



United States Environmental Protection Agency
Office of Environmental Measurement & Evaluation
11 Technology Drive
North Chelmsford, MA 01863-2431

Laboratory Report

December 06, 2010

Tom Hatzopoulos - Mail Code OSRR02-2
US EPA New England R1

Project Number: 10110016
Project: Former Bendix Property - Greenville, MA
Analysis: Metals by XRF
Analyst: Janet Paquin
JP 12/6/10

Analytical Procedure:

All samples were received and logged in by the laboratory according to the USEPA New England SOP for Sample Log-in.

Sample preparation and analysis was done following the EPA Region I SOP, EIASOP-INGXRF0.

Samples were screened using a PANanalytical Epsilon 5 energy dispersive x-ray fluorescence (XRF) spectrometer. The spectrometer is a high resolution energy dispersive x-ray fluorescence spectrometer. It uses both direct and secondary targets to qualitatively and quantitatively analyze elements.

Date Samples Received by the Laboratory: 11/05/2010

Data were reviewed in accordance with the internal verification procedures described in the EPA New England OEME Chemistry QA Plan.

Results relate only to the items tested or to the samples as received by the Laboratory. This analytical report shall not be reproduced except in full, without written approval of the laboratory.

Report may contain multiple sections and each section will be numbered independently.

If you have any questions please call me at 617-918-8340 .

Sincerely,

Daniel N. Boudreau 12/13/10

Daniel N. Boudreau
Chemistry Team Leader

Qualifiers:

RL	Reporting limit
ND	Not Detected above reporting limit
NA	Not Applicable
NC	Not calculated since analyte concentration is ND
J	Estimated result. The result is estimated because a double layer of prolene film was used in the XRF sample cup to keep the sample from leaking. The instrument software only corrects for a single layer of film. Therefore, the results may be affected.
J1	Estimated value due to MS recovery outside acceptance criteria
J3	Estimated value due to RPD result outside acceptance criteria
J4	Estimated value due to certified reference material result outside acceptance criteria
RPD	Relative Percent Difference

Standard reference materials SRM2709 and SRM2710 are the quality control standards that correspond to the solid sample. The Conostan oil standards are the quality control standards that correspond to the liquid samples.

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Former Bendix Property - Greenville, MA

Metals by XRF

Client Sample ID: R01-101104TH-0001

Lab Sample ID: AB12639

Date of Collection: 11/4/2010

Matrix Product

Date of Analysis: 11/30/10

<u>CAS Number</u>	<u>Compound</u>	<u>Concentration mg/Kg</u>	<u>RL mg/Kg</u>	<u>Qualifier</u>
7440-38-2	Arsenic	ND	10	J4
7440-39-3	Barium	ND	50	J4
7440-43-9	Cadmium	ND	10	
7440-47-3	Chromium	ND	30	
7439-92-1	Lead	ND	5	
7439-97-6	Mercury	ND	20	
7782-49-2	Selenium	ND	10	
7440-22-4	Silver	ND	10	

Comments:

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Former Bendix Property - Greenville, MA

Metals by XRF

Client Sample ID: R01-101104TH-0002

Lab Sample ID: AB12640

Date of Collection: 11/4/2010

Matrix Product

Date of Analysis: 11/30/10

<u>CAS Number</u>	<u>Compound</u>	<u>Concentration mg/Kg</u>	<u>RL mg/Kg</u>	<u>Qualifier</u>
7440-38-2	Arsenic	ND	10	J4
7440-39-3	Barium	ND	50	J4
7440-43-9	Cadmium	ND	10	
7440-47-3	Chromium	ND	30	
7439-92-1	Lead	ND	5	
7439-97-6	Mercury	ND	20	
7782-49-2	Selenium	ND	10	
7440-22-4	Silver	ND	10	

Comments:

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Metals by XRF

Client Sample ID: R01-101104TH-0003

Lab Sample ID: AB12641

Date of Collection: 11/4/2010

Matrix Product

Date of Analysis: 11/30/10

<u>CAS Number</u>	<u>Compound</u>	<u>Concentration mg/Kg</u>	<u>RL mg/Kg</u>	<u>Qualifier</u>
7440-38-2	Arsenic	ND	10	J4
7440-39-3	Barium	ND	50	J4
7440-43-9	Cadmium	ND	10	
7440-47-3	Chromium	ND	30	
7439-92-1	Lead	ND	5	
7439-97-6	Mercury	ND	20	
7782-49-2	Selenium	ND	10	
7440-22-4	Silver	ND	10	

Comments:

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Metals by XRF

Client Sample ID: R01-101104TH-0004

Lab Sample ID: AB12642

Date of Collection: 11/4/2010

Matrix Product

Date of Analysis: 11/30/10

<u>CAS Number</u>	<u>Compound</u>	<u>Concentration mg/Kg</u>	<u>RL mg/Kg</u>	<u>Qualifier</u>
7440-38-2	Arsenic	ND	10	J4
7440-39-3	Barium	ND	50	J4
7440-43-9	Cadmium	ND	10	
7440-47-3	Chromium	ND	30	
7439-92-1	Lead	ND	5	
7439-97-6	Mercury	ND	20	
7782-49-2	Selenium	ND	10	
7440-22-4	Silver	ND	10	

Comments:

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Former Bendix Property - Greenville, MA

Metals by XRF

Client Sample ID: R01-101104TH-0005

Lab Sample ID: AB12643

Date of Collection: 11/4/2010

Matrix Product

Date of Analysis: 11/30/10

<u>CAS Number</u>	<u>Compound</u>	<u>Concentration mg/Kg</u>	<u>RL mg/Kg</u>	<u>Qualifier</u>
7440-38-2	Arsenic	ND	10	J4
7440-39-3	Barium	ND	50	J4
7440-43-9	Cadmium	ND	10	
7440-47-3	Chromium	ND	30	
7439-92-1	Lead	ND	5	
7439-97-6	Mercury	ND	20	
7782-49-2	Selenium	ND	10	
7440-22-4	Silver	ND	10	

Comments:

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Former Bendix Property - Greenville, MA

Metals by XRF

Client Sample ID: R01-101104TH-0006

Lab Sample ID: AB12644

Date of Collection: 11/4/2010

Matrix Product

Date of Analysis: 11/30/10

<u>CAS Number</u>	<u>Compound</u>	<u>Concentration mg/Kg</u>	<u>RL mg/Kg</u>	<u>Qualifier</u>
7440-38-2	Arsenic	ND	10	J4
7440-39-3	Barium	ND	50	J4
7440-43-9	Cadmium	ND	10	
7440-47-3	Chromium	ND	30	
7439-92-1	Lead	ND	5	
7439-97-6	Mercury	ND	20	
7782-49-2	Selenium	ND	10	
7440-22-4	Silver	ND	10	

Comments: The sample consisted of two layers. The top layer was orange and the bottom layer was clear. The two layers were separated and run individually. The results of the top layer are reported. The results for the bottom layer were also ND for all eight elements.

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Former Bendix Property - Greenville, MA

Metals by XRF

Client Sample ID: R01-101104TH-0007

Lab Sample ID: AB12645

Date of Collection: 11/4/2010

Matrix: Product

Date of Analysis: 11/30/10

<u>CAS Number</u>	<u>Compound</u>	<u>Concentration mg/Kg</u>	<u>RL mg/Kg</u>	<u>Qualifier</u>
7440-38-2	Arsenic	ND	10	J4
7440-39-3	Barium	ND	50	J4
7440-43-9	Cadmium	ND	10	
7440-47-3	Chromium	ND	30	
7439-92-1	Lead	ND	5	
7439-97-6	Mercury	ND	20	
7782-49-2	Selenium	ND	10	
7440-22-4	Silver	ND	10	

Comments: The sample consisted of two layers. The top layer was orange and the bottom layer was clear. The two layers were separated and run individually. The results of the top layer are reported. The results for the bottom layer were also ND for all eight elements.

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Former Bendix Property - Greenville, MA

Metals by XRF

Client Sample ID: R01-101104TH-0043

Lab Sample ID: AB12650

Date of Collection: 11/4/2010

Matrix: Solid Product

Date of Analysis: 12/1/10

<u>CAS Number</u>	<u>Compound</u>	<u>Concentration mg/Kg</u>	<u>RL mg/Kg</u>	<u>Qualifier</u>
7440-38-2	Arsenic	ND	10	
7440-39-3	Barium	ND	50	J4
7440-43-9	Cadmium	ND	10	
7440-47-3	Chromium	370	30	
7439-92-1	Lead	ND	5	
7439-97-6	Mercury	ND	20	
7782-49-2	Selenium	ND	10	
7440-22-4	Silver	ND	10	

Comments:

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Laboratory Duplicate Results

COMPOUND	SAMPLE RESULT mg/Kg	SAMPLE DUPLICATE RESULT mg/Kg	PRECISION RPD %	QC LIMITS
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Sample ID: AB12639

Arsenic	ND	ND	NC	35
Barium	ND	ND	NC	35
Cadmium	ND	ND	NC	35
Chromium	ND	ND	NC	35
Lead	ND	ND	NC	35
Mercury	ND	ND	NC	35
Selenium	ND	ND	NC	35
Silver	ND	ND	NC	35

Sample ID: AB12650

Arsenic	ND	ND	NC	35
Barium	ND	ND	NC	35
Cadmium	ND	ND	NC	35
Chromium	370	380	3	35
Lead	ND	ND	NC	35
Mercury	ND	ND	NC	35
Selenium	ND	ND	NC	35
Silver	ND	ND	NC	35

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XRF QC REPORT

Former Bendix Property - Greenville, MA

Standard Reference Material 2709

COMPOUND	MEASURED CONCENTRATION mg/Kg	CERTIFIED VALUE mg/Kg	QC LIMITS mg/Kg
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Run Date: 12/01/2010

Arsenic	19	18	13 - 23
Barium	790	970	680 - 1260
Chromium	100	130	91 - 170
Lead	20	19	13 - 25

Comments:

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XRF QC REPORT

Former Bendix Property - Greenville, MA

Standard Reference Material 2710

COMPOUND	MEASURED CONCENTRATION mg/Kg	CERTIFIED VALUE mg/Kg	QC LIMITS mg/Kg
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Run Date: 12/01/2010

Arsenic	620	630	440 - 820
Barium	970	710	497 - 920
Cadmium	22	22	15 - 29
Lead	5330	5530	3870 - 7190
Mercury	37	33	23 - 43
Silver	40	35	25 - 46

Comments:

