

200-19B2

**2019 TIER 2 TESTING AND
NMOC EMISSION ESTIMATES REPORT
FOR**

**LOUDON COUNTY (MATLOCK BEND)
LANDFILL**

TDEC SOLID WASTE Permit No.: SNL 53-103-0203



**PREPARED BY:
SANTEK WASTE SERVICES, LLC
650 25TH STREET NW, SUITE 100
CLEVELAND, TN 37311**

MAY 2019



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Cleveland, Tennessee 37311
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May 24, 2019

Compliance Validation Program
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Ave., 15th Floor
Nashville, TN 37243

RE: 2019 Tier 2 NMOC Emission Testing
Loudon County (Matlock Bend) Landfill – Loudon, TN
Solid Waste Permit #: SNL 53-103-0203

To Whom It May Concern:

Santek Waste Services, LLC (Santek) is pleased to submit the results of the Tier 2 testing and non-methane organic compound (NMOC) emissions estimates for the Loudon County (Matlock Bend) Landfill located at 21712 Hwy 72 North, Loudon, TN to the Tennessee Department of Environment and Conservation (TDEC), Division of Air Pollution Control. This document reports the results of the Tier 2 testing activities and the NMOC calculations as required by state and federal regulations.

Tier 2 Testing

Tier 2 testing must be completed every five (5) years at the facility until such times as the estimated emissions of NMOC's exceed the regulatory threshold of 50 Megagrams (Mg) per year. EMServices (EMS) collected landfill gas samples in accordance with the methods specified in Appendix A of 40 CFR, Part 60. The facility's combined area with waste in place for greater than two (2) years is 65.6 acres (26.6 hectares). In accordance with 40 CFR 60.754, two (2) samples per hectare are required; therefore, 50 samples are required to be collected.

Sampling was performed by compositing samples at five (5) sample locations into one (1) Summa canister for a total of ten (10) canisters. Sample compositing was conducted in accordance with the procedures described in 40 CFR, Part 60, Subpart WWW. Sample collection and subsequent analyses were also performed in accordance with the procedures described in U.S. Environmental Protection Agency (USEPA) Reference Methods 3C and 25C.

Field activities for the Tier 2 testing were conducted on March 26 – 27 and April 2, 2019 by EMS. Since the facility has waste in-place for two (2) years or more on more than 26.56 hectares, 50 sample locations were required. The samples were split between the closed and active portions of the landfill. As a result, 29 samples were taken from the active landfill and 21 samples were taken from the closed landfill, map located in Appendix D). The sampling locations were distributed across the regulated areas as indicated in the EMS report enclosed in Appendix A. Sample probes were

installed at each sampling location using the direct push procedure to advance a sample probe through the landfill cover into the waste. EMS utilized a Geo Probe 6620 to conduct the direct push sampling. The probes were advanced to approximately one (1) meter below the waste cover at 46 of the 50 sample locations. At four (4) locations, 44, 46, 48 and 50, the sample probes were advanced to 10', 20', 15', and 20' respectively to reach waste greater than two (2) years old. Once the probes had reached the proper depth for sampling, the pilot probes were backed out to permit sampling.

Immediately after installing each sampling probe, a landfill gas analyzer was connected to a sampling port on the top of the probe using flexible hoses. The line was purged for two to three minutes until the gas concentrations detected by the analyzer stabilized. Oxygen (O_2) concentrations were required to be below 5 percent (5%) by volume before gas samples were collected into sample containers. This procedure was used to verify the absence of air infiltration. Upon completion of the landfill gas quality field check at each sampling location, the sampling valve was closed and then opened to a pre-evacuated, six-liter Summa canister. Integrated samples were collected at <500 ml/min until the vacuum of the canister reached the desired composite volume. The EMS Tier 2 Field Data Sheets (located in Appendix A) presents a summary of data collected in the field during sampling. Sampling and purge flow rates were controlled using an in-line needle valve and verified using a rodometer. The sample canisters were labeled and secured for transport to an offsite analytical laboratory. Holes created by the sampling activities were backfilled with bentonite and hydrated with water to maintain cap integrity.

Sample canisters were pre-evacuated prior to the field sampling effort. The Summa canisters were verified “leak-free” by the maximum vacuum (≥ 29.5 ” Hg) recorded prior to sampling. Canisters used for sampling were evacuated by Eurofins Test America, Inc. (Eurofins).

Analysis of each sample was performed by Eurofins located in South Burlington, Vermont, in accordance with the procedures described in USEPA Reference Methods 3C and 25C. Method 3C is used to determine the methane, oxygen, nitrogen and carbon dioxide concentration of the samples collected. During sample collection, all sampling points indicated O_2 concentrations well below five percent (5%). The Method 3C and Method 25C gas concentrations are summarized in the Tier 2 Field Data Sheets (Appendix A). The Eurofins laboratory report for method 3C and 25C are enclosed in Appendix B.

Tier 2 Sampling Results and NMOC Emissions Estimates

Eurofins Test America analyzed landfill gas samples collected by EMS and the results of the landfill analyses were used to calculate the NMOC emissions for the Loudon County (Matlock Bend) Landfill. The results from the Tier 2 testing were converted from parts per million by volume of Carbon (ppmv_C) to parts per million by volume of Hexane (ppmv_{Hex}) for use as the site-specific NMOC concentration in landfill gas (LFG), as required by 40 CFR 60.752. To determine the site specific NMOC as Hexane concentration, the results of the analysis were averaged in accordance with 40 CFR 60.754. The site specific estimated NMOC concentration in LFG for the landfill is **75 ppmv_{Hex}**.

To calculate the mass emission rate of NMOC (in Megagrams per year [Mg/yr]), the site-specific NMOC concentration and other site-specific parameters were input into the Landfill Gas Emissions Model (LandGEM) ver. 3.02 as prepared under contract for the US Environmental Protection Agency. The LandGEM uses the equation specified in 40 CFR 60.754 to estimate the NMOC emissions for a facility based on known waste receipts. Santek used waste receipt volumes from facility opening through 2018 to determine in-place waste for the updated calculations. The landfill design capacity required by the LandGEM program was gathered from the Amended Design Capacity Report (ADCR)

dated January 2, 2014. The default values for the methane generation rate constant (k) and refuse methane generation potential (L_o) as specified in 40 CFR 60.754 were used to calculate the NMOC emission rate.

The NMOC emissions calculation, using the site specific NMOC concentration, indicate the Loudon County (Matlock Bend) Landfill NMOC emissions are well below the threshold of 50 Mg/yr that trigger design and installation of a landfill gas collection and control system (GCCS). The estimated NMOC emission rate for 2019, using the default k and L_o values and site-specific NMOC concentration (as determined by the May 2019 Tier 2 sampling results) is **8.79 Mg/yr**. Results of the LandGEM NMOC emission calculations are enclosed in Appendix C. Based on the results of the LandGEM emission estimates, the Loudon County (Matlock Bend) Landfill will not exceed the 50 Mg/yr NMOC threshold. The facility is required to complete another Tier 2 testing event before the five (5) year anniversary of this testing event.

If you have any questions or comments, feel free to call at (423) 303-7101.

Sincerely,



Robert Hudson
Environmental Compliance Coordinator



Ron E. Vail, P.E.
Executive V.P. of Engineering

Enclosures

cc: Steve Field, Chairman, LCSWDC
Matt Dillard, Executive V.P. of Operations, Santek
Ben Johnston, V.P. of Business Development, Santek
Justin Givens, Landfill Manager, Santek

Table 1
NMOC Concentration Calculation

Loudon County (Matlock Bend) Landfill

Calculations: NMOC (as Hexane) = NMOC (as Carbon) / 6

Site Specific NMOC = Average of the measured NMOC (as Hexane)

Sample ID	NMOC Detected (as Carbon) (ppmv) ¹	Calculated NMOC Content (as Hexane) (ppmv) ¹
200-48140-1	250	42
200-48140-2	300	50
200-48140-3	320	53
200-48140-4	670	112
200-48140-5	900	150
200-48182-1	570	95
200-48182-2	330	55
200-48182-3	330	55
200-48182-4	420	70
200-48182-5	410	68
AVERAGE		75

Notes:

¹NMOC measured as Methane in accordance with Method 25C of Appendix A of 40 CFR 60, subpart WWW by Eurofins Test America

²NMOC concentration as Hexane calculated in accordance with 40 CFR 60.754(a)(3)

APPENDIX A

EM Services

Environmental Monitoring Services, LLC

Client Santek Waste Services
 Site Loudon County (Matlock Bend) Landfill
 Date(s) 3/26-27, 04/02/2019

Sample Point ID	Landfill Phase	Date	Time	CH ₄ (% by vol.)	O ₂ (% by vol.)	Balance	Sample Container ID	Starting Pressure ("Hg)	Ending Pressure ("Hg)	Flow Rate (ml/min)	Temp (°F)	Barometric Pressure ("Hg)
1		3/26/2019	1045	61.5%	2.3%	36.2%	4947	29	24	500	46	29.87
2		3/26/2019	1111	68.0%	0.0%	32.0%	4947	24	19	500	48	29.88
21		3/26/2019	1254	71.0%	0.1%	28.9%	4947	19	14	500	49	29.89
18		3/26/2019	1305	65.5%	0.2%	34.3%	4947	14	9	500	54	29.89
19		3/26/2019	1316	62.0%	0.0%	38.0%	4947	9	5	500	54	29.89
20		3/26/2019	1333	65.0%	0.4%	34.6%	3012	29	24	500	50	29.88
15		3/26/2019	1415	72.5%	0.0%	27.5%	3012	24	19	500	56	29.87
7		3/26/2019	1429	70.5%	0.1%	29.4%	3012	19	14	500	56	29.85
6		3/26/2019	1525	87.0%	0.0%	13.0%	3012	14	9	500	59	29.85
23		3/26/2019	1551	67.0%	0.0%	33.0%	3012	9	5	500	59	29.85
25		3/27/2019	938	70.0%	0.0%	30.0%	4807	29	24	500	40	30.04
28		3/27/2019	956	62.0%	0.5%	37.5%	4807	24	19	500	40	30.04
31		3/27/2019	1013	65.0%	0.4%	34.6%	4807	19	14	500	43	30.04
24		3/27/2019	1028	74.0%	0.0%	26.0%	4807	14	9	500	48	30.05
29		3/27/2019	1041	67.0%	0.0%	33.0%	4807	9	5	500	47	30.05
26		3/27/2019	1100	68.5%	0.3%	31.2%	2596	29	24	500	48	30.05
32		3/27/2019	1117	67.5%	0.0%	32.5%	2596	24	19	500	53	30.06
27		3/27/2019	1132	74.5%	0.5%	25.0%	2596	19	14	500	52	30.06
33		3/27/2019	1145	68.5%	0.0%	31.5%	2596	14	9	500	52	30.06
49		3/27/2019	1203	65.5%	0.0%	34.5%	2596	9	5	500	57	30.06
50		3/27/2019	1243	67.5%	0.2%	32.3%	4561	29	24	500	57	30.05
39		3/27/2019	1258	76.5%	0.0%	23.5%	4561	24	19	500	60	30.05
46		3/27/2019	1309	71.0%	0.0%	29.0%	4561	19	14	500	61	30.04
47		3/27/2019	1322	66.5%	0.0%	33.5%	4561	14	9	500	60	30.02
38		3/27/2019	1341	67.5%	0.0%	32.5%	4561	9	5	500	61	30.02

EM Services

Environmental Monitoring Services, LLC

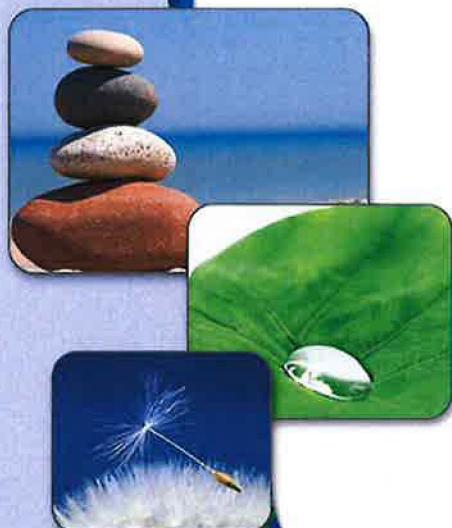
Client Santek Waste Services
 Site Loudon County (Matlock Bend) Landfill
 Date(s) 3/26-27, 04/02/2019

Sample Point ID	Landfill Phase	Date	Time	CH ₄ (% by vol.)	O ₂ (% by vol.)	Balance	Sample Container ID	Starting Pressure ("Hg)	Ending Pressure ("Hg)	Flow Rate (ml/min)	Temp (°F)	Barometric Pressure ("Hg)
44		3/27/2019	1356	67.0%	0.0%	33.0%	5022	29	24	500	59	30.02
48		4/2/2019	1002	65.0%	0.0%	35.0%	5022	24	19	500	44	30.18
45		4/2/2019	1016	68.0%	0.0%	32.0%	5022	19	14	500	44	30.18
43		4/2/2019	1037	68.5%	0.0%	31.5%	5022	14	9	500	46	30.18
40		4/2/2019	1048	66.0%	0.0%	34.0%	5022	9	5	500	46	30.18
37		4/2/2019	1104	71.5%	0.0%	28.5%	4451	29	24	500	46	30.18
36		4/2/2019	1118	62.5%	1.4%	36.1%	4451	24	19	500	51	30.18
42		4/2/2019	1129	78.5%	0.0%	21.5%	4451	19	14	500	51	30.18
30		4/2/2019	1139	69.5%	0.0%	30.5%	4451	14	9	500	52	30.18
35		4/2/2019	1144	71.0%	0.0%	29.0%	4451	9	5	500	45	30.18
34		4/2/2019	1156	68.5%	0.0%	31.5%	2739	27	24	500	48	30.17
41		4/2/2019	1207	70.5%	0.0%	29.5%	2739	24	19	500	49	30.17
22		4/2/2019	1217	69.5%	0.0%	30.5%	2739	19	14	500	50	30.17
14		4/2/2019	1242	72.0%	0.8%	27.2%	2739	14	9	500	49	30.17
12		4/2/2019	1300	78.0%	0.6%	21.4%	2739	9	5	500	53	30.15
13		4/2/2019	1314	80.0%	0.3%	19.7%	5624	29	24	500	53	30.15
11		4/2/2019	1327	77.5%	0.0%	22.5%	5624	24	19	500	53	30.15
10		4/2/2019	1337	81.0%	0.0%	19.0%	5624	19	14	500	53	30.15
9		4/2/2019	1349	78.5%	0.0%	21.5%	5624	14	9	500	53	30.15
17		4/2/2019	1359	82.5%	0.0%	17.5%	5624	9	5	500	53	30.15
3		4/2/2019	1413	81.0%	0.0%	19.0%	6173	29	24	500	56	30.15
4		4/2/2019	1425	82.0%	0.0%	18.0%	6173	24	19	500	56	30.15
5		4/2/2019	1439	71.0%	0.0%	29.0%	6173	19	14	500	54	30.12
8		4/2/2019	1450	71.5%	0.0%	28.5%	6173	14	9	500	54	30.12
19		4/2/2019	1501	72.0%	0.1%	27.9%	6173	9	5	500	54	30.12

APPENDIX B



Environment Testing
TestAmerica



ANALYTICAL REPORT

Eurofins TestAmerica, Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403
Tel: (802)660-1990

Laboratory Job ID: 200-48140-1

Laboratory Sample Delivery Group: 200-48140-1
Client Project/Site: Landfill Tier II

For:

Environmental Monitoring Services, LLC
106 Hartwood Drive
Suite A
Woodstock, Georgia 30189

Attn: Mr. Jeff Johnson

Kathryn Kelly

Authorized for release by:
4/24/2019 11:27:43 AM

Kathryn Kelly, Project Manager II
(802)923-1021
kathryn.kelly@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Definitions/Glossary

Client: Environmental Monitoring Services, LLC
Project/Site: Landfill Tier II

Job ID: 200-48140-1
SDG: 200-48140-1

Qualifiers

Air - GC VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation These commonly used abbreviations may or may not be present in this report.

□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

3

Case Narrative

Client: Environmental Monitoring Services, LLC
Project/Site: Landfill Tier II

Job ID: 200-48140-1
SDG: 200-48140-1

Job ID: 200-48140-1

Laboratory: Eurofins TestAmerica, Burlington

Narrative

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CASE NARRATIVE

Client: Environmental Monitoring Services, LLC

Project: Landfill Tier II

Report Number: 200-48140-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 04/02/2019; the samples arrived in good condition.

NON-METHANE ORGANIC CARBON

Samples 1, 2, 21, 18, 19, 20, 15, 7, 6, 23, 25, 28, 31, 24, 29, 26, 32, 27, 33, 49 and 50, 39, 46, 47, 38 were analyzed for Non-Methane Organic Carbon in accordance with EPA Method 25C. The samples were analyzed on 04/19/2019.

Samples 1, 2, 21, 18, 19[1.68X], 20, 15, 7, 6, 23[1.83X], 25, 28, 31, 24, 29[1.65X], 26, 32, 27, 33, 49[1.53X] and 50, 39, 46, 47, 38[1.68X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

FIXED GASES

Samples 1, 2, 21, 18, 19, 20, 15, 7, 6, 23, 25, 28, 31, 24, 29, 26, 32, 27, 33, 49 and 50, 39, 46, 47, 38 were analyzed for Fixed Gases in accordance with EPA Method 3C. The samples were analyzed on 04/09/2019 and 04/10/2019.

Samples 1, 2, 21, 18, 19[1.8X], 20, 15, 7, 6, 23[1.83X], 25, 28, 31, 24, 29[1.65X], 26, 32, 27, 33, 49[1.53X] and 50, 39, 46, 47, 38[1.68X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Environmental Monitoring Services, LLC
 Project/Site: Landfill Tier II

Job ID: 200-48140-1
 SDG: 200-48140-1

Client Sample ID: 1, 2, 21, 18, 19

Lab Sample ID: 200-48140-1

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
NMOC as Carbon – Uncorrected	200		10	10	ppm-C	1.68	EPA 25C		Total/NA
NMOC as Carbon - N2 Corrected	250		10	10	ppm-C	1.68	EPA 25C		Total/NA
Carbon dioxide	30		0.090	0.090	% v/v	1.8	EPA 3C		Total/NA
Methane	60		0.072	0.072	% v/v	1.8	EPA 3C		Total/NA
Nitrogen	13		0.90	0.90	% v/v	1.8	EPA 3C		Total/NA
Oxygen	2.8		0.090	0.090	% v/v	1.8	EPA 3C		Total/NA

Client Sample ID: 20, 15, 7, 6, 23

Lab Sample ID: 200-48140-2

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
NMOC as Carbon – Uncorrected	240		11	11	ppm-C	1.83	EPA 25C		Total/NA
NMOC as Carbon - N2 Corrected	300		11	11	ppm-C	1.83	EPA 25C		Total/NA
Carbon dioxide	25		0.092	0.092	% v/v	1.83	EPA 3C		Total/NA
Methane	57		0.073	0.073	% v/v	1.83	EPA 3C		Total/NA
Nitrogen	13		0.92	0.92	% v/v	1.83	EPA 3C		Total/NA
Oxygen	3.7		0.092	0.092	% v/v	1.83	EPA 3C		Total/NA

Client Sample ID: 25, 28, 31, 24, 29

Lab Sample ID: 200-48140-3

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
NMOC as Carbon – Uncorrected	290		9.9	9.9	ppm-C	1.65	EPA 25C		Total/NA
NMOC as Carbon - N2 Corrected	320		9.9	9.9	ppm-C	1.65	EPA 25C		Total/NA
Carbon dioxide	38		0.083	0.083	% v/v	1.65	EPA 3C		Total/NA
Methane	59		0.066	0.066	% v/v	1.65	EPA 3C		Total/NA
Nitrogen	3.6		0.83	0.83	% v/v	1.65	EPA 3C		Total/NA
Oxygen	0.86		0.083	0.083	% v/v	1.65	EPA 3C		Total/NA

Client Sample ID: 26, 32, 27, 33, 49

Lab Sample ID: 200-48140-4

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
NMOC as Carbon – Uncorrected	560		9.2	9.2	ppm-C	1.53	EPA 25C		Total/NA
NMOC as Carbon - N2 Corrected	670		9.2	9.2	ppm-C	1.53	EPA 25C		Total/NA
Carbon dioxide	32		0.077	0.077	% v/v	1.53	EPA 3C		Total/NA
Methane	52		0.061	0.061	% v/v	1.53	EPA 3C		Total/NA
Nitrogen	10		0.77	0.77	% v/v	1.53	EPA 3C		Total/NA
Oxygen	2.8		0.077	0.077	% v/v	1.53	EPA 3C		Total/NA

Client Sample ID: 50, 39, 46, 47, 38

Lab Sample ID: 200-48140-5

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
NMOC as Carbon – Uncorrected	840		10	10	ppm-C	1.68	EPA 25C		Total/NA
NMOC as Carbon - N2 Corrected	900		10	10	ppm-C	1.68	EPA 25C		Total/NA
Carbon dioxide	39		0.084	0.084	% v/v	1.68	EPA 3C		Total/NA
Methane	59		0.067	0.067	% v/v	1.68	EPA 3C		Total/NA
Nitrogen	2.5		0.84	0.84	% v/v	1.68	EPA 3C		Total/NA
Oxygen	0.69		0.084	0.084	% v/v	1.68	EPA 3C		Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Burlington

Client Sample Results

Client: Environmental Monitoring Services, LLC
 Project/Site: Landfill Tier II

Job ID: 200-48140-1
 SDG: 200-48140-1

Client Sample ID: 1, 2, 21, 18, 19

Lab Sample ID: 200-48140-1
 Matrix: Air

Date Collected: 03/26/19 13:16

Date Received: 04/02/19 12:03

Sample Container: Summa Canister 6L

Method: EPA 25C - Nonmethane Organic Compounds (NMOC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
NMOC as Carbon – Uncorrected	200		10	10	ppm-C			04/19/19 17:59	1.68
NMOC as Carbon - N2 Corrected	250		10	10	ppm-C			04/19/19 17:59	1.68

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	30		0.090	0.090	% v/v			04/09/19 22:55	1.8
Methane	60		0.072	0.072	% v/v			04/09/19 22:55	1.8
Nitrogen	13		0.90	0.90	% v/v			04/09/19 22:55	1.8
Oxygen	2.8		0.090	0.090	% v/v			04/09/19 22:55	1.8

Client Sample ID: 20, 15, 7, 6, 23

Lab Sample ID: 200-48140-2

Date Collected: 03/26/19 15:51

Date Received: 04/02/19 12:03

Sample Container: Summa Canister 6L

Method: EPA 25C - Nonmethane Organic Compounds (NMOC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
NMOC as Carbon – Uncorrected	240		11	11	ppm-C			04/19/19 19:04	1.83
NMOC as Carbon - N2 Corrected	300		11	11	ppm-C			04/19/19 19:04	1.83

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	25		0.092	0.092	% v/v			04/09/19 23:59	1.83
Methane	57		0.073	0.073	% v/v			04/09/19 23:59	1.83
Nitrogen	13		0.92	0.92	% v/v			04/09/19 23:59	1.83
Oxygen	3.7		0.092	0.092	% v/v			04/09/19 23:59	1.83

Client Sample ID: 25, 28, 31, 24, 29

Lab Sample ID: 200-48140-3

Date Collected: 03/27/19 10:41

Date Received: 04/02/19 12:03

Sample Container: Summa Canister 6L

Method: EPA 25C - Nonmethane Organic Compounds (NMOC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
NMOC as Carbon – Uncorrected	290		9.9	9.9	ppm-C			04/19/19 20:09	1.65
NMOC as Carbon - N2 Corrected	320		9.9	9.9	ppm-C			04/19/19 20:09	1.65

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	38		0.083	0.083	% v/v			04/10/19 01:08	1.65
Methane	59		0.066	0.066	% v/v			04/10/19 01:08	1.65
Nitrogen	3.6		0.83	0.83	% v/v			04/10/19 01:08	1.65
Oxygen	0.86		0.083	0.083	% v/v			04/10/19 01:08	1.65

Eurofins TestAmerica, Burlington

Client Sample Results

Client: Environmental Monitoring Services, LLC
 Project/Site: Landfill Tier II

Job ID: 200-48140-1
 SDG: 200-48140-1

Client Sample ID: 26, 32, 27, 33, 49

Lab Sample ID: 200-48140-4

Matrix: Air

Date Collected: 03/27/19 12:03

Date Received: 04/02/19 12:03

Sample Container: Summa Canister 6L

Method: EPA 25C - Nonmethane Organic Compounds (NMOC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
NMOC as Carbon – Uncorrected	560		9.2	9.2	ppm-C			04/19/19 21:13	1.53
NMOC as Carbon - N2 Corrected	670		9.2	9.2	ppm-C			04/19/19 21:13	1.53

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	32		0.077	0.077	% v/v			04/10/19 02:15	1.53
Methane	52		0.061	0.061	% v/v			04/10/19 02:15	1.53
Nitrogen	10		0.77	0.77	% v/v			04/10/19 02:15	1.53
Oxygen	2.8		0.077	0.077	% v/v			04/10/19 02:15	1.53

Client Sample ID: 50, 39, 46, 47, 38

Lab Sample ID: 200-48140-5

Matrix: Air

Date Collected: 03/27/19 13:41

Date Received: 04/02/19 12:03

Sample Container: Summa Canister 6L

Method: EPA 25C - Nonmethane Organic Compounds (NMOC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
NMOC as Carbon – Uncorrected	840		10	10	ppm-C			04/19/19 22:18	1.68
NMOC as Carbon - N2 Corrected	900		10	10	ppm-C			04/19/19 22:18	1.68

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	39		0.084	0.084	% v/v			04/10/19 03:19	1.68
Methane	59		0.067	0.067	% v/v			04/10/19 03:19	1.68
Nitrogen	2.5		0.84	0.84	% v/v			04/10/19 03:19	1.68
Oxygen	0.69		0.084	0.084	% v/v			04/10/19 03:19	1.68

QC Sample Results

Client: Environmental Monitoring Services, LLC
 Project/Site: Landfill Tier II

Job ID: 200-48140-1
 SDG: 200-48140-1

Method: EPA 25C - Nonmethane Organic Compounds (NMOC)

Lab Sample ID: MB 200-142202/5

Matrix: Air

Analysis Batch: 142202

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
NMOC as Carbon – Uncorrected	6.0	U	6.0	6.0	ppm-C			04/19/19 13:52	1
NMOC as Carbon - N2 Corrected	6.0	U	6.0	6.0	ppm-C			04/19/19 13:52	1

Lab Sample ID: LCS 200-142202/6

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Matrix: Air
Analysis Batch: 142202

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec.	Limits
NMOC as Carbon – Uncorrected	750	711		ppm-C		95	70 - 130

Method: EPA 3C - Fixed Gases from Stationary Sources

Lab Sample ID: MB 200-142064/4

Client Sample ID: Method Blank
Prep Type: Total/NA

Matrix: Air
Analysis Batch: 142064

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	0.050	U	0.050	0.050	% v/v			04/09/19 18:54	1
Methane	0.040	U	0.040	0.040	% v/v			04/09/19 18:54	1
Nitrogen	0.50	U	0.50	0.50	% v/v			04/09/19 18:54	1
Oxygen	0.050	U	0.050	0.050	% v/v			04/09/19 18:54	1

Lab Sample ID: LCS 200-142064/2

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Matrix: Air
Analysis Batch: 142064

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec.	Limits
Carbon dioxide	5.00	4.87		% v/v		97	70 - 130
Methane	4.00	4.02		% v/v		101	70 - 130
Nitrogen	5.00	4.51		% v/v		90	70 - 130
Oxygen	2.50	2.23		% v/v		89	70 - 130

QC Association Summary

Client: Environmental Monitoring Services, LLC
 Project/Site: Landfill Tier II

Job ID: 200-48140-1
 SDG: 200-48140-1

Air - GC VOA

Analysis Batch: 142064

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
200-48140-1	1, 2, 21, 18, 19	Total/NA	Air	EPA 3C	
200-48140-2	20, 15, 7, 6, 23	Total/NA	Air	EPA 3C	
200-48140-3	25, 28, 31, 24, 29	Total/NA	Air	EPA 3C	
200-48140-4	26, 32, 27, 33, 49	Total/NA	Air	EPA 3C	
200-48140-5	50, 39, 46, 47, 38	Total/NA	Air	EPA 3C	
MB 200-142064/4	Method Blank	Total/NA	Air	EPA 3C	
LCS 200-142064/2	Lab Control Sample	Total/NA	Air	EPA 3C	

Analysis Batch: 142202

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
200-48140-1	1, 2, 21, 18, 19	Total/NA	Air	EPA 25C	
200-48140-2	20, 15, 7, 6, 23	Total/NA	Air	EPA 25C	
200-48140-3	25, 28, 31, 24, 29	Total/NA	Air	EPA 25C	
200-48140-4	26, 32, 27, 33, 49	Total/NA	Air	EPA 25C	
200-48140-5	50, 39, 46, 47, 38	Total/NA	Air	EPA 25C	
MB 200-142202/5	Method Blank	Total/NA	Air	EPA 25C	
LCS 200-142202/6	Lab Control Sample	Total/NA	Air	EPA 25C	

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Lab Chronicle

Client: Environmental Monitoring Services, LLC
 Project/Site: Landfill Tier II

Job ID: 200-48140-1
 SDG: 200-48140-1

Client Sample ID: 1, 2, 21, 18, 19

Lab Sample ID: 200-48140-1
 Matrix: Air

Date Collected: 03/26/19 13:16
 Date Received: 04/02/19 12:03

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 25C		1.68	142202	04/19/19 17:59	WRD	TAL BUR
Total/NA	Analysis	EPA 3C		1.8	142064	04/09/19 22:55	WRD	TAL BUR

Client Sample ID: 20, 15, 7, 6, 23

Lab Sample ID: 200-48140-2
 Matrix: Air

Date Collected: 03/26/19 15:51
 Date Received: 04/02/19 12:03

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 25C		1.83	142202	04/19/19 19:04	WRD	TAL BUR
Total/NA	Analysis	EPA 3C		1.83	142064	04/09/19 23:59	WRD	TAL BUR

Client Sample ID: 25, 28, 31, 24, 29

Lab Sample ID: 200-48140-3
 Matrix: Air

Date Collected: 03/27/19 10:41
 Date Received: 04/02/19 12:03

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 25C		1.65	142202	04/19/19 20:09	WRD	TAL BUR
Total/NA	Analysis	EPA 3C		1.65	142064	04/10/19 01:08	WRD	TAL BUR

Client Sample ID: 26, 32, 27, 33, 49

Lab Sample ID: 200-48140-4
 Matrix: Air

Date Collected: 03/27/19 12:03
 Date Received: 04/02/19 12:03

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 25C		1.53	142202	04/19/19 21:13	WRD	TAL BUR
Total/NA	Analysis	EPA 3C		1.53	142064	04/10/19 02:15	WRD	TAL BUR

Client Sample ID: 50, 39, 46, 47, 38

Lab Sample ID: 200-48140-5
 Matrix: Air

Date Collected: 03/27/19 13:41
 Date Received: 04/02/19 12:03

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 25C		1.68	142202	04/19/19 22:18	WRD	TAL BUR
Total/NA	Analysis	EPA 3C		1.68	142064	04/10/19 03:19	WRD	TAL BUR

Laboratory References:

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Eurofins TestAmerica, Burlington

Accreditation/Certification Summary

Client: Environmental Monitoring Services, LLC
Project/Site: Landfill Tier II

Job ID: 200-48140-1
SDG: 200-48140-1

Laboratory: Eurofins TestAmerica, Burlington

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
ANAB	DoD / DOE	L2336		02-25-20
Connecticut	State Program	1	PH-0751	09-30-19
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	NA	02-01-19 *
Florida	NELAP	4	E87467	06-30-19
Maine	State Program	1	VT00008	04-17-19 *
Minnesota	NELAP	5	050-999-436	12-31-19
New Hampshire	NELAP	1	2006	12-18-19
New Jersey	NELAP	2	VT972	06-30-19
New York	NELAP	2	10391	04-01-20
Pennsylvania	NELAP	3	68-00489	04-30-19 *
Rhode Island	State Program	1	LAO00298	12-30-19
US Fish & Wildlife	Federal		LE-058448-0	07-31-19
USDA	Federal		P330-11-00093	07-24-20
Vermont	State Program	1	VT-4000	12-31-19
Virginia	NELAP	3	460209	12-14-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Burlington

Method Summary

Client: Environmental Monitoring Services, LLC
Project/Site: Landfill Tier II

Job ID: 200-48140-1
SDG: 200-48140-1

Method	Method Description	Protocol	Laboratory
EPA 25C	Nonmethane Organic Compounds (NMOC)	EPA	TAL BUR
EPA 3C	Fixed Gases from Stationary Sources	EPA	TAL BUR

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Sample Summary

Client: Environmental Monitoring Services, LLC
Project/Site: Landfill Tier II

Job ID: 200-48140-1
SDG: 200-48140-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
200-48140-1	1, 2, 21, 18, 19	Air	03/26/19 13:16	04/02/19 12:03
200-48140-2	20, 15, 7, 6, 23	Air	03/26/19 15:51	04/02/19 12:03
200-48140-3	25, 28, 31, 24, 29	Air	03/27/19 10:41	04/02/19 12:03
200-48140-4	26, 32, 27, 33, 49	Air	03/27/19 12:03	04/02/19 12:03
200-48140-5	50, 39, 46, 47, 38	Air	03/27/19 13:41	04/02/19 12:03

TestAmerica Burlington

30 Community Drive

Suite 11

South Burlington, VT 05403-6809

phone 802.660.1990 fax 802.660.1919

681-Atlanta

Canister Samples Chain of Custody Record

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples.

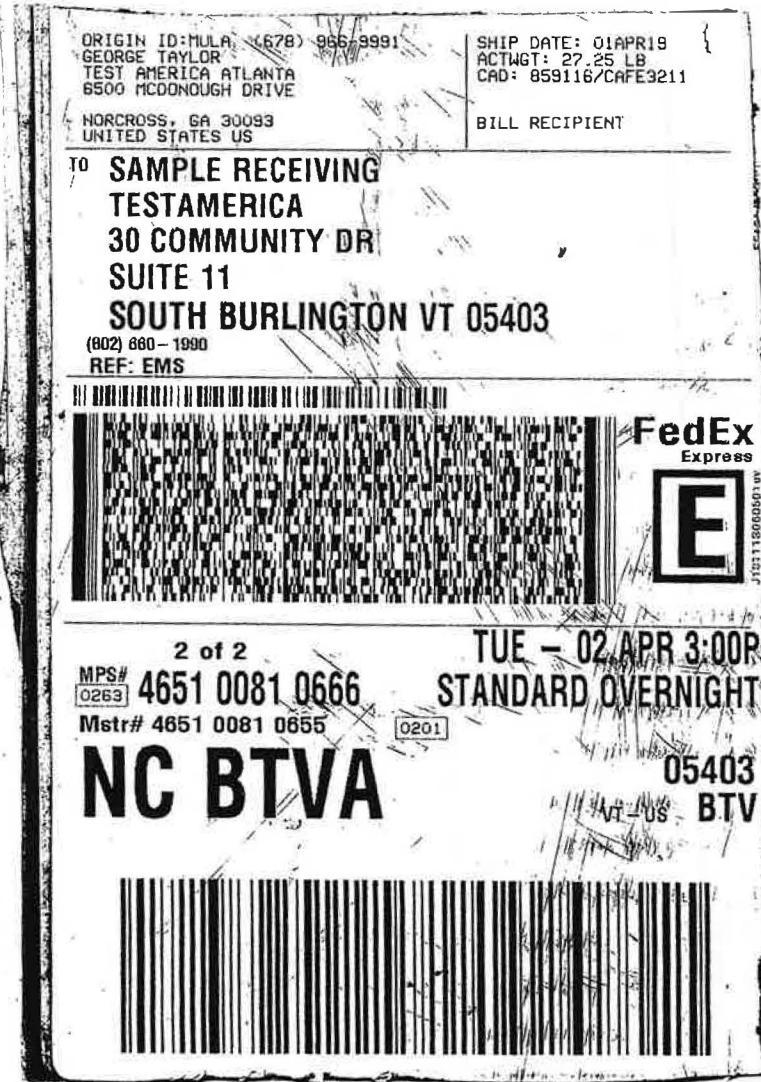
TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact Information		Client Project Manager: <u>Jeff Johnson</u>		Samples Collected By: <u>BRADLEY ARSO</u>		COC No:											
Company Name: <u>GM Services</u>		Phone: <u>770-823-7174</u>				<u>1</u> of <u>1</u> COCs											
Address: <u>106A Harwood Dr</u>		Email: <u>JJ@GMServicesOnline.com</u>				For Lab Use Only:											
City/State/Zip <u>Woolstock, GA 30189</u>						Walk-in Client: <input type="checkbox"/>											
Phone: <u></u>		Site Contact: <u></u>				Lab Sampling: <input type="checkbox"/>											
FAX: <u></u>		Tel/Fax: <u></u>				Job / SDG No.: <u></u>											
Project Name: <u>Loudon Co. Tier 2</u>		Analysis Turnaround Time				(See below for Add'l Items)											
Site/Location: <u>Loudon, TN</u>		Standard (Specific): <input checked="" type="checkbox"/>															
P O #		Rush (Specify): <u></u>															
Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum In Field, 'Hg (Start)'	Canister Vacuum In Field, 'Hg (Stop)'	Flow Controller ID	Canister ID	TO-14/15 (Standard / Low Level)		Other (Please specify in notes section)	Sub-Slab	Soil Gas	Landfill Gas	Other (Please specify in notes section)			
								TO-16 SIM	EPA 3C						EPA 25C	ASTM D-3946	EPA 16/16
1, 2, 21, 18, 19	3/26/19	1045	1316	29.0	5.0	--	4947	/	/	/	/	/	/				
20, 15, 7, 6, 23	3/26/19	1333	1551	29.0	5.0	--	3012	/	/	/	/	/	/				
25, 28, 31, 24, 29	3/27/19	0938	1041	29.0	5.0	--	4807	/	/								
26, 32, 27, 33, 49	3/27/19	1100	1203	29.0	5.0	--	2596	/	/								
50, 39, 46, 47, 38	3/27/19	1243	1341	29.0	5.0	--	4561	/	/								
								 200-48140 Chain of Custody									
Temperature (Fahrenheit)																	
Start	Interior		Ambient														
Stop																	
Pressure (inches of Hg)																	
Start	Interior		Ambient														
Stop																	
Special Instructions/QC Requirements & Comments:																	
Samples Shipped by:		Date / Time:		Samples Received by:		<u>Sam Hall TABurl 4-2-19 1203</u> <u>Received by: E C</u> <u>Received by: E C</u>											
Samples Relinquished by: <u>Bradley Arso</u>		Date / Time: <u>3/28/19 1400</u>		Received by:													
Relinquished by: <u>Bradley Arso</u>		Date / Time: <u>4-1-19 1123</u>		Received by:													
Initials Only		Shipping Name:		Open/Closed:		Condition:											

Form No. CA-C-WI-003, Rev. 2.5, dated 9/22/2017



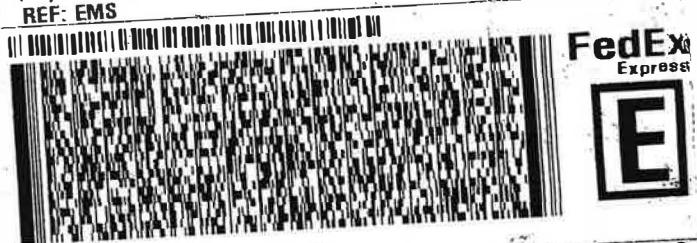
ORIGIN ID: MULA (678) 966-9991
GEORGE TAYLOR
TEST AMERICA ATLANTA
6500 MCDONOUGH DRIVE
NORCROSS, GA 30093
UNITED STATES US

SHIP DATE: 01APR19
ACTWGT: 13.55 LB
CAD: 859116/CAFE3211

BILL RECIPIENT

**TO SAMPLE RECEIVING
TESTAMERICA
30 COMMUNITY DR
SUITE 11
SOUTH BURLINGTON VT 05403**

(802) 660-1990
REF: EMS



1 of 2
TRK# 4651 0081 0655
[0201] 0201
MASTER

**TUE - 02 APR 3:00P
STANDARD OVERNIGHT**

**05403
VT-US BTVA**



Login Sample Receipt Checklist

Client: Environmental Monitoring Services, LLC

Job Number: 200-48140-1
SDG Number: 200-48140-1

Login Number: 48140

List Number: 1

Creator: McNabb, Robert W

List Source: Eurofins TestAmerica, Burlington

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	548756, 548754
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	Thermal preservation not required.
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	N/A	Thermal preservation not required.
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	BA
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Burlington Job No.: 200-47654-1
 SDG No.:
 Client Sample ID: 5156 Lab Sample ID: 200-47654-1
 Matrix: Air Lab File ID: 200-34819-022.D
 Analysis Method: TO-15 Date Collected: 03/04/2019 00:00
 Sample wt/vol: 1000 (mL) Date Analyzed: 03/06/2019 06:21
 Soil Aliquot Vol: Dilution Factor: 0.2
 Soil Extract Vol.: GC Column: RTX-624 ID: 0.32 (mm)
 % Moisture: Level: (low/med) Low
 Analysis Batch No.: 140514 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
115-07-1	Propylene	1.0	U	1.0	1.0
75-71-8	Dichlorodifluoromethane	0.10	U	0.10	0.10
75-45-6	Freon 22	0.10	U	0.10	0.10
76-14-2	1,2-Dichlorotetrafluoroethane	0.040	U	0.040	0.040
74-87-3	Chloromethane	0.10	U	0.10	0.10
106-97-8	n-Butane	0.10	U	0.10	0.10
75-01-4	Vinyl chloride	0.040	U	0.040	0.040
106-99-0	1,3-Butadiene	0.040	U	0.040	0.040
74-83-9	Bromomethane	0.040	U	0.040	0.040
75-00-3	Chloroethane	0.10	U	0.10	0.10
593-60-2	Bromoethene(Vinyl Bromide)	0.040	U	0.040	0.040
75-69-4	Trichlorofluoromethane	0.040	U	0.040	0.040
64-17-5	Ethanol	1.0	U	1.0	1.0
76-13-1	Freon TF	0.040	U	0.040	0.040
75-35-4	1,1-Dichloroethene	0.040	U	0.040	0.040
67-64-1	Acetone	1.0	U	1.0	1.0
67-63-0	Isopropyl alcohol	1.0	U	1.0	1.0
75-15-0	Carbon disulfide	0.10	U	0.10	0.10
107-05-1	3-Chloropropene	0.10	U	0.10	0.10
75-09-2	Methylene Chloride	0.10	U	0.10	0.10
75-65-0	tert-Butyl alcohol	1.0	U	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.040	U	0.040	0.040
156-60-5	trans-1,2-Dichloroethene	0.040	U	0.040	0.040
110-54-3	n-Hexane	0.040	U	0.040	0.040
75-34-3	1,1-Dichloroethane	0.040	U	0.040	0.040
108-05-4	Vinyl acetate	1.0	U	1.0	1.0
141-78-6	Ethyl acetate	1.0	U	1.0	1.0
78-93-3	Methyl Ethyl Ketone	0.10	U	0.10	0.10
156-59-2	cis-1,2-Dichloroethene	0.040	U	0.040	0.040
540-59-0	1,2-Dichloroethene, Total	0.080	U	0.080	0.080
67-66-3	Chloroform	0.040	U	0.040	0.040
109-99-9	Tetrahydrofuran	1.0	U	1.0	1.0
71-55-6	1,1,1-Trichloroethane	0.040	U	0.040	0.040
110-82-7	Cyclohexane	0.040	U	0.040	0.040
56-23-5	Carbon tetrachloride	0.040	U	0.040	0.040
540-84-1	2,2,4-Trimethylpentane	0.040	U	0.040	0.040

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FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Burlington

Job No.: 200-47654-1

SDG No.: _____

Client Sample ID: 5156 Lab Sample ID: 200-47654-1

Matrix: Air Lab File ID: 200-34819-022.D

Analysis Method: TO-15 Date Collected: 03/04/2019 00:00

Sample wt/vol: 1000(mL) Date Analyzed: 03/06/2019 06:21

Soil Aliquot Vol: _____ Dilution Factor: 0.2

Soil Extract Vol.: _____ GC Column: RTX-624 ID: 0.32 (mm)

% Moisture: _____ Level: (low/med) Low

Analysis Batch No.: 140514 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
71-43-2	Benzene	0.040	U	0.040	0.040
107-06-2	1,2-Dichloroethane	0.040	U	0.040	0.040
142-82-5	n-Heptane	0.040	U	0.040	0.040
79-01-6	Trichloroethene	0.040	U	0.040	0.040
80-62-6	Methyl methacrylate	0.10	U	0.10	0.10
78-87-5	1,2-Dichloropropane	0.040	U	0.040	0.040
123-91-1	1,4-Dioxane	1.0	U	1.0	1.0
75-27-4	Bromodichloromethane	0.040	U	0.040	0.040
10061-01-5	cis-1,3-Dichloropropene	0.040	U	0.040	0.040
108-10-1	methyl isobutyl ketone	0.10	U	0.10	0.10
108-88-3	Toluene	0.040	U	0.040	0.040
10061-02-6	trans-1,3-Dichloropropene	0.040	U	0.040	0.040
79-00-5	1,1,2-Trichloroethane	0.040	U	0.040	0.040
127-18-4	Tetrachloroethene	0.040	U	0.040	0.040
591-78-6	Methyl Butyl Ketone (2-Hexanone)	0.10	U	0.10	0.10
124-48-1	Dibromochloromethane	0.040	U	0.040	0.040
106-93-4	1,2-Dibromoethane	0.040	U	0.040	0.040
108-90-7	Chlorobenzene	0.040	U	0.040	0.040
100-41-4	Ethylbenzene	0.040	U	0.040	0.040
179601-23-1	m,p-Xylene	0.10	U	0.10	0.10
95-47-6	Xylene, o-	0.040	U	0.040	0.040
1330-20-7	Xylene (total)	0.14	U	0.14	0.14
100-42-5	Styrene	0.040	U	0.040	0.040
75-25-2	Bromoform	0.040	U	0.040	0.040
98-82-8	Cumene	0.040	U	0.040	0.040
79-34-5	1,1,2,2-Tetrachloroethane	0.040	U	0.040	0.040
103-65-1	n-Propylbenzene	0.040	U	0.040	0.040
622-96-8	4-Ethyltoluene	0.040	U	0.040	0.040
108-67-8	1,3,5-Trimethylbenzene	0.040	U	0.040	0.040
95-49-8	2-Chlorotoluene	0.040	U	0.040	0.040
98-06-6	tert-Butylbenzene	0.040	U	0.040	0.040
95-63-6	1,2,4-Trimethylbenzene	0.040	U	0.040	0.040
135-98-8	sec-Butylbenzene	0.040	U	0.040	0.040
99-87-6	4-Isopropyltoluene	0.040	U	0.040	0.040
541-73-1	1,3-Dichlorobenzene	0.040	U	0.040	0.040
106-46-7	1,4-Dichlorobenzene	0.040	U	0.040	0.040

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Burlington

Job No.: 200-47654-1

SDG No.: _____

Client Sample ID: 5156

Lab Sample ID: 200-47654-1

Matrix: Air

Lab File ID: 200-34819-022.D

Analysis Method: TO-15

Date Collected: 03/04/2019 00:00

Sample wt/vol: 1000 (mL)

Date Analyzed: 03/06/2019 06:21

Soil Aliquot Vol: _____

Dilution Factor: 0.2

Soil Extract Vol.: _____

GC Column: RTX-624 ID: 0.32 (mm)

% Moisture: _____

Level: (low/med) Low

Analysis Batch No.: 140514

Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
100-44-7	Benzyl chloride	0.040	U	0.040	0.040
104-51-8	n-Butylbenzene	0.040	U	0.040	0.040
95-50-1	1,2-Dichlorobenzene	0.040	U	0.040	0.040
120-82-1	1,2,4-Trichlorobenzene	0.10	U	0.10	0.10
87-68-3	Hexachlorobutadiene	0.040	U	0.040	0.040
91-20-3	Naphthalene	0.10	U *	0.10	0.10

15

TestAmerica Burlington
Target Compound Quantitation Report

Data File: \\chromna\Burlington\ChromData\CHG.i\20190305-34819.b\200-34819-022.D
 Lims ID: 200-47654-A-1
 Client ID: 5156
 Sample Type: Client
 Inject. Date: 06-Mar-2019 06:21:30 ALS Bottle#: 21 Worklist Smp#: 22
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Sample Info: 200-0034819-022
 Misc. Info.: 47654-1
 Operator ID: ggg Instrument ID: CHG.i
 Method: \\chromna\Burlington\ChromData\CHG.i\20190305-34819.b\TO15_MasterMethod_(v1).G.m
 Limit Group: AI_TO15_ICAL
 Last Update: 06-Mar-2019 10:42:06 Calib Date: 28-Feb-2019 03:57:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Burlington\ChromData\CHG.i\20190227-34752.b\200-34752-011.D
 Column 1 : RTX-624 (0.32 mm) Det: MS SCAN
 Process Host: CTX0340

First Level Reviewer: guazzonig

Date:

06-Mar-2019 11:36:23

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
1 Propene	41	3.065					ND	
2 Dichlorodifluoromethane	85	3.113					ND	
3 Chlorodifluoromethane	51	3.145					ND	
4 1,2-Dichloro-1,1,2,2-tetra	85	3.311					ND	
5 Chloromethane	50	3.418					ND	
6 Butane	43	3.563					ND	
7 Vinyl chloride	62	3.595					ND	
8 Butadiene	54	3.654					ND	
10 Bromomethane	94	4.157					ND	
11 Chloroethane	64	4.328					ND	
13 Vinyl bromide	106	4.627					ND	
14 Trichlorofluoromethane	101	4.702					ND	
17 Ethanol	45	5.152	5.125	0.027	56	488	0.1385	
20 1,1,2-Trichloro-1,2,2-trif	101		5.537				ND	
21 1,1-Dichloroethene	96	5.564	5.590	-0.026	1	211	0.0144	
22 Acetone	43		5.772				ND	
23 Carbon disulfide	76		5.943				ND	
24 Isopropyl alcohol	45		6.002				ND	
25 3-Chloro-1-propene	41		6.232				ND	
27 Methylene Chloride	49		6.473				ND	
28 2-Methyl-2-propanol	59		6.666				ND	
29 Methyl tert-butyl ether	73		6.847				ND	
31 trans-1,2-Dichloroethene	61		6.869				ND	
33 Hexane	57		7.211				ND	
34 1,1-Dichloroethane	63		7.639				ND	
35 Vinyl acetate	43		7.698				ND	
37 cis-1,2-Dichloroethene	96		8.640				ND	
38 2-Butanone (MEK)	72		8.682				ND	
39 Ethyl acetate	88		8.725				ND	
* 40 Chlorobromomethane	128	9.057	9.062	-0.005	72	176667	10.0	
41 Tetrahydrofuran	42		9.105				ND	

Report Date: 06-Mar-2019 11:36:33

Chrom Revision: 2.3 11-Feb-2019 16:31:10

Data File: \\chromna\\Burlington\\ChromData\\CHG.i\\20190305-34819.b\\200-34819-022.D

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
42 Chloroform	83		9.180				ND	
43 Cyclohexane	84		9.437				ND	
44 1,1,1-Trichloroethane	97		9.447				ND	
S 30 1,2-Dichloroethene, Total	61		9.665				ND	
45 Carbon tetrachloride	117		9.688				ND	
46 Isooctane	57		10.100				ND	
47 Benzene	78	10.121	10.116	0.005	1	1410	0.0310	
48 1,2-Dichloroethane	62		10.277				ND	
49 n-Heptane	43	10.469	10.475	-0.006	41	1294	0.0591	
* 50 1,4-Difluorobenzene	114	10.913	10.919	-0.006	93	895827	10.0	
53 Trichloroethene	95		11.379				ND	
54 1,2-Dichloropropane	63		11.908				ND	
55 Methyl methacrylate	69		12.095				ND	
56 1,4-Dioxane	88		12.160				ND	
57 Dibromomethane	174	12.149	12.160	-0.011	46	597	0.0149	
58 Dichlorobromomethane	83		12.454				ND	
60 cis-1,3-Dichloropropene	75		13.369				ND	
61 4-Methyl-2-pentanone (MIBK)	43		13.674				ND	
65 Toluene	92		13.957				ND	
66 trans-1,3-Dichloropropene	75		14.551				ND	
67 1,1,2-Trichloroethane	83		14.915				ND	
68 Tetrachloroethene	166		15.038				ND	
69 2-Hexanone	43		15.396				ND	
71 Chlorodibromomethane	129		15.680				ND	
72 Ethylene Dibromide	107		15.937				ND	
* 74 Chlorobenzene-d5	117	16.851	16.851	0.000	83	1015176	10.0	
75 Chlorobenzene	112		16.916				ND	
76 Ethylbenzene	91		17.081				ND	
78 m-Xylene & p-Xylene	106	17.344	17.338	0.006	0	615	0.0155	
79 o-Xylene	106		18.183				ND	
80 Styrene	104		18.237				ND	
81 Bromoform	173		18.676				ND	
82 Isopropylbenzene	105		18.948				ND	
S 73 Xylenes, Total	106				0		0.0155	7
84 1,1,2,2-Tetrachloroethane	83		19.676				ND	
85 N-Propylbenzene	91	19.756	19.762	-0.006	51	2311	0.0173	
89 2-Chlorotoluene	91		19.965				ND	
88 4-Ethyltoluene	105		19.970				ND	
90 1,3,5-Trimethylbenzene	105		20.093				ND	
92 tert-Butylbenzene	119		20.618				ND	
93 1,2,4-Trimethylbenzene	105		20.725				ND	
94 sec-Butylbenzene	105		20.971				ND	
95 4-Isopropyltoluene	119		21.190				ND	
96 1,3-Dichlorobenzene	146		21.201				ND	
97 1,4-Dichlorobenzene	146	21.350	21.345	0.005	15	1715	0.0209	
98 Benzyl chloride	91	21.548	21.548	0.000	1	1587	0.0196	
100 n-Butylbenzene	91		21.784				ND	
101 1,2-Dichlorobenzene	146	21.885	21.880	0.005	6	1193	0.0154	
103 1,2,4-Trichlorobenzene	180	24.250	24.250	0.000	1	1943	0.0346	
104 Hexachlorobutadiene	225	24.453	24.443	0.010	1	1375	0.0225	
105 Naphthalene	128		24.683				ND	

Report Date: 06-Mar-2019 11:36:33

Chrom Revision: 2.3 11-Feb-2019 16:31:10

QC Flag Legend

Processing Flags

7 - Failed Limit of Detection

Reagents:

ATTO15GIS_00015

Amount Added: 20.00

Units: mL

Run Reagent

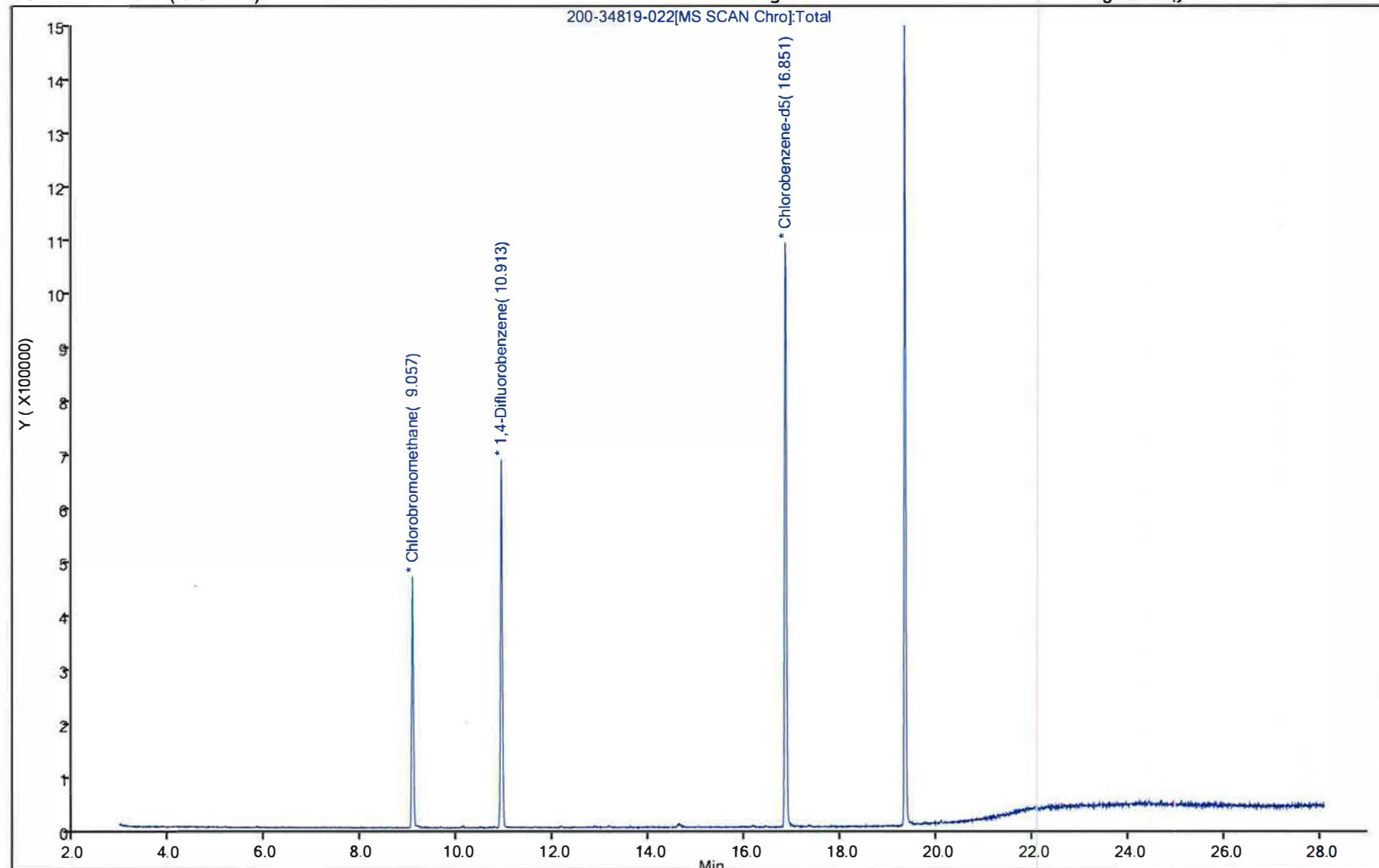
Report Date: 06-Mar-2019 11:36:33

Chrom Revision: 2.3 11-Feb-2019 16:31:10

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHG.i\\20190305-34819.b\\200-34819-022.D
Injection Date: 06-Mar-2019 06:21:30 Instrument ID: CHG.i Operator ID: ggg
Lims ID: 200-47654-A-1 Lab Sample ID: 200-47654-1 Worklist Smp#: 22
Client ID: 5156
Purge Vol: 200.000 mL Dil. Factor: 0.2000 ALS Bottle#: 21
Method: TO15_MasterMethod_(v1)_G Limit Group: AI_TO15_ICAL
Column: RTX-624 (0.32 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1





eurofins

Environment Testing
TestAmerica



ANALYTICAL REPORT

Eurofins TestAmerica, Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403
Tel: (802)660-1990

Laboratory Job ID: 200-48182-1

Laboratory Sample Delivery Group: 200-48182
Client Project/Site: Landfill Tier II

For:

Environmental Monitoring Services, LLC
106 Hartwood Drive
Suite A
Woodstock, Georgia 30189

Attn: Mr. Jeff Johnson

Kathryn Kelly

Authorized for release by:
4/30/2019 4:46:51 PM

Kathryn Kelly, Project Manager II
(802)923-1021
kathryn.kelly@testamericainc.com

LINKS

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results through
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Expert**

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Environmental Monitoring Services, LLC
Project/Site: Landfill Tier II

Job ID: 200-48182-1
SDG: 200-48182

Qualifiers

Air - GC VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation These commonly used abbreviations may or may not be present in this report.

<input checked="" type="checkbox"/>	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

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Case Narrative

Client: Environmental Monitoring Services, LLC
Project/Site: Landfill Tier II

Job ID: 200-48182-1
SDG: 200-48182

Job ID: 200-48182-1

Laboratory: Eurofins TestAmerica, Burlington

Narrative

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F

CASE NARRATIVE

Client: Environmental Monitoring Services, LLC

Project: Landfill Tier II

Report Number: 200-48182-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 04/04/2019; the samples arrived in good condition.

NON-METHANE ORGANIC CARBON

Samples 44,48,45,43,40; 37,36,42,30,35; 34,41,22,14,12; 13,11,10,9,17 and 3,4,5,8,19 were analyzed for Non-Methane Organic Carbon in accordance with EPA Method 25C. The samples were analyzed on 04/22/2019.

Samples 44,48,45,43,40[1.58X], 37,36,42,30,35[1.46X], 34,41,22,14,12[1.46X], 13,11,10,9,17[1.56X] and 3,4,5,8,19[1.64X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

FIXED GASES

Samples 44,48,45,43,40; 37,36,42,30,35; 34,41,22,14,12; 13,11,10,9,17 and 3,4,5,8,19 were analyzed for Fixed Gases in accordance with EPA Method 3C. The samples were analyzed on 04/09/2019.

Samples 44,48,45,43,40[1.58X], 37,36,42,30,35[1.46X], 34,41,22,14,12[1.46X], 13,11,10,9,17[1.56X] and 3,4,5,8,19[1.64X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Environmental Monitoring Services, LLC
 Project/Site: Landfill Tier II

Job ID: 200-48182-1
 SDG: 200-48182

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Client Sample ID: 44,48,45,43,40

Lab Sample ID: 200-48182-1

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
NMOC as Carbon – Uncorrected	490		9.5	9.5	ppm-C	1.58	EPA 25C		Total/NA
NMOC as Carbon - N2 Corrected	570		9.5	9.5	ppm-C	1.58	EPA 25C		Total/NA
Carbon dioxide	36		0.079	0.079	% v/v	1.58	EPA 3C		Total/NA
Methane	53		0.063	0.063	% v/v	1.58	EPA 3C		Total/NA
Nitrogen	8.8		0.79	0.79	% v/v	1.58	EPA 3C		Total/NA
Oxygen	2.5		0.079	0.079	% v/v	1.58	EPA 3C		Total/NA

Client Sample ID: 37,36,42,30,35

Lab Sample ID: 200-48182-2

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
NMOC as Carbon – Uncorrected	260		8.8	8.8	ppm-C	1.46	EPA 25C		Total/NA
NMOC as Carbon - N2 Corrected	330		8.8	8.8	ppm-C	1.46	EPA 25C		Total/NA
Carbon dioxide	29		0.073	0.073	% v/v	1.46	EPA 3C		Total/NA
Methane	52		0.058	0.058	% v/v	1.46	EPA 3C		Total/NA
Nitrogen	14		0.73	0.73	% v/v	1.46	EPA 3C		Total/NA
Oxygen	3.9		0.073	0.073	% v/v	1.46	EPA 3C		Total/NA

Client Sample ID: 34,41,22,14,12

Lab Sample ID: 200-48182-3

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
NMOC as Carbon – Uncorrected	230		8.8	8.8	ppm-C	1.46	EPA 25C		Total/NA
NMOC as Carbon - N2 Corrected	330		8.8	8.8	ppm-C	1.46	EPA 25C		Total/NA
Carbon dioxide	24		0.073	0.073	% v/v	1.46	EPA 3C		Total/NA
Methane	46		0.058	0.058	% v/v	1.46	EPA 3C		Total/NA
Nitrogen	21		0.73	0.73	% v/v	1.46	EPA 3C		Total/NA
Oxygen	5.8		0.073	0.073	% v/v	1.46	EPA 3C		Total/NA

Client Sample ID: 13,11,10,9,17

Lab Sample ID: 200-48182-4

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
NMOC as Carbon – Uncorrected	320		9.4	9.4	ppm-C	1.56	EPA 25C		Total/NA
NMOC as Carbon - N2 Corrected	420		9.4	9.4	ppm-C	1.56	EPA 25C		Total/NA
Carbon dioxide	25		0.078	0.078	% v/v	1.56	EPA 3C		Total/NA
Methane	56		0.062	0.062	% v/v	1.56	EPA 3C		Total/NA
Nitrogen	16		0.78	0.78	% v/v	1.56	EPA 3C		Total/NA
Oxygen	4.2		0.078	0.078	% v/v	1.56	EPA 3C		Total/NA

Client Sample ID: 3,4,5,8,19

Lab Sample ID: 200-48182-5

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
NMOC as Carbon – Uncorrected	280		9.8	9.8	ppm-C	1.64	EPA 25C		Total/NA
NMOC as Carbon - N2 Corrected	410		9.8	9.8	ppm-C	1.64	EPA 25C		Total/NA
Carbon dioxide	22		0.082	0.082	% v/v	1.64	EPA 3C		Total/NA
Methane	46		0.066	0.066	% v/v	1.64	EPA 3C		Total/NA
Nitrogen	23		0.82	0.82	% v/v	1.64	EPA 3C		Total/NA
Oxygen	6.5		0.082	0.082	% v/v	1.64	EPA 3C		Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Burlington

Client Sample Results

Client: Environmental Monitoring Services, LLC
 Project/Site: Landfill Tier II

Job ID: 200-48182-1
 SDG: 200-48182

Client Sample ID: 44,48,45,43,40

Lab Sample ID: 200-48182-1
 Matrix: Air

Date Collected: 04/02/19 10:48

Date Received: 04/04/19 10:22

Sample Container: Summa Canister 6L

Method: EPA 25C - Nonmethane Organic Compounds (NMOC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
NMOC as Carbon – Uncorrected	490		9.5	9.5	ppm-C			04/22/19 15:31	1.58
NMOC as Carbon - N2 Corrected	570		9.5	9.5	ppm-C			04/22/19 15:31	1.58

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	36		0.079	0.079	% v/v			04/09/19 05:54	1.58
Methane	53		0.063	0.063	% v/v			04/09/19 05:54	1.58
Nitrogen	8.8		0.79	0.79	% v/v			04/09/19 05:54	1.58
Oxygen	2.5		0.079	0.079	% v/v			04/09/19 05:54	1.58

Client Sample ID: 37,36,42,30,35

Lab Sample ID: 200-48182-2
 Matrix: Air

Date Collected: 04/02/19 11:44

Date Received: 04/04/19 10:22

Sample Container: Summa Canister 6L

Method: EPA 25C - Nonmethane Organic Compounds (NMOC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
NMOC as Carbon – Uncorrected	260		8.8	8.8	ppm-C			04/22/19 16:35	1.46
NMOC as Carbon - N2 Corrected	330		8.8	8.8	ppm-C			04/22/19 16:35	1.46

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	29		0.073	0.073	% v/v			04/09/19 06:58	1.46
Methane	52		0.058	0.058	% v/v			04/09/19 06:58	1.46
Nitrogen	14		0.73	0.73	% v/v			04/09/19 06:58	1.46
Oxygen	3.9		0.073	0.073	% v/v			04/09/19 06:58	1.46

Client Sample ID: 34,41,22,14,12

Lab Sample ID: 200-48182-3
 Matrix: Air

Date Collected: 04/02/19 13:00

Date Received: 04/04/19 10:22

Sample Container: Summa Canister 6L

Method: EPA 25C - Nonmethane Organic Compounds (NMOC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
NMOC as Carbon – Uncorrected	230		8.8	8.8	ppm-C			04/22/19 17:40	1.46
NMOC as Carbon - N2 Corrected	330		8.8	8.8	ppm-C			04/22/19 17:40	1.46

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	24		0.073	0.073	% v/v			04/09/19 19:42	1.46
Methane	46		0.058	0.058	% v/v			04/09/19 19:42	1.46
Nitrogen	21		0.73	0.73	% v/v			04/09/19 19:42	1.46
Oxygen	5.8		0.073	0.073	% v/v			04/09/19 19:42	1.46

Eurofins TestAmerica, Burlington

Client Sample Results

Client: Environmental Monitoring Services, LLC
 Project/Site: Landfill Tier II

Job ID: 200-48182-1
 SDG: 200-48182

Client Sample ID: 13,11,10,9,17

Lab Sample ID: 200-48182-4

Matrix: Air

Date Collected: 04/02/19 13:59

Date Received: 04/04/19 10:22

Sample Container: Summa Canister 6L

Method: EPA 25C - Nonmethane Organic Compounds (NMOC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
NMOC as Carbon – Uncorrected	320		9.4	9.4	ppm-C			04/22/19 18:44	1.56
NMOC as Carbon - N2 Corrected	420		9.4	9.4	ppm-C			04/22/19 18:44	1.56

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	25		0.078	0.078	% v/v			04/09/19 20:47	1.56
Methane	56		0.062	0.062	% v/v			04/09/19 20:47	1.56
Nitrogen	16		0.78	0.78	% v/v			04/09/19 20:47	1.56
Oxygen	4.2		0.078	0.078	% v/v			04/09/19 20:47	1.56

Client Sample ID: 3,4,5,8,19

Lab Sample ID: 200-48182-5

Matrix: Air

Date Collected: 04/02/19 15:01

Date Received: 04/04/19 10:22

Sample Container: Summa Canister 6L

Method: EPA 25C - Nonmethane Organic Compounds (NMOC)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
NMOC as Carbon – Uncorrected	280		9.8	9.8	ppm-C			04/22/19 19:48	1.64
NMOC as Carbon - N2 Corrected	410		9.8	9.8	ppm-C			04/22/19 19:48	1.64

Method: EPA 3C - Fixed Gases from Stationary Sources

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	22		0.082	0.082	% v/v			04/09/19 21:51	1.64
Methane	46		0.066	0.066	% v/v			04/09/19 21:51	1.64
Nitrogen	23		0.82	0.82	% v/v			04/09/19 21:51	1.64
Oxygen	6.5		0.082	0.082	% v/v			04/09/19 21:51	1.64

QC Sample Results

Client: Environmental Monitoring Services, LLC
 Project/Site: Landfill Tier II

Job ID: 200-48182-1
 SDG: 200-48182

Method: EPA 25C - Nonmethane Organic Compounds (NMOC)

Lab Sample ID: MB 200-142353/3

Matrix: Air

Analysis Batch: 142353

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
NMOC as Carbon – Uncorrected	6.0	U	6.0	6.0	ppm-C			04/22/19 10:17	1
NMOC as Carbon - N2 Corrected	6.0	U	6.0	6.0	ppm-C			04/22/19 10:17	1

Lab Sample ID: LCS 200-142353/2

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Matrix: Air
Analysis Batch: 142353

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
NMOC as Carbon – Uncorrected	750	720		ppm-C	96	70 - 130	

Method: EPA 3C - Fixed Gases from Stationary Sources

Lab Sample ID: MB 200-142064/4

Client Sample ID: Method Blank
Prep Type: Total/NA

Matrix: Air
Analysis Batch: 142064

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	0.050	U	0.050	0.050	% v/v			04/09/19 18:54	1
Methane	0.040	U	0.040	0.040	% v/v			04/09/19 18:54	1
Nitrogen	0.50	U	0.50	0.50	% v/v			04/09/19 18:54	1
Oxygen	0.050	U	0.050	0.050	% v/v			04/09/19 18:54	1

Lab Sample ID: LCS 200-142064/2

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Matrix: Air
Analysis Batch: 142064

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
Carbon dioxide	5.00	4.87		% v/v	97	70 - 130	
Methane	4.00	4.02		% v/v	101	70 - 130	
Nitrogen	5.00	4.51		% v/v	90	70 - 130	
Oxygen	2.50	2.23		% v/v	89	70 - 130	

Lab Sample ID: MB 200-142208/16

Client Sample ID: Method Blank
Prep Type: Total/NA

Matrix: Air
Analysis Batch: 142208

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	0.050	U	0.050	0.050	% v/v			04/08/19 17:27	1
Methane	0.040	U	0.040	0.040	% v/v			04/08/19 17:27	1
Nitrogen	0.50	U	0.50	0.50	% v/v			04/08/19 17:27	1
Oxygen	0.050	U	0.050	0.050	% v/v			04/08/19 17:27	1

Lab Sample ID: LCS 200-142208/14

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Matrix: Air
Analysis Batch: 142208

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
Carbon dioxide	5.00	4.99		% v/v	100	70 - 130	
Methane	4.00	4.06		% v/v	102	70 - 130	
Nitrogen	5.00	4.61		% v/v	92	70 - 130	

Eurofins TestAmerica, Burlington

QC Sample Results

Client: Environmental Monitoring Services, LLC
Project/Site: Landfill Tier II

Job ID: 200-48182-1
SDG: 200-48182

Method: EPA 3C - Fixed Gases from Stationary Sources (Continued)

Lab Sample ID: LCS 200-142208/14

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Matrix: Air

Analysis Batch: 142208

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Oxygen	2.50	2.30		% v/v		92	70 - 130

QC Association Summary

Client: Environmental Monitoring Services, LLC
 Project/Site: Landfill Tier II

Job ID: 200-48182-1
 SDG: 200-48182

Air - GC VOA

Analysis Batch: 142064

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
200-48182-3	34,41,22,14,12	Total/NA	Air	EPA 3C	
200-48182-4	13,11,10,9,17	Total/NA	Air	EPA 3C	
200-48182-5	3,4,5,6,19	Total/NA	Air	EPA 3C	
MB 200-142064/4	Method Blank	Total/NA	Air	EPA 3C	
LCS 200-142064/2	Lab Control Sample	Total/NA	Air	EPA 3C	

Analysis Batch: 142208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
200-48182-1	44,48,45,43,40	Total/NA	Air	EPA 3C	
200-48182-2	37,36,42,30,35	Total/NA	Air	EPA 3C	
MB 200-142208/16	Method Blank	Total/NA	Air	EPA 3C	
LCS 200-142208/14	Lab Control Sample	Total/NA	Air	EPA 3C	

Analysis Batch: 142353

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
200-48182-1	44,48,45,43,40	Total/NA	Air	EPA 25C	
200-48182-2	37,36,42,30,35	Total/NA	Air	EPA 25C	
200-48182-3	34,41,22,14,12	Total/NA	Air	EPA 25C	
200-48182-4	13,11,10,9,17	Total/NA	Air	EPA 25C	
200-48182-5	3,4,5,8,19	Total/NA	Air	EPA 25C	
MB 200-142353/3	Method Blank	Total/NA	Air	EPA 25C	
LCS 200-142353/2	Lab Control Sample	Total/NA	Air	EPA 25C	

Lab Chronicle

Client: Environmental Monitoring Services, LLC
 Project/Site: Landfill Tier II

Job ID: 200-48182-1
 SDG: 200-48182

Client Sample ID: 44,48,45,43,40

Date Collected: 04/02/19 10:48

Date Received: 04/04/19 10:22

Lab Sample ID: 200-48182-1

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 25C		1.58	142353	04/22/19 15:31	WRD	TAL BUR
Total/NA	Analysis	EPA 3C		1.58	142208	04/09/19 05:54	WRD	TAL BUR

Client Sample ID: 37,36,42,30,35

Lab Sample ID: 200-48182-2

Matrix: Air

Date Received: 04/04/19 10:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 25C		1.46	142353	04/22/19 16:35	WRD	TAL BUR
Total/NA	Analysis	EPA 3C		1.46	142208	04/09/19 06:58	WRD	TAL BUR

Client Sample ID: 34,41,22,14,12

Lab Sample ID: 200-48182-3

Matrix: Air

Date Received: 04/04/19 10:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 25C		1.46	142353	04/22/19 17:40	WRD	TAL BUR
Total/NA	Analysis	EPA 3C		1.46	142064	04/09/19 19:42	WRD	TAL BUR

Client Sample ID: 13,11,10,9,17

Lab Sample ID: 200-48182-4

Matrix: Air

Date Received: 04/04/19 10:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 25C		1.56	142353	04/22/19 18:44	WRD	TAL BUR
Total/NA	Analysis	EPA 3C		1.56	142064	04/09/19 20:47	WRD	TAL BUR

Client Sample ID: 3,4,5,8,19

Lab Sample ID: 200-48182-5

Matrix: Air

Date Received: 04/04/19 10:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	EPA 25C		1.64	142353	04/22/19 19:48	WRD	TAL BUR
Total/NA	Analysis	EPA 3C		1.64	142064	04/09/19 21:51	WRD	TAL BUR

Laboratory References:

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Eurofins TestAmerica, Burlington

Accreditation/Certification Summary

Client: Environmental Monitoring Services, LLC

Project/Site: Landfill Tier II

Job ID: 200-48182-1

SDG: 200-48182

Laboratory: Eurofins TestAmerica, Burlington

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
ANAB	DoD / DOE		L2336	02-25-20
Connecticut	State Program	1	PH-0751	09-30-19
DF Haz Subst Cleanup Act (HSCA)	State Program	3	NA	02-01-19 *
Florida	NELAP	4	E87467	06-30-19
Maine	State Program	1	VT00008	04-17-19 *
Minnesota	NELAP	5	050-999-436	12-31-19
New Hampshire	NELAP	1	2006	12-18-19
New Jersey	NELAP	2	VT972	06-30-19
New York	NFI AP	2	10391	04-01-20
Pennsylvania	NELAP	3	68-00489	04-30-20
Rhode Island	State Program	1	LA000298	12-30-19
US Fish & Wildlife	Federal		LE-058448-0	07-31-19
USDA	Federal		P330-11-00093	07-24-20
Vermont	State Program	1	VT-4000	12-31-19
Virginia	NELAP	3	460209	12-14-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Environmental Monitoring Services, LLC
Project/Site: Landfill Tier II

Job ID: 200-48182-1
SDG: 200-48182

Method	Method Description	Protocol	Laboratory
EPA 25C	Nonmethane Organic Compounds (NMOC)	EPA	TAL BUR
EPA 3C	Fixed Gases from Stationary Sources	EPA	TAL BUR

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Sample Summary

Client: Environmental Monitoring Services, LLC
Project/Site: Landfill Tier II

Job ID: 200-48182-1
SDG: 200-48182

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
200-48182-1	44,48,45,43,40	Air	04/02/19 10:48	04/04/19 10:22
200-48182-2	37,36,42,30,35	Air	04/02/19 11:44	04/04/19 10:22
200-48182-3	34,41,22,14,12	Air	04/02/19 13:00	04/04/19 10:22
200-48182-4	13,11,10,9,17	Air	04/02/19 13:59	04/04/19 10:22
200-48182-5	3,4,5,8,19	Air	04/02/19 15:01	04/04/19 10:22

TestAmerica Burlington

30 Community Drive

Suite 11

South Burlington, VT 05403-6809

phone 802.660.1990 fax 802.660.1919

Canister Samples Chain of Custody Record

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

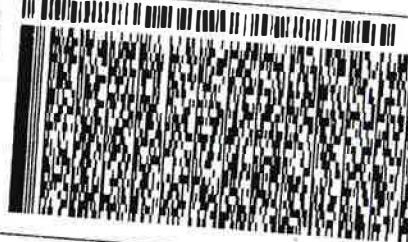
Client Contact Information		Client Project Manager: <u>Jeff Johnson</u>		Samples Collected By: <u>M. Young 1B A160</u>		COC No: <u>1 of 1 COCs</u>																	
Company Name: <u>EPA J3e/VCOS</u>		Phone: <u>770/523-7174</u>																					
Address: <u>106 Hartwood Dr</u>		Email: <u>J3e@enviroservicesonline.com</u>																					
City/State/Zip <u>Woodstock GA 30187</u>																							
Phone: <u>770/823-7174</u>		Site Contact:																					
FAX:		Tel/Fax:																					
Project Name: <u>Larson Co Tiers 2</u>		Analysis Turnaround Time																					
Site/Location: <u>Metlock Bend Landfill, TN</u>		Standard (Specific): <u>STD</u>																					
P O #		Rush (Specify):																					
Sample Identification	Sample Data(s)	Time Start	Time Stop	Canister Vacuum In Field, 'Hg (Start)'	Canister Vacuum In Field, 'Hg (Stop)'	Flow Controller ID	Canister ID	TO-14/16 (Standard / Low Level)	TO-16 SIM	EPA 3C	EPA 26C	ASTM D-1946	EPA 15/16	Other (Please specify in notes section)	Indoor Air/Ambient Air	Sub-Slab	Soil Gas	Soil Vapor Extraction (SVE)	Landfill Gas	Other (Please specify in notes section)			
<u>44, 48, 45, 43, 40</u>	<u>3/21/19 1002</u>	<u>1048</u>	<u>29</u>	<u>5</u>	<u>5022</u>			/	/	/	/												
<u>37, 36, 42, 30, 35</u>	<u>4/2/19 1104</u>	<u>1114</u>	<u>28</u>	<u>5</u>	<u>4451</u>			/	/	/	/												
<u>34, 41, 22, 14, 12</u>	<u>4/2/19 1156</u>	<u>1300</u>	<u>27</u>	<u>5</u>	<u>2739</u>			/	/	/	/												
<u>13, 11, 10, 9, 17</u>	<u>4/2/19 1314</u>	<u>1359</u>	<u>26</u>	<u>5</u>	<u>5624</u>			/	/	/	/												
<u>3, 4, 5, 8, 19</u>	<u>4/2/19 1413</u>	<u>1501</u>	<u>27</u>	<u>5</u>	<u>6173</u>			/	/	/	/												
Temperature (Fahrenheit)								 200-48182 Chain of Custody															
Start	Interior	Ambient																					
Stop																							
Pressure (inches of Hg)								 200-48182 Chain of Custody															
Start	Interior	Ambient																					
Stop																							
Special Instructions/QC Requirements & Comments:																							
Samples Shipped by: <u>ME</u>	Date / Time: <u>4/3/19 0900</u>	Samples Received by: <u>ME</u>		4/3/19 0900																			
Samples Relinquished by: <u>ME</u>	Date / Time: <u>4/3/19 1610</u>	Received by: <u>ME</u>																					
Relinquished by: <u>ME</u>	Date / Time: <u>4/4/19 1022</u>	Received by: <u>ME</u>		TABC 4/4/19 1022																			
Handling Only	Shipper Name:	Openatory:	Condition:																				

Form No. CA-C-WI-003, Rev. 2.5, dated 9/22/2017

ORIGIN ID:MULA (678) 966-9991
GEORGE TAYLOR (678) 966-9991
TEST AMERICA ATLANTA
6500 MCDONOUGH DRIVE
NORCROSS, GA 30093
UNITED STATES US

SHIP DATE: 03APR19
ACTWGT: 22.00 LB
CAD: 859116/CAFE3211
BILL RECIPIENT

To SAMPLE RECEIVING
TESTAMERICA
30 COMMUNITY DR
SUITE 11
SOUTH BURLINGTON VT 05403
(802) 660-1990
REF: EMS



FedEx
Express

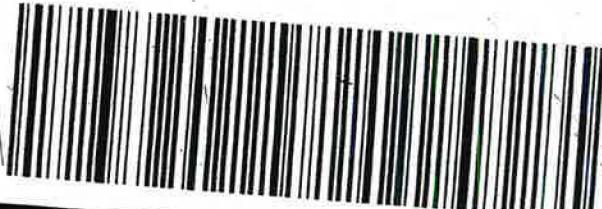


2 of 2
MPS# 0263 4651 0081 1000
Master# 4651 0081 0997

THU - 04 APR 3:00P
STANDARD OVERNIGHT

NC BTVA

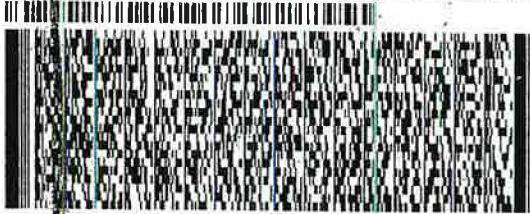
05403
VT-US BTV



ORIGIN ID:MULA (678) 966-9991
GEORGE TAYLOR (678) 966-9991
TEST AMERICA ATLANTA
6500 MCDONOUGH DRIVE
NORCROSS, GA 30093
UNITED STATES US

SHIP DATE: 03APR19
ACTWGT: 21.10 LB
CAD: 859116/CAFE3211
BILL RECIPIENT

To SAMPLE RECEIVING
TESTAMERICA
30 COMMUNITY DR
SUITE 11
SOUTH BURLINGTON VT 05403
(802) 660-1990
REF: EMS



FedEx
Express



1 of 2
TRK 020 4651 0081 0997
##MASTER ##

NC BTVA

05403
VT-US BTV



Login Sample Receipt Checklist

Client: Environmental Monitoring Services, LLC

Job Number: 200-48182-1

SDG Number: 200-48182

Login Number: 48182

List Source: Eurofins TestAmerica, Burlington

List Number: 1

Creator: Lavigne, Scott M

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	692581,580
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	Thermal preservation not required.
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	N/A	Thermal preservation not required.
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Pre-Shipment Clean Canister Certification Report

Canister Cleaning & Pre-Shipment Leak Test

Canister Cleaning & Pre-Shipment Leak Test															
System ID	Max DF#	# Cycles	Cleaning Start Date/Time		System Start Temp(s):		Technician		Can Size		Certification Type:				
Bottom Rack	550	25	2/15/2019	1404	21	21	EJE		6 liter		batch				
Port	Can ID	Initial ¹ (psia)	Final (psia)	Final ("Hg)	Initial Reading					Final Reading					
		Gauge:	Date:	Time:	Tech:	Temp:	Gauge:	Date:	Time:	Tech:	Temp:				
1	4547	.03	.03	.00	-30.4	G26	2/16/19	1430	SV	21.0	G26	2/17/19	14:08	EE	22
2	3074	1	.03	.00	1	G26			L	G26	L	L	L	L	
3	4919	1	.03	.00	1	G26			L	G26	1	1	1	1	
4	4829	102	.02	0	29.9	G26	3/1/19	1410	—	21.0	G26	3/2/19	14:00	—	21.0
5	5605	.03	.03	.00	-30.4	G26	2/16/19	1430	SV	21.0	G26	2/17/19	14:08	EE	22
6	5624	1	.03	.00	1	G26			1	G26					
7	4233	15	.02			G26				G26					
8	5403	.03	.00			G26				G26					
9	3145	.03	.00			G26				G26					
10	5059	.03	.00			G26				G26					
11	4082	.03	.00			G26				G26					
12	6394	1	.03	.00	1	G26			1	G26					

¹ Batch Certification: The reading is taken on the "batch" canister and this value is used as the initial pressure for all canisters in the batch.

³ Difference = Final Pressure - Initial Pressure . Acceptance Criteria: (1) The difference must be less than or equal to + 0.25psi. (2) Pressure readings must be at least 24 hours apart.

If time frame was not met, the PM must authorize shipment of canister

PM Authorization

Date:-

Clean Canister Certification Analysis & Authorization of Release to Inventory

Inventory Level 1: Individual Canister Certification (TO15LL 0.01).

Comments:

Inventory Level 2: Individual or Batch Certification (TO15 0.04 ppbv).

Inventory Level 3: Individual or Batch Certification (TO15 0.2 ppbv).

Digitized by srujanika@gmail.com

Invento y Level Limited: Canisters may only be used for certain projects.

H2O

Drip Tees/Vac gauges (enter IDs if included):

[View Details](#) | [Edit](#) | [Delete](#)

Form ID: FAI023:12
Revision Date: 12/18/2018

TestAmerica Burlington

Loc: 200
47422
#4
A

200-47422-A4
4923
Location: Air Storage
Bottle: Summa Cansister 6L
Sampled: 2/15/2019 12:00 AM
20C-1258175

200-47422-A4
4923
Location: Air Storage
Bottle: Summa Cansister 6L
Sampled: 2/15/2019 12:00 AM
20C-1258175

Pre-Shipment Clean Canister Certification Report

Canister Cleaning & Pre-Shipment Leak Test

Canister Cleaning & Pre-Shipment Leak Test														
System ID	Max DF#	# Cycles	Cleaning Start Date/Time			System Start Temp(s):		Technician		Can Size		Certification Type:		
Oven 3/4	1	26	2/25/2019		1429	21	21	EJE		6 liter		batch		
Port	Can ID	Initial ¹	Final	Final	Initial Reading			Final Reading						
		(psia)	(psia)	(Hg)	Gauge:	Date:	Time:	Tech:	Temp:	Gauge:	Date:	Time:		
1	2739	.07	.07	0	29.9	G26	2/26/19	9:37	EE	21	G26	3/2/19	13:05	
2	4430	1	.124	.117	29.9	G26				G26				
3	3196		.107	0	29.9	G26				G26				
4	3038		.114	.07	29.9	G26				G26				
5	6260		.07	0	29.9	G26				G26				
6	4429		.114	.07	29.9	G26				G26				
7	5157		.117	0	29.9	G26				G26				
8	4942		.07	.06	29.9	G26				G26				
9	4837		.121	.14	29.9	G26				G26				
10	3320	1	.07	0	29.9	G26	+	+	+	G26	✓	✓	✓	
11	5458	.01	.104	0	29.6	G26	3/2/19	13:45	S	21.0	G26	3/4/19	12:05	← 21.0
12	4573	.07	.07	0	29.9	G26	2/26/19	9:37	EE	21	G26	3/2/19	13:05	← 21.0

¹ Batch Certification: The reading is taken on the "batch" canister and this value is used as the initial pressure for all canisters in the batch.

Difference = Final Pressure - Initial Pressure . Acceptance Criteria: (1) The difference must be less than or equal to + 0.25psi. (2) Pressure readings must be at least 24 hours apart.

If time frame was not met, the PM must authorize shipment of canister

PM Authorization

Date:

Clean Canister Certification Analysis & Authorization of Release to Inventory

Inventory Level 1: Individual Canister Certification (TO15LL 0.01).

Inventory Level 2: Individual or Batch Certification (TO15 0.04 ppbv).

Inventory Level 3: Individual or Batch Certification (TO15 0.2 ppbv).

Inventory Level Limited: Canisters may only be used for certain projects

Dup Tees/Vac gauges (enter IDs if included):

Form ID: FAI023:12
Revision Date: 12/18/2018

TestAmerica Burlington

Loc: 200
47546
#11
A

Loc: 200

A standard linear barcode representing the item number 200-47546-A-11.

A standard linear barcode representing the item number 200-47546-A-11.

Pre-Shipment Clean Canister Certification Report

Canister Cleaning & Pre-Shipment Leak Test

Canister Cleaning & Pre-Shipment Leak Test														
System ID	Max DF#	# Cycles	Cleaning Start Date/Time		System Start Temp(s):		Technician		Can Size		Certification Type:			
Port	Can ID	Initial ¹ (psia)	Final (psia)	Diff. ³ ("Hg)	Initial Reading					Final Reading				
1	5156	.02	.06	.04	29.7	G26	3-15-19	11:11	E6	21	G26	3-16-19	15:30	21
2	4451	.02	.02	.00	-29.9	G26	3-15-19	15:24	EE	21	G26	3-14-19	15:15	EE
3	6173	1	.02	.00	1	G26					G26			
4	4807		.02	.00		G26					G26			
5	2598		.02	.00		G26					G26			
6	3012		.02	.00		G26					G26			
7	2596		.02	.00		G26					G26			
8	4561		.02	.00		G26					G26			
9	4947		.04	.02		G26					G26			
10	5022		.02	.00		G26					G26			
11	4812		.05	.03		G26					G26			
12	5110	✓	.02	.00	✓	G26	✓	✓	✓	✓	G26	✓	✓	✓

Batch Certification: The reading is taken on the "batch" canister and this value is used as the initial pressure for all canisters in the batch.

³ Difference = Final Pressure - Initial Pressure . Acceptance Criteria: (1) The difference must be less than or equal to + 0.25psi. (2) Pressure readings must be at least 24 hours apart.

If time frame was not met, the PM must authorize shipment of canister

PM Authorization

Date:-

Page 200

Clean Canister Certification Analysis & Authorization of Release to Inventory

Inventory Level 1: Individual Canister Certification (TO15LL 0.01).

Inventory Level 2: Individual or Batch Certification (TO15 0.04 ppbv).

Inventory Level 3: Individual or Batch Certification (TO15 0.2 ppbv).

Inventory Level Limited: Canisters may only be used for certain projects.

Dup Tees/Vac gauges (enter IDs if included):

Form ID: FAI023:12
Revision Date: 12/18/2018

TestAmerica Burlington

Loc: 200
47654
#1

200-47654-A-1
5-56
Location: Air-Storage
Bottle: Summa Canister 6L
Sampled 3/4/2019 12:00 AM
200-126201

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Burlington

Job No.: 200-47422-1

SDG No.:

Client Sample ID: 4829

Lab Sample ID: 200-47422-4

Matrix: Air

Lab File ID: 34625-05.D

Analysis Method: TO-15

Date Collected: 02/15/2019 00:00

Sample wt/vol: 1000 (mL)

Date Analyzed: 02/18/2019 13:46

Soil Aliquot Vol.:

Dilution Factor: 0.2

Soil Extract Vol.:

GC Column: RTX-624 ID: 0.32 (mm)

% Moisture:

Level: (low/med) Low

Analysis Batch No.: 140067

Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
115-07-1	Propylene	1.0	U ^	1.0	1.0
75-71-8	Dichlorodifluoromethane	0.10	U	0.10	0.10
75-45-6	Freon 22	0.10	U	0.10	0.10
76-14-2	1,2-Dichlorotetrafluoroethane	0.040	U	0.040	0.040
74-87-3	Chloromethane	0.10	U	0.10	0.10
106-97-8	n-Butane	0.10	U	0.10	0.10
75-01-4	Vinyl chloride	0.040	U	0.040	0.040
106-99-0	1,3-Butadiene	0.040	U	0.040	0.040
74-83-9	Bromomethane	0.040	U	0.040	0.040
75-00-3	Chloroethane	0.10	U	0.10	0.10
593-60-2	Bromoethene (Vinyl Bromide)	0.040	U	0.040	0.040
75-69-4	Trichlorofluoromethane	0.040	U	0.040	0.040
64-17-5	Ethanol	1.0	U	1.0	1.0
76-13-1	Freon TF	0.040	U	0.040	0.040
75-35-4	1,1-Dichloroethene	0.040	U	0.040	0.040
67-64-1	Acetone	1.0	U	1.0	1.0
67-63-0	Isopropyl alcohol	1.0	U	1.0	1.0
75-15-0	Carbon disulfide	0.10	U	0.10	0.10
107-05-1	3-Chloropropene	0.10	U	0.10	0.10
75-09-2	Methylene Chloride	0.10	U	0.10	0.10
75-65-0	tert-Butyl alcohol	1.0	U	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.040	U	0.040	0.040
156-60-5	trans-1,2-Dichloroethene	0.040	U	0.040	0.040
110-54-3	n-Hexane	0.040	U	0.040	0.040
75-34-3	1,1-Dichloroethane	0.040	U	0.040	0.040
108-05-4	Vinyl acetate	1.0	U	1.0	1.0
141-78-6	Ethyl acetate	1.0	U	1.0	1.0
78-93-3	Methyl Ethyl Ketone	0.10	U	0.10	0.10
156-59-2	cis-1,2-Dichloroethene	0.040	U	0.040	0.040
540-59-0	1,2-Dichloroethene, Total	0.080	U	0.080	0.080
67-66-3	Chloroform	0.040	U	0.040	0.040
109-99-9	Tetrahydrofuran	1.0	U	1.0	1.0
71-55-6	1,1,1-Trichloroethane	0.040	U	0.040	0.040
110-82-7	Cyclohexane	0.040	U	0.040	0.040
56-23-5	Carbon tetrachloride	0.040	U	0.040	0.040
540-84-1	2,2,4-Trimethylpentane	0.040	U	0.040	0.040

FORM I TO-15

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Burlington

Job No.: 200-47422-1

SDG No.: _____

Client Sample ID: 4829

Lab Sample ID: 200-47422-4

Matrix: Air

Lab File ID: 34625-05.D

Analysis Method: TO-15

Date Collected: 02/15/2019 00:00

Sample wt/vol: 1000 (mL)

Date Analyzed: 02/18/2019 13:46

Soil Aliquot Vol: _____

Dilution Factor: 0.2

Soil Extract Vol.: _____

GC Column: RTX-624 ID: 0.32 (mm)

% Moisture: _____

Level: (low/med) Low

Analysis Batch No.: 140067

Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
71-43-2	Benzene	0.040	U	0.040	0.040
107-06-2	1,2-Dichloroethane	0.040	U	0.040	0.040
142-82-5	n-Heptane	0.040	U	0.040	0.040
79-01-6	Trichloroethene	0.040	U	0.040	0.040
80-62-6	Methyl methacrylate	0.10	U	0.10	0.10
78-87-5	1,2-Dichloropropane	0.040	U	0.040	0.040
123-91-1	1,4-Dioxane	1.0	U	1.0	1.0
75-27-4	Bromodichloromethane	0.040	U	0.040	0.040
10061-01-5	cis-1,3-Dichloropropene	0.040	U	0.040	0.040
108-10-1	methyl isobutyl ketone	0.10	U	0.10	0.10
108-88-3	Toluene	0.040	U	0.040	0.040
10061-02-6	trans-1,3-Dichloropropene	0.040	U	0.040	0.040
79-00-5	1,1,2-Trichloroethane	0.040	U	0.040	0.040
127-18-4	Tetrachloroethene	0.040	U	0.040	0.040
591-78-6	Methyl Butyl Ketone (2-Hexanone)	0.10	U	0.10	0.10
124-48-1	Dibromochloromethane	0.040	U	0.040	0.040
106-93-4	1,2-Dibromoethane	0.040	U	0.040	0.040
108-90-7	Chlorobenzene	0.040	U	0.040	0.040
100-41-4	Ethylbenzene	0.040	U	0.040	0.040
179601-23-1	m,p-Xylene	0.10	U	0.10	0.10
95-47-6	Xylene, o-	0.040	U	0.040	0.040
1330-20-7	Xylene (total)	0.14	U	0.14	0.14
100-42-5	Styrene	0.040	U	0.040	0.040
75-25-2	Bromoform	0.040	U	0.040	0.040
98-82-8	Cumene	0.040	U	0.040	0.040
79-34-5	1,1,2,2-Tetrachloroethane	0.040	U	0.040	0.040
103-65-1	n-Propylbenzene	0.040	U	0.040	0.040
622-96-8	4-Ethyltoluene	0.040	U	0.040	0.040
108-67-8	1,3,5-Trimethylbenzene	0.040	U	0.040	0.040
95-49-8	2-Chlorotoluene	0.040	U	0.040	0.040
98-06-6	tert-Butylbenzene	0.040	U	0.040	0.040
95-63-6	1,2,4-Trimethylbenzene	0.040	U	0.040	0.040
135-98-8	sec-Butylbenzene	0.040	U	0.040	0.040
99-87-6	4-Isopropyltoluene	0.040	U	0.040	0.040
541-73-1	1,3-Dichlorobenzene	0.040	U	0.040	0.040
106-46-7	1,4-Dichlorobenzene	0.040	U	0.040	0.040

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Burlington

Job No.: 200-47422-1

SDG No.: _____

Client Sample ID: 4829 Lab Sample ID: 200-47422-4

Matrix: Air Lab File ID: 34625-05.D

Analysis Method: TO-15 Date Collected: 02/15/2019 00:00

Sample wt/vol: 1000 (mL) Date Analyzed: 02/18/2019 13:46

Soil Aliquot Vol: _____ Dilution Factor: 0.2

Soil Extract Vol.: _____ GC Column: RTX-624 ID: 0.32 (mm)

% Moisture: _____ Level: (low/med) Low

Analysis Batch No.: 140067 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
100-44-7	Benzyl chloride	0.040	U	0.040	0.040
104-51-8	n-Butylbenzene	0.040	U	0.040	0.040
95-50-1	1,2-Dichlorobenzene	0.040	U	0.040	0.040
120-82-1	1,2,4-Trichlorobenzene	0.10	U	0.10	0.10
87-68-3	Hexachlorobutadiene	0.040	U	0.040	0.040
91-20-3	Naphthalene	0.10	U *	0.10	0.10

TestAmerica Burlington
Target Compound Quantitation Report

Data File: \\chromna\Burlington\ChromData\CHC.i\20190218-34625.b\34625-05.D
 Lims ID: 200-47422-A-4
 Client ID: 4829
 Sample Type: Client
 Inject. Date: 18-Feb-2019 13:46:30 ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Sample Info: 200-0034625-005
 Misc. Info.: 47422-04
 Operator ID: ggg Instrument ID: CHC.i
 Method: \\chromna\Burlington\ChromData\CHC.i\20190218-34625.b\TO15_MasterMethod_(v1)_CHC.i.m
 Limit Group: AI_TO15_ICAL
 Last Update: 19-Feb-2019 13:11:27 Calib Date: 06-Feb-2019 00:53:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Burlington\ChromData\CHC.i\20190205-34442.b\34442-11.D
 Column 1 : RTX-624 (0.32 mm) Det: MS SCAN
 Process Host: CTX0310

First Level Reviewer: puangmaleek Date: 19-Feb-2019 13:11:27

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
1 Propene	41		2.962				ND	
2 Dichlorodifluoromethane	85		3.031				ND	
3 Chlorodifluoromethane	51		3.079				ND	U
4 1,2-Dichloro-1,1,2,2-tetra	85		3.288				ND	
5 Chloromethane	50	3.410	3.416	-0.006	22	734	0.0317	
6 Butane	43		3.613				ND	U
7 Vinyl chloride	62		3.650				ND	
8 Butadiene	54		3.725				ND	
10 Bromomethane	94		4.387				ND	
11 Chloroethane	64		4.622				ND	
13 Vinyl bromide	106		5.011				ND	
14 Trichlorodifluoromethane	101		5.118				ND	
17 Ethanol	45		5.695				ND	U
20 1,1,2-Trichloro-1,2,2-trif	101		6.207				ND	
21 1,1-Dichloroethene	96		6.234				ND	
22 Acetone	43		6.447				ND	
23 Carbon disulfide	76	6.612	6.612	0.005	98	3340	0.0430	M
24 Isopropyl alcohol	45		6.773				ND	
25 3-Chloro-1-propene	41		7.013				ND	U
27 Methylene Chloride	49		7.312				ND	
28 2-Methyl-2-propanol	59		7.546				ND	
29 Methyl tert-butyl ether	73		7.728				ND	
31 trans-1,2-Dichloroethene	61		7.765				ND	
33 Hexane	57		8.171				ND	
34 1,1-Dichloroethane	63		8.624				ND	
35 Vinyl acetate	43		8.710				ND	
37 cis-1,2-Dichloroethene	96		9.740				ND	
38 2-Butanone (MEK)	72		9.772				ND	
39 Ethyl acetate	88		9.841				ND	
* 40 Chlorobromomethane	128	10.193	10.199	-0.006	83	532513	10.0	
S 30 1,2-Dichloroethene, Total	61		10.200				ND	

Report Date: 19-Feb-2019 13:11:28

Chrom Revision: 2.3 11-Feb-2019 16:31:10

Data File: \\chromna\Burlington\ChromData\CHC.\20190218-34625.b\34625-05.D

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
41 Tetrahydrofuran	42		10.204				ND	
42 Chloroform	83		10.343				ND	
43 Cyclohexane	84		10.604				ND	
44 1,1,1-Trichloroethane	97		10.615				ND	
45 Carbon tetrachloride	117		10.871				ND	
47 Benzene	78		11.325				ND	U
46 Isooctane	57		11.330				ND	
48 1,2-Dichloroethane	62		11.496				ND	
49 n-Heptane	43		11.731				ND	U
* 50 1,4-Difluorobenzene	114	12.179	12.179	0.000	94	3174143	10.0	
53 Trichloroethene	95		12.654				ND	
54 1,2-Dichloropropane	63		13.188				ND	
55 Methyl methacrylate	69		13.385				ND	
56 1,4-Dioxane	88		13.422				ND	
57 Dibromomethane	174		13.449				ND	
58 Dichlorobromomethane	83		13.764				ND	
60 cis-1,3-Dichloropropene	75		14.714				ND	
61 4-Methyl-2-pentanone (MIBK)	43		14.997				ND	
65 Toluene	92	15.312	15.312	0.000	14	567	0.005512	7M
66 trans-1,3-Dichloropropene	75		15.915				ND	
67 1,1,2-Trichloroethane	83		16.283				ND	
68 Tetrachloroethene	166		16.411				ND	
69 2-Hexanone	43		16.731				ND	
71 Chlorodibromomethane	129		17.046				ND	
72 Ethylene Dibromide	107		17.302				ND	U
* 74 Chlorobenzene-d5	117	18.215	18.215	0.000	85	3339639	10.0	
75 Chlorobenzene	112		18.274				ND	U
76 Ethylbenzene	91		18.434				ND	U
78 m-Xylene & p-Xylene	106	18.679	18.679	-0.006	0	882	0.009898	7M
79 o-Xylene	106		19.522				ND	
80 Styrene	104		19.570				ND	
81 Bromoform	173		20.003				ND	
S 73 Xylenes, Total	106				0		0.009898	7
82 Isopropylbenzene	105		20.238				ND	U
84 1,1,2,2-Tetrachloroethane	83		20.905				ND	
85 N-Propylbenzene	91		20.985				ND	U
88 4-Ethyltoluene	105		21.177				ND	U
89 2-Chlorotoluene	91		21.182				ND	U
90 1,3,5-Trimethylbenzene	105		21.289				ND	U
92 tert-Butylbenzene	119		21.785				ND	
93 1,2,4-Trimethylbenzene	105		21.887				ND	
94 sec-Butylbenzene	105		22.121				ND	U
95 4-Isopropyltoluene	119		22.324				ND	U
96 1,3-Dichlorobenzene	146		22.351				ND	
97 1,4-Dichlorobenzene	146	22.495	22.490	0.011	89	1628	0.0103	
98 Benzyl chloride	91		22.677				ND	U
100 n-Butylbenzene	91		22.895				ND	U
101 1,2-Dichlorobenzene	146		23.007				ND	
103 1,2,4-Trichlorobenzene	180		25.409				ND	
104 Hexachlorobutadiene	225		25.601				ND	U
105 Naphthalene	128	25.873	25.863	0.021	96	4087	0.0171	

Report Date: 19-Feb-2019 13:11:28

Chrom Revision: 2.3 11-Feb-2019 16:31:10

QC Flag Legend

Processing Flags

7 - Failed Limit of Detection

Review Flags

M - Manually Integrated

U - Marked Undetected

Reagents:

ATTO15CISs_00010

Amount Added: 20.00

Units: mL

Run Reagent



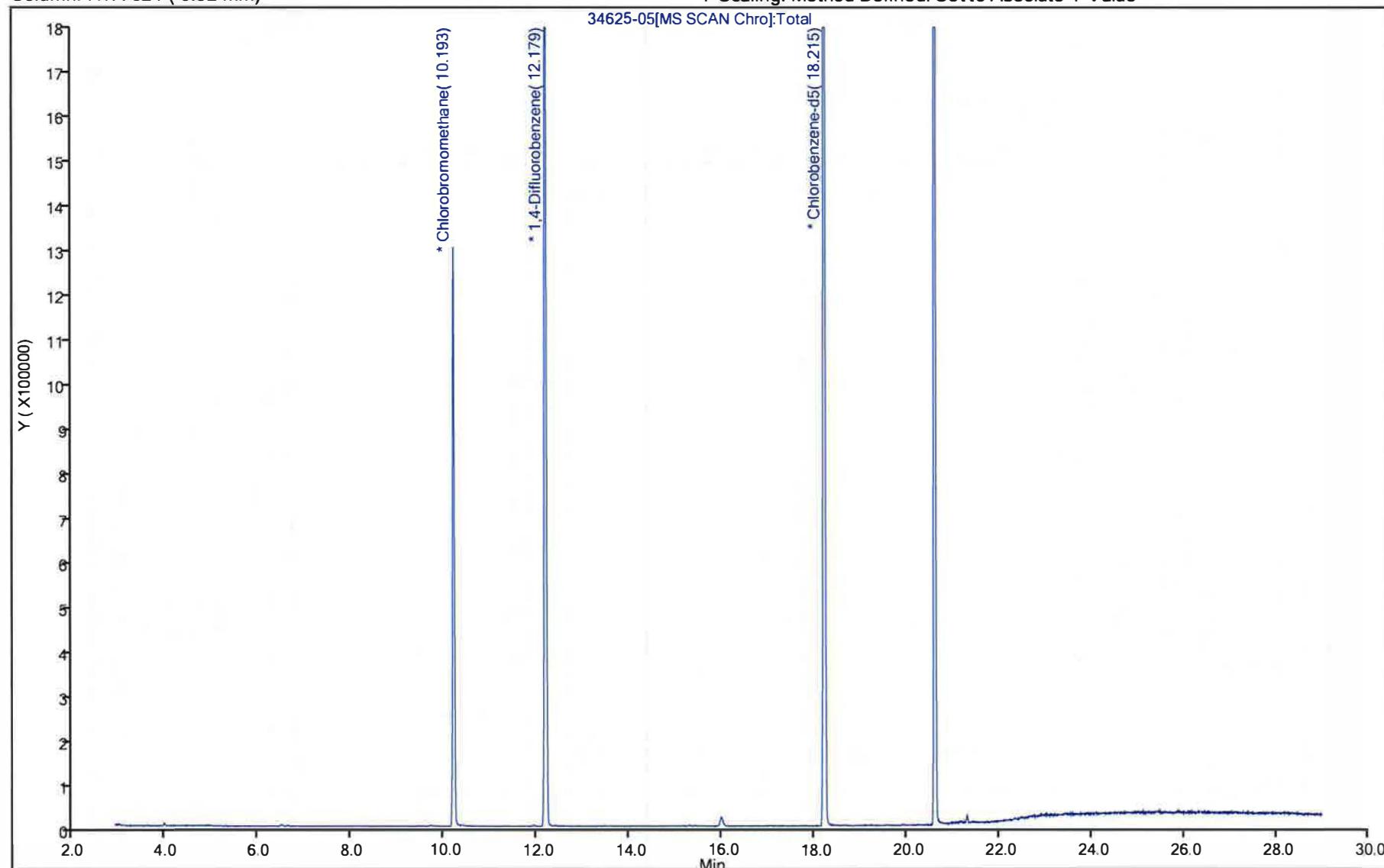
Report Date: 19-Feb-2019 13:11:28

Chrom Revision: 2.3 11-Feb-2019 16:31:10

TestAmerica Burlington
Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
Client ID: 4829 Operator ID: ggg
Purge Vol: 200.000 mL Dil. Factor: 0.2000
Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
Column: RTX-624 (0.32 mm)

Worklist Smp#: 5
ALS Bottle#: 5

Y Scaling: Method Defined: Set to Absolute Y Value



Report Date: 19-Feb-2019 13:11:28

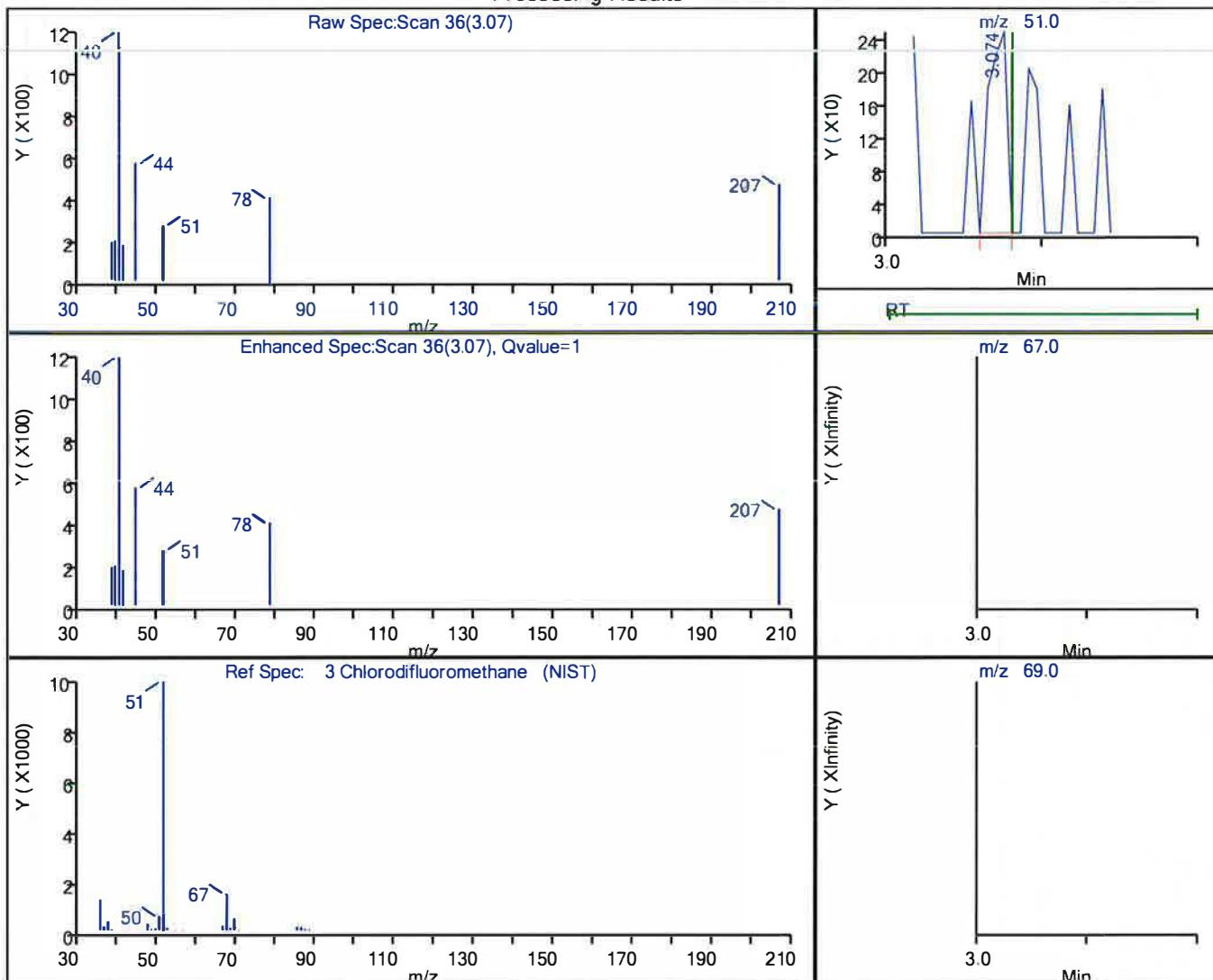
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

3 Chlorodifluoromethane, CAS: 75-45-6

Processing Results



RT	Mass	Response	Amount
3.07	51.00	205	0.004386
3.08	67.00	0	
3.08	69.00	0	

Reviewer: puangmaleek, 19-Feb-2019 13:09:14

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 19-Feb-2019 13:11:28

Chrom Revision: 2.3 11-Feb-2019 16:31:10

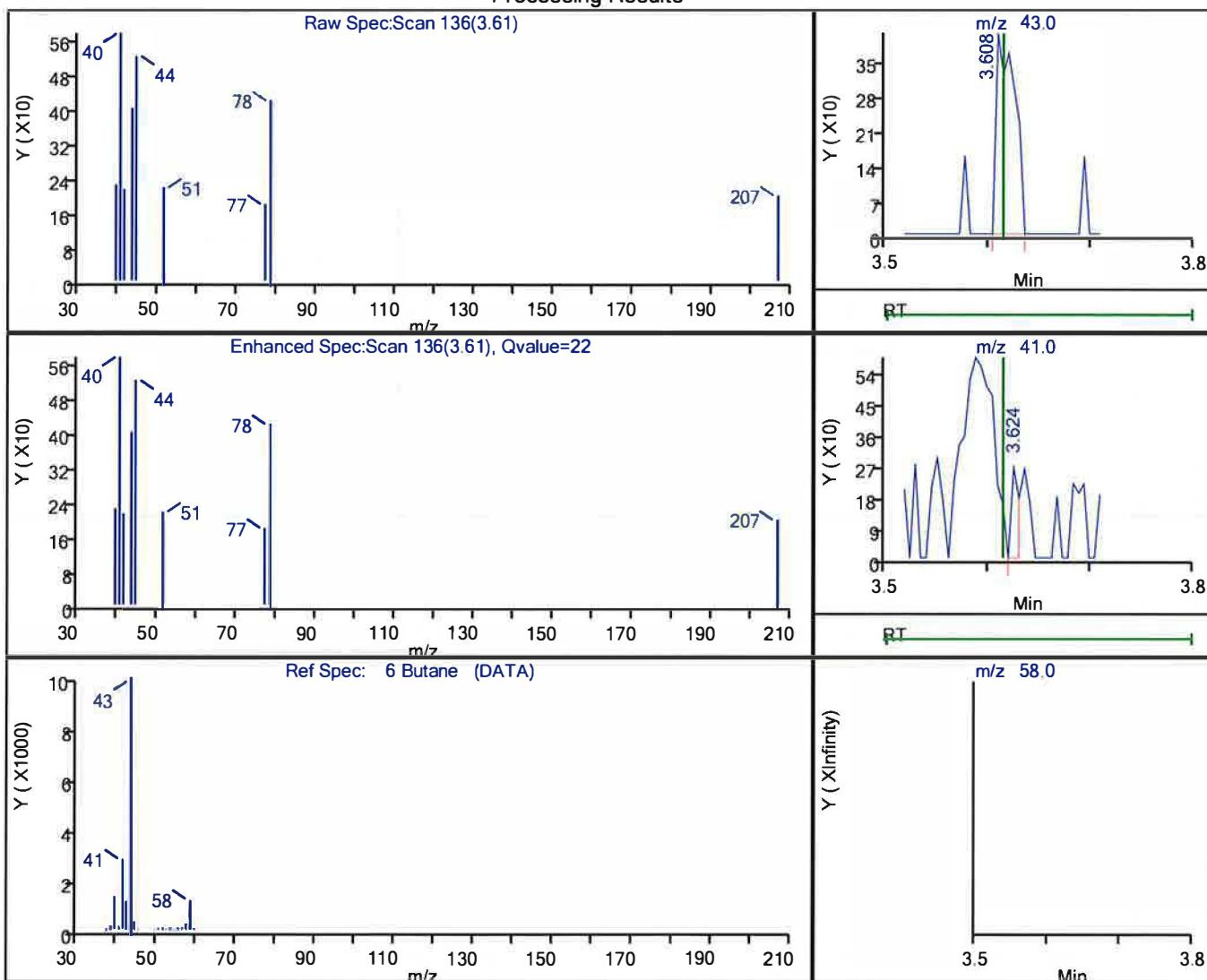
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

6 Butane, CAS: 106-97-8

Processing Results



RT	Mass	Response	Amount
3.61	43.00	514	0.014386
3.62	41.00	140	
3.61	58.00	0	

Reviewer: puangmaleek, 19-Feb-2019 13:09:19

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 19-Feb-2019 13:11:28

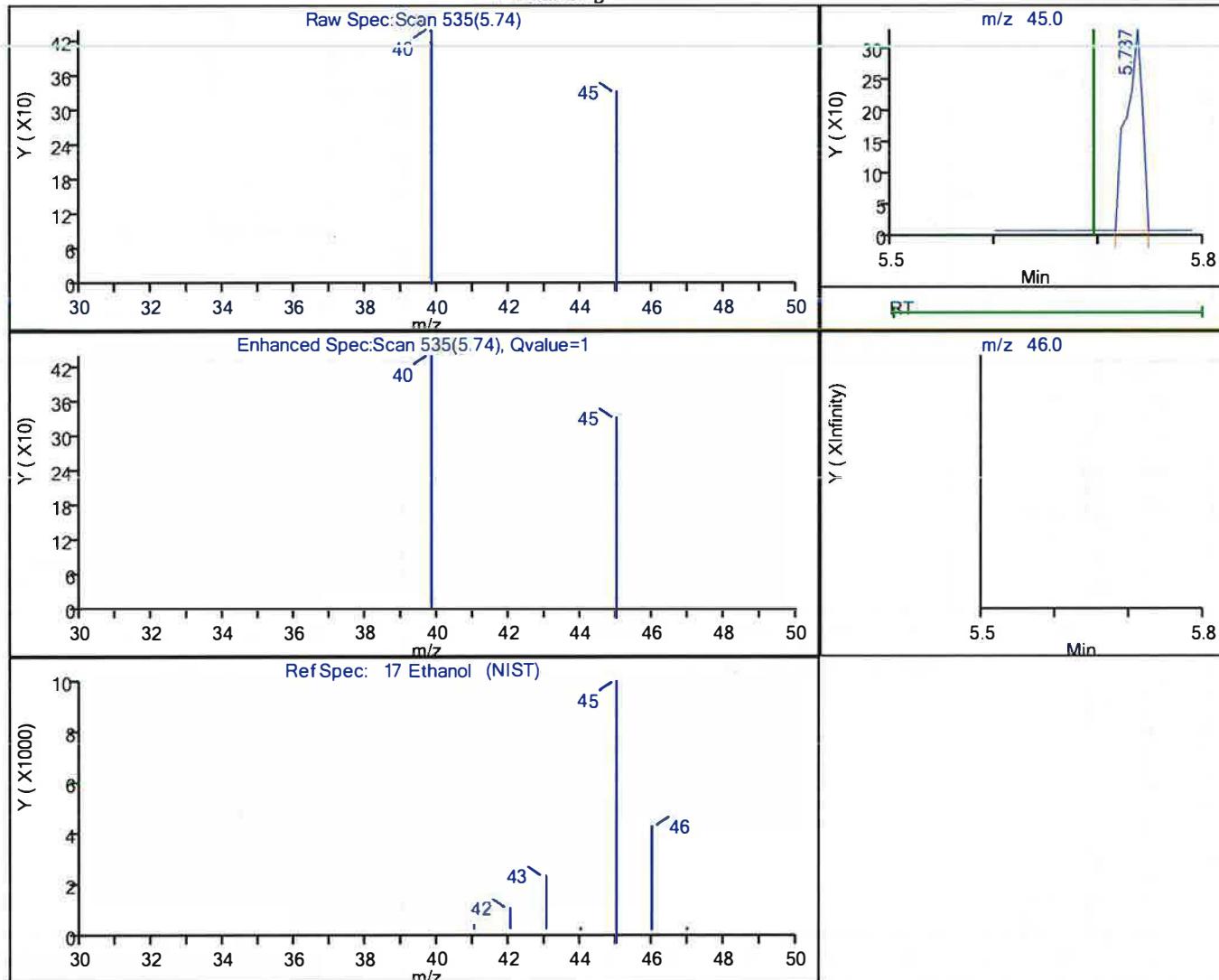
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

17 Ethanol, CAS: 64-17-5

Processing Results



RT	Mass	Response	Amount
5.74	45.00	350	0.043408
5.69	46.00	0	

Reviewer: puangmaleek, 19-Feb-2019 13:09:22

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

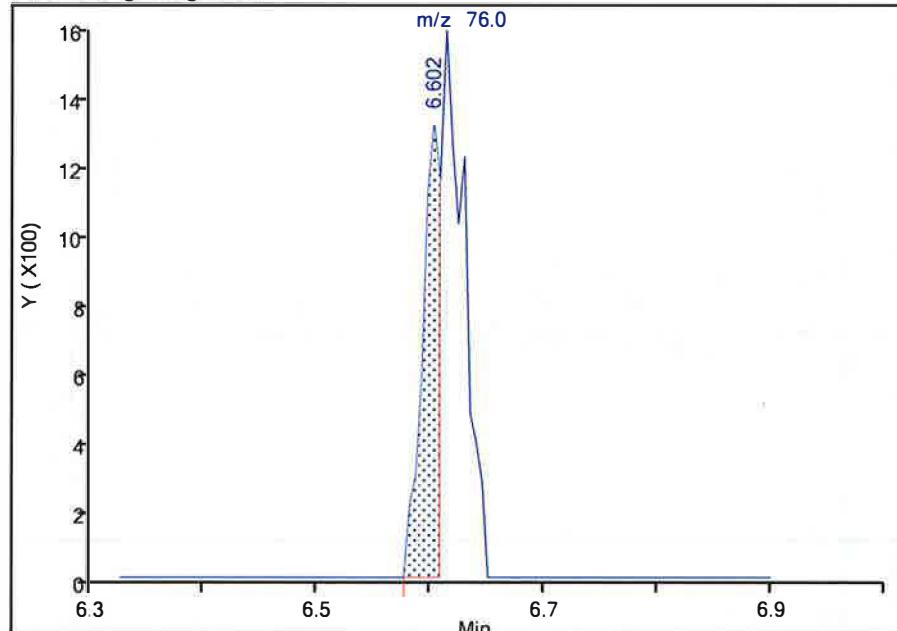
TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

23 Carbon disulfide, CAS: 75-15-0
Signal: 1

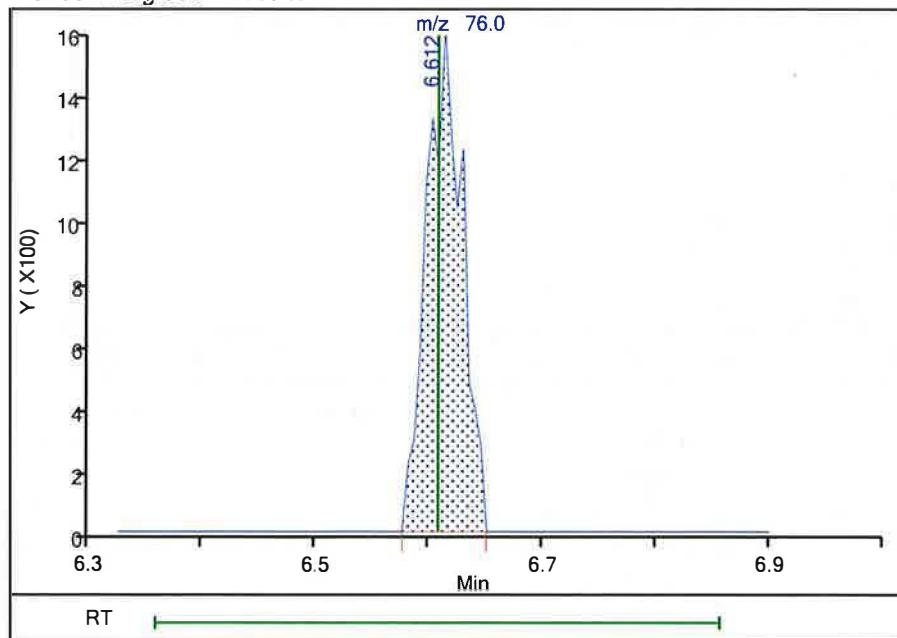
Processing Integration Results

RT: 6.60
 Area: 1434
 Amount: 0.018450
 Amount Units: ppb v/v



Manual Integration Results

RT: 6.61
 Area: 3340
 Amount: 0.042972
 Amount Units: ppb v/v



Reviewer: puangmaleek, 19-Feb-2019 13:09:32

Audit Action: Manually Integrated

Audit Reason: Assign Peak

Report Date: 19-Feb-2019 13:11:28

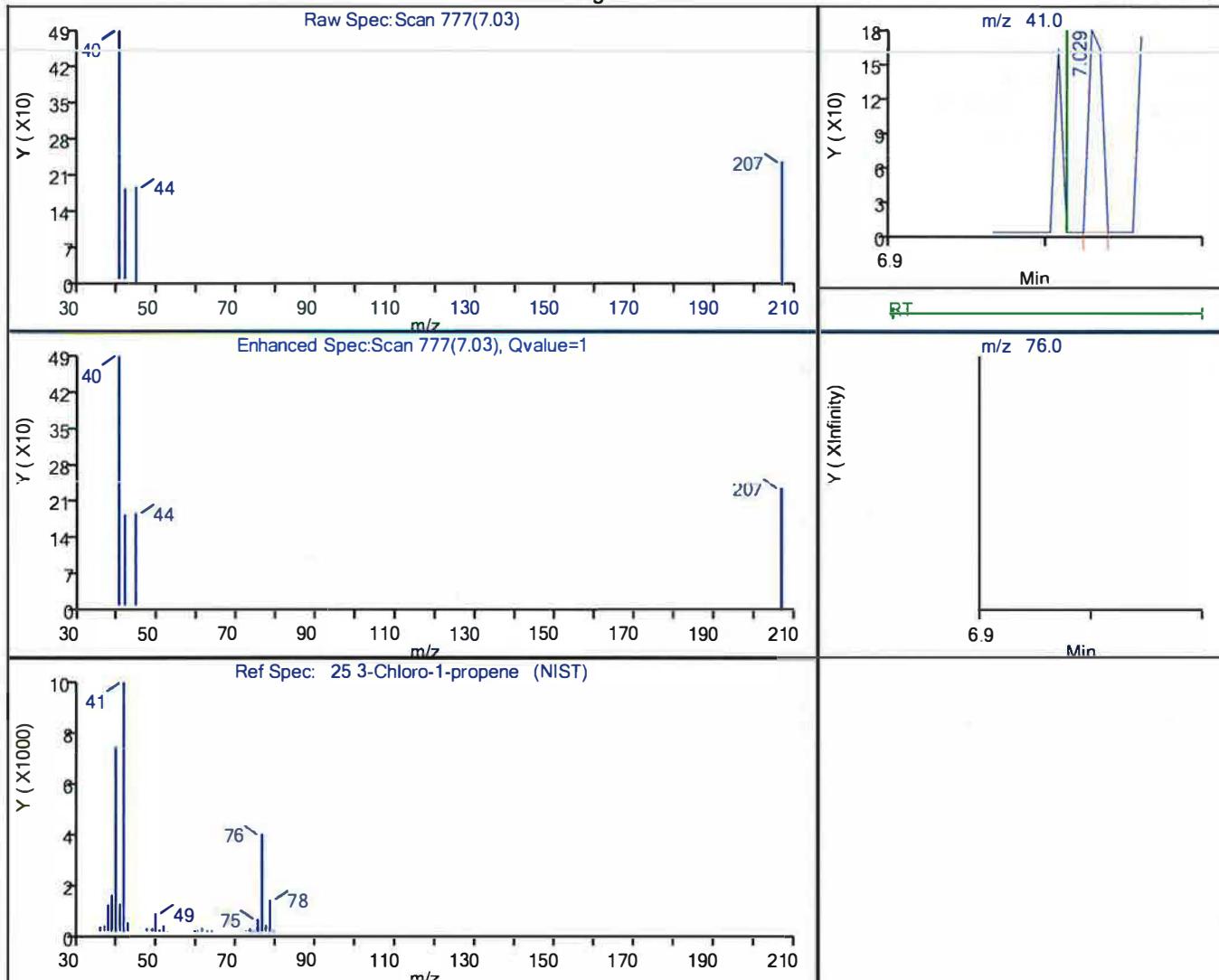
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAI
 Column: RTX-624 (0.32 mm) Detector MS SCAN

25 3-Chloro-1-propene, CAS: 107-05-1

Processing Results



RT	Mass	Response	Amount
7.03	41.00	109	0.004576
7.01	76.00	0	

Reviewer: puangmaleek, 19-Feb-2019 13:09:38

Audit Action: Marked Compound Undetected

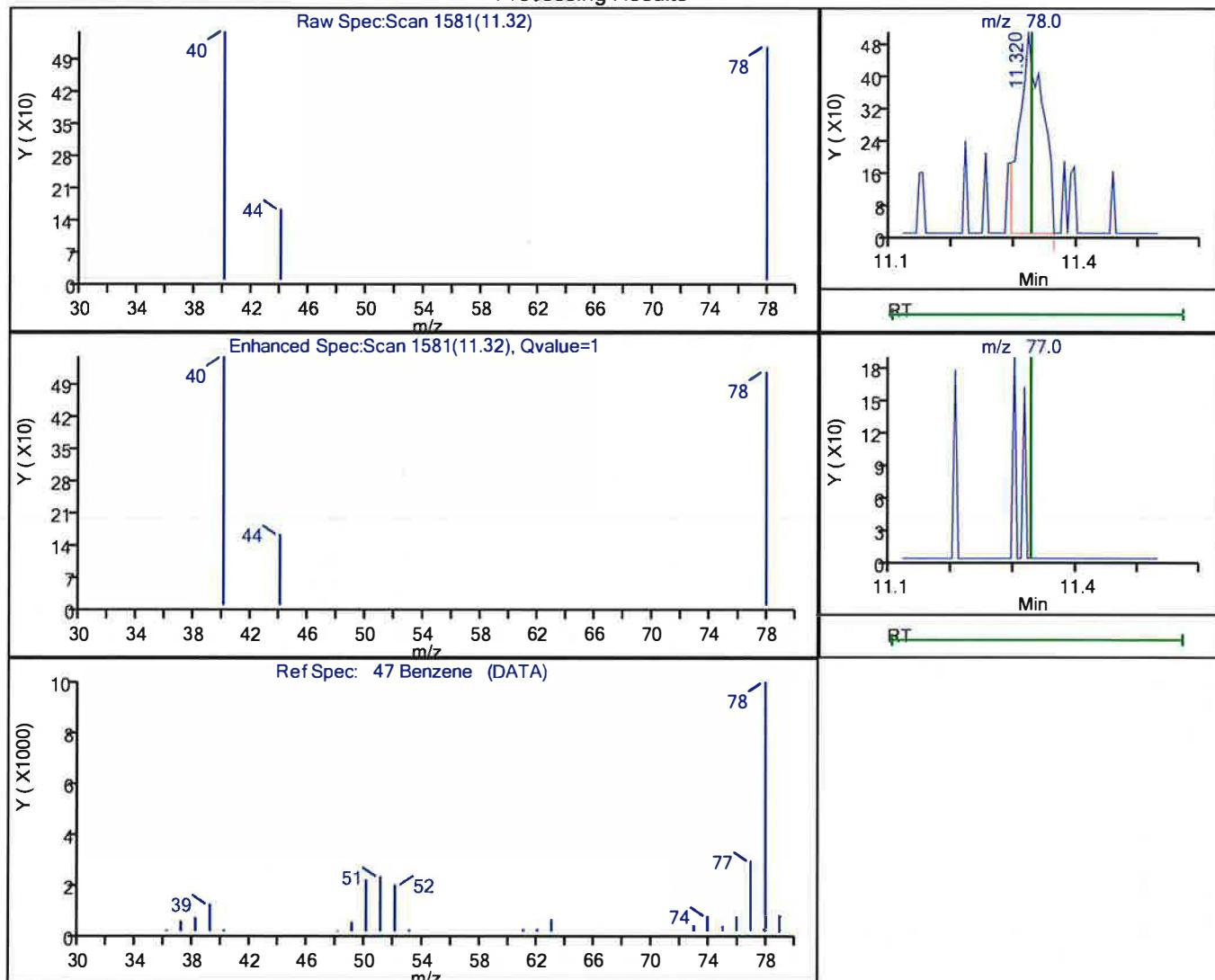
Audit Reason: Invalid Compound ID

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

47 Benzene, CAS: 71-43-2

Processing Results



RT	Mass	Response	Amount
11.32	78.00	1309	0.011498
11.32	77.00	0	

Reviewer: puangmaleek, 19-Feb-2019 13:09:47

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 19-Feb-2019 13:11:28

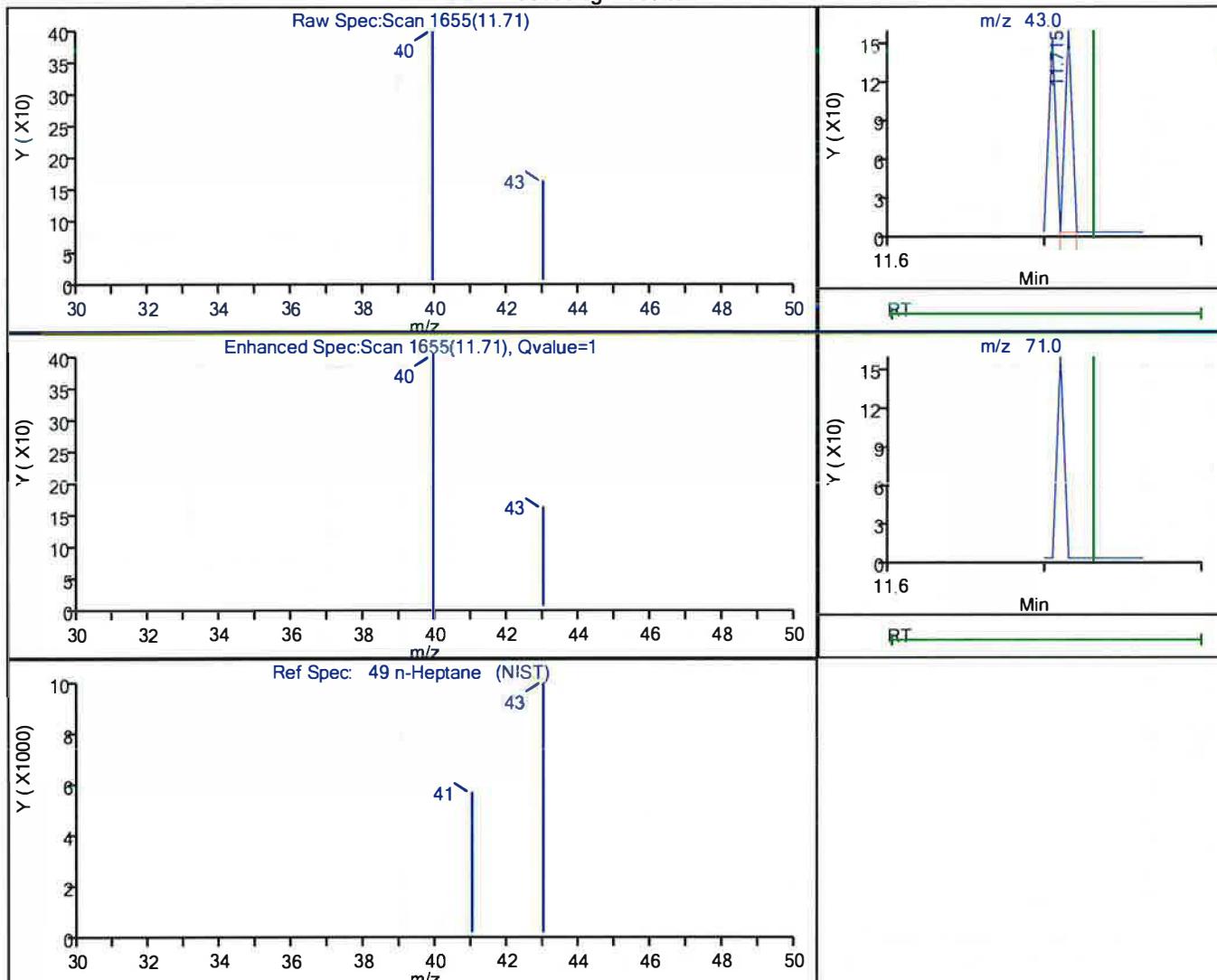
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

49 n-Heptane, CAS: 142-82-5

Processing Results



RT	Mass	Response	Amount
11.71	43.00	50	0.000848
11.73	71.00	0	

Reviewer: puangmaleek, 19-Feb-2019 13:09:49

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 19-Feb-2019 13:11:28

Chrom Revision: 2.3 11-Feb-2019 16:31:10
Manual Integration/User Assign Peak Report

TestAmerica Burlington

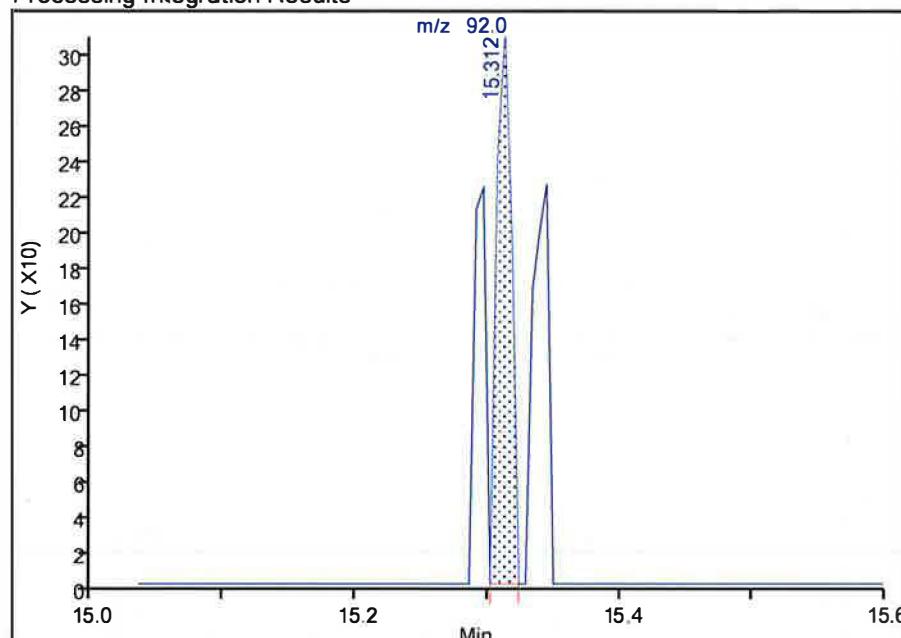
Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
Client ID: 4829
Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
Purge Vol: 200.000 mL Dil. Factor: 0.2000
Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
Column: RTX-624 (0.32 mm) Detector MS SCAN

65 Toluene, CAS: 108-88-3

Signal: 1

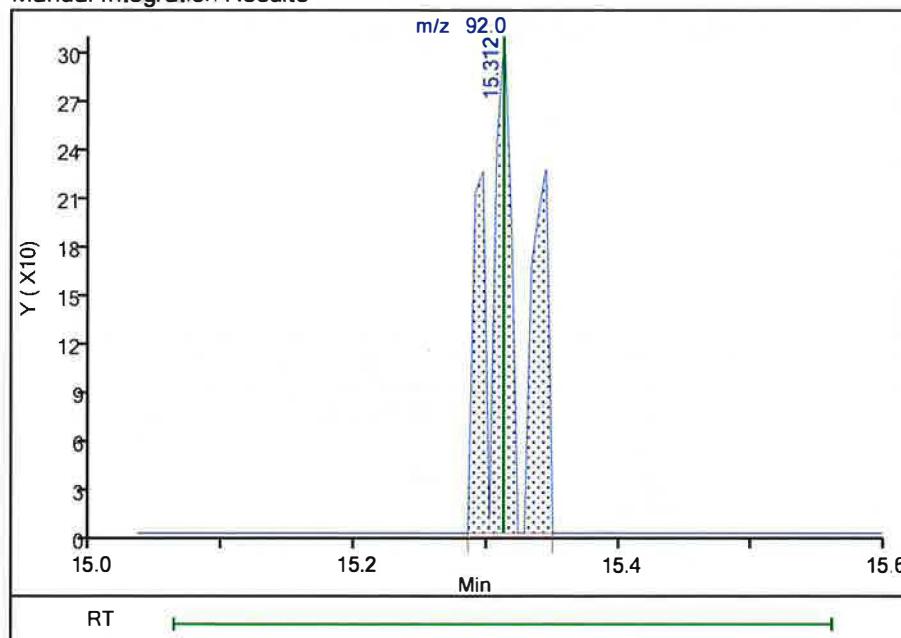
RT: 15.31
Area: 238
Amount: 0.002314
Amount Units: ppb v/v

Processing Integration Results



RT: 15.31
Area: 567
Amount: 0.005512
Amount Units: ppb v/v

Manual Integration Results



Reviewer: puangmaleek, 19-Feb-2019 13:10:33

Audit Action: Manually Integrated

Audit Reason: Assign Peak

Report Date: 19-Feb-2019 13:11:28

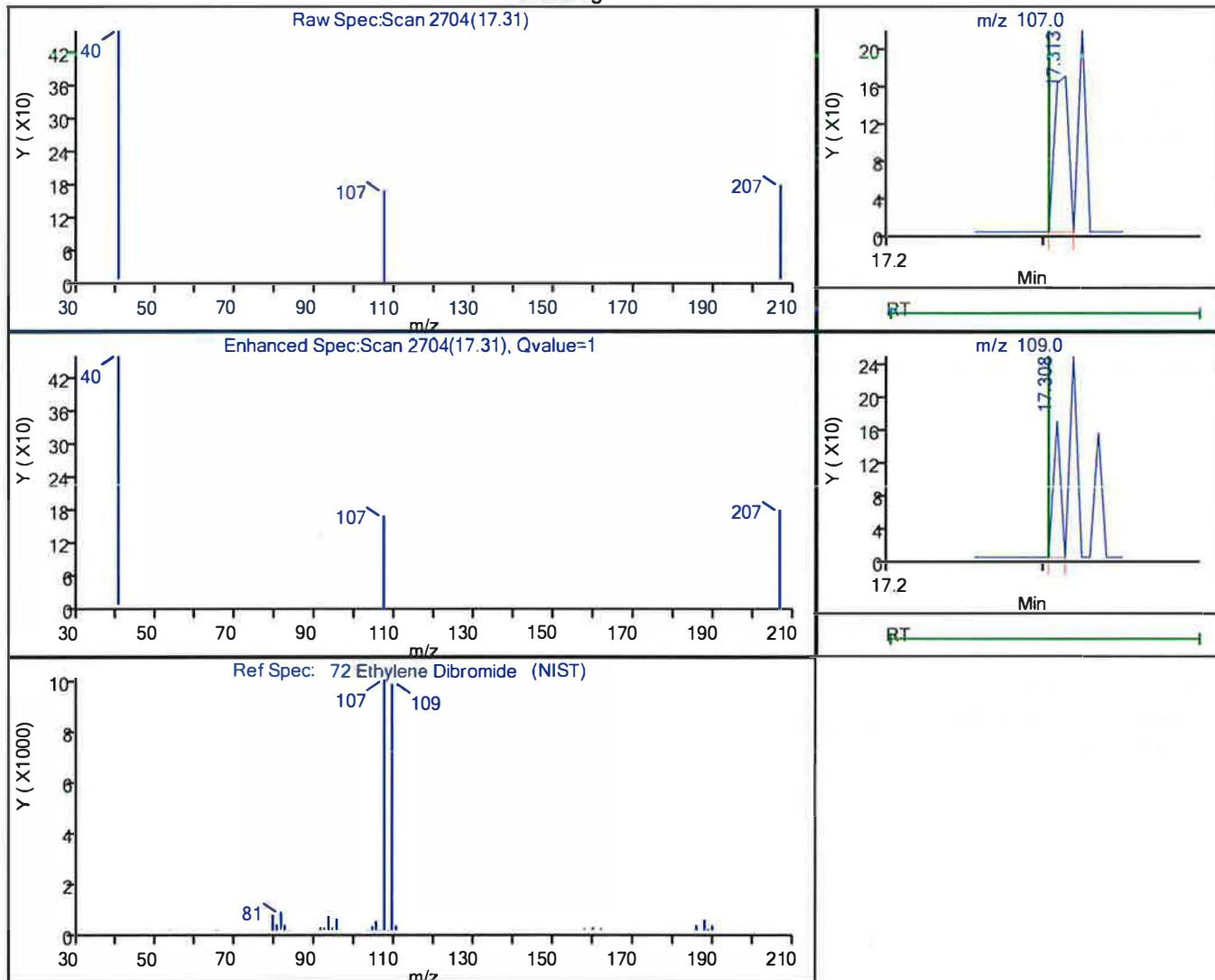
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

72 Ethylene Dibromide, CAS: 106-93-4

Processing Results



RT	Mass	Response	Amount
17.31	107.00	103	0.001087
17.31	109.00	54	

Reviewer: puangmaleek, 19-Feb-2019 13:10:42

Audit Action: Marked Compound Undetected

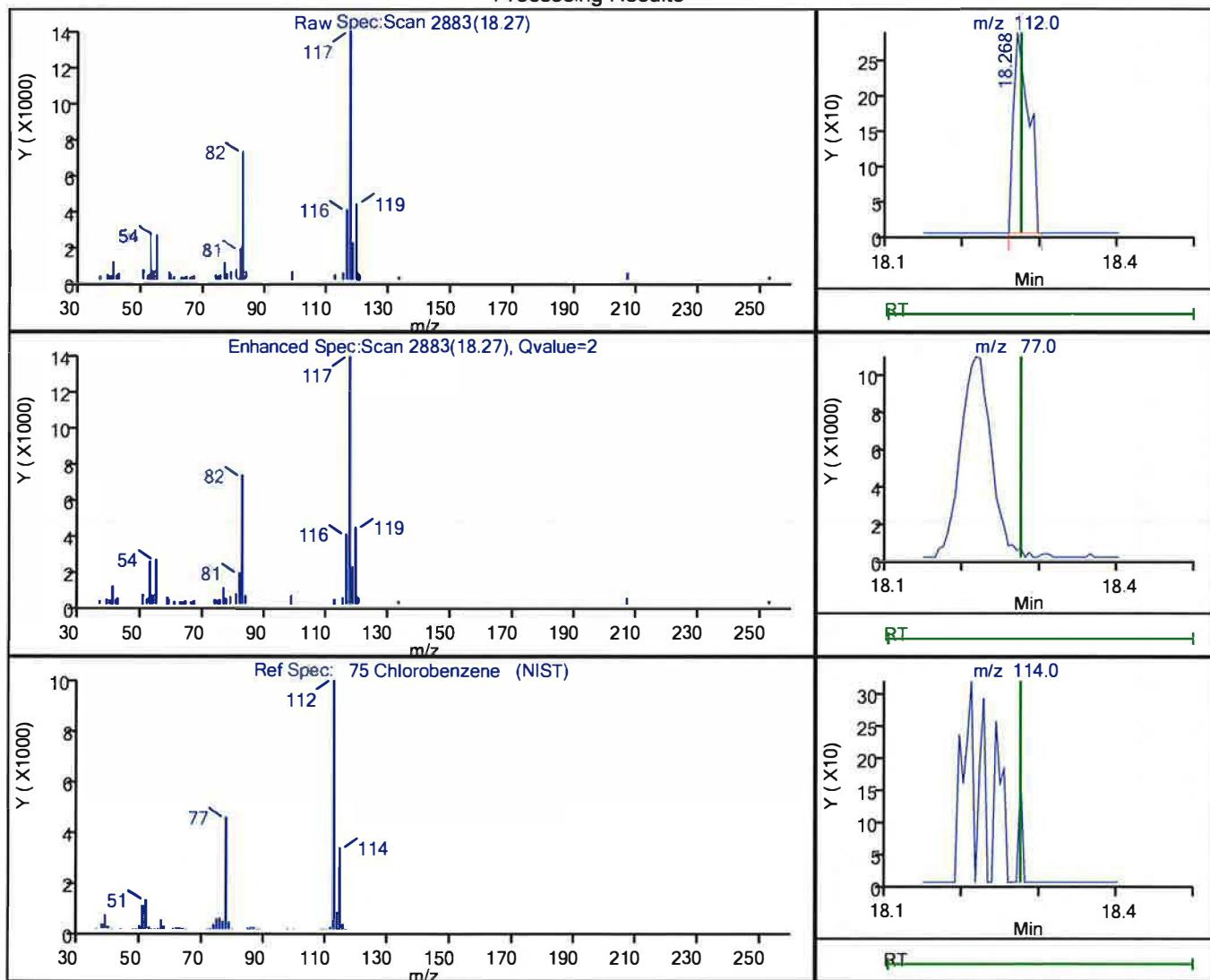
Audit Reason: Invalid Compound ID

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle #: 5 Worklist Smp #: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

75 Chlorobenzene, CAS: 108-90-7

Processing Results



RT	Mass	Response	Amount
18.27	112.00	379	0.002678
18.27	77.00	0	
18.27	114.00	0	

Reviewer: puangmaleek, 19-Feb-2019 13:10:43

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 19-Feb-2019 13:11:28

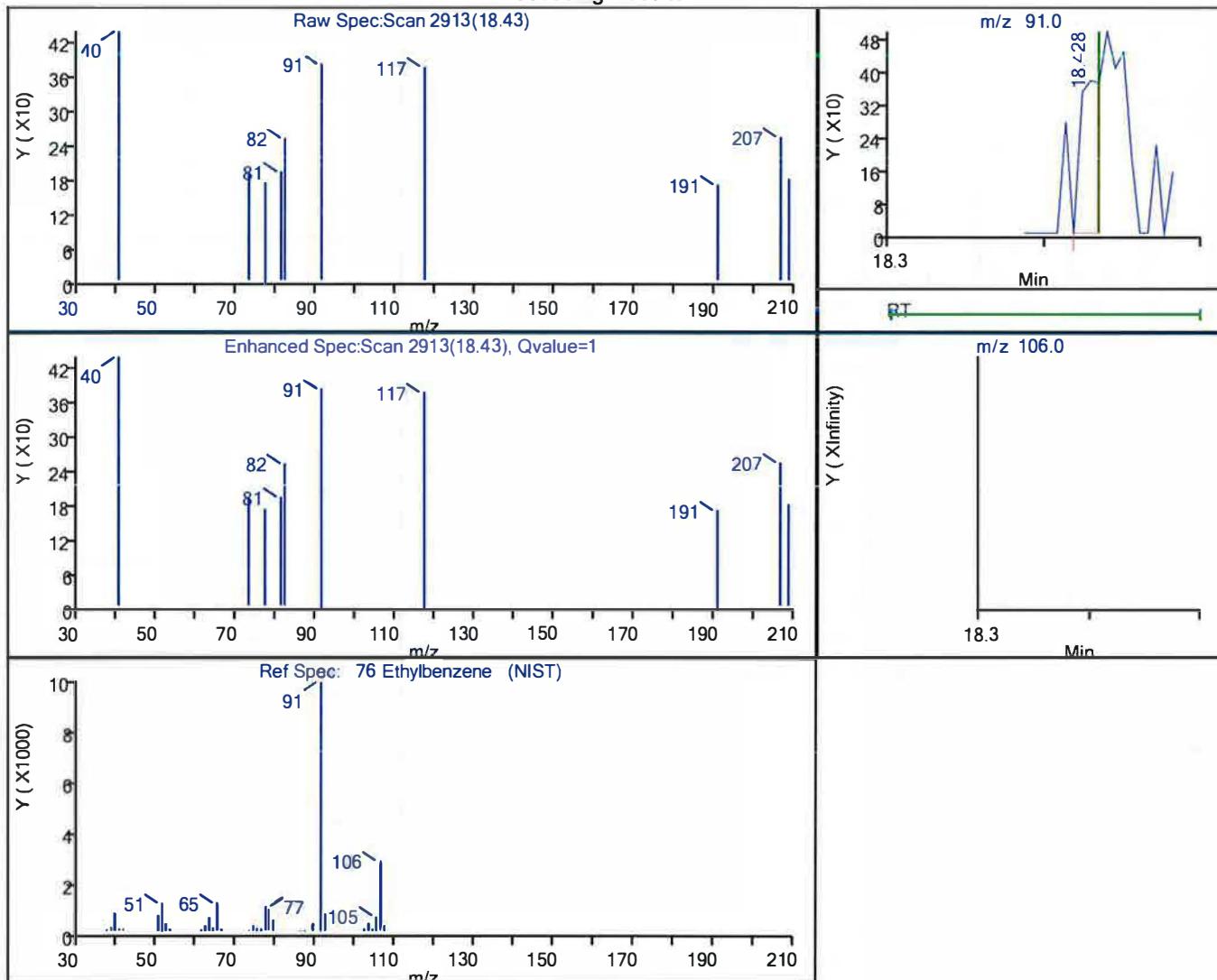
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

76 Ethylbenzene, CAS: 100-41-4

Processing Results



RT	Mass	Response	Amount
18.43	91.00	353	0.001575
18.43	106.00	0	

Reviewer: puangmaleek, 19-Feb-2019 13:10:45

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

TestAmerica Burlington

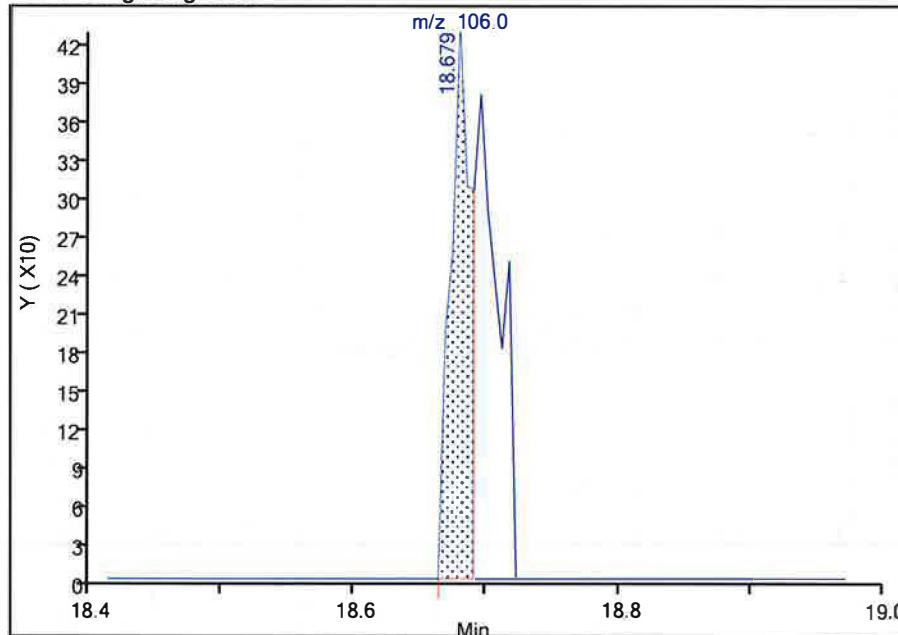
Data File: \\chromna\\Burlington\\ChromData\\CHC.\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle #: 5 Worklist Smp #: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

78 m-Xylene & p-Xylene, CAS: 179601-23-1

Signal: 1

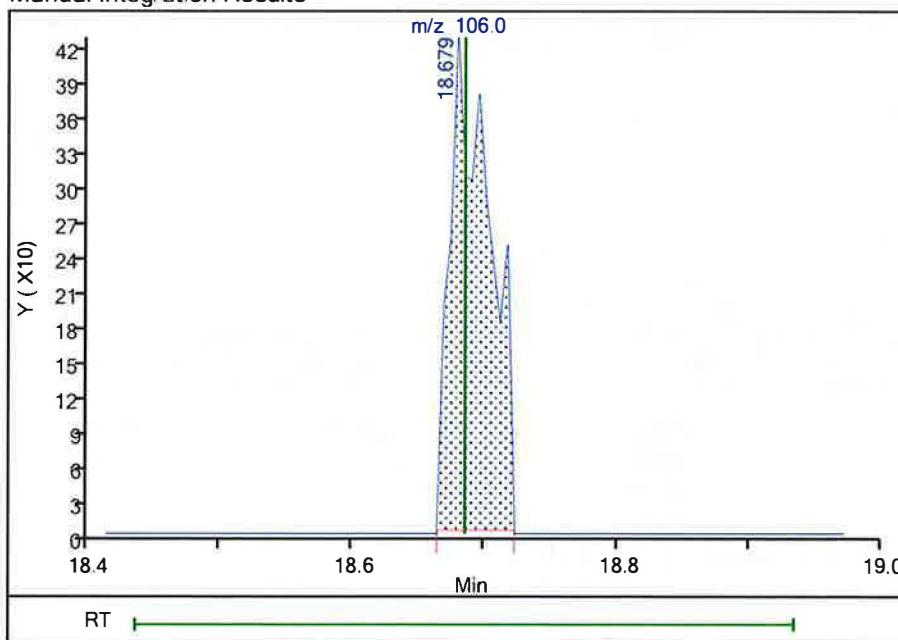
RT: 18.68
 Area: 473
 Amount: 0.005308
 Amount Units: ppb v/v

Processing Integration Results



RT: 18.68
 Area: 882
 Amount: 0.009898
 Amount Units: ppb v/v

Manual Integration Results



Reviewer: puangmaleek, 19-Feb-2019 13:10:51

Audit Action: Manually Integrated

Audit Reason: Assign Peak

Report Date: 19-Feb-2019 13:11:28

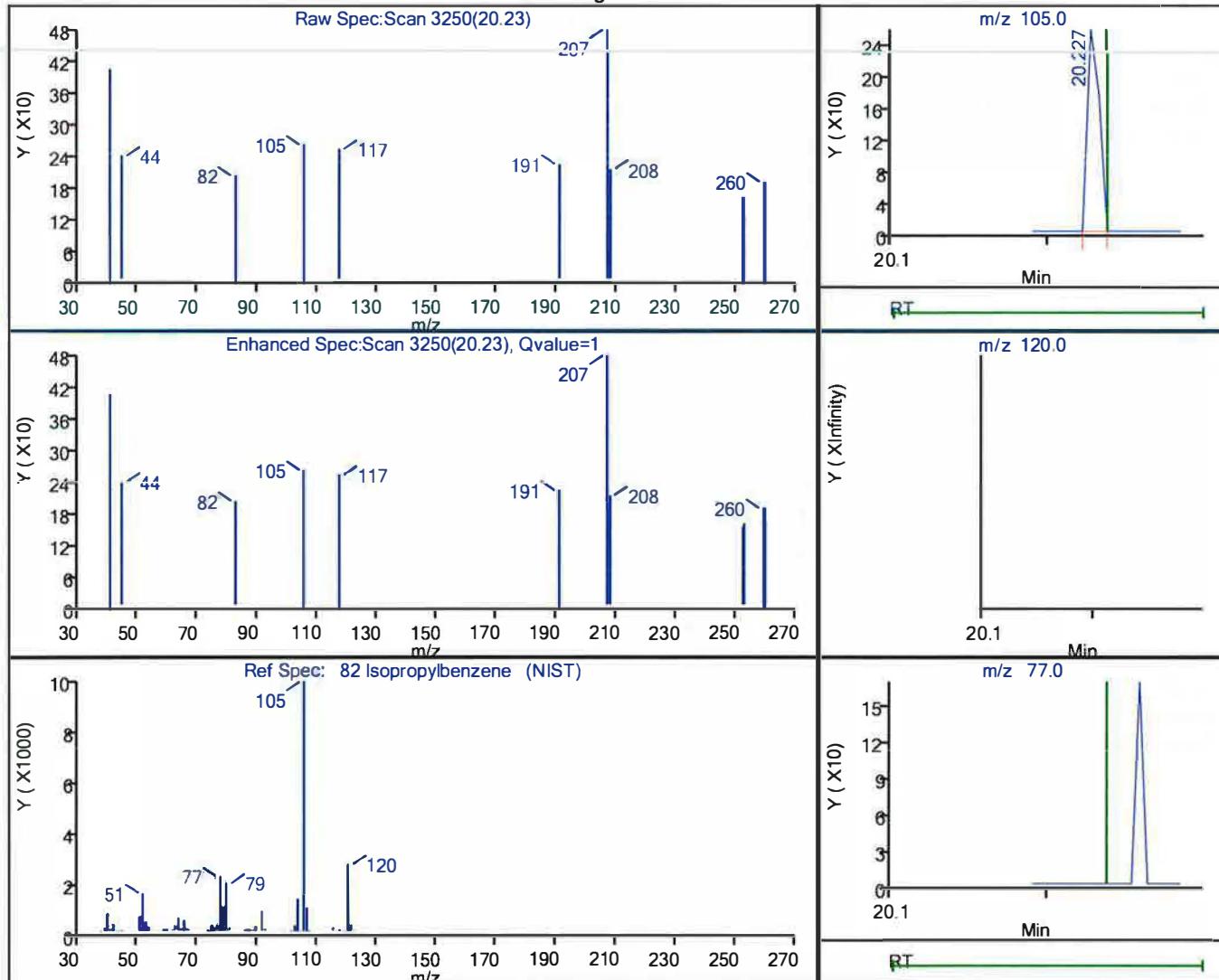
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

82 Isopropylbenzene, CAS: 98-82-8

Processing Results



RT	Mass	Response	Amount
20.23	105.00	139	0.000549
20.24	120.00	0	
20.24	77.00	0	

Reviewer: puangmaleek, 19-Feb-2019 13:10:56

Audit Action: Marked Compound Undetected

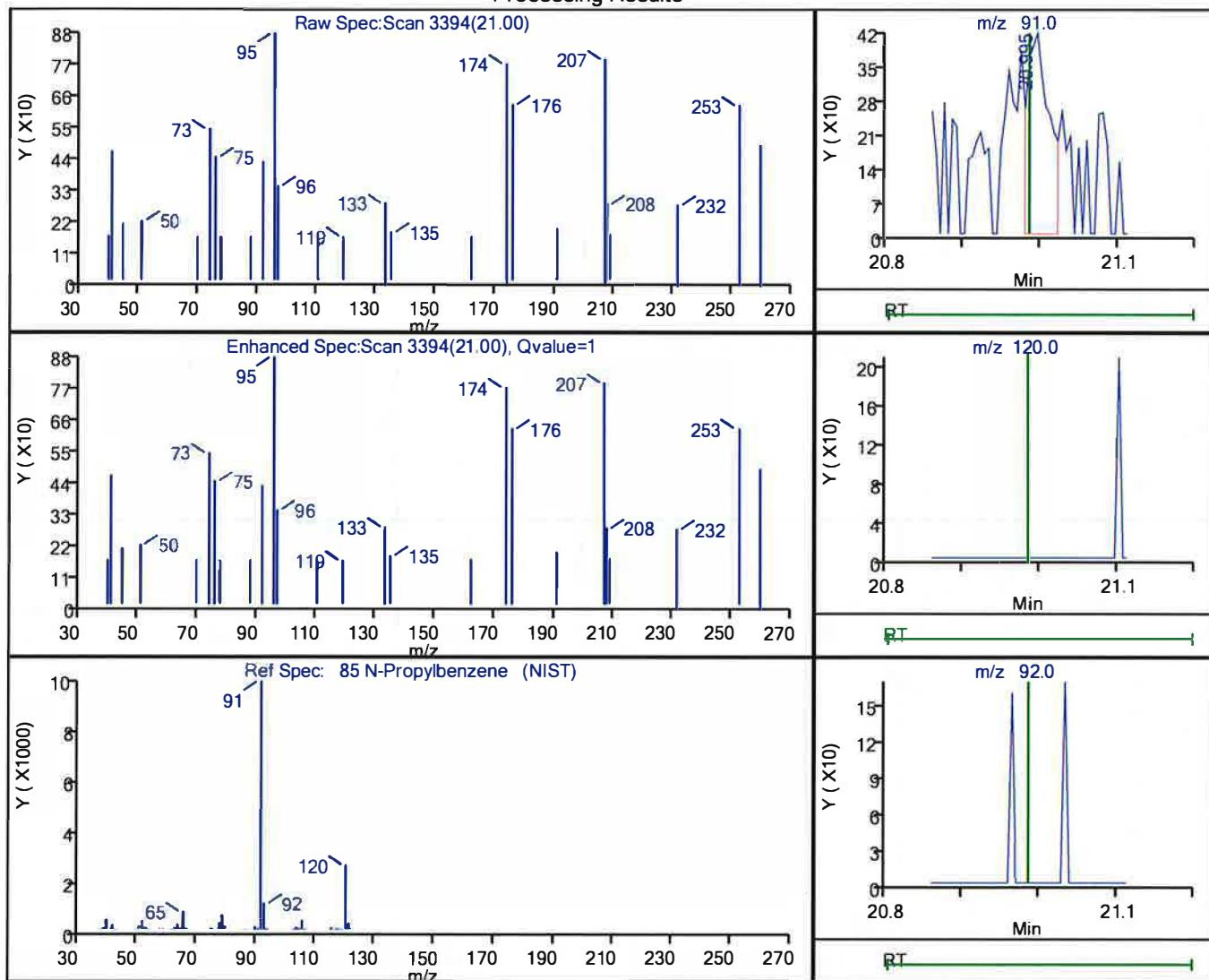
Audit Reason: Invalid Compound ID

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.I\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

85 N-Propylbenzene, CAS: 103-65-1

Processing Results



RT	Mass	Response	Amount
21.00	91.00	866	0.002925
20.98	120.00	0	
20.98	92.00	0	

Reviewer: puangmaleek, 19-Feb-2019 13:10:58

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 19-Feb-2019 13:11:28

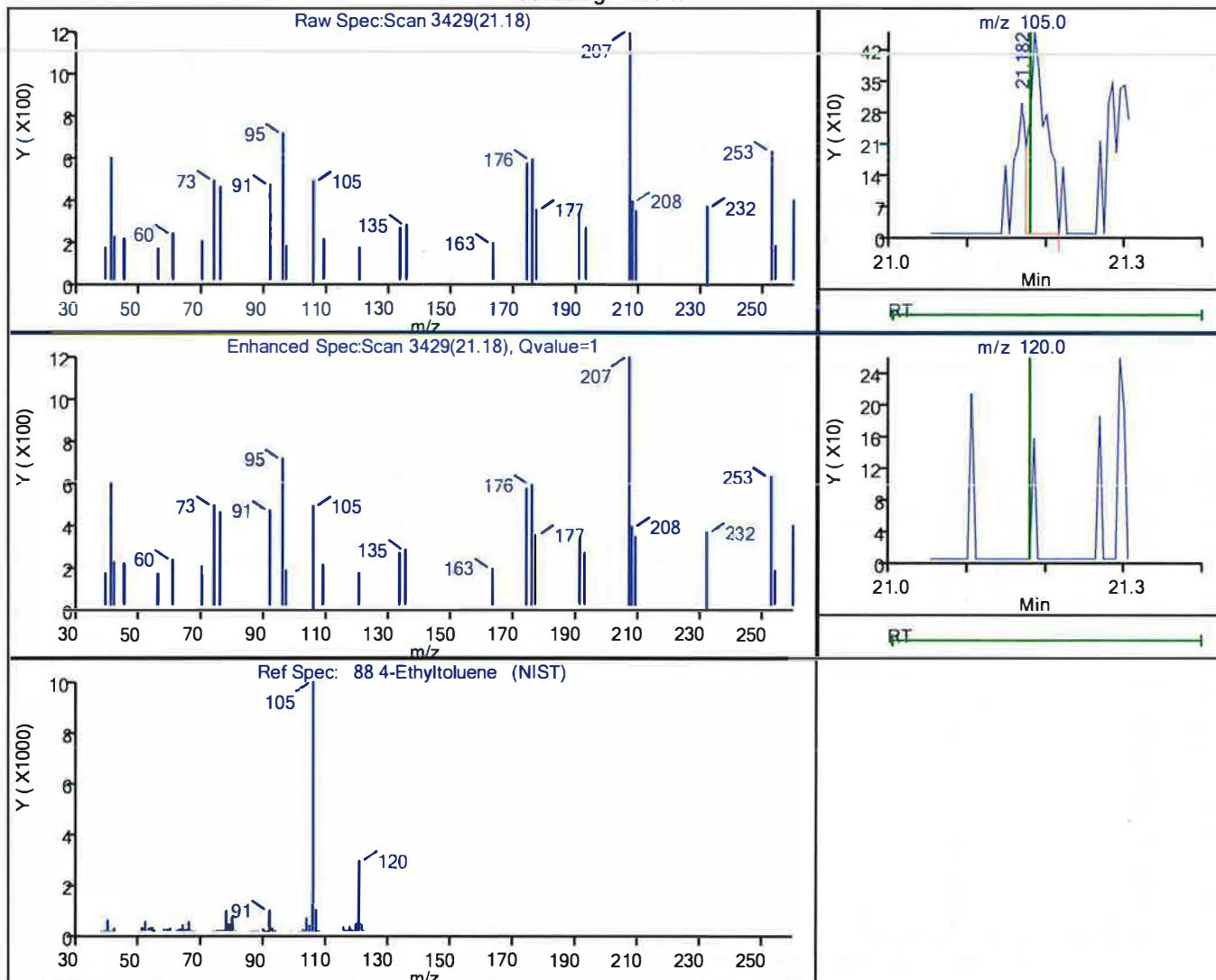
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAI
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

88 4-Ethyltoluene, CAS: 622-96-8

Processing Results



RT	Mass	Response	Amount
21.18	105.00	695	0.002789
21.18	120.00	0	

Reviewer: puangmaleek, 19-Feb-2019 13:10:59

Audit Action: Marked Compound Undetected

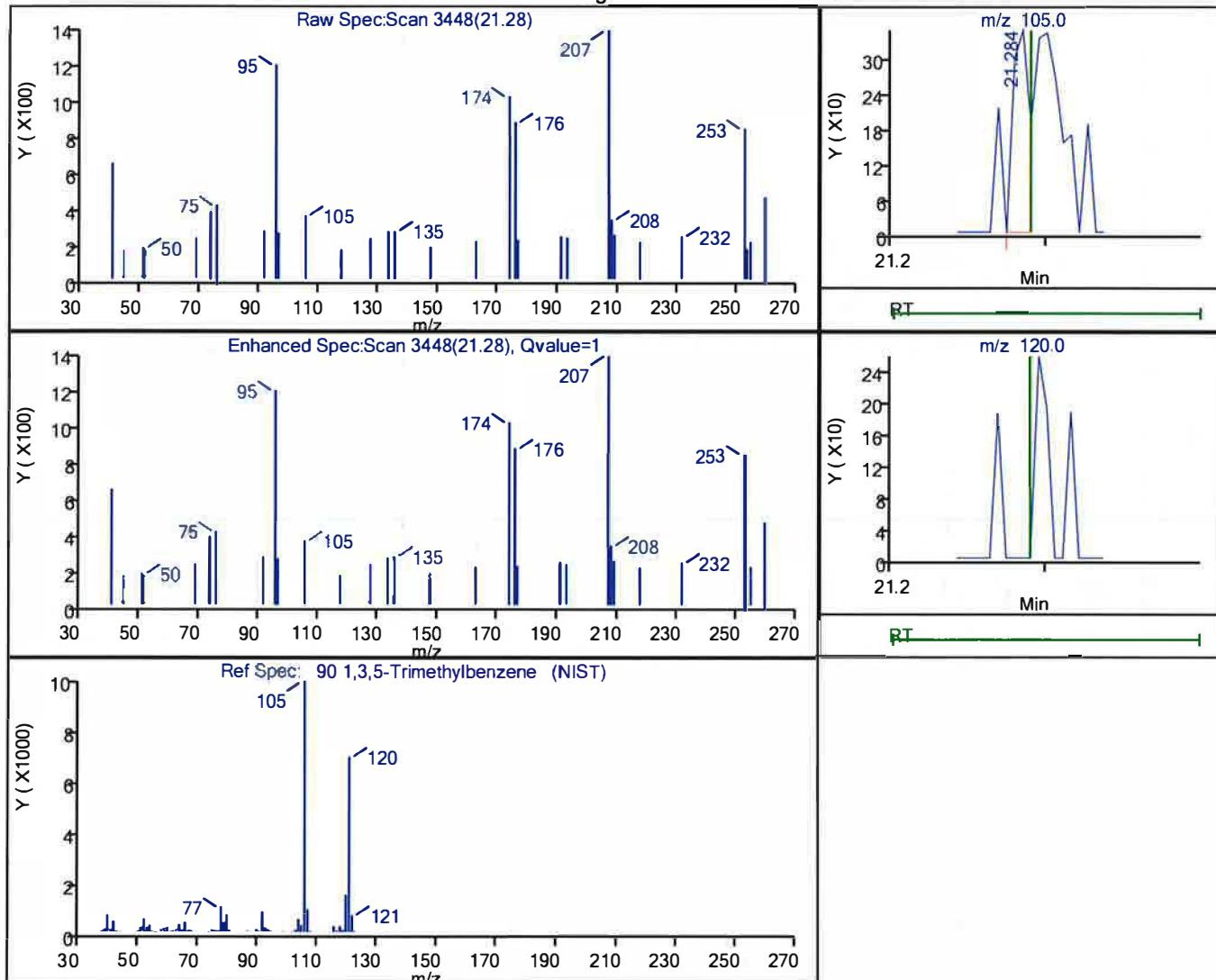
Audit Reason: Invalid Compound ID

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

90 1,3,5-Trimethylbenzene, CAS: 108-67-8

Processing Results



RT	Mass	Response	Amount
21.28	105.00	263	0.001229
21.29	120.00	0	

Reviewer: puangmaleek, 19-Feb-2019 13:11:04

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 19-Feb-2019 13:11:28

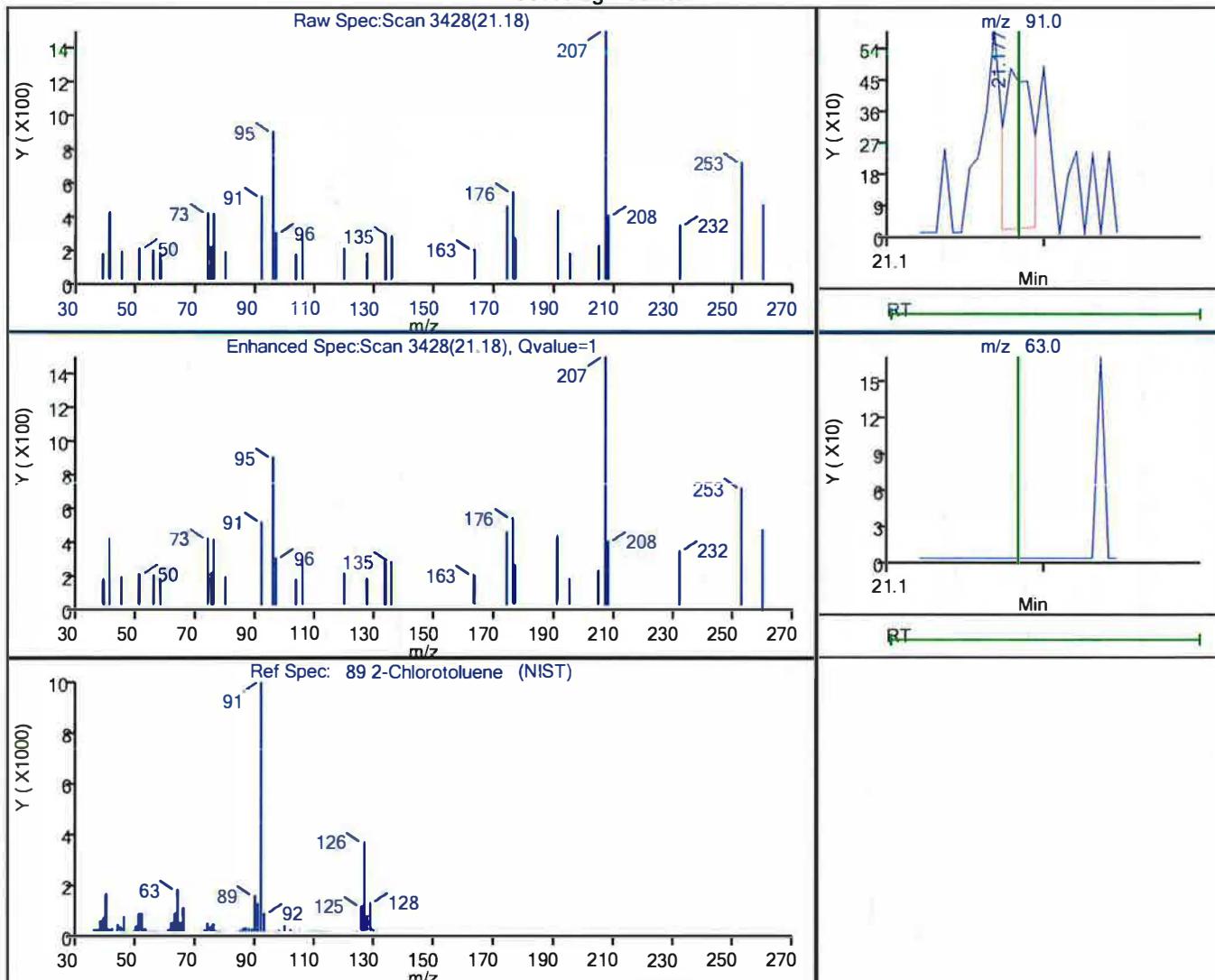
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAI
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

89 2-Chlorotoluene, CAS: 95-49-8

Processing Results



RT	Mass	Response	Amount
21.18	91.00	605	0.003032
21.18	63.00	0	

Reviewer: puangmaleek, 19-Feb-2019 13:11:02

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

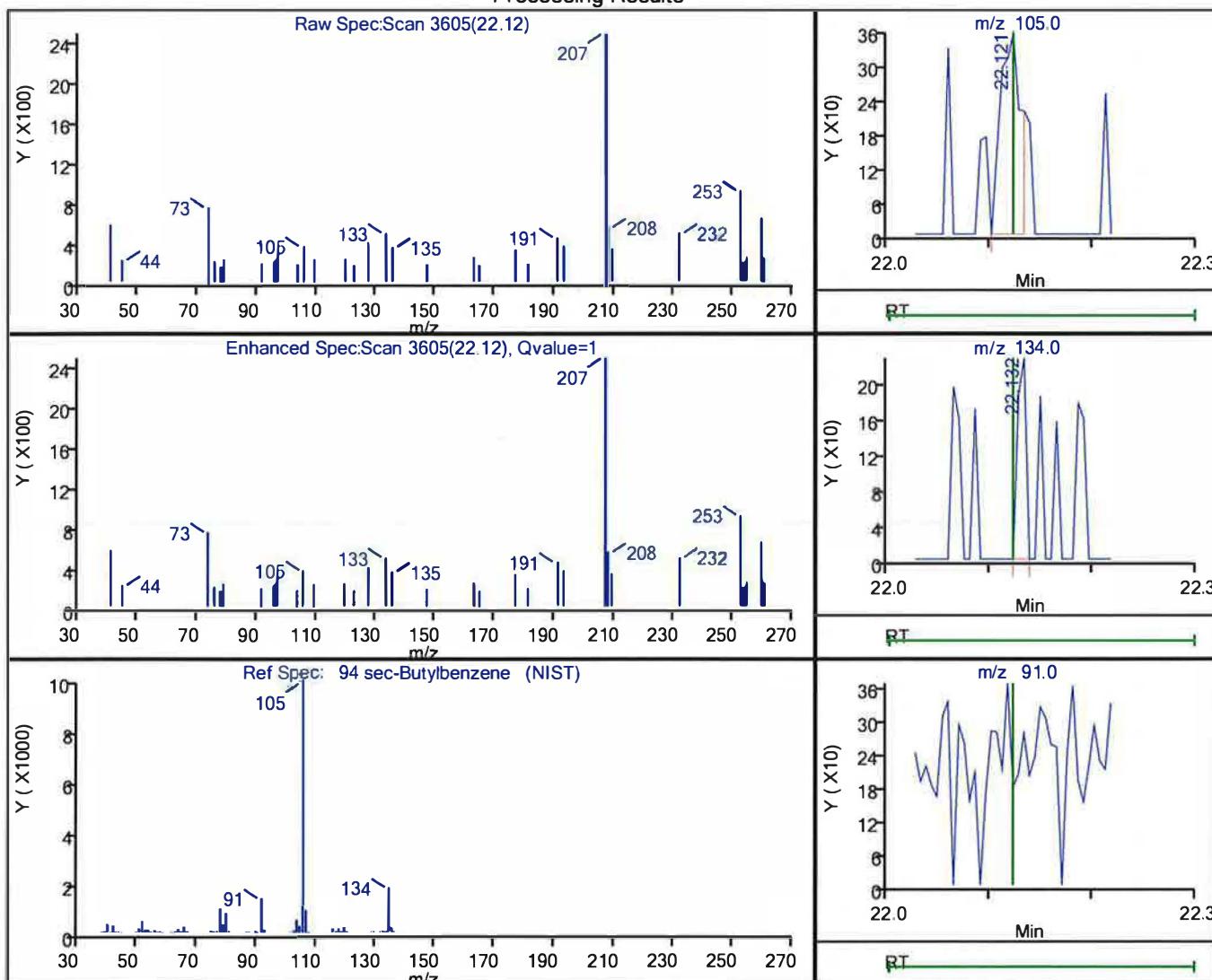
15

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

94 sec-Butylbenzene, CAS: 135-98-8

Processing Results



RT	Mass	Response	Amount
22.12	105.00	495	0.001589
22.13	134.00	129	
22.12	91.00	0	

Reviewer: puangmaleek, 19-Feb-2019 13:11:09

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 19-Feb-2019 13:11:29

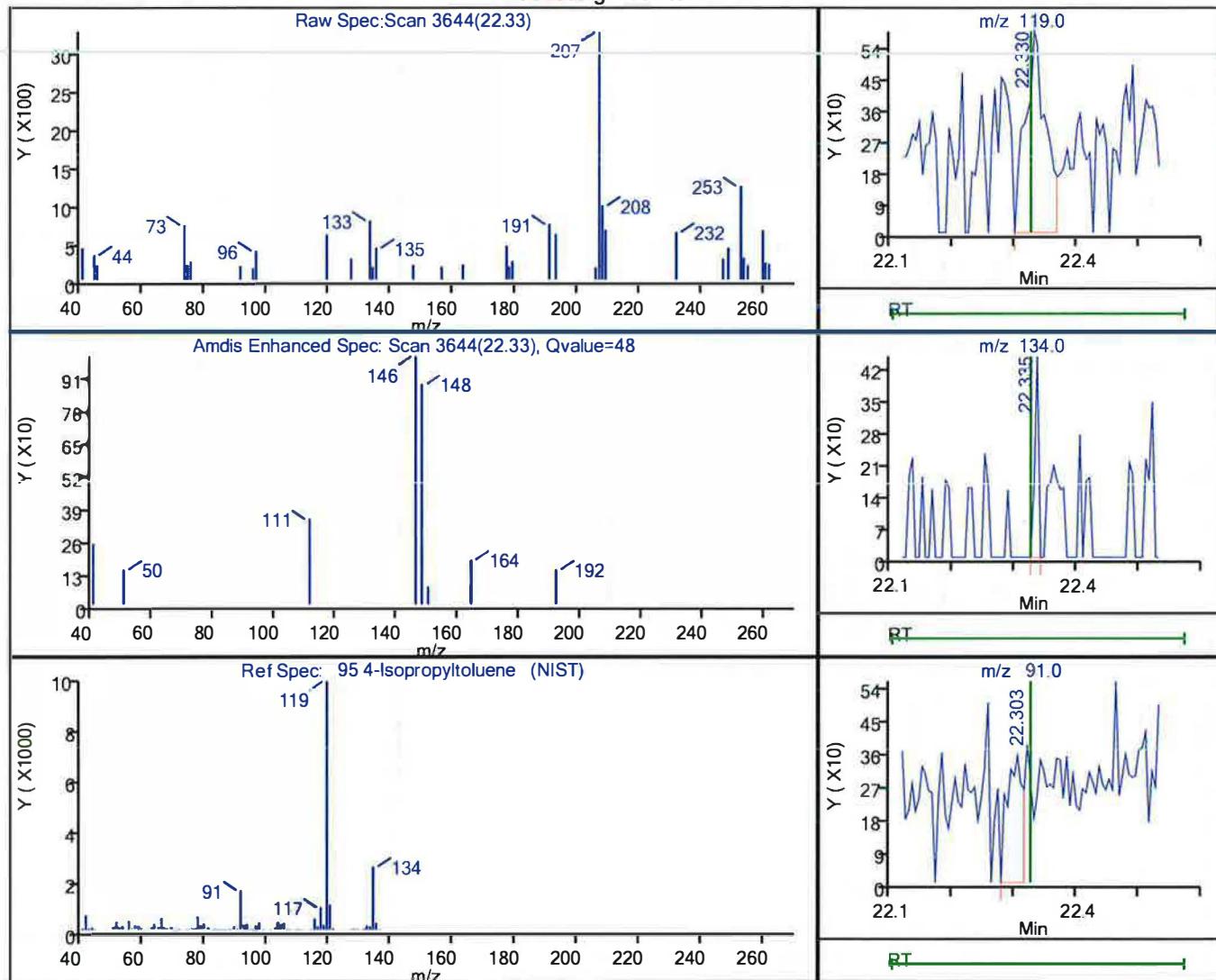
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAI
 Column: RTX-624 (0.32 mm) Detector MS SCAN

95 4-Isopropyltoluene, CAS: 99-87-6

Processing Results



RT	Mass	Response	Amount
22.33	119.00	1367	0.005177
22.33	134.00	196	
22.30	91.00	624	

Reviewer: puangmaleek, 19-Feb-2019 13:11:10

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 19-Feb-2019 13:11:29

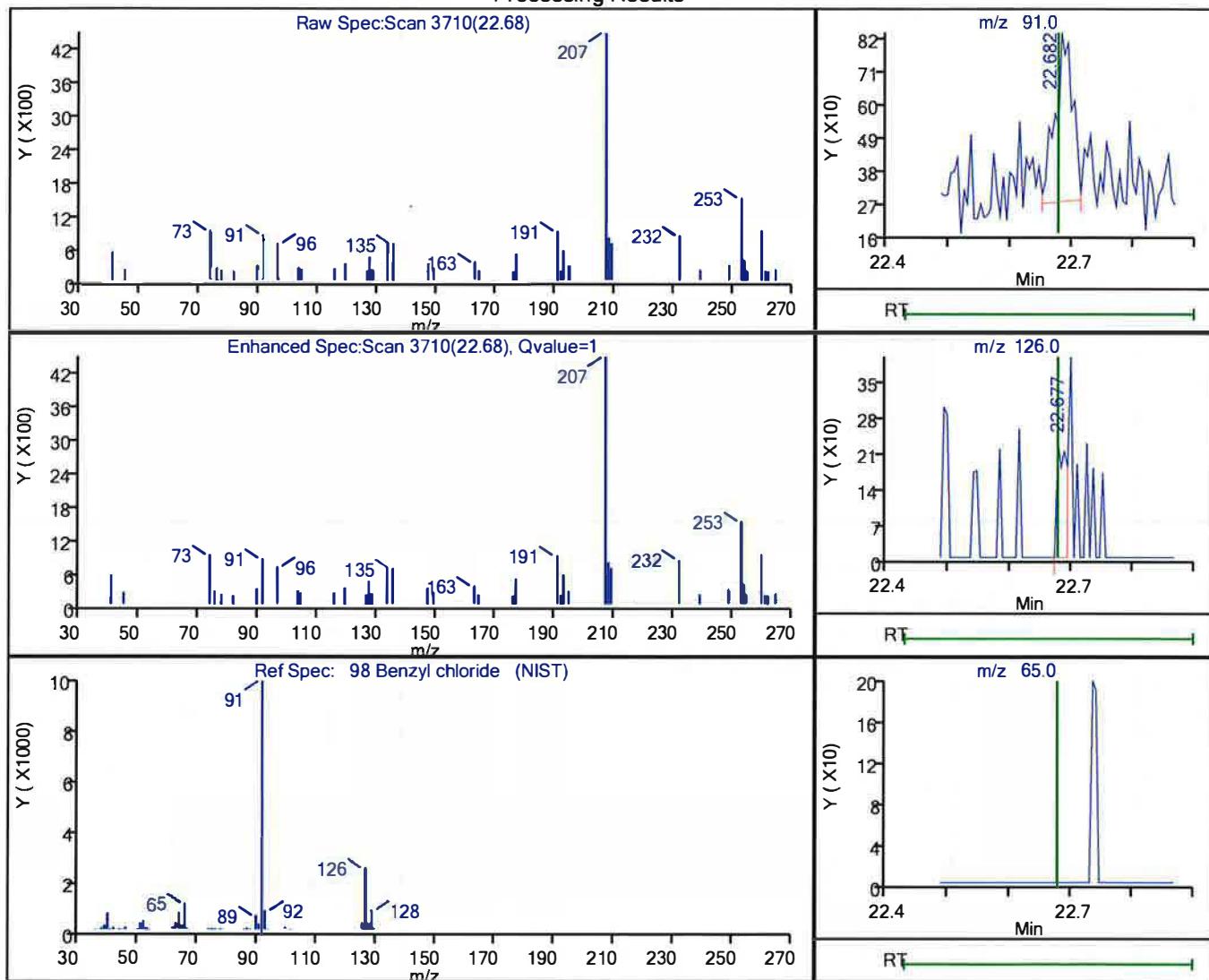
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.I\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

98 Benzyl chloride, CAS: 100-44-7

Processing Results



RT	Mass	Response	Amount
22.68	91.00	1121	0.006204
22.68	126.00	255	
22.68	65.00	0	

Reviewer: puangmaleek, 19-Feb-2019 13:11:13

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 19-Feb-2019 13:11:29

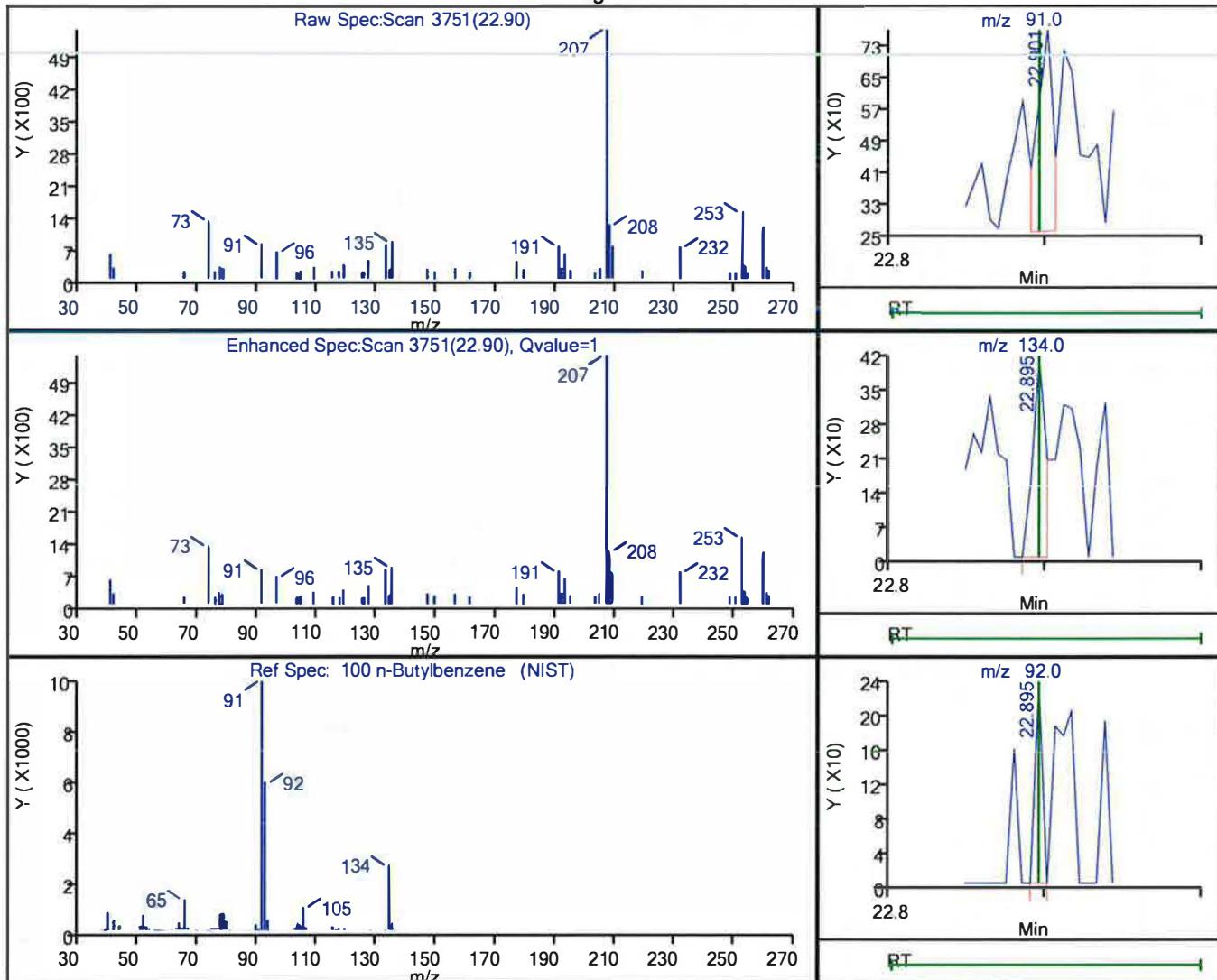
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

100 n-Butylbenzene, CAS: 104-51-8

Processing Results



RT	Mass	Response	Amount
22.90	91.00	382	0.001625
22.90	134.00	244	
22.90	92.00	74	

Reviewer: puangmaleek, 19-Feb-2019 13:11:15

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 19-Feb-2019 13:11:29

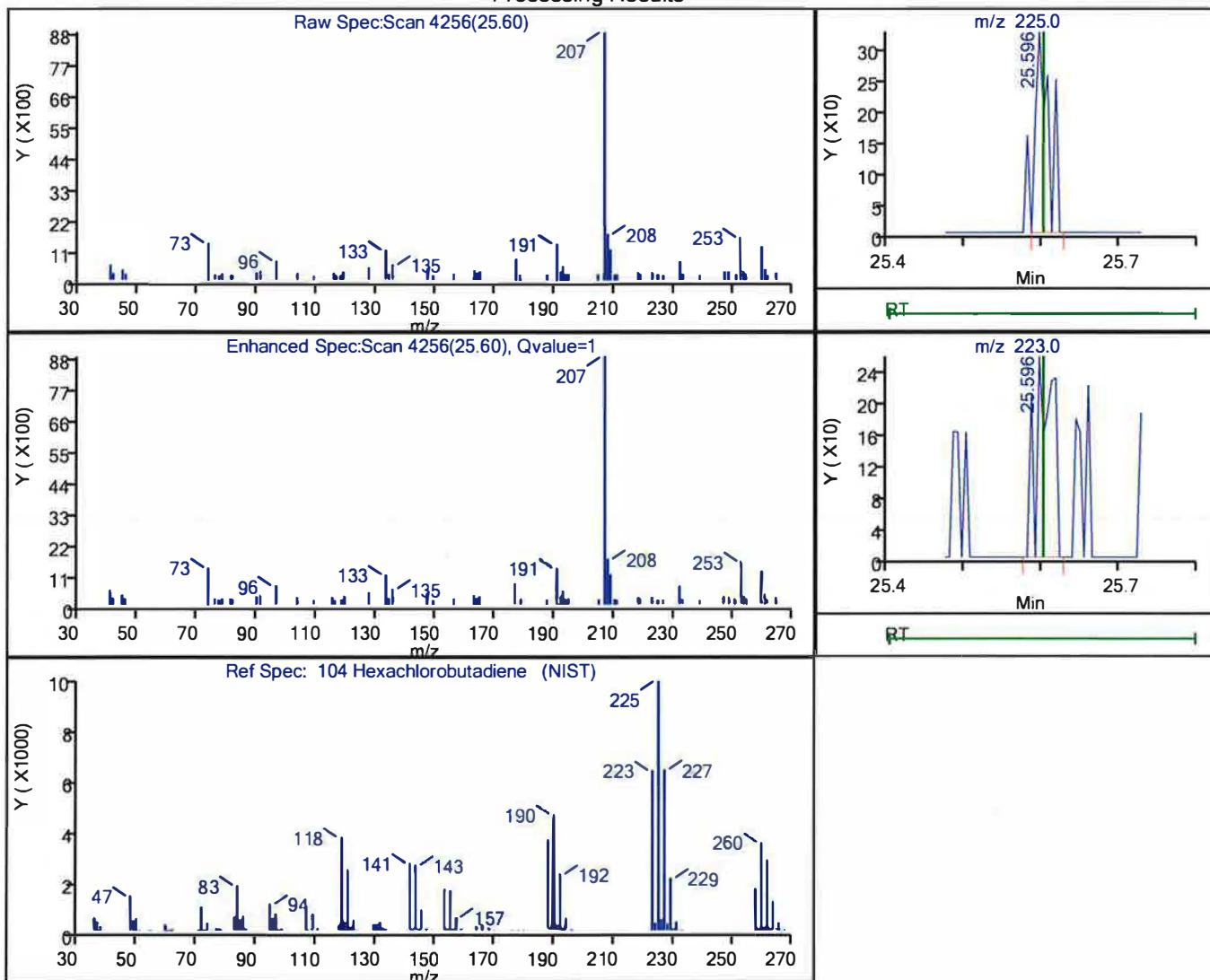
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHC.i\\20190218-34625.b\\34625-05.D
 Injection Date: 18-Feb-2019 13:46:30 Instrument ID: CHC.i
 Lims ID: 200-47422-A-4 Lab Sample ID: 200-47422-4
 Client ID: 4829
 Operator ID: ggg ALS Bottle#: 5 Worklist Smp#: 5
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1)_CHC.i Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

104 Hexachlorobutadiene, CAS: 87-68-3

Processing Results



RT	Mass	Response	Amount
25.60	225.00	393	0.003381
25.60	223.00	404	

Reviewer: puangmaleek, 19-Feb-2019 13:11:20

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Burlington

Job No.: 200-47546-1

SDG No.: _____

Client Sample ID: 5458

Lab Sample ID: 200-47546-11

Matrix: Air

Lab File ID: 34746-007.d

Analysis Method: TO-15

Date Collected: 02/25/2019 00:00

Sample wt/vol: 1000 (mL)

Date Analyzed: 02/27/2019 19:05

Soil Aliquot Vol: _____

Dilution Factor: 0.2

Soil Extract Vol.: _____

GC Column: RTX-624 ID: 0.32 (mm)

% Moisture: _____

Level: (low/med) Low

Analysis Batch No.: 140352

Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
115-07-1	Propylene	1.0	U	1.0	1.0
75-71-8	Dichlorodifluoromethane	0.10	U	0.10	0.10
75-45-6	Freon 22	0.10	U	0.10	0.10
76-14-2	1,2-Dichlorotetrafluoroethane	0.040	U	0.040	0.040
74-87-3	Chloromethane	0.10	U	0.10	0.10
106-97-8	n-Butane	0.10	U	0.10	0.10
75-01-4	Vinyl chloride	0.040	U	0.040	0.040
106-99-0	1,3-Butadiene	0.040	U	0.040	0.040
74-83-9	Bromomethane	0.040	U	0.040	0.040
75-00-3	Chloroethane	0.10	U	0.10	0.10
593-60-2	Bromoethene (Vinyl Bromide)	0.040	U	0.040	0.040
75-69-4	Trichlorofluoromethane	0.040	U	0.040	0.040
64-17-5	Ethanol	1.0	U	1.0	1.0
76-13-1	Freon TF	0.040	U	0.040	0.040
75-35-4	1,1-Dichloroethene	0.040	U	0.040	0.040
67-64-1	Acetone	1.0	U	1.0	1.0
67-63-0	Isopropyl alcohol	1.0	U	1.0	1.0
75-15-0	Carbon disulfide	0.10	U	0.10	0.10
107-05-1	3-Chloropropene	0.10	U *	0.10	0.10
75-09-2	Methylene Chloride	0.10	U	0.10	0.10
75-65-0	tert-Butyl alcohol	1.0	U	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.040	U	0.040	0.040
156-60-5	trans-1,2-Dichloroethene	0.040	U	0.040	0.040
110-54-3	n-Hexane	0.040	U	0.040	0.040
75-34-3	1,1-Dichloroethane	0.040	U	0.040	0.040
108-05-4	Vinyl acetate	1.0	U	1.0	1.0
141-78-6	Ethyl acetate	1.0	U	1.0	1.0
78-93-3	Methyl Ethyl Ketone	0.10	U	0.10	0.10
156-59-2	cis-1,2-Dichloroethene	0.040	U	0.040	0.040
540-59-0	1,2-Dichloroethene, Total	0.080	U	0.080	0.080
67-66-3	Chloroform	0.040	U	0.040	0.040
109-99-9	Tetrahydrofuran	1.0	U	1.0	1.0
71-55-6	1,1,1-Trichloroethane	0.040	U	0.040	0.040
110-82-7	Cyclohexane	0.040	U	0.040	0.040
56-23-5	Carbon tetrachloride	0.040	U	0.040	0.040
540-84-1	2,2,4-Trimethylpentane	0.040	U	0.040	0.040

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Burlington

Job No.: 200-47546-1

SDG No.: _____

Client Sample ID: 5458 Lab Sample ID: 200-47546-11

Matrix: Air Lab File ID: 34746-007.d

Analysis Method: TO-15 Date Collected: 02/25/2019 00:00

Sample wt/vol: 1000 (mL) Date Analyzed: 02/27/2019 19:05

Soil Aliquot Vol: _____ Dilution Factor: 0.2

Soil Extract Vol.: _____ GC Column: RTX-624 ID: 0.32 (mm)

% Moisture: _____ Level: (low/med) Low

Analysis Batch No.: 140352 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
71-43-2	Benzene	0.040	U	0.040	0.040
107-06-2	1,2-Dichloroethane	0.040	U	0.040	0.040
142-82-5	n-Heptane	0.040	U	0.040	0.040
79-01-6	Trichloroethene	0.040	U	0.040	0.040
80-62-6	Methyl methacrylate	0.10	U	0.10	0.10
78-87-5	1,2-Dichloropropane	0.040	U	0.040	0.040
123-91-1	1,4-Dioxane	1.0	U	1.0	1.0
75-27-4	Bromodichloromethane	0.040	U	0.040	0.040
10061-01-5	cis-1,3-Dichloropropene	0.040	U	0.040	0.040
108-10-1	methyl isobutyl ketone	0.10	U	0.10	0.10
108-88-3	Toluene	0.040	U	0.040	0.040
10061-02-6	trans-1,3-Dichloropropene	0.040	U	0.040	0.040
79-00-5	1,1,2-Trichloroethane	0.040	U	0.040	0.040
127-18-4	Tetrachloroethene	0.040	U	0.040	0.040
591-78-6	Methyl Butyl Ketone (2-Hexanone)	0.10	U	0.10	0.10
124-48-1	Dibromochloromethane	0.040	U	0.040	0.040
106-93-4	1,2-Dibromoethane	0.040	U	0.040	0.040
108-90-7	Chlorobenzene	0.040	U	0.040	0.040
100-41-4	Ethylbenzene	0.040	U	0.040	0.040
179601-23-1	m,p-Xylene	0.10	U	0.10	0.10
95-47-6	Xylene, o-	0.040	U	0.040	0.040
1330-20-7	Xylene (total)	0.14	U	0.14	0.14
100-42-5	Styrene	0.040	U	0.040	0.040
75-25-2	Bromoform	0.040	U	0.040	0.040
98-82-8	Cumene	0.040	U	0.040	0.040
79-34-5	1,1,2,2-Tetrachloroethane	0.040	U	0.040	0.040
103-65-1	n-Propylbenzene	0.040	U	0.040	0.040
622-96-8	4-Ethyltoluene	0.040	U	0.040	0.040
108-67-8	1,3,5-Trimethylbenzene	0.040	U	0.040	0.040
95-49-8	2-Chlorotoluene	0.040	U	0.040	0.040
98-06-6	tert-Butylbenzene	0.040	U	0.040	0.040
95-63-6	1,2,4-Trimethylbenzene	0.040	U	0.040	0.040
135-98-8	sec-Butylbenzene	0.040	U	0.040	0.040
99-87-6	4-Isopropyltoluene	0.040	U	0.040	0.040
541-73-1	1,3-Dichlorobenzene	0.040	U	0.040	0.040
106-46-7	1,4-Dichlorobenzene	0.040	U	0.040	0.040

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Burlington

Job No.: 200-47546-1

SDG No.: _____

Client Sample ID: 5458 Lab Sample ID: 200-47546-11

Matrix: Air Lab File ID: 34746-007.d

Analysis Method: T0-15 Date Collected: 02/25/2019 00:00

Sample wt/vol: 1000 (mL) Date Analyzed: 02/27/2019 19:05

Soil Aliquot Vol: _____ Dilution Factor: 0.2

Soil Extract Vol: _____ GC Column: RTX-624 ID: 0.32 (mm)

% Moisture: _____ Level: (low/med) Low

Analysis Batch No.: 140352 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
100-44-7	Benzyl chloride	0.040	U *	0.040	0.040
104-51-8	n-Butylbenzene	0.040	U	0.040	0.040
95-50-1	1,2-Dichlorobenzene	0.040	U	0.040	0.040
120-82-1	1,2,4-Trichlorobenzene	0.10	U *	0.10	0.10
87-68-3	Hexachlorobutadiene	0.040	U	0.040	0.040
91-20-3	Naphthalene	0.10	U *	0.10	0.10

TestAmerica Burlington
Target Compound Quantitation Report

Data File: \\chromna\Burlington\ChromData\CHW.i\20190227-34746.b\34746-007.d
 Lims ID: 200-47546-A-11
 Client ID: 5458
 Sample Type: Client
 Inject. Date: 27-Feb-2019 19:05:30 ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Sample Info: 200-0034746-007
 Misc. Info.: 47546-11
 Operator ID: ggg Instrument ID: CHW.i
 Method: \\chromna\Burlington\ChromData\CHW.i\20190227-34746.b\TO15_MasterMethod_(v1).m
 Limit Group: AI_TO15_ICAL
 Last Update: 28-Feb-2019 15:07:43 Calib Date: 27-Feb-2019 09:49:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Burlington\ChromData\CHW.i\20190226-34732.b\34732-018.d
 Column 1 : RTX-624 (0.32 mm) Det: MS SCAN
 Process Host: CTX0329

First Level Reviewer: bunmaa Date: 28-Feb-2019 15:07:43

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
1 Propene	41	2.922				ND	U	
2 Dichlorodifluoromethane	85	2.997				ND		
3 Chlorodifluoromethane	51	3.029				ND	U	
4 1,2-Dichloro-1,1,2,2-tetra	85	3.270				ND		
5 Chloromethane	50	3.350				ND	U	
6 Butane	43	3.591				ND	U	
7 Vinyl chloride	62	3.591				ND		
8 Butadiene	54	3.677				ND		
9 Bromomethane	94	4.265				ND		
11 Chloroethane	64	4.517				ND		
13 Vinyl bromide	106	4.918				ND		
14 Trichlorofluoromethane	101	5.084				ND		
16 Ethanol	45	5.645				ND	U	
21 1,1-Dichloroethene	96	6.255				ND		
20 1,1,2-Trichloro-1,2,2-trif	101	6.314				ND		
22 Acetone	43	6.437				ND		
23 Carbon disulfide	76	6.683				ND		
24 Isopropyl alcohol	45	6.785	6.860	-0.075	96	7065	0.2350	
25 3-Chloro-1-propene	41	7.101				ND		
27 Methylene Chloride	49	7.384	7.384	0.000	94	1805	0.0748	M
28 2-Methyl-2-propanol	59	7.759				ND		
30 trans-1,2-Dichloroethene	61	7.967				ND		
29 Methyl tert-butyl ether	73	7.994				ND		
33 Hexane	57	8.556				ND		
34 1,1-Dichloroethane	63	8.887				ND		
35 Vinyl acetate	43	8.946				ND		
36 cis-1,2-Dichloroethene	96	10.080				ND		
37 2-Butanone (MEK)	72	10.096				ND		
S 31 1,2-Dichloroethene, Total	61	10.200				ND		
38 Ethyl acetate	88	10.209				ND		
* 40 Chlorobromomethane	128	10.562	10.578	-0.016	96	141175	10.0	

Report Date: 28-Feb-2019 15:07:43

Chrom Revision: 2.3 11-Feb-2019 16:31:10

Data File: \\chromna\\Burlington\\ChromData\\CHW.i\\20190227-34746.b\\34746-007.d

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
39 Tetrahydrofuran	42	10.615					ND	
41 Chloroform	83	10.819					ND	
43 1,1,1-Trichloroethane	97	11.134					ND	
42 Cyclohexane	84	11.268					ND	
44 Carbon tetrachloride	117	11.450					ND	
46 Benzene	78	11.899					ND	
47 1,2-Dichloroethane	62	12.033					ND	
45 Isooctane	57	12.161					ND	
48 n-Heptane	43	12.547					ND	
* 49 1,4-Difluorobenzene	114	12.814	12.830	-0.016	95	680440	10.0	
51 Trichloroethene	95	13.290					ND	
53 1,2-Dichloropropane	63	13.836					ND	
55 Methyl methacrylate	69	13.975					ND	
56 1,4-Dioxane	88	13.986					ND	
57 Dibromomethane	174	14.007					ND	
58 Dichlorobromomethane	83	14.376					ND	
59 cis-1,3-Dichloropropene	75	15.264					ND	
61 4-Methyl-2-pentanone (MIBK)	43	15.574					ND	
63 Toluene	92	15.944					ND	MU
64 trans-1,3-Dichloropropene	75	16.425					ND	
65 1,1,2-Trichloroethane	83	16.826					ND	
66 Tetrachloroethene	166	16.981					ND	
67 2-Hexanone	43	17.265					ND	
68 Chlorodibromomethane	129	17.591					ND	
69 Ethylene Dibromide	107	17.832					ND	
* 71 Chlorobenzene-d5	117	18.779	18.779	0.000	87	598754	10.0	
72 Chlorobenzene	112	18.843					ND	
73 Ethylbenzene	91	19.046					ND	
75 m-Xylene & p-Xylene	106	19.325					ND	
S 76 Xylenes, Total	106	20.100					ND	
77 o-Xylene	106	20.111					ND	
78 Styrene	104	20.159					ND	
79 Bromoform	173	20.512					ND	
80 Isopropylbenzene	105	20.823					ND	
81 1,1,2,2-Tetrachloroethane	83	21.374					ND	U
82 N-Propylbenzene	91	21.550					ND	U
86 2-Chlorotoluene	91	21.695					ND	U
85 4-Ethyltoluene	105	21.748					ND	U
87 1,3,5-Trimethylbenzene	105	21.850					ND	U
89 tert-Butylbenzene	119	22.342					ND	
90 1,2,4-Trimethylbenzene	105	22.433					ND	U
91 sec-Butylbenzene	105	22.679					ND	U
93 1,3-Dichlorobenzene	146	22.855					ND	MU
92 4-Isopropyltoluene	119	22.898					ND	
94 1,4-Dichlorobenzene	146	23.000	23.000	0.000	1	623	0.0107	M
95 Benzyl chloride	91	23.160					ND	U
96 n-Butylbenzene	91	23.481					ND	MU
98 1,2-Dichlorobenzene	146	23.513	23.513	0.000	3	611	0.009829	
100 1,2,4-Trichlorobenzene	180	26.055	26.055	-0.001	81	1136	0.0339	
101 Hexachlorobutadiene	225	26.306					ND	
102 Naphthalene	128	26.563					ND	MU

Report Date: 28-Feb-2019 15:07:43

Chrom Revision: 2.3 11-Feb-2019 16:31:10

QC Flag Legend

Review Flags

M - Manually Integrated

U - Marked Undetected

Reagents:

ATTO15WISs_00004

Amount Added: 20.00

Units: mL

Run Reagent

Report Date: 28-Feb-2019 15:07:43

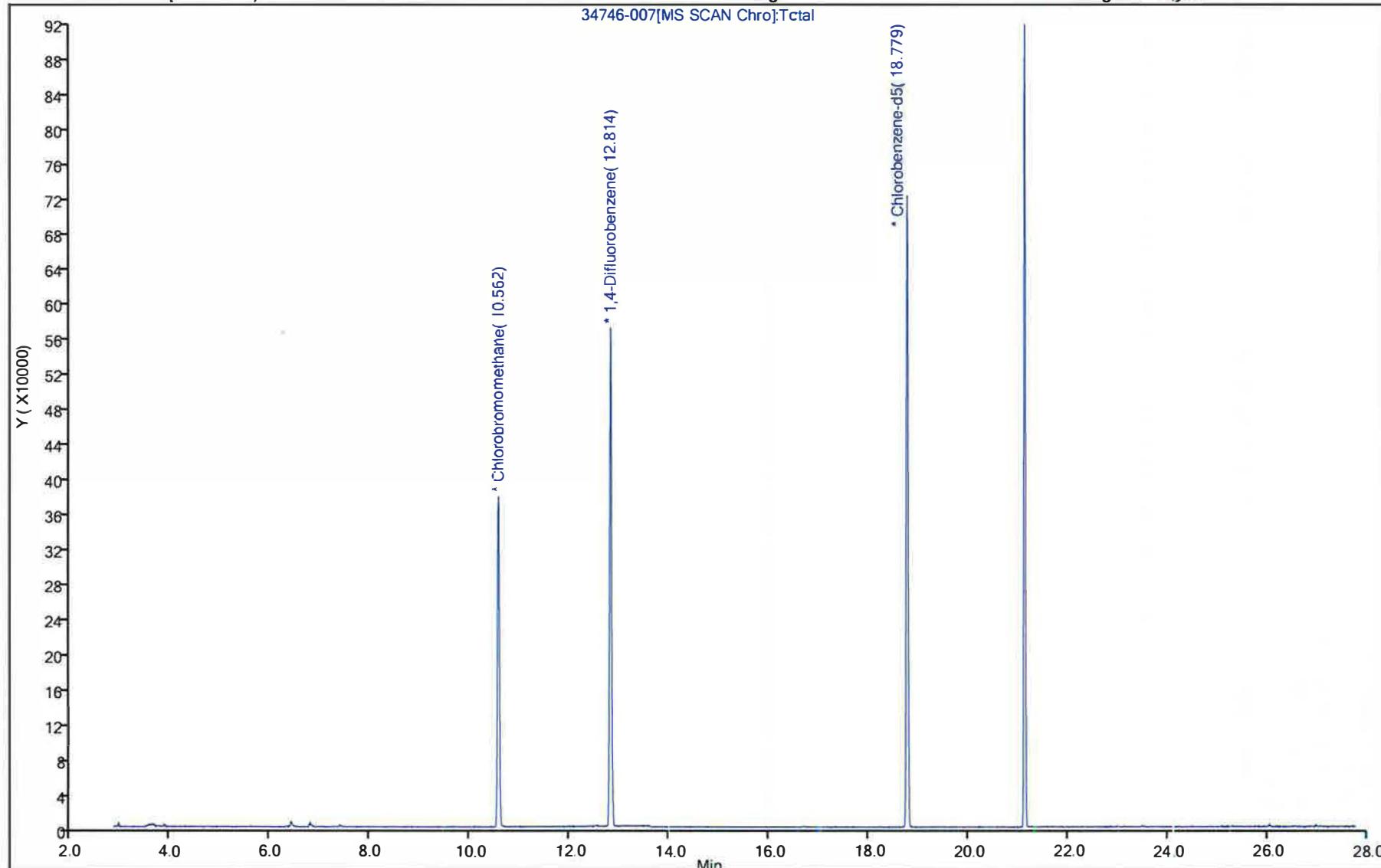
Chrom Revision: 2.3 11-Feb-2019 16:31:10

TestAmerica Burlington
Data File: \\chromna\\Burlington\\ChromData\\CHW.i\\20190227-34746.b\\34746-007.d
Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
Client ID: 5458 Operator ID: ggg
Purge Vol: 200.000 mL Dil. Factor: 0.2000
Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
Column: RTX-624 (0.32 mm)

Worklist Smp#: 7

ALS Bottle#: 6

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1

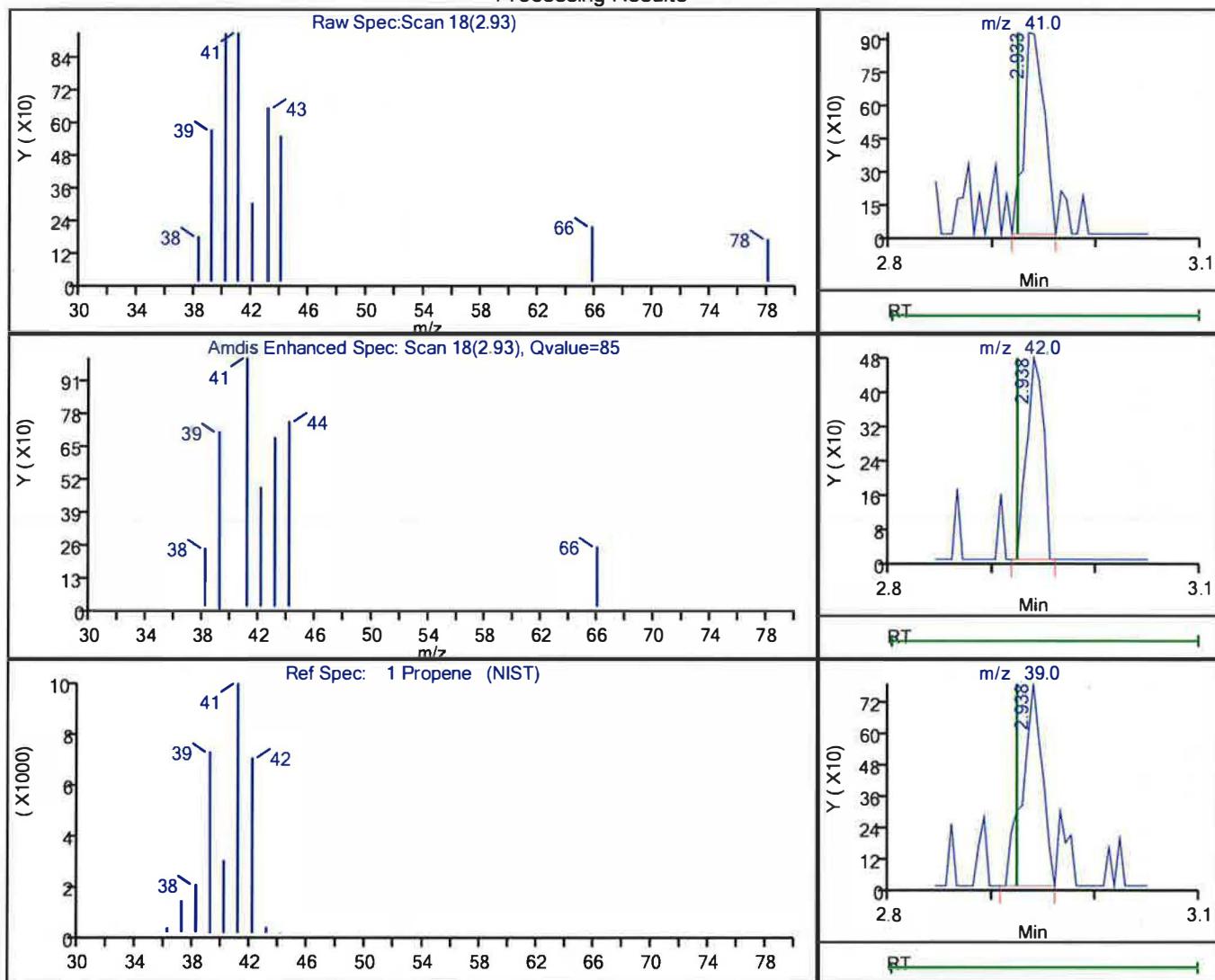


TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHW.i\\20190227-34746.b\\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

1 Propene, CAS: 115-07-1

Processing Results



RT	Mass	Response	Amount
2.93	41.00	1259	0.062880
2.94	42.00	530	
2.94	39.00	1055	

Reviewer: bunmaa, 28-Feb-2019 15:04:32

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 28-Feb-2019 15:07:43

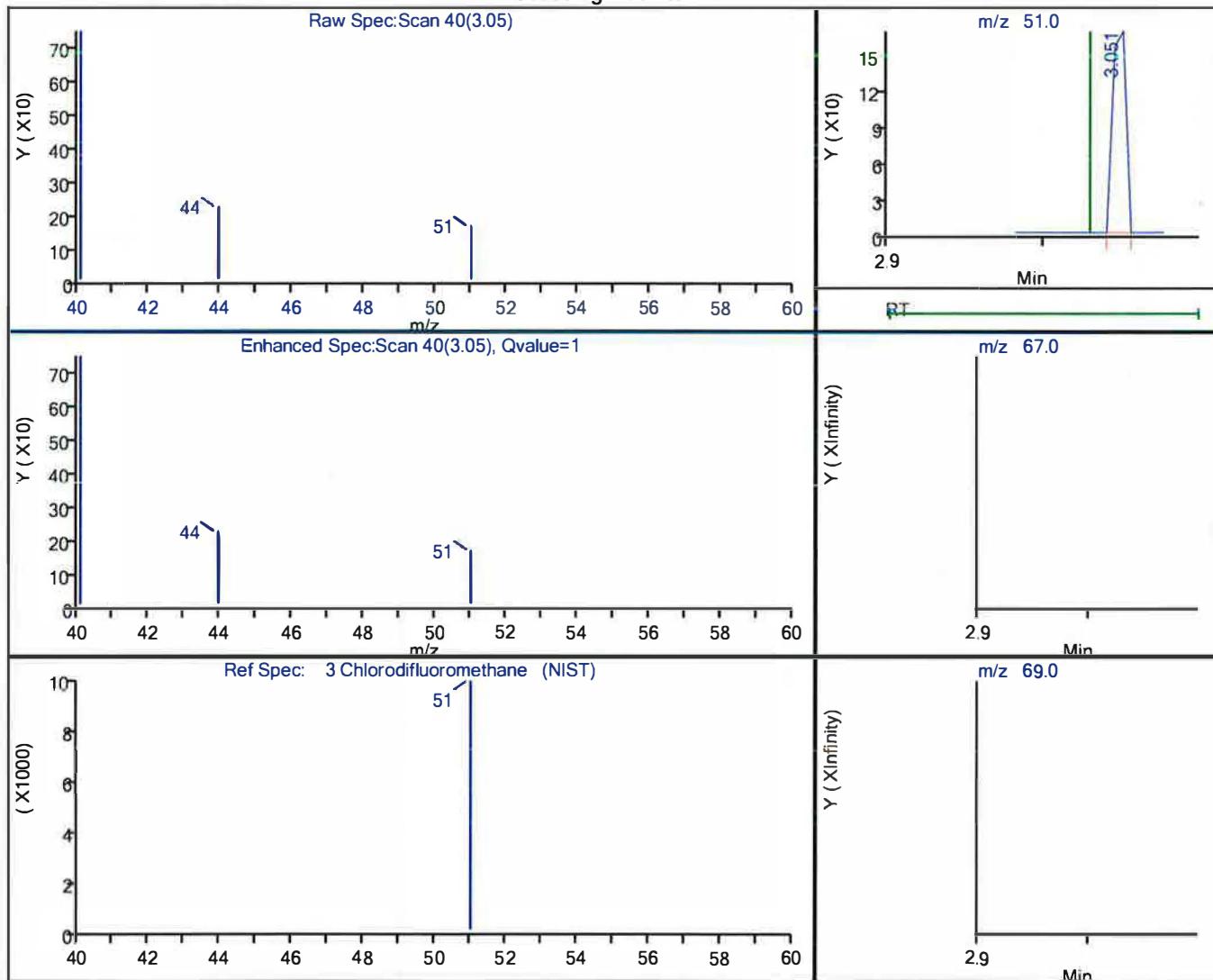
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHW.i\\20190227-34746.b\\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

3 Chlorodifluoromethane, CAS: 75-45-6

Processing Results



RT	Mass	Response	Amount
3.05	51.00	101	0.002388
3.03	67.00	0	
3.03	69.00	0	

Reviewer: bunmaa, 28-Feb-2019 15:04:36

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 28-Feb-2019 15:07:43

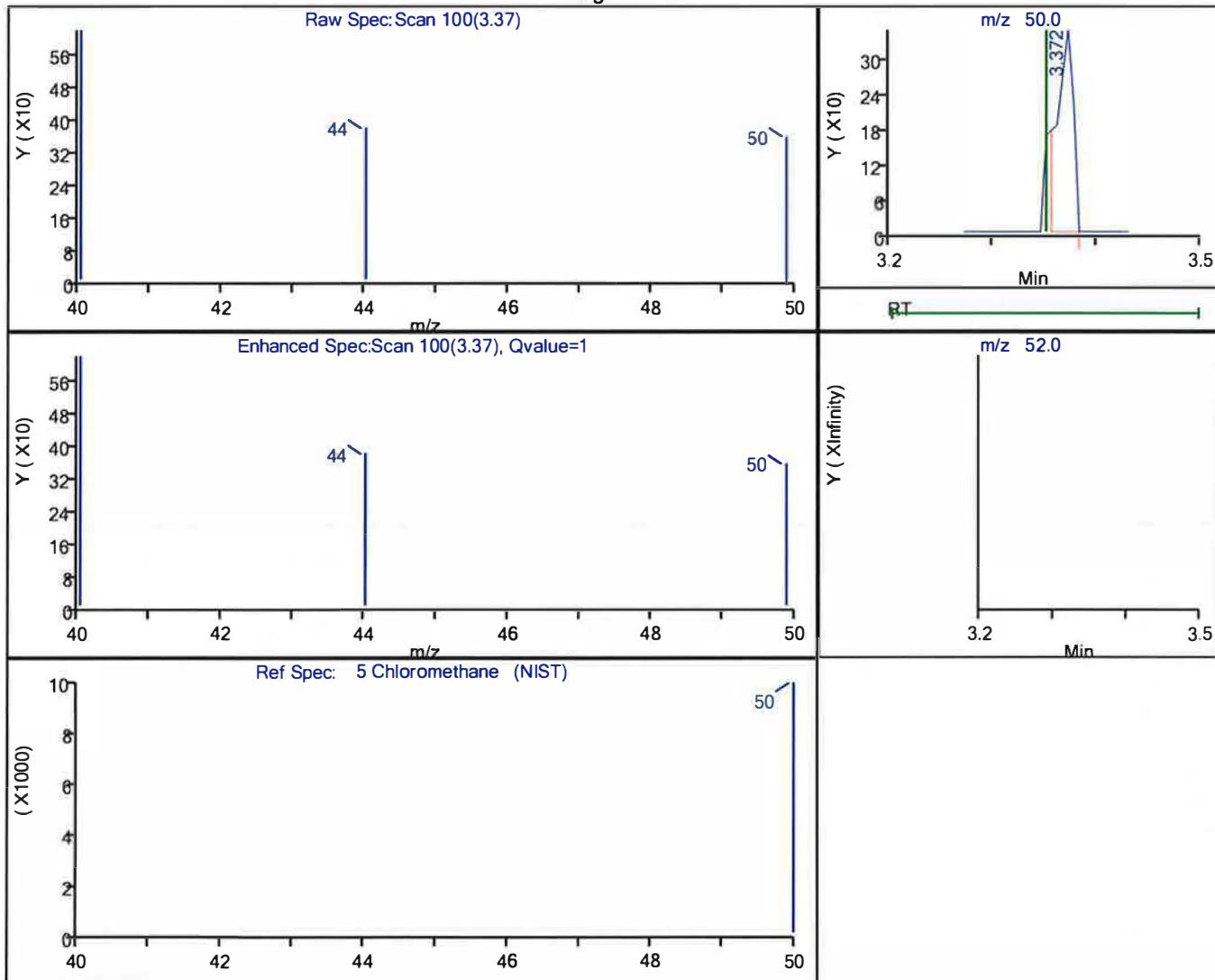
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\Burlington\ChromData\CHW.i\20190227-34746.b\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

5 Chloromethane, CAS: 74-87-3

Processing Results



RT	Mass	Response	Amount
3.37	50.00	385	0.016033
3.35	52.00	0	

Reviewer: bunmaa, 28-Feb-2019 15:04:41

Audit Action: Marked Compound Undetected

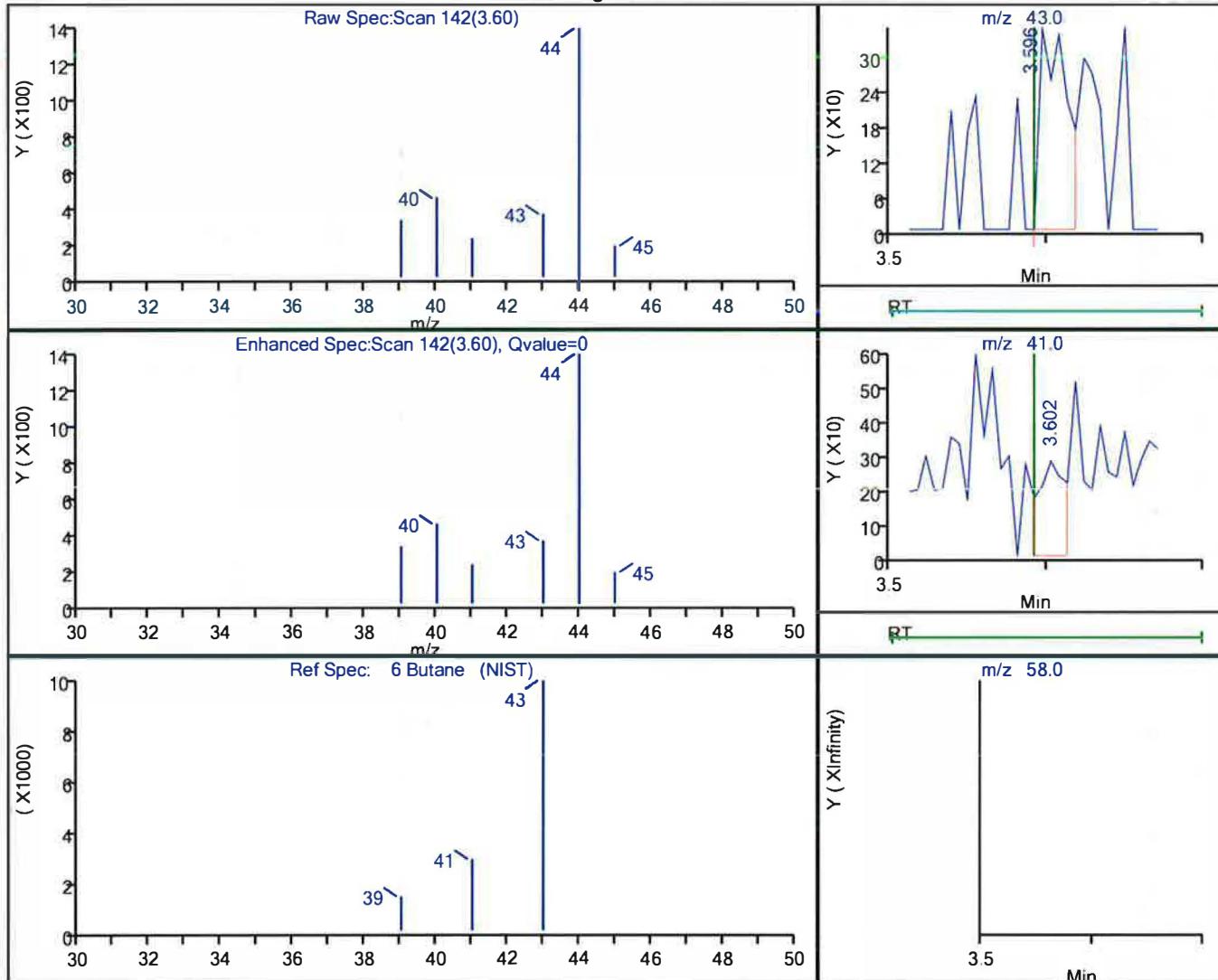
Audit Reason: Invalid Compound ID

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHW.i\\20190227-34746.b\\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

6 Butane, CAS: 106-97-8

Processing Results



RT	Mass	Response	Amount
3.60	43.00	420	0.012716
3.60	41.00	357	
3.59	58.00	0	

Reviewer: bunmaa, 28-Feb-2019 15:04:44

Audit Action: Marked Compound Undetected

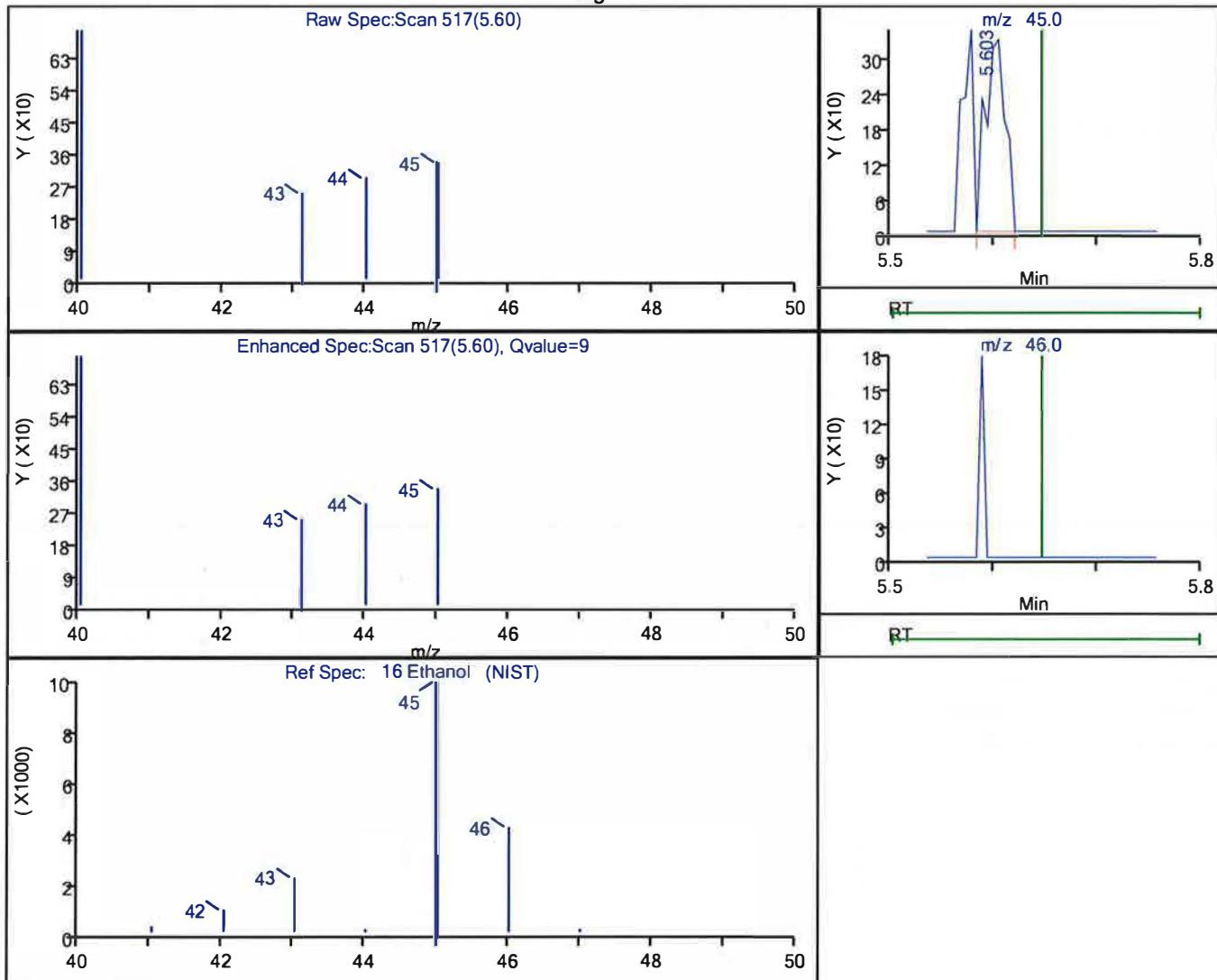
Audit Reason: Invalid Compound ID

TestAmerica Burlington

Data File: \\chromna\Burlington\ChromData\CHW.i\20190227-34746.b\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

16 Ethanol, CAS: 64-17-5

Processing Results



RT	Mass	Response	Amount
5.60	45.00	454	0.058402
5.65	46.00	0	

Reviewer: bunmaa, 28-Feb-2019 15:04:55

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

TestAmerica Burlington

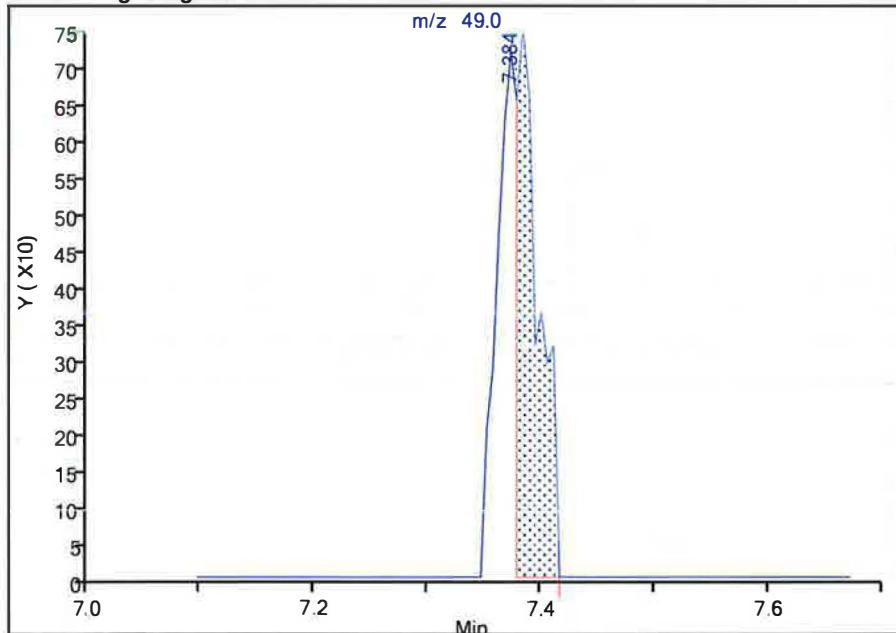
Data File: \\chromna\\Burlington\\ChromData\\CHW.i\\20190227-34746.b\\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

27 Methylene Chloride, CAS: 75-09-2

Signal: 1

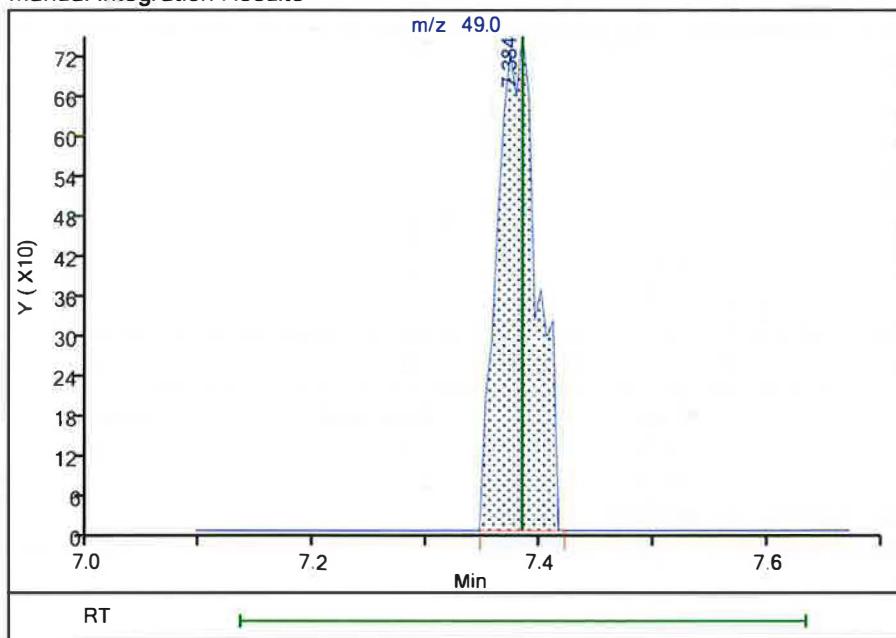
Processing Integration Results

RT: 7.38
 Area: 1066
 Amount: 0.044196
 Amount Units: ppb v/v



Manual Integration Results

RT: 7.38
 Area: 1805
 Amount: 0.074834
 Amount Units: ppb v/v



Reviewer: bunmaa, 28-Feb-2019 15:05:12

Audit Action: Manually Integrated

Audit Reason: Assign Peak

Report Date: 28-Feb-2019 15:07:43

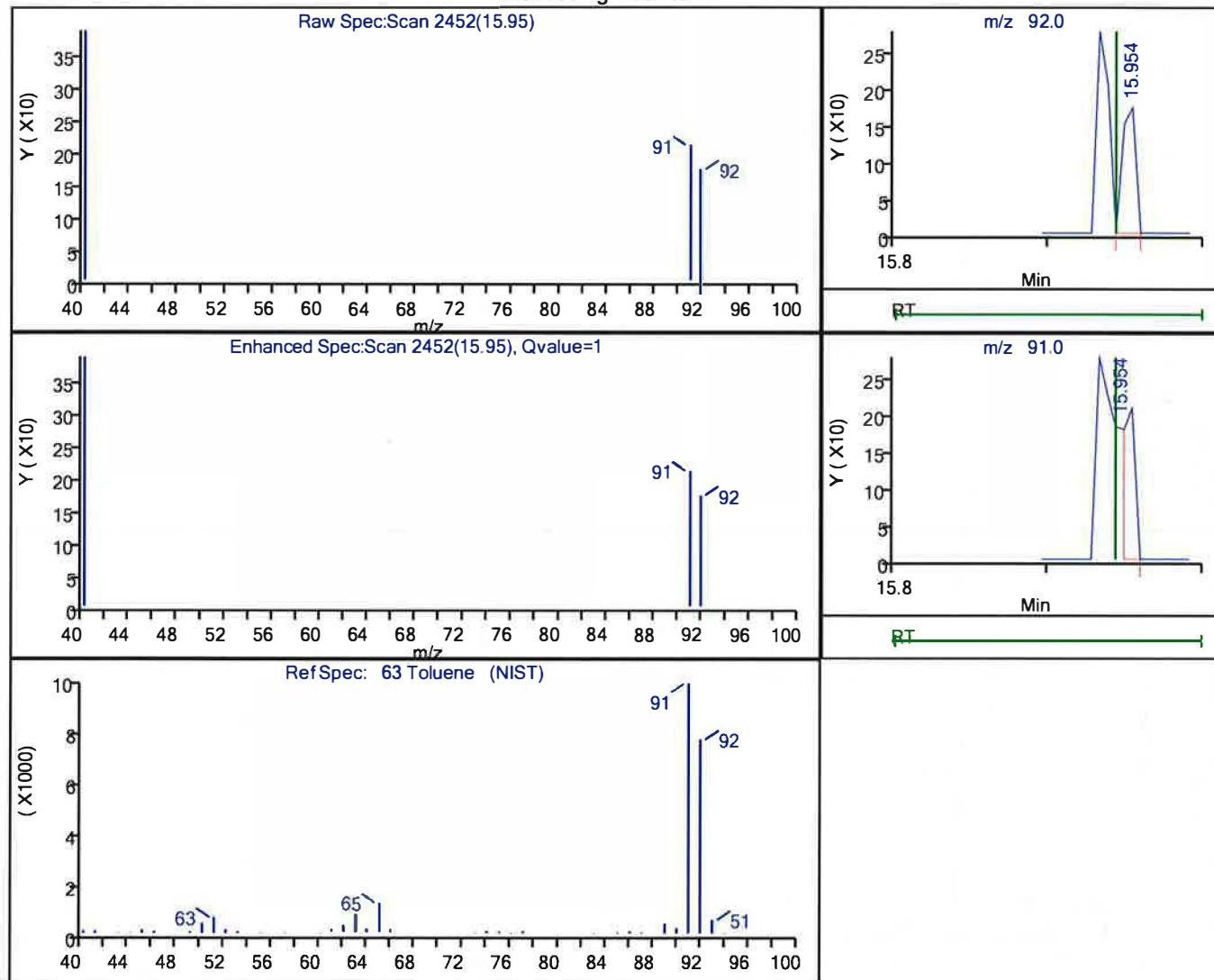
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHW.i\\20190227-34746.b\\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

63 Toluene, CAS: 108-88-3

Processing Results



RT	Mass	Response	Amount
15.95	92.00	103	0.002375
15.95	91.00	125	

Reviewer: bunmaa, 28-Feb-2019 15:05:49

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 28-Feb-2019 15:07:43

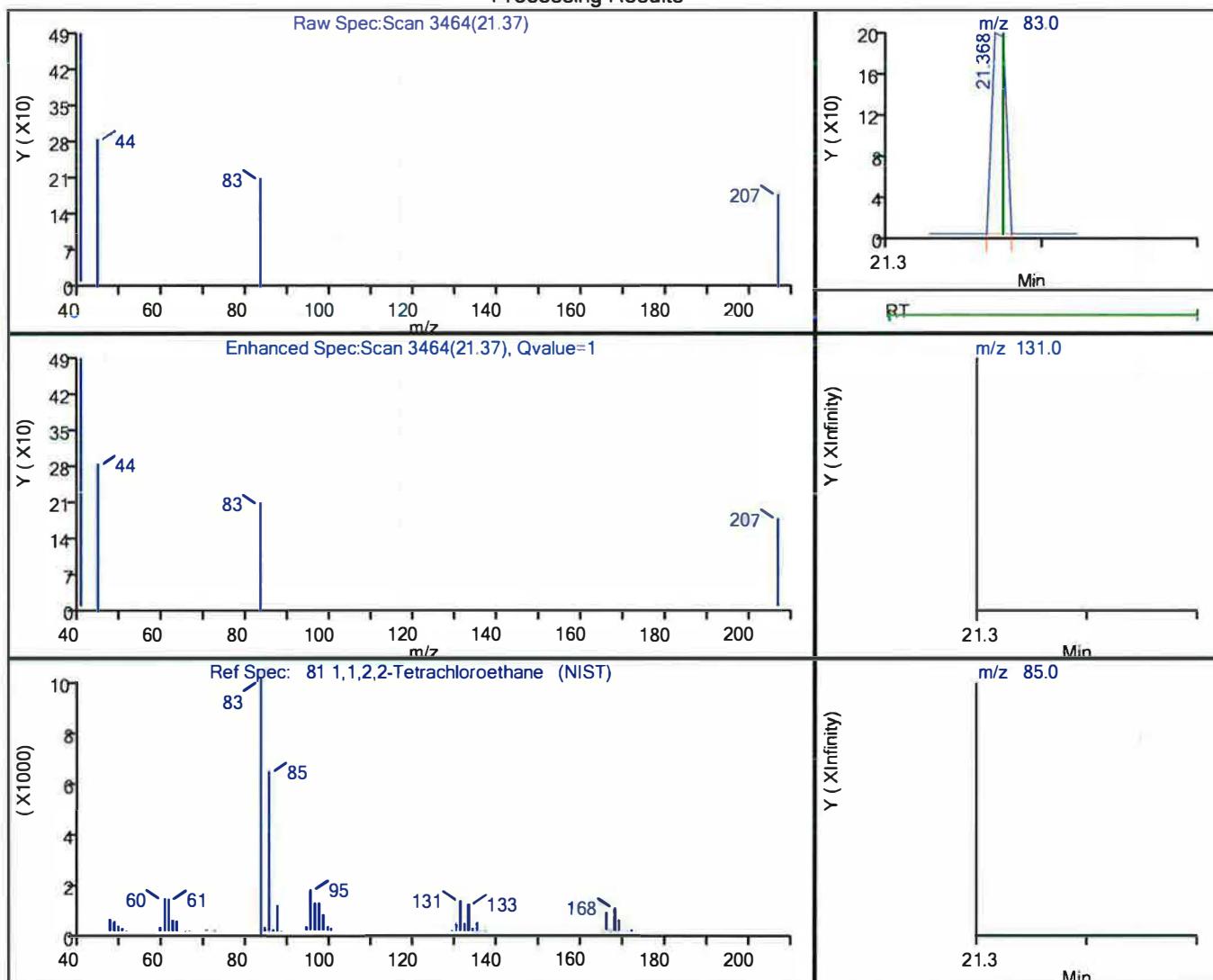
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHW.i\\20190227-34746.b\\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

81 1,1,2,2-Tetrachloroethane, CAS: 79-34-5

Processing Results



RT	Mass	Response	Amount
21.37	83.00	127	0.001892
21.37	131.00	0	
21.37	85.00	0	

Reviewer: bunmaa, 28-Feb-2019 15:06:04

Audit Action: Marked Compound Undetected

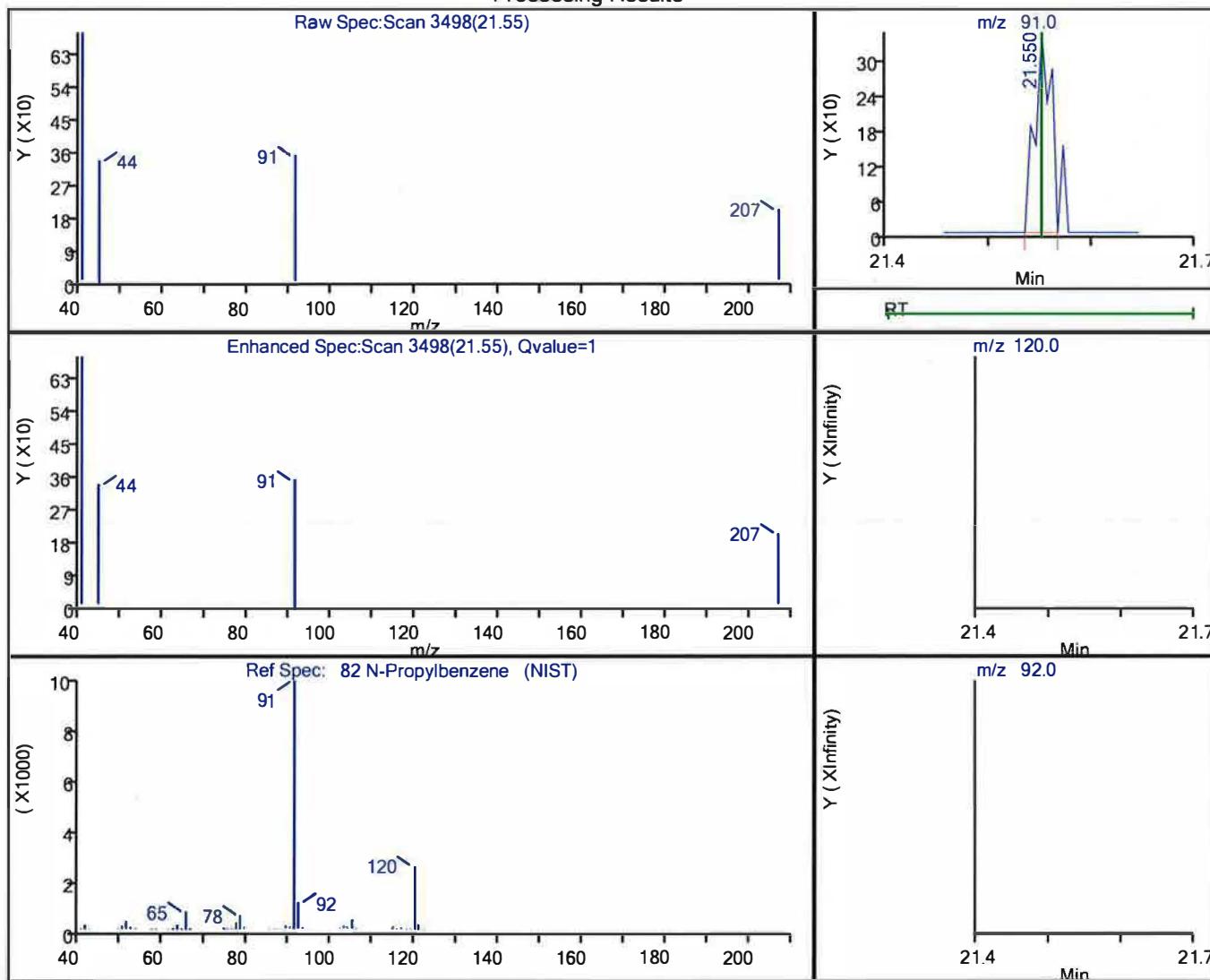
Audit Reason: Invalid Compound ID

TestAmerica Burlington

Data File: \\chromna\Burlington\ChromData\CHW.i\20190227-34746.b\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

82 N-Propylbenzene, CAS: 103-65-1

Processing Results



RT	Mass	Response	Amount
21.55	91.00	381	0.002849
21.55	120.00	0	
21.55	92.00	0	

Reviewer: bunmaa, 28-Feb-2019 15:06:09

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 28-Feb-2019 15:07:43

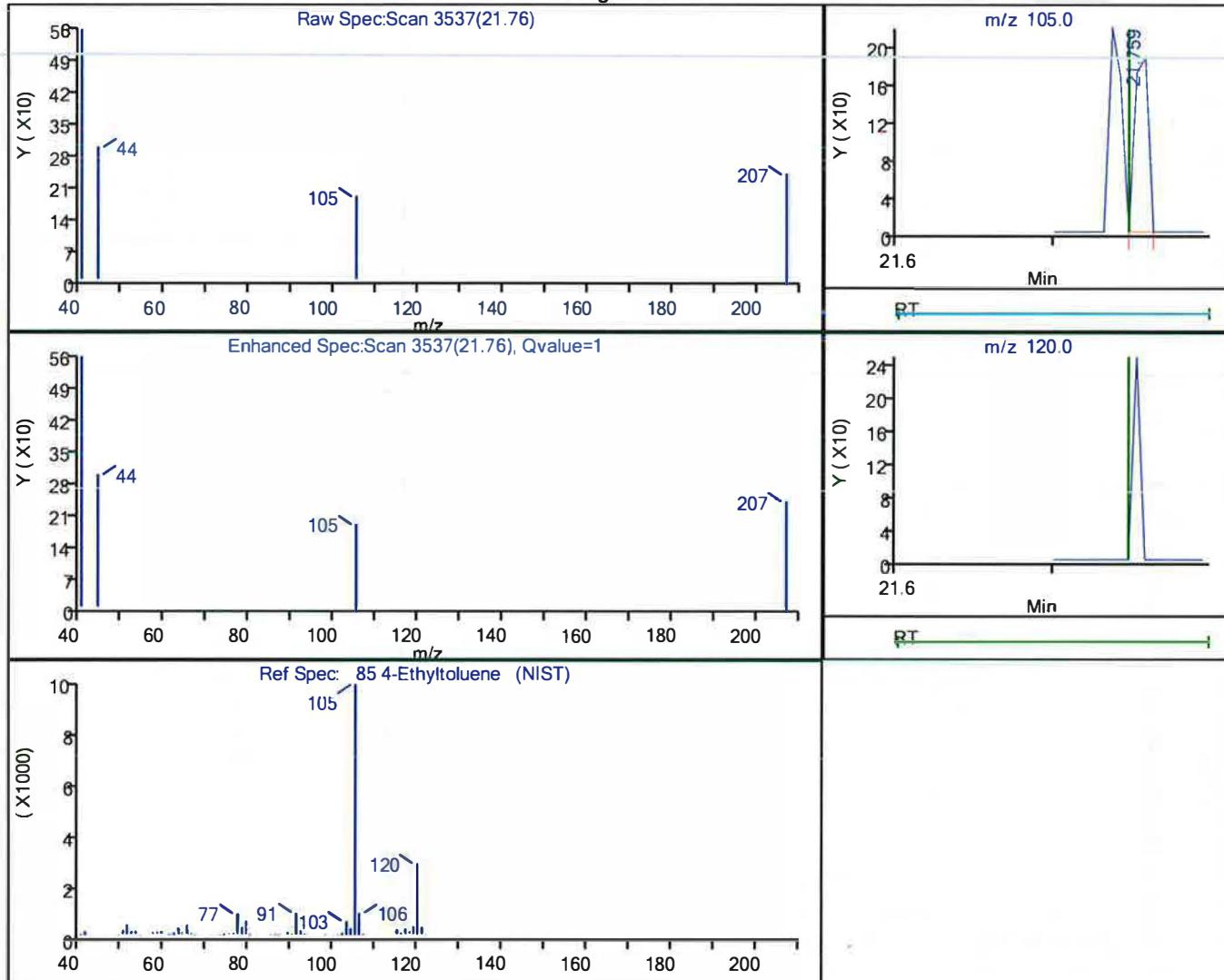
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHW.i\\20190227-34746.b\\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15 MasterMethod (v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

85 4-Ethyltoluene, CAS: 622-96-8

Processing Results



RT	Mass	Response	Amount
21.76	105.00	114	0.001048
21.75	120.00	0	

Reviewer: bunmaa, 28-Feb-2019 15:06:14

Audit Action: Marked Compound Undetected

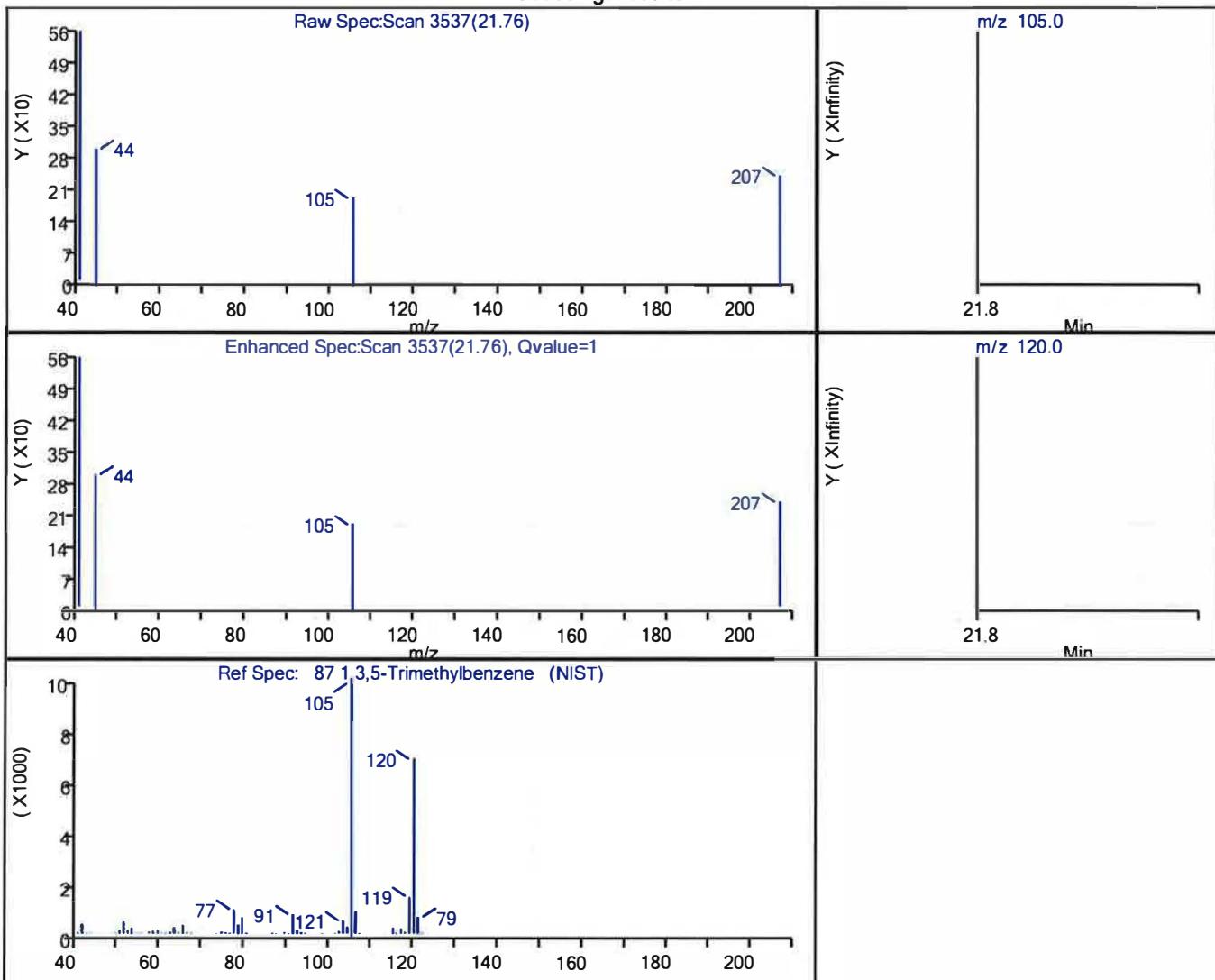
Audit Reason: Invalid Compound ID

TestAmerica Burlington

Data File: \\chromna\Burlington\ChromData\CHW.i\20190227-34746.b\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

87 1,3,5-Trimethylbenzene, CAS: 108-67-8

Processing Results



RT	Mass	Response	Amount
21.76	105.00	114	0.001222
21.85	120.00	0	

Reviewer: bunmaa, 28-Feb-2019 15:06:16

Audit Action: Marked Compound Undetected

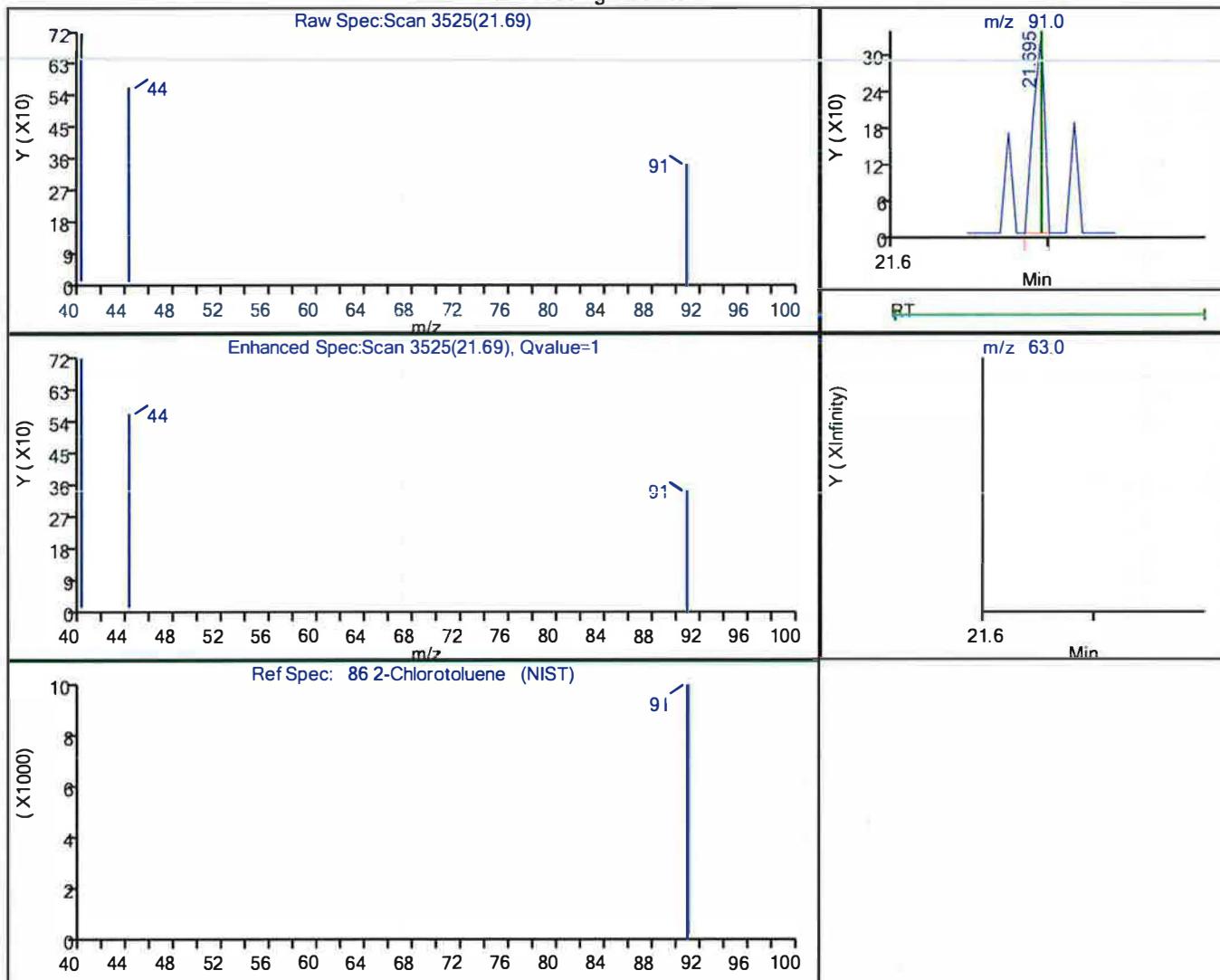
Audit Reason: Invalid Compound ID

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHW.i\\20190227-34746.b\\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

86 2-Chlorotoluene, CAS: 95-49-8

Processing Results



RT	Mass	Response	Amount
21.69	91.00	170	0.002069
21.69	63.00	0	

Reviewer: bunmaa, 28-Feb-2019 15:06:11

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 28-Feb-2019 15:07:44

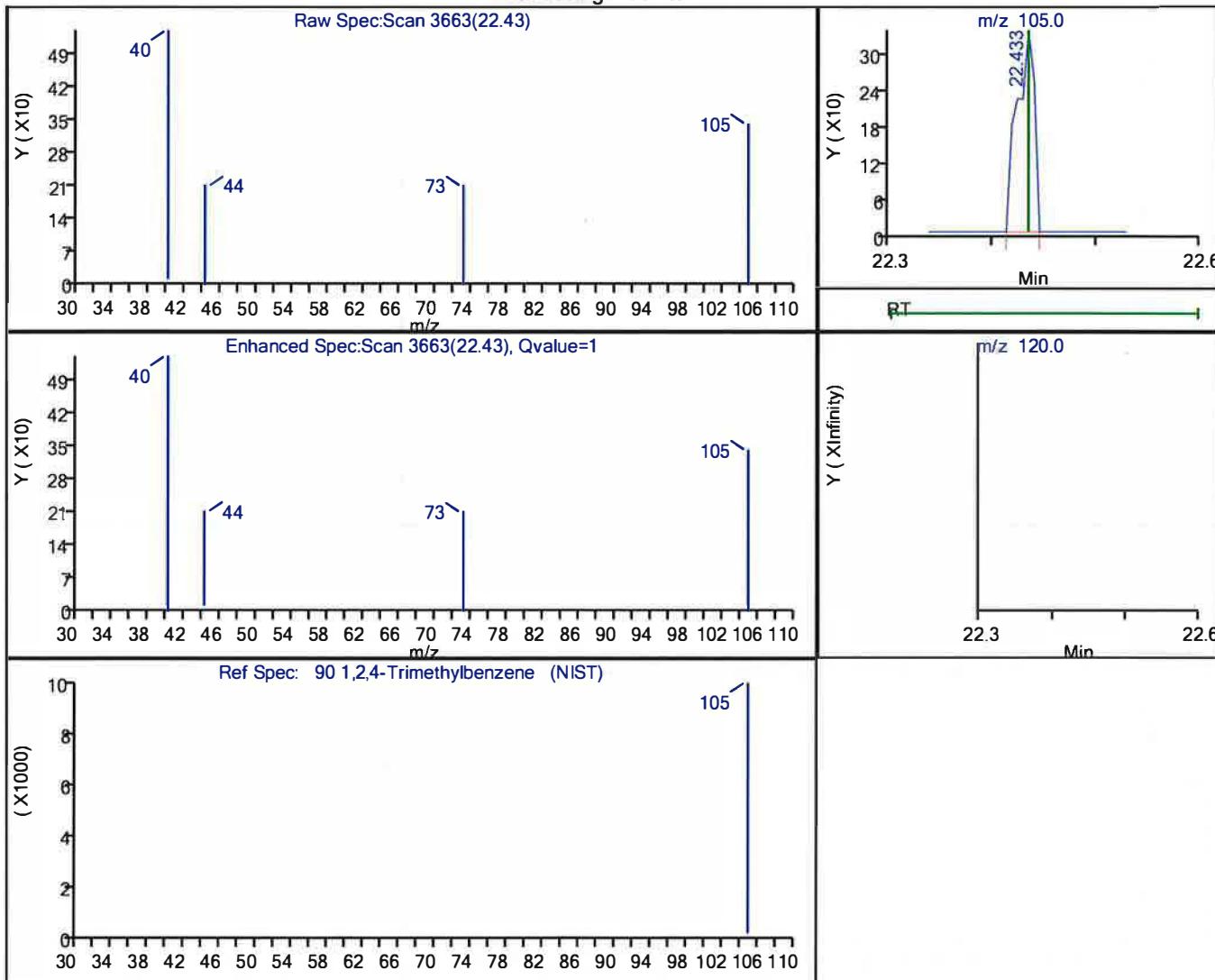
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\Burlington\ChromData\CHW.i\20190227-34746.b\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

90 1,2,4-Trimethylbenzene, CAS: 95-63-6

Processing Results



RT	Mass	Response	Amount
22.43	105.00	390	0.004123
22.43	120.00	0	

Reviewer: bunmaa, 28-Feb-2019 15:06:22

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 28-Feb-2019 15:07:44

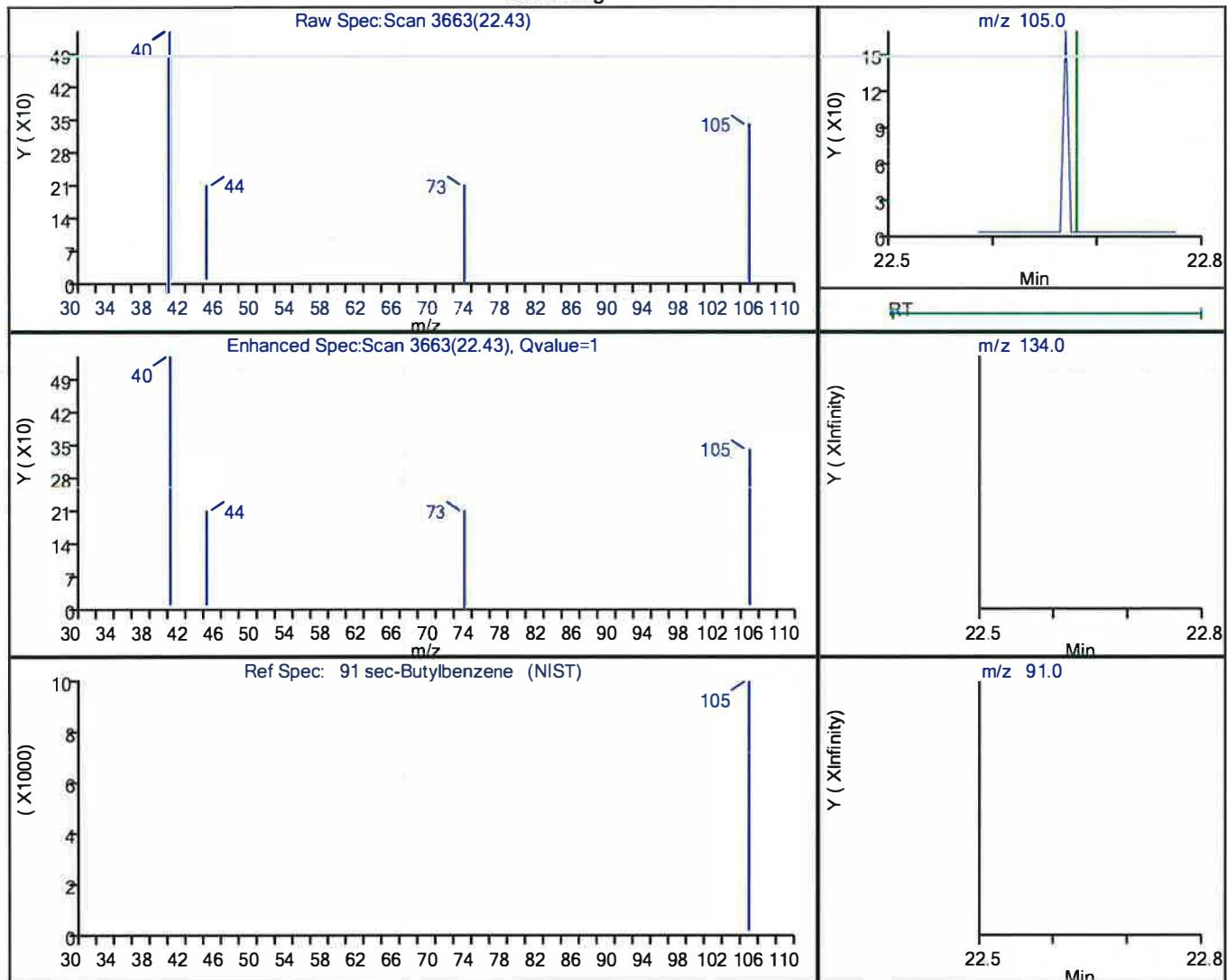
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHW.i\\20190227-34746.b\\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

91 sec-Butylbenzene, CAS: 135-98-8

Processing Results



RT	Mass	Response	Amount
22.43	105.00	390	0.002758
22.68	134.00	0	
22.68	91.00	0	

Reviewer: bunmaa, 28-Feb-2019 15:06:25

Audit Action: Marked Compound Undetected

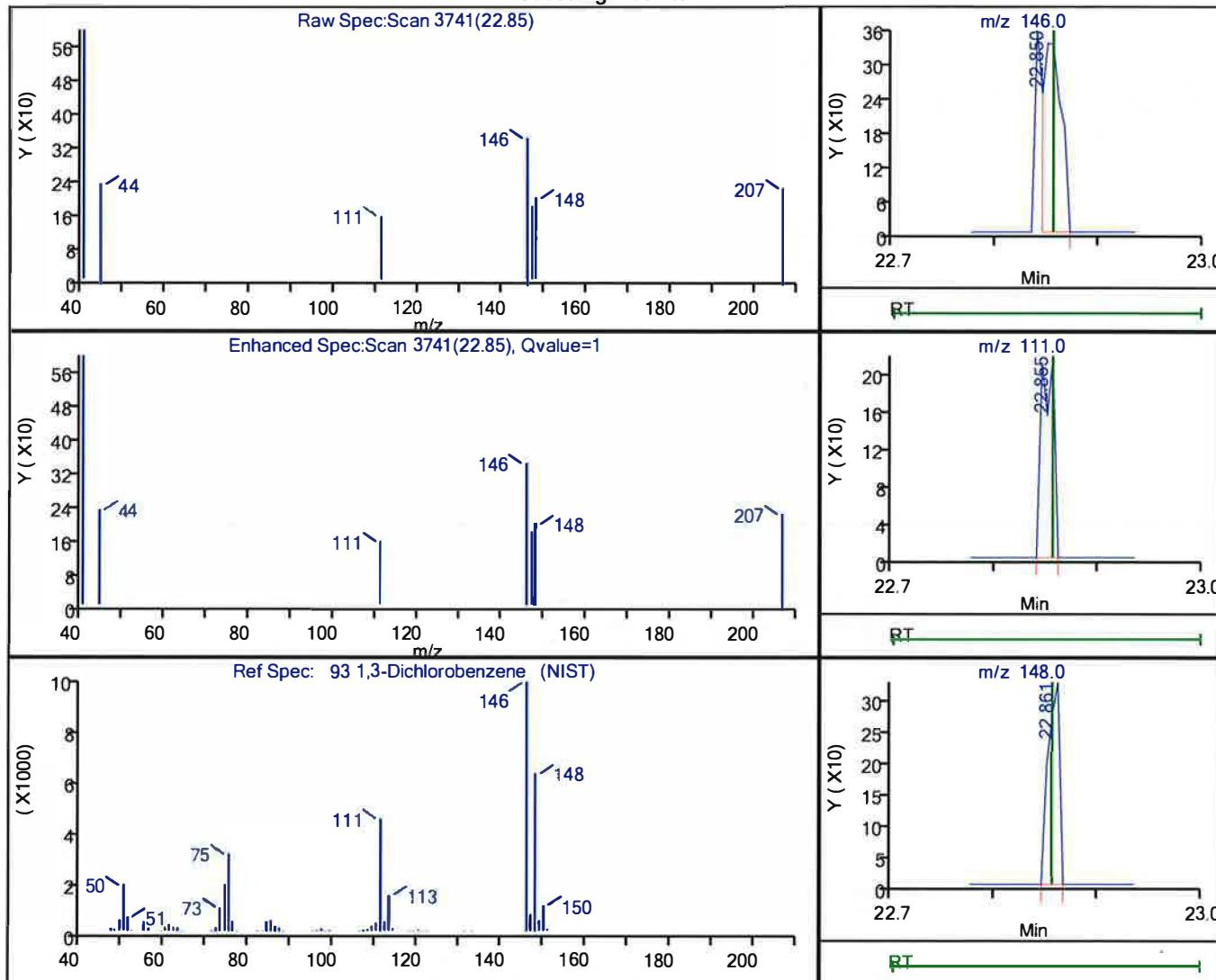
Audit Reason: Invalid Compound ID

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHW.i\\20190227-34746.b\\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector MS SCAN

93 1,3-Dichlorobenzene, CAS: 541-73-1

Processing Results



RT	Mass	Response	Amount
22.85	146.00	431	0.007068
22.86	111.00	184	
22.86	148.00	255	

Reviewer: bunmaa, 28-Feb-2019 15:06:34

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

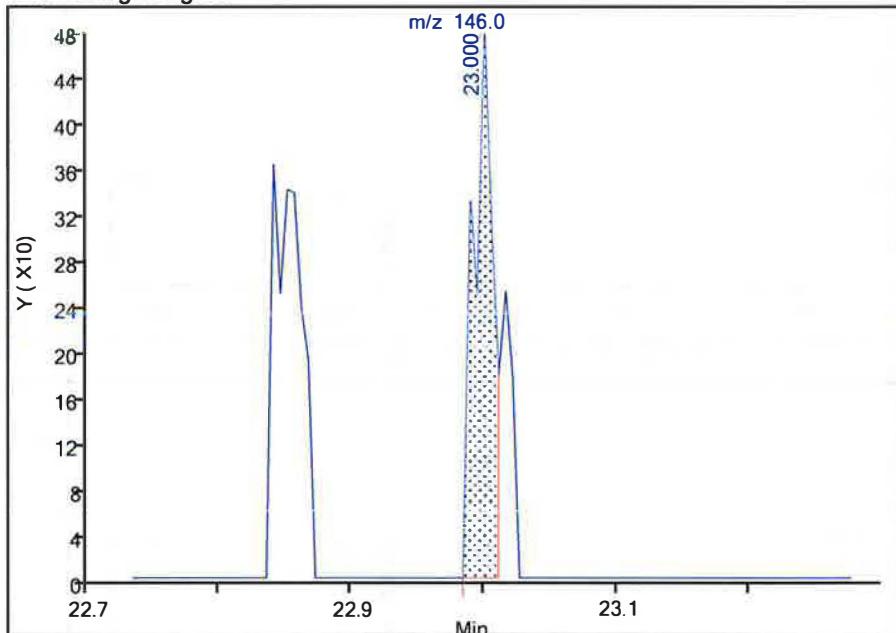
TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHW.i\\20190227-34746.b\\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

94 1,4-Dichlorobenzene, CAS: 106-46-7
Signal: 1

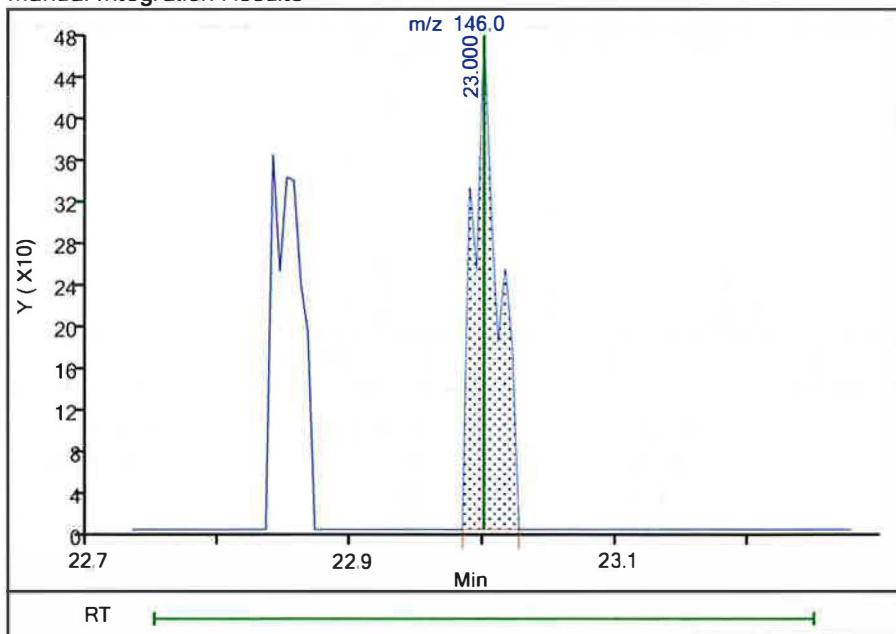
RT: 23.00
 Area: 488
 Amount: 0.008358
 Amount Units: ppb v/v

Processing Integration Results



RT: 23.00
 Area: 623
 Amount: 0.010671
 Amount Units: ppb v/v

Manual Integration Results



Reviewer: bunmaa, 28-Feb-2019 15:06:45

Audit Action: Manually Integrated

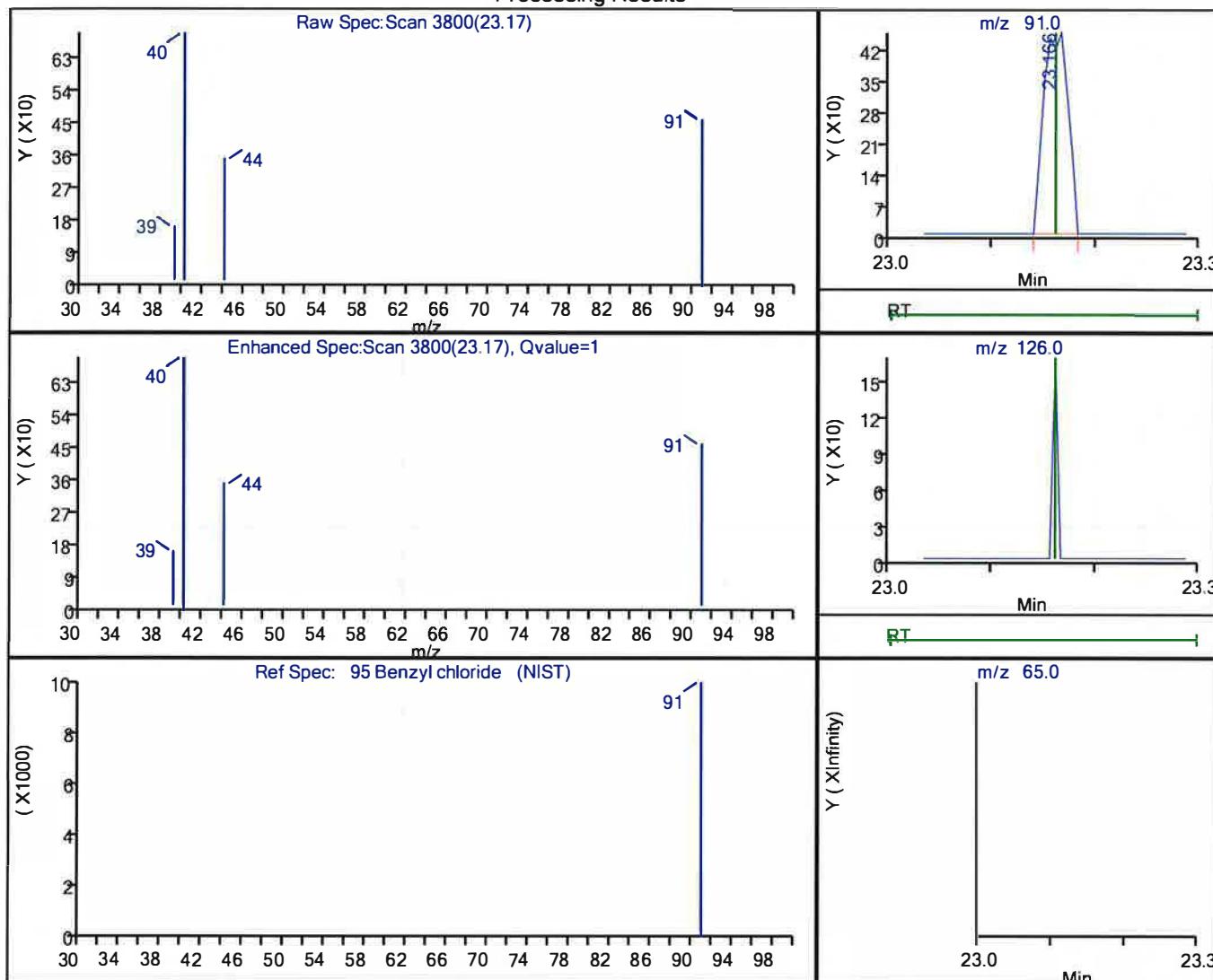
Audit Reason: Assign Peak

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHW.i\\20190227-34746.b\\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

95 Benzyl chloride, CAS: 100-44-7

Processing Results



RT	Mass	Response	Amount
23.17	91.00	750	0.012108
23.16	126.00	0	
23.16	65.00	0	

Reviewer: bunmaa, 28-Feb-2019 15:07:06

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

Report Date: 28-Feb-2019 15:07:44

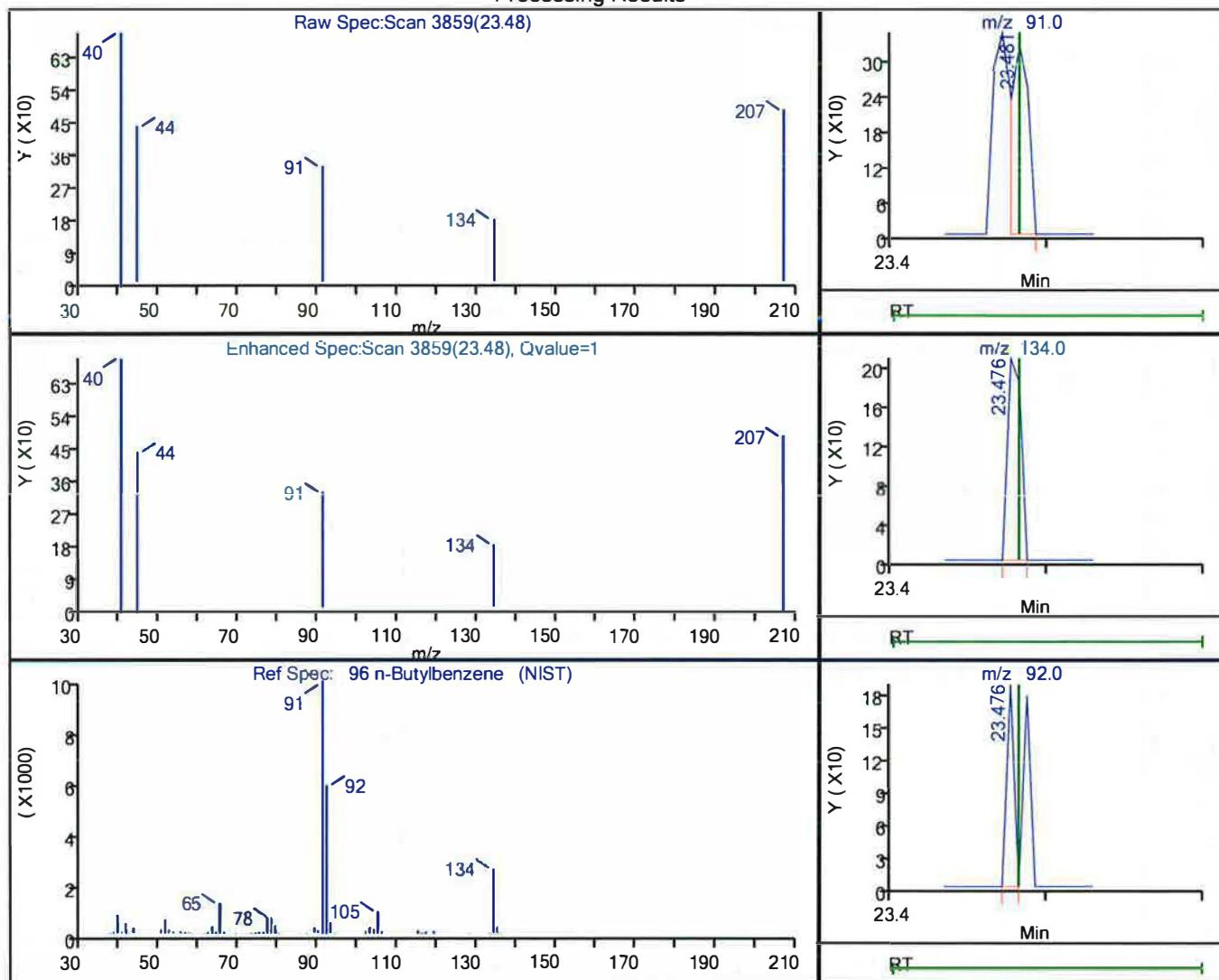
Chrom Revision: 2.3 11-Feb-2019 16:31:10
User Disabled Compound Report

TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHW.i\\20190227-34746.b\\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

96 n-Butylbenzene, CAS: 104-51-8

Processing Results



Reviewer: bunmaa, 28-Feb-2019 15:07:20

Audit Action: Marked Compound Undetected

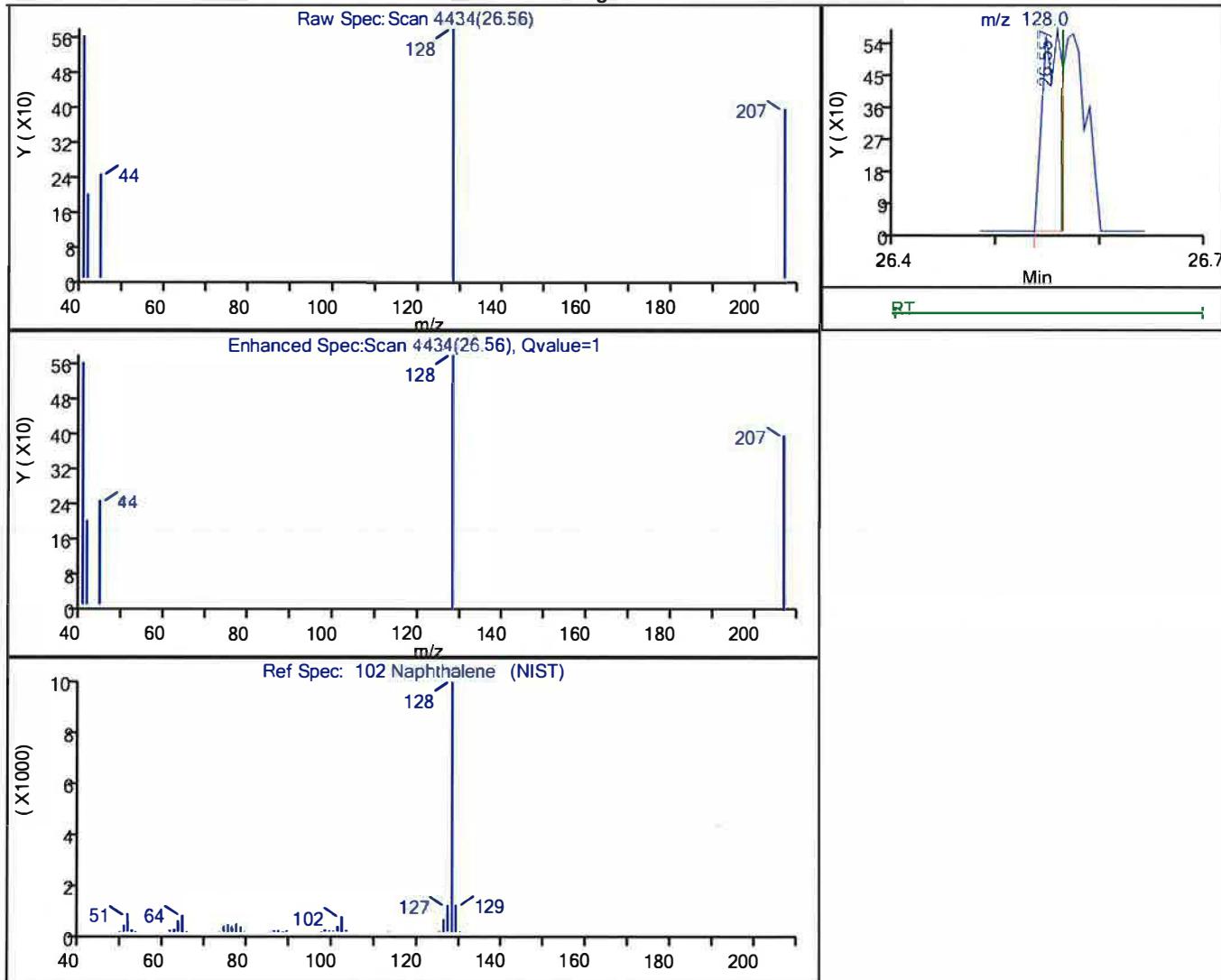
Audit Reason: Invalid Compound ID

TestAmerica Burlington

Data File: \\chromna\Burlington\ChromData\CHW.i\20190227-34746.b\34746-007.d
 Injection Date: 27-Feb-2019 19:05:30 Instrument ID: CHW.i
 Lims ID: 200-47546-A-11 Lab Sample ID: 200-47546-11
 Client ID: 5458
 Operator ID: ggg ALS Bottle#: 6 Worklist Smp#: 7
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Method: TO15_MasterMethod_(v1) Limit Group: AI_TO15_ICAL
 Column: RTX-624 (0.32 mm) Detector: MS SCAN

102 Naphthalene, CAS: 91-20-3

Processing Results



RT	Mass	Response	Amount
26.56	128.00	734	0.009143

Reviewer: bunmaa, 28-Feb-2019 15:07:38

Audit Action: Marked Compound Undetected

Audit Reason: Invalid Compound ID

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Burlington

Job No.: 200-47654-1

SDG No.: _____

Client Sample ID: 5156

Lab Sample ID: 200-47654-1

Matrix: Air

Lab File ID: 200-34819-022.D

Analysis Method: TO-15

Date Collected: 03/04/2019 00:00

Sample wt/vol: 1000 (mL)

Date Analyzed: 03/06/2019 06:21

Soil Aliquot Vol: _____

Dilution Factor: 0.2

Soil Extract Vol.: _____

GC Column: RTX-624 ID: 0.32 (mm)

% Moisture: _____

Level: (low/med) Low

Analysis Batch No.: 140514

Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
115-07-1	Propylene	1.0	U	1.0	1.0
75-71-8	Dichlorodifluoromethane	0.10	U	0.10	0.10
75-45-6	Freon 22	0.10	U	0.10	0.10
76-14-2	1,2-Dichlorotetrafluoroethane	0.040	U	0.040	0.040
74-87-3	Chloromethane	0.10	U	0.10	0.10
106-97-8	n-Butane	0.10	U	0.10	0.10
75-01-4	Vinyl chloride	0.040	U	0.040	0.040
106-99-0	1,3-Butadiene	0.040	U	0.040	0.040
74-83-9	Bromomethane	0.040	U	0.040	0.040
75-00-3	Chloroethane	0.10	U	0.10	0.10
593-60-2	Bromoethene(Vinyl Bromide)	0.040	U	0.040	0.040
75-69-4	Trichlorofluoromethane	0.040	U	0.040	0.040
64-17-5	Ethanol	1.0	U	1.0	1.0
76-13-1	Freon TF	0.040	U	0.040	0.040
75-35-4	1,1-Dichloroethene	0.040	U	0.040	0.040
67-64-1	Acetone	1.0	U	1.0	1.0
67-63-0	Isopropyl alcohol	1.0	U	1.0	1.0
15-15-0	Carbon disulfide	0.10	U	0.10	0.10
107-05-1	3-Chloropropene	0.10	U	0.10	0.10
75-09-2	Methylene Chloride	0.10	U	0.10	0.10
75-65-0	tert-Butyl alcohol	1.0	U	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.040	U	0.040	0.040
156-60-5	trans-1,2-Dichloroethene	0.040	U	0.040	0.040
110-54-3	n-Hexane	0.040	U	0.040	0.040
75-34-3	1,1-Dichloroethane	0.040	U	0.040	0.040
108-05-4	Vinyl acetate	1.0	U	1.0	1.0
141-78-6	Ethyl acetate	1.0	U	1.0	1.0
78-93-3	Methyl Ethyl Ketone	0.10	U	0.10	0.10
156-59-2	cis-1,2-Dichloroethene	0.040	U	0.040	0.040
540-59-0	1,2-Dichloroethene, Total	0.080	U	0.080	0.080
67-66-3	Chloroform	0.040	U	0.040	0.040
109-99-9	Tetrahydrofuran	1.0	U	1.0	1.0
71-55-6	1,1,1-Trichloroethane	0.040	U	0.040	0.040
110-82-7	Cyclohexane	0.040	U	0.040	0.040
56-23-5	Carbon tetrachloride	0.040	U	0.040	0.040
540-84-1	2,2,4-Trimethylpentane	0.040	U	0.040	0.040

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Burlington

Job No.: 200-47654-1

SDG No.:

Client Sample ID: 5156

Lab Sample ID: 200-47654-1

Matrix: Air

Lab File ID: 200-34819-022.D

Analysis Method: TO-15

Date Collected: 03/04/2019 00:00

Sample wt/vol: 1000 (mL)

Date Analyzed: 03/06/2019 06:21

Soil Aliquot Vol.:

Dilution Factor: 0.2

Soil Extract Vol.:

GC Column: RTX-624 ID: 0.32 (mm)

% Moisture:

Level: (low/med) Low

Analysis Batch No.: 140514

Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
71-43-2	Benzene	0.040	U	0.040	0.040
107-06-2	1,2-Dichloroethane	0.040	U	0.040	0.040
142-82-5	n-Heptane	0.040	U	0.040	0.040
79-01-6	Trichloroethene	0.040	U	0.040	0.040
80-62-6	Methyl methacrylate	0.10	U	0.10	0.10
78-87-5	1,2-Dichloropropane	0.040	U	0.040	0.040
123-91-1	1,4-Dioxane	1.0	U	1.0	1.0
75-27-4	Bromodichloromethane	0.040	U	0.040	0.040
10061-01-5	cis-1,3-Dichloropropene	0.040	U	0.040	0.040
108-10-1	methyl isobutyl ketone	0.10	U	0.10	0.10
108-88-3	Toluene	0.040	U	0.040	0.040
10061-02-6	trans-1,3-Dichloropropene	0.040	U	0.040	0.040
79-00-5	1,1,2-Trichloroethane	0.040	U	0.040	0.040
127-18-4	Tetrachloroethene	0.040	U	0.040	0.040
591-78-6	Methyl Butyl Ketone (2-Hexanone)	0.10	U	0.10	0.10
124-48-1	Dibromochloromethane	0.040	U	0.040	0.040
106-93-4	1,2-Dibromoethane	0.040	U	0.040	0.040
108-90-7	Chlorobenzene	0.040	U	0.040	0.040
100-41-4	Ethylbenzene	0.040	U	0.040	0.040
179601-23-1	m,p-Xylene	0.10	U	0.10	0.10
95-47-6	Xylene, o-	0.040	U	0.040	0.040
1330-20-7	Xylene (total)	0.14	U	0.14	0.14
100-42-5	Styrene	0.040	U	0.040	0.040
75-25-2	Bromoform	0.040	U	0.040	0.040
98-82-8	Cumene	0.040	U	0.040	0.040
79-34-5	1,1,2,2-Tetrachloroethane	0.040	U	0.040	0.040
103-65-1	n-Propylbenzene	0.040	U	0.040	0.040
622-96-8	4-Ethyltoluene	0.040	U	0.040	0.040
108-67-8	1,3,5-Trimethylbenzene	0.040	U	0.040	0.040
95-49-8	2-Chlorotoluene	0.040	U	0.040	0.040
98-06-6	tert-Butylbenzene	0.040	U	0.040	0.040
95-63-6	1,2,4-Trimethylbenzene	0.040	U	0.040	0.040
135-98-8	sec-Butylbenzene	0.040	U	0.040	0.040
99-87-6	4-Isopropyltoluene	0.040	U	0.040	0.040
541-73-1	1,3-Dichlorobenzene	0.040	U	0.040	0.040
106-46-7	1,4-Dichlorobenzene	0.040	U	0.040	0.040

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Burlington Job No.: 200-47654-1
SDG No.:
Client Sample ID: 5156 Lab Sample ID: 200-47654-1
Matrix: Air Lab File ID: 200-34819-022.D
Analysis Method: TO-15 Date Collected: 03/04/2019 00:00
Sample wt/vol: 1000 (mL) Date Analyzed: 03/06/2019 06:21
Soil Aliquot Vol.: Dilution Factor: 0.2
Soil Extract Vol.: GC Column: RTX-624 ID: 0.32 (mm)
% Moisture: Level: (low/med) Low
Analysis Batch No.: 140514 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
100-44-7	Benzyl chloride	0.040	U	0.040	0.040
104-51-8	n-Butylbenzene	0.040	U	0.040	0.040
95-50-1	1,2-Dichlorobenzene	0.040	U	0.040	0.040
120-82-1	1,2,4-Trichlorobenzene	0.10	U	0.10	0.10
87-68-3	Hexachlorobutadiene	0.040	U	0.040	0.040
91-20-3	Naphthalene	0.10	U *	0.10	0.10

15

TestAmerica Burlington
Target Compound Quantitation Report

Data File: \\chromna\Burlington\ChromData\CHG.i\20190305-34819.b\200-34819-022.D
 Lims ID: 200-47654-A-1
 Client ID: 5156
 Sample Type: Client
 Inject. Date: 06-Mar-2019 06:21:30 ALS Bottle#: 21 Worklist Smp#: 22
 Purge Vol: 200.000 mL Dil. Factor: 0.2000
 Sample Info: 200-0034819-022
 Misc. Info.: 47654-1
 Operator ID: ggg Instrument ID: CHG.i
 Method: \\chromna\Burlington\ChromData\CHG.i\20190305-34819.b\TO15_MasterMethod_(v1)_G.m
 Limit Group: AI_TO15_ICAL
 Last Update: 06-Mar-2019 10:42:06 Calib Date: 28-Feb-2019 03:57:30
 Integrator: RTE ID Type: Deconvolution ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Burlington\ChromData\CHG.i\20190227-34752.b\200-34752-011.D
 Column 1 : RTX-624 (0.32 mm) Det: MS SCAN
 Process Host: CTX0340

First Level Reviewer: guazzonig Date: 06-Mar-2019 11:36:23

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
1 Propene	41		3.065				ND	
2 Dichlorodifluoromethane	85		3.113				ND	
3 Chlorodifluoromethane	51		3.145				ND	
4 1,2-Dichloro-1,1,2,2-tetra	85		3.311				ND	
5 Chloromethane	50		3.418				ND	
6 Butane	43		3.563				ND	
7 Vinyl chloride	62		3.595				ND	
8 Butadiene	54		3.654				ND	
10 Bromomethane	94		4.157				ND	
11 Chloroethane	64		4.328				ND	
13 Vinyl bromide	106		4.627				ND	
14 Trichlorodifluoromethane	101		4.702				ND	
17 Ethanol	45	5.152	5.125	0.027	56	488	0.1385	
20 1,1,2-Trichloro-1,2,2-trif	101		5.537				ND	
21 1,1-Dichloroethene	96	5.564	5.590	-0.026	1	211	0.0144	
22 Acetone	43		5.772				ND	
23 Carbon disulfide	76		5.943				ND	
24 Isopropyl alcohol	45		6.002				ND	
25 3-Chloro-1-propene	41		6.232				ND	
27 Methylene Chloride	49		6.473				ND	
28 2-Methyl-2-propanol	59		6.666				ND	
29 Methyl tert-butyl ether	73		6.847				ND	
31 trans-1,2-Dichloroethene	61		6.869				ND	
33 Hexane	57		7.211				ND	
34 1,1-Dichloroethane	63		7.639				ND	
35 Vinyl acetate	43		7.698				ND	
37 cis-1,2-Dichloroethene	96		8.640				ND	
38 2-Butanone (MEK)	72		8.682				ND	
39 Ethyl acetate	88		8.725				ND	
* 40 Chlorobromomethane	128	9.057	9.062	-0.005	72	176667	10.0	
41 Tetrahydrofuran	42		9.105				ND	

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Chrom Revision: 2.3 11-Feb-2019 16:31:10

Data File: \\chromna\\Burlington\\ChromData\\CHG.i\\20190305-34819.b\\200-34819-022.D

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
42 Chloroform	83		9.180				ND	
43 Cyclohexane	84		9.437				ND	
44 1,1,1-Trichloroethane	97		9.447				ND	
S 30 1,2-Dichloroethene, Total	61		9.665				ND	
45 Carbon tetrachloride	117		9.688				ND	
46 isoctane	57		10.100				ND	
47 Benzene	78	10.121	10.116	0.005	1	1410	0.0310	
48 1,2-Dichloroethane	62		10.277				ND	
49 n-Heptane	43	10.469	10.475	-0.006	41	1294	0.0591	
* 50 1,4-Difluorobenzene	114	10.913	10.919	-0.006	93	895827	10.0	
53 Trichloroethene	95		11.379				ND	
54 1,2-Dichloropropane	63		11.908				ND	
55 Methyl methacrylate	69		12.095				ND	
56 1,4-Dioxane	88		12.160				ND	
57 Dibromomethane	174	12.149	12.160	-0.011	46	597	0.0149	
58 Dichlorobromomethane	83		12.454				ND	
60 cis-1,3-Dichloropropene	75		13.369				ND	
61 4-Methyl-2-pentanone (MIBK)	43		13.674				ND	
65 Toluene	92		13.957				ND	
66 trans-1,3-Dichloropropene	75		14.551				ND	
67 1,1,2-Trichloroethane	83		14.915				ND	
68 Tetrachloroethene	166		15.038				ND	
69 2-Hexanone	43		15.396				ND	
71 Chlorodibromomethane	129		15.680				ND	
72 Ethylene Dibromide	107		15.937				ND	
* 74 Chlorobenzene-d5	117	16.851	16.851	0.000	83	1015176	10.0	
75 Chlorobenzene	112		16.916				ND	
76 Ethylbenzene	91		17.081				ND	
78 m-Xylene & p-Xylene	106	17.344	17.338	0.006	0	615	0.0155	
79 o-Xylene	106		18.183				ND	
80 Styrene	104		18.237				ND	
81 Bromoform	173		18.676				ND	
82 Isopropylbenzene	105		18.948				ND	
S 73 Xylenes, Total	106				0		0.0155	7
84 1,1,2,2-Tetrachloroethane	83		19.676				ND	
85 N-Propylbenzene	91	19.756	19.762	-0.006	51	2311	0.0173	
89 2-Chlorotoluene	91		19.965				ND	
88 4-Ethyltoluene	105		19.970				ND	
90 1,3,5-Trimethylbenzene	105		20.093				ND	
92 tert-Butylbenzene	119		20.618				ND	
93 1,2,4-Trimethylbenzene	105		20.725				ND	
94 sec-Butylbenzene	105		20.971				ND	
95 4-Isopropyltoluene	119		21.190				ND	
96 1,3-Dichlorobenzene	146		21.201				ND	
97 1,4-Dichlorobenzene	146	21.350	21.345	0.005	15	1715	0.0209	
98 Benzyl chloride	91	21.548	21.548	0.000	1	1587	0.0196	
100 n-Butylbenzene	91		21.784				ND	
101 1,2-Dichlorobenzene	146	21.885	21.880	0.005	6	1193	0.0154	
103 1,2,4-Trichlorobenzene	180	24.250	24.250	0.000	1	1943	0.0346	
104 Hexachlorobutadiene	225	24.453	24.443	0.010	1	1375	0.0225	
105 Naphthalene	128		24.683				ND	

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QC Flag Legend

Processing Flags

7 - Failed Limit of Detection

Reagents:

ATTO15GIS_00015

Amount Added: 20.00

Units: mL

Run Reagent

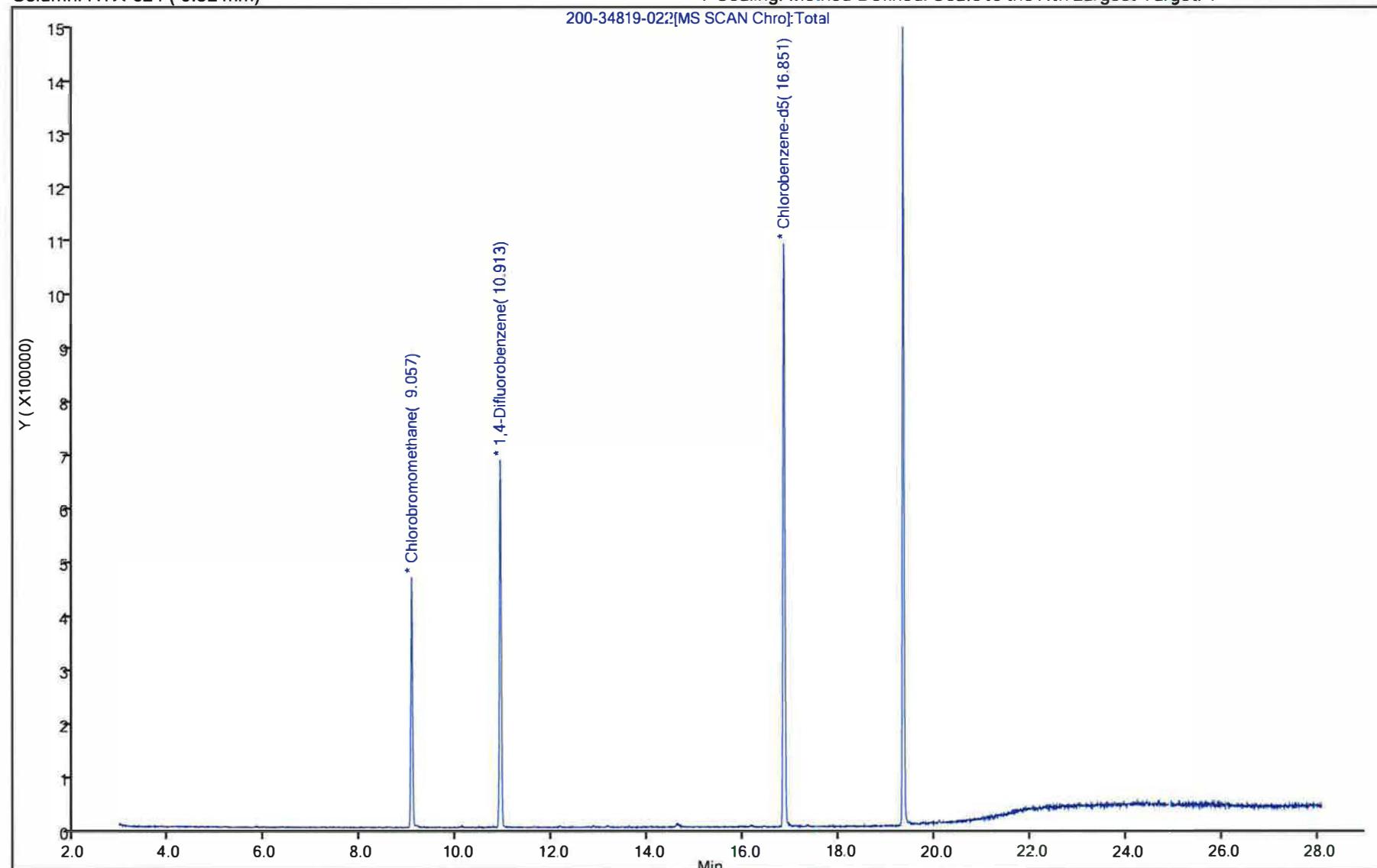
Report Date: 06-Mar-2019 11:36:33

Chrom Revision: 2.3 11-Feb-2019 16:31:10

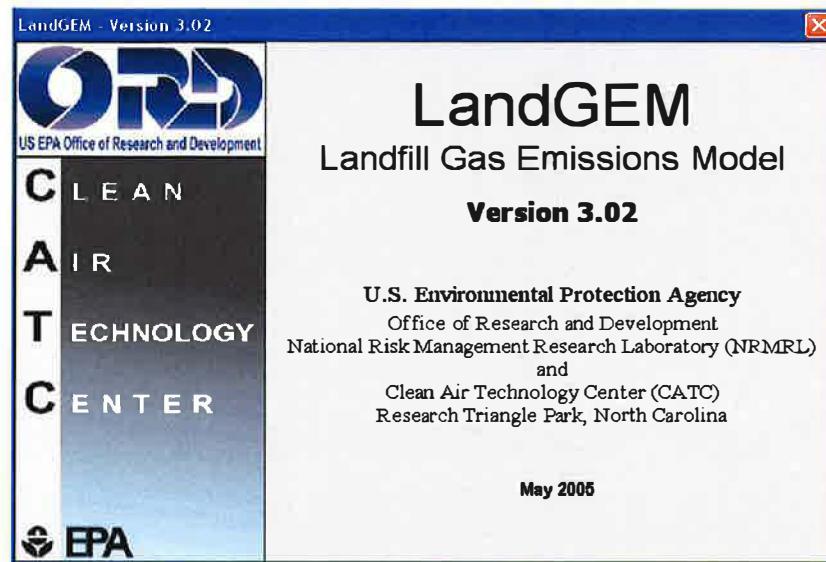
TestAmerica Burlington

Data File: \\chromna\\Burlington\\ChromData\\CHG.i\\20190305-34819.b\\200-34819-022.D
Injection Date: 06-Mar-2019 06:21:30 Instrument ID: CHG.i Operator ID: ggg
Lims ID: 200-47654-A-1 Lab Sample ID: 200-47654-1 Worklist Smp#: 22
Client ID: 5156
Purge Vol: 200.000 mL Dil. Factor: 0.2000 ALS Bottle#: 21
Method: TO15_MasterMethod_(v1)_G Limit Group: AI_TO15_ICAL
Column: RTX-624 (0.32 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



APPENDIX C



Summary Report

Landfill Name or Identifier: Matlock Bend Landfill

Date: Tuesday, May 07, 2019

Description/Comments:

Waste Design Capacity: Phase I = 1,107,699 CY / 2.0 CY/Ton = 553,850 Tons x 0.907 Mg/Ton = 502,341 Mg Phase II/IV = 4,748,110 CY / 1.22 CY/Ton = 3,891,893 Tons x 0.907 Mg/Ton = 3,529,947 Mg TOTAL: 4,032,288 Mg (2.0 CY/Ton is estimate for closed landfills; 1.22 CY/Ton is avg. denisty from Airspace Man. Sheet Yr Ending 2016) (Phase I design capacity is from subtracting Phase II/IV cap. from 5,855,809 CY(Total from SCS 2/24/99 ltr))

About LandGEM:

First-Order Decomposition Rate Equation:

$$Q_{CH_4} = \sum_{i=1}^n \sum_{j=0.1}^1 k L_o \left(\frac{M_i}{10} \right) e^{-kt_{ij}}$$

Where,

Q_{CH_4} = annual methane generation in the year of the calculation (m^3/year)

i = 1-year time increment

n = (year of the calculation) - (initial year of waste acceptance)

j = 0.1-year time increment

k = methane generation rate (year^{-1})

L_o = potential methane generation capacity (m^3/Mg)

M_i = mass of waste accepted in the ith year (Mg)

t_{ij} = age of the jth section of waste mass M_i accepted in the ith year (decimal years, e.g., 3.2 years)

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at <http://www.epa.gov/ttnatw01/landfill/landflpg.html>.

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for conventional landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	1987
Landfill Closure Year (with 80-year limit)	2024
Actual Closure Year (without limit)	2024
Have Model Calculate Closure Year?	Yes
Waste Design Capacity	4,032,288 megagrams

MODEL PARAMETERS

Methane Generation Rate, k	0.050	year ⁻¹
Potential Methane Generation Capacity, L _o	170	m ³ /Mg
NMOC Concentration	75	ppmv as hexane
Methane Content	50	% by volume

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	Total landfill gas
Gas / Pollutant #2:	Methane
Gas / Pollutant #3:	Carbon dioxide
Gas / Pollutant #4:	NMOC

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-in-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
1987	22,069	24,276	0	0
1988	50,897	55,987	22,069	24,276
1989	61,594	67,753	72,966	80,263
1990	66,674	73,341	134,560	148,016
1991	96,893	106,582	201,234	221,357
1992	87,734	96,507	298,127	327,940
1993	86,165	94,782	385,861	424,447
1994	121,935	134,129	472,026	519,229
1995	54,350	59,785	593,961	653,357
1996	37,141	40,855	648,311	713,142
1997	45,648	50,213	685,452	753,997
1998	47,842	52,626	731,100	804,210
1999	54,471	59,918	778,942	856,836
2000	50,066	55,073	833,413	916,754
2001	43,706	48,077	883,479	971,827
2002	40,984	45,082	927,185	1,019,904
2003	50,021	55,023	968,169	1,064,986
2004	61,955	68,151	1,018,190	1,120,009
2005	72,703	79,973	1,080,145	1,188,160
2006	81,768	89,945	1,152,848	1,268,133
2007	119,065	130,972	1,234,616	1,358,078
2008	152,040	167,244	1,353,681	1,489,049
2009	140,643	154,707	1,505,721	1,656,293
2010	118,624	130,486	1,646,364	1,811,000
2011	214,770	236,247	1,764,988	1,941,487
2012	215,592	237,151	1,979,758	2,177,734
2013	228,653	251,518	2,195,350	2,414,885
2014	171,087	188,196	2,424,003	2,666,403
2015	146,778	161,456	2,595,090	2,854,599
2016	163,917	180,309	2,741,868	3,016,055
2017	158,665	174,532	2,905,785	3,196,364
2018	146,338	160,972	3,064,450	3,370,895
2019	146,338	160,972	3,210,788	3,531,867
2020	146,338	160,972	3,357,126	3,692,839
2021	146,338	160,972	3,503,464	3,853,810
2022	146,338	160,972	3,649,802	4,014,782
2023	146,338	160,972	3,796,140	4,175,754
2024	89,810	98,791	3,942,478	4,336,726
2025	0	0	4,032,288	4,435,517
2026	0	0	4,032,288	4,435,517

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2027	0	0	4,032,288	4,435,517
2028	0	0	4,032,288	4,435,517
2029	0	0	4,032,288	4,435,517
2030	0	0	4,032,288	4,435,517
2031	0	0	4,032,288	4,435,517
2032	0	0	4,032,288	4,435,517
2033	0	0	4,032,288	4,435,517
2034	0	0	4,032,288	4,435,517
2035	0	0	4,032,288	4,435,517
2036	0	0	4,032,288	4,435,517
2037	0	0	4,032,288	4,435,517
2038	0	0	4,032,288	4,435,517
2039	0	0	4,032,288	4,435,517
2040	0	0	4,032,288	4,435,517
2041	0	0	4,032,288	4,435,517
2042	0	0	4,032,288	4,435,517
2043	0	0	4,032,288	4,435,517
2044	0	0	4,032,288	4,435,517
2045	0	0	4,032,288	4,435,517
2046	0	0	4,032,288	4,435,517
2047	0	0	4,032,288	4,435,517
2048	0	0	4,032,288	4,435,517
2049	0	0	4,032,288	4,435,517
2050	0	0	4,032,288	4,435,517
2051	0	0	4,032,288	4,435,517
2052	0	0	4,032,288	4,435,517
2053	0	0	4,032,288	4,435,517
2054	0	0	4,032,288	4,435,517
2055	0	0	4,032,288	4,435,517
2056	0	0	4,032,288	4,435,517
2057	0	0	4,032,288	4,435,517
2058	0	0	4,032,288	4,435,517
2059	0	0	4,032,288	4,435,517
2060	0	0	4,032,288	4,435,517
2061	0	0	4,032,288	4,435,517
2062	0	0	4,032,288	4,435,517
2063	0	0	4,032,288	4,435,517
2064	0	0	4,032,288	4,435,517
2065	0	0	4,032,288	4,435,517
2066	0	0	4,032,288	4,435,517

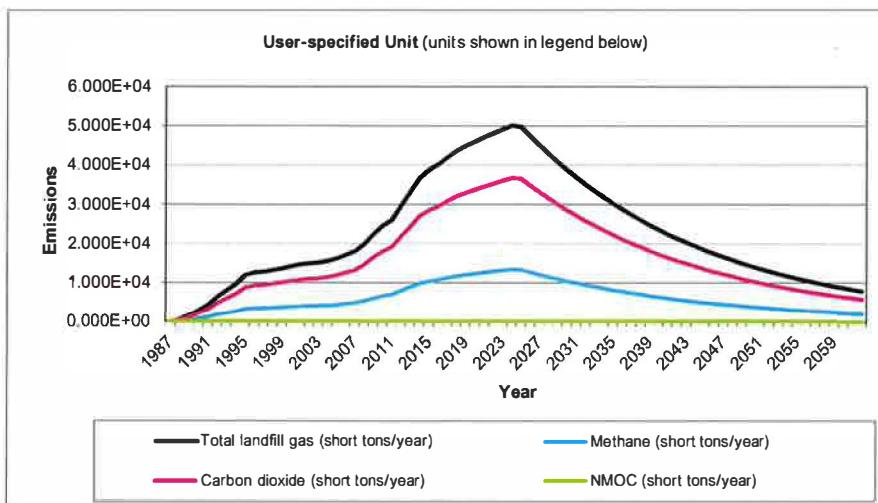
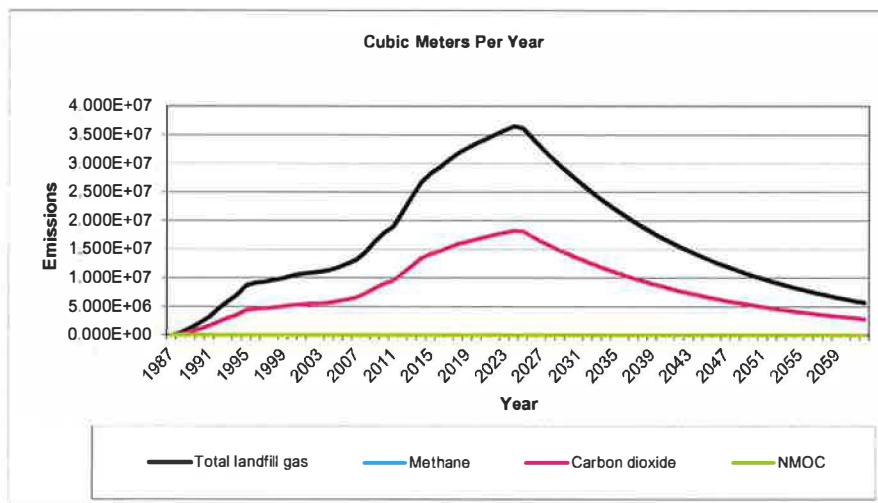
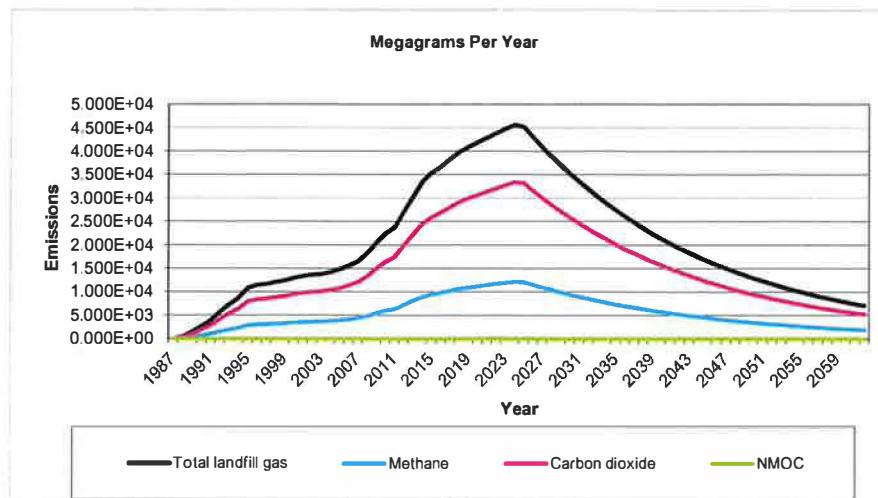
Pollutant Parameters

Gas / Pollutant Default Parameters:			User-specified Pollutant Parameters:	
	Compound	Concentration (ppmv)	Molecular Weight	Concentration (ppmv)
Gases	Total landfill gas		0.00	
	Methane		16.04	
	Carbon dioxide		44.01	
	NMOC	4,000	86.18	
Pollutants	1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	133.41	
	1,1,2,2-Tetrachloroethane - HAP/VOC	1.1	167.85	
	1,1-Dichloroethane (ethyldene dichloride) - HAP/VOC	2.4	98.97	
	1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	96.94	
	1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	98.96	
	1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	112.99	
	2-Propanol (isopropyl alcohol) - VOC	50	60.11	
	Acetone	7.0	58.08	
	Acrylonitrile - HAP/VOC	6.3	53.06	
	Benzene - No or Unknown Co-disposal - HAP/VOC	1.9	78.11	
	Benzene - Co-disposal - HAP/VOC	11	78.11	
	Bromodichloromethane - VOC	3.1	163.83	
	Butane - VOC	5.0	58.12	
	Carbon disulfide - HAP/VOC	0.58	76.13	
	Carbon monoxide	140	28.01	
	Carbon tetrachloride - HAP/VOC	4.0E-03	153.84	
	Carbonyl sulfide - HAP/VOC	0.49	60.07	
	Chlorobenzene - HAP/VOC	0.25	112.56	
	Chlorodifluoromethane	1.3	86.47	
	Chloroethane (ethyl chloride) - HAP/VOC	1.3	64.52	
	Chloroform - HAP/VOC	0.03	119.39	
	Chloromethane - VOC	1.2	50.49	
	Dichlorobenzene - (HAP for para isomer/VOC)	0.21	147	
	Dichlorodifluoromethane	16	120.91	
	Dichlorofluoromethane - VOC	2.6	102.92	
	Dichloromethane (methylene chloride) - HAP	14	84.94	
	Dimethyl sulfide (methyl sulfide) - VOC	7.8	62.13	
	Ethane	890	30.07	
	Ethanol - VOC	27	46.08	

Pollutant Parameters (Continued)

	Gas / Pollutant Default Parameters:		User-specified Pollutant Parameters:	
	Compound	Concentration (ppmv)	Molecular Weight	Concentration (ppmv)
Pollutants	Ethyl mercaptan (ethanethiol) - VOC	2.3	62.13	
	Ethylbenzene - HAP/VOC	4.6	106.16	
	Ethylene dibromide - HAP/VOC	1.0E-03	187.88	
	Fluorotrichloromethane - VOC	0.76	137.38	
	Hexane - HAP/VOC	6.6	86.18	
	Hydrogen sulfide	36	34.08	
	Mercury (total) - HAP	2.9E-04	200.61	
	Methyl ethyl ketone - HAP/VOC	7.1	72.11	
	Methyl isobutyl ketone - HAP/VOC	1.9	100.16	
	Methyl mercaptan - VOC	2.5	48.11	
	Pentane - VOC	3.3	72.15	
	Perchloroethylene (tetrachloroethylene) - HAP	3.7	165.83	
	Propane - VOC	11	44.09	
	t-1,2-Dichloroethene - VOC	2.8	96.94	
	Toluene - No or Unknown Co-disposal - HAP/VOC	39	92.13	
	Toluene - Co-disposal - HAP/VOC	170	92.13	
	Trichloroethylene (trichloroethene) - HAP/VOC	2.8	131.40	
	Vinyl chloride - HAP/VOC	7.3	62.50	
	Xylenes - HAP/VOC	12	106.16	

Graphs



Results

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
1987	0	0	0	0	0	0
1988	4.581E+02	3.669E+05	5.040E+02	1.224E+02	1.834E+05	1.346E+02
1989	1.492E+03	1.195E+06	1.642E+03	3.986E+02	5.975E+05	4.385E+02
1990	2.698E+03	2.161E+06	2.968E+03	7.207E+02	1.080E+06	7.928E+02
1991	3.951E+03	3.164E+06	4.346E+03	1.055E+03	1.582E+06	1.161E+03
1992	5.770E+03	4.620E+06	6.347E+03	1.541E+03	2.310E+06	1.695E+03
1993	7.310E+03	5.853E+06	8.041E+03	1.952E+03	2.927E+06	2.148E+03
1994	8.742E+03	7.000E+06	9.616E+03	2.335E+03	3.500E+06	2.569E+03
1995	1.085E+04	8.686E+06	1.193E+04	2.897E+03	4.343E+06	3.187E+03
1996	1.145E+04	9.166E+06	1.259E+04	3.057E+03	4.583E+06	3.363E+03
1997	1.166E+04	9.336E+06	1.282E+04	3.114E+03	4.668E+06	3.426E+03
1998	1.204E+04	9.639E+06	1.324E+04	3.215E+03	4.820E+06	3.537E+03
1999	1.244E+04	9.965E+06	1.369E+04	3.324E+03	4.982E+06	3.656E+03
2000	1.297E+04	1.038E+07	1.426E+04	3.464E+03	5.192E+06	3.810E+03
2001	1.337E+04	1.071E+07	1.471E+04	3.573E+03	5.355E+06	3.930E+03
2002	1.363E+04	1.091E+07	1.499E+04	3.641E+03	5.457E+06	4.005E+03
2003	1.382E+04	1.106E+07	1.520E+04	3.690E+03	5.532E+06	4.059E+03
2004	1.418E+04	1.136E+07	1.560E+04	3.788E+03	5.678E+06	4.167E+03
2005	1.478E+04	1.183E+07	1.625E+04	3.947E+03	5.916E+06	4.341E+03
2006	1.556E+04	1.246E+07	1.712E+04	4.157E+03	6.231E+06	4.573E+03
2007	1.650E+04	1.321E+07	1.815E+04	4.408E+03	6.607E+06	4.849E+03
2008	1.817E+04	1.455E+07	1.999E+04	4.853E+03	7.275E+06	5.339E+03
2009	2.044E+04	1.637E+07	2.248E+04	5.460E+03	8.183E+06	6.006E+03
2010	2.236E+04	1.791E+07	2.460E+04	5.973E+03	8.953E+06	6.571E+03
2011	2.373E+04	1.901E+07	2.611E+04	6.340E+03	9.503E+06	6.974E+03
2012	2.704E+04	2.165E+07	2.974E+04	7.221E+03	1.082E+07	7.944E+03
2013	3.019E+04	2.418E+07	3.321E+04	8.065E+03	1.209E+07	8.871E+03
2014	3.347E+04	2.680E+07	3.681E+04	8.939E+03	1.340E+07	9.833E+03
2015	3.539E+04	2.834E+07	3.892E+04	9.452E+03	1.417E+07	1.040E+04
2016	3.671E+04	2.939E+07	4.038E+04	9.805E+03	1.470E+07	1.079E+04
2017	3.832E+04	3.069E+07	4.215E+04	1.024E+04	1.534E+07	1.126E+04
2018	3.975E+04	3.183E+07	4.372E+04	1.062E+04	1.591E+07	1.168E+04
2019	4.084E+04	3.271E+07	4.493E+04	1.091E+04	1.635E+07	1.200E+04
2020	4.189E+04	3.354E+07	4.608E+04	1.119E+04	1.677E+07	1.231E+04
2021	4.289E+04	3.434E+07	4.717E+04	1.146E+04	1.717E+07	1.260E+04
2022	4.383E+04	3.510E+07	4.822E+04	1.171E+04	1.755E+07	1.288E+04
2023	4.473E+04	3.582E+07	4.921E+04	1.195E+04	1.791E+07	1.314E+04
2024	4.559E+04	3.651E+07	5.015E+04	1.218E+04	1.825E+07	1.339E+04
2025	4.523E+04	3.622E+07	4.975E+04	1.208E+04	1.811E+07	1.329E+04
2026	4.302E+04	3.445E+07	4.733E+04	1.149E+04	1.723E+07	1.264E+04
2027	4.093E+04	3.277E+07	4.502E+04	1.093E+04	1.639E+07	1.202E+04
2028	3.893E+04	3.117E+07	4.282E+04	1.040E+04	1.559E+07	1.144E+04
2029	3.703E+04	2.965E+07	4.073E+04	9.891E+03	1.483E+07	1.088E+04
2030	3.522E+04	2.821E+07	3.875E+04	9.409E+03	1.410E+07	1.035E+04
2031	3.351E+04	2.683E+07	3.686E+04	8.950E+03	1.342E+07	9.845E+03
2032	3.187E+04	2.552E+07	3.506E+04	8.514E+03	1.276E+07	9.365E+03
2033	3.032E+04	2.428E+07	3.335E+04	8.098E+03	1.214E+07	8.908E+03
2034	2.884E+04	2.309E+07	3.172E+04	7.703E+03	1.155E+07	8.474E+03
2035	2.743E+04	2.197E+07	3.018E+04	7.328E+03	1.098E+07	8.060E+03
2036	2.610E+04	2.090E+07	2.870E+04	6.970E+03	1.045E+07	7.667E+03

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2037	2.482E+04	1.988E+07	2.730E+04	6.630E+03	9.938E+06	7.293E+03
2038	2.361E+04	1.891E+07	2.597E+04	6.307E+03	9.454E+06	6.938E+03
2039	2.246E+04	1.799E+07	2.471E+04	5.999E+03	8.993E+06	6.599E+03
2040	2.136E+04	1.711E+07	2.350E+04	5.707E+03	8.554E+06	6.277E+03
2041	2.032E+04	1.627E+07	2.236E+04	5.428E+03	8.137E+06	5.971E+03
2042	1.933E+04	1.548E+07	2.126E+04	5.164E+03	7.740E+06	5.680E+03
2043	1.839E+04	1.473E+07	2.023E+04	4.912E+03	7.363E+06	5.403E+03
2044	1.749E+04	1.401E+07	1.924E+04	4.672E+03	7.003E+06	5.140E+03
2045	1.664E+04	1.332E+07	1.830E+04	4.444E+03	6.662E+06	4.889E+03
2046	1.583E+04	1.267E+07	1.741E+04	4.228E+03	6.337E+06	4.650E+03
2047	1.506E+04	1.206E+07	1.656E+04	4.022E+03	6.028E+06	4.424E+03
2048	1.432E+04	1.147E+07	1.575E+04	3.825E+03	5.734E+06	4.208E+03
2049	1.362E+04	1.091E+07	1.499E+04	3.639E+03	5.454E+06	4.003E+03
2050	1.296E+04	1.038E+07	1.425E+04	3.461E+03	5.188E+06	3.807E+03
2051	1.233E+04	9.870E+06	1.356E+04	3.293E+03	4.935E+06	3.622E+03
2052	1.173E+04	9.389E+06	1.290E+04	3.132E+03	4.695E+06	3.445E+03
2053	1.115E+04	8.931E+06	1.227E+04	2.979E+03	4.466E+06	3.277E+03
2054	1.061E+04	8.496E+06	1.167E+04	2.834E+03	4.248E+06	3.117E+03
2055	1.009E+04	8.081E+06	1.110E+04	2.696E+03	4.041E+06	2.965E+03
2056	9.600E+03	7.687E+06	1.056E+04	2.564E+03	3.844E+06	2.821E+03
2057	9.132E+03	7.312E+06	1.004E+04	2.439E+03	3.656E+06	2.683E+03
2058	8.686E+03	6.956E+06	9.555E+03	2.320E+03	3.478E+06	2.552E+03
2059	8.263E+03	6.616E+06	9.089E+03	2.207E+03	3.308E+06	2.428E+03
2060	7.860E+03	6.294E+06	8.646E+03	2.099E+03	3.147E+06	2.309E+03
2061	7.476E+03	5.987E+06	8.224E+03	1.997E+03	2.993E+06	2.197E+03
2062	7.112E+03	5.695E+06	7.823E+03	1.900E+03	2.847E+06	2.090E+03
2063	6.765E+03	5.417E+06	7.441E+03	1.807E+03	2.709E+06	1.988E+03
2064	6.435E+03	5.153E+06	7.078E+03	1.719E+03	2.576E+06	1.891E+03
2065	6.121E+03	4.902E+06	6.733E+03	1.635E+03	2.451E+06	1.799E+03
2066	5.823E+03	4.662E+06	6.405E+03	1.555E+03	2.331E+06	1.711E+03
2067	5.539E+03	4.435E+06	6.093E+03	1.479E+03	2.218E+06	1.627E+03
2068	5.269E+03	4.219E+06	5.795E+03	1.407E+03	2.109E+06	1.548E+03
2069	5.012E+03	4.013E+06	5.513E+03	1.339E+03	2.007E+06	1.473E+03
2070	4.767E+03	3.817E+06	5.244E+03	1.273E+03	1.909E+06	1.401E+03
2071	4.535E+03	3.631E+06	4.988E+03	1.211E+03	1.816E+06	1.332E+03
2072	4.314E+03	3.454E+06	4.745E+03	1.152E+03	1.727E+06	1.267E+03
2073	4.103E+03	3.286E+06	4.513E+03	1.096E+03	1.643E+06	1.206E+03
2074	3.903E+03	3.125E+06	4.293E+03	1.043E+03	1.563E+06	1.147E+03
2075	3.713E+03	2.973E+06	4.084E+03	9.917E+02	1.486E+06	1.091E+03
2076	3.532E+03	2.828E+06	3.885E+03	9.433E+02	1.414E+06	1.038E+03
2077	3.359E+03	2.690E+06	3.695E+03	8.973E+02	1.345E+06	9.871E+02
2078	3.196E+03	2.559E+06	3.515E+03	8.536E+02	1.279E+06	9.389E+02
2079	3.040E+03	2.434E+06	3.344E+03	8.119E+02	1.217E+06	8.931E+02
2080	2.891E+03	2.315E+06	3.181E+03	7.723E+02	1.158E+06	8.496E+02
2081	2.750E+03	2.202E+06	3.025E+03	7.347E+02	1.101E+06	8.081E+02
2082	2.616E+03	2.095E+06	2.878E+03	6.988E+02	1.047E+06	7.687E+02
2083	2.489E+03	1.993E+06	2.738E+03	6.648E+02	9.964E+05	7.312E+02
2084	2.367E+03	1.896E+06	2.604E+03	6.323E+02	9.478E+05	6.956E+02
2085	2.252E+03	1.803E+06	2.477E+03	6.015E+02	9.016E+05	6.616E+02
2086	2.142E+03	1.715E+06	2.356E+03	5.722E+02	8.576E+05	6.294E+02
2087	2.038E+03	1.632E+06	2.241E+03	5.443E+02	8.158E+05	5.987E+02

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2088	1.938E+03	1.552E+06	2.132E+03	5.177E+02	7.760E+05	5.695E+02
2089	1.844E+03	1.476E+06	2.028E+03	4.925E+02	7.382E+05	5.417E+02
2090	1.754E+03	1.404E+06	1.929E+03	4.684E+02	7.022E+05	5.153E+02
2091	1.668E+03	1.336E+06	1.835E+03	4.456E+02	6.679E+05	4.902E+02
2092	1.587E+03	1.271E+06	1.746E+03	4.239E+02	6.353E+05	4.663E+02
2093	1.509E+03	1.209E+06	1.660E+03	4.032E+02	6.044E+05	4.435E+02
2094	1.436E+03	1.150E+06	1.579E+03	3.835E+02	5.749E+05	4.219E+02
2095	1.366E+03	1.094E+06	1.502E+03	3.648E+02	5.468E+05	4.013E+02
2096	1.299E+03	1.040E+06	1.429E+03	3.470E+02	5.202E+05	3.817E+02
2097	1.236E+03	9.896E+05	1.359E+03	3.301E+02	4.948E+05	3.631E+02
2098	1.176E+03	9.413E+05	1.293E+03	3.140E+02	4.707E+05	3.454E+02
2099	1.118E+03	8.954E+05	1.230E+03	2.987E+02	4.477E+05	3.286E+02
2100	1.064E+03	8.518E+05	1.170E+03	2.841E+02	4.259E+05	3.125E+02
2101	1.012E+03	8.102E+05	1.113E+03	2.703E+02	4.051E+05	2.973E+02
2102	9.625E+02	7.707E+05	1.059E+03	2.571E+02	3.854E+05	2.828E+02
2103	9.155E+02	7.331E+05	1.007E+03	2.445E+02	3.666E+05	2.690E+02
2104	8.709E+02	6.974E+05	9.580E+02	2.326E+02	3.487E+05	2.559E+02
2105	8.284E+02	6.634E+05	9.112E+02	2.213E+02	3.317E+05	2.434E+02
2106	7.880E+02	6.310E+05	8.668E+02	2.105E+02	3.155E+05	2.315E+02
2107	7.496E+02	6.002E+05	8.245E+02	2.002E+02	3.001E+05	2.202E+02
2108	7.130E+02	5.710E+05	7.843E+02	1.905E+02	2.855E+05	2.095E+02
2109	6.782E+02	5.431E+05	7.461E+02	1.812E+02	2.716E+05	1.993E+02
2110	6.452E+02	5.166E+05	7.097E+02	1.723E+02	2.583E+05	1.896E+02
2111	6.137E+02	4.914E+05	6.751E+02	1.639E+02	2.457E+05	1.803E+02
2112	5.838E+02	4.675E+05	6.421E+02	1.559E+02	2.337E+05	1.715E+02
2113	5.553E+02	4.447E+05	6.108E+02	1.483E+02	2.223E+05	1.632E+02
2114	5.282E+02	4.230E+05	5.810E+02	1.411E+02	2.115E+05	1.552E+02
2115	5.025E+02	4.023E+05	5.527E+02	1.342E+02	2.012E+05	1.476E+02
2116	4.780E+02	3.827E+05	5.257E+02	1.277E+02	1.914E+05	1.404E+02
2117	4.546E+02	3.641E+05	5.001E+02	1.214E+02	1.820E+05	1.336E+02
2118	4.325E+02	3.463E+05	4.757E+02	1.155E+02	1.731E+05	1.271E+02
2119	4.114E+02	3.294E+05	4.525E+02	1.099E+02	1.647E+05	1.209E+02
2120	3.913E+02	3.133E+05	4.304E+02	1.045E+02	1.567E+05	1.150E+02
2121	3.722E+02	2.981E+05	4.095E+02	9.943E+01	1.490E+05	1.094E+02
2122	3.541E+02	2.835E+05	3.895E+02	9.458E+01	1.418E+05	1.040E+02
2123	3.368E+02	2.697E+05	3.705E+02	8.996E+01	1.348E+05	9.896E+01
2124	3.204E+02	2.565E+05	3.524E+02	8.558E+01	1.283E+05	9.413E+01
2125	3.048E+02	2.440E+05	3.352E+02	8.140E+01	1.220E+05	8.954E+01
2126	2.899E+02	2.321E+05	3.189E+02	7.743E+01	1.161E+05	8.518E+01
2127	2.758E+02	2.208E+05	3.033E+02	7.366E+01	1.104E+05	8.102E+01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m³/year)	(short tons/year)	(Mg/year)	(m³/year)	(short tons/year)
1987	0	0	0	0	0	0
1988	3.358E+02	1.834E+05	3.693E+02	9.863E-02	2.751E+01	1.085E-01
1989	1.094E+03	5.975E+05	1.203E+03	3.213E-01	8.963E+01	3.534E-01
1990	1.978E+03	1.080E+06	2.175E+03	5.809E-01	1.621E+02	6.390E-01
1991	2.896E+03	1.582E+06	3.185E+03	8.505E-01	2.373E+02	9.356E-01
1992	4.229E+03	2.310E+06	4.651E+03	1.242E+00	3.465E+02	1.366E+00
1993	5.357E+03	2.927E+06	5.893E+03	1.574E+00	4.390E+02	1.731E+00
1994	6.407E+03	3.500E+06	7.048E+03	1.882E+00	5.250E+02	2.070E+00
1995	7.950E+03	4.343E+06	8.745E+03	2.335E+00	6.514E+02	2.569E+00
1996	8.389E+03	4.583E+06	9.228E+03	2.464E+00	6.874E+02	2.710E+00
1997	8.545E+03	4.668E+06	9.399E+03	2.510E+00	7.002E+02	2.761E+00
1998	8.823E+03	4.820E+06	9.705E+03	2.591E+00	7.230E+02	2.851E+00
1999	9.120E+03	4.982E+06	1.003E+04	2.679E+00	7.473E+02	2.947E+00
2000	9.504E+03	5.192E+06	1.045E+04	2.792E+00	7.788E+02	3.071E+00
2001	9.802E+03	5.355E+06	1.078E+04	2.879E+00	8.032E+02	3.167E+00
2002	9.989E+03	5.457E+06	1.099E+04	2.934E+00	8.186E+02	3.228E+00
2003	1.013E+04	5.532E+06	1.114E+04	2.974E+00	8.297E+02	3.272E+00
2004	1.039E+04	5.678E+06	1.143E+04	3.053E+00	8.516E+02	3.358E+00
2005	1.083E+04	5.916E+06	1.191E+04	3.181E+00	8.873E+02	3.499E+00
2006	1.141E+04	6.231E+06	1.255E+04	3.350E+00	9.347E+02	3.685E+00
2007	1.209E+04	6.607E+06	1.330E+04	3.552E+00	9.911E+02	3.908E+00
2008	1.332E+04	7.275E+06	1.465E+04	3.911E+00	1.091E+03	4.302E+00
2009	1.498E+04	8.183E+06	1.648E+04	4.400E+00	1.228E+03	4.840E+00
2010	1.639E+04	8.953E+06	1.803E+04	4.814E+00	1.343E+03	5.295E+00
2011	1.739E+04	9.503E+06	1.913E+04	5.109E+00	1.425E+03	5.620E+00
2012	1.981E+04	1.082E+07	2.180E+04	5.820E+00	1.624E+03	6.402E+00
2013	2.213E+04	1.209E+07	2.434E+04	6.500E+00	1.813E+03	7.150E+00
2014	2.453E+04	1.340E+07	2.698E+04	7.204E+00	2.010E+03	7.925E+00
2015	2.593E+04	1.417E+07	2.853E+04	7.618E+00	2.125E+03	8.379E+00
2016	2.690E+04	1.470E+07	2.959E+04	7.902E+00	2.205E+03	8.692E+00
2017	2.808E+04	1.534E+07	3.089E+04	8.249E+00	2.301E+03	9.074E+00
2018	2.913E+04	1.591E+07	3.204E+04	8.556E+00	2.387E+03	9.412E+00
2019	2.993E+04	1.635E+07	3.293E+04	8.793E+00	2.453E+03	9.672E+00
2020	3.070E+04	1.677E+07	3.377E+04	9.018E+00	2.516E+03	9.920E+00
2021	3.143E+04	1.717E+07	3.457E+04	9.232E+00	2.576E+03	1.016E+01
2022	3.212E+04	1.755E+07	3.534E+04	9.436E+00	2.632E+03	1.038E+01
2023	3.278E+04	1.791E+07	3.606E+04	9.630E+00	2.686E+03	1.059E+01
2024	3.341E+04	1.825E+07	3.675E+04	9.814E+00	2.738E+03	1.080E+01
2025	3.315E+04	1.811E+07	3.646E+04	9.737E+00	2.716E+03	1.071E+01
2026	3.153E+04	1.723E+07	3.468E+04	9.262E+00	2.584E+03	1.019E+01
2027	2.999E+04	1.639E+07	3.299E+04	8.810E+00	2.458E+03	9.691E+00
2028	2.853E+04	1.559E+07	3.138E+04	8.380E+00	2.338E+03	9.218E+00
2029	2.714E+04	1.483E+07	2.985E+04	7.972E+00	2.224E+03	8.769E+00
2030	2.582E+04	1.410E+07	2.840E+04	7.583E+00	2.115E+03	8.341E+00
2031	2.456E+04	1.342E+07	2.701E+04	7.213E+00	2.012E+03	7.934E+00
2032	2.336E+04	1.276E+07	2.570E+04	6.861E+00	1.914E+03	7.547E+00
2033	2.222E+04	1.214E+07	2.444E+04	6.527E+00	1.821E+03	7.179E+00
2034	2.114E+04	1.155E+07	2.325E+04	6.208E+00	1.732E+03	6.829E+00
2035	2.011E+04	1.098E+07	2.212E+04	5.906E+00	1.648E+03	6.496E+00
2036	1.912E+04	1.045E+07	2.104E+04	5.618E+00	1.567E+03	6.179E+00

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2037	1.819E+04	9.938E+06	2.001E+04	5.344E+00	1.491E+03	5.878E+00
2038	1.730E+04	9.454E+06	1.904E+04	5.083E+00	1.418E+03	5.591E+00
2039	1.646E+04	8.993E+06	1.811E+04	4.835E+00	1.349E+03	5.319E+00
2040	1.566E+04	8.554E+06	1.722E+04	4.599E+00	1.283E+03	5.059E+00
2041	1.489E+04	8.137E+06	1.638E+04	4.375E+00	1.221E+03	4.812E+00
2042	1.417E+04	7.740E+06	1.558E+04	4.162E+00	1.161E+03	4.578E+00
2043	1.348E+04	7.363E+06	1.482E+04	3.959E+00	1.104E+03	4.354E+00
2044	1.282E+04	7.003E+06	1.410E+04	3.766E+00	1.051E+03	4.142E+00
2045	1.219E+04	6.662E+06	1.341E+04	3.582E+00	9.993E+02	3.940E+00
2046	1.160E+04	6.337E+06	1.276E+04	3.407E+00	9.505E+02	3.748E+00
2047	1.103E+04	6.028E+06	1.214E+04	3.241E+00	9.042E+02	3.565E+00
2048	1.050E+04	5.734E+06	1.155E+04	3.083E+00	8.601E+02	3.391E+00
2049	9.984E+03	5.454E+06	1.098E+04	2.933E+00	8.181E+02	3.226E+00
2050	9.497E+03	5.188E+06	1.045E+04	2.790E+00	7.782E+02	3.069E+00
2051	9.034E+03	4.935E+06	9.937E+03	2.654E+00	7.403E+02	2.919E+00
2052	8.593E+03	4.695E+06	9.453E+03	2.524E+00	7.042E+02	2.777E+00
2053	8.174E+03	4.466E+06	8.992E+03	2.401E+00	6.698E+02	2.641E+00
2054	7.776E+03	4.248E+06	8.553E+03	2.284E+00	6.372E+02	2.512E+00
2055	7.396E+03	4.041E+06	8.136E+03	2.173E+00	6.061E+02	2.390E+00
2056	7.036E+03	3.844E+06	7.739E+03	2.067E+00	5.765E+02	2.273E+00
2057	6.693E+03	3.656E+06	7.362E+03	1.966E+00	5.484E+02	2.162E+00
2058	6.366E+03	3.478E+06	7.003E+03	1.870E+00	5.217E+02	2.057E+00
2059	6.056E+03	3.308E+06	6.661E+03	1.779E+00	4.962E+02	1.957E+00
2060	5.760E+03	3.147E+06	6.336E+03	1.692E+00	4.720E+02	1.861E+00
2061	5.479E+03	2.993E+06	6.027E+03	1.609E+00	4.490E+02	1.770E+00
2062	5.212E+03	2.847E+06	5.733E+03	1.531E+00	4.271E+02	1.684E+00
2063	4.958E+03	2.709E+06	5.454E+03	1.456E+00	4.063E+02	1.602E+00
2064	4.716E+03	2.576E+06	5.188E+03	1.385E+00	3.865E+02	1.524E+00
2065	4.486E+03	2.451E+06	4.935E+03	1.318E+00	3.676E+02	1.449E+00
2066	4.267E+03	2.331E+06	4.694E+03	1.253E+00	3.497E+02	1.379E+00
2067	4.059E+03	2.218E+06	4.465E+03	1.192E+00	3.326E+02	1.312E+00
2068	3.861E+03	2.109E+06	4.247E+03	1.134E+00	3.164E+02	1.248E+00
2069	3.673E+03	2.007E+06	4.040E+03	1.079E+00	3.010E+02	1.187E+00
2070	3.494E+03	1.909E+06	3.843E+03	1.026E+00	2.863E+02	1.129E+00
2071	3.323E+03	1.816E+06	3.656E+03	9.762E-01	2.723E+02	1.074E+00
2072	3.161E+03	1.727E+06	3.477E+03	9.286E-01	2.591E+02	1.021E+00
2073	3.007E+03	1.643E+06	3.308E+03	8.833E-01	2.464E+02	9.716E-01
2074	2.860E+03	1.563E+06	3.147E+03	8.402E-01	2.344E+02	9.242E-01
2075	2.721E+03	1.486E+06	2.993E+03	7.992E-01	2.230E+02	8.792E-01
2076	2.588E+03	1.414E+06	2.847E+03	7.602E-01	2.121E+02	8.363E-01
2077	2.462E+03	1.345E+06	2.708E+03	7.232E-01	2.018E+02	7.955E-01
2078	2.342E+03	1.279E+06	2.576E+03	6.879E-01	1.919E+02	7.567E-01
2079	2.228E+03	1.217E+06	2.451E+03	6.544E-01	1.826E+02	7.198E-01
2080	2.119E+03	1.158E+06	2.331E+03	6.224E-01	1.736E+02	6.847E-01
2081	2.016E+03	1.101E+06	2.217E+03	5.921E-01	1.652E+02	6.513E-01
2082	1.917E+03	1.047E+06	2.109E+03	5.632E-01	1.571E+02	6.195E-01
2083	1.824E+03	9.964E+05	2.006E+03	5.357E-01	1.495E+02	5.893E-01
2084	1.735E+03	9.478E+05	1.908E+03	5.096E-01	1.422E+02	5.606E-01
2085	1.650E+03	9.016E+05	1.815E+03	4.848E-01	1.352E+02	5.332E-01
2086	1.570E+03	8.576E+05	1.727E+03	4.611E-01	1.286E+02	5.072E-01
2087	1.493E+03	8.158E+05	1.643E+03	4.386E-01	1.224E+02	4.825E-01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(short tons/year)	(Mg/year)	(m ³ /year)	(short tons/year)
2088	1.420E+03	7.760E+05	1.563E+03	4.172E-01	1.164E+02	4.590E-01
2089	1.351E+03	7.382E+05	1.486E+03	3.969E-01	1.107E+02	4.366E-01
2090	1.285E+03	7.022E+05	1.414E+03	3.775E-01	1.053E+02	4.153E-01
2091	1.223E+03	6.679E+05	1.345E+03	3.591E-01	1.002E+02	3.950E-01
2092	1.163E+03	6.353E+05	1.279E+03	3.416E-01	9.530E+01	3.758E-01
2093	1.106E+03	6.044E+05	1.217E+03	3.249E-01	9.065E+01	3.574E-01
2094	1.052E+03	5.749E+05	1.158E+03	3.091E-01	8.623E+01	3.400E-01
2095	1.001E+03	5.468E+05	1.101E+03	2.940E-01	8.203E+01	3.234E-01
2096	9.522E+02	5.202E+05	1.047E+03	2.797E-01	7.803E+01	3.076E-01
2097	9.057E+02	4.948E+05	9.963E+02	2.660E-01	7.422E+01	2.926E-01
2098	8.616E+02	4.707E+05	9.477E+02	2.531E-01	7.060E+01	2.784E-01
2099	8.195E+02	4.477E+05	9.015E+02	2.407E-01	6.716E+01	2.648E-01
2100	7.796E+02	4.259E+05	8.575E+02	2.290E-01	6.388E+01	2.519E-01
2101	7.416E+02	4.051E+05	8.157E+02	2.178E-01	6.077E+01	2.396E-01
2102	7.054E+02	3.854E+05	7.759E+02	2.072E-01	5.780E+01	2.279E-01
2103	6.710E+02	3.666E+05	7.381E+02	1.971E-01	5.498E+01	2.168E-01
2104	6.383E+02	3.487E+05	7.021E+02	1.875E-01	5.230E+01	2.062E-01
2105	6.071E+02	3.317E+05	6.678E+02	1.783E-01	4.975E+01	1.962E-01
2106	5.775E+02	3.155E+05	6.353E+02	1.696E-01	4.732E+01	1.866E-01
2107	5.494E+02	3.001E+05	6.043E+02	1.614E-01	4.502E+01	1.775E-01
2108	5.226E+02	2.855E+05	5.748E+02	1.535E-01	4.282E+01	1.688E-01
2109	4.971E+02	2.716E+05	5.468E+02	1.460E-01	4.073E+01	1.606E-01
2110	4.728E+02	2.583E+05	5.201E+02	1.389E-01	3.875E+01	1.528E-01
2111	4.498E+02	2.457E+05	4.948E+02	1.321E-01	3.686E+01	1.453E-01
2112	4.278E+02	2.337E+05	4.706E+02	1.257E-01	3.506E+01	1.382E-01
2113	4.070E+02	2.223E+05	4.477E+02	1.195E-01	3.335E+01	1.315E-01
2114	3.871E+02	2.115E+05	4.258E+02	1.137E-01	3.172E+01	1.251E-01
2115	3.682E+02	2.012E+05	4.051E+02	1.082E-01	3.018E+01	1.190E-01
2116	3.503E+02	1.914E+05	3.853E+02	1.029E-01	2.870E+01	1.132E-01
2117	3.332E+02	1.820E+05	3.665E+02	9.787E-02	2.730E+01	1.077E-01
2118	3.170E+02	1.731E+05	3.486E+02	9.310E-02	2.597E+01	1.024E-01
2119	3.015E+02	1.647E+05	3.316E+02	8.856E-02	2.471E+01	9.741E-02
2120	2.868E+02	1.567E+05	3.155E+02	8.424E-02	2.350E+01	9.266E-02
2121	2.728E+02	1.490E+05	3.001E+02	8.013E-02	2.235E+01	8.814E-02
2122	2.595E+02	1.418E+05	2.854E+02	7.622E-02	2.126E+01	8.384E-02
2123	2.468E+02	1.348E+05	2.715E+02	7.250E-02	2.023E+01	7.975E-02
2124	2.348E+02	1.283E+05	2.583E+02	6.897E-02	1.924E+01	7.587E-02
2125	2.234E+02	1.220E+05	2.457E+02	6.560E-02	1.830E+01	7.217E-02
2126	2.125E+02	1.161E+05	2.337E+02	6.241E-02	1.741E+01	6.865E-02
2127	2.021E+02	1.104E+05	2.223E+02	5.936E-02	1.656E+01	6.530E-02

APPENDIX D

A decorative horizontal flourish consisting of two stylized, symmetrical leaf-like shapes meeting in the center, separated by a small circular element.

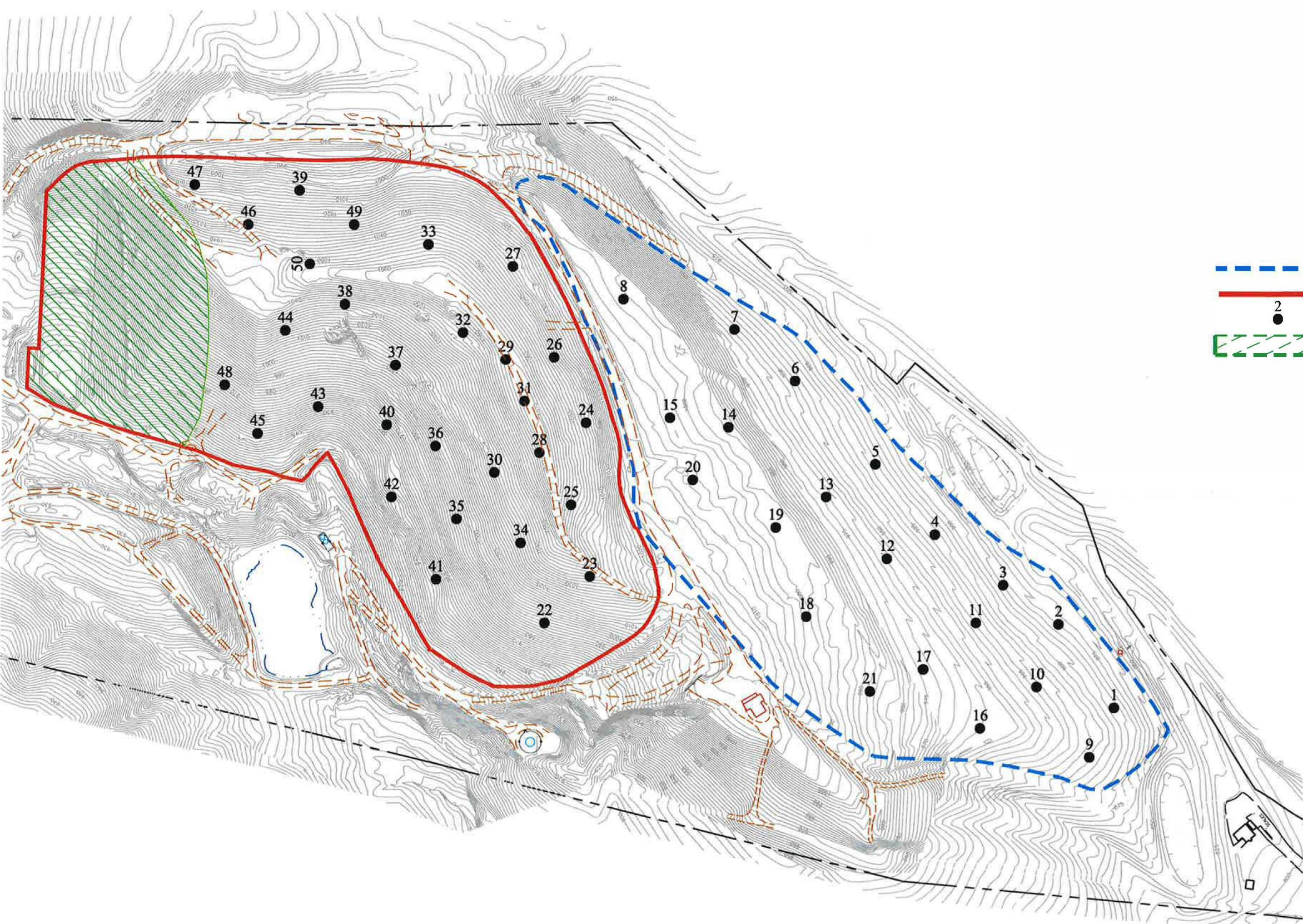
NOTES:

1. 2 SAMPLES PER HECTARE (HA)
 2. 1 HA = 2.47 ACRES
 3. $65.6 \text{ AC} \div 2.47 \text{ AC/HA} = 26.56 \text{ HA}$
 - a. $26.56 \text{ HA} * 2 \text{ SAMPLES/HA} = 53 \text{ SAMPLES}$ (50 samples is maximum required.)

SAMPLING AREA		
LOCATION	ACREAGE	REQUIRED SAMPLING POINTS
ACTIVE LF	37.4	29
CLOSED LF	28.2	21
TOTAL	65.6	50

LEGEND

- CLOSED LANDFILL LIMITS
ACTIVE LANDFILL LIMITS
TIER 2 SAMPLING LOCATION
WASTE LESS THAN 2 YEARS OLD



**SANTEK
ENVIRONMENTAL**
650 25TH STREET NW
SUITE 100
LEVELAND, TENNESSEE

TIER 2 SAMPLING POINTS

**MATLOCK BEND LANDFILL
LOUDON COUNTY, TENNESSEE**