# Periodic Review Report

*Former Banknote Facility*
*10 Dunnigan Drive*
*Ramapo, New York*
*NYSDEC BCP Number: C344047*

September 2013

ERM Project Number: 0158624

Prepared for:

Manhattan Beer Distributors
400 Walnut Avenue
Bronx, New York 10454

Prepared by:

**ERM Consulting and Engineering, Inc.**
5788 Widewaters Parkway
Dewitt, New York 13214

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*A CERTIFICATION OF INSTITUTIONAL CONTROLS/ ENGINEERING CONTROLS*
*B JUNE 2013 GROUND WATER SAMPLING REPORT*

## *EXECUTIVE SUMMARY*

The Former Banknote Facility is a 10-acre parcel of land with buildings located at 10 Dunnigan Drive, Town of Ramapo, Rockland County, New York (the "Site"). The former owner of the property, Baker Properties, Inc. (Baker) of Pleasantville, New York, entered in to a Brownfield Cleanup Agreement (BCA) with an effective date of 4 June 2004, with the New York State Department of Environmental Conservation (NYSDEC), BCA Index No.: A3-0424-0007; Site No. C00359-3 to address soil contained chromium above regulatory limits.

All affected soil was removed and disposed at a secure and regulated facility. A cap of topsoil was placed over the formerly affected soil and all soil at the Site meet NYSDEC regulatory standards. Low-level concentrations of chromium are present in Site ground water. The extent of affected ground water has been identified from over 17 years of monitoring. There is no affected ground water leaving the Site. A use exclusion has been placed Site ground water and a long-term ground water monitoring program has been implemented.

The current owner Manhattan Beer Distributors is in compliance with the Site Management Plan and there are no recommended changes to the Site the management strategy at this time. The long-term ground water monitoring program will be continued with the next ground water sampling event proposed for September 2014.

## *1.0 INTRODUCTION*

On behalf of Manhattan Beer Distributors (MBD), ERM Consulting and Engineering, Inc. (ERM) has prepared this Period Review Report (PRR) as require by the New York State Department of Environmental Conservation (NYSDEC). This PRR documents the implementation of, and compliance with the Site Specific Management Plan as required by Section 6.3(b) of Division Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10). The PRP Certification of Institutional Controls/ Engineering Controls (IC/ECs) is presented as Attachment A.

## *1.1 PROJECT BACKGROUND*

The Former Banknote Facility is a 10-acre parcel and structure located at 10 Dunnigan Drive, Town of Ramapo, Rockland County, New York (the "Site"). The former owner of the Site, Baker Properties, Inc. (Baker) of Pleasantville, New York purchased the property in 1984. Baker leased the facility to American Banknote (ABN) from January of 1984 to April of 1990. In 1990, ABN assigned its lease of the property over to Banknote Corporation of America (BCA), who leased the property until December 1995. There were two known environmental issues during ABN's and BCA's occupancy of the building associated with the operation of a chromium scrubber on the east side of the building. This area of concern was discovered in August 1986 and reportedly remediated at a later, but unknown, date. The second discovery of chromium contamination was in this same area in March of 1990. In 1992, the soil in this area was again remediated, under the direction of the NYSDEC.

In December 1995, the building has been completely decontaminated and sampled and a portion of the affected soil was removed from the west side of the building and the former chromium plating room. Additionally, an extensive database of subsurface samples was generated to characterize and monitor the subsurface soil and water at the Site.

An additional remedial action was performed at the Site in 2004 under a Brownfield Cleanup Agreement (BCA) with an effective

date of 24 June 2004, between Baker and the NYSDEC, BCA Index No. A3-0424-0007; Site No. C00359-3. The remedial work performed in the summer of 2004 consisted of the following elements:

- Excavation and off-site disposal of chromium-impacted soil from beneath the former chromium room (FCR) floor and the exterior of the building;
- Collection of confirmatory samples to document the quality of the remaining soil in the excavated areas;
- Backfill and restoration of the excavations and installation of a new concrete slab in the FCR; and
- Implementation of a post-remedy ground water monitoring program and the placement of ground water use limitations on the property deed.

The Final Remedial Action Report summarized Site remedial activity was prepared and submitted to the in March 2005. A Certification of Completion was issued by the NYSDEC in December 2007.

## *1.2 REMEDIAL OBJECTIVES*

The remedial action objectives (RAOs) selected for the Site were to eliminate the potential for direct human contact with the chromium affected soils through soil excavation. The remedial activities meet the project objectives by eliminating the potential for direct human contact with chromium-affected soil. Chromium-affected soils with concentrations greater than 50 mg/kg, to a depth of approximately 6-feet below grade were removed from the Site.

## *2.0 INSTIUTIONAL AND ENGINEERING CONTROLS*

IC/ECs as described in DER 10 detail that "the oversight steps and any other media-specific requirements necessary to assure the institutional and/or engineering controls required by the decision document for the Site remain in place and effective". The institutional control for the Site is an environmental easement which placed ground water use limitations on the property deed and requires long term ground water monitoring program. In addition, the responsible party is required to prepare and submit PRP Certification of IC/ECs (Attachment A).

## *3.0 MONITORING PLAN*

Ground water samples were collected from select monitoring wells at the Site for five quarterly ground water monitoring events and have been collected every firth quarter (15 months) thereafter. The analytical results are validated, summarized in a report and submitted to the NYSDEC following each sampling event. The ground water program is re-evaluated in each summary report to determine the most appropriate sampling interval or closure. The results of the June 2013 ground water sampling event are summarized in a Ground Water Monitoring Report presented as Attachment B.

## *4.0 EVALUATION OF REMEDY PROFORMANCE, EFFECTIVENESS AND PROTECTIVENESS*

The restriction on ground water use at the Site remains in effect. The Site is used as commercial/ industrial Site with access limited to Site workers and Site visitor.

Long-term ground water monitoring has continued to be performer at the Site since the implementation of the remedial action. ERM re-evaluated the ground water data after three rounds of sampling and in a correspondence dated 12 September 2005, the NYSDEC agreed to remove monitoring wells MW-2, MW-3, MW-7, MW-10 and DW-1 from the ground water sampling schedule because the chromium concentrations in the samples collected from these monitoring wells were consistently below the reporting limit for chromium.

ERM continues to monitor three monitoring wells (MW-4, MW-6 and MW-8) at the Site. Data summarized in the attached Ground Water Sampling Report dated September 2013, indicates that two monitoring wells (MW-4 and MW-8) contained total chromium at concentrations exceeding the NYSDEC Ground Water Standard (Attachment B). A review of the analytical data from previous sampling events indicated chromium concentrations in the ground water collected from MW-4 and MW-8 have shown slight fluctuations with no clear trend. Hexavalent chromium concentrations were obtained during this sampling event and indicate that the concentrations of total chromium detected equal the concentrations of hexavalent chromium detected in these two wells.

Total chromium concentrations in MW-6 located downgradient and proximal to the property line has shown slight fluctuations in concentration, but have been below the applicable ground water standard since July 2002. Data from 2013 indicates hexavalent chromium is making up approximately 8 percent of the total chromium detected in groundwater.

The remedial action completed at the Site and IC/ECs are effectively managing potential exposure scenarios and have effectively stopped off-Site migration of chromium-effected ground water with concentrations above the applicable NYSDEC guidance values.

## *5.0 OPERATION AND MAINTENANCE COMPLIANCE*

There are no mechanical systems of any kind associated with the remaining remedial effort at the Site; therefore, no additional information is required in this section.

## *6.0 RECOMMENDATIONS AND CONCLUSIONS*

The remedial action was completed at the Site and IC/ECs are effectively managing potential exposure scenarios and have effectively stopped off-Site migration of chromium-effected ground water above the applicable NYSDEC guidance values. MDB is compliant with the SMP.

Due to the exceedances of the NYSDEC ground water standard in MW-4 and MW-8, ERM recommends a continuation of ground water monitoring at the Site. The next sampling event is proposed for September 2014 which is a continuation of monitoring every fifth quarter (15-months). During this future ground water sampling event, ERM recommends sampling MW-4, MW-6 and MW-8. Following the September 2014 sampling event, ERM will prepare and submit a letter report discussing the analytical results. ERM will reevaluate Site conditions during 2014 and make recommendations based on the analytical data and statistical trends in chromium concentrations.

As required by the NYSDEC, a PRR will be submitted every three years with the next PRR is due July 2016.

# *ATTACHMENT A*
# *CERTIFICATION OF INSTITUTIONAL CONTROLS/ ENGINEERING CONTROLS*

Enclosure 2

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION**
**Site Management Periodic Review Report Notice**
**Institutional and Engineering Controls Certification Form**

**Site Details** **Box 1**

**Site No.** C344047

**Site Name** Former Banknote Corporation of America

Site Address: 10 Dunnigan Drive Zip Code: 10901
City/Town: Suffern
County: Rockland
Site Acreage: 5.6

Reporting Period: July 27, 2010 to July 27, 2013

| | YES | NO |
|---|---|---|
| 1. Is the information above correct? | ☒ | ☐ |
| If NO, include handwritten above or on a separate sheet. | | |
| 2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period? | ☐ | ☒ |
| 3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))? | ☐ | ☒ |
| 4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period? | ☐ | ☒ |
| **If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.** | | |
| 5. Is the site currently undergoing development? | ☐ | ☒ |

**Box 2**

| | YES | NO |
|---|---|---|
| 6. Is the current site use consistent with the use(s) listed below? Commercial and Industrial | ☒ | ☐ |
| 7. Are all ICs/ECs in place and functioning as designed? | ☒ | ☐ |

**IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.**

**A Corrective Measures Work Plan must be submitted along with this form to address these issues.**

Signature of Owner, Remedial Party or Designated Representative — Date

**Box 2A**

| | YES | NO |
|---|---|---|
| 8. Has any new information revealed that assumptions made in the Qualitative Exposure Assessment regarding offsite contamination are no longer valid? | ☐ | ☒ |
| **If you answered YES to question 8, include documentation or evidence that documentation has been previously submitted with this certification form.** | | |
| 9. Are the assumptions in the Qualitative Exposure Assessment still valid? (The Qualitative Exposure Assessment must be certified every five years) | ☒ | ☐ |
| **If you answered NO to question 9, the Periodic Review Report must include an updated Qualitative Exposure Assessment based on the new assumptions.** | | |

SITE NO. C344047

**Box 3**

**Description of Institutional Controls**

| Parcel | Owner | Institutional Control |
|---|---|---|
| 55.7-1-11 | Mike McCarthy | Ground Water Use Restriction<br>Landuse Restriction |

A. Land Use is restricted to commercial or industrial uses.

Controls.

i. The Owner of the Property shall prohibit the use of groundwater underlying the Property, without treatment rendering it safe, for drinking water or industrial purposes, as appropriate, unless the user first obtains permission to do so from the NYSDEC, or any successor agency of the NYSDEC.

ii. The groundwater monitoring wells installed on the Controlled Property as part of the Site Management Plan ("SMP") approved for the Controlled Property by the NYSDEC shall not be removed or rendered ineffective by Grantor, Grantor's assigns, or any lessees and persons using the Controlled Property without the express written approval of the NYSDEC, shall remain accessible at all times, and shall be inspected and tested in accordance with the SMP approved for the Controlled Property by the NYSDEC and any NYSDEC approved adjustments to the SMP.

iii. Grantor shall provide all persons who aquire an interest in the Controlled Property a true and complete copy of the SMP approved for the Controlled Property by the NYSDEC and all NYSDEC-approved amendments of the SMP.

**Box 4**

**Description of Engineering Controls**

None Required

Not Applicable/No EC's

**Box 5**

## Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

| YES | NO |
|---|---|
| ☒ | ☐ |

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

   (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

| YES | NO |
|---|---|
| ☒ | ☐ |

**IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.**

**A Corrective Measures Work Plan must be submitted along with this form to address these issues.**

Signature of Owner, Remedial Party or Designated Representative — Date

IC CERTIFICATIONS
SITE NO. C344017

Box 6

**SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE**

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I MICHAEL MCCARTHY at 10 DUNNIGAN DR. SUFFERN, NY. 10901
print name print business address

am certifying as S.V.P OF OWNER. (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

Signature of Owner, Remedial Party, or Designated Representative Rendering Certification — Date

*APPENDIX B*
*JUNE 2013 GROUND*
*WATER MONITORING REPORT*

# June 2013 Quarterly Ground Water Monitoring Report

*Former Banknote Facility*
*10 Dunnigan Drive*
*Ramapo, New York*
*NYSDEC BCP Number: C344047*

September 2013

ERM Project Number: 0158624

Prepared for:

Manhattan Beer Distributors
400 Walnut Avenue
Bronx, New York 10454

Prepared by:

**ERM Consulting and Engineering, Inc.**
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*D* *LABORATORY ANALYTICAL REPORT*
*E* *DATA USABILITY SUMMARY REPORT*

## *1.0 INTRODUCTION*

On behalf of Manhattan Beer Distributors (Manhattan), ERM Consulting and Engineering, Inc. (ERM) has prepared this Ground Water Monitoring Report (Report) to document the June 2013 ground water sampling activities at the Former Banknote Facility. The Former Banknote Facility is a 10-acre parcel of land with buildings located at 10 Dunnigan Drive, Town of Ramapo, Rockland County, New York (the "Site"). A Site Location Map is presented on Figure 1, Appendix A.

Ground water sampling was conducted in accordance with a Brownfield Cleanup Agreement (BCA) with an effective date of 4 June 2004, between Baker Properties, Inc. (Baker) of Pleasantville, New York (the previous Site Owners) and the New York State Department of Environmental Conservation (NYSDEC), BCA Index No.: A3-0424-0007; Site No. C00359-3, and in accordance with the following technical documents:

- NYSDEC-approved "*Remedial Action Work Plan (RAWP)*", under the Voluntary Cleanup Program (VCP); NYSDEC VCP No.: V-00359, (ERM, December, 2003);

- NYSDEC-approved "*Health and Safety Plan*", (ERM, January 2004); and

- NYSDEC-approved "*Quality Assurance Project Plan*", (ERM, October 2003);

As part of the RAWP, ERM sampled the following ground water monitoring wells MW-1, MW-2, MW-3 MW-4, DW-1, MW-5 MW-6 MW-7, MW-8 and MW-10 for total chromium on a quarterly basis for five quarters and every fifth quarter for five years thereafter. ERM re-evaluated the data after the first three rounds of sampling and in a correspondence dated 12 September 2005, the NYSDEC agreed to remove monitoring wells MW-2, MW-3, MW-7, MW-10 and DW-1 from the sample schedule because the chromium concentrations in the samples collected from these monitoring wells were consistently below the reporting limit for chromium.

In the Quarterly Ground Water Report dated January 2011 ERM recommended removing MW-5 from the monitoring program as

detected concentrations have been below the NYSDEC's guidance values since the July 2002 sampling event. This was subsequently approved by NYSDEC.

MW-1 was destroyed during a parking lot renovation, and is therefore no longer sampled. As a result of the aforementioned changes, the approved roster of wells currently sampled includes MW-4, MW-6, and MW-8.

## *2.0 GROUND WATER SAMPLING METHODS*

Pursuant to the NYSDEC-approved monitoring plan, ERM collected ground water samples at the site during the following months:

- December 2004,
- March 2005,
- June 2005,
- September 2005,
- December 2005,
- March 2007,
- May 2008,
- September 2009,
- December 2010,
- March 2012, and
- June 2013.

On 28 June 2013, ERM collected the quarterly ground water samples from monitoring wells MW-4, MW-6, and MW-8 at the west end of the site. A site layout map showing the locations of the ground water monitoring wells is included as Figure 2, Appendix A.

An ERM geologist collected static water level measurements from each of the wells using an electronic water level indicator, which was washed with a Liquinox™ solution, 10% nitric acid solution and rinsed with distilled water between measurement locations. The reference point used for all water level measurements was the top of the well casing.

The low-flow purging/sampling technique was implemented by ERM for each of the sampled wells, employing a flow-through cell, probe and meter to measure water quality parameters including temperature, pH, turbidity, specific conductivity, oxidation-reduction potential, and dissolved oxygen (DO) continuously at each well during purging. Samples were collected once the ground water parameters stabilized for three consecutive readings in accordance with the U.S. Environmental Protection Agency Low Stress Purging and Sampling Procedure for Collection of Ground Water from Monitoring Wells, dated January 2010. For quality

control requirements a blind field duplicate was collected from MW-4.

All samples were transferred into clean, laboratory-supplied containers and placed into a chilled, thermally insulated cooler immediately after collection. Ground water samples collected on from during this sampling event were transported by courier to Spectrum Analytical, Inc. (Spectrum) in Agawam, Massachusetts for analysis. Spectrum is a New York State Department of Health (NYSDOH) approved environmental laboratory.

## *3.0 GROUND WATER TABLE ELEVATIONS*

ERM collected depth to ground water measurements from the shallow wells located along the west side of the Site on 28 June 2013 (Table 1). A water table contour map (Figure 3, Appendix A) was compiled using the water level data from the eight shallow monitoring wells.

The water table contour map indicates that shallow ground water flow during this event was generally to the north-northwest consistent with earlier sampling events.

## *4.0 ANALYTICAL RESULTS*

Ground water samples collected from the monitoring wells were analyzed for total chromium by United States Environmental Protection Agency (EPA) Method 6010C and hexavalent chromium by SW846-7196A in accordance with the 1995 NYSDEC Analytical Services Protocol (ASP) Category B deliverable guidelines. A summary table including the results of previous sampling events is included as Table 2, Appendix B. Ground water sampling records are included in Appendix C. Laboratory analytical report is presented as Appendix D. A Data Usability Summary Report performed by ERM is presented as Attachment E. This data quality review concluded that the results are valid and usable for assessment of the Site ground water quality.

Laboratory analytical data from the 28 June 2013 sampling event indicate that total chromium was detected above the NYSDEC ground water standard of 0.050 milligrams per liter (mg/l) in the ground water samples collected from monitoring well MW-4 and MW-8. Slight fluctuations in concentration over time are noted; however the current results are generally consistent with previous sampling efforts.

Hexavalent chromium was detected in all three wells. Hexavalent chromium concentrations in MW-4 and MW-8 are approximately equal to the total chromium value indicating that all chromium detected in these wells was hexavalent chromium. Hexavalent chromium in MW-6 makes up 8percent of the total detected concentration.

## *5.0 SUMMARY*

Static ground water measurements indicate ground water flow at the Site was to the north-northwest which is consistent with previous sampling events.

Data from the 28 June 2013 sampling event indicates that two monitoring wells (MW-4 and MW-8) contained total chromium at concentrations exceeding the NYSDEC Ground Water Standard. A review of the analytical data from previous sampling events indicated chromium concentrations in the ground water collected from MW-4 and MW-8 have shown slight fluctuations with no clear trend. Hexavalent chromium concentrations were obtained during this sampling event and indicate that the concentrations of total chromium detected equal the concentrations of hexavalent chromium detected in these two wells.

There is a general decreasing trend in total chromium concentration in ground water collected from MW-8 since December 2005. The last sampling event in November 2010 marked the first monitoring period where total chromium concentration in MW-8 was under the applicable standard. However, the data collected during the last two sampling events indicates a slight rebound and concentrations are now above the applicable standard.

Total chromium concentrations in MW-6 have shown slight fluctuations, but have been below the applicable ground water standard since July 2002. Data from 2013 indicates hexavalent chromium is making up approximately 8 percent of the total chromium detected in groundwater.

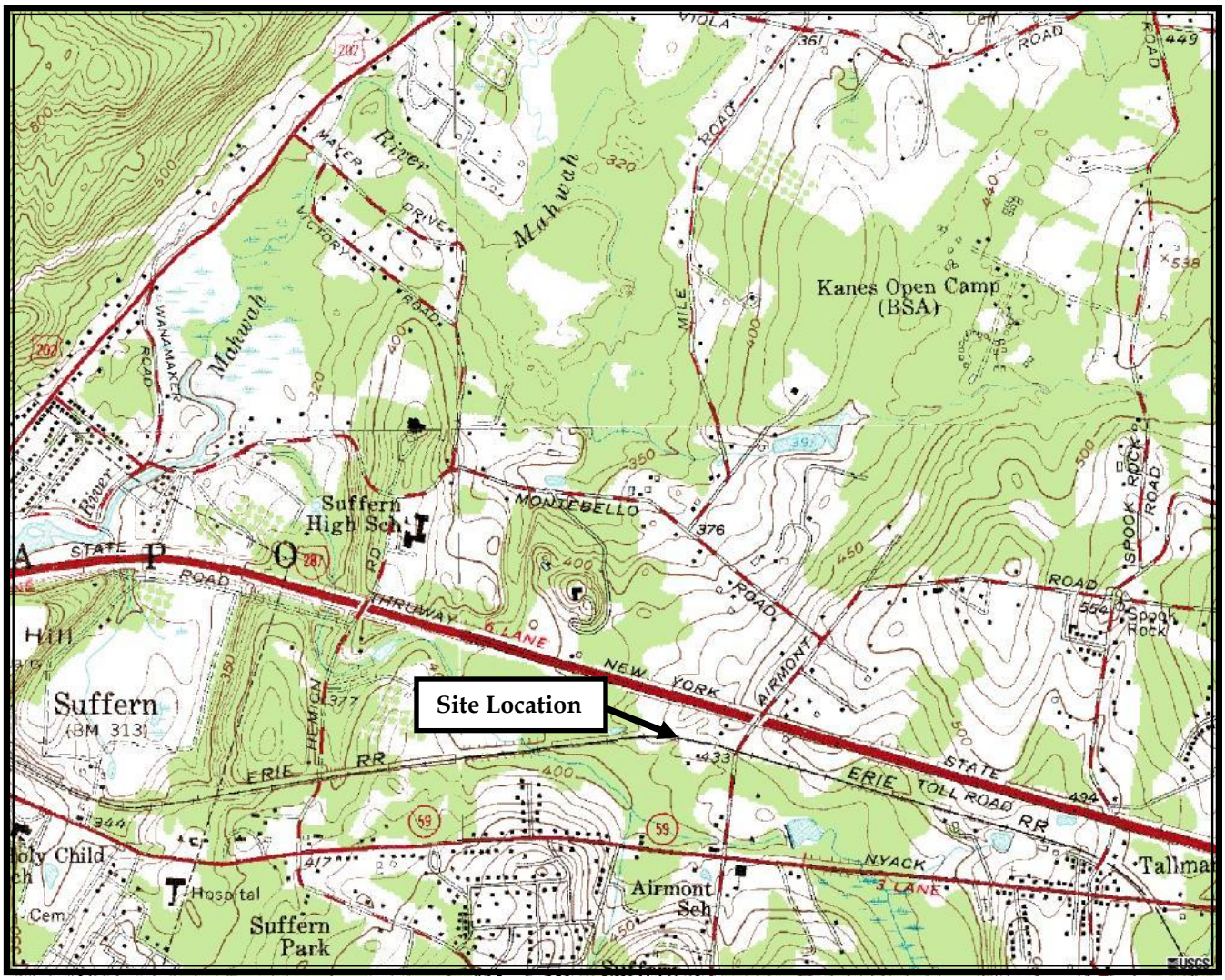
Two wells located within close proximity of the building (MW-4 and MW-8) have had total chromium concentrations which exceeded the applicable NYSDEC ground water standard during ERM's monitoring period as shown on Table 2. Ground water data indicates that total chromium concentration in ground water monitored proximal to the down-gradient boundaries of the Site have been below applicable NYSDEC ground water standards since July 2002.

## *6.0 RECOMMENDATIONS*

Due to the exceedance of the NYSDEC ground water standard in MW-4 and MW-8, ERM recommends a continuation of ground water monitoring at the Site. The next sampling event will be completed during September 2014 which is a continuation of monitoring every fifth quarter (15-months). During this future ground water sampling event, ERM recommends sampling MW-4, MW-6 and MW-8. Following the September 2014 sampling event, ERM will prepare and submit a letter report discussing the analytical results. ERM will reevaluate Site conditions during 2014 and make recommendations based on the analytical data and statistical trends in chromium concentrations.

As required by the NYSDEC, a Site Management Periodic Review (MPR) will be submitted every three years with the next MPR due July 2016.

# *APPENDIX A*
# *FIGURES*





| | | |
|---|---|---|
| Site Location<br>Former Banknote Facility<br>Suffern, New York | | |
| Prepared For: Manhattan Beer Distributors | | |
| ERM | Scale<br>As Shown | Figure<br>1 |
| | Date<br>14 Sept 09 | |

N

New York State Thruway

MW-6

MW-7

MW-10

MW-5

Stone Swale

Administrative Offices

DW-1

MW-4

Former Chromium Room

Loading Docks

MW-3

MW-8

**Former Banknote Facility**

MW-2

Parking Lot

Electrical Transformer

Parking Lot

Dunnigan Drive

**Legend**

Fence

MW-2 Monitoring Well

Site Layout
Former Banknote Facility
Suffern, New York

Prepared For: Manhattan Beer Dsitributors

ERM

Scale: NTS

Date: 14 Sept 09

Figure: 2

N

New York State Thruway

MW-6
(349.99)

MW-7
(350.72)

351

MW-10
(351.22)

MW-5
(352.24)

353

355

357

MW-4
(357.96)

MW-3
(358.97)

Former
Chromium Room

359

MW-8
(360.40)

**Former Banknote Facility**

Loading
Docks

Parking Lot

MW-2
(360.87)

Parking Lot

Dunnigan Drive

**Legend**

Fence

MW-2 Monitoring Well

Ground Water Contour, Dashed Where Inferred

Ground Water Contour- 28 June 2013
Former Banknote Facility
Suffern, New York

Prepared For: Manhattan Beer Distributors

ERM

Scale: NTS

Date: 28 June 2013

Figure: 3

# *APPENDIX B*
# *TABLES*

**TABLE 1**
**SUMMARY OF MONITORING WELL AND GROUND WATER ELEVATIONS**
**FORMER BANKNOTE OF AMERICA FACILITY**
**SUFFERN, ROCKLAND COUNTY, NEW YORK**

| MONITORING WELL INDENTIFICATION | ELEVATION OF CASING (feet) | DEPTH TO GROUND WATER (feet) | ELEVATION OF GROUND WATER (feet) |
|---|---|---|---|
| **MW-2** | 368.19 | 7.32 | 360.87 |
| **MW-3** | 369.64 | 10.67 | 358.97 |
| **MW-4** | 373.14 | 15.18 | 357.96 |
| **MW-5** | 366.91 | 14.67 | 352.24 |
| **MW-6** | 370.02 | 20.03 | 349.99 |
| **MW-7** | 371.30 | 20.58 | 350.72 |
| **MW-8** | 373.66 | 13.26 | 360.40 |
| **MW-10** | 368.97 | 17.75 | 351.22 |

**NOTES:**

Depth to ground water measured 28 June 2013

**TABLE 2**
**SUMMARY OF ANALYTICAL RESULTS FOR CHROMIUM IN GROUND WATER**
**FORMER BANKNOTE OF AMERICA FACILITY**
**SUFFERN, ROCKLAND COUNTY, NEW YORK**

| SAMPLE IDENTIFICATION | MW-4 | | MW-6 | | MW-8 | |
|---|---|---|---|---|---|---|
| ANALYTE | Total Cr | $Cr^{6+}$ | Total Cr | $Cr^{6+}$ | Total Cr | $Cr^{6+}$ |
| **SAMPLE DATES** | | | | | | |
| January-96 | --- | NA | --- | NA | --- | NA |
| May-96 | --- | NA | --- | NA | --- | NA |
| August-96 | **0.290** | NA | --- | NA | --- | NA |
| December-96 | **1.300** | NA | **---** | NA | --- | NA |
| March-97 | **0.470** | NA | --- | NA | --- | NA |
| June-97 | **2.400** | NA | --- | NA | --- | NA |
| September-97 | **0.180** | NA | **0.210** | NA | --- | NA |
| December-97 | **0.210** | NA | **0.210** | NA | --- | NA |
| July-99 | **0.830** | NA | **0.080** | NA | --- | NA |
| July-02 | **0.550** | NA | 0.044 | NA | **0.180** | NA |
| December-04 | **0.814 J** | NA | 0.047 J | NA | **0.274 J** | NA |
| March-05 | **1.23 J** | NA | 0.0324 J | NA | **0.274 J** | NA |
| June-05 | **1.44 J** | NA | 0.0132 J | NA | NS* | NA |
| September-05 | **0.0861 J** | NA | 0.0357 J | NA | **0.0823 J** | NA |
| December-05 | **0.885** | NA | 0.0184 | NA | **0.237** | NA |
| March-07 | **0.716** | NA | 0.0346 | NA | **0.133** | NA |
| May-08 | **1.410** | NA | 0.0347 | NA | **0.119** | NA |
| September-09 | **1.580** | NA | 0.0125 | NA | **0.073** | NA |
| November-10 | **1.5000** | NA | 0.0181 J | NA | 0.0410 | NA |
| March-12 | **1.7800** | 1.780 | 0.0167 | 0.020 | **0.0982** | 0.102 |
| June-13 | **0.6560** | 0.659 | 0.0102 | 0.008 U | **0.234 J** | 0.313 J |
| | 0.984 | 1.220 | 0.067 | 0.020 | 0.126 | average |

**Notes:**

Concentrations reported in mg/l.

NA -Not analyzed

BRL= Below Reporting Limit.

Bold white text with black background indicates exceedance of the NYSDEC action level in ground water of 0.05 mg/l.

J indicates an estimated value as per the DUSR or the laboratory analytical data.

U indicates hexalent chromium was identified in the the method blank below the report concentration

Total Cr- total chromium

$Cr^{6+}$ -Hexavalent chromium

# *APPENDIX C*
# *GROUND WATER SAMPLING RECORDS*

# LOW FLOW DATA SHEET

Well ID: MW-4 Date: 6/28/2013 Project Name: Former Bankrates Facility Project Number: 0158C24

Weather Conditions: ±80, overcast

Pump Used: Geopump

Static water level before lowflow: 15.18 (feet below top of casing)
Bottom of well: — (feet below top of casing)

Time Started: _____ Time Finished: _____

| Time | DTW | Pump (on/off) | Turb. | Temp. | pH | ~~Cond.~~ ORP. | DO | Flow | ~~ORP~~ Cond. | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 11:25 | 16.15 | on | 4.71 | 16.61 | 6.78 | 157.4 | 8.81 | 100 | 736 | |
| 11:30 | 16.20 | on | 0.23 | 16.20 | 6.68 | 129.4 | 8.04 | 100 | 593 | |
| 11:35 | 16.27 | on | 0.00 | 16.47 | 6.64 | 103.2 | 7.36 | 100 | 588 | |
| 11:40 | 16.35 | on | 0.00 | (RS) 16.86 | 6.66 | 88.0 | 5.14 | 100 | 583 | |
| 11:45 | 16.39 | on | 0.00 | 17.47 | 6.59 | 81.7 | 4.13 | 100 | 590 | |
| 11:50 | 16.37 | on | 0.00 | 17.49 | 6.61 | 77.6 | 4.03 | 100 | 589 | |
| 11:55 | 16.35 | on | 0.00 | 17.52 | 6.61 | 79.8 | 3.93 | 100 | 598 | |
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| | | | | | | | | | | |

Notes:

Sample ID: MW-4 (06/2013) and Dup (06/2013
Sample Time: 12:00
Total Vol. Purged: 1 Gallons
Samplers Initials: RS

# LOW FLOW DATA SHEET

Well ID: MW-6 Date: 6/28/2013 Project Name: Former Banknotes facility Project Number: 158624

Weather Conditions: ±80, overcast, humid, early morning thunderstorms

Pump Used: Geopump

Static water level before lowflow: 20.03 (feet below top of casing)
Bottom of well: — (feet below top of casing)

Time Started: 10:00 Time Finished: 11:15

| Time | DTW | Pump (on/off) | Turb. | Temp. | pH | Cond. | DO | Flow | ORP | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 10:03 | | on | 11.8 | 6.66 | 6.67 | 1423 | 8.81 | 300 | 223.6 | |
| 10:08 | | on | 9.15 | 14.15 | 7.08 | 1398 | 7.23 | 150 | 223.3 | |
| 10:13 | | on | 8.08 | 16.44 | 7.26 | 1379 | 6.65 | 150 | 236.5 | |
| 10:18 | | on | 4.74 | 16.01 | 7.11 | 1344 | 6.43 | 150 | 258.1 | |
| 10:23 | | on | 0.00 | 17.06 | 7.22 | 1333 | 5.78 | 150 | 247.9 | |
| 10:28 | | on | 0.00 | 15.66 | 7.36 | 1356 | 5.11 | 150 | 242.0 | |
| 10:33 | | on | 0.00 | 15.57 | 7.23 | 1330 | 4.81 | 150 | 264.4 | |
| 10:39 | | on | 0.00 | 15.36 | 7.07 | 1323 | 4.73 | 150 | 273.0 | |
| 10:43 | | on | 0.00 | 15.74 | 7.13 | 1319 | 4.70 | 150 | 269.0 | |
| 10:48 | | on | 0.00 | 15.96 | 7.18 | 1317 | 4.74 | 150 | 259.1 | |
| 10:53 | | on | 0.00 | 16.02 | 7.25 | 1315 | 4.79 | 150 | 257.7 | |
| 10:58 | | on | 0.00 | 15.91 | 7.17 | 1313 | 4.77 | 150 | 254.1 | |
| 11:03 | | on | 0.00 | 15.93 | 7.20 | 1310 | 4.72 | 150 | 250.3 | |
| | | | | | | | | | | |

Notes:

Sample ID: MW-6 (0C/2013
Sample Time: 11:15
Total Vol. Purged: ~1.5 Gallons
Samplers Initials: RS

# LOW FLOW DATA SHEET

Well ID: MW-8 Date: 6/28/2013 Project Name: former Benkoles facility Project Number: 0158624

Weather Conditions: ±85, overcast, humid

Pump Used

Static water level before lowflow: 13.26 (feet below top of casing)
Bottom of well: — (feet below top of casing)

Time Started: _____ Time Finished: _____

| Time | DTW | Pump (on/off) | Turb. | Temp. | pH | Cond. | DO | Flow | ORP | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 13:28 | 13.26 | on | — | — | — | — | — | — | — | |
| 13:30 | 13.65 | on | 3.34 | 16.19 | 7.56 | 1377 | 11.28 | 200 | 117.0 | |
| 13:35 | 13.67 | on | 1.08 | 16.64 | 7.53 | 1357 | 8.85 | 100 | 137.2 | |
| 13:40 | 13.71 | on | 0.33 | 16.57 | 7.53 | 1349 | 5.01 | 100 | 133.7 | |
| 13:45 | 13.76 | on | 0.18 | 16.41 | 7.54 | 1348 | 4.11 | 100 | 151.1 | |
| 13:50 | 13.81 | on | 0.00 | 16.35 | 7.54 | 1345 | 3.57 | 100 | 144.2 | |
| 13:55 | 13.85 | on | 0.00 | 16.51 | 7.54 | 1339 | 3.50 | 100 | 150.0 | |
| 14:00 | 13.88 | on | 0.00 | 16.53 | 7.54 | 1337 | 3.44 | 100 | 152.2 | |
| | | | | | | | | | | |
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| | | | | | | | | | | |

Notes:

Sample ID: MW-8 (06/2013)
Sample Time: 14:10
Total Vol. Purged: 1 Gallons
Samplers Initials: RS

g:geoforms\LowFlow (Updated).XLS
rev. 10/99

# *APPENDIX D*
# *LABORATORY ANALYTICAL REPORT*

Report Date:
12-Jul-13 15:03

☑ Final Report
☐ Re-Issued Report
☐ Revised Report

**SPECTRUM ANALYTICAL, INC.**
*Featuring*
**HANIBAL TECHNOLOGY**

# *Laboratory Report*

Environmental Resources Management
5788 Widewaters Pkwy
Dewitt, NY 13214
Attn: Robert Sents

Project: Former Banknote Facility-Suffern, NY
Project #: Manhattan Beer Distributors (MBD)

| Laboratory ID | Client Sample ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| SB72366-01 | Dup (06/13) | Ground Water | 28-Jun-13 14:00 | 28-Jun-13 18:45 |
| SB72366-02 | MW-6 (06/13) | Ground Water | 28-Jun-13 11:15 | 28-Jun-13 18:45 |
| SB72366-03 | MW-4 (06/13) | Ground Water | 28-Jun-13 12:00 | 28-Jun-13 18:45 |
| SB72366-04 | MW-8 (06/13) | Ground Water | 28-Jun-13 14:10 | 28-Jun-13 18:45 |

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87600/E87936
Maine # MA138
New Hampshire # 2538
New Jersey # MA011/MA012
New York # 11393/11840
Pennsylvania # 68-04426/68-02924
Rhode Island # 98
USDA # S-51435

Authorized by:

Nicole Leja
Laboratory Director

Spectrum Analytical holds certification in the State of New York for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of New York does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.
Please note that this report contains 7 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

*Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our "Quality" web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (NY-11840, FL-E87936 and NJ-MA012).*

*Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.*

**CASE NARRATIVE:**

The samples were received 0.9 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

**There is no relevant protocol-specific QC and/or performance standards non-conformances to report.**

## Sample Acceptance Check Form

| | |
|---|---|
| Client: | Environmental Resources Management - Dewitt, NY |
| Project: | Former Banknote Facility-Suffern, NY / Manhattan Beer Distributors (MBD) |
| Work Order: | SB72366 |
| Sample(s) received on: | 6/28/2013 |
| Received by: | Tanya Krivolenko |

***The following outlines the condition of samples for the attached Chain of Custody upon receipt.***

| | Yes | No | N/A |
|---|---|---|---|
| 1. Were custody seals present? | ☐ | ☑ | ☐ |
| 2. Were custody seals intact? | ☐ | ☐ | ☑ |
| 3. Were samples received at a temperature of ≤ 6°C? | ☑ | ☐ | ☐ |
| 4. Were samples cooled on ice upon transfer to laboratory representative? | ☑ | ☐ | ☐ |
| 5. Were samples refrigerated upon transfer to laboratory representative? | ☐ | ☑ | ☐ |
| 6. Were sample containers received intact? | ☑ | ☐ | ☐ |
| 7. Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)? | ☑ | ☐ | ☐ |
| 8. Were samples accompanied by a Chain of Custody document? | ☑ | ☐ | ☐ |
| 9. Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample? | ☑ | ☐ | ☐ |
| 10. Did sample container labels agree with Chain of Custody document? | ☑ | ☐ | ☐ |
| 11. Were samples received within method-specific holding times? | ☑ | ☐ | ☐ |

Sample Identification
**Dup (06/13)**
SB72366-01

Client Project #: Manhattan Beer Distributors (MBD)
Matrix: Ground Water
Collection Date/Time: 28-Jun-13 14:00
Received: 28-Jun-13

| CAS No. | Analyte(s) | Result | Flag | Units | *RDL | MDL | Dilution | Method Ref. | Prepared | Analyzed | Analyst | Batch | Cert. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals by EPA 200/6000 Series Methods** | | | | | | | | | | | | | |
| | Preservation | **Field Preserved** | | N/A | | | 1 | EPA 200/6000 methods | | | BEL | 1315476 | |
| **Total Metals by EPA 6000/7000 Series Methods** | | | | | | | | | | | | | |
| 7440-47-3 | Chromium | **0.643** | | mg/l | 0.0050 | 0.0009 | 1 | SW846 6010C | 09-Jul-13 | 11-Jul-13 | edt | 1315950 | X |
| **General Chemistry Parameters** | | | | | | | | | | | | | |
| 18540-29-9 | Hexavalent Chromium | **0.688** | LIV | mg/l | 0.050 | 0.015 | 1 | SW846 7196A/SM3500CrD | 28-Jun-13 18:51 | 28-Jun-13 19:42 | TDD/C | 1315388 | X |

Sample Identification
**MW-6 (06/13)**
SB72366-02

Client Project #: Manhattan Beer Distributors (MBD)
Matrix: Ground Water
Collection Date/Time: 28-Jun-13 11:15
Received: 28-Jun-13

| CAS No. | Analyte(s) | Result | Flag | Units | *RDL | MDL | Dilution | Method Ref. | Prepared | Analyzed | Analyst | Batch | Cert. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals by EPA 200/6000 Series Methods** | | | | | | | | | | | | | |
| | Preservation | **Field Preserved** | | N/A | | | 1 | EPA 200/6000 methods | | | BEL | 1315476 | |
| **Total Metals by EPA 6000/7000 Series Methods** | | | | | | | | | | | | | |
| 7440-47-3 | Chromium | **0.0102** | | mg/l | 0.0050 | 0.0009 | 1 | SW846 6010C | 09-Jul-13 | 11-Jul-13 | edt | 1315950 | X |
| **General Chemistry Parameters** | | | | | | | | | | | | | |
| 18540-29-9 | Hexavalent Chromium | **0.008** | | mg/l | 0.005 | 0.001 | 1 | SW846 7196A/SM3500CrD | 28-Jun-13 18:51 | 28-Jun-13 19:43 | TDD/C | 1315388 | X |

Sample Identification
**MW-4 (06/13)**
SB72366-03

Client Project #: Manhattan Beer Distributors (MBD)
Matrix: Ground Water
Collection Date/Time: 28-Jun-13 12:00
Received: 28-Jun-13

| CAS No. | Analyte(s) | Result | Flag | Units | *RDL | MDL | Dilution | Method Ref. | Prepared | Analyzed | Analyst | Batch | Cert. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals by EPA 200/6000 Series Methods** | | | | | | | | | | | | | |
| | Preservation | **Field Preserved** | | N/A | | | 1 | EPA 200/6000 methods | | | BEL | 1315476 | |
| **Total Metals by EPA 6000/7000 Series Methods** | | | | | | | | | | | | | |
| 7440-47-3 | Chromium | **0.656** | | mg/l | 0.0050 | 0.0009 | 1 | SW846 6010C | 09-Jul-13 | 11-Jul-13 | edt | 1315950 | X |
| **General Chemistry Parameters** | | | | | | | | | | | | | |
| 18540-29-9 | Hexavalent Chromium | **0.659** | LIV | mg/l | 0.050 | 0.015 | 1 | SW846 7196A/SM3500CrD | 28-Jun-13 18:51 | 28-Jun-13 19:43 | TDD/C | 1315388 | X |

Sample Identification
**MW-8 (06/13)**
SB72366-04

Client Project #: Manhattan Beer Distributors (MBD)
Matrix: Ground Water
Collection Date/Time: 28-Jun-13 14:10
Received: 28-Jun-13

| CAS No. | Analyte(s) | Result | Flag | Units | *RDL | MDL | Dilution | Method Ref. | Prepared | Analyzed | Analyst | Batch | Cert. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals by EPA 200/6000 Series Methods** | | | | | | | | | | | | | |
| | Preservation | **Field Preserved** | | N/A | | | 1 | EPA 200/6000 methods | | | BEL | 1315476 | |
| **Total Metals by EPA 6000/7000 Series Methods** | | | | | | | | | | | | | |
| 7440-47-3 | Chromium | **0.234** | | mg/l | 0.0050 | 0.0009 | 1 | SW846 6010C | 09-Jul-13 | 11-Jul-13 | edt | 1315950 | X |
| **General Chemistry Parameters** | | | | | | | | | | | | | |
| 18540-29-9 | Hexavalent Chromium | **0.313** | LIV | mg/l | 0.050 | 0.015 | 1 | SW846 7196A/SM3500CrD | 28-Jun-13 18:51 | 28-Jun-13 19:46 | TDD/C | 1315388 | X |

## Total Metals by EPA 6000/7000 Series Methods - Quality Control

| Analyte(s) | Result | Flag | Units | *RDL | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1315950 - SW846 3005A** | | | | | | | | | | |
| **Blank (1315950-BLK1)** | | | | | Prepared: 09-Jul-13 Analyzed: 11-Jul-13 | | | | | |
| Chromium | < 0.0009 | U | mg/l | 0.0009 | | | | | | |
| **LCS (1315950-BS1)** | | | | | Prepared: 09-Jul-13 Analyzed: 11-Jul-13 | | | | | |
| Chromium | **1.34** | | mg/l | 0.0009 | 1.25 | | 107 | 85-115 | | |
| **LCS Dup (1315950-BSD1)** | | | | | Prepared: 09-Jul-13 Analyzed: 11-Jul-13 | | | | | |
| Chromium | **1.34** | | mg/l | 0.0009 | 1.25 | | 108 | 85-115 | 0.1 | 20 |
| **Duplicate (1315950-DUP1)** | | | **Source: SB72366-01** | | Prepared: 09-Jul-13 Analyzed: 11-Jul-13 | | | | | |
| Chromium | **0.642** | | mg/l | 0.0009 | | 0.643 | | | 0.08 | 20 |
| **Matrix Spike (1315950-MS1)** | | | **Source: SB72366-03** | | Prepared: 09-Jul-13 Analyzed: 11-Jul-13 | | | | | |
| Chromium | **1.97** | | mg/l | 0.0009 | 1.25 | 0.656 | 105 | 75-125 | | |
| **Matrix Spike Dup (1315950-MSD1)** | | | **Source: SB72366-03** | | Prepared: 09-Jul-13 Analyzed: 11-Jul-13 | | | | | |
| Chromium | **2.00** | | mg/l | 0.0009 | 1.25 | 0.656 | 108 | 75-125 | 2 | 20 |
| **Post Spike (1315950-PS1)** | | | **Source: SB72366-03** | | Prepared: 09-Jul-13 Analyzed: 11-Jul-13 | | | | | |
| Chromium | **2.01** | | mg/l | 0.0009 | 1.25 | 0.656 | 109 | 80-120 | | |

## General Chemistry Parameters - Quality Control

| Analyte(s) | Result | Flag | Units | *RDL | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1315388 - General Preparation** | | | | | | | | | | |
| **Blank (1315388-BLK1)** | | | | | | Prepared & Analyzed: 28-Jun-13 | | | | |
| Hexavalent Chromium | **0.003** | J | mg/l | 0.001 | | | | | | |
| **LCS (1315388-BS1)** | | | | | | Prepared & Analyzed: 28-Jun-13 | | | | |
| Hexavalent Chromium | **0.050** | | mg/l | 0.001 | 0.0500 | | 100 | 80-120 | | |
| **Calibration Blank (1315388-CCB1)** | | | | | | Prepared & Analyzed: 28-Jun-13 | | | | |
| Hexavalent Chromium | **-0.004** | U | mg/l | | | | | | | |
| **Calibration Blank (1315388-CCB2)** | | | | | | Prepared & Analyzed: 28-Jun-13 | | | | |
| Hexavalent Chromium | **0.003** | J | mg/l | | | | | | | |
| **Calibration Blank (1315388-CCB3)** | | | | | | Prepared & Analyzed: 28-Jun-13 | | | | |
| Hexavalent Chromium | **0.004** | J | mg/l | | | | | | | |
| **Calibration Check (1315388-CCV1)** | | | | | | Prepared & Analyzed: 28-Jun-13 | | | | |
| Hexavalent Chromium | **0.049** | | mg/l | 0.001 | 0.0500 | | 97 | 90-110 | | |
| **Calibration Check (1315388-CCV2)** | | | | | | Prepared & Analyzed: 28-Jun-13 | | | | |
| Hexavalent Chromium | **0.052** | | mg/l | 0.001 | 0.0500 | | 104 | 90-110 | | |
| **Calibration Check (1315388-CCV3)** | | | | | | Prepared & Analyzed: 28-Jun-13 | | | | |
| Hexavalent Chromium | **0.045** | | mg/l | 0.001 | 0.0500 | | 90 | 90-110 | | |
| **Duplicate (1315388-DUP1)** | | | **Source: SB72366-04** | | | Prepared & Analyzed: 28-Jun-13 | | | | |
| Hexavalent Chromium | **0.288** | | mg/l | 0.015 | | 0.313 | | | 8 | 20 |
| **Matrix Spike (1315388-MS1)** | | | **Source: SB72366-04** | | | Prepared & Analyzed: 28-Jun-13 | | | | |
| Hexavalent Chromium | **0.799** | | mg/l | 0.015 | 0.500 | 0.313 | 97 | 85-115 | | |
| **Matrix Spike Dup (1315388-MSD1)** | | | **Source: SB72366-04** | | | Prepared & Analyzed: 28-Jun-13 | | | | |
| Hexavalent Chromium | **0.810** | | mg/l | 0.015 | 0.500 | 0.313 | 99 | 85-115 | 1 | 20 |
| **Reference (1315388-SRM1)** | | | | | | Prepared & Analyzed: 28-Jun-13 | | | | |
| Hexavalent Chromium | **0.023** | | mg/l | 0.001 | 0.0250 | | 92 | 85-115 | | |

## Notes and Definitions

| | |
|---|---|
| J | Detected above the Method Detection Limit but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). |
| U | Analyte included in the analysis, but not detected at or above the MDL. |
| dry | Sample results reported on a dry weight basis |
| NR | Not Reported |
| RPD | Relative Percent Difference |
| LIV | The initial volume for this sample has been reduced due to sample matrix and/or historical data therefore elevating the reporting limit. |

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

Validated by:
June O'Connor
Rebecca Merz

SB72366 JB

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# CHAIN OF CUSTODY RECORD

Page 1 of 1

**Special Handling:**
- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: ERM
5788 Widewaters Parkway
DeWitt, NY 13214

Telephone #: 315-445-2543
Project Mgr. R. Sents

Invoice To: Same

P.O. No.: _____ RQN: MSA Rates

Project No.: Manhattan Beer Distributors (MBD)
Site Name: Farmer Bank notes facility
Location: Suffern State: NY
Sampler(s): RS

1=$Na_2S2O_3$ 2=HCl 3=$H_2SO_4$ 4=$HNO_3$ 5=NaOH 6=Ascorbic Acid 7=$CH_3OH$
8=$NaHSO_4$ 9=Deionized Water 10=$H_3PO_4$ 11= Icl 12= _____

List preservative code below: 4 | 1

QA/QC Reporting Notes:
* additional charges may apply

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

| Lab Id: | Sample Id: | Date: | Time: | Type | Matrix | # of VOA Vials | # of Amber Glass | # of Clear Glass | # of Plastic | Analyses: Total Cr | Analyses: Hex Cr |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 72366 01 | Dup (oc/13) | 6/28/13 | 14:00 | G | GW | | | | 2 | X | X |
| 02 | MW-6 (oc/13) | | 11:15 | G | GW | | | | 2 | X | X |
| 03 | MW-4 (oc/13) | | 12:00 | G | GW | | | | 2 | X | X |
| 04 | MW-8 (oc/13) | ↓ | 14:10 | G | GW | | | | 2 | X | X |

Containers: # of VOA Vials | # of Amber Glass | # of Clear Glass | # of Plastic
Analyses: Total Cr | Hex Cr

MA DEP MCP CAM Report: Yes ☐ No ☐
CT DPH RCP Report: Yes ☐ No ☐

**QA/QC Reporting Level**
☐ Standard ☐ No QC ☐ DQA*
☐ NY ASP A* ☒ NY ASP B*
☐ NJ Reduced* ☐ NJ Full*
☐ TIER II* ☐ TIER IV*
☐ Other _____

State-specific reporting standards:

| Relinquished by: | Received by: | Date: | Time: | Temp°C |
|---|---|---|---|---|
| | | 6-28-13 | 2:50 | |
| | Icamark | 6-28-13 | 18:45 | 0.9/0.9 |

☒ EDD Format _____
☐ E-mail to Robert.Sents@ERM.com

Condition upon receipt:
☐ Ambient ☒ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

# *APPENDIX E*
# *DATA USABILITY SUMMARY REPORT*

**Environmental Resources Management**

5788 Widewaters Parkway
Dewitt, NY 13214
(315) 445-2554
(315) 445-2543 (fax)

http://www.erm.com

***DATA USABILITY SUMMARY REPORT (DUSR)***
***MANHATTAN BEER DISTRIBUTORS***
***FORMER BANKNOTE FACILITY***
***SUFFERN, NEW YORK***
***2013 JUNE GROUND WATER SAMPLE ANALYSIS***
***ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)***
***PROJECT NUMBER 0158624***
***SPECTRUM ANALYTICAL, INC. JOB NUMBER SB72366***

***Deliverables:***

The above referenced data package for three (3) ground water samples and one (1) blind field duplicate sample contains all required deliverables as stipulated under the New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP) for Category B deliverables. The sample specific analysis included Chromium analyzed by United States Environmental Protection Agency (USEPA) SW-846 Method 6010C and Hexavalent Chromium analyzed by USEPA SW-846 Method 7196A. These methods follow *"Test Methods for Evaluation Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions"*. The data have been evaluated according to the protocols and quality control (QC) requirements of the ASP, the National Functional Guidelines for Inorganic Data Review (January 2010), the USEPA Region II Data Review SOP Number HW-2a, Revision 15, December 2012: ICP-AES Data Validation and the reviewer's professional judgment.

This validation report pertains to the following ground water samples collected on 28 June 2013:

| *Samples* | *QC Samples* |
|---|---|
| MW-4 (06/13) | Dup (06/13) - blind field duplicate of sample MW-4 (06/13) |
| MW-6 (06/13) | |
| MW-8 (06/13) | |

***Chain-of-Custody***

- The Chain-of-Custody (COC) was reviewed for completeness and accuracy. There were no discrepancies observed with the samples presented on the COC, and all tests specified on the COC were performed for the designated samples.

*Inorganics*

The following items/criteria were reviewed:

- Case narrative and deliverable requirements
- Holding times and sample preservation
- Detection and reporting limits
- Inorganic analysis data sheets (Form I)
- Initial and continuing calibration verifications
- Contract Required Detection Limit (CRDL) Standard
- Lab Blank data
- ICP Interference Check Sample (ICS) analysis
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis and results
- Matrix Duplicate (MD) analysis and results
- Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) analysis and results
- ICP Serial Dilution (SD) analysis and results
- Blind Field Duplicate analysis

The items listed above were technically and contractually in compliance with SW-846 protocols with the exceptions discussed in the text below. The data have been validated according to the procedures outlined above and qualified accordingly.

- Typically a matrix spike/matrix spike duplicate (MS/MSD) set are collected and submitted to the laboratory per twenty field samples collected. In this case, no MS/MSD was collected. The laboratory selected sample MW-4 (06/13) (SB72366-03) from this data set for chromium MS/MSD analysis, sample Dup (06/13) (SB72366-01) for chromium SD analysis, and sample MW-8 (06/13) (SB72366-04) for hexavalent chromium MS/MSD/SD analysis. No QC issues were observed.

- The concentration of hexavalent chromium was greater than the concentration of total chromium in samples MW-4 (06/13), Dup (06/13), and MW-8 (06/13). No qualification of the sample data is required for samples MW-4 (06/13) or Dup (06/13) as the percent difference (%D) between the two concentrations is less than 20%. The %D between the two concentrations for sample MW-8 (06/13) is 28.9%. Chromium and hexavalent chromium in sample MW-8 (06/13) may be biased and have therefore been qualified "J". Results are still valid and useable for project

objectives.

- Chromium was positively identified in continuing calibration blank S308178-CCB3 at 0.0019 mg/l. Hexavalent Chromium was positively identified in method blank 1315388-BLK1 and continuing calibration blanks 1315388-CCB2 and 1315388-CCB2 at 0.003, 0.003 and 0.0041 mg/l respectively. No qualification is required for all samples except the hexavalent chromium analysis of sample MW-6 (06/13) as the concentrations are below those reported in the samples and no blank contamination is suspected. The hexavalent chromium result for sample MW-6 (06/13) is negated as suspected blank contamination and has been qualified with a U. The reporting limit has been raised to the value initially reported for this sample.

***Package Summary:***

All data are valid and usable with qualifications as noted in this review.

Signed: _____ Dated: 31 July 2013

Andrew J. Coenen
ERM QA Officer

# FORM I - INORGANIC ANALYSIS DATA SHEET

## SW846 6010C

MW-4 (06/13)

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Spectrum Analytical, Inc. - Agawam, MA | | | SDG: | 72366 |
| Client: | Environmental Resources Management - Dewitt, NY | | | Project: | Former Banknote Facility-Suffern, NY |
| Project Number: | Manhattan Beer Distributors (MBD) | | | Received: | 06/28/13 18:45 |
| Matrix: | Ground Water | Laboratory ID: | SB72366-03 | File ID: | 20130711-101 |
| Sampled: | 06/28/13 12:00 | Prepared: | 07/09/13 12:30 | | |
| % Solids: | | Preparation: | SW846 3005A | Initial/Final: | 100 ml / 50 ml |
| Batch: | 1315950 | Sequence: | S308178 | Calibration: | 1307044 |
| Instrument: | ICAP | | | | |
| Reported to: | MDL | | | | |

| CAS NO. | Analyte | Result (mg/l) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| 7440-47-3 | Chromium | 0.656 | 1 | 0.0009 | 0.0050 | |

# FORM I - INORGANIC ANALYSIS DATA SHEET

## SW846 6010C

Dup (06/13)

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Spectrum Analytical, Inc. - Agawam, MA | | | SDG: | 72366 |
| Client: | Environmental Resources Management - Dewitt, NY | | | Project: | Former Banknote Facility-Suffern, NY |
| Project Number: | Manhattan Beer Distributors (MBD) | | | Received: | 06/28/13 18:45 |
| Matrix: | Ground Water | Laboratory ID: | SB72366-01 | File ID: | 20130711-098 |
| Sampled: | 06/28/13 14:00 | Prepared: | 07/09/13 12:30 | | |
| % Solids: | | Preparation: | SW846 3005A | Initial/Final: | 100 ml / 50 ml |
| Batch: | 1315950 | Sequence: | S308178 | Calibration: | 1307044 |
| Instrument: | ICAP | | | | |
| Reported to: | MDL | | | | |

| CAS NO. | Analyte | Result (mg/l) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| 7440-47-3 | Chromium | 0.643 | 1 | 0.0009 | 0.0050 | |

# FORM I - INORGANIC ANALYSIS DATA SHEET

## SW846 6010C

MW-6 (06/13)

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Spectrum Analytical, Inc. - Agawam, MA | | | SDG: | 72366 |
| Client: | Environmental Resources Management - Dewitt, NY | | | Project: | Former Banknote Facility-Suffern, NY |
| Project Number: | Manhattan Beer Distributors (MBD) | | | Received: | 06/28/13 18:45 |
| Matrix: | Ground Water | Laboratory ID: | SB72366-02 | File ID: | 20130711-100 |
| Sampled: | 06/28/13 11:15 | Prepared: | 07/09/13 12:30 | | |
| % Solids: | | Preparation: | SW846 3005A | Initial/Final: | 100 ml / 50 ml |
| Batch: | 1315950 | Sequence: | S308178 | Calibration: | 1307044 |
| Instrument: | ICAP | | | | |
| Reported to: | MDL | | | | |

| CAS NO. | Analyte | Result (mg/l) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| 7440-47-3 | Chromium | 0.0102 | 1 | 0.0009 | 0.0050 | |

# FORM I - INORGANIC ANALYSIS DATA SHEET

## SW846 6010C

MW-8 (06/13)

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Spectrum Analytical, Inc. - Agawam, MA | | | SDG: | 72366 |
| Client: | Environmental Resources Management - Dewitt, NY | | | Project: | Former Banknote Facility-Suffern, NY |
| Project Number: | Manhattan Beer Distributors (MBD) | | | Received: | 06/28/13 18:45 |
| Matrix: | Ground Water | Laboratory ID: | SB72366-04 | File ID: | 20130711-107 |
| Sampled: | 06/28/13 14:10 | Prepared: | 07/09/13 12:30 | | |
| % Solids: | | Preparation: | SW846 3005A | Initial/Final: | 100 ml / 50 ml |
| Batch: | 1315950 | Sequence: | S308178 | Calibration: | 1307044 |
| Instrument: | ICAP | | | | |
| Reported to: | MDL | | | | |

| CAS NO. | Analyte | Result (mg/l) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| 7440-47-3 | Chromium | 0.234 | 1 | 0.0009 | 0.0050 | J |

# FORM I - INORGANIC ANALYSIS DATA SHEET

## SW846 7196A/SM3500CrD

MW-4 (06/13)

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Spectrum Analytical, Inc. - Agawam, MA | | | SDG: | 72366 |
| Client: | Environmental Resources Management - Dewitt, NY | | | Project: | Former Banknote Facility-Suffern, NY |
| Project Number: | Manhattan Beer Distributors (MBD) | | | Received: | 06/28/13 18:45 |
| Matrix: | Ground Water | Laboratory ID: | SB72366-03 | File ID: | 1315388-012 |
| Sampled: | 06/28/13 12:00 | Prepared: | 06/28/13 18:51 | Analyzed: | 06/28/13 19:43 |
| % Solids: | | Preparation: | General Preparation | Initial/Final: | 5 ml / 50 ml |
| Batch: | 1315388 | Sequence: | S308180 | Calibration: | 1307061 |
| Instrument: | Spec 1 | | | | |
| Reported to: | MDL | | | | |

| CAS NO. | Analyte | Result (mg/l) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| 18540-29-9 | Hexavalent Chromium | 0.659 | 1 | 0.015 | 0.050 | |

# FORM I - INORGANIC ANALYSIS DATA SHEET

## SW846 7196A/SM3500CrD

**Dup (06/13)**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Spectrum Analytical, Inc. - Agawam, MA | | | SDG: | 72366 |
| Client: | Environmental Resources Management - Dewitt, NY | | | Project: | Former Banknote Facility-Suffern, NY |
| Project Number: | Manhattan Beer Distributors (MBD) | | | Received: | 06/28/13 18:45 |
| Matrix: | Ground Water | Laboratory ID: | SB72366-01 | File ID: | 1315388-010 |
| Sampled: | 06/28/13 14:00 | Prepared: | 06/28/13 18:51 | Analyzed: | 06/28/13 19:42 |
| % Solids: | | Preparation: | General Preparation | Initial/Final: | 5 ml / 50 ml |
| Batch: | 1315388 | Sequence: | S308180 | Calibration: | 1307061 |
| Instrument: | Spec 1 | | | | |
| Reported to: | MDL | | | | |

| CAS NO. | Analyte | Result (mg/l) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| 18540-29-9 | Hexavalent Chromium | 0.688 | 1 | 0.015 | 0.050 | |

# FORM I - INORGANIC ANALYSIS DATA SHEET

## SW846 7196A/SM3500CrD

MW-6 (06/13)

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Spectrum Analytical, Inc. - Agawam, MA | | | SDG: | 72366 |
| Client: | Environmental Resources Management - Dewitt, NY | | | Project: | Former Banknote Facility-Suffern, NY |
| Project Number: | Manhattan Beer Distributors (MBD) | | | Received: | 06/28/13 18:45 |
| Matrix: | Ground Water | Laboratory ID: | SB72366-02 | File ID: | 1315388-011 |
| Sampled: | 06/28/13 11:15 | Prepared: | 06/28/13 18:51 | Analyzed: | 06/28/13 19:43 |
| % Solids: | | Preparation: | General Preparation | Initial/Final: | 50 ml / 50 ml |
| Batch: | 1315388 | Sequence: | S308180 | Calibration: | 1307061 |
| Instrument: | Spec 1 | | | | |
| Reported to: | MDL | | | | |

| CAS NO. | Analyte | Result (mg/l) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| 18540-29-9 | Hexavalent Chromium | 0.008 | 1 | 0.001 | 0.005 / 0.01 | U |

# FORM I - INORGANIC ANALYSIS DATA SHEET

## SW846 7196A/SM3500CrD

MW-8 (06/13)

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | Spectrum Analytical, Inc. - Agawam, MA | | | SDG: | 72366 |
| Client: | Environmental Resources Management - Dewitt, NY | | | Project: | Former Banknote Facility-Suffern, NY |
| Project Number: | Manhattan Beer Distributors (MBD) | | | Received: | 06/28/13 18:45 |
| Matrix: | Ground Water | Laboratory ID: | SB72366-04 | File ID: | 1315388-016 |
| Sampled: | 06/28/13 14:10 | Prepared: | 06/28/13 18:51 | Analyzed: | 06/28/13 19:46 |
| % Solids: | | Preparation: | General Preparation | Initial/Final: | 5 ml / 50 ml |
| Batch: | 1315388 | Sequence: | S308180 | Calibration: | 1307061 |
| Instrument: | Spec 1 | | | | |
| Reported to: | MDL | | | | |

| CAS NO. | Analyte | Result (mg/l) | Dilution Factor | MDL | MRL | Q |
|---|---|---|---|---|---|---|
| 18540-29-9 | Hexavalent Chromium | 0.313 | 1 | 0.015 | 0.050 | J |