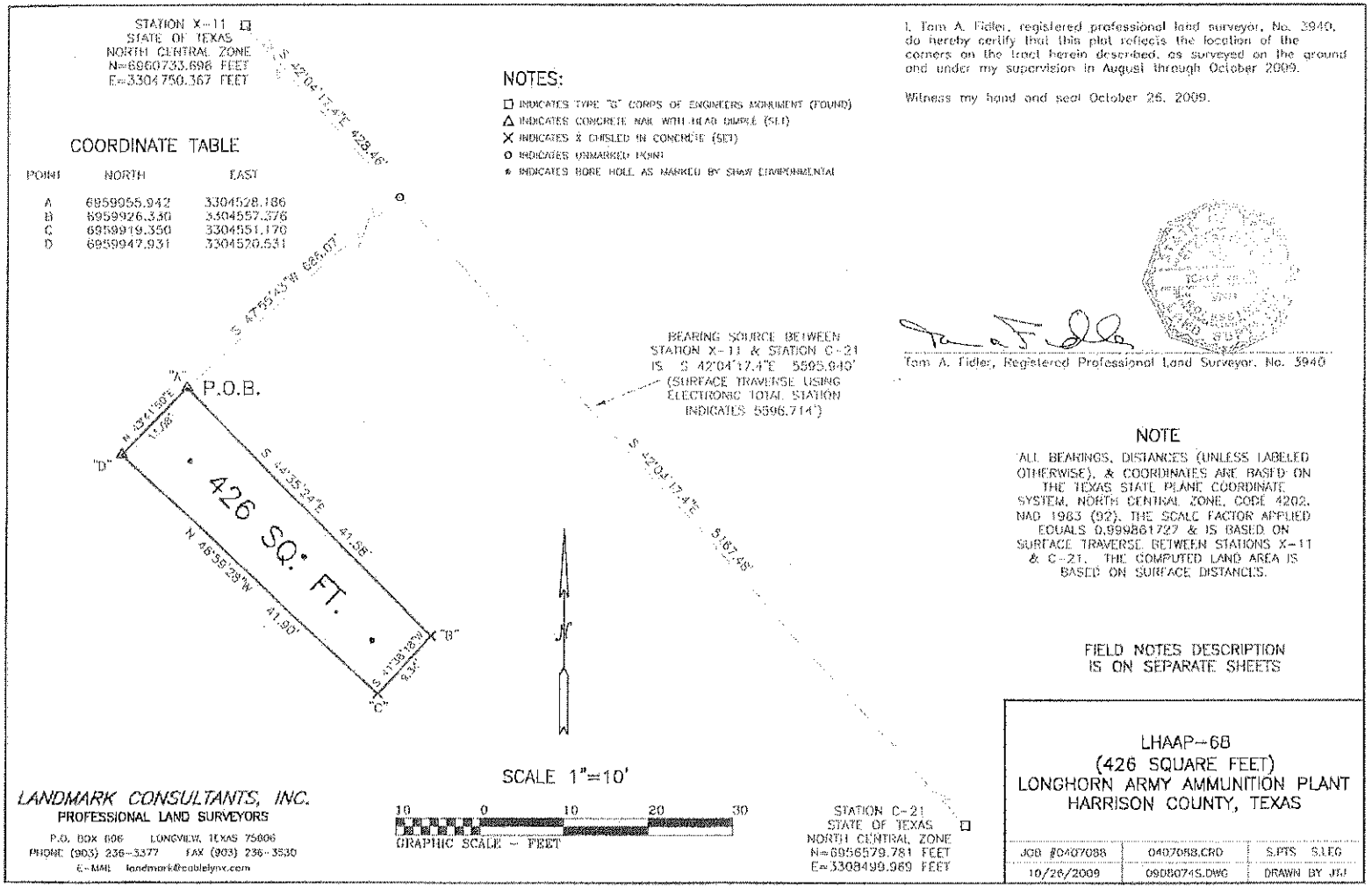
THENCE N 43deg41'50"E 11.08' along the Northwest B.L. of this

tract to this POINT OF BEGINNING. This tract contains 426 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



POINT	NORTH	EAST
A	6959955.942	3304528.186
B	6959926.330	3304557.376
C	6959919.350	3304551.170
D	6959947.931	3304520.531

NOTES:

- □ INDICATES TYPE "B" CORPS OF ENGINEERS MONUMENT (FOUND)
- △ INDICATES CONCRETE NAIL WITH LEAD DIMPLE (SET)
- X INDICATES X CHISLED IN CONCRETE (SET)
- O INDICATES UNMARKED POINT
- * INDICATES BORE HOLE AS MARKED BY SHAW ENVIRONMENTAL

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-5377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

LHAAP-68
(426 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	S.PTS S.LEG
10/26/2009	09080745.DWG	DRAWN BY JTF

PISTOL RANGE

NOTICE OF NONRESIDENTIAL LAND USE AT PISTOL RANGE FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2012-000000705

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000705 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas, in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, the former Pistol Range is located at the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA) became effective on December 30, 1991. The former Pistol Range is an NPL site and a removal action was performed in 2009 in accordance with the FFA requirements. As a result of the removal action, the lead agency has determined that no further CERCLA action is necessary at the former Pistol Range to protect public health, welfare or the environment.

The former Pistol Range is located in the southeastern portion of LHAAP, approximately 280 feet south of Avenue Q at the end of Robert Avenue. The site is the eastern portion of a rectangular field and is approximately 110 feet north to south by 150 feet east to west. The former Pistol Range was known to have been used by LHAAP security personnel for small arms target qualification and recertification. The former Pistol Range was established in the 1950s and was used intermittently through 2004. A no further action Record of Decision for the former Pistol Range was signed by USEPA in 2010

establishing no remedy was required. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The former Pistol Range is a 0.3879 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the former Pistol Range and USEPA and TCEQ concluded that no further investigation or action is required.

Limited monitoring of the former Pistol Range will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of the former Pistol Range is consistent with the nonresidential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 21 th day of July, 2011.

BEFORE ME, on this the 21 th day of July, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 21 day of July, 2011.

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 03-17-2015

Notary Public in and for the State of Texas,
County of Harrison

FIELD NOTES DESCRIPTION OF
FORMER PISTOL RANGE
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 16,897 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9999146277, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "C-19-2" (N=6952844.320 feet E=3312839.019 feet) and "3-95" (N=6952411.298 feet E=3314136.438 feet). Said traverse indicates a surface distance of 1367.890 feet between said monuments. The computed land area is based on grid (State Plane) distances.

Commencing at monument "3-95" referenced above,

(As used herein, the abbreviation I.R.C. indicates 1/2" iron rod with R.P.L.S. #3940 orange plastic cap)

THENCE S 45deg51'27"E 855.98' to an I.R.C. set for the S.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 00deg00'20"W 107.99' along the W.B.L. of this tract to an I.R.C. set for this tract's N.W.C. ,

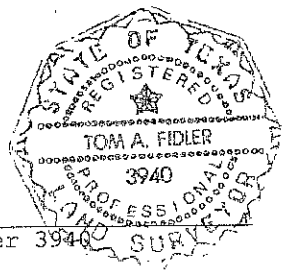
THENCE N 89deg59'47"E 155.96' along the N.B.L. of this tract to an I.R.C. set for this tract's N.E.C. ,

THENCE S 00deg32'56"E 107.99' along the E.B.L. of this tract to an I.R.C. set for this tract's S.E.C. ,

THENCE S 89deg59'43"W 156.98' along the S.B.L. of this tract to this POINT OF BEGINNING.

This tract contains 16,897 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

STATION C-19-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6952844.320 FEET
E=3312839.019 FEET

BEARING SOURCE BETWEEN
STATION C-19-2 & STATION 3-95
IS S 71°32'35.6"E 1367.773'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1367.890')

STATION 3-95
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6952411.298 FEET
E=3314136.438 FEET

S 45°51'27"E
855.98'

COORDINATE TABLE

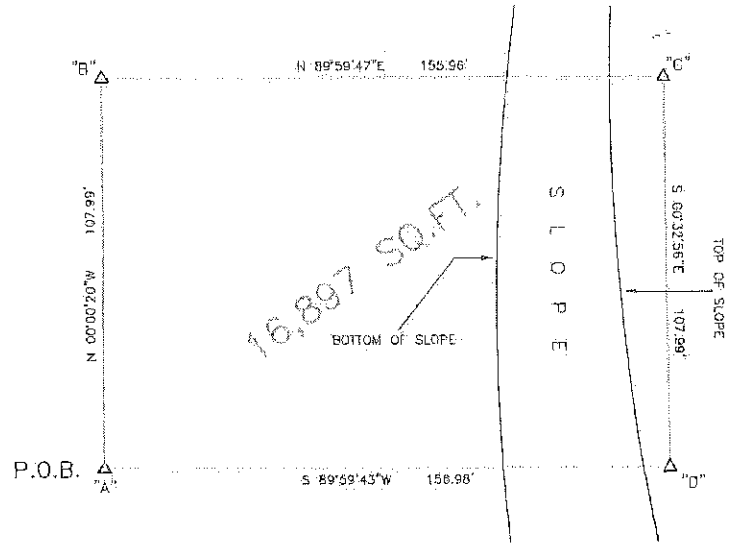
POINT	NORTH	EAST
A	6951923.143	3314750.686
B	6951815.153	3314750.697
C	6951815.166	3314907.681
D	6951923.153	3314906.647

LEGEND

□ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
△ INDICATES 1/2" IRON ROD WITH R.P.L.S. #3940 CAP (SET)

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999914277 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS C-19-2 AND 3-95. THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.



LANDMARK SURVEYS, INC.
PROFESSIONAL LAND SURVEYORS
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PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in April 2011.

Witness my hand and seal May 2, 2011.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

SCALE 1"=30'

30 0 30 60 90
GRAPHIC SCALE - FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

FORMER PISTOL RANGE
(16,897 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1104040	0407088.CRD	L.PTS L.LEG
MAY 2, 2011	1103025L.DWG	DRAWN BY JTJ

LHAAP-001-R-01/LHAAP-003-R-01South Test Area (LHAAP-001-R-01) and Ground Signal Test Area (LHAAP-003-R-01), MMRP-1

LONG TERM MANAGEMENT INSPECTION AND MAINTENANCE CHECKLIST

October 15, 2018

LTM Inspection and Maintenance Checklist

General Information	
Project Name	LTM Inspection and Maintenance, LHAAP-001-R and LHAAP-003-R MMRP, Longhorn Army Ammunition Plant, Karnack, TX
Contractor	
Inspector's Name	
Inspector's Title	
Inspector's Signature	
Inspector's Contact Number	
Inspection Date	
Type of Inspection	☐ Quarterly ☐ Semiannual ☐ Annual ☐ Prior to forecast rain ☐ After rain event ☐ Other_____

	Description	Yes	No	N/A	**Comments** (Attach photos/location sketches)	**Corrective Action** (Attach photos)
A. Perimeter Signage						
A.1	Are there any damaged signs?					
A.2	Are there any missing signs?					
A.3	Are all signs legible?					
A.4	Is perimeter boundary mowed?					

A.5	Are signs visible from one sign to the next sign?					
B. LUC Boundary						
B.1	Is the LUC Boundary identifiable?					
C. Dig and Intrusive Activities restriction						
C.1	Any observed digging activities or similar intrusive activities within the site boundaries?					

Note: Annual compliance inspections shall be conducted no later than March 1 of each year for the previous calendar year and filed onsite.

LHAAP-001-R-01/LHAAP-003-R-01
South Test Area (LHAAP-001-R-01) and Ground Signal Test Area (LHAAP-003-R-01), MMRP-2
LUCs FROM FINAL REMEDIAL DESIGN

October 15, 2018

FINAL
LAND USE CONTROL REMEDIAL DESIGN/ REMEDIAL ACTION CONSTRUCTION REPORT LHAAP-001-R-01 AND LHAAP-003-R-01 LONGHORN ARMY AMMUNITION PLANT

May 2018

Contract Number: W9128F-13-D-0012
Task Order Number: W912BV17F0150

Performance Based Remediation (PBR)
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared For:

Longhorn Army Ammunition Plant
Karnack, Texas

Under Contract To:

U.S. Army Corps of Engineers
Tulsa District
Tulsa, Oklahoma

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Figure 1-1 LHAAP Site Map
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Figure 3-1 Danger UXO Warning Sign

Attachment

Attachment 1 - Initial Notice of Land Use Controls Including 2008 LUC Boundary Maps for LHAAP-001-R and LHAAP-003-R
Attachment 2 - Initial Notice of Land Use Controls for Four Environmental Sites at Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas Transmittal Letters

Attachment 3 - Notice of Land Use Controls Including Final LUC Boundary Maps for LHAAP-001-R and LHAAP-003-R
Attachment 4 - Notice of Land Use Controls for Two Environmental Sites at Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas Transmittal Letters

Appendices

Appendix A LTM Inspection and Maintenance Checklist
Appendix B LUC Compliance Certification Form
Appendix C Recordation of Land Use Controls for LHAAP-001-R and LHAAP-003-R

ACRONYMS AND ABBREVIATIONS

ARAR	Applicable or Relevant and Appropriate Requirement
bgs	below ground surface
BIP	Blow-in-place
CD	Cultural debris
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CTT	Closed, Transferring, and Transferred
DNT	Dinitrotoluene
DoD	Department of Defense
ECP	Environmental Condition of Property
EE/CA	Engineering Evaluation/Cost Analysis
e2M	Engineering-Environmental Management
FFA	Federal Facility Agreement
GW-Ind	Groundwater-Industrial
HMX	1,3,5,7-Tetranitro-1,3,5,7-tetrazocane
IRP	Installation Restoration Program
LHAAP	Longhorn Army Ammunition Plant
LUC	Land use control
µg/kg	Micrograms per kilogram
µg/L	Micrograms per liter
MC	Munitions constituent
MCL	Maximum Contaminant Level
MD	Munitions debris
MEC	Munitions and Explosives of Concern
mm	Millimeter
MMRP	Military Munitions Response Program
MOA	Memorandum of Agreement
MPPEH	Material potentially presenting explosive hazard
MRS	Munitions response site
MSC	Medium Specific Concentration
NCP	National Contingency Plan
NFA	No Further Action
NPL	National Priorities List
OB/OD	Open burn/open detonation
O&M	Operation and maintenance
PCL	Protective Concentration Level
RACR	Remedial Action Completion Report
RAO	Remedial action objective
RD	Remedial design
RDX	1,3,5-Trinitro-1,3,5-triazinane
ROD	Record of Decision

SARA	Superfund Amendments and Reauthorization Act
§	Section
SI	Site Inspection
STEP	Solutions to Environmental Problems
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TNT	Trinitrotoluene
TRRP	Texas Risk Reduction Program
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UU/UE	Unlimited Use/Unlimited Exposure
UXO	Unexploded Ordnance
WP	White phosphorus

3 LAND USE CONTROL REMEDIAL DESIGN/REMEDIAL ACTION CONSTRUCTION

The remedial action objective for LHAAP-001-R and LHAAP-003-R is protection of human health and safety from explosive hazards that may have remained at the sites after the MEC removal action. The duration for the LUCs specified in the MEC ROD for this purpose must remain in place until it is demonstrated that the MEC no longer presents a threat to public/human safety.

This section describes the LUC RD/RAC for LHAAP-001-R and LHAAP-003-R. Per the Final ROD, the LUCs' performance objectives are to:

- Prohibit the development and use of the property for residential housing, elementary and secondary schools, child care facilities, and playgrounds.
- Restrict land use to nonresidential
- Prohibit intrusive activities such as digging or any other activity which could result in explosive safety risk.
- Maintain existing MEC warning signs at the perimeter of each site to physically demarcate controlled areas.

The implementation, maintenance, and inspection requirements associated with each of the performance objectives that comprise this LUC RD/RAC are described below. The actions taken to implement the LUC objectives during the remedial action phase, as well as ongoing maintenance, monitoring, and reporting requirements are presented in Section 3.1 below. Upon regulatory review and concurrence with the final LUC RD/RACR, it will be distributed as part of the Comprehensive LUC Management Plan.

For portions of LHAAP-001-R and LHAAP-003-R subject to LUCs that are not owned by the Army, the Army will monitor and report on the implementation, maintenance, and enforcement of LUCs, and coordinate with federal, state, and local governments and owners and occupants of properties subject to LUCs. The Army remains responsible for ensuring that the remedy remains protective of human health and safety.

3.1 LUC Implementation (Completed)

The actions required to implement the LUCs for LHAAP-001-R and LHAAP-003-R are described below. An initial notice of LUCs, was completed on December 8, 2016 (**Attachments 1 and 2**), within 90 days of ROD signature as required. The notice of LUCs including the final LUC boundary maps and description of the LUCs were completed on May 9, 2018 (**Attachments 3 and 4**). The preliminary LUC boundaries presented in the initial notice are considered the final LUC boundaries presented in the notice of final LUCs and are presented on **Figure 1-2.** The following actions were undertaken to implement LUCs for LHAAP-001-R and LHAAP-003-R:

- Finalize the boundaries of the LUCs as part of the remedial action (completed). The preliminary LUC boundaries are considered the final LUC boundaries, as referenced on **Figure 1-2**.
- Survey the LUC boundaries (completed). The boundaries were finalized based on USEPA and TCEQ concurrence, and the LUC boundaries were surveyed by a State of Texas licensed surveyor. A legal description of the surveyed area accompanies the survey plat.
- Record the LUCs in Harrison County. The LUC plats and legal descriptions and LUC restriction language was recorded in the Harrison County Courthouse in accordance with Title 30 TAC §335.566 on April 19, 2018 (**Appendix C**).
- Provide notice of LUCs with finalization of the RD/RACR (completed).
    - Prepare the notice of land use restrictions including prohibiting development/use for residential housing, elementary and secondary schools, child care facilities and play grounds; prohibit intrusive activities, and maintenance of existing MEC warning signs along the perimeter of each site to physically demarcate controlled areas. The notice consists of a brief description of the LUCs and a figure depicting the LUC boundaries.
    - Transmit the notice to federal, state, and local governments involved at LHAAP-001-R and LHAAP-003-R and owners and occupants of the property subject to restrictions and LUCs. The notices have been sent to federal, state, and local officials including: State Representatives, the Harrison County Judge, Harrison County Historical Courthouse, the City of Uncertain Mayor, and Caddo Lake and Leigh Water Supply Corporations' Presidents. Notice has also been sent to the Caddo Lake National Wildlife Refuge Manager, as a representative of the USFWS, the future transferee of the property.

3.2 Maintenance and Monitoring

Components of the final remedy at LHAAP-001-R and LHAAP-003-R require repair and maintenance and those activities are described in this section, along with other routine maintenance activities. The following subsections present the maintenance and monitoring requirements of the final remedy.

3.2.1 Maintenance of Existing MEC Warning Signs

MEC warning signs have been installed at the perimeter of LHAAP-001-R and LHAAP-003-R (64 signs at each site), that serve as a physical demarcation of the controlled areas. The signs have visibility from one sign to the next with a maximum spacing of 100 feet. The signs include warning of potential presence of MEC and state the restriction against intrusive activities.

These signs will be visually inspected annually, or as needed, to ensure they remain intact, undamaged, and visible from one sign to the next. Maintenance will be conducted, as needed, and may include the following activities:

- Mowing and brush clearing around MEC warning signs to ensure that they are visible from one sign location to the next sign location.
- Rehanging/affixing MEC warning signs or replacing MEC warning sign(s), if they become damaged or illegible. Figure 3-1 presents an example of the Unexploded Ordnance (UXO) Danger signs that are required. The specifications for sign replacement are found in Appendix N of the MEC Removal Action report (EODT, 2009).
- Repairing existing MEC warning sign posts, which may require the reestablishment of the concrete base or post replacement.

The Inspection and Maintenance Checklist is provided in **Appendix A.** Repairs will also be documented via photographs and field notes.

3.2.2 Administrative Maintenance

Administrative maintenance required to ensure LUCs remain in place and effective include:

- Annual field inspections of LHAAP-001-R and LHAAP-003-R to confirm that no violations of the LUCs have occurred. Documentation of the inspection will be included on the Inspection and Maintenance Checklist (see **Appendix A**).
- Annual certifications that no LUC-restricted activities have been authorized and that LHAAP-001-R and LHAAP-003-R conditions and use are consistent with the LUCs. The Annual LUC Compliance Certification Form is presented in **Appendix B**.
- Periodic transmittal of a LUC Notice to federal, State, and local authorities and to owners and occupants of LHAAP-001-R and LHAAP-003-R. The notice will include the land use restrictions referenced in the ROD, a written description of the LUCs, and a figure depicting the LUC boundaries. The transmittal will coincide with each Five Year Review and will be documented in the report.
- The final LUC RD/RACR will be added to the Comprehensive LUC Management Plan and the plan will be provided to the owner or occupant of LHAAP-001-R and LHAAP-003-R. This update to the Comprehensive LUC Management Plan will be completed during the next annual update, which will be in the fourth quarter of 2018.

The U.S. Army will address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable.

3.3 Reporting of LUC Inspection and Monitoring

Beginning with finalization of this RD/RACR and approval of the Inspection and Maintenance forms and the Annual Certification Form, the U.S. Army will undertake inspections and certify continued compliance with the LUC objectives. The U.S. Army, or the transferee after transfer, will retain the LUC Inspection and Certification documents in the project files for incorporation into the Five Year Review reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the certification, the U.S. Army will provide to USEPA and TCEQ, along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations. The need to continue inspections and certifications will be revisited during each Five Year Review.

3.3.1 Notice of Planned Property Conveyances

Upon transfer of Army-owned property, the Army will provide written notice of the LUCs to the transferee of the potential presence of MEC and any land use restrictions referenced in the ROD. Within 15 days of transfer, the U.S. Army will provide written notice to USEPA and TCEQ of the division of implementation, maintenance, and enforcement responsibilities unless such information has already been provided in the LUC RD/RACR. The notice will describe the mechanism by which the LUC will continue to be implemented, maintained, inspected, reported, and enforced. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental document for transfer. Although the U.S. Army may transfer responsibility for various implementation actions, the U.S. Army will also retain ultimate responsibility for the remedy integrity. This means that the U.S. Army is responsible for addressing substantive violations of the LUC performance objectives that would undermine the U.S. Army's CERCLA remedy. The U.S. Army also will be responsible for incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation. In the event property is transferred out of Federal control, the LUCs relating to property restrictions shall be recorded in the deed and shall be enforceable by the U.S. and the state of Texas.

3.3.2 Opportunity to Review Text of Intended LUCs

The U.S. Army provided a copy of the land use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. The USEPA also received a copy for review. The U.S. Army will produce an ECP or other environmental document for transfer of LHAAP-001-R and LHAAP-003-R, but before executing transfer, the U.S. Army will provide the USEPA and TCEQ with a copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before transfer, to review all LUC-related provisions.

3.3.3 Notification Should Action(s) which Interfere with LUC Effectiveness be Discovered Subsequent to Conveyance

Should the U.S. Army discover, after conveyance of the site, any activity on the property inconsistent with the LUC performance objectives, the U.S. Army shall notify the USEPA and TCEQ within 72 hours of such discovery. Consistent with Section 4.3.4 below, the U.S. Army will then work with the USEPA, TCEQ, and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the U.S. Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health and safety.

3.3.4 LUC Enforcement

Should the LUC remedy reflected in this LUC RD/RACR fail, the U.S. Army will coordinate with the USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the USFWS or its lessee, to the institution of judicial action against non-federal third parties. Alternatively, should the circumstances warrant such, the U.S. Army could choose to exercise its response authorities under CERCLA. Should the U.S. Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the U.S. Army may notify those agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC.

3.3.5 Modification or Termination of LUCs

The LUCs shall remain in effect until such time as the U.S. Army and USEPA agree that it has been demonstrated that MEC no longer presents a threat to public/human safety, allowing unrestricted property use. When this occurs, the LUCs will be terminated, as needed. The decision to terminate the LUC will be documented consistent with the National Contingency Plan (NCP) process for post-ROD changes, potentially including an explanation of significant differences or a RACR. If the property has been transferred and a determination by the U.S. Army and USEPA has been made to terminate the LUC, the U.S. Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

SOUTH TEST AREA (LHAAP-001-R-01) AND GROUND SIGNAL TEST AREA (LHAAP-003-R-01), MMRP-3
NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-001-R-01 AND LHAAP-003-R-01 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

Date October 4, 2019

DATE

DAIM-ODB-LO

John Doe
1234 Any Street
Anywhere, TX 56789

Re: Notice of Land Use Controls for two environmental sites at Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas

The final Land Use Control (LUC) Remedial Design (RD)/Remedial Action Construction Report (RACR) for two sites at LHAAP was completed in 2018. The two sites are: LHAAP-001-R South Test Area/South Bomb Area and LHAAP-003-R Ground Signal Test Area.

The attached information is provided to fulfill a requirement of the LUC RD/RACR to give notice of the groundwater and soil (surface and subsurface) contamination and any land use restrictions referenced in the ROD. The selected remedy of land use controls has been implemented at both sites. The notices are being sent to federal, state and local governments involved at these sites and the owners and occupants of the properties subject to the use restrictions and land use controls.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Three Enclosures
Copies furnished:
R. Mayer, USEPA Region 6, Dallas, TX
A. Palmie, TCEQ, Austin, TX
Administrative Record

EXAMPLE

01071277

2018-000004040

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

NOTICE

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/19/2018 02:27 PM **Document Number:** 2018-000004040 **Receipt No:** 1804258 **Amount:** $ 42.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

KIM NEMMERS
4085 ASPEN LANE

EVERGREEN, CO 80439

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROLS

KNOW ALL MEN BY THESE PRESENTS THAT:
Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a removal of munitions and explosives of concern on the land described herein. Longhorn Army Ammunition Plant (LHAAP) Munition Response Sites (MRSs) LHAAP-001-R (South Test Area/Bomb Test Area) and LHAAP-003-R (Ground Signal Test Area) are former military test areas located in the southern and southeastern portions of LHAAP, respectively. LHAAP was placed on the National Priorities List (NPL) in August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA) and the TCEQ entered into an agreement under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. MRSs LHAAP-001-R and LHAAP-003-R are co-located with NPL sites LHAAP-27 and LHAAP-54, respectively and are also considered NPL sites. Remedial activities at these sites were performed in accordance with the FFA requirements.

MRS LHAAP-01-R was constructed in 1954 and was used for testing photoflash bombs produced at the facility until approximately 1956. During the late 1950s, illuminating signal devises were also demilitarized within pits excavated in the vicinity of the test pad. During the 1960s, leaking production items may have been demilitarized by detonation. LHAAP-001-R was identified as an MRS based on the visual confirmation of MEC.

MRS LHAAP-003-R was used intermittently in April 1963 for aerial and on-ground testing and destruction of a variety of devices, including pyrotechnic signal devices, red phosphorus smoke wedges, infrared flares, illuminating mortar shells and cartridges, button bombs and various types of explosive simulators. The site was used intermittently over a 20-year period for testing and burn-out of rocket motors. From late 1988 through 1991, the site was used for the burn-out of Pershing missile rocket motors and, occasionally, leaking white phosphorus munitions were burned at the site as a demilitarization activity. LHAAP-003-R was identified as an MRS based on the reported presence of MEC.

Non-time critical removal actions (NTCRAs) for MEC removal were conducted at both sites in 2008. A Final Record of Decision (ROD) for LHAAP-001-R and LHAAP-003-R was issued in August 2016, which documents the final selected remedy for the sites, including the implementation of Land Use Controls (LUCs) designed to promote ongoing protection of human safety against potential explosive hazards that may have remained at the sites following the MEC removal actions. The LUCs' performance objectives are to prohibit residential use, to restrict land use to non-residential, and to prohibit intrusive activities such as digging or any other activity which could result in explosive safety risks.

Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E (Room 103. first floor) 12100 Park 35 Circle, Austin, Texas 78753, (512) 239-2900, Monday through Friday 8:00 am to 5:00 pm, or the Administrative Record available at the Marshall Public Library, 300 South Alamo Boulevard, Marshall, Texas 75670, (903) 935-4465, Monday, Tuesday and Thursday 9:30AM – 7:30PM, Wednesday and Friday 9:30AM – 5:30PM, and Saturday 9:30AM – 3:30PM.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public on the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

MRS LHAAP-001-R covers an area of approximately 72.14 acre-tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in **Exhibit A**. The entire LHAAP-001-R parcel is within a LUC boundary which is described in **Exhibit A**.

MRS LHAAP-003-R covers an area of approximately 79.53 acre-tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in **Exhibit B**. The entire LHAAP-003-R parcel is within a LUC boundary which is described in **Exhibit B**.

The United States Department of the Army has undertaken careful environmental study of MRSs LHAAP-001-R and LHAAP-003-R and the USEPA and TCEQ concluded that LUCs should remain in place until it is demonstrated that MEC no longer presents an explosive hazard.

Future use of these sites is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. The LUCs placed on the property to ensure appropriate future use include:

(1) Use must remain non-residential as described above. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences, child care facilities, nursing home or assisted living facilities, and any type of educational purpose for children/young adults in grades kindergarten through 12. This LUC will remain in place until it is demonstrated that the MEC no longer present a threat to human safety/health.

(2) No intrusive activity shall be permitted, which includes digging or any other activity which could result in explosive safety risks, without prior consent. This LUC will remain in place until it is demonstrated that the MEC no longer present an explosive hazard. Intrusive subsurface activities may occur provided that the Army and the EPA approve such intrusive subsurface activities before they are commenced and provided that they are undertaken by qualified personnel who are trained in explosives safety measures.

III

The owner of these sites is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post office Box 220
Ratcliff, AR 72951
Or
Assistant Chief of Staff for Installation Management
ATN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington, D.C. 20310-0600

Rose M. Zeiler
Longhorn AP Site Manager

EXECUTED this the 19th day of April, 2018.

BEFORE ME, on this 19th day of April personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

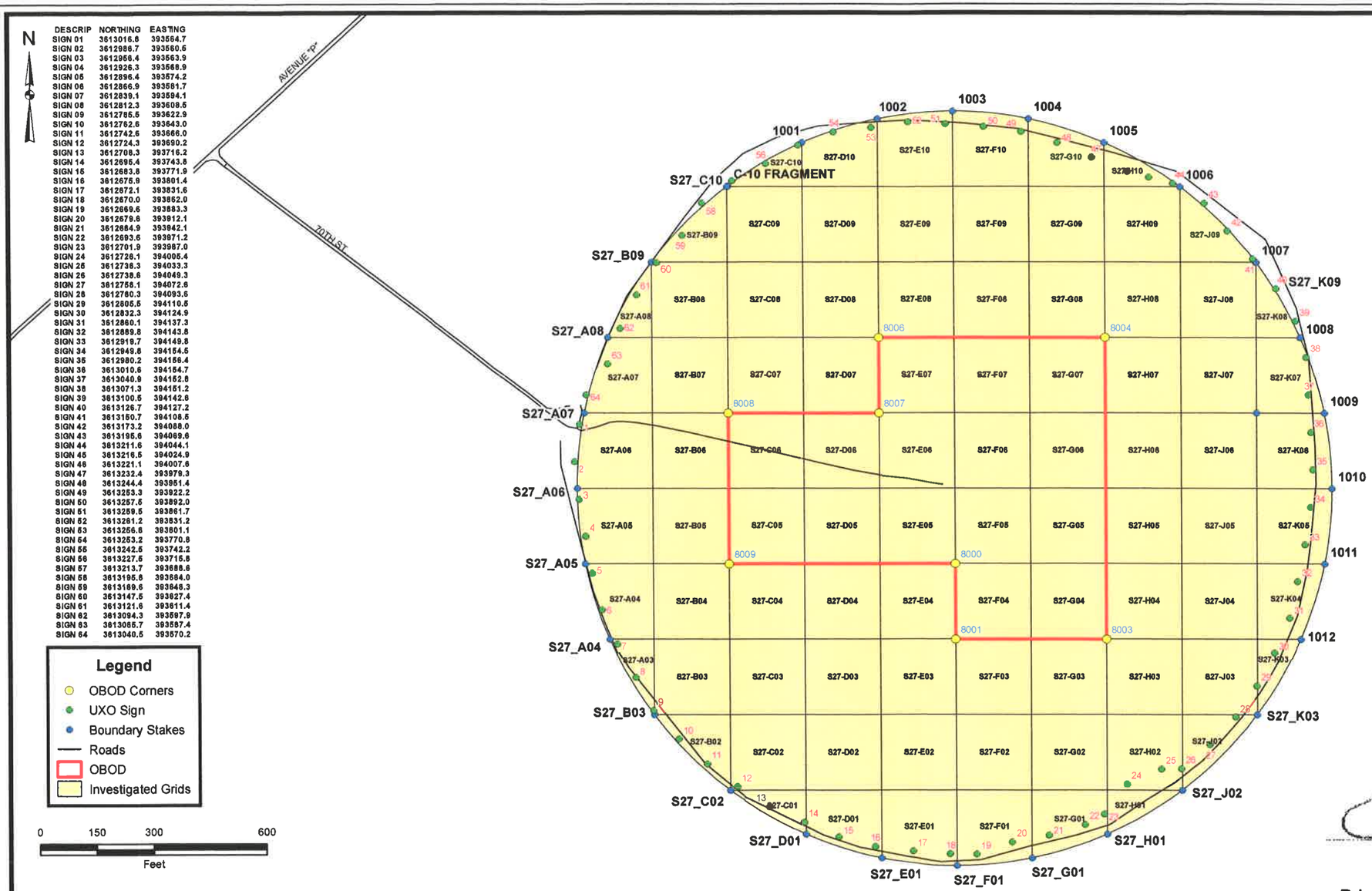
GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 19th day of April, 2018.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 1/3/2019
NO. 128484987

Notary Public in and for the State of Texas,
County of Harrison

Exhibit A
LHAAP-001-R, South Test Area/South Bomb Area
Longhorn Army Ammunition Plant, Karnack, Texas

DESCRIP	NORTHING	EASTING
SIGN 01	3613016.8	393564.7
SIGN 02	3612986.7	393560.5
SIGN 03	3612956.4	393563.9
SIGN 04	3612926.3	393568.9
SIGN 05	3612896.4	393574.2
SIGN 06	3612866.9	393581.7
SIGN 07	3612839.1	393594.1
SIGN 08	3612812.3	393608.5
SIGN 09	3612785.6	393622.9
SIGN 10	3612762.6	393643.0
SIGN 11	3612742.6	393666.0
SIGN 12	3612724.3	393690.2
SIGN 13	3612708.3	393716.2
SIGN 14	3612695.4	393743.6
SIGN 15	3612683.8	393771.9
SIGN 16	3612676.9	393801.4
SIGN 17	3612672.1	393831.6
SIGN 18	3612670.0	393862.0
SIGN 19	3612669.6	393893.3
SIGN 20	3612679.6	393912.1
SIGN 21	3612684.9	393942.1
SIGN 22	3612693.6	393971.2
SIGN 23	3612701.9	393987.0
SIGN 24	3612726.1	394005.4
SIGN 25	3612736.3	394033.3
SIGN 26	3612738.6	394049.3
SIGN 27	3612758.1	394072.6
SIGN 28	3612780.3	394093.5
SIGN 29	3612805.5	394110.5
SIGN 30	3612832.3	394124.9
SIGN 31	3612860.1	394137.3
SIGN 32	3612889.8	394143.8
SIGN 33	3612918.7	394149.8
SIGN 34	3612949.8	394154.5
SIGN 35	3612980.2	394156.4
SIGN 36	3613010.6	394154.7
SIGN 37	3613040.9	394152.8
SIGN 38	3613071.3	394151.2
SIGN 39	3613100.5	394142.6
SIGN 40	3613126.7	394127.2
SIGN 41	3613150.7	394108.5
SIGN 42	3613173.2	394088.0
SIGN 43	3613195.6	394069.6
SIGN 44	3613211.6	394044.1
SIGN 45	3613216.5	394024.9
SIGN 46	3613221.1	394007.6
SIGN 47	3613232.4	393979.3
SIGN 48	3613244.4	393951.4
SIGN 49	3613253.3	393922.2
SIGN 50	3613257.5	393892.0
SIGN 51	3613259.5	393861.7
SIGN 52	3613261.2	393831.2
SIGN 53	3613256.6	393801.1
SIGN 54	3613253.2	393770.8
SIGN 55	3613242.5	393742.2
SIGN 56	3613227.5	393715.6
SIGN 57	3613213.7	393688.6
SIGN 58	3613195.8	393664.0
SIGN 59	3613189.5	393648.3
SIGN 60	3613147.5	393627.4
SIGN 61	3613121.6	393611.4
SIGN 62	3613094.3	393597.9
SIGN 63	3613065.7	393587.4
SIGN 64	3613040.5	393570.2



DESCRIP	NORTHING	EASTING
8000	3612904.2	393867.3
8001	3612843.2	393867.3
8003	3612843.2	393989.2
8004	3613087.0	393989.2
8006	3613087.1	393806.4
8007	3613026.1	393806.4
8008	3613026.1	393684.4
8009	3612904.2	393684.4

DESCRIP	NORTHING	EASTING
1001	393745.4	3613244.5
1002	393806.4	3613263.8
1003	393867.3	3613269.9
1004	393928.3	3613263.8
1005	393989.2	3613244.5
1006	394050.1	3613209.0
1007	394111.0	3613148.0
1008	394146.5	3613087.0
1009	394165.8	3613026.1
1010	394171.9	3612965.1
1011	394165.8	3612904.2
1012	394146.5	3612843.2
C-10 FRAGMENT	393685.2	3613209.4
S27_A04	393568.0	3612843.2
S27_A05	393568.7	3612904.2
S27_A06	393562.5	3612965.1
S27_A07	393568.6	3613026.1
S27_A08	393687.9	3613087.1
S27_B03	393623.8	3612782.3
S27_B09	393623.8	3613148.0
S27_C02	393684.6	3612721.3
S27_C10	393684.4	3613209.0
S27_D01	393745.4	3612665.9
S27_E01	393806.4	3612666.6
S27_F01	393867.3	3612660.5
S27_G01	393928.3	3612666.7
S27_H01	393989.3	3612666.0
S27_J02	394049.9	3612721.3
S27_K03	394110.9	3612782.3
S27_K07	394111.2	3613026.1
S27_K09	394111.2	3613147.9

STATE OF TEXAS
REGISTERED
DAVID R COLLINS
1954
PROFESSIONAL
LAND SURVEYOR

I, David R. Collins, Registered Professional Land Surveyor No. 1954, do hereby certify that this plat correctly represents the results of a survey made under my supervision August 4 through September 23, 2008.

Datum: NAD83 UTM
Monument: Longhorn Army Ammunition Plant
Monument BG-1 with coordinates
NORTHING-3614801.46,
EASTING-395385.09

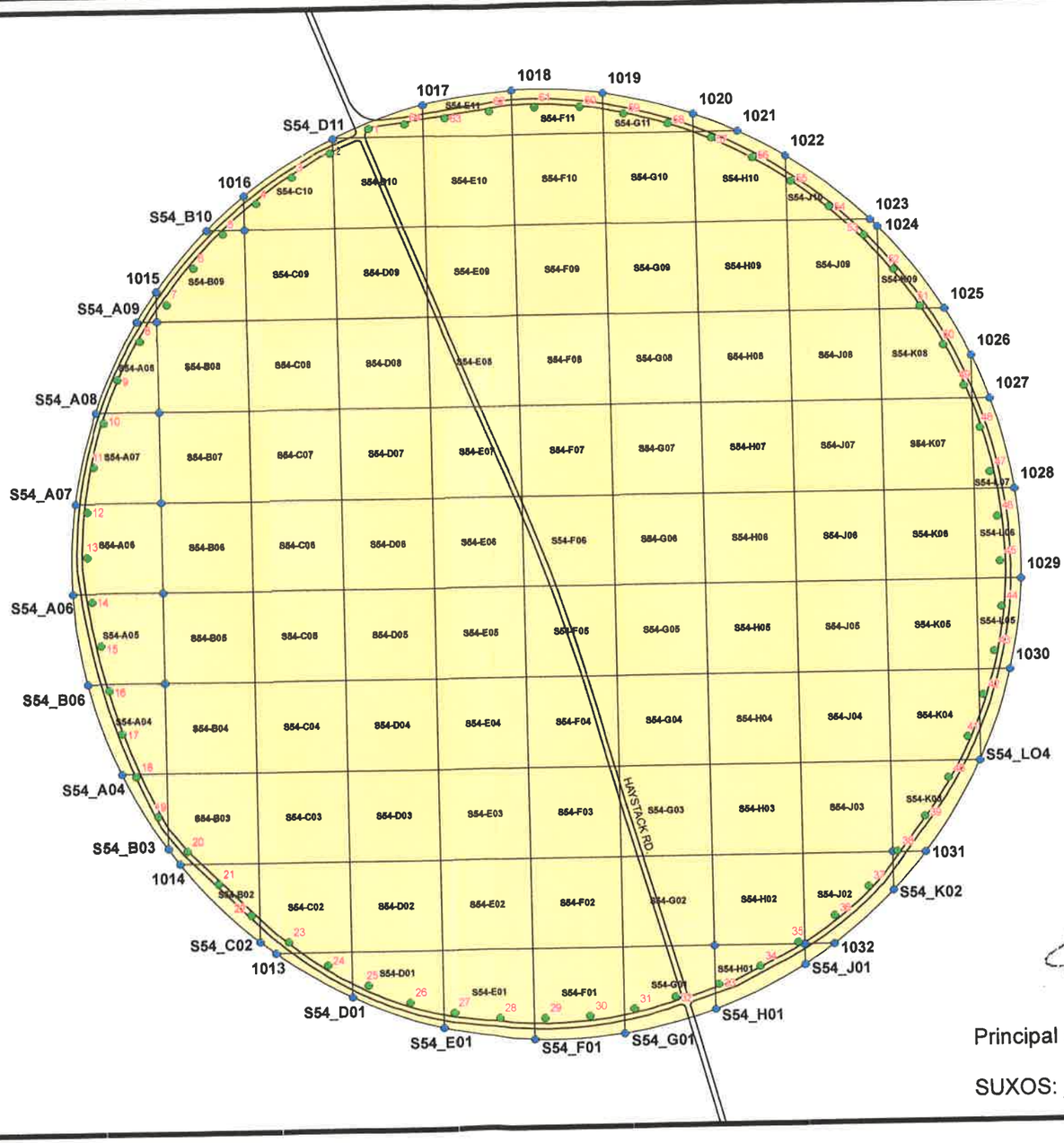
Principal of the firm: _____

SUXOS: _____

Exhibit B
LHAAP-003-R, Ground Signal Test Area
Longhorn Army Ammunition Plant, Karnack, Texas

DESCRIP	NORTH	EAST
SIGN 1	3614179.4	395143.2
SIGN 10	3613984.2	394959.8
SIGN 11	3613954.6	394952.4
SIGN 12	3613924.6	394947.4
SIGN 13	3613894.1	394947
SIGN 14	3613863.7	394949.6
SIGN 15	3613833.8	394956.1
SIGN 16	3613803.8	394959.8
SIGN 17	3613774.4	394967.8
SIGN 18	3613745.2	394976.7
SIGN 19	3613718.3	394991.2
SIGN 2	3614163.4	395117.3
SIGN 20	3613694.6	395010.3
SIGN 21	3613672.4	395031.1
SIGN 22	3613651.1	395052.8
SIGN 23	3613632.6	395077
SIGN 24	3613616.8	395103.1
SIGN 25	3613602.8	395130
SIGN 26	3613591	395158.1
SIGN 27	3613583.5	395187.5
SIGN 28	3613579.1	395217.8
SIGN 29	3613578.7	395248.2
SIGN 3	3614147.8	395091.2
SIGN 30	3613579.8	395278.7
SIGN 31	3613584.2	395308.8
SIGN 32	3613591.4	395336.3
SIGN 33	3613599.6	395365.6
SIGN 34	3613611	395393.8
SIGN 35	3613626.8	395419.8
SIGN 36	3613644.2	395444.8
SIGN 37	3613663.5	395469.2
SIGN 38	3613686.5	395488.2
SIGN 39	3613710.2	395507.8
SIGN 4	3614130.2	395086.2
SIGN 40	3613735.9	395523.8
SIGN 41	3613763	395537.5
SIGN 42	3613791.2	395546.8
SIGN 43	3613820.6	395556.7
SIGN 44	3613850.5	395562.3
SIGN 45	3613880.9	395562.2
SIGN 46	3613911.3	395561
SIGN 47	3613941.4	395556.7
SIGN 48	3613971.3	395550.8
SIGN 49	3613999.9	395540.6
SIGN 5	3614110.1	395043.4
SIGN 50	3614027.4	395527.6
SIGN 51	3614053.7	395512.2
SIGN 52	3614076.9	395498.2
SIGN 53	3614102.3	395478.8
SIGN 54	3614122	395452.6
SIGN 55	3614139.3	395427.5
SIGN 56	3614155.8	395401.9
SIGN 57	3614169.5	395374.8
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SIGN 59	3614186.8	395316.6
SIGN 6	3614087.5	395032.9
SIGN 60	3614191.9	395286.4
SIGN 61	3614192.1	395255.9
SIGN 62	3614190.3	395226.5
SIGN 63	3614186.9	395195.4
SIGN 64	3614182	395167.9
SIGN 7	3614063.3	395004.4
SIGN 8	3614039.1	394988.8
SIGN 9	3614013.1	394969.9

DESCRIP	NORTHIN	EASTING
1013	395068.8	3613625.2
1014	395005.1	3613686.2
1015	394997.4	3614072.1
1016	395058.4	3614135.6
1017	395180.3	3614195.0
1018	395241.3	3614203.9
1019	395302.2	3614200.9
1020	395363.2	3614185.9
1021	395392.4	3614173.9
1022	395424.1	3614156.7
1023	395480.2	3614112.9
1024	395485.1	3614108.0
1025	395528.9	3614061.9
1026	395546.1	3614020.2
1027	395558.0	3613991.0
1028	395573.1	3613930.0
1029	395576.0	3613869.1
1030	395567.2	3613808.1
1031	395507.7	3613686.2
1032	395444.2	3613625.2
S54_A04	394967.3	3613747.1
S54_A06	394936.8	3613869.1
S54_A07	394939.8	3613930.0
S54_A08	394954.8	3613991.0
S54_A09	394983.9	3614051.9
S54_B03	394997.4	3613998.4
S54_B06	394997.4	3613808.1
S54_B06	394997.4	3613869.1
S54_B07	394997.4	3613930.0
S54_B08	394997.4	3613991.0
S54_B09	394997.4	3614051.9
S54_B10	395032.6	3614112.9
S54_C02	395068.4	3613633.0
S54_C10	395058.4	3614112.9
S54_D01	395119.3	3613696.1
S54_D11	395119.4	3614173.3
S54_E01	395180.3	3613573.5
S54_F01	395241.3	3613564.6
S54_G01	395302.2	3613567.6
S54_H01	395363.2	3613582.6
S54_H02	395363.1	3613625.2
S54_J01	395424.1	3613611.8
S54_J02	395424.1	3613625.2
S54_K02	395485.1	3613680.5
S54_K03	395485.1	3613686.2
S54_LO4	395545.5	3613747.1



Legend
- UXO Signs
- Boundary Stakes
- Roads
- Investigated Grids

0 150 300 600
Feet

Datum: NAD83 UTM
Monument: Longhorn Army Ammunition Plant
Monument BG-1 with coordinates
NORTHING-3614801.46,
EASTING-395385.09

STATE OF TEXAS
REGISTERED
DAVID R COLLINS
1954
PROFESSIONAL
LAND SURVEYOR

I, David R. Collins, Registered Professional Land Surveyor No. 1954, do hereby certify that this plat correctly represents the results of a survey made under my supervision August 4 through September 28, 2008.

Principal of the firm: _____

SUXOS: _____

South Test Area (LHAAP-001-R-01) and Ground Signal Test Area (LHAAP-003-R-01), MMRP-4

LAND USE CONTROL COMPLIANCE INSPECTION FORM

October 15, 2018

LAND USE CONTROL COMPLIANCE CERTIFICATION FORM

In accordance with the LUC Plan dated _____ for LHAAP-001-R and LHAAP-003-R, an inspection of the sites was conducted by _____ on _____.

A summary of land use control mechanisms is as follows:

- Land use restrictions - restrict land use to non-residential.
- Integrity of LUC signage by ensuring signs are present, legible and have visibility from one sign to the next.

A summary of compliance with land use and restriction covenants is as follows:

- The posted signs are properly maintained at LHAAP-001-R and LHAAP-003-R.
- No digging or intrusive activities have taken place within the boundaries identified for LHAAP-001-R and LHAAP-003-R.
- No land use other than non-residential.
- Pamphlets and safety awareness video are being used to educate visitors.

I, the undersigned, do document that the inspections were performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name: _____

Signature: _____

Completed annual compliance inspections shall be conducted no later than March 1 of each year for the previous calendar year and filed on site.

APPENDIX A

GSA TRANSFER LETTERS

GSA Public Buildings Service
Tel: (817) 978-3856
Fax: (817) 978-2063
melvin.freeman@gsa.gov

February 21, 2014

Mr. Thomas E. Lederle
Chief, ACSIM BRAC Division
600 Army Pentagon
Washington D.C. 20310-0600

Dear Mr. Lederle:

Your report of excess dated July 29, 2002, covered 8,492.02 acres of land (later corrected to 8,416 acres), more or less, and improvements at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas. GSA Control No. 7-D-TX-0692.

As set forth in the enclosed letter, an additional 50.54 acres of land, more or less, of the LHAAP property known as Tract No. 7 – Landfill 12 Area, described in Attachment 1 of the transfer letter has been transferred without reimbursement to the U.S. Department of the Interior, Fish and Wildlife Service (FWS) under the authority of 16 U.S.C. 667b. Additional transfers will be made when approvals are obtained from the Army on lands currently not suitable for transfer. Future requests for transfers will identify requested land by legal description or map overlay.

Upon finalization of transfer of the total land requested by FWS, a complete boundary legal description will be provided by FWS identifying all former Army land that had been transferred. Any map overlays used in the interim to identify previously transferred land will be voided for use to identify former Army land at LHAAP subsequently controlled by FWS.

Custody and accountability of the property identified by legal description in Attachment 1 to the transfer letter, together with any necessary documentation, should be transferred to FWS by your agency as soon as practicable. We will appreciate your prompt advice as to the date such action is accomplished. We understand that the FWS, Region 2 Acting Regional Director, Ms. Joy Nicholopoulos, P.O. Box 1306, Albuquerque, NM 87103 will represent the FWS in this matter.

Please acknowledge receipt of this communication in the space provided on the enclosed copy of this letter and return it to this office. You may contact Veronica Capron Vorva, Realty Specialist at telephone 817-978-4246 if there are questions.

U.S. General Services Administration
Real Property Utilization and Disposal
Division (7PZ)
819 Taylor Street, Room 11A30
Fort Worth, TX 76102-6112

Sincerely,

Melvin E. Freeman, Director
Real Property Utilization and Disposal
Division (7PZ)

Enclosures

Receipt acknowledged:

Name THOMAS E LEDERLE

Title Chief, ACSIM BRAC DIV

Date 03/07/2014

cc: Ms. Joy Nicholopoulos, Acting Regional Director
U.S. Fish and Wildlife Service, Region 2
Division of Realty
P.O. Box 1306
Albuquerque, NM 87103-1306

GSA Public Buildings Service
Tel (817) 978-3856
Fax (817) 978-2063
melvin.freeman@gsa.gov

February 21, 2014

Joy Nicholopoulos, Acting Regional Director
U.S. Fish and Wildlife Service, Region 2
Division of Realty
P.O. Box 1306
Albuquerque, NM 87103-1306

RE: Transfer of 50.54 acres of land at the Longhorn Army Ammunition Plant, Harrison County, Texas

Dear Ms. Nicholopoulos:

Your letter of April 27, 2004, requested transfer to the U.S. Department of the Interior, Fish and Wildlife Service (FWS), under the authority of P.L. 80-537, 16 U.S.C. 667b, a total of 8,404 acres of land (later corrected to 8,416 acres, more or less), at the Longhorn Army Ammunition Plant (LHAAP), City of Karnack, Harrison County, State of Texas, together with all the improvements found on the real estate, and all related personal property located thereon (hereinafter referred to as the "Property"), reported July 29, 2002, as excess to the needs of the U.S. Army. The first transfer of 5,031.75 acres was accepted into primary jurisdiction by FWS on April 30, 2004. It was agreed that as parcels met the specifications of transfer, additional parcels would be transferred by means of a letter request, a map, and a legal description to GSA.

All the rights to be transferred herein have heretofore been declared excess to the needs of the United States Department of the Army. The respective interests to be transferred hereby have been reported to the General Services Administration (GSA) and have been determined to be excess for disposal pursuant to P.L. 107-217, (40 U.S.C. §§550, et. seq.) as amended.

In accordance with your subsequent letter of February 4, 2014, an additional 50.54 acres, more or less, known as Tract No. 7 – Landfill 12 Area (hereinafter referred to as the "Property") are now suitable for transfer to add to the 6,364.35 acres, more or less, previously transferred on nine separate occasions. A true and complete legal description of Tract No. 7 – Landfill 12 Area is included in **Attachment 1**.

Accordingly, pursuant to 40 U.S.C. 501, et seq. and Public Law 80-537, 16 U.S.C. 667b, and acting under authority delegated to me, I hereby transfer 50.54 acres, more

U.S. General Services Administration
Real Property Utilization and Disposal
Division (7PZ)
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or less, as described in **Attachment 1** to the custody and accountability of the U.S. Department of Interior, Fish and Wildlife Service.

Additional transfers covering the remainder of the real estate comprising the LHAAP will be made when approvals are obtained from the Army on lands currently not suitable for transfer. Future requests for other transfers will specifically identify such requested land by legal description and/or map overlay.

This transfer is expressly made subject to all environmental notices, exceptions, restrictions, agreements, and covenants affecting the Property identified in the Environmental Condition of Property V, Longhorn Army Ammunition Plant, Karnack, Texas, dated September 2007 and revised December 6, 2013, (hereinafter referred to as the "ECOP V") which is incorporated herein by reference and amends the "ECOP" previously described in and made a part of the original transfer of April 26, 2004, and subsequent transfers, and the "ECOP II" dated October 2004, "ECOP III" dated August 2005, and "ECOP IV" dated March 2007 to the extent and only to the extent the same are valid and affect the Property conveyed herein. FWS covenants and agrees that the Property is hereby transferred subject to the use restrictions and covenants which run with the land as identified in Attachment 2 of the ECOP V previously described. FWS further covenants and agrees that in the event that the Property, or any part thereof, is sold, conveyed, transferred, leased, or otherwise disposed of, the following notices, covenants, and restrictions shall be inserted in any instrument of conveyance.

Upon finalization of transfer of the total land requested by FWS, a complete boundary legal description will be provided by FWS identifying all former Army land that had been transferred. Any map overlays used in the interim to identify previously transferred land will be voided for use to identify former Army land at LHAAP subsequently controlled by FWS.

The property transferred is subject to compliance by the FWS with the provisions of the National Environmental Policy Act of 1969, as amended, including the preparation of an environmental impact statement if required. The Property is transferred subject to compliance by the FWS with Section 106 of the National Historic Preservation Act of 1966, and Executive Order 11593.

Mr. Thomas E. Lederle, Chief, ACSIM BRAC Division, U.S. Army, 600 Army Pentagon, Washington D.C. 20310 will act for the U.S. Army in arranging for the transfer of custody and accountability of the Property and in other matters related to the transfer.

A copy of our letter of same date to the U.S. Army is enclosed for your information. It is requested that you acknowledge receipt of this communication on the enclosed copy of this letter in the space provided, return it to this office, and that such steps as necessary be taken by your Agency to consummate the transaction.

Sincerely,

Melvin E. Freeman

Melvin E. Freeman, Director
Real Property Utilization and Disposal
Division (7PZ)

Enclosures

Receipt acknowledged:

Name Robert R. Brubaker

Title Realty Officer

Date 3-3-2014

cc: Mr. Thomas E. Lederle
Chief, ACSIM BRAC Division
600 Army Pentagon
Washington D.C. 20310-0600

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
DIVISION OF REALTY

TRACT REPORT

OF THE

UNITED STAES OF AMERICA

TRACT (100q)

CONTAINING 50.54 ACRES

CADDO LAKE NATIONAL WILDLIFE REFUGE

HARRRISON COUNTY, TEXAS

Report Prepared By

Louis J. duBois, Jr.
Land Surveyor

January 2014

Tract Description of the
United States of America Tract (100q)
Caddo Lake National Wildlife Refuge
Harrison County, Texas

The hereinafter described tract of land is located in Harrison County, Texas, near the town of Karnack, tract (100q) being 50.54 acres of land out of the Longhorn Ordnance Works Reservation, also known as the Longhorn Army Ammunition Plant, Karnack, Texas, said 50.54 acres of land being that certain 50.54 acre tract described as Parcel No. 7 – Landfill 12 Area excepted from United States of America tract (100a) as surveyed by Entz Engineering and Associates, Inc. & Huffman Surveying Company, A Joint Venture, of Muskogee, Oklahoma, delineated on a map tracing designated "United States of America Tracts (100a,b)" bearing the date of May, 2004, of record in the files of the United States Department of the Interior, Fish and Wildlife Service, Region 2, Albuquerque, New Mexico, said tract (100q) being more particularly described by metes and bounds as follows:

SURVEYOR'S NOTE:

All bearings and distances are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92), Survey Feet. The average Combined Scale Factor applied equals 0.99988410; Convergence equals 02° 21' 53". The computed land area is based on surface distances.

Parcel No. 7 - Landfill 12 Area

BEGINNING at the southwest corner of the Landfill 12 Area, described as Parcel No. 7, said point being described as "Landfill 12 Area Point No. 1" and having a coordinate value of N=6953300.238, E=3311087.540;

THENCE, along the boundary line of said Parcel No. 7,

N. 03°15'36" W., 1741.41 feet

to a point for a corner of this tract, said point being described as "Landfill 12 Area Point No. 2";

THENCE, along the boundary line of said Parcel No. 7,

N. 62°03'32" E., 1151.75 feet

to a point for a corner of this tract, said point being described as "Landfill 12 Area Point No. 3";

THENCE, along the boundary line of said Parcel No. 7,

S. 15°55'59" E., 1311.85 feet

to a point for a corner of this tract, said point being described as "Landfill 12 Area Point No. 4";

THENCE, along the boundary line of said Parcel No. 7,

S. 35°09'33" W., 1306.48 feet

to a point for a corner of this tract, said point being described as "Landfill 12 Area Point No. 5";

THENCE, along the boundary line of said Parcel No. 7,

N. 84°25'54" W., 528.74 feet

to the **POINT OF BEGINNING**, and containing 50.54 acres, more or less.

Bounded on the north, east, south and west by USA tract (100a).

The hereinbefore-described tract of land is delineated on a plat designated "United States of America Tract (100q)" bearing the date of January 15, 2014, of record in the files of the United States Department of the Interior, Fish and Wildlife Service.

GSA Public Buildings Service
Tel: (817) 978-3856
Fax: (817) 978-2063
melvin.freeman@gsa.gov

January 29, 2015

Mr. Thomas E. Lederle
Chief, ACSIM BRAC Division
600 Army Pentagon
Washington D.C. 20310-0600

Dear Mr. Lederle:

Your report of excess dated July 29, 2002, covered 8,492.02 acres of land (later corrected to 8,416 acres), more or less, and improvements at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas. GSA Control No. 7-D-TX-0692.

As set forth in the enclosed letter, an additional 109.91 acres of land, more or less, in five parcels of the LHAAP property, described in Attachment 1 and Attachment 2 of the transfer letter, including: three portions of the "Production Area Parcel," consisting of Tract 100r, containing 31.73 acres in and around the Former Acid Storage Area, Tract 100s, containing 18.80 acres in and around the Former TNT Waste Disposal Plant, and Tract 100t, containing 3.82 acres in and around the Former Sewage Treatment Plant; the "Y-Area Parcel," Tract 100u, containing 17.24 acres; and a portion of the 40.37 acre "Static Test Area Parcel," Tract 100v, containing 38.32 acres, have been transferred without reimbursement to the U.S. Department of the Interior, Fish and Wildlife Service (FWS) under the authority of 16 U.S.C. 667b. Additional transfers will be made when approvals are obtained from the Army on lands currently not suitable for transfer. Future requests for transfers will identify requested land by legal description or map overlay.

Upon finalization of transfer of the total land requested by FWS, a complete boundary legal description will be provided by FWS identifying all former Army land that had been transferred. Any map overlays used in the interim to identify previously transferred land will be voided for use to identify former Army land at LHAAP subsequently controlled by FWS.

Custody and accountability of the property identified by legal description in Attachment 1 and Attachment 2 to the transfer letter, together with any necessary documentation, should be transferred to FWS by your agency as soon as practicable. We will appreciate your prompt advice as to the date such action is accomplished. We understand that the FWS, Region 2 Acting Regional Director, Ms. Joy Nicholopoulos, P.O. Box 1306, Albuquerque, NM 87103 will represent the FWS in this matter.

U.S. General Services Administration
Real Property Utilization and Disposal Division (7PZ)
819 Taylor Street, Room 11A30
Fort Worth, TX 76102-6112

Please acknowledge receipt of this communication in the space provided on the enclosed copy of this letter and return it to this office. You may contact Veronica Vorva, Realty Specialist, at telephone 817-978-4246 if there are questions.

Sincerely,

Melvin E. Freeman

Melvin E. Freeman, Director
Real Property Utilization and Disposal
Division (7PZ)

Enclosures

Receipt acknowledged:

Name THOMAS E LEDERLE

Title Chief, ACSIM BRAC DIV

Date 20 APR 2015

cc: Ms. Joy Nicholopoulos, Acting Regional Director
U.S. Fish and Wildlife Service, Region 2
Division of Realty
P.O. Box 1306
Albuquerque, NM 87103-1306

GSA Public Buildings Service
Tel: (817) 978-3856
Fax: (817) 978-2063
melvin.freeman@gsa.gov

January 29, 2015

Joy Nicholopoulos, Acting Regional Director
U.S. Fish and Wildlife Service, Region 2
Division of Realty
P.O. Box 1306
Albuquerque, NM 87103-1306

RE: Transfer of 109.91 acres of land at the Longhorn Army Ammunition Plant, Karnack, Harrison County, Texas

Dear Ms. Nicholopoulos:

Your letter of April 27, 2004, requested transfer to the U.S. Department of the Interior, Fish and Wildlife Service (FWS), under the authority of P.L. 80-537, 16 U.S.C. 667b, a total of 8,404 acres of land (later corrected to 8,416 acres, more or less), at the Longhorn Army Ammunition Plant (LHAAP), City of Karnack, Harrison County, State of Texas, together with all the improvements found on the real estate, and all related personal property located thereon (hereinafter referred to as the "Property"), reported July 29, 2002, as excess to the needs of the U.S. Army. The first transfer of 5,031.75 acres was accepted into primary jurisdiction by FWS on April 30, 2004. It was agreed that as parcels met the specifications of transfer, additional parcels would be transferred by means of a letter request, a map, and a legal description to GSA.

All the rights to be transferred herein have heretofore been declared excess to the needs of the United States Department of the Army. The respective interests to be transferred hereby have been reported to the General Services Administration (GSA) and have been determined to be excess for disposal pursuant to P.L. 107-217, (40 U.S.C. §§550, et. seq.) as amended.

In accordance with your subsequent letter of December 2, 2014, an additional 109.91 acres, more or less, in five parcels of the LHAAP property including: three portions of the "Production Area Parcel," consisting of Tract 100r, containing 31.73 acres in and around the Former Acid Storage Area, Tract 100s, containing 18.80 acres in and around the Former TNT Waste Disposal Plant, and Tract 100t, containing 3.82 acres in and around the Former Sewage Treatment Plant; the "Y-Area Parcel," Tract 100u, containing 17.24 acres; and a portion of the 40.37 acre "Static Test Area Parcel," Tract 100v, containing 38.32 acres (hereinafter referred to as the "Properties") is now suitable

U.S. General Services Administration
Real Property Utilization and Disposal
Division (7PZ)
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Fort Worth, TX 76102-6112

for transfer to add to the 6,414.89 acres, more or less, previously transferred on ten separate occasions. True and complete legal descriptions of the Properties are included in **Attachment 1** and **Attachment 2**.

Accordingly, pursuant to 40 U.S.C. 501, et seq. and Public Law 80-537, 16 U.S.C. 667b, and acting under authority delegated to me, I hereby transfer 109.91 acres, more or less, as described in **Attachment 1** and **Attachment 2** to the custody and accountability of the U.S. Department of Interior, Fish and Wildlife Service.

Additional transfers covering the remainder of the real estate comprising the LHAAP will be made when approvals are obtained from the Army on lands currently not suitable for transfer. Future requests for other transfers will specifically identify such requested land by legal description and/or map overlay.

This transfer is expressly made subject to all environmental notices, exceptions, restrictions, agreements, and covenants affecting the Property identified in the Environmental Condition of Property VI, Longhorn Army Ammunition Plant, Karnack, Texas, dated January 2014, (hereinafter referred to as the "ECOP VI") which is incorporated herein by reference and amends the "ECOP" previously described in and made a part of the original transfer of April 26, 2004, and subsequent transfers, and the "ECOP II" dated October 2004, "ECOP III" dated August 2005, "ECOP IV" dated March 2007, and "ECOP V" dated September 2007 and revised December 6, 2013 to the extent and only to the extent the same are valid and affect the Property conveyed herein. FWS covenants and agrees that the Property is hereby transferred subject to the use restrictions and covenants which run with the land as identified in Attachment 3 of the ECOP VI previously described. FWS further covenants and agrees that in the event that the Property, or any part thereof, is sold, conveyed, transferred, leased, or otherwise disposed of, the following notices, covenants, and restrictions shall be inserted in any instrument of conveyance.

Upon finalization of transfer of the total land requested by FWS, a complete boundary legal description will be provided by FWS identifying all former Army land that had been transferred. Any map overlays used in the interim to identify previously transferred land will be voided for use to identify former Army land at LHAAP subsequently controlled by FWS.

The property transferred is subject to compliance by the FWS with the provisions of the National Environmental Policy Act of 1969, as amended, including the preparation of an environmental impact statement if required. The Property is transferred subject to compliance by the FWS with Section 106 of the National Historic Preservation Act of 1966, and Executive Order 11593.

Mr. Thomas E. Lederle, Chief, ACSIM BRAC Division, U.S. Army, 600 Army Pentagon, Washington D.C. 20310 will act for the U.S. Army in arranging for the transfer of custody and accountability of the Property and in other matters related to the transfer.

A copy of our letter of same date to the U.S. Army is enclosed for your information. It is requested that you acknowledge receipt of this communication on the enclosed copy of this letter in the space provided, return it to this office, and that such steps as necessary be taken by your Agency to consummate the transaction.

Sincerely,

Melvin E. Freeman, Director
Real Property Utilization and Disposal
Division (7PZ)

Enclosures

Receipt acknowledged:

Name David Allard

Title Realty Specialist

Date 2/2/2015

cc: Mr. Thomas E. Lederle
Chief, ACSIM BRAC Division
600 Army Pentagon
Washington D.C. 20310-0600

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

December 17, 2021

DAIN-ODB-LO

Mr. Brian Follin
U.S. Environmental Protection Agency
1201 Elm Street, Suite 500
Dallas, TX 75270-2002

Re: Final 2021 Update of the Comprehensive Land Use Control (LUC) Management Plan, Longhorn Army Ammunition Plant, Karnack, Texas, 17 December 2021

Dear Mr. Follin,

In accordance with the Comprehensive LUC Management Plan, the Plan has been revised to include the addition of the notices LHAAP-04 and LHAAP-16, as well as the pending LUCs for LHAAP-18/24 and LHAAP-29. The 6 December 2021 draft final document was approved by EPA and TCEQ without comment and is resubmitted as Final with the approval signatures.

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder. An electronic copy of this letter and download instructions for the electronic file have been sent via email. Hard copies of the changed pages will be distributed for incorporation into complete hard copy record. Army will update the Administrative Record with this letter transmittal, the complete LUC Management Plan with the changed pages incorporated, and the final signed Revision Log.

The document was revised by Bhate Environmental Associates, Inc., (Bhate) on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.zeiler@calibresys.com.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Electronic Copies furnished:
L. Poulos, USEPA Region 6, Dallas, TX
A. Palmie, TCEQ, Austin, TX
P. Bruckwicki, USFWS, Caddo Lake NWR, TX (1 hard copy and 1 CD)
C. Montoya, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
A. Nieves, USAEC, San Antonio, TX
K. Nemmers, Bhate, Lakewood, CO
P. Srivastav, APTIM, Houston, TX

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

December 17, 2021

DAIN-ODB-LO

Ms. April Palmie
Texas Commission on Environmental Quality
Superfund Section, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final 2021 Update of the Comprehensive Land Use Control (LUC) Management Plan, Longhorn Army Ammunition Plant, Karnack, Texas, 17 December 2021

Dear Ms. Palmie,

In accordance with the Comprehensive LUC Management Plan, the Plan has been revised to include the addition of the notices LHAAP-04 and LHAAP-16, as well as the pending LUCs for LHAAP-18/24 and LHAAP-29. The 6 December 2021 draft final document was approved by EPA and TCEQ without comment and is resubmitted as Final with the approval signatures.

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The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.zeiler@calibresys.com.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Electronic Copies furnished:
B. Follin, USEPA Region 6, Dallas, TX
L. Poulos, USEPA Region 6, Dallas, TX
P. Bruckwicki, USFWS, Caddo Lake NWR, TX (1 hard copy and 1 CD)
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