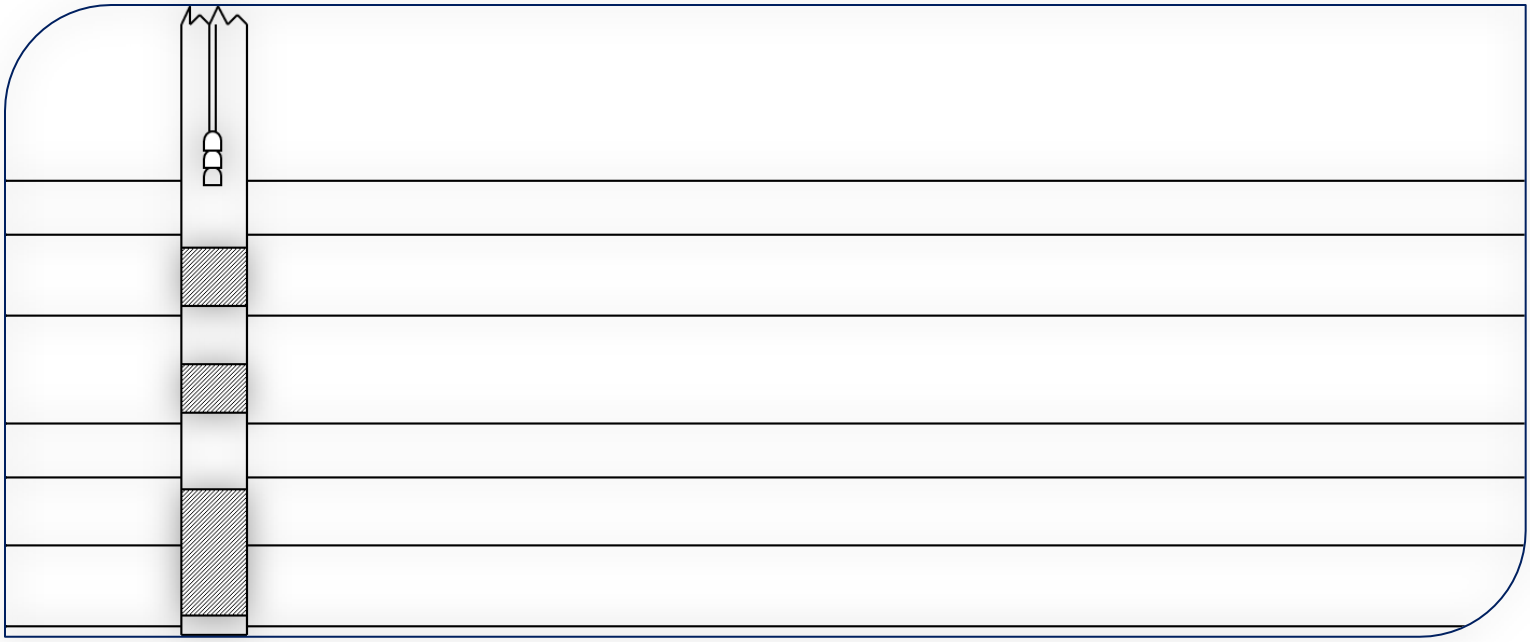
Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
0	149.5	2:27:55	Pump turned off.
0	147.5	2:28:30	Particles visible in water during recharge.

BESST INC.
GLOBAL SUBSURFACE TECHNOLOGIES

Video Camera Survey Report: Private Water Supply Well PGDW23
October 9, 2014

Prepared by: Kim Miles and Noah Heller

Reviewed by: Debra Cerda and Christine Taylor



Introduction

BESST Inc. observed well construction and integrity for private water-supply well (well) PGDW23 during a video survey conducted on October 9, 2014. The survey was performed using a ¾ inch GeoVision Nano Camera. The well has a submersible pump and the survey was conducted during pumping and non-pumping conditions.

Objective

The objective of the work is to assess the well with regard to the following criteria:

- Depth
- Screened interval
- Material type, casing condition, and well integrity
- Presence of scaling, sediment, or bacteria
- Color and clarity of the water
- Gas intrusion
- Water inflow zones
- Other similar observations that may relate to potential water-quality issues

Methods and Materials

The miniaturized video camera was deployed using a motorized reel, which was attached to an electronic optical counter wheel. A portable DVD recorder was used in conjunction with a small LCD screen for viewing. The camera was deployed directly into the well casing. The recording uses the top of the casing as the datum. All depths in the report are relative to feet below top of casing (ft. BTC). Work was conducted in general accordance with the methods specified in the following documents:

- Site Health and Safety Plan (AME 2014)
- Quality Assurance Project Plan (AME 2014)
- Sampling and Analysis Plan (AME 2014)
- Sampling and Analysis Plan Addendum: Well Video Surveys (AME 2014), which includes the BESST Inc. Work Plan

Well PGDW23 Information Summary

The following information for Well PGDW23 is based on technical information provided by Acton Mickelson Environmental, Inc. (AME), Wyoming Department of Environmental Quality, and information collected during the video survey.

Well PGDW23 is on residential/agricultural property. This well's total depth is 475 ft. below ground surface, with a PVC casing diameter of 5 inches. There is a 4-bolt ABS watertight well cap without an access port. The well has a submersible pump.

Observations

Well Depth

The camera survey does not progress beyond the top of the pump due to limited annular space at 360.2 ft. BTC.

Screened Interval(s)

Screened intervals were not observed in Well PGDW23's PVC casing.

Material Type, Casing Condition, and Well Integrity

Well PGDW23 is constructed with 5-inch PVC casing from the ground surface to the deepest observed location (directly above the top of the pump). The casing is in very good condition, with no observed damage to well integrity. There is minor yellow staining on the inside of the casing associated with the water column. The dry casing does not exhibit the yellow staining.

Scaling, Sediment, and Microbial Biofilms

The well did not have any visible scaling or sedimentation and is clean, with little to no observed algae or bacteria.

Color and Clarity of Water

Water clarity is good throughout the entire camera survey during non-pumping conditions. After the gas bubble/drawdown test, water clarity above the pump became a cloudy white. Color changes reflect the amount of minor yellow staining on the inside of the casing.

Gas Intrusion

Gas bubbles were not observed in the well during static or pumping conditions. Continuous water level drawdown was observed for 1 hour and 10 minutes in the well from 195.2 ft. BTC to the lowest observed pumping water level at 277.6 ft. BTC. Water level recharge was observed on Disc 2 after the drawdown test.

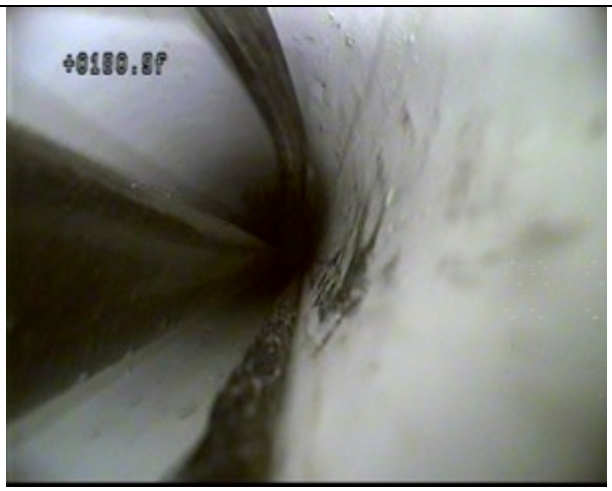
Groundwater Inflow

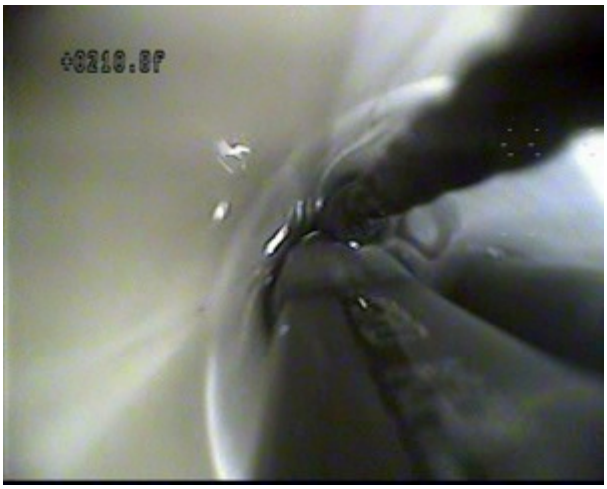
Groundwater inflow was not observed in the well. Due to limited annular space, the downhole camera was not able to pass the submersible pump at 360.2 ft. BTC. Screened PVC was not observed above the pump. The recorded discharge rate was 6.7 GPM.

Well PGDW23 Images and Description:

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	Above Datum	0:04:02 (Disc 1)	Top of Well.
0	7.6	0:11:25 (Disc 1)	Pitless adapter.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	90.6	0:19:39 (Disc 1)	Water droplets on casing.
0	134.4	0:21:43 (Disc 1)	Cable separated from pump column.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	180.9	0:31:05 (Disc 1)	 Larger increased number of water drops on casing.
0	197.0	0:33:36 (Disc 1)	Above water level.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	197.5	0:33:49 (Disc 1)	 **At water level.**
6.7	210.8	0:35:47 (Disk 1)	 **Water level drops below camera.**

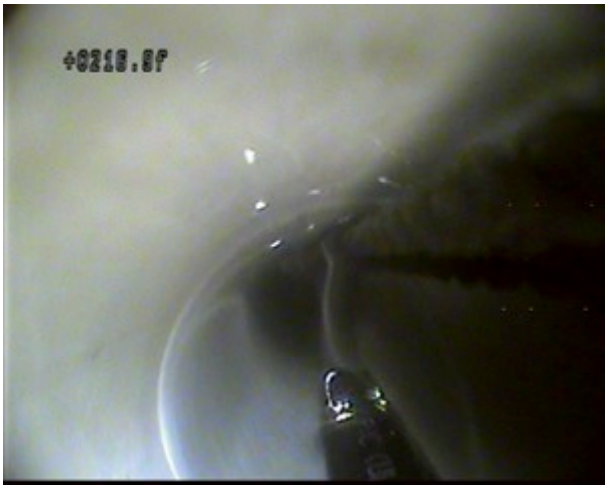
Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
6.7	219.4	0:36:49 (Disc 1)	 Camera drops below water level.
6.7	259.6	0:39:04 (Disc 1)	 Metal hose clamps.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
6.7	287.2	0:55:26 (Disc 1)	Medium-sized particles in water.
6.7	309.4	0:57:48 (Disc 1)	Metal hose clamps.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
6.7	358.4	1:04:24 (Disc 1)	Cables leading to pump.
6.7	360.2	1:06:44 (Disc 1)	Top of pump.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	200.6	1:29:56 (Disc 1)	Observing recharge, no visible bubbles.
0	195.2	1:51:23 (Disc 1)	Water level during recharge.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
6.7	195.2	1:51:56 (Disc 1)	**Pump on.** **Observed drawdown for the remainder of Disc 1.**
6.7	259.2	2:09:56 (Disc 1)	**Image is foggy.**

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
6.7	277.6	3:01:34 (Disc 1)	**Lowest observed pumping water level. End of Disc 1.**
0	216.9	0:05:06 (Disc 2)	 **Observing recharge, there are no bubbles. Pull out of well.**

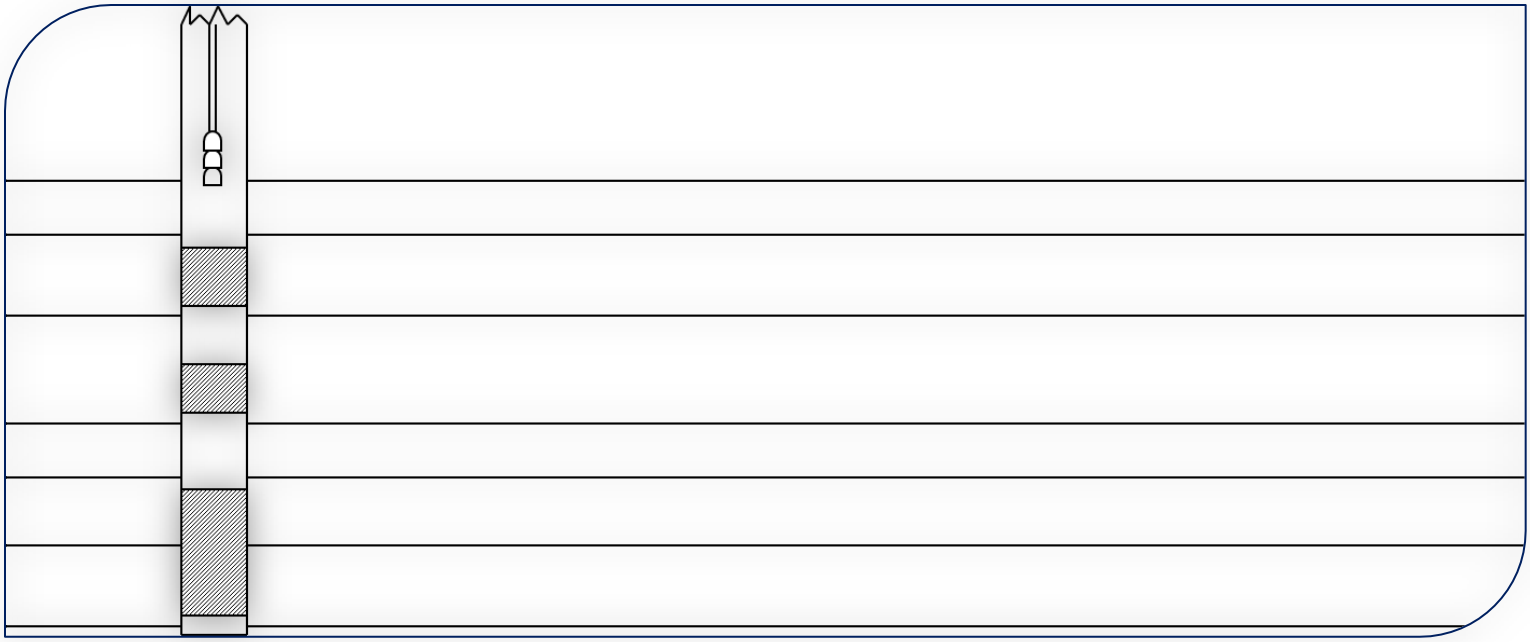
Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	Above Datum	0:18:31 (Disc 2)	**End of disc 2.**

BESST INC.
GLOBAL SUBSURFACE TECHNOLOGIES

Video Camera Survey Report: Private Water Supply Well PGDW41A October 7, 2014

Prepared by: Kim Miles and Noah Heller

Reviewed by: Debra Cerda and Christine Taylor



Introduction

BESST Inc. observed well construction and integrity for private water-supply well (well) PGDW41A during a video survey conducted on October 7, 2014. The survey was performed using a ¾ inch GeoVision Nano Camera. The well contains a submersible pump and the survey was conducted during pumping and non-pumping conditions.

Objective

The objective of the work is to assess the well with regard to the following criteria:

- Depth
- Screened interval
- Material type and condition of the casing and screen
- Presence of scaling, sediment, or bacteria
- Well integrity
- Color and clarity of the water
- Gas intrusion
- Water inflow zones
- Other similar observations that may relate to potential water-quality issues

Methods and Materials

The miniaturized video camera was deployed using a motorized reel, which was attached to an electronic optical counter wheel. A portable DVD recorder was used in conjunction with a small LCD screen for viewing. The camera was deployed directly into the well casing. The recording uses the top of the casing as the datum. All depths in the report are relative to feet below top of casing (ft. BTC). Work was conducted in general accordance with the methods specified in the following documents:

- Site Health and Safety Plan (AME 2014)
- Quality Assurance Project Plan (AME 2014)
- Sampling and Analysis Plan (AME 2014)
- Sampling and Analysis Plan Addendum: Well Video Surveys (AME 2014), which includes the BESST Inc. Work Plan

Well PGDW41A Information Summary

The following information for Well PGDW41A is based on technical information provided by Acton Mickelson Environmental, Inc. (AME), Wyoming Department of Environmental Quality and information collected during the video survey.

Well PGDW41A is on residential/agricultural property and is used for yard irrigation purposes. Total depth of the well is 376 ft. below ground surface, with a PVC casing diameter of 6 inches. There is a 4-bolt ABS watertight well cap without an access port. The well has a submersible pump. The well owner stated that cattle had deceased after drinking water from this well.

Observations

Well Depth

Total well depth was not observed in this video survey. There was not sufficient annular space between the pump body at 262.4 ft. BTC and the well casing to allow the camera to pass.

Screened Interval(s)

No screen was observed in Well PGDW41A.

Material Type, Casing Condition, and Well Integrity

Well PGDW41A is constructed with 6-inch PVC casing. BESST Inc. observed the PVC casing for the entirety of the video survey (from ground surface to pump set depth). Long scratch and gouge marks were observed on the well casing at 324 ft. BTC. The scratches parallel the well casing down to the pump set depth. PVC splinters were observed at the bottom of gouges. Scratch marks and gouges may be a result of deviated well casing. Torn casing, along with a separated joint, and finger-like, beige-colored protrusions were observed at 284.2 ft. BTC. BESST Inc. was not able to determine casing condition beyond the top of the pump due to limited annular space.

White material was observed at and around the pump column couplings. There was a noticeable color difference between the coupling and the well column. It is possible that due to dissimilar metals, the white material around the couplings may be a result of catalytic corrosion between the column pipe, collar, and the pump.

Scaling, Sediment, and Microbial Biofilms

Oxidation is present on the pump column from 316–334 ft. BTC. Fine white suspended particles appear at 114 ft. BTC and continue down the well. A small yellow object shaped like a cigarette butt was observed at 141 and 265 ft. BTC. A dense cloud of fine yellow particles was released when the camera lens collided with the yellow objects. Finger-like, beige-colored protrusions were observed at 284.2 ft. BTC around a damaged casing joint.

Color and Clarity of Water

Water color reflected the color of the well casing and the amount of white PVC exposed when staining is present. Water clarity in a static condition is slightly foggy, with light suspended particles. Suspended particles loosened on camera's descent were lifted to shallower depths during water level recharge after pumping.

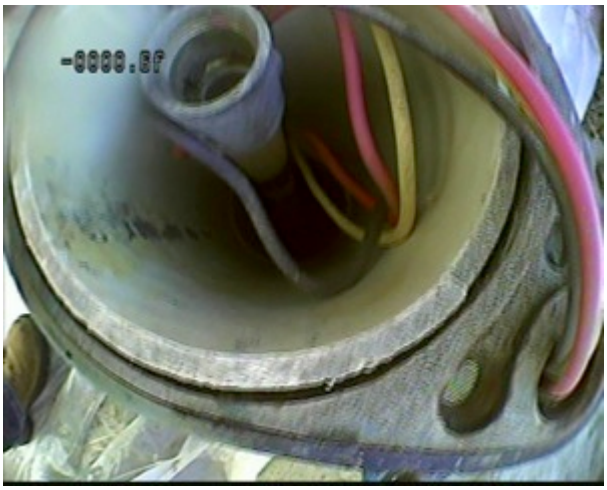
Gas Intrusion

BESST Inc. did not observe any gas bubbles during the water level survey or in the water column during both pumping and non-pumping conditions.

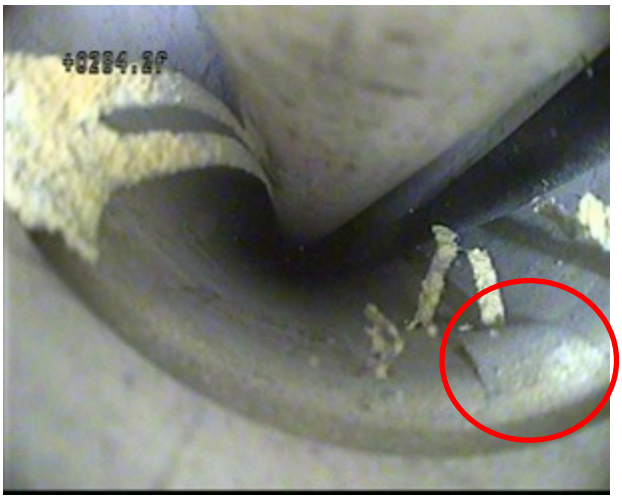
Groundwater Inflow

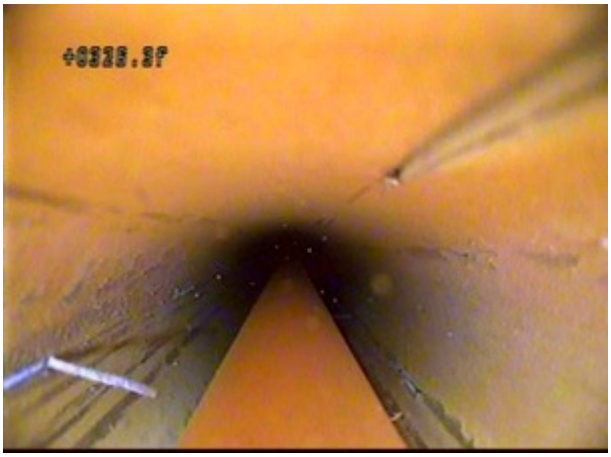
Groundwater inflow was not observed in PGDW41A. The video survey did not explore screened sections of PGDW41A due to limited annular space between the pump body and the well casing.

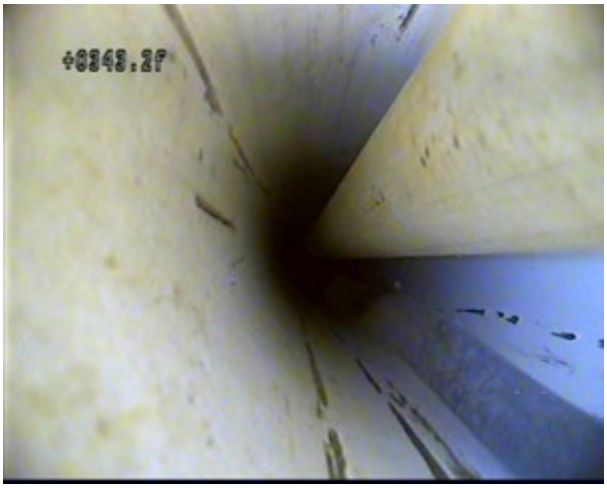
PGDW41A Images and Description:

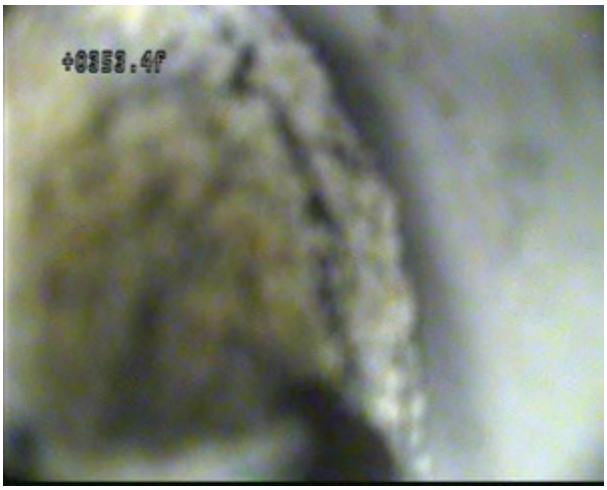
Pump Rage (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	Above Datum	0:00:00 (1)	 **Top of well.**
0	8.2	0:04:22 (1)	**Pitless adapter.**

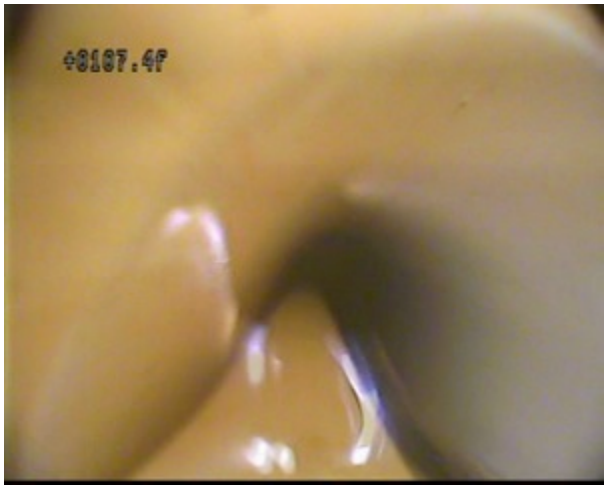
Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	106.6	0:46:03 (1)	 Above water level.
0	107.7	46:22 (1)	 At water level.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	115.1	0:48:24 (1)	 Fine particles suspended in water.
0	284.3	2:11:25 (1)	 Finger-like protrusions proximal to casing joint. Circled area of casing appears torn.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	315.2	2:20:44 (1)	 Color in well changes from white to orange.
0	326.3	2:33:57 (1)	 PVC Splinters on well casing. Scratch marks start at 324 ft BTC.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	334.0	2:25:35 (1)	 Color in well changes back to white.
0	343.2	2:26:19 (1)	 Gouge marks in well casing.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	352.8	2:34:02 (1)	Above pump.
0	353.4	2:35:24 (1)	 At the top of the pump.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	107.5	0:17:06 (2)	 **Counter reset to account for slip.** **Set to static water level.**
Pump active rate was not recorded	106.9	0:21:57 (2)	 **Pump turned on.**

Rate Pump (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	155.3	0:25:19 (2)	 **Pump turned off to relieve pressure tank.**
Pump active rate was not recorded	149.1	0:27:37 (2)	 **Pump turned on, no bubbles observed.**

Rate Pump (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	189.9	0:31:57 (2)	 Pump turned off.
Pump active rate was not recorded	182.7	0:34:24 (2)	 Pump turned on, no bubbles observed.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	227.1	0:38:52 (2)	 **Pump turned off.**
Pump active rate was not recorded	212.1	0:41:13 (2)	 **Pump turned on, no bubbles observed.**

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	165.8	0:56:58 (2)	 **Camera becomes wedged between the electric line and the pump column.**
0	179.6	1:23:08 (2)	 **Water level rises to where camera is stuck, no bubbles are observed.**

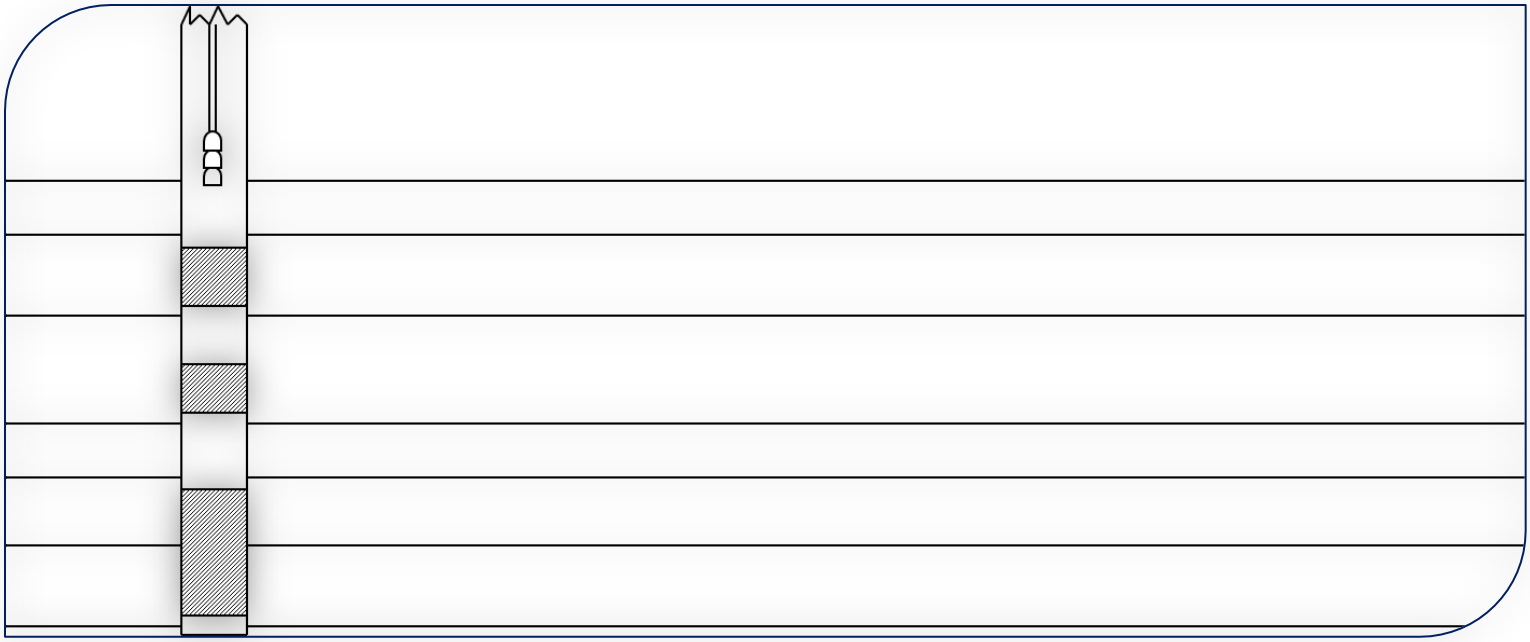
Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss (Disc #)	Image & Description
0	179.6	1:24:03 (2)	**Water clarity during recharge remains the same for the remainder of the video recording.**

BESST INC.
GLOBAL SUBSURFACE TECHNOLOGIES

Video Camera Survey Report: Private Water Supply Well PGDW41B October 7, 2014

Prepared by: Kim Miles and Noah Heller

Reviewed by: Debra Cerda and Christine Taylor



Introduction

BESST Inc. observed well construction and integrity for private water-supply well (well) PGDW41B during a video survey conducted on October 7, 2014. The survey was performed using a ¾ inch GeoVision Nano Camera. The well has a submersible pump and the survey was conducted during pumping and non-pumping conditions.

Objective

The objective of the work is to assess the well with regard to the following criteria:

- Depth
- Screened interval
- Material type, casing condition, and well integrity
- Presence of scaling, sediment, or bacteria
- Color and clarity of the water
- Gas intrusion
- Water inflow zones
- Other similar observations that may relate to potential water-quality issues

Methods and Materials

The miniaturized video camera was deployed using a motorized reel, which was attached to an electronic optical counter wheel. A portable DVD recorder was used in conjunction with a small LCD screen for viewing. The camera was deployed directly into the well casing. The recording uses the top of the casing as the datum. All depths in the report are relative to feet below top of casing (ft. BTC). Work was conducted in general accordance with the methods specified in the following documents:

- Site Health and Safety Plan (AME 2014)
- Quality Assurance Project Plan (AME 2014)
- Sampling and Analysis Plan (AME 2014)
- Sampling and Analysis Plan Addendum: Well Video Surveys (AME 2014), which includes the BESST Inc. Work Plan

Well PGDW41B Information Summary

The following information for Well PGDW41B is based on technical information provided by Acton Mickelson Environmental, Inc (AME), Wyoming Department of Environmental Quality and information collected during the video survey.

Well PGDW41B is on a residential property and is used for agricultural purposes. This well's total depth is 70 ft. below ground surface, with a PVC casing diameter of 8 inches. There is a 4-bolt ABS watertight well cap without an access port. The well has a submersible pump.

Observations

Well Depth

Total well depth was not observed in Well PGDW41B due to a centralizer attached to the pump column at 50.5 ft. BTC. After consultation with the client, it was agreed not to lower the camera any further due to the risk of the camera becoming wedged inside the centralizer upon return.

Screened Interval(s)

Screened PVC was not observed between the top of Well PGDW41B casing and the centralizer at 50.5 ft. BTC.

Material Type, Casing Condition, and Well Integrity

Well PGDW41B is constructed with 8-inch PVC casing. BESST Inc. did not observe any major damage to the well casing or pump column. Possible damage was noted at the first casing joint (11.6 ft. BTC) at 0:07:16 on the DVD.

Scaling, Sediment, and Microbial Biofilms

Several areas of sediment/staining were observed on Well PGDW41B's casing. Grainy, dark brown algae and/or bacteria appear in the upper part (above water level) of Well PGDW41B from 5 to 13 ft. BTC. Orange/yellow inconsistent film appears on the casing surface between static water level at 8.7 ft. BTC and the centralizer at 50.5 ft. BTC.

Color and Clarity of Water

In non-pumping conditions, the water was very clear. Suspended particles and cloudiness were not observed during static condition. Water clarity during pumping conditions remained clear. Water within 5 ft. of the pump became lightly cloudy after Well PGDW41B was allowed to recharge.

Gas Intrusion

Medium-sized gas bubbles were observed floating up to pumping water level one at a time about one second apart between 33.6 to 50.5 ft. BTC. Bubbles became more abundant with greater drawdown. The pump column centralizer blocked view of further drawdown below 50.5 ft. BTC. Gas bubbles were not observed in a static or recharging state.

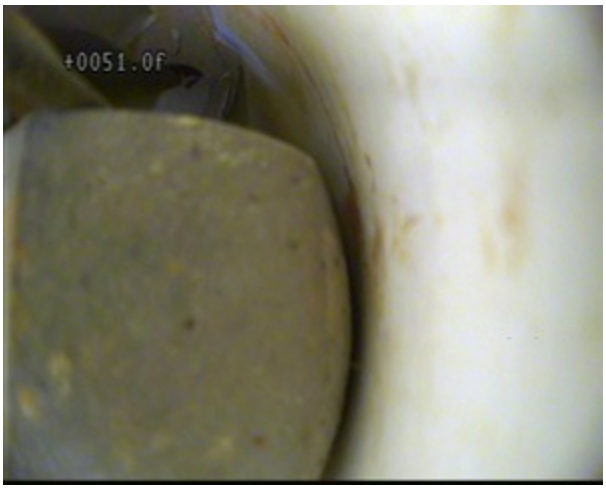
Groundwater Inflow

Groundwater inflow was not observed in Well PGDW41B. The video survey did not explore screened sections of Well PGDW41B due to limited space around the pump column centralizer at 50.5 ft. BTC. Discharge rate was recorded at 9 gallons per minute (GPM).

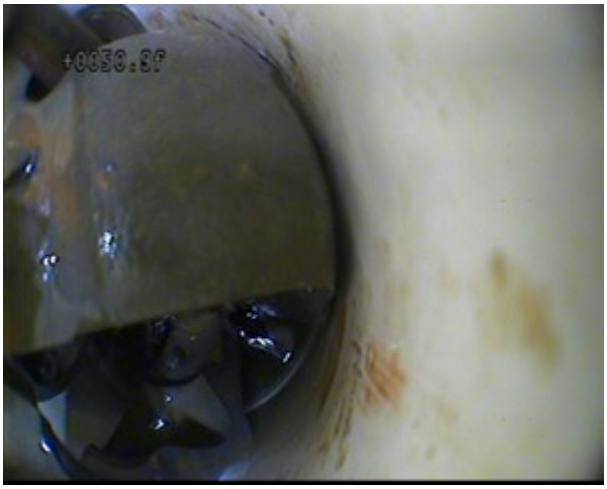
Well PGDW41B Images and Description:

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
0	Above Datum	0:00:27	Top of well.
0	5.7	0:01:41	Pitless adapter.

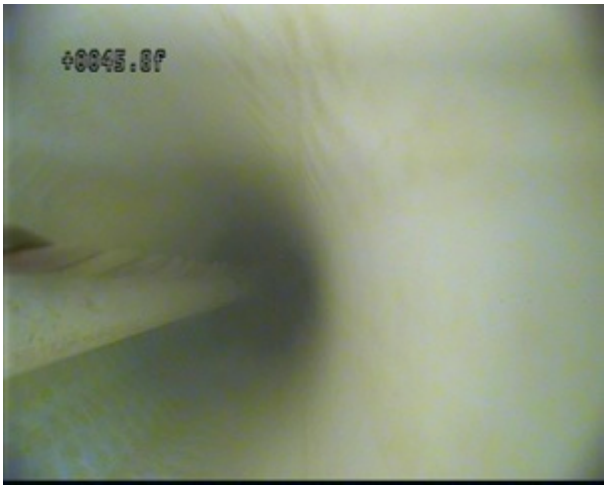
Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
0	7.8	0:05:53	Above water level.
0	8.7	0:07:06	Static water level.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
0	50.1	0:28:00	Above centralizer.
0	51.0	0:28:10	 At centralizer.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
9	8.4	1:18:00	**Pump turned on.**
9	36.7	1:23:22	**Medium-sized bubbles in water. They appear one at a time. First bubble appears at 33.6 ft. BTC.**

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
9	50.9	1:29:21	 Water level drops below centralizer.
0	50.5	1:40:01	Pump turned off.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
0	50.5	1:41:00	Water level rises above centralizer.
0	50.5	1:41:50	Some particles in the water.

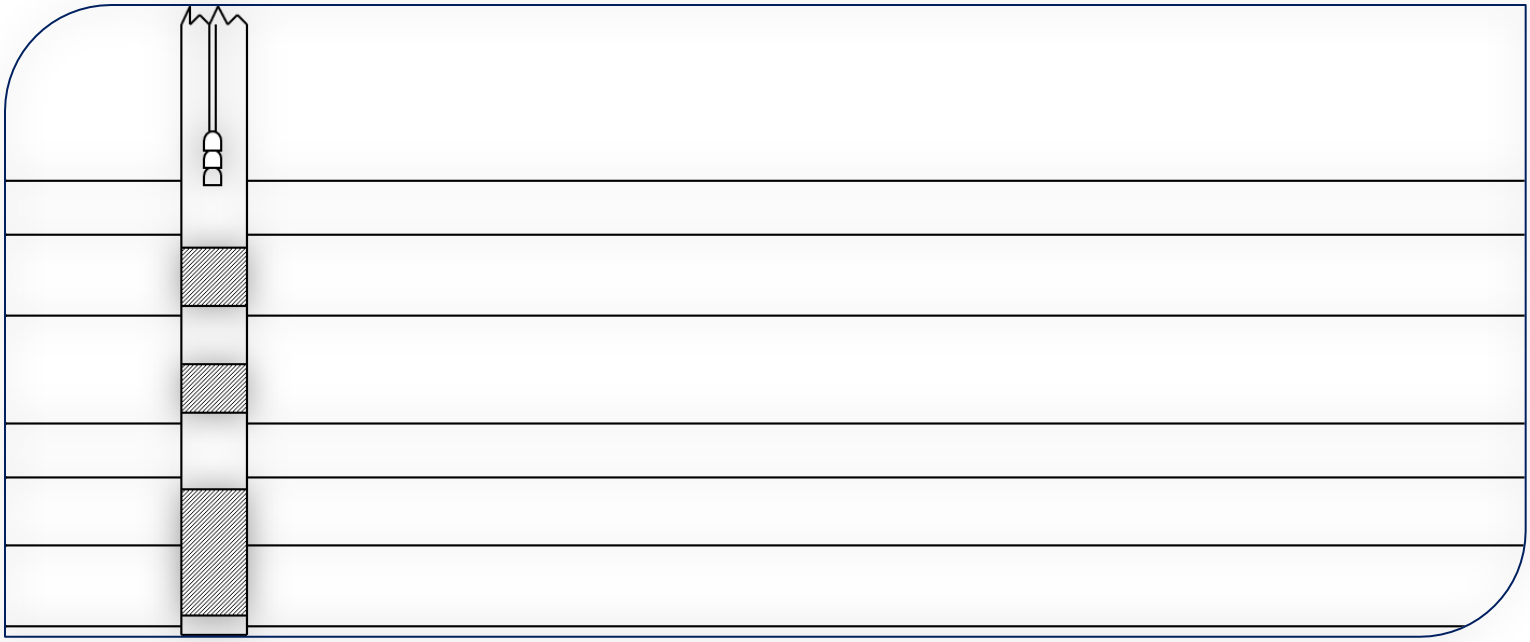
Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
0	45.8	1:44:00	 Water clarity worsens.
0	10.7	2:23:25	Above water level after recharge.

BESST INC.
GLOBAL SUBSURFACE TECHNOLOGIES

Video Camera Survey Report: Private Water Supply Well PGDW44
October 9, 2014

Prepared by: Kim Miles and Noah Heller

Reviewed by: Debra Cerda and Christine Taylor



Introduction

BESST Inc. observed well construction and integrity for private water-supply well (well) PGDW44 during a video survey conducted on October 9, 2014. The survey was performed using a ¾ inch GeoVision Nano Camera. The well has a submersible pump and the survey was conducted during pumping and non-pumping conditions.

Objective

The objective of the work is to assess the well with regard to the following criteria:

- Depth
- Screened interval
- Material type, casing condition, and well integrity
- Presence of scaling, sediment, or bacteria
- Color and clarity of the water
- Gas intrusion
- Water inflow zones
- Other similar observations that may relate to potential water-quality issues

Methods and Materials

The miniaturized video camera was deployed using a motorized reel, which was attached to an electronic optical counter wheel. A portable DVD recorder was used in conjunction with a small LCD screen for viewing. The camera was deployed directly into the well casing. The recording uses the top of the casing as the datum. All depths in the report are relative to feet below top of casing (ft. BTC). Work was conducted in general accordance with the methods specified in the following documents:

- Site Health and Safety Plan (AME 2014)
- Quality Assurance Project Plan (AME 2014)
- Sampling and Analysis Plan (AME 2014)
- Sampling and Analysis Plan Addendum: Well Video Surveys (AME 2014), which includes the BESST Inc. Work Plan

Well PGWD44 Information Summary

The following information for PGDW44 is based on technical information provided by Acton Mickelson Environmental, Inc. (AME), Wyoming Department of Environmental Quality and information collected during the video survey.

PGDW44 was used as an exploratory oil well, with a depth of over 4,000 ft. It is currently being used as an agricultural/stock well. This well's total depth is 750 ft. below ground surface, with a steel casing diameter of 9 inches. There is not a well cap or seal present. The well has a submersible pump at 178 ft. BTC.

Observations

Well Depth

The total well depth was not observed. The camera was not able to deploy past the pump due to an obstruction between the pump body and the well casing at 181.4 ft. BTC.

Screened Interval(s)

While no screen slots were observed in PGDW44 due to minor concretions, there was a water clarity change from 120 to 140 ft. BTC. A change in water clarity might suggest a zone that produces water.

Material Type, Casing Condition, and Well Integrity

PGDW44 is constructed with a 9-inch steel casing from the ground surface to the observed total depth. BESST Inc. did not observe any major physical compromises to the well casing. Minor scaling was observed along the length of the well casing.

Scaling, Sediment, and Microbial Biofilms

Typically concretions are a composite of inorganic scale and bacteriological material. There is not enough data within the video itself to be able to observe bacterial slime or matting by itself. Bulbous concretions were observed starting around 40 ft. BTC and continue down the well casing to the top of the pump. The concretions appear black and tough. When the camera bounced off the side of a concretion, the structure remained intact. It was also noted that the bulbous black concretions are inside black cascading staining on the well casing. This staining is most pronounced around 55 ft. BTC (above current static water level). Minor scale is observed in the water during static conditions.

Color and Clarity of Water

The first descent during static conditions in PGDW44 revealed milky water with limited visibility range from water level to about 120 ft. BTC. From 120 to 140 ft. BTC, water quality improved. Water below 140 ft. BTC remained transparent and colorless to the top of the pump. The change in water clarity remained at the same depth interval during pumping conditions. The camera survey did not continue downhole due to a blockage between the pump body and the well casing.

Gas Intrusion

Gas bubbles were not observed at water surface during pumping and non-pumping conditions. Due to the cyclical nature of the pressure tank interface with the pump, PGDW44 was not able to pump during a steady-state condition. Lowest pumping water level observed was 74.9 ft. BTC.

Groundwater Inflow

While no screen slots were observed in PGDW44 due to minor concretions, there was a water clarity change from 120 to 140 ft. BTC. A change in water clarity might suggest a zone that produces water. Discharge rate was recorded at 3 gallons per minute (GPM).

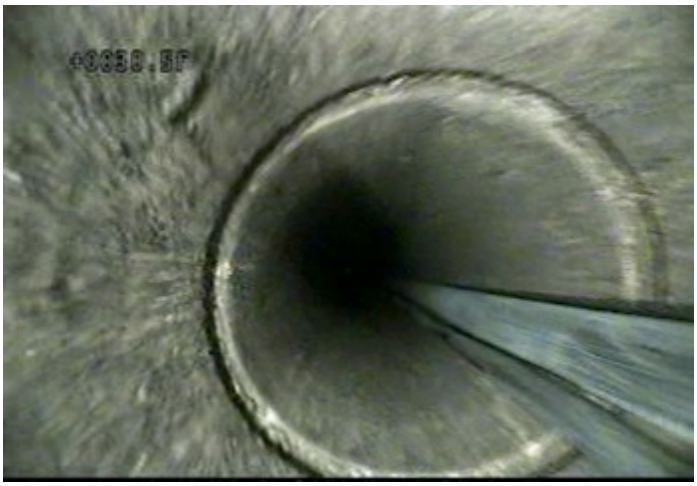
Other Similar Observations That May Relate to Potential Water-Quality Issues

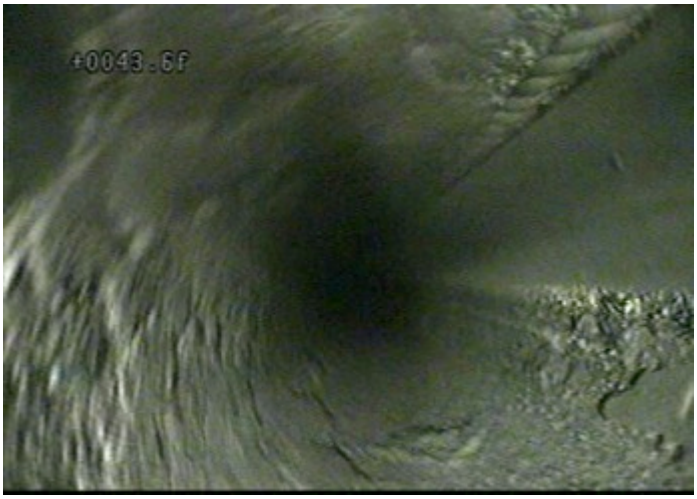
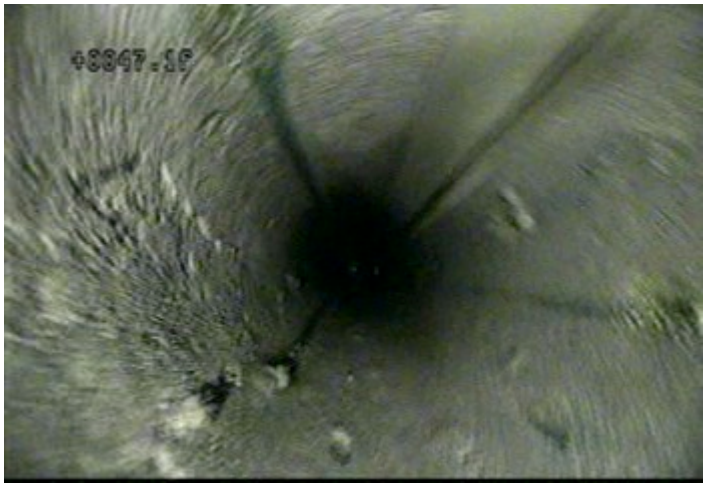
Counter slip occurred when the fiber-optic cable became disconnected at 58.8 ft. BTC. The camera lens was brought back up to static water level. While the counter was repaired with respect to water level, the cable reading was 1.2 ft. less than the actual camera recording depth. The recording datum was re-zeroed to the top of PGDW44 casing at 01:17:49. The remainder of the video recording explores PGDW44 during pumping condition.

Well PGDW44 Images and Description:

Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
0	Above Datum	0:00:00	**Top of well.**

Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
0	6.3	0:01:37	Pitless adapter.
0	20.8	0:10:04	Double hose clamps.

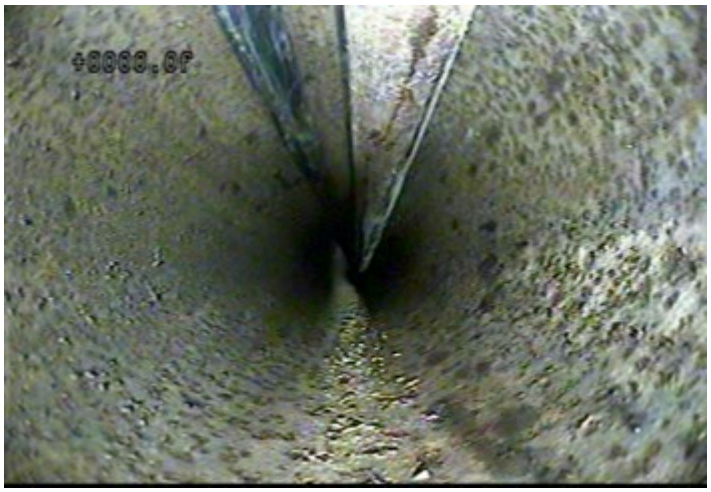
Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
0	28.5	0:10:19	Casing condition.
0	38.5	0:10:24	 Casing joint.

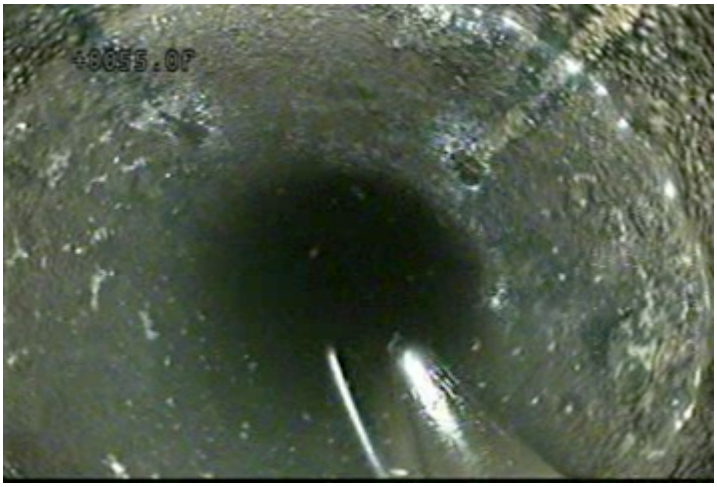
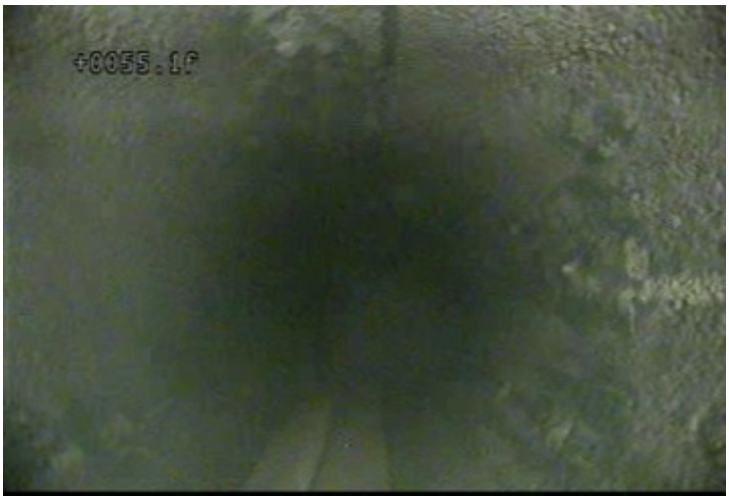
Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
0	43.6	0:10:51	 Well casing condition changes.
0	47.1	0:10:56	 Well casing condition changes.

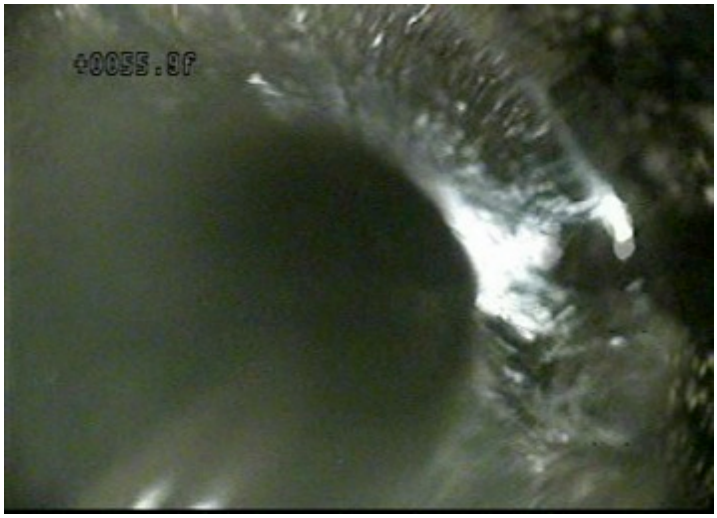
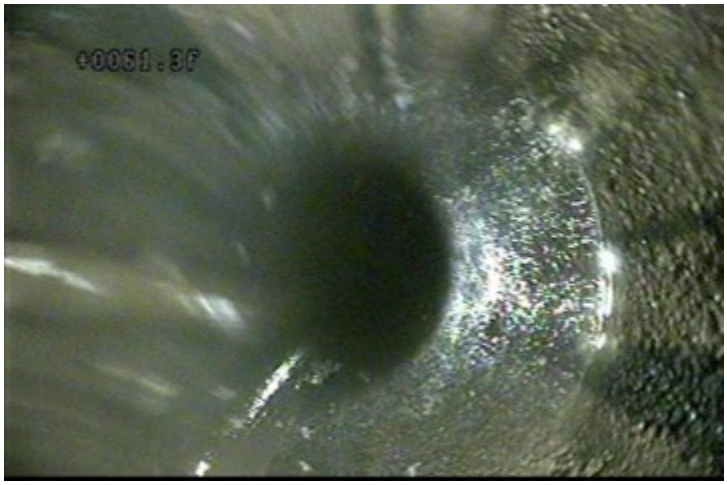
Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
0	50.5	0:11:06	Cascading black staining with bulbous concretions.
0	60.0	1:20:18	Water level #1 counter slip: 1.2 ft.

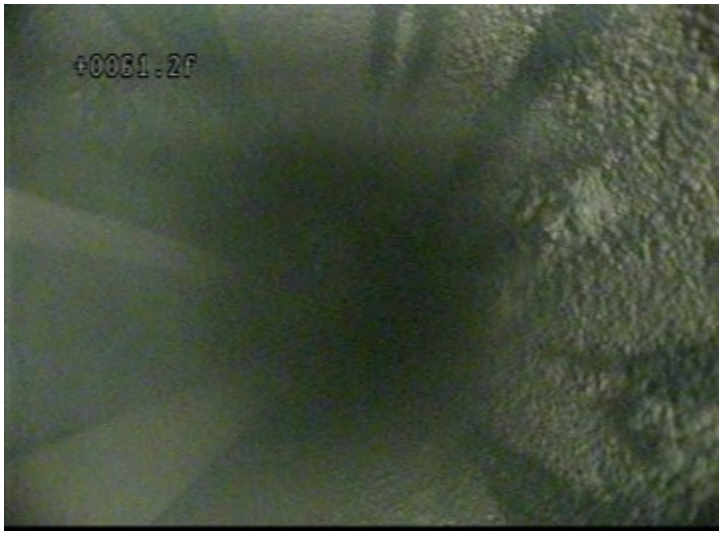
Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
0	60.6	0:22:41	Water clarity in static condition. Counter slip: 1.2 ft.
0	81.2	00:24:00	Water clarity in static conditon. Counter slip: 1.2 ft.

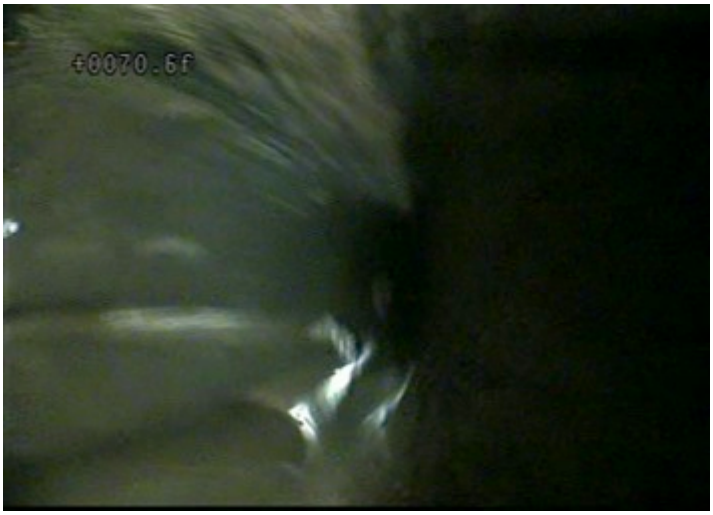
Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
0	162.4	0:33:02	Water clarity in static conditon. Counter slip: 1.2 ft.
0	177.4	0:34:58	Top of Pump. Counter slip: 1.2 ft.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
0	121.3	0:30:23	**Water clarity in static conditon. Counter slip: 1.2 ft.**
0	0.0	1:16:53	 **Camera was brought to surface to clean debris off lens and re-zeroed counter to the top of well PGDW44 casing.**

Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
0	55.1	1:20:25	 Water level #2. Viewing depth: 55.0 ft. BTC.
0	55.1	1:21:05	 Water clarity.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
3	55.9	1:21:40	 Pump turned on.
3	61.3	1:22:50	 Pumping water level.

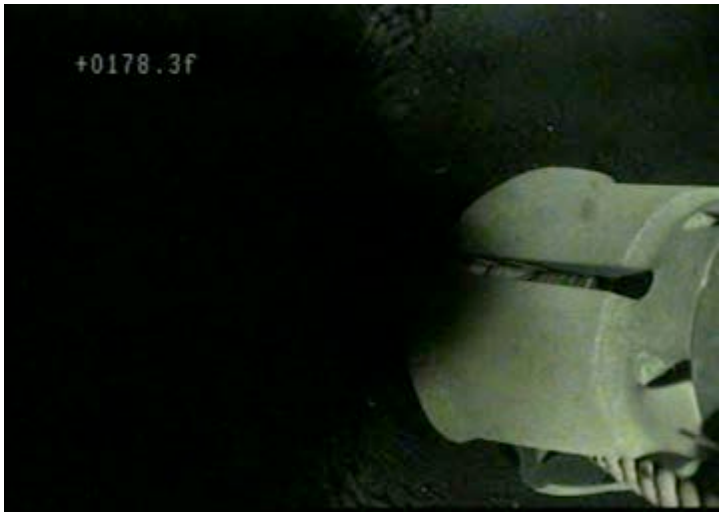
Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
0	61.2	1:24:10	 Recharging water level.
3	61.2	1:24:45	Water level drops.

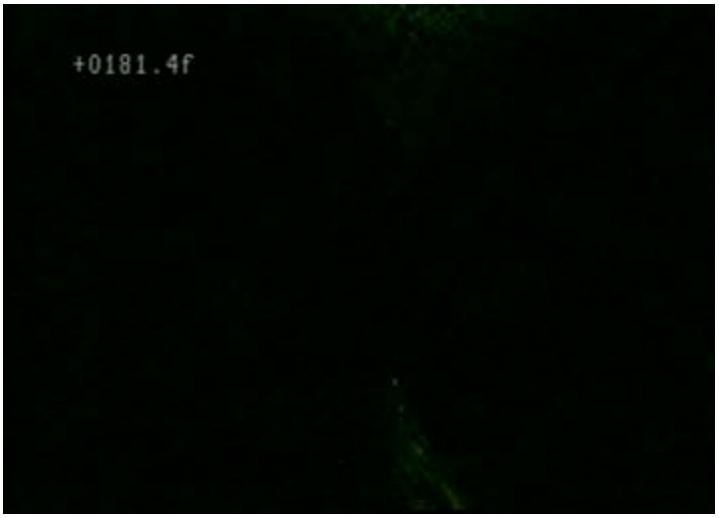
Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
0	66.3	1:27:02	Recharging water level #2.
0	70.6	1:30:10	 Recharging water level #3.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
0	74.9	1:34:29	Recharging water level #4.
3	80.0	1:34:42	Structure in pump column.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
3	90.3	1:34:59	Pump on.
3	101.3	1:35:16	Backflow preventer.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
0	125.9	1:35:55	**Pump off.**
0	140.4	1:36:12	**Water clarity improves.**

Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
0	173.5	1:36:50	Knot in rope.
0	178.3	1:37:03	 Top of pump.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
0	181.4	1:38:00	 **Camera resting on surface between pump body and well casing.**
3	178.2	1:44:46	**Pump on, large suspended particles observed moving with water toward pump intake.**

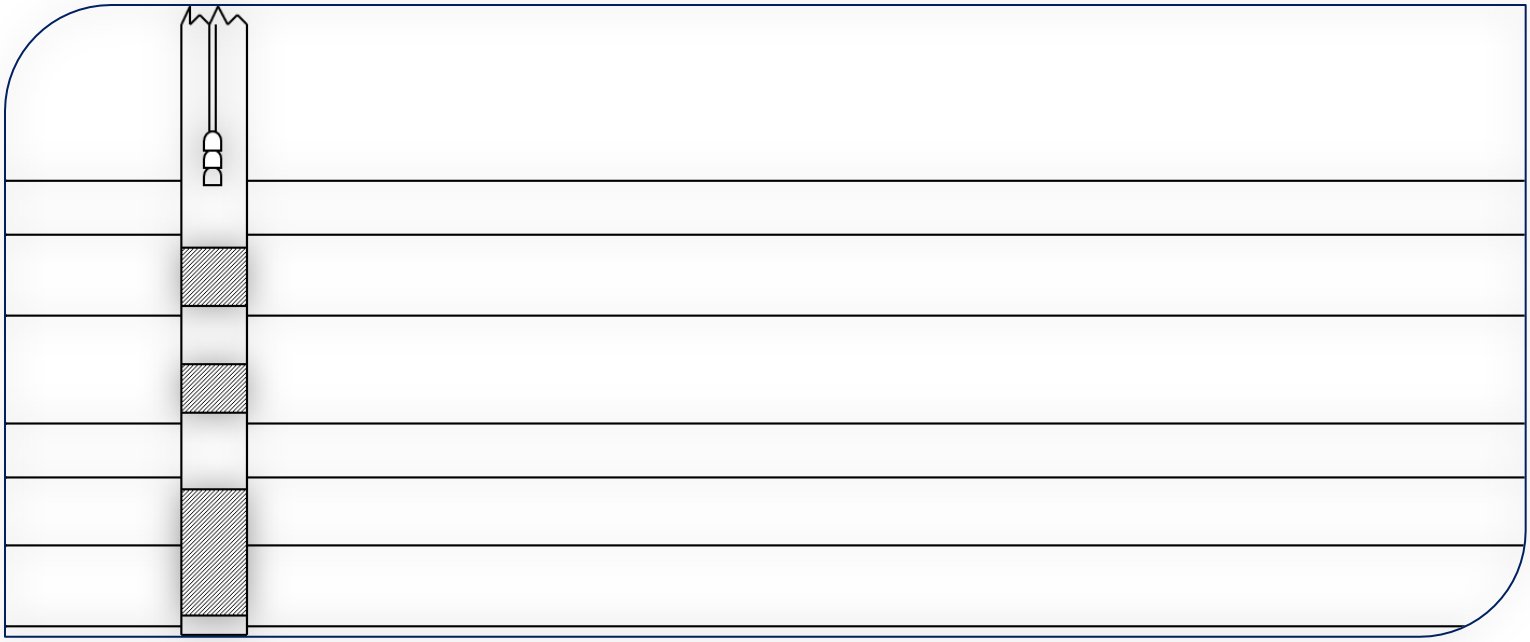
Pump Rate (GPM)	Depth (ft. BTC)	Video Time (h:mm:ss)	Image & Description
0	Above Datum	2:04:34	**End video survey.**

BESST INC.
GLOBAL SUBSURFACE TECHNOLOGIES

Video Camera Survey Report: Private Water Supply Well PGDW49
October 6, 2014

Prepared by: Kim Miles and Noah Heller

Reviewed by: Debra Cerda and Christine Taylor



Introduction

BESST Inc. observed well construction and integrity for private water-supply well (well) PGDW49 during a video survey conducted on October 6, 2014. The survey was performed using a ¾ inch GeoVision Nano Camera. The well contains a submersible pump and the survey was conducted during pumping and non-pumping conditions.

Objective

The objective of the work is to assess the well with regard to the following criteria:

- Depth
- Screened interval
- Material type, casing condition, and well integrity
- Presence of scaling, sediment, or bacteria
- Color and clarity of the water
- Gas intrusion
- Water inflow zones
- Other similar observations that may relate to potential water-quality issues

Methods and Materials

The miniaturized video camera was deployed using a motorized reel, which was attached to an electronic optical counter wheel. A portable DVD recorder was used in conjunction with a small LCD screen for viewing. The camera was deployed directly into the well casing. The recording uses the top of the casing as the datum. All depths in the report are relative to feet below top of casing (ft. BTC). Work was conducted in general accordance with the methods specified in the following documents:

- Site Health and Safety Plan (AME 2014)
- Quality Assurance Project Plan (AME 2014)
- Sampling and Analysis Plan (AME 2014)
- Sampling and Analysis Plan Addendum: Well Video Surveys (AME 2014), which includes the BESST Inc. Work Plan

Well PGDW49 Information Summary

The following information for PGDW49 is based on technical information provided by Acton Mickelson Environmental, Inc. (AME), Wyoming Department of Environmental Quality and information collected during the video survey.

PGDW49 is in use and is a stock supply well. This well's total depth is reported to be 50 ft. below ground surface, with a steel casing diameter of 6 inches. There was a cast-iron well cap with a 3/4-inch access port. The well has a submersible pump that is located at a depth of 32 ft. BTC.

Observations

Well Depth

Total observed depth of PGDW49 is 51.7 ft. BTC. Unidentified objects and scaling were observed at the bottom of the well.

Screened Interval(s)

The well had a casing from ground surface down to about 24 ft. BTC. The water in the casing above 24 ft. BTC is murky. At a depth of 24 ft. BTC, the groundwater suddenly clears inside the well and the beginnings of circumferential encrustations are seen. This suggests the top of a well screen. From a depth of 24 ft. BTC down, these circumferential encrustations vary in size and detectability. This suggests that there may be a number of screen intervals inside the well between 24 ft. BTC and the observed bottom of the well (50 ft. BTC).

Well Integrity

Due to moderate but pervasive encrustation of the surface on the well casing, BESST Inc. cannot determine the quality of well integrity at this time. BESST Inc. did not observe any major physical compromises to the well casing. Cascading water was observed along the sides of the casing above the pumping water level inside the well. A leak was observed in the pump column at 4.3 ft. BTC, shown by spraying water against the side of the casing.

Casing Condition and Well Integrity /Material Type

PGDW49 is constructed with 6-inch steel casing from the ground surface to the observed total depth.

Color and Clarity of Water

Water clarity during pumping conditions was fairly clear from about 24 ft. BTC down to near the bottom of the well. However, above the last 2 ft. from the bottom of the well, we observed swirling sediment and scale. Additionally, from 2 ft. to the bottom of the well, we observed a blacked-out view from the camera, due to the density of suspended solids.

In non-pumping conditions, water was clear when encrustations attached to the well casing were not disturbed. Water clarity quickly degraded when camera scraped the side of the casing.

Scaling, Sediment, and Microbial Biofilms

Typically, concretions are a composite of inorganic scale and bacteriological material. There is not enough data within the video itself to be able to observe bacterial slime or matting. Pervasive encrustations were observed throughout the entire length of the well column. The encrustations appear gray and brittle. When pieces were knocked off by the camera's descent, fine particles hovered in the column and slowly sank. It took several minutes for visibility to improve.

Gas Intrusion

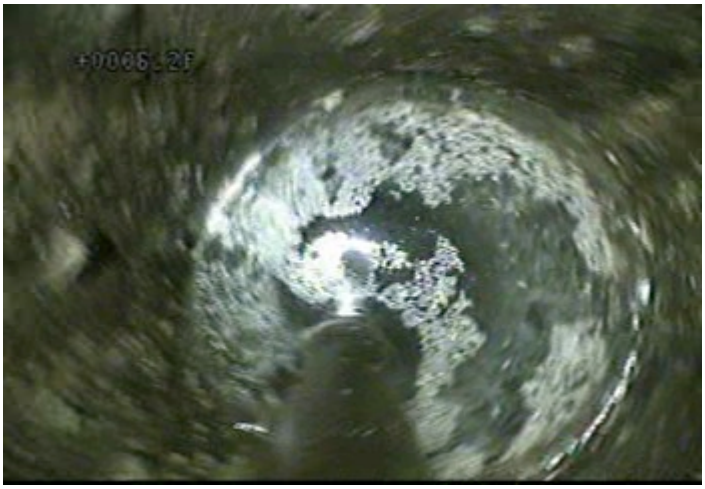
Bubbles were observed at water level when PGDW49 was pumping. BESST Inc. did not observe any gas bubbles in the water column during both pumping and non-pumping conditions. A water leak in the column pipe (4.3 ft. BTC) was found near the end of the survey. It is possible that entrained air from cascading water from the leak was the source of the bubbles.

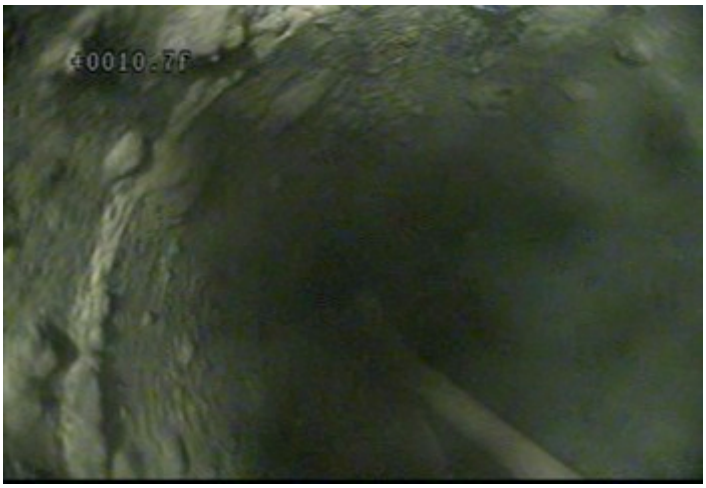
Groundwater Inflow

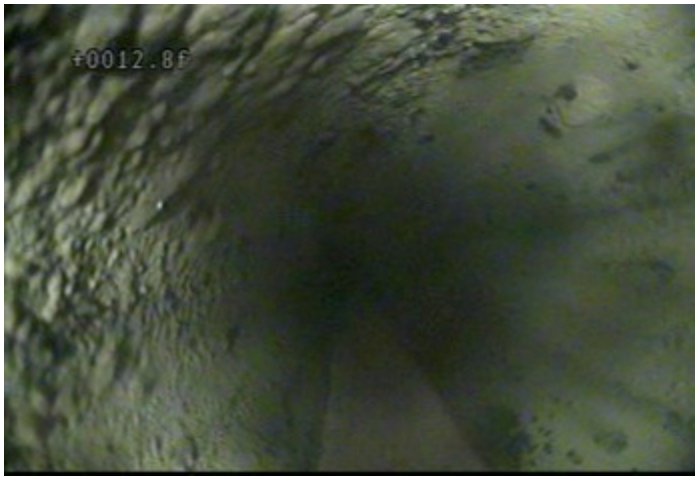
Two noticeable flow zones were noted within PGDW49. The first was a water clarity change around 24 ft. BTC. It is likely water stops being pulled from above the pump around 24 ft. BTC. Similarly, a dense arrangement of spinning particles was observed above 2 ft. from the well bottom. Asymmetric flow contribution at this depth resulted in a dense upwards spinning cloud. The discharge rate was measured to be 10 GPM.

PGDW 49 Images and Description

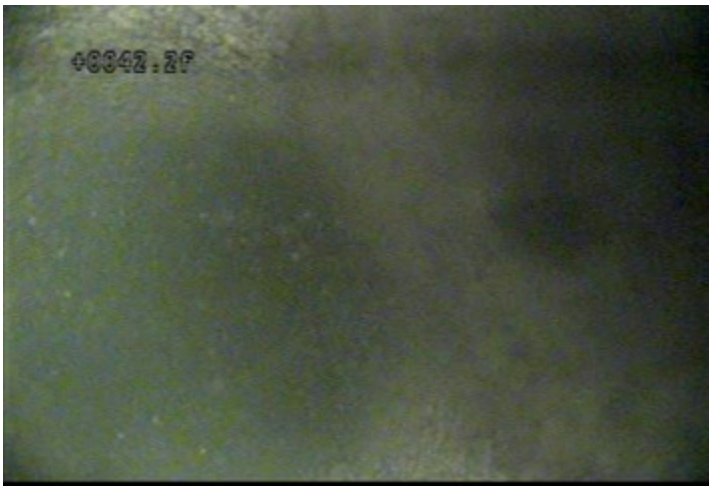
Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
0	Above Datum	0:00:00	View of PGDW49 well head.

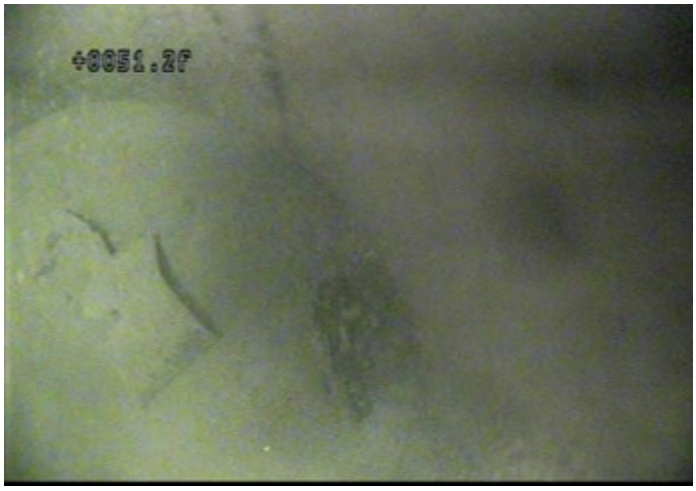
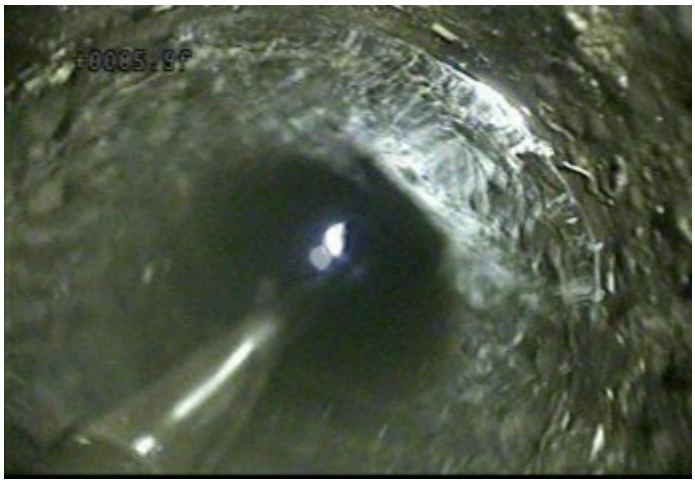
Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
0	2.3	0:11:04	Steel casing at ground surface. Detached rubber seal visible. Viewing depth: 1.7 ft. BTC.
0	6.7	0:11:32	 Static water level. Small debris floating on water level surface. Viewing level: 6.2 ft. BTC.

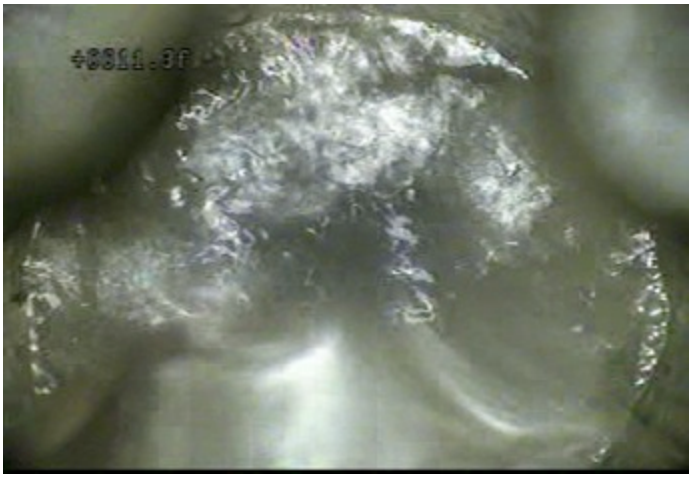
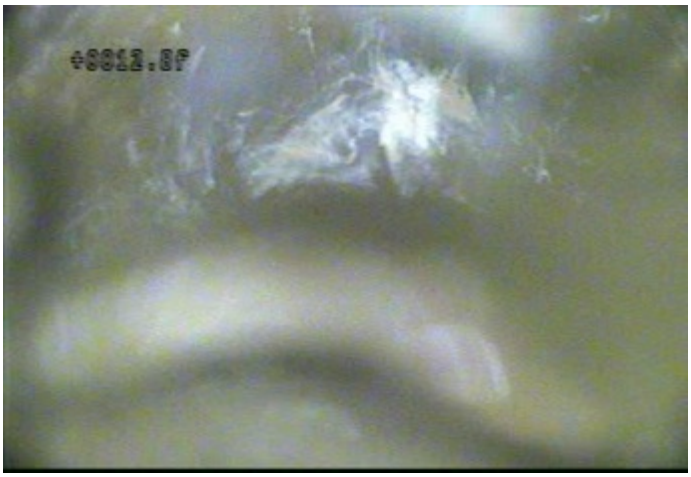
Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
0	7.0	0:12:01	Top of water column. Moderately encrusted casing.
0	10.9	0:21:02	 Steel casing (welded) joint. Viewing depth: 10.7 ft. BTC.

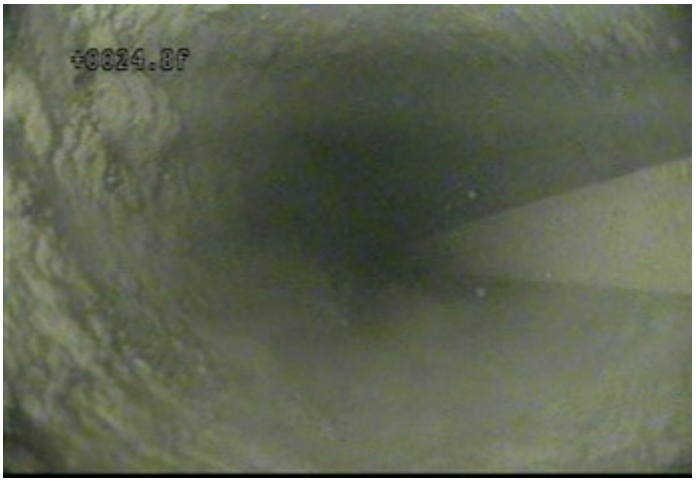
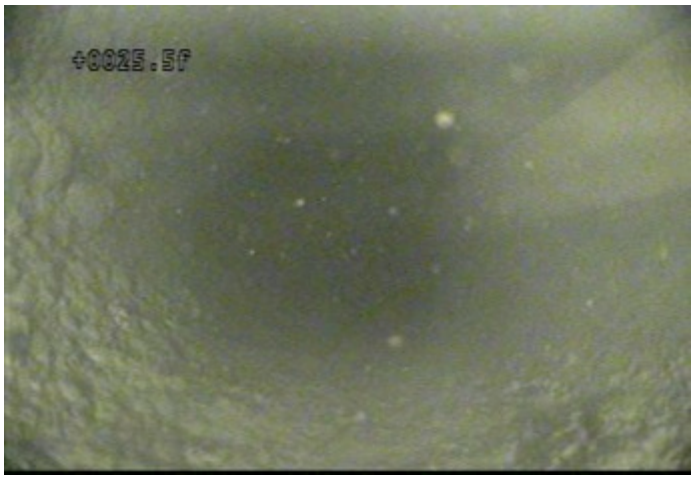
Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
0	12.8	0:21:21	 Asymmetrical concretion growth pattern.
0	19.8	0:22:06	Concretion density increases. Water clarity decreases due to camera dislodging brittle growths.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
0	32.0	0:31:15	**Top of pump. Moved pump column laterally to allow camera passage. Viewing depth: 31.5 ft. BTC.**
0	33.9	0:31:20	**Concentric encrustations suggest screen slots near the top of the pump.**

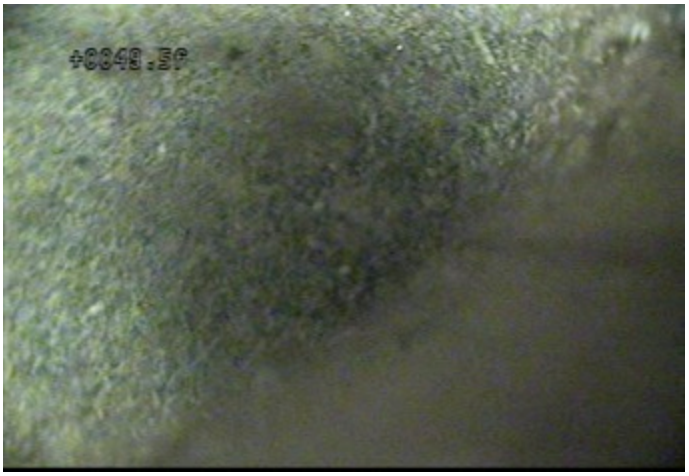
Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
0	35.3	0:39:54	Partial rubber seal lodged in well casing.
0	42.2	43:57	 Camera descent paused to allow water clarity to improve.

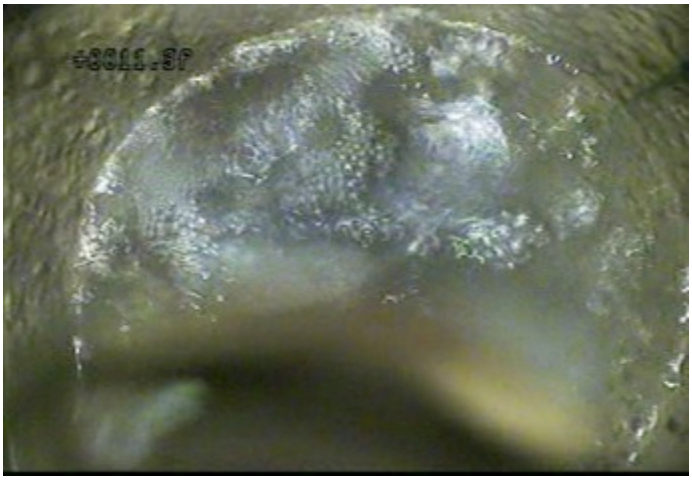
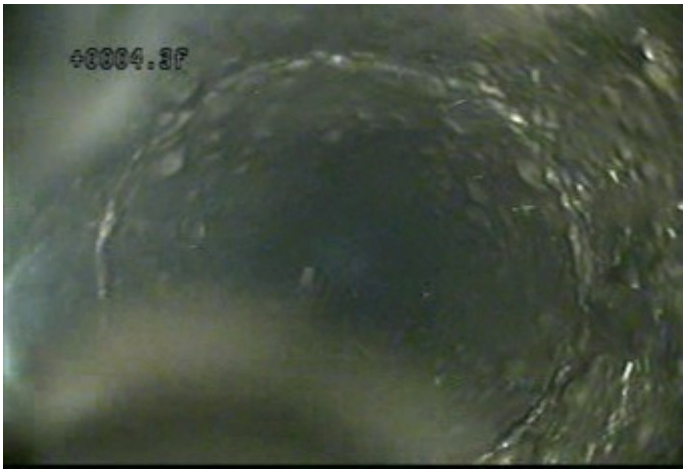
Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
0	51.7	0:57:05	 **Well total depth (TD). Viewing depth: 51.2 ft. BTC (well bottom).**
0	6.1	1:06:47	 **Pulled camera up to static water level for visual on water level drawdown during pumping conditions. Viewing depth: 5.9 ft. BTC.**

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
10	11.3	1:14:12	 **Pump turned on, bubbles visible. Origin of bubbles uncertain (perhaps due to air entrainment from cascading water). Water is falling from a leak in the pump column.**
10	12.9	1:37:44	 **Pumping water level. Camera followed water level draw down from 01:14:12 to 1:37:44.**

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
10	24.8	1:42:50	 **Dramatic water clarity change from very poor to clear. Pump is running. Water is milky white from water level to this point.**
10	25.5	1:50:00	 **Water clarity horizon further down the well casing. Pump turned off at 1:43:47 and on again at 1:47:40.**

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
10	36.7	1:54:11	**Water clarity below pump while pump is on. Pump turned off at 1:50:56 and on again at 1:53:25.**
10	47.5	1:56:06	**Suspended particles spinning in the water column during pumping.**

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
10	49.5	1:56:23	 Greater concentration of spinning suspended particles near well TD during pumping.
10	51.8	1:58:45	Fine particle density blacked out camera lighting at well TD.

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
10	11.3	2:14:16	 **Pulled camera back to water level. Turned pump off at 2:03:30 and on at 2:04:47 when passing the pump bubbles visible. Bubbles not found in water column.**
10	4.3	2:16:28	 **Water jetting from pump column observed above water level. Pump is on.**

Pump Rate (GPM)	Depth (ft. BTC)	Video Time h:mm:ss	Image & Description
0	Above Datum	2:17:18	**End of video survey.**

APPENDIX E—Results of Equipment Field Blank Analyses

Two equipment blanks were obtained for laboratory analysis to check that contaminants were not introduced into the wells from the downhole video equipment. The first equipment blank was collected prior to conducting the video survey in the first well, PGDW49. The second sample was collected prior to conducting the video survey in PGDW23. The equipment blanks were analyzed for a list of parameters specified by WDEQ:

- GRO by SW846 8015B
- Volatile organic acids by SM5560C
- VOCs including TICs by SW846 8260B
- Acrylamide by SW846 8316
- DRO, with and without SGCU, by SW846 8015B
- Nitrogen- and phosphorus-containing pesticides by EPA 507
- Organochlorine pesticides by SW 846 8081A
- Organophosphorus compounds by SW 846 8141A
- SVOCs including TICs by SW846 8270C
- Oil and grease by EPA 1664A
- E.coli and total coliform by SM 9223B
- Iron-related bacteria and sulfate-reducing bacteria by BART™ Bioreactor

Reported concentrations of most target compounds were less than the respective MDL or RL in the field blank samples. The one exception was DRO analyzed without SGCU, reported at 460 Y and 150 Y µg/L in the field blank samples. GRO was reported in the field blanks, trip blanks, and method blanks; thus reported concentrations of GRO were clearly artifacts of laboratory contamination. Acetone was reported in both the field blanks and trip blanks. TICs were reported in the analyses for SVOC at concentrations up to 36 J µg/L.

The reported DRO concentrations for samples analyzed without SGCU appear to coincide with the TICs reported in the SVOC analysis, and appear to be residue from detergent used to decontaminate equipment. The DRO results are flagged exhibiting a chromatographic pattern which did not resemble the diesel standard (Y); also, reported DRO concentrations in samples analyzed with SGCU were less than the MDL. Therefore, the reported DRO concentrations represent polar organic compounds and not petroleum hydrocarbons. TICs include the long-chain fatty acids hexadecanoic acid (C16) and octadecanoic acid (C18), the long-chain fatty acid amides dodecamide (C12) and hexadecamide (C16), and nonanal, a long-chain (C9) aldehyde. All of these are polar compounds.

Both dodecamide and hexadecamide are fatty acid amides and are associated with surfactants. Cocamide is a mixture of fatty acid amides obtained from coconut oil, in which lauric acid (C12)

predominates, and thus coconut oil amides contain a high portion of dodecamide. Cocamide is the basis of many surfactants such as cocamide diethanolamine. Octadecanoic acid, aka stearic acid, is used in many commercial and consumer products, including cleaning products and lubricants. Hexadecanoic acid is also called palmitic acid, and has similar uses (NIH, 2015). Pharmacologic-grade stearic acid is primarily a mixture of stearic and palmitic acids (Budavari, 1996).

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 261495
ANALYTICAL REPORT

Acton Mickelson Environmental	Project : PAVILLION
1107 Investment Boulevard	Location : Pavillion, WY
El Dorado Hills, CA 95762	Level : III

Sample ID	Lab ID
FB-1-10062014	261495-001
SOURCE WATER-1-10062014	261495-002
SOURCE WATER-2-10062014	261495-003
TB-1-10062014	261495-004
FB-1-10062014	261495-005

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 11/03/2014

Will S Rice
Project Manager
will.rice@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**261495**
Client:	**Acton Mickelson Environmental**
Project:	**PAVILLION**
Location:	**Pavillion, WY**
Request Date:	**10/07/14**
Samples Received:	**10/07/14**

This data package contains sample and QC results for two water samples, requested for the above referenced project on 10/07/14. See attached cooler receipt form for any sample receipt problems or discrepancies.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):
Gasoline C7-C12 was detected between the MDL and the RL in the method blank for batch 216264; this analyte was not detected in the sample at or above the RL.

Gasoline C7-C12 was detected between the MDL and the RL in the method blank for batch 216638; this analyte was not detected in the sample at or above the RL.

261495-004 was analyzed outside of hold time; affected data was qualified with "b".

No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):
Low response was observed for bromomethane in the ICV analyzed 10/06/14 17:35.

Low response was observed for Freon 12 in the CCV analyzed 10/17/14 12:05; this analyte met minimum response criteria.

No other analytical problems were encountered.

Semivolatile Organics by GC/MS (EPA 8270C):
No analytical problems were encountered.

Pesticides (EPA 8081A):
All samples underwent sulfur cleanup using the copper option in EPA Method 3660B.

No analytical problems were encountered.

Hydrocarbon Oil & Grease (SGT-HEM) (EPA 1664A):
Matrix spikes were not performed for this analysis due to insufficient sample volume.

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**261495**
Client:	**Acton Mickelson Environmental**
Project:	**PAVILLION**
Location:	**Pavillion, WY**
Request Date:	**10/07/14**
Samples Received:	**10/07/14**

Hydrocarbon Oil & Grease (SGT-HEM) (EPA 1664A):

Low recovery was observed for hydrocarbon oil & grease in the MS for batch 216878; the parent sample was not a project sample, and the LCS was within limits. High RPD was also observed for hydrocarbon oil & grease in the MS/MSD for batch 216878; this analyte was not detected at or above the RL in the associated sample.

No other analytical problems were encountered.

Organophosphorous Pesticides (EPA 8141):
APPL in Clovis, CA performed the analysis (NELAP certified). Please see the APPL case narrative.

Volatile Fatty Acids (SM 5560C):
Microbac Ohio in Marietta, OH performed the analysis (not NELAP certified). Please see the Microbac Ohio case narrative.

Nitrogen- and Phosphorus pesticides (EPA 507):
APPL in Clovis, CA performed the analysis (not NELAP certified). Please see the APPL case narrative.

Acrylamide (EPA 8316):
TA Tallahassee in Tallahassee, FL performed the analysis (not NELAP certified). Please see the TA Tallahassee case narrative.

Chain of Custody

261495

Acton Michelson Environmental, Inc.
1107 Investment Blvd, Suite 290
El Dorado Hills, CA 95762
Phone: (916) 939-7550 Fax: (916) 939-7570

Invoice To: Ellen Frosch	
(916) 939-7550	Email: efrosch@ameinc.net
Project Name	Pavillion, Wy

CHAIN OF CUSTODY RECORD

DATE: 10/6/2014

PAGE: 1 OF 1

LABORATORY: **Curtis & Tompkins Laboratories**
ADDRESS: **2323 5th Street**
CITY: **Berkeley, CA 94710**
TEL: **(510) 486-0900** FAX: **(510) 486-0532** Contact: **Will Rice**

Project Number: **90081.07s**
PROJECT CONTACT: **Michael Acton**
SAMPLER(S): Dennis Jones, Michael Acton

P.O.
LAB USE ONLY
COOLER RECEIPT
Temp = _____ °C

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 ☐ 5 DAYS ☑ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____/____/____

SPECIAL INSTRUCTIONS:

Note 1: FB-1-10062014 matrix is laboratory-grade organic-free reagant water. WQ=water quality control matrix, blank water
Note 2: DRO with and without Silica Gel Clean Up (SGCU).
Note 3: WH =Equipment Wash Water

EquIS EDD

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	Field Point Name	SAMPLING DATE	SAMPLING TIME	MATRIX	PRESERVE	NO. OF CONT.	GRO 8015B	Volatile organic acids HPLC Microbac 830-MBA	VOCs w/TICs 8260B	Acrylamide 8032A/8316	DRO 8015D[2]	N- and P- Pesticides 507	Organochlorine pesticides 8081	Organophosphorus compounds 8141B	SVOCs w/TICs 8270D	Oil and Grease, non-polar EPA 1664A				HOLD	CONTAINER TYPE/NOTES
	FB-1-10062014	QAQC	10/6/2014	1515	WQ[1]	HCL	3	X														40mL VOA w/HCL
	FB-1-10062014	QAQC	10/6/2014	1515	WQ[1]	C	1		X													500 mL Poly
	FB-1-10062014	QAQC	10/6/2014	1515	WQ[1]	HCL	3			X												40mL VOA w/HCL
	FB-1-10062014	QAQC	10/6/2014	1515	WQ[1]	C	1				X											500 mL Glass Bottle
	FB-1-10062014	QAQC	10/6/2014	1515	WQ[1]	C	2					X										500 mL Glass Bottle
	FB-1-10062014	QAQC	10/6/2014	1515	WQ[1]	C	1						X									1,000 mL Glass Bottle
	FB-1-10062014	QAQC	10/6/2014	1515	WQ[1]	C	1							X								1,000 mL Glass Bottle
	FB-1-10062014	QAQC	10/6/2014	1515	WQ[1]	C	2								X							1,000 mL Glass Bottle
	FB-1-10062014	QAQC	10/6/2014	1515	WQ[1]	C	2									X						1,000 mL Glass Bottle
	FB-1-10062014	QAQC	10/6/2014	1515	WQ[1]	HCL	1										X					1,000 mL Glass Bottle w/HCL
2	Source Water-1-10062014	QAQC	10/6/2014	1620	WH[3]	C	1														X	1,000 mL Glass Bottle
3	Source Water-2-10062014	QAQC	10/6/2014	1630	WQ[1]	C	1														X	1,000 mL Glass Bottle
4	TB-1-10062014	QCTB	10/6/2014	1515	WQ[1]	HCL	6	X		X												40mL VOA w/HCL

Relinquished by: (Signature)	Received by: (Signature)	Date, & Time:
FedEx: 8055 1810 6879	10/07/14 1030	10/6/2014 1610
Relinquished by: (Signature)	Received by: (Signature)	Date, & Time:
Relinquished by: (Signature)	Received by: (Signature)	Date, & Time:

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 261495 Date Received 10/07/14 Number of coolers 2
Client AME Project Pavillion

Date Opened 10/07 By (print) MC (sign) [illegible]
Date Logged in [illegible] By (print) [illegible] (sign) [illegible]

1. Did cooler come with a shipping slip (airbill, etc) ____ (YES) NO
   Shipping info FedEX # 8055 1810 6880 + 6879
2A. Were custody seals present? .... ☒ YES (circle) (on cooler) on samples ☐ NO
   How many 2/2 Name Signature Date 10.06.14
2B. Were custody seals intact upon arrival? ____ (YES) NO N/A
3. Were custody papers dry and intact when received? ____ (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? ____ (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form) ____ (YES) NO
6. Indicate the packing in cooler: (if other, describe) ____

   ☒ Bubble Wrap ☒ Foam blocks ☒ Bags ☐ None
   ☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels
7. Temperature documentation: * Notify PM if temperature exceeds 6°C

   Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) 1.7/2.0

   ☒ Samples Received on ice & cold without a temperature blank; temp. taken with IR gun

   ☐ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? ____ YES (NO)
   If YES, what time were they transferred to freezer? ____
9. Did all bottles arrive unbroken/unopened? ____ YES (NO)
10. Are there any missing / extra samples? ____ YES (NO)
11. Are samples in the appropriate containers for indicated tests? ____ (YES) NO
12. Are sample labels present, in good condition and complete? ____ (YES) NO
13. Do the sample labels agree with custody papers? ____ (YES) NO
14. Was sufficient amount of sample sent for tests requested? ____ (YES) NO
15. Are the samples appropriately preserved? ____ YES (NO) N/A
16. Did you check preservatives for all bottles for each sample? ____ (YES) NO N/A
17. Did you document your preservative check? ____ (YES) NO N/A
18. Did you change the hold time in LIMS for unpreserved VOAs? ____ YES NO (N/A)
19. Did you change the hold time in LIMS for preserved terracores? ____ YES NO (N/A)
20. Are bubbles > 6mm absent in VOA samples? ____ (YES) NO N/A
21. Was the client contacted concerning this sample delivery? ____ YES (NO)
   If YES, Who was called? ____ By ____ Date: ____

COMMENTS

#9) received 1 broken container (1L-amber glass)

#15) VFAs: received unpreserved; added H_3PO_4 (lot # B34823) on 10/07/14 @ 1145

Rev 10, 9/12

Curtis & Tompkins Sample Preservation for 261495

Sample	pH: <2	>9	>12	Other
-001a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[X]	[ ]	[ ]	_____
h	[X]	[ ]	[ ]	_____
i	[ ]	[ ]	[ ]	_____
j	[ ]	[ ]	[ ]	_____
k	[ ]	[ ]	[ ]	_____
l	[ ]	[ ]	[ ]	_____
m	[ ]	[ ]	[ ]	_____
n	[ ]	[ ]	[ ]	_____
o	[ ]	[ ]	[ ]	_____
p	[ ]	[ ]	[ ]	_____
q	[ ]	[ ]	[ ]	_____
r	[ ]	[ ]	[ ]	_____

Analyst: ME
Date: 10/07/14

Page 1 of 1

Curtis & Tompkins, Ltd.

Detections Summary for 261495

Results for any subcontracted analyses are not included in this summary.

Client : Acton Mickelson Environmental
Project : PAVILLION
Location : Pavillion, WY

Client Sample ID : FB-1-10062014 Laboratory Sample ID : 261495-001

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	12	J	50	11	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	460	Y	54	18	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C
Acetone	2.1	J	10	0.4	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
TIC:Hexadecanoic Acid	36	J			ug/L	As Recd	1.000	EPA 8270C	EPA 3520C
TIC:Octadecanoic acid	18	J			ug/L	As Recd	1.000	EPA 8270C	EPA 3520C
TIC:Unknown 1	5.2	J			ug/L	As Recd	1.000	EPA 8270C	EPA 3520C
TIC:Unknown 2	11	J			ug/L	As Recd	1.000	EPA 8270C	EPA 3520C

Client Sample ID : TB-1-10062014 Laboratory Sample ID : 261495-004

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	17	J,b	50	11	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Isopropanol	5.8	J	50	2.5	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Acetone	0.8	J	10	0.4	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B

Client Sample ID : FB-1-10062014 Laboratory Sample ID : 261495-005

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
TIC:3-Hexen-1-ol, (Z)-	12	J			ug/L	As Recd	1.000	EPA 8270C	EPA 3520C
TIC:Hexadecanoic Acid	20	J			ug/L	As Recd	1.000	EPA 8270C	EPA 3520C
TIC:Octadecanoic acid	7.4	J			ug/L	As Recd	1.000	EPA 8270C	EPA 3520C

J = Estimated value
Y = Sample exhibits chromatographic pattern which does not resemble standard
b = See narrative

Laboratory Job Number 261495

ANALYTICAL REPORT

TPH-Purgeables and/or BTXE by GC

Matrix: Water

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 5030B
Project#:	PAVILLION	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	10/06/14
Units:	ug/L	Received:	10/07/14
Diln Fac:	1.000		

Field ID:	FB-1-10062014	Batch#:	216264
Type:	SAMPLE	Analyzed:	10/09/14
Lab ID:	261495-001		

Analyte	Result	RL	MDL
Gasoline C7-C12	12 J	50	11

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	110	77-128

Field ID:	TB-1-10062014	Batch#:	216638
Type:	SAMPLE	Analyzed:	10/21/14
Lab ID:	261495-004		

Analyte	Result	RL	MDL
Gasoline C7-C12	17 J b	50	11

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	116 b	77-128

Type:	BLANK	Batch#:	216264
Lab ID:	QC761044	Analyzed:	10/09/14

Analyte	Result	RL	MDL
Gasoline C7-C12	12 J	50	11

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	114	77-128

Type:	BLANK	Batch#:	216638
Lab ID:	QC762516	Analyzed:	10/21/14

Analyte	Result	RL	MDL
Gasoline C7-C12	15 J	50	11

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	113	77-128

J= Estimated value
b= See narrative
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 5030B
Project#:	PAVILLION	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC761043	Batch#:	216264
Matrix:	Water	Analyzed:	10/09/14
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,107	111	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	114	77-128

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 5030B
Project#:	PAVILLION	Analysis:	EPA 8015B
Field ID:	FB-1-10062014	Batch#:	216264
MSS Lab ID:	261495-001	Sampled:	10/06/14
Matrix:	Water	Received:	10/07/14
Units:	ug/L	Analyzed:	10/09/14
Diln Fac:	1.000		

Type: MS Lab ID: QC761083

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	12.38	2,000	2,190	109	74-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	112	77-128

Type: MSD Lab ID: QC761084

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,144	107	74-120	2	27

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	113	77-128

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 5030B
Project#:	PAVILLION	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC762515	Batch#:	216638
Matrix:	Water	Analyzed:	10/21/14
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,121	112	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	112	77-128

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 5030B
Project#:	PAVILLION	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	216638
MSS Lab ID:	261851-002	Sampled:	10/20/14
Matrix:	Water	Received:	10/20/14
Units:	ug/L	Analyzed:	10/21/14
Diln Fac:	1.000		

Type: MS Lab ID: QC762517

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<10.56	2,000	1,987	99	74-120

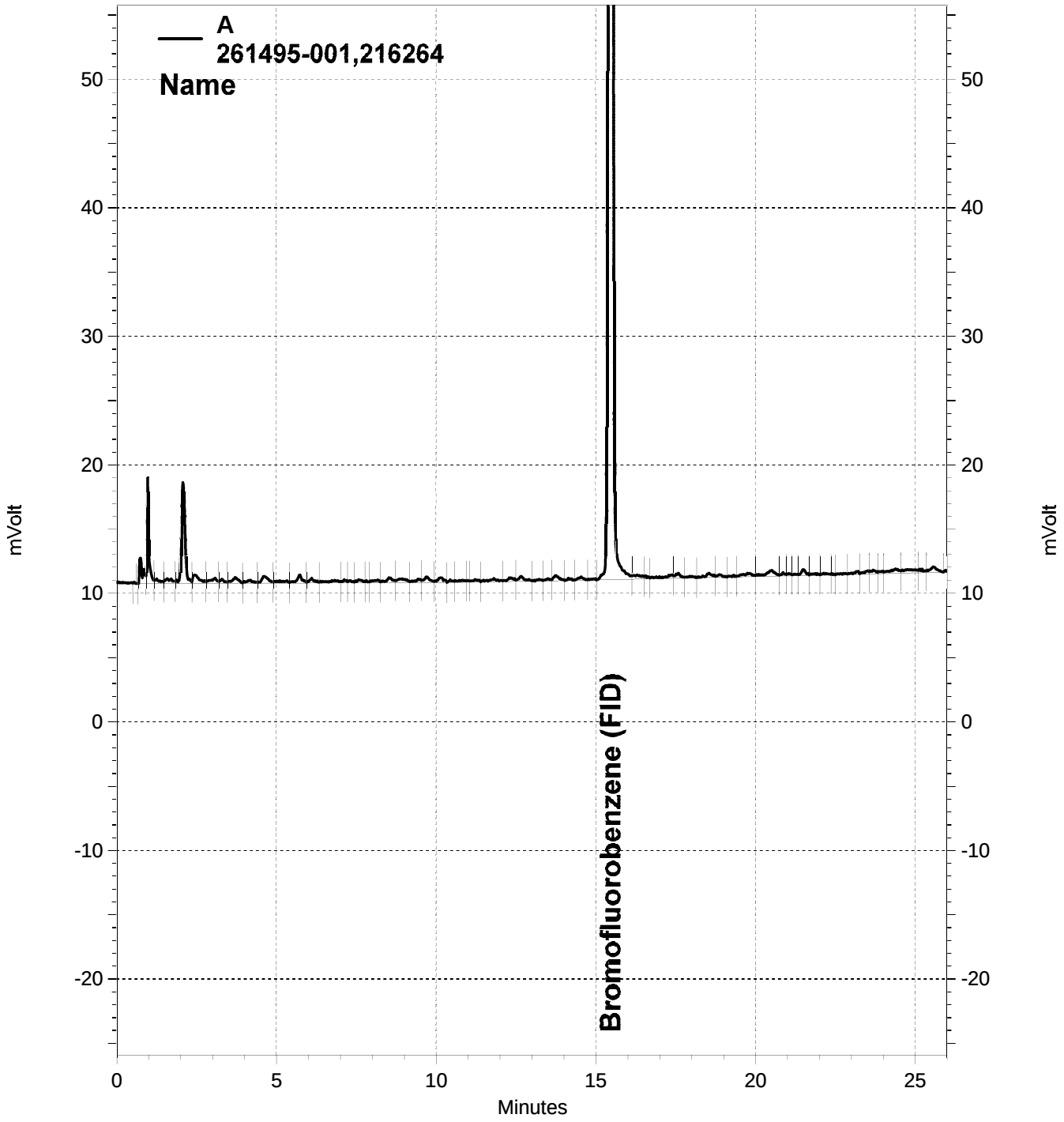
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	119	77-128

Type: MSD Lab ID: QC762518

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,980	99	74-120	0	27

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	117	77-128

RPD= Relative Percent Difference



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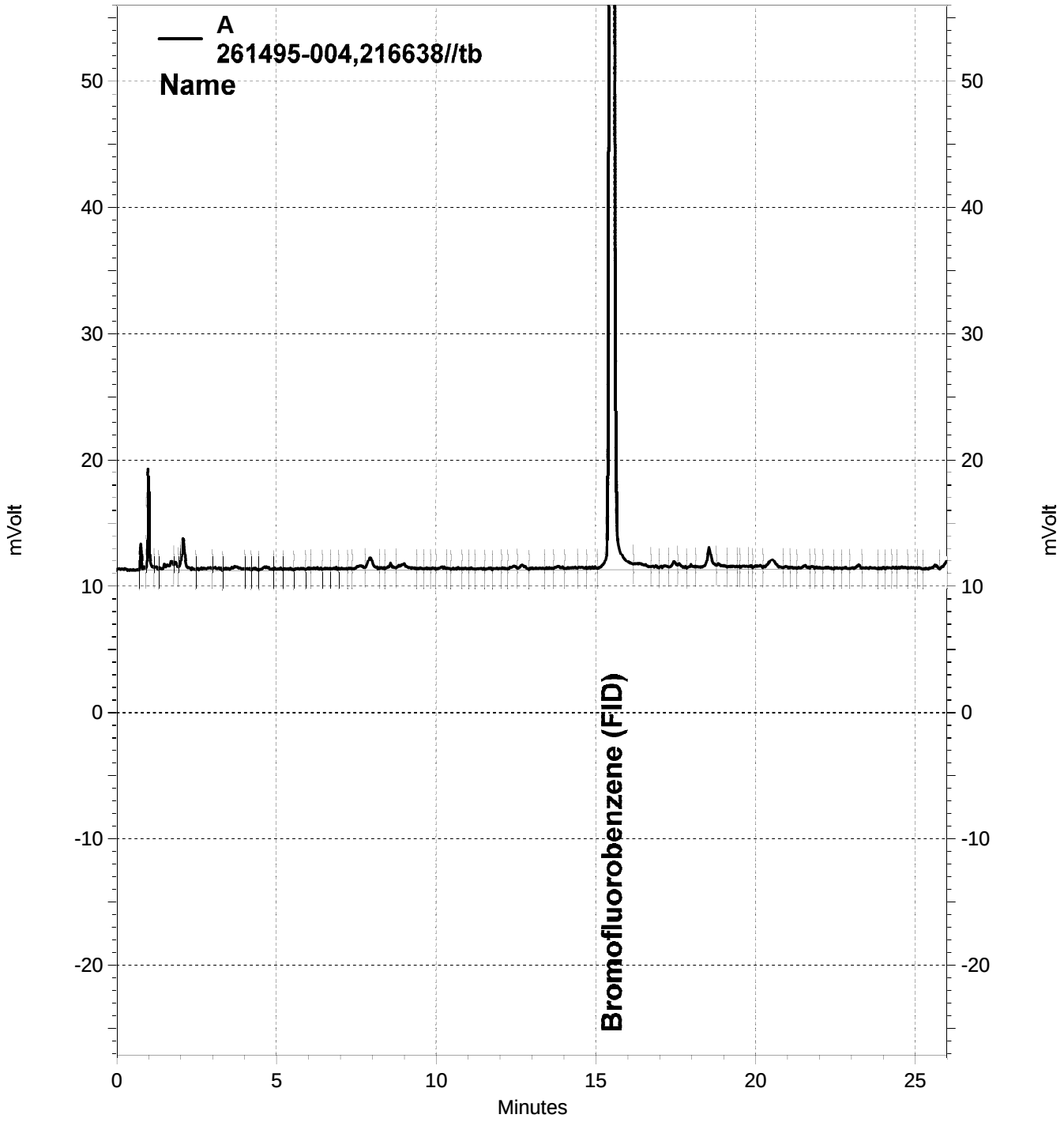

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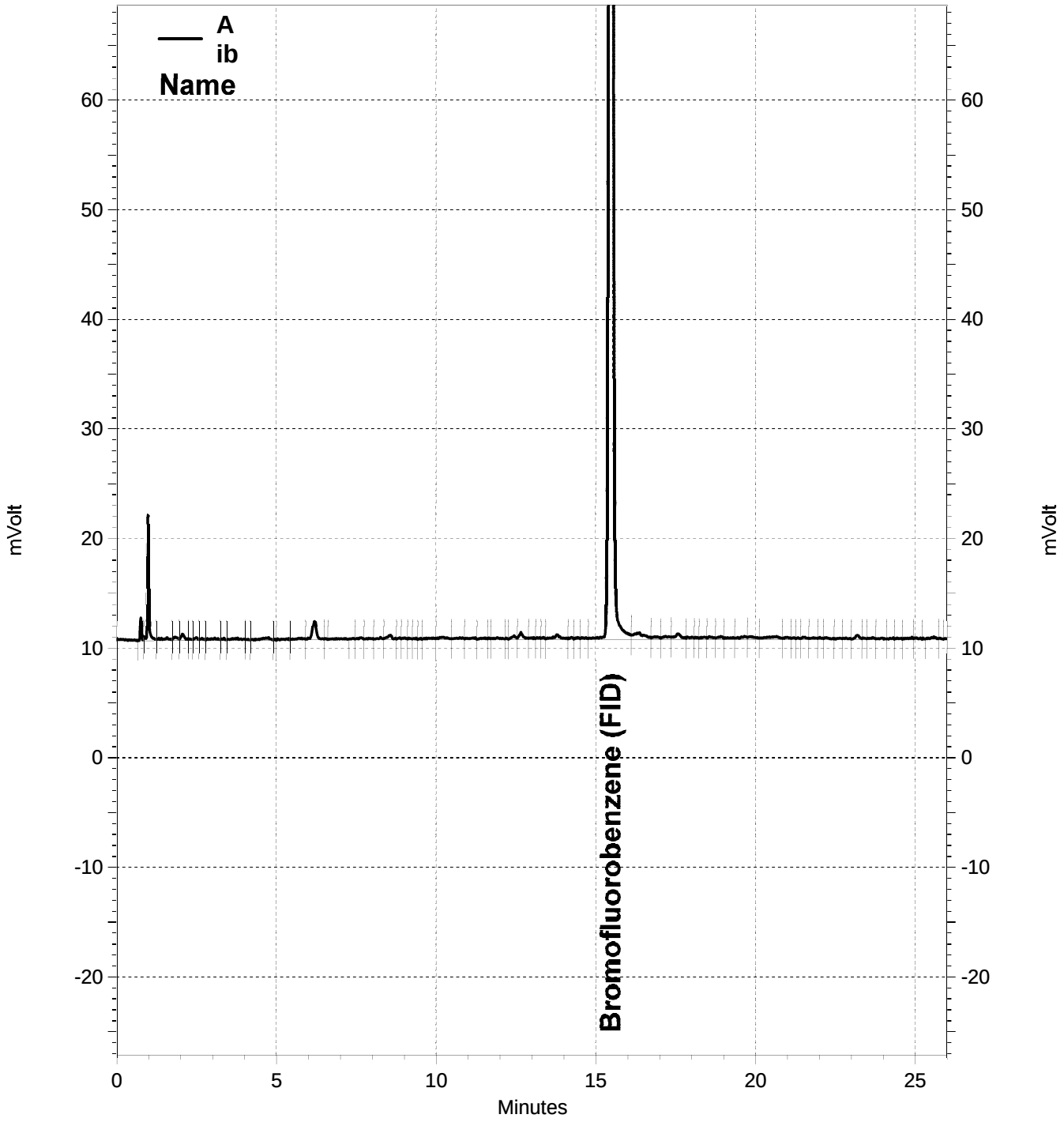

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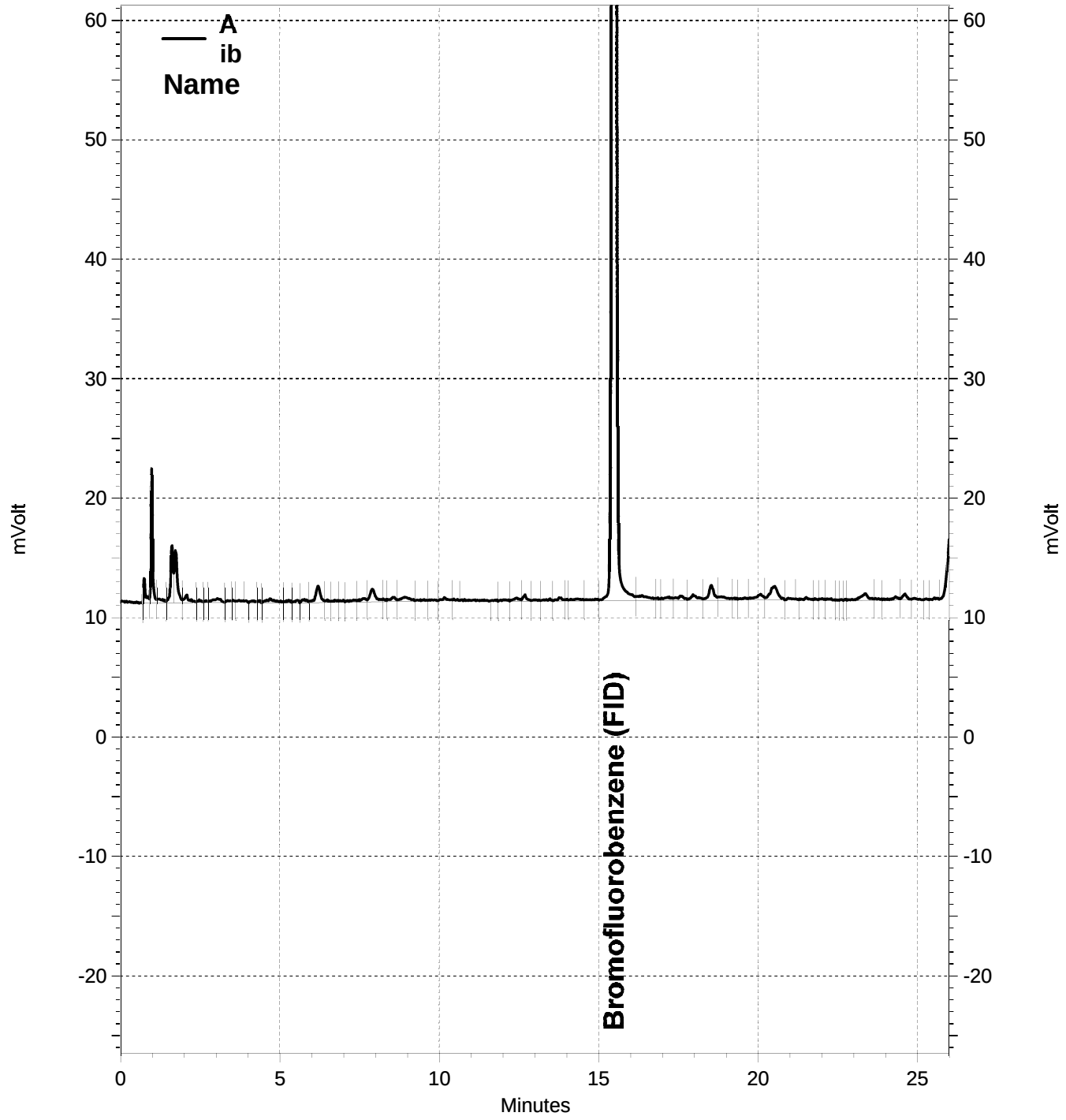

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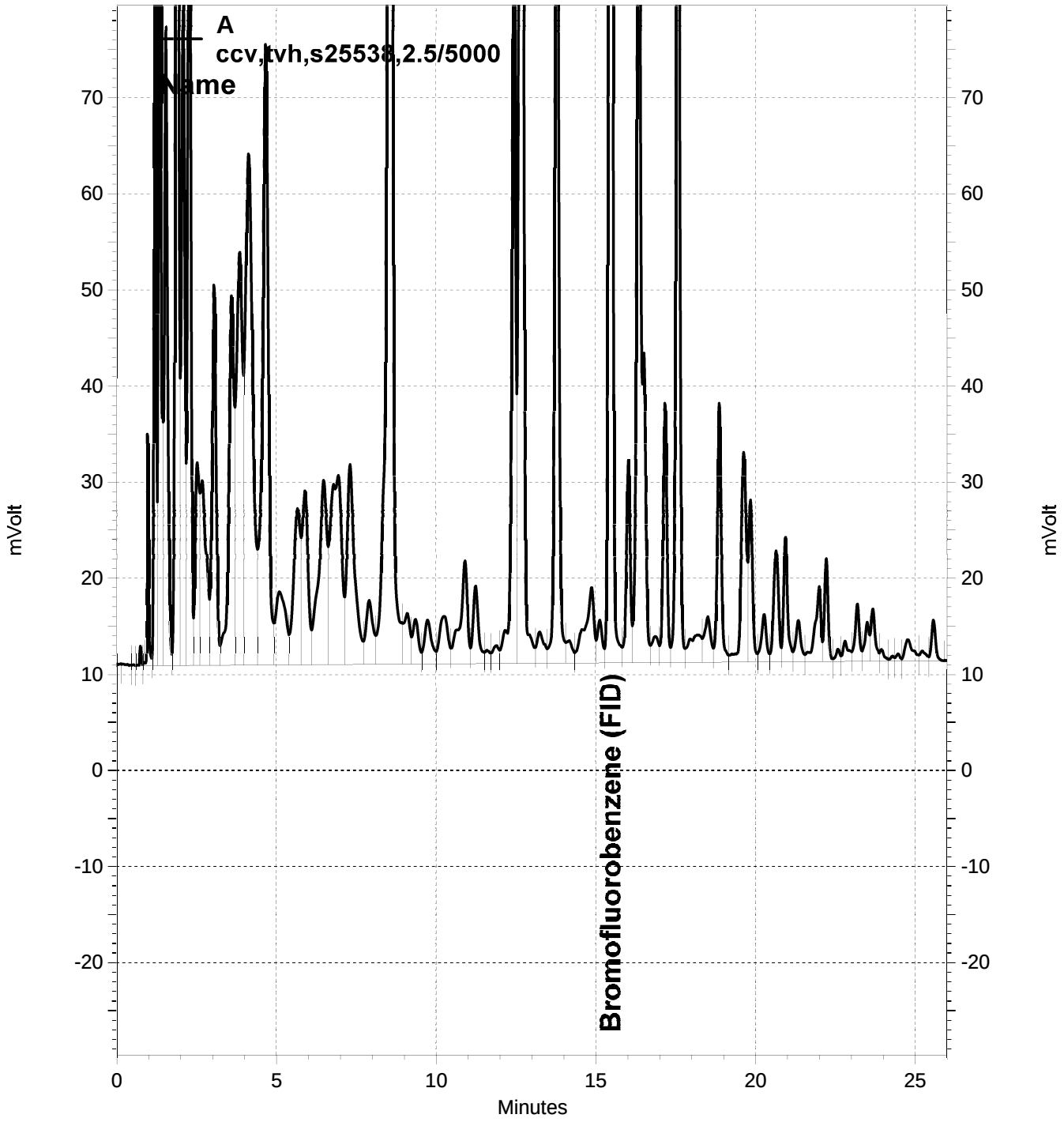

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Initial & Continuing Calibration Data

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 261495 GCVOA Water: EPA 8015B

Inst : GC07
Calnum : 324091754001
Units : ng

Name : tvh/bfb_063
Date : 04-MAR-2014 17:50
X Axis : R

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	063_002	324091754002	TVH_14	04-MAR-2014 17:50	S24210 (1000X), S24314 (5000X)
L2	063_003	324091754003	TVH_15	04-MAR-2014 18:26	S24209 (1000X), S24314 (5000X)
L3	063_004	324091754004	TVH_16	04-MAR-2014 19:02	S24208 (1000X), S24314 (5000X)
L4	063_005	324091754005	TVH_17	04-MAR-2014 19:38	S24207 (2000X), S24314 (5000X)
L5	063_006	324091754006	TVH_18	04-MAR-2014 20:14	S24207 (1000X), S24314 (5000X)

Analyte	Ch	L1	L2	L3	L4	L5	Type	a0	a1	a2	Avg	r^2 %RSD	MnR^2	MxRSD	Flg
Gasoline C7-C12	A	3251.1	2408.8	2458.5	2380.7	2334.7	AVRG		3.90E-4		2566.7	15	0.995	20	
Bromofluorobenzene (FID)	A	2130.5	2017.7	2097.4	2082.8	2095.6	AVRG		4.80E-4		2084.8	2	0.995	20	

Spiked Amounts / Drifts	Ch	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D
Gasoline C7-C12	A	250.00	**27**	2500.0	-6	10000	-4	25000	-7	50000	-9
Bromofluorobenzene (FID)	A	900.00	2	900.00	-3	900.00	1	900.00	0	900.00	1

Analyst: MAC Date: 03/05/14 Reviewer: EAH Date: 03/05/14

Instrument amount = a0 + response * a1 + response^2 * a2; AVRG=Average response factor

CURTIS & TOMPKINS 2ND SOURCE CALIBRATION SUMMARY FOR 261495 GCVOA Water
EPA 8015B

Inst : GC07 Name : tvh/bfb_063
Calnum : 324091754001 Cal Date : 04-MAR-2014

ICV 324091754008 (063_008 04-MAR-2014) stds: S23904 (1000X), S24314 (5000X)

Analyte	Ch	Spiked	Quant	Units	%D	Max	Flags
Gasoline C7-C12	A	10000	9133	ng	-9	15	

Analyst: MAC Date: 03/05/14 Reviewer: EAH Date: 03/05/14

CURTIS & TOMPKINS SPIKE USER REPORT FOR 261495 GCVOA Water
EPA 8015B

Inst : GC07 Run Name : QC761043 IDF : 1.0
Seqnum : 324406689003.5 File : 282_003 Time : 09-OCT-2014 11:21
Cal : 324091754001 Caldate : 04-MAR-2014
Standards: S25538 (2000X), S25475 (5000X)

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Gasoline C7-C12	A	2566.7	2840.8	5000	5534	ng	11	15	u
Bromofluorobenzene (FID)	A	2084.8	2374.3	900.0	1025	ng	14	15	u

DAR 10/10/14 : ccv/lcs,qc761043,216264 [general version]

Analyst: MAC Date: 10/19/14 Reviewer: EAH Date: 10/22/14

u=use

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 GCVOA Water
EPA 8015B

Inst : GC07 Run Name : TVH IDF : 1.0
Seqnum : 324406689011 File : 282_011 Time : 09-OCT-2014 17:18
Cal : 324091754001 Caldate : 04-MAR-2014
Standards: S25538 (1000X), S25475 (5000X)

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Gasoline C7-C12	A	2566.7	2766.3	10000	10780	ng	8	15	
Bromofluorobenzene (FID)	A	2084.8	2437.0	900.0	1052	ng	**17**	15	c+

DAR 10/10/14 [Bromofluorobenzene (FID) A]: Passes control limits.

Analyst: DAR Date: 10/10/14 Reviewer: EAH Date: 10/13/14

+=high bias c=CCV

CURTIS & TOMPKINS SPIKE USER REPORT FOR 261495 GCVOA Water
EPA 8015B

Inst : GC07 Run Name : QC762515 IDF : 1.0
Seqnum : 324423869003.3 File : 294_003 Time : 21-OCT-2014 09:41
Cal : 324091754001 Caldate : 04-MAR-2014
Standards: S25538 (2000X), S25475 (5000X)

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Gasoline C7-C12	A	2566.7	2877.0	5000	5604	ng	12	15	u
Bromofluorobenzene (FID)	A	2084.8	2344.8	900.0	1012	ng	12	15	u

DAR 10/22/14 : ccv/lcs,qc762515,216638 [general version]

Analyst: DAR Date: 10/22/14 Reviewer: EAH Date: 10/22/14

u=use

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 GCVOA Water
EPA 8015B

Inst : GC07 Run Name : TVH IDF : 1.0
Seqnum : 324423869015 File : 294_015 Time : 21-OCT-2014 18:23
Cal : 324091754001 Caldate : 04-MAR-2014
Standards: S25538 (1000X), S25475 (5000X)

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Gasoline C7-C12	A	2566.7	2609.4	10000	10170	ng	2	15	
Bromofluorobenzene (FID)	A	2084.8	2416.4	900.0	1043	ng	**16**	15	c+

DAR 10/22/14 [Bromofluorobenzene (FID) A]: Passes control limits.

Analyst: DAR Date: 10/22/14 Reviewer: EAH Date: 10/22/14

+=high bias c=CCV

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 GCVOA Water
EPA 8015B

Inst : GC07 Run Name : TVH IDF : 1.0
Seqnum : 324423869017 File : 294_017 Time : 21-OCT-2014 19:35
Cal : 324091754001 Caldate : 04-MAR-2014
Standards: S25538 (1000X), S25475 (5000X)

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Gasoline C7-C12	A	2566.7	2594.1	10000	10110	ng	1	15	
Bromofluorobenzene (FID)	A	2084.8	2398.4	900.0	1035	ng	15	15	

Analyst: DAR Date: 10/22/14 Reviewer: EAH Date: 10/22/14

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 GCVOA Water
EPA 8015B

Inst : GC07 Run Name : TVH IDF : 1.0
Seqnum : 324423869025 File : 294_025 Time : 22-OCT-2014 00:24
Cal : 324091754001 Caldate : 04-MAR-2014
Standards: S25538 (666.7X), S25475 (5000X)

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Gasoline C7-C12	A	2566.7	2605.5	15000	15230	ng	2	15	
Bromofluorobenzene (FID)	A	2084.8	2415.3	900.0	1043	ng	**16**	15	c+

DAR 10/22/14 [Bromofluorobenzene (FID) A]: Passes control limits.

Analyst: DAR Date: 10/22/14 Reviewer: EAH Date: 10/22/14

+=high bias c=CCV

Logbooks & Sequences

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 324091754

Instrument : GC07 Begun : 03/04/14 17:14
Method : EPA 8015B, EPA 8021B SOP Version : TVH_BTXE_rv22

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	063_001	IB	CALIB			03/04/14 17:14	1.0	1	
002	063_002	ICAL	TVH_14			03/04/14 17:50	1.0	2 1	
003	063_003	ICAL	TVH_15			03/04/14 18:26	1.0	3 1	
004	063_004	ICAL	TVH_16			03/04/14 19:02	1.0	4 1	
005	063_005	ICAL	TVH_17			03/04/14 19:38	1.0	5 1	
006	063_006	ICAL	TVH_18			03/04/14 20:14	1.0	5 1	
007	063_007	X	IB			03/04/14 20:50	1.0	1	
008	063_008	ICV	TVH			03/04/14 21:26	1.0	6 1	
009	063_009	X	ICV			03/04/14 22:02	1.0	6 1	
010	063_010	CMARKER	CMARK			03/04/14 22:39	1.0	7 1	
011	063_011	IB	ICALIB			03/04/14 23:15	1.0	1	
012	063_012	ICAL	BTXE_1			03/04/14 23:51	1.0	8 1	
013	063_013	ICAL	MBTXE_2			03/05/14 00:28	1.0	9 1	
014	063_014	ICAL	MBTXE_3			03/05/14 01:04	1.0	9 1	
015	063_015	ICAL	MBTXE_4			03/05/14 01:40	1.0	9 1	
016	063_016	ICAL	MBTXE_5			03/05/14 02:16	1.0	10 1	
017	063_017	ICAL	MBTXE_6			03/05/14 02:53	1.0	10 1	
018	063_018	ICAL	MBTXE_7			03/05/14 03:29	1.0	10 1	
019	063_019	ICAL	MTBE_7			03/05/14 04:05	1.0	11 1	
020	063_020	X	IB			03/05/14 04:41	1.0	1	
021	063_021	ICV	MBTXE			03/05/14 05:17	1.0	12 1	
022	063_022	X	ICV			03/05/14 05:53	1.0	12 1	

MAC 03/05/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 22.

Reviewed by: MAC Date: 03/05/14

Standards used: 1=S24314 2=S24210 3=S24209 4=S24208 5=S24207 6=S23904 7=S23668 8=S23709 9=S23708 10=S23707 11=S24099 12=S23834

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CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 324406689

Instrument : GC07 Begun : 10/09/14 10:09
Method : EPA 8015B, EPA 8021B SOP Version : TVH_BTXE_rv22

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	282_001	X	CMARKER			10/09/14 10:09	1.0	1 2	
002	282_002	CCV/BS	QC761041	Water	216264	10/09/14 10:45	1.0	3 2	
003	282_003	CCV/LCS	QC761043	Water	216264	10/09/14 11:21	1.0	4 2	
004	282_004	BSD	QC761042	Water	216264	10/09/14 11:57	1.0	3 2	
005	282_005	BLANK	QC761044	Water	216264	10/09/14 12:34	1.0	2	
006	282_006	SAMPLE	261510-001	Water	216264	10/09/14 13:10	1.0	2	
007	282_007	SAMPLE	261495-004	Water	216264	10/09/14 14:53	1.0	2	
008	282_008	MSS	261495-001	Water	216264	10/09/14 15:29	1.0	2	
009	282_009	MS	QC761083	Water	216264	10/09/14 16:05	1.0	4 2	
010	282_010	MSD	QC761084	Water	216264	10/09/14 16:42	1.0	4 2	
011	282_011	CCV	TVH			10/09/14 17:18	1.0	4 2	
012	282_012	CCV	TVH			10/09/14 17:54	1.0	4 2	
013	282_013	X	CMARKER			10/09/14 18:30	1.0	1 2	
014	282_014	SAMPLE	261537-001	Water	216264	10/09/14 19:06	1000	2	headspace > 1 mL
015	282_015	X	IB			10/09/14 19:42	1.0	2	
016	282_016	SAMPLE	261536-001	Water	216264	10/09/14 20:18	1000	2	headspace <= 1 mL
017	282_017	X	IB			10/09/14 20:54	1.0	2	
018	282_018	SAMPLE	261535-001	Water	216264	10/09/14 21:30	1000	2	headspace > 1 mL
019	282_019	CCV	BTXE			10/09/14 22:07	1.0	3 2	
020	282_020	CCV	BTXE			10/09/14 22:43	1.0	3 2	
021	282_021	X	CMARKER			10/09/14 23:19	1.0	1 2	

DAR 10/10/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 21.

Reviewed by: DAR Date: 10/10/14

Standards used: 1=S25478 2=S25475 3=S25729 4=S25538

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CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 324423869

Instrument : GC07 Begun : 10/21/14 08:29
Method : EPA 8015B, EPA 8021B SOP Version : TVH_BTXE_rv22

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	294_001	X	CMARKER			10/21/14 08:29	1.0	1 2	
002	294_002	CCV	BTXE			10/21/14 09:05	1.0	3 2	
003	294_003	CCV/LCS	QC762515	Water	216638	10/21/14 09:41	1.0	4 2	
004	294_004	CCV	BTXE			10/21/14 10:17	1.0	3 2	
005	294_005	BLANK	QC762516	Water	216638	10/21/14 10:54	1.0	2	
006	294_006	SAMPLE	261495-004	Water	216638	10/21/14 12:57	1.0	2	sh
007	294_007	LOQ	261519-001	Water	216638	10/21/14 13:33	1.0	5 2	
008	294_008	CCV	BTXE			10/21/14 14:10	1.0	3 2	
009	294_009	CCV	BTXE			10/21/14 14:46	1.0	3 2	
010	294_010	LOQ	261519-002	Water	216638	10/21/14 15:22	1.0	4 2	
011	294_011	SAMPLE	261609-001	Water	216638	10/21/14 15:58	1.0	2	
012	294_012	SAMPLE	261609-002	Water	216638	10/21/14 16:34	1.0	2	pH > 2
013	294_013	SAMPLE	261609-003	Water	216638	10/21/14 17:10	1.0	2	pH > 2
014	294_014	SAMPLE	261609-004	Water	216638	10/21/14 17:47	1.0	2	pH > 2
015	294_015	CCV	TVH			10/21/14 18:23	1.0	4 2	
016	294_016	X	CMARKER			10/21/14 18:59	1.0	1 2	
017	294_017	CCV	TVH			10/21/14 19:35	1.0	4 2	
018	294_018	SAMPLE	261851-003	Water	216638	10/21/14 20:11	1.0	2	
019	294_019	MSS	261851-002	Water	216638	10/21/14 20:47	1.0	2	
020	294_020	SAMPLE	261851-001	Water	216638	10/21/14 21:23	1.0	2	
021	294_021	MS	QC762517	Water	216638	10/21/14 22:00	1.0	4 2	
022	294_022	MSD	QC762518	Water	216638	10/21/14 22:35	1.0	4 2	
023	294_023	SAMPLE	261868-001	Water	216638	10/21/14 23:12	1.0	2	headspace <= 1 mL, pH > 2, 4:GAS:6-10=170000
024	294_024	X	TVH			10/21/14 23:48	1.0	4 2	
025	294_025	CCV	TVH			10/22/14 00:24	1.0	4 2	
026	294_026	X	CMARKER			10/22/14 01:00	1.0	1 2	
027	294_027	SAMPLE	261868-001	Water	216638	10/22/14 08:48	25.0	2	headspace <= 1 mL, pH > 2
028	294_028	CCV	TVH			10/22/14 09:24	1.0	4 2	
029	294_029	X	CMARKER			10/22/14 10:00	1.0	1 2	

DAR 10/22/14 : xed out file 24 ccv out low

DAR 10/22/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 29.

Reviewed by: DAR Date: 10/22/14

Standards used: 1=S25478 2=S25475 3=S25729 4=S25538 5=S25453

Flags used: sh=out of sample hold

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Laboratory Job Number 261495

ANALYTICAL REPORT

TPH-Extractables by GC

Matrix: Water

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 3520C
Project#:	PAVILLION	Analysis:	EPA 8015B
Field ID:	FB-1-10062014	Batch#:	216187
Matrix:	Water	Sampled:	10/06/14
Units:	ug/L	Received:	10/07/14
Diln Fac:	1.000	Prepared:	10/07/14

Type:	SAMPLE	Analyzed:	10/09/14
Lab ID:	261495-001	Cleanup Method:	EPA 3630C

Analyte	Result	RL	MDL
Diesel C10-C24	460 Y	54	18
Diesel C10-C24 (SGCU)	ND	54	18

Surrogate	%REC	Limits
o-Terphenyl	113	66-129
o-Terphenyl (SGCU)	113	66-129

Type:	BLANK	Analyzed:	10/08/14
Lab ID:	QC760735	Cleanup Method:	EPA 3630C

Analyte	Result	RL	MDL
Diesel C10-C24	ND	50	16
Diesel C10-C24 (SGCU)	ND	50	16

Surrogate	%REC	Limits
o-Terphenyl	103	66-129
o-Terphenyl (SGCU)	105	66-129

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit
SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 3520C
Project#:	PAVILLION	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC760736	Batch#:	216187
Matrix:	Water	Prepared:	10/07/14
Units:	ug/L	Analyzed:	10/08/14

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,395	96	61-120
Diesel C10-C24 (SGCU)	2,500	2,553	102	61-120

Surrogate	%REC	Limits
o-Terphenyl	104	66-129
o-Terphenyl (SGCU)	125	66-129

SGCU= Silica gel cleanup

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 3520C
Project#:	PAVILLION	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	216187
MSS Lab ID:	261459-001	Sampled:	10/06/14
Matrix:	Water	Received:	10/06/14
Units:	ug/L	Prepared:	10/07/14
Diln Fac:	1.000	Analyzed:	10/08/14

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC760738

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24 (SGCU)	16.37	2,451	2,327	94	65-120

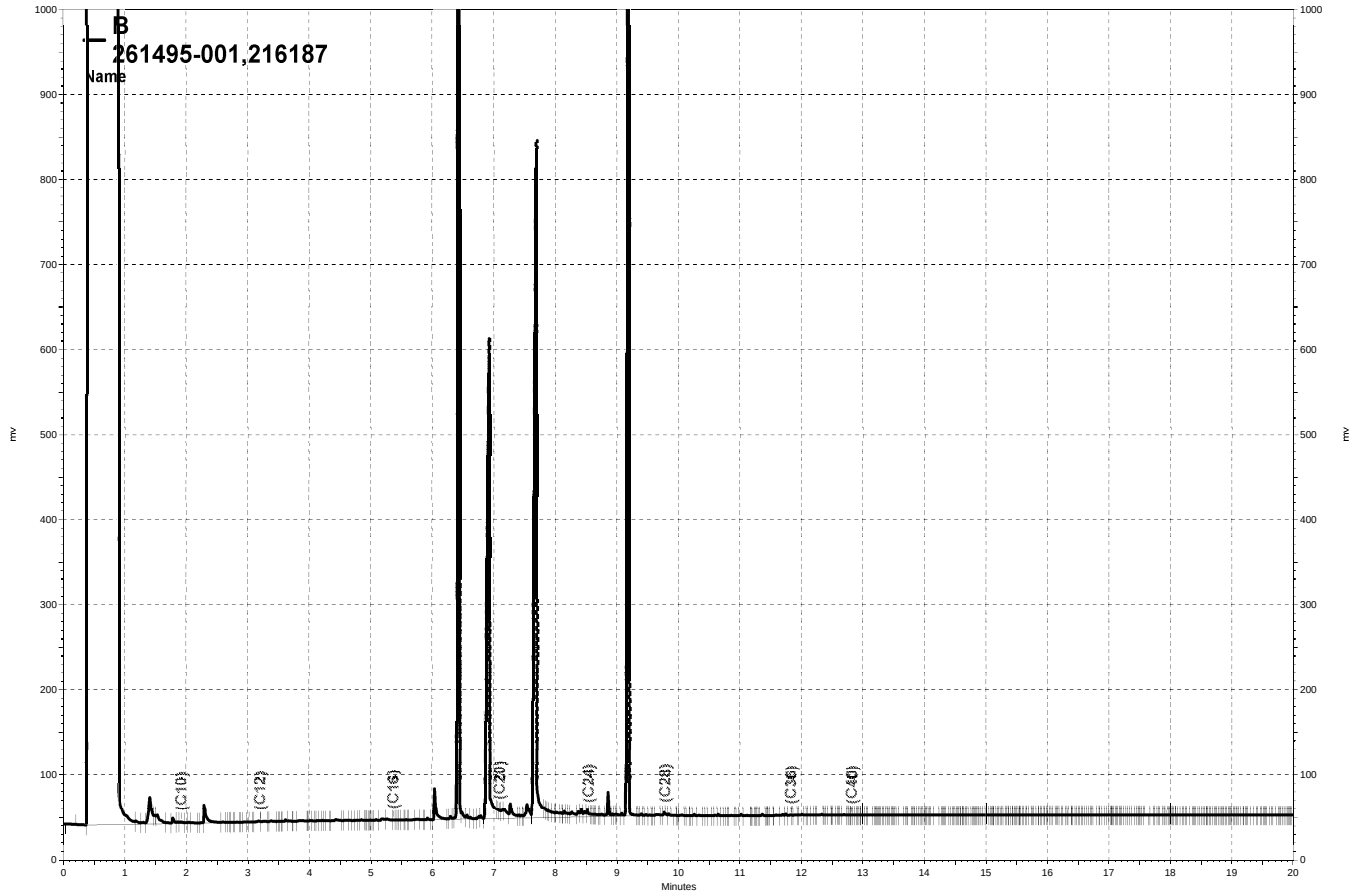
Surrogate	%REC	Limits
o-Terphenyl (SGCU)	112	66-129

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC760739

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24 (SGCU)	2,451	2,397	97	65-120	3	26

Surrogate	%REC	Limits
o-Terphenyl (SGCU)	112	66-129

RPD= Relative Percent Difference
SGCU= Silica gel cleanup



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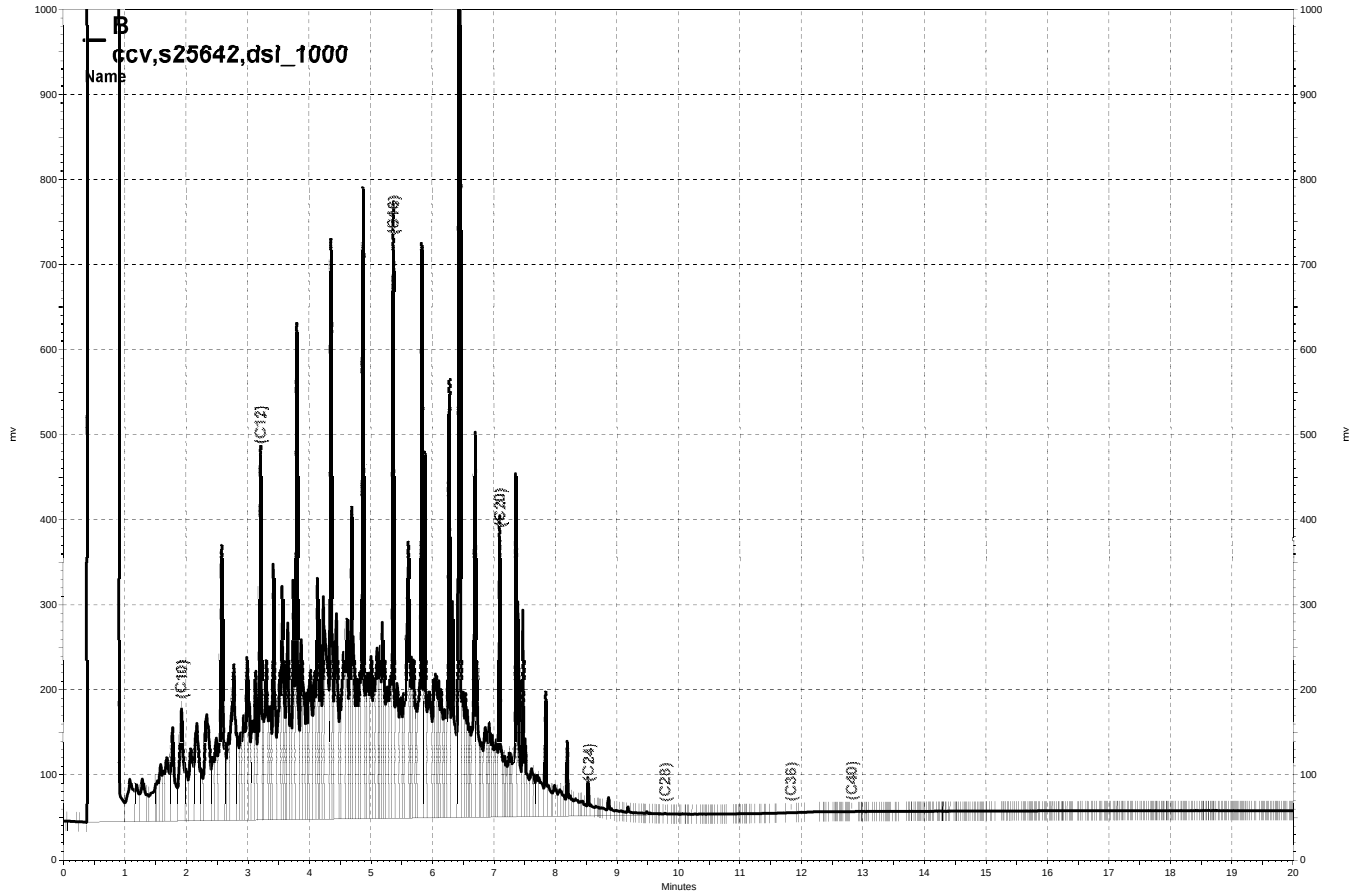

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Initial & Continuing Calibration Data

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 261495 GCSV Water: EPA 8015B

Inst : GC14B
Calnum : 224317392001
Units : mg/L

Name : OTPHEX_220
Date : 08-AUG-2014 20:04
X Axis : R

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	220_009	224317392009	HEX OTP_5	08-AUG-2014 20:04	S25390
L2	220_010	224317392010	HEX OTP_10	08-AUG-2014 20:32	S25391
L3	220_011	224317392011	HEX OTP_25	08-AUG-2014 21:00	S25392
L4	220_012	224317392012	HEX OTP_50	08-AUG-2014 21:28	S25393
L5	220_013	224317392013	HEX OTP_100	08-AUG-2014 21:56	S25394
L6	220_014	224317392014	HEX OTP_200	08-AUG-2014 22:25	S25395

Analyte	Ch	L1	L2	L3	L4	L5	L6	Type	a0	a1	a2	Avg	r^2 %RSD	MnR^2	MxRSD	Flg
o-Terphenyl	B	33576	34339	34327	34209	36598	39855	AVRG		2.82E-5		35484	7	0.995	20	

Spiked Amounts / Drifts	Ch	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D
o-Terphenyl	B	5.0000	-5	10.000	-3	25.000	-3	50.000	-4	100.00	3	200.00	12

JDG 08/11/14 : Corrected automatically drawn baseline in all levels.

Analyst: JDG Date: 08/11/14 Reviewer: EAH Date: 08/12/14

Instrument amount = a0 + response * a1 + response^2 * a2; AVRG=Average response factor

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 261495 GCSV Water: EPA 8015B

Inst : GC14B
Calnum : 224317392002
Units : mg/L

Name : DSL_220
Date : 08-AUG-2014 23:22
X Axis : R

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	220_016	224317392016	DSL_10	08-AUG-2014 23:22	S25266
L2	220_017	224317392017	DSL_100	08-AUG-2014 23:50	S25267
L3	220_018	224317392018	DSL_500	09-AUG-2014 00:19	S25268
L4	220_019	224317392019	DSL_1000	09-AUG-2014 00:47	S25269
L5	220_020	224317392020	DSL_5000	09-AUG-2014 01:15	S24515

Analyte	Ch	L1	L2	L3	L4	L5	Type	a0	a1	a2	Avg	r^2 %RSD	MnR^2	MxRSD	Flg
Diesel C10-C24	B	30628	28120	28618	30917	32592	AVRG		3.31E-5		30175	6	0.995	20	

Spiked Amounts / Drifts	Ch	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D
Diesel C10-C24	B	10.000	2	100.00	-7	500.00	-5	1000.0	2	5000.0	8

JDG 08/11/14 : Corrected automatically drawn baseline in DSL_10 (220_016).

Analyst: JDG Date: 08/11/14 Reviewer: EAH Date: 08/12/14

Instrument amount = a0 + response * a1 + response^2 * a2; AVRG=Average response factor

CURTIS & TOMPKINS 2ND SOURCE CALIBRATION SUMMARY FOR 261495 GCSV Water
EPA 8015B

Inst : GC14B
Calnum : 224317392002

Name : DSL_220
Cal Date : 08-AUG-2014

ICV 224317392022 (220_022 09-AUG-2014) stds: S25245

Analyte	Ch	Spiked	Quant	Units	%D	Max	Flags
Diesel C10-C24	B	500.0	521.9	mg/L	4	15	

Analyst: JDG Date: 08/11/14 Reviewer: EAH Date: 08/12/14

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 261495 GCSV Water: EPA 8015B

Inst : GC15B
Calnum : 164206385001
Units : mg/L

Name : OTPHEX_143
Date : 23-MAY-2014 15:23
X Axis : R

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	143b009	164206385009	HEXOTP_5	23-MAY-2014 15:23	S24342
L2	143b010	164206385010	HEXOTP_10	23-MAY-2014 15:50	S24343
L3	143b011	164206385011	HEXOTP_25	23-MAY-2014 16:18	S24344
L4	143b012	164206385012	HEXOTP_50	23-MAY-2014 16:45	S24345
L5	143b013	164206385013	HEXOTP_100	23-MAY-2014 17:13	S24346
L6	143b014	164206385014	HEXOTP_200	23-MAY-2014 17:41	S24347

Analyte	L1	L2	L3	L4	L5	L6	Type	a0	a1	a2	Avg	r^2 %RSD	MnR^2	MxRSD	Flg
o-Terphenyl	54783	55332	54309	55166	56027	66457	AVRG		1.75E-5		57013	8	0.995	20	

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D
o-Terphenyl	5.0000	-4	10.000	-3	25.000	-5	50.000	-3	100.00	-2	200.00	17

JDG 05/27/14 : Corrected automatically drawn baseline in multiple levels.

JDG 05/27/14 : Samples that require hexacosane will not be analyzed on this instrument.

Analyst: JDG Date: 05/27/14 Reviewer: EAH Date: 05/27/14

Instrument amount = a0 + response * a1 + response^2 * a2; AVRG=Average response factor

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 261495 GCSV Water: EPA 8015B

Inst : GC15B
Calnum : 164206385002
Units : mg/L

Name : DSL_143
Date : 23-MAY-2014 18:36
X Axis : R

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	143b016	164206385016	DSL_10	23-MAY-2014 18:36	S24516
L2	143b017	164206385017	DSL_100	23-MAY-2014 19:03	S24517
L3	143b018	164206385018	DSL_500	23-MAY-2014 19:30	S24518
L4	143b019	164206385019	DSL_1000	23-MAY-2014 19:58	S24519
L5	143b020	164206385020	DSL_5000	23-MAY-2014 20:26	S24515

Analyte	L1	L2	L3	L4	L5	Type	a0	a1	a2	Avg	r^2 %RSD	MnR^2	MxRSD	Flg
Diesel C10-C24	46289	63325	46837	50168	51135	AVRG		1.94E-5		51551	13	0.995	20	

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D
Diesel C10-C24	10.000	-10	100.00	**23**	500.00	-9	1000.0	-3	5000.0	-1

JDG 05/27/14 : Corrected automatically drawn baseline in DSL_100 (143b017).

Analyst: JDG Date: 05/27/14 Reviewer: EAH Date: 05/27/14

Instrument amount = a0 + response * a1 + response^2 * a2; AVRG=Average response factor

CURTIS & TOMPKINS 2ND SOURCE CALIBRATION SUMMARY FOR 261495 GCSV Water
EPA 8015B

Inst : GC15B
Calnum : 164206385002

Name : DSL_143
Cal Date : 23-MAY-2014

ICV 164206385022 (143b022 23-MAY-2014) stds: S24580

Analyte	Spiked	Quant	Units	%D	Max	Flags
Diesel C10-C24	500.0	473.3	mg/L	-5	15	

Analyst: JDG Date: 05/27/14 Reviewer: EAH Date: 05/27/14

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 GCSV Water
EPA 8015B

Inst : GC14B Run Name : DSL_500 IDF : 1.0
Seqnum : 224405094003 File : 281_003 Time : 08-OCT-2014 08:30
Standards: S25641

Analyte	Ch	Cal	Caldate	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Diesel C10-C24	B	224317392002	08-AUG-2014	30175	31110	500.0	515.5	mg/L	3	15	
o-Terphenyl	B	224317392001	08-AUG-2014	35484	34875	50.00	49.14	mg/L	-2	15	

SFL 10/08/14 : Corrected automatically drawn baseline.

Analyst: SFL Date: 10/08/14 Reviewer: EAH Date: 10/08/14

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 GCSV Water
EPA 8015B

Inst : GC14B Run Name : DSL_250 IDF : 1.0
Seqnum : 224405094015 File : 281_015 Time : 08-OCT-2014 15:28
Standards: S25640

Analyte	Ch	Cal	Caldate	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Diesel C10-C24	B	224317392002	08-AUG-2014	30175	29596	250.0	245.2	mg/L	-2	15	
o-Terphenyl	B	224317392001	08-AUG-2014	35484	34324	50.00	48.37	mg/L	-3	15	

SFL 10/08/14 : Corrected automatically drawn baseline.

SFL 10/08/14 : s25641,dsl_250

EAH 10/08/14 : S25640,dsl-250.

Analyst: SFL Date: 10/08/14 Reviewer: EAH Date: 10/08/14

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 GCSV Water
EPA 8015B

Inst : GC15B Run Name : MO_500 IDF : 1.0
Seqnum : 164405093012 File : 281b012 Time : 08-OCT-2014 12:48
Cal : 164206385001 Caldate : 23-MAY-2014
Standards: S25831

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
o-Terphenyl	57013	60780	50.00	53.30	mg/L	7	15	

Analyst: JDG Date: 10/08/14 Reviewer: EAH Date: 10/08/14

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 GCSV Water
EPA 8015B

Inst : GC15B Run Name : DSL_1000 IDF : 1.0
Seqnum : 164405093013 File : 281b013 Time : 08-OCT-2014 14:02
Standards: S25642

Analyte	Cal	Caldate	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Diesel C10-C24	164206385002	23-MAY-2014	51551	51797	1000	1005	mg/L	0	15	
o-Terphenyl	164206385001	23-MAY-2014	57013	62968	50.00	55.22	mg/L	10	15	

JDG 10/08/14 : Corrected automatically drawn baseline.

Analyst: JDG Date: 10/08/14 Reviewer: EAH Date: 10/08/14

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 GCSV Water
EPA 8015B

Inst : GC15B Run Name : MO_500 IDF : 1.0
Seqnum : 164405093029 File : 281b029 Time : 08-OCT-2014 23:01
Cal : 164206385001 Caldate : 23-MAY-2014
Standards: S25831

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
o-Terphenyl	57013	61859	50.00	54.25	mg/L	9	15	

Analyst: JDG Date: 10/09/14 Reviewer: EAH Date: 10/09/14

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 GCSV Water
EPA 8015B

Inst : GC15B Run Name : DSL_250 IDF : 1.0
Seqnum : 164405093030 File : 281b030 Time : 08-OCT-2014 23:29
Standards: S25640

Analyte	Cal	Caldate	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Diesel C10-C24	164206385002	23-MAY-2014	51551	53558	250.0	259.7	mg/L	4	15	
o-Terphenyl	164206385001	23-MAY-2014	57013	60296	50.00	52.88	mg/L	6	15	

JDG 10/09/14 : Corrected automatically drawn baseline.

Analyst: JDG Date: 10/09/14 Reviewer: EAH Date: 10/09/14

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 GCSV Water
EPA 8015B

Inst : GC15B Run Name : MO_500 IDF : 1.0
Seqnum : 164405093037 File : 281b037 Time : 09-OCT-2014 02:43
Cal : 164206385001 Caldate : 23-MAY-2014
Standards: S25831

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
o-Terphenyl	57013	59172	50.00	51.89	mg/L	4	15	

Analyst: JDG Date: 10/09/14 Reviewer: PRW Date: 10/10/14

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 GCSV Water
EPA 8015B

Inst : GC15B Run Name : DSL_1000 IDF : 1.0
Seqnum : 164405093038 File : 281b038 Time : 09-OCT-2014 03:11
Standards: S25642

Analyte	Cal	Caldate	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Diesel C10-C24	164206385002	23-MAY-2014	51551	51567	1000	1000	mg/L	0	15	
o-Terphenyl	164206385001	23-MAY-2014	57013	61198	50.00	53.67	mg/L	7	15	

JDG 10/09/14 : Corrected automatically drawn baseline.

Analyst: JDG Date: 10/09/14 Reviewer: PRW Date: 10/10/14

Logbooks & Sequences

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 164206385

Instrument : GC15B Begun : 05/23/14 07:45
Method : EPA 8015B SOP Version : TEH_rv18

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	143b001	X	IB			05/23/14 07:45	1.0		
002	143b002	X	IB			05/23/14 08:44	1.0		
003	143b003	X	IB			05/23/14 10:48	1.0		
005	143b005	X	IB			05/23/14 12:58	1.0		
006	143b006	X	CMARKER			05/23/14 13:26	1.0	1	
007	143b007	X	IB			05/23/14 13:53	1.0		
008	143b008	IB	CALIB			05/23/14 14:55	1.0		
009	143b009	ICAL	HEXOTP_5			05/23/14 15:23	1.0	2	
010	143b010	ICAL	HEXOTP_10			05/23/14 15:50	1.0	3	
011	143b011	ICAL	HEXOTP_25			05/23/14 16:18	1.0	4	
012	143b012	ICAL	HEXOTP_50			05/23/14 16:45	1.0	5	
013	143b013	ICAL	HEXOTP_100			05/23/14 17:13	1.0	6	
014	143b014	ICAL	HEXOTP_200			05/23/14 17:41	1.0	7	
015	143b015	IB	CALIB			05/23/14 18:08	1.0		
016	143b016	ICAL	DSL_10			05/23/14 18:36	1.0	8	
017	143b017	ICAL	DSL_100			05/23/14 19:03	1.0	9	
018	143b018	ICAL	DSL_500			05/23/14 19:30	1.0	10	
019	143b019	ICAL	DSL_1000			05/23/14 19:58	1.0	11	
020	143b020	ICAL	DSL_5000			05/23/14 20:26	1.0	12	
021	143b021	IB	CALIB			05/23/14 20:53	1.0		
022	143b022	ICV	DSL_500			05/23/14 21:21	1.0	13	
023	143b023	X	ICV			05/23/14 21:49	1.0	13	
024	143b024	IB	CALIB			05/23/14 22:16	1.0		
025	143b025	X	MO_25			05/23/14 22:44	1.0	14	
026	143b026	ICAL	MO_50			05/23/14 23:12	1.0	14	
027	143b027	ICAL	MO_250			05/23/14 23:40	1.0	15	
028	143b028	ICAL	MO_500			05/24/14 00:08	1.0	16	
029	143b029	ICAL	MO_1000			05/24/14 00:35	1.0	17	
030	143b030	ICAL	MO_2500			05/24/14 01:03	1.0	18	
031	143b031	ICAL	MO_5000			05/24/14 01:31	1.0	18	
032	143b032	IB	CALIB			05/24/14 01:58	1.0		
033	143b033	CMARKER	C8-C50			05/24/14 02:26	1.0	1	

JDG 05/27/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 33.

Standards used: 1=S24669 2=S24342 3=S24343 4=S24344 5=S24345 6=S24346 7=S24347 8=S24516 9=S24517 10=S24518 11=S24519 12=S24515 13=S24580 14=S23963 15=S23964 16=S23965 17=S23966 18=S23962

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 164405093

Instrument : GC15B Begun : 10/08/14 07:33
Method : EPA 8015B SOP Version : TEH_rv18

#	File	Type	Sample ID	P	Matrix	Batch	Analyzed	IDF	Stds Used	
001	281b001	X	IB				10/08/14 07:33	1.0		
002	281b002	X	CMARKER				10/08/14 08:00	1.0	1	
003	281b003	X	MO_500				10/08/14 08:28	1.0	2	
004	281b004	CCV	DSL_500				10/08/14 08:56	1.0	3	
005	281b005	CCV	MO_500				10/08/14 09:24	1.0	2	
006	281b006	SAMPLE	261402-004	S	Soil	216197	10/08/14 10:01	10.0		
007	281b007	SAMPLE	261402-003	S	Soil	216197	10/08/14 10:29	20.0		
008	281b008	X	IB				10/08/14 10:57	1.0		
009	281b009	MS	QC760782	S	Soil	216197	10/08/14 11:25	1.0		
010	281b010	MSD	QC760783	S	Soil	216197	10/08/14 11:52	1.0		
011	281b011	MSS	261422-001	S	Soil	216197	10/08/14 12:20	1.0		
012	281b012	CCV	MO_500				10/08/14 12:48	1.0	4	
013	281b013	CCV	DSL_1000				10/08/14 14:02	1.0	5	
014	281b014	SAMPLE	261422-002	S	Soil	216197	10/08/14 14:30	1.0		
015	281b015	SAMPLE	261422-003	S	Soil	216197	10/08/14 14:58	1.0		
016	281b016	SAMPLE	261442-001	S	Miscell.	216197	10/08/14 15:26	1.0		
017	281b017	SAMPLE	261422-002		Soil	216197	10/08/14 15:53	1.0		
018	281b018	SAMPLE	261422-003		Soil	216197	10/08/14 16:21	1.0		
019	281b019	X	IB				10/08/14 18:22	1.0		
020	281b020	BLANK	QC760735	S	Water	216187	10/08/14 18:50	1.0		
021	281b021	LCS	QC760736	S	Water	216187	10/08/14 19:17	1.0		
022	281b022	LCS	QC760737		Water	216187	10/08/14 19:45	1.0		
023	281b023	MSS	261459-001	S	Water	216187	10/08/14 20:13	1.0		
024	281b024	MS	QC760738	S	Water	216187	10/08/14 20:41	1.0		
025	281b025	MSD	QC760739	S	Water	216187	10/08/14 21:09	1.0		
026	281b026	SAMPLE	261459-002	S	Water	216187	10/08/14 21:37	1.0		
027	281b027	SAMPLE	261459-004	S	Water	216187	10/08/14 22:05	1.0		
028	281b028	X	CMARKER				10/08/14 22:33	1.0	1	
029	281b029	CCV	MO_500				10/08/14 23:01	1.0	4	
030	281b030	CCV	DSL_250				10/08/14 23:29	1.0	6	
031	281b031	X	CCV				10/08/14 23:57	1.0	4	
032	281b032	X	CCV				10/09/14 00:24	1.0	6	
033	281b033	SAMPLE	261495-001	S	Water	216187	10/09/14 00:52	1.0		
034	281b034	SAMPLE	261465-003		Water	216187	10/09/14 01:20	1.0		
035	281b035	SAMPLE	261466-007		Water	216187	10/09/14 01:48	1.0		
036	281b036	SAMPLE	261495-001		Water	216187	10/09/14 02:16	1.0		
037	281b037	CCV	MO_500				10/09/14 02:43	1.0	4	
038	281b038	CCV	DSL_1000				10/09/14 03:11	1.0	5	
039	281b039	CHECK	MO_500				10/09/14 03:39	1.0	4	

JDG 10/08/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 13.

JDG 10/09/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 14 through 39.

Standards used: 1=S25476 2=S25617 3=S25641 4=S25831 5=S25642 6=S25640

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 224317392

Instrument : GC14B Begun : 08/08/14 09:52
Method : EPA 8015B SOP Version : TEH_rv18

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
003	220_003	X	IB			08/08/14 09:52	1.0		
004	220_004	X	IB			08/08/14 10:20	1.0		
005	220_005	X	CMARKER			08/08/14 10:49	1.0	1	
006	220_006	X	CMARKER			08/08/14 17:07	1.0	1	
007	220_007	X	IB			08/08/14 17:35	1.0		
008	220_008	IB	CALIB			08/08/14 19:35	1.0		
009	220_009	ICAL	HEX OTP_5			08/08/14 20:04	1.0	2	
010	220_010	ICAL	HEX OTP_10			08/08/14 20:32	1.0	3	
011	220_011	ICAL	HEX OTP_25			08/08/14 21:00	1.0	4	
012	220_012	ICAL	HEX OTP_50			08/08/14 21:28	1.0	5	
013	220_013	ICAL	HEX OTP_100			08/08/14 21:56	1.0	6	
014	220_014	ICAL	HEX OTP_200			08/08/14 22:25	1.0	7	
015	220_015	IB	CALIB			08/08/14 22:53	1.0		
016	220_016	ICAL	DSL_10			08/08/14 23:22	1.0	8	
017	220_017	ICAL	DSL_100			08/08/14 23:50	1.0	9	
018	220_018	ICAL	DSL_500			08/09/14 00:19	1.0	10	
019	220_019	ICAL	DSL_1000			08/09/14 00:47	1.0	11	
020	220_020	ICAL	DSL_5000			08/09/14 01:15	1.0	12	
021	220_021	IB	CALIB			08/09/14 01:44	1.0		
022	220_022	ICV	DSL_500			08/09/14 02:12	1.0	13	
023	220_023	X	ICV			08/09/14 02:40	1.0	13	
024	220_024	IB	CALIB			08/09/14 03:08	1.0		
025	220_025	ICAL	MO_25			08/09/14 03:37	1.0	14	
026	220_026	ICAL	MO_50			08/09/14 04:05	1.0	14	
027	220_027	ICAL	MO_250			08/09/14 04:33	1.0	15	
028	220_028	ICAL	MO_500			08/09/14 05:01	1.0	16	
029	220_029	ICAL	MO_1000			08/09/14 05:30	1.0	17	
030	220_030	ICAL	MO_2500			08/09/14 05:58	1.0	18	
031	220_031	ICAL	MO_5000			08/09/14 06:27	1.0	18	
032	220_032	IB	CALIB			08/09/14 06:55	1.0		
033	220_033	CMARKER	C10-C50			08/09/14 07:23	1.0	1	
034	220_034	IB	CALIB			08/09/14 07:52	1.0		

JDG 08/11/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 34.

Standards used: 1=S24669 2=S25390 3=S25391 4=S25392 5=S25393 6=S25394 7=S25395 8=S25266 9=S25267 10=S25268 11=S25269 12=S24515 13=S25245 14=S25144 15=S25145 16=S25146 17=S25147 18=S25143

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 224405094

Instrument : GC14B Begun : 10/08/14 07:34
Method : EPA 8015B SOP Version : TEH_rv18

#	File	Type	Sample ID	P	Matrix	Batch	Analyzed	IDF	Stds Used	
001	281_001	X	IB				10/08/14 07:34	1.0		
002	281_002	X	CMARKER				10/08/14 08:02	1.0	1	
003	281_003	CCV	DSL_500				10/08/14 08:30	1.0	2	
004	281_004	CCV	MO_500				10/08/14 08:59	1.0	3	
005	281_005	BLANK	QC760780		Soil	216197	10/08/14 09:29	1.0		
006	281_006	BLANK	QC760780	S	Soil	216197	10/08/14 09:58	1.0		
007	281_007	LCS	QC760781		Soil	216197	10/08/14 10:26	1.0		
008	281_008	LCS	QC760781	S	Soil	216197	10/08/14 10:55	1.0		
009	281_009	SAMPLE	261394-003	S	Water	216125	10/08/14 11:23	1.0		
010	281_010	MSS	261422-001		Soil	216197	10/08/14 11:52	1.0		
011	281_011	MS	QC760782		Soil	216197	10/08/14 12:20	1.0		1:BUNKC:10-40=5100
012	281_012	MSD	QC760783		Soil	216197	10/08/14 12:48	1.0		2:BUNKC:10-40=5300
013	281_013	LCS	QC760736		Water	216187	10/08/14 14:08	1.0		
014	281_014	BLANK	QC760735		Water	216187	10/08/14 14:36	1.0		
015	281_015	CCV	DSL_250				10/08/14 15:28	1.0	4	
016	281_016	CCV	MO_500				10/08/14 16:38	1.0	3	
017	281_017	X	CMARKER				10/08/14 18:38	1.0	1	

JDG 10/08/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 8.

SFL 10/08/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 9 through 16.

Standards used: 1=S25476 2=S25641 3=S25617 4=S25640

SAMPLE PREPARATION SUMMARY

Batch # : 216187
Started By : ERR
Method : 3520C
Spike #1 ID : S25600

Prep Date : 07-OCT-2014 15:50
SOP Version : TEH_3520_rv15
Spike #2 ID : S25710

Analysis : TEH
Finished By : TPR
Units : mL
Spike #3 ID : S25573

Sample	Stype	Matrix	Initial	Final	Clean DF	Prep DF	pH	Sp 1 Vol	Sp 2 Vol	Sp 3 Vol	Clean Method	Analysis	Comments
261367-002		Water	510	2.5	1	0.004902	7	.5				TEHM	
261421-001		Water	510	2.5	1	0.004902	7	.5			3630C	TEHM	
261421-003		Water	510	2.5	1	0.004902	7	.5			3630C	TEHM	
261421-005		Water	510	2.5	1	0.004902	7	.5			3630C	TEHM	
261421-006		Water	510	2.5	1	0.004902	7	.5			3630C	TEHM	
261421-007		Water	510	2.5	1	0.004902	7	.5			3630C	TEHM	
261426-001		Water	500	2.5	1	0.005	9	.5			3630C	TEHM	
261459-001		Water	510	2.5	1	0.004902	7	.5			3630C	TEHM	MSS
261459-002		Water	510	2.5	1	0.004902	7	.5			3630C	TEHM	
261459-004		Water	510	2.5	1	0.004902	7	.5			3630C	TEHM	
261465-001		Water	510	2.5	1	0.004902	7	.5				TEH	
261465-002		Water	510	2.5	1	0.004902	7	.5				TEH	
261465-003		Water	510	2.5	1	0.004902	7	.5				TEH	
261466-007		Water	510	2.5	1	0.004902	7	.5				TEHM	
261495-001		Water	460	2.5	1	0.005435	5	.5			3630C	TEH	
261497-001		Water	480	2.5	1	0.005208	8	.5				TEHM	
261512-001		Water	500	2.5	1	0.005	11	.5				TEHM	Prepped 07-OCT-2014 19:02
QC760735	BLANK	Water	500	2.5	1	0.005		.5			3630C		
QC760736	LCS	Water	500	2.5	1	0.005		.5	.5		3630C		
QC760737	LCS	Water	500	2.5	1	0.005		.5		.5			M.O. Spike
QC760738	MS	Water	510	2.5	1	0.004902	7	.5	.5		3630C		
QC760739	MSD	Water	510	2.5	1	0.004902	7	.5	.5		3630C		

EAH 10/08/14 : Checked batch documents.

EAH 10/09/14 : Reviewed for NSG.

Analyst: JDG Date: 10/09/14 Reviewer: EAH Date: 10/09/14

TEH (8015) Water Prep Log Curtis & Tompkins, Ltd.

LIMS Batch No: 216187
LIMS Analysis: TEH/M
Date Extracted: 10-7-14

Extraction Method:
☒ EPA 3520c cont. L/L
☐ _____

Cleanup Method (if needed):
☒ EPA 3630c Silica Gel

Sample #	Container ID	Volume of Sample (mL)	Sample pH	Final Volume (mL)	Cleanup (x if needed)		Comments
261367-002	E	☐ 500 ☒ 510	☒ 7 ☐	☒ 2.5 ☐		☒ ≤2pH	
261421-001	I	☐ 500 ☒ 510	☒ 7 ☐	☒ 2.5 ☐	X	☒ ≤2pH	
3		☐ 500 ☒ 510	☒ 7 ☐	☒ 2.5 ☐	X	☒ ≤2pH	
5		☐ 500 ☒ 510	☒ 7 ☐	☒ 2.5 ☐	X	☒ ≤2pH	
6	J	☐ 500 ☒ 510	☒ 7 ☐	☒ 2.5 ☐	X	☒ ≤2pH	
7		☐ 500 ☒ 510	☒ 7 ☐	☒ 2.5 ☐	X	☒ ≤2pH	
261426-001	D	☒ 500 ☐	☐ 7 ☒ 9	☒ 2.5 ☐	X	☒ ≤2pH	
261459-001	V	☐ 500 ☒ 510	☒ 7 ☐	☒ 2.5 ☐	X	☒ ≤2pH	MSS
2	I	☐ 500 ☒ 510	☒ 7 ☐	☒ 2.5 ☐	X	☒ ≤2pH	
4	I	☐ 500 ☒ 510	☒ 7 ☐	☒ 2.5 ☐	X	☒ ≤2pH	
261465-001	G	☐ 500 ☒ 510	☒ 7 ☐	☒ 2.5 ☐		☒ ≤2pH	
2		☐ 500 ☒ 510	☒ 7 ☐	☒ 2.5 ☐		☒ ≤2pH	
3		☐ 500 ☒ 510	☒ 7 ☐	☒ 2.5 ☐		☒ ≤2pH	
261466-007	I	☐ 500 ☒ 510	☒ 7 ☐	☒ 2.5 ☐		☒ ≤2pH	
261495-001	J	☐ 500 ☒ 460	☐ 7 ☒ 5	☒ 2.5 ☐	X	☒ ≤2pH	
261497-001	E	☐ 500 ☒ 490	☐ 7 ☒ 8	☒ 2.5 ☐		☒ ≤2pH	
MB QC760735	N/A	☒ 500 ☐	☐ 7 ☒ NA	☒ 2.5 ☐	X	☒ ≤2pH	
LCS 6		☒ 500 ☐	☐ 7 ☒ NA	☒ 2.5 ☐	X	☒ ≤2pH	
LCS 7		☒ 500 ☐	☐ 7 ☒ NA	☒ 2.5 ☐		☒ ≤2pH	M.O.LCS: 525573B
MS 8	AE	☐ 500 ☒ 510	☒ 7 ☐	☒ 2.5 ☐	X	☒ ≤2pH	261459-001
MSD 9	Z	☐ 500 ☒ 510	☒ 7 ☐	☒ 2.5 ☐	X	☒ ≤2pH	
261512-001	F	☒ 500 ☐	☐ 7 ☒ 11	☒ 2.5 ☐		☒ ≤2pH	*A/0@1902 on 10/7/14 by TPR
		☐ 500 ☐	☐ 7 ☐	☐ 2.5 ☐		☐ ≤2pH	
		☐ 500 ☐	☐ 7 ☐	☐ 2.5 ☐		☐ ≤2pH	

	Mfg & Lot# / LIMS # / Time	Date/ Initials
0.5 mL of TEH_SURR was added to all samples	S25600I	ERR 10-7-14
0.5 mL of TEH_SP was added to all spikes	S25710E	
pH of all samples adjusted to pH ≤ 2 with H_2SO_4	FS140656	
☒ 3520c: Samples were continually extracted about 450 mL of CH_2Cl_2	EM54024	
Extraction Start Time:	1550/1902*	
Extraction End Time:	1000/1302* TPR 10/8/14	CAJ 10/8/14
☐ 3510c: Samples were extracted 3 times with 60 mL of CH_2Cl_2	N/A	TPR 10/8/14
Extracts filtered through baked, CH2Cl2-rinsed granular Na2SO4	EMWL23I	
Concentrated to final volume at temperature (degrees C)	100	
Relinquished to TEH Department	✓	

10-7-14
Extraction Chemist Date

Contined from Page ____
Continued on Page ____

KMT 10/8/14
Reviewed by Date

Curtis & Tompkins, Ltd. **Silica Gel Cleanup** **EPA 3630c**

Prep Chemist: TPR
Cleanup Date: 10/8/14

Benchbook # **BK 3609**
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Sample #	Extraction Batch#	Initial Volume (mL)	Final Volume (mL)	Comments
~~261510~~ 261421-001	216187	☒ 1.0 ☐	☒ 1.0 ☐	
3		☒ 1.0 ☐	☒ 1.0 ☐	
5		☒ 1.0 ☐	☒ 1.0 ☐	
6		☒ 1.0 ☐	☒ 1.0 ☐	
7		☒ 1.0 ☐	☒ 1.0 ☐	
261426-001		☐ 1.0 ☒ 0.3	☐ 1.0 ☒ 0.3	limited Vol sample left
261459-001		☒ 1.0 ☐	☒ 1.0 ☐	
2		☒ 1.0 ☐	☒ 1.0 ☐	
4		☒ 1.0 ☐	☒ 1.0 ☐	
261495-001		☒ 1.0 ☐	☒ 1.0 ☐	
MB QC760735		☒ 1.0 ☐	☒ 1.0 ☐	
LCS 6		☒ 1.0 ☐	☒ 1.0 ☐	
MS TPR 10/8/14 ~~7~~ 8		☒ 1.0 ☐	☒ 1.0 ☐	
MSD ~~8~~ 9		☒ 1.0 ☐	☒ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	
		☐ 1.0 ☐	☐ 1.0 ☐	

	Mfg & Lot # / Time / Program	Initials / Date
☒ Extracts were cleaned up using C&T assembled 1.0 g columns	R15A003	TPR 10/8/14
☐ Extracts were cleaned up using — g cartridges	N/A	
Extracts were eluted with 4.0 mL CH_2Cl_2	EM54024	
Concentrated to volumes as noted above	✓	

Jma Rankar 10/8/14
Extraction Chemist / Date

Continued from page —
Continued on page —

10/8/14
Reviewed by / Date

Laboratory Job Number 261495

ANALYTICAL REPORT

Volatile Organics by GC/MS

Matrix: Water

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 5030B
Project#:	PAVILLION	Analysis:	EPA 8260B
Field ID:	FB-1-10062014	Diln Fac:	1.000
Lab ID:	261495-001	Sampled:	10/06/14
Matrix:	Water	Received:	10/07/14
Units:	ug/L		

Analyte	Result	RL	MDL	Batch#	Analyzed
Freon 12	ND	1.0	0.2	216460	10/15/14
Chloromethane	ND	1.0	0.1	216460	10/15/14
Vinyl Chloride	ND	0.5	0.2	216460	10/15/14
Bromomethane	ND	1.0	0.2	216460	10/15/14
Chloroethane	ND	1.0	0.2	216460	10/15/14
Trichlorofluoromethane	ND	1.0	0.1	216460	10/15/14
Ethanol	ND	250	26	216532	10/17/14
Isopropanol	ND	50	2.5	216532	10/17/14
Acetone	2.1 J	10	0.4	216460	10/15/14
1,1-Dichloroethene	ND	0.5	0.1	216460	10/15/14
Methylene Chloride	ND	10	0.1	216460	10/15/14
Carbon Disulfide	ND	0.5	0.1	216460	10/15/14
MTBE	ND	0.5	0.1	216460	10/15/14
trans-1,2-Dichloroethene	ND	0.5	0.1	216460	10/15/14
1,1-Dichloroethane	ND	0.5	0.1	216460	10/15/14
2-Butanone	ND	10	0.4	216460	10/15/14
cis-1,2-Dichloroethene	ND	0.5	0.1	216460	10/15/14
2,2-Dichloropropane	ND	0.5	0.1	216460	10/15/14
Chloroform	ND	0.5	0.1	216460	10/15/14
Bromochloromethane	ND	0.5	0.1	216460	10/15/14
1,1,1-Trichloroethane	ND	0.5	0.1	216460	10/15/14
1,1-Dichloropropene	ND	0.5	0.1	216460	10/15/14
Carbon Tetrachloride	ND	0.5	0.1	216460	10/15/14
1,2-Dichloroethane	ND	0.5	0.1	216460	10/15/14
Benzene	ND	0.5	0.1	216460	10/15/14
Trichloroethene	ND	0.5	0.1	216460	10/15/14
1,2-Dichloropropane	ND	0.5	0.1	216460	10/15/14
Bromodichloromethane	ND	0.5	0.1	216460	10/15/14
Dibromomethane	ND	0.5	0.1	216460	10/15/14
4-Methyl-2-Pentanone	ND	10	0.1	216460	10/15/14
cis-1,3-Dichloropropene	ND	0.5	0.1	216460	10/15/14
Toluene	ND	0.5	0.1	216460	10/15/14
trans-1,3-Dichloropropene	ND	0.5	0.1	216460	10/15/14
1,1,2-Trichloroethane	ND	0.5	0.1	216460	10/15/14
2-Hexanone	ND	10	0.2	216460	10/15/14
1,3-Dichloropropane	ND	0.5	0.1	216460	10/15/14
Tetrachloroethene	ND	0.5	0.1	216460	10/15/14
Dibromochloromethane	ND	0.5	0.1	216460	10/15/14
1,2-Dibromoethane	ND	0.5	0.1	216460	10/15/14
Chlorobenzene	ND	0.5	0.1	216460	10/15/14
1,1,1,2-Tetrachloroethane	ND	0.5	0.1	216460	10/15/14
Ethylbenzene	ND	0.5	0.1	216460	10/15/14
m,p-Xylenes	ND	0.5	0.1	216460	10/15/14
o-Xylene	ND	0.5	0.1	216460	10/15/14
Styrene	ND	0.5	0.1	216460	10/15/14
Bromoform	ND	1.0	0.1	216460	10/15/14
Isopropylbenzene	ND	0.5	0.1	216460	10/15/14
1,1,2,2-Tetrachloroethane	ND	0.5	0.1	216460	10/15/14
1,2,3-Trichloropropane	ND	0.5	0.1	216460	10/15/14
Propylbenzene	ND	0.5	0.1	216460	10/15/14
Bromobenzene	ND	0.5	0.1	216460	10/15/14
1,3,5-Trimethylbenzene	ND	0.5	0.1	216460	10/15/14
2-Chlorotoluene	ND	0.5	0.1	216460	10/15/14

J= Estimated value
ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 5030B
Project#:	PAVILLION	Analysis:	EPA 8260B
Field ID:	FB-1-10062014	Diln Fac:	1.000
Lab ID:	261495-001	Sampled:	10/06/14
Matrix:	Water	Received:	10/07/14
Units:	ug/L		

Analyte	Result	RL	MDL	Batch#	Analyzed
4-Chlorotoluene	ND	0.5	0.1	216460	10/15/14
tert-Butylbenzene	ND	0.5	0.1	216460	10/15/14
1,2,4-Trimethylbenzene	ND	0.5	0.1	216460	10/15/14
sec-Butylbenzene	ND	0.5	0.1	216460	10/15/14
para-Isopropyl Toluene	ND	0.5	0.1	216460	10/15/14
1,3-Dichlorobenzene	ND	0.5	0.1	216460	10/15/14
1,4-Dichlorobenzene	ND	0.5	0.1	216460	10/15/14
n-Butylbenzene	ND	0.5	0.1	216460	10/15/14
1,2-Dichlorobenzene	ND	0.5	0.1	216460	10/15/14
1,2-Dibromo-3-Chloropropane	ND	2.0	0.3	216460	10/15/14
1,2,4-Trichlorobenzene	ND	0.5	0.1	216460	10/15/14
Hexachlorobutadiene	ND	2.0	0.2	216460	10/15/14
Naphthalene	ND	2.0	0.1	216460	10/15/14
1,2,3-Trichlorobenzene	ND	0.5	0.1	216460	10/15/14
tert-Butyl Alcohol (TBA)	ND	10	1.3	216460	10/15/14
Isopropyl Ether (DIPE)	ND	0.5	0.1	216460	10/15/14
Ethyl tert-Butyl Ether (ETBE)	ND	0.5	0.1	216460	10/15/14
Methyl tert-Amyl Ether (TAME)	ND	0.5	0.1	216460	10/15/14

Tentatively Identified Compounds	Batch#	Analyzed
No TICs found.	216460	10/15/14

Surrogate	%REC	Limits	Batch#	Analyzed
Dibromofluoromethane	99	77-136	216460	10/15/14
Dibromofluoromethane	103	77-136	216532	10/17/14
1,2-Dichloroethane-d4	93	75-139	216460	10/15/14
1,2-Dichloroethane-d4	106	75-139	216532	10/17/14
Toluene-d8	101	80-120	216460	10/15/14
Toluene-d8	99	80-120	216532	10/17/14
Bromofluorobenzene	101	80-120	216460	10/15/14
Bromofluorobenzene	100	80-120	216532	10/17/14

J= Estimated value
ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 5030B
Project#:	PAVILLION	Analysis:	EPA 8260B
Field ID:	TB-1-10062014	Diln Fac:	1.000
Lab ID:	261495-004	Sampled:	10/06/14
Matrix:	Water	Received:	10/07/14
Units:	ug/L		

Analyte	Result	RL	MDL	Batch#	Analyzed
Freon 12	ND	1.0	0.2	216460	10/15/14
Chloromethane	ND	1.0	0.1	216460	10/15/14
Vinyl Chloride	ND	0.5	0.2	216460	10/15/14
Bromomethane	ND	1.0	0.2	216460	10/15/14
Chloroethane	ND	1.0	0.2	216460	10/15/14
Trichlorofluoromethane	ND	1.0	0.1	216460	10/15/14
Ethanol	ND	250	26	216532	10/17/14
Isopropanol	5.8 J	50	2.5	216532	10/17/14
Acetone	0.8 J	10	0.4	216460	10/15/14
1,1-Dichloroethene	ND	0.5	0.1	216460	10/15/14
Methylene Chloride	ND	10	0.1	216460	10/15/14
Carbon Disulfide	ND	0.5	0.1	216460	10/15/14
MTBE	ND	0.5	0.1	216460	10/15/14
trans-1,2-Dichloroethene	ND	0.5	0.1	216460	10/15/14
1,1-Dichloroethane	ND	0.5	0.1	216460	10/15/14
2-Butanone	ND	10	0.4	216460	10/15/14
cis-1,2-Dichloroethene	ND	0.5	0.1	216460	10/15/14
2,2-Dichloropropane	ND	0.5	0.1	216460	10/15/14
Chloroform	ND	0.5	0.1	216460	10/15/14
Bromochloromethane	ND	0.5	0.1	216460	10/15/14
1,1,1-Trichloroethane	ND	0.5	0.1	216460	10/15/14
1,1-Dichloropropene	ND	0.5	0.1	216460	10/15/14
Carbon Tetrachloride	ND	0.5	0.1	216460	10/15/14
1,2-Dichloroethane	ND	0.5	0.1	216460	10/15/14
Benzene	ND	0.5	0.1	216460	10/15/14
Trichloroethene	ND	0.5	0.1	216460	10/15/14
1,2-Dichloropropane	ND	0.5	0.1	216460	10/15/14
Bromodichloromethane	ND	0.5	0.1	216460	10/15/14
Dibromomethane	ND	0.5	0.1	216460	10/15/14
4-Methyl-2-Pentanone	ND	10	0.1	216460	10/15/14
cis-1,3-Dichloropropene	ND	0.5	0.1	216460	10/15/14
Toluene	ND	0.5	0.1	216460	10/15/14
trans-1,3-Dichloropropene	ND	0.5	0.1	216460	10/15/14
1,1,2-Trichloroethane	ND	0.5	0.1	216460	10/15/14
2-Hexanone	ND	10	0.2	216460	10/15/14
1,3-Dichloropropane	ND	0.5	0.1	216460	10/15/14
Tetrachloroethene	ND	0.5	0.1	216460	10/15/14
Dibromochloromethane	ND	0.5	0.1	216460	10/15/14
1,2-Dibromoethane	ND	0.5	0.1	216460	10/15/14
Chlorobenzene	ND	0.5	0.1	216460	10/15/14
1,1,1,2-Tetrachloroethane	ND	0.5	0.1	216460	10/15/14
Ethylbenzene	ND	0.5	0.1	216460	10/15/14
m,p-Xylenes	ND	0.5	0.1	216460	10/15/14
o-Xylene	ND	0.5	0.1	216460	10/15/14
Styrene	ND	0.5	0.1	216460	10/15/14
Bromoform	ND	1.0	0.1	216460	10/15/14
Isopropylbenzene	ND	0.5	0.1	216460	10/15/14
1,1,2,2-Tetrachloroethane	ND	0.5	0.1	216460	10/15/14
1,2,3-Trichloropropane	ND	0.5	0.1	216460	10/15/14
Propylbenzene	ND	0.5	0.1	216460	10/15/14
Bromobenzene	ND	0.5	0.1	216460	10/15/14
1,3,5-Trimethylbenzene	ND	0.5	0.1	216460	10/15/14
2-Chlorotoluene	ND	0.5	0.1	216460	10/15/14

J= Estimated value
ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 5030B
Project#:	PAVILLION	Analysis:	EPA 8260B
Field ID:	TB-1-10062014	Diln Fac:	1.000
Lab ID:	261495-004	Sampled:	10/06/14
Matrix:	Water	Received:	10/07/14
Units:	ug/L		

Analyte	Result	RL	MDL	Batch#	Analyzed
4-Chlorotoluene	ND	0.5	0.1	216460	10/15/14
tert-Butylbenzene	ND	0.5	0.1	216460	10/15/14
1,2,4-Trimethylbenzene	ND	0.5	0.1	216460	10/15/14
sec-Butylbenzene	ND	0.5	0.1	216460	10/15/14
para-Isopropyl Toluene	ND	0.5	0.1	216460	10/15/14
1,3-Dichlorobenzene	ND	0.5	0.1	216460	10/15/14
1,4-Dichlorobenzene	ND	0.5	0.1	216460	10/15/14
n-Butylbenzene	ND	0.5	0.1	216460	10/15/14
1,2-Dichlorobenzene	ND	0.5	0.1	216460	10/15/14
1,2-Dibromo-3-Chloropropane	ND	2.0	0.3	216460	10/15/14
1,2,4-Trichlorobenzene	ND	0.5	0.1	216460	10/15/14
Hexachlorobutadiene	ND	2.0	0.2	216460	10/15/14
Naphthalene	ND	2.0	0.1	216460	10/15/14
1,2,3-Trichlorobenzene	ND	0.5	0.1	216460	10/15/14
tert-Butyl Alcohol (TBA)	ND	10	1.3	216460	10/15/14
Isopropyl Ether (DIPE)	ND	0.5	0.1	216460	10/15/14
Ethyl tert-Butyl Ether (ETBE)	ND	0.5	0.1	216460	10/15/14
Methyl tert-Amyl Ether (TAME)	ND	0.5	0.1	216460	10/15/14

Tentatively Identified Compounds	Batch#	Analyzed
No TICs found.	216460	10/15/14

Surrogate	%REC	Limits	Batch#	Analyzed
Dibromofluoromethane	101	77-136	216460	10/15/14
Dibromofluoromethane	106	77-136	216532	10/17/14
1,2-Dichloroethane-d4	90	75-139	216460	10/15/14
1,2-Dichloroethane-d4	103	75-139	216532	10/17/14
Toluene-d8	101	80-120	216460	10/15/14
Toluene-d8	100	80-120	216532	10/17/14
Bromofluorobenzene	103	80-120	216460	10/15/14
Bromofluorobenzene	101	80-120	216532	10/17/14

J= Estimated value
ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 5030B
Project#:	PAVILLION	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	216460
Units:	ug/L	Analyzed:	10/15/14
Diln Fac:	1.000		

Type: BS Lab ID: QC761811

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	15.00	15.93	106	65-134
Benzene	15.00	16.48	110	80-124
Trichloroethene	15.00	15.99	107	80-120
Toluene	15.00	16.54	110	80-122
Chlorobenzene	15.00	16.72	111	80-120
tert-Butyl Alcohol (TBA)	75.00	80.35	107	37-151
Isopropyl Ether (DIPE)	15.00	15.58	104	56-124
Ethyl tert-Butyl Ether (ETBE)	15.00	14.75	98	61-122
Methyl tert-Amyl Ether (TAME)	15.00	14.82	99	65-120

Surrogate	%REC	Limits
Dibromofluoromethane	102	77-136
1,2-Dichloroethane-d4	88	75-139
Toluene-d8	101	80-120
Bromofluorobenzene	100	80-120

Type: BSD Lab ID: QC761812

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	15.00	15.43	103	65-134	3	20
Benzene	15.00	15.93	106	80-124	3	20
Trichloroethene	15.00	15.08	101	80-120	6	20
Toluene	15.00	16.31	109	80-122	1	20
Chlorobenzene	15.00	16.33	109	80-120	2	20
tert-Butyl Alcohol (TBA)	75.00	81.34	108	37-151	1	30
Isopropyl Ether (DIPE)	15.00	15.33	102	56-124	2	20
Ethyl tert-Butyl Ether (ETBE)	15.00	14.73	98	61-122	0	22
Methyl tert-Amyl Ether (TAME)	15.00	14.77	98	65-120	0	22

Surrogate	%REC	Limits
Dibromofluoromethane	100	77-136
1,2-Dichloroethane-d4	89	75-139
Toluene-d8	101	80-120
Bromofluorobenzene	100	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 5030B
Project#:	PAVILLION	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC761813	Batch#:	216460
Matrix:	Water	Analyzed:	10/15/14
Units:	ug/L		

Analyte	Result	RL	MDL
Freon 12	ND	1.0	0.2
Chloromethane	ND	1.0	0.1
Vinyl Chloride	ND	0.5	0.2
Bromomethane	ND	1.0	0.2
Chloroethane	ND	1.0	0.2
Trichlorofluoromethane	ND	1.0	0.1
Ethanol	ND	1,000	15
Isopropanol	ND	100	2.0
Acetone	ND	10	0.4
1,1-Dichloroethene	ND	0.5	0.1
Methylene Chloride	ND	10	0.1
Carbon Disulfide	ND	0.5	0.1
MTBE	ND	0.5	0.1
trans-1,2-Dichloroethene	ND	0.5	0.1
1,1-Dichloroethane	ND	0.5	0.1
2-Butanone	ND	10	0.4
cis-1,2-Dichloroethene	ND	0.5	0.1
2,2-Dichloropropane	ND	0.5	0.1
Chloroform	ND	0.5	0.1
Bromochloromethane	ND	0.5	0.1
1,1,1-Trichloroethane	ND	0.5	0.1
1,1-Dichloropropene	ND	0.5	0.1
Carbon Tetrachloride	ND	0.5	0.1
1,2-Dichloroethane	ND	0.5	0.1
Benzene	ND	0.5	0.1
Trichloroethene	ND	0.5	0.1
1,2-Dichloropropane	ND	0.5	0.1
Bromodichloromethane	ND	0.5	0.1
Dibromomethane	ND	0.5	0.1
4-Methyl-2-Pentanone	ND	10	0.1
cis-1,3-Dichloropropene	ND	0.5	0.1
Toluene	ND	0.5	0.1
trans-1,3-Dichloropropene	ND	0.5	0.1
1,1,2-Trichloroethane	ND	0.5	0.1
2-Hexanone	ND	10	0.2
1,3-Dichloropropane	ND	0.5	0.1
Tetrachloroethene	ND	0.5	0.1
Dibromochloromethane	ND	0.5	0.1
1,2-Dibromoethane	ND	0.5	0.1
Chlorobenzene	ND	0.5	0.1
1,1,1,2-Tetrachloroethane	ND	0.5	0.1
Ethylbenzene	ND	0.5	0.1
m,p-Xylenes	ND	0.5	0.1
o-Xylene	ND	0.5	0.1
Styrene	ND	0.5	0.1
Bromoform	ND	1.0	0.1
Isopropylbenzene	ND	0.5	0.1
1,1,2,2-Tetrachloroethane	ND	0.5	0.1
1,2,3-Trichloropropane	ND	0.5	0.1
Propylbenzene	ND	0.5	0.1
Bromobenzene	ND	0.5	0.1
1,3,5-Trimethylbenzene	ND	0.5	0.1
2-Chlorotoluene	ND	0.5	0.1

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 5030B
Project#:	PAVILLION	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC761813	Batch#:	216460
Matrix:	Water	Analyzed:	10/15/14
Units:	ug/L		

Analyte	Result	RL	MDL
4-Chlorotoluene	ND	0.5	0.1
tert-Butylbenzene	ND	0.5	0.1
1,2,4-Trimethylbenzene	ND	0.5	0.1
sec-Butylbenzene	ND	0.5	0.1
para-Isopropyl Toluene	ND	0.5	0.1
1,3-Dichlorobenzene	ND	0.5	0.1
1,4-Dichlorobenzene	ND	0.5	0.1
n-Butylbenzene	ND	0.5	0.1
1,2-Dichlorobenzene	ND	0.5	0.1
1,2-Dibromo-3-Chloropropane	ND	2.0	0.3
1,2,4-Trichlorobenzene	ND	0.5	0.1
Hexachlorobutadiene	ND	2.0	0.2
Naphthalene	ND	2.0	0.1
1,2,3-Trichlorobenzene	ND	0.5	0.1
tert-Butyl Alcohol (TBA)	ND	10	1.3
Isopropyl Ether (DIPE)	ND	0.5	0.1
Ethyl tert-Butyl Ether (ETBE)	ND	0.5	0.1
Methyl tert-Amyl Ether (TAME)	ND	0.5	0.1

Tentatively Identified Compounds
No TICs found.

Surrogate	%REC	Limits
Dibromofluoromethane	99	77-136
1,2-Dichloroethane-d4	91	75-139
Toluene-d8	101	80-120
Bromofluorobenzene	101	80-120

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 5030B
Project#:	PAVILLION	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	216532
Units:	ug/L	Analyzed:	10/17/14
Diln Fac:	1.000		

Type: BS Lab ID: QC762101

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	27.17	109	65-134
Benzene	25.00	26.89	108	80-124
Trichloroethene	25.00	25.85	103	80-120
Toluene	25.00	26.28	105	80-122
Chlorobenzene	25.00	25.60	102	80-120
tert-Butyl Alcohol (TBA)	125.0	127.2	102	37-151
Isopropyl Ether (DIPE)	25.00	27.70	111	56-124
Ethyl tert-Butyl Ether (ETBE)	25.00	26.27	105	61-122
Methyl tert-Amyl Ether (TAME)	25.00	25.03	100	65-120

Surrogate	%REC	Limits
Dibromofluoromethane	107	77-136
1,2-Dichloroethane-d4	103	75-139
Toluene-d8	99	80-120
Bromofluorobenzene	99	80-120

Type: BSD Lab ID: QC762102

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	24.05	96	65-134	12	20
Benzene	25.00	23.77	95	80-124	12	20
Trichloroethene	25.00	22.95	92	80-120	12	20
Toluene	25.00	23.93	96	80-122	9	20
Chlorobenzene	25.00	23.43	94	80-120	9	20
tert-Butyl Alcohol (TBA)	125.0	117.2	94	37-151	8	30
Isopropyl Ether (DIPE)	25.00	25.35	101	56-124	9	20
Ethyl tert-Butyl Ether (ETBE)	25.00	24.17	97	61-122	8	22
Methyl tert-Amyl Ether (TAME)	25.00	22.31	89	65-120	11	22

Surrogate	%REC	Limits
Dibromofluoromethane	105	77-136
1,2-Dichloroethane-d4	99	75-139
Toluene-d8	101	80-120
Bromofluorobenzene	98	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 5030B
Project#:	PAVILLION	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC762103	Batch#:	216532
Matrix:	Water	Analyzed:	10/17/14
Units:	ug/L		

Analyte	Result	RL	MDL
Freon 12	ND	1.0	0.2
Chloromethane	ND	1.0	0.2
Vinyl Chloride	ND	0.5	0.1
Bromomethane	ND	1.0	0.2
Chloroethane	ND	1.0	0.2
Trichlorofluoromethane	ND	1.0	0.2
Ethanol	ND	250	26
Isopropanol	ND	50	2.5
Acetone	ND	10	0.5
1,1-Dichloroethene	ND	0.5	0.1
Methylene Chloride	ND	10	0.1
Carbon Disulfide	ND	0.5	0.1
MTBE	ND	0.5	0.1
trans-1,2-Dichloroethene	ND	0.5	0.1
1,1-Dichloroethane	ND	0.5	0.1
2-Butanone	ND	10	0.3
cis-1,2-Dichloroethene	ND	0.5	0.1
2,2-Dichloropropane	ND	0.5	0.1
Chloroform	ND	0.5	0.1
Bromochloromethane	ND	0.5	0.2
1,1,1-Trichloroethane	ND	0.5	0.1
1,1-Dichloropropene	ND	0.5	0.1
Carbon Tetrachloride	ND	0.5	0.1
1,2-Dichloroethane	ND	0.5	0.1
Benzene	ND	0.5	0.1
Trichloroethene	ND	0.5	0.1
1,2-Dichloropropane	ND	0.5	0.2
Bromodichloromethane	ND	0.5	0.1
Dibromomethane	ND	0.5	0.1
4-Methyl-2-Pentanone	ND	10	0.2
cis-1,3-Dichloropropene	ND	0.5	0.1
Toluene	ND	0.5	0.1
trans-1,3-Dichloropropene	ND	0.5	0.1
1,1,2-Trichloroethane	ND	0.5	0.2
2-Hexanone	ND	10	0.2
1,3-Dichloropropane	ND	0.5	0.1
Tetrachloroethene	ND	0.5	0.1
Dibromochloromethane	ND	0.5	0.1
1,2-Dibromoethane	ND	0.5	0.1
Chlorobenzene	ND	0.5	0.1
1,1,1,2-Tetrachloroethane	ND	0.5	0.1
Ethylbenzene	ND	0.5	0.2
m,p-Xylenes	ND	0.5	0.1
o-Xylene	ND	0.5	0.1
Styrene	ND	0.5	0.1
Bromoform	ND	1.0	0.1
Isopropylbenzene	ND	0.5	0.1
1,1,2,2-Tetrachloroethane	ND	0.5	0.1
1,2,3-Trichloropropane	ND	0.5	0.1
Propylbenzene	ND	0.5	0.1
Bromobenzene	ND	0.5	0.1
1,3,5-Trimethylbenzene	ND	0.5	0.1
2-Chlorotoluene	ND	0.5	0.1

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 5030B
Project#:	PAVILLION	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC762103	Batch#:	216532
Matrix:	Water	Analyzed:	10/17/14
Units:	ug/L		

Analyte	Result	RL	MDL
4-Chlorotoluene	ND	0.5	0.2
tert-Butylbenzene	ND	0.5	0.1
1,2,4-Trimethylbenzene	ND	0.5	0.2
sec-Butylbenzene	ND	0.5	0.1
para-Isopropyl Toluene	ND	0.5	0.1
1,3-Dichlorobenzene	ND	0.5	0.1
1,4-Dichlorobenzene	ND	0.5	0.1
n-Butylbenzene	ND	0.5	0.1
1,2-Dichlorobenzene	ND	0.5	0.1
1,2-Dibromo-3-Chloropropane	ND	2.0	0.2
1,2,4-Trichlorobenzene	ND	0.5	0.1
Hexachlorobutadiene	ND	2.0	0.1
Naphthalene	ND	2.0	0.1
1,2,3-Trichlorobenzene	ND	0.5	0.1
tert-Butyl Alcohol (TBA)	ND	10	1.5
Isopropyl Ether (DIPE)	ND	0.5	0.1
Ethyl tert-Butyl Ether (ETBE)	ND	0.5	0.1
Methyl tert-Amyl Ether (TAME)	ND	0.5	0.1

Tentatively Identified Compounds
No TICs found.

Surrogate	%REC	Limits
Dibromofluoromethane	104	77-136
1,2-Dichloroethane-d4	100	75-139
Toluene-d8	100	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Initial & Continuing Calibration Data

CURTIS & TOMPKINS BFB TUNE FOR 261495 MSVOA Water
EPA 8260B

Inst : MSVOA09 Run Name : BFB IDF : 1.0
Seqnum : 484393742002 File : iiu02 Time : 30-SEP-2014 11:05

Standards: S24715

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	13018	21.98	
75	30% - 60% of mass 95	28117	47.47	
95		59226	100.00	
96	5% - 9% of mass 95	4317	7.29	
173	< 2% of mass 174	149	0.33	
174	> 50% and < 100% of mass 95	44674	75.43	
175	5% - 9% of mass 174	3229	7.23	
176	> 95% and < 101% of mass 174	43944	98.37	
177	5% - 9% of mass 176	2719	6.19	

Analyst: TEW Date: 10/07/14 Reviewer: LW Date: 10/07/14

CURTIS & TOMPKINS BFB TUNE FOR 261495 MSVOA Water
EPA 8260B

Inst : MSVOA09 Run Name : BFB IDF : 1.0
Seqnum : 484402568002 File : ij602 Time : 06-OCT-2014 14:11

Standards: S24715

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	22573	20.97	
75	30% - 60% of mass 95	48349	44.91	
95		107656	100.00	
96	5% - 9% of mass 95	7456	6.93	
173	< 2% of mass 174	0	0.00	
174	> 50% and < 100% of mass 95	84210	78.22	
175	5% - 9% of mass 174	5998	7.12	
176	> 95% and < 101% of mass 174	81114	96.32	
177	5% - 9% of mass 176	5404	6.66	

Analyst: TEW Date: 10/07/14 Reviewer: LW Date: 10/07/14

CURTIS & TOMPKINS BFB TUNE FOR 261495 MSVOA Water
EPA 8260B

Inst : MSVOA09 Run Name : BFB IDF : 1.0
Seqnum : 484402568006 File : ij606 Time : 06-OCT-2014 17:11

Standards: S24715

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	13682	21.33	
75	30% - 60% of mass 95	29338	45.74	
95		64138	100.00	
96	5% - 9% of mass 95	4765	7.43	
173	< 2% of mass 174	0	0.00	
174	> 50% and < 100% of mass 95	52674	82.13	
175	5% - 9% of mass 174	3856	7.32	
176	> 95% and < 101% of mass 174	50752	96.35	
177	5% - 9% of mass 176	3072	6.05	

Analyst: TEW Date: 10/07/14 Reviewer: LW Date: 10/07/14

CURTIS & TOMPKINS BFB TUNE FOR 261495 MSVOA Water
EPA 8260B

Inst : MSVOA09 Run Name : BFB IDF : 1.0
Seqnum : 484417997008 File : ijh08 Time : 17-OCT-2014 11:41

Standards: S24715

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	21666	22.12	
75	30% - 60% of mass 95	44242	45.17	
95		97954	100.00	
96	5% - 9% of mass 95	6427	6.56	
173	< 2% of mass 174	391	0.52	
174	> 50% and < 100% of mass 95	75368	76.94	
175	5% - 9% of mass 174	5254	6.97	
176	> 95% and < 101% of mass 174	72981	96.83	
177	5% - 9% of mass 176	4448	6.09	

Analyst: TEW Date: 10/19/14 Reviewer: LW Date: 10/20/14

CURTIS & TOMPKINS BFB TUNE FOR 261495 MSVOA Water
EPA 8260B

Inst : MSVOA10 Run Name : BFB IDF : 1.0
Seqnum : 494306229001.1 File : jgv01 Time : 31-JUL-2014 15:49

Standards: S24715

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	46837	21.32	
75	30% - 60% of mass 95	96264	43.82	
95		219690	100.00	
96	5% - 9% of mass 95	14163	6.45	
173	< 2% of mass 174	0	0.00	
174	> 50% and < 100% of mass 95	177088	80.61	
175	5% - 9% of mass 174	12740	7.19	
176	> 95% and < 101% of mass 174	170453	96.25	
177	5% - 9% of mass 176	11293	6.63	

LW 10/14/14 : This looks like it was only reprocessed through lims in job mode so I only re-signed in job mode.

Analyst: BO Date: 08/01/14 * Reviewer: LW Date: 10/14/14

CURTIS & TOMPKINS BFB TUNE FOR 261495 MSVOA Water
EPA 8260B

Inst : MSVOA10 Run Name : BFB IDF : 1.0
Seqnum : 494415523002 File : jjf02 Time : 15-OCT-2014 13:49

Standards: S24715

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	44178	21.78	
75	30% - 60% of mass 95	90701	44.71	
95		202858	100.00	
96	5% - 9% of mass 95	13473	6.64	
173	< 2% of mass 174	0	0.00	
174	> 50% and < 100% of mass 95	154602	76.21	
175	5% - 9% of mass 174	11290	7.30	
176	> 95% and < 101% of mass 174	149458	96.67	
177	5% - 9% of mass 176	10265	6.87	

Analyst: BCH Date: 10/16/14 Reviewer: LW Date: 10/16/14

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 261495 MSVOA Water: EPA 8260B

Inst : MSVOA09 Name : 826GOX9W
Calnum : 484393742001 Date : 30-SEP-2014 12:45 Type : WATER
Units : ug/L X Axis : R

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	iiu05	484393742005	.25/.5PPB	30-SEP-2014 12:45	S25553 (2000000X), S25611 (2000000X), S24388 (1000000X), S25550 (5000X)
L2	iiu06	484393742006	0.5/1PPB	30-SEP-2014 13:18	S25553 (1000000X), S24237 (1000000X), S25611 (1000000X), S24388 (500000X), S25550 (5000X)
L3	iiu07	484393742007	2PPB	30-SEP-2014 13:51	S24237 (500000X), S25553 (250000X), S24388 (250000X), S25611 (250000X), S25550 (5000X)
L4	iiu08	484393742008	5PPB	30-SEP-2014 14:24	S24237 (200000X), S25553 (100000X), S24388 (100000X), S25611 (100000X), S25550 (5000X)
L5	iiu09	484393742009	10PPB	30-SEP-2014 14:57	S24237 (100000X), S25553 (50000X), S24388 (50000X), S25611 (50000X), S25550 (5000X)
L6	iiu10	484393742010	20PPB	30-SEP-2014 15:30	S24237 (50000X), S25553 (25000X), S24388 (25000X), S25611 (25000X), S25550 (5000X)
L7	iiu11	484393742011	50PPB	30-SEP-2014 16:03	S24237 (20000X), S25553 (10000X), S24388 (10000X), S25611 (10000X), S25550 (5000X)
L8	iiu12	484393742012	75PPB	30-SEP-2014 16:36	S24237 (13330X), S25553 (6667X), S24388 (6667X), S25611 (6667X), S25550 (5000X)
L9	iiu13	484393742013	100PPB	30-SEP-2014 17:09	S24237 (10000X), S25553 (5000X), S24388 (5000X), S25611 (5000X), S25550 (5000X)

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Freon 12		0.6985m	1.0308m	0.7390m	0.8281m	0.7464m	0.7013m	0.7722m	0.6996m	AVRG		1.28703		0.7770	14	15	0.05	0.99	
Chloromethane		0.7357	1.0070m	0.7961	0.8845m	0.7989m	0.7329m	0.7847m	0.7091m	AVRG		1.24052		0.8061	12	15	0.10	0.99	
Vinyl Chloride	0.6773m	0.5215m	0.7712	0.5663m	0.6175m	0.5755m	0.5304m	0.5720m	0.5170m	AVRG		1.68264		0.5943	14	15	0.05	0.99	
Bromomethane	0.1296	0.0774	0.1374	0.1099m	0.1388m	0.1670m	0.1961m	0.2359m	0.2294m	QUAD	1.62070	5.11877	-0.04050	0.1579	0.996	15	0.05	0.99	
Chloroethane	0.3036	0.2714m	0.4155m	0.2919m	0.3176m	0.2884m	0.2756m	0.2889m	0.2665m	AVRG		3.30936		0.3022	15	15	0.05	0.99	
Trichlorofluoromethane		0.7415	0.9811	0.7486	0.8397m	0.7588m	0.7399m	0.8208m	0.7518m	AVRG		1.25351		0.7978	10	15	0.05	0.99	
Acetone				0.1210	0.1179	0.1226	0.1170	0.1278	0.1230	AVRG		8.22597		0.1216	3	15	0.05	0.99	
1,1-Dichloroethene		0.3321	0.4537	0.3452	0.3691	0.3492	0.3419	0.3770	0.3518	AVRG		2.73980		0.3650	11	15	0.05	0.99	
Methylene Chloride		0.4650	0.6032	0.4641	0.4888	0.4725	0.4477	0.4935	0.4631	AVRG		2.05240		0.4872	10	15	0.05	0.99	
Carbon Disulfide		1.3907	1.7397	1.3428	1.4453	1.3409	1.3072	1.3842	1.3011	AVRG		0.71100		1.4065	10	15	0.05	0.99	
MTBE		0.8179	1.1205	0.9020	0.9402	0.9003	0.8935	0.9578	0.9336	AVRG		1.07154		0.9332	9	15	0.05	0.99	
trans-1,2-Dichloroethene		0.4022	0.5261	0.4008	0.4202	0.3861	0.3802	0.4096	0.3867	AVRG		2.41549		0.4140	11	15	0.05	0.99	
1,1-Dichloroethane		0.9218	1.1379	0.8720	0.9515	0.8712	0.8296	0.8929	0.8419	AVRG		1.09307		0.9149	11	15	0.10	0.99	
2-Butanone			0.1722	0.1596	0.1639	0.1612	0.1555	0.1677	0.1571	AVRG		6.15569		0.1625	4	15	0.05	0.99	
2,2-Dichloropropane		0.5659	0.7735	0.6119	0.6480	0.6037	0.5656	0.6338	0.5885	AVRG		1.60291		0.6239	11	15	0.05	0.99	
cis-1,2-Dichloroethene		0.4022	0.5627	0.4410	0.4866	0.4438	0.4297	0.4746	0.4470	AVRG		2.16946		0.4609	11	15	0.05	0.99	
Chloroform		0.8206	1.0964	0.8201	0.8530	0.7952	0.7520	0.8192	0.7713	AVRG		1.18909		0.8410	13	15	0.05	0.99	
Bromochloromethane		0.1963	0.2824	0.2160	0.2307	0.2180	0.2138	0.2341	0.2252	AVRG		4.40405		0.2271	11	15	0.05	0.99	
1,1,1-Trichloroethane		0.6023	0.8206	0.5932	0.6641	0.6101	0.5754	0.6127	0.5763	AVRG		1.58268		0.6318	13	15	0.05	0.99	
1,1-Dichloropropene		0.2842	0.4044	0.3212	0.3360	0.3221	0.3009	0.3158	0.2991	AVRG		3.09646		0.3229	11	15	0.05	0.99	
Carbon Tetrachloride		0.3007	0.4032	0.3210	0.3413	0.3304	0.3128	0.3341	0.3217	AVRG		3.00165		0.3331	9	15	0.05	0.99	
1,2-Dichloroethane		0.2850	0.4161	0.3226	0.3393	0.3259	0.2908	0.3187	0.2956	AVRG		3.08416		0.3242	13	15	0.05	0.99	
Benzene		1.0119	1.2684	0.9817	1.0593	1.0135	0.9229	0.9718	0.9320	AVRG		0.98023		1.0202	11	15	0.05	0.99	
Trichloroethene		0.2343	0.3165	0.2456	0.2705	0.2620	0.2451	0.2639	0.2578	AVRG		3.81740		0.2620	10	15	0.05	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
1,2-Dichloropropane		0.3096	0.3928	0.3227	0.3183	0.3188	0.2904	0.3084	0.2908	AVRG		3.13499		0.3190	10	15	0.05	0.99	
Bromodichloromethane		0.3070	0.4593	0.3635	0.3828	0.3800	0.3599	0.3895	0.3731	AVRG		2.65334		0.3769	11	15	0.05	0.99	
Dibromomethane		0.1372	0.1857	0.1591	0.1637	0.1639	0.1531	0.1652	0.1562	AVRG		6.23016		0.1605	8	15	0.05	0.99	
4-Methyl-2-Pentanone			0.2363	0.2034	0.2062	0.2201	0.2072	0.2242	0.2075	AVRG		4.65168		0.2150	6	15	0.05	0.99	
cis-1,3-Dichloropropene		0.3196	0.4649	0.3850	0.4162	0.4131	0.3819	0.4040	0.3898	AVRG		2.52021		0.3968	10	15	0.05	0.99	
Toluene		0.5916	0.7834	0.6265	0.6316	0.6139	0.5913	0.6116	0.6126	AVRG		1.58021		0.6328	10	15	0.05	0.99	
trans-1,3-Dichloropropene		0.2852	0.4221	0.3573	0.3819	0.3703	0.3591	0.3941	0.3881	AVRG		2.70447		0.3698	11	15	0.05	0.99	
1,1,2-Trichloroethane		0.1226	0.1442	0.1238	0.1267	0.1231	0.1209	0.1296	0.1273	AVRG		7.85727		0.1273	6	15	0.05	0.99	
2-Hexanone			0.1151	0.1462	0.1651	0.1667	0.1587	0.1787	0.1764	AVRG		6.32408		0.1581	14	15	0.05	0.99	
1,3-Dichloropropane		0.3662	0.4946	0.3948	0.4103	0.3938	0.3532	0.3898	0.3866	AVRG		2.50837		0.3987	11	15	0.05	0.99	
Tetrachloroethene		0.2259	0.3016	0.2488	0.2602	0.2446	0.2391	0.2544	0.2509	AVRG		3.94945		0.2532	9	15	0.05	0.99	
Dibromochloromethane		0.2183	0.3215	0.2686	0.2831	0.2809	0.2788	0.3091	0.3044	AVRG		3.53259		0.2831	11	15	0.05	0.99	
1,2-Dibromoethane		0.1821	0.2586	0.2253	0.2285	0.2216	0.2164	0.2343	0.2310	AVRG		4.44970		0.2247	10	15	0.05	0.99	
Chlorobenzene		0.6430	0.8935	0.6763	0.7237	0.6807	0.6553	0.7038	0.6801	AVRG		1.41430		0.7071	11	15	0.30	0.99	
1,1,1,2-Tetrachloroethane		0.2277	0.3433	0.2687	0.2836	0.2605	0.2492	0.2642	0.2539	AVRG		3.71936		0.2689	13	15	0.05	0.99	
Ethylbenzene		1.0071	1.4335	1.1269	1.2226	1.1116	1.0444	1.0983	1.0214	AVRG		0.88244		1.1332	12	15	0.05	0.99	
m,p-Xylenes	0.5196	0.3468	0.5051	0.4036	0.4352	0.4096	0.3854	0.3736	0.3520	AVRG		2.41223		0.4146	15	15	0.05	0.99	
o-Xylene		0.3238	0.5082	0.3944	0.4479	0.4303	0.4086	0.4527	0.4264	AVRG		2.35835		0.4240	13	15	0.05	0.99	
Styrene		0.4878	0.7926	0.6684	0.7300	0.6951	0.6802	0.7221	0.6880	AVRG		1.46408		0.6830	13	15	0.05	0.99	
Bromoform		0.1120	0.1721	0.1447	0.1586	0.1601	0.1652	0.1840	0.1805	AVRG		6.26351		0.1597	14	15	0.10	0.99	
Isopropylbenzene		1.7249	2.6773	1.9980	2.2025	2.0348	1.9467	1.9916	1.9758	AVRG		0.48334		2.0690	13	15	0.05	0.99	
1,1,2,2-Tetrachloroethane		0.4835	0.6473	0.4834	0.5161	0.4763	0.4623	0.4965	0.4755	AVRG		1.97981		0.5051	12	15	0.30	0.99	
1,2,3-Trichloropropane		0.1150	0.1433	0.1177	0.1187	0.1145	0.1092	0.1142	0.1089	AVRG		8.49733		0.1177	9	15	0.05	0.99	
Propylbenzene		2.3090	3.1714	2.2972	2.5630	2.3936	2.2339	2.2826	2.0542	AVRG		0.41440		2.4131	14	15	0.05	0.99	
Bromobenzene		0.5526	0.7478	0.5684	0.5956	0.5683	0.5597	0.5938	0.5682	AVRG		1.68268		0.5943	11	15	0.05	0.99	
1,3,5-Trimethylbenzene		1.3467	2.0434	1.5038	1.6339	1.5470	1.4421	1.4987	1.3587	AVRG		0.64650		1.5468	14	15	0.05	0.99	
2-Chlorotoluene		1.5891	2.2292	1.6382	1.7389	1.6276	1.4810	1.5322		AVRG		0.59141		1.6909	15	15	0.05	0.99	
4-Chlorotoluene		1.4523	2.0315	1.4185	1.4967	1.4207	1.3301	1.3961	1.3101	QUAD	-0.2378	0.69875	4.342E-4	1.4820	0.999	15	0.05	0.99	
tert-Butylbenzene		1.1328	1.7355	1.3453	1.4639	1.4062	1.3787	1.4369	1.3872	AVRG		0.70881		1.4108	12	15	0.05	0.99	
1,2,4-Trimethylbenzene		1.1542	1.8634	1.4379	1.5717	1.4994	1.4515	1.4859	1.4390	AVRG		0.67210		1.4879	13	15	0.05	0.99	
sec-Butylbenzene		1.5479	2.4480	1.9060	2.1585	2.0066	1.9083	2.0037	1.8547	AVRG		0.50525		1.9792	13	15	0.05	0.99	
para-Isopropyl Toluene		1.0650	1.7400	1.4004	1.5247	1.4739	1.4197	1.5349	1.4652	AVRG		0.68825		1.4530	13	15	0.05	0.99	
1,3-Dichlorobenzene		0.8840	1.1515	0.8931	0.9557	0.9171	0.8860	0.9393	0.9196	AVRG		1.06010		0.9433	9	15	0.05	0.99	
1,4-Dichlorobenzene		0.9022	1.2558	0.8876	0.9453	0.8946	0.8567	0.9031	0.8678	AVRG		1.06479		0.9391	14	15	0.05	0.99	
n-Butylbenzene		0.8477	1.2981	1.0523	1.2019	1.2073	1.1828	1.2898	1.2475	AVRG		0.85769		1.1659	13	15	0.05	0.99	
1,2-Dichlorobenzene		0.7662	1.1425	0.8771	0.9268	0.9147	0.8893	0.9378	0.9275	AVRG		1.08373		0.9227	11	15	0.05	0.99	
1,2-Dibromo-3-Chloropropane			0.0716	0.0592	0.0657	0.0684	0.0711	0.0790	0.0774	AVRG		14.2198		0.0703	10	15	0.05	0.99	
1,2,4-Trichlorobenzene		0.2741	0.3842	0.3279	0.3812	0.3896	0.4064			AVRG		2.77326		0.3606	14	15	0.05	0.99	
Hexachlorobutadiene		0.1869	0.2768	0.2214	0.2375	0.2210	0.2146	0.2391	0.2393	AVRG		4.35554		0.2296	11	15	0.05	0.99	
Naphthalene			0.6514	0.5997	0.6938	0.7706	0.7819	0.8870	0.8699	AVRG		1.33224		0.7506	14	15	0.05	0.99	
1,2,3-Trichlorobenzene		0.1583m	0.3466	0.3020	0.3590	0.3584	0.3808	0.4363	0.4334	QUAD	0.72209	2.66643	-0.00936	0.3469	0.999	15	0.05	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
tert-Butyl Alcohol (TBA)		0.0160m	0.0248	0.0220	0.0229	0.0230	0.0223	0.0251	0.0244	AVRG		44.3198		0.0226	13	15	0.005	0.99	
Isopropyl Ether (DIPE)		1.7194	2.3899	1.9172	2.0691	1.9197	1.8790	2.0539	1.8768	AVRG		0.50553		1.9781	10	15	0.05	0.99	
Ethyl tert-Butyl Ether (ETBE)		1.2364	1.6809	1.3004	1.4048	1.3513	1.2912	1.4242	1.3421	AVRG		0.72520		1.3789	10	15	0.05	0.99	
Methyl tert-Amyl Ether (TAME)		0.5720	0.7649	0.6145	0.6546	0.6363	0.6009	0.6331	0.6005	AVRG		1.57579		0.6346	9	15	0.05	0.99	
Ethanol			0.0046	0.0037	0.0038	0.0037	0.0037	0.0038	0.0039	AVRG		256.325		0.0039	8	15	0.0005	0.99	
Isopropanol			0.0217	0.0165	0.0178	0.0171	0.0176	0.0181	0.0188	AVRG		54.8334		0.0182	9	15	0.005	0.99	
Dibromofluoromethane	0.6090	0.6133	0.6229	0.6121	0.6121	0.6042	0.6047	0.5967	0.5787	AVRG		1.65026		0.6060	2	15	0.05	0.99	
1,2-Dichloroethane-d4	0.3424	0.3409	0.3334	0.3442	0.3400	0.3448	0.3324	0.3172	0.3032	AVRG		3.00153		0.3332	4	15	0.05	0.99	
Toluene-d8	1.2421	1.2430	1.2940	1.3152	1.2587	1.2342	1.2676	1.2417	1.2734	AVRG		0.79157		1.2633	2	15	0.05	0.99	
Bromofluorobenzene	1.0478	1.0182	1.0813	1.0183	0.9906	0.9698	1.0019	1.0029	0.9963	AVRG		0.98608		1.0141	3	15	0.05	0.99	

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
Freon 12			1.0000	-10	2.0000	**33**	5.0000	-5	10.000	7	20.000	-4	50.000	-10	75.000	-1	100.00	-10
Chloromethane			1.0000	-9	2.0000	**25**	5.0000	-1	10.000	10	20.000	-1	50.000	-9	75.000	-3	100.00	-12
Vinyl Chloride	0.5000	14	1.0000	-12	2.0000	**30**	5.0000	-5	10.000	4	20.000	-3	50.000	-11	75.000	-4	100.00	-13
Bromomethane	0.5000	**290**	1.0000	**102**	2.0000	**51**	5.0000	-12	10.000	-14	20.000	-9	50.000	-4	75.000	6	100.00	-2
Chloroethane	0.5000	0	1.0000	-10	2.0000	**38**	5.0000	-3	10.000	5	20.000	-5	50.000	-9	75.000	-4	100.00	-12
Trichlorofluoromethane			1.0000	-7	2.0000	**23**	5.0000	-6	10.000	5	20.000	-5	50.000	-7	75.000	3	100.00	-6
Acetone							5.0000	0	10.000	-3	20.000	1	50.000	-4	75.000	5	100.00	1
1,1-Dichloroethene			0.5000	-9	2.0000	**24**	5.0000	-5	10.000	1	20.000	-4	50.000	-6	75.000	3	100.00	-4
Methylene Chloride			0.5000	-5	2.0000	**24**	5.0000	-5	10.000	0	20.000	-3	50.000	-8	75.000	1	100.00	-5
Carbon Disulfide			0.5000	-1	2.0000	**24**	5.0000	-5	10.000	3	20.000	-5	50.000	-7	75.000	-2	100.00	-7
MTBE			0.5000	-12	2.0000	20	5.0000	-3	10.000	1	20.000	-4	50.000	-4	75.000	3	100.00	0
trans-1,2-Dichloroethene			0.5000	-3	2.0000	**27**	5.0000	-3	10.000	1	20.000	-7	50.000	-8	75.000	-1	100.00	-7
1,1-Dichloroethane			0.5000	1	2.0000	**24**	5.0000	-5	10.000	4	20.000	-5	50.000	-9	75.000	-2	100.00	-8
2-Butanone					2.0000	6	5.0000	-2	10.000	1	20.000	-1	50.000	-4	75.000	3	100.00	-3
2,2-Dichloropropane			0.5000	-9	2.0000	**24**	5.0000	-2	10.000	4	20.000	-3	50.000	-9	75.000	2	100.00	-6
cis-1,2-Dichloroethene			0.5000	-13	2.0000	**22**	5.0000	-4	10.000	6	20.000	-4	50.000	-7	75.000	3	100.00	-3
Chloroform			0.5000	-2	2.0000	**30**	5.0000	-2	10.000	1	20.000	-5	50.000	-11	75.000	-3	100.00	-8
Bromochloromethane			0.5000	-14	2.0000	**24**	5.0000	-5	10.000	2	20.000	-4	50.000	-6	75.000	3	100.00	-1
1,1,1-Trichloroethane			0.5000	-5	2.0000	**30**	5.0000	-6	10.000	5	20.000	-3	50.000	-9	75.000	-3	100.00	-9
1,1-Dichloropropene			0.5000	-12	2.0000	**25**	5.0000	-1	10.000	4	20.000	0	50.000	-7	75.000	-2	100.00	-7
Carbon Tetrachloride			0.5000	-10	2.0000	**21**	5.0000	-4	10.000	2	20.000	-1	50.000	-6	75.000	0	100.00	-3
1,2-Dichloroethane			0.5000	-12	2.0000	**28**	5.0000	-1	10.000	5	20.000	1	50.000	-10	75.000	-2	100.00	-9
Benzene			0.5000	-1	2.0000	**24**	5.0000	-4	10.000	4	20.000	-1	50.000	-10	75.000	-5	100.00	-9
Trichloroethene			0.5000	-11	2.0000	**21**	5.0000	-6	10.000	3	20.000	0	50.000	-6	75.000	1	100.00	-2
1,2-Dichloropropane			0.5000	-3	2.0000	**23**	5.0000	1	10.000	0	20.000	0	50.000	-9	75.000	-3	100.00	-9
Bromodichloromethane			0.5000	-19	2.0000	**22**	5.0000	-4	10.000	2	20.000	1	50.000	-5	75.000	3	100.00	-1
Dibromomethane			0.5000	-15	2.0000	16	5.0000	-1	10.000	2	20.000	2	50.000	-5	75.000	3	100.00	-3
4-Methyl-2-Pentanone					2.0000	10	5.0000	-5	10.000	-4	20.000	2	50.000	-4	75.000	4	100.00	-3
cis-1,3-Dichloropropene			0.5000	-19	2.0000	17	5.0000	-3	10.000	5	20.000	4	50.000	-4	75.000	2	100.00	-2
Toluene			0.5000	-7	2.0000	**24**	5.0000	-1	10.000	0	20.000	-3	50.000	-7	75.000	-3	100.00	-3
trans-1,3-Dichloropropene			0.5000	**-23**	2.0000	14	5.0000	-3	10.000	3	20.000	0	50.000	-3	75.000	7	100.00	5
1,1,2-Trichloroethane			0.5000	-4	2.0000	13	5.0000	-3	10.000	0	20.000	-3	50.000	-5	75.000	2	100.00	0
2-Hexanone					2.0000	**-27**	5.0000	-8	10.000	4	20.000	5	50.000	0	75.000	13	100.00	12
1,3-Dichloropropane			0.5000	-8	2.0000	**24**	5.0000	-1	10.000	3	20.000	-1	50.000	-11	75.000	-2	100.00	-3
Tetrachloroethene			0.5000	-11	2.0000	19	5.0000	-2	10.000	3	20.000	-3	50.000	-6	75.000	0	100.00	-1
Dibromochloromethane			0.5000	**-23**	2.0000	14	5.0000	-5	10.000	0	20.000	-1	50.000	-1	75.000	9	100.00	8
1,2-Dibromoethane			0.5000	-19	2.0000	15	5.0000	0	10.000	2	20.000	-1	50.000	-4	75.000	4	100.00	3
Chlorobenzene			0.5000	-9	2.0000	**26**	5.0000	-4	10.000	2	20.000	-4	50.000	-7	75.000	0	100.00	-4
1,1,1,2-Tetrachloroethane			0.5000	-15	2.0000	**28**	5.0000	0	10.000	5	20.000	-3	50.000	-7	75.000	-2	100.00	-6
Ethylbenzene			0.5000	-11	2.0000	**26**	5.0000	-1	10.000	8	20.000	-2	50.000	-8	75.000	-3	100.00	-10
m,p-Xylenes	0.5000	**25**	1.0000	-16	4.0000	**22**	10.000	-3	20.000	5	40.000	-1	100.00	-7	150.00	-10	200.00	-15
o-Xylene			0.5000	**-24**	2.0000	20	5.0000	-7	10.000	6	20.000	1	50.000	-4	75.000	7	100.00	1

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
Styrene			0.5000	**-29**	2.0000	16	5.0000	-2	10.000	7	20.000	2	50.000	0	75.000	6	100.00	1
Bromoform			0.5000	**-30**	2.0000	8	5.0000	-9	10.000	-1	20.000	0	50.000	3	75.000	15	100.00	13
Isopropylbenzene			0.5000	-17	2.0000	**29**	5.0000	-3	10.000	6	20.000	-2	50.000	-6	75.000	-4	100.00	-5
1,1,2,2-Tetrachloroethane			0.5000	-4	2.0000	**28**	5.0000	-4	10.000	2	20.000	-6	50.000	-8	75.000	-2	100.00	-6
1,2,3-Trichloropropane			0.5000	-2	2.0000	**22**	5.0000	0	10.000	1	20.000	-3	50.000	-7	75.000	-3	100.00	-7
Propylbenzene			0.5000	-4	2.0000	**31**	5.0000	-5	10.000	6	20.000	-1	50.000	-7	75.000	-5	100.00	-15
Bromobenzene			0.5000	-7	2.0000	**26**	5.0000	-4	10.000	0	20.000	-4	50.000	-6	75.000	0	100.00	-4
1,3,5-Trimethylbenzene			0.5000	-13	2.0000	**32**	5.0000	-3	10.000	6	20.000	0	50.000	-7	75.000	-3	100.00	-12
2-Chlorotoluene			0.5000	-6	2.0000	**32**	5.0000	-3	10.000	3	20.000	-4	50.000	-12	75.000	-9		
4-Chlorotoluene			0.5000	**-46**	2.0000	**30**	5.0000	-5	10.000	3	20.000	0	50.000	-4	75.000	4	100.00	-1
tert-Butylbenzene			0.5000	-20	2.0000	**23**	5.0000	-5	10.000	4	20.000	0	50.000	-2	75.000	2	100.00	-2
1,2,4-Trimethylbenzene			0.5000	**-22**	2.0000	**25**	5.0000	-3	10.000	6	20.000	1	50.000	-2	75.000	0	100.00	-3
sec-Butylbenzene			0.5000	**-22**	2.0000	**24**	5.0000	-4	10.000	9	20.000	1	50.000	-4	75.000	1	100.00	-6
para-Isopropyl Toluene			0.5000	**-27**	2.0000	20	5.0000	-4	10.000	5	20.000	1	50.000	-2	75.000	6	100.00	1
1,3-Dichlorobenzene			0.5000	-6	2.0000	**22**	5.0000	-5	10.000	1	20.000	-3	50.000	-6	75.000	0	100.00	-3
1,4-Dichlorobenzene			0.5000	-4	2.0000	**34**	5.0000	-5	10.000	1	20.000	-5	50.000	-9	75.000	-4	100.00	-8
n-Butylbenzene			0.5000	**-27**	2.0000	11	5.0000	-10	10.000	3	20.000	4	50.000	1	75.000	11	100.00	7
1,2-Dichlorobenzene			0.5000	-17	2.0000	**24**	5.0000	-5	10.000	0	20.000	-1	50.000	-4	75.000	2	100.00	1
1,2-Dibromo-3-Chloropropane					2.0000	2	5.0000	-16	10.000	-7	20.000	-3	50.000	1	75.000	12	100.00	10
1,2,4-Trichlorobenzene			0.5000	**-24**	2.0000	7	5.0000	-9	10.000	6	20.000	8	50.000	13				
Hexachlorobutadiene			0.5000	-19	2.0000	**21**	5.0000	-4	10.000	3	20.000	-4	50.000	-7	75.000	4	100.00	4
Naphthalene					2.0000	-13	5.0000	-20	10.000	-8	20.000	3	50.000	4	75.000	18	100.00	16
1,2,3-Trichlorobenzene			0.5000	**103**	2.0000	**28**	5.0000	-5	10.000	2	20.000	-3	50.000	-4	75.000	4	100.00	-1
tert-Butyl Alcohol (TBA)			5.0000	**-29**	20.000	10	50.000	-3	100.00	1	200.00	2	500.00	-1	750.00	11	1000.0	8
Isopropyl Ether (DIPE)			0.5000	-13	2.0000	**21**	5.0000	-3	10.000	5	20.000	-3	50.000	-5	75.000	4	100.00	-5
Ethyl tert-Butyl Ether (ETBE)			0.5000	-10	2.0000	**22**	5.0000	-6	10.000	2	20.000	-2	50.000	-6	75.000	3	100.00	-3
Methyl tert-Amyl Ether (TAME)			0.5000	-10	2.0000	**21**	5.0000	-3	10.000	3	20.000	0	50.000	-5	75.000	0	100.00	-5
Ethanol					200.00	18	500.00	-4	1000.0	-1	2000.0	-5	5000.0	-5	7500.0	-2	10000	-1
Isopropanol					20.000	19	50.000	-9	100.00	-2	200.00	-6	500.00	-3	750.00	-1	1000.0	3
Dibromofluoromethane	50.000	1	50.000	1	50.000	3	50.000	1	50.000	1	50.000	0	50.000	0	50.000	-2	50.000	-4
1,2-Dichloroethane-d4	50.000	3	50.000	2	50.000	0	50.000	3	50.000	2	50.000	3	50.000	0	50.000	-5	50.000	-9
Toluene-d8	50.000	-2	50.000	-2	50.000	2	50.000	4	50.000	0	50.000	-2	50.000	0	50.000	-2	50.000	1
Bromofluorobenzene	50.000	3	50.000	0	50.000	7	50.000	0	50.000	-2	50.000	-4	50.000	-1	50.000	-1	50.000	-2

TEW 10/07/14 [Freon 12]: Corrected fronting or tailing peak integration in all levels.

TEW 10/07/14 [Chloromethane]: Corrected fronting or tailing peak integration in multiple levels.

TEW 10/07/14 [Vinyl Chloride]: Corrected fronting or tailing peak integration in multiple levels.

TEW 10/07/14 [Bromomethane]: Corrected fronting or tailing peak integration in multiple levels.

TEW 10/07/14 [Chloroethane]: Corrected fronting or tailing peak integration in multiple levels.

TEW 10/07/14 [Trichlorofluoromethane]: Corrected fronting or tailing peak integration in multiple levels.

TEW 10/07/14 [tert-Butyl Alcohol (TBA)]: Combined split peak1PPB (iiu06).

TEW 10/07/14 [Trifluorotoluene]: Picked or reassigned peak in multiple levels.

TEW 10/07/14 [Bromomethane]: Fails 8260C low point requant criteria due to high bias. OK to report ND samples, or hits >5. Will rerun hits <5ppb.

TEW 10/08/14 [4-Chlorotoluene]: Fails 8260C low point requant criteria due to low bias. Will not run any samples needing this analyte.

TEW 10/07/14 [1,2,3-Trichlorobenzene]: Fails 8260C low point requant criteria due to high bias. OK to report ND samples, or hits >2. Will rerun hits <2ppb.

TEW 10/07/14 [Iodomethane]: Fails 8260C low point requant criteria due to high bias. OK to report ND samples, or hits >10. Will rerun hits <10ppb.

TEW 10/07/14 [2-Chloroethylvinylether]: Fails 8260C low point requant criteria due to high bias. OK to report ND samples, or hits >10. Will rerun hits <10ppb.

TEW 10/07/14 [1-Chlorohexane]: Fails 8260C low point requant criteria due to high bias. OK to report ND samples, or hits >5. Will rerun hits <5ppb.

TEW 10/08/14 [1,2,3-Trichlorobenzene]: Combined split peak in multiple levels.

TEW 10/08/14 : Different aliquot of S25528 used on October 6th sequence.

TEW 10/08/14 [1,2,3-Trichlorobenzene]: Both values round to the same number.

Analyst: TEW Date: 10/08/14 Reviewer: LW Date: 10/08/14

m=manual integration

Instrument amount = a0 + response * a1 + response^2 * a2; AVRG=Average response factor; QUAD=Quadratic regression

CURTIS & TOMPKINS 2ND SOURCE CALIBRATION SUMMARY FOR 261495 MSVOA Water
EPA 8260B

Inst : MSVOA09 Name : 826GOX9W
Calnum : 484393742001 Cal Date : 30-SEP-2014 Type : WATER

ICV 484402568005 (ij605 06-OCT-2014) stds: S25528 (10000X), S25398 (10000X), S25703 (10000X), S25550 (5000X)
ICV 484402568007 (ij607 06-OCT-2014) stds: S25697 (10000X), S25550 (5000X)

Analyte	ICV Seqnum	Spiked	Quant	Units	%D	Max	Flags
Freon 12	484402568007	20.00	14.14	ug/L	**-29**	30	!v- m
Chloromethane	484402568007	20.00	18.75	ug/L	-6	30	m
Vinyl Chloride	484402568007	20.00	18.00	ug/L	-10	20	m
Bromomethane	484402568007	20.00	10.87	ug/L	**-46**	30	v- m
Chloroethane	484402568007	20.00	18.16	ug/L	-9	30	m
Trichlorofluoromethane	484402568007	20.00	17.25	ug/L	-14	30	m
Acetone	484402568005	25.00	23.56	ug/L	-6	40	
1,1-Dichloroethene	484402568005	25.00	23.84	ug/L	-5	20	
Methylene Chloride	484402568005	25.00	24.69	ug/L	-1	30	
Carbon Disulfide	484402568005	25.00	22.99	ug/L	-8	30	
MTBE	484402568005	25.00	25.24	ug/L	1	30	
trans-1,2-Dichloroethene	484402568005	25.00	23.63	ug/L	-5	30	
1,1-Dichloroethane	484402568005	25.00	23.76	ug/L	-5	30	
2-Butanone	484402568005	25.00	24.31	ug/L	-3	40	
2,2-Dichloropropane	484402568005	25.00	20.11	ug/L	-20	30	
cis-1,2-Dichloroethene	484402568005	25.00	25.02	ug/L	0	30	
Chloroform	484402568005	25.00	24.02	ug/L	-4	20	
Bromochloromethane	484402568005	25.00	25.39	ug/L	2	30	
1,1,1-Trichloroethane	484402568005	25.00	23.21	ug/L	-7	30	
1,1-Dichloropropene	484402568005	25.00	24.06	ug/L	-4	30	
Carbon Tetrachloride	484402568005	25.00	23.65	ug/L	-5	30	
1,2-Dichloroethane	484402568005	25.00	25.73	ug/L	3	30	
Benzene	484402568005	25.00	24.49	ug/L	-2	30	
Trichloroethene	484402568005	25.00	23.88	ug/L	-4	30	
1,2-Dichloropropane	484402568005	25.00	23.86	ug/L	-5	20	
Bromodichloromethane	484402568005	25.00	25.06	ug/L	0	30	
Dibromomethane	484402568005	25.00	26.55	ug/L	6	30	
4-Methyl-2-Pentanone	484402568005	25.00	25.77	ug/L	3	40	
cis-1,3-Dichloropropene	484402568005	25.00	26.38	ug/L	6	30	
Toluene	484402568005	25.00	23.41	ug/L	-6	20	
trans-1,3-Dichloropropene	484402568005	25.00	24.34	ug/L	-3	30	
1,1,2-Trichloroethane	484402568005	25.00	25.72	ug/L	3	30	
2-Hexanone	484402568005	25.00	26.28	ug/L	5	40	
1,3-Dichloropropane	484402568005	25.00	24.87	ug/L	-1	30	
Tetrachloroethene	484402568005	25.00	23.10	ug/L	-8	30	
Dibromochloromethane	484402568005	25.00	26.64	ug/L	7	30	
1,2-Dibromoethane	484402568005	25.00	25.57	ug/L	2	30	
Chlorobenzene	484402568005	25.00	24.28	ug/L	-3	30	
1,1,1,2-Tetrachloroethane	484402568005	25.00	24.54	ug/L	-2	30	
Ethylbenzene	484402568005	25.00	23.13	ug/L	-7	20	
m,p-Xylenes	484402568005	50.00	47.00	ug/L	-6	30	
o-Xylene	484402568005	25.00	25.53	ug/L	2	30	
Styrene	484402568005	25.00	25.45	ug/L	2	30	
Bromoform	484402568005	25.00	27.39	ug/L	10	30	
Isopropylbenzene	484402568005	25.00	23.56	ug/L	-6	30	
1,1,2,2-Tetrachloroethane	484402568005	25.00	23.74	ug/L	-5	30	
1,2,3-Trichloropropane	484402568005	25.00	24.33	ug/L	-3	30	

Analyte	ICV Seqnum	Spiked	Quant	Units	%D	Max	Flags
Propylbenzene	484402568005	25.00	22.18	ug/L	-11	30	
Bromobenzene	484402568005	25.00	23.75	ug/L	-5	30	
1,3,5-Trimethylbenzene	484402568005	25.00	23.79	ug/L	-5	30	
2-Chlorotoluene	484402568005	25.00	23.43	ug/L	-6	30	
4-Chlorotoluene	484402568005	25.00	23.61	ug/L	-6	30	
tert-Butylbenzene	484402568005	25.00	23.52	ug/L	-6	30	
1,2,4-Trimethylbenzene	484402568005	25.00	22.77	ug/L	-9	30	
sec-Butylbenzene	484402568005	25.00	23.32	ug/L	-7	30	
para-Isopropyl Toluene	484402568005	25.00	21.50	ug/L	-14	30	
1,3-Dichlorobenzene	484402568005	25.00	23.78	ug/L	-5	30	
1,4-Dichlorobenzene	484402568005	25.00	21.79	ug/L	-13	30	
n-Butylbenzene	484402568005	25.00	20.27	ug/L	-19	30	
1,2-Dichlorobenzene	484402568005	25.00	24.21	ug/L	-3	30	
1,2-Dibromo-3-Chloropropane	484402568005	25.00	23.55	ug/L	-6	30	
1,2,4-Trichlorobenzene	484402568005	25.00	25.54	ug/L	2	30	
Hexachlorobutadiene	484402568005	25.00	19.81	ug/L	**-21**	30	!v-
Naphthalene	484402568005	25.00	25.55	ug/L	2	30	
1,2,3-Trichlorobenzene	484402568005	25.00	24.39	ug/L	-2	30	calc
tert-Butyl Alcohol (TBA)	484402568005	125.0	140.2	ug/L	12	30	
Isopropyl Ether (DIPE)	484402568005	25.00	24.76	ug/L	-1	30	
Ethyl tert-Butyl Ether (ETBE)	484402568005	25.00	24.83	ug/L	-1	30	
Methyl tert-Amyl Ether (TAME)	484402568005	25.00	24.79	ug/L	-1	30	
Ethanol	484402568005	2500	2442	ug/L	-2	30	
Isopropanol	484402568005	250.0	252.9	ug/L	1	30	

484402568005: Analyst: TEW Date: 10/08/14 Reviewer: LW Date: 10/08/14
484402568007: Analyst: TEW Date: 10/08/14 Reviewer: LW Date: 10/08/14

!=warning -=low bias calc=calc err m=manual integration v=ICV

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 261495 MSVOA Water: EPA 8260B

Inst : MSVOA10 Name : 826GOX10
Calnum : 494306229001 Date : 31-JUL-2014 18:03 Type : WATER
Units : ug/L X Axis : R

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	jgv05	494306229005	.25/0.5PPB	31-JUL-2014 18:03	S25051 (2000000X), S25011 (2000000X), S23923 (2000000X), S24993 (2000000X), S24201 (1000000X), S25201 (2500X)
L2	jgv06	494306229006	0.5/1PPB	31-JUL-2014 18:36	S25051 (1000000X), S25011 (1000000X), S23923 (1000000X), S24993 (1000000X), S24201 (500000X), S25201 (2500X)
L3	jgv07	494306229007	2PPB	31-JUL-2014 19:09	S25051 (250000X), S25011 (250000X), S23923 (500000X), S24993 (250000X), S24201 (250000X), S25201 (2500X)
L4	jgv08	494306229008	5PPB	31-JUL-2014 19:42	S25051 (100000X), S25011 (100000X), S23923 (200000X), S24993 (100000X), S24201 (100000X), S25201 (2500X)
L5	jgv09	494306229009	10PPB	31-JUL-2014 20:14	S25051 (50000X), S25011 (50000X), S23923 (100000X), S24993 (50000X), S24201 (50000X), S25201 (2500X)
L6	jgv10	494306229010	20PPB	31-JUL-2014 20:47	S25051 (25000X), S25011 (25000X), S23923 (50000X), S24993 (25000X), S24201 (25000X), S25201 (2500X)
L7	jgv11	494306229011	50PPB	31-JUL-2014 21:19	S25051 (10000X), S25011 (10000X), S23923 (20000X), S24993 (10000X), S24201 (10000X), S25201 (2500X)
L8	jgv12	494306229012	75PPB	31-JUL-2014 21:52	S25051 (6667X), S25011 (6667X), S23923 (13330X), S24993 (6667X), S24201 (6667X), S25201 (2500X)
L9	jgv13	494306229013	100PPB	31-JUL-2014 22:25	S25051 (5000X), S25011 (5000X), S23923 (10000X), S24993 (5000X), S24201 (5000X), S25201 (2500X)

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Freon 12		0.7968	0.8137m	0.7079m	0.7791	0.6925	0.6917	0.8659	0.7756	AVRG		1.30652		0.7654	8	15	0.05	0.99	
Chloromethane	1.0282	0.8278	0.8700	0.7769	0.8208	0.8339	0.7954	0.8922	0.8347	AVRG		1.17188		0.8533	9	15	0.10	0.99	
Vinyl Chloride	0.5685	0.5901	0.6308	0.5735	0.6450	0.6016	0.6047	0.7013	0.6495	AVRG		1.61720		0.6184	7	15	0.05	0.99	
Bromomethane		0.2585	0.3408	0.3147	0.3221	0.3212	0.3318	0.3748	0.3566	AVRG		3.05299		0.3275	10	15	0.05	0.99	
Chloroethane		0.3319	0.3843	0.3001	0.3514	0.3326	0.3314	0.3711	0.3473	AVRG		2.90905		0.3438	8	15	0.05	0.99	
Trichlorofluoromethane		0.6416	0.6989	0.6151	0.6762	0.6108	0.6035	0.7169	0.6575	AVRG		1.53240		0.6526	6	15	0.05	0.99	
Acetone					0.2321m	0.2125	0.2270	0.2373	0.2231	AVRG		4.41711		0.2264	4	15	0.05	0.99	
1,1-Dichloroethene		0.5992	0.4568	0.3828	0.4655	0.4092	0.4303	0.4723	0.4526	AVRG		2.18066		0.4586	14	15	0.05	0.99	
Methylene Chloride		0.5477	0.6441	0.5861	0.6164	0.5979	0.6007	0.6313	0.6092	AVRG		1.65513		0.6042	5	15	0.05	0.99	
Carbon Disulfide		2.0207	1.8262	1.5220	1.7619	1.6429	1.7699	1.9572	1.8433	AVRG		0.55772		1.7930	9	15	0.05	0.99	
MTBE		1.9694	1.7368	1.6030	1.6317	1.6778	1.6638	1.7532	1.6205	AVRG		0.58582		1.7070	7	15	0.05	0.99	
trans-1,2-Dichloroethene		0.7042	0.5556	0.5029	0.5246	0.5092	0.5118	0.5642	0.5293	AVRG		1.81739		0.5502	12	15	0.05	0.99	
1,1-Dichloroethane		1.0261	1.1571	1.0298	1.0524	1.0323	1.0442	1.1385	1.0830	AVRG		0.93422		1.0704	5	15	0.10	0.99	
2-Butanone					0.3872	0.3668	0.3513	0.3586	0.3289	AVRG		2.78907		0.3585	6	15	0.05	0.99	
2,2-Dichloropropane		0.6633	0.7433	0.6426	0.7135	0.6594	0.6857	0.7342	0.6842	AVRG		1.44765		0.6908	5	15	0.05	0.99	
cis-1,2-Dichloroethene		0.7817	0.7124	0.6138	0.6115	0.5831	0.5854	0.6243	0.5944	AVRG		1.56658		0.6383	11	15	0.05	0.99	
Chloroform		0.9655	1.0190	0.9681	0.9981	0.9465	0.9382	1.0031	0.9346	AVRG		1.02920		0.9716	3	15	0.05	0.99	
Bromochloromethane		0.2314	0.3228	0.3498	0.3225	0.3172	0.3215	0.3408	0.3061	AVRG		3.18458		0.3140	11	15	0.05	0.99	
1,1,1-Trichloroethane		0.8198	0.7386	0.6042	0.6939	0.6466	0.6842	0.7511	0.7081	AVRG		1.41680		0.7058	9	15	0.05	0.99	
1,1-Dichloropropene		0.4445	0.4460	0.3746	0.4431	0.4127	0.4199	0.4691	0.4366	AVRG		2.32130		0.4308	7	15	0.05	0.99	
Carbon Tetrachloride		0.3639	0.3738	0.3039	0.3744	0.3379	0.3732	0.4136	0.3770	AVRG		2.74181		0.3647	9	15	0.05	0.99	
1,2-Dichloroethane		0.5159	0.5902	0.5136	0.5190	0.5225	0.5229	0.5513	0.5027	AVRG		1.88761		0.5298	5	15	0.05	0.99	
Benzene		1.3708	1.3904	1.2697	1.2963	1.2561	1.2490	1.3538	1.2126	AVRG		0.76932		1.2999	5	15	0.05	0.99	
Trichloroethene		0.3410	0.3606	0.3238	0.3521	0.3363	0.3501	0.3832	0.3565	AVRG		2.85353		0.3504	5	15	0.05	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
1,2-Dichloropropane		0.4266	0.4273	0.3835	0.4016	0.4015	0.3940	0.4208	0.3985	AVRG		2.45863		0.4067	4	15	0.05	0.99	
Bromodichloromethane		0.4333	0.5396	0.4834	0.4828	0.4884	0.4882	0.5207	0.4831	AVRG		2.04114		0.4899	6	15	0.05	0.99	
Dibromomethane		0.1965	0.2697	0.2504	0.2696	0.2589	0.2598	0.2764	0.2574	AVRG		3.92415		0.2548	10	15	0.05	0.99	
4-Methyl-2-Pentanone				0.4866	0.5226	0.5196	0.5029	0.5291	0.4751	AVRG		1.97633		0.5060	4	15	0.05	0.99	
cis-1,3-Dichloropropene		0.6247	0.6299	0.6241	0.6234	0.6121	0.5945	0.6459	0.6049	AVRG		1.61305		0.6199	3	15	0.05	0.99	
Toluene		0.9711	0.9319	0.8914	0.9337	0.8732	0.8923	0.9621	0.8798	AVRG		1.09056		0.9170	4	15	0.05	0.99	
trans-1,3-Dichloropropene		0.6877	0.6230	0.6344	0.6642	0.6379	0.6427	0.6933	0.6448	AVRG		1.53021		0.6535	4	15	0.05	0.99	
1,1,2-Trichloroethane		0.1904	0.2049	0.2100	0.2209	0.2130	0.2190	0.2306	0.2179	AVRG		4.68737		0.2133	6	15	0.05	0.99	
2-Hexanone				0.4186	0.4268	0.4183	0.4125	0.4344	0.4064	AVRG		2.38392		0.4195	2	15	0.05	0.99	
1,3-Dichloropropane		0.6750	0.7057	0.6711	0.6816	0.6588	0.6777	0.7031	0.6692	AVRG		1.47003		0.6803	2	15	0.05	0.99	
Tetrachloroethene		0.3964	0.4177	0.3626	0.4283	0.3694	0.3985	0.4305	0.4126	AVRG		2.48761		0.4020	6	15	0.05	0.99	
Dibromochloromethane		0.4136	0.4385	0.4580	0.4719	0.4612	0.4623	0.4988	0.4664	AVRG		2.17945		0.4588	5	15	0.05	0.99	
1,2-Dibromoethane		0.4611	0.4476	0.4234	0.4442	0.4632	0.4520	0.4793	0.4460	AVRG		2.21197		0.4521	4	15	0.05	0.99	
Chlorobenzene		1.1192	1.0792	1.0590	1.0942	1.0327	1.0288	1.0921	1.0148	AVRG		0.93897		1.0650	3	15	0.30	0.99	
1,1,1,2-Tetrachloroethane		0.3100	0.3782	0.3828	0.3790	0.3730	0.3763	0.3950	0.3691	AVRG		2.69970		0.3704	7	15	0.05	0.99	
Ethylbenzene		2.0430	1.8550	1.6495	1.8089	1.6492	1.7054	1.7798	1.6319	AVRG		0.56646		1.7653	8	15	0.05	0.99	
m,p-Xylenes	0.6858	0.7681	0.6888	0.6282	0.6901	0.6345	0.6413	0.6554	0.6012	AVRG		1.50165		0.6659	7	15	0.05	0.99	
o-Xylene		0.6747	0.7204	0.6354	0.6912	0.6328	0.6560	0.6792	0.6291	AVRG		1.50409		0.6649	5	15	0.05	0.99	
Styrene		1.2344	1.2141	1.1527	1.2288	1.1611	1.1649	1.2074	1.0943	AVRG		0.84588		1.1822	4	15	0.05	0.99	
Bromoform		0.3016	0.3271	0.3352	0.3342	0.3429	0.3439	0.3679	0.3437	AVRG		2.96670		0.3371	6	15	0.10	0.99	
Isopropylbenzene		3.6939	3.3756	2.9007	3.2401	2.9195	3.1412	3.3215	3.0308	AVRG		0.31222		3.2029	8	15	0.05	0.99	
1,1,2,2-Tetrachloroethane		1.1828	1.1169	0.9899	1.0313	0.9757	0.9753	1.0485	0.9374	AVRG		0.96879		1.0322	8	15	0.30	0.99	
1,2,3-Trichloropropane		0.9263	1.0057	0.8866	0.9002	0.8554	0.8630	0.9101	0.8427	AVRG		1.11267		0.8987	6	15	0.05	0.99	
Propylbenzene		4.5852	4.0679	3.5887	3.9328	3.5454	3.7600	3.8652	3.5120	AVRG		0.25926		3.8572	9	15	0.05	0.99	
Bromobenzene		0.9319	0.9516	0.8827	0.9159	0.8801	0.8768	0.9042	0.8168	AVRG		1.11731		0.8950	5	15	0.05	0.99	
1,3,5-Trimethylbenzene		3.2575	2.8102	2.5312	2.7155	2.4988	2.6028	2.6685	2.4007	AVRG		0.37235		2.6856	10	15	0.05	0.99	
2-Chlorotoluene		3.0197	2.7011	2.5016	2.6635	2.3824	2.4492	2.4988	2.2579	AVRG		0.39073		2.5593	9	15	0.05	0.99	
4-Chlorotoluene		2.8362	2.5878	2.3405	2.4728	2.3000	2.4054	2.5291	2.3175	AVRG		0.40426		2.4737	7	15	0.05	0.99	
tert-Butylbenzene		2.7090	2.4546	2.0221	2.3017	2.0527	2.2272	2.4113	2.1975	AVRG		0.43535		2.2970	10	15	0.05	0.99	
1,2,4-Trimethylbenzene		3.3608	2.8644	2.6328	2.8123	2.5918	2.7237	2.8931	2.6092	AVRG		0.35574		2.8110	9	15	0.05	0.99	
sec-Butylbenzene		4.2123	3.6979	3.2086	3.6973	3.3282	3.6091	3.8701	3.4892	AVRG		0.27479		3.6391	9	15	0.05	0.99	
para-Isopropyl Toluene		3.4496	2.9042	2.5587	2.9957	2.6237	2.8224	3.0582	2.7587	AVRG		0.34525		2.8964	10	15	0.05	0.99	
1,3-Dichlorobenzene		2.0095	1.7486	1.6703	1.7117	1.5703	1.6288	1.7048	1.5628	AVRG		0.58794		1.7009	8	15	0.05	0.99	
1,4-Dichlorobenzene		1.9291	1.7399	1.6552	1.6931	1.5922	1.6192	1.7168	1.5630	AVRG		0.59222		1.6886	7	15	0.05	0.99	
n-Butylbenzene		3.5239	2.8103	2.3924	2.8067	2.4329	2.7330	2.9283	2.6302	AVRG		0.35943		2.7822	13	15	0.05	0.99	
1,2-Dichlorobenzene		1.5953	1.7027	1.6049	1.6498	1.5562	1.6014	1.6876	1.5457	AVRG		0.61806		1.6180	4	15	0.05	0.99	
1,2-Dibromo-3-Chloropropane			0.2009	0.1829	0.1798	0.1775	0.1866	0.1965	0.1781	AVRG		5.37509		0.1860	5	15	0.05	0.99	
1,2,4-Trichlorobenzene		1.3417	1.2161	1.1029	1.1652	1.0678	1.1154	1.1917	1.0799	AVRG		0.86200		1.1601	8	15	0.05	0.99	
Hexachlorobutadiene		0.4841	0.4375	0.3500	0.4632	0.4030	0.4504	0.5047	0.4563	AVRG		2.25414		0.4436	11	15	0.05	0.99	
Naphthalene		2.6495	2.6425	2.3855	2.4959	2.4739	2.5515	2.7048	2.5241	AVRG		0.39162		2.5535	4	15	0.05	0.99	
1,2,3-Trichlorobenzene		1.1944	1.0481	1.0369	1.1084	1.0280	1.0556	1.1455	1.0604	AVRG		0.92194		1.0847	5	15	0.05	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
tert-Butyl Alcohol (TBA)		0.0569	0.0604	0.0568	0.0596	0.0569	0.0551	0.0581	0.0519	AVRG		17.5612		0.0569	5	15	0.005	0.99	
Isopropyl Ether (DIPE)		3.0173	2.7497	2.5373	2.6097	2.5463	2.5519	2.7137	2.5473	AVRG		0.37606		2.6592	6	15	0.05	0.99	
Ethyl tert-Butyl Ether (ETBE)		2.1669	2.1452	2.0194	2.0753	2.0689	2.0865	2.1955	2.0717	AVRG		0.47536		2.1037	3	15	0.05	0.99	
Methyl tert-Amyl Ether (TAME)		1.2243	1.1836	1.0610	1.0646	1.0802	1.0429	1.1096	0.9970	AVRG		0.91291		1.0954	7	15	0.05	0.99	
Ethanol					0.0098	0.0088	0.0087	0.0094	0.0084	AVRG		110.527		0.0090	6	15	0.0005	0.99	
Isopropanol					0.0494	0.0471	0.0440	0.0464	0.0421	AVRG		21.8273		0.0458	6	15	0.005	0.99	
Dibromofluoromethane	0.5420	0.5442	0.5546	0.5666	0.5494	0.5585	0.5606	0.5422	0.5585	AVRG		1.80849		0.5529	2	15	0.05	0.99	
1,2-Dichloroethane-d4	0.4029	0.4031	0.4025	0.4038	0.3987	0.3975	0.3839	0.3763	0.3639	AVRG		2.54772		0.3925	4	15	0.05	0.99	
Toluene-d8	1.2762	1.2701	1.2619	1.2814	1.2738	1.2488	1.2748	1.2767	1.3007	AVRG		0.78503		1.2738	1	15	0.05	0.99	
Bromofluorobenzene	1.0108	1.0115	1.0001	1.0022	1.0110	1.0023	1.0174	1.0307	1.0177	AVRG		0.98860		1.0115	1	15	0.05	0.99	

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
Freon 12			1.0000	4	2.0000	6	5.0000	-8	10.000	2	20.000	-10	50.000	-10	75.000	13	100.00	1
Chloromethane	0.5000	20	1.0000	-3	2.0000	2	5.0000	-9	10.000	-4	20.000	-2	50.000	-7	75.000	5	100.00	-2
Vinyl Chloride	0.5000	-8	1.0000	-5	2.0000	2	5.0000	-7	10.000	4	20.000	-3	50.000	-2	75.000	13	100.00	5
Bromomethane			1.0000	**-21**	2.0000	4	5.0000	-4	10.000	-2	20.000	-2	50.000	1	75.000	14	100.00	9
Chloroethane			1.0000	-3	2.0000	12	5.0000	-13	10.000	2	20.000	-3	50.000	-4	75.000	8	100.00	1
Trichlorofluoromethane			1.0000	-2	2.0000	7	5.0000	-6	10.000	4	20.000	-6	50.000	-8	75.000	10	100.00	1
Acetone									10.000	3	20.000	-6	50.000	0	75.000	5	100.00	-1
1,1-Dichloroethene			0.5000	**31**	2.0000	0	5.0000	-17	10.000	2	20.000	-11	50.000	-6	75.000	3	100.00	-1
Methylene Chloride			0.5000	-9	2.0000	7	5.0000	-3	10.000	2	20.000	-1	50.000	-1	75.000	4	100.00	1
Carbon Disulfide			0.5000	13	2.0000	2	5.0000	-15	10.000	-2	20.000	-8	50.000	-1	75.000	9	100.00	3
MTBE			0.5000	15	2.0000	2	5.0000	-6	10.000	-4	20.000	-2	50.000	-3	75.000	3	100.00	-5
trans-1,2-Dichloroethene			0.5000	**28**	2.0000	1	5.0000	-9	10.000	-5	20.000	-7	50.000	-7	75.000	3	100.00	-4
1,1-Dichloroethane			0.5000	-4	2.0000	8	5.0000	-4	10.000	-2	20.000	-4	50.000	-2	75.000	6	100.00	1
2-Butanone									10.000	8	20.000	2	50.000	-2	75.000	0	100.00	-8
2,2-Dichloropropane			0.5000	-4	2.0000	8	5.0000	-7	10.000	3	20.000	-5	50.000	-1	75.000	6	100.00	-1
cis-1,2-Dichloroethene			0.5000	**22**	2.0000	12	5.0000	-4	10.000	-4	20.000	-9	50.000	-8	75.000	-2	100.00	-7
Chloroform			0.5000	-1	2.0000	5	5.0000	0	10.000	3	20.000	-3	50.000	-3	75.000	3	100.00	-4
Bromochloromethane			0.5000	**-26**	2.0000	3	5.0000	11	10.000	3	20.000	1	50.000	2	75.000	9	100.00	-3
1,1,1-Trichloroethane			0.5000	16	2.0000	5	5.0000	-14	10.000	-2	20.000	-8	50.000	-3	75.000	6	100.00	0
1,1-Dichloropropene			0.5000	3	2.0000	4	5.0000	-13	10.000	3	20.000	-4	50.000	-3	75.000	9	100.00	1
Carbon Tetrachloride			0.5000	0	2.0000	2	5.0000	-17	10.000	3	20.000	-7	50.000	2	75.000	13	100.00	3
1,2-Dichloroethane			0.5000	-3	2.0000	11	5.0000	-3	10.000	-2	20.000	-1	50.000	-1	75.000	4	100.00	-5
Benzene			0.5000	5	2.0000	7	5.0000	-2	10.000	0	20.000	-3	50.000	-4	75.000	4	100.00	-7
Trichloroethene			0.5000	-3	2.0000	3	5.0000	-8	10.000	0	20.000	-4	50.000	0	75.000	9	100.00	2
1,2-Dichloropropane			0.5000	5	2.0000	5	5.0000	-6	10.000	-1	20.000	-1	50.000	-3	75.000	3	100.00	-2
Bromodichloromethane			0.5000	-12	2.0000	10	5.0000	-1	10.000	-1	20.000	0	50.000	0	75.000	6	100.00	-1
Dibromomethane			0.5000	**-23**	2.0000	6	5.0000	-2	10.000	6	20.000	2	50.000	2	75.000	8	100.00	1
4-Methyl-2-Pentanone							5.0000	-4	10.000	3	20.000	3	50.000	-1	75.000	5	100.00	-6
cis-1,3-Dichloropropene			0.5000	1	2.0000	2	5.0000	1	10.000	1	20.000	-1	50.000	-4	75.000	4	100.00	-2
Toluene			0.5000	6	2.0000	2	5.0000	-3	10.000	2	20.000	-5	50.000	-3	75.000	5	100.00	-4
trans-1,3-Dichloropropene			0.5000	5	2.0000	-5	5.0000	-3	10.000	2	20.000	-2	50.000	-2	75.000	6	100.00	-1
1,1,2-Trichloroethane			0.5000	-11	2.0000	-4	5.0000	-2	10.000	4	20.000	0	50.000	3	75.000	8	100.00	2
2-Hexanone							5.0000	0	10.000	2	20.000	0	50.000	-2	75.000	4	100.00	-3
1,3-Dichloropropane			0.5000	-1	2.0000	4	5.0000	-1	10.000	0	20.000	-3	50.000	0	75.000	3	100.00	-2
Tetrachloroethene			0.5000	-1	2.0000	4	5.0000	-10	10.000	7	20.000	-8	50.000	-1	75.000	7	100.00	3
Dibromochloromethane			0.5000	-10	2.0000	-4	5.0000	0	10.000	3	20.000	1	50.000	1	75.000	9	100.00	2
1,2-Dibromoethane			0.5000	2	2.0000	-1	5.0000	-6	10.000	-2	20.000	2	50.000	0	75.000	6	100.00	-1
Chlorobenzene			0.5000	5	2.0000	1	5.0000	-1	10.000	3	20.000	-3	50.000	-3	75.000	3	100.00	-5
1,1,1,2-Tetrachloroethane			0.5000	-16	2.0000	2	5.0000	3	10.000	2	20.000	1	50.000	2	75.000	7	100.00	0
Ethylbenzene			0.5000	16	2.0000	5	5.0000	-7	10.000	2	20.000	-7	50.000	-3	75.000	1	100.00	-8
m,p-Xylenes	0.5000	3	1.0000	15	4.0000	3	10.000	-6	20.000	4	40.000	-5	100.00	-4	150.00	-2	200.00	-10
o-Xylene			0.5000	1	2.0000	8	5.0000	-4	10.000	4	20.000	-5	50.000	-1	75.000	2	100.00	-5

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
Styrene			0.5000	4	2.0000	3	5.0000	-2	10.000	4	20.000	-2	50.000	-1	75.000	2	100.00	-7
Bromoform			0.5000	-11	2.0000	-3	5.0000	-1	10.000	-1	20.000	2	50.000	2	75.000	9	100.00	2
Isopropylbenzene			0.5000	15	2.0000	5	5.0000	-9	10.000	1	20.000	-9	50.000	-2	75.000	4	100.00	-5
1,1,2,2-Tetrachloroethane			0.5000	15	2.0000	8	5.0000	-4	10.000	0	20.000	-5	50.000	-6	75.000	2	100.00	-9
1,2,3-Trichloropropane			0.5000	3	2.0000	12	5.0000	-1	10.000	0	20.000	-5	50.000	-4	75.000	1	100.00	-6
Propylbenzene			0.5000	19	2.0000	5	5.0000	-7	10.000	2	20.000	-8	50.000	-3	75.000	0	100.00	-9
Bromobenzene			0.5000	4	2.0000	6	5.0000	-1	10.000	2	20.000	-2	50.000	-2	75.000	1	100.00	-9
1,3,5-Trimethylbenzene			0.5000	**21**	2.0000	5	5.0000	-6	10.000	1	20.000	-7	50.000	-3	75.000	-1	100.00	-11
2-Chlorotoluene			0.5000	18	2.0000	6	5.0000	-2	10.000	4	20.000	-7	50.000	-4	75.000	-2	100.00	-12
4-Chlorotoluene			0.5000	15	2.0000	5	5.0000	-5	10.000	0	20.000	-7	50.000	-3	75.000	2	100.00	-6
tert-Butylbenzene			0.5000	18	2.0000	7	5.0000	-12	10.000	0	20.000	-11	50.000	-3	75.000	5	100.00	-4
1,2,4-Trimethylbenzene			0.5000	20	2.0000	2	5.0000	-6	10.000	0	20.000	-8	50.000	-3	75.000	3	100.00	-7
sec-Butylbenzene			0.5000	16	2.0000	2	5.0000	-12	10.000	2	20.000	-9	50.000	-1	75.000	6	100.00	-4
para-Isopropyl Toluene			0.5000	19	2.0000	0	5.0000	-12	10.000	3	20.000	-9	50.000	-3	75.000	6	100.00	-5
1,3-Dichlorobenzene			0.5000	18	2.0000	3	5.0000	-2	10.000	1	20.000	-8	50.000	-4	75.000	0	100.00	-8
1,4-Dichlorobenzene			0.5000	14	2.0000	3	5.0000	-2	10.000	0	20.000	-6	50.000	-4	75.000	2	100.00	-7
n-Butylbenzene			0.5000	**27**	2.0000	1	5.0000	-14	10.000	1	20.000	-13	50.000	-2	75.000	5	100.00	-5
1,2-Dichlorobenzene			0.5000	-1	2.0000	5	5.0000	-1	10.000	2	20.000	-4	50.000	-1	75.000	4	100.00	-4
1,2-Dibromo-3-Chloropropane					2.0000	8	5.0000	-2	10.000	-3	20.000	-5	50.000	0	75.000	6	100.00	-4
1,2,4-Trichlorobenzene			0.5000	16	2.0000	5	5.0000	-5	10.000	0	20.000	-8	50.000	-4	75.000	3	100.00	-7
Hexachlorobutadiene			0.5000	9	2.0000	-1	5.0000	**-21**	10.000	4	20.000	-9	50.000	2	75.000	14	100.00	3
Naphthalene			0.5000	4	2.0000	3	5.0000	-7	10.000	-2	20.000	-3	50.000	0	75.000	6	100.00	-1
1,2,3-Trichlorobenzene			0.5000	10	2.0000	-3	5.0000	-4	10.000	2	20.000	-5	50.000	-3	75.000	6	100.00	-2
tert-Butyl Alcohol (TBA)			5.0000	0	20.000	6	50.000	0	100.00	5	200.00	0	500.00	-3	750.00	2	1000.0	-9
Isopropyl Ether (DIPE)			0.5000	13	2.0000	3	5.0000	-5	10.000	-2	20.000	-4	50.000	-4	75.000	2	100.00	-4
Ethyl tert-Butyl Ether (ETBE)			0.5000	3	2.0000	2	5.0000	-4	10.000	-1	20.000	-2	50.000	-1	75.000	4	100.00	-2
Methyl tert-Amyl Ether (TAME)			0.5000	12	2.0000	8	5.0000	-3	10.000	-3	20.000	-1	50.000	-5	75.000	1	100.00	-9
Ethanol									1000.0	9	2000.0	-2	5000.0	-3	7500.0	4	10000	-7
Isopropanol									100.00	8	200.00	3	500.00	-4	750.00	1	1000.0	-8
Dibromofluoromethane	50.000	-2	50.000	-2	50.000	0	50.000	2	50.000	-1	50.000	1	50.000	1	50.000	-2	50.000	1
1,2-Dichloroethane-d4	50.000	3	50.000	3	50.000	3	50.000	3	50.000	2	50.000	1	50.000	-2	50.000	-4	50.000	-7
Toluene-d8	50.000	0	50.000	0	50.000	-1	50.000	1	50.000	0	50.000	-2	50.000	0	50.000	0	50.000	2
Bromofluorobenzene	50.000	0	50.000	0	50.000	-1	50.000	-1	50.000	0	50.000	-1	50.000	1	50.000	2	50.000	1

BO 08/01/14 [Freon 12]: Corrected fronting or tailing peak integration in multiple levels.

BO 08/01/14 [Acetone]: Corrected baseline noise or negative peak in 10PPB (jgv09).

Analyst: BO Date: 08/01/14 Reviewer: LW Date: 08/01/14

m=manual integration

Instrument amount = a0 + response * a1 + response^2 * a2; AVRG=Average response factor

CURTIS & TOMPKINS 2ND SOURCE CALIBRATION SUMMARY FOR 261495 MSVOA Water
EPA 8260B

Inst : MSVOA10 Name : 826GOX10
Calnum : 494306229001 Cal Date : 31-JUL-2014 Type : WATER

ICV 494306229014 (jgv14 31-JUL-2014) stds: S24693 (10000X), S25201 (2500X)
ICV 494306229016 (jgv16 01-AUG-2014) stds: S25233 (10000X), S25173 (10000X), S24848 (10000X), S25201 (2500X)

Analyte	ICV Seqnum	Date	Spiked	Quant	Units	%D	Max	Flags
Freon 12	494306229014	31-JUL-2014	20.00	16.47	ug/L	-18	30	
Chloromethane	494306229014	31-JUL-2014	20.00	16.53	ug/L	-17	30	
Vinyl Chloride	494306229014	31-JUL-2014	20.00	19.12	ug/L	-4	20	
Bromomethane	494306229014	31-JUL-2014	20.00	17.84	ug/L	-11	30	
Chloroethane	494306229014	31-JUL-2014	20.00	18.24	ug/L	-9	30	
Trichlorofluoromethane	494306229014	31-JUL-2014	20.00	18.67	ug/L	-7	30	
Acetone	494306229016	01-AUG-2014	25.00	23.81	ug/L	-5	40	
1,1-Dichloroethene	494306229016	01-AUG-2014	25.00	24.82	ug/L	-1	20	
Methylene Chloride	494306229016	01-AUG-2014	25.00	25.98	ug/L	4	30	
Carbon Disulfide	494306229016	01-AUG-2014	25.00	25.05	ug/L	0	30	
MTBE	494306229016	01-AUG-2014	25.00	22.40	ug/L	-10	30	
trans-1,2-Dichloroethene	494306229016	01-AUG-2014	25.00	24.34	ug/L	-3	30	
1,1-Dichloroethane	494306229016	01-AUG-2014	25.00	25.06	ug/L	0	30	
2-Butanone	494306229016	01-AUG-2014	25.00	23.93	ug/L	-4	40	
2,2-Dichloropropane	494306229016	01-AUG-2014	25.00	24.37	ug/L	-3	30	
cis-1,2-Dichloroethene	494306229016	01-AUG-2014	25.00	24.62	ug/L	-2	30	
Chloroform	494306229016	01-AUG-2014	25.00	25.39	ug/L	2	20	
Bromochloromethane	494306229016	01-AUG-2014	25.00	26.76	ug/L	7	30	
1,1,1-Trichloroethane	494306229016	01-AUG-2014	25.00	25.42	ug/L	2	30	
1,1-Dichloropropene	494306229016	01-AUG-2014	25.00	26.99	ug/L	8	30	
Carbon Tetrachloride	494306229016	01-AUG-2014	25.00	26.00	ug/L	4	30	
1,2-Dichloroethane	494306229016	01-AUG-2014	25.00	24.71	ug/L	-1	30	
Benzene	494306229016	01-AUG-2014	25.00	25.84	ug/L	3	30	
Trichloroethene	494306229016	01-AUG-2014	25.00	26.77	ug/L	7	30	
1,2-Dichloropropane	494306229016	01-AUG-2014	25.00	25.14	ug/L	1	20	
Bromodichloromethane	494306229016	01-AUG-2014	25.00	25.22	ug/L	1	30	
Dibromomethane	494306229016	01-AUG-2014	25.00	26.03	ug/L	4	30	
4-Methyl-2-Pentanone	494306229016	01-AUG-2014	25.00	23.52	ug/L	-6	40	
cis-1,3-Dichloropropene	494306229016	01-AUG-2014	25.00	25.99	ug/L	4	30	
Toluene	494306229016	01-AUG-2014	25.00	26.27	ug/L	5	20	
trans-1,3-Dichloropropene	494306229016	01-AUG-2014	25.00	24.43	ug/L	-2	30	
1,1,2-Trichloroethane	494306229016	01-AUG-2014	25.00	25.85	ug/L	3	30	
2-Hexanone	494306229016	01-AUG-2014	25.00	25.37	ug/L	1	40	
1,3-Dichloropropane	494306229016	01-AUG-2014	25.00	24.84	ug/L	-1	30	
Tetrachloroethene	494306229016	01-AUG-2014	25.00	26.39	ug/L	6	30	
Dibromochloromethane	494306229016	01-AUG-2014	25.00	25.97	ug/L	4	30	
1,2-Dibromoethane	494306229016	01-AUG-2014	25.00	24.82	ug/L	-1	30	
Chlorobenzene	494306229016	01-AUG-2014	25.00	27.44	ug/L	10	30	
1,1,1,2-Tetrachloroethane	494306229016	01-AUG-2014	25.00	26.60	ug/L	6	30	
Ethylbenzene	494306229016	01-AUG-2014	25.00	26.02	ug/L	4	20	
m,p-Xylenes	494306229016	01-AUG-2014	50.00	52.97	ug/L	6	30	
o-Xylene	494306229016	01-AUG-2014	25.00	27.43	ug/L	10	30	
Styrene	494306229016	01-AUG-2014	25.00	26.51	ug/L	6	30	
Bromoform	494306229016	01-AUG-2014	25.00	25.77	ug/L	3	30	
Isopropylbenzene	494306229016	01-AUG-2014	25.00	26.82	ug/L	7	30	
1,1,2,2-Tetrachloroethane	494306229016	01-AUG-2014	25.00	23.58	ug/L	-6	30	
1,2,3-Trichloropropane	494306229016	01-AUG-2014	25.00	24.57	ug/L	-2	30	

Analyte	ICV Seqnum	Date	Spiked	Quant	Units	%D	Max	Flags
Propylbenzene	494306229016	01-AUG-2014	25.00	26.85	ug/L	7	30	
Bromobenzene	494306229016	01-AUG-2014	25.00	26.75	ug/L	7	30	
1,3,5-Trimethylbenzene	494306229016	01-AUG-2014	25.00	26.57	ug/L	6	30	
2-Chlorotoluene	494306229016	01-AUG-2014	25.00	27.60	ug/L	10	30	
4-Chlorotoluene	494306229016	01-AUG-2014	25.00	26.51	ug/L	6	30	
tert-Butylbenzene	494306229016	01-AUG-2014	25.00	27.51	ug/L	10	30	
1,2,4-Trimethylbenzene	494306229016	01-AUG-2014	25.00	25.66	ug/L	3	30	
sec-Butylbenzene	494306229016	01-AUG-2014	25.00	27.49	ug/L	10	30	
para-Isopropyl Toluene	494306229016	01-AUG-2014	25.00	26.05	ug/L	4	30	
1,3-Dichlorobenzene	494306229016	01-AUG-2014	25.00	26.00	ug/L	4	30	
1,4-Dichlorobenzene	494306229016	01-AUG-2014	25.00	25.53	ug/L	2	30	
n-Butylbenzene	494306229016	01-AUG-2014	25.00	25.10	ug/L	0	30	
1,2-Dichlorobenzene	494306229016	01-AUG-2014	25.00	26.88	ug/L	8	30	
1,2-Dibromo-3-Chloropropane	494306229016	01-AUG-2014	25.00	24.35	ug/L	-3	30	
1,2,4-Trichlorobenzene	494306229016	01-AUG-2014	25.00	24.43	ug/L	-2	30	
Hexachlorobutadiene	494306229016	01-AUG-2014	25.00	25.71	ug/L	3	30	
Naphthalene	494306229016	01-AUG-2014	25.00	24.38	ug/L	-2	30	
1,2,3-Trichlorobenzene	494306229016	01-AUG-2014	25.00	25.62	ug/L	2	30	
tert-Butyl Alcohol (TBA)	494306229016	01-AUG-2014	125.0	113.0	ug/L	-10	30	
Isopropyl Ether (DIPE)	494306229016	01-AUG-2014	25.00	23.63	ug/L	-5	30	
Ethyl tert-Butyl Ether (ETBE)	494306229016	01-AUG-2014	25.00	23.37	ug/L	-7	30	
Methyl tert-Amyl Ether (TAME)	494306229016	01-AUG-2014	25.00	23.00	ug/L	-8	30	
Ethanol	494306229016	01-AUG-2014	2500	2268	ug/L	-9	30	
Isopropanol	494306229016	01-AUG-2014	250.0	217.7	ug/L	-13	30	

494306229014: Analyst: BO Date: 08/01/14 Reviewer: LW Date: 08/01/14
494306229016: Analyst: BO Date: 08/01/14 Reviewer: LW Date: 08/01/14

CURTIS & TOMPKINS SPIKE USER REPORT FOR 261495 MSVOA Water
EPA 8260B

Inst : MSVOA09 Run Name : QC762101 IDF : 1.0
Seqnum : 484417997009.9 File : ijh09 Time : 17-OCT-2014 12:05
Cal : 484393742001 Caldate : 30-SEP-2014 Caltype : WATER
Standards: S25528 (10000X), S24978 (10000X), S25859 (10000X), S25703 (10000X), S25550 (5000X)

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
Freon 12	0.7770	0.3950	20.00	10.17	ug/L	**-49**	30	0.0500	!v- ?LOD c- m u ***
Chloromethane	0.8061	0.6621	20.00	16.43	ug/L	-18	30	0.1000	?LOD m u
Vinyl Chloride	0.5943	0.5394	20.00	18.15	ug/L	-9	20	0.0500	?LOD m u
Bromomethane	0.1579	0.2310	20.00	24.41	ug/L	22	30	0.0500	?LOD m u v- ***
Chloroethane	0.3022	0.3165	20.00	20.95	ug/L	5	30	0.0500	m u
Trichlorofluoromethane	0.7978	0.6911	20.00	17.33	ug/L	-13	30	0.0500	?LOD m u
Ethanol	0.0039	0.0041	2500	2654	ug/L	6	30	5.0E-4	?LOD u
Isopropanol	0.0182	0.0186	250.0	254.9	ug/L	2	30	0.0050	u
Acetone	0.1216	0.1355	25.00	27.86	ug/L	11	40	0.0500	?LOD u
1,1-Dichloroethene	0.3650	0.3967	25.00	27.17	ug/L	9	20	0.0500	?LOD u
Methylene Chloride	0.4872	0.5481	25.00	28.12	ug/L	12	30	0.0500	?LOD u
Carbon Disulfide	1.4065	1.5892	25.00	28.25	ug/L	13	30	0.0500	?LOD u
MTBE	0.9332	0.9789	25.00	26.22	ug/L	5	30	0.0500	?LOD u
trans-1,2-Dichloroethene	0.4140	0.4673	25.00	28.22	ug/L	13	30	0.0500	?LOD u
1,1-Dichloroethane	0.9149	0.9857	25.00	26.94	ug/L	8	30	0.1000	?LOD u
2-Butanone	0.1625	0.1908	25.00	29.36	ug/L	17	40	0.0500	?LOD u
cis-1,2-Dichloroethene	0.4609	0.5225	25.00	28.34	ug/L	13	30	0.0500	?LOD u
2,2-Dichloropropane	0.6239	0.7360	25.00	29.49	ug/L	18	30	0.0500	?LOD u
Chloroform	0.8410	0.9227	25.00	27.43	ug/L	10	20	0.0500	?LOD u
Bromochloromethane	0.2271	0.2509	25.00	27.62	ug/L	10	30	0.0500	?LOD u
1,1,1-Trichloroethane	0.6318	0.6840	25.00	27.07	ug/L	8	30	0.0500	?LOD u
1,1-Dichloropropene	0.3229	0.3612	25.00	27.96	ug/L	12	30	0.0500	?LOD u
Carbon Tetrachloride	0.3331	0.3333	25.00	25.01	ug/L	0	30	0.0500	?LOD u
1,2-Dichloroethane	0.3242	0.3267	25.00	25.19	ug/L	1	30	0.0500	?LOD u
Benzene	1.0202	1.0972	25.00	26.89	ug/L	8	30	0.0500	?LOD u
Trichloroethene	0.2620	0.2709	25.00	25.85	ug/L	3	30	0.0500	?LOD u
1,2-Dichloropropane	0.3190	0.3225	25.00	25.27	ug/L	1	20	0.0500	?LOD u
Bromodichloromethane	0.3769	0.3860	25.00	25.61	ug/L	2	30	0.0500	?LOD u
Dibromomethane	0.1605	0.1692	25.00	26.35	ug/L	5	30	0.0500	?LOD u
4-Methyl-2-Pentanone	0.2150	0.2204	25.00	25.63	ug/L	3	40	0.0500	?LOD u
cis-1,3-Dichloropropene	0.3968	0.4573	25.00	28.81	ug/L	15	30	0.0500	?LOD u
Toluene	0.6328	0.6653	25.00	26.28	ug/L	5	20	0.0500	?LOD u
trans-1,3-Dichloropropene	0.3698	0.3872	25.00	26.18	ug/L	5	30	0.0500	?LOD u
1,1,2-Trichloroethane	0.1273	0.1254	25.00	24.64	ug/L	-1	30	0.0500	?LOD u
2-Hexanone	0.1581	0.1681	25.00	26.57	ug/L	6	40	0.0500	?LOD u
1,3-Dichloropropane	0.3987	0.3768	25.00	23.63	ug/L	-5	30	0.0500	?LOD u
Tetrachloroethene	0.2532	0.2404	25.00	23.74	ug/L	-5	30	0.0500	?LOD u
Dibromochloromethane	0.2831	0.2726	25.00	24.08	ug/L	-4	30	0.0500	?LOD u
1,2-Dibromoethane	0.2247	0.2219	25.00	24.68	ug/L	-1	30	0.0500	?LOD u
Chlorobenzene	0.7071	0.7241	25.00	25.60	ug/L	2	30	0.3000	?LOD u
1,1,1,2-Tetrachloroethane	0.2689	0.2556	25.00	23.77	ug/L	-5	30	0.0500	?LOD u
Ethylbenzene	1.1332	1.1820	25.00	26.08	ug/L	4	20	0.0500	?LOD u
m,p-Xylenes	0.4146	0.4265	50.00	51.44	ug/L	3	30	0.0500	?LOD u
o-Xylene	0.4240	0.4546	25.00	26.80	ug/L	7	30	0.0500	?LOD u
Styrene	0.6830	0.7323	25.00	26.80	ug/L	7	30	0.0500	?LOD u
Bromoform	0.1597	0.1585	25.00	24.82	ug/L	-1	30	0.1000	?LOD u
Isopropylbenzene	2.0690	2.2222	25.00	26.85	ug/L	7	30	0.0500	?LOD u

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
1,1,2,2-Tetrachloroethane	0.5051	0.5269	25.00	26.08	ug/L	4	30	0.3000	?LOD u
1,2,3-Trichloropropane	0.1177	0.1209	25.00	25.69	ug/L	3	30	0.0500	?LOD u
Propylbenzene	2.4131	2.5702	25.00	26.63	ug/L	7	30	0.0500	?LOD u
Bromobenzene	0.5943	0.5786	25.00	24.34	ug/L	-3	30	0.0500	?LOD u
1,3,5-Trimethylbenzene	1.5468	1.6481	25.00	26.64	ug/L	7	30	0.0500	?LOD u
2-Chlorotoluene	1.6909	1.8200	25.00	26.91	ug/L	8	30	0.0500	?LOD u
4-Chlorotoluene	1.4820	1.5455	25.00	27.41	ug/L	10	30	0.0500	?LOD u
tert-Butylbenzene	1.4108	1.4669	25.00	25.99	ug/L	4	30	0.0500	?LOD u
1,2,4-Trimethylbenzene	1.4879	1.4863	25.00	24.97	ug/L	0	30	0.0500	?LOD u
sec-Butylbenzene	1.9792	2.1724	25.00	27.44	ug/L	10	30	0.0500	?LOD u
para-Isopropyl Toluene	1.4530	1.4347	25.00	24.69	ug/L	-1	30	0.0500	?LOD u
1,3-Dichlorobenzene	0.9433	0.9519	25.00	25.23	ug/L	1	30	0.0500	?LOD u
1,4-Dichlorobenzene	0.9391	0.9047	25.00	24.08	ug/L	-4	30	0.0500	?LOD u
n-Butylbenzene	1.1659	1.2648	25.00	27.12	ug/L	8	30	0.0500	?LOD u
1,2-Dichlorobenzene	0.9227	0.9260	25.00	25.09	ug/L	0	30	0.0500	?LOD u
1,2-Dibromo-3-Chloropropane	0.0703	0.0659	25.00	23.42	ug/L	-6	30	0.0500	u
1,2,4-Trichlorobenzene	0.3606	0.3927	25.00	27.22	ug/L	9	30	0.0500	?LOD u
Hexachlorobutadiene	0.2296	0.1953	25.00	21.27	ug/L	-15	30	0.0500	!v- ?LOD u
Naphthalene	0.7506	0.7609	25.00	25.34	ug/L	1	30	0.0500	?LOD u
1,2,3-Trichlorobenzene	0.3469	0.3667	25.00	24.38	ug/L	-2	30	0.0500	?LOD calc u
tert-Butyl Alcohol (TBA)	0.0226	0.0230	125.0	127.2	ug/L	2	30	0.0050	?LOD u
Isopropyl Ether (DIPE)	1.9781	2.1917	25.00	27.70	ug/L	11	30	0.0500	?LOD u
Ethyl tert-Butyl Ether (ETBE)	1.3789	1.4490	25.00	26.27	ug/L	5	30	0.0500	?LOD u
Methyl tert-Amyl Ether (TAME)	0.6346	0.6353	25.00	25.03	ug/L	0	30	0.0500	?LOD u
Dibromofluoromethane	0.6060	0.6469	50.00	53.37	ug/L	7	30	0.0500	u
1,2-Dichloroethane-d4	0.3332	0.3416	50.00	51.27	ug/L	3	30	0.0500	u
Toluene-d8	1.2633	1.2558	50.00	49.70	ug/L	-1	30	0.0500	u
Bromofluorobenzene	1.0141	1.0079	50.00	49.69	ug/L	-1	30	0.0500	u

ISTD (ICAL iiu11)	ICAL Area	Area	%Drift	ICAL RT	RT	Drift
Pentafluorobenzene	1468129	1062727	-27.61	11.32	11.29	-0.03
1,4-Difluorobenzene	2374800	1797152	-24.32	12.59	12.55	-0.04
Chlorobenzene-d5	2065050	1648326	-20.18	16.87	16.85	-0.02
1,4-Dichlorobenzene-d4	1069752	832639	-22.17	19.32	19.30	-0.02

TEW 10/19/14 [Freon 12]: Corrected fronting or tailing peak integration. [general version]

TEW 10/19/14 [Chloromethane]: Corrected fronting or tailing peak integration. [general version]

TEW 10/19/14 [Vinyl Chloride]: Corrected fronting or tailing peak integration. [general version]

TEW 10/19/14 [Bromomethane]: Corrected fronting or tailing peak integration. [general version]

TEW 10/19/14 [Chloroethane]: Corrected fronting or tailing peak integration. [general version]

TEW 10/19/14 [Trichlorofluoromethane]: Corrected fronting or tailing peak integration. [general version]

LW 10/20/14 [1,2,3-Trichlorobenzene]: Both calculated values round to 24.38 [general version]

Analyst: BCH Date: 10/20/14 Reviewer: LW Date: 10/22/14

!=warning -=low bias ?LOD=no LOD c=CCV calc=check quantitation m=manual integration u=use v=ICV

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 MSVOA Water
EPA 8260B

Inst : MSVOA09 Run Name : A/A IDF : 1.0
Seqnum : 484417997011 File : ijh11 Time : 17-OCT-2014 13:21
Cal : 484393742001 Caldate : 30-SEP-2014 Caltype : WATER
Standards: S25666 (100000X), S25550 (5000X)

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
Dibromofluoromethane	0.6060	0.6440	50.00	53.14	ug/L	6	30	0.0500	
1,2-Dichloroethane-d4	0.3332	0.3421	50.00	51.35	ug/L	3	30	0.0500	
Toluene-d8	1.2633	1.2808	50.00	50.69	ug/L	1	30	0.0500	
Bromofluorobenzene	1.0141	1.0206	50.00	50.32	ug/L	1	30	0.0500	

ISTD (ICAL iiu11)	ICAL Area	Area	%Drift	ICAL RT	RT	Drift
Pentafluorobenzene	1468129	800252	-45.49	11.32	11.30	-0.02
1,4-Difluorobenzene	2374800	1359147	-42.77	12.59	12.56	-0.03
Chlorobenzene-d5	2065050	1186352	-42.55	16.87	16.86	-0.01
1,4-Dichlorobenzene-d4	1069752	571968	-46.53	19.32	19.30	-0.02

TEW 10/19/14 : Not needed.

Analyst: KKM Date: 10/20/14 Reviewer: LW Date: 10/20/14

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 MSVOA Water
EPA 8260B

Inst : MSVOA10 IDF : 1.0
Seqnum : 494415523003 File : jjf03 Time : 15-OCT-2014 14:29
Cal : 494306229001 Caldate : 31-JUL-2014 Caltype : WATER
Standards: S24237 (33330X), S25611 (33330X), S25553 (33330X), S24389 (33330X), S25556 (2500X)

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
Freon 12	0.7654	0.6276	15.00	12.30	ug/L	-18	30	0.0500	
Chloromethane	0.8533	0.8795	15.00	15.46	ug/L	3	30	0.1000	
Vinyl Chloride	0.6184	0.6260	15.00	15.19	ug/L	1	20	0.0500	
Bromomethane	0.3275	0.2650	15.00	12.14	ug/L	-19	30	0.0500	
Chloroethane	0.3438	0.3501	15.00	15.28	ug/L	2	30	0.0500	
Trichlorofluoromethane	0.6526	0.5181	15.00	11.91	ug/L	**-21**	30	0.0500	!c-
Acetone	0.2264	0.3070	15.00	20.34	ug/L	**36**	40	0.0500	!c+
1,1-Dichloroethene	0.4586	0.4863	15.00	15.91	ug/L	6	20	0.0500	
Methylene Chloride	0.6042	0.6714	15.00	16.67	ug/L	11	30	0.0500	
Carbon Disulfide	1.7930	1.9071	15.00	15.95	ug/L	6	30	0.0500	
MTBE	1.7070	1.7990	15.00	15.81	ug/L	5	30	0.0500	
trans-1,2-Dichloroethene	0.5502	0.5558	15.00	15.15	ug/L	1	30	0.0500	
1,1-Dichloroethane	1.0704	1.1641	15.00	16.31	ug/L	9	30	0.1000	
2-Butanone	0.3585	0.4421	15.00	18.50	ug/L	**23**	40	0.0500	!c+
2,2-Dichloropropane	0.6908	0.7012	15.00	15.23	ug/L	2	30	0.0500	
cis-1,2-Dichloroethene	0.6383	0.6411	15.00	15.07	ug/L	0	30	0.0500	
Chloroform	0.9716	1.0021	15.00	15.47	ug/L	3	20	0.0500	
Bromochloromethane	0.3140	0.3592	15.00	17.16	ug/L	14	30	0.0500	
1,1,1-Trichloroethane	0.7058	0.6950	15.00	14.77	ug/L	-2	30	0.0500	
1,1-Dichloropropene	0.4308	0.4575	15.00	15.93	ug/L	6	30	0.0500	
Carbon Tetrachloride	0.3647	0.3589	15.00	14.76	ug/L	-2	30	0.0500	
1,2-Dichloroethane	0.5298	0.5037	15.00	14.26	ug/L	-5	30	0.0500	
Benzene	1.2999	1.4521	15.00	16.76	ug/L	12	30	0.0500	
Trichloroethene	0.3504	0.3710	15.00	15.88	ug/L	6	30	0.0500	
1,2-Dichloropropane	0.4067	0.4480	15.00	16.52	ug/L	10	20	0.0500	
Bromodichloromethane	0.4899	0.5085	15.00	15.57	ug/L	4	30	0.0500	
Dibromomethane	0.2548	0.2887	15.00	16.99	ug/L	13	30	0.0500	
4-Methyl-2-Pentanone	0.5060	0.5810	15.00	17.22	ug/L	15	40	0.0500	
cis-1,3-Dichloropropene	0.6199	0.6416	15.00	15.52	ug/L	3	30	0.0500	
Toluene	0.9170	1.0135	15.00	16.58	ug/L	11	20	0.0500	
trans-1,3-Dichloropropene	0.6535	0.6656	15.00	15.28	ug/L	2	30	0.0500	
1,1,2-Trichloroethane	0.2133	0.2560	15.00	18.00	ug/L	20	30	0.0500	
2-Hexanone	0.4195	0.4916	15.00	17.58	ug/L	17	40	0.0500	
1,3-Dichloropropane	0.6803	0.7676	15.00	16.93	ug/L	13	30	0.0500	
Tetrachloroethene	0.4020	0.4351	15.00	16.24	ug/L	8	30	0.0500	
Dibromochloromethane	0.4588	0.4881	15.00	15.96	ug/L	6	30	0.0500	
1,2-Dibromoethane	0.4521	0.4989	15.00	16.55	ug/L	10	30	0.0500	
Chlorobenzene	1.0650	1.1494	15.00	16.19	ug/L	8	30	0.3000	
1,1,1,2-Tetrachloroethane	0.3704	0.4012	15.00	16.25	ug/L	8	30	0.0500	
Ethylbenzene	1.7653	1.8646	15.00	15.84	ug/L	6	20	0.0500	
m,p-Xylenes	0.6659	0.7139	30.00	32.16	ug/L	7	30	0.0500	
o-Xylene	0.6649	0.7187	15.00	16.22	ug/L	8	30	0.0500	
Styrene	1.1822	1.2596	15.00	15.98	ug/L	7	30	0.0500	
Bromoform	0.3371	0.3538	15.00	15.74	ug/L	5	30	0.1000	
Isopropylbenzene	3.2029	3.4963	15.00	16.37	ug/L	9	30	0.0500	
1,1,2,2-Tetrachloroethane	1.0322	1.2575	15.00	18.27	ug/L	**22**	30	0.3000	!c+
1,2,3-Trichloropropane	0.8987	1.0221	15.00	17.06	ug/L	14	30	0.0500	

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
Propylbenzene	3.8572	4.2624	15.00	16.58	ug/L	11	30	0.0500	
Bromobenzene	0.8950	1.0189	15.00	17.08	ug/L	14	30	0.0500	
1,3,5-Trimethylbenzene	2.6856	2.8128	15.00	15.71	ug/L	5	30	0.0500	
2-Chlorotoluene	2.5593	2.7603	15.00	16.18	ug/L	8	30	0.0500	
4-Chlorotoluene	2.4737	2.7073	15.00	16.42	ug/L	9	30	0.0500	
tert-Butylbenzene	2.2970	2.3916	15.00	15.62	ug/L	4	30	0.0500	
1,2,4-Trimethylbenzene	2.8110	2.8993	15.00	15.47	ug/L	3	30	0.0500	
sec-Butylbenzene	3.6391	3.8322	15.00	15.80	ug/L	5	30	0.0500	
para-Isopropyl Toluene	2.8964	2.9466	15.00	15.26	ug/L	2	30	0.0500	
1,3-Dichlorobenzene	1.7009	1.7479	15.00	15.42	ug/L	3	30	0.0500	
1,4-Dichlorobenzene	1.6886	1.7974	15.00	15.97	ug/L	6	30	0.0500	
n-Butylbenzene	2.7822	2.8163	15.00	15.18	ug/L	1	30	0.0500	
1,2-Dichlorobenzene	1.6180	1.7838	15.00	16.54	ug/L	10	30	0.0500	
1,2-Dibromo-3-Chloropropane	0.1860	0.2003	15.00	16.15	ug/L	8	30	0.0500	
1,2,4-Trichlorobenzene	1.1601	1.0456	15.00	13.52	ug/L	-10	30	0.0500	
Hexachlorobutadiene	0.4436	0.4392	15.00	14.85	ug/L	-1	30	0.0500	
Naphthalene	2.5535	2.4054	15.00	14.13	ug/L	-6	30	0.0500	
1,2,3-Trichlorobenzene	1.0847	0.9968	15.00	13.79	ug/L	-8	30	0.0500	
tert-Butyl Alcohol (TBA)	0.0569	0.0647	150.0	170.4	ug/L	14	30	0.0050	
Isopropyl Ether (DIPE)	2.6592	2.9449	15.00	16.61	ug/L	11	30	0.0500	
Ethyl tert-Butyl Ether (ETBE)	2.1037	2.2314	15.00	15.91	ug/L	6	30	0.0500	
Methyl tert-Amyl Ether (TAME)	1.0954	1.1766	15.00	16.11	ug/L	7	30	0.0500	
Ethanol	0.0090	0.0114	1500	1884	ug/L	**26**	30	5.0E-4	!c+
Isopropanol	0.0458	0.0567	150.0	185.7	ug/L	**24**	30	0.0050	!c+
Dibromofluoromethane	0.5529	0.5598	50.00	50.62	ug/L	1	30	0.0500	
1,2-Dichloroethane-d4	0.3925	0.3561	50.00	45.36	ug/L	-9	30	0.0500	
Toluene-d8	1.2738	1.2974	50.00	50.93	ug/L	2	30	0.0500	
Bromofluorobenzene	1.0115	1.0242	50.00	50.62	ug/L	1	30	0.0500	

ISTD (ICAL jgv11)	ICAL Area	Area	%Drift	ICAL RT	RT	Drift
Pentafluorobenzene	534687	850512	59.07	10.82	10.80	-0.02
1,4-Difluorobenzene	860147	1339235	55.70	11.99	11.98	-0.01
Chlorobenzene-d5	744278	1132295	52.13	15.97	15.95	-0.02
1,4-Dichlorobenzene-d4	410406	582520	41.94	18.69	18.66	-0.03

Analyst: BCH Date: 10/16/14 Reviewer: LW Date: 10/16/14

!=warning +=high bias -=low bias c=CCV

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 MSVOA Water
EPA 8260B

Inst : MSVOA10 Run Name : A/A IDF : 1.0
Seqnum : 494415523006 File : jjf06 Time : 15-OCT-2014 16:57
Cal : 494306229001 Caldate : 31-JUL-2014 Caltype : WATER
Standards: S25666 (100000X), S25556 (2500X)

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
Dibromofluoromethane	0.5529	0.5467	50.00	49.44	ug/L	-1	30	0.0500	
1,2-Dichloroethane-d4	0.3925	0.3595	50.00	45.79	ug/L	-8	30	0.0500	
Toluene-d8	1.2738	1.2773	50.00	50.14	ug/L	0	30	0.0500	
Bromofluorobenzene	1.0115	1.0107	50.00	49.96	ug/L	0	30	0.0500	

ISTD (ICAL jgv11)	ICAL Area	Area	%Drift	ICAL RT	RT	Drift
Pentafluorobenzene	534687	939959	75.80	10.82	10.81	-0.01
1,4-Difluorobenzene	860147	1449551	68.52	11.99	11.98	-0.01
Chlorobenzene-d5	744278	1252693	68.31	15.97	15.96	-0.01
1,4-Dichlorobenzene-d4	410406	635116	54.75	18.69	18.66	-0.03

BCH 10/16/14 : not needed

Analyst: KKM Date: 10/16/14 Reviewer: LW Date: 10/17/14

Logbooks & Sequences

CURTIS & TOMPKINS INTERNAL STANDARD SUMMARY FOR SEQUENCE 484417997

Date : 10/17/14 Reference : iiu11
Sequence : MSVOA09 ijh Analyzed : 09/30/14 16:03

#	Type	Sample ID	PFLBZ	RT	14DFB	RT	CLBZD5	RT	DCBZ14D4	RT
		ICAL STD	1468129	11.32	2374800	12.59	2065050	16.87	1069752	19.32
		LOWER LIMIT	734065	10.82	1187400	12.09	1032525	16.37	534876	18.82
		UPPER LIMIT	2936258	11.82	4749600	13.09	4130100	17.37	2139504	19.82
003	CCV/BS	QC762101	1357114	11.29	2295977	12.55	2032953	16.84	1032671	19.30
005	CCV/BS	QC762101	1232319	11.29	2005432	12.55	1862391	16.85	937737	19.30
007	CCV/BS	QC762101	1225206	11.29	2012706	12.56	1846802	16.85	923947	19.30
009	CCV/BS	QC762101	1062727	11.29	1797152	12.55	1648326	16.85	832639	19.30
010	BSD	QC762102	1189299	11.29	2010638	12.56	1787465	16.85	941524	19.30
011	CCV	A/A	800252	11.30	1359147	12.56	1186352	16.86	571968	19.30
013	BLANK	QC762103	1094306	11.31	1813924	12.57	1637023	16.86	775650	19.31
014	SAMPLE	261495-004	1037811	11.32	1738160	12.58	1543010	16.86	754071	19.32
015	SAMPLE	261612-007	901413	11.32	1512050	12.58	1335934	16.86	650882	19.32
016	SAMPLE	261583-004	972294	11.31	1642849	12.58	1500741	16.87	729591	19.32
017	SAMPLE	261568-021	664277 *	11.31	1135372 *	12.58	1024402 *	16.87	474248 *	19.31
018	SAMPLE	261568-030	829865	11.31	1448169	12.58	1332431	16.87	666972	19.31
019	SAMPLE	261568-031	741448	11.31	1231247	12.58	1134847	16.87	605421	19.31
020	SAMPLE	261568-037	1242535	11.31	2020828	12.58	1825037	16.87	912882	19.31
021	SAMPLE	261495-001	1272197	11.32	2031180	12.58	1843347	16.86	917615	19.31
022	SAMPLE	261568-029	1215804	11.31	2043303	12.58	1851885	16.87	969536	19.31
023	SAMPLE	261613-003	1327328	11.31	2174691	12.57	1940841	16.87	954432	19.31
024	SAMPLE	261600-007	1257427	11.31	2047136	12.57	1823500	16.87	914921	19.31
025	SAMPLE	261600-008	891633	11.31	1460165	12.58	1284915	16.87	627787	19.31
026	SAMPLE	261571-002	857434	11.31	1441878	12.58	1277572	16.87	604988	19.31
027	SAMPLE	261571-007	1218319	11.32	2004158	12.58	1806767	16.86	868063	19.31

CURTIS & TOMPKINS INTERNAL STANDARD SUMMARY FOR SEQUENCE 494415523

Date : 10/15/14 Reference : jgv11
Sequence : MSVOA10 jjf Analyzed : 07/31/14 21:19

#	Type	Sample ID	PFLBZ	RT	14DFB	RT	CLBZD5	RT	DCBZ14D4	RT
		ICAL STD	534687	10.82	860147	11.99	744278	15.97	410406	18.69
		LOWER LIMIT	267344	10.32	430074	11.49	372139	15.47	205203	18.19
		UPPER LIMIT	1069374	11.32	1720294	12.49	1488556	16.47	820812	19.19
003	CCV		850512	10.80	1339235	11.98	1132295	15.95	582520	18.66
004	BS	QC761811	959668	10.81	1493973	11.98	1258433	15.95	645762	18.65
005	BSD	QC761812	902844	10.80	1413706	11.97	1205549	15.95	614455	18.66
006	CCV	A/A	939959	10.81	1449551	11.98	1252693	15.96	635116	18.66
008	BLANK	QC761813	915358	10.81	1404712	11.98	1210335	15.95	612771	18.66
009	SAMPLE	261466-007	916960	10.81	1432656	11.98	1221282	15.95	622983	18.66
010	SAMPLE	261495-001	922918	10.81	1421363	11.98	1228549	15.95	617364	18.66
011	SAMPLE	261495-004	887414	10.80	1400432	11.98	1185261	15.95	591954	18.66
012	SAMPLE	261500-004	897333	10.80	1396460	11.98	1191869	15.95	598495	18.66
013	SAMPLE	261500-005	915467	10.80	1430177	11.97	1239043	15.95	627183	18.66
014	SAMPLE	261611-001	881562	10.80	1386332	11.98	1187989	15.95	597399	18.66
015	SAMPLE	261611-003	905544	10.80	1423296	11.98	1201852	15.95	596027	18.66
016	SAMPLE	261611-006	936734	10.81	1472002	11.98	1269578	15.95	639526	18.66
017	SAMPLE	261614-002	926929	10.81	1468254	11.98	1249910	15.95	637061	18.66
018	SAMPLE	261614-003	909837	10.80	1439787	11.98	1233991	15.95	614905	18.66
019	SAMPLE	261614-005	896888	10.81	1435950	11.98	1244401	15.95	616620	18.65
024	SAMPLE	261429-001	941739	10.81	1492772	11.98	1292109	15.95	638220	18.65
025	SAMPLE	261429-002	939526	10.81	1483105	11.98	1279608	15.95	626253	18.66
026	SAMPLE	261619-001	951288	10.81	1511049	11.98	1287382	15.95	640369	18.66

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 484393742

Instrument : MSVOA09 Begun : 09/30/14 10:22
Method : EPA 8260B SOP Version : TVH_8260B_rv1

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	iiu01	X	IB			09/30/14 10:22	1.0	1	
002	iiu02	TUN	BFB			09/30/14 11:05	1.0	2	
003	iiu03	X	IB			09/30/14 11:29	1.0	1	
004	iiu04	IB	CALIB IB			09/30/14 12:02	1.0	1	
005	iiu05	ICAL	.25/.5PPB			09/30/14 12:45	1.0	3 4 5 1	
006	iiu06	ICAL	0.5/1PPB			09/30/14 13:18	1.0	3 6 4 5 1	
007	iiu07	ICAL	2PPB			09/30/14 13:51	1.0	6 3 5 4 1	
008	iiu08	ICAL	5PPB			09/30/14 14:24	1.0	6 3 5 4 1	
009	iiu09	ICAL	10PPB			09/30/14 14:57	1.0	6 3 5 4 1	
010	iiu10	ICAL	20PPB			09/30/14 15:30	1.0	6 3 5 4 1	
011	iiu11	ICAL	50PPB			09/30/14 16:03	1.0	6 3 5 4 1	
012	iiu12	ICAL	75PPB			09/30/14 16:36	1.0	6 3 5 4 1	
013	iiu13	ICAL	100PPB			09/30/14 17:09	1.0	6 3 5 4 1	
014	iiu14	ICV	GASES			09/30/14 17:42	1.0	7 1	
015	iiu15	ICV				09/30/14 18:15	1.0	8 9 10 1	
016	iiu16	X	IB			09/30/14 18:48	1.0	1	

TEW 10/07/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 16.

Analyst: TEW Date: 10/07/14 Reviewer: LW Date: 10/07/14

Standards used: 1=S25550 2=S24715 3=S25553 4=S25611 5=S24388 6=S24237 7=S24978 8=S25528 9=S25398 10=S25703

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 484402568

Instrument : MSVOA09 Begun : 10/06/14 13:28
Method : EPA 8260B SOP Version : TVH_8260B_rv1

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	ij601	X	IB			10/06/14 13:28	1.0	1	
002	ij602	TUN	BFB			10/06/14 14:11	1.0	2	
003	ij603	ICV	GASES			10/06/14 14:36	1.0	3 1	
004	ij604	ICV	2-CLEVE			10/06/14 15:10	1.0	4 1	
005	ij605	ICV				10/06/14 15:43	1.0	5 6 7 1	
006	ij606	TUN	BFB			10/06/14 17:11	1.0	2	
007	ij607	ICV	GASES			10/06/14 17:35	1.0	3 1	
008	ij608	X	IB			10/06/14 18:50	1.0	1	

TEW 10/06/14 : Adjusted tune prior to file ij606.

TEW 10/07/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 8.

Analyst: TEW Date: 10/07/14 Reviewer: LW Date: 10/07/14

Standards used: 1=S25550 2=S24715 3=S25697 4=S17234 5=S25528 6=S25398 7=S25703

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 484417997

Instrument : MSVOA09 Begun : 10/17/14 06:37
Method : EPA 8260B SOP Version : TVH_8260B_rv1

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	ijh01	X	IB			10/17/14 06:37	1.0	1	
002	ijh02	TUN	BFB			10/17/14 08:06	1.0	2	
003	ijh03	CCV/BS	QC762101	Water	216532	10/17/14 08:33	1.0	3 4 5 6 1	spk cc-
004	ijh04	TUN	BFB			10/17/14 09:16	1.0	2	
005	ijh05	CCV/BS	QC762101	Water	216532	10/17/14 09:48	1.0	3 4 5 6 1	cc-
006	ijh06	TUN	BFB			10/17/14 10:32	1.0	2	
007	ijh07	CCV/BS	QC762101	Water	216532	10/17/14 10:58	1.0	3 4 5 6 1	cc-
008	ijh08	TUN	BFB			10/17/14 11:41	1.0	2	
009	ijh09	CCV/BS	QC762101	Water	216532	10/17/14 12:05	1.0	3 4 5 6 1	
010	ijh10	BSD	QC762102	Water	216532	10/17/14 12:48	1.0	3 4 5 6 1	
011	ijh11	CCV	A/A			10/17/14 13:21	1.0	7 1	
012	ijh12	X	IB			10/17/14 13:53	1.0	1	
013	ijh13	BLANK	QC762103	Water	216532	10/17/14 14:27	1.0	1	
014	ijh14	SAMPLE	261495-004	Water	216532	10/17/14 14:59	1.0	1	
015	ijh15	SAMPLE	261612-007	Water	216532	10/17/14 15:32	1.0	1	
016	ijh16	SAMPLE	261583-004	Water	216532	10/17/14 16:05	1.0	1	
017	ijh17	SAMPLE	261568-021	Water	216532	10/17/14 16:38	1.0	1	
018	ijh18	SAMPLE	261568-030	Water	216532	10/17/14 17:11	1.0	1	
019	ijh19	SAMPLE	261568-031	Water	216532	10/17/14 17:44	1.0	1	4:NAPH=500
020	ijh20	SAMPLE	261568-037	Water	216532	10/17/14 18:17	1.0	1	
021	ijh21	SAMPLE	261495-001	Water	216532	10/17/14 18:50	1.0	1	
022	ijh22	SAMPLE	261568-029	Water	216532	10/17/14 19:23	1.0	1	2:PBZN=120
023	ijh23	SAMPLE	261613-003	Water	216532	10/17/14 19:55	1.0	1	
024	ijh24	SAMPLE	261600-007	Water	216532	10/17/14 20:28	1.0	1	
025	ijh25	SAMPLE	261600-008	Water	216532	10/17/14 21:01	1.0	1	
026	ijh26	SAMPLE	261571-002	Water	216532	10/17/14 21:34	10.0	1	
027	ijh27	SAMPLE	261571-007	Water	216532	10/17/14 22:07	12.50	1	
028	ijh28	X	IB			10/17/14 22:40	1.0	1	
029	ijh29	X	IB			10/17/14 23:12	1.0	1	

TEW 10/19/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 29.

TEW 10/19/14 : Matrix spikes were not performed for this analysis in batch 216532 due to insufficient sample amount.

TEW 10/19/14 : Tune was adjusted by DJA prior to files ijh04, 06 & 08.

Analyst: TEW Date: 10/19/14 Reviewer: LW Date: 10/20/14

Standards used: 1=S25550 2=S24715 3=S25528 4=S24978 5=S25859 6=S25703 7=S25666

Flags used: -=low bias cc=CCV CCC failure spk=5% spike rule

Page 1 of 1

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 494306229

Instrument : MSVOA10 Begun : 07/31/14 15:49
Method : EPA 8260B SOP Version : TVH_8260B_rv1

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	jgv01	TUN	BFB			07/31/14 15:49	1.0	1	
002	jgv02	X	IB			07/31/14 16:05	1.0	2	
003	jgv03	IB	CALIB IB			07/31/14 16:38	1.0	2	
004	jgv04	X	IB			07/31/14 17:10	1.0	2	
005	jgv05	ICAL	.25/0.5PPB			07/31/14 18:03	1.0	3 4 5 6 7 2	
006	jgv06	ICAL	0.5/1PPB			07/31/14 18:36	1.0	3 4 5 6 7 2	
007	jgv07	ICAL	2PPB			07/31/14 19:09	1.0	3 4 5 6 7 2	
008	jgv08	ICAL	5PPB			07/31/14 19:42	1.0	3 4 5 6 7 2	
009	jgv09	ICAL	10PPB			07/31/14 20:14	1.0	3 4 5 6 7 2	
010	jgv10	ICAL	20PPB			07/31/14 20:47	1.0	3 4 5 6 7 2	
011	jgv11	ICAL	50PPB			07/31/14 21:19	1.0	3 4 5 6 7 2	
012	jgv12	ICAL	75PPB			07/31/14 21:52	1.0	3 4 5 6 7 2	
013	jgv13	ICAL	100PPB			07/31/14 22:25	1.0	3 4 5 6 7 2	
014	jgv14	ICV	20PPB			07/31/14 22:57	1.0	8 2	
015	jgv15	ICV	40PPB			07/31/14 23:30	1.0	9 2	
016	jgv16	ICV	25PPB			08/01/14 00:02	1.0	10 11 12 2	
017	jgv17	X	IB			08/01/14 00:35	1.0	2	
018	jgv18	X	IB			08/01/14 01:07	1.0	2	
019	jgv19	X	IB			08/01/14 01:40	1.0	2	
020	jgv20	X	IB			08/01/14 02:12	1.0	2	
021	jgv21	X	IB			08/01/14 02:45	1.0	2	

BO 08/01/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 21.

Analyst: BO Date: 08/01/14 Reviewer: LW Date: 08/01/14

Standards used: 1=S24715 2=S25201 3=S25051 4=S25011 5=S23923 6=S24993 7=S24201 8=S24693 9=S17234 10=S25233 11=S25173 12=S24848

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 494415523

Instrument : MSVOA10 Begun : 10/15/14 13:23
Method : EPA 8260B SOP Version : TVH_8260B_rv1

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	jjf01	X	IB			10/15/14 13:23	1.0	1	
002	jjf02	TUN	BFB			10/15/14 13:49	1.0	2	
003	jjf03	CCV				10/15/14 14:29	1.0	3 4 5 6 1	
004	jjf04	BS	QC761811	Water	216460	10/15/14 15:24	1.0	7 8 9 10 1	
005	jjf05	BSD	QC761812	Water	216460	10/15/14 15:57	1.0	7 8 9 10 1	
006	jjf06	CCV	A/A			10/15/14 16:57	1.0	11 1	
007	jjf07	X	IB			10/15/14 17:30	1.0	1	
008	jjf08	BLANK	QC761813	Water	216460	10/15/14 18:02	1.0	1	
009	jjf09	SAMPLE	261466-007	Water	216460	10/15/14 18:36	1.0	1	combined (sediment), headspace <= 1 mL, pH > 2
010	jjf10	SAMPLE	261495-001	Water	216460	10/15/14 19:08	1.0	1	
011	jjf11	SAMPLE	261495-004	Water	216460	10/15/14 19:41	1.0	1	
012	jjf12	SAMPLE	261500-004	Water	216460	10/15/14 20:13	2.0	1	
013	jjf13	SAMPLE	261500-005	Water	216460	10/15/14 20:46	2.0	1	
014	jjf14	SAMPLE	261611-001	Water	216460	10/15/14 21:19	1.0	1	
015	jjf15	SAMPLE	261611-003	Water	216460	10/15/14 21:51	1.0	1	
016	jjf16	SAMPLE	261611-006	Water	216460	10/15/14 22:24	1.0	1	
017	jjf17	SAMPLE	261614-002	Water	216460	10/15/14 22:56	1.0	1	
018	jjf18	SAMPLE	261614-003	Water	216460	10/15/14 23:29	1.0	1	
019	jjf19	SAMPLE	261614-005	Water	216460	10/16/14 00:01	1.0	1	
020	jjf20	X	IB			10/16/14 00:34	1.0	1	
021	jjf21	X	IB			10/16/14 01:06	1.0	1	
022	jjf22	X	IB			10/16/14 01:39	1.0	1	
023	jjf23	X	IB			10/16/14 02:11	1.0	1	
024	jjf24	SAMPLE	261429-001	Water	216460	10/16/14 02:44	1.0	1	<<t
025	jjf25	SAMPLE	261429-002	Water	216460	10/16/14 03:16	1.0	1	<<t
026	jjf26	SAMPLE	261619-001	Water	216460	10/16/14 03:49	1.0	1	<<t , pH > 2
027	jjf27	X	HIGH GAS			10/16/14 04:21	1.0	1	

BCH 10/16/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 27.

BCH 10/16/14 : Matrix spikes were not performed for this analysis in batch 216460 due to insufficient sample amount.

Analyst: BCH Date: 10/16/14 Reviewer: LW Date: 10/16/14

Standards used: 1=S25556 2=S24715 3=S24237 4=S25611 5=S25553 6=S24389 7=S25703 8=S25859 9=S25528 10=S25697 11=S25666

Flags used: <<t=out of clock

MSVOA WATER Prepsheet Curtis & Tompkins, Ltd.

Date: 10.15.14 **Batch #:** 216460

	Sample ID	Vial	pH <2	pH (if >2)	HS?	Dil'n flask	MS#	RR	DF	Comments	20 % ccv	hold	due	init date
1	2614667	FB		2.5	large flask		10	2	1	BrMt C- ~~5~~ Check for sediment ~~4~~		1920		JCH
2	261495.1	C	✓						1	FB RR for ~~ethanol~~ & IPA				
3	↓ 4	B	✓						1	TB ↓ ↓				
4	261500.4	C	✓			7		2	2	F12, BrMt, 4-chlorotoluene				
5	↓ 5	C	✓			9		2	2	↓ ↓ ↓				
6	261611.1	C	✓					1	1	C- F12, BrMt				
7	3	C	✓					1	1	↓ ↓				
8	↓ 6	C	✓					1	1					
9	261614.2	A	✓					1	1					
10	3	C	✓					1	1					
11	↓ 5	D	✓					1	1	↓ ↓				
12														
13														
14														
15														
16														
17														
18														
19														
20	261429.1	A	✓						1	STORAGE BLANK				
21	↓ 2	↓	✓						1	↓				
22	261619.1	A		6					1	↓				

MSVOA WATER Prepsheet Curtis & Tompkins, Ltd.

Date: 10/17/14 **Batch #:** 216532

	Sample ID	Vial	pH <2	pH (if >2)	HS?	Dil'n flask	MS# ~~8~~ 9 DJA 10/17	BR	DF	Comments	20 % ccv	hold	due	init date
1	261568-30	C	X				9	1	1X	mtbe c- + 5% rule				DJA
2	-31	C	X					1	1X	↓				
3	-37	C	X					1	1X	OD				
9 4	-21	D	X					2	1X	mtbe + 5% rule				
5	-29	C	X					1	1X	↓ + IS↑, load last				
8 6	261571-2	B	✓			3		1	10X	chlform, CT, TCE >LR				
7	-7	↓	✓			5		1	12.5X	OD				
9 8	261613-3	B	X						1X					
9	261583-4	C	X					1	1X	OD				
9 10	261612-7	A	X					1	1X	mtbe c- + 5% flag, EB				
8 11	261495-1	P	X					1	1X	raised KL IPA + Ethanol, FB				
12	-4	C	X					1	1X	↓ ↓, TB				
13	261600-7	A	X						1X					
14	-8	B	X						1X					
15														
16														
17														
18														
19														
20														
21														
22														

Laboratory Job Number 261495

ANALYTICAL REPORT

Semivolatile Organics by GC/MS

Matrix: Water

Curtis & Tompkins, Ltd.

Semivolatile Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 3520C
Project#:	PAVILLION	Analysis:	EPA 8270C
Field ID:	FB-1-10062014	Batch#:	216322
Lab ID:	261495-001	Sampled:	10/06/14
Matrix:	Water	Received:	10/07/14
Units:	ug/L	Prepared:	10/10/14
Diln Fac:	1.000	Analyzed:	10/14/14

Analyte	Result	RL	MDL
N-Nitrosodimethylamine	ND	10	0.76
Phenol	ND	10	0.98
bis(2-Chloroethyl)ether	ND	10	1.8
2-Chlorophenol	ND	10	1.0
1,3-Dichlorobenzene	ND	10	0.67
1,4-Dichlorobenzene	ND	10	0.65
Benzyl alcohol	ND	10	0.59
1,2-Dichlorobenzene	ND	10	0.69
2-Methylphenol	ND	10	0.63
bis(2-Chloroisopropyl) ether	ND	10	0.81
4-Methylphenol	ND	10	0.60
N-Nitroso-di-n-propylamine	ND	10	0.84
Hexachloroethane	ND	10	0.69
Nitrobenzene	ND	10	0.60
Isophorone	ND	10	0.67
2-Nitrophenol	ND	20	3.1
2,4-Dimethylphenol	ND	10	0.69
Benzoic acid	ND	50	15
bis(2-Chloroethoxy)methane	ND	10	0.56
2,4-Dichlorophenol	ND	10	0.73
1,2,4-Trichlorobenzene	ND	10	0.61
Naphthalene	ND	10	0.58
4-Chloroaniline	ND	10	0.65
Hexachlorobutadiene	ND	10	0.54
4-Chloro-3-methylphenol	ND	10	0.82
2-Methylnaphthalene	ND	10	0.53
1-Methylnaphthalene	ND	10	0.57
Hexachlorocyclopentadiene	ND	20	0.18
2,4,6-Trichlorophenol	ND	10	1.1
2,4,5-Trichlorophenol	ND	10	1.1
2-Nitroaniline	ND	20	2.6
Dimethylphthalate	ND	10	0.66
Acenaphthylene	ND	10	0.58
2,6-Dinitrotoluene	ND	10	0.67
3-Nitroaniline	ND	20	0.84
Acenaphthene	ND	10	0.49
2,4-Dinitrophenol	ND	20	2.3
4-Nitrophenol	ND	20	1.2
Dibenzofuran	ND	10	0.57
2,4-Dinitrotoluene	ND	10	0.65
Diethylphthalate	ND	10	0.68
Fluorene	ND	10	0.57
4-Chlorophenyl-phenylether	ND	10	0.53
4-Nitroaniline	ND	20	3.3
2,3,4,6-Tetrachlorophenol	ND	10	2.6
4,6-Dinitro-2-methylphenol	ND	20	2.5
Azobenzene	ND	10	0.65
4-Bromophenyl-phenylether	ND	10	0.56
Hexachlorobenzene	ND	10	0.68
Pentachlorophenol	ND	20	1.7
Phenanthrene	ND	10	0.71
Anthracene	ND	10	0.62

J= Estimated value
ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Semivolatile Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 3520C
Project#:	PAVILLION	Analysis:	EPA 8270C
Field ID:	FB-1-10062014	Batch#:	216322
Lab ID:	261495-001	Sampled:	10/06/14
Matrix:	Water	Received:	10/07/14
Units:	ug/L	Prepared:	10/10/14
Diln Fac:	1.000	Analyzed:	10/14/14

Analyte	Result	RL	MDL
Carbazole	ND	10	2.8
Di-n-butylphthalate	ND	10	1.4
Fluoranthene	ND	10	0.77
Pyrene	ND	10	0.74
Butylbenzylphthalate	ND	10	0.82
3,3'-Dichlorobenzidine	ND	20	2.5
Benzo(a)anthracene	ND	10	0.75
Chrysene	ND	10	0.70
bis(2-Ethylhexyl)phthalate	ND	10	1.6
Di-n-octylphthalate	ND	10	0.63
Benzo(b)fluoranthene	ND	10	0.71
Benzo(k)fluoranthene	ND	10	0.66
Benzo(a)pyrene	ND	10	0.57
Indeno(1,2,3-cd)pyrene	ND	10	0.77
Dibenz(a,h)anthracene	ND	10	0.79
Benzo(g,h,i)perylene	ND	10	0.87

Tentatively Identified Compounds	Result
Hexadecanoic Acid	36 J
Octadecanoic acid	18 J
Unknown 1	5.2 J
Unknown 2	11 J

Surrogate	%REC	Limits
2-Fluorophenol	85	39-120
Phenol-d5	87	40-120
2,4,6-Tribromophenol	73	46-122
Nitrobenzene-d5	84	50-120
2-Fluorobiphenyl	78	50-120
Terphenyl-d14	63	21-120

J= Estimated value
ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Semivolatile Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 3520C
Project#:	PAVILLION	Analysis:	EPA 8270C
Field ID:	FB-1-10062014	Sampled:	10/06/14
Matrix:	Water	Received:	10/07/14
Diln Fac:	1.000	Prepared:	10/08/14
Batch#:	216229	Analyzed:	10/09/14

Type: SAMPLE Units: ug/L
Lab ID: 261495-005

Analyte	Result	RL	MDL
Pyridine	ND	10	2.1
Aniline	ND	10	2.0

Tentatively Identified Compounds	Result
3-Hexen-1-ol, (Z)-	12 J
Hexadecanoic Acid	20 J
Octadecanoic acid	7.4 J

Surrogate	%REC	Limits
Nitrobenzene-d5	77	50-120
2-Fluorobiphenyl	75	50-120
Terphenyl-d14	60	21-120

Type: BLANK Lab ID: QC760901

Analyte	Result	RL	MDL	Units
Pyridine	ND	10	1.5	ug/L
Aniline	ND	10	0.66	ug/L

Tentatively Identified Compounds	Result	Units
3-Hexen-1-ol, (Z)-	0.012 J	ug/mL

Surrogate	%REC	Limits
Nitrobenzene-d5	85	50-120
2-Fluorobiphenyl	79	50-120
Terphenyl-d14	67	21-120

J= Estimated value
ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Semivolatile Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 3520C
Project#:	PAVILLION	Analysis:	EPA 8270C
Matrix:	Water	Batch#:	216229
Units:	ug/L	Prepared:	10/08/14
Diln Fac:	2.000	Analyzed:	10/09/14

Type: BS Lab ID: QC760902

Analyte	Spiked	Result	%REC	Limits
Pyridine	80.00	58.04	73	28-120
Aniline	80.00	41.77	52	1-120

Surrogate	%REC	Limits
Nitrobenzene-d5	88	50-120
2-Fluorobiphenyl	79	50-120
Terphenyl-d14	84	21-120

Type: BSD Lab ID: QC760903

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Pyridine	80.00	61.84	77	28-120	6	88
Aniline	80.00	45.69	57	1-120	9	88

Surrogate	%REC	Limits
Nitrobenzene-d5	88	50-120
2-Fluorobiphenyl	77	50-120
Terphenyl-d14	82	21-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Semivolatile Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 3520C
Project#:	PAVILLION	Analysis:	EPA 8270C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC761278	Batch#:	216322
Matrix:	Water	Prepared:	10/10/14
Units:	ug/L	Analyzed:	10/14/14

Analyte	Result	RL	MDL
N-Nitrosodimethylamine	ND	10	0.76
Phenol	ND	10	0.98
bis(2-Chloroethyl)ether	ND	10	1.8
2-Chlorophenol	ND	10	1.0
1,3-Dichlorobenzene	ND	10	0.67
1,4-Dichlorobenzene	ND	10	0.65
Benzyl alcohol	ND	10	0.59
1,2-Dichlorobenzene	ND	10	0.69
2-Methylphenol	ND	10	0.63
bis(2-Chloroisopropyl) ether	ND	10	0.81
4-Methylphenol	ND	10	0.60
N-Nitroso-di-n-propylamine	ND	10	0.84
Hexachloroethane	ND	10	0.69
Nitrobenzene	ND	10	0.60
Isophorone	ND	10	0.67
2-Nitrophenol	ND	20	3.1
2,4-Dimethylphenol	ND	10	0.69
Benzoic acid	ND	50	15
bis(2-Chloroethoxy)methane	ND	10	0.56
2,4-Dichlorophenol	ND	10	0.73
1,2,4-Trichlorobenzene	ND	10	0.61
Naphthalene	ND	10	0.58
4-Chloroaniline	ND	10	0.65
Hexachlorobutadiene	ND	10	0.54
4-Chloro-3-methylphenol	ND	10	0.82
2-Methylnaphthalene	ND	10	0.53
1-Methylnaphthalene	ND	10	0.57
Hexachlorocyclopentadiene	ND	20	0.18
2,4,6-Trichlorophenol	ND	10	1.1
2,4,5-Trichlorophenol	ND	10	1.1
2-Nitroaniline	ND	20	2.6
Dimethylphthalate	ND	10	0.66
Acenaphthylene	ND	10	0.58
2,6-Dinitrotoluene	ND	10	0.67
3-Nitroaniline	ND	20	0.84
Acenaphthene	ND	10	0.49
2,4-Dinitrophenol	ND	20	2.3
4-Nitrophenol	ND	20	1.2
Dibenzofuran	ND	10	0.57
2,4-Dinitrotoluene	ND	10	0.65
Diethylphthalate	ND	10	0.68
Fluorene	ND	10	0.57
4-Chlorophenyl-phenylether	ND	10	0.53
4-Nitroaniline	ND	20	3.3
2,3,4,6-Tetrachlorophenol	ND	10	2.6
4,6-Dinitro-2-methylphenol	ND	20	2.5
Azobenzene	ND	10	0.65
4-Bromophenyl-phenylether	ND	10	0.56
Hexachlorobenzene	ND	10	0.68
Pentachlorophenol	ND	20	1.7
Phenanthrene	ND	10	0.71
Anthracene	ND	10	0.62

J= Estimated value
ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Semivolatile Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 3520C
Project#:	PAVILLION	Analysis:	EPA 8270C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC761278	Batch#:	216322
Matrix:	Water	Prepared:	10/10/14
Units:	ug/L	Analyzed:	10/14/14

Analyte	Result	RL	MDL
Carbazole	ND	10	2.8
Di-n-butylphthalate	ND	10	1.4
Fluoranthene	ND	10	0.77
Pyrene	ND	10	0.74
Butylbenzylphthalate	ND	10	0.82
3,3'-Dichlorobenzidine	ND	20	2.5
Benzo(a)anthracene	ND	10	0.75
Chrysene	ND	10	0.70
bis(2-Ethylhexyl)phthalate	ND	10	1.6
Di-n-octylphthalate	ND	10	0.63
Benzo(b)fluoranthene	ND	10	0.71
Benzo(k)fluoranthene	ND	10	0.66
Benzo(a)pyrene	ND	10	0.57
Indeno(1,2,3-cd)pyrene	ND	10	0.77
Dibenz(a,h)anthracene	ND	10	0.79
Benzo(g,h,i)perylene	ND	10	0.87

Tentatively Identified Compounds	Result
Unknown 1	10 J
Unknown 2	11 J

Surrogate	%REC	Limits
2-Fluorophenol	89	39-120
Phenol-d5	91	40-120
2,4,6-Tribromophenol	63	46-122
Nitrobenzene-d5	88	50-120
2-Fluorobiphenyl	80	50-120
Terphenyl-d14	77	21-120

J= Estimated value
ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Semivolatile Organics by GC/MS

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 3520C
Project#:	PAVILLION	Analysis:	EPA 8270C
Matrix:	Water	Batch#:	216322
Units:	ug/L	Prepared:	10/10/14
Diln Fac:	1.000	Analyzed:	10/15/14

Type: BS Lab ID: QC761279

Analyte	Spiked	Result	%REC	Limits
Phenol	80.00	61.10	76	54-120
2-Chlorophenol	80.00	63.69	80	65-120
1,4-Dichlorobenzene	80.00	55.77	70	56-120
N-Nitroso-di-n-propylamine	80.00	61.06	76	45-120
1,2,4-Trichlorobenzene	80.00	55.41	69	55-120
4-Chloro-3-methylphenol	80.00	62.58	78	54-120
Acenaphthene	30.00	24.11	80	62-120
4-Nitrophenol	80.00	65.91	82	58-120
2,4-Dinitrotoluene	80.00	68.91	86	66-120
Pentachlorophenol	80.00	66.52	83	58-120
Pyrene	30.00	26.48	88	65-120

Surrogate	%REC	Limits
2-Fluorophenol	80	39-120
Phenol-d5	80	40-120
2,4,6-Tribromophenol	89	46-122
Nitrobenzene-d5	75	50-120
2-Fluorobiphenyl	70	50-120
Terphenyl-d14	78	21-120

Type: BSD Lab ID: QC761280

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Phenol	80.00	57.45	72	54-120	6	29
2-Chlorophenol	80.00	60.25	75	65-120	6	33
1,4-Dichlorobenzene	80.00	53.76	67	56-120	4	25
N-Nitroso-di-n-propylamine	80.00	58.05	73	45-120	5	26
1,2,4-Trichlorobenzene	80.00	54.55	68	55-120	2	24
4-Chloro-3-methylphenol	80.00	58.71	73	54-120	6	46
Acenaphthene	30.00	22.48	75	62-120	7	22
4-Nitrophenol	80.00	61.37	77	58-120	7	28
2,4-Dinitrotoluene	80.00	64.07	80	66-120	7	22
Pentachlorophenol	80.00	61.98	77	58-120	7	27
Pyrene	30.00	24.70	82	65-120	7	22

Surrogate	%REC	Limits
2-Fluorophenol	78	39-120
Phenol-d5	79	40-120
2,4,6-Tribromophenol	82	46-122
Nitrobenzene-d5	73	50-120
2-Fluorobiphenyl	68	50-120
Terphenyl-d14	76	21-120

RPD= Relative Percent Difference

Initial & Continuing Calibration Data

CURTIS & TOMPKINS DFTPP TUNE FOR 261495 MSBNA Water
EPA 8270C

Inst : MSBNA06 Run Name : DFTPP/PEM IDF : 1.0
Seqnum : 554382191006 File : yim06 Time : 22-SEP-2014 12:52

Standards: S25535

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
51	30% - 60% of mass 198	180242	41.23	
68	< 2% of mass 69	0	0.00	
69		177807	100.00	
70	< 2% of mass 69	993	0.56	
127	40% - 60% of mass 198	212522	48.61	
197	< 1% of mass 198	0	0.00	
198		437184	100.00	
199	5% - 9% of mass 198	30456	6.97	
275	10% - 30% of mass 198	112914	25.83	
365	> 1% of mass 198	13761	3.15	
441	Present, < mass 443	62922	76.02	
442	> 40% and < 100% of mass 198	416554	95.28	
443	17% - 23% of mass 442	82770	19.87	

Analyst: KMH Date: 09/22/14 Reviewer: LW Date: 09/26/14

PEM Report

File Name : G:\msbna06\092214\YIM06.D
Date Acquired : 22 Sep 2014 12:52 pm
Sample Name : TUN,S25535
Misc. Info : DFTPP/PEM
Calib. Title : MSBNA06 BNA DFTPP/PEM
Inst. Name : MSBNA06
AcquisitionMeth: DFTPP06.M

Compound Name	Tailing Factor	RT	Area
Pentachlorophenol	1.304	5.26	766182
Benzidine	0.595	7.13	3220426
4,4'-DDT		8.15	1630655
4,4'-DDE		7.36	5412
4,4'-DDD		7.77	55847

% Breakdown: 4,4'-DDT	LIMIT <=20%	4%	PASS
Tailing: Pentachlorophenol	8270C <5.0	1.3	PASS
	8270D <=2	1	PASS
Tailing: Benzidine	8270C <3.0	0.6	PASS
	8270D <=2	1	PASS

Mon Sep 22 13:10:21 2014

CURTIS & TOMPKINS DFTPP TUNE FOR 261495 MSBNA Water
EPA 8270C

Inst : MSBNA06 Run Name : DFTPP/PEM IDF : 1.0
Seqnum : 554383786004 File : yin04 Time : 23-SEP-2014 14:13

Standards: S25535

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
51	30% - 60% of mass 198	180152	43.28	
68	< 2% of mass 69	0	0.00	
69		173077	100.00	
70	< 2% of mass 69	896	0.52	
127	40% - 60% of mass 198	208896	50.18	
197	< 1% of mass 198	0	0.00	
198		416277	100.00	
199	5% - 9% of mass 198	28402	6.82	
275	10% - 30% of mass 198	105941	25.45	
365	> 1% of mass 198	13182	3.17	
441	Present, < mass 443	56898	72.80	
442	> 40% and < 100% of mass 198	382869	91.97	
443	17% - 23% of mass 442	78160	20.41	

Analyst: NPM Date: 09/23/14 Reviewer: LW Date: 09/26/14

PEM Report

File Name : G:\msbna06\092314\YIN04.D
Date Acquired : 23 Sep 2014 2:13 pm
Sample Name : TUN,S25535
Misc. Info : DFTPP/PEM
Calib. Title : MSBNA06 BNA
Inst. Name : MSBNA06
AcquisitionMeth: DFTPP06.M

Compound Name	Tailing Factor	RT	Area
Pentachlorophenol	1.247	5.26	834866
Benzidine	0.673	7.13	3033183
4,4'-DDT		8.15	1555377
4,4'-DDE		7.36	6635
4,4'-DDD		7.77	58518

% Breakdown: 4,4'-DDT	LIMIT <=20%	4%	PASS
Tailing: Pentachlorophenol	8270C <5.0	1.2	PASS
	8270D <=2	1	PASS
Tailing: Benzidine	8270C <3.0	0.7	PASS
	8270D <=2	1	PASS

Tue Sep 23 17:01:37 2014

CURTIS & TOMPKINS DFTPP TUNE FOR 261495 MSBNA Water
EPA 8270C

Inst : MSBNA06 Run Name : DFTPP/PEM IDF : 1.0
Seqnum : 554406629002 File : yj902 Time : 09-OCT-2014 09:38

Standards: S25535

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
51	30% - 60% of mass 198	170712	38.92	
68	< 2% of mass 69	0	0.00	
69		175146	100.00	
70	< 2% of mass 69	790	0.45	
127	40% - 60% of mass 198	212736	48.51	
197	< 1% of mass 198	0	0.00	
198		438570	100.00	
199	5% - 9% of mass 198	29997	6.84	
275	10% - 30% of mass 198	107136	24.43	
365	> 1% of mass 198	12737	2.90	
441	Present, < mass 443	61048	76.91	
442	> 40% and < 100% of mass 198	403946	92.11	
443	17% - 23% of mass 442	79373	19.65	

Analyst: KMH Date: 10/09/14 Reviewer: LW Date: 10/09/14

PEM Report

File Name : G:\csinput.net\DATA\100914\YJ902.D
Date Acquired : 9 Oct 2014 9:38 am
Sample Name : TUN,S25535
Misc. Info : DFTPP/PEM
Calib. Title : MSBNA06 BNA DFTPP/PEM
Inst. Name : MSBNA06
AcquisitionMeth: DFTPP06.M

Compound Name	Tailing Factor	RT	Area
Pentachlorophenol	1.192	5.25	655237
Benzidine	0.906	7.11	3573345
4,4'-DDT		8.14	1664418
4,4'-DDE		7.35	5025
4,4'-DDD		7.76	76837

% Breakdown: 4,4'-DDT	LIMIT <=20%	5%	PASS
Tailing: Pentachlorophenol	8270C <5.0	1.2	PASS
	8270D <=2	1	PASS
Tailing: Benzidine	8270C <3.0	0.9	PASS
	8270D <=2	1	PASS

Thu Oct 09 09:48:35 2014

CURTIS & TOMPKINS DFTPP TUNE FOR 261495 MSBNA Water
EPA 8270C

Inst : MSBNA06 Run Name : DFTPP/PEM IDF : 1.0
Seqnum : 554415327002 File : yjf02 Time : 15-OCT-2014 10:36

Standards: S25535

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
51	30% - 60% of mass 198	156222	36.12	
68	< 2% of mass 69	0	0.00	
69		163221	100.00	
70	< 2% of mass 69	903	0.55	
127	40% - 60% of mass 198	202453	46.81	
197	< 1% of mass 198	0	0.00	
198		432490	100.00	
199	5% - 9% of mass 198	29325	6.78	
275	10% - 30% of mass 198	111789	25.85	
365	> 1% of mass 198	11939	2.76	
441	Present, < mass 443	55693	72.90	
442	> 40% and < 100% of mass 198	370858	85.75	
443	17% - 23% of mass 442	76397	20.60	

Analyst: NPM Date: 10/15/14 Reviewer: LW Date: 10/16/14

PEM Report

File Name : G:\msbna06\101514\YJF02.D
Date Acquired : 15 Oct 2014 10:36 am
Sample Name : TUN,S25535
Misc. Info : DFTPP/PEM
Calib. Title : MSBNA06 BNA DFTPP/PEM
Inst. Name : MSBNA06
AcquisitionMeth: DFTPP06.M

Compound Name	Tailing Factor	RT	Area
Pentachlorophenol	1.706	5.23	790129
Benzidine	0.644	7.11	3444390
4,4'-DDT		8.13	1754371
4,4'-DDE		7.34	5163
4,4'-DDD		7.75	88105

% Breakdown: 4,4'-DDT	LIMIT <=20%	5%	PASS
Tailing: Pentachlorophenol	8270C <5.0	1.7	PASS
	8270D <=2	2	PASS
Tailing: Benzidine	8270C <3.0	0.6	PASS
	8270D <=2	1	PASS

Wed Oct 15 10:46:43 2014

CURTIS & TOMPKINS DFTPP TUNE FOR 261495 MSBNA Water
EPA 8270C

Inst : MSBNA07 Run Name : DFTPP/PEM IDF : 1.0
Seqnum : 564353477006 File : zi206 Time : 02-SEP-2014 14:13

Standards: S24893

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
51	30% - 60% of mass 198	291970	46.42	
68	< 2% of mass 69	0	0.00	
69		271969	100.00	
70	< 2% of mass 69	1281	0.47	
127	40% - 60% of mass 198	346986	55.17	
197	< 1% of mass 198	0	0.00	
198		628970	100.00	
199	5% - 9% of mass 198	42490	6.76	
275	10% - 30% of mass 198	153586	24.42	
365	> 1% of mass 198	14124	2.25	
441	Present, < mass 443	59544	86.21	
442	> 40% and < 100% of mass 198	347541	55.26	
443	17% - 23% of mass 442	69069	19.87	

Analyst: KMH Date: 09/02/14 Reviewer: LW Date: 09/05/14

PEM Report

File Name : G:\msbna07\090214\ZI206.D
Date Acquired : 2 Sep 2014 2:13 pm
Sample Name : TUN,S24893
Misc. Info : DFTPP/PEM
Calib. Title : MSBNA07 BNA DFTPP/PEM
Inst. Name : MSBNA07
AcquisitionMeth: DFTPP07.M

Compound Name	Tailing Factor	RT	Area
Pentachlorophenol	0.937	5.53	609055
Benzidine	0.518	7.40	5227100
4,4'-DDT		8.42	2511335
4,4'-DDE		7.63	5231
4,4'-DDD		8.04	47404

% Breakdown: 4,4'-DDT	LIMIT <=20%	2%	PASS
Tailing: Pentachlorophenol	8270C <5.0	0.9	PASS
	8270D <=2	1	PASS
Tailing: Benzidine	8270C <3.0	0.5	PASS
	8270D <=2	1	PASS

Tue Sep 02 14:55:40 2014

CURTIS & TOMPKINS DFTPP TUNE FOR 261495 MSBNA Water
EPA 8270C

Inst : MSBNA07 Run Name : DFTPP/PEM IDF : 1.0
Seqnum : 564354873002 File : zi302 Time : 03-SEP-2014 11:02

Standards: S24893

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
51	30% - 60% of mass 198	339152	49.31	
68	< 2% of mass 69	0	0.00	
69		315370	100.00	
70	< 2% of mass 69	1505	0.48	
127	40% - 60% of mass 198	390848	56.83	
197	< 1% of mass 198	0	0.00	
198		687808	100.00	
199	5% - 9% of mass 198	46322	6.73	
275	10% - 30% of mass 198	159658	23.21	
365	> 1% of mass 198	14302	2.08	
441	Present, < mass 443	59205	85.27	
442	> 40% and < 100% of mass 198	341482	49.65	
443	17% - 23% of mass 442	69434	20.33	

KMH 09/03/14 [4,4'-DDD]: Combined split peak.

Analyst: KMH Date: 09/03/14 Reviewer: LW Date: 09/05/14

PEM Report

File Name : G:\msbna07\090314\ZI302.D
Date Acquired : 3 Sep 2014 11:02 am
Sample Name : TUN,S24893
Misc. Info : DFTPP/PEM
Calib. Title : MSBNA07 BNA DFTPP/PEM
Inst. Name : MSBNA07
AcquisitionMeth: DFTPP07.M

Compound Name	Tailing Factor	RT	Area
Pentachlorophenol	1.223	5.52	650889
Benzidine	0.845	7.39	4970981
4,4'-DDT		8.42	2350837
4,4'-DDE		7.63	9336
4,4'-DDD		8.04	55564

% Breakdown: 4,4'-DDT	LIMIT <=20%	3%	PASS
Tailing: Pentachlorophenol	8270C <5.0	1.2	PASS
	8270D <=2	1	PASS
Tailing: Benzidine	8270C <3.0	0.8	PASS
	8270D <=2	1	PASS

Wed Sep 03 11:13:07 2014

CURTIS & TOMPKINS DFTPP TUNE FOR 261495 MSBNA Water
EPA 8270C

Inst : MSBNA07 Run Name : DFTPP/PEM IDF : 1.0
Seqnum : 564406681002 File : zj902 Time : 09-OCT-2014 10:31

Standards: S25535

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
51	30% - 60% of mass 198	243180	48.08	
68	< 2% of mass 69	0	0.00	
69		232592	100.00	
70	< 2% of mass 69	1180	0.51	
127	40% - 60% of mass 198	275093	54.39	
197	< 1% of mass 198	0	0.00	
198		505770	100.00	
199	5% - 9% of mass 198	34034	6.73	
275	10% - 30% of mass 198	127992	25.31	
365	> 1% of mass 198	12148	2.40	
441	Present, < mass 443	59530	85.62	
442	> 40% and < 100% of mass 198	348885	68.98	
443	17% - 23% of mass 442	69530	19.93	

Analyst: KMH Date: 10/09/14 Reviewer: LW Date: 10/09/14

PEM Report

File Name : G:\csinput.net\DATA\100914\ZJ902.D
Date Acquired : 9 Oct 2014 10:31 am
Sample Name : TUN,S25535
Misc. Info : DFTPP/PEM
Calib. Title : MSBNA07 BNA DFTPP/PEM
Inst. Name : MSBNA07
AcquisitionMeth: DFTPP07.M

Compound Name	Tailing Factor	RT	Area
Pentachlorophenol	0.996	5.45	310035
Benzidine	0.827	7.31	3512008
4,4'-DDT		8.34	1579747
4,4'-DDE		7.54	4867
4,4'-DDD		7.96	148507

% Breakdown: 4,4'-DDT	LIMIT <=20%	9%	PASS
Tailing: Pentachlorophenol	8270C <5.0	1.0	PASS
	8270D <=2	1	PASS
Tailing: Benzidine	8270C <3.0	0.8	PASS
	8270D <=2	1	PASS

Thu Oct 09 10:40:42 2014

CURTIS & TOMPKINS DFTPP TUNE FOR 261495 MSBNA Water
EPA 8270C

Inst : MSBNA07 Run Name : DFTPP/PEM IDF : 1.0
Seqnum : 564413843004 File : zje04 Time : 14-OCT-2014 11:09

Standards: S25535

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
51	30% - 60% of mass 198	266780	48.59	
68	< 2% of mass 69	0	0.00	
69		249344	100.00	
70	< 2% of mass 69	1299	0.52	
127	40% - 60% of mass 198	300522	54.73	
197	< 1% of mass 198	1711	0.31	
198		549098	100.00	
199	5% - 9% of mass 198	36410	6.63	
275	10% - 30% of mass 198	131746	23.99	
365	> 1% of mass 198	11726	2.14	
441	Present, < mass 443	56237	85.62	
442	> 40% and < 100% of mass 198	331178	60.31	
443	17% - 23% of mass 442	65680	19.83	

Analyst: KMH Date: 10/14/14 Reviewer: LW Date: 10/16/14

PEM Report

File Name : G:\msbna07\101414\ZJE04.D
Date Acquired : 14 Oct 2014 11:09 am
Sample Name : TUN,S25535
Misc. Info : DFTPP/PEM
Calib. Title : MSBNA07 BNA DFTPP/PEM
Inst. Name : MSBNA07
AcquisitionMeth: DFTPP07.M

Compound Name	Tailing Factor	RT	Area
Pentachlorophenol	1.155	5.45	345460
Benzidine	0.630	7.31	2988518
4,4'-DDT		8.33	1953627
4,4'-DDE		7.54	6578
4,4'-DDD		7.95	54912

% Breakdown: 4,4'-DDT	LIMIT <=20%	3%	PASS
Tailing: Pentachlorophenol	8270C <5.0	1.2	PASS
	8270D <=2	1	PASS
Tailing: Benzidine	8270C <3.0	0.6	PASS
	8270D <=2	1	PASS

Tue Oct 14 11:24:50 2014

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 261495 MSBNA Water: EPA 8270C

Inst : MSBNA06
Calnum : 554382191002
Units : ug/mL

Name : 6PTBNA6
Date : 22-SEP-2014 13:13
X Axis : R

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	yim07	554382191007	ICAL	22-SEP-2014 13:13	S25407
L2	yim08	554382191008	ICAL	22-SEP-2014 13:48	S25408
L3	yim09	554382191009	ICAL	22-SEP-2014 14:24	S25409
L4	yim10	554382191010	ICAL	22-SEP-2014 14:59	S25410
L5	yim11	554382191011	ICAL	22-SEP-2014 15:34	S25411
L6	yim12	554382191012	ICAL	22-SEP-2014 16:10	S25412
L7	yim13	554382191013	ICAL	22-SEP-2014 16:45	S25413
L8	yim14	554382191014	ICAL	22-SEP-2014 17:22	S25414
L9	yim15	554382191015	ICAL	22-SEP-2014 17:57	S25415

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
N-Nitrosodimethylamine		1.2181	1.2447	1.2303	1.1871	1.1305	1.0404	0.9743	0.9229	AVRG		0.89403		1.1185	11	15	0.05	0.99	
Pyridine		2.3360	2.4290	2.3620	2.2948	2.2161	2.1409			AVRG		0.43545		2.2965	5	15	0.05	0.99	
Phenol		2.3074	2.2122	2.0523	1.9533	1.8536	1.6807	1.5963	1.5254	AVRG		0.52697		1.8976	15	15	0.05	0.99	
Aniline		2.5231m	2.5216m	2.3404m	2.2314m	2.1343m	2.0243m	1.9490m	1.8854m	AVRG		0.45430		2.2012	11	15	0.05	0.99	
bis(2-Chloroethyl)ether		1.6063	1.5047	1.4173	1.3155	1.2314	1.1246m			AVRG		0.73172		1.3666	13	15	0.05	0.99	
2-Chlorophenol		1.7545	1.6690	1.5772	1.5173	1.4571	1.3780	1.3102	1.2533	AVRG		0.67133		1.4896	12	15	0.05	0.99	
1,3-Dichlorobenzene		1.9129	1.8297	1.7340	1.6501	1.5635	1.4184	1.3225	1.2257m	AVRG		0.63208		1.5821	15	15	0.05	0.99	
1,4-Dichlorobenzene		1.6624	1.5999	1.5216	1.4617	1.3817	1.2560	1.1451	1.0855m	AVRG		0.71982		1.3892	15	15	0.05	0.99	
Benzyl alcohol		0.9495	0.9994	0.9453	0.9276	0.9081	0.9020	0.8766	0.8510m	AVRG		1.08704		0.9199	5	15	0.05	0.99	
1,2-Dichlorobenzene		1.6490	1.6317	1.5357	1.4726	1.3860	1.2580	1.1622		AVRG		0.69339		1.4422	13	15	0.05	0.99	
2-Methylphenol		1.1173	1.1350	1.0755	1.0399	1.0006	0.9382	0.8880	0.8287	AVRG		0.99712		1.0029	11	15	0.05	0.99	
bis(2-Chloroisopropyl) ether		2.2836	2.1626	1.9568	1.8342	1.7009	1.5135			AVRG		0.52394		1.9086	15	15	0.05	0.99	
4-Methylphenol		1.6790	1.6775	1.6076	1.5586	1.5362				AVRG		0.62044		1.6118	4	15	0.05	0.99	
N-Nitroso-di-n-propylamine		0.8645	0.8707	0.8315	0.7940	0.7667	0.7083	0.6719	0.6389	AVRG		1.30156		0.7683	11	15	0.050	0.99	
Hexachloroethane		0.6894	0.6897	0.6729	0.6423	0.6115	0.5546	0.5094	0.4700	AVRG		1.65297		0.6050	14	15	0.05	0.99	
Nitrobenzene		0.4584	0.4306	0.4083	0.3850	0.3654	0.3328	0.3083		AVRG		2.60345		0.3841	14	15	0.05	0.99	
Isophorone		0.8743	0.8488	0.8190	0.7846	0.7582	0.7291			AVRG		1.24638		0.8023	7	15	0.05	0.99	
2-Nitrophenol			0.2625	0.2523	0.2426	0.2333	0.2162	0.2034	0.1958m	AVRG		4.35848		0.2294	11	15	0.05	0.99	
2,4-Dimethylphenol		0.4373	0.4026	0.3833	0.3563	0.3417	0.3058	0.2903		AVRG		2.78083		0.3596	15	15	0.05	0.99	
bis(2-Chloroethoxy)methane			0.5089	0.5037	0.4737	0.4522	0.4233	0.4042	0.3923	AVRG		2.21639		0.4512	10	15	0.05	0.99	
Benzoic acid		0.2741	0.2848	0.3150	0.3173	0.3117	0.3050	0.2994	0.2972m	AVRG		3.32703		0.3006	5	15	0.05	0.99	
2,4-Dichlorophenol		0.3896	0.3792	0.3657	0.3436	0.3194	0.2880	0.2681		AVRG		2.97429		0.3362	14	15	0.05	0.99	
1,2,4-Trichlorobenzene		0.4346	0.4106	0.3955	0.3725	0.3524	0.3172	0.2968		AVRG		2.71368		0.3685	14	15	0.05	0.99	
Naphthalene	1.2494	1.2467	1.2152	1.2000	1.1268	1.0717	0.9925	0.9263	0.8735	AVRG		0.90892		1.1002	13	15	0.05	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
4-Chloroaniline		0.4953	0.5064	0.5076	0.4705	0.4430	0.4139	0.3926	0.3834m	AVRG		2.21433		0.4516	11	15	0.05	0.99	
Hexachlorobutadiene		0.2153	0.2133	0.2067	0.1948	0.1842	0.1686	0.1561	0.1464	AVRG		5.38600		0.1857	14	15	0.05	0.99	
4-Chloro-3-methylphenol		0.4041	0.3741	0.3632	0.3459	0.3309	0.2972	0.2746	0.2644	AVRG		3.01384		0.3318	15	15	0.05	0.99	
2-Methylnaphthalene	0.9805	0.9750	0.9453	0.9250	0.8753	0.8285	0.7461	0.6957	0.6642m	AVRG		1.17872		0.8484	14	15	0.05	0.99	
1-Methylnaphthalene	0.9437	0.9136	0.8820	0.8541	0.8031	0.7567	0.6748	0.6366		AVRG		1.23750		0.8081	14	15	0.05	0.99	
Hexachlorocyclopentadiene			0.4312	0.4004	0.3944	0.3828	0.3625	0.3309	0.3193	AVRG		2.67030		0.3745	11	15	0.050	0.99	
2,4,6-Trichlorophenol		0.4834	0.4601	0.4353	0.4306	0.4160	0.3972	0.3730	0.3696m	AVRG		2.37731		0.4206	10	15	0.05	0.99	
2,4,5-Trichlorophenol		0.4959	0.4769	0.4477	0.4371	0.4188m	0.3916m	0.3671m	0.3552m	AVRG		2.35969		0.4238	12	15	0.05	0.99	
2-Nitroaniline			0.4629	0.4241	0.4145	0.3999	0.3840	0.3616	0.3513m	AVRG		2.50150		0.3998	10	15	0.05	0.99	
Dimethylphthalate		1.7163	1.6117	1.4898	1.4459	1.3754	1.2987	1.2091	1.1646	AVRG		0.70724		1.4139	14	15	0.05	0.99	
2,6-Dinitrotoluene		0.3801	0.3716	0.3571	0.3490	0.3367	0.3295	0.3103	0.3112m	AVRG		2.91381		0.3432	8	15	0.05	0.99	
Acenaphthylene	2.4219	2.3732	2.2978	2.1371	2.0804	1.9997	1.9028	1.7768	1.7182	AVRG		0.48108		2.0787	12	15	0.05	0.99	
3-Nitroaniline			0.4219	0.4030	0.4036	0.3931	0.3974	0.3854	0.3892m	AVRG		2.50567		0.3991	3	15	0.05	0.99	
Acenaphthene	1.2987	1.3306	1.2895	1.2033	1.1862	1.1383	1.0699	1.0035	0.9814	AVRG		0.85703		1.1668	11	15	0.05	0.99	
2,4-Dinitrophenol			0.1415	0.1645	0.1781	0.1825	0.1963	0.2015	0.2081m	AVRG		5.50053		0.1818	13	15	0.050	0.99	
4-Nitrophenol			0.1872	0.1876	0.1856	0.1847	0.1839	0.1817	0.1829m	AVRG		5.41089		0.1848	1	15	0.050	0.99	
Dibenzofuran			1.9091	1.7634	1.6980	1.6093	1.4469	1.2660		AVRG		0.61903		1.6154	14	15	0.05	0.99	
2,4-Dinitrotoluene		0.4730	0.4794	0.4580	0.4523	0.4324	0.4042	0.3629	0.3443m	AVRG		2.34845		0.4258	12	15	0.05	0.99	
2,3,4,6-Tetrachlorophenol		0.3826	0.3861	0.3674	0.3626	0.3522	0.3392	0.3212	0.3136m	AVRG		2.83185		0.3531	8	15	0.05	0.99	
Diethylphthalate			1.6979	1.6149	1.5650	1.5223	1.4588	1.3602	1.3283	AVRG		0.66367		1.5068	9	15	0.05	0.99	
Fluorene	1.7304	1.7163	1.6131	1.4664	1.4085	1.3378	1.2172			AVRG		0.66732		1.4985	13	15	0.05	0.99	
4-Chlorophenyl-phenylether			0.7776	0.7306	0.7203	0.6832	0.6467	0.5959	0.5748	AVRG		1.48021		0.6756	11	15	0.05	0.99	
4-Nitroaniline			0.3802	0.3742	0.3747	0.3735	0.3776	0.3585	0.3528m	AVRG		2.70109		0.3702	3	15	0.05	0.99	
4,6-Dinitro-2-methylphenol			0.1392	0.1433	0.1427	0.1400	0.1397	0.1352	0.1358m	AVRG		7.17398		0.1394	2	15	0.05	0.99	
Azobenzene			0.8903	0.8362	0.8002	0.7438	0.6835	0.6337	0.5941	AVRG		1.35089		0.7403	15	15	0.05	0.99	
4-Bromophenyl-phenylether			0.2840	0.2704	0.2656	0.2558	0.2465	0.2364	0.2302m	AVRG		3.91311		0.2556	8	15	0.05	0.99	
Hexachlorobenzene		0.3085	0.2931	0.2759	0.2711	0.2530	0.2458	0.2299	0.2211	AVRG		3.81219		0.2623	12	15	0.05	0.99	
Pentachlorophenol			0.1967	0.1945	0.1952	0.1847	0.1824	0.1744	0.1682	AVRG		5.40071		0.1852	6	15	0.05	0.99	
Phenanthrene	1.2727m	1.2402	1.2052	1.1540	1.1077	1.0503	1.0089	0.9363	0.8948m	AVRG		0.91185		1.0967	12	15	0.05	0.99	
Anthracene	1.2989	1.3173	1.2675	1.2068	1.1638	1.0986	1.0285	0.9639	0.9249m	AVRG		0.87632		1.1411	13	15	0.05	0.99	
Carbazole		1.0973	1.1181	1.0674	1.0099	0.9536	0.8871	0.8083	0.7842m	AVRG		1.03548		0.9657	13	15	0.05	0.99	
Di-n-butylphthalate			1.7186	1.6502	1.6000	1.5065	1.3866	1.2653	1.1995	AVRG		0.67784		1.4753	13	15	0.05	0.99	
Fluoranthene	1.7216	1.7075	1.6727	1.5695	1.5114	1.4343	1.3112	1.2186	1.1537m	AVRG		0.67666		1.4778	14	15	0.05	0.99	
Pyrene	1.7496	1.7193	1.6569	1.5929	1.5431	1.4827	1.4185	1.3432	1.2862	AVRG		0.65253		1.5325	11	15	0.05	0.99	
Butylbenzylphthalate			0.7786	0.7876	0.7810	0.7698	0.7368	0.7020	0.6753	AVRG		1.33814		0.7473	6	15	0.05	0.99	
3,3'-Dichlorobenzidine			0.5333	0.5452	0.5401	0.5297	0.5175	0.4691	0.4386	AVRG		1.95885		0.5105	8	15	0.05	0.99	
Benzo(a)anthracene	1.3890	1.3471	1.2911	1.2454	1.2010	1.1520	1.0759	0.9900	0.9412m	AVRG		0.84644		1.1814	13	15	0.05	0.99	
bis(2-Ethylhexyl)phthalate			0.8924	0.8679	0.8355	0.7992	0.7156	0.6192		AVRG		1.26855		0.7883	13	15	0.05	0.99	
Chrysene	1.1553	1.1550	1.1464	1.1573	1.1322	1.1076	1.1067	1.0565	1.0492m	AVRG		0.89407		1.1185	4	15	0.05	0.99	
Di-n-octylphthalate			1.5939	1.6618	1.6391	1.6278	1.6066	1.5266	1.4899m	AVRG		0.62804		1.5922	4	15	0.05	0.99	
Benzo(b)fluoranthene	1.2717	1.2925	1.3023	1.3444	1.2765	1.2523	1.2878	1.3229	1.3175m	AVRG		0.77135		1.2964	2	15	0.05	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Benzo(k)fluoranthene	1.2056	1.2003	1.1702	1.1360	1.1143	1.0994	1.0332	0.9532m	0.9409m	AVRG		0.91342		1.0948	9	15	0.05	0.99	
Benzo(a)pyrene	1.1386	1.2267	1.2635	1.2668	1.2495	1.2252	1.2249	1.2040	1.1979m	AVRG		0.81839		1.2219	3	15	0.05	0.99	
Indeno(1,2,3-cd)pyrene	1.2769	1.3968	1.4840	1.5203	1.5032	1.4806	1.5009	1.4906		AVRG		0.68651		1.4566	6	15	0.05	0.99	
Dibenz(a,h)anthracene	1.0407	1.1246	1.1655	1.1739	1.1461	1.1236	1.1353	1.1227	1.1111m	AVRG		0.88725		1.1271	3	15	0.05	0.99	
Benzo(g,h,i)perylene	1.1458	1.1733	1.2022	1.2112	1.2023	1.1825	1.1947	1.1794	1.1608m	AVRG		0.84490		1.1836	2	15	0.05	0.99	
2-Fluorophenol	1.8998	2.0004	2.0642	2.0529	2.0083	1.9343	1.9202	1.8498	1.7979	AVRG		0.51347		1.9475	5	15	0.05	0.99	
Phenol-d5	2.2605	2.3892	2.4466	2.3567	2.3166	2.2193	2.0954	1.9675	1.9015	AVRG		0.45106		2.2170	9	15	0.05	0.99	
Nitrobenzene-d5	0.5084	0.5002	0.4930	0.4875	0.4681	0.4584	0.4332	0.4211	0.4137	AVRG		2.15134		0.4648	8	15	0.05	0.99	
2-Fluorobiphenyl		1.8577	1.7349	1.5603	1.5095	1.4347	1.3771	1.2706		AVRG		0.65148		1.5350	13	15	0.05	0.99	
2,4,6-Tribromophenol	0.2248	0.2495	0.2583	0.2519	0.2531	0.2527	0.2585	0.2569	0.2603	AVRG		3.97181		0.2518	4	15	0.05	0.99	
Terphenyl-d14	1.1731	1.1592	1.1338	1.1167	1.0771	1.0455	1.0140	0.9527	0.9321	AVRG		0.93709		1.0671	8	15	0.05	0.99	

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
N-Nitrosodimethylamine			10.000	9	20.000	11	32.000	10	40.000	6	50.000	1	80.000	-7	100.00	-13	120.00	-17
Pyridine			10.000	2	20.000	6	32.000	3	40.000	0	50.000	-3	80.000	-7				
Phenol			10.000	**22**	20.000	17	32.000	8	40.000	3	50.000	-2	80.000	-11	100.00	-16	120.00	-20
Aniline			10.000	15	20.000	15	32.000	6	40.000	1	50.000	-3	80.000	-8	100.00	-11	120.00	-14
bis(2-Chloroethyl)ether			10.000	18	20.000	10	32.000	4	40.000	-4	50.000	-10	80.000	-18				
2-Chlorophenol			10.000	18	20.000	12	32.000	6	40.000	2	50.000	-2	80.000	-7	100.00	-12	120.00	-16
1,3-Dichlorobenzene			10.000	**21**	20.000	16	32.000	10	40.000	4	50.000	-1	80.000	-10	100.00	-16	120.00	**-23**
1,4-Dichlorobenzene			10.000	20	20.000	15	32.000	10	40.000	5	50.000	-1	80.000	-10	100.00	-18	120.00	**-22**
Benzyl alcohol			10.000	3	20.000	9	32.000	3	40.000	1	50.000	-1	80.000	-2	100.00	-5	120.00	-7
1,2-Dichlorobenzene			10.000	14	20.000	13	32.000	6	40.000	2	50.000	-4	80.000	-13	100.00	-19		
2-Methylphenol			10.000	11	20.000	13	32.000	7	40.000	4	50.000	0	80.000	-6	100.00	-11	120.00	-17
bis(2-Chloroisopropyl) ether			10.000	20	20.000	13	32.000	3	40.000	-4	50.000	-11	80.000	**-21**				
4-Methylphenol			10.000	4	20.000	4	32.000	0	40.000	-3	50.000	-5						
N-Nitroso-di-n-propylamine			10.000	13	20.000	13	32.000	8	40.000	3	50.000	0	80.000	-8	100.00	-13	120.00	-17
Hexachloroethane			10.000	14	20.000	14	32.000	11	40.000	6	50.000	1	80.000	-8	100.00	-16	120.00	**-22**
Nitrobenzene			10.000	19	20.000	12	32.000	6	40.000	0	50.000	-5	80.000	-13	100.00	-20		
Isophorone			10.000	9	20.000	6	32.000	2	40.000	-2	50.000	-5	80.000	-9				
2-Nitrophenol					20.000	14	32.000	10	40.000	6	50.000	2	80.000	-6	100.00	-11	120.00	-15
2,4-Dimethylphenol			10.000	**22**	20.000	12	32.000	7	40.000	-1	50.000	-5	80.000	-15	100.00	-19		
bis(2-Chloroethoxy)methane					10.000	13	16.000	12	20.000	5	25.000	0	40.000	-6	50.000	-10	60.000	-13
Benzoic acid			50.000	-9	60.000	-5	80.000	5	90.000	6	100.00	4	120.00	1	130.00	0	140.00	-1
2,4-Dichlorophenol			10.000	16	20.000	13	32.000	9	40.000	2	50.000	-5	80.000	-14	100.00	-20		
1,2,4-Trichlorobenzene			10.000	18	20.000	11	32.000	7	40.000	1	50.000	-4	80.000	-14	100.00	-19		
Naphthalene	2.0000	14	5.0000	13	10.000	10	16.000	9	20.000	2	25.000	-3	40.000	-10	50.000	-16	60.000	**-21**
4-Chloroaniline			10.000	10	20.000	12	32.000	12	40.000	4	50.000	-2	80.000	-8	100.00	-13	120.00	-15
Hexachlorobutadiene			10.000	16	20.000	15	32.000	11	40.000	5	50.000	-1	80.000	-9	100.00	-16	120.00	**-21**
4-Chloro-3-methylphenol			10.000	**22**	20.000	13	32.000	9	40.000	4	50.000	0	80.000	-10	100.00	-17	120.00	-20
2-Methylnaphthalene	2.0000	16	5.0000	15	10.000	11	16.000	9	20.000	3	25.000	-2	40.000	-12	50.000	-18	60.000	**-22**
1-Methylnaphthalene	2.0000	17	5.0000	13	10.000	9	16.000	6	20.000	-1	25.000	-6	40.000	-16	50.000	**-21**		
Hexachlorocyclopentadiene					20.000	15	32.000	7	40.000	5	50.000	2	80.000	-3	100.00	-12	120.00	-15
2,4,6-Trichlorophenol			10.000	15	20.000	9	32.000	3	40.000	2	50.000	-1	80.000	-6	100.00	-11	120.00	-12
2,4,5-Trichlorophenol			10.000	17	20.000	13	32.000	6	40.000	3	50.000	-1	80.000	-8	100.00	-13	120.00	-16
2-Nitroaniline					20.000	16	32.000	6	40.000	4	50.000	0	80.000	-4	100.00	-10	120.00	-12
Dimethylphthalate			10.000	**21**	20.000	14	32.000	5	40.000	2	50.000	-3	80.000	-8	100.00	-14	120.00	-18
2,6-Dinitrotoluene			10.000	11	20.000	8	32.000	4	40.000	2	50.000	-2	80.000	-4	100.00	-10	120.00	-9
Acenaphthylene	2.0000	17	5.0000	14	10.000	11	16.000	3	20.000	0	25.000	-4	40.000	-8	50.000	-15	60.000	-17
3-Nitroaniline					20.000	6	32.000	1	40.000	1	50.000	-1	80.000	0	100.00	-3	120.00	-2
Acenaphthene	2.0000	11	5.0000	14	10.000	11	16.000	3	20.000	2	25.000	-2	40.000	-8	50.000	-14	60.000	-16
2,4-Dinitrophenol					20.000	**-22**	32.000	-10	40.000	-2	50.000	0	80.000	8	100.00	11	120.00	14
4-Nitrophenol					20.000	1	32.000	2	40.000	0	50.000	0	80.000	0	100.00	-2	120.00	-1
Dibenzofuran					10.000	18	16.000	9	20.000	5	25.000	0	40.000	-10	50.000	**-22**		
2,4-Dinitrotoluene			10.000	11	20.000	13	32.000	8	40.000	6	50.000	2	80.000	-5	100.00	-15	120.00	-19

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
2,3,4,6-Tetrachlorophenol			10.000	8	20.000	9	32.000	4	40.000	3	50.000	0	80.000	-4	100.00	-9	120.00	-11
Diethylphthalate					10.000	13	16.000	7	20.000	4	25.000	1	40.000	-3	50.000	-10	60.000	-12
Fluorene	2.0000	15	5.0000	15	10.000	8	16.000	-2	20.000	-6	25.000	-11	40.000	-19				
4-Chlorophenyl-phenylether					10.000	15	16.000	8	20.000	7	25.000	1	40.000	-4	50.000	-12	60.000	-15
4-Nitroaniline					20.000	3	32.000	1	40.000	1	50.000	1	80.000	2	100.00	-3	120.00	-5
4,6-Dinitro-2-methylphenol					20.000	0	32.000	3	40.000	2	50.000	0	80.000	0	100.00	-3	120.00	-3
Azobenzene					10.000	20	16.000	13	20.000	8	25.000	0	40.000	-8	50.000	-14	60.000	-20
4-Bromophenyl-phenylether					10.000	11	16.000	6	20.000	4	25.000	0	40.000	-4	50.000	-7	60.000	-10
Hexachlorobenzene			10.000	18	20.000	12	32.000	5	40.000	3	50.000	-4	80.000	-6	100.00	-12	120.00	-16
Pentachlorophenol					20.000	6	32.000	5	40.000	5	50.000	0	80.000	-1	100.00	-6	120.00	-9
Phenanthrene	2.0000	16	5.0000	13	10.000	10	16.000	5	20.000	1	25.000	-4	40.000	-8	50.000	-15	60.000	-18
Anthracene	2.0000	14	5.0000	15	10.000	11	16.000	6	20.000	2	25.000	-4	40.000	-10	50.000	-16	60.000	-19
Carbazole			10.000	14	20.000	16	32.000	11	40.000	5	50.000	-1	80.000	-8	100.00	-16	120.00	-19
Di-n-butylphthalate					10.000	16	16.000	12	20.000	8	25.000	2	40.000	-6	50.000	-14	60.000	-19
Fluoranthene	2.0000	16	5.0000	16	10.000	13	16.000	6	20.000	2	25.000	-3	40.000	-11	50.000	-18	60.000	**-22**
Pyrene	2.0000	14	5.0000	12	10.000	8	16.000	4	20.000	1	25.000	-3	40.000	-7	50.000	-12	60.000	-16
Butylbenzylphthalate					10.000	4	16.000	5	20.000	5	25.000	3	40.000	-1	50.000	-6	60.000	-10
3,3'-Dichlorobenzidine					20.000	4	32.000	7	40.000	6	50.000	4	80.000	1	100.00	-8	120.00	-14
Benzo(a)anthracene	2.0000	18	5.0000	14	10.000	9	16.000	5	20.000	2	25.000	-2	40.000	-9	50.000	-16	60.000	-20
bis(2-Ethylhexyl)phthalate					10.000	13	16.000	10	20.000	6	25.000	1	40.000	-9	50.000	**-21**		
Chrysene	2.0000	3	5.0000	3	10.000	2	16.000	3	20.000	1	25.000	-1	40.000	-1	50.000	-6	60.000	-6
Di-n-octylphthalate					10.000	0	16.000	4	20.000	3	25.000	2	40.000	1	50.000	-4	60.000	-6
Benzo(b)fluoranthene	2.0000	-2	5.0000	0	10.000	0	16.000	4	20.000	-2	25.000	-3	40.000	-1	50.000	2	60.000	2
Benzo(k)fluoranthene	2.0000	10	5.0000	10	10.000	7	16.000	4	20.000	2	25.000	0	40.000	-6	50.000	-13	60.000	-14
Benzo(a)pyrene	2.0000	-7	5.0000	0	10.000	3	16.000	4	20.000	2	25.000	0	40.000	0	50.000	-1	60.000	-2
Indeno(1,2,3-cd)pyrene	2.0000	-12	5.0000	-4	10.000	2	16.000	4	20.000	3	25.000	2	40.000	3	50.000	2		
Dibenz(a,h)anthracene	2.0000	-8	5.0000	0	10.000	3	16.000	4	20.000	2	25.000	0	40.000	1	50.000	0	60.000	-1
Benzo(g,h,i)perylene	2.0000	-3	5.0000	-1	10.000	2	16.000	2	20.000	2	25.000	0	40.000	1	50.000	0	60.000	-2
2-Fluorophenol	2.0000	-2	5.0000	3	10.000	6	16.000	5	20.000	3	25.000	-1	40.000	-1	50.000	-5	60.000	-8
Phenol-d5	2.0000	2	5.0000	8	10.000	10	16.000	6	20.000	4	25.000	0	40.000	-5	50.000	-11	60.000	-14
Nitrobenzene-d5	2.0000	9	5.0000	8	10.000	6	16.000	5	20.000	1	25.000	-1	40.000	-7	50.000	-9	60.000	-11
2-Fluorobiphenyl			5.0000	**21**	10.000	13	16.000	2	20.000	-2	25.000	-7	40.000	-10	50.000	-17		
2,4,6-Tribromophenol	2.0000	-11	5.0000	-1	10.000	3	16.000	0	20.000	1	25.000	0	40.000	3	50.000	2	60.000	3
Terphenyl-d14	2.0000	10	5.0000	9	10.000	6	16.000	5	20.000	1	25.000	-2	40.000	-5	50.000	-11	60.000	-13

NPM 09/23/14 [Aniline]: Picked or reassigned peak in multiple levels.

NPM 09/23/14 [Phenanthrene]: Corrected automatically drawn baseline in ICAL (yim07).

NPM 09/23/14 [2,4,5-Trichlorophenol]: Corrected automatically drawn baseline in multiple levels.

NPM 09/23/14 [bis(2-Chloroethyl)ether]: Corrected automatically drawn baseline in multiple levels.

NPM 09/23/14 [4-Methylphenol]: Corrected automatically drawn baseline in multiple levels.

NPM 09/23/14 [Pyridine]: Corrected automatically drawn baseline in multiple levels.

NPM 09/23/14 [Benzo(k)fluoranthene]: Picked or reassigned peak in multiple levels.

NPM 09/23/14 [Aniline]: Corrected automatically drawn baseline in ICAL (yim15).

NPM 09/23/14 [1,3-Dichlorobenzene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [1,4-Dichlorobenzene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Benzyl alcohol]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Nitrobenzene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Isophorone]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [2-Nitrophenol]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Benzoic acid]: Corrected automatically drawn baseline in ICAL (yim15).

NPM 09/23/14 [2,4-Dichlorophenol]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [1,2,4-Trichlorobenzene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [4-Chloroaniline]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Resorcinol]: Corrected automatically drawn baseline in ICAL (yim15).

NPM 09/23/14 [2-Methylnaphthalene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [2,4,6-Trichlorophenol]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [2,4,5-Trichlorophenol]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [2-Fluorobiphenyl]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [2-Nitroaniline]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [2,6-Dinitrotoluene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [3-Nitroaniline]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [2,4-Dinitrophenol]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [4-Nitrophenol]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [2,4-Dinitrotoluene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [2,3,4,6-Tetrachlorophenol]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [4-Nitroaniline]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [4,6-Dinitro-2-methylphenol]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [4-Bromophenyl-phenylether]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Phenanthrene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Anthracene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Carbazole]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Fluoranthene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Benzidine]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Benzo(a)anthracene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Chrysene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Di-n-octylphthalate]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Benzo(b)fluoranthene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Benzo(a)pyrene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Indeno(1,2,3-cd)pyrene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Dibenz(a,h)anthracene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 [Benzo(g,h,i)perylene]: Picked or reassigned peak in ICAL (yim15).

NPM 09/23/14 : The documents for ICAL level 9 are displaying many incorrect 'before version' chromatograms. The retention times were shifted and I reassigned many of the peaks.

NPM 09/26/14 [Naphthalene-d8]: Picked or reassigned peak in ICAL (yim15).

NPM 09/26/14 [Phenanthrene-d10]: Picked or reassigned peak in ICAL (yim15).

NPM 09/26/14 [Perylene-d12]: Picked or reassigned peak in ICAL (yim15).

Analyst: NPM Date: 09/23/14 Reviewer: LW Date: 09/26/14

m=manual integration

Instrument amount = a0 + response * a1 + response^2 * a2; AVRG=Average response factor

CURTIS & TOMPKINS 2ND SOURCE CALIBRATION SUMMARY FOR 261495 MSBNA Water
EPA 8270C

Inst : MSBNA06 Name : 6PTBNA6
Calnum : 554382191002 Cal Date : 22-SEP-2014

ICV 554383786006 (yin06 23-SEP-2014) stds: S24471

Analyte	Spiked	Quant	Units	%D	Max	Flags
N-Nitrosodimethylamine	40.00	44.90	ug/mL	12	30	
Pyridine	40.00	42.50	ug/mL	6	30	
Phenol	40.00	38.51	ug/mL	-4	20	
Aniline	40.00	40.60	ug/mL	1	30	m
bis(2-Chloroethyl)ether	40.00	38.05	ug/mL	-5	30	
2-Chlorophenol	40.00	40.47	ug/mL	1	30	
1,3-Dichlorobenzene	40.00	41.46	ug/mL	4	30	
1,4-Dichlorobenzene	40.00	41.72	ug/mL	4	20	
Benzyl alcohol	40.00	40.95	ug/mL	2	30	
1,2-Dichlorobenzene	40.00	40.33	ug/mL	1	30	
2-Methylphenol	40.00	41.45	ug/mL	4	30	
bis(2-Chloroisopropyl) ether	40.00	37.68	ug/mL	-6	30	
4-Methylphenol	40.00	35.80	ug/mL	-11	30	
N-Nitroso-di-n-propylamine	40.00	41.54	ug/mL	4	30	
Hexachloroethane	40.00	42.45	ug/mL	6	30	
Nitrobenzene	40.00	38.46	ug/mL	-4	30	
Isophorone	40.00	37.35	ug/mL	-7	30	
2-Nitrophenol	40.00	40.96	ug/mL	2	20	
2,4-Dimethylphenol	40.00	39.51	ug/mL	-1	30	
bis(2-Chloroethoxy)methane	40.00	36.94	ug/mL	-8	30	
Benzoic acid	100.0	100.9	ug/mL	1	40	
2,4-Dichlorophenol	40.00	39.18	ug/mL	-2	20	
1,2,4-Trichlorobenzene	40.00	39.18	ug/mL	-2	30	
Naphthalene	40.00	33.76	ug/mL	-16	30	
4-Chloroaniline	40.00	40.54	ug/mL	1	30	
Hexachlorobutadiene	40.00	42.25	ug/mL	6	20	
4-Chloro-3-methylphenol	40.00	41.01	ug/mL	3	20	
2-Methylnaphthalene	40.00	34.71	ug/mL	-13	30	
1-Methylnaphthalene	40.00	32.42	ug/mL	-19	30	
Hexachlorocyclopentadiene	40.00	39.14	ug/mL	-2	40	
2,4,6-Trichlorophenol	40.00	39.62	ug/mL	-1	20	
2,4,5-Trichlorophenol	40.00	40.02	ug/mL	0	30	m
2-Nitroaniline	40.00	40.79	ug/mL	2	30	
Dimethylphthalate	40.00	38.57	ug/mL	-4	30	
2,6-Dinitrotoluene	40.00	38.25	ug/mL	-4	30	
Acenaphthylene	40.00	32.44	ug/mL	-19	30	
3-Nitroaniline	40.00	39.59	ug/mL	-1	30	
Acenaphthene	40.00	34.63	ug/mL	-13	20	
2,4-Dinitrophenol	40.00	36.97	ug/mL	-8	40	
4-Nitrophenol	40.00	38.93	ug/mL	-3	40	
Dibenzofuran	40.00	37.14	ug/mL	-7	30	
2,4-Dinitrotoluene	40.00	41.42	ug/mL	4	30	
2,3,4,6-Tetrachlorophenol	40.00	39.93	ug/mL	0	30	
Diethylphthalate	40.00	35.11	ug/mL	-12	30	
Fluorene	40.00	29.96	ug/mL	**-25**	30	!v-
4-Chlorophenyl-phenylether	40.00	35.30	ug/mL	-12	40	
4-Nitroaniline	40.00	38.98	ug/mL	-3	30	
4,6-Dinitro-2-methylphenol	40.00	38.30	ug/mL	-4	30	
Azobenzene	40.00	34.59	ug/mL	-14	30	

Analyte	Spiked	Quant	Units	%D	Max	Flags
4-Bromophenyl-phenylether	40.00	36.82	ug/mL	-8	30	
Hexachlorobenzene	40.00	39.20	ug/mL	-2	30	
Pentachlorophenol	40.00	38.65	ug/mL	-3	20	
Phenanthrene	40.00	34.28	ug/mL	-14	30	
Anthracene	40.00	34.03	ug/mL	-15	30	
Carbazole	40.00	41.40	ug/mL	3	30	
Di-n-butylphthalate	40.00	35.13	ug/mL	-12	30	
Fluoranthene	40.00	33.70	ug/mL	-16	20	
Pyrene	40.00	32.93	ug/mL	-18	30	
Butylbenzylphthalate	40.00	37.51	ug/mL	-6	30	
3,3'-Dichlorobenzidine	60.00	57.78	ug/mL	-4	40	
Benzo(a)anthracene	40.00	34.97	ug/mL	-13	30	
bis(2-Ethylhexyl)phthalate	40.00	34.10	ug/mL	-15	30	
Chrysene	40.00	35.88	ug/mL	-10	30	
Di-n-octylphthalate	40.00	36.00	ug/mL	-10	20	
Benzo(b)fluoranthene	40.00	38.55	ug/mL	-4	30	
Benzo(k)fluoranthene	40.00	36.18	ug/mL	-10	30	
Benzo(a)pyrene	40.00	37.51	ug/mL	-6	20	
Indeno(1,2,3-cd)pyrene	40.00	38.11	ug/mL	-5	30	
Dibenz(a,h)anthracene	40.00	37.22	ug/mL	-7	30	
Benzo(g,h,i)perylene	40.00	37.50	ug/mL	-6	30	

Analyst: NPM Date: 09/23/14 Reviewer: LW Date: 09/26/14

!=warning -=low bias m=manual integration v=ICV

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 261495 MSBNA Water: EPA 8270C

Inst : MSBNA07
Calnum : 564353477001
Units : ug/mL

Name : 6PTBNA7
Date : 02-SEP-2014 14:58
X Axis : R

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	zi207	564353477007	ICAL	02-SEP-2014 14:58	S25407
L2	zi208	564353477008	ICAL	02-SEP-2014 15:34	S25408
L3	zi209	564353477009	ICAL	02-SEP-2014 16:10	S25409
L4	zi210	564353477010	ICAL	02-SEP-2014 16:48	S25410
L5	zi211	564353477011	ICAL	02-SEP-2014 17:25	S25411
L6	zi212	564353477012	ICAL	02-SEP-2014 18:03	S25412
L7	zi213	564353477013	ICAL	02-SEP-2014 18:40	S25413
L8	zi214	564353477014	ICAL	02-SEP-2014 19:18	S25414
L9	zi215	564353477015	ICAL	02-SEP-2014 19:55	S25415

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
N-Nitrosodimethylamine		0.7556m	0.7612	0.7539	0.7507	0.7449	0.7520	0.7463	0.7572	AVRG		1.32851		0.7527	1	15	0.05	0.99	
Pyridine		1.4004m	1.4056	1.3965	1.3784	1.3706				AVRG		0.71928		1.3903	1	15	0.05	0.99	
Phenol		1.6790	1.6828	1.6576	1.6255	1.6081	1.6077	1.5818	1.5821	AVRG		0.61422		1.6281	2	15	0.05	0.99	
Aniline		1.9343m	2.0373m	2.0346m	2.0052m	1.9833m	2.0283m	1.9859m	2.0300m	AVRG		0.49879		2.0049	2	15	0.05	0.99	
bis(2-Chloroethyl)ether		1.3256	1.3444	1.3272	1.2730	1.2584	1.2405	1.2270	1.2045	AVRG		0.78427		1.2751	4	15	0.05	0.99	
2-Chlorophenol		1.5028	1.5176	1.5093	1.4835	1.4633	1.4769	1.4497	1.4675	AVRG		0.67393		1.4838	2	15	0.05	0.99	
1,3-Dichlorobenzene		1.6518	1.6381	1.6116	1.5679	1.5381	1.5061	1.4534	1.4243	AVRG		0.64561		1.5489	5	15	0.05	0.99	
1,4-Dichlorobenzene		1.6696	1.6433	1.6364	1.5678	1.5457	1.4864	1.4155	1.3847	AVRG		0.64781		1.5437	7	15	0.05	0.99	
Benzyl alcohol		0.9280	0.9477	0.9400	0.9060	0.8978	0.8929	0.8715	0.8776	AVRG		1.10169		0.9077	3	15	0.05	0.99	
1,2-Dichlorobenzene		1.5950	1.5772	1.5760	1.5126	1.4712	1.4419	1.3784	1.3428	AVRG		0.67255		1.4869	6	15	0.05	0.99	
2-Methylphenol		1.1134	1.1401	1.1235	1.0856	1.0593	1.0457	1.0159	1.0067	AVRG		0.93130		1.0738	5	15	0.05	0.99	
bis(2-Chloroisopropyl) ether		1.9785	1.9508	1.8943m	1.8200m	1.7537	1.6914	1.6396	1.6105	AVRG		0.55793		1.7923	8	15	0.05	0.99	
4-Methylphenol		1.6453	1.6500	1.6271	1.5729	1.5500	1.5452			AVRG		0.62561		1.5984	3	15	0.05	0.99	
N-Nitroso-di-n-propylamine		0.7796	0.7780	0.7632	0.7261	0.7062	0.6941	0.6844	0.7056	AVRG		1.37051		0.7297	5	15	0.050	0.99	
Hexachloroethane		0.6196	0.6271	0.6185	0.6007	0.5896	0.5782	0.5496	0.5366	AVRG		1.69499		0.5900	6	15	0.05	0.99	
Nitrobenzene		0.3378	0.3453	0.3434	0.3458	0.3438	0.3466	0.3453	0.3433	AVRG		2.90777		0.3439	1	15	0.05	0.99	
Isophorone		0.6490	0.6214	0.6217	0.6232	0.6242				AVRG		1.59260		0.6279	2	15	0.05	0.99	
2-Nitrophenol			0.1875	0.1940	0.1986	0.2032	0.2087	0.2093	0.2088	AVRG		4.96465		0.2014	4	15	0.05	0.99	
2,4-Dimethylphenol		0.3426	0.3397	0.3317	0.3291	0.3214	0.3144	0.3142	0.3203	AVRG		3.06117		0.3267	3	15	0.05	0.99	
bis(2-Chloroethoxy)methane			0.4076	0.4002	0.3978	0.3915	0.3873	0.3863	0.3943	AVRG		2.53164		0.3950	2	15	0.05	0.99	
Benzoic acid		0.1851	0.2114	0.2299m	0.2467m	0.2529m	0.2691m	0.2770m	0.2846m	AVRG		4.08841		0.2446	14	15	0.05	0.99	
2,4-Dichlorophenol		0.3032	0.3092	0.3078	0.3040	0.3002	0.2925	0.2908	0.2934	AVRG		3.33192		0.3001	2	15	0.05	0.99	
1,2,4-Trichlorobenzene		0.3187	0.3264	0.3231	0.3249	0.3188	0.3215	0.3152	0.3081	AVRG		3.12916		0.3196	2	15	0.05	0.99	
Naphthalene	1.1560	1.1336	1.1132	1.0958	1.0732	1.0522	1.0422	1.0156	1.0003	AVRG		0.92956		1.0758	5	15	0.05	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
4-Chloroaniline		0.3887	0.4623m	0.4524	0.4435m	0.4287m	0.4234	0.4305m	0.4380m	AVRG		2.30708		0.4334	5	15	0.05	0.99	
Hexachlorobutadiene		0.1665	0.1688	0.1708	0.1703	0.1698	0.1714	0.1688	0.1658	AVRG		5.91560		0.1690	1	15	0.05	0.99	
4-Chloro-3-methylphenol		0.2982	0.2892	0.2890	0.2892	0.2890	0.3004	0.2979	0.3006	AVRG		3.39913		0.2942	2	15	0.05	0.99	
2-Methylnaphthalene	0.7438	0.7351	0.7368	0.7288	0.7063	0.6891	0.6849	0.6886	0.6963	AVRG		1.40413		0.7122	3	15	0.05	0.99	
1-Methylnaphthalene	0.7081	0.6985	0.6994	0.6812	0.6638	0.6407	0.6427	0.6475	0.6629	AVRG		1.48889		0.6716	4	15	0.05	0.99	
Hexachlorocyclopentadiene			0.3323	0.3345	0.3405	0.3367	0.3432	0.3410	0.3320	AVRG		2.96598		0.3372	1	15	0.050	0.99	
2,4,6-Trichlorophenol		0.3440	0.3454	0.3524	0.3589	0.3611	0.3762	0.3754	0.3738	AVRG		2.77083		0.3609	4	15	0.05	0.99	
2,4,5-Trichlorophenol		0.3748	0.3825	0.3932	0.3909	0.3943	0.3973m	0.3909m	0.3863m	AVRG		2.57214		0.3888	2	15	0.05	0.99	
2-Nitroaniline			0.3451	0.3461	0.3484	0.3477	0.3581	0.3614	0.3667	AVRG		2.83004		0.3534	2	15	0.05	0.99	
Dimethylphthalate		1.4522	1.4246	1.3878	1.3526	1.3185	1.3034	1.2757	1.2657	AVRG		0.74208		1.3476	5	15	0.05	0.99	
2,6-Dinitrotoluene		0.2966	0.3216	0.3236	0.3222	0.3221	0.3298	0.3320	0.3328	AVRG		3.09991		0.3226	4	15	0.05	0.99	
Acenaphthylene	1.9975	1.9585	1.9154	1.8959	1.8756	1.8525	1.8453	1.8277	1.8106	AVRG		0.53007		1.8866	3	15	0.05	0.99	
3-Nitroaniline			0.2947	0.3287	0.3432	0.3461	0.3687	0.3705	0.3794	AVRG		2.87903		0.3473	8	15	0.05	0.99	
Acenaphthene	1.1893	1.1905	1.2144	1.2149	1.2200	1.2069	1.1621	1.1243	1.1227	AVRG		0.84545		1.1828	3	15	0.05	0.99	
2,4-Dinitrophenol			0.0992	0.1204	0.1376	0.1478	0.1722	0.1796	0.1877	LINR	12.8463	4.82377		0.1492	0.999	15	0.050	0.99	
4-Nitrophenol			0.1644	0.1691	0.1651	0.1659	0.1735	0.1744	0.1789m	AVRG		5.87534		0.1702	3	15	0.050	0.99	
Dibenzofuran			1.7271	1.6918	1.6506	1.5954	1.5881	1.5644	1.5283	AVRG		0.61698		1.6208	4	15	0.05	0.99	
2,4-Dinitrotoluene		0.3882	0.4202	0.4244	0.4234	0.4218	0.4287	0.4266	0.4270	AVRG		2.38087		0.4200	3	15	0.05	0.99	
2,3,4,6-Tetrachlorophenol		0.2612	0.2911	0.3043	0.3144	0.3176	0.3338	0.3324	0.3365	AVRG		3.21109		0.3114	8	15	0.05	0.99	
Diethylphthalate			1.4742	1.4338	1.3922	1.3683	1.3572	1.3351	1.3276	AVRG		0.72251		1.3841	4	15	0.05	0.99	
Fluorene	1.4649	1.4960	1.4849	1.4343	1.3944	1.3596	1.3534	1.3252	1.3331	AVRG		0.71171		1.4051	5	15	0.05	0.99	
4-Chlorophenyl-phenylether			0.6819	0.6734	0.6563	0.6570	0.6680	0.6599	0.6591	AVRG		1.50358		0.6651	1	15	0.05	0.99	
4-Nitroaniline			0.3330m	0.3433	0.3412	0.3374	0.3561	0.3610	0.3668	AVRG		2.87026		0.3484	4	15	0.05	0.99	
4,6-Dinitro-2-methylphenol			0.1039	0.1197	0.1274	0.1309	0.1454	0.1527	0.1560	AVRG		7.47939		0.1337	14	15	0.05	0.99	
Azobenzene			0.7707	0.7624	0.7511	0.7376	0.7537	0.7638	0.7551	AVRG		1.32218		0.7563	1	15	0.05	0.99	
4-Bromophenyl-phenylether			0.1998	0.2063	0.2067	0.2090	0.2254	0.2295	0.2338	AVRG		4.63403		0.2158	6	15	0.05	0.99	
Hexachlorobenzene		0.1923	0.2168	0.2338	0.2452	0.2472	0.2667	0.2700	0.2672	AVRG		4.12522		0.2424	11	15	0.05	0.99	
Pentachlorophenol			0.1224	0.1388	0.1503	0.1573	0.1782	0.1865		AVRG		6.42785		0.1556	15	15	0.05	0.99	
Phenanthrene	1.1501	1.1258	1.1005	1.0937	1.0783	1.0595	1.0960	1.1002	1.1009	AVRG		0.90863		1.1006	2	15	0.05	0.99	
Anthracene	1.1915	1.1622	1.1311	1.1336	1.0945	1.0747	1.1096	1.1199	1.1137	AVRG		0.88838		1.1256	3	15	0.05	0.99	
Carbazole		0.9447	0.9910	1.0148	1.0111	0.9840	1.0245	1.0239	1.0124	AVRG		0.99918		1.0008	3	15	0.05	0.99	
Di-n-butylphthalate			1.4250	1.4324	1.4108	1.3858	1.4050	1.4047	1.3906	AVRG		0.71034		1.4078	1	15	0.05	0.99	
Fluoranthene	1.2627	1.2349	1.2569	1.2768	1.2797	1.2701	1.3292	1.3450	1.3321	AVRG		0.77670		1.2875	3	15	0.05	0.99	
Pyrene	1.2626	1.2214	1.2296	1.2386	1.2444	1.2462	1.3199	1.3211	1.3148	AVRG		0.78957		1.2665	3	15	0.05	0.99	
Butylbenzylphthalate			0.5769	0.5864	0.5930	0.5873	0.6252	0.6322	0.6357	AVRG		1.65220		0.6053	4	15	0.05	0.99	
3,3'-Dichlorobenzidine			0.3490	0.3846	0.4155	0.4449	0.4931	0.4903	0.4753	AVRG		2.29307		0.4361	13	15	0.05	0.99	
Benzo(a)anthracene	1.1529	1.1052	1.1171	1.1136	1.1175	1.1105	1.1672	1.1800	1.1843	AVRG		0.87818		1.1387	3	15	0.05	0.99	
bis(2-Ethylhexyl)phthalate			0.8354	0.8358	0.8280	0.8189	0.7954	0.7418	0.6839	AVRG		1.26371		0.7913	7	15	0.05	0.99	
Chrysene	1.0511	1.0399	1.0262	1.0336	1.0188	1.0118	1.0649	1.0616	1.0697m	AVRG		0.95974		1.0419	2	15	0.05	0.99	
Di-n-octylphthalate			1.5302	1.6153	1.6190	1.6317	1.7686	1.7815	1.8216	AVRG		0.59484		1.6811	6	15	0.05	0.99	
Benzo(b)fluoranthene	0.9900	1.0479	1.0896	1.1744	1.1714	1.2133	1.3589	1.4214	1.5094	AVRG		0.81995		1.2196	14	15	0.05	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Benzo(k)fluoranthene	0.9928m	1.0339	1.0763	1.1140	1.1466	1.1413	1.2306	1.2068m	1.1702m	AVRG		0.88999		1.1236	7	15	0.05	0.99	
Benzo(a)pyrene	0.9431	1.0190	1.0736	1.1362	1.1543	1.1731	1.2963	1.3171	1.3469	AVRG		0.86046		1.1622	12	15	0.05	0.99	
Indeno(1,2,3-cd)pyrene	0.9755	1.0269	1.1033	1.1838	1.2314	1.2624	1.4297	1.4648	1.5068	AVRG		0.80467		1.2427	15	15	0.05	0.99	
Dibenz(a,h)anthracene	0.8224	0.8807	0.9530	1.0352	1.0748	1.1035	1.2656			AVRG		0.98107		1.0193	15	15	0.05	0.99	
Benzo(g,h,i)perylene	0.8564	0.8507	0.9119	0.9822	1.0247	1.0382	1.1558	1.1671	1.1872	AVRG		0.98101		1.0194	13	15	0.05	0.99	
2-Fluorophenol	1.3668	1.3769	1.4152	1.4143	1.3917	1.3839	1.4293	1.4216	1.4458	AVRG		0.71172		1.4051	2	15	0.05	0.99	
Phenol-d5	1.6277	1.5995	1.6398	1.6412	1.6142	1.5883	1.6215	1.6052	1.6207	AVRG		0.61821		1.6176	1	15	0.05	0.99	
Nitrobenzene-d5	0.3526	0.3510	0.3700	0.3767	0.3778	0.3790	0.3864	0.3908	0.3915	AVRG		2.66591		0.3751	4	15	0.05	0.99	
2-Fluorobiphenyl	1.5638	1.5847	1.5169	1.4324	1.3617	1.3282	1.3446	1.3300	1.3147	AVRG		0.70439		1.4197	8	15	0.05	0.99	
2,4,6-Tribromophenol		0.1073	0.1366	0.1494	0.1566	0.1657	0.1885	0.1949		LINR	3.83748	4.82234		0.1570	0.996	15	0.05	0.99	
Terphenyl-d14	0.8319	0.8436	0.8852	0.9248	0.9402	0.9475	1.0264	1.0291	1.0338	AVRG		1.06349		0.9403	8	15	0.05	0.99	

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
N-Nitrosodimethylamine			10.000	0	20.000	1	32.000	0	40.000	0	50.000	-1	80.000	0	100.00	-1	120.00	1
Pyridine			10.000	1	20.000	1	32.000	0	40.000	-1	50.000	-1						
Phenol			10.000	3	20.000	3	32.000	2	40.000	0	50.000	-1	80.000	-1	100.00	-3	120.00	-3
Aniline			10.000	-4	20.000	2	32.000	1	40.000	0	50.000	-1	80.000	1	100.00	-1	120.00	1
bis(2-Chloroethyl)ether			10.000	4	20.000	5	32.000	4	40.000	0	50.000	-1	80.000	-3	100.00	-4	120.00	-6
2-Chlorophenol			10.000	1	20.000	2	32.000	2	40.000	0	50.000	-1	80.000	0	100.00	-2	120.00	-1
1,3-Dichlorobenzene			10.000	7	20.000	6	32.000	4	40.000	1	50.000	-1	80.000	-3	100.00	-6	120.00	-8
1,4-Dichlorobenzene			10.000	8	20.000	6	32.000	6	40.000	2	50.000	0	80.000	-4	100.00	-8	120.00	-10
Benzyl alcohol			10.000	2	20.000	4	32.000	4	40.000	0	50.000	-1	80.000	-2	100.00	-4	120.00	-3
1,2-Dichlorobenzene			10.000	7	20.000	6	32.000	6	40.000	2	50.000	-1	80.000	-3	100.00	-7	120.00	-10
2-Methylphenol			10.000	4	20.000	6	32.000	5	40.000	1	50.000	-1	80.000	-3	100.00	-5	120.00	-6
bis(2-Chloroisopropyl) ether			10.000	10	20.000	9	32.000	6	40.000	2	50.000	-2	80.000	-6	100.00	-9	120.00	-10
4-Methylphenol			10.000	3	20.000	3	32.000	2	40.000	-2	50.000	-3	80.000	-3				
N-Nitroso-di-n-propylamine			10.000	7	20.000	7	32.000	5	40.000	0	50.000	-3	80.000	-5	100.00	-6	120.00	-3
Hexachloroethane			10.000	5	20.000	6	32.000	5	40.000	2	50.000	0	80.000	-2	100.00	-7	120.00	-9
Nitrobenzene			10.000	-2	20.000	0	32.000	0	40.000	1	50.000	0	80.000	1	100.00	0	120.00	0
Isophorone			10.000	3	20.000	-1	32.000	-1	40.000	-1	50.000	-1						
2-Nitrophenol					20.000	-7	32.000	-4	40.000	-1	50.000	1	80.000	4	100.00	4	120.00	4
2,4-Dimethylphenol			10.000	5	20.000	4	32.000	2	40.000	1	50.000	-2	80.000	-4	100.00	-4	120.00	-2
bis(2-Chloroethoxy)methane					10.000	3	16.000	1	20.000	1	25.000	-1	40.000	-2	50.000	-2	60.000	0
Benzoic acid			50.000	**-24**	60.000	-14	80.000	-6	90.000	1	100.00	3	120.00	10	130.00	13	140.00	16
2,4-Dichlorophenol			10.000	1	20.000	3	32.000	3	40.000	1	50.000	0	80.000	-3	100.00	-3	120.00	-2
1,2,4-Trichlorobenzene			10.000	0	20.000	2	32.000	1	40.000	2	50.000	0	80.000	1	100.00	-1	120.00	-4
Naphthalene	2.0000	7	5.0000	5	10.000	3	16.000	2	20.000	0	25.000	-2	40.000	-3	50.000	-6	60.000	-7
4-Chloroaniline			10.000	-10	20.000	7	32.000	4	40.000	2	50.000	-1	80.000	-2	100.00	-1	120.00	1
Hexachlorobutadiene			10.000	-1	20.000	0	32.000	1	40.000	1	50.000	0	80.000	1	100.00	0	120.00	-2
4-Chloro-3-methylphenol			10.000	1	20.000	-2	32.000	-2	40.000	-2	50.000	-2	80.000	2	100.00	1	120.00	2
2-Methylnaphthalene	2.0000	4	5.0000	3	10.000	3	16.000	2	20.000	-1	25.000	-3	40.000	-4	50.000	-3	60.000	-2
1-Methylnaphthalene	2.0000	5	5.0000	4	10.000	4	16.000	1	20.000	-1	25.000	-5	40.000	-4	50.000	-4	60.000	-1
Hexachlorocyclopentadiene					20.000	-1	32.000	-1	40.000	1	50.000	0	80.000	2	100.00	1	120.00	-2
2,4,6-Trichlorophenol			10.000	-5	20.000	-4	32.000	-2	40.000	-1	50.000	0	80.000	4	100.00	4	120.00	4
2,4,5-Trichlorophenol			10.000	-4	20.000	-2	32.000	1	40.000	1	50.000	1	80.000	2	100.00	1	120.00	-1
2-Nitroaniline					20.000	-2	32.000	-2	40.000	-1	50.000	-2	80.000	1	100.00	2	120.00	4
Dimethylphthalate			10.000	8	20.000	6	32.000	3	40.000	0	50.000	-2	80.000	-3	100.00	-5	120.00	-6
2,6-Dinitrotoluene			10.000	-8	20.000	0	32.000	0	40.000	0	50.000	0	80.000	2	100.00	3	120.00	3
Acenaphthylene	2.0000	6	5.0000	4	10.000	2	16.000	0	20.000	-1	25.000	-2	40.000	-2	50.000	-3	60.000	-4
3-Nitroaniline					20.000	-15	32.000	-5	40.000	-1	50.000	0	80.000	6	100.00	7	120.00	9
Acenaphthene	2.0000	1	5.0000	1	10.000	3	16.000	3	20.000	3	25.000	2	40.000	-2	50.000	-5	60.000	-5
2,4-Dinitrophenol					20.000	12	32.000	-2	40.000	-1	50.000	-3	80.000	-1	100.00	-1	120.00	1
4-Nitrophenol					20.000	-3	32.000	-1	40.000	-3	50.000	-3	80.000	2	100.00	2	120.00	5
Dibenzofuran					10.000	7	16.000	4	20.000	2	25.000	-2	40.000	-2	50.000	-3	60.000	-6
2,4-Dinitrotoluene			10.000	-8	20.000	0	32.000	1	40.000	1	50.000	0	80.000	2	100.00	2	120.00	2

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
2,3,4,6-Tetrachlorophenol			10.000	-16	20.000	-7	32.000	-2	40.000	1	50.000	2	80.000	7	100.00	7	120.00	8
Diethylphthalate					10.000	7	16.000	4	20.000	1	25.000	-1	40.000	-2	50.000	-4	60.000	-4
Fluorene	2.0000	4	5.0000	6	10.000	6	16.000	2	20.000	-1	25.000	-3	40.000	-4	50.000	-6	60.000	-5
4-Chlorophenyl-phenylether					10.000	3	16.000	1	20.000	-1	25.000	-1	40.000	0	50.000	-1	60.000	-1
4-Nitroaniline					20.000	-4	32.000	-1	40.000	-2	50.000	-3	80.000	2	100.00	4	120.00	5
4,6-Dinitro-2-methylphenol					20.000	**-22**	32.000	-10	40.000	-5	50.000	-2	80.000	9	100.00	14	120.00	17
Azobenzene					10.000	2	16.000	1	20.000	-1	25.000	-2	40.000	0	50.000	1	60.000	0
4-Bromophenyl-phenylether					10.000	-7	16.000	-4	20.000	-4	25.000	-3	40.000	4	50.000	6	60.000	8
Hexachlorobenzene			10.000	**-21**	20.000	-11	32.000	-4	40.000	1	50.000	2	80.000	10	100.00	11	120.00	10
Pentachlorophenol					20.000	**-21**	32.000	-11	40.000	-3	50.000	1	80.000	15	100.00	20		
Phenanthrene	2.0000	5	5.0000	2	10.000	0	16.000	-1	20.000	-2	25.000	-4	40.000	0	50.000	0	60.000	0
Anthracene	2.0000	6	5.0000	3	10.000	0	16.000	1	20.000	-3	25.000	-5	40.000	-1	50.000	-1	60.000	-1
Carbazole			10.000	-6	20.000	-1	32.000	1	40.000	1	50.000	-2	80.000	2	100.00	2	120.00	1
Di-n-butylphthalate					10.000	1	16.000	2	20.000	0	25.000	-2	40.000	0	50.000	0	60.000	-1
Fluoranthene	2.0000	-2	5.0000	-4	10.000	-2	16.000	-1	20.000	-1	25.000	-1	40.000	3	50.000	4	60.000	3
Pyrene	2.0000	0	5.0000	-4	10.000	-3	16.000	-2	20.000	-2	25.000	-2	40.000	4	50.000	4	60.000	4
Butylbenzylphthalate					10.000	-5	16.000	-3	20.000	-2	25.000	-3	40.000	3	50.000	4	60.000	5
3,3'-Dichlorobenzidine					20.000	-20	32.000	-12	40.000	-5	50.000	2	80.000	13	100.00	12	120.00	9
Benzo(a)anthracene	2.0000	1	5.0000	-3	10.000	-2	16.000	-2	20.000	-2	25.000	-2	40.000	3	50.000	4	60.000	4
bis(2-Ethylhexyl)phthalate					10.000	6	16.000	6	20.000	5	25.000	3	40.000	1	50.000	-6	60.000	-14
Chrysene	2.0000	1	5.0000	0	10.000	-2	16.000	-1	20.000	-2	25.000	-3	40.000	2	50.000	2	60.000	3
Di-n-octylphthalate					10.000	-9	16.000	-4	20.000	-4	25.000	-3	40.000	5	50.000	6	60.000	8
Benzo(b)fluoranthene	2.0000	-19	5.0000	-14	10.000	-11	16.000	-4	20.000	-4	25.000	-1	40.000	11	50.000	17	60.000	**24**
Benzo(k)fluoranthene	2.0000	-12	5.0000	-8	10.000	-4	16.000	-1	20.000	2	25.000	2	40.000	10	50.000	7	60.000	4
Benzo(a)pyrene	2.0000	-19	5.0000	-12	10.000	-8	16.000	-2	20.000	-1	25.000	1	40.000	12	50.000	13	60.000	16
Indeno(1,2,3-cd)pyrene	2.0000	**-22**	5.0000	-17	10.000	-11	16.000	-5	20.000	-1	25.000	2	40.000	15	50.000	18	60.000	**21**
Dibenz(a,h)anthracene	2.0000	-19	5.0000	-14	10.000	-7	16.000	2	20.000	5	25.000	8	40.000	**24**				
Benzo(g,h,i)perylene	2.0000	-16	5.0000	-17	10.000	-11	16.000	-4	20.000	1	25.000	2	40.000	13	50.000	14	60.000	16
2-Fluorophenol	2.0000	-3	5.0000	-2	10.000	1	16.000	1	20.000	-1	25.000	-2	40.000	2	50.000	1	60.000	3
Phenol-d5	2.0000	1	5.0000	-1	10.000	1	16.000	1	20.000	0	25.000	-2	40.000	0	50.000	-1	60.000	0
Nitrobenzene-d5	2.0000	-6	5.0000	-6	10.000	-1	16.000	0	20.000	1	25.000	1	40.000	3	50.000	4	60.000	4
2-Fluorobiphenyl	2.0000	10	5.0000	12	10.000	7	16.000	1	20.000	-4	25.000	-6	40.000	-5	50.000	-6	60.000	-7
2,4,6-Tribromophenol			5.0000	**29**	10.000	4	16.000	-4	20.000	-5	25.000	-5	40.000	0	50.000	2		
Terphenyl-d14	2.0000	-12	5.0000	-10	10.000	-6	16.000	-2	20.000	0	25.000	1	40.000	9	50.000	9	60.000	10

KMH 09/03/14 [Pyridine]: Corrected automatically drawn baseline in multiple levels.

KMH 09/03/14 [Aniline]: Picked or reassigned peak in multiple levels.

KMH 09/03/14 [2,4,5-Trichlorophenol]: Corrected automatically drawn baseline in multiple levels.

KMH 09/03/14 [Benzo(k)fluoranthene]: Corrected automatically drawn baseline in multiple levels.

KMH 09/03/14 [N-Nitrosodimethylamine]: Corrected automatically drawn baseline in ICAL (zi208).

KMH 09/03/14 [4-Nitroaniline]: Corrected automatically drawn baseline in multiple levels.

KMH 09/03/14 [4-Chloroaniline]: Corrected automatically drawn baseline in multiple levels.

KMH 09/03/14 [Benzoic acid]: Corrected automatically drawn baseline in multiple levels.

KMH 09/03/14 [4-Methylphenol]: Corrected automatically drawn baseline in multiple levels.

KMH 09/03/14 [Benzo(k)fluoranthene]: Picked or reassigned peak in multiple levels.

KMH 09/03/14 [Resorcinol]: Corrected automatically drawn baseline in ICAL (zi215).

KMH 09/03/14 [4-Nitrophenol]: Picked or reassigned peak in ICAL (zi215).

KMH 09/03/14 [Aniline]: Corrected automatically drawn baseline in ICAL (zi215).

KMH 09/03/14 [Chrysene]: Corrected automatically drawn baseline in ICAL (zi215).

KMH 09/05/14 [bis(2-Chloroisopropyl) ether]: Corrected automatically drawn baseline in multiple levels.

Analyst: KMH Date: 09/03/14 Reviewer: LW Date: 09/05/14

m=manual integration

Instrument amount = a0 + response * a1 + response^2 * a2; AVRG=Average response factor; LINR=Linear regression

CURTIS & TOMPKINS 2ND SOURCE CALIBRATION SUMMARY FOR 261495 MSBNA Water
EPA 8270C

Inst : MSBNA07 Name : 6PTBNA7
Calnum : 564353477001 Cal Date : 02-SEP-2014

ICV 564353477016 (zi216 02-SEP-2014) stds: S25418
ICV 564354873003 (zi303 03-SEP-2014) stds: S25418 (2X), S25005 (200X)

Analyte	ICV Seqnum	Date	Spiked	Quant	Units	%D	Max	Flags
N-Nitrosodimethylamine	564353477016	02-SEP-2014	40.00	37.99	ug/mL	-5	30	
Pyridine	564353477016	02-SEP-2014	40.00	36.03	ug/mL	-10	30	
Phenol	564353477016	02-SEP-2014	40.00	37.66	ug/mL	-6	20	
Aniline	564353477016	02-SEP-2014	40.00	38.20	ug/mL	-5	30	m
bis(2-Chloroethyl)ether	564353477016	02-SEP-2014	40.00	37.99	ug/mL	-5	30	
2-Chlorophenol	564353477016	02-SEP-2014	40.00	37.66	ug/mL	-6	30	
1,3-Dichlorobenzene	564353477016	02-SEP-2014	40.00	38.38	ug/mL	-4	30	
1,4-Dichlorobenzene	564353477016	02-SEP-2014	40.00	37.71	ug/mL	-6	20	
Benzyl alcohol	564353477016	02-SEP-2014	40.00	37.83	ug/mL	-5	30	
1,2-Dichlorobenzene	564353477016	02-SEP-2014	40.00	37.87	ug/mL	-5	30	
2-Methylphenol	564353477016	02-SEP-2014	40.00	37.56	ug/mL	-6	30	
bis(2-Chloroisopropyl) ether	564353477016	02-SEP-2014	40.00	38.16	ug/mL	-5	30	
4-Methylphenol	564353477016	02-SEP-2014	40.00	33.35	ug/mL	-17	30	
N-Nitroso-di-n-propylamine	564353477016	02-SEP-2014	40.00	36.42	ug/mL	-9	30	
Hexachloroethane	564353477016	02-SEP-2014	40.00	37.82	ug/mL	-5	30	
Nitrobenzene	564353477016	02-SEP-2014	40.00	38.35	ug/mL	-4	30	
Isophorone	564353477016	02-SEP-2014	40.00	36.91	ug/mL	-8	30	
2-Nitrophenol	564353477016	02-SEP-2014	40.00	38.76	ug/mL	-3	20	
2,4-Dimethylphenol	564353477016	02-SEP-2014	40.00	37.49	ug/mL	-6	30	m
bis(2-Chloroethoxy)methane	564353477016	02-SEP-2014	40.00	37.20	ug/mL	-7	30	
Benzoic acid	564353477016	02-SEP-2014	100.0	103.2	ug/mL	3	40	
2,4-Dichlorophenol	564353477016	02-SEP-2014	40.00	37.84	ug/mL	-5	20	
1,2,4-Trichlorobenzene	564353477016	02-SEP-2014	40.00	38.02	ug/mL	-5	30	
Naphthalene	564353477016	02-SEP-2014	40.00	34.61	ug/mL	-13	30	
4-Chloroaniline	564353477016	02-SEP-2014	40.00	37.67	ug/mL	-6	30	m
Hexachlorobutadiene	564353477016	02-SEP-2014	40.00	39.01	ug/mL	-2	20	
4-Chloro-3-methylphenol	564353477016	02-SEP-2014	40.00	37.89	ug/mL	-5	20	
2-Methylnaphthalene	564353477016	02-SEP-2014	40.00	36.20	ug/mL	-10	30	
1-Methylnaphthalene	564353477016	02-SEP-2014	40.00	34.70	ug/mL	-13	30	
Hexachlorocyclopentadiene	564353477016	02-SEP-2014	40.00	32.94	ug/mL	-18	40	
2,4,6-Trichlorophenol	564353477016	02-SEP-2014	40.00	37.39	ug/mL	-7	20	
2,4,5-Trichlorophenol	564353477016	02-SEP-2014	40.00	37.40	ug/mL	-6	30	
2-Nitroaniline	564353477016	02-SEP-2014	40.00	37.69	ug/mL	-6	30	
Dimethylphthalate	564353477016	02-SEP-2014	40.00	36.63	ug/mL	-8	30	
2,6-Dinitrotoluene	564353477016	02-SEP-2014	40.00	37.76	ug/mL	-6	30	
Acenaphthylene	564353477016	02-SEP-2014	40.00	34.24	ug/mL	-14	30	
3-Nitroaniline	564353477016	02-SEP-2014	40.00	37.85	ug/mL	-5	30	
Acenaphthene	564353477016	02-SEP-2014	40.00	35.33	ug/mL	-12	20	
2,4-Dinitrophenol	564353477016	02-SEP-2014	40.00	40.29	ug/mL	1	40	
4-Nitrophenol	564353477016	02-SEP-2014	40.00	36.65	ug/mL	-8	40	
Dibenzofuran	564353477016	02-SEP-2014	40.00	35.43	ug/mL	-11	30	
2,4-Dinitrotoluene	564353477016	02-SEP-2014	40.00	37.53	ug/mL	-6	30	
2,3,4,6-Tetrachlorophenol	564353477016	02-SEP-2014	40.00	37.40	ug/mL	-7	30	
Diethylphthalate	564353477016	02-SEP-2014	40.00	34.07	ug/mL	-15	30	
Fluorene	564353477016	02-SEP-2014	40.00	34.01	ug/mL	-15	30	
4-Chlorophenyl-phenylether	564353477016	02-SEP-2014	40.00	36.10	ug/mL	-10	40	
4-Nitroaniline	564353477016	02-SEP-2014	40.00	35.33	ug/mL	-12	30	
4,6-Dinitro-2-methylphenol	564353477016	02-SEP-2014	40.00	36.94	ug/mL	-8	30	

Analyte	ICV Seqnum	Date	Spiked	Quant	Units	%D	Max	Flags
Azobenzene	564353477016	02-SEP-2014	40.00	35.24	ug/mL	-12	30	
4-Bromophenyl-phenylether	564353477016	02-SEP-2014	40.00	37.84	ug/mL	-5	30	
Hexachlorobenzene	564353477016	02-SEP-2014	40.00	37.94	ug/mL	-5	30	
Pentachlorophenol	564353477016	02-SEP-2014	40.00	36.20	ug/mL	-9	20	
Phenanthrene	564353477016	02-SEP-2014	40.00	35.46	ug/mL	-11	30	
Anthracene	564353477016	02-SEP-2014	40.00	35.40	ug/mL	-11	30	
Carbazole	564353477016	02-SEP-2014	40.00	38.56	ug/mL	-4	30	
Di-n-butylphthalate	564353477016	02-SEP-2014	40.00	35.74	ug/mL	-11	30	
Fluoranthene	564353477016	02-SEP-2014	40.00	37.01	ug/mL	-7	20	
Pyrene	564353477016	02-SEP-2014	40.00	34.65	ug/mL	-13	30	
Butylbenzylphthalate	564353477016	02-SEP-2014	40.00	37.13	ug/mL	-7	30	
3,3'-Dichlorobenzidine	564353477016	02-SEP-2014	60.00	59.55	ug/mL	-1	40	
Benzo(a)anthracene	564353477016	02-SEP-2014	40.00	37.37	ug/mL	-7	30	
bis(2-Ethylhexyl)phthalate	564353477016	02-SEP-2014	40.00	36.33	ug/mL	-9	30	
Chrysene	564353477016	02-SEP-2014	40.00	34.37	ug/mL	-14	30	
Di-n-octylphthalate	564353477016	02-SEP-2014	40.00	36.94	ug/mL	-8	20	
Benzo(b)fluoranthene	564353477016	02-SEP-2014	40.00	40.77	ug/mL	2	30	
Benzo(k)fluoranthene	564353477016	02-SEP-2014	40.00	40.37	ug/mL	1	30	m
Benzo(a)pyrene	564353477016	02-SEP-2014	40.00	39.66	ug/mL	-1	20	
Indeno(1,2,3-cd)pyrene	564353477016	02-SEP-2014	40.00	41.05	ug/mL	3	30	
Dibenz(a,h)anthracene	564354873003	03-SEP-2014	20.00	17.83	ug/mL	-11	30	
Benzo(g,h,i)perylene	564353477016	02-SEP-2014	40.00	39.30	ug/mL	-2	30	

564353477016: Analyst: KMH Date: 09/03/14 Reviewer: LW Date: 09/05/14
564354873003: Analyst: KMH Date: 09/03/14 Reviewer: LW Date: 09/05/14

m=manual integration

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 MSBNA Water
EPA 8270C

Inst : MSBNA06 IDF : 1.0
Seqnum : 554406629003 File : yj903 Time : 09-OCT-2014 09:59
Cal : 554382191002 Caldate : 22-SEP-2014
Standards: S25411

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
N-Nitrosodimethylamine	1.1185	1.1363	40.00	40.64	ug/mL	2	30	0.0500	
Pyridine	2.2965	2.2990	40.00	40.04	ug/mL	0	30	0.0500	
Phenol	1.8976	1.9871	40.00	41.89	ug/mL	5	20	0.0500	
Aniline	2.2012	2.2127	40.00	40.21	ug/mL	1	30	0.0500	m
bis(2-Chloroethyl)ether	1.3666	1.3385	40.00	39.18	ug/mL	-2	30	0.0500	
2-Chlorophenol	1.4896	1.5488	40.00	41.59	ug/mL	4	30	0.0500	
1,3-Dichlorobenzene	1.5821	1.6762	40.00	42.38	ug/mL	6	30	0.0500	
1,4-Dichlorobenzene	1.3892	1.4907	40.00	42.92	ug/mL	7	20	0.0500	
Benzyl alcohol	0.9199	0.9435	40.00	41.02	ug/mL	3	30	0.0500	
1,2-Dichlorobenzene	1.4422	1.4966	40.00	41.51	ug/mL	4	30	0.0500	
2-Methylphenol	1.0029	1.0558	40.00	42.11	ug/mL	5	30	0.0500	
bis(2-Chloroisopropyl) ether	1.9086	1.7334	40.00	36.33	ug/mL	-9	30	0.0500	
4-Methylphenol	1.6118	1.5352	40.00	38.10	ug/mL	-5	30	0.0500	
N-Nitroso-di-n-propylamine	0.7683	0.8108	40.00	42.21	ug/mL	6	30	0.0500	
Hexachloroethane	0.6050	0.6536	40.00	43.21	ug/mL	8	30	0.0500	
Nitrobenzene	0.3841	0.3877	40.00	40.38	ug/mL	1	30	0.0500	
Isophorone	0.8023	0.7925	40.00	39.51	ug/mL	-1	30	0.0500	
2-Nitrophenol	0.2294	0.2407	40.00	41.97	ug/mL	5	20	0.0500	
2,4-Dimethylphenol	0.3596	0.3560	40.00	39.59	ug/mL	-1	30	0.0500	
bis(2-Chloroethoxy)methane	0.4512	0.4748	20.00	21.05	ug/mL	5	30	0.0500	
Benzoic acid	0.3006	0.3029	90.00	90.71	ug/mL	1	40	0.0500	
2,4-Dichlorophenol	0.3362	0.3397	40.00	40.41	ug/mL	1	20	0.0500	
1,2,4-Trichlorobenzene	0.3685	0.3694	40.00	40.10	ug/mL	0	30	0.0500	
Naphthalene	1.1002	1.1335	20.00	20.61	ug/mL	3	30	0.0500	
4-Chloroaniline	0.4516	0.4780	40.00	42.34	ug/mL	6	30	0.0500	
Hexachlorobutadiene	0.1857	0.1987	40.00	42.80	ug/mL	7	20	0.0500	
4-Chloro-3-methylphenol	0.3318	0.3554	40.00	42.85	ug/mL	7	20	0.0500	
2-Methylnaphthalene	0.8484	0.8781	20.00	20.70	ug/mL	4	30	0.0500	
1-Methylnaphthalene	0.8081	0.8021	20.00	19.85	ug/mL	-1	30	0.0500	
Hexachlorocyclopentadiene	0.3745	0.3987	40.00	42.58	ug/mL	6	40	0.0500	
2,4,6-Trichlorophenol	0.4206	0.4398	40.00	41.82	ug/mL	5	20	0.0500	
2,4,5-Trichlorophenol	0.4238	0.4467	40.00	42.16	ug/mL	5	30	0.0500	
2-Nitroaniline	0.3998	0.4184	40.00	41.87	ug/mL	5	30	0.0500	
Dimethylphthalate	1.4139	1.4563	40.00	41.20	ug/mL	3	30	0.0500	
2,6-Dinitrotoluene	0.3432	0.3497	40.00	40.75	ug/mL	2	30	0.0500	
Acenaphthylene	2.0787	2.1154	20.00	20.35	ug/mL	2	30	0.0500	
3-Nitroaniline	0.3991	0.3963	40.00	39.72	ug/mL	-1	30	0.0500	
Acenaphthene	1.1668	1.1845	20.00	20.30	ug/mL	2	20	0.0500	
2,4-Dinitrophenol	0.1818	0.1758	40.00	38.67	ug/mL	-3	40	0.0500	
4-Nitrophenol	0.1848	0.1834	40.00	39.69	ug/mL	-1	40	0.0500	
Dibenzofuran	1.6154	1.7115	20.00	21.19	ug/mL	6	30	0.0500	
2,4-Dinitrotoluene	0.4258	0.4502	40.00	42.29	ug/mL	6	30	0.0500	
2,3,4,6-Tetrachlorophenol	0.3531	0.3667	40.00	41.53	ug/mL	4	30	0.0500	
Diethylphthalate	1.5068	1.5777	20.00	20.94	ug/mL	5	30	0.0500	
Fluorene	1.4985	1.4319	20.00	19.11	ug/mL	-4	30	0.0500	!v-
4-Chlorophenyl-phenylether	0.6756	0.7171	20.00	21.23	ug/mL	6	40	0.0500	
4-Nitroaniline	0.3702	0.3724	40.00	40.23	ug/mL	1	30	0.0500	
4,6-Dinitro-2-methylphenol	0.1394	0.1430	40.00	41.05	ug/mL	3	30	0.0500	

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
Azobenzene	0.7403	0.7887	20.00	21.31	ug/mL	7	30	0.0500	
4-Bromophenyl-phenylether	0.2556	0.2665	20.00	20.86	ug/mL	4	30	0.0500	
Hexachlorobenzene	0.2623	0.2559	40.00	39.02	ug/mL	-2	30	0.0500	
Pentachlorophenol	0.1852	0.1859	40.00	40.15	ug/mL	0	20	0.0500	
Phenanthrene	1.0967	1.1198	20.00	20.42	ug/mL	2	30	0.0500	
Anthracene	1.1411	1.1719	20.00	20.54	ug/mL	3	30	0.0500	
Carbazole	0.9657	1.0187	40.00	42.19	ug/mL	5	30	0.0500	
Di-n-butylphthalate	1.4753	1.5896	20.00	21.55	ug/mL	8	30	0.0500	
Fluoranthene	1.4778	1.4993	20.00	20.29	ug/mL	1	20	0.0500	
Pyrene	1.5325	1.5883	20.00	20.73	ug/mL	4	30	0.0500	
Butylbenzylphthalate	0.7473	0.7960	20.00	21.30	ug/mL	7	30	0.0500	
3,3'-Dichlorobenzidine	0.5105	0.5482	40.00	42.96	ug/mL	7	40	0.0500	
Benzo(a)anthracene	1.1814	1.2093	20.00	20.47	ug/mL	2	30	0.0500	
bis(2-Ethylhexyl)phthalate	0.7883	0.8900	20.00	22.58	ug/mL	13	30	0.0500	
Chrysene	1.1185	1.1341	20.00	20.28	ug/mL	1	30	0.0500	
Di-n-octylphthalate	1.5922	1.6908	20.00	21.24	ug/mL	6	20	0.0500	
Benzo(b)fluoranthene	1.2964	1.2874	20.00	19.86	ug/mL	-1	30	0.0500	
Benzo(k)fluoranthene	1.0948	1.1341	20.00	20.72	ug/mL	4	30	0.0500	
Benzo(a)pyrene	1.2219	1.2581	20.00	20.59	ug/mL	3	20	0.0500	
Indeno(1,2,3-cd)pyrene	1.4566	1.4068	20.00	19.32	ug/mL	-3	30	0.0500	
Dibenz(a,h)anthracene	1.1271	1.0820	20.00	19.20	ug/mL	-4	30	0.0500	
Benzo(g,h,i)perylene	1.1836	1.1146	20.00	18.83	ug/mL	-6	30	0.0500	
2-Fluorophenol	1.9475	2.0054	20.00	20.59	ug/mL	3	30	0.0500	
Phenol-d5	2.2170	2.3257	20.00	20.98	ug/mL	5	30	0.0500	
Nitrobenzene-d5	0.4648	0.4722	20.00	20.32	ug/mL	2	30	0.0500	
2-Fluorobiphenyl	1.5350	1.5854	20.00	20.66	ug/mL	3	30	0.0500	
2,4,6-Tribromophenol	0.2518	0.2455	20.00	19.50	ug/mL	-2	30	0.0500	
Terphenyl-d14	1.0671	1.1088	20.00	20.78	ug/mL	4	30	0.0500	

KMH 10/09/14 [Aniline]: Picked or reassigned peak.

Analyst: KMH Date: 10/09/14 Reviewer: LW Date: 10/09/14

!=warning -=low bias m=manual integration v=ICV

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 MSBNA Water
EPA 8270C

Inst : MSBNA06 IDF : 1.0
Seqnum : 554415327003 File : yjf03 Time : 15-OCT-2014 10:55
Cal : 554382191002 Caldate : 22-SEP-2014
Standards: S25411

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
N-Nitrosodimethylamine	1.1185	1.0179	40.00	36.40	ug/mL	-9	30	0.0500	
Pyridine	2.2965	2.0919	40.00	36.44	ug/mL	-9	30	0.0500	
Phenol	1.8976	1.9119	40.00	40.30	ug/mL	1	20	0.0500	
Aniline	2.2012	2.1297	40.00	38.70	ug/mL	-3	30	0.0500	m
bis(2-Chloroethyl)ether	1.3666	1.2930	40.00	37.84	ug/mL	-5	30	0.0500	
2-Chlorophenol	1.4896	1.5132	40.00	40.64	ug/mL	2	30	0.0500	
1,3-Dichlorobenzene	1.5821	1.6524	40.00	41.78	ug/mL	4	30	0.0500	
1,4-Dichlorobenzene	1.3892	1.4787	40.00	42.58	ug/mL	6	20	0.0500	
Benzyl alcohol	0.9199	0.8848	40.00	38.47	ug/mL	-4	30	0.0500	
1,2-Dichlorobenzene	1.4422	1.4567	40.00	40.40	ug/mL	1	30	0.0500	
2-Methylphenol	1.0029	1.0055	40.00	40.10	ug/mL	0	30	0.0500	
bis(2-Chloroisopropyl) ether	1.9086	1.5280	40.00	32.02	ug/mL	-20	30	0.0500	
4-Methylphenol	1.6118	1.4364	40.00	35.65	ug/mL	-11	30	0.0500	
N-Nitroso-di-n-propylamine	0.7683	0.7779	40.00	40.50	ug/mL	1	30	0.0500	
Hexachloroethane	0.6050	0.6215	40.00	41.09	ug/mL	3	30	0.0500	
Nitrobenzene	0.3841	0.3723	40.00	38.77	ug/mL	-3	30	0.0500	
Isophorone	0.8023	0.7274	40.00	36.27	ug/mL	-9	30	0.0500	
2-Nitrophenol	0.2294	0.2402	40.00	41.87	ug/mL	5	20	0.0500	
2,4-Dimethylphenol	0.3596	0.3554	40.00	39.53	ug/mL	-1	30	0.0500	
bis(2-Chloroethoxy)methane	0.4512	0.4526	20.00	20.06	ug/mL	0	30	0.0500	
Benzoic acid	0.3006	0.2771	90.00	82.97	ug/mL	-8	40	0.0500	
2,4-Dichlorophenol	0.3362	0.3405	40.00	40.51	ug/mL	1	20	0.0500	
1,2,4-Trichlorobenzene	0.3685	0.3748	40.00	40.69	ug/mL	2	30	0.0500	
Naphthalene	1.1002	1.1066	20.00	20.12	ug/mL	1	30	0.0500	
4-Chloroaniline	0.4516	0.4577	40.00	40.54	ug/mL	1	30	0.0500	
Hexachlorobutadiene	0.1857	0.2032	40.00	43.77	ug/mL	9	20	0.0500	
4-Chloro-3-methylphenol	0.3318	0.3242	40.00	39.08	ug/mL	-2	20	0.0500	
2-Methylnaphthalene	0.8484	0.8406	20.00	19.82	ug/mL	-1	30	0.0500	
1-Methylnaphthalene	0.8081	0.7770	20.00	19.23	ug/mL	-4	30	0.0500	
Hexachlorocyclopentadiene	0.3745	0.4378	40.00	46.77	ug/mL	17	40	0.0500	
2,4,6-Trichlorophenol	0.4206	0.4370	40.00	41.56	ug/mL	4	20	0.0500	
2,4,5-Trichlorophenol	0.4238	0.4477	40.00	42.26	ug/mL	6	30	0.0500	
2-Nitroaniline	0.3998	0.3919	40.00	39.21	ug/mL	-2	30	0.0500	
Dimethylphthalate	1.4139	1.4856	40.00	42.03	ug/mL	5	30	0.0500	
2,6-Dinitrotoluene	0.3432	0.3574	40.00	41.65	ug/mL	4	30	0.0500	
Acenaphthylene	2.0787	2.0830	20.00	20.04	ug/mL	0	30	0.0500	
3-Nitroaniline	0.3991	0.3958	40.00	39.67	ug/mL	-1	30	0.0500	
Acenaphthene	1.1668	1.1615	20.00	19.91	ug/mL	0	20	0.0500	
2,4-Dinitrophenol	0.1818	0.1907	40.00	41.96	ug/mL	5	40	0.0500	
4-Nitrophenol	0.1848	0.1837	40.00	39.76	ug/mL	-1	40	0.0500	
Dibenzofuran	1.6154	1.7359	20.00	21.49	ug/mL	7	30	0.0500	
2,4-Dinitrotoluene	0.4258	0.4574	40.00	42.97	ug/mL	7	30	0.0500	
2,3,4,6-Tetrachlorophenol	0.3531	0.3823	40.00	43.31	ug/mL	8	30	0.0500	
Diethylphthalate	1.5068	1.5982	20.00	21.21	ug/mL	6	30	0.0500	
Fluorene	1.4985	1.4577	20.00	19.45	ug/mL	-3	30	0.0500	!v-
4-Chlorophenyl-phenylether	0.6756	0.7429	20.00	21.99	ug/mL	10	40	0.0500	
4-Nitroaniline	0.3702	0.3696	40.00	39.93	ug/mL	0	30	0.0500	
4,6-Dinitro-2-methylphenol	0.1394	0.1462	40.00	41.96	ug/mL	5	30	0.0500	

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
Azobenzene	0.7403	0.7317	20.00	19.77	ug/mL	-1	30	0.0500	
4-Bromophenyl-phenylether	0.2556	0.2734	20.00	21.39	ug/mL	7	30	0.0500	
Hexachlorobenzene	0.2623	0.2566	40.00	39.12	ug/mL	-2	30	0.0500	
Pentachlorophenol	0.1852	0.1892	40.00	40.86	ug/mL	2	20	0.0500	
Phenanthrene	1.0967	1.1057	20.00	20.16	ug/mL	1	30	0.0500	
Anthracene	1.1411	1.1372	20.00	19.93	ug/mL	0	30	0.0500	
Carbazole	0.9657	1.0028	40.00	41.54	ug/mL	4	30	0.0500	
Di-n-butylphthalate	1.4753	1.5556	20.00	21.09	ug/mL	5	30	0.0500	
Fluoranthene	1.4778	1.4881	20.00	20.14	ug/mL	1	20	0.0500	
Pyrene	1.5325	1.5569	20.00	20.32	ug/mL	2	30	0.0500	
Butylbenzylphthalate	0.7473	0.7705	20.00	20.62	ug/mL	3	30	0.0500	
3,3'-Dichlorobenzidine	0.5105	0.4967	40.00	38.92	ug/mL	-3	40	0.0500	
Benzo(a)anthracene	1.1814	1.1816	20.00	20.00	ug/mL	0	30	0.0500	
bis(2-Ethylhexyl)phthalate	0.7883	0.8927	20.00	22.65	ug/mL	13	30	0.0500	
Chrysene	1.1185	1.1241	20.00	20.10	ug/mL	0	30	0.0500	
Di-n-octylphthalate	1.5922	1.7004	20.00	21.36	ug/mL	7	20	0.0500	
Benzo(b)fluoranthene	1.2964	1.2094	20.00	18.66	ug/mL	-7	30	0.0500	
Benzo(k)fluoranthene	1.0948	1.0986	20.00	20.07	ug/mL	0	30	0.0500	
Benzo(a)pyrene	1.2219	1.2027	20.00	19.68	ug/mL	-2	20	0.0500	
Indeno(1,2,3-cd)pyrene	1.4566	1.4667	20.00	20.14	ug/mL	1	30	0.0500	
Dibenz(a,h)anthracene	1.1271	1.1617	20.00	20.61	ug/mL	3	30	0.0500	
Benzo(g,h,i)perylene	1.1836	1.2205	20.00	20.62	ug/mL	3	30	0.0500	
2-Fluorophenol	1.9475	1.9206	20.00	19.72	ug/mL	-1	30	0.0500	
Phenol-d5	2.2170	2.2045	20.00	19.89	ug/mL	-1	30	0.0500	
Nitrobenzene-d5	0.4648	0.4466	20.00	19.22	ug/mL	-4	30	0.0500	
2-Fluorobiphenyl	1.5350	1.5577	20.00	20.30	ug/mL	1	30	0.0500	
2,4,6-Tribromophenol	0.2518	0.2546	20.00	20.22	ug/mL	1	30	0.0500	
Terphenyl-d14	1.0671	1.1048	20.00	20.71	ug/mL	4	30	0.0500	

NPM 10/15/14 [Aniline]: Picked or reassigned peak.

Analyst: NPM Date: 10/15/14 Reviewer: LW Date: 10/16/14

!=warning -=low bias m=manual integration v=ICV

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 MSBNA Water
EPA 8270C

Inst : MSBNA07 IDF : 1.0
Seqnum : 564406681003 File : zj903 Time : 09-OCT-2014 10:51
Cal : 564353477001 Caldate : 02-SEP-2014
Standards: S25411

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
N-Nitrosodimethylamine	0.7527	0.6766	40.00	35.95	ug/mL	-10	30	0.0500	
Pyridine	1.3903	1.3790	40.00	39.68	ug/mL	-1	30	0.0500	
Phenol	1.6281	1.6841	40.00	41.38	ug/mL	3	20	0.0500	
Aniline	2.0049	1.9642	40.00	39.19	ug/mL	-2	30	0.0500	m
bis(2-Chloroethyl)ether	1.2751	1.3226	40.00	41.49	ug/mL	4	30	0.0500	
2-Chlorophenol	1.4838	1.4781	40.00	39.85	ug/mL	0	30	0.0500	
1,3-Dichlorobenzene	1.5489	1.5883	40.00	41.02	ug/mL	3	30	0.0500	
1,4-Dichlorobenzene	1.5437	1.6316	40.00	42.28	ug/mL	6	20	0.0500	
Benzyl alcohol	0.9077	0.9326	40.00	41.10	ug/mL	3	30	0.0500	
1,2-Dichlorobenzene	1.4869	1.5496	40.00	41.69	ug/mL	4	30	0.0500	
2-Methylphenol	1.0738	1.1332	40.00	42.21	ug/mL	6	30	0.0500	
bis(2-Chloroisopropyl) ether	1.7923	1.8153	40.00	40.51	ug/mL	1	30	0.0500	
4-Methylphenol	1.5984	1.6398	40.00	41.04	ug/mL	3	30	0.0500	
N-Nitroso-di-n-propylamine	0.7297	0.7709	40.00	42.26	ug/mL	6	30	0.0500	
Hexachloroethane	0.5900	0.5945	40.00	40.31	ug/mL	1	30	0.0500	
Nitrobenzene	0.3439	0.3530	40.00	41.06	ug/mL	3	30	0.0500	
Isophorone	0.6279	0.6462	40.00	41.16	ug/mL	3	30	0.0500	
2-Nitrophenol	0.2014	0.2025	40.00	40.22	ug/mL	1	20	0.0500	
2,4-Dimethylphenol	0.3267	0.3204	40.00	39.24	ug/mL	-2	30	0.0500	
bis(2-Chloroethoxy)methane	0.3950	0.3944	20.00	19.97	ug/mL	0	30	0.0500	
Benzoic acid	0.2446	0.1952	90.00	71.83	ug/mL	-20	40	0.0500	
2,4-Dichlorophenol	0.3001	0.3024	40.00	40.30	ug/mL	1	20	0.0500	
1,2,4-Trichlorobenzene	0.3196	0.3168	40.00	39.65	ug/mL	-1	30	0.0500	
Naphthalene	1.0758	1.0907	20.00	20.28	ug/mL	1	30	0.0500	
4-Chloroaniline	0.4334	0.4374	40.00	40.36	ug/mL	1	30	0.0500	
Hexachlorobutadiene	0.1690	0.1674	40.00	39.61	ug/mL	-1	20	0.0500	
4-Chloro-3-methylphenol	0.2942	0.3013	40.00	40.97	ug/mL	2	20	0.0500	
2-Methylnaphthalene	0.7122	0.7205	20.00	20.23	ug/mL	1	30	0.0500	
1-Methylnaphthalene	0.6716	0.6702	20.00	19.96	ug/mL	0	30	0.0500	
Hexachlorocyclopentadiene	0.3372	0.2743	40.00	32.54	ug/mL	-19	40	0.0500	
2,4,6-Trichlorophenol	0.3609	0.3661	40.00	40.57	ug/mL	1	20	0.0500	
2,4,5-Trichlorophenol	0.3888	0.3899	40.00	40.12	ug/mL	0	30	0.0500	
2-Nitroaniline	0.3534	0.3417	40.00	38.69	ug/mL	-3	30	0.0500	
Dimethylphthalate	1.3476	1.3109	40.00	38.91	ug/mL	-3	30	0.0500	
2,6-Dinitrotoluene	0.3226	0.3141	40.00	38.94	ug/mL	-3	30	0.0500	
Acenaphthylene	1.8866	1.8795	20.00	19.93	ug/mL	0	30	0.0500	
3-Nitroaniline	0.3473	0.3504	40.00	40.36	ug/mL	1	30	0.0500	
Acenaphthene	1.1828	1.1226	20.00	18.98	ug/mL	-5	20	0.0500	
2,4-Dinitrophenol	0.1492	0.1075	40.00	33.58	ug/mL	-16	40	0.0500	
4-Nitrophenol	0.1702	0.1472	40.00	34.59	ug/mL	-14	40	0.0500	
Dibenzofuran	1.6208	1.6259	20.00	20.06	ug/mL	0	30	0.0500	
2,4-Dinitrotoluene	0.4200	0.4126	40.00	39.30	ug/mL	-2	30	0.0500	
2,3,4,6-Tetrachlorophenol	0.3114	0.3219	40.00	41.35	ug/mL	3	30	0.0500	
Diethylphthalate	1.3841	1.3292	20.00	19.21	ug/mL	-4	30	0.0500	
Fluorene	1.4051	1.3765	20.00	19.59	ug/mL	-2	30	0.0500	
4-Chlorophenyl-phenylether	0.6651	0.6459	20.00	19.42	ug/mL	-3	40	0.0500	
4-Nitroaniline	0.3484	0.3384	40.00	38.85	ug/mL	-3	30	0.0500	
4,6-Dinitro-2-methylphenol	0.1337	0.1192	40.00	35.67	ug/mL	-11	30	0.0500	

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
Azobenzene	0.7563	0.7454	20.00	19.71	ug/mL	-1	30	0.0500	
4-Bromophenyl-phenylether	0.2158	0.2136	20.00	19.79	ug/mL	-1	30	0.0500	
Hexachlorobenzene	0.2424	0.2394	40.00	39.50	ug/mL	-1	30	0.0500	
Pentachlorophenol	0.1556	0.1477	40.00	37.97	ug/mL	-5	20	0.0500	
Phenanthrene	1.1006	1.1117	20.00	20.20	ug/mL	1	30	0.0500	
Anthracene	1.1256	1.1257	20.00	20.00	ug/mL	0	30	0.0500	
Carbazole	1.0008	1.0155	40.00	40.59	ug/mL	1	30	0.0500	
Di-n-butylphthalate	1.4078	1.3791	20.00	19.59	ug/mL	-2	30	0.0500	
Fluoranthene	1.2875	1.2705	20.00	19.74	ug/mL	-1	20	0.0500	
Pyrene	1.2665	1.2341	20.00	19.49	ug/mL	-3	30	0.0500	
Butylbenzylphthalate	0.6053	0.5630	20.00	18.60	ug/mL	-7	30	0.0500	
3,3'-Dichlorobenzidine	0.4361	0.3950	40.00	36.23	ug/mL	-9	40	0.0500	
Benzo(a)anthracene	1.1387	1.0915	20.00	19.17	ug/mL	-4	30	0.0500	
bis(2-Ethylhexyl)phthalate	0.7913	0.8113	20.00	20.50	ug/mL	3	30	0.0500	
Chrysene	1.0419	1.0300	20.00	19.77	ug/mL	-1	30	0.0500	
Di-n-octylphthalate	1.6811	1.5523	20.00	18.47	ug/mL	-8	20	0.0500	
Benzo(b)fluoranthene	1.2196	1.1367	20.00	18.64	ug/mL	-7	30	0.0500	
Benzo(k)fluoranthene	1.1236	1.1263	20.00	20.05	ug/mL	0	30	0.0500	
Benzo(a)pyrene	1.1622	1.1234	20.00	19.33	ug/mL	-3	20	0.0500	
Indeno(1,2,3-cd)pyrene	1.2427	1.1903	20.00	19.16	ug/mL	-4	30	0.0500	
Dibenz(a,h)anthracene	1.0193	1.0446	20.00	20.50	ug/mL	2	30	0.0500	
Benzo(g,h,i)perylene	1.0194	0.9711	20.00	19.05	ug/mL	-5	30	0.0500	
2-Fluorophenol	1.4051	1.3829	20.00	19.68	ug/mL	-2	30	0.0500	
Phenol-d5	1.6176	1.6423	20.00	20.31	ug/mL	2	30	0.0500	
Nitrobenzene-d5	0.3751	0.3883	20.00	20.70	ug/mL	4	30	0.0500	
2-Fluorobiphenyl	1.4197	1.3855	20.00	19.52	ug/mL	-2	30	0.0500	
2,4,6-Tribromophenol	0.1570	0.1748	20.00	20.69	ug/mL	3	30	0.0500	
Terphenyl-d14	0.9403	0.9186	20.00	19.54	ug/mL	-2	30	0.0500	

KMH 10/09/14 [Aniline]: Picked or reassigned peak.

Analyst: KMH Date: 10/09/14 Reviewer: LW Date: 10/09/14

m=manual integration

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 MSBNA Water
EPA 8270C

Inst : MSBNA07 IDF : 1.0
Seqnum : 564413843006 File : zje06 Time : 14-OCT-2014 12:17
Cal : 564353477001 Caldate : 02-SEP-2014
Standards: S25410

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
N-Nitrosodimethylamine	0.7527	0.7139	32.00	30.35	ug/mL	-5	30	0.0500	
Pyridine	1.3903	1.4082	32.00	32.41	ug/mL	1	30	0.0500	
Phenol	1.6281	1.7283	32.00	33.97	ug/mL	6	20	0.0500	
Aniline	2.0049	1.9833	32.00	31.66	ug/mL	-1	30	0.0500	m
bis(2-Chloroethyl)ether	1.2751	1.3571	32.00	34.06	ug/mL	6	30	0.0500	
2-Chlorophenol	1.4838	1.5053	32.00	32.46	ug/mL	1	30	0.0500	
1,3-Dichlorobenzene	1.5489	1.6383	32.00	33.85	ug/mL	6	30	0.0500	
1,4-Dichlorobenzene	1.5437	1.6545	32.00	34.30	ug/mL	7	20	0.0500	
Benzyl alcohol	0.9077	0.9274	32.00	32.70	ug/mL	2	30	0.0500	
1,2-Dichlorobenzene	1.4869	1.5837	32.00	34.08	ug/mL	7	30	0.0500	
2-Methylphenol	1.0738	1.1437	32.00	34.09	ug/mL	7	30	0.0500	
bis(2-Chloroisopropyl) ether	1.7923	1.8957	32.00	33.85	ug/mL	6	30	0.0500	
4-Methylphenol	1.5984	1.6491	32.00	33.01	ug/mL	3	30	0.0500	
N-Nitroso-di-n-propylamine	0.7297	0.8331	32.00	36.54	ug/mL	14	30	0.0500	
Hexachloroethane	0.5900	0.6022	32.00	32.67	ug/mL	2	30	0.0500	
Nitrobenzene	0.3439	0.3563	32.00	33.16	ug/mL	4	30	0.0500	
Isophorone	0.6279	0.6547	32.00	33.37	ug/mL	4	30	0.0500	
2-Nitrophenol	0.2014	0.2074	32.00	32.95	ug/mL	3	20	0.0500	
2,4-Dimethylphenol	0.3267	0.3200	32.00	31.35	ug/mL	-2	30	0.0500	m
bis(2-Chloroethoxy)methane	0.3950	0.4009	16.00	16.24	ug/mL	1	30	0.0500	
Benzoic acid	0.2446	0.1907	80.00	62.36	ug/mL	**-22**	40	0.0500	!c-
2,4-Dichlorophenol	0.3001	0.3041	32.00	32.42	ug/mL	1	20	0.0500	
1,2,4-Trichlorobenzene	0.3196	0.3247	32.00	32.51	ug/mL	2	30	0.0500	
Naphthalene	1.0758	1.1124	16.00	16.55	ug/mL	3	30	0.0500	
4-Chloroaniline	0.4334	0.4464	32.00	32.95	ug/mL	3	30	0.0500	
Hexachlorobutadiene	0.1690	0.1684	32.00	31.87	ug/mL	0	20	0.0500	
4-Chloro-3-methylphenol	0.2942	0.3015	32.00	32.80	ug/mL	2	20	0.0500	
2-Methylnaphthalene	0.7122	0.7331	16.00	16.47	ug/mL	3	30	0.0500	
1-Methylnaphthalene	0.6716	0.6948	16.00	16.55	ug/mL	3	30	0.0500	
Hexachlorocyclopentadiene	0.3372	0.2746	32.00	26.06	ug/mL	-19	40	0.0500	
2,4,6-Trichlorophenol	0.3609	0.3577	32.00	31.71	ug/mL	-1	20	0.0500	
2,4,5-Trichlorophenol	0.3888	0.3829	32.00	31.52	ug/mL	-2	30	0.0500	
2-Nitroaniline	0.3534	0.3419	32.00	30.96	ug/mL	-3	30	0.0500	
Dimethylphthalate	1.3476	1.3281	32.00	31.54	ug/mL	-1	30	0.0500	
2,6-Dinitrotoluene	0.3226	0.3202	32.00	31.77	ug/mL	-1	30	0.0500	
Acenaphthylene	1.8866	1.9095	16.00	16.20	ug/mL	1	30	0.0500	
3-Nitroaniline	0.3473	0.3180	32.00	29.30	ug/mL	-8	30	0.0500	
Acenaphthene	1.1828	1.1514	16.00	15.58	ug/mL	-3	20	0.0500	
2,4-Dinitrophenol	0.1492	0.1305	32.00	33.00	ug/mL	3	40	0.0500	
4-Nitrophenol	0.1702	0.1439	32.00	27.05	ug/mL	-15	40	0.0500	
Dibenzofuran	1.6208	1.6272	16.00	16.06	ug/mL	0	30	0.0500	
2,4-Dinitrotoluene	0.4200	0.4106	32.00	31.29	ug/mL	-2	30	0.0500	
2,3,4,6-Tetrachlorophenol	0.3114	0.3111	32.00	31.97	ug/mL	0	30	0.0500	
Diethylphthalate	1.3841	1.3351	16.00	15.43	ug/mL	-4	30	0.0500	
Fluorene	1.4051	1.3716	16.00	15.62	ug/mL	-2	30	0.0500	
4-Chlorophenyl-phenylether	0.6651	0.6430	16.00	15.47	ug/mL	-3	40	0.0500	
4-Nitroaniline	0.3484	0.3379	32.00	31.03	ug/mL	-3	30	0.0500	
4,6-Dinitro-2-methylphenol	0.1337	0.1365	32.00	32.68	ug/mL	2	30	0.0500	

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
Azobenzene	0.7563	0.7557	16.00	15.99	ug/mL	0	30	0.0500	
4-Bromophenyl-phenylether	0.2158	0.2151	16.00	15.95	ug/mL	0	30	0.0500	
Hexachlorobenzene	0.2424	0.2412	32.00	31.84	ug/mL	-1	30	0.0500	
Pentachlorophenol	0.1556	0.1369	32.00	28.17	ug/mL	-12	20	0.0500	
Phenanthrene	1.1006	1.1246	16.00	16.35	ug/mL	2	30	0.0500	
Anthracene	1.1256	1.1359	16.00	16.15	ug/mL	1	30	0.0500	
Carbazole	1.0008	1.0198	32.00	32.61	ug/mL	2	30	0.0500	
Di-n-butylphthalate	1.4078	1.3765	16.00	15.64	ug/mL	-2	30	0.0500	
Fluoranthene	1.2875	1.2517	16.00	15.56	ug/mL	-3	20	0.0500	
Pyrene	1.2665	1.2630	16.00	15.96	ug/mL	0	30	0.0500	
Butylbenzylphthalate	0.6053	0.5656	16.00	14.95	ug/mL	-7	30	0.0500	
3,3'-Dichlorobenzidine	0.4361	0.3714	32.00	27.25	ug/mL	-15	40	0.0500	
Benzo(a)anthracene	1.1387	1.1079	16.00	15.57	ug/mL	-3	30	0.0500	
bis(2-Ethylhexyl)phthalate	0.7913	0.8041	16.00	16.26	ug/mL	2	30	0.0500	
Chrysene	1.0419	1.0413	16.00	15.99	ug/mL	0	30	0.0500	
Di-n-octylphthalate	1.6811	1.5237	16.00	14.50	ug/mL	-9	20	0.0500	
Benzo(b)fluoranthene	1.2196	1.1379	16.00	14.93	ug/mL	-7	30	0.0500	
Benzo(k)fluoranthene	1.1236	1.0918	16.00	15.55	ug/mL	-3	30	0.0500	
Benzo(a)pyrene	1.1622	1.1038	16.00	15.20	ug/mL	-5	20	0.0500	
Indeno(1,2,3-cd)pyrene	1.2427	1.1451	16.00	14.74	ug/mL	-8	30	0.0500	
Dibenz(a,h)anthracene	1.0193	1.0045	16.00	15.77	ug/mL	-1	30	0.0500	
Benzo(g,h,i)perylene	1.0194	0.9380	16.00	14.72	ug/mL	-8	30	0.0500	
2-Fluorophenol	1.4051	1.4021	16.00	15.97	ug/mL	0	30	0.0500	
Phenol-d5	1.6176	1.6723	16.00	16.54	ug/mL	3	30	0.0500	
Nitrobenzene-d5	0.3751	0.3849	16.00	16.42	ug/mL	3	30	0.0500	
2-Fluorobiphenyl	1.4197	1.4491	16.00	16.33	ug/mL	2	30	0.0500	
2,4,6-Tribromophenol	0.1570	0.1643	16.00	16.52	ug/mL	3	30	0.0500	
Terphenyl-d14	0.9403	0.9300	16.00	15.82	ug/mL	-1	30	0.0500	

KMH 10/14/14 [Aniline]: Picked or reassigned peak.

KMH 10/14/14 [2,4-Dimethylphenol]: Picked or reassigned peak.

Analyst: KMH Date: 10/14/14 Reviewer: LW Date: 10/16/14

!=warning -=low bias c=CCV m=manual integration

Logbooks & Sequences

CURTIS & TOMPKINS INTERNAL STANDARD SUMMARY FOR SEQUENCE 554406629

Date : 10/09/14
Sequence : MSBNA06 yj9

Reference : yj903
Analyzed : 10/09/14 09:59

#	Type	Sample ID	DCBZ14D4	RT	NAPHD8	RT	ACEND10	RT	PHEND10	RT	CHYD12	RT	PERYD12	RT
		CCV+CCV/BS+CCV/LCS+ICV+ICV/BS+ICV/CCV+ICV/LCS+RCCV+RICV STD	580933	5.88	2007628	7.37	1215109	9.52	2192789	11.36	2080017	14.70	2377864	17.40
		LOWER LIMIT	290467	5.38	1003814	6.87	607555	9.02	1096395	10.86	1040009	14.20	1188932	16.90
		UPPER LIMIT	1161866	6.38	4015256	7.87	2430218	10.02	4385578	11.86	4160034	15.20	4755728	17.90
003	CCV		580933	5.88	2007628	7.37	1215109	9.52	2192789	11.36	2080017	14.70	2377864	17.40
004	SAMPLE	261525-001	670684	5.88	2432265	7.36	1425638	9.51	2375924	11.35	2391855	14.69	2569336	17.39
005	MSS	261523-001	497713	5.89	1124475	7.38	867016	9.54	1605875	11.39	1752068	14.74	1963098	17.47
006	MSS	261523-001	663558	5.88	1810551	7.37	1126198	9.52	1967602	11.36	2039939	14.70	2173943	17.41
007	SAMPLE	261523-002	639874	5.88	1765575	7.37	1102524	9.52	1937579	11.36	2003429	14.70	2109153	17.41
008	SAMPLE	261521-002	829362	5.88	2543707	7.36	1524297	9.51	2533563	11.35	2250776	14.69	2342932	17.39
009	SAMPLE	261521-002	623472	5.88	1997154	7.37	1243422	9.52	2202244	11.36	2288023	14.70	2541289	17.39
010	SAMPLE	261521-001	598846	5.88	1863648	7.37	1215783	9.52	2028465	11.36	2026423	14.71	2158076	17.42
011	MS	QC760915	599357	5.88	1744724	7.37	1081499	9.52	1931591	11.37	1977686	14.71	2088299	17.42
012	MSD	QC760916	588100	5.88	1698748	7.37	1059172	9.52	1903237	11.36	1912006	14.71	2017939	17.42
013	SAMPLE	261495-001	733052	5.87	2448351	7.36	1501900	9.51	2496673	11.36	2274993	14.70	2403276	17.40
014	SAMPLE	261495-005	827258	5.87	2486429	7.36	1479909	9.51	2587786	11.35	2413527	14.70	2577803	17.39

CURTIS & TOMPKINS INTERNAL STANDARD SUMMARY FOR SEQUENCE 554415327

Date : 10/15/14
Sequence : MSBNA06 yjf

Reference : yjf03
Analyzed : 10/15/14 10:55

#	Type	Sample ID	DCBZ14D4	RT	NAPHD8	RT	ACEND10	RT	PHEND10	RT	CHYD12	RT	PERYD12	RT
		CCV+CCV/BS+CCV/LCS+ICV+ICV/BS+ICV/CCV+ICV/LCS+RCCV+RICV STD	521854	5.87	1746995	7.36	1023802	9.51	1917730	11.35	1845640	14.69	2026843	17.38
		LOWER LIMIT	260927	5.37	873498	6.86	511901	9.01	958865	10.85	922820	14.19	1013422	16.88
		UPPER LIMIT	1043708	6.37	3493990	7.86	2047604	10.01	3835460	11.85	3691280	15.19	4053686	17.88
003	CCV		521854	5.87	1746995	7.36	1023802	9.51	1917730	11.35	1845640	14.69	2026843	17.38
004	BS	QC761279	530235	5.87	1799913	7.36	1064360	9.51	1979825	11.35	1888584	14.70	1917114	17.38
005	BSD	QC761280	550659	5.87	1854518	7.36	1105669	9.51	2050944	11.35	1944558	14.69	1942922	17.37
006	LOQ	261519-006	658979	5.88	1688709	7.36	1365903	9.51	2256264	11.35	2316524	14.68	2153452	17.36
007	LOQ	261519-007	604799	5.88	1570396	7.36	1232203	9.51	2151913	11.35	2072299	14.69	2002036	17.37
008	LOQ	261519-008	606828	5.88	1780867	7.36	1264890	9.51	2241902	11.35	2027701	14.69	2039277	17.37
009	MS	QC761546	572931	5.87	1895158	7.36	1108983	9.51	1971015	11.35	1824189	14.68	1658367	17.37
010	MSD	QC761547	580471	5.87	1915625	7.36	1116770	9.51	1967848	11.35	1767594	14.68	1584283	17.37

CURTIS & TOMPKINS INTERNAL STANDARD SUMMARY FOR SEQUENCE 564406681

Date : 10/09/14
Sequence : MSBNA07 zj9

Reference : zj903
Analyzed : 10/09/14 10:51

#	Type	Sample ID	DCBZ14D4	RT	NAPHD8	RT	ACEND10	RT	PHEND10	RT	CHYD12	RT	PERYD12	RT
		CCV+CCV/BS+CCV/LCS+ICV+ICV/BS+ICV/CCV+ICV/LCS+RCCV+RICV STD	421015	6.06	1660823	7.56	972483	9.71	1605767	11.56	1798526	14.96	1589128	17.86
		LOWER LIMIT	210508	5.56	830412	7.06	486242	9.21	802884	11.06	899263	14.46	794564	17.36
		UPPER LIMIT	842030	6.56	3321646	8.06	1944966	10.21	3211534	12.06	3597052	15.46	3178256	18.36
003	CCV		421015	6.06	1660823	7.56	972483	9.71	1605767	11.56	1798526	14.96	1589128	17.86
004	LCS	QC760914	423571	6.07	1667729	7.56	1003232	9.72	5266 *	11.14	0 *	0.00 *	4807 *	18.06
005	LCS	QC760914	438832	6.07	1655093	7.56	1002951	9.71	1710841	11.56	1767185	14.96	1684784	17.85
006	BLANK	QC760901	433895	6.06	1707161	7.55	928592	9.71	1630649	11.56	1681096	14.95	1611476	17.84
007	BS	QC760902	416824	6.06	1645313	7.56	946213	9.71	1663612	11.56	1702557	14.96	1619470	17.85
008	BSD	QC760903	414963	6.06	1644009	7.55	955644	9.71	1680564	11.56	1717516	14.95	1616376	17.85
009	BSD	QC760906	415611	6.06	1668204	7.56	981195	9.71	1702651	11.56	1805850	14.96	1737212	17.86
010	BLANK	QC760149	399887	6.06	1575592	7.55	880340	9.70	1538419	11.55	1565076	14.95	1471703	17.84

CURTIS & TOMPKINS INTERNAL STANDARD SUMMARY FOR SEQUENCE 564413843

Date : 10/14/14
Sequence : MSBNA07 zje

Reference : zje06
Analyzed : 10/14/14 12:17

#	Type	Sample ID	DCBZ14D4	RT	NAPHD8	RT	ACEND10	RT	PHEND10	RT	CHYD12	RT	PERYD12	RT
		CCV+CCV/BS+CCV/LCS+ICV+ICV/BS+ICV/CCV+ICV/LCS+RCCV+RICV STD	444215	6.06	1755335	7.56	1017267	9.71	1656641	11.56	1832748	14.96	1622199	17.85
		LOWER LIMIT	222108	5.56	877668	7.06	508634	9.21	828321	11.06	916374	14.46	811100	17.35
		UPPER LIMIT	888430	6.56	3510670	8.06	2034534	10.21	3313282	12.06	3665496	15.46	3244398	18.35
006	CCV		444215	6.06	1755335	7.56	1017267	9.71	1656641	11.56	1832748	14.96	1622199	17.85
007	BLANK	QC761278	428964	6.06	1689917	7.55	970575	9.71	1688796	11.56	1634540	14.95	1572676	17.85
008	BS	QC761279	453201	6.06	1799785	7.55	1068953	9.71	1809013	11.56	1641379	14.95	1549130	17.85
009	BSD	QC761280	476367	6.06	1849847	7.55	1096973	9.71	1862992	11.56	1682906	14.95	1565728	17.85
010	BLANK	QC761544	429409	6.07	1349631	7.55	1013805	9.70	1669483	11.55	1486773	14.95	1390540	17.84
011	LCS	QC761545	227679	6.06	895142	7.55	533925	9.71	899487	11.55	806909 *	14.95	744222 *	17.83
012	LOQ	261519-006	447292	6.07	1552990	7.56	1057996	9.71	1767281	11.56	1603838	14.95	1539805	17.85
013	LOQ	261519-007	439262	6.07	1630814	7.56	1050183	9.71	1756558	11.56	1619139	14.95	1561008	17.85
014	LOQ	261519-008	479009	6.07	1841210	7.56	1150029	9.71	1917562	11.56	1788187	14.96	1665647	17.85
015	SAMPLE	261495-001	453035	6.06	1762027	7.55	1018938	9.70	1771680	11.55	1569102	14.95	1466665	17.84
016	MSS	261587-005	415136	6.06	1618573	7.55	904537	9.70	1576756	11.55	1478454	14.95	1525329	17.85
017	BS	QC761279	454748	6.06	1790804	7.55	1056842	9.71	1808180	11.56	1640045	14.95	1643413	17.85
018	BSD	QC761280	439843	6.06	1731143	7.55	1013215	9.71	1739372	11.55	1565303	14.95	1525771	17.85
019	BLANK	QC761544	457993	6.07	1450435	7.55	1092847	9.71	1827914	11.55	1652213	14.95	1614932	17.84
020	LCS	QC761545	430657	6.07	1687261	7.56	1020112	9.71	1735840	11.56	1588083	14.95	1519473	17.85

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 554382191

Instrument : MSBNA06 Begun : 09/22/14 09:51
Method : EPA 8270C SOP Version : bna_rv13

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	yim01	IB	IB			09/22/14 09:51	1.0		?t
002	yim02	TUN	DFTPP/PEM			09/22/14 10:20	1.0	1	
003	yim03	CCV				09/22/14 10:42	1.0	2	cc+
004	yim04	CCV				09/22/14 11:25	1.0	2	cc+
005	yim05	TUN	DFTPP/PEM			09/22/14 12:31	1.0	1	t
006	yim06	TUN	DFTPP/PEM			09/22/14 12:52	1.0	1	
007	yim07	ICAL	ICAL			09/22/14 13:13	1.0	3	
008	yim08	ICAL	ICAL			09/22/14 13:48	1.0	4	
009	yim09	ICAL	ICAL			09/22/14 14:24	1.0	5	
010	yim10	ICAL	ICAL			09/22/14 14:59	1.0	2	
011	yim11	ICAL	ICAL			09/22/14 15:34	1.0	6	
012	yim12	ICAL	ICAL			09/22/14 16:10	1.0	7	
013	yim13	ICAL	ICAL			09/22/14 16:45	1.0	8	
014	yim14	ICAL	ICAL			09/22/14 17:22	1.0	9	
015	yim15	ICAL	ICAL			09/22/14 17:57	1.0	10	
016	yim16	ICV	ICV			09/22/14 18:32	1.0	11	

NPM 09/23/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 16.

Standards used: 1=S25535 2=S25410 3=S25407 4=S25408 5=S25409 6=S25411 7=S25412 8=S25413 9=S25414 10=S25415 11=S25418

Flags used: +=high bias ?t=missing tune cc=CCV CCC failure t=tune failure

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 554383786

Instrument : MSBNA06 Begun : 09/23/14 12:26
Method : EPA 8270C SOP Version : bna_rv13

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	yin01	IB	IB			09/23/14 12:26	1.0		?t
002	yin02	TUN	DFTPP/PEM			09/23/14 12:55	1.0	1	t
003	yin03	TUN	DFTPP/PEM			09/23/14 13:16	1.0	1	t
004	yin04	TUN	DFTPP/PEM			09/23/14 14:13	1.0	1	
005	yin05	ICV	ICV			09/23/14 14:50	1.0	2	t
006	yin06	ICV	ICV			09/23/14 15:47	1.0	2	

NPM 09/23/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 6.

Standards used: 1=S25535 2=S24471

Flags used: ?t=missing tune t=tune failure

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CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 554406629

Instrument : MSBNA06 Begun : 10/09/14 09:09
Method : EPA 8270C SOP Version : bna_rv13

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	yj901	IB	IB			10/09/14 09:09	1.0		?t
002	yj902	TUN	DFTPP/PEM			10/09/14 09:38	1.0	1	
003	yj903	CCV				10/09/14 09:59	1.0	2	
004	yj904	SAMPLE	261525-001	Soil	216233	10/09/14 10:37	1.0	3	
005	yj905	MSS	261523-001	Soil	216233	10/09/14 11:13	1.0	3	
006	yj906	MSS	261523-001	Soil	216233	10/09/14 11:50	5.0	3	high NT
007	yj907	SAMPLE	261523-002	Soil	216233	10/09/14 12:30	5.0	3	high NT
008	yj908	SAMPLE	261521-002	Water	216229	10/09/14 13:07	50.0	3	high NT
009	yj909	SAMPLE	261521-002	Water	216229	10/09/14 13:43	1.0	3	
010	yj910	SAMPLE	261521-001	Water	216230	10/09/14 14:18	1.0	3	spk
011	yj911	MS	QC760915	Soil	216233	10/09/14 15:02	5.0	3	
012	yj912	MSD	QC760916	Soil	216233	10/09/14 15:38	5.0	3	high NT
013	yj913	SAMPLE	261495-001	Water	216230	10/09/14 16:13	1.0	3	spk
014	yj914	SAMPLE	261495-005	Water	216229	10/09/14 16:49	1.0	3	

KMH 10/10/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 14.

Standards used: 1=S25535 2=S25411 3=S25374

Flags used: ?t=missing tune spk=5% spike rule

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CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 554415327

Instrument : MSBNA06 Begun : 10/15/14 10:07
Method : EPA 8270C SOP Version : bna_rv13

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	yjf01	IB	IB			10/15/14 10:07	1.0		?t
002	yjf02	TUN	DFTPP/PEM			10/15/14 10:36	1.0	1	
003	yjf03	CCV				10/15/14 10:55	1.0	2	
004	yjf04	BS	QC761279	Water	216322	10/15/14 12:13	1.0	3	1:MEPH4=54
005	yjf05	BSD	QC761280	Water	216322	10/15/14 12:47	1.0	3	1:MEPH4=52
006	yjf06	LOQ	261519-006	Soil	216392	10/15/14 13:23	1.0	3	
007	yjf07	LOQ	261519-007	Soil	216392	10/15/14 13:59	1.0	3	
008	yjf08	LOQ	261519-008	Soil	216392	10/15/14 14:34	1.0	3	
009	yjf09	MS	QC761546	Soil	216392	10/15/14 15:09	5.0	3	
010	yjf10	MSD	QC761547	Soil	216392	10/15/14 15:46	5.0	3	

NPM 10/15/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 10.

Standards used: 1=S25535 2=S25411 3=S25374

Flags used: ?t=missing tune

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 564353477

Instrument : MSBNA07 Begun : 09/02/14 11:17
Method : EPA 8270C SOP Version : bna_rv13

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	zi201	X	IB			09/02/14 11:17	1.0		
002	zi202	TUN	DFTPP/PEM			09/02/14 11:46	1.0	1	
003	zi203	CCV	RT CHECK			09/02/14 12:11	1.0	2	
004	zi204	CCV	RF CHECK			09/02/14 12:59	1.0	3	
005	zi205	X	IB			09/02/14 13:44	1.0		
006	zi206	TUN	DFTPP/PEM			09/02/14 14:13	1.0	1	
007	zi207	ICAL	ICAL			09/02/14 14:58	1.0	4	
008	zi208	ICAL	ICAL			09/02/14 15:34	1.0	5	
009	zi209	ICAL	ICAL			09/02/14 16:10	1.0	3	
010	zi210	ICAL	ICAL			09/02/14 16:48	1.0	6	
011	zi211	ICAL	ICAL			09/02/14 17:25	1.0	2	
012	zi212	ICAL	ICAL			09/02/14 18:03	1.0	7	
013	zi213	ICAL	ICAL			09/02/14 18:40	1.0	8	
014	zi214	ICAL	ICAL			09/02/14 19:18	1.0	9	
015	zi215	ICAL	ICAL			09/02/14 19:55	1.0	10	
016	zi216	ICV	ICV			09/02/14 20:33	1.0	11	1:DBAHA=44

KMH 09/03/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 16.

Standards used: 1=S24893 2=S25411 3=S25409 4=S25407 5=S25408 6=S25410 7=S25412 8=S25413 9=S25414 10=S25415 11=S25418

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 564354873

Instrument : MSBNA07 Begun : 09/03/14 10:33
Method : EPA 8270C SOP Version : bna_rv13

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	zi301	X	IB			09/03/14 10:33	1.0		
002	zi302	TUN	DFTPP/PEM			09/03/14 11:02	1.0	1	
003	zi303	ICV	ICV			09/03/14 11:23	1.0	2 3	
004	zi304	CCV				09/03/14 12:27	1.0	4	

KMH 09/03/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 3.

Standards used: 1=S24893 2=S25418 3=S25005 4=S25410

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 564406681

Instrument : MSBNA07 Begun : 10/09/14 10:01
Method : EPA 8270C SOP Version : bna_rv13

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	zj901	X	IB			10/09/14 10:01	1.0		
002	zj902	TUN	DFTPP/PEM			10/09/14 10:31	1.0	1	
003	zj903	CCV				10/09/14 10:51	1.0	2	
004	zj904	LCS	QC760914	Soil	216233	10/09/14 11:39	1.0	3	spk , 11:HCLBZ=21000
005	zj905	LCS	QC760914	Soil	216233	10/09/14 12:17	1.0	3	1:ISOP=65
006	zj906	BLANK	QC760901	Water	216229	10/09/14 12:54	1.0	3	
007	zj907	BS	QC760902	Water	216229	10/09/14 13:32	2.0	3	spk
008	zj908	BSD	QC760903	Water	216229	10/09/14 14:09	2.0	3	spk
009	zj909	BSD	QC760906	Water	216230	10/09/14 14:54	1.0	3	spk , 1:ISOP=58
010	zj910	BLANK	QC760149	Soil	216039	10/09/14 15:30	1.0	3	

KMH 10/09/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 10.

Standards used: 1=S25535 2=S25411 3=S25374

Flags used: spk=5% spike rule

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 564413843

Instrument : MSBNA07 Begun : 10/14/14 09:23
Method : EPA 8270C SOP Version : bna_rv13

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	zje01	X	IB			10/14/14 09:23	1.0		
002	zje02	IB	IB			10/14/14 10:02	1.0		?t
003	zje03	IB	IB			10/14/14 10:40	1.0		?t
004	zje04	TUN	DFTPP/PEM			10/14/14 11:09	1.0	1	
005	zje05	CCV				10/14/14 11:28	1.0	2	
006	zje06	CCV				10/14/14 12:17	1.0	2	
007	zje07	BLANK	QC761278	Water	216322	10/14/14 13:34	1.0	3	
008	zje08	BS	QC761279	Water	216322	10/14/14 14:10	2.0	3	
009	zje09	BSD	QC761280	Water	216322	10/14/14 14:47	2.0	3	spk
010	zje10	BLANK	QC761544	Soil	216392	10/14/14 15:24	1.0	3	
011	zje11	LCS	QC761545	Soil	216392	10/14/14 16:01	2.0	3	spk , 2:ISOP=63
012	zje12	LOQ	261519-006	Soil	216392	10/14/14 16:45	1.0	3	
013	zje13	LOQ	261519-007	Soil	216392	10/14/14 17:22	1.0	3	
014	zje14	LOQ	261519-008	Soil	216392	10/14/14 17:59	1.0	3	
015	zje15	SAMPLE	261495-001	Water	216322	10/14/14 18:35	1.0	3	
016	zje16	MSS	261587-005	Soil	216392	10/14/14 19:12	5.0	3	
017	zje17	BS	QC761279	Water	216322	10/14/14 19:49	2.0	3	
018	zje18	BSD	QC761280	Water	216322	10/14/14 20:25	2.0	3	
019	zje19	BLANK	QC761544	Soil	216392	10/14/14 21:02	1.0	3	
020	zje20	LCS	QC761545	Soil	216392	10/14/14 21:40	2.0	3	

KMH 10/14/14 : pressure failing during runs 1 & 2

KMH 10/15/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 20.

Standards used: 1=S25535 2=S25410 3=S25374

Flags used: ?t=missing tune spk=5% spike rule

SAMPLE PREPARATION SUMMARY

Batch # : 216229 Analysis : 8270-BASE
Started By : ARW Prep Date : 08-OCT-2014 14:40 Finished By : TPR
Method : 3520C Units : mL
Spike #1 ID : S24866 Spike #2 ID : S25773

Sample	Stype	Matrix	Initial	Final	Clean DF	Prep DF	pH	Sp 1 Vol	Sp 2 Vol	Sp 3 Vol	Clean Method	Analysis	Comments
261495-005		Water	1000	1	1	0.001	7	.4				8270-BASE	
261521-002		Water	1000	1	1	0.001	7	.4				8270-BASE	
QC760901	BLANK	Water	1000	1	1	0.001		.4				8270-BASE	
QC760902	BS	Water	1000	1	1	0.001		.4	1			8270-BASE	
QC760903	BSD	Water	1000	1	1	0.001		.4	1			8270-BASE	

KMH 10/09/14 : Matrix spikes were not performed for this analysis in batch 216229 due to insufficient sample amount.

Analyst: KMH Date: 10/09/14 Reviewer: LW Date: 10/09/14

BNA (8270 & 625) Water Prep Log **Curtis & Tompkins, Ltd.**

LIMS Batch No: 216229
LIMS Analysis: 8270 - BASE
Date Extracted: 10/8/2014

Extraction Method:
☑ EPA 3520c cont. L/L
☐ _____

Sample #	Container ID	Volume of Sample (mL)	Sample pH	Final Volume (mL)	Confirmed pH ≤2 ≥11	Comments
261495-005	N	1000	☑7 ☐	☑1.0 ☐	☑ ≤2	aliased 261 495-001
261521-002	O	1000	☑7 ☐	☑1.0 ☐	☑ ≤2	aliased 261 521-001
LMB QC760101	MA	1000	☐7 ☑ MA	☑1.0 ☐	☑ ≤2	
BS ↓ 2	↓	1000	☐7 ☑ MA	☑1.0 ☐	☑ ≤2	
BSD ↓ 3	↓	1000	☐7 ☑ MA	☑1.0 ☐	☑ ≤2	TPR 10/9/14
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	
			☐7 ☐	☐1.0 ☐	☐ ≤2	NPR 10/9/14

	Lot# / LIMS # / Time	Date/ Initials
0.4 mL of surrogate solution was added to all samples	S248669	AKW 10/8/2014
1.0 mL of matrix spiking solution was added to all spikes	S257736	
pH of all samples adjusted to pH ≤ 2 with H_2SO_4	~~ES 140650~~ N/A	TPR 10/9/14
Cont. L/L extracted with 450mL of CH_2Cl_2	EM 54024	
Extraction Start Time:	1440	
Extraction End Time:	0850	10/9/14 CPJ 10/8/14
pH of all samples adjusted to pH ≥ 11 with 10 N NaOH	JTB0000073953	TPR 10/9/14
Extraction Start Time:	N/A 1440	
Extraction End Time:	0850	
Extracts filtered through baked, CH2Cl2-rinsed granular Na2SO4	EMWL23I	
Concentrated to final volume at temperature (degrees C)	70	
Relinquished to BNA department	✓	

Ani Riley 10/8/2014
Extraction Chemist **Date**

Contined from Page _____
Continued on Page _____

10/9/14
Reviewed by **Date**

SAMPLE PREPARATION SUMMARY

Batch # : 216322 Analysis : 8270-1
Started By : ARW Prep Date : 10-OCT-2014 15:00 Finished By : AVW
Method : 3520C SOP Version : 8270_3520_rv20 Units : mL
Spike #1 ID : S24866 Spike #2 ID : S25773

Sample	Stype	Matrix	Initial	Final	Clean DF	Prep DF	pH	Sp 1 Vol	Sp 2 Vol	Sp 3 Vol	Clean Method	Analysis	Comments
261495-001		Water	1000	1	1	0.001	7	.4				8270-1	sample was HCl preserved
QC761278	BLANK	Water	1000	1	1	0.001		.4				8270-1	
QC761279	BS	Water	1000	1	1	0.001		.4	1			8270-1	
QC761280	BSD	Water	1000	1	1	0.001		.4	1			8270-1	

NPM 10/15/14 : Matrix spikes were not performed for this analysis in batch 216322 due to insufficient sample amount.

Analyst: NPM Date: 10/15/14 Reviewer: LW Date: 10/16/14

BNA (8270 & 625) Water Prep Log **Curtis & Tompkins, Ltd.**

LIMS Batch No: 216322
LIMS Analysis: 8270-1
Date Extracted: 10/10/2014

Extraction Method:
☑ EPA 3520c cont. L/L
☐ _____

Sample #	Container ID	Volume of Sample (mL)	Sample pH	Final Volume (mL)	Confirmed pH ≤2	Comments
261495-001	M	1000	☑7 ☐___	☑1.0 ☐___	☑≤2	Sample was under HCl preserved
MB QC761278	MA	1000	☐7 ☑NA	☑1.0 ☐___	☑≤2	
BS 9	↓	1000	☐7 ☑NA	☑1.0 ☐___	☑≤2	
BSD 80	↓	1000	☐7 ☑NA	☑1.0 ☐___	☑≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	
			☐7 ☐___	☐1.0 ☐___	☐≤2	NAM 10/13/14

	Lot# / LIMS # / Time	Date/ Initials
0.4 mL of surrogate solution was added to all samples	S 24866A	AZW 10/10/2014
1.0 mL of matrix spiking solution was added to all spikes	S 25773C	↓
pH of all samples adjusted to pH ≤ 2 with H_2SO_4	FS 140605	↓
Cont. L/L extracted with 450mL of CH_2Cl_2	EMT 40214	↓
Extraction Start Time:	1500	↓
Extraction End Time:	0480	SRW 10/11/14
pH of all samples adjusted to pH ≥ 11 with 10 N NaOH	NA	AW 10/13/14
Extraction Start Time:	↓	↓
Extraction End Time:	↓	↓
Extracts filtered through baked, CH2Cl2-rinsed granular Na2SO4	EMWC231	↓
Concentrated to final volume at temperature (degrees C)	70	↓
Relinquished to BNA department	✓	↓

10/10/2014
Extraction Chemist **Date**

Contined from Page ___
Continued on Page ___

10/13/14
Reviewed by **Date**

Laboratory Job Number 261495

ANALYTICAL REPORT

Pesticides

Matrix: Water

Curtis & Tompkins, Ltd.

Organochlorine Pesticides

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 3520C
Project#:	PAVILLION	Analysis:	EPA 8081A
Field ID:	FB-1-10062014	Batch#:	216181
Lab ID:	261495-001	Sampled:	10/06/14
Matrix:	Water	Received:	10/07/14
Units:	ug/L	Prepared:	10/07/14
Diln Fac:	1.000	Analyzed:	10/08/14

Analyte	Result	RL	MDL
alpha-BHC	ND	0.05	0.01
beta-BHC	ND	0.05	0.01
gamma-BHC	ND	0.05	0.008
delta-BHC	ND	0.05	0.01
Heptachlor	ND	0.05	0.01
Aldrin	ND	0.05	0.01
Heptachlor epoxide	ND	0.05	0.01
Endosulfan I	ND	0.05	0.01
Dieldrin	ND	0.1	0.02
4,4'-DDE	ND	0.1	0.01
Endrin	ND	0.1	0.01
Endosulfan II	ND	0.1	0.02
Endosulfan sulfate	ND	0.1	0.01
4,4'-DDD	ND	0.1	0.01
Endrin aldehyde	ND	0.1	0.02
4,4'-DDT	ND	0.1	0.02
alpha-Chlordane	ND	0.05	0.01
gamma-Chlordane	ND	0.05	0.01
Methoxychlor	ND	0.5	0.05
Toxaphene	ND	1.0	0.3

Surrogate	%REC	Limits
TCMX	54	35-145
Decachlorobiphenyl	43	25-122

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 3520C
Project#:	PAVILLION	Analysis:	EPA 8081A
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC760707	Batch#:	216181
Matrix:	Water	Prepared:	10/07/14
Units:	ug/L	Analyzed:	10/08/14

Analyte	Result	RL	MDL
alpha-BHC	ND	0.05	0.006
beta-BHC	ND	0.05	0.02
gamma-BHC	ND	0.05	0.008
delta-BHC	ND	0.05	0.006
Heptachlor	ND	0.05	0.006
Aldrin	ND	0.05	0.004
Heptachlor epoxide	ND	0.05	0.007
Endosulfan I	ND	0.05	0.004
Dieldrin	ND	0.1	0.007
4,4'-DDE	ND	0.1	0.005
Endrin	ND	0.1	0.02
Endosulfan II	ND	0.1	0.01
Endosulfan sulfate	ND	0.1	0.005
4,4'-DDD	ND	0.1	0.02
Endrin aldehyde	ND	0.1	0.006
4,4'-DDT	ND	0.1	0.02
alpha-Chlordane	ND	0.05	0.004
gamma-Chlordane	ND	0.05	0.003
Methoxychlor	ND	0.5	0.1
Toxaphene	ND	1.0	0.3

Surrogate	%REC	Limits
TCMX	69	35-145
Decachlorobiphenyl	77	25-122

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Organochlorine Pesticides

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	EPA 3520C
Project#:	PAVILLION	Analysis:	EPA 8081A
Matrix:	Water	Batch#:	216181
Units:	ug/L	Prepared:	10/07/14
Diln Fac:	1.000	Analyzed:	10/08/14

Type: BS Lab ID: QC760708

Analyte	Spiked	Result	%REC	Limits
gamma-BHC	0.2000	0.1729	86	62-137
Heptachlor	0.2000	0.1373	69	52-138
Aldrin	0.2000	0.1389	69	58-136
Dieldrin	0.2000	0.1714	86	61-148
Endrin	0.2000	0.1111	56	55-151
4,4'-DDT	0.2000	0.1462	73	46-153

Surrogate	%REC	Limits
TCMX	54	35-145
Decachlorobiphenyl	70	25-122

Type: BSD Lab ID: QC760709

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
gamma-BHC	0.2000	0.1876	94	62-137	8	31
Heptachlor	0.2000	0.1442	72	52-138	5	27
Aldrin	0.2000	0.1450	72	58-136	4	23
Dieldrin	0.2000	0.1851	93	61-148	8	35
Endrin	0.2000	0.1575	79	55-151	35	38
4,4'-DDT	0.2000	0.1726	86	46-153	17	31

Surrogate	%REC	Limits
TCMX	55	35-145
Decachlorobiphenyl	87	25-122

RPD= Relative Percent Difference

Initial & Continuing Calibration Data

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 261495 PEST Water: EPA 8081A

Inst : GC21
Calnum : 244354653001
Units : pg/uL

Name : GC21_Pest_246
Date : 03-SEP-2014 16:25

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	246_018	244354653018	ISOPEST_1/2	03-SEP-2014 16:25	S25255 (2X)
L2	246_019	244354653019	ISOPEST_1	03-SEP-2014 16:47	S25255
L3	246_020	244354653020	ISOPEST_2	03-SEP-2014 17:09	S25256
L4	246_021	244354653021	ISOPEST_3	03-SEP-2014 17:31	S25257
L5	246_022	244354653022	ISOPEST_4	03-SEP-2014 17:53	S25258
L6	246_023	244354653023	ISOPEST_5	03-SEP-2014 18:15	S25259
L7	246_024	244354653024	ISOPEST_6	03-SEP-2014 18:36	S25260
L8	246_025	244354653025	ISOPEST_7	03-SEP-2014 18:58	S25261

Analyte	Ch	L1	L2	L3	L4	L5	L6	L7	L8	Type	X	a0	a1	a2	Avg	r^2 %RSD	MnR^2	MxRSD	Flg
alpha-BHC	A	1864.0	1847.5	1771.8	1909.4	1729.3	1771.9	1753.3	1634.7	AVRG	R		5.60E-4		1785.2	5	0.990	20	
gamma-BHC	A	1678.0	1702.5	1604.0	1742.6	1559.4	1598.4	1584.7	1489.7	AVRG	R		6.17E-4		1619.9	5	0.990	20	
beta-BHC	A	722.00	720.50	673.20	721.00	625.60	633.08	637.00	633.89	AVRG	R		0.00149		670.78	7	0.990	20	
delta-BHC	A	1556.0	1574.0	1488.6	1629.5	1474.4	1516.7	1512.3	1399.8	AVRG	R		6.58E-4		1518.9	5	0.990	20	
Heptachlor	A	1588.0	1602.0	1477.2	1589.3	1432.6	1461.5	1436.8	1310.0	AVRG	R		6.72E-4		1487.2	7	0.990	20	
Aldrin	A	1618.0	1616.0	1493.4	1583.4	1475.0	1516.0	1484.1	1340.4	AVRG	R		6.60E-4		1515.8	6	0.990	20	
Heptachlor epoxide	A	1441.0	1454.0	1347.0	1431.8	1288.3	1318.9	1285.3	1142.4	AVRG	R		7.47E-4		1338.6	8	0.990	20	
gamma-Chlordane	A	1466.0	1444.5	1343.8	1454.3	1314.2	1351.2	1326.7	1213.1	AVRG	R		7.33E-4		1364.2	6	0.990	20	
alpha-Chlordane	A	1405.0	1335.5	1238.0	1362.3	1211.9	1289.0	1272.3	1149.5	AVRG	R		7.79E-4		1282.9	7	0.990	20	
4,4'-DDE	A	1327.5	1318.0	1222.6	1345.4	1239.4	1249.9	1143.1	900.30	AVRG	R		8.21E-4		1218.3	12	0.990	20	
Endosulfan I	A	1338.0	1361.0	1279.6	1293.1	1213.8	1210.3	1187.0	1066.8	AVRG	R		8.04E-4		1243.7	8	0.990	20	
Dieldrin	A	1376.0	1373.0	1279.4	1422.7	1300.1	1294.4	1163.4	907.73	AVRG	R		7.91E-4		1264.6	13	0.990	20	
Endrin	A	1148.5	1152.0	1056.0	1181.2	1078.1	1072.7	989.10	801.05	AVRG	R		9.44E-4		1059.8	11	0.990	20	
4,4'-DDD	A	995.50	1008.3	936.90	1035.9	981.40	974.90	922.53	753.53	AVRG	R		0.00105		951.11	9	0.990	20	
Endosulfan II	A	1082.0	1063.0	991.00	1076.4	993.40	995.82	948.53	780.52	AVRG	R		0.00101		991.33	10	0.990	20	
4,4'-DDT	A	1054.0	1058.8	981.90	1097.4	1049.7	1035.0	969.56	791.98	AVRG	R		9.95E-4		1004.8	10	0.990	20	
Endrin aldehyde	A	787.00	789.75	722.50	802.15	774.95	760.10	751.60	664.81	AVRG	R		0.00132		756.61	6	0.990	20	
Methoxychlor	A	460.20	455.75	429.12	472.58	401.29	374.68	298.96	203.56	QUAD	A	3404.81	405.725	-0.20655	387.02	0.997	0.990	20	
Endosulfan sulfate	A	938.50	934.00	855.40	931.85	890.15	879.82	886.95	797.05	AVRG	R		0.00112		889.21	5	0.990	20	
TCMX	A	1112.0	1147.0	1132.8	1112.5	1019.4	1066.7	993.69	852.31	AVRG	R		9.48E-4		1054.5	9	0.990	20	
Decachlorobiphenyl	A	863.00	852.00	776.20	818.05	773.10	743.22	798.14	783.32	AVRG	R		0.00125		800.88	5	0.990	20	
alpha-BHC	B	3887.0	4054.5	3993.4	4736.9	5363.6	6189.4	5942.8	5524.5	AVRG	R		2.02E-4		4961.5	19	0.990	20	
gamma-BHC	B	3569.0	3871.0	3868.2	4387.1	4958.5	5778.8	5607.5	5077.7	AVRG	R		2.16E-4		4639.7	18	0.990	20	
beta-BHC	B	1510.0	1585.5	1508.2	1497.1	1388.8	1566.2	1737.6	2329.7	AVRG	R		6.10E-4		1640.4	18	0.990	20	
delta-BHC	B	3426.0	3597.0	3584.4	3935.0	4495.6	5446.7	5315.9	4990.9	AVRG	R		2.30E-4		4348.9	19	0.990	20	

Analyte	Ch	L1	L2	L3	L4	L5	L6	L7	L8	Type	X	a0	a1	a2	Avg	r^2 %RSD	MnR^2	MxRSD	Flg
Heptachlor	B	3854.0	4021.5	4047.6	4586.4	5152.0	6018.4	5749.7	5052.0	AVRG	R		2.08E-4		4810.2	17	0.990	20	
Aldrin	B	3540.0	3591.5	3630.4	4270.1	4904.4	5704.5	5382.2	4700.4	AVRG	R		2.24E-4		4465.4	19	0.990	20	
Heptachlor epoxide	B	3299.0	3388.0	3341.6	3736.9	4069.8	4833.7	4606.1	4032.5	AVRG	R		2.56E-4		3913.5	15	0.990	20	
gamma-Chlordane	B	3325.0	3391.5	3321.6	3728.9	4167.9	5028.5	4855.2	4249.2	AVRG	R		2.49E-4		4008.5	17	0.990	20	
alpha-Chlordane	B	3097.0	3202.5	3150.2	3427.2	3877.7	4735.0	4527.7	3985.3	AVRG	R		2.67E-4		3750.3	17	0.990	20	
4,4'-DDE	B	2947.5	3131.3	3223.1	3915.5	4134.0	4826.0	3845.2	2940.5	AVRG	R		2.76E-4		3620.4	19	0.990	20	
Endosulfan I	B	3094.0	3191.0	3116.0	3387.4	3720.4	4529.5	4297.7	3898.7	AVRG	R		2.74E-4		3654.3	15	0.990	20	
Dieldrin	B	3223.5	3489.8	3799.3	4723.9	4652.2	5063.5	3752.6		AVRG	R		2.44E-4		4100.7	17	0.990	20	
Endrin	B	1750.5	1867.3	1877.3	2161.2	2267.8	2781.8	2466.4	2064.9	AVRG	R		4.64E-4		2154.6	16	0.990	20	
4,4'-DDD	B	2248.0	2374.0	2403.9	2699.0	2984.5	3662.2	3189.1	2629.9	AVRG	R		3.61E-4		2773.8	17	0.990	20	
Endosulfan II	B	2651.5	2775.0	2937.2	3422.6	3576.3	4246.7	3364.1	2554.1	AVRG	R		3.13E-4		3190.9	18	0.990	20	
4,4'-DDT	B	2367.5	2529.8	2696.3	3171.5	3475.6	4218.1	3395.5	2640.1	AVRG	R		3.27E-4		3061.8	20	0.990	20	
Endrin aldehyde	B	2073.0	2151.8	2136.1	2366.3	2717.2	3234.0	2859.4	2481.1	AVRG	R		4.00E-4		2502.4	16	0.990	20	
Methoxychlor	B	998.30	1112.3	1321.9	1450.0	1260.2	1371.2	939.26	684.62	QUAD	A	7635.44	1328.49	-0.65790	1142.2	0.990	0.990	20	
Endosulfan sulfate	B	2200.0	2305.8	2303.0	2504.5	2762.3	3492.9	3102.6	2532.4	AVRG	R		3.77E-4		2650.4	17	0.990	20	
TCMX	B	2234.0	2326.3	2255.1	2424.2	2706.5	3170.0	3107.8	3014.5	AVRG	R		3.77E-4		2654.8	15	0.990	20	
Decachlorobiphenyl	B	2001.0	2073.8	2016.8	1986.4	2046.9	2712.5	2649.6	2309.0	AVRG	R		4.50E-4		2224.5	13	0.990	20	
Average EPA 8081A	A														(n=23)	9		20	
Average EPA 8081A	B														(n=23)	17		20	

Spiked Amounts / Drifts	Ch	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D
alpha-BHC	A	1.0000	4	2.0000	3	5.0000	-1	10.000	7	20.000	-3	25.000	-1	50.000	-2	100.00	-8
gamma-BHC	A	1.0000	4	2.0000	5	5.0000	-1	10.000	8	20.000	-4	25.000	-1	50.000	-2	100.00	-8
beta-BHC	A	1.0000	8	2.0000	7	5.0000	0	10.000	7	20.000	-7	25.000	-6	50.000	-5	100.00	-6
delta-BHC	A	1.0000	2	2.0000	4	5.0000	-2	10.000	7	20.000	-3	25.000	0	50.000	0	100.00	-8
Heptachlor	A	1.0000	7	2.0000	8	5.0000	-1	10.000	7	20.000	-4	25.000	-2	50.000	-3	100.00	-12
Aldrin	A	1.0000	7	2.0000	7	5.0000	-1	10.000	4	20.000	-3	25.000	0	50.000	-2	100.00	-12
Heptachlor epoxide	A	1.0000	8	2.0000	9	5.0000	1	10.000	7	20.000	-4	25.000	-1	50.000	-4	100.00	-15
gamma-Chlordane	A	1.0000	7	2.0000	6	5.0000	-1	10.000	7	20.000	-4	25.000	-1	50.000	-3	100.00	-11
alpha-Chlordane	A	1.0000	10	2.0000	4	5.0000	-4	10.000	6	20.000	-6	25.000	0	50.000	-1	100.00	-10
4,4'-DDE	A	2.0000	9	4.0000	8	10.000	0	20.000	10	40.000	2	50.000	3	100.00	-6	200.00	**-26**
Endosulfan I	A	1.0000	8	2.0000	9	5.0000	3	10.000	4	20.000	-2	25.000	-3	50.000	-5	100.00	-14
Dieldrin	A	2.0000	9	4.0000	9	10.000	1	20.000	13	40.000	3	50.000	2	100.00	-8	200.00	**-28**
Endrin	A	2.0000	8	4.0000	9	10.000	0	20.000	11	40.000	2	50.000	1	100.00	-7	200.00	**-24**
4,4'-DDD	A	2.0000	5	4.0000	6	10.000	-1	20.000	9	40.000	3	50.000	3	100.00	-3	200.00	**-21**
Endosulfan II	A	2.0000	9	4.0000	7	10.000	0	20.000	9	40.000	0	50.000	0	100.00	-4	200.00	**-21**
4,4'-DDT	A	2.0000	5	4.0000	5	10.000	-2	20.000	9	40.000	4	50.000	3	100.00	-4	200.00	**-21**
Endrin aldehyde	A	2.0000	4	4.0000	4	10.000	-5	20.000	6	40.000	2	50.000	0	100.00	-1	200.00	-12
Methoxychlor	A	10.000	**-70**	20.000	**-29**	50.000	-9	100.00	15	200.00	6	250.00	2	500.00	-5	1000.0	**-100**
Endosulfan sulfate	A	2.0000	6	4.0000	5	10.000	-4	20.000	5	40.000	0	50.000	-1	100.00	0	200.00	-10
TCMX	A	2.0000	5	4.0000	9	10.000	7	20.000	5	40.000	-3	50.000	1	100.00	-6	200.00	-19
Decachlorobiphenyl	A	2.0000	8	4.0000	6	10.000	-3	20.000	2	40.000	-3	50.000	-7	100.00	0	200.00	-2
alpha-BHC	B	1.0000	**-22**	2.0000	-18	5.0000	-20	10.000	-5	20.000	8	25.000	**25**	50.000	20	100.00	11
gamma-BHC	B	1.0000	**-23**	2.0000	-17	5.0000	-17	10.000	-5	20.000	7	25.000	**25**	50.000	**21**	100.00	9
beta-BHC	B	1.0000	-8	2.0000	-3	5.0000	-8	10.000	-9	20.000	-15	25.000	-5	50.000	6	100.00	**42**
delta-BHC	B	1.0000	**-21**	2.0000	-17	5.0000	-18	10.000	-10	20.000	3	25.000	**25**	50.000	**22**	100.00	15
Heptachlor	B	1.0000	-20	2.0000	-16	5.0000	-16	10.000	-5	20.000	7	25.000	**25**	50.000	20	100.00	5
Aldrin	B	1.0000	**-21**	2.0000	-20	5.0000	-19	10.000	-4	20.000	10	25.000	**28**	50.000	**21**	100.00	5
Heptachlor epoxide	B	1.0000	-16	2.0000	-13	5.0000	-15	10.000	-5	20.000	4	25.000	**24**	50.000	18	100.00	3
gamma-Chlordane	B	1.0000	-17	2.0000	-15	5.0000	-17	10.000	-7	20.000	4	25.000	**25**	50.000	**21**	100.00	6
alpha-Chlordane	B	1.0000	-17	2.0000	-15	5.0000	-16	10.000	-9	20.000	3	25.000	**26**	50.000	**21**	100.00	6
4,4'-DDE	B	2.0000	-19	4.0000	-14	10.000	-11	20.000	8	40.000	14	50.000	**33**	100.00	6	200.00	-19
Endosulfan I	B	1.0000	-15	2.0000	-13	5.0000	-15	10.000	-7	20.000	2	25.000	**24**	50.000	18	100.00	7
Dieldrin	B	2.0000	**-21**	4.0000	-15	10.000	-7	20.000	15	40.000	13	50.000	**23**	100.00	-8		
Endrin	B	2.0000	-19	4.0000	-13	10.000	-13	20.000	0	40.000	5	50.000	**29**	100.00	14	200.00	-4
4,4'-DDD	B	2.0000	-19	4.0000	-14	10.000	-13	20.000	-3	40.000	8	50.000	**32**	100.00	15	200.00	-5
Endosulfan II	B	2.0000	-17	4.0000	-13	10.000	-8	20.000	7	40.000	12	50.000	**33**	100.00	5	200.00	-20
4,4'-DDT	B	2.0000	**-23**	4.0000	-17	10.000	-12	20.000	4	40.000	14	50.000	**38**	100.00	11	200.00	-14
Endrin aldehyde	B	2.0000	-17	4.0000	-14	10.000	-15	20.000	-5	40.000	9	50.000	**29**	100.00	14	200.00	-1
Methoxychlor	B	10.000	**-82**	20.000	**-45**	50.000	-10	100.00	9	200.00	2	250.00	18	500.00	-11	1000.0	**-100**
Endosulfan sulfate	B	2.0000	-17	4.0000	-13	10.000	-13	20.000	-6	40.000	4	50.000	**32**	100.00	17	200.00	-4
TCMX	B	2.0000	-16	4.0000	-12	10.000	-15	20.000	-9	40.000	2	50.000	19	100.00	17	200.00	14
Decachlorobiphenyl	B	2.0000	-10	4.0000	-7	10.000	-9	20.000	-11	40.000	-8	50.000	**22**	100.00	19	200.00	4

MAW 09/04/14 : Corrected automatically drawn baseline in all levels.

MAW 09/04/14 : Adjusted curve fit types and dropped high point for dieldrin (Ch B) to achieve acceptable r^2 and RSD% values

MAW 09/04/14 : delta-BHC is within 30% and grand mean within 15% on Ch B. Okay for 8081

Analyst: MAW Date: 09/04/14 Reviewer: EAH Date: 09/04/14

X=A: Instrument response = a0 + amount * a1 + amount^2 * a2 (invert equation before quantitating); X=R: Instrument amount = a0 + response * a1 + response^2 * a2; AVRG=Average response factor; QUAD=Quadratic regression

CURTIS & TOMPKINS 2ND SOURCE CALIBRATION SUMMARY FOR 261495 PEST Water
EPA 8081A

Inst : GC21 Name : GC21_Pest_246
Calnum : 244354653001 Cal Date : 03-SEP-2014

ICV 244354653028 (246_028 03-SEP-2014) stds: S24661

Analyte	Ch	Spiked	Quant	Units	%D	Max	Flags
alpha-BHC	A	20.00	20.39	pg/uL	2	15	
gamma-BHC	A	20.00	20.11	pg/uL	1	15	
beta-BHC	A	20.00	20.02	pg/uL	0	15	
delta-BHC	A	20.00	21.29	pg/uL	6	15	
Heptachlor	A	20.00	20.22	pg/uL	1	15	
Aldrin	A	20.00	20.10	pg/uL	1	15	
Heptachlor epoxide	A	20.00	20.43	pg/uL	2	15	
gamma-Chlordane	A	20.00	20.72	pg/uL	4	15	
alpha-Chlordane	A	20.00	20.54	pg/uL	3	15	
4,4'-DDE	A	20.00	22.32	pg/uL	12	15	
Endosulfan I	A	20.00	19.63	pg/uL	-2	15	
Dieldrin	A	20.00	21.96	pg/uL	10	15	
Endrin	A	20.00	21.88	pg/uL	9	15	
4,4'-DDD	A	20.00	21.34	pg/uL	7	15	
Endosulfan II	A	20.00	20.82	pg/uL	4	15	
4,4'-DDT	A	20.00	21.75	pg/uL	9	15	
Endrin aldehyde	A	20.00	22.44	pg/uL	12	15	
Methoxychlor	A	200.0	229.5	pg/uL	15	15	
Endosulfan sulfate	A	20.00	21.11	pg/uL	6	15	
alpha-BHC	B	20.00	23.03	pg/uL	15	15	
gamma-BHC	B	20.00	23.01	pg/uL	15	15	
beta-BHC	B	20.00	18.10	pg/uL	-10	15	
delta-BHC	B	20.00	23.71	pg/uL	**19**	15	v+
Heptachlor	B	20.00	22.85	pg/uL	14	15	
Aldrin	B	20.00	22.67	pg/uL	13	15	
Heptachlor epoxide	B	20.00	22.59	pg/uL	13	15	
gamma-Chlordane	B	20.00	22.84	pg/uL	14	15	
alpha-Chlordane	B	20.00	22.69	pg/uL	13	15	
4,4'-DDE	B	20.00	21.13	pg/uL	6	15	
Endosulfan I	B	20.00	21.18	pg/uL	6	15	
Dieldrin	B	20.00	21.95	pg/uL	10	15	
Endrin	B	20.00	19.31	pg/uL	-3	15	
4,4'-DDD	B	20.00	18.18	pg/uL	-9	15	
Endosulfan II	B	20.00	19.76	pg/uL	-1	15	
4,4'-DDT	B	20.00	19.25	pg/uL	-4	15	
Endrin aldehyde	B	20.00	19.68	pg/uL	-2	15	
Methoxychlor	B	200.0	230.8	pg/uL	15	15	
Endosulfan sulfate	B	20.00	18.76	pg/uL	-6	15	
Average EPA 8081A	A	n=21			6	15	
Average EPA 8081A	B	n=21			10	15	

Analyst: MAW Date: 09/04/14 Reviewer: EAH Date: 09/04/14

+=high bias v=ICV

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 261495 PEST Water: EPA 8081A

Inst : GC30
Calnum : 354376355001
Units : pg/uL

Name : GC30_Pest_261
Date : 18-SEP-2014 15:55

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	261_009	354376355009	ISOPEST_1/2	18-SEP-2014 15:55	S25255 (2X)
L2	261_010	354376355010	ISOPEST_1	18-SEP-2014 16:17	S25255
L3	261_011	354376355011	ISOPEST_2	18-SEP-2014 16:39	S25256
L4	261_012	354376355012	ISOPEST_3	18-SEP-2014 17:01	S25257
L5	261_013	354376355013	ISOPEST_4	18-SEP-2014 17:24	S25258
L6	261_014	354376355014	ISOPEST_5	18-SEP-2014 17:46	S25259
L7	261_015	354376355015	ISOPEST_6	18-SEP-2014 18:08	S25260
L8	261_016	354376355016	ISOPEST_7	18-SEP-2014 18:30	S25261

Analyte	Ch	L1	L2	L3	L4	L5	L6	L7	L8	Type	X	a0	a1	a2	Avg	r^2 %RSD	MnR^2	MxRSD	Flg
alpha-BHC	A	1956.0	1979.0	2094.4	2026.8	1883.5	1933.4	2059.4	2064.8	AVRG	R		5.00E-4		1999.7	4	0.990	20	
gamma-BHC	A	1855.0	1870.0	1890.0	1829.5	1743.7	1747.9	1905.5	1888.4	AVRG	R		5.43E-4		1841.2	3	0.990	20	
beta-BHC	A	741.00	715.50	717.80	687.60	641.45	646.12	662.96	680.52	AVRG	R		0.00146		686.62	5	0.990	20	
delta-BHC	A	1960.0	1895.5	1871.6	1809.3	1765.3	1823.4	1945.1	1837.8	AVRG	R		5.37E-4		1863.5	4	0.990	20	
Heptachlor	A	1774.0	1759.0	1765.0	1659.8	1647.2	1709.8	1835.0	1739.0	AVRG	R		5.76E-4		1736.1	4	0.990	20	
Aldrin	A	1861.0	1771.5	1753.2	1701.3	1668.7	1729.3	1838.1	1744.1	AVRG	R		5.69E-4		1758.4	4	0.990	20	
Heptachlor epoxide	A	1706.0	1637.5	1547.8	1503.2	1439.9	1491.5	1574.0	1498.1	AVRG	R		6.45E-4		1549.7	6	0.990	20	
gamma-Chlordane	A		1547.5	1523.0	1450.9	1407.3	1452.8	1566.2	1510.9	AVRG	R		6.69E-4		1494.1	4	0.990	20	
alpha-Chlordane	A	1505.0	1519.0	1444.0	1406.8	1356.6	1381.0	1485.2	1447.7	AVRG	R		6.93E-4		1443.2	4	0.990	20	
4,4'-DDE	A	1553.0	1397.3	1361.1	1358.1	1388.3	1450.7	1412.1	1194.6	AVRG	R		7.20E-4		1389.4	7	0.990	20	
Endosulfan I	A	1542.0	1485.0	1474.2	1430.7	1377.6	1404.9	1473.6	1430.8	AVRG	R		6.89E-4		1452.3	4	0.990	20	
Dieldrin	A	1520.5	1494.8	1507.9	1493.4	1511.6	1572.2	1526.1	1267.3	AVRG	R		6.73E-4		1486.7	6	0.990	20	
Endrin	A	1162.5	1064.3	1080.1	1034.1	1031.9	1050.1	1161.9	1038.1	AVRG	R		9.28E-4		1077.9	5	0.990	20	
4,4'-DDD	A		1134.0	1099.2	1100.2	1091.7	1149.7	1171.0	1024.9	AVRG	R		9.01E-4		1110.1	4	0.990	20	
Endosulfan II	A	1315.5	1235.3	1223.6	1218.1	1221.8	1248.7	1271.3	1117.0	AVRG	R		8.12E-4		1231.4	5	0.990	20	
4,4'-DDT	A	1311.0	1070.3	1058.6	1028.2	1064.0	1145.8	1206.3	1057.5	AVRG	R		8.95E-4		1117.7	9	0.990	20	
Endrin aldehyde	A		1096.8	958.60	990.60	928.23	960.26	1033.9	954.38	AVRG	R		0.00101		988.95	6	0.990	20	
Methoxychlor	A	523.70	478.40	486.34	484.71	496.19	505.54	435.33		AVRG	R		0.00205		487.17	6	0.990	20	
Endosulfan sulfate	A	1139.5	1083.3	1095.8	1048.2	1025.9	1082.2	1169.5	1070.5	AVRG	R		9.18E-4		1089.3	4	0.990	20	
TCMX	A	1115.5	1100.0	1118.0	1057.2	988.30	1018.0	1110.8	1065.8	AVRG	R		9.33E-4		1071.7	5	0.990	20	
Decachlorobiphenyl	A	904.00	885.00	879.40	849.50	838.15	861.62	957.69	964.87	AVRG	R		0.00112		892.53	5	0.990	20	
alpha-BHC	B	1306.0	1292.0	1369.2	1332.9	1572.6	1536.1	2064.3		AVRG	R		6.68E-4		1496.2	18	0.990	20	
gamma-BHC	B	1234.0	1173.5	1284.0	1182.4	1359.1	1383.8	1814.8		AVRG	R		7.42E-4		1347.4	16	0.990	20	
beta-BHC	B	458.00	470.00	452.80	429.90	470.10	465.16	524.76	560.26	AVRG	R		0.00209		478.87	9	0.990	20	
delta-BHC	B	1165.0	1121.0	1168.8	1114.0	1310.2	1304.2	1643.4	1765.6	AVRG	R		7.55E-4		1324.0	19	0.990	20	

Analyte	Ch	L1	L2	L3	L4	L5	L6	L7	L8	Type	X	a0	a1	a2	Avg	r^2 %RSD	MnR^2	MxRSD	Flg
Heptachlor	B	1077.0	1172.0	1232.6	1159.7	1365.4	1433.7	1857.7		AVRG	R		7.53E-4		1328.3	20	0.990	20	
Aldrin	B	1132.0	1179.0	1264.6	1186.7	1399.4	1445.1	1903.1		AVRG	R		7.36E-4		1358.6	20	0.990	20	
Heptachlor epoxide	B	1087.0	1114.0	1079.4	1044.0	1131.0	1187.7	1484.4	1569.4	AVRG	R		8.25E-4		1212.1	17	0.990	20	
gamma-Chlordane	B	1146.0	1090.0	1095.8	1040.7	1156.7	1195.0	1549.5	1662.1	AVRG	R		8.05E-4		1242.0	19	0.990	20	
alpha-Chlordane	B	1077.0	1028.0	1049.4	997.50	1105.0	1140.8	1509.4		AVRG	R		8.85E-4		1129.6	15	0.990	20	
4,4'-DDE	B	924.00	967.00	1030.9	989.60	1200.3	1345.1	1694.7		QUAD	A	-278.17	927.433	7.722251	1164.5	1.000	0.990	20	
Endosulfan I	B	1030.0	1015.5	1033.6	976.20	1083.8	1103.6	1460.6	1579.1	AVRG	R		8.62E-4		1160.3	20	0.990	20	
Dieldrin	B	1281.0	1064.8	1079.5	1068.8	1292.2	1373.3	1710.5	1504.7	AVRG	R		7.71E-4		1296.8	18	0.990	20	
Endrin	B	810.00	734.00	809.10	742.45	869.13	812.52	977.19	817.05	AVRG	R		0.00122		821.43	9	0.990	20	
4,4'-DDD	B	723.50	760.50	800.00	756.80	902.30	1002.2	1313.7		QUAD	A	244.219	647.283	6.648261	894.14	1.000	0.990	20	
Endosulfan II	B	1101.0	889.50	892.70	850.90	1022.7	1070.6	1401.8	1285.4	AVRG	R		9.40E-4		1064.3	19	0.990	20	
4,4'-DDT	B	1458.0	734.50	824.70	758.50	941.93	986.82	1336.8		QUAD	A	989.876	613.997	7.132325	1005.9	1.000	0.990	20	
Endrin aldehyde	B	764.00	602.25	652.20	683.60	749.93	875.34	1115.4		QUAD	A	154.584	568.019	5.470627	777.53	0.999	0.990	20	
Methoxychlor	B	301.90	316.60	364.06	347.30	461.25	443.50	448.69		AVRG	R		0.00261		383.33	17	0.990	20	
Endosulfan sulfate	B	852.00	746.50	773.70	720.45	828.53	858.02	1174.7		AVRG	R		0.00118		850.55	18	0.990	20	
TCMX	B	836.00	793.25	844.00	817.75	928.83	941.86	1307.6		AVRG	R		0.00108		924.18	19	0.990	20	
Decachlorobiphenyl	B		628.75	684.80	622.25	697.35	613.90	1003.7	1193.6	QUAD	A	-2707.6	710.595	2.511258	777.77	0.997	0.990	20	
Average EPA 8081A	A														(n=23)	5		20	
Average EPA 8081A	B														(n=23)	19		20	

Spiked Amounts / Drifts	Ch	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D
alpha-BHC	A	1.0000	-2	2.0000	-1	5.0000	5	10.000	1	20.000	-6	25.000	-3	50.000	3	100.00	3
gamma-BHC	A	1.0000	1	2.0000	2	5.0000	3	10.000	-1	20.000	-5	25.000	-5	50.000	3	100.00	3
beta-BHC	A	1.0000	8	2.0000	4	5.0000	5	10.000	0	20.000	-7	25.000	-6	50.000	-3	100.00	-1
delta-BHC	A	1.0000	5	2.0000	2	5.0000	0	10.000	-3	20.000	-5	25.000	-2	50.000	4	100.00	-1
Heptachlor	A	1.0000	2	2.0000	1	5.0000	2	10.000	-4	20.000	-5	25.000	-2	50.000	6	100.00	0
Aldrin	A	1.0000	6	2.0000	1	5.0000	0	10.000	-3	20.000	-5	25.000	-2	50.000	5	100.00	-1
Heptachlor epoxide	A	1.0000	10	2.0000	6	5.0000	0	10.000	-3	20.000	-7	25.000	-4	50.000	2	100.00	-3
gamma-Chlordane	A			2.0000	4	5.0000	2	10.000	-3	20.000	-6	25.000	-3	50.000	5	100.00	1
alpha-Chlordane	A	1.0000	4	2.0000	5	5.0000	0	10.000	-3	20.000	-6	25.000	-4	50.000	3	100.00	0
4,4'-DDE	A	2.0000	12	4.0000	1	10.000	-2	20.000	-2	40.000	0	50.000	4	100.00	2	200.00	-14
Endosulfan I	A	1.0000	6	2.0000	2	5.0000	2	10.000	-1	20.000	-5	25.000	-3	50.000	1	100.00	-1
Dieldrin	A	2.0000	2	4.0000	1	10.000	1	20.000	0	40.000	2	50.000	6	100.00	3	200.00	-15
Endrin	A	2.0000	8	4.0000	-1	10.000	0	20.000	-4	40.000	-4	50.000	-3	100.00	8	200.00	-4
4,4'-DDD	A			4.0000	2	10.000	-1	20.000	-1	40.000	-2	50.000	4	100.00	5	200.00	-8
Endosulfan II	A	2.0000	7	4.0000	0	10.000	-1	20.000	-1	40.000	-1	50.000	1	100.00	3	200.00	-9
4,4'-DDT	A	2.0000	17	4.0000	-4	10.000	-5	20.000	-8	40.000	-5	50.000	3	100.00	8	200.00	-5
Endrin aldehyde	A			4.0000	11	10.000	-3	20.000	0	40.000	-6	50.000	-3	100.00	5	200.00	-3
Methoxychlor	A	10.000	7	20.000	-2	50.000	0	100.00	-1	200.00	2	250.00	4	500.00	-11		
Endosulfan sulfate	A	2.0000	5	4.0000	-1	10.000	1	20.000	-4	40.000	-6	50.000	-1	100.00	7	200.00	-2
TCMX	A	2.0000	4	4.0000	3	10.000	4	20.000	-1	40.000	-8	50.000	-5	100.00	4	200.00	-1
Decachlorobiphenyl	A	2.0000	1	4.0000	-1	10.000	-1	20.000	-5	40.000	-6	50.000	-3	100.00	7	200.00	8
alpha-BHC	B	1.0000	-13	2.0000	-14	5.0000	-8	10.000	-11	20.000	5	25.000	3	50.000	**38**		
gamma-BHC	B	1.0000	-8	2.0000	-13	5.0000	-5	10.000	-12	20.000	1	25.000	3	50.000	**35**		
beta-BHC	B	1.0000	-4	2.0000	-2	5.0000	-5	10.000	-10	20.000	-2	25.000	-3	50.000	10	100.00	17
delta-BHC	B	1.0000	-12	2.0000	-15	5.0000	-12	10.000	-16	20.000	-1	25.000	-1	50.000	**24**	100.00	**33**
Heptachlor	B	1.0000	-19	2.0000	-12	5.0000	-7	10.000	-13	20.000	3	25.000	8	50.000	**40**		
Aldrin	B	1.0000	-17	2.0000	-13	5.0000	-7	10.000	-13	20.000	3	25.000	6	50.000	**40**		
Heptachlor epoxide	B	1.0000	-10	2.0000	-8	5.0000	-11	10.000	-14	20.000	-7	25.000	-2	50.000	**22**	100.00	**29**
gamma-Chlordane	B	1.0000	-8	2.0000	-12	5.0000	-12	10.000	-16	20.000	-7	25.000	-4	50.000	**25**	100.00	**34**
alpha-Chlordane	B	1.0000	-5	2.0000	-9	5.0000	-7	10.000	-12	20.000	-2	25.000	1	50.000	**34**		
4,4'-DDE	B	2.0000	13	4.0000	8	10.000	5	20.000	-6	40.000	-2	50.000	2	100.00	0		
Endosulfan I	B	1.0000	-11	2.0000	-12	5.0000	-11	10.000	-16	20.000	-7	25.000	-5	50.000	**26**	100.00	**36**
Dieldrin	B	2.0000	-1	4.0000	-18	10.000	-17	20.000	-18	40.000	0	50.000	6	100.00	**32**	200.00	16
Endrin	B	2.0000	-1	4.0000	-11	10.000	-2	20.000	-10	40.000	6	50.000	-1	100.00	19	200.00	-1
4,4'-DDD	B	2.0000	-9	4.0000	4	10.000	8	20.000	-4	40.000	-1	50.000	1	100.00	0		
Endosulfan II	B	2.0000	3	4.0000	-16	10.000	-16	20.000	-20	40.000	-4	50.000	1	100.00	**32**	200.00	**21**
4,4'-DDT	B	2.0000	**52**	4.0000	**-23**	10.000	5	20.000	-5	40.000	2	50.000	0	100.00	0		
Endrin aldehyde	B	2.0000	18	4.0000	-4	10.000	2	20.000	0	40.000	-4	50.000	3	100.00	0		
Methoxychlor	B	10.000	**-21**	20.000	-17	50.000	-5	100.00	-9	200.00	20	250.00	16	500.00	17		
Endosulfan sulfate	B	2.0000	0	4.0000	-12	10.000	-9	20.000	-15	40.000	-3	50.000	1	100.00	**38**		
TCMX	B	2.0000	-10	4.0000	-14	10.000	-9	20.000	-12	40.000	1	50.000	2	100.00	**41**		
Decachlorobiphenyl	B			4.0000	**79**	10.000	**29**	20.000	0	40.000	-5	50.000	-18	100.00	6	200.00	0

MAW 09/19/14 : Dropped various low and high points and adjusted curve fit types to achieve acceptable r^2 and %RSD values

MAW 09/19/14 : Corrected automatically drawn baseline in all levels.

Analyst: MAW Date: 09/22/14 Reviewer: EAH Date: 09/22/14

average ICV drift out (B)

X=A: Instrument response = a0 + amount * a1 + amount^2 * a2 (invert equation before quantitating); X=R: Instrument amount = a0 + response * a1 + response^2 * a2; AVRG=Average response factor; QUAD=Quadratic regression

CURTIS & TOMPKINS 2ND SOURCE CALIBRATION SUMMARY FOR 261495 PEST Water
EPA 8081A

Inst : GC30 Name : GC30_Pest_261
Calnum : 354376355001 Cal Date : 18-SEP-2014

ICV 354376355018 (261_018 18-SEP-2014) stds: S24661

Analyte	Ch	Spiked	Quant	Units	%D	Max	Flags
alpha-BHC	A	20.00	20.38	pg/uL	2	15	
gamma-BHC	A	20.00	20.74	pg/uL	4	15	
beta-BHC	A	20.00	20.08	pg/uL	0	15	
delta-BHC	A	20.00	20.73	pg/uL	4	15	
Heptachlor	A	20.00	20.61	pg/uL	3	15	
Aldrin	A	20.00	19.63	pg/uL	-2	15	
Heptachlor epoxide	A	20.00	20.13	pg/uL	1	15	
gamma-Chlordane	A	20.00	20.46	pg/uL	2	15	
alpha-Chlordane	A	20.00	20.00	pg/uL	0	15	
4,4'-DDE	A	20.00	20.90	pg/uL	5	15	
Endosulfan I	A	20.00	19.04	pg/uL	-5	15	
Dieldrin	A	20.00	20.82	pg/uL	4	15	
Endrin	A	20.00	20.90	pg/uL	4	15	
4,4'-DDD	A	20.00	20.01	pg/uL	0	15	
Endosulfan II	A	20.00	19.93	pg/uL	0	15	
4,4'-DDT	A	20.00	19.85	pg/uL	-1	15	
Endrin aldehyde	A	20.00	20.74	pg/uL	4	15	
Methoxychlor	A	200.0	229.7	pg/uL	15	15	
Endosulfan sulfate	A	20.00	20.91	pg/uL	5	15	
alpha-BHC	B	20.00	24.64	pg/uL	**23**	15	v+
gamma-BHC	B	20.00	24.71	pg/uL	**24**	15	v+
beta-BHC	B	20.00	22.68	pg/uL	13	15	
delta-BHC	B	20.00	21.99	pg/uL	10	15	
Heptachlor	B	20.00	25.05	pg/uL	**25**	15	v+
Aldrin	B	20.00	23.44	pg/uL	**17**	15	v+
Heptachlor epoxide	B	20.00	21.89	pg/uL	9	15	
gamma-Chlordane	B	20.00	21.95	pg/uL	10	15	
alpha-Chlordane	B	20.00	23.18	pg/uL	**16**	15	v+
4,4'-DDE	B	20.00	23.91	pg/uL	**20**	15	v+
Endosulfan I	B	20.00	21.11	pg/uL	6	15	
Dieldrin	B	20.00	20.67	pg/uL	3	15	
Endrin	B	20.00	20.84	pg/uL	4	15	
4,4'-DDD	B	20.00	24.11	pg/uL	**21**	15	v+
Endosulfan II	B	20.00	19.86	pg/uL	-1	15	
4,4'-DDT	B	20.00	23.60	pg/uL	**18**	15	v+
Endrin aldehyde	B	20.00	26.09	pg/uL	**30**	15	v+
Methoxychlor	B	200.0	291.0	pg/uL	**45**	15	v+
Endosulfan sulfate	B	20.00	22.41	pg/uL	12	15	
Average EPA 8081A	A	n=21			3	15	
Average EPA 8081A	B	n=21			**16**	15	av ***

Analyst: MAW Date: 09/19/14 Reviewer: EAH Date: 09/19/14

+=high bias av=average ICV drift out v=ICV

CURTIS & TOMPKINS PERFORMANCE EVALUATION FOR 261495 PEST Water
EPA 8081A

Inst : GC21 Run Name : PEM IDF : 1.0
Seqnum : 244354653016 File : 246_016 Time : 03-SEP-2014 15:42

Standards: S25152

Analyte	Ch	Area	% Breakdown	Limit	Flags
4,4'-DDT	A	79190	1	15	
4,4'-DDE	A	386			
4,4'-DDD	A	477			
Endrin	A	44551	3	15	
Endrin aldehyde	A	456			
Endrin ketone	A	846			
4,4'-DDT	B	337944	1	15	
4,4'-DDE	B	1090			
4,4'-DDD	B	1901			
Endrin	B	120370	12	15	
Endrin aldehyde	B	8916			
Endrin ketone	B	7072			

Analyst: MAW Date: 09/04/14 Reviewer: EAH Date: 09/04/14

CURTIS & TOMPKINS PERFORMANCE EVALUATION FOR 261495 PEST Water
EPA 8081A

Inst : GC21 Run Name : PEM IDF : 1.0
Seqnum : 244404994002 File : 281_002 Time : 08-OCT-2014 06:16

Standards: S25152

Analyte	Ch	Area	% Breakdown	Limit	Flags
4,4'-DDT	A	90394	1	15	
4,4'-DDE	A	265			
4,4'-DDD	A	558			
Endrin	A	50418	3	15	
Endrin aldehyde	A	860			
Endrin ketone	A	811			
4,4'-DDT	B	384924	0	15	
4,4'-DDE	B	470			
4,4'-DDD	B	1006			
Endrin	B	157910	7	15	
Endrin aldehyde	B	6927			
Endrin ketone	B	5268			

Analyst: MAW Date: 10/08/14 Reviewer: EAH Date: 10/16/14

CURTIS & TOMPKINS PERFORMANCE EVALUATION FOR 261495 PEST Water
EPA 8081A

Inst : GC21 Run Name : PEM IDF : 1.0
Seqnum : 244404994006 File : 281_006 Time : 08-OCT-2014 13:14

Standards: S25152

Analyte	Ch	Area	% Breakdown	Limit	Flags
4,4'-DDT	A	89571	1	15	
4,4'-DDE	A	183			
4,4'-DDD	A	502			
Endrin	A	50702	2	15	
Endrin aldehyde	A	467			
Endrin ketone	A	740			
4,4'-DDT	B	396007	0	15	
4,4'-DDE	B	703			
4,4'-DDD	B	1193			
Endrin	B	170562	5	15	
Endrin aldehyde	B	5327			
Endrin ketone	B	3131			

Analyst: MAW Date: 10/08/14 Reviewer: EAH Date: 10/16/14

CURTIS & TOMPKINS PERFORMANCE EVALUATION FOR 261495 PEST Water
EPA 8081A

Inst : GC30 Run Name : PEM IDF : 1.0
Seqnum : 354376355007 File : 261_007 Time : 18-SEP-2014 15:10

Standards: S25152

Analyte	Ch	Area	% Breakdown	Limit	Flags
4,4'-DDT	A	106966	2	15	
4,4'-DDE	A	154			
4,4'-DDD	A	2017			
Endrin	A	53557	9	15	
Endrin aldehyde	A	2140			
Endrin ketone	A	3257			
4,4'-DDT	B	109034	2	15	
4,4'-DDE	B	365			
4,4'-DDD	B	1722			
Endrin	B	41166	14	15	
Endrin aldehyde	B	3234			
Endrin ketone	B	3605			

Analyst: MAW Date: 09/19/14 Reviewer: EAH Date: 09/19/14

CURTIS & TOMPKINS PERFORMANCE EVALUATION FOR 261495 PEST Water
EPA 8081A

Inst : GC30 Run Name : PEM IDF : 1.0
Seqnum : 354404990006 File : 281_006 Time : 08-OCT-2014 09:03

Standards: S25152

Analyte	Ch	Area	% Breakdown	Limit	Flags
4,4'-DDT	A	132001	2	15	
4,4'-DDE	A	332			
4,4'-DDD	A	2255			
Endrin	A	67993	8	15	
Endrin aldehyde	A	2577			
Endrin ketone	A	3487			
4,4'-DDT	B	179043	1	15	
4,4'-DDE	B	180			
4,4'-DDD	B	1266			
Endrin	B	77662	7	15	
Endrin aldehyde	B	2616			
Endrin ketone	B	3043			

Analyst: MAW Date: 10/08/14 Reviewer: EAH Date: 10/08/14

CURTIS & TOMPKINS PERFORMANCE EVALUATION FOR 261495 PEST Water
EPA 8081A

Inst : GC30 Run Name : PEM IDF : 1.0
Seqnum : 354404990012 File : 281_012 Time : 08-OCT-2014 11:58

Standards: S25152

Analyte	Ch	Area	% Breakdown	Limit	Flags
4,4'-DDT	A	120585	3	15	
4,4'-DDE	A	720			
4,4'-DDD	A	2860			
Endrin	A	60213	10	15	
Endrin aldehyde	A	3027			
Endrin ketone	A	3719			
4,4'-DDT	B	179718	4	15	
4,4'-DDE	B	5606			
4,4'-DDD	B	1864			
Endrin	B	77034	7	15	
Endrin aldehyde	B	2919			
Endrin ketone	B	2752			

Analyst: MAW Date: 10/08/14 Reviewer: EAH Date: 10/08/14

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 PEST Water
EPA 8081A

Inst : GC21 Run Name : ISOPEST_3 IDF : 1.0
Seqnum : 244404994003 File : 281_003 Time : 08-OCT-2014 06:38
Cal : 244354653001 Caldate : 03-SEP-2014
Standards: S25257

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
alpha-BHC	A	1785.2	1724.5	10.00	9.660	pg/uL	-3	15	
gamma-BHC	A	1619.9	1715.2	10.00	10.59	pg/uL	6	15	
beta-BHC	A	670.78	704.20	10.00	10.50	pg/uL	5	15	
delta-BHC	A	1518.9	1594.6	10.00	10.50	pg/uL	5	15	
Heptachlor	A	1487.2	1563.0	10.00	10.51	pg/uL	5	15	
Aldrin	A	1515.8	1634.2	10.00	10.78	pg/uL	8	15	
Heptachlor epoxide	A	1338.6	1426.2	10.00	10.65	pg/uL	7	15	
gamma-Chlordane	A	1364.2	1455.4	10.00	10.67	pg/uL	7	15	
alpha-Chlordane	A	1282.9	1378.5	10.00	10.74	pg/uL	7	15	
4,4'-DDE	A	1218.3	1367.2	20.00	22.44	pg/uL	12	15	
Endosulfan I	A	1243.7	1366.7	10.00	10.99	pg/uL	10	15	
Dieldrin	A	1264.6	1437.0	20.00	22.73	pg/uL	14	15	
Endrin	A	1059.8	1159.5	20.00	21.88	pg/uL	9	15	
4,4'-DDD	A	951.11	990.20	20.00	20.82	pg/uL	4	15	
Endosulfan II	A	991.33	1090.6	20.00	22.00	pg/uL	10	15	
4,4'-DDT	A	1004.8	1083.6	20.00	21.57	pg/uL	8	15	
Endrin aldehyde	A	756.61	838.50	20.00	22.16	pg/uL	11	15	
Methoxychlor	A	387.02	449.36	100.0	108.3	pg/uL	8	15	
Endosulfan sulfate	A	889.21	915.75	20.00	20.60	pg/uL	3	15	
TCMX	A	1054.5	1173.2	20.00	22.25	pg/uL	11	15	
Decachlorobiphenyl	A	800.88	708.30	20.00	17.69	pg/uL	-12	15	
alpha-BHC	B	4961.5	4458.4	10.00	8.986	pg/uL	-10	15	
gamma-BHC	B	4639.7	3922.4	10.00	8.454	pg/uL	-15	15	
beta-BHC	B	1640.4	1451.3	10.00	8.847	pg/uL	-12	15	
delta-BHC	B	4348.9	2850.6	10.00	6.555	pg/uL	**-34**	15	c- v+ ***
Heptachlor	B	4810.2	4853.7	10.00	10.09	pg/uL	1	15	
Aldrin	B	4465.4	4288.0	10.00	9.603	pg/uL	-4	15	
Heptachlor epoxide	B	3913.5	3587.0	10.00	9.166	pg/uL	-8	15	
gamma-Chlordane	B	4008.5	3519.7	10.00	8.781	pg/uL	-12	15	
alpha-Chlordane	B	3750.3	3333.2	10.00	8.888	pg/uL	-11	15	
4,4'-DDE	B	3620.4	3078.0	20.00	17.00	pg/uL	-15	15	
Endosulfan I	B	3654.3	3327.6	10.00	9.106	pg/uL	-9	15	
Dieldrin	B	4100.7	5022.6	20.00	24.50	pg/uL	**22**	15	c+ ***
Endrin	B	2154.6	2453.1	20.00	22.77	pg/uL	14	15	
4,4'-DDD	B	2773.8	2097.2	20.00	15.12	pg/uL	**-24**	15	c- ***
Endosulfan II	B	3190.9	3571.6	20.00	22.39	pg/uL	12	15	
4,4'-DDT	B	3061.8	2808.4	20.00	18.34	pg/uL	-8	15	
Endrin aldehyde	B	2502.4	2431.9	20.00	19.44	pg/uL	-3	15	
Methoxychlor	B	1142.2	1413.1	100.0	106.2	pg/uL	6	15	
Endosulfan sulfate	B	2650.4	2472.2	20.00	18.65	pg/uL	-7	15	
TCMX	B	2654.8	1893.9	20.00	14.27	pg/uL	**-29**	15	c-
Decachlorobiphenyl	B	2224.5	2053.8	20.00	18.46	pg/uL	-8	15	
Average EPA 8081A	A	(n=23)					8	15	
Average EPA 8081A	B	(n=23)					13	15	

MAW 10/08/14 : Corrected automatically drawn baseline.

Analyst: MAW Date: 10/08/14 Reviewer: EAH Date: 10/16/14

+=high bias -=low bias c=CCV v=ICV

244404994003

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 PEST Water
EPA 8081A

Inst : GC21 Run Name : ISOPEST_3 IDF : 1.0
Seqnum : 244404994007 File : 281_007 Time : 08-OCT-2014 13:35
Cal : 244354653001 Caldate : 03-SEP-2014
Standards: S25257

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
alpha-BHC	A	1785.2	1607.8	10.00	9.006	pg/uL	-10	15	
gamma-BHC	A	1619.9	1437.1	10.00	8.871	pg/uL	-11	15	
beta-BHC	A	670.78	583.10	10.00	8.693	pg/uL	-13	15	
delta-BHC	A	1518.9	1324.1	10.00	8.717	pg/uL	-13	15	
Heptachlor	A	1487.2	1281.4	10.00	8.616	pg/uL	-14	15	
Aldrin	A	1515.8	1362.8	10.00	8.991	pg/uL	-10	15	
Heptachlor epoxide	A	1338.6	1237.1	10.00	9.242	pg/uL	-8	15	
gamma-Chlordane	A	1364.2	1214.8	10.00	8.905	pg/uL	-11	15	
alpha-Chlordane	A	1282.9	1139.2	10.00	8.880	pg/uL	-11	15	
4,4'-DDE	A	1218.3	1120.4	20.00	18.39	pg/uL	-8	15	
Endosulfan I	A	1243.7	1072.9	10.00	8.627	pg/uL	-14	15	
Dieldrin	A	1264.6	1173.8	20.00	18.56	pg/uL	-7	15	
Endrin	A	1059.8	944.50	20.00	17.82	pg/uL	-11	15	
4,4'-DDD	A	951.11	838.35	20.00	17.63	pg/uL	-12	15	
Endosulfan II	A	991.33	896.95	20.00	18.10	pg/uL	-10	15	
4,4'-DDT	A	1004.8	891.50	20.00	17.75	pg/uL	-11	15	
Endrin aldehyde	A	756.61	760.05	20.00	20.09	pg/uL	0	15	
Methoxychlor	A	387.02	387.60	100.0	91.39	pg/uL	-9	15	
Endosulfan sulfate	A	889.21	769.45	20.00	17.31	pg/uL	-13	15	
TCMX	A	1054.5	986.10	20.00	18.70	pg/uL	-6	15	
Decachlorobiphenyl	A	800.88	604.90	20.00	15.11	pg/uL	**-24**	15	c-
alpha-BHC	B	4961.5	3837.6	10.00	7.735	pg/uL	**-23**	15	c- ***
gamma-BHC	B	4639.7	3848.0	10.00	8.294	pg/uL	**-17**	15	c- ***
beta-BHC	B	1640.4	1446.0	10.00	8.815	pg/uL	-12	15	
delta-BHC	B	4348.9	2887.8	10.00	6.640	pg/uL	**-34**	15	c- v+ ***
Heptachlor	B	4810.2	4895.4	10.00	10.18	pg/uL	2	15	
Aldrin	B	4465.4	4444.1	10.00	9.952	pg/uL	0	15	
Heptachlor epoxide	B	3913.5	3719.1	10.00	9.503	pg/uL	-5	15	
gamma-Chlordane	B	4008.5	5044.6	10.00	12.58	pg/uL	**26**	15	c+ ***
alpha-Chlordane	B	3750.3	3497.1	10.00	9.325	pg/uL	-7	15	
4,4'-DDE	B	3620.4	3428.3	20.00	18.94	pg/uL	-5	15	
Endosulfan I	B	3654.3	3392.4	10.00	9.283	pg/uL	-7	15	
Dieldrin	B	4100.7	5168.7	20.00	25.21	pg/uL	**26**	15	c+ ***
Endrin	B	2154.6	2897.7	20.00	26.90	pg/uL	**34**	15	c+ ***
4,4'-DDD	B	2773.8	2507.0	20.00	18.08	pg/uL	-10	15	
Endosulfan II	B	3190.9	3906.5	20.00	24.48	pg/uL	**22**	15	c+ ***
4,4'-DDT	B	3061.8	3225.9	20.00	21.07	pg/uL	5	15	
Endrin aldehyde	B	2502.4	2696.0	20.00	21.55	pg/uL	8	15	
Methoxychlor	B	1142.2	1733.3	100.0	133.6	pg/uL	**34**	15	c+ ***
Endosulfan sulfate	B	2650.4	2791.4	20.00	21.06	pg/uL	5	15	
TCMX	B	2654.8	1806.0	20.00	13.61	pg/uL	**-32**	15	c-
Decachlorobiphenyl	B	2224.5	2247.9	20.00	20.21	pg/uL	1	15	
Average EPA 8081A	A	(n=23)					11	15	
Average EPA 8081A	B	(n=23)					**16**	15	ac ***

MAW 10/08/14 : Corrected automatically drawn baseline.

Analyst: MAW Date: 10/08/14 Reviewer: EAH Date: 10/16/14

+=high bias -=low bias ac=average CCV drift out c=CCV v=ICV

244404994007

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 PEST Water
EPA 8081A

Inst : GC30 Run Name : ISOPEST_3 IDF : 1.0
Seqnum : 354404990007 File : 281_007 Time : 08-OCT-2014 09:26
Cal : 354376355001 Caldate : 18-SEP-2014
Standards: S25257

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
alpha-BHC	A	1999.7	1979.6	10.00	9.900	pg/uL	-1	15	
gamma-BHC	A	1841.2	1857.3	10.00	10.09	pg/uL	1	15	
beta-BHC	A	686.62	666.20	10.00	9.703	pg/uL	-3	15	
delta-BHC	A	1863.5	1774.1	10.00	9.520	pg/uL	-5	15	
Heptachlor	A	1736.1	1691.3	10.00	9.742	pg/uL	-3	15	
Aldrin	A	1758.4	1774.4	10.00	10.09	pg/uL	1	15	
Heptachlor epoxide	A	1549.7	1546.1	10.00	9.976	pg/uL	0	15	
gamma-Chlordane	A	1494.1	1487.9	10.00	9.959	pg/uL	0	15	
alpha-Chlordane	A	1443.2	1450.0	10.00	10.05	pg/uL	0	15	
4,4'-DDE	A	1389.4	1381.0	20.00	19.88	pg/uL	-1	15	
Endosulfan I	A	1452.3	1452.5	10.00	10.00	pg/uL	0	15	
Dieldrin	A	1486.7	1567.6	20.00	21.09	pg/uL	5	15	
Endrin	A	1077.9	1082.7	20.00	20.09	pg/uL	0	15	
4,4'-DDD	A	1110.1	1081.1	20.00	19.48	pg/uL	-3	15	
Endosulfan II	A	1231.4	1230.2	20.00	19.98	pg/uL	0	15	
4,4'-DDT	A	1117.7	1050.3	20.00	18.79	pg/uL	-6	15	
Endrin aldehyde	A	988.95	1006.2	20.00	20.35	pg/uL	2	15	
Methoxychlor	A	487.17	490.79	100.0	100.7	pg/uL	1	15	
Endosulfan sulfate	A	1089.3	1099.0	20.00	20.18	pg/uL	1	15	
TCMX	A	1071.7	1074.1	20.00	20.04	pg/uL	0	15	
Decachlorobiphenyl	A	892.53	835.30	20.00	18.72	pg/uL	-6	15	
alpha-BHC	B	1496.2	1802.3	10.00	12.05	pg/uL	**20**	15	c+ v+ ***
gamma-BHC	B	1347.4	1638.6	10.00	12.16	pg/uL	**22**	15	c+ v+ ***
beta-BHC	B	478.87	571.20	10.00	11.93	pg/uL	**19**	15	c+ ***
delta-BHC	B	1324.0	1541.4	10.00	11.64	pg/uL	**16**	15	c+ ***
Heptachlor	B	1328.3	1654.0	10.00	12.45	pg/uL	**25**	15	c+ v+ ***
Aldrin	B	1358.6	1605.7	10.00	11.82	pg/uL	**18**	15	c+ v+ ***
Heptachlor epoxide	B	1212.1	1400.7	10.00	11.56	pg/uL	**16**	15	c+ ***
gamma-Chlordane	B	1242.0	1413.4	10.00	11.38	pg/uL	14	15	
alpha-Chlordane	B	1129.6	1354.1	10.00	11.99	pg/uL	**20**	15	c+ v+ ***
4,4'-DDE	B	1164.5	1468.6	20.00	26.24	pg/uL	**31**	15	c+ v+ ***
Endosulfan I	B	1160.3	1325.5	10.00	11.42	pg/uL	14	15	
Dieldrin	B	1296.8	1524.6	20.00	23.51	pg/uL	**18**	15	c+ ***
Endrin	B	821.43	1176.7	20.00	28.65	pg/uL	**43**	15	c+ ***
4,4'-DDD	B	894.14	1159.6	20.00	27.62	pg/uL	**38**	15	c+ v+ ***
Endosulfan II	B	1064.3	1245.7	20.00	23.41	pg/uL	**17**	15	c+ ***
4,4'-DDT	B	1005.9	1219.4	20.00	28.60	pg/uL	**43**	15	c+ v+ ***
Endrin aldehyde	B	777.53	991.65	20.00	27.41	pg/uL	**37**	15	c+ v+ ***
Methoxychlor	B	383.33	630.35	100.0	164.4	pg/uL	**64**	15	c+ v+ ***
Endosulfan sulfate	B	850.55	1073.8	20.00	25.25	pg/uL	**26**	15	c+ ***
TCMX	B	924.18	1078.1	20.00	23.33	pg/uL	**17**	15	c+
Decachlorobiphenyl	B	777.77	1003.9	20.00	29.08	pg/uL	**45**	15	c+
Average EPA 8081A	A	(n=23)					2	15	
Average EPA 8081A	B	(n=23)					**27**	15	ac ***

MAW 10/08/14 : Corrected automatically drawn baseline.

average ICV drift out (B)

Analyst: MAW Date: 10/08/14 Reviewer: EAH Date: 10/08/14

+=high bias ac=average CCV drift out c=CCV v=ICV

354404990007

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 261495 PEST Water
EPA 8081A

Inst : GC30 Run Name : ISOPEST_3 IDF : 1.0
Seqnum : 354404990013 File : 281_013 Time : 08-OCT-2014 12:20
Cal : 354376355001 Caldate : 18-SEP-2014
Standards: S25257

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
alpha-BHC	A	1999.7	2195.4	10.00	10.98	pg/uL	10	15	
gamma-BHC	A	1841.2	1968.8	10.00	10.69	pg/uL	7	15	
beta-BHC	A	686.62	699.90	10.00	10.19	pg/uL	2	15	
delta-BHC	A	1863.5	1884.6	10.00	10.11	pg/uL	1	15	
Heptachlor	A	1736.1	1804.7	10.00	10.40	pg/uL	4	15	
Aldrin	A	1758.4	1889.2	10.00	10.74	pg/uL	7	15	
Heptachlor epoxide	A	1549.7	1631.6	10.00	10.53	pg/uL	5	15	
gamma-Chlordane	A	1494.1	1589.0	10.00	10.64	pg/uL	6	15	
alpha-Chlordane	A	1443.2	1501.4	10.00	10.40	pg/uL	4	15	
4,4'-DDE	A	1389.4	1492.2	20.00	21.48	pg/uL	7	15	
Endosulfan I	A	1452.3	1546.3	10.00	10.65	pg/uL	6	15	
Dieldrin	A	1486.7	1673.2	20.00	22.51	pg/uL	13	15	
Endrin	A	1077.9	1237.7	20.00	22.96	pg/uL	15	15	
4,4'-DDD	A	1110.1	1192.3	20.00	21.48	pg/uL	7	15	
Endosulfan II	A	1231.4	1313.4	20.00	21.33	pg/uL	7	15	
4,4'-DDT	A	1117.7	1146.3	20.00	20.51	pg/uL	3	15	
Endrin aldehyde	A	988.95	1060.1	20.00	21.44	pg/uL	7	15	
Methoxychlor	A	487.17	561.84	100.0	115.3	pg/uL	15	15	
Endosulfan sulfate	A	1089.3	1144.8	20.00	21.02	pg/uL	5	15	
TCMX	A	1071.7	1127.9	20.00	21.05	pg/uL	5	15	
Decachlorobiphenyl	A	892.53	909.40	20.00	20.38	pg/uL	2	15	
alpha-BHC	B	1496.2	1913.9	10.00	12.79	pg/uL	**28**	15	c+ v+ ***
gamma-BHC	B	1347.4	1730.9	10.00	12.85	pg/uL	**28**	15	c+ v+ ***
beta-BHC	B	478.87	577.20	10.00	12.05	pg/uL	**21**	15	c+ ***
delta-BHC	B	1324.0	1671.6	10.00	12.63	pg/uL	**26**	15	c+ ***
Heptachlor	B	1328.3	1748.7	10.00	13.16	pg/uL	**32**	15	c+ v+ ***
Aldrin	B	1358.6	1710.3	10.00	12.59	pg/uL	**26**	15	c+ v+ ***
Heptachlor epoxide	B	1212.1	1508.8	10.00	12.45	pg/uL	**24**	15	c+ ***
gamma-Chlordane	B	1242.0	1523.6	10.00	12.27	pg/uL	**23**	15	c+ ***
alpha-Chlordane	B	1129.6	1444.0	10.00	12.78	pg/uL	**28**	15	c+ v+ ***
4,4'-DDE	B	1164.5	1579.0	20.00	27.88	pg/uL	**39**	15	c+ v+ ***
Endosulfan I	B	1160.3	1408.6	10.00	12.14	pg/uL	**21**	15	c+ ***
Dieldrin	B	1296.8	1641.7	20.00	25.32	pg/uL	**27**	15	c+ ***
Endrin	B	821.43	1288.9	20.00	31.38	pg/uL	**57**	15	c+ ***
4,4'-DDD	B	894.14	1241.5	20.00	29.22	pg/uL	**46**	15	c+ v+ ***
Endosulfan II	B	1064.3	1330.4	20.00	25.00	pg/uL	**25**	15	c+ ***
4,4'-DDT	B	1005.9	1303.7	20.00	30.23	pg/uL	**51**	15	c+ v+ ***
Endrin aldehyde	B	777.53	1060.1	20.00	28.97	pg/uL	**45**	15	c+ v+ ***
Methoxychlor	B	383.33	680.94	100.0	177.6	pg/uL	**78**	15	c+ v+ ***
Endosulfan sulfate	B	850.55	1133.0	20.00	26.64	pg/uL	**33**	15	c+ ***
TCMX	B	924.18	1125.7	20.00	24.36	pg/uL	**22**	15	c+
Decachlorobiphenyl	B	777.77	1031.0	20.00	29.71	pg/uL	**49**	15	c+
Average EPA 8081A	A	(n=23)					7	15	
Average EPA 8081A	B	(n=23)					**34**	15	ac ***

MAW 10/08/14 : Corrected automatically drawn baseline.

average ICV drift out (B)

Analyst: MAW Date: 10/08/14 Reviewer: EAH Date: 10/08/14

+=high bias ac=average CCV drift out c=CCV v=ICV

354404990013

Logbooks & Sequences

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 244354653

Instrument : GC21 Begun : 09/03/14 06:53
Method : EPA 8081A SOP Version : pesticides_rv17

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	246_001	X	HEX			09/03/14 06:53	1.0		
002	246_002	PEM	PEM			09/03/14 07:15	1.0	1	
003	246_003	CCV	ISOPEST_3			09/03/14 07:37	1.0	2	
004	246_004	BLANK	QC755958	Soil	215004	09/03/14 10:01	1.0		>ac
005	246_005	LCS	QC755959	Soil	215004	09/03/14 10:23	1.0		>ac
006	246_006	SAMPLE	260290-001	Water	214906	09/03/14 10:45	10.0		high NT
007	246_007	SAMPLE	260290-002	Water	214906	09/03/14 11:07	10.0		high NT
008	246_008	SAMPLE	260290-001	Water	214906	09/03/14 11:29	3.0		high NT
009	246_009	SAMPLE	260290-002	Water	214906	09/03/14 11:51	3.0		high NT
010	246_010	PEM	PEM			09/03/14 12:24	1.0	1	
011	246_011	CCV	ISOPEST_3			09/03/14 12:46	1.0	2	ac
012	246_012	CCV	ISOPEST_2			09/03/14 13:34	1.0	3	ac
013	246_013	X	HEX			09/03/14 14:36	1.0		
014	246_014	X	HEX			09/03/14 14:58	1.0		
015	246_015	X	HEX			09/03/14 15:20	1.0		
016	246_016	PEM	PEM			09/03/14 15:42	1.0	1	
017	246_017	IB	CALIB			09/03/14 16:03	1.0		
018	246_018	ICAL	ISOPEST_1/2			09/03/14 16:25	1.0	4	
019	246_019	ICAL	ISOPEST_1			09/03/14 16:47	1.0	4	
020	246_020	ICAL	ISOPEST_2			09/03/14 17:09	1.0	3	
021	246_021	ICAL	ISOPEST_3			09/03/14 17:31	1.0	2	
022	246_022	ICAL	ISOPEST_4			09/03/14 17:53	1.0	5	
023	246_023	ICAL	ISOPEST_5			09/03/14 18:15	1.0	6	
024	246_024	ICAL	ISOPEST_6			09/03/14 18:36	1.0	7	
025	246_025	ICAL	ISOPEST_7			09/03/14 18:58	1.0	8	
026	246_026	X	HEX			09/03/14 19:20	1.0		
027	246_027	X	PEST_ICV			09/03/14 19:42	1.0	9	
028	246_028	ICV	PEST_ICV			09/03/14 20:04	1.0	9	
029	246_029	CCV	CHLOR_150			09/03/14 20:26	1.0	10	
030	246_030	CCV	TOX_1000			09/03/14 20:48	1.0	11	
031	246_031	X	HEX			09/03/14 21:10	1.0		

MAW 09/04/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 31.

Standards used: 1=S25152 2=S25257 3=S25256 4=S25255 5=S25258 6=S25259 7=S25260 8=S25261 9=S24661 10=S25097 11=S25526

Flags used: >=closing ac=average CCV drift out

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 244404994

Instrument : GC21 Begun : 10/08/14 05:54
Method : EPA 8081A SOP Version : pesticides_rv17

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	281_001	X	HEX			10/08/14 05:54	1.0		
002	281_002	PEM	PEM			10/08/14 06:16	1.0	1	
003	281_003	CCV	ISOPEST_3			10/08/14 06:38	1.0	2	
004	281_004	SAMPLE	261466-007	Water	216181	10/08/14 12:07	1.0		>ac
005	281_005	SAMPLE	261495-001	Water	216181	10/08/14 12:28	1.0		>ac
006	281_006	PEM	PEM			10/08/14 13:14	1.0	1	
007	281_007	CCV	ISOPEST_3			10/08/14 13:35	1.0	2	ac

MAW 10/08/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 7.

Standards used: 1=S25152 2=S25257

Flags used: >=closing ac=average CCV drift out

Page 1 of 1

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 354376355

Instrument : GC30 Begun : 09/18/14 08:35
Method : EPA 8081A SOP Version : pesticides_rv17

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	261_001	X	HEX			09/18/14 08:35	1.0		
002	261_002	PEM	PEM			09/18/14 08:57	1.0	1	
003	261_003	CCV	ISOPEST_3			09/18/14 09:20	1.0	2	ac arsd
004	261_004	X	HEX			09/18/14 14:03	1.0		
005	261_005	X	HEX			09/18/14 14:25	1.0		
006	261_006	X	HEX			09/18/14 14:48	1.0		
007	261_007	PEM	PEM			09/18/14 15:10	1.0	1	
008	261_008	IB	CALIB			09/18/14 15:32	1.0		
009	261_009	ICAL	ISOPEST_1/2			09/18/14 15:55	1.0	3	
010	261_010	ICAL	ISOPEST_1			09/18/14 16:17	1.0	3	
011	261_011	ICAL	ISOPEST_2			09/18/14 16:39	1.0	4	
012	261_012	ICAL	ISOPEST_3			09/18/14 17:01	1.0	2	
013	261_013	ICAL	ISOPEST_4			09/18/14 17:24	1.0	5	
014	261_014	ICAL	ISOPEST_5			09/18/14 17:46	1.0	6	
015	261_015	ICAL	ISOPEST_6			09/18/14 18:08	1.0	7	
016	261_016	ICAL	ISOPEST_7			09/18/14 18:30	1.0	8	
017	261_017	X	HEX			09/18/14 18:53	1.0		
018	261_018	ICV	PEST_ICV			09/18/14 19:15	1.0	9	
019	261_019	X	ICV			09/18/14 19:37	1.0	9	
020	261_020	CCV	CHLOR_150			09/18/14 20:00	1.0	10	
021	261_021	CCV	TOX_1000			09/18/14 20:22	1.0	11	
022	261_022	X	HEX			09/18/14 20:44	1.0		

MAW 09/19/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 22.

Standards used: 1=S25152 2=S25257 3=S25255 4=S25256 5=S25258 6=S25259 7=S25260 8=S25261 9=S24661 10=S25097 11=S25526

Flags used: ac=average CCV drift out arsd=average ICAL %RSD out

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 354404990

Instrument : GC30 Begun : 10/08/14 05:50
Method : EPA 8081A SOP Version : pesticides_rv17

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	281_001	X	HEX			10/08/14 05:50	1.0		
002	281_002	PEM	PEM			10/08/14 06:13	1.0	1	
003	281_003	CCV	ISOPEST_3			10/08/14 06:35	1.0	2	av ac
004	281_004	LOD	200799-035	Soil	214271	10/08/14 08:19	1.0		eh av >ac <ac
005	281_005	LOD	200799-036	Soil	214271	10/08/14 08:41	1.0		eh av >ac <ac
006	281_006	PEM	PEM			10/08/14 09:03	1.0	1	
007	281_007	CCV	ISOPEST_3			10/08/14 09:26	1.0	2	av ac
008	281_008	BLANK	QC760707	Water	216181	10/08/14 10:21	1.0		av >ac <ac
009	281_009	BS	QC760708	Water	216181	10/08/14 10:43	1.0		av >ac <ac
010	281_010	BSD	QC760709	Water	216181	10/08/14 11:05	1.0		av >ac <ac
011	281_011	SAMPLE	261434-001	Water	216181	10/08/14 11:27	1.0		
012	281_012	PEM	PEM			10/08/14 11:58	1.0	1	
013	281_013	CCV	ISOPEST_3			10/08/14 12:20	1.0	2	av ac

MAW 10/08/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 7.

MAW 10/08/14 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 8 through 13.

Standards used: 1=S25152 2=S25257

Flags used: <=opening >=closing ac=average CCV drift out av=average ICV drift out eh=out of extract hold

SAMPLE PREPARATION SUMMARY

Batch # : 216181
Started By : ARW
Method : 3520C
Spike #1 ID : S25506

Prep Date : 07-OCT-2014 14:15
SOP Version : 8081_3520_rv22
Spike #2 ID : S25359

Analysis : 8081
Finished By : ETP
Units : mL

Sample	Stype	Matrix	Initial	Final	Clean DF	Prep DF	pH	Sp 1 Vol	Sp 2 Vol	Sp 3 Vol	Clean Method	Analysis	Comments
261434-001		Water	1040	10	1	0.009615	7	.8				608-PEST	See comment 1 below
261466-007		Water	1060	10	1	0.009434	7	.4				8081	
261495-001		Water	1040	10	1	0.009615	7	.4				8081	
261515-005		Water	900	10	1	0.01111	7	.8				8081	See comment 2 below
261515-006		Water	900	10	1	0.01111	7	.8				8081	See comment 3 below
261515-007		Water	1000	10	1	0.01	7	.8				8081	See comment 3 below
261516-014		Water	1020	10	1	0.009804	7	.8				8081	See comment 3 below
261521-001		Water	1020	10	1	0.009804	7	.8				8081	See comment 3 below
QC760707	BLANK	Water	1000	10	1	0.01		.4				8081	
QC760708	BS	Water	1000	10	1	0.01		.4	.2			8081	
QC760709	BSD	Water	1000	10	1	0.01		.4	.2			8081	

Comment 1: Prepped 07-OCT-2014 14:30; soil syringe used
Comment 2: Prepped 08-OCT-2014 14:00; soil syringe used, May be slightly above 10 mL.
Comment 3: Prepped 08-OCT-2014 14:00; soil syringe used

MAW 10/08/14 : Matrix spikes were not performed for this analysis in batch 216181 due to insufficient sample amount.

Analyst: MAW Date: 10/08/14 Reviewer: EAH Date: 10/08/14

Pesticides (8081 & 608) Water Prep Log Curtis & Tompkins, Ltd.

BK 3535 Page: 40

LIMS Batch No: 261681

Date Extracted: 10/7/2014

Extraction Method:
☑ EPA 3520c cont. L/L
☐ _____

Cleanup Method (if needed):
☐ EPA 3620b Florisil
☐ _____

Sample #	Container ID	Volume of Sample (mL)	Sample pH	Final Volume (mL)	Cleanup (x if needed)	Comments
~~261491-001~~	K		☐7 ☑1	☐ ~~10.0~~ ☐		~~HCl preserved~~
261466-007	J	10 60	☑7 ☐	☑ 10.0 ☐		
261495-001	O	10 40	☑7 ☐	☑ 10.0 ☐		
MB QC760707	N/A	1000	☐7 ☑ ~~N~~	☑ 10.0 ☐		
BS	8	1000	☐7 ☑ ~~N~~	☑ 10.0 ☐		
BSD	9	1000	☐7 ☑ ~~N~~	☑ 10.0 ☐		
261434-001	O	1040	☑7 ☐	☑ 10.0 ☐		pH @ 1430
261515-005	I	900	☑7 ☐	☑ 10.0 ☐		pH @ 1400 10-8-14 may be slightly
6	J	900	☑7 ☐	☑ 10.0 ☐		used soil syringe ARG 10.9
7	J	1000	☑7 ☐	☑ 10.0 ☐		
261516-014	J	1020	☑7 ☐	☑ 10.0 ☐		Sediment
261521-001	K	1020	☑7 ☐	☑ 10.0 ☐		
			☐7 ☐	☐ 10.0 ☐		
			☐7 ☐	☐ 10.0 ☐		
			☐7 ☐	☐ 10.0 ☐		
			☐7 ☐	☐ 10.0 ☐		
			☐7 ☐	☐ 10.0 ☐		
			☐7 ☐	☐ 10.0 ☐		
			☐7 ☐	☐ 10.0 ☐		
			☐7 ☐	☐ 10.0 ☐		
			☐7 ☐	☐ 10.0 ☐		
			☐7 ☐	☐ 10.0 ☐		
			☐7 ☐	☐ 10.0 ☐		
			☐7 ☐	☐ 10 ☐		MAW 10/9/14

	Mfg & Lot# / LIMS # / Time	Date/ Initi
0.4 mL of surrogate solution was added to all samples	~~255068~~ 255068	~~Apr 10/7~~
0.2 mL of matrix spiking solution was added to all spikes	253591B	
☑ EPA 3520c: Samples continuously extracted with about 450 mL of CH_2Cl_2	EM 54094	
Extraction Start Time:	1415 / 1430 / 1400	
Extraction End Time:	0815 / 0830 / 0800	ETP 10/8
☐ EPA 3510c: Samples were extracted 3 times with 60 mL of CH_2Cl_2	N/A	
Extracts filtered through baked, CH_2Cl_2 rinsed granular Na_2SO_4	EMWL231	
Exchanged 2x with Hexane	EM 94168	
Concentrated to final volumes as noted above at temperature (degrees C)	100	
Clean-up (if necessary): ☐ GPC (see GPC run log) ☐ Florisil	N/A	
Extracts relinquished to the Pesticide Group	✓	

10/7/2014

Extraction Chemist **Date**

Contined from Page _____
Continued on Page _____

10/8/14 for rushes

Reviewed by **Date**

Pestic

BK 35

LIMS

Date

Sample

261

261

261

261

261

MB

BS

BSD

REPORTING SUMMARY FOR 261495 PEST Water

Sample ID	Analyte	Inst ID	Ch	Date & Time
261495-001	alpha-BHC	GC21	A	10/08/14 12:28
261495-001	beta-BHC	GC21	A	10/08/14 12:28
261495-001	gamma-BHC	GC21	A	10/08/14 12:28
261495-001	delta-BHC	GC21	A	10/08/14 12:28
261495-001	Heptachlor	GC21	A	10/08/14 12:28
261495-001	Aldrin	GC21	A	10/08/14 12:28
261495-001	Heptachlor epoxide	GC21	A	10/08/14 12:28
261495-001	Endosulfan I	GC21	A	10/08/14 12:28
261495-001	Dieldrin	GC21	A	10/08/14 12:28
261495-001	4,4'-DDE	GC21	A	10/08/14 12:28
261495-001	Endrin	GC21	A	10/08/14 12:28
261495-001	Endosulfan II	GC21	A	10/08/14 12:28
261495-001	Endosulfan sulfate	GC21	A	10/08/14 12:28
261495-001	4,4'-DDD	GC21	A	10/08/14 12:28
261495-001	Endrin aldehyde	GC21	A	10/08/14 12:28
261495-001	4,4'-DDT	GC21	A	10/08/14 12:28
261495-001	alpha-Chlordane	GC21	A	10/08/14 12:28
261495-001	gamma-Chlordane	GC21	A	10/08/14 12:28
261495-001	Methoxychlor	GC21	A	10/08/14 12:28
261495-001	Toxaphene	GC21	A	10/08/14 12:28
261495-001	TCMX	GC21	A	10/08/14 12:28
261495-001	Decachlorobiphenyl	GC21	A	10/08/14 12:28
QC760707	alpha-BHC	GC30	A	10/08/14 10:21
QC760707	beta-BHC	GC30	A	10/08/14 10:21
QC760707	gamma-BHC	GC30	A	10/08/14 10:21
QC760707	delta-BHC	GC30	A	10/08/14 10:21
QC760707	Heptachlor	GC30	A	10/08/14 10:21
QC760707	Aldrin	GC30	A	10/08/14 10:21
QC760707	Heptachlor epoxide	GC30	A	10/08/14 10:21
QC760707	Endosulfan I	GC30	A	10/08/14 10:21
QC760707	Dieldrin	GC30	A	10/08/14 10:21
QC760707	4,4'-DDE	GC30	A	10/08/14 10:21
QC760707	Endrin	GC30	A	10/08/14 10:21
QC760707	Endosulfan II	GC30	A	10/08/14 10:21
QC760707	Endosulfan sulfate	GC30	A	10/08/14 10:21
QC760707	4,4'-DDD	GC30	A	10/08/14 10:21
QC760707	Endrin aldehyde	GC30	A	10/08/14 10:21
QC760707	4,4'-DDT	GC30	A	10/08/14 10:21
QC760707	alpha-Chlordane	GC30	A	10/08/14 10:21
QC760707	gamma-Chlordane	GC30	A	10/08/14 10:21
QC760707	Methoxychlor	GC30	A	10/08/14 10:21
QC760707	Toxaphene	GC30	A	10/08/14 10:21
QC760707	TCMX	GC30	A	10/08/14 10:21
QC760707	Decachlorobiphenyl	GC30	A	10/08/14 10:21
QC760708	gamma-BHC	GC30	A	10/08/14 10:43
QC760708	Heptachlor	GC30	A	10/08/14 10:43
QC760708	Aldrin	GC30	A	10/08/14 10:43
QC760708	Dieldrin	GC30	A	10/08/14 10:43
QC760708	Endrin	GC30	A	10/08/14 10:43
QC760708	4,4'-DDT	GC30	A	10/08/14 10:43
QC760708	TCMX	GC30	A	10/08/14 10:43
QC760708	Decachlorobiphenyl	GC30	A	10/08/14 10:43

REPORTING SUMMARY FOR 261495 PEST Water

Sample ID	Analyte	Inst ID	Ch	Date & Time
QC760709	gamma-BHC	GC30	A	10/08/14 11:05
QC760709	Heptachlor	GC30	A	10/08/14 11:05
QC760709	Aldrin	GC30	A	10/08/14 11:05
QC760709	Dieldrin	GC30	A	10/08/14 11:05
QC760709	Endrin	GC30	A	10/08/14 11:05
QC760709	4,4'-DDT	GC30	A	10/08/14 11:05
QC760709	TCMX	GC30	A	10/08/14 11:05
QC760709	Decachlorobiphenyl	GC30	A	10/08/14 11:05

Laboratory Job Number 261495

ANALYTICAL REPORT

Wet Chemistry

Matrix: Water

Curtis & Tompkins, Ltd.

Hydrocarbon Oil & Grease (SGT-HEM)

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	METHOD
Project#:	PAVILLION	Analysis:	EPA 1664A
Analyte:	Hydrocarbon Oil & Grease	Sampled:	10/06/14 15:15
Field ID:	FB-1-10062014	Received:	10/07/14
Matrix:	Water	Prepared:	10/28/14 11:30
Units:	mg/L	Analyzed:	10/28/14 15:00
Batch#:	216878		

Type	Lab ID	Result	RL	Diln Fac
SAMPLE	261495-001	ND	10.9	2.174
BLANK	QC763454	J ND	5.00	1.000

J= Estimated value
ND= Not Detected
RL= Reporting Limit

34.0

Curtis & Tompkins, Ltd.

Batch QC Report

Hydrocarbon Oil & Grease (SGT-HEM)

Lab #:	261495	Location:	Pavillion, WY
Client:	Acton Mickelson Environmental	Prep:	METHOD
Project#:	PAVILLION	Analysis:	EPA 1664A
Analyte:	Hydrocarbon Oil & Grease	Batch#:	216878
Field ID:	ZZZZZZZZZZ	Sampled:	10/20/14 11:35
MSS Lab ID:	261846-001	Received:	10/20/14
Matrix:	Water	Prepared:	10/28/14 11:30
Units:	mg/L	Analyzed:	10/28/14 15:00

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac
LCS	QC763455		20.00	16.90	84	64-132			1.000
MS	QC763456	<4.715	20.00	5.900	30 *	54-142			1.000
MSD	QC763457		20.00	14.16	72	54-142	82 *	44	0.9900

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins Laboratories Sample Batch Report

Batch Number: 216878
Date Started: 28-OCT-2014
Batched by : Michael Borscheid

Analysis : 1664S
Bgroup : N/A
Department : Wet Chemistry

Sample	Type		Client	Matrix	Analyses	Due Date
261495-001			Acton Mickelson En	Water	1664S	21-OCT-2014
261845-001			Polymatrix	Water	1664S	24-OCT-2014
261845-002			Polymatrix	Water	1664S	24-OCT-2014
261846-001			Polymatrix	Water	1664S	24-OCT-2014
261847-001			Polymatrix	Water	1664S	24-OCT-2014
261932-001			Weiss Associates	Water	1664S	28-OCT-2014
261932-002			Weiss Associates	Water	1664S	28-OCT-2014
QC763454	BLANK			Water	1664S	
QC763455	LCS			Water	1664S	
QC763456	MS	of 261846-001		Water	1664S	
QC763457	MSD	of 261846-001		Water	1664S	

Analysis:	**Hexane Extractable Material (Petroleum)**					Analyst:	MB3
Method:	**EPA 1664A**					Prep Date:	10/28/14
Matrix:	Water		RPD	Recovery Limits		Analysis Date:	10/28/14
Silica Gel:	**Yes**	LCS/ BS/ BSD	34	64 - 132		Batch #:	216878
SOP#:	1664_rv8.doc	SDUP/MS/ MSD	44	54 - 142			

Note: RPD calculation includes correction for different spiking levels.

BATCH QC

Sample	Sample Vol (mL)	Pan Mass (g)	Total Mass (g)	Residue Mass (g)	Dil'n Factor (1000/vol)	**Report** (mg/L)	Reporting Limit (mg/L)	Spike Value (g)	**Recovery,%**	**RPD,%**
MB	1000	6.3492	6.3507	0.0015	1.000	1.500 **J**	5.00			
LCS	1000	6.4478	6.4647	0.0169	1.000	16.900	5.00	0.0200	84	
261846-001	1060	6.3475	6.3516	0.0041	0.943	ND	4.72			
MS	1000	6.3965	6.4024	0.0059	1.000	5.900	5.00	0.0200	30 *	
MSD	1010	6.3426	6.3569	0.0143	0.990	14.158	4.95	0.0198	72	83 *

SAMPLES	Vs (mL)	Pan (g)	Total (g)	Residue (g)	**DF (1000/Vs)**	**Report (mg/L)**	RL (mg/L)
261495-001	460	6.3474	6.3482	0.0008	2.174	ND	10.87
261845-001	1060	6.2779	6.2810	0.0031	0.943	ND	4.72
261845-002	1040	6.3189	6.3220	0.0031	0.962	ND	4.81
261846-001	1060	6.3475	6.3518	0.0043	0.943	ND	4.72
261847-001	1050	6.4153	6.4638	0.0485	0.952	46.190	4.76
261932-001	1050	6.3146	6.3196	0.0050	0.952	ND	4.76
261932-002	1060	6.3625	6.3644	0.0019	0.943	ND	4.72

Oil Grease (H.E.M.) Benchbook EPA 1664A Curtis & Tompkins, Ltd.

Hexane Manufacturer & Lot# —
Extraction Disc Lot#: —
LIMS Batch #: 216878
Matrix: Water

Spike Std LIMS S#: —
Spike Std Conc (mg/L): —
Date: 10/28/14
Time: 11:30
Benchbook#: BK3618
Page: 10

Hexane Manufacturer & Lot# EMD 54108
Extraction Disc Lot#: XM40306
Silica Gel Cleanup Used (Y / N): Y
Silica Gel Manufacturer & Lot# EMD TH0242EMS

Spike Std LIMS S#: 519500
Spike Std Conc (mg/L): 4000
Volume Spike Std Used (mL): 5.0
Into Final Vol (mL): 1000
Final Spike Conc (mg/L): 20

Sample #	Container ID	pH	Sample Vol (mL)	Mass (g)	Mass (g)*	Mass (g)*	Comments
Blank		☑<2	1000	6.3492	6.3508	6.3507	
BS or LCS		☑<2	1000	6.4478	6.4646	6.4647	WB3 10/28/14
~~BSD~~ MS	A	☑<2	1000	~~6.3965~~	6.4023	6.4024	~~6.3960~~ initial weight = 6.396
MSD	B	☑<2	1010	6.3426	6.3573	6.3569	Some extracted sample lost, possible low spike recov
261845-001	A	☑<2	1060	6.2779	6.2811	6.2810	
↓ 2	A	☑<2	1040	6.3189	6.3221	6.3220	
261846-001	C	☑<2	1060	6.3475	6.3603	6.3518	MSS, 6.3516
261847-001	C	☑<2	1050	6.4153	6.5130	6.4638	6.4639
261932-001	I	☑<2	1050	6.3146 WB3 10/28/14	6.3146	6.3195	6.3196
↓ 2	✓	☑<2	1060	6.3625	6.3999	6.3643	6.3644
261495-001	K	☑<2	460	6.3474	6.3485	6.3482	pH adjusted<2
		□<2					
		□<2					
		□<2					
		□<2					
		□<2					
		□<2					
		□<2					
		□<2					
		□<2					
		□<2					
		□<2					
		□<2					
		□<2					
		□<2					
		□<2					
		□<2					

WB3 10/28/14

* Constant weight must be within ± 0.0005g from previous reading.

Weight Set Number: 35298

	Opening Wt.	Ending Wt.	Limits
500 mg	0.5000	0.4999	(0.4975 to 0.5025 g)
5 g	4.9997	4.9996	(4.975 to 5.025 g)
20 g	19.9984	19.9989	(19.9000 to 20.1000 g)

Balance: Wet 03

10/28/14
Analyst / Date

10-29-14
Reviewed by / Date

Laboratory Job Number 261495

ANALYTICAL REPORT

Subcontracted Products

Laboratory Job Number 261495

Subcontracted Products

APPL

908 North Temperance Ave. ∇ Clovis, CA 93611 ∇ Phone 559-275-2175 ∇ Fax 559-275-4422

Certification Number: CA1312
NELAP Certification number: CA00046
DoD-ELAP Certificate number: 74807

Summary Report

November 3, 2014

Curtis & Tompkins Ltd.
2323 5th Street
Berkeley, California 94710.

Attn: Will S. Rice

Title: Report of Data: Case 74531

Project: 261495 Pavillion, WY

Dear Mr. Rice:

One water sample was received October 8, 2014, at 3.0°C. Written results for the requested analyses are provided on this November 3, 2014.

Results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

If you have any questions or require further information, please contact your APPL Project Manager, Cynthia Clark, cclark@applinc.com at your convenience. Thank you for choosing APPL, Inc.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. These test results meet all requirements of NELAC. Release of the hard copy has been authorized by the Laboratory Manager or her designee, as verified by the following signature.

Sharon Dehmlow, Laboratory Director
APPL, Inc.

SD/ab
Enclosure
cc: File

Number of pages in this report: 41

T:\Case Narratives\Curtis & Tompkins\74531 Rice Pavillion.doc

Summary Package

for

261495 Pavillion, WY

ARF 74531

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SAMPLE RECEIPT INFORMATION

Sample receipt information

ARF: 74531

Project: 261495 Pavillion, WY

Sample Receipt Information:

The sample was received on October 8, 2014, at 3.0°C. The sample group was assigned Analytical Request Form (ARF) number 74531. The sample numbers and requested analyses were compared to the chain of custody. No exception was encountered.

Sample Table

CLIENT ID	APPL ID	Matrix	Date Sampled	Date Received
FB-1-10062014	AZ04096	WATER	10/06/14	10/08/14

The sample and blanks were screened for J-value responses between the method detection limit (MDL) and practical quantitation limit (PQL).

CASE NARRATIVE

EPA Method 507
Organophosphorous / Triazine Pesticides

Sample Preparation:

The water sample was extracted according to EPA method 507. All holding times were met.

Sample Analysis Information:

The sample was analyzed according to the method using an Agilent Gas Chromatograph equipped with an NPD. All holding times were met.

Quality Control/Assurance:

Calibrations:

Initial and continuing calibrations were performed according to the method. All method criteria were met.

Blanks:

No target compound was detected above the method detection limit in the method blank.

Spikes:

A Laboratory Control Spike (LCS) was used for quality assurance. All spike recoveries were acceptable.

No sample was designated by the client for MS/MSD analysis.

Surrogates:

Surrogate recoveries are summarized on the form 2 & 8. All surrogate recoveries were acceptable.

Summary:

No other problem was encountered. The data generated are acceptable.

EPA method 8141A
Organophosphorous Compounds

Sample Preparation:

The water sample was extracted according to EPA method 3510C. All holding times were met.

Sample Analysis Information:

The sample was analyzed for Organophosphorous compounds according to EPA method 8141A using an Agilent GC equipped with an NPD. The instrument stopped before the closing CCV. The instrument was restarted with the reported CCV.

Quality Control/Assurance

Spike Recovery

A Laboratory Control Spike (LCS) was used for quality assurance. All spike recoveries met acceptance criteria.

No sample was designated by the client for MS/MSD analysis.

Method blanks

No target compound was detected at or above the method detection level.

Surrogates

Surrogate recoveries are summarized on the form 2 & 8. All surrogate recoveries were within the control limits.

Calibration

The initial and continuing calibrations were performed according to the method. All calibration acceptance criteria were met.

Summary:

No other problem was encountered. The data generated are acceptable.

CHAIN OF CUSTODY,
ARF, CRF, AND
CLIENT COMMUNICATION

APPL - Analysis Request Form 74531

Client: **Curtis & Tompkins Ltd.**
Address: **2323 5th Street**
Berkeley, CA 94710
Attn: **Will S. Rice**
Phone: **510-486-0900** Fax: **510-486-0532**
Job: **261495 Pavillion, WY**
PO #: **NA**
Chain of Custody (Y/N): **Y** # **100714**
RAD Screen (Y/N): **Y** pH (Y/N): **N**
Turn Around Type: **STD**

Received by: **YL**
Date Received: **10/08/14** Time: **10:00**
Delivered by: **FED EX**
Shuttle Custody Seals (Y/N): **N** Time Zone: **-6**
Chest Temp(s): **3.0°C**
Color: **I-PurpleRed**
Samples Chilled until Placed in Refrig/Freezer: **Y**
Project Manager: **Cynthia Clark**
QC Report Type: **DVP3/ERPIMS/WY**
Due Date: **10/29/14**

Comments:
Please e-mail pdf of report to will.rice@ctberk.com
ERPIMS enhanced EDD
PDF via e-mail only, no Hard Copy needed.
Forms: self Calc F1s with J to MDL

Sample Distribution:
GC: 1-$507, 1-$814LL
Extractions: 1-_SEP007, 1-_SEP025

Charges:

Invoice To:

	Client ID	APPL ID	Sampled	Analyses Requested
1.	FB-1-10062014	AZ04096W	10/06/14 15:15	$507, $814LL

Note: All times, excluding sample collection times, are Pacific Time Zone unless noted otherwise. Collection times are in: -6 UTC

APPL Sample Receipt Form

ARF# **74531**

Sample	Container Type	Count	pH
AZ04096	17 Amber Liter	2	na

Sample	Container Type	Count	pH

Printed 10/08/14 10:45:38 AM

74531
3.0
YL 10/8/14

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900
(510) 486-0532

Project Number: 261495
Site: Pavillion, WY

Subcontract Laboratory:
APPL
908 N. Temperance Ave.
Clovis, CA 93611
(559) 275-2175
ATTN: Cynthia Clark

Results due: Report Level: III

Please send report to: Will S Rice (will.rice@ctberk.com)
*** Please report using Sample ID rather than C&T Lab #.

Sample ID	Sampled	Matrix	Analysis	C&T Lab #	Comments
FB-1-10062014	10/06 15:15	Water	507	261495-001	
FB-1-10062014	10/06 15:15	Water	8141	261495-001	

Notes:	Relinquished By:	Received By:
	[signature]	Yang Fan
	Date/Time: 10/07/14 @ 1510	Date/Time: 10/8/14 @ 10:00
	Date/Time:	Date/Time:

Signature on this form constitutes a firm Purchase Order for the services requested above.

Page 1 of 1

COOLER RECEIPT FORM

ARF: 74531

1) Project: 261495 Pavillion, WY Date Received: 10/08/14

2) Coolers: Number of Coolers: 1

3) No Were custody seals present and intact?
How many? 0 Name/Date on seal? _____

4) YES Was there a shipping slip? Carrier name: FED EX

5) Type of packing in cooler: X bubble wrap ___ popcorn ___ foam ___ plastic bags
X wet ice ___ dry ice ___ no ice ___ other

6) YES Were cooler temperatures acceptable?

7) Serial number of certified NIST thermometer use A39267

8) Cooler temp(s): In °C

1: 3.0	2:	3:	4:	5:	6:
7:	8:	9:	10:	11:	12:

Chain of custody:

9) YES Was a chain of custody received?

10) YES Were the custody papers complete/signed in the appropriate places?

Sample Labels:

11) YES Were all sample labels complete (sample ID, date/time of sampling, etc.)?

12) YES Did all container labels agree with custody papers?

Sample Containers:

13) YES Were all containers sealed in separate bags?

14) YES Did all containers arrive in good condition:(unbroken, no leakage, no cracked/broken lids)?

15) YES Were correct containers and preservatives used for the tests indicated?

16) YES Was a sufficient amount of sample sent for tests indicated?

17) NA Were bubbles present in volatile samples?
If yes, the following were received with air bubbles:
Larger than a pea: _____
Smaller than a pea: _____

Preservation Hold time:

18) Yes Was a sufficient amount of holding time remaining to analyze the samples?

19) NA Was the pH taken of all non-VOA preserved samples and written on the sample container?

20) NA Was the pH of acid preserved non-VOA samples < 2?

21) NA Was the pH of sodium hydroxide preserved samples for Cyanide > 12 and Sulfide >9?

22) NO Were unpreserved VOA Vials received?

23) NA Are unpreserved VOA vials noted in the ADD TEST FIELD on the ARF?
pH strip lot number: _____
Lab notified if pH was not adequate: _____

Notes/Deficiencies:

Personnel receiving samples: BB Second reviewer: YC
Personnel labeling samples: _____
Project manager notified: _____ Date/Time of notification _____
Name of client notified: _____ Date/Time of notification _____

EPA METHOD 507
OP/Triazine Pesticides

APPL, INC.

EPA METHOD 507
OP/Triazine Pesticides

QC Summary

APPL, INC.

Method Blank

EPA 507 OP/TRIAZINE PESTICIDES

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **141009W-04096 - 191260**
Batch ID: #507-141009A

Sample Type	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
BLANK	ALACHLOR	Not detected	0.5	0.30	ug/L	10/9/2014	10/15/2014
BLANK	ATRAZINE	Not detected	0.5	0.06	ug/L	10/9/2014	10/15/2014
BLANK	BROMACIL	Not detected	0.5	0.34	ug/L	10/9/2014	10/15/2014
BLANK	BUTACHLOR	Not detected	0.38	0.282	ug/L	10/9/2014	10/15/2014
BLANK	DEMETON (TOTAL)	Not detected	0.5	0.07	ug/L	10/9/2014	10/15/2014
BLANK	DIAZINON	Not detected	0.25	0.160	ug/L	10/9/2014	10/15/2014
BLANK	DIMETHOATE	Not detected	0.5	0.09	ug/L	10/9/2014	10/15/2014
BLANK	DISULFOTON	Not detected	0.5	0.04	ug/L	10/9/2014	10/15/2014
BLANK	METOLACHLOR	Not detected	0.5	0.21	ug/L	10/9/2014	10/15/2014
BLANK	METRIBUZIN	Not detected	0.5	0.14	ug/L	10/9/2014	10/15/2014
BLANK	MEVINPHOS	Not detected	0.5	0.22	ug/L	10/9/2014	10/15/2014
BLANK	MOLINATE	Not detected	0.5	0.13	ug/L	10/9/2014	10/15/2014
BLANK	PROMETON	Not detected	0.5	0.07	ug/L	10/9/2014	10/15/2014
BLANK	PROMETRYN	Not detected	0.5	0.06	ug/L	10/9/2014	10/15/2014
BLANK	PRONAMIDE	Not detected	0.5	0.27	ug/L	10/9/2014	10/15/2014
BLANK	SIMAZINE	Not detected	0.5	0.07	ug/L	10/9/2014	10/15/2014
BLANK	SIMETRYN	Not detected	0.5	0.07	ug/L	10/9/2014	10/15/2014
BLANK	TERBUTRYN	Not detected	0.5	0.07	ug/L	10/9/2014	10/15/2014
BLANK	THIOBENCARB	Not detected	0.5	0.06	ug/L	10/9/2014	10/15/2014
BLANK	SURROGATE: TRIBUTYLPHOSPHATE	90.4	70-130		%	10/9/2014	10/15/2014
BLANK	SURROGATE: TRIPHENYLPHOSPHA	85.8	70-130		%	10/9/2014	10/15/2014

Quant Method:5071015.M
Run #:1015014
Instrument:Opie
Sequence:141015
Initials:LA

GC SC-Blank-REG MDLs
Printed: 10/28/2014 2:34:07 PM

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc.
Case No: 74531
Matrix: WATER

SDG No: 74531
Date Analyzed: 10/15/2014
Instrument: Opie

APPL ID.	Client Sample No.	SURROGATE: TRIBUTYLPHOSPHATE (S)			SURROGATE: TRIPHENYLPHOSPHATE (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
141009A-BLK	Blank	70-130	90.4		70-130	85.8	
141009A-LCS	Lab Control Spike	70-130	127		70-130	122	
AZ04096	FB-1-10062014	70-130	97.2		70-130	91.4	

Comments: Batch: #507-141009A

Laboratory Control Spike Recovery
EPA 507 OP/TRIAZINE PESTICIDES

APPL ID: **141009W-04096 LCS - 191260**
Batch ID: #507-141009A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits
ALACHLOR	2.50	2.89	116	67-125
ATRAZINE	2.50	2.15	86.0	64-120
BROMACIL	2.50	2.91	116	64-118
BUTACHLOR	2.50	2.16	86.4	67-125
DEMETON (TOTAL)	2.50	2.43	97.2	53-102
DIAZINON	2.50	2.97	119	81-150
DIMETHOATE	2.50	2.28	91.2	62-115
DISULFOTON	2.50	2.10	84.0	62-116
METOLACHLOR	2.50	2.87	115	65-121
METRIBUZIN	2.50	2.19	87.6	71-131
MEVINPHOS	2.50	3.01	120	67-124
MOLINATE	2.50	2.78	111	69-127
PROMETON	2.50	2.19	87.6	55-101
PROMETRYN	2.50	2.19	87.6	65-121
PRONAMIDE	2.50	2.22	88.8	64-118
SIMAZINE	2.50	2.90	116	70-130
SIMETRYN	2.50	2.96	118	69-129
TERBUTRYN	2.50	2.91	116	66-122
THIOBENCARB	2.50	2.16	86.4	60-111
SURROGATE: TRIBUTYLPHOSPHATE (	2.50	3.18	127	70-130
SURROGATE: TRIPHENYLPHOSPHATE	2.50	3.04	122	70-130

Comments: _____

Primary	SPK
Quant Method :	5071015.M
Extraction Date :	10/9/2014
Analysis Date :	10/16/2014
Instrument :	Opie
Run :	1015015
Initials :	LA

Printed: 10/28/2014 2:34:00 PM
APPL Standard LCS

EPA 507

Form 4

Blank Summary

Lab Name: APPL, Inc.
Case No: 74531
Matrix: WATER
Blank ID: 141009A-BLK

SDG No: 74531
Date Analyzed: 10/15/2014
Instrument: Opie
Time Analyzed: 2331

APPL ID.	Client Sample No.	File ID.	Date Analyzed
141009A-BLK	Blank	1015014	10/15/2014 2331
141009A-LCS	Lab Control Spike	1015015	10/16/2014 0005
AZ04096	FB-1-10062014	1015017	10/16/2014 0111

Comments: Batch: #507-141009A

Printed: 10/28/2014 2:33:54 PM
Form 4, Blank Summary

EPA METHOD 507
OP/Triazine Pesticides

Sample Data

EPA 507 OP/TRIAZINE PESTICIDES

Curtis & Tompkins Ltd.
2323 5th Street
Berkeley, CA 94710

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Will S. Rice
Project: 261495 Pavillion, WY
Sample ID: FB-1-10062014
Sample Collection Date: 10/6/2014

ARF: 74531
APPL ID: AZ04096
QCG: #507-141009A-191260

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 507	ALACHLOR	Not detected	0.5	0.30	ug/L	10/09/14	10/16/14
EPA 507	ATRAZINE	Not detected	0.5	0.06	ug/L	10/09/14	10/16/14
EPA 507	BROMACIL	Not detected	0.5	0.34	ug/L	10/09/14	10/16/14
EPA 507	BUTACHLOR	Not detected	0.38	0.282	ug/L	10/09/14	10/16/14
EPA 507	DEMETON (TOTAL)	Not detected	0.5	0.07	ug/L	10/09/14	10/16/14
EPA 507	DIAZINON	Not detected	0.25	0.160	ug/L	10/09/14	10/16/14
EPA 507	DIMETHOATE	Not detected	0.5	0.09	ug/L	10/09/14	10/16/14
EPA 507	DISULFOTON	Not detected	0.5	0.04	ug/L	10/09/14	10/16/14
EPA 507	METOLACHLOR	Not detected	0.5	0.21	ug/L	10/09/14	10/16/14
EPA 507	METRIBUZIN	Not detected	0.5	0.14	ug/L	10/09/14	10/16/14
EPA 507	MEVINPHOS	Not detected	0.5	0.22	ug/L	10/09/14	10/16/14
EPA 507	MOLINATE	Not detected	0.5	0.13	ug/L	10/09/14	10/16/14
EPA 507	PROMETON	Not detected	0.5	0.07	ug/L	10/09/14	10/16/14
EPA 507	PROMETRYN	Not detected	0.5	0.06	ug/L	10/09/14	10/16/14
EPA 507	PRONAMIDE	Not detected	0.5	0.27	ug/L	10/09/14	10/16/14
EPA 507	SIMAZINE	Not detected	0.5	0.07	ug/L	10/09/14	10/16/14
EPA 507	SIMETRYN	Not detected	0.5	0.07	ug/L	10/09/14	10/16/14
EPA 507	TERBUTRYN	Not detected	0.5	0.07	ug/L	10/09/14	10/16/14
EPA 507	THIOBENCARB	Not detected	0.5	0.06	ug/L	10/09/14	10/16/14
EPA 507	SURROGATE: TRIBUTYLPHOSPHAT	97.2	70-130		%	10/09/14	10/16/14
EPA 507	SURROGATE: TRIPHENYLPHOSPHA	91.4	70-130		%	10/09/14	10/16/14

Quant Method: 5071015.M
Run #: 1015017
Instrument: Opie
Sequence: 141015
Dilution Factor: 1
Initials: LA

Printed: 11/3/2014 9:30:06 AM
APPL-F1-SC-NoMC-REG MDLs

EPA METHOD 507
OP/Triazine Pesticides

Calibration Data

APPL, INC.

Organophosphate Analysis by
5071015

Form 6
Initial Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No: 74531
Initial Cal. Date: 10/15/2014
Instrument: Opie

Initials: LAC

		Compound	1015008.D	1015009.D	1015010.D	1015011.D	1015012.D	1015013.D					Avg	%RSD		
			1	2	3	4	5	6								
36	MB	Mevinphos #2	17170	18784	23722	20173	21171	20581					20267	11	MB	
37	MB	Molinate #2	4940	3210	3481	3050	3313	3341					3556	19	MB	
38	SB	Tributyl Phosphate #2	30180	25576	29173	23700	24018	23228					25979	11	SB	
39	MB	Demeton-O #2	11014	8023	9836	8342	8970	9074					9210	12	MB	
40	MBQ	Demeton-S #2	6827	54067	67042	55121	56091	55585					49122	43	MBQ	0.990
41	MA	Prometon #2	5540	3916	4686	4261	4771	4768					4657	12	MA	
42	MAL	Pronamide #2	3540	1030	937	907	852	833					1350	80	MAL	0.999
43	MB	Diazinon #2	25000	23100	25868	21193	22320	22010					23248	7.8	MB	
44	MA	Atrazine #2	6460	4990	5848	5473	5994	6152					5819	9.0	MA	
45	MB	Simazine #2	4210	2982	4303	3959	4628	4640					4120	15	MB	
46	MA	Disulfoton #2	26920	21634	25022	21100	21600	20834					22852	11	MA	
47	MA	Dimethoate #2	28440	22974	28175	24515	25410	24929					25741	8.4	MA	
48	MB	Alachlor #2	7640	4532	5743	5234	5461	5751					5727	18	MB	
49	MA	Prometryn #2	4060	3804	4514	4017	4398	4310					4184	6.4	MA	
50	MB	Simetryn #2	7640	4532	5743	5234	5461	5751					5727	18	MB	
51	MB	Terbutryn #2	4930	4026	4479	4117	4415	4426					4399	7.2	MB	
52	MA	Metribuzin #2	3350	2384	2863	2499	2779	2772					2774	12	MA	
53	MB	Metolachlor #2		1020	809	736	809	867					848	13	MB	
54	MA	Thiobencarb #2	2970	2040	2592	2360	2494	2558					2502	12	MA	
55	MBL	Bromacil #2	9860	4026	4479	4117	4415	4426					5221	44	MBL	0.999
56	MAL	Butachlor #2	3000	1328	871	811	857	866					1289	67	MAL	0.998
57	SB	Triphenyl Phosphate #2	16600	14804	19591	16154	16727	16386					16710	9.4	SB	
58																
59																
60																
61																
62																
63																
64																
65																
66																
67																
68																
69																
70																

12.748981

Organophosphate Analysis by
5071015

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: 0

SDG No: 74531
Date Analyzed: 10/16/2014
Instrument: Opie
Cal. Date: 10/15/2014
Data File: 1015027,28.D

		Compound	MEAN	CCRF	%D		%Drift
41	MA	Prometon	4657	4748	2.0	MA	
42	MAL	Pronamide	1350	857	36	MAL	1.1
43	MA	Atrazine	5819	6045	3.9	MA	
44	MA	Disulfoton	22852	24329	6.5	MA	
45	MA	Dimethoate	25741	27671	7.5	MA	
46	MA	Prometryn	4184	4548	8.7	MA	
47	MA	Metribuzin	2774	2885	4.0	MA	
48	MA	Thiobencarb	2502	2601	3.9	MA	
49	MAL	Butachlor	1289	924	28	MAL	7.0
1	MB	Mevinphos	20267	22726	12	MB	
2	MB	Molinate	3556	3471	2.4	MB	
3	SB	Tributyl Phosphate	25979	25344	2.4	SB	
4	MB	Demeton-O	9210	9741	5.8	MB	
5	MBQ	Demeton-S	49122	60347	23	MBQ	6.9
6	MB	Diazinon	23248	23976	3.1	MB	
7	MB	Simazine	4120	4658	13	MB	
8	MB	Alachlor	5727	5772	0.78	MB	
9	MB	Simetryn	5727	5772	0.78	MB	
10	MB	Terbutryn	4399	4637	5.4	MB	
11	MB	Metolachlor	848	911	7.4	MB	
12	MBL	Bromacil	5221	4637	11	MBL	6.0
13	SB	Triphenyl Phosphate	16710	18375	10	SB	
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
		Average			9.0		

EPA METHOD 507
OP/Triazine Pesticides

Raw Data

APPL, INC.

_SEP007

Organic Extraction Worksheet

Method	507/508 Extraction in GC Extract	Extraction Set	141009A	Extraction Method	SEP007	Units	mL

Spiked ID 1	507A Std 9-4-14 EXP 1-4-15		Surrogate ID 1	OCL/OP Water Surrogate 9-26-14 EXP 12-26-14	
Spiked ID 2	507-B Std. W/ Surr. 7-22-14 EXP 1-4-15		Surrogate ID 2		
Spiked ID 3			Surrogate ID 3		
Spiked ID 4			Surrogate ID 4		
Spiked ID 5			Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	NO	
Spiked ID 7			Ext. Start Time:	10/09/14 10:20	
Spiked ID 8			Ext. End Time:	10/09/14 13:35	
			GC Requires Extract By:	10/29/14 0:00	

pH1			Water Bath Temp Criteria	79 °C
pH2				
pH3				

Spiked By: KY **Date** 10/09/14 **Witnessed By:** DL **Date** 10/09/14

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	141009A Blk				0.5	1 equip	1000 E-WB6	5	7	10/09/14 10:20	
2	141009A LCS-1		0.5	1	0.5	1 equip	1000 E-WB6	5	7	10/09/14 10:20	
3	141009A LCS-2		0.5	2	NA	NA equip	1000 E-WB6	5	7	10/09/14 10:20	
4	AZ04096	AZ04096W01			0.5	1 equip	1000 E-WB6	5	7	10/09/14 10:20	74531

KLS 10/9/14

Solvent and Lot#	
MC	54128
Na2SO4	WH22G
MTBE	53339
NaCl	WJ11D
Phosphate Buffer	9-29-14
Filter Paper	400038

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	LH
Date	10/10/14
Time	8:15
Refrigerator	Hobart

	Technician's Initials
Scanned By	KY
Sample Preparation	KY
Extraction	KY
Concentration	IC

Modified	10/09/14 1:01:26 PM

Reviewed By: KLS **Date** 10/9/14

Ext_ID 25 45416

10/09/14 4:02:15 PM

Injection Log

Directory: G:\OPIE\DATA\141015

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	2	1015002.D	1	507A 10/1000 10/15/14	MIX(A)	10-15-14 16:51:43
2	3	1015003.D	1	507A 50/1000 10/15/14	MIX(A)	10-15-14 17:25:10
3	4	1015004.D	1	507A 20/100 10/15/14	MIX(A)	10-15-14 17:58:29
4	5	1015005.D	1	507A 100/200 10/15/14	MIX(A)	10-15-14 18:31:55
5	6	1015006.D	1	507A 70/100 10/15/14	MIX(A)	10-15-14 19:05:14
6	7	1015007.D	1	507A 100/100 10/15/14	MIX(A)	10-15-14 19:38:38
7	8	1015008.D	1	507B 10/1000 10/15/14	MIX(B)	10-15-14 20:11:54
8	9	1015009.D	1	507B 50/1000 10/15/14	MIX(B)	10-15-14 20:45:17
9	10	1015010.D	1	507B 20/100 10/15/14	MIX(B)	10-15-14 21:18:34
10	11	1015011.D	1	507B 100/200 10/15/14	MIX(B)	10-15-14 21:51:58
11	12	1015012.D	1	507B 70/100 10/15/14	MIX(B)	10-15-14 22:25:15
12	13	1015013.D	1	507B 100/100 10/15/14	MIX(B)	10-15-14 22:58:39
13	14	1015014.D	5	141009A BLK 5/1000	water	10-15-14 23:31:52
14	15	1015015.D	5	141009A LCS-1 5/1000	water	10-16-14 0:05:12
15	16	1015016.D	5	141009A LCS-2 5/1000	water	10-16-14 0:38:25
16	17	1015017.D	5	AZ04096W01 5/1000	water	10-16-14 1:11:44
17	27	1015027.D	1	507A 100/200 10/15/14	MIX(A)	10-16-14 12:20:06
18	28	1015028.D	1	507B 100/200 10/15/14	MIX(B)	10-16-14 12:53:24

EPA METHOD 8141A
Organophosphorous Compounds

APPL, INC.

EPA METHOD 8141A
Organophosphorous Compounds

QC Summary

APPL, INC.

Method Blank

EPA 8141A OP Pesticide Water Low

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **141009W-04096 - 191415**
Batch ID: #814LL-141009A

Sample Type	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
BLANK	AZINPHOSMETHYL	Not detected	1.0	0.02	ug/L	10/9/2014	10/30/2014
BLANK	BOLSTAR	Not detected	0.10	0.072	ug/L	10/9/2014	10/30/2014
BLANK	CHLORPYRIFOS (DURSBAN)	Not detected	0.05	0.003	ug/L	10/9/2014	10/30/2014
BLANK	COUMAPHOS	Not detected	0.20	0.130	ug/L	10/9/2014	10/30/2014
BLANK	DEF	Not detected	0.10	0.084	ug/L	10/9/2014	10/30/2014
BLANK	DEMETON (TOTAL)	Not detected	0.20	0.080	ug/L	10/9/2014	10/30/2014
BLANK	DIAZINON	Not detected	0.05	0.004	ug/L	10/9/2014	10/30/2014
BLANK	DICHLORVOS	Not detected	0.20	0.020	ug/L	10/9/2014	10/30/2014
BLANK	DIMETHOATE	Not detected	0.10	0.080	ug/L	10/9/2014	10/30/2014
BLANK	DISULFOTON	Not detected	0.10	0.020	ug/L	10/9/2014	10/30/2014
BLANK	EPN	Not detected	0.10	0.030	ug/L	10/9/2014	10/30/2014
BLANK	EPTC	Not detected	0.10	0.030	ug/L	10/9/2014	10/30/2014
BLANK	ETHION	Not detected	0.10	0.030	ug/L	10/9/2014	10/30/2014
BLANK	ETHOPROP	Not detected	0.10	0.024	ug/L	10/9/2014	10/30/2014
BLANK	FENSULFOTHION	Not detected	0.50	0.160	ug/L	10/9/2014	10/30/2014
BLANK	FENTHION	Not detected	0.10	0.020	ug/L	10/9/2014	10/30/2014
BLANK	MALATHION	Not detected	0.10	0.030	ug/L	10/9/2014	10/30/2014
BLANK	MERPHOS	Not detected	0.10	0.060	ug/L	10/9/2014	10/30/2014
BLANK	MEVINPHOS	Not detected	0.70	0.072	ug/L	10/9/2014	10/30/2014
BLANK	NALED	Not detected	0.50	0.200	ug/L	10/9/2014	10/30/2014
BLANK	PARATHION, ETHYL	Not detected	0.10	0.020	ug/L	10/9/2014	10/30/2014
BLANK	PARATHION, METHYL	Not detected	0.10	0.075	ug/L	10/9/2014	10/30/2014
BLANK	PHORATE	Not detected	0.10	0.072	ug/L	10/9/2014	10/30/2014
BLANK	PROWL (PENDIMETHALIN)	Not detected	0.10	0.041	ug/L	10/9/2014	10/30/2014
BLANK	RONNEL	Not detected	0.10	0.030	ug/L	10/9/2014	10/30/2014
BLANK	STIROPHOS	Not detected	0.10	0.060	ug/L	10/9/2014	10/30/2014
BLANK	SULFOTEP	Not detected	0.10	0.020	ug/L	10/9/2014	10/30/2014
BLANK	TOKUTHION	Not detected	0.10	0.022	ug/L	10/9/2014	10/30/2014
BLANK	TRICHLORONATE	Not detected	0.10	0.050	ug/L	10/9/2014	10/30/2014
BLANK	TRIFLURALIN	Not detected	0.05	0.036	ug/L	10/9/2014	10/30/2014
BLANK	SURROGATE: TRIBUTYLPHOSPHATE	103	65-145		%	10/9/2014	10/30/2014
BLANK	SURROGATE: TRIPHENYLPHOSPHA	97.0	57-125		%	10/9/2014	10/30/2014

Quant Method: OPF1029.M
Run #: 1029026
Instrument: Opie
Sequence: 141029
Initials: LA

GC SC-Blank-REG MDLs
Printed: 11/3/2014 9:13:20 AM

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc.
Case No: 74531
Matrix: WATER

SDG No: 74531
Date Analyzed: 10/30/2014
Instrument: Opie

APPL ID.	Client Sample No.	SURROGATE: TRIBUTYLPHOSPHATE (S)			SURROGATE: TRIPHENYLPHOSPHATE (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
141009A-BLK	Blank	65-145	103		57-125	97.0	
141009A-LCS	Lab Control Spike	65-145	92.4		57-125	93.6	
AZ04096	FB-1-10062014	65-145	92.3		57-125	92.8	

Comments: Batch: #814LL-141009A

Laboratory Control Spike Recovery
EPA 8141A OP Pesticide Water Low

APPL ID: **141009W-04096 LCS - 191415**
Batch ID: #814LL-141009A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits
AZINPHOSMETHYL	2.50	2.39	95.6	12-169
BOLSTAR	5.00	4.39	87.8	33-149
CHLORPYRIFOS (DURSBAN)	2.50	2.19	87.6	66-105
COUMAPHOS	2.50	2.18	87.2	27-166
DEF	5.00	4.51	90.2	64-146
DEMETON (TOTAL)	2.50	3.18	127	10-184
DIAZINON	2.50	2.13	85.2	63-116
DICHLORVOS	5.00	7.95	159	10-189
DIMETHOATE	2.50	2.11	84.4	30-150
DISULFOTON	2.50	2.08	83.2	46-120
EPN	2.50	2.32	92.8	35-169
EPTC	2.50	1.77	70.8	27-136
ETHION	2.50	2.28	91.2	47-137
ETHOPROP	2.50	2.19	87.6	54-142
FENSULFOTHION	2.50	2.38	95.2	15-179
FENTHION	2.50	2.23	89.2	29-144
MALATHION	2.50	2.81	112	39-147
MERPHOS	5.00	4.51	90.2	45-155
MEVINPHOS	2.50	2.39	95.6	13-183
NALED	5.00	7.95	159	0-182
PARATHION, ETHYL	2.50	2.20	88.0	35-138
PARATHION, METHYL	2.50	2.19	87.6	33-136
PHORATE	2.50	2.22	88.8	24-136
PROWL (PENDIMETHALIN)	2.50	2.16	86.4	43-151
RONNEL	2.50	2.23	89.2	48-134
STIROPHOS	2.50	2.32	92.8	34-168
SULFOTEP	2.50	2.18	87.2	59-124
TOKUTHION	2.50	2.17	86.8	49-140
TRICHLORONATE	2.50	2.18	87.2	37-143
TRIFLURALIN	2.50	1.87	74.8	42-123
SURROGATE: TRIBUTYLPHOSPHATE (	2.50	2.31	92.4	65-145

Primary	SPK
Quant Method :	OPF1029.M
Extraction Date :	10/9/2014
Analysis Date :	10/30/2014
Instrument :	Opie
Run :	1029027
Initials :	LA

Comments: _____

Printed: 11/3/2014 9:13:14 AM
APPL Standard LCS

Laboratory Control Spike Recovery
EPA 8141A OP Pesticide Water Low

APPL ID: **141009W-04096 LCS - 191415**
Batch ID: #814LL-141009A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/L	SPK Result ug/L	SPK % Recovery	Recovery Limits
SURROGATE: TRIPHENYLPHOSPHATE	2.50	2.34	93.6	57-125

Comments: _____

Primary	SPK
Quant Method :	OPF1029.M
Extraction Date :	10/9/2014
Analysis Date :	10/30/2014
Instrument :	Opie
Run :	1029027
Initials :	LA

Printed: 11/3/2014 9:13:14 AM
APPL Standard LCS

EPA 8141A

Form 4

Blank Summary

Lab Name: APPL, Inc.
SDG No: 74531
Case No: 74531
Date Analyzed: 10/30/2014
Matrix: WATER
Instrument: Opie
Blank ID: 141009A-BLK
Time Analyzed: 1431

APPL ID.	Client Sample No.	File ID.	Date Analyzed
141009A-BLK	Blank	1029026	10/30/2014 1431
141009A-LCS	Lab Control Spike	1029027	10/30/2014 1505
AZ04096	FB-1-10062014	1029028	10/30/2014 1538

Comments: Batch: #814LL-141009A

Printed: 11/3/2014 9:13:07 AM
Form 4, Blank Summary

EPA METHOD 8141A
Organophosphorous Compounds

Sample Data

APPL, INC.

EPA 8141A OP Pesticide Water Low

Curtis & Tompkins Ltd.
2323 5th Street
Berkeley, CA 94710

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Will S. Rice
Project: 261495 Pavillion, WY
Sample ID: FB-1-10062014
Sample Collection Date: 10/6/2014

ARF: 74531
APPL ID: AZ04096
QCG: #814LL-141009A-191415

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8141A	AZINPHOSMETHYL	Not detected	1.0	0.02	ug/L	10/09/14	10/30/14
EPA 8141A	BOLSTAR	Not detected	0.10	0.072	ug/L	10/09/14	10/30/14
EPA 8141A	CHLORPYRIFOS (DURSBAN)	Not detected	0.05	0.003	ug/L	10/09/14	10/30/14
EPA 8141A	COUMAPHOS	Not detected	0.20	0.130	ug/L	10/09/14	10/30/14
EPA 8141A	DEF	Not detected	0.10	0.084	ug/L	10/09/14	10/30/14
EPA 8141A	DEMETON (TOTAL)	Not detected	0.20	0.080	ug/L	10/09/14	10/30/14
EPA 8141A	DIAZINON	Not detected	0.05	0.004	ug/L	10/09/14	10/30/14
EPA 8141A	DICHLORVOS	Not detected	0.20	0.020	ug/L	10/09/14	10/30/14
EPA 8141A	DIMETHOATE	Not detected	0.10	0.080	ug/L	10/09/14	10/30/14
EPA 8141A	DISULFOTON	Not detected	0.10	0.020	ug/L	10/09/14	10/30/14
EPA 8141A	EPN	Not detected	0.10	0.030	ug/L	10/09/14	10/30/14
EPA 8141A	EPTC	Not detected	0.10	0.030	ug/L	10/09/14	10/30/14
EPA 8141A	ETHION	Not detected	0.10	0.030	ug/L	10/09/14	10/30/14
EPA 8141A	ETHOPROP	Not detected	0.10	0.024	ug/L	10/09/14	10/30/14
EPA 8141A	FENSULFOTHION	Not detected	0.50	0.160	ug/L	10/09/14	10/30/14
EPA 8141A	FENTHION	Not detected	0.10	0.020	ug/L	10/09/14	10/30/14
EPA 8141A	MALATHION	Not detected	0.10	0.030	ug/L	10/09/14	10/30/14
EPA 8141A	MERPHOS	Not detected	0.10	0.060	ug/L	10/09/14	10/30/14
EPA 8141A	MEVINPHOS	Not detected	0.70	0.072	ug/L	10/09/14	10/30/14
EPA 8141A	NALED	Not detected	0.50	0.200	ug/L	10/09/14	10/30/14
EPA 8141A	PARATHION, ETHYL	Not detected	0.10	0.020	ug/L	10/09/14	10/30/14
EPA 8141A	PARATHION, METHYL	Not detected	0.10	0.075	ug/L	10/09/14	10/30/14
EPA 8141A	PHORATE	Not detected	0.10	0.072	ug/L	10/09/14	10/30/14
EPA 8141A	PROWL (PENDIMETHALIN)	Not detected	0.10	0.041	ug/L	10/09/14	10/30/14
EPA 8141A	RONNEL	Not detected	0.10	0.030	ug/L	10/09/14	10/30/14
EPA 8141A	STIROPHOS	Not detected	0.10	0.060	ug/L	10/09/14	10/30/14
EPA 8141A	SULFOTEP	Not detected	0.10	0.020	ug/L	10/09/14	10/30/14
EPA 8141A	TOKUTHION	Not detected	0.10	0.022	ug/L	10/09/14	10/30/14
EPA 8141A	TRICHLORONATE	Not detected	0.10	0.050	ug/L	10/09/14	10/30/14
EPA 8141A	TRIFLURALIN	Not detected	0.05	0.036	ug/L	10/09/14	10/30/14
EPA 8141A	SURROGATE: TRIBUTYLPHOSPHAT	92.3	65-145		%	10/09/14	10/30/14
EPA 8141A	SURROGATE: TRIPHENYLPHOSPHA	92.8	57-125		%	10/09/14	10/30/14

Quant Method: OPF1029.M
Run #: 1029028
Instrument: Opie
Sequence: 141029
Dilution Factor: 1
Initials: LA

Printed: 11/3/2014 9:13:17 AM
APPL-F1-SC-NoMC-REG MDLs

EPA METHOD 8141A
Organophosphorous Compounds

Calibration Data

APPL, INC.

Organophosphorus Pesticide Analysis by
OPF1029

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No: 74531
Case No: Initial Cal. Date: 10/29/2014
Matrix: Water Instrument: Opie Initials: LAC

		Compound	1	2	3	4	5	6	1A	1B			Avg	%RSD		
			1029004.D	1029005.D	1029006.D	1029007.D	1029008.D	1029009 D	1029002.D	1029003 D						
1	TAML	Dichlorvos	49540	16269	17964	16432	17818	18009		19050			22154	55	TAML	0.998
2	TAML	Naled	49540	16269	17964	16432	17818	18009		19050			22154	55	TAML	0.998
3	TAM	EPTC	14700	15612	16443	14720	16741	17064		18600			16268	8.6	TAM	
4	TBM	Mevinphos	49940	53738	59253	51537	55820	55635	49400	49460			53098	6.8	TBM	
5	TBM	Trifluralin	7660	8858	9867	8829	9590	10009					9135	9.6	TBM	
6	SB	Tributyl Phosphate	62710	64966	69082	60500	63532	61757	62400	68940			64236	5.0	SB	
7	TAM	Demeton-O	18829	20203	22328	20566	22010	22817		16694			20492	11	TAM	
8	TBM	Ethoprop	74430	75550	80181	67839	71426	69465	79150	73880			73990	5.9	TBM	
9	TAM	Sulfotepp	119190	116386	121354	102571	105221	100852	121650	114140			112670	7.6	TAM	
10	TBM	Phorate	65870	68386	73253	63025	64575	64162	68850	66800			66865	4.9	TBM	
11	TAM	Demeton-S	149667	158947	169702	148181	158629	157029	139333	133938			151928	7.6	TAM	
12	TBM	Diazinon	64160	63196	67202	59895	62678	61635	67750	59200			63214	4.9	TBM	
13	TAM	Disulfoton	66360	69352	72538	62298	65681	66131	65900	68200			67057	4.5	TAM	
14	TBM	Dimethoate	117430	130286	151203	130957	146165	146828	172150	123940			139870	13	TBM	
15	TAM	Ronnel	43930	48538	52153	47412	51587	50498	36000	47300			47177	11	TAM	
16	TBM	Methyl Parathion	57010	59402	64239	57896	62091	62105	56750	55160			59332	5.4	TBM	
17	TAM	Malathion	42370	41460	44374	39286	43028	42270	40700	42940			42053	3.7	TAM	
18	TAM	Trichlorinate	45300	46441	49717	44082	46101	46806	43425	46520			46049	4.2	TAM	
19	TBM	Chlorpyrifos	45300	46441	49717	44082	46101	46806	43425	46520			46049	4.2	TBM	
20	TAM	Parathion	57740	60372	64473	58239	61848	61018	59350	56380			59927	4.3	TAM	
21	TAM	Fenthion	57370	59336	63380	56451	60740	59557	58150	55920			58863	4.2	TAM	
22	TBM	Prowl	7140	9474	10452	9949	10959	11193		8300			9638	15	TBM	
23	TAM	Diphenamid	9580	9190	9998	9249	9975	10573					9761	5.4	TAM	
24	TAM	Merphos II	32090	32970	34339	29220	30053	28922	31738	33025			31545	6.2	TAM	
25	TBM	DEF	32090	32970	34339	29220	30053	28922	31738	33025			31545	6.2	TBM	
26	TBM	Tokothion	32090	32970	34339	29220	30053	28922	31738	33025			31545	6.2	TBM	
27	TAM	Stirophos	32090	32970	34339	29220	30053	28922	31738	33025			31545	6.2	TAM	
28	TAM	Ethion	93360	88644	95830	80968	83024	82700	79950	91920			87050	7.1	TAM	
29	TBM	Bolstar	52800	51947	55020	46979	49502	47488	50825	49750			50539	5.3	TBM	
30	TAM	Fensulfothion	41870	45794	54733	48995	51122	52100	39400	39940			46744	13	TAM	
31		Famphur	51530	53987	59664	51169	53920	51532	58450	54910			54395	5.9		
32	SB	Triphenyl Phosphate	39050	40544	43979	40246	42943	43849	39500	41660			41471	4.7	SB	
33	TAM	EPN	44560	49682	54254	49612	52221	54097	41050	41920			48425	11	TAM	
34	TBM	Azinphos Methyl	72810	80172	92063	85958	93682	93974		66340			83571	13	TBM	
35	TAM	Coumaphos	30540	30024	33452	30206	33205	32705		29560			31385	5.3	TAM	

9.863634

Organophosphorus Pesticide Analysis by
OPF1029

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No: 74531
Date Analyzed: 10/31/2014
Instrument: Opie
Initial Cal. Date: 10/29/2014
Data File: 1029031.D

		Compound	MEAN	CCRF	%D	%Drift	
1	TAML	Dichlorvos	22154	18831	15	TAML	6.2
2	TAML	Naled	22154	18831	15	TAML	6.2
3	TAM	EPTC	16269	15948	2.0	TAM	
4	TBM	Mevinphos	53098	57638	8.6	TBM	
5	TBM	Trifluralin	9135	8746	4.3	TBM	
6	SB	Tributyl Phosphate	64236	64420	0.29	SB	
7	TAM	Demeton-O	20493	22691	11	TAM	
8	TBM	Ethoprop	73990	73067	1.2	TBM	
9	TAM	Sulfotepp	112670	106215	5.7	TAM	
10	TBM	Phorate	66865	74703	12	TBM	
11	TAM	Demeton-S	151928	163413	7.6	TAM	
12	TBM	Diazinon	63214	64181	1.5	TBM	
13	TAM	Disulfoton	67058	64275	4.1	TAM	
14	TBM	Dimethoate	139870	137603	1.6	TBM	
15	TAM	Ronnel	47177	49932	5.8	TAM	
16	TBM	Methyl Parathion	59332	58508	1.4	TBM	
17	TAM	Malathion	42054	41153	2.1	TAM	
18	TAM	Trichlorinate	46049	44935	2.4	TAM	
19	TBM	Chlorpyrifos	46049	44935	2.4	TBM	
20	TAM	Parathion	59928	58586	2.2	TAM	
21	TAM	Fenthion	58863	58715	0.25	TAM	
22	TBM	Prowl	9638	10013	3.9	TBM	
23	TAM	Diphenamid	9761	10748	10	TAM	
24	TAM	Merphos II	31545	30127	4.5	TAM	
25	TBM	DEF	31545	30127	4.5	TBM	
26	TBM	Tokothion	31545	30127	4.5	TBM	
27	TAM	Stirophos	31545	30127	4.5	TAM	
28	TAM	Ethion	87050	82200	5.6	TAM	
29	TBM	Bolstar	50539	46651	7.7	TBM	
30	TAM	Fensulfothion	46744	50586	8.2	TAM	
31		Famphur	54395	52389	3.7		
32	SB	Triphenyl Phosphate	41471	42433	2.3	SB	
33	TAM	EPN	48425	70821	46	TAM	*
34	TBM	Azinphos Methyl	83571	89797	7.4	TBM	
35	TAM	Coumaphos	31385	31882	1.6	TAM	
36							
37							
38							
39							
40							
		Average			6.3		

EPA METHOD 8141A
Organophosphorous Compounds

Raw Data

APPL, INC.

_SEP025

Organic Extraction Worksheet

Method	OCL OP/Triazine Sep Funnel Low 3510C	Extraction Set	141014A	Extraction Method	SEP025	Units	mL

Spiked ID 1	OP/FAM Std. W/ Surr. 9-24-14 exp 12-8-14		Surrogate ID 1	OCL/OP Water Surrogate 8-20-14 exp 11-20-14	
Spiked ID 2			Surrogate ID 2		
Spiked ID 3			Surrogate ID 3		
Spiked ID 4			Surrogate ID 4		
Spiked ID 5			Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	NO	
Spiked ID 7			Ext. Start Time:	10/14/14 10:40	
Spiked ID 8			Ext. End Time:	10/14/14 15:35	
			GC Requires Extract By:	**11/03/14 0:00**	

pH1	2	0/14/14 10:44:00 AM	Water Bath Temp Criteria	35,35,35,3
pH2				
pH3				

Spiked By: KY **Date** 10/14/14 **Witnessed By:** CFM **Date** 10/14/14

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	141014A Blk				0.1	1 equip	500 E-WB1	1	2	10/14/14 10:40	
2	141014A LCS-1		0.250	1	NA	NA equip	500 E-WB2	1	2	10/14/14 10:40	
3	AZ04437	AZ04437W02			0.1	1 equip	500 E-WB3	1	2	10/14/14 10:40	74568
4	AZ04451	AZ04451W02			0.1	1 equip	500 E-WB4	1	2	10/14/14 10:40	74570

KY 10/14/14

Solvent and Lot#	
1+1 Sulfuric Acid	9-25-14
PH STRIPS	HC413032
MC	54128
Filter Paper	400038
A. Soduim Sulfate	10-13-14
Hexane	080613A

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	MA
Date	10/15/14
Time	16:00
Refrigerator	Hobart

	Technician's Initials
Scanned By	KY
Sample Preparation	JR
Extraction	JR
Concentration	DL

Modified	10/14/14 4:04:05 PM

Reviewed By: KY **Date** 10/14/14

10/14/14 4:04:36 PM Ext_ID 40 45474

Injection Log

Directory: G:\OPIE\DATA\141029

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	2	1029002.D	1	OP/F 2/1000 10/29/14	water	10-29-14 16:05:33
2	3	1029003.D	1	OP/F 5/1000 10/29/14	water	10-29-14 16:38:58
3	4	1029004.D	1	OP/F 10/1000 10/29/14	water	10-29-14 17:12:19
4	5	1029005.D	1	OP/F 50/1000 10/29/14	water	10-29-14 17:45:45
5	6	1029006.D	1	OP/F 20/100 10/29/14	water	10-29-14 18:19:04
6	7	1029007.D	1	OP/F 100/200 10/29/14	water	10-29-14 18:52:32
7	8	1029008.D	1	OP/F 70/100 10/29/14	water	10-29-14 19:25:52
8	9	1029009.D	1	OP/F 100/100 10/29/14	water	10-29-14 19:59:16
9	23	1029023.D	1	OP/F 100/200 10/29/14	water	10-30-14 12:51:26
10	26	1029026.D	2	141009A BLK 1/500	water	10-30-14 14:31:39
11	27	1029027.D	2	141009A LCS-1 1/500	water	10-30-14 15:05:00
12	28	1029028.D	2	AZ04096W02 1/500	water	10-30-14 15:38:27
13	31	1029031.D	1	OP/F 100/200 10/29/14	water	10-31-14 9:52:20

Laboratory Job Number 261495

Subcontracted Products

Microbac Ohio

Microbac

Laboratory Report Number: L14100489

Will Rice
Curtis Tompkins Inc
2323 Fifth Street
Berkeley, CA 94710

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Emily Yoak – Client Services Specialist
(740) 373-4071
emily.yoak@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on October 24 2014

David Vandenberg – Managing Director

State of Origin: CA
Accrediting Authority: Department of Health Services ID:2730
QAPP: DOD Ver 4.1

Microbac

Lab Report #: L14100489
Lab Project #: 2998.003
Project Name: Pavillion Project
Lab Contact: Emily Yoak

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
styrofoam	I	1.0		1001891751060004575000771417196854	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	NA

Microbac Laboratories ● Ohio Valley Division
158 Starlite Drive, Marietta, OH 45750 ● T: (740)373-4071 F: (740)373-4835
www.microbac.com

Microbac

Lab Report #: L14100489
Lab Project #: 2998.003
Project Name: Pavillion Project
Lab Contact: Emily Yoak

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
FB-1-10062014	L14100489-01	10/06/2014 15:15	10/08/2014 11:40

Microbac Laboratories ● Ohio Valley Division
158 Starlite Drive, Marietta, OH 45750 ● T: (740)373-4071 F: (740)373-4835
www.microbac.com

Login Number: L14100489
Department: General Chromatography
Analyst: John W. Richards Jr.

METHOD

Preparation: Filtration @ 0.45 micron

Analysis Metabolic Acids by HPLC

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds linear equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group.

SAMPLES

Samples: All acceptance criteria were met. Pyruvic acid is prone to false positives; false hits were eliminated using post-

spike reanalysis.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak
completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area
counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and
benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 90763
Approved By: Jeremy Kinney

Microbac

Lab Report #: L14100489
Lab Project #: 2998.003
Project Name: Pavillion Project
Lab Contact: Emily Yoak

Certificate of Analysis

Sample #:	L14100489-01	**PrePrep Method:**	N/A	**Instrument:**	HPLC3
Client ID:	FB-1-10062014	**Prep Method:**	830-MBA	**Prep Date:**	10/20/2014 13:10
Matrix:	Water	**Analytical Method:**	830-MBA	**Cal Date:**	09/16/2014 17:02
Workgroup #:	WG497145	**Analyst:**	JWR	**Run Date:**	10/20/2014 15:15
Collect Date:	10/06/2014 15:15	**Dilution:**	1	**File ID:**	3L020795.F
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Pyruvic Acid	127-17-3		U	0.100	0.0500
Lactic Acid	50-21-5		U	1.00	0.500
Acetic Acid	64-19-7		U	1.00	0.500
Propionic Acid	79-09-4		U	10.0	5.00
Butyric Acid	107-92-6		U	1.00	0.500

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

2.1 Semivolatiles Data

2.1.1 Metabolic Acids HPLC Data (830-MBA)

2.1.1.1 Summary Data

Microbac

Lab Report #: L14100489
Lab Project #: 2998.003
Project Name: Pavillion Project
Lab Contact: Emily Yoak

Certificate of Analysis

Sample #:	L14100489-01	**PrePrep Method:**	N/A	**Instrument:**	HPLC3
Client ID:	FB-1-10062014	**Prep Method:**	830-MBA	**Prep Date:**	10/20/2014 13:10
Matrix:	Water	**Analytical Method:**	830-MBA	**Cal Date:**	09/16/2014 17:02
Workgroup #:	WG497145	**Analyst:**	JWR	**Run Date:**	10/20/2014 15:15
Collect Date:	10/06/2014 15:15	**Dilution:**	1	**File ID:**	3L020795.F
Sample Tag:	01	**Units:**	mg/L		

Analyte	CAS #	Result	Qual	LOQ	LOD
Pyruvic Acid	127-17-3		U	0.100	0.0500
Lactic Acid	50-21-5		U	1.00	0.500
Acetic Acid	64-19-7		U	1.00	0.500
Propionic Acid	79-09-4		U	10.0	5.00
Butyric Acid	107-92-6		U	1.00	0.500

U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

2.1.1.2 QC Summary Data

Login Number: L14100489
Department: General Chromatography
Analyst: John W. Richards Jr.

METHOD

Preparation: Filtration @ 0.45 micron

Analysis Metabolic Acids by HPLC

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds linear equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group.

SAMPLES

Samples: All acceptance criteria were met. Pyruvic acid is prone to false positives; false hits were eliminated using post-

spike reanalysis.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

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Narrative ID: 90763
Approved By: Jeremy Kinney

Microbac Laboratories Inc.

Data Checklist

Date: 16-SEP-2014
Analyst: JWR
Analyst: NA
Method: 830-MBA
Instrument: HPLC3
Curve Workgroup: WG492545
Runlog ID: 63560
Analytical Workgroups: L14090642, 0757

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	NA
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	20 BAR
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	NA
Special standards	NA
Blanks	X
TCL hits	ND
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	
Check for completeness	X
Primary Reviewer	JWR
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
19-SEP-2014
John Richards

Secondary Reviewer:
22-SEP-2014
Michael Cochran

CHECKLIST1 - Modified 03/05/2008
Generated: SEP-22-2014 08:21:45

Microbac Laboratories Inc.

Data Checklist

Date: 20-OCT-2014
Analyst: JBK
Analyst: NA
Method: 830-MBA
Instrument: HPLC3
Curve Workgroup: NA
Runlog ID: 64230
Analytical Workgroups: 10-0489, 0831, 0895, 1008, 1102

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	NA
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	22 BAR
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	NA
Special standards	NA
Blanks	X
TCL hits	NA
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	
Check for completeness	X
Primary Reviewer	JBK
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	LSB

Primary Reviewer:
23-OCT-2014

Secondary Reviewer:
24-OCT-2014

CHECKLIST1 - Modified 03/05/2008
Generated: OCT-24-2014 13:16:14

Example 830-MBA Calculations

1.0 Calculating the Calibration Factor (CF) from the initial calibration (ICAL) data:

$$CF = \frac{C_s}{A_s}$$

where:	Example:
A_s = Area of the compound being measured in the standard	10000
C_s = Concentration of the compound being measured (ng/mL)	100
	CF = 0.01

2.0 Calculating the concentration (C) of a compound in water using data from prep log and quantitation report:*

$$C = \frac{(A_x)(V_f)(D)(CF)(1000)}{V_i}$$

where:	Example:
A_x = Area of the compound being measured	10000
V_f = Final volume of sample extract (mL). (prep log)	1
D = Dilution factor for sample as a multiplier (10X = 10)	1
CF = Calibration factor from ICAL calculated above	0.01
V_i = Initial volume of sample (mL). (prep log)	1000
	C ($\mu g/l$) = 0.1

3.0 Calculating the concentration (C) of a compound in soil using data from prep log and quantitation report:*

$$C = \frac{(A_x)(V_f)(D)(CF)}{V_i}$$

where:	Example:
A_x = Area of the compound being measured	10000
V_f = Final volume of sample extract (mL). (prep log)	1
D = Dilution factor for sample as a multiplier (10X = 10)	1
CF = Calibration factor from ICAL calculated above	0.01
W_i = Initial weight of sample (g). (prep log)	30
	C ($\mu g/l$) = 3.333333

* Concentrations appearing on instrument quantitation reports are on-column results and do not take into account initial volume, final volume and dilution factor.

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPLC3 Dataset: 091614
Analyst1: JWR Analyst2: NA
Method: 830-MBA SOP: HPLC03 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 00180133
Eluent ID#: RGT31402
Column 1 ID: REZEX ROA ORGANIC A Column 2 ID: NA
Workgroups: Analytical WG492549
Internal STD: NA Surrogate STD: NA Calibration STD STD64955 (09/16/2014)
CCV STD: STD64955 LCS STD: STD64955 MS/MSD STD: STD64955

Comments: ICAL WG492545 : Alternate STD65122 : System backpressure = 20bar

Sample L14090642-02 was randomely selected for MS/MSD analysis. The chromatogram for this sample contains an "unknown peak" within pyruvic acid's retention time window. This "unknown peak" was initially identified as pyruvic acid based on its retention time.

This "unknown peak" is also present in the chromatograms for the MS and MSD at the same retention time as the "unknown peak" in the parent sample. When the "unknown peaks" initially identified as pyruvic acid are compared, it is noted that there is relatively no change in their area counts from parent sample to MS and MSD. It has been determined that this "unknown peak" is not pyruvic acid.

The chromatograms for the MS and MSD, however, contain an extra peak that coelutes with the "unknown peak" mentioned above. This "extra coeluting peak" does not appear in the parent sample's chromatogram. The "extra coeluting peak" in the MS and MSD has an apex slightly past the RT-window for pyruvic acid. When this "extra coeluting peak" is identified as pyruvic acid by its retention time, it is noted that the parent sample result = ND, and the MS/MSD each have a recovery of 96%. It has been determined that this "extra coeluting peak" is pyruvic acid.

This suggests that there is something in the sample matrix affecting the analytical column in a way that shifts the retention time of "true pyruvic acid" past its retention time window.

Every sample analyzed in this batch had an "unknown peak" within the retention time window for pyruvic acid. On 09/18/2014 every sample was spiked at the CCV's level with pyruvic acid and reanalyzed in order to determine if these unknown peaks are pyruvic acid. It was determined that none of these samples have pyruvic acid in them. All pyruvic acid results for the samples analyzed in this analytical batch were set to ND.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	3L020648.F	Solv Rinse	1	1		09/16/14 12:52
2	3L020649.F	WG492545-01 STD	1	1	STD64955	09/16/14 13:34
3	3L020650.F	WG492545-02 STD	1	1	STD64955	09/16/14 14:15
4	3L020651.F	WG492545-03 STD-CCV	1	1	STD64955	09/16/14 14:57
5	3L020652.F	WG492545-04 STD	1	1	STD64955	09/16/14 15:39
6	3L020653.F	WG492545-05 STD	1	1	STD64955	09/16/14 16:20
7	3L020654.F	WG492545-06 STD	1	1	STD64955	09/16/14 17:02
8	3L020655.F	WG492545-07 SSCV	1	1	STD65122	09/16/14 17:44
9	3L020656.F	WG492548-01 CCV	1	1	STD64955	09/16/14 18:26
10	3L020657.F	WG492549-01 BLK	1	1		09/16/14 19:07
11	3L020658.F	WG492549-02 LCS	1	1	STD64955	09/16/14 19:49
12	3L020659.F	L14090642-02 REF	1	1		09/16/14 20:31
13	3L020660.F	WG492549-04 MS	1	1	STD64955	09/16/14 21:13
14	3L020661.F	WG492549-05 MSD	1	1	STD64955	09/16/14 21:54
15	3L020662.F	L14090642-03	1	1		09/16/14 22:36
16	3L020663.F	L14090642-01	1	1		09/16/14 23:18
17	3L020664.F	WG492548-02 CCV	1	1	STD64955	09/17/14 00:00
18	3L020665.F	L14090757-02	1	1		09/17/14 00:41
19	3L020666.F	L14090757-03	1	1		09/17/14 01:23

Page: 1 Approved: 22-SEP-14

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPLC3 Dataset: 091614
Analyst1: JWR Analyst2: NA
Method: 830-MBA SOP: HPLC03 Rev: 6

Maintenance Log ID: Syringe Filter Lot#: 00180133
Eluent ID#: RGT31402
Column 1 ID: REZEX ROA ORGANIC / Column 2 ID: NA
Workgroups: Analytical WG492549
Internal STD: NA Surrogate STD: NA STD64955 (09/16/2014)
CCV STD: STD64955 LCS STD: STD64955 STD64955

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
20	3L020667.F	L14090757-04	1	1		09/17/14 02:05
21	3L020668.F	L14090757-05	1	1		09/17/14 02:46
22	3L020669.F	L14090757-01	1	1		09/17/14 03:28
23	3L020670.F	WG492548-03 CCV	1	1	STD64955	09/17/14 04:10

Comments

Seq.	Rerun	Dil.	Reason	Analytes
7				
	WG492545-06 STD : The result for Propionic Acid is not reported from this ICAL-STD Level. This level is below the LOD for Propionic Acid.			

Page: 2 Approved: 22-SEP-14

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPLC3 Dataset: 102014
Analyst1: JBK Analyst2: NA
Method: 830-MBA SOP: HPLC03 Rev: 7

Maintenance Log ID: Syringe Filter Lot#: 00180133
Eluent ID#: RGT31402
Column 1 ID: REZEX ROA ORGANIC / Column 2 ID: NA
Workgroups:
Internal STD: NA Surrogate STD: NA Calibration STD STD64955 (09/16/2014)
CCV STD: STD64955 LCS STD: STD64955 MS/MSD STD: STD64955

Comments: 3L020809.F-3L020814.F Post spiked for pyruvic acid only. First analysis did not confirm. Pyruvic Acid not reported.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	3L020792.F	WG497146-01 CCV	1	1	STD64955	10/20/14 13:10
2	3L020793.F	WG497145-01 BLK	1	1		10/20/14 13:52
3	3L020794.F	WG497145-02 LCS	1	1	STD64955	10/20/14 14:33
4	3L020795.F	L14100489-01	1	1		10/20/14 15:15
5	3L020796.F	L14100831-01	1	1		10/20/14 15:57
6	3L020797.F	L14100895-01	1	1		10/20/14 16:38
7	3L020798.F	L14100895-02	1	1		10/20/14 17:20
8	3L020799.F	L14101008-01	1	1		10/20/14 18:02
9	3L020800.F	L14101008-02	1	1		10/20/14 18:44
10	3L020801.F	L14101008-03	1	1		10/20/14 19:25
11	3L020802.F	L14101008-04	1	1		10/20/14 20:07
12	3L020803.F	WG497146-02 CCV	1	1	STD64955	10/20/14 20:49
13	3L020804.F	L14101102-01	1	1		10/20/14 21:31
14	3L020805.F	L14101102-02	1	1		10/20/14 22:12
15	3L020806.F	WG497145-04 MS	1	1		10/20/14 22:54
16	3L020807.F	WG497145-05 MSD	1	1		10/20/14 23:36
17	3L020808.F	WG497146-03 CCV	1	1	STD64955	10/21/14 00:18
18	3L020809.F	L14100489-01 CF	1	1		10/21/14 10:11
19	3L020810.F	L14100831-01 CF	1	1		10/21/14 10:52
20	3L020811.F	L14101008-02 CF	1	1		10/21/14 11:34
21	3L020812.F	L14101008-03 CF	1	1		10/21/14 12:16
22	3L020813.F	L14101008-04 CF	1	1		10/21/14 12:58
23	3L020814.F	L14101102-01 CF	1	1		10/21/14 13:39
24	3L020815.F	WG497146-04 CCV	1	1	STD64955	10/21/14 14:21

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Page: 1 Approved: 24-OCT-14

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 830-MBA

AAB#: WG497145

Login Number: L14100489

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
FB-1-10062014	01	10/06/14					10/20/2014	13.9	28		10/20/14	14	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 3829971
Report generated 10/24/2014 14:37

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L14100489
Blank File ID: 3L020793.F
Prep Date: 10/20/14 13:10
Analyzed Date: 10/20/14 13:52
Analyst: JWR

Work Group: WG497145
Blank Sample ID: WG497145-01
Instrument ID: HPLC3
Method: 830-MBA

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG497145-02	3L020794.F	10/20/14 14:33	01
FB-1-10062014	L14100489-01	3L020795.F	10/20/14 15:15	01

Report Name: BLANK_SUMMARY
PDF File ID: 3829972
Report generated 10/24/2014 14:37

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number: L14100489 Prep Date: 10/20/14 13:10 Sample ID: WG497145-01
Instrument ID: HPLC3 Run Date: 10/20/14 13:52 Prep Method: 830-MBA
File ID: 3L020793.F Analyst: JWR Method: 830-MBA
Workgroup (AAB#): WG497145 Matrix: Water Units: mg/L
Contract #: Cal ID: HPLC3-16-SEP-14

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Pyruvic Acid	0.0500	0.100	0.0500	1	U
Lactic Acid	0.500	1.00	0.500	1	U
Acetic Acid	0.500	1.00	0.500	1	U
Propionic Acid	5.00	10.0	5.00	1	U
Butyric Acid	0.500	1.00	0.500	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 3829973
24-OCT-2014 14:37

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L14100489 Run Date: 10/20/2014 Sample ID: WG497145-02
Instrument ID: HPLC3 Run Time: 14:33 Prep Method: 830-MBA
File ID: 3L020794.F Analyst: JWR Method: 830-MBA
Workgroup (AAB#): WG497145 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD64955 Cal ID: HPLC3-16-SEP-14

Analytes	Expected	Found	% Rec	LCS Limits	Q
Pyruvic Acid	2.01	1.82	90.5	90 - 110	
Lactic Acid	17.4	16.7	96.2	90 - 110	
Acetic Acid	21.1	19.6	92.9	90 - 110	
Propionic Acid	22.9	21.8	95.0	80 - 115	
Butyric Acid	20.2	18.3	90.6	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 3829974
Report generated: 10/24/2014 14:37

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

Login Number: L14100489
Analytical Method: 830-MBA
ICAL Workgroup: WG492545

Instrument ID: HPLC3
Initial Calibration Date: 16-SEP-14 17:02
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
Acetic Acid		1.546	0.682	1.00000	
Butyric Acid		1.822	3.23	1.00000	
Lactic Acid		1.476	1.47	1.00000	
Propionic Acid		0.1285	33.1	1.00000	
Pyruvic Acid		0.1003	0.270	1.00000	

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

This method always uses linear calibration model (R)

INT_CAL - Modified 03/06/2008
PDF File ID: 3829975
Report generated 10/24/2014 14:37

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L14100489

Analytical Method: 830-MBA

Instrument ID: HPLC3

Initial Calibration Date: 16-SEP-14 17:02

Column ID: F

Analyte	WG492545-01			WG492545-02			WG492545-03		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Acetic Acid	106	1210.59509	0.0008260	52.9	605.746094	0.008254	21.1	243.801025	0.08671
Butyric Acid	101	1125.24487	0.0008887	50.6	554.249390	0.009021	20.2	221.201614	0.09141
Lactic Acid	87.0	1288.85571	0.0007759	43.5	646.774963	0.007731	17.4	263.554596	0.06599
Propionic Acid	115	1373.75012	11.98	57.4	723.366638	0.006912	22.9	338.611176	0.06775
Pyruvic Acid	10.1	1880.44104	0.00005318	5.03	935.031006	0.0005347	2.01	375.773071	0.005354

INT_CAL - Modified 03/06/2008
PDF File ID: 3829975
Report generated 10/24/2014 14:37

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L14100489

Analytical Method: 830-MBA

Instrument ID: HPLC3

Initial Calibration Date: 16-SEP-14 17:02

Column ID: F

Analyte	WG492545-04			WG492545-05			WG492545-06		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Acetic Acid	10.6	120.740028	0.1656	5.29	61.5081329	0.8129	1.06	12.1947680	8.200
Butyric Acid	10.1	109.907700	0.1820	5.06	55.5484314	0.9001	1.01	10.2585669	9.748
Lactic Acid	8.70	128.395126	0.1558	4.35	65.9339371	0.7583	0.870	12.7096643	7.868
Propionic Acid	11.5	209.122757	0.09564	5.74	145.520416	0.3436		98.7053299	1.013
Pyruvic Acid	1.01	187.518845	0.01067	0.503	93.5026627	0.05347	0.101	18.8138294	0.5315

INT_CAL - Modified 03/06/2008
PDF File ID: 3829975
Report generated 10/24/2014 14:37

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L14100489 Run Date: 09/16/2014 Sample ID: WG492545-07
Instrument ID: HPLC3 Run Time: 17:44 Method: 830-MBA
File ID: 3L020655.F Analyst: JBK QC Key: DOD4
ICal Workgroup: WG492545 Cal ID: HPLC3 - 16-SEP-14

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Pyruvic Acid		2.01	2.02	mg/L	0.00533	0.600	20	
Lactic Acid		17.4	17.6	mg/L	0.0663	1.10	20	
Acetic Acid		21.1	21.2	mg/L	0.0868	0.400	20	
Propionic Acid		22.9	23.1	mg/L	0.0675	0.600	20	
Butyric Acid		20.2	20.1	mg/L	0.0916	0.700	20	

* Exceeds %D Limit

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 3829976
Report generated 10/24/2014 14:37

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L14100489
Run Date: 10/20/2014
Sample ID: WG497146-01
Instrument ID: HPLC3
Run Time: 13:10
Method: 830-MBA
File ID: 3L020792.F
Analyst: JWR
QC Key: DOD4
Workgroup (AAB#): WG497145
Cal ID: HPLC3 - 16-SEP-14
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Pyruvic Acid		2.01	1.81	mg/L	0.00595	9.89	20	
Lactic Acid		17.4	16.7	mg/L	0.0697	3.80	20	
Acetic Acid		21.1	19.6	mg/L	0.0940	7.36	20	
Propionic Acid		22.9	21.6	mg/L	0.0709	5.79	20	
Butyric Acid		20.2	18.3	mg/L	0.100	9.28	20	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3829977
Report generated 10/24/2014 14:38

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L14100489
Run Date: 10/20/2014
Sample ID: WG497146-02
Instrument ID: HPLC3
Run Time: 20:49
Method: 830-MBA
File ID: 3L020803.F
Analyst: JWR
QC Key: DOD4
Workgroup (AAB#): WG497145
Cal ID: HPLC3 - 16-SEP-14
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Pyruvic Acid		2.01	1.85	mg/L	0.00583	7.93	20	
Lactic Acid		17.4	16.5	mg/L	0.0705	4.92	20	
Acetic Acid		21.1	19.2	mg/L	0.0959	9.13	20	
Propionic Acid		22.9	19.3	mg/L	0.0772	15.9	20	
Butyric Acid		20.2	18.0	mg/L	0.102	10.8	20	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 3829977
Report generated 10/24/2014 14:38

3.0 Attachments

Microbac Laboratories Inc.
Ohio Valley Division Analyst List
October 24, 2014

001 - BIO-CHEM TESTING WVDEP 220	002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental	004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES	006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES	008 - BENCHMARK LABORATORIES
010 - MICROBAC CHICAGOLAND	ADC - ANTHONY D. CANTER
ADG - APRIL D. GREENE	ALS - ADRIANE L. STEED
AWE - ANDREW W. ESSIG	AZH - AFTER HOURS
BJO - BRIAN J. OGDEN	BKT - BRENDAN TORRENCE
BLG - BRENDA L. GREENWALT	BRG - BRENDA R. GREGORY
CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CEB - CHAD E. BARNES	CJR - COURTNEY J. REXROAD
CLC - CHRYS L. CRAWFORD	CLS - CARA L. STRICKLER
CLW - CHARISSA L. WINTERS	CPD - CHAD P. DAVIS
CSH - CHRIS S. HILL	DAK - DEAN A. KETELSEN
DCM - DAVID C. MERCKLE	DEV - DAVID E. VANDENBERG
DIH - DEANNA I. HESSON	DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE	DSM - DAVID S. MOSSOR
ECL - ERIC C. LAWSON	ENY - EMILY N. YOAK
EPT - ETHAN P. TIDD	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	JBK - JEREMY B. KINNEY
JDH - JUSTIN D. HESSON	JDS - JARED D. SMITH
JJS - JOHN J. STE MARIE	JLL - JOHN L. LENT
JMW - JEANA M. WHITE	JTP - JOSHUA T. PEMBERTON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES
JYH - JI Y. HU	KAJ - KELLIE A. JOHNSON
KAT - KATHY A. TUCKER	KDW - KATHRYN D. WELCH
KEB - KATIE E. BARNES	KHR - KIM H. RHODES
KRA - KATHY R. ALBERTSON	KRB - KAELY R. BECKER
KRP - KATHY R. PARSONS	LEC - LAURA E. CARPENTER
LKN - LINDA K. NEDEFF	LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA	MBK - MORGAN B. KNOWLTON
MDA - MIKE D. ALBERTSON	MDC - MIKE D. COCHRAN
MES - MARY E. SCHILLING	MLB - MEGAN L. BACHE
MMB - MAREN M. BEERY	MRT - MICHELLE R. TAYLOR
MSW - MATT S. WILSON	PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE	PRL - PAIGE R. LAMB
PSW - PEGGY S. WEBB	QX - QIN XU
RAH - ROY A. HALSTEAD	REK - BOB E. KYER
RLB - BOB BUCHANAN	RM - RAYMOND MALEKE
RNP - RICK N. PETTY	SAV - SARAH A. VANDENBERG
SDC - SHALYN D. CONLEY	SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF	TB - TODD BOYLE
TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WJB - WILL J. BEASLEY
WRR - WESLEY R. RICHARDS	WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT	

Microbac Laboratories Inc.
List of Valid Qualifiers
October 24, 2014

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value; the analyte concentration was less than the RL/LOQ.
J,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentativlely identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL/MDL).
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.
TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.

Qualkey: DOD

U	Analyte was not detected. The concentration is below the reported LOD.
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900
(510) 486-0532

Project Number: 261495
Site: Pavillion, WY

Subcontract Laboratory:
Microbac Ohio
158 Starlite Dr
Marietta, OH 45750
(800) 373-4071

Results due: Report Level: III

Please send report to: Will S Rice (will.rice@ctberk.com)
*** Please report using Sample ID rather than C&T Lab #.

Sample ID	Sampled	Matrix	Analysis	C&T Lab #	Comments
FB-1-10062014	10/06 15:15	Water	VFA	261495-001	rec'd unpreserved, added H3PO4
	(Lot#B34823) on 10/07/14 at 1145				

Notes:	Relinquished By:	Received B
	Date/Time: 10/07/14 @ 1510	Date/Time:
	Date/Time:	Date/Time:

Microbac OVD
Received: 10/08/2014 11:40
By: COURTNEY REXROAD
2210000060540
Courtney Rexroad

Signature on this form constitutes a firm Purchase Order for the services requested above.
Page 1 of 1

Internal Chain of Custody Report

Login: L14100489
Account: 2998
Project: 2998.003
Samples: 1
Due Date: 17-OCT-2014

Samplenum	Container ID	Products
L14100489-01	450478	830-MBA

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	SEM	08-OCT-2014 14:51	CJR		
2	STORE	SEM	A2	23-OCT-2014 09:52	CLS	ALS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER		08-OCT-2014 14:51	CJR		

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Laboratory Job Number 261495

Subcontracted Products

TA Tallahassee

ANALYTICAL REPORT

Job Number: 640-49391-1

SDG Number: 261495

Job Description: Pavillion

For:
Curtis & Tompkins, Ltd.
2323 Fifth Street
Berkeley, CA 94710

Attention: Mr. Will Rice

Approved for release.
Noel Savoie
Project Management Assistant II
10/28/2014 3:18 PM

Noel Savoie, Project Management Assistant II
2846 Industrial Plaza Drive, Tallahassee, FL, 32301
(850)878-3994
noel.savoie@testamericainc.com
10/28/2014

These test results meet all the requirements of NELAC unless specified in the case narrative. All questions regarding this test report should be directed to the TestAmerica Project Manager who signed this test report. The estimated uncertainty associated with these reported results is available upon request. The results contained in this test report relate only to the samples included herein.

TestAmerica Tallahassee Florida Department of Health Certification No. E81005

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CASE NARRATIVE
Client: Curtis & Tompkins, Ltd.
Project: Pavillion
SDG: 261495
Report Number: 640-49391-1

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.
This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT
The samples were received on 10/09/2014; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.6 C.

ACRYLAMIDE (HPLC; DAI)
Sample FB-1-10062014 (640-49391-1) was analyzed for Acrylamide (HPLC; DAI) in accordance with SW-846 Method 8316. The samples were prepared on 10/13/2014 and analyzed on 10/27/2014.

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

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Tallahassee Job No.: 640-49391-1

SDG No.: 261495

Instrument ID: CHLCI Analysis Batch Number: 112716

Lab Sample ID: IC 640-112716/2 Client Sample ID:

Date Analyzed: 10/28/14 09:35 Lab File ID: 1J28I2.d GC Column: LC-CN ID: 4.6(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Acrylamide	4.30	Baseline	smithdn	10/28/14 10:29

8316

SAMPLE SUMMARY

Client: Curtis & Tompkins, Ltd.

Job Number: 640-49391-1
Sdg Number: 261495

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
640-49391-1	FB-1-10062014	Water	10/06/2014 1515	10/09/2014 0950

EXECUTIVE SUMMARY - Detections

Client: Curtis & Tompkins, Ltd.

Job Number: 640-49391-1
Sdg Number: 261495

Lab Sample ID Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method

No Detections

METHOD SUMMARY

Client: Curtis & Tompkins, Ltd.

Job Number: 640-49391-1
Sdg Number: 261495

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Acrylamide (HPLC; DAI)	TAL TAL	SW846 8316	
Sample Filtration	TAL TAL		Filtration

Lab References:

TAL TAL = TestAmerica Tallahassee

Method References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: Curtis & Tompkins, Ltd.

Job Number: 640-49391-1
Sdg Number: 261495

Method	Analyst	Analyst ID
SW846 8316	Driver, Robert	RDD

Client: Curtis & Tompkins, Ltd.

Job Number: 640-49391-1
Sdg Number: 261495

Client Sample ID: **FB-1-10062014**

Lab Sample ID: 640-49391-1
Client Matrix: Water

Date Sampled: 10/06/2014 1515
Date Received: 10/09/2014 0950

8316 Acrylamide (HPLC; DAI)

Analysis Method:	8316	Analysis Batch:	640-112706	Instrument ID:	CHLCK
Prep Method:	Filtration	Prep Batch:	640-112288	Lab File ID:	1J27K11.d
Dilution:	1.0			Initial Weight/Volume:	10 mL
Analysis Date:	10/27/2014 1610			Final Weight/Volume:	10 mL
Prep Date:	10/13/2014 0824			Injection Volume:	1 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Acrylamide	ND		9.5	100

Client: Curtis & Tompkins, Ltd.

Job Number: 640-49391-1
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Method Blank - Batch: 640-112288

Method: 8316
Preparation: Filtration

Lab Sample ID:	MB 640-112288/1-A	Analysis Batch:	640-112706	Instrument ID:	CHLCK
Client Matrix:	Water	Prep Batch:	640-112288	Lab File ID:	1J27K8.d
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	10 mL
Analysis Date:	10/27/2014 1536	Units:	ug/L	Final Weight/Volume:	10 mL
Prep Date:	10/13/2014 0824			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Acrylamide	ND		9.5	100

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 640-112288

Method: 8316
Preparation: Filtration

LCS Lab Sample ID:	LCS 640-112288/2-A	Analysis Batch:	640-112706	Instrument ID:	CHLCK
Client Matrix:	Water	Prep Batch:	640-112288	Lab File ID:	1J27K9.d
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	10 mL
Analysis Date:	10/27/2014 1548	Units:	ug/L	Final Weight/Volume:	10 mL
Prep Date:	10/13/2014 0824			Injection Volume:	1 uL
Leach Date:	N/A				
LCSD Lab Sample ID:	LCSD 640-112288/3-A	Analysis Batch:	640-112706	Instrument ID:	CHLCK
Client Matrix:	Water	Prep Batch:	640-112288	Lab File ID:	1J27K10.d
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	10 mL
Analysis Date:	10/27/2014 1559	Units:	ug/L	Final Weight/Volume:	10 mL
Prep Date:	10/13/2014 0824			Injection Volume:	1 uL
Leach Date:	N/A				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Acrylamide	107	107	57 - 142	0	30		

Laboratory Control/
Laboratory Duplicate Data Report - Batch: 640-112288

Method: 8316
Preparation: Filtration

LCS Lab Sample ID:	LCS 640-112288/2-A	Units:	ug/L	LCSD Lab Sample ID:	LCSD 640-112288/3-A
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	10/27/2014 1548			Analysis Date:	10/27/2014 1559
Prep Date:	10/13/2014 0824			Prep Date:	10/13/2014 0824
Leach Date:	N/A			Leach Date:	N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
Acrylamide	500	500	537	535

Client: Curtis & Tompkins, Ltd.

Job Number: 640-49391-1
Sdg Number: 261495

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 640-112288

Method: 8316
Preparation: Filtration

MS Lab Sample ID:	640-49391-1	Analysis Batch:	640-112706	Instrument ID:	CHLCK
Client Matrix:	Water	Prep Batch:	640-112288	Lab File ID:	1J27K12.d
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	10 mL
Analysis Date:	10/27/2014 1622			Final Weight/Volume:	10 mL
Prep Date:	10/13/2014 0824			Injection Volume:	1 uL
Leach Date:	N/A				

MSD Lab Sample ID:	640-49391-1	Analysis Batch:	640-112706	Instrument ID:	CHLCK
Client Matrix:	Water	Prep Batch:	640-112288	Lab File ID:	1J27K13.d
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	10 mL
Analysis Date:	10/27/2014 1633			Final Weight/Volume:	10 mL
Prep Date:	10/13/2014 0824			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acrylamide	117	117	58 - 134	0	20		

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 640-112288

Method: 8316
Preparation: Filtration

MS Lab Sample ID:	640-49391-1	Units:	ug/L	MSD Lab Sample ID:	640-49391-1
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	10/27/2014 1622			Analysis Date:	10/27/2014 1633
Prep Date:	10/13/2014 0824			Prep Date:	10/13/2014 0824
Leach Date:	N/A			Leach Date:	N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Acrylamide	ND	500	500	587	586

DATA REPORTING QUALIFIERS

Lab Section	Qualifier	Description

Client: Curtis & Tompkins, Ltd.

Job Number: 640-49391-1
Sdg Number: 261495

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
HPLC/IC					
Prep Batch: 640-112288					
LCS 640-112288/2-A	Lab Control Sample	T	Water	Filtration	
LCSD 640-112288/3-A	Lab Control Sample Duplicate	T	Water	Filtration	
MB 640-112288/1-A	Method Blank	T	Water	Filtration	
640-49391-1	FB-1-10062014	T	Water	Filtration	
640-49391-1MS	Matrix Spike	T	Water	Filtration	
640-49391-1MSD	Matrix Spike Duplicate	T	Water	Filtration	
Analysis Batch:640-112706					
LCS 640-112288/2-A	Lab Control Sample	T	Water	8316	640-112288
LCSD 640-112288/3-A	Lab Control Sample Duplicate	T	Water	8316	640-112288
MB 640-112288/1-A	Method Blank	T	Water	8316	640-112288
640-49391-1	FB-1-10062014	T	Water	8316	640-112288
640-49391-1MS	Matrix Spike	T	Water	8316	640-112288
640-49391-1MSD	Matrix Spike Duplicate	T	Water	8316	640-112288
Analysis Batch:640-112716					
MB 640-112288/1-A	Method Blank	T	Water	8316	640-112288
640-49391-1	FB-1-10062014	T	Water	8316	640-112288

Report Basis
T = Total

Client: Curtis & Tompkins, Ltd.

Job Number: 640-49391-1
SDG: 261495

Laboratory Chronicle

Lab ID: **640-49391-1** **Client ID:** **FB-1-10062014**

Sample Date/Time: 10/06/2014 15:15 Received Date/Time: 10/09/2014 09:50

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:Filtration	640-49391-A-1-A		640-112706	640-112288	10/13/2014 08:24	1	TAL TAL	DNS
A:8316	640-49391-A-1-A		640-112706	640-112288	10/27/2014 16:10	1	TAL TAL	RDD

Lab ID: **640-49391-1 MS** **Client ID:** **FB-1-10062014**

Sample Date/Time: 10/06/2014 15:15 Received Date/Time: 10/09/2014 09:50

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:Filtration	640-49391-A-1-B MS		640-112706	640-112288	10/13/2014 08:24	1	TAL TAL	DNS
A:8316	640-49391-A-1-B MS		640-112706	640-112288	10/27/2014 16:22	1	TAL TAL	RDD

Lab ID: **640-49391-1 MSD** **Client ID:** **FB-1-10062014**

Sample Date/Time: 10/06/2014 15:15 Received Date/Time: 10/09/2014 09:50

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:Filtration	640-49391-A-1-C MSD		640-112706	640-112288	10/13/2014 08:24	1	TAL TAL	DNS
A:8316	640-49391-A-1-C MSD		640-112706	640-112288	10/27/2014 16:33	1	TAL TAL	RDD

Lab ID: **MB** **Client ID:** **N/A**

Sample Date/Time: N/A Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:Filtration	MB 640-112288/1-A		640-112706	640-112288	10/13/2014 08:24	1	TAL TAL	DNS
A:8316	MB 640-112288/1-A		640-112706	640-112288	10/27/2014 15:36	1	TAL TAL	RDD

Lab ID: **LCS** **Client ID:** **N/A**

Sample Date/Time: N/A Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:Filtration	LCS 640-112288/2-A		640-112706	640-112288	10/13/2014 08:24	1	TAL TAL	DNS
A:8316	LCS 640-112288/2-A		640-112706	640-112288	10/27/2014 15:48	1	TAL TAL	RDD

Client: Curtis & Tompkins, Ltd.

Job Number: 640-49391-1
SDG: 261495

Laboratory Chronicle

Lab ID: **LCSD** **Client ID:** **N/A**

Sample Date/Time: N/A Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:Filtration	LCSD 640-112288/3-A		640-112706	640-112288	10/13/2014 08:24	1	TAL TAL	DNS
A:8316	LCSD 640-112288/3-A		640-112706	640-112288	10/27/2014 15:59	1	TAL TAL	RDD

Lab References:
TAL TAL = TestAmerica Tallahassee

Certification Summary

Client: Curtis & Tompkins, Ltd.
Project/Site: Pavillion

TestAmerica Job ID: 640-49391-1
SDG: 261495

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Tallahassee	Florida	NELAP	4	E81005
TestAmerica Tallahassee	Georgia	State Program	4	
TestAmerica Tallahassee	Louisiana	NELAP	6	30663
TestAmerica Tallahassee	New Jersey	NELAP	2	FL012
TestAmerica Tallahassee	Texas	NELAP	6	T104704459-11-2
TestAmerica Tallahassee	USDA	Federal		P330-08-00158

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.