Injection Pilot Test Report
Lockheed Martin Middle River Complex
2323 Eastern Boulevard
Middle River, Maryland

Prepared for:

Lockheed Martin Corporation

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ACRONYMS

ARD	anaerobic reductive dechlorination
b	saturated thickness
bgs	below ground surface
CAH	chlorinated aliphatic hydrocarbon
COC	chain of custody
COPC	chemical(s) of potential concern
cVOC	chlorinated volatile organic compound
DO	dissolved oxygen
DPT	direct push technology
EESH	Energy, Environment, Safety and Health
EGIS	environmental geographic information system
ft/day	feet per day
ft/year	feet per year
FID	flame ionization detector
GAC	granular activated carbon
g/d/ft	gallon(s) per day per foot
gpm	gallon(s) per minutes
GPR	ground penetrating radar
IDW	investigation derived waste
ISCO	*in situ* chemical oxidation
K	hydraulic conductivity
kg	kilogram(s)
lbs	pounds
Lockheed Martin	Lockheed Martin Corporation
LMCPI	Lockheed Martin Corporation Properties, Inc.
m	meter
m^2/day	square meters per day
m^3/day	cubic meters per day
MDE	Maryland Department of the Environment
µg/kg	microgram(s) per kilogram
µg/L	microgram(s) per liter
µg/m^3	microgram(s) per cubic meter
mg/kg	milligram(s) per kilogram

mg/L	milligram(s) per liter
ml/minute	milliliter(s) per minute
MRC	Middle River Complex
MSDS	material safety data sheet
NaBr	sodium bromide (tracer)
ORP	oxidation reduction potential
PAHs	polycyclic aromatic hydrocarbons
PDF	portable document file
PID	photoionization detector
PPE	personal protective equipment
psi	pounds per square inch
psig	pound force per square inch gauge
PVC	polyvinyl chloride
Q	flow
r_x	distance from injection well to observation point *x*
RAP	response action plan
ROI	radius of influence
s_x	observed hydraulic head change at observation point *x*
SVOC	semivolatile organic compound
TCE	trichloroethene
TCLP	Toxicity Characteristic Leaching Procedure
Tetra Tech	Tetra Tech, Inc.
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

Section 1
Introduction

On behalf of Lockheed Martin Corporation (Lockheed Martin), Tetra Tech, Inc. (Tetra Tech) has performed an injection pilot test at the Lockheed Martin Corporation Middle River Complex (MRC) at 2323 Eastern Boulevard in Middle River, Maryland. Site investigations at the Middle River Complex facility have identified impacts to soil and groundwater associated with historical plant activities. Accordingly, Lockheed Martin has assumed responsibility to assess and clean up environmental impacts at the Middle River Complex. A *Draft Groundwater Response Action Plan* for the Middle River Complex (Tetra Tech, 2011a) was prepared and submitted to the Maryland Department of the Environment (MDE) in June 2011; MDE's comments on that document do not require modification of the selected remedial alternative.

The *Draft Groundwater Response Action Plan* addresses the impacts to groundwater in three areas with elevated concentrations of chlorinated volatile organic compounds (cVOCs). The *Draft Groundwater Response Action Plan* selects *in situ* bioremediation as the remedial alternative to address groundwater contaminated by cVOCs. Multiple injection wells, underground distribution piping, and aboveground injection equipment will be installed in three areas exhibiting elevated concentrations of chlorinated volatile organic compounds. These injection wells will introduce necessary biological amendments into the subsurface to enable reductive dechlorination of cVOCs. A conceptual design of the selected remedial alternative is described in Section 8 of the *Draft Groundwater Response Action Plan* (Tetra Tech, 2011a).

The main design parameters (such as the number and spacing of injection wells, injection rates, and volumes) were determined based on groundwater modeling of the injection process. However, achievable injection rates are difficult to predict accurately for the low permeability, heterogeneous geology of the Middle River Complex. Therefore, as part of a pre-design investigation, a field injection pilot test was recommended. The test objectives, rationales, and methodology were developed in the *Injection Pilot Test Work Plan* (Tetra Tech, 2011b). The main objectives of the injection pilot test (based on the work plan) were to:

- determine sustainable injection rates and volumes
- verify the performance and design of injection wells
- determine the injection wells' effects on the aquifer
- determine if injected material is transported from the injection areas via flow through utilities or utility bedding

The three locations for the injection pilot test were:

- southwest trichloroethene (TCE) area
- southeast TCE area
- northern TCE area

The injection pilot test involved the following general activities:

- obtaining site and utility clearance
- installing three injection wells
- installing eight monitoring well clusters (two screened intervals per cluster)
- performing the injection tests at each injection well at three different injection rates (low, intermediate, and high) using de-chlorinated potable water with added sodium bromide tracer
- having a Maryland-licensed surveyor survey the injection and monitoring well locations
- collecting, storing, and characterizing investigation derived waste (IDW) and disposing of that waste at an off-site Lockheed Martin -approved treatment or disposal facility

This report is organized as follows:

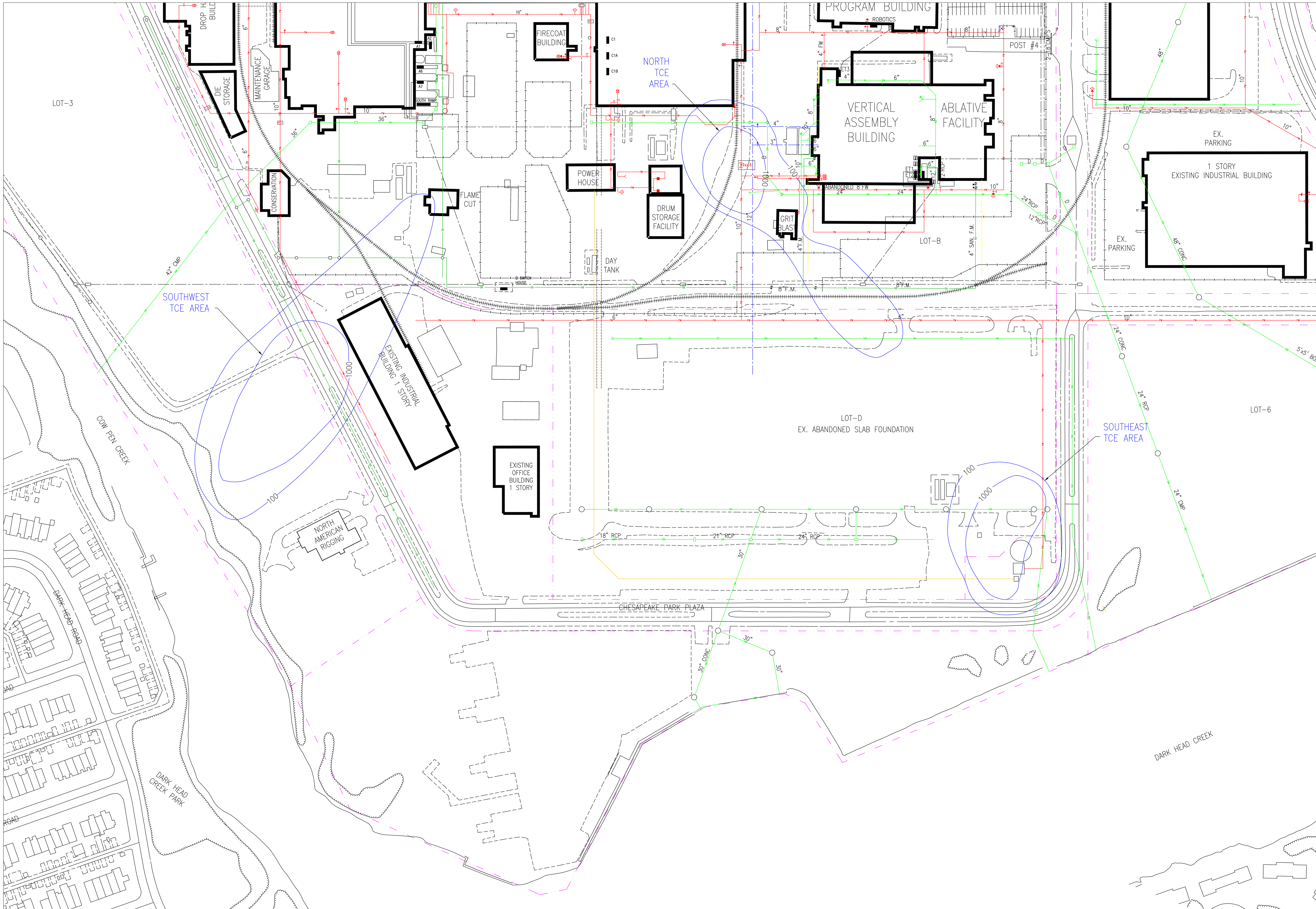
Section 2—Test Layout and Methodology: Describes the injection test layout, injection wells and monitoring points, equipment set-up, and methodology.

Section 3—Test Results: Describes the results for all nine tests.

Section 4—Results Summary and Conclusions: Summarizes the injection test results, compares the areas tested, and evaluates potential impacts on the full-scale bioremediation system design.

To avoid redundancy, detailed MRC background information is not included in this report. Refer to the *Draft Groundwater Response Action Plan* (Tetra Tech, 2011a) and the *Injection Pilot Test Work Plan* (Tetra Tech, 2011b) for MRC background information. However, two prior pilot test studies (*in situ* chemical oxidation [ISCO] and anaerobic reductive dechlorination [ARD]) at the MRC are located near two of the injection pilot test locations.

The ISCO study was conducted in the southwest TCE area and the ARD study was conducted in the north TCE area. Therefore, the ISCO and ARD pilot tests are particularly important with regard to the current injection test. Accordingly, discussion of the previous ISCO (Section 3.2.6) and ARD (Section 3.3.6) pilot studies is included in the results section of this report for the southwest and north TCE areas' injection tests, respectively. For detailed information, refer to the ISCO and ARD pilot test reports (Tetra Tech 2009a, b).



LEGEND

1000	1,000 ug/L TCE CONTOUR
	PROPERTY LINE
	DOMESTIC WATER
SS	SANITARY SEWER
SW	STORM WATER
G	GAS
FW	FIRE WATER
E	ELECTRICAL SERVICE
ST	STEAM
C	CONDENSATE

BASE MAP: BASED ON DRAWING PREPARED BY TAI CONSULTING ENGINEERS, INC.

TOPOGRAPHY: TOPOGRAPHY WITHIN AREA OF DISTURBANCE FROM FIELD RUN SURVEY CONDUCTED BY DMW, INC. IN JUNE 1999 FLOATED TO STATE GRID.

HORIZONTAL INFORMATION OUTSIDE OF LIMIT OF DISTURBANCE FROM BALTIMORE COUINTY OFFICE OF INFORMATION TECHNOLOGY GIS SERVICES UNIT. DATE OF CAPTURE: MARCH 1995

EXISTING UTILITIES: FIELD INFORMATION OBTAINED FROM DMW FIELD RUN SURVEY AND LOCKHEED MARTIN ENTITLED "EXHIBIT #6 EXISTING UTILITIES PLAN."

BOUNDARY LINES: BOUNDARY INFORMATION TAKEN FROM RECORDED PLAT E.H.K., JR. 51 FOLIO 43 "1ST AMENDED CHESAPEAKE PARK RE-SUBDIVISION" PREPARED BY MARYLAND SURVEYING AND ENGINEERING CO., INC. 4/24/84. BOUNDARY HAS BEEN ORIENTED TO THE BALTIMORE COUNTY METROPOLITAN DISTRICT GRID, BUT SHOULD NOT BE CONSIDERED A BOUNDARY SURVEY.

SCALE

0' 125' 250' 500'

TETRA TECH

MRC SITE MAP

LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

DATE:	02-22-12
PROJECT NO.:	
DESIGNED BY:	BD
DRAWN BY:	BD
CHECKED BY:	CP

FIGURE 1-1

Section 2
Test Approach and Methodology

Before field activities began, appropriate Tetra Tech, Inc. (Tetra Tech) personnel became familiar with the injection work plan, the site-specific health and safety plan (HASP), and the respective Safe Work permits and emergency response plan included in the HASP. Tetra Tech conducted mandatory health and safety tailgate meetings before each day's field events. Safety requirements are addressed in detail in the site-specific HASP.

2.1 SITE ACCESS, UTILITY CLEARANCE, PERMITS

Field activities planned for the locations identified in each of the three test areas were coordinated with Lockheed Martin Corporation Properties Inc. (LMCPI). Utility clearance work and documentation conform to the provisions of Lockheed Martin Corporation's (Lockheed Martin) *Remediation Contractor's Energy, Environment, Safety and Health (EESH) Handbook, Revision 1*, June 10, 2009, or the latest update. All required utility clearance activities were also completed, including clearing each boring location of subsurface utilities. Tetra Tech obtained all access agreements, required clearances, and permits before beginning any field testing, as follows:

- notified the Miss Utility underground utility location center (1-800-257-7777; www.missutility.net)
- reviewed facility and site utility maps
- used a private utility locating firm (Enviroscan Inc. of Lancaster, Pennsylvania) to identify any subsurface utilities/anomalies. As part of the subcontract, Enviroscan Inc. submitted a full report of utility clearance.
- followed Enterprise Operations-28 and Lockheed Martin Minimum Requirements for Intrusive Fieldwork Work Plans, completed the digging authorization form, and obtained the required signatures

- obtained drilling and injection permits. A Rule Authorization letter has been requested of and received from the Maryland Department of the Environment (MDE) to allow injection of the water

A geophysical survey located and marked any underground utility lines at the proposed injection and monitoring well locations. A combination of electromagnetic resistivity/conductivity line locating and ground penetrating radar (GPR) ensured that all proposed sampling locations were clear of all underground utilities. Enviroscan, Inc. marked any underground utilities and anomalies, in accordance with Lockheed Martin's *Remediation Contractor's EESH Handbook, Revision 1* (June 10, 2009) and other procedures for intrusive work. All utilities within a 40-foot radius of each designated drilling location were identified using the appropriate technology and the ground surface was marked with paint to delineate utility locations.

2.2 INJECTION AND MONITORING WELL INSTALLATION

Injection and monitoring wells were installed for the injection test in the three selected areas of the Middle River Complex (MRC): the southwest trichloroethene (TCE) area (near the 2008 *in situ* chemical oxidation ISCO pilot study area), the southeast TCE area, and the north TCE area (near the 2008 anaerobic reductive dechlorination [ARD] pilot study area) (Figure 2-1). One injection well and three monitoring well clusters were installed in the southeast and southwest TCE areas, and one injection well and only two monitoring well clusters were installed in the north TCE area, where an existing set of wells was used as the third monitoring cluster. Two screened intervals were used for each monitoring well cluster: a shallow screened interval at approximately 15 feet, and an intermediate screened interval at approximately 35 feet. The monitoring well clusters are approximately five feet, 10 feet, and 15 feet from each injection well. These distances were selected based on the injection process groundwater simulation presented in the *Draft Groundwater Response Action Plan* (Tetra Tech, 2011a).

A decontamination pad was set up for pressure washing all drilling equipment after completion of each well. Volumes of liquid related to drilling that were generated during decontamination were collected on a bermed pad. Decontamination liquid volumes were kept to a minimum. The fluid level in the pad was monitored continuously during equipment decontamination. The pad was never filled to more than 50% of its capacity. Liquid accumulated in the decontamination pad was pumped out at the end of each workday and handled as IDW.

2.2.1 Injection Wells

Borings for the injection wells were advanced using a sonic rig (Roto-Sonic method) operated by a Maryland-licensed driller. The Roto-Sonic method involves a drill rod/override casing set up (with temporary casing) to install the well to its total depth. Soil was continuously sampled during drilling using a 10-foot-core barrel. Soil samples were collected for screening, including lithologic characterization, visual observations (e.g., staining, discolorations, etc.), and odor detection. Soil samples were screened for volatile organic compounds (VOCs) using a portable photoionization detector (PID) and a sealed bag headspace technique. A qualified Tetra Tech field geologist performed lithologic logging. All pertinent information, including boring location, soil/lithology descriptions, and PID readings, was included on soil boring log forms (see Appendix A). Soil samples for laboratory analysis were not collected. No refusal was encountered during well drilling.

Construction details for the injection test wells are shown in Figure 2-2. The injection wells were constructed using two-inch-diameter flush threaded Schedule 40 polyvinyl chloride (PVC) well casing and manufactured PVC well screens. Well screens were 15–20 feet long with 0.010-inch wire wrapped openings. The screened intervals were placed from 15–35 feet below ground surface (bgs), as shown in Table 2-1.

Table 2-1
Injection Wells Screened Intervals
Lockheed Martin, Middle River Complex

Well	Top of screen	Bottom of screen
IW-E	15	35
IW-N	20	35
IW-W	15	35

A sand filter pack of washed 20×40 mesh (0.0331×0.0165 inch) silica sand was placed around the well screen at least one foot above the top of the well screen. The required depth to sand was confirmed using a weighted tape. Following placement of the sand pack, each well was pre-developed via the drill rig using a combination of surging and air lifting to settle the sand pack around the well screen. A two-foot-thick bentonite seal was installed above the sand pack and allowed to hydrate during installation. Grout (consisting of Type II Portland cement and powdered bentonite gel) was placed above the bentonite seal to approximately one foot below the ground surface. Grout was made by mixing a 94-pound bag of Type II Portland cement with nine pounds of powdered sodium bentonite and no more than eight gallons of water per bag of cement.

A protective, locking, traffic rated flush mounted well cover, 12 inches in diameter and 12 inches high, was secured over the well casing to protect each injection well. A concrete pad (six inches thick by 24 inches square) was installed around the well cover. The PVC well casing was cut below ground and made watertight by installing a locking, expandable, sanitary seal in the well casing top. Well construction details were recorded in the field logbook and on a well construction form.

Following well installation, each injection well was developed by Boart Longyear to remove fines from the well filter pack and casing to ensure a hydraulic connection between the well and the geologic formation. Well development was performed as soon as possible following installation once a minimum of 24 hours had elapsed following well construction (to allow the grout to set up). Wells were developed by gentle surging and airlifting to remove fines and sediment from the sand pack and well screen. Development began at the bottom of the well screen and was accomplished by working up incrementally to the top of the screened interval and then back down to the bottom of the well.

Following installation, Tetra Tech personnel continued well development. During this phase of well development, water level drawdown measurements were monitored and groundwater parameters (including pH, temperature, specific conductance, dissolved oxygen [DO], and oxidation reduction potential [ORP]) were collected using a water quality meter. These data were recorded in a site-specific logbook and on well development records (Appendix B). Turbidity readings were also collected using a separate turbidity meter and recorded in the field logbook and on a well development record.

Development was considered complete when the monitored water quality parameters stabilized in accordance with the information contained in the following paragraph, or when a minimum of three saturated well casing volumes had been removed, or when the well was purged dry. Development was considered complete when three consecutive readings, taken at five-minute intervals, were achieved, as follows:

- ±0.1 standard units for pH,
- ±3% for specific conductance and temperature,
- ±10% for DO and ORP
- less than 50 nephalometric turbidity units for turbidity

All development water was collected in U.S. Department of Transportation (USDOT)-approved 55-gallon steel drums and temporarily stored in a facility-approved location.

2.2.2 Monitoring Well Clusters

Similar to the injection well installations, the monitoring well clusters were advanced using a sonic rig (Roto-Sonic method) operated by a licensed Maryland driller. For monitoring well clusters consisting of an intermediate and a shallow well, the borings were completed using a six-inch drill casing. Soil was continuously sampled during drilling using a 10-foot core barrel. Soil samples were collected for screening, including lithologic characterization, visual observations (e.g., staining, discolorations, etc.), and odor detection.

Soil samples were screened for VOCs using a portable PID and a headspace screening methodology (e.g., sealed bag headspace technique). A qualified Tetra Tech field geologist conducted lithologic logging. All pertinent information, including boring location, lithologic descriptions, and PID readings, was recorded on soil boring log forms. Soil samples for laboratory analysis were not collected.

Construction details for the monitoring well clusters are shown in Figure 2-2. Monitoring well clusters were constructed of one-inch-diameter flush threaded Schedule 40 PVC well casing and manufactured PVC well screens. Well screen sections were 5–10 feet long with 0.010-inch slotted or wire wrapped openings. The depth of the shallow wells varied from 13–22.5 feet bgs; intermediate well depths were from 30–35 feet. The screen depth and length (or slot size) were adjusted in the field to address the depth to groundwater, formation material, type/thickness of soil, or installation of a surface seal (Table 2-2).

All of the intermediate wells had a 10-foot screened interval. Four of the shallow wells had 10-foot screened intervals; the other four had five-foot intervals. Each well had at least five feet of well screen. A sand filter pack of washed 20×40-mesh (0.0331×0.0165 inch) silica sand was placed around each well screen up to at least two feet above the top of the screen. The depth to sand was measured using a weighted tape. Additional sand was used as needed to bring the sand pack up to the desired depth.

Table 2-2
Monitoring Wells' Screened Intervals
Lockheed Martin, Middle River Complex

Well	Top of screen	Bottom of screen
MPE-1S	11	21
MPE-1I	25	35
MPE-2S	12.5	22.5
MPE-2I	25	35
MPE-3S	8	18
MPE-3I	25	35
MPN-1S	9	14
MPN-1I	20	30
MPN-2S	9	14
MPN-2I	20	30
OW-1B[1]	15	20
OW-1C	25	30
MPW-1S	10	15
MPW-1I	25	35
MPW-2S	7	17
MPW-2I	25	35
MPW-3S	8	13
MPW-3I	25	35

For each screened interval, a two-foot-thick bentonite seal was installed above the sand pack and allowed to hydrate during installation. Grout, consisting of Type II Portland cement and powdered bentonite gel, was placed above the bentonite seals between the intermediate bentonite plug and the shallow filter sand packs, and above the shallow bentonite plug, to approximately one foot below ground surface. Grout was made by mixing a 94-pound bag of Type II Portland

[1]*OW-1B and OW-1C were installed earlier and used as pilot test observation points.*

cement, nine pounds of powdered sodium bentonite, and no more than eight gallons of water per bag of cement. The relative thicknesses of the bentonite seal and the surface seal and grout were adjusted to accommodate the well depth relative to ground surface.

A 12-inch-diameter by 12-inch-high protective, locking, traffic rated flush mounted well cover was secured over the well casing to protect each injection well. A concrete pad (six-inches thick by 24-inches square) was installed around the well cover. The PVC well casing was cut below ground and made watertight by installing a locking, expandable, sanitary seal in the well casing top. A concrete floor (two-inches thick) covered with sand was installed at the bottom of the well cover around the well casing. Following well installation, each monitoring well was developed in a similar manner as described in the previous section for injection well installation. All development water was collected in USDOT-approved, 55-gallon steel drums and temporarily stored in a facility-approved location pending disposal at a Lockheed Martin-approved off-site disposal facility.

2.2.3 Surveying

A Maryland-licensed professional land surveyor surveyed the site to provide horizontal and vertical coordinates for each new well. Well locations were surveyed to the nearest 0.01 foot for vertical elevations in the North American Vertical Datum 1988, and 0.1 foot horizontal coordinates in the North American Datum 1983, at the top of the well casings. Ground elevations at the wells will be surveyed with a vertical accuracy of 0.1 foot. This information will also be used to update the Middle River Complex (MRC) environmental geographic information system (EGIS).

2.3 WASTE MANAGEMENT

A waste management plan was prepared conforming to *Lockheed Martin EESH Remediation Waste Management Procedure No. EROP-03, Revision 4* (effective April 17, 2009). This plan was followed during this investigation to store, manage, test, and dispose of investigation derived waste (IDW). IDW consisted of all drill cuttings and soil cuttings, decontamination rinsate water, excess soil from sampling, well purge water, and personal protective equipment (PPE). Soil cuttings and decontamination water were collected and stored in USDOT-approved 55-gallon drums. All drums were appropriately labeled and logged on a drum inventory form (Appendix C).

Wastes were characterized and disposed of in accordance with applicable state and federal regulations and the *MRC Waste Management Plan* (Tetra Tech, 2011d). After waste generation, the drums were relocated to a drum staging area identified by Lockheed Martin personnel. Personal protective equipment IDW was brushed off, placed in trash bags, and disposed of in a facility trash receptacle.

Samples of IDW were collected and submitted for Toxicity Characteristic Leaching Procedure (TCLP) organic and inorganic analyses, corrosivity, and reactive sulfide and reactive cyanide. Upon receipt of the IDW analytical data, the generated IDW was removed from the drum storage area and properly disposed of in accordance with federal, state, and local regulations. Disposal documentation and waste characterization analytical results are in Appendices C and G, respectively.

2.4 TEST OBJECTIVES AND METHODOLOGY SUMMARY

The main parameters of the bioremediation system at MRC (such as the number and spacing of injection wells, injection rates, and volumes) were determined in the *Draft Groundwater Response Action Plan* using groundwater modeling of the injection process. However, achievable injection rates and effects on the aquifer are difficult to predict accurately for the low permeable heterogeneous geology of the MRC. Also unclear was whether the injection would cause the injected fluid to daylight, channel, or produce other undesired effects. The injection pilot test was intended to reduce these uncertainties. The main objectives of the injection pilot test included:

- determining sustainable injection rates and volumes that can be achieved without the injected fluid daylighting or channeling
- verifying the performance and design of the injection wells
- determining the injection wells' effects on the aquifer
- determining if injected material is transported from the injection areas via flow through utilities or utility bedding

The injection test approach can be summarized as follows:

- The tests involved injecting potable water containing a sodium bromide tracer at three injection locations, one in each of the three TCE areas where the future bioremediation system will be installed.

- Residual disinfectants (such as chlorine and chloramines) were removed from the potable water before injection using granular activated carbon (GAC).

- Each of three injection locations was tested at three different injection rates, each for approximately 24 hours.

- The injected fluid's effects on the aquifer were monitored at each location using monitoring well clusters. Changes in water levels were measured using in-well pressure transducers and manual depth to water measurements.

- The total injected fluid volume ranged from approximately 2,600 gallons at the southwest TCE area to 2,700 gallons at the north TCE area, which is comparable to the design injection volume per injection well stipulated in the *Draft Groundwater Response Action Plan* (Tetra Tech, 2011a).

Available catch basins (i.e., MH-10 [IL-3], IL-X1, and X-11A) at each test location were sampled and observed during the tests to confirm that the injected material was not entering the site utility system.

2.5 INJECTION TEST SET-UP SUMMARY

The injection test equipment and logistics were selected to ensure safety during field procedures, minimize cost, and reduce overall impact while achieving the stated design objectives. The following steps summarize the injection tests' sequence and equipment:

- All monitoring wells were sampled to determine bromide base levels.

- Three rented water storage tanks were delivered and placed at each of the testing locations. The tanks were EZ Kleen™ cross-linked polyethylene tanks with 2,400 gallons stated capacity.

- A local water hauling company was contracted to deliver and fill the three storage tanks with potable water from the nearest municipal water treatment plant. A tank trailer suitable for hauling drinking water was used.

- Dissolved sodium bromide tracer was added to each of the water storage tanks. Approximately 10 pounds (lbs) of sodium bromide was placed in each tank. Fourteen kilograms (kg) (equal to 30.8 lbs) of sodium bromide was purchased and divided equally between three tanks, resulting in approximately 10 lbs of bromide per each tank. At each injection site, sodium bromide was placed into a five-gallon pail and mixed until completely dissolved before transferring the bromide solution into the tank. The resultant sodium bromide concentration in the injected water ranged from 350–600 milligrams per liter (mg/L). The contents of each tank were agitated with a high-volume mixing pump to thoroughly mix the bromide solution. (Sodium bromide is a common nontoxic tracer for groundwater studies. Refer to Appendix D for the sodium bromide material safety data sheet [MSDS]).

- At each injection site, a Tetrasolve HPP-50 granular activated carbon (GAC) filter with approximately 3.5 feet carbon bed height and 10-inch-diameter (Appendix E) removed residual chlorine from water before injecting. Total chlorine was measured before and after GAC filtration at the beginning of each test using a Hach® kit (total of nine tests). The chlorine kit detection range is from 0.02 milligrams per liter (mg/L) to 3.5 mg/L of total chlorine.

- Before starting the injection test at each location, the data logging liquid level transducers (Shlumberger Micro-Diver; see Appendix E) were placed in each of the deep-screen monitoring points and into each injection well for an automatic liquid level measurement. Four transducers were used at each injection location.

- Injection tests used Proactive model Mini-Typhoon® 12-volt DC pumps with a variable speed controller. The selected pump's capacity can be varied from a maximum of one gallon per minute (gpm) at 13 pounds per square inch (psi) to as low as 40 milliliters per minute (ml/minute). Refer to Appendix E for the pump and controller details. Deep-cycle batteries powered the pumps. The batteries were replaced and charged as necessary from available 115-volt AC wall outlets.

- Three different injection rates were used at each injection location: low, intermediate, and high. Each injection rate was tested for approximately 24 hours. The groundwater table was allowed to equilibrate between tests at different injection rates.

- The presence of bromide tracer was determined by collecting analytical samples from the monitoring wells at each injection location. The samples were collected from each monitoring well cluster at the conclusion of each test. Therefore, 18 samples were collected at each injection location during the three tests.

- Catch basins near each injection test area were also tested for bromide tracer after each test. Three catch basins (i.e., MH-10 [IL-3], IL-X-1 and X11A) were identified for this purpose. Nine bromide samples were collected at catch basins during the tests. Bromide sampling to determine the background concentrations in catch basins in the southeast TCE area was also performed (see Section 3.1.5).

- Injection pressure and flow was adjusted and maintained using a variable speed pump controller and an effluent needle valve. The equipment set-up was identical for each test area. Refer to Figure 2-3 for the injection equipment process schematic, instrumentation, and controls.

- All injection tests were performed in parallel to reduce time in the field. The injection test equipment was configured so it could function unattended or with little field personnel involvement. However, the injection process was monitored by field personnel at all times, including during nighttime operation.

The most consistent way to evaluate the actual injection pressure is to express it as an increase of the hydraulic head in the injection well compared to the static level. This hydraulic head increase is the actual stress to the formation caused by the injection in a particular location; it therefore reflects the formation's hydraulic permeability in a particular location. Another useful reference point is an injection pressure measured at the wellhead (surface level pressure). The latter is useful when evaluating a potential for the injected fluid to daylight. Both the hydraulic head increase and the wellhead pressure were recorded during the injection tests.

2.6 SAMPLING PROCEDURE FOR BROMIDE

Bromide tracer analysis results were used to estimate the radius of influence (ROI) of the injection wells. The bromide results are attached as Appendix F. This information will later be used during the remedial design phase. A standard low-flow sampling technique was used to collect representative formation groundwater samples for tracer analyses.

Monitoring wells were purged using a peristaltic pump and disposable polyethylene tubing. The pumping rate ranged between 100–300 ml/minute. The final adjustment of the purge rate depended on water stabilization and how fast the wells recharged without drawdown below the initial static water level.

During groundwater purging, water level drawdown measurements and groundwater parameters (including pH, temperature, specific conductance, DO, and ORP) were collected every five to 10 minutes, or after each purge volume, whichever was quicker, until purging was complete, and this information was recorded in the appropriate site-specific logbook, as well as on Low Flow Purge Data Sheets. Water quality parameters were measured using an inline water quality meter.

Purging was considered complete when the monitored water quality parameters had stabilized, the well was purged dry, or purging had taken place for one hour. Stabilization was considered achieved when three consecutive readings, taken at five-minute intervals, were within ±0.2 standard units for pH, ±5% for specific conductance and temperature, ±20% for DO and ORP, and less than 20 nephalometric turbidity units for turbidity, or when a maximum of one hour had elapsed. If a monitoring well was purged dry, the water level in the well was allowed to recover a minimum of 80% of its initial static water level before groundwater sampling.

2.7 HYDRAULIC CONDUCTIVITY ESTIMATE

The formation hydraulic conductivity was estimated using the following equation (Dupuit equation) for a steady state flow in an unconfined aquifer (Driscoll, 1986):

$$K = \frac{Q \ln\left(\frac{r_1}{r_2}\right)}{2\pi b\left[\left(s_1 - \frac{s_1^2}{2b}\right)\right] - \left(s_2 - \frac{s_2^2}{2b}\right)}$$

where:

K = hydraulic conductivity (square meters per day [m^2/day])

Q = flow (cubic meters per day [m^3/day])

b = saturated thickness (meters [m])

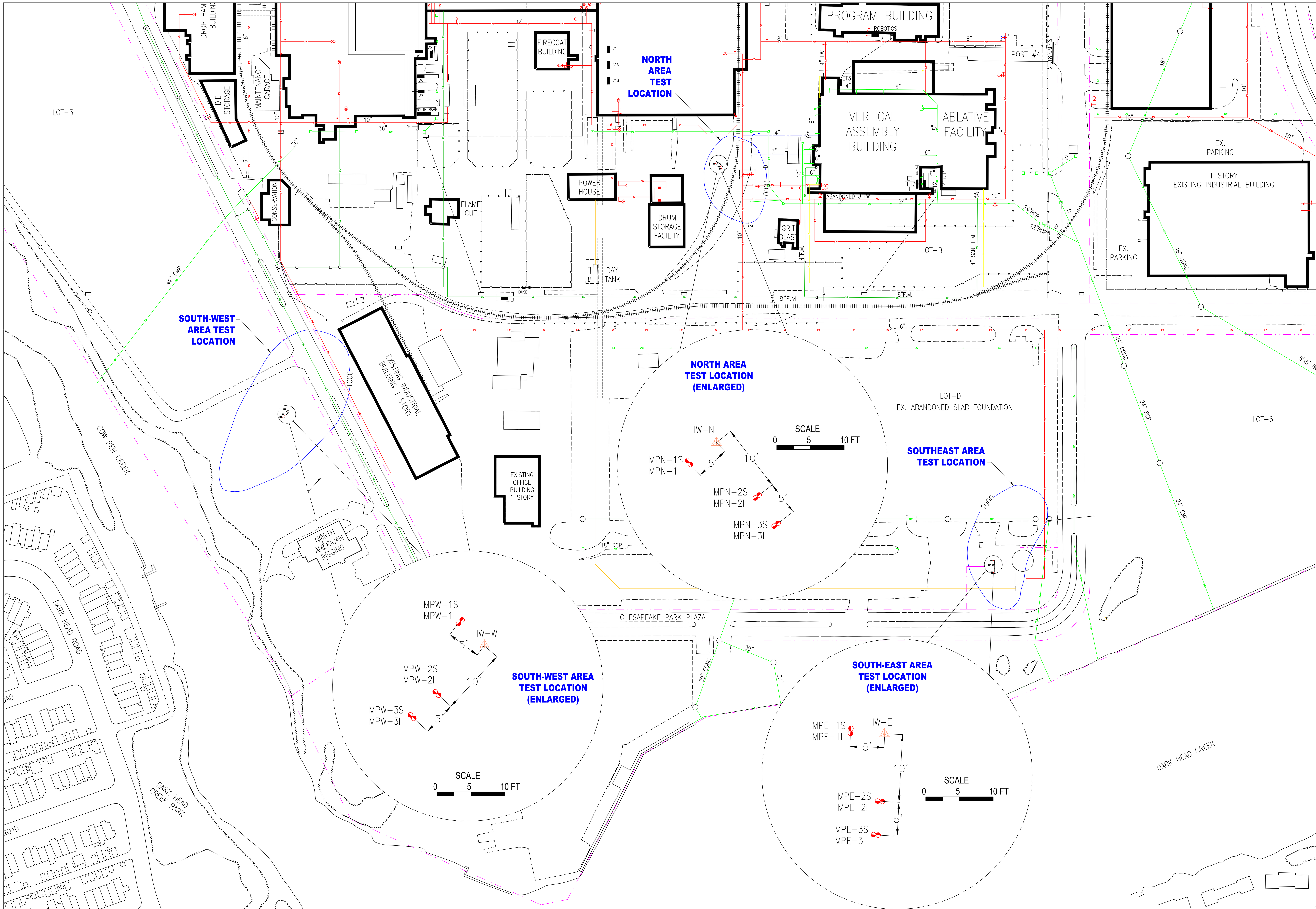
s_1 = observed hydraulic head change at first observation point (m)

s_2 = observed hydraulic head change at second observation point (m)

r_1 = distance from injection well to first observation point (m)

r_2 = distance from injection well to second observation point (m)

During the injection tests, the observed hydraulic heads in the test areas stabilized quickly and remained relatively constant during the injection process. Therefore, assuming a steady state flow would not, in this case, be expected to lead to significant errors. A steady state Dupuit equation solution and a common method for evaluating the pump test results (Theis by *AQTESOLV* software) were compared for the southeast TCE area injection test done at a high injection rate. The comparison indicates that the calculated values of hydraulic conductivities produced using these two methods are indeed close (within approximately 15%). A steady state Dupuit equation was therefore selected as a method for calculating hydraulic conductivity values, as it allows a simpler data evaluation for the multiple tests conducted at the site.



LEGEND

IW-N	TEST INJECTION WELL "N" - NORTH TEST AREA "W" - SOUTHWEST TEST AREA "E" - SOUTHEAST TEST AREA
MPE-1S MPE-1I	MONITORING WELLS CLUSTER "S"- SHALLOW SCREENED INTERVAL (10-15' BGS) "I" - INTERMEDIATE SCREENED INTERVAL (25-35' BGS)
1000	1,000 ug/L TCE CONTOUR
	PROPERTY LINE
	DOMESTIC WATER
SS	SANITARY SEWER
SW	STORM WATER
G	GAS
FW	FIRE WATER
E	ELECTRICAL SERVICE
ST	STEAM
C	CONDENSATE

BASE MAP: BASED ON DRAWING PREPARED BY TAI CONSULTING ENGINEERS, INC.

TOPOGRAPHY: TOPOGRAPHY WITHIN AREA OF DISTURBANCE FROM FIELD RUN SURVEY CONDUCTED BY DMW, INC. IN JUNE 1999 FLOATED TO STATE GRID.

HORIZONTAL INFORMATION OUTSIDE OF LIMIT OF DISTURBANCE FROM BALTIMORE COUINTY OFFICE OF INFORMATION TECHNOLOGY GIS SERVICES UNIT. DATE OF CAPTURE: MARCH 1995

EXISTING UTILITIES: FIELD INFORMATION OBTAINED FROM DMW FIELD RUN SURVEY AND LOCKHEED MARTIN ENTITLED "EXHIBIT #6 EXISTING UTILITIES PLAN."

BOUNDARY LINES: BOUNDARY INFORMATION TAKEN FROM RECORDED PLAT E.H.K., JR. 51 FOLIO 43 "1ST AMENDED CHESAPEAKE PARK RE-SUBDIVISION" PREPARED BY MARYLAND SURVEYING AND ENGINEERING CO., INC. 4/24/84. BOUNDARY HAS BEEN ORIENTED TO THE BALTIMORE COUNTY METROPOLITAN DISTRICT GRID, BUT SHOULD NOT BE CONSIDERED A BOUNDARY SURVEY.

SCALE
0' 125' 250' 500'

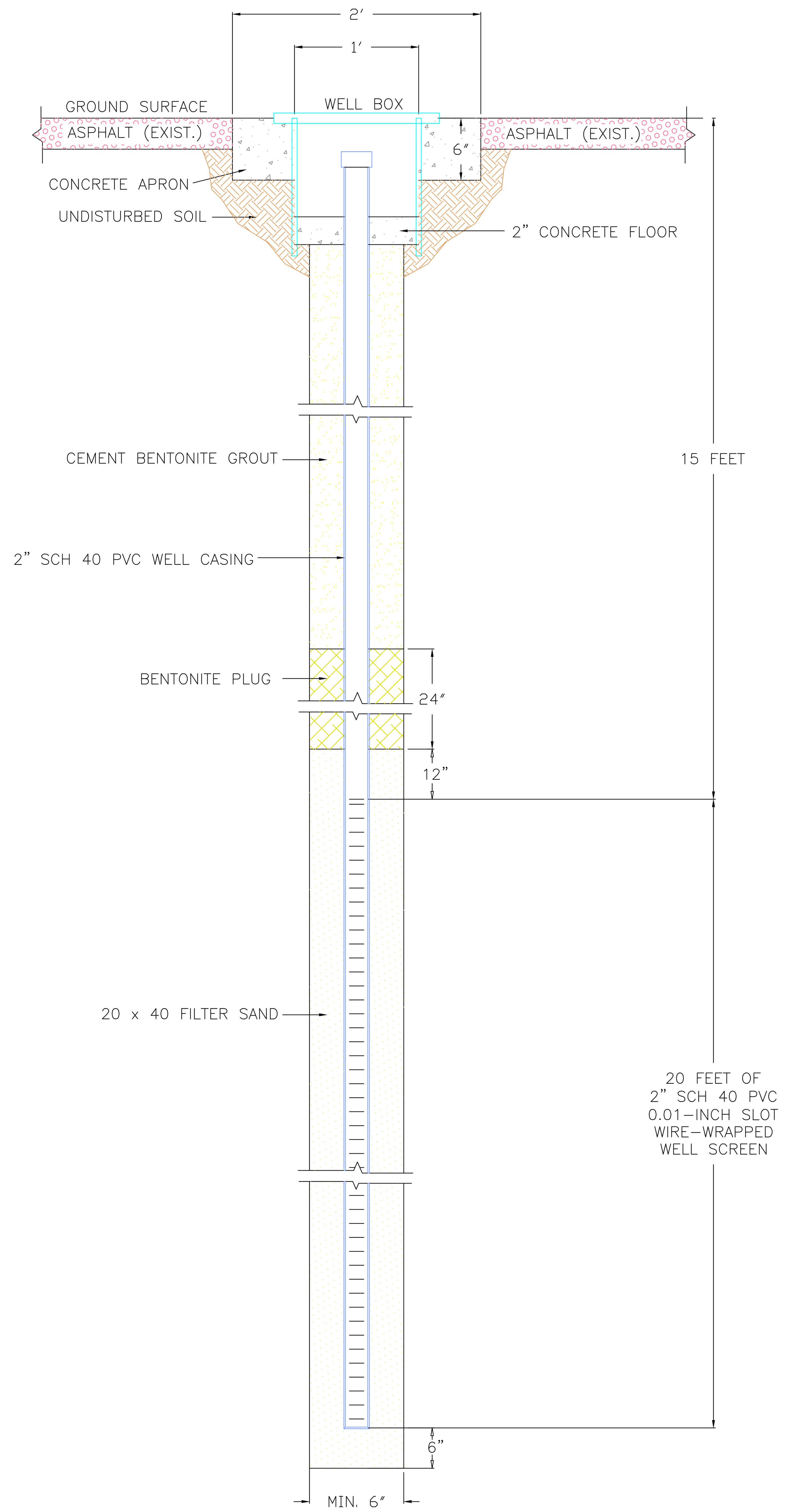
TETRA TECH

TEST WELL LOCATIONS

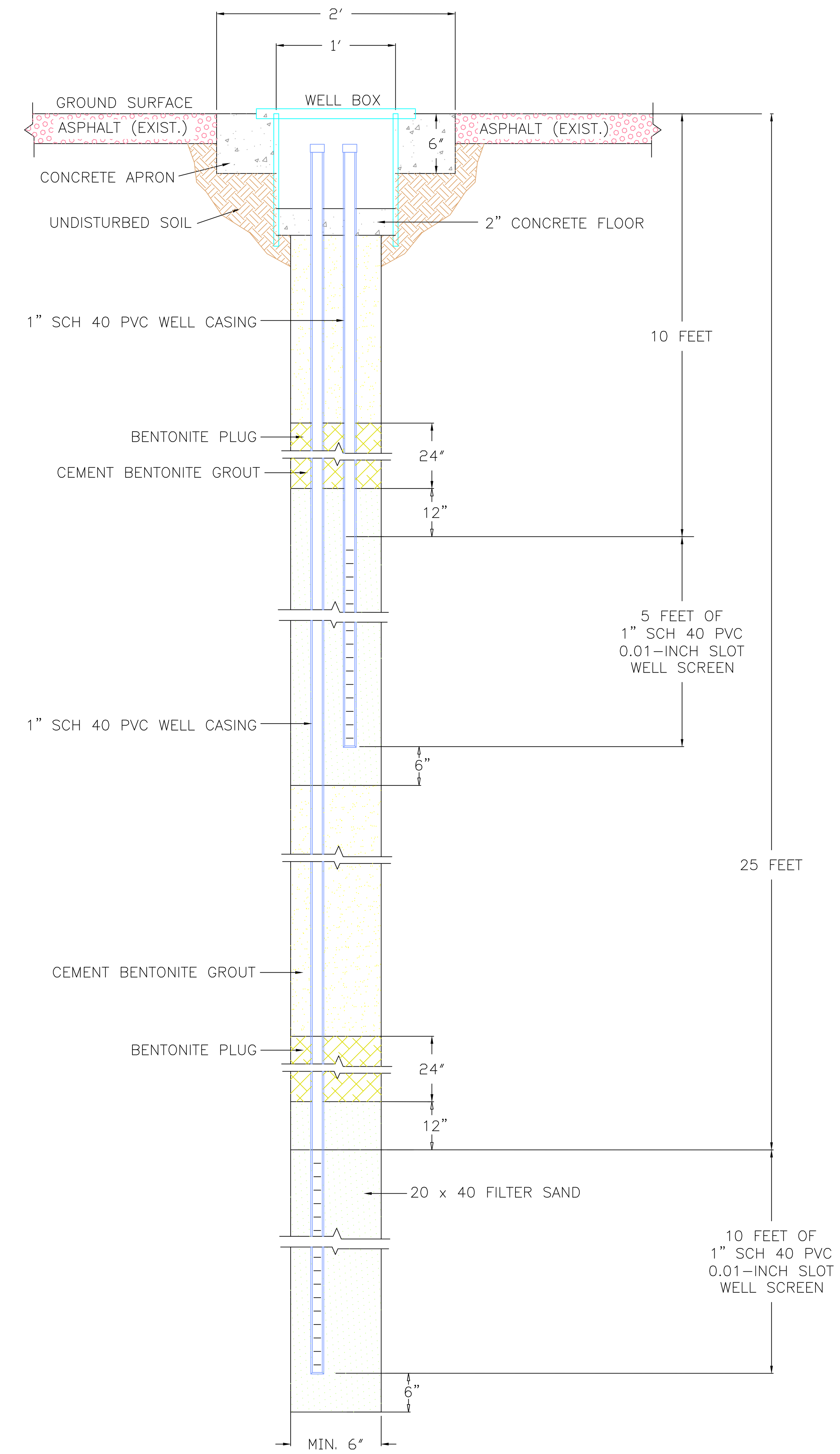
LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

DATE:	02-2-12
PROJECT NO.:	
DESIGNED BY:	BD
DRAWN BY:	BD
CHECKED BY:	CP

FIGURE 2-1



TEST INJECTION WELL
(TYPICAL)



MONITORING
WELL CLUSTER
(TYPICAL)

NOT TO SCALE

TETRA TECH

INJECTION TEST WELL
CONSTRUCTION DETAILS

LOCKHEED MARTIN MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

DATE:	02-22-2012
PROJECT NO.:	
DESIGNED BY:	BD
DRAWN BY:	BD
CHECKED BY:	CP
SCALE:	N.T.S.

FIGURE 2-2

T-1
2,400-GAL
HDPE TANK
8.5 FEET DIA

DP-1
SUMBERSIBLE PUMP
12 VDC WITH
VARIABLE SPEED
CONTROLLER
PROACTIVE MODEL
MINI-MONSOON

GAC-1
CARBON FILTER
TETRASOLVE HPP-50
EPOXY RESIN
125 PSI MAX PRESSURE
1.7 CU. FT OF CARBON
3 FEET BED HEIGHT
10-INCH DIAMETER
3/4-INCH CONNECTIONS

TZ-1
MECHANICAL
FLOW
TOTALIZER
SIEMENS
WFU10.110-1
0.025 GPM
STARTING FLOW

FM-1
DIRECT-READ
FLOW-METER
KING SERIES 7510
1 GPM MODEL FOR
>0.25 GPM
22 GPH MODEL FOR
<0.25 GPM

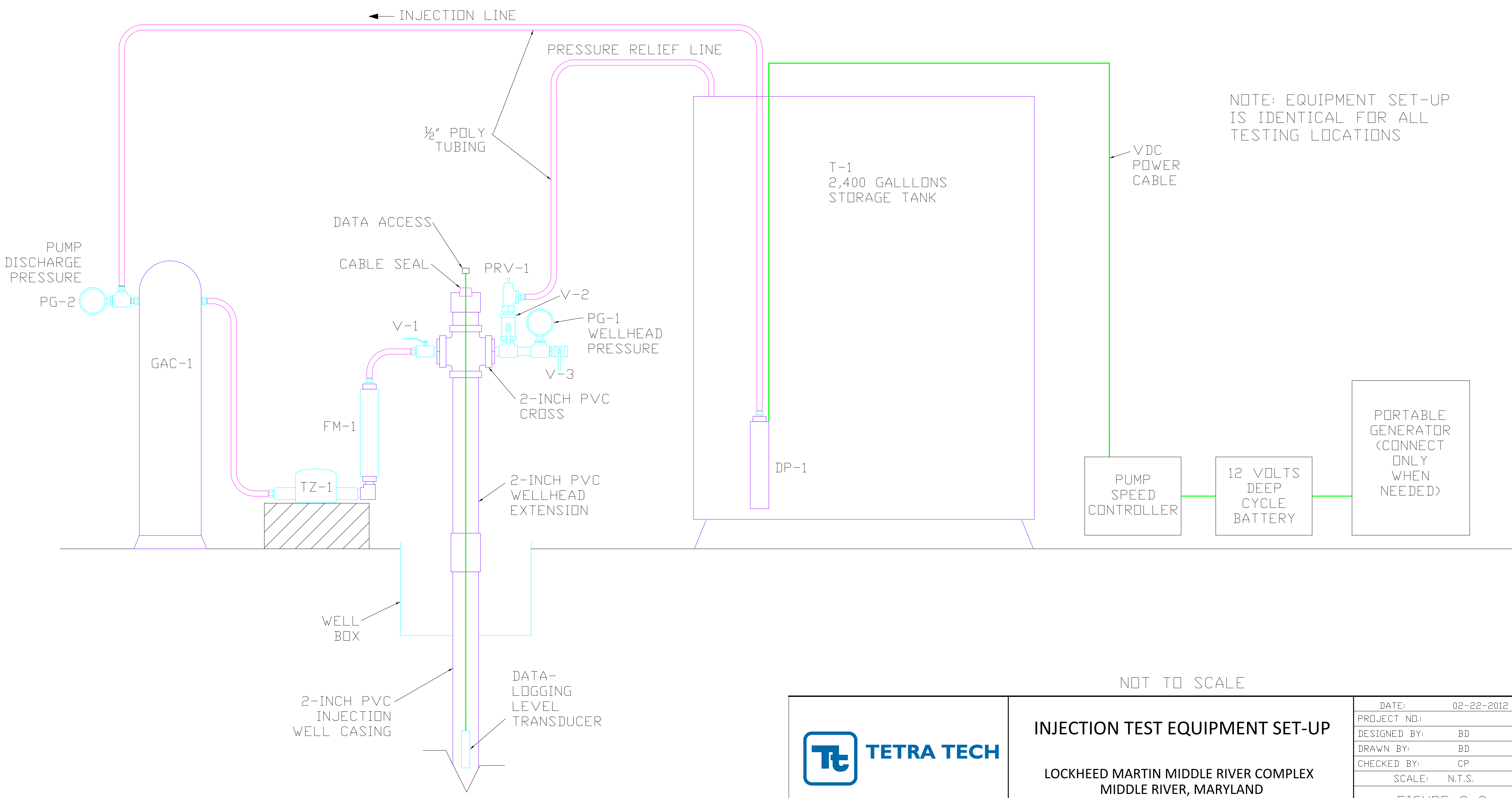
PRV-1
ADJUSTABE
PRESSURE
RELIEF VALVE
0-14 PSI RANGE
½" BRONZE

V-1
FLOW
REGULATING
NEEDLE
VALVE
½" BRASS

V-2
SHUT-OFF
BALL VALVE
½" BRASS

V-3
AIR VENT
ALL VALVE
¼" BRASS

PG-1, PG-2
PRESSURE
GAUGES
0-20 PSI
¼" BRASS



NOT TO SCALE

TETRA TECH	INJECTION TEST EQUIPMENT SET-UP LOCKHEED MARTIN MIDDLE RIVER COMPLEX MIDDLE RIVER, MARYLAND	DATE: 02-22-2012 PROJECT NO.: DESIGNED BY: BD DRAWN BY: BD CHECKED BY: CP SCALE: N.T.S. FIGURE 2-3

Section 3
Test Results

The injection test parameters include the injection pressures, injection flows, total injection volumes, water levels, and bromide tracer concentrations. Associated observations, such as injected fluid daylighting, channeling, injection rate adjustments, and other pertinent information were also recorded as appropriate. The following sections present the results for each of nine tests performed at three test locations using low, intermediate, and high injection rates.

3.1 SOUTHEAST TRICHLOROETHENE AREA

This section describes the results of the injection tests performed at the southeast trichloroethene (TCE) area (Figure 3-1) during the period of November 8–15, 2011.

3.1.1 Low-Rate Injection Test

Before the test start-up, a total chlorine concentration was measured before and after the granular activated carbon (GAC) filter while circulating the injection solution in a closed loop at a rate of one gallon per minute (gpm). Approximately 90 gallons were passed through the GAC filter before taking chlorine measurements. The GAC filter influent chlorine level was 0.5 milligrams per liter (mg/L) while the effluent chlorine was below detection limit of the Hach® kit (less than 0.02 mg/L).

The low-rate test at the southeast TCE area began at 9:35 a.m. on November 8, 2011. The initial injection rate was approximately 0.27 gpm. After several hours, the injection rate drifted upwards to 0.42 gpm and was later reduced to approximately 0.3 gpm. The average injection flow was 0.3 gpm for the entire 24-hour test period, based on the flow totalizer. The injection used a gravity flow due to low injection pressure requirements. Based on the flow totalizer, 436 gallons of bromide solution were injected during this test. Table 3-1 summarizes the injection flow rates and volumes recorded at the southeast TCE area during the low-rate test.

Note that during the low-rate test, the water level drawdown in the tank could not be used to calculate the injected volumes (and thus compared with the flow totalizer readings) due to an irregular geometry at the top portion of the tank. This comparison was made during the later tests, when the water level reached the cylindrical portion of the tank. Injection at this flow resulted in a relatively small hydraulic head increase above the static level in injection well IW-E. As shown in Figure 3-2, the hydraulic head in the injection well ranged from approximately 1.2–1.8 feet above the static level during the low-rate test. The wellhead pressure gauge indicated no wellhead pressure because the water level in the injection well remained at least six feet below ground surface during the injection.

The test was stopped at 9:40 a.m. on November 9, 2011 after 24 hours and five minutes of continuous injection. The injection was not interrupted. When the injection was stopped, the hydraulic head in the injection well quickly decreased, and was measured within 0.1 feet of the static level after only one hour of recharge (Figure 3-2).

3.1.2 Intermediate-Rate Injection Test

The intermediate-rate test at the southeast TCE area began at 9:04 a.m. on November 10, 2011. The initial injection rate was approximately 0.6 gpm. At the beginning of the test, the total chlorine concentration was measured before and after the GAC filter. The GAC filter influent chlorine level was 0.16 mg/L, while the effluent chlorine was below the detection limit of the Hach® kit (less than 0.02 mg/L).

Several adjustments kept the injection rate at a constant level. The average injection flow was 0.57 gpm for the 24-hour test period, based on the flow totalizer. The injection was performed using a battery operated pump. Based on the flow totalizer, a total of 826 gallons of bromide solution was injected during this test. Note that based on the water level measurements in the tank and the tank diameter (8.5 feet), 832 gallons of bromide solution were injected during this test. The injected volumes calculated by these two methods (flow totalizer and tank water levels) are remarkably close. However, the method based on water level measurements in the tank is likely less accurate due to an inaccuracy in detecting water levels, irregularities in the tank's dimensions, and other factors. Therefore, flow totalizer readings were used to calculate the reported injection volumes and flow rates, and tank water levels were used for injection volume verifications. Table 3-2 includes a summary of the injection flows and volumes recorded at the southeast TCE area during the intermediate-rate test.

As shown in Figure 3-2, the hydraulic head in the injection well IW-E ranged from approximately 2.6–3 feet above the static level during the intermediate-rate test (approximately two times higher as compared to a low-rate test). The wellhead pressure gauge recorded no wellhead pressure because the water level in the injection well remained at least five feet below the ground surface during the injection. The test was stopped at 9:04 a.m. on November 11, 2011 after 24 hours of continuous injection. The injection was not interrupted. When the injection was stopped, the hydraulic head in the injection well quickly decreased and was soon close to the pre-test static level (Figure 3-2).

3.1.3 High-Rate Injection Test

When the intermediate-rate test was finished, the remaining water volume in the tank was estimated at 873 gallons (calculation in Table 3-2). However, an injection volume of 1440 gallons was required for the high-rate test, given the projected injection rate of 1 gpm and 24 hours (1440 minutes) duration. Therefore, an additional quantity of potable water (estimated at 546 gallons; see Table 3-3) was delivered to the site and pumped into the tank to obtain an injection volume of approximately 1440 gallons for the high-rate test. Note that the bromide tracer concentration was subsequently reduced due to the addition of fresh water. Refer to Section 3.1.5 for the calculated bromide concentration during the injection tests in the southeastern TCE area.

The high-rate test at the southeast TCE area began at 7:35 a.m. on November 14, 2011. The initial injection rate was approximately 1.08 gpm. At the beginning of the test, the total chlorine concentration was measured before and after the GAC filter. The GAC filter influent chlorine level was 0.1 mg/L, and the effluent chlorine was below the detection limit of the Hach® kit (less than 0.02 mg/L).

Several adjustments kept the injection rate constant. The average injection flow was 1.01 gpm for the 24-hour test period, based on the flow totalizer. The injection was performed using a battery operated pump. A total of 1419 gallons of bromide solution was injected during this test.

Note that 1437 gallons of bromide solution were injected during this test, based on the water level measurements in the tank and the tank diameter (8.5 feet).

Similar to the intermediate test described in the previous section, the injection volumes calculated using these two methods (flow totalizer and tank water levels) are very close. As noted earlier, the flow totalizer readings were used to calculate the reported injection volumes and flow-rates while the tank water levels were used to verify injection volumes. Refer to Table 3-3 for a summary of the injection flows and volumes recorded at the southeast TCE area during the high-rate test.

As shown in Figure 3-2, the hydraulic head in injection well IW-E ranged from approximately 4.2–6.2 feet above the static level during the high-rate rate test (approximately two times higher as compared to the intermediate-rate test). The wellhead pressure gauge indicated no wellhead pressure, as the water level in the injection well remained at least two feet below the ground surface during the injection. The test was stopped at 7:00 a.m. on November 15, 2011 after 23 hours and 25 minutes of continuous injection. When the injection was stopped, the hydraulic head in the injection well quickly decreased and, similar to the low- and intermediate-rate tests, was soon close to the pre-test static level (Figure 3-2).

3.1.4 Monitoring Wells' Hydraulic Response

The static depth to water in each southeastern TCE-area monitoring well was measured before each test using an electronic water level meter. Depth to water in this test area generally ranged from approximately 8–8.5 feet below the ground surface (Table 3-4). Note that the static water levels in this area tended to decrease slightly over time and were approximately 0.7 feet lower before the high-rate test when compared to the low-rate test (Table 3-4). This general decrease in the water table is likely associated with factors such as formation reaction to changes in atmospheric pressure and other factors not directly related to the injection tests.

Note that no significant rain occurred during the injection tests. The only minor rainfall during these tests occurred on November 10, 2011 (0.05 inches of precipitation total). Historical groundwater level observations at this location and the distance from the shoreline suggest that a tidal influence is not a likely factor in the observed changes in the groundwater table.

Hydraulic conductivity values were calculated for all three tests in the southeast TCE area using three different combinations of observation points. The hydraulic conductivity values calculated for the high- and intermediate-rate injection tests are consistent, ranging from 2.1–2.9 feet per day (ft/day). The hydraulic conductivities calculated for the low-rate test are lower (0.8-1.3 ft/day). Refer to Table 3-5 for the hydraulic conductivity calculation details.

3.1.4.1 Deep Monitoring Points

Water levels in all three deep monitoring points (MPE-1I, MPE-2I, and MPE-3I) responded very quickly to the injection events at all three injection rates. The changes in the hydraulic head for the low-, intermediate-, and high-rate tests are shown in Figures 3-3, 3-5, and 3-7 respectively. For each test, the hydraulic head increased quickly (within five minutes) after the injection began and decreased quickly (within five minutes) when the injection was stopped. As expected, the strongest response was in the monitoring point closest to the injection well (MPE-1I, approximately five feet from the injection well). However, the hydraulic response in the more distant monitoring points (MPE-2I at 10 feet and MPE-3I at 15 feet from the injection well) was generally in the same range. For example, during the high-rate injection test the hydraulic head increase in MPE-3I was approximately 0.8 feet over static, compared to 1.0 foot in MPE-1I (Figure 3-7). In general, the observed changes in the hydraulic head point indicate that the deeper interval in the southeast TCE area (25–35 feet) is relatively permeable.

3.1.4.2 Shallow Monitoring Points

Changes in hydraulic head for the low-, intermediate-, and high-rate tests are shown in Figures 3-4, 3-6, and 3-8 respectively. Water levels in the shallow monitoring points (MPE-1S, MPE-2S, and MPE-3S) appear to have responded to the injection events. However, the data trends are not as clearly indicative of a hydraulic response related to the injection events as was demonstrated for the deep monitoring wells. In some cases, observed water levels fluctuated in ways that are difficult to explain and relate to the injection events. For example, during the intermediate-rate injection test, water levels in all shallow monitoring points decreased approximately 0.3 feet (after the 11:35 p.m. measurement) following at least 14 hours of continuous injection. Some difficult to explain fluctuations in the water levels were also observed during the low-rate and the high-rate injection tests (Figures 3-4 and 3-8, respectively).

The shallow monitoring wells' responses were not clearly related to their distance from the injection well. For example, during the high-rate test (Figure 3-8), the hydraulic response in the most distant monitoring point (MPE-3S, 15 feet from the injection well) was the same or even greater than the response in the nearest monitoring point (MPE-1S, 5 feet from the injection well). The shallow observation points' hydraulic responses to the injection events were also not as immediate and sharp as in the deep monitoring points, and water levels took longer to equilibrate. However, the magnitude of the hydraulic response to the injection events was generally in the same range as for the deep monitoring wells.

These complicated data trends make drawing clear conclusions regarding the hydraulic permeability of the shallow zone and the degree of hydraulic interconnectivity between the shallow and deep intervals somewhat difficult. The shallow zone appears to be less permeable compared to the deep zone, and seems somewhat hydraulically isolated from the deeper zone. Tracer results (discussed in the following chapter) would appear to support the conclusion that the deep interval is not directly connected to the shallow zone.

3.1.5 Bromide Tracer Results

The initial concentration of sodium bromide (NaBr) tracer in the solution tank was calculated based on the known quantity of sodium bromide that had been dissolved in the tank (10.3 lbs), and the estimated initial water volume in the tank (2135 gallons, as calculated in Table 3-4), as follows:

Low and Intermediate Tests Sodium Bromide Tracer Concentration =
*10.3 lbs/2135 gallons/8.327 lbs/gallon * 1,000,000 mg/L = 579 mg/L of sodium bromide*

Note that the initial sodium bromide tracer concentration was used during the low- and intermediate-rate tests. However, an additional 546 gallons of fresh water was placed in the tank with 873 gallons of remaining solution before the high-rate test to make up the necessary volume, thus reducing the bromide tracer concentration. The bromide concentration for the high-rate test is calculated as follows:

High-Rate Test Sodium Bromide Concentration =
*579 mg/L * 873 gallons/(873 gallons + 546 gallons)= 356 mg/L of sodium bromide*

Before the injection test, monitoring points in the southeast TCE area were sampled for baseline bromide levels. Baseline bromide samples were collected between October 28, 2011 and November 2, 2011. The baseline bromide levels ranged from a maximum of 0.12 mg/L in MPE-3I to less than 0.050 mg/L in MPE-2S and MPE-3S. They were slightly higher in the deep monitoring points as compared to the shallow monitoring points. Table 3-6 includes the bromide sampling summary for the southeast TCE area.

After the low-rate injection test, the bromide tracer concentration slightly increased in two deep monitoring points (MPE-1I and MPE-2I; see Table 3-6). At this point, the tracer concentration in MPE-3I (0.36 mg/L at 15 feet from the injection well) was the highest, which may indicate a preferential flow toward MPE-3I. The bromide concentration in deep monitoring points after the low-rate injection test ranged from 0.11 mg/L in MPE-1I to 0.36 mg/l in MPE-3I.

After the intermediate-rate injection test, the bromide tracer concentration increased significantly in all three deep monitoring points (approximately 75–178 times over baseline, Table 3-6). At this point, the tracer concentration in MPE-3I (13 mg/L at a distance of 15 feet from the injection well) was higher than in MPE-2I (6.1 mg/L at 10 feet from the injection well), which may again indicate a preferential flow toward MPE-3I. The bromide concentration in deep monitoring points after the intermediate-rate injection test ranged from 6.1 mg/L in MPE-2I to 16 mg/L in MPE-1I.

After the high-rate injection test, the bromide tracer concentration continued to increase in all three deep monitoring points (approximately 233–744 times over baseline, Table 3-6). At this point, the tracer concentration was progressively lower with increasing distance from the injection well, which may indicate a more uniform radial flow from the injection well at a higher injection rate. The bromide concentration in the deep monitoring points after the high-rate injection test ranged from 28 mg/L in MPE-3I to 67 mg/l in MPE-1I.

In sharp contrast to the deep interval, the shallow monitoring points (MPE-1S to MPE-3S) exhibited no changes in bromide concentration over baseline levels (Table 3-6). These results suggest that the shallow zone may be hydraulically isolated from the deep interval, and that the shallow zone is much less permeable compared to the deep interval. Note that injection well IW-E was screened from 15–35 feet below the ground, whereas the shallow monitoring points were screened from 10–15 feet below the ground surface, thus providing a potential for a tracer to access the shallow interval. A summary of all bromide detections in the southeast TCE area monitoring points is in Figure 3-9.

Several bromide samples were also collected from the catch basin (MH-10/IL-3 in Figure 3-10) approximately 125 feet northeast of injection well IW-E. The sampled catch basin had visible flow during the test. The first two samples collected after the low- and intermediate-rate injection tests were within the same range as the baseline sampling results in the monitoring points (0.1 mg/L on November 10, 2011, and 0.11 mg/L on November 11, 2011, Table 3-6). However, the third sample, collected after the high-rate injection test on November 15, 2011, indicated 1.7 mg/L of bromide. This bromide concentration indicates a potential preferential path toward the catch basin from the injection well IW-E. This preferential path may affect the full-scale bioremediation system implementation in this area[2].

Several contradictory observations prevent a clear conclusion regarding a preferential path in this area, as follows:

- A complete absence of bromide tracer detections in all shallow monitoring points contrasts with clear and significant tracer indications in all the deep monitoring points. This observation indicates that the flow in the shallow zone is severely impeded. The catch basin is shallow.
- Injection pressures were low at all injection rates (less than six feet above static water levels), thus reducing any potential to create a preferential pathway.
- Hydraulic response in the monitoring points was relatively weak (less than 1.2 feet at five feet), thus reducing the potential to create a preferential pathway.

3.2 SOUTHWEST TCE AREA

This section describes the results of the injection tests performed in the southwest TCE area (Figure 3-10) during the period of November 8–15, 2011.

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[2] *Follow-up bromide sampling was performed in three Southeast TCE area catch basins (MH-10/IL-3, IL-2 [175 feet south of MH-10/IL-3], IL-1 [210 feet south of MH-10/IL-3] and at Outfall 08 (320 feet south of MH-10/IL-3) to determine if brackish surface water intrusion could be associated with the bromide detection in MH-10 (IL-3). This sampling indicates that the bromide levels in all three catch basins were near the levels detected in MH-10/IL-3 following the low and intermediate-rate tests (approximately 0.1 mg/L), while the bromide level at Outfall 08 was approximately 0.5 mg/L. Note that these follow-up samples were collected at low tide, mid-tide, and high tide, and the results for all tide levels are similar. Refer to Table 3-6 and Appendix H for the follow-up bromide sampling results.*

3.2.1 Low-Rate Injection Test

Before starting the test, a total chlorine concentration was measured before and after the GAC filter while circulating the injection solution in a closed loop at a rate of 1 gpm. Approximately 80 gallons were passed through the GAC filter before taking chlorine measurements. The GAC filter influent chlorine level was 0.5 mg/L; the effluent chlorine was below detection limit of the Hach® kit (less than 0.02 mg/L).

The low-rate test at the southwest TCE area began at 11:00 a.m. on November 8, 2011. The initial injection rate was approximately 0.3 gpm, but after several hours the injection rate drifted upwards to 0.4 gpm before later reducing to approximately 0.3 gpm. The average injection flow was 0.28 gpm for the entire 24-hour test period, based on the flow totalizer. The injection used a gravity flow due to low injection-pressure requirements. Based on the flow totalizer, 402 gallons of bromide solution were injected during this test. Table 3-7 contains a summary of the injection flow-rates and volumes recorded at the southwest TCE area during the low-rate test. Note that, similar to the southeast TCE area test, during the southwest TCE area low-rate test, the water level drawdown in the tank could not be used to calculate the injected volumes used for comparison to the flow totalizer readings, due to the irregular geometry of the top portion of the tank. This comparison was performed during the later tests, when the water level reached the cylindrical portion of the tank.

Injection at this flow-rate resulted in a relatively small hydraulic head increase above the static level in injection well IW-W. As shown in Figure 3-11, hydraulic head in the injection well was typically three feet above the static level during the low-rate test. However, this was approximately twice as high as the hydraulic head in southeast TCE area injection well IW-E (Figure 3-2). At the end of the test, only a slight wellhead pressure (0.1 pound force per square inch gauge [psig]) was read from the wellhead pressure gauge, because the water level in the injection well remained near the ground surface during the injection.

The test was stopped at 11:00 a.m. on November 9, 2011 after 24 hours of continuous injection. The injection was not interrupted. When the injection was stopped, the hydraulic head in the injection well quickly decreased. However, injection well IW-W re-equilibrated at a slower rate compared to injection well IW-E, in the southeast TCE area. For example, after 12 hours the water level in IW-W was still 0.475 feet above the pre-test static level (Figure 3-11); in IW-E, water levels returned to pre-test conditions within minutes.

3.2.2 Intermediate-Rate Injection Test

The intermediate-rate test at the southwest TCE area began at 10:20 a.m. on November 10, 2011. The initial injection rate was approximately 0.5 gpm. At the beginning of the test, the total chlorine concentration was measured before and after the GAC filter. The GAC filter influent chlorine level was 0.12 mg/L; the effluent chlorine was below the detection limit of the Hach® kit (less than 0.02 mg/L).

Several adjustments kept the injection rate constant. The average injection flow was 0.51 gpm for the 24-hour test period, based on the flow totalizer. The injection was performed using a battery operated pump. Based on the flow totalizer, 741 gallons of bromide solution were injected during this test. Note that, based on the water level measurements in the tank and the tank diameter (8.5 feet), 764 gallons of bromide solution were injected during this test (Table 3-8). The injection volumes calculated based on these two methods (flow totalizer and tank water levels) are close. However, similar to the southeast TCE area test, the flow totalizer readings were used to calculate the reported injection volumes and flow-rates, and the tank water levels were used to verify injection volumes. Table 3-8 provides a summary of the injection flows and volumes recorded at the southeast TCE area during the intermediate-rate test.

As shown in Figure 3-11, hydraulic head in injection well IW-E was typically six feet above the static level during the intermediate-rate test (approximately two times higher compared to a low-rate test). The wellhead pressure at the end of the test increased to 1.0 psig (Table 3-8). The test was stopped at 10:20 a.m. on November 11, 2011 after 24 hours of continuous injection. The injection was not interrupted.

When the injection was stopped, the hydraulic head in the injection well quickly decreased. However, injection well IW-W re-equilibrated at a significantly slower rate compared to injection well IW-E, in the southeast TCE area. For example, after 12 hours of recharge the water level in IW-W was still 1.1 feet above the pre-test static level (Figure 3-11), whereas the water level at IW-E recharged within minutes.

3.2.3 High-Rate Injection Test

When the intermediate test was completed, the remaining water volume in the tank was estimated at 912 gallons (calculation in Table 3-8). However, an injection volume of 1440 gallons was required for the high-rate test, given the projected injected rate of 1 gpm and 24 hours (1440 minutes) duration. Therefore, an additional quantity of potable water (estimated at 541 gallons, see Table 3-9) was delivered to the site and pumped into the tank to obtain approximately 1440 gallons for the high-rate test. As a result, the bromide tracer concentration was subsequently reduced by the addition of fresh water. Section 3.2.5 describes the calculated bromide concentration during the injection tests in the southeastern TCE area.

The high-rate test at the southwest TCE area began at 8:30 a.m. on November 14, 2011 (Table 3-9). The initial injection rate was adjusted to approximately 1 gpm. At the beginning of the test, the total chlorine concentration was measured before and after the GAC filter. The GAC filter influent chlorine level was 0.1 mg/L, and the effluent chlorine was below the detection limit of the Hach® kit (less than 0.02 mg/L).

Several adjustments kept the injection rate constant. Average injection flow was 1.02 gpm for the 24-hour test period, based on the flow totalizer. The injection was performed using a battery operated pump. A total of 1453 gallons of bromide solution was injected during this test. Note that, based on the water level measurements in the tank and the tank diameter (8.5 feet), 1442 gallons of bromide solution were injected during this test.

As noted earlier, flow totalizer readings were used to calculate the reported injection volumes and flow-rates, and tank water levels were used to verify injection volumes. Table 3-9 contains a summary of the injection flows and volumes recorded at the southwest TCE area during the high-rate test. As shown in Figure 3-11, the hydraulic head in injection well IW-W ranged from approximately 10–13 feet above the static level during the high-rate test (approximately two times higher when compared to the intermediate-rate test). The wellhead pressure ranged from 2–3.5 psig during the injection.

The test was stopped at 8:18 a.m. on November 15, 2011 after 23 hours 48 minutes of continuous injection. When the injection was stopped, the hydraulic head in the injection well quickly decreased. However, the injection well IW-W re-equilibrated at a significantly slower rate compared to the injection well IW-E in the southeast TCE area: after 12 hours of recharge the water level in IW-W was still two feet above the pre-test static level (Figure 3-11).

3.2.4 Monitoring Wells' Hydraulic Response

The static depth to water in each southwestern TCE-area monitoring point was measured before each test using an electronic water level meter. Depth to water in this test area generally ranged from approximately 2.3–3.0 feet below the ground surface (Table 3-10). The pre-test static water levels in this area were generally within 0.2 feet between the injection events. This indicates that the water table largely recovered between injection events.

Hydraulic conductivity values were calculated for the high- and intermediate-rate injection tests in the southwest TCE area using three different combinations of observation points. The available data for the low-rate test were insufficient for this calculation. The hydraulic conductivity values calculated for the high-rate injection test ranged from 1.1–1.3 ft/day. The hydraulic conductivities calculated for the intermediate-rate test were lower (0.4–0.6 ft/day). The hydraulic conductivity values for the southwest area were approximately two times lower than those for the southeast area. Refer to Table 3-11 for the hydraulic conductivity calculation details.

3.2.4.1 Deep Monitoring Points

Water levels in all three deep monitoring points (MPW-1I, MPW-2I, and MPW-3I) responded very quickly to the injection events at all three injection rates. Changes in hydraulic head for the low-, intermediate-, and high-rate tests are shown in Figures 3-12, 3-14, and 3-16, respectively. These figures show that for each test the hydraulic head increased quickly (within five minutes) after the injection began, and decreased quickly (within five minutes) when the injection was stopped.

As expected, the strongest response was in the monitoring point closest to the injection well (MPW-1I, five feet from the injection well), but the hydraulic response in the more distant monitoring points (MPW-2I at 10 feet, and MPE-WI at 15 feet) was generally in the same range. As an example, during the high-rate injection test the hydraulic head increase in MPW-3I was approximately 5.5 feet over static, compared to 6.0 feet in MPW-1I (Figure 3-16). The magnitude of the hydraulic response was greater in the southwest test area as compared to the southeast area. In general, the observed changes in the hydraulic head indicate that the deeper interval (25–35 feet) in the southwest TCE area is also relatively permeable, but to a lesser degree than in the southeast TCE area.

3.2.4.2 Shallow Monitoring Points

Changes in hydraulic head for the low-, intermediate-, and high-rate tests are shown in Figures 3-13, 3-15, and 3-17, respectively. A relatively weak response appears to have occurred in the closest shallow monitoring point MPW-1S (five feet from the injection point) during the intermediate- and high-rate injection tests. Some difficult to explain fluctuations in water levels were observed during the low-rate injection tests (Figure 3-13).

In general, the hydraulic response in the shallow monitoring points was weaker compared to the deep monitoring points. Therefore, the shallow zone appears to be less permeable compared to the deep zone, and the shallow zone is probably hydraulically isolated from the deeper zone. Tracer results (discussed in the following chapter) also support the conclusion that the deep interval is not directly connected to the shallow zone.

3.2.5 Bromide Tracer Results

The initial concentration of sodium bromide tracer in the solution tank was calculated based on the known quantity of sodium bromide dissolved in the tank (10.3 lbs) and the estimated initial water volume in the tank (2055 gallons, as calculated in Table 3-8), as follows:

Low- and Intermediate-Rate Tests Sodium Bromide Tracer Concentration =
*10.3 lbs/2055 gallons/8.327 lbs/gallon * 1,000,000 mg/L = 602 mg/L of sodium bromide*

Note that the initial sodium bromide tracer concentration was used during the low- and intermediate-rate tests. However, an additional 541 gallons of fresh water was placed in the tank with 912 gallons of the remaining solution before the high-rate test to reach the necessary volume, resulting in a decreased bromide tracer concentration. The bromide concentration for the high-rate test can be calculated as follows:

High-Rate Test Sodium Bromide Concentration =
*602 mg/L * 912 gallons/(912 gallons + 541 gallons) = 378 mg/L of sodium bromide*

Before the injection test, the monitoring points in the southeast TCE area were sampled for baseline bromide levels. Baseline bromide samples were collected between October 28, 2011 and

November 2, 2011. The baseline bromide levels ranged from 0.073 mg/L in MPW-2I to a maximum of 0.16 mg/L in MPW-1S. Baseline bromide levels were slightly higher in the shallow monitoring points as compared to the deeper monitoring points. Table 3-12 summarizes bromide sampling in the southwest TCE area.

After the low-rate injection test, the bromide concentration increased from a base level of 0.09 mg/L to 12 mg/L in the deep monitoring point MPW-1I, five feet from the injection well (Table 3-12). Bromide levels in all the remaining monitoring points stayed close to the baseline levels after the low-rate injection test. After the intermediate-rate injection test, the bromide concentration in MPW-1I further increased to 200 mg/L. Bromide levels in all of the rest of the monitoring points remained close to the baseline levels after the intermediate-rate injection test.

After the high-rate injection test, a bromide spike (55 mg/L) was detected in the second monitoring point (MPW-2I, 10 feet from the injection well). The bromide level in MPW-1I after the high-rate test was 210 mg/L (compared to 378 mg/L in the injected bromide solution). The bromide level in the remaining monitoring point stayed close to the baseline levels after the high-rate injection test.

The shallow monitoring points (MPW-1S to MPW-3S) exhibited no changes in bromide concentration over the baseline levels (Table 3-12). These results suggest that the shallow zone may be hydraulically isolated from the deep interval, and that the shallow zone is much less permeable as compared to the deep interval. Note that the injection well IW-W was screened from 15–35 feet below ground, and the shallow monitoring points were screened from 10–15 feet below ground, thus providing a potential route for the tracer to access the shallow interval.

Figure 3-18 is a summary of all bromide detections in the southeast TCE area monitoring points. Three bromide samples were also collected from the catch basin (IL-X1; see Figure 3-10), approximately 115 feet northeast of the injection well IW-E. All sampling results are within the same range as the baseline samples in the monitoring points (0.082 mg/L on November 10, 2011, less than 0.05 mg/L on November 11, 2011, and less than 0.05 mg/L on November 15, 2011.

3.2.6 2008 *in situ* Chemical Oxidation Pilot Test Discussion

An *in situ* chemical oxidation (ISCO) study (Tetra Tech, 2009a) was performed in the southwest TCE area in 2008 (Figure 3-10). The study injected chemicals and potable water via seven direct push injection points. Most of the ISCO pilot study wells were approximately 100 feet northeast of the southwest TCE area injection test location.

The ISCO pilot study injections were performed at pressures ranging from 20–43 psig and with injection flows ranging from 1.6–3.7 gpm. Injection volumes ranged from 45–276 gallons. The injected fluid was observed daylighting during several injection events.

Directly comparing the 2008 ISCO pilot study to the 2011 injection test for the southwest TCE area is difficult, due to the construction differences in the injection points (small diameter direct push points versus wells with filter pack and grouting) and due to differences in injection rates (a maximum 3.7 gpm versus a maximum 1 gpm). The observed injection pressures during the ISCO test were considerably higher than during the injection test (a maximum of 43 psig versus a maximum 3.5 psig). Injection wells with properly constructed sand filter packs and cement/bentonite grouting are likely better suited for injection than are the type of small diameter direct driven points that were used in the 2008 ISCO study.

The 2008 ISCO pilot study injection wells were at a distance of approximately 100 feet northeast of the southwest TCE area injection test location. During the injection tests, no indications were observed that preferential pathways had been created by the 2008 ISCO test. Therefore, we believe that the formation in the injection test location was not affected by the 2008 ISCO pilot test.

3.3 NORTH TCE AREA

This section describes the results of the injection tests performed at the north TCE area (Figure 3-19) during the period of November 8 to November 15, 2011.

3.3.1 Low-Rate Injection Test

Before starting the test, a total chlorine concentration was measured before and after the GAC filter while circulating the injection solution in a closed loop at a rate of 1 gpm. Approximately 80 gallons were passed through the GAC filter before taking chlorine measurements. The GAC filter influent chlorine level was 0.5 mg/L and the effluent chlorine was below detection limit of the Hach® kit (less than 0.02 mg/L).

The low-rate test at the north TCE area began at 12:20 p.m. on November 8, 2011. The initial injection rate was approximately 0.3 gpm. Several flow adjustments maintained a constant rate. The average injection flow was 0.29 gpm for the entire 24.5-hour test period, based on the flow totalizer. The injection was performed using a battery operated pump. Based on the flow totalizer, 423 gallons of bromide solution were injected during this test. Table 3-13 includes a summary of the injection flow-rates and volumes recorded at the north TCE area during the low-rate test.

The injection at this flow-rate resulted in a moderately high hydraulic head increase above the static level in the injection well IW-N. As shown in Figure 3-20, the hydraulic head in the injection well was typically 12–15 feet above the static level during the low-rate test, a significantly higher level than that demonstrated in both the southeast and southwest test areas (Figures 3-2 and 3-11). Wellhead pressure, as measured by the pressure gauge, ranged from 3–4.6 psig during the injection.

The test was stopped at 12:50 p.m. on November 9, 2011 after 24.5 hours of continuous injection. The injection was not interrupted. When the injection was stopped, the hydraulic head in the injection well quickly decreased, and was within 0.5 feet of the pre-test static level after four hours (Figure 3-10).

3.3.2 Intermediate-Rate Injection Test

The intermediate-rate test at the north TCE area began at 11:30 a.m. on November 10, 2011. At the beginning of the test, the total chlorine concentration was measured before and after the GAC filter. The GAC filter influent chlorine level was 0.12 mg/L, and the effluent chlorine was below the detection limit of the Hach® kit (less than 0.02 mg/L).

Several adjustments kept the injection rate constant. The average injection flow was 0.55 gpm for the 24-hour test period, based on the flow totalizer. The injection was performed using a battery operated pump. Based on the flow totalizer, 785 gallons of bromide solution were injected during this test. As with the tests in the southeast and southwest area, the flow totalizer readings were used to calculate the reported injection volumes and flow-rates, and the tank water levels were used to verify injection volumes. Table 3-14 summarizes the injection flows and volumes recorded at the north TCE area during the intermediate-rate test.

As shown in Figure 3-20, the hydraulic head in the injection well IW-N was typically 22–23 feet above the static level during the intermediate-rate test (approximately two times higher than the low-rate test). The wellhead pressure was approximately 5 psig (Table 3-14). The test was stopped at 11:30 a.m. on November 11, 2011 after 24 hours of continuous injection. The injection was not interrupted. When the injection was stopped, the hydraulic head in the injection well quickly decreased and was within one foot above the pre-test static level after approximately four hours of recharge (Figure 3-20).

3.3.3 High-Rate Injection Test

When the intermediate test was finished, the remaining water volume in the tank was estimated at 996 gallons (calculation in Table 3-14). However, an injection volume of 1440 gallons was required for the high-rate test, given the projected injected rate (1 gpm) and duration (24 hours, or 1440 minutes). Therefore, an additional quantity of potable water (estimated at 489 gallons, see Table 3-15) was delivered to the site and pumped into the tank to obtain approximately 1440 gallons for the high-rate test. Note that the bromide tracer concentration was subsequently reduced by the addition of fresh water. Section 3.3.5 includes the calculated bromide concentration during the injection tests in the northern TCE area.

The high-rate test at the north TCE area began at 10:00 a.m. on November 14, 2011. The initial injection rate was adjusted to approximately 1 gpm. At the beginning of the test, the total chlorine concentration was measured before and after the GAC filter. The GAC filter influent chlorine level was 0.1 mg/L, and the effluent chlorine was below the detection limit of the Hach® kit (less than 0.02 mg/L).

Several adjustments kept the injection rate constant. The average injection flow was 1.08 gpm for the test period, based on the flow totalizer. The injection was performed using a battery operated pump. A total of 1485 gallons of bromide solution was injected during this test.

Note that, based on the water level measurements in the tank and the tank diameter (8.5 feet), 1420 gallons of bromide solution were injected during this test. As noted earlier, the flow totalizer readings were used to calculate the reported injection volumes and flow-rates, and the tank water levels were used to verify injection volumes. Table 3-15 includes a summary of the injection flows and volumes recorded at the north TCE area during the high-rate test.

As shown in Figure 3-20, hydraulic head in the injection well IW-N ranged from approximately 26–28 feet above the static level during the high-rate test (approximately 1.3 times higher than the intermediate-rate test). The wellhead pressure ranged from 7.3–8.7 psig during the injection. The test was stopped at 8:50 a.m. on November 15, 2011 after 22 hours and 50 minutes of continuous injection.

Hydraulic head in the injection well quickly decreased when the injection was stopped. However, after the high-rate injection test, injection well IW-N re-equilibrated more slowly than what was demonstrated at the conclusion of low- and intermediate-rate injection tests at this location. When the injection was stopped, the hydraulic head in the injection well was still approximately 2.4 feet above the pre-test static level after approximately four hours (Figure 3-20).

3.3.4 Monitoring Wells' Hydraulic Response

Only two sets of monitoring points were installed in the north TCE test area due to the existing monitoring wells in the area: MPN-1S/I is five feet from the injection well IW-N, and MPN-2S/I is 15 feet from injection well IW-N. The existing monitoring well cluster OW-1B/C (nine feet from the injection well IW-N) was used as the intermediate-distance monitoring point. However, the screened lengths of the OW-1B/C cluster are placed somewhat differently than the screened intervals of the monitoring points installed specifically for the test. Therefore, results from the OW-1B/C monitoring cluster are not directly comparable to the monitoring clusters MPN-1S/I and MPN-2S/I.

The static depth to water in each northern TCE area monitoring point was measured before each test using an electronic water level meter. Depth to water in this test area generally ranged from approximately 9.5–17.5 feet below ground surface (Table 3-16). Before each test, static water levels in MPN-1I, MPN-1S, and OW-1B were generally within 0.4 feet when measured between the injection events. This indicates that the water table in these wells largely recovered between the injection and sampling. However, water levels in OW-1C, MPN-2I, and MPN-2S were not fully re-equilibrated after bromide sampling events. This was especially pronounced in OW-1C

(Table 3-16). These observations point to a considerably lower formation permeability in this area as compared to the southeast and southwest test areas.

Hydraulic conductivity values were calculated for the high- and intermediate-rate injection tests in the north TCE area using two different combinations of observation points. Data for the low-rate test were insufficient for this calculation. The calculated hydraulic conductivity values for the high-rate injection test ranged from 0.02–0.04 ft/day. Hydraulic conductivities calculated for the intermediate-rate test were lower (0.01–0.02 ft/day). The hydraulic conductivity values for the north area are considerably lower (approximately two orders of magnitude) as compared to both the southeast and southwest areas. Refer to Table 3-17 for the hydraulic conductivity calculation details.

3.3.4.1 Deep Monitoring Points

The response of the deep monitoring points to injection events in the northern area was different compared to the southeast and southwest test areas. Only the monitoring point closest to the injection well (MPN-1I) responded quickly to the injection events at all three injection rates (Figures 3-21, 3-23, and 3-25). The magnitude of the hydraulic response in MPN-1I was the highest among all test areas.

Hydraulic head in MPN-1I increased by approximately six feet, 19 feet, and 21 feet at the low-, intermediate-, and high-rate tests, respectively. Monitoring points MPN-2I and OW1-C also responded to injection, but the response was delayed compared to the response demonstrated in MPN-1I (Figures 3-23 and 3-25). In general, changes observed in hydraulic head indicate that the deeper interval (25–35 feet) in the north TCE area is less permeable than in the southeast and southwest TCE areas.

3.3.4.2 Shallow Monitoring Points

The response of the shallow monitoring points to the injection events was also different compared to the southeast and southwest test areas. The closest to the injection well monitoring point (MPN-1S) responded strongly to the injection events at all three injection rates (Figures 3-22, 3-24, and 3-26). The magnitude of the hydraulic response in MPN-1S ranged from approximately 3.3 feet during the low-rate test to greater than 10 feet during the high-rate test. Note that during the high-rate test the water level reached the top of the casing, and the well

MPN-1S had to be sealed off. Monitoring points MPN-2S and OW1-B responded to the intermediate- and high-rate injections with a response considerably less pronounced than in MPN-1S (Figures 3-22, 3-24 and 3-26).

Overall, similar to the southeast and southwest areas, the shallow zone appears less permeable as compared to the deep zone. However, the shallow zone appears more hydraulically connected to the deeper zone in the northern area; this may be due to fracturing conducted as part of the 2008 anaerobic reductive dechlorination (ARD) pilot study. Tracer results (discussed in the following sub-section) also indicate that the shallow interval may be hydraulically connected to the deeper zone.

3.3.5 Bromide Tracer Results

The initial concentration of sodium bromide tracer in the solution tank is calculated based on the known quantity of sodium bromide dissolved in the tank (10.3 lbs) and the estimated initial water volume in the tank (2204 gallons, as calculated in Table 3-14), using the following equation**:**

Low- and Intermediate-Rate Tests Sodium Bromide Tracer Concentration =
*10.3 lbs/2204 gallons/8.327 lbs/gallon * 1,000,000 mg/L = 561 mg/L of sodium bromide*

Note that the initial sodium bromide tracer concentration above was used during the low- and intermediate-rate tests, but an additional 489 gallons of fresh water were placed in the tank with 996 gallons of the remaining solution before the high-rate test was conducted, thus decreasing the bromide tracer concentration. The bromide concentration for the high-rate test can be calculated as follows:

High-Rate Test Sodium Bromide Concentration =
*561 mg/L * 996 gallons/(996 gallons + 489 gallons) = 376 mg/L of sodium bromide*

Before the injection test, monitoring points in the north TCE area were sampled for baseline bromide levels. Baseline bromide samples were collected between October 28, 2011 and November 2, 2011. Baseline bromide levels ranged from 0.083 mg/L in OW-1C to a maximum of 0.34 mg/L in OW-1B. Baseline bromide levels in the north TCE test area were the highest among all test areas. The bromide sampling summary for the north TCE area is in Table 3-18.

After the low-rate injection test, the bromide concentration increased in three monitoring points (see Table 3-18): MPN-1S (from 0.17 to 240 mg/L); MPN1I (from 0.22 to 300 mg/L); and

OW-1B (from 0.34 to 52 mg/L). Note that two of these locations are in the shallow interval. After the intermediate-rate injection test, the bromide concentration in OW-1C increased to 13 mg/L from a base level of 0.083 mg/L. After the intermediate-rate injection test, bromide levels in MPN-1S, MPN-1I, and OW-1B increased further to 330 mg/L, 370 mg/L, and 210 mg/L, respectively, (see Table 3-18).

After the high-rate injection test, the bromide concentration in OW-1C increased to 27 mg/L, and bromide concentrations in MPN-1S, MPN-1I, and OW-1B declined (see Table 3-18). This decline is likely associated with the use of a more diluted bromide tracer for the high-rate injection test, and the greater time interval between the intermediate- and high-rate injection tests (four days), which allowed tracer dissipation. Note that no significant changes in the bromide concentration were detected in the most distant monitoring cluster (MPN-2S/I), 15 feet from injection well IW-N (Table 3-18). Overall, bromide tracer was detected in both shallow and deep monitoring wells at similar concentrations. These results suggest that the shallow zone is not hydraulically isolated from the deep interval in the north TCE test area.

A summary of all bromide detections in the southeast TCE area monitoring points is in Figure 3-27. Three bromide samples were also collected from the catch basin (X-11A) approximately 140 feet southeast of injection well IW-N (Figure 3-19). All samples were within the same low range and were similar to catch basins in the other test areas (less than 0.05 mg/L on November 9, 2011, 0.072 mg/L on November 11, 2011, and 0.062 mg/L on November 15, 2011).

Note that the selected bromide sampling location may not be ideal for intercepting the injected bromide tracer. For example, the manhole (MH-10) on the main storm-water line approximately 60 feet northeast of the sampled catch basin could possibly be a better bromide sampling location (Figure 3-19). However, this manhole sampling location was not selected due to logistical considerations (heavy cover lifting, potential confined space entry).

3.3.6 2008 Anaerobic Reductive Dechlorination Pilot Test

The 2008 ARD study (Tetra Tech, 2009b) was performed in the north TCE area (Figure 3-19). The study involved a hydraulic fracturing of the formation from a single fracturing point and injecting a diluted, emulsified, vegetable oil substrate into three temporary injection wells near the fracturing point. Injection well IW-N is approximately 27 feet northwest of the fracturing point (Figure 3-19).

Tetra Tech reported (Tetra Tech 2009b) that nine fractures were created. A mixture of polymer and sand was placed into the fractures to keep them open. Following the fracturing operation, approximately 3000 gallons of the substrate solution was injected into three nearby injection points at an average high-flow rate of 7 gpm. The resultant injection pressure was relatively low (1–10 psi range), but numerous surface seepages through the asphalt pavement cracks were observed. The Tetra Tech team suspected that the injected fluid had migrated to an underground utility line during this test (Tetra Tech, 2009b).

Directly evaluating the effects of the 2008 hydraulic fracturing and injections on the latest injection test results in the northern TCE test area is difficult. The fracturing point is certainly close enough (approximately 27 feet) to the injection well IW-N to affect the hydraulic properties in the injection area. However, the actual injection data do not indicate any hydraulically conductive fractures near the injection well IW-N.

No surface seepage of the injected liquid was observed. Mounding was relatively uniform in all directions. The injection pressure was relatively high even at the low injection rates, indicating that no fractures were intercepted by injection well IW-N. Therefore, the injection test data were probably not directly affected by the 2008 ARD pilot study activities. However, to be prudent, we will assume that the hydraulic fracturing and injections performed in 2008 created preferential pathways (both vertical and horizontal) in the north TCE area. This should be considered during the full-scale system design for this area.

Table 3-1
Injection Test #1: Low Rate, Southeast TCE Area
Injection Well IW-E
Injection Pilot Test
Lockheed Martin Middle River Complex
Middle River, Maryland

Date/time	Totalizer reading (gallons)	Calculated Flow (gpm)	Wellhead pressure (psi)	Notes
11/8/11 9:35 AM	93	0	0	Injection start (11/8/11 at 9:35 AM)
11/8/11 2:30 PM	174	0.27	0	
11/8/11 4:09 PM	216	0.42	0	
11/8/11 8:10 PM	290	0.31	0	Flow reduced
11/8/11 11:50 PM	358	0.31	0	
11/9/11 4:00 AM	434	0.30	0	
11/9/11 7:30 AM	494	0.29	0	
11/9/11 9:00 AM	519	0.28	0	
11/9/11 9:40 AM	529	0.25	0	Injection stop (11/9/11 at 9:40 AM)

gpm - gallons per minute
psi - pounds per square inch

Total test #1 injected	436	gallons
Average test #1 flow	0.30	gpm

Table 3-2
Injection Test #2: Intermediate Rate, Southeast TCE Area
Injection Well IW-E
Injection Pilot Test
Lockheed Martin Middle River Complex
Middle River, Maryland

Date/time	Totalizer reading (gallons)	Calculated Flow (gpm)	Wellhead pressure (psi)	Depth to water in tank (feet)	Notes
11/10/11 9:04 AM	529	0	0	2.24	Injection start (11/10/11 at 9:04 AM)
11/10/11 11:36 AM	621	0.61	0		
11/10/11 2:30 PM	735	0.66	0		Flow reduced
11/10/11 5:00 PM	816	0.54	0		
11/10/11 7:50 PM	921	0.62	0	3.2	
11/10/11 11:50 PM	1075	0.64	0		Flow reduced
11/11/11 3:55 AM	1200	0.51	0		
11/11/11 7:45 AM	1314	0.50	0		
11/11/11 9:04 AM	1355	0.52	0	4.2	Injection stop (11/9/11 at 9:40 AM)

gpm - gallons per minute
psi - pounds per square inch

Total test #2 injected (by totalizer)	826	gallons
Average test #2 flow (by totalizer)	0.57	gpm
Total test #2 injected (by tank water level[1])	832	gallons
Depth to bottom in tank	6.26	feet
Volume left in tank at end of test #2 (by tank water level[1])	873	gallons
Initial tank volume estimate[2]	2135	gallons

[1]Tank diameter is 8.5 feet, resulting in 424 gallons per foot.
[2](Volume left in tank at end of test #2) + (total test #1 injected) + (total test #2 injected)

Table 3-3
Injection Test #3: High Rate, Southeast TCE Area
Injection Well IW-E
Injection Pilot Test
Lockheed Martin Middle River Complex
Middle River, Maryland

Date/time	Totalizer reading (gallons)	Calculated Flow (gpm)	Wellhead pressure (psi)	Depth to water in tank (feet)	Notes
11/14/11 7:35 AM	1355	0	0	2.87	Injection start (11/14/11 at 7:35 AM)
11/14/11 8:00 AM	1382	1.08	0		
11/14/11 10:55 AM	1566	1.05	0		
11/14/11 1:07 PM	1734	1.27	0		Flow reduced
11/14/11 3:50 PM	1902	1.03	0		
11/14/11 5:50 PM	2043	1.17	0		Flow reduced
11/14/11 8:00 PM	2203	1.23	0	4.94	
11/14/11 11:25 PM	2374	0.83	0	5.35	
11/15/11 2:35 AM	2536	0.85	0	5.74	
11/15/11 5:15 AM	2665	0.81	0	6	
11/15/11 7:00 AM	2774	1.04	0	6.26	Injection stop (11/15/11 at 7:00 AM)

gpm - gallons per minute
psi - pounds per square inch

Total test #3 injected (by totalizer)	1419	gallons
Average test #3 flow (by totalizer)	1.01	gpm
Total test #3 injected (by tank water level[1])	1437	gallons
Volume left in tank at end of test #2 (by tank water level[1])	873	gallons
Potable water added to tank[2] at end of test #2	546	gallons

[1]Tank diameter is 8.5 feet, resulting in 424 gallons per foot
[2](total test #3 injected) - (volume left in tank at end of test #2)

Table 3-4
Southeast TCE Area Static Water Levels
Injection Pilot Test
Lockheed Martin Middle River Complex
Middle River, Maryland

Date/time	Event	Depth to water (feet below grade surface)					
		MPE-1I	MPE-2I	MPE-3I	MPE-1S	MPE-2S	MPE-3S
11/8/11 9:00 AM	Prior to low rate test	7.97	8.00	7.85	7.83	7.63	7.63
11/10/11 8:30 AM	Prior to intermediate rate te	8.05	8.09	7.91	7.99	7.91	7.89
11/14/11 7:00 AM	Prior to high rate test	8.65	8.67	8.50	8.48	8.42	8.30

Table 3-5
Estimated Conductivity Values
Southeast TCE Area Injection Test
Injection Well: IW-E
Lockheed Martin Middle River Complex, Middle River, Maryland

Parameter Description	Symbol in Dupuit equation	Unit	Southeast High Rate			Southeast Medium Rate			Southeast Low Rate		
			MPE-1 and MPE-3	MPE-2 and MPE-3	MPE-1 and MPE-2	MPE-1 and MPE-3	MPE-2 and MPE-3	MPE-1 and MPE-2	MPE-1 and MPE-3	MPE-2 and MPE-3	MPE-1 and MPE-2
Saturated thickness	b	ft	70	70	70	70	70	70	70	70	70
GW mounding at distance r_1 from injection well	s_1	ft	1.12	0.97	1.12	0.5	0.44	0.5	0.25	0.14	0.25
GW mounding at distance r_2 from injection well	s_2	ft	0.9	0.9	0.97	0.4	0.4	0.44	0.1	0.1	0.14
Distance of first observation point from injection well	r_1	ft	5	10	5	5	10	5	5	10	5
Distance of second observation point from injection well	r_2	ft	15	15	10	15	15	10	15	15	10
Injection rate	Q	gpm	1.01	1.01	1.01	0.57	0.57	0.57	0.3	0.3	0.3
Calculated transmissivity values from Dupuit equation	T	m^2/day	15	17	13	18	17	19	6	9	5
Corresponding hydraulic conductivity	K	ft/day	2.2	2.6	2.1	2.8	2.5	2.9	1.0	1.3	0.8

Average hydraulic conductivity for all tests **2.0**

Dupuit equation for transmissivity in unconfined aquifer:

$$T = \frac{Q \ln\left(\frac{r_1}{r_2}\right)}{2\pi\left[\left(s_1 - \frac{s_1^2}{2b}\right)\right] - \left(s_2 - \frac{s_2^2}{2b}\right)}$$

Assumptions
1. Steady state conditions
2. Unconfined aquifer
3. Aquifer with infinite aerial extent
4. Aquifer is homogeneous, isotropic, and of uniform thickness
5. Static water table is horizontal
6. Constant pumping/injection rate
7. Fully penetrating pumping/injeciton well

Table 3-6
Bromide Analytical Results, Southeast TCE Area
Injection Pilot Test
Lockheed Martin Middle River Complex
Middle River, Maryland

At Monitoring Points:

Monitoring Well ID	Bromide Detections, mg/L			
	Baseline	After Low Rate test	After Intermediate Rate test	After High Rate test
	11/1/2011	11/9/2011	11/11/2011	11/15/2011
MPE-1S	0.057	0.062	0.053	<0.05
MPE-2S	<0.05	0.061	0.062	0.06
MPE-3S	<0.05	0.051	0.054	<0.05
MPE-1I	0.09	0.11	16	67
MPE-2I	0.082	0.23	6.1	49
MPE-3I	0.12	0.36	13	28

At Catch Basin:

Catch Basin ID	Bromide Detections, mg/L		
	After Low Rate test	After Intermediate Rate test	After High Rate test
	11/9/2011	11/11/2011	11/15/2011
E-MH10-SW	0.1	0.11	1.7

mg/L - milligrams per liter

Table 3-7
Injection Test #4: Low Rate, Southwest TCE Area
Injection Well IW-W
Injection Pilot Test
Lockheed Martin Middle River Complex
Middle River, Maryland

Date/time	Totalizer reading (gallons)	Calculated Flow (gpm)	Wellhead pressure (psi)	Notes
11/8/11 11:00 AM	80	0	0	Injection start (11/8/11 at 11:00 AM)
11/8/11 11:15 AM	86	0.40	0	
11/8/11 2:15 PM	131	0.25	0	
11/8/11 4:26 PM	171	0.31	0	Flow reduced
11/8/11 8:40 PM	241	0.28	0	
11/9/11 12:10 AM	304	0.30	0	
11/9/11 4:20 AM	372	0.27	0	
11/9/11 7:15 AM	418	0.26	0	
11/9/11 10:30 AM	472	0.28	0.1	Water level in IW-W near top of well
11/9/11 11:00 AM	482	0.33	0.1	Injection stop (11/9/11 at 11:00 AM)

gpm - gallons per minute
psi - pounds per square inch

Total test #1 injected	402	gallons
Average test #1 flow	0.28	gpm

Table 3-8
Injection Test #5: Intermediate Rate, Southwest TCE Area
Injection Well IW-W
Injection Pilot Test
Lockheed Martin Middle River Complex
Middle River, Maryland

Date/time	Totalizer reading (gallons)	Calculated Flow (gpm)	Wellhead pressure (psi)	Depth to water in tank (feet)	Notes
11/10/11 10:20 AM	482	0	0	2.15	Injection start (11/10/11 at 10:20 AM)
11/10/11 11:56 AM	549	0.70	0		
11/10/11 2:47 PM	637	0.51	0		Flow reduced
11/10/11 5:20 PM	701	0.42	0		
11/10/11 8:10 PM	802	0.59	>0	2.95	
11/11/11 12:15 AM	931	0.53	>0		
11/11/11 4:20 AM	1048	0.48	>0		Flow reduced
11/11/11 8:00 AM	1153	0.48	0.8		
11/11/11 10:00 AM	1212	0.49	1		
11/11/11 10:20 AM	1223	0.55	1	3.95	Injection stop (11/11/11 at 10:20 AM)

gpm - gallons per minute
psi - pounds per square inch

Total test #5 injected (by totalizer)	741	gallons
Average test #5 flow (by totalizer)	0.51	gpm
Total test #5 injected (by tank water level[1])	764	gallons
Depth to bottom in tank	6.10	feet
Volume left in tank at end of test #5 (by tank water level[1])	912	gallons
Initial tank volume estimate[2]	2055	gallons

[1]Tank diameter is 8.5 feet resulting in 424 gallons per foot.
[2](Volume left in tank at end of test #5) + (total test #4 injected) + (total test #5 injected)

Table 3-9
Injection Test #6: High Rate, Southwest TCE Area
Injection Well IW-W
Injection Pilot Test
Lockheed Martin Middle River Complex
Middle River, Maryland

Date/time	Totalizer reading (gallons)	Calculated Flow (gpm)	Wellhead pressure (psi)	Depth to water in tank (feet)	Notes
11/14/11 8:30 AM	1233	0.00	0	2.7	Injection start (11/14/11 at 8:30 am)
11/14/11 9:00 AM	1268	1.17	2		
11/14/11 11:30 AM	1415	0.98	3		
11/14/11 2:30 PM	1611	1.09	3		Flow reduced
11/14/11 4:30 PM	1733	1.02	3		
11/14/11 6:30 PM	1851	0.98	3.4	4.39	Flow reduced
11/14/11 8:45 PM	2001	1.11	3.5	4.75	
11/14/11 11:50 PM	2188	1.01	3.4	5.22	
11/15/11 3:00 AM	2369	0.95	3.3	5.62	
11/15/11 5:35 AM	2455	0.55	2	5.85	
11/15/11 8:18 AM	2686	1.42	0	6.1	Injection stop (11/15/11 at 8:18 am)

gpm - gallons per minute
psi - pounds per square inch
psig - pound-force per square inch gauge

Total test #6 injected (by totalizer)	1453	gallons
Average test #6 flow (by totalizer)	1.02	gpm
Average test #6 wellhead pressure	3.0	psig
Total test #3 injected (by tank water level[1])	1442	gallons
Volume left in tank at end of test #5 (by tank water level[1])	912	gallons
Potable water added to tank[2] at end of test #5	541	gallons

[1]Tank diameter is 8.5 feet resulting in 424 gallons per foot
[2](total test #3 injected) - (volume left in tank at end of test #2)

Table 3-10
Southwest TCE Area Static Water Levels
Injection Pilot Test
Lockheed Martin Middle River Complex
Middle River, Maryland

Date/time	Event	Deph to water (feet below grade surface)					
		MPW-1I	MPW-2I	MPW-3I	MPW-1S	MPW-2S	MPW-3S
11/8/11 10:50 AM	Prior to low rate test	2.85	2.60	2.55	2.65	2.75	2.40
11/10/11 10:00 AM	Prior to intermediate rate test	2.65	2.50	2.41	2.76	2.29	2.45
11/14/11 8:00 AM	Prior to high rate test	3.00	2.85	2.75	2.92	2.45	2.58

Table 3-11
Estimated Conductivity Values, Southwest TCE Area Injection Test
Injection Well: IW-W
Lockheed Martin Middle River Complex, Middle River, Maryland

Parameter Description	Symbol in Dupuit equation	Unit	Southwest High Rate			Southwest Medium Rate		
			MPW-1 and MPW-3	MPW-2 and MPW-3	MPW-1 and MPW-2	MPW-1 and MPW-3	MPW-2 and MPW-3	MPW-1 and MPW-2
Saturated thickness	b	ft	70	70	70	70	70	70
GW mounding at distance r_1 from injection well	s_1	ft	6	5.7	6	3	2.75	3
GW mounding at distance r_2 from injection well	s_2	ft	5.55	5.55	5.7	2.5	2.5	2.75
Distance of first observation point from injection well	r_1	ft	5	10	5	5	10	5
Distance of second observation point from injection wel	r_2	ft	15	15	10	15	15	10
Injection rate	Q	gpm	1.02	1.02	1.02	0.51	0.51	0.51
Calculated transmissivity values from Dupuit equation	T	m^2/day	7.7	8.5	7.3	3.3	2.4	4.2
Corresponding hydraulic conductivity	K	ft/day	1.2	1.3	1.1	0.5	0.4	0.6

Average hydraulic conductivity for all tests **0.9**

Dupuit equation for transmissivity in unconfined aquifer:

$$T = \frac{Q \ln\left(\frac{r_1}{r_2}\right)}{2\pi\left[\left(s_1 - \frac{s_1^2}{2b}\right)\right] - \left(s_2 - \frac{s_2^2}{2b}\right)}$$

Assumptions
1. Steady state conditions
2. Unconfined aquifer
3. Aquifer with infinite aerial extent
4. Aquifer is homogeneous, isotropic, and of uniform thickness
5. Static water table is horizontal
6. Constant pumping/injection rate
7. Fully penetrating pumping/injeciton well

Table 3-12
Bromide Analytical Results, Southwest TCE Area
Injection Pilot Test
Lockheed Martin Middle River Complex
Middle River, Maryland

At Monitoring Points:

Monitoring Well ID	Bromide Detections, mg/L			
	Baseline	After Low Rate test	After Intermediate Rate test	After High Rate test
	11/1/2011	11/9/2011	11/11/2011	11/15/2011
MPW-1S	0.16	0.14	0.16	0.13
MPW-2S	0.13	0.12	<0.05	0.1
MPW-3S	0.14	<0.05	0.12	<0.05
MPW-1I	0.09	12	200	210
MPW-2I	0.073	0.092	0.11	55
MPW-3I	0.074	0.096	0.098	0.11

At Catch Basin:

Catch Basin ID	Bromide Detections, mg/L		
	After Low Rate tes	After Intermediate Rate test	After High Rate test
	11/9/2011	11/11/2011	11/15/2011
G-IL-XI-SW	0.082	<0.05	<0.05

mg/L - milligrams per liter

Table 3-13
Injection Test #7: Low Rate, North TCE Area
Injection Pilot Test
Lockheed Martin Middle River Complex
Middle River, Maryland

Date/time	Totalizer reading (gallons)	Calculated Flow (gpm)	Wellhead pressure (psi)	Notes
11/8/11 12:20 PM	81	0	0	Injection start (11/8/11 at 12:20 AM)
11/8/11 1:45 PM	107	0.31	3	
11/8/11 2:58 PM	130	0.32	3.6	
11/8/11 4:09 PM	161	0.44	4	Flow adjusted
11/8/11 7:29 PM	209	0.24	4.4	
11/8/11 11:30 PM	284	0.28	4.6	Flow adjusted
11/9/11 3:30 AM	352	0.28	3.8	
11/9/11 7:45 AM	416	0.25	3	
11/9/11 12:50 PM	504	0.29	3.4	Injection stop (11/9/11 at 12:50 AM)

gpm - gallons per minute
psi - pounds per square inch
psig- pound-force per square inch gauge

Total test #7 injected	423	gallons
Average test #7 flow	0.29	gpm
Average test #7 wellhead pressure	3.3	psig

Table 3-14
Injection Test #8: Intermediate Rate, North TCE Area
Injection Pilot Test
Lockheed Martin Middle River Complex
Middle River, Maryland

Date/time	Totalizer reading (gallons)	Calculated Flow (gpm)	Wellhead pressure (psi)	Depth to water in tank (feet)	Notes
11/10/11 11:30 AM	504	0	0		Injection start (11/10/11 at 11:30 AM)
11/10/11 12:30 PM	544	0.67	5.0		
11/10/11 3:01 PM	624	0.53	5.0		
11/10/11 5:30 PM	725	0.68	5.0		
11/10/11 7:30 PM	782	0.47	5.0		
11/10/11 11:30 PM	921	0.58	5.4		
11/11/11 3:30 AM	1046	0.52	5.0		
11/11/11 7:30 AM	1164	0.49	5.0		
11/11/11 10:50 AM	1261	0.48	5.0		
11/11/11 11:30 AM	1289	0.70	5.0	3.6	Injection stop (11/1/11 at 11:30 AM)

gpm - gallons per minute
psi - pounds per square inch
psig - pound-force per square inch gauge

Total test #8 injected (by totalizer)	785	gallons
Average test #8 flow (by totalizer)	0.55	gpm
Average test #8 wellhead pressure	5.0	psig
Depth to bottom in tank	5.95	feet
Volume left in tank at end of test #8 (by tank water level[1])	996	gallons
Initial tank volume estimate[2]	2204	gallons

[1]Tank diameter is 8.5 feet resulting in 424 gallons per foot.

[2](Volume left in tank at end of test #8) + (total test #7 injected) + (total test #8 injected)

Table 3-15
Injection Test #9: High Rate, North TCE Area
Injection Pilot Test
Lockheed Martin Middle River Complex
Middle River, Maryland

Date/time	Totalizer reading (gallons)	Calculated Flow (gpm)	Wellhead pressure (psi)	Depth to water in tank (feet)	Notes
11/14/11 10:00 AM	1289	0	0	2.6	Injection start (11/14/11 at 10:00 AM)
11/14/11 11:25 AM	1396	1.26	7.7		
11/14/11 1:00 PM	1500	1.09	7.9		Flow adjusted
11/14/11 3:00 PM	1609	0.91	8		
11/14/11 5:00 PM	1740	1.09	8		
11/14/11 7:00 PM	1862	1.02	8	4.16	
11/14/11 9:00 PM	1991	1.07	8.6	4.52	
11/14/11 11:00 PM	2119	1.07	8.7	4.83	
11/15/11 2:00 AM	2312	1.07	8.5	5.29	Flow adjusted
11/15/11 5:00 AM	2472	0.89	7.3	5.68	
11/15/11 8:50 AM	2774	1.31		5.95	Injection stop (11/15/11 at 8:50 AM)

gpm - gallons per minute
psi - pounds per square inch
psig - pound-force per square inch gauge

Total test #9 injected (by totalizer)	1485	gallons
Average test #9 flow (by totalizer)	1.08	gpm
Average test #9 wellhead pressure	8.1	psig
Total test #9 injected (by tank water level[1])	1420	gallons
Volume left in tank at end of test #8 (by tank water level[1])	996	gallons
Potable water added to tank[2] at end of test #8	489	gallons

[1]Tank diameter is 8.5 feet resulting in 424 gallons per foot
[2](total test #9 injected) - (volume left in tank at end of test #2)

Table 3-16
North TCE Area Static Water Levels
Injection Pilot Test
Lockheed Martin Middle River Complex
Middle River, Maryland

Date/time	Event	MPN-1I	MPN-2I	OW-1C	MPN-1S	MPN-2S	OW-1B
11/8/11 11:00 AM	Prior to low rate test	10.72	12.50	9.92	10.65	11.00	9.40
11/10/11 11:00 AM	Prior to intermediate rate test	10.33	12.14	17.49	10.18	11.73	9.33
11/14/11 8:00 AM	Prior to high rate test	10.55	11.02	15.07	10.50	11.12	9.61

Table 3-17
Estimated Conductivity Values, North TCE Area Injection Test
Injection Well: IW-N
Lockheed Martin Middle River Complex, Middle River, Maryland

Parameter Description	Symbol in Dupuit equation	Unit	North High Rate		North Medium Rate	
			MPN-1 and MPE-2	MPN-1 and OW-1C	MPN-1 and MPE-2	MPN-1 and OW-1C
Saturated thickness	b	ft	70	70	70	70
GW mounding at distance r_1 from injection well	s_1	ft	20	20	18	18
GW mounding at distance r_2 from injection well	s_2	ft	3.2	3.2	3	1.6
Distance of first observation point from injection well	r_1	ft	5	5	5	5
Distance of second observation point from injection wel	r_2	ft	15	10	15	10
Injection rate	Q	gpm	1.08	1.08	0.55	0.55
Calculated transmissivity values from Dupuit equation	T	m^2/day	0.24	0.15	0.13	0.08
Corresponding hydraulic conductivity	K	ft/day	0.04	0.02	0.02	0.01

Average hydraulic conductivity for all tests **0.02 ft/day**

Dupuit equation for transmissivity in unconfined aquifer:

$$T = \frac{Q \ln\left(\frac{r_1}{r_2}\right)}{2\pi \left[\left(s_1 - \frac{s_1^2}{2b}\right)\right] - \left(s_2 - \frac{s_2^2}{2b}\right)}$$

Assumptions
1. Steady state conditions
2. Unconfined aquifer
3. Aquifer with infinite aerial extent
4. Aquifer is homogeneous, isotropic, and of uniform thickness
5. Static water table is horizontal
6. Constant pumping/injection rate
7. Fully penetrating pumping/injeciton well

Table 3-18
Bromide Analytical Results, North TCE Area
Injection Pilot Test
Lockheed Martin Middle River Complex
Middle River, Maryland

At Monitoring Points:

Monitoring Well ID	Bromide Detections, mg/L			
	Baseline	After Low Rate test	After Intermediate Rate test	After High Rate test
	11/1/2011	11/9/2011	11/11/2011	11/15/2011
MPN-1S	0.17	240	330	81
MPN-2S	0.3	0.5	0.55	0.56
OW-1B	0.34	52	210	53
MPN-1I	0.22	300	370	220
MPN-2I	0.1	0.2	0.19	0.2
OW-1C	0.083	0.15	13	27

At Catch Basin:

Catch Basin ID	Bromide Detections, mg/L		
	After Low Rate test	After Intermediate Rate test	After High Rate test
	11/9/2011	11/11/2011	11/15/2011
I-X11A-SW	<0.05	0.072	0.062

mg/L - milligrams per liter

Table 3-19
Follow-Up Bromide Sampling Analytical Results
Lockheed Martin Middle River Complex
Middle River, Maryland

Sample ID:	Date	Time	Tide	Color (visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^oC)	Turbidity (NTU)	DO (mg/L)	ORP	Bromide (mg/L)	Chloride (mg/L)
Outfall08	2/24/12	825	High	Slightly	6.45	0.884	9.34	18.8	12.85	244	0.48	190
	2/24/12	1140	Moderate	Slightly	7.76	0.845	10.62	19	10.45	59	0.54	190
	2/24/12	1501	Low	Slightly	7.8	0.877	9.42	30.6	10.05	-1	0.53	210
IL-1	2/24/12	835	High	Slightly	7.1	0.671	8.54	35.4	11.97	7	0.1	94
	2/24/12	1151	Moderate	Clear	7.48	0.605	10.32	8.1	11.4	-26	0.1	100
	2/24/12	1515	Low	Slightly	7.85	0.3	8.34	11.5	12.3	94	ND	43
IL-2	2/24/12	845	High	Cloudy	7.29	0.662	8.39	134	12.2	-23	0.094	94
	2/24/12	1205	Moderate	Clear	7.44	0.647	9.41	8.9	11.69	-41	0.098	93
	2/24/12	1525	Low	Slightly	7.59	0.365	8.62	36	12.08	11	ND	52
IL-3	2/24/12	900	High	Slightly	7.28	0.68	10.98	72.4	12.5	-59	0.094	98
	2/24/12	1215	Moderate	Clear	7.29	0.691	8.84	10.9	11.94	-64	0.078	97
	2/24/12	1535	Low	Clear	7.27	0.679	8.72	9.6	11.99	-68	0.12	93

ND-Not Detected

S.C. Specific conductance
DO Dissolved oxygen
ORP Oxidation reduction potential

REFERENCE PLANS & DATA:

1. UTILITY CROSS CONNECTION SURVEY PERFORMED BY TETRA TECH CREW: RAB & AN, DATED 10/6,10/10 & 10/11/2011
2. SURVEYED LOCATIONS OF UNDERGROUND ELECTRIC, WATER, COMMUNICATION LINES, ARE BASED ON GEOPHYSICAL SURVEYS CONDUCTED BY ENVIROSCAN, INC. LANCASTER, PA, AND UNKNOWN FEATURES.
3. SEWER PIPE CCTV REPORTS PREPARED BY VIDEO PIPE SERVICES, INC. DATED 9/26 & 10/12/2011
4. BLOCK G TOPOGRAPHIC SURVEY UPDATE PREPARED BY TETRA TECH CREW: RAB & AN, DATED: 06/07 & 06/08/2011
5. PRE-CONSTRUCTION SURVEY OF STORM DRAIN LINES FOR BLOCK E PREPARED BY TETRA TECH CREW: RAB & AN, DATED 08/15 & 08/16/ 2011.
6. BACKGROUND BASEMAP AND PROPERTY LINES ARE FROM CHESAPEAKE PARK SITE PLAN - LMC PROPERTIES, INC PREPARED BY TAI CONSULTING ENGINEERS, DATED 4/15/01. BACKGROUND DATA IS NOT FIELD VERIFIED AND FOR REFERENCE ONLY.

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MARK	DATE	DESCRIPTION	BY

SOUTHEAST TCE AREA INJECTION TEST LAYOUT
LOCKHEED MARTIN CORPORATION
MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

DATE: 2/2/12
PROJECT NO.: 112IC03835
DRAWN BY: DWM
CHECKED BY: BD

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FIGURE 3-1

C:\USERS\BORIS.DYNKIN\DOCUMENTS\LMC MRC\INJECTION TEST\UCC\MRC_SE_TCE_INJ_LAYOUT.DWG DWM 2/2/12

Figure 3-2 Hydraulic Head Changes in Injection Well IW-E - Southeast TCE Area InjectionTest
Middle River Complex, Middle River, Maryland

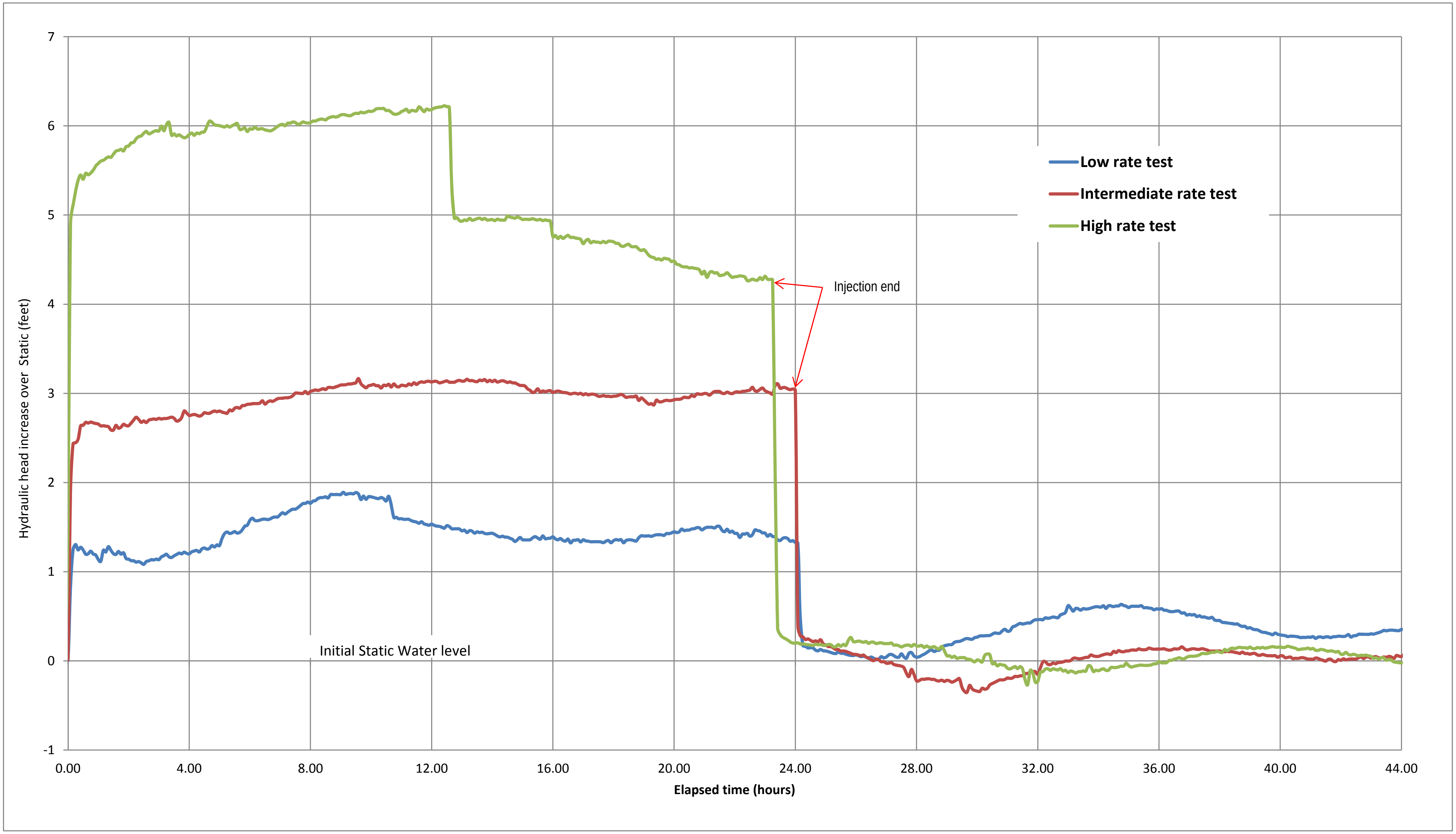


Figure 3-3 Water Level Changes in Deep Monitoring Wells - Low Rate Injection Test
Southeast TCE Area, Middle River Complex, Middle River, Maryland

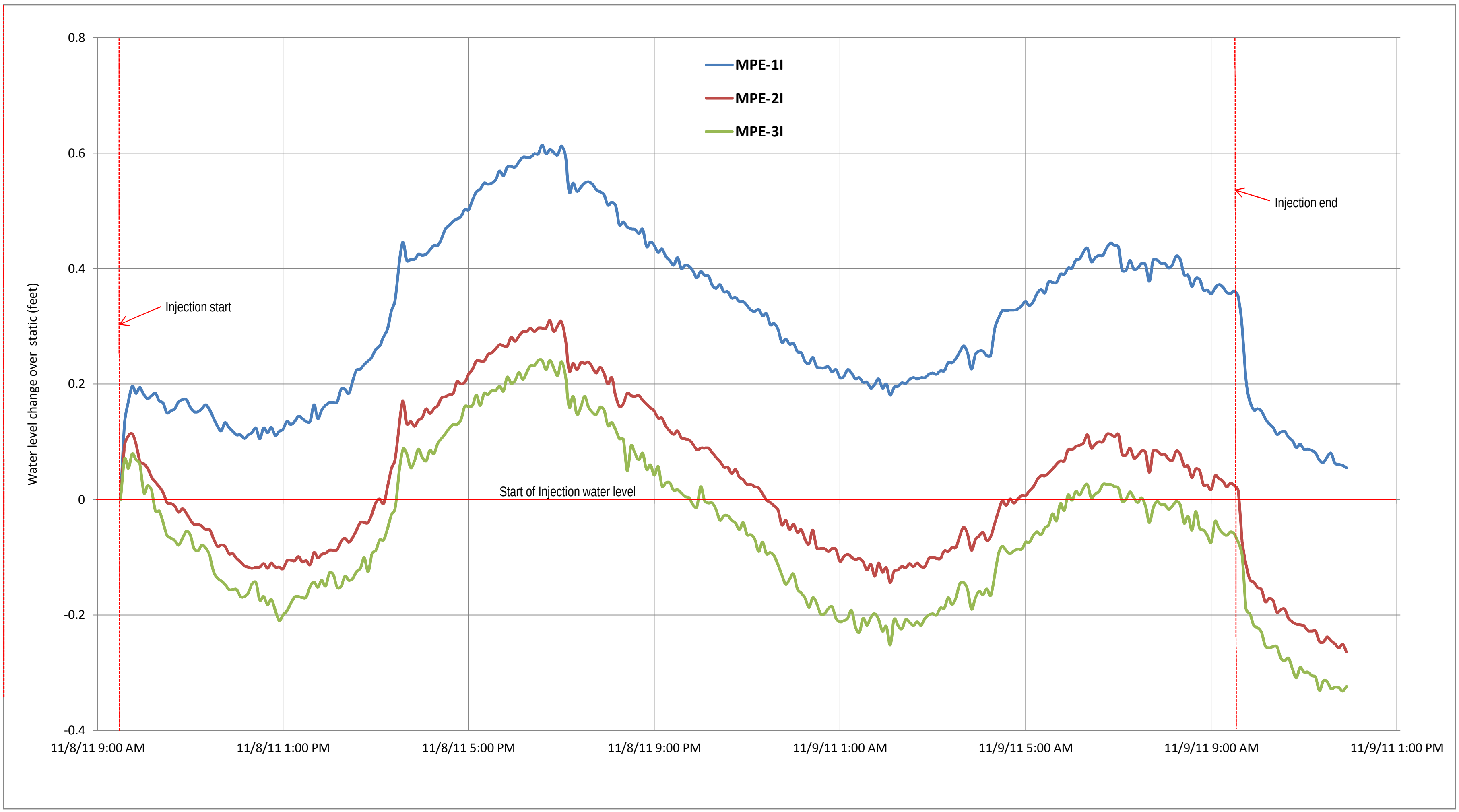


Figure 3-4 Water Level Changes in Shallow Monitoring Wells - Low Rate Injection Test
Southeast TCE Area, Middle River Complex, Middle River, Maryland

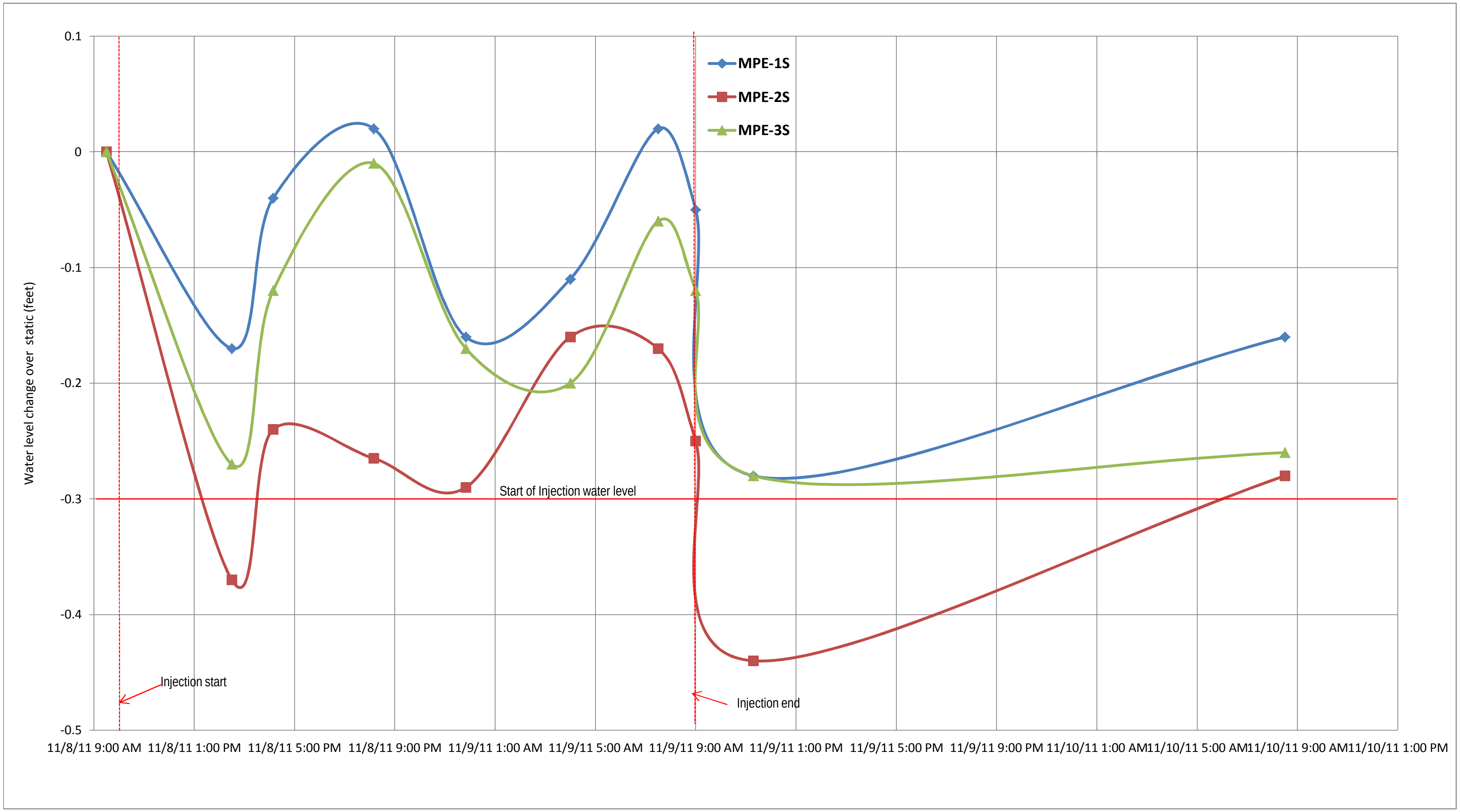


Figure 3-5 Water Level Changes in Deep Monitoring Wells - Intermediate Rate Injection Test
Southeast TCE Area, Middle River Complex, Middle River, Maryland

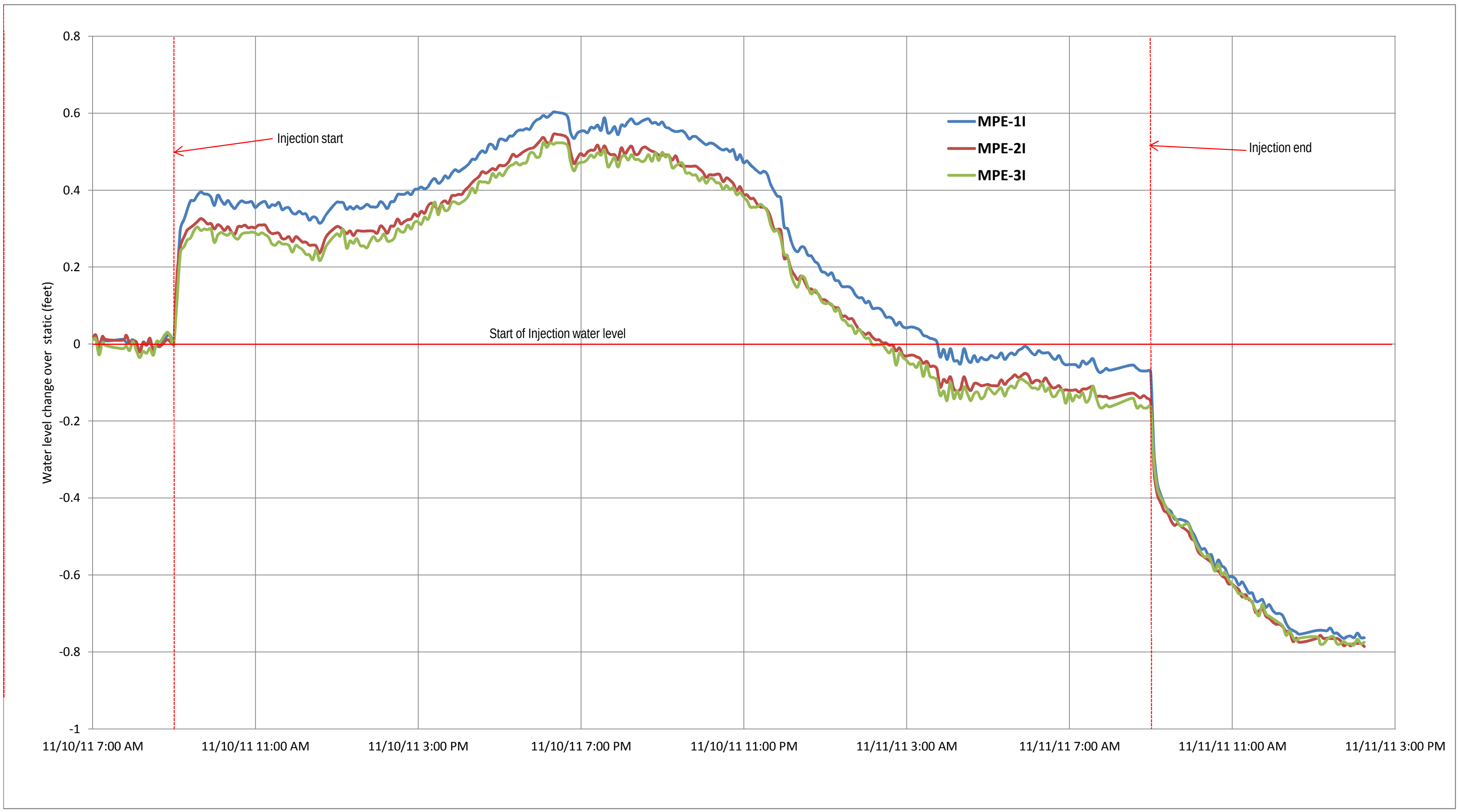


Figure 3-6 Water Level Changes in Shallow Monitoring Wells - Intermediate Rate Injection Test
Southeast TCE Area, Middle River Complex, Middle River, Maryland

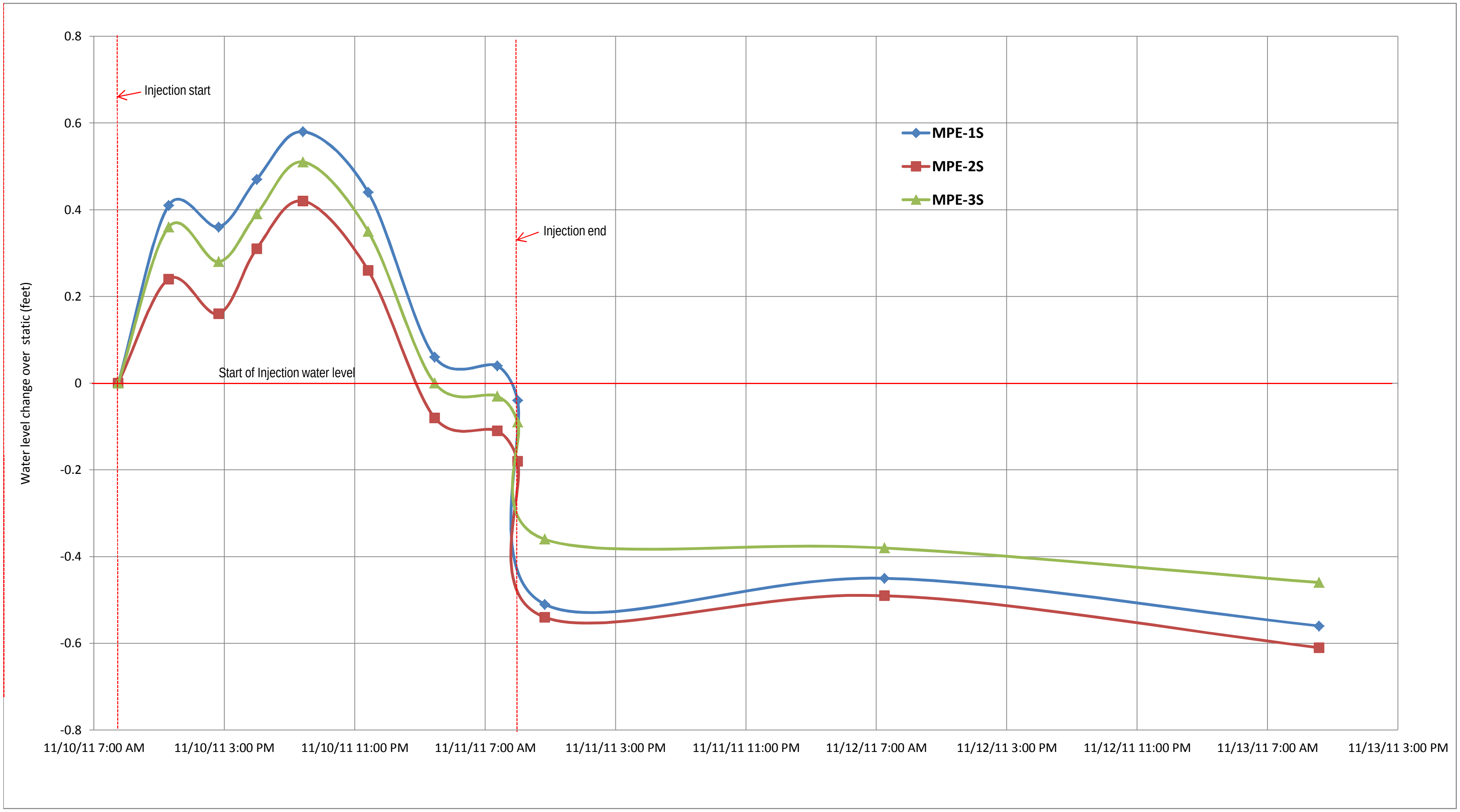


Figure 3-7 Water Level Changes in Deep Monitoring Wells - High Rate Injection Test
Southeast TCE Area, Middle River Complex, Middle River, Maryland

Figure 3-8 Water Level Changes in Shallow Monitoring Wells - High Rate Injection Test
Southeast TCE Area, Middle River Complex, Middle River, Maryland

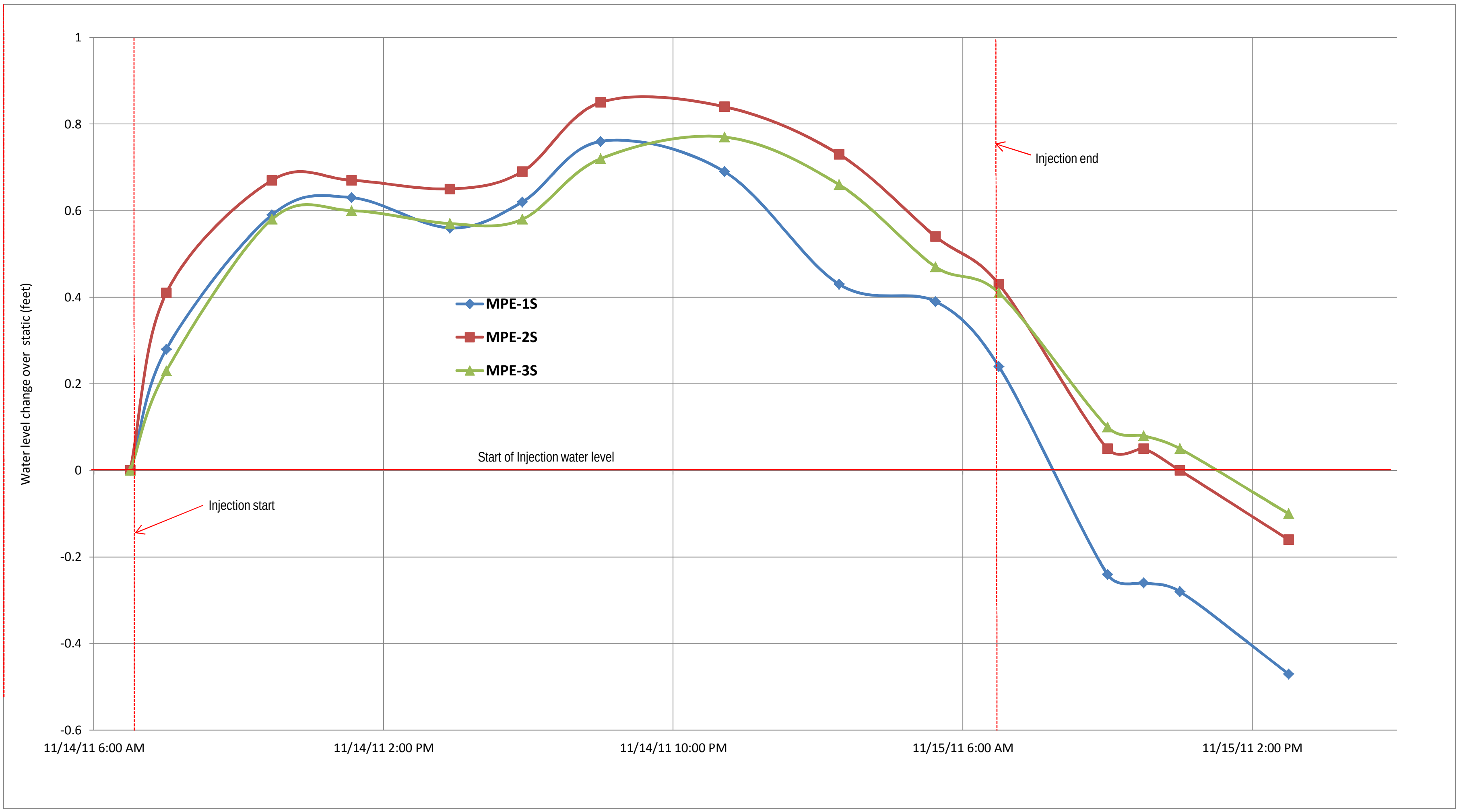
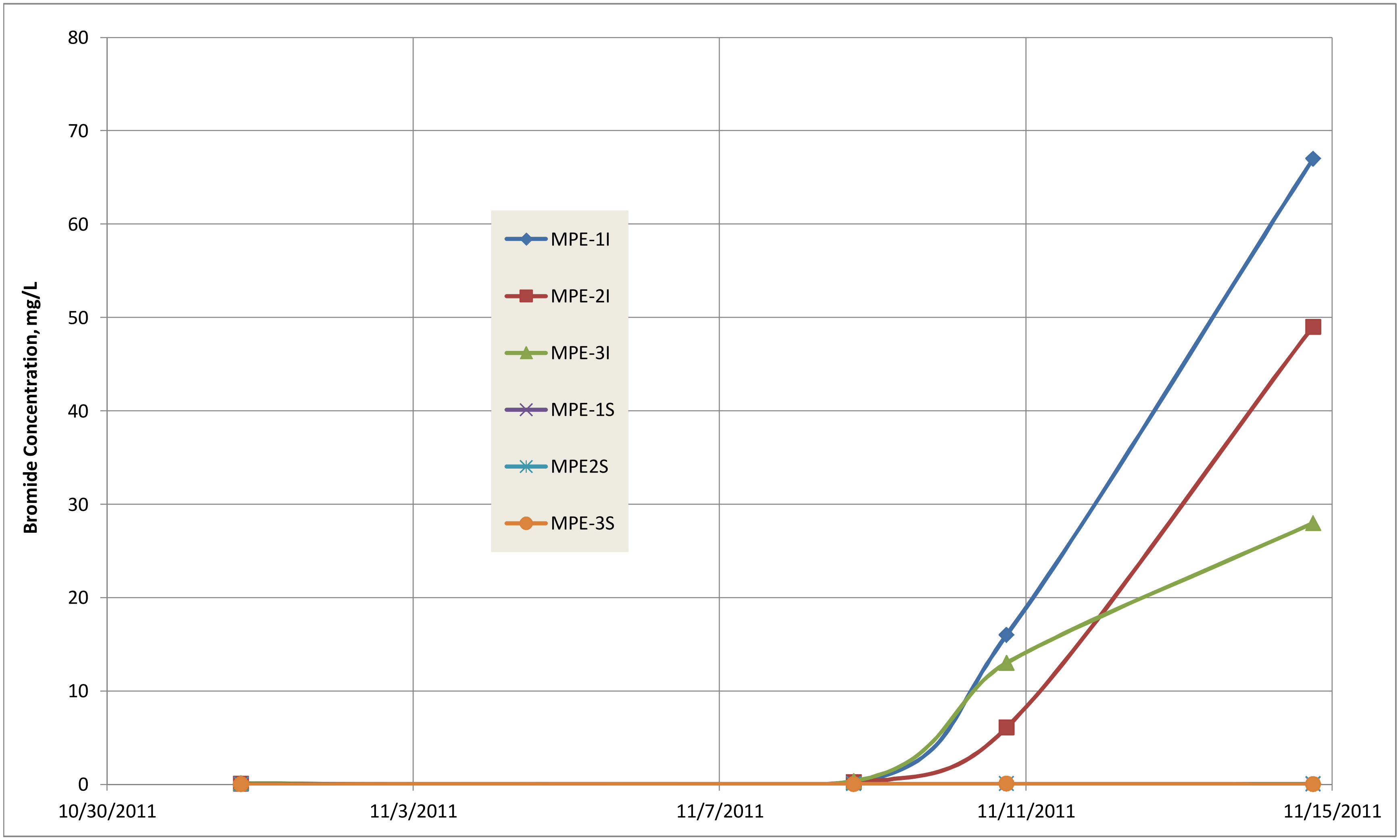


Figure 3-9 Bromide Analytical Results - Southeast TCE Area InjectionTest
Middle River Complex, Middle River, Maryland



REFERENCE PLANS & DATA:

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4. BLOCK G TOPOGRAPHIC SURVEY UPDATE PREPARED BY TETRA TECH CREW: RAB & AN, DATED: 06/07 & 06/08/2011
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6. BACKGROUND BASEMAP AND PROPERTY LINES ARE FROM CHESAPEAKE PARK SITE PLAN - LMC PROPERTIES, INC PREPARED BY TAI CONSULTING ENGINEERS, DATED 4/15/01. BACKGROUND DATA IS NOT FIELD VERIFIED AND FOR REFERENCE ONLY.

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MARK	DATE	DESCRIPTION	BY

SOUTHWEST TCE AREA INJECTION TEST LAYOUT
LOCKHEED MARTIN CORPORATION
MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

DATE: 3/22/12
PROJECT NO.: 112IC03835
DRAWN BY: DWM
CHECKED BY: BD

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FIGURE 3-10

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Figure 3-11 Hydraulic Head Changes in Injection Well IW-W, Southwest TCE Area Injection Test
Middle River Complex, Middle River, Maryland

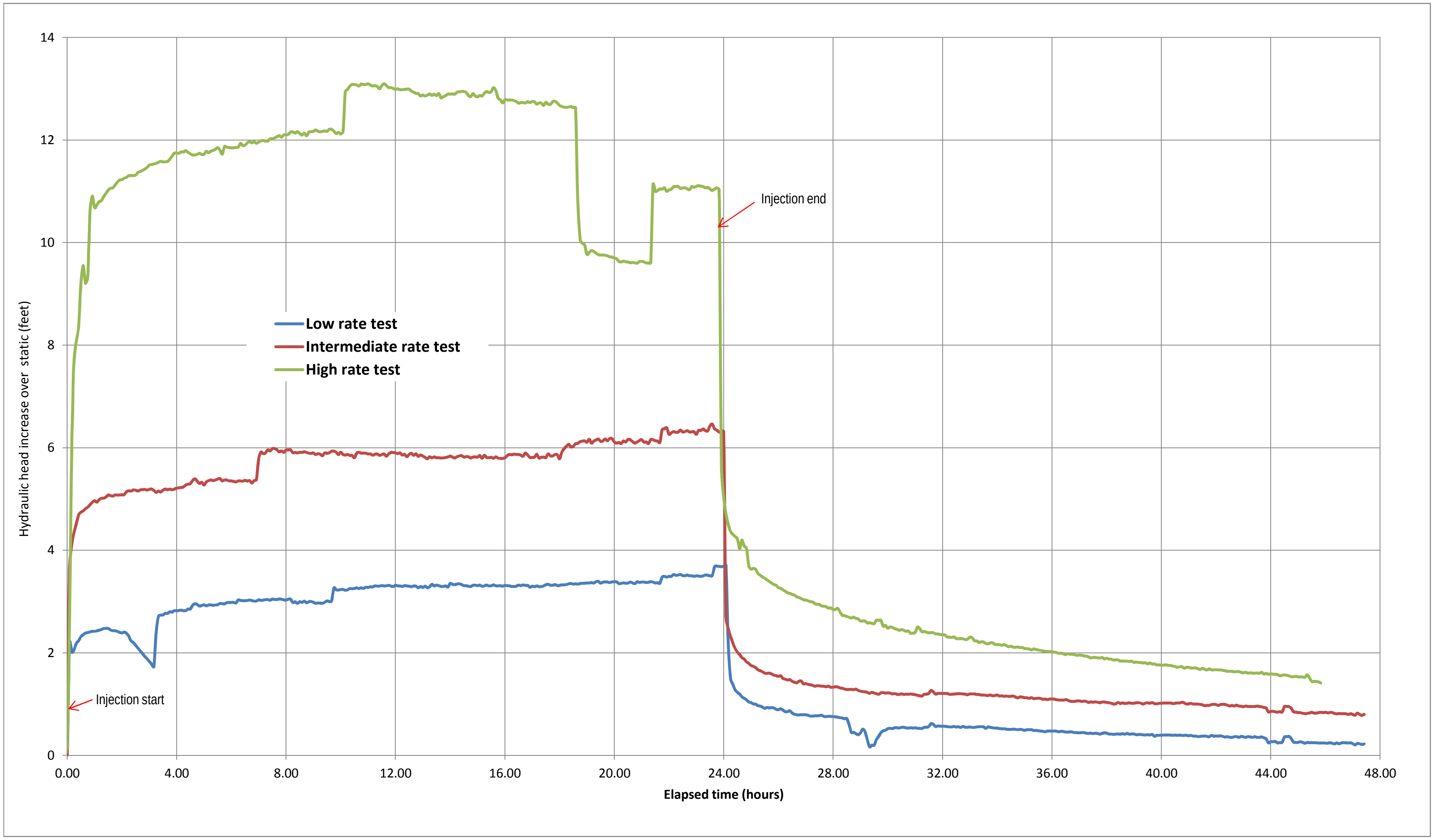


Figure 3-12 Water Level Changes in Deep Monitoring Well MPW-2I - Low Rate Injection Test
Southwest TCE Area, Middle River Complex, Middle River, Maryland

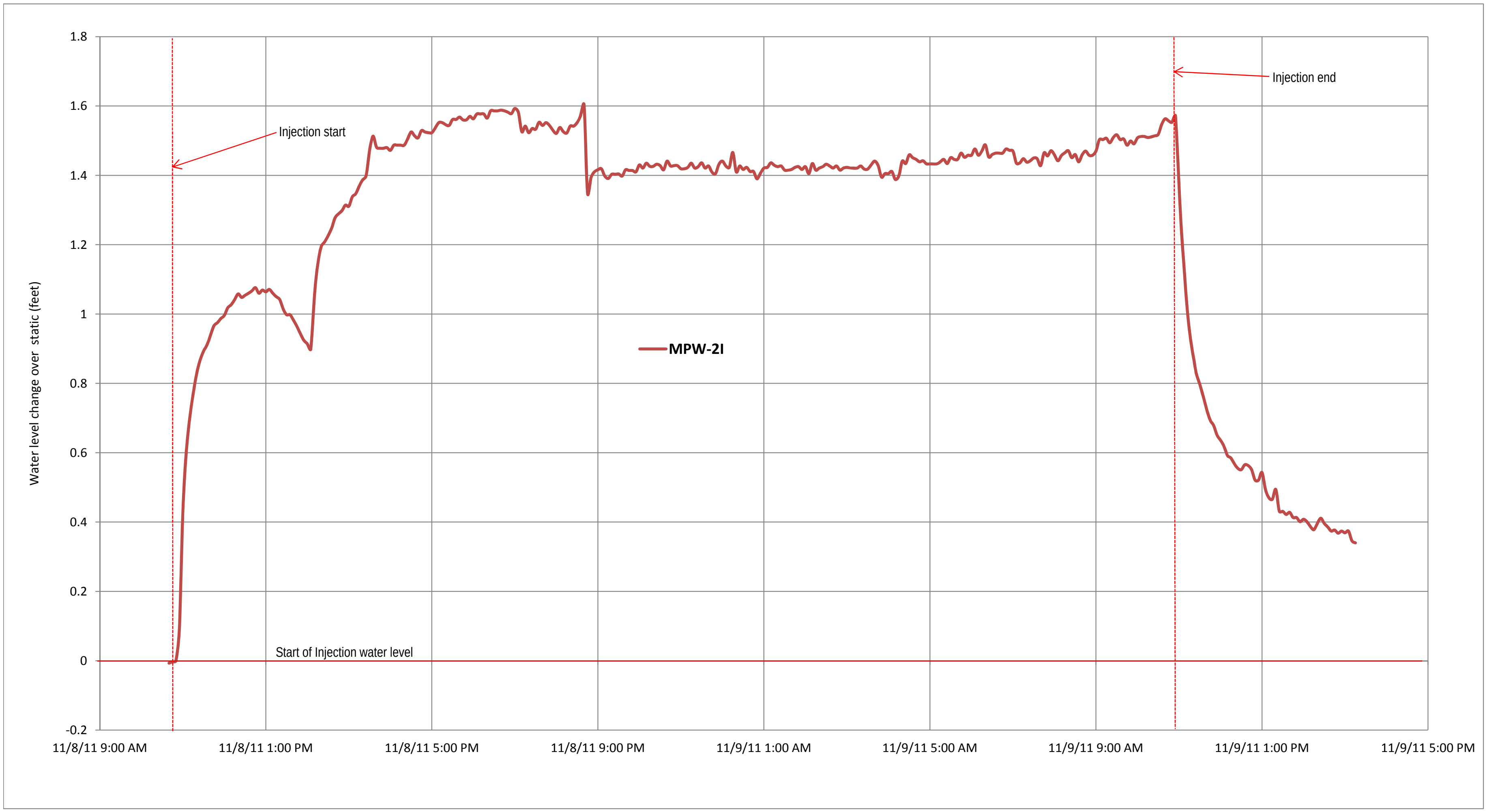


Figure 3-13 Water Level Changes in Shallow Monitoring Wells - Low Rate Injection Test
Southwest TCE Area, Middle River Complex, Middle River, Maryland

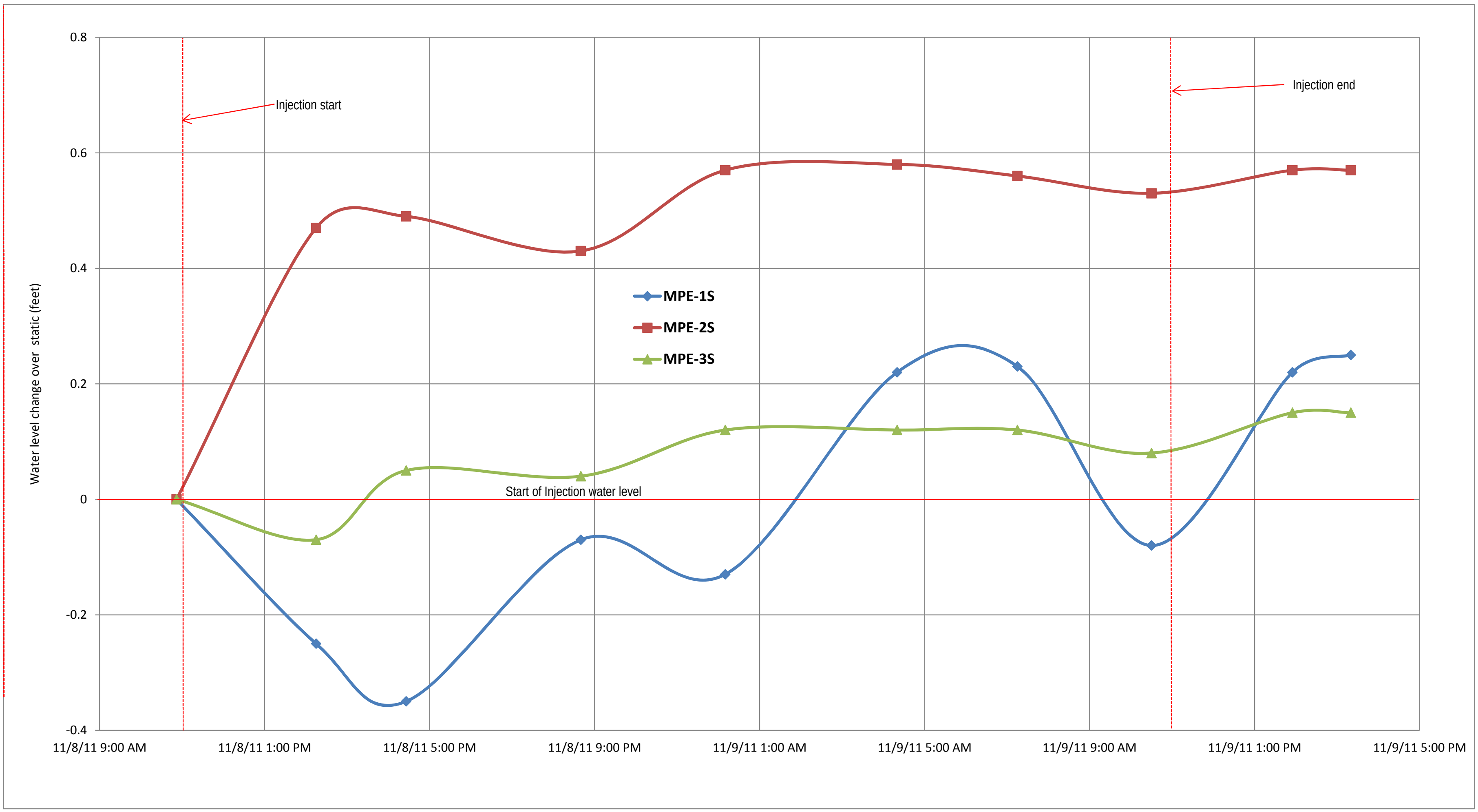


Figure 3-14 Water Level Changes in Deep Monitoring Wells - Intermediate Rate Injection Test
Southwest TCE Area, Middle River Complex, Middle River, Maryland

Figure 3-15 Water Level Changes in Shallow Monitoring Wells - Intermediate Rate Injection Test
Southwest TCE Area, Middle River Complex, Middle River, Maryland

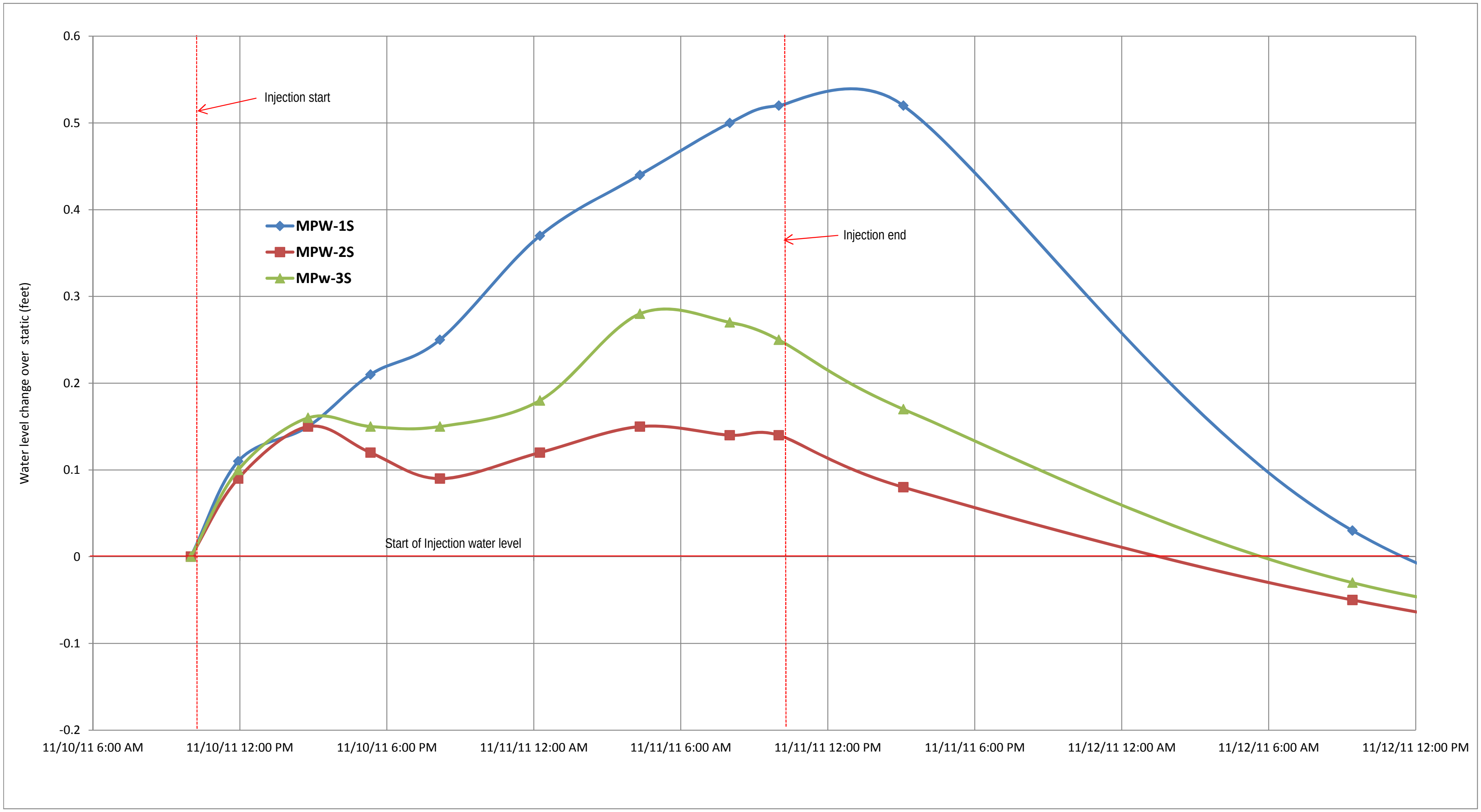


Figure 3-16 Water Level Changes in Deep Monitoring Wells - High Rate Injection Test
Southwest TCE Area, Middle River Complex, Middle River, Maryland

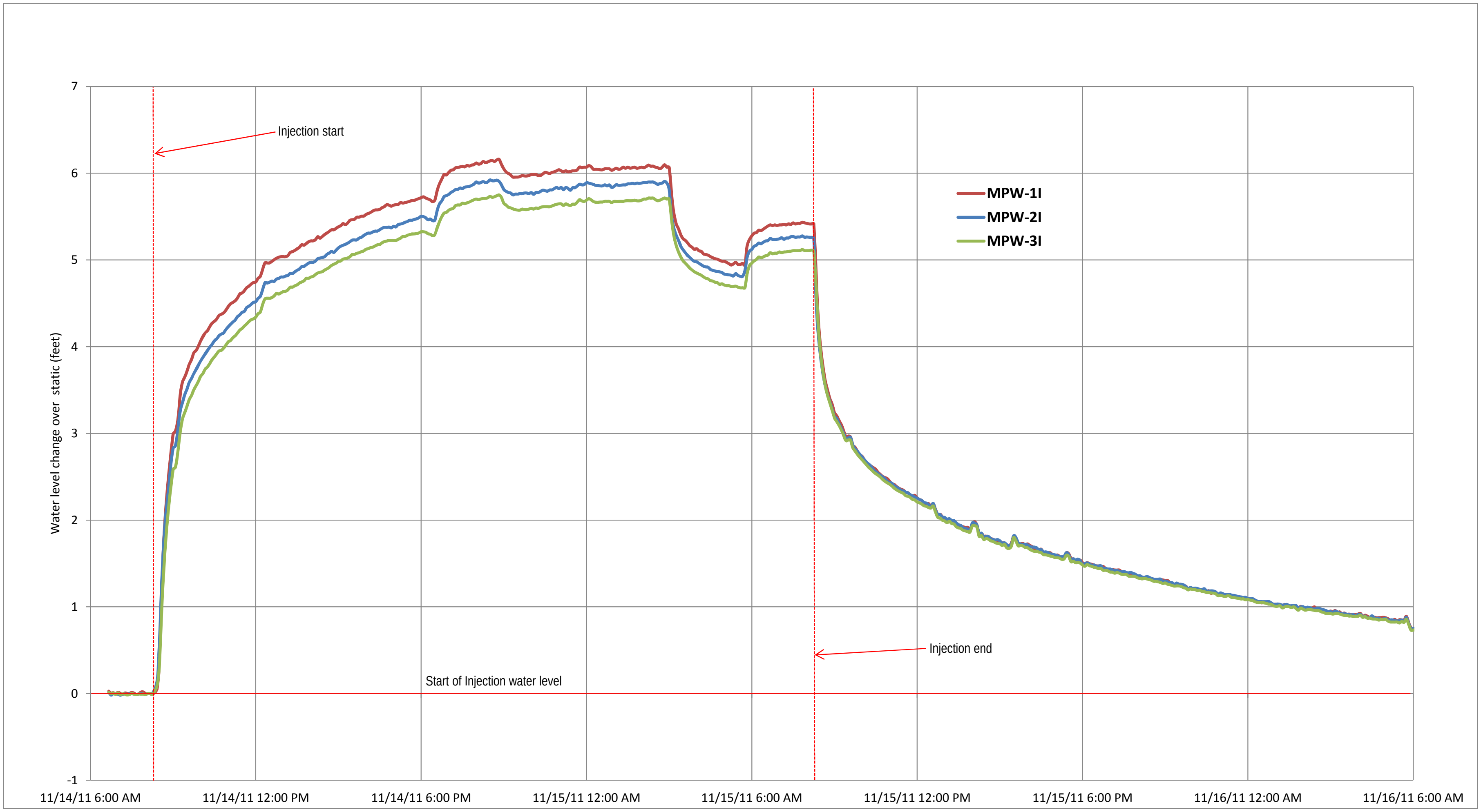


Figure 3-17 Water Level Changes in Shallow Monitoring Wells - High Rate Injection Test
Southwest TCE Area, Middle River Complex, Middle River, Maryland

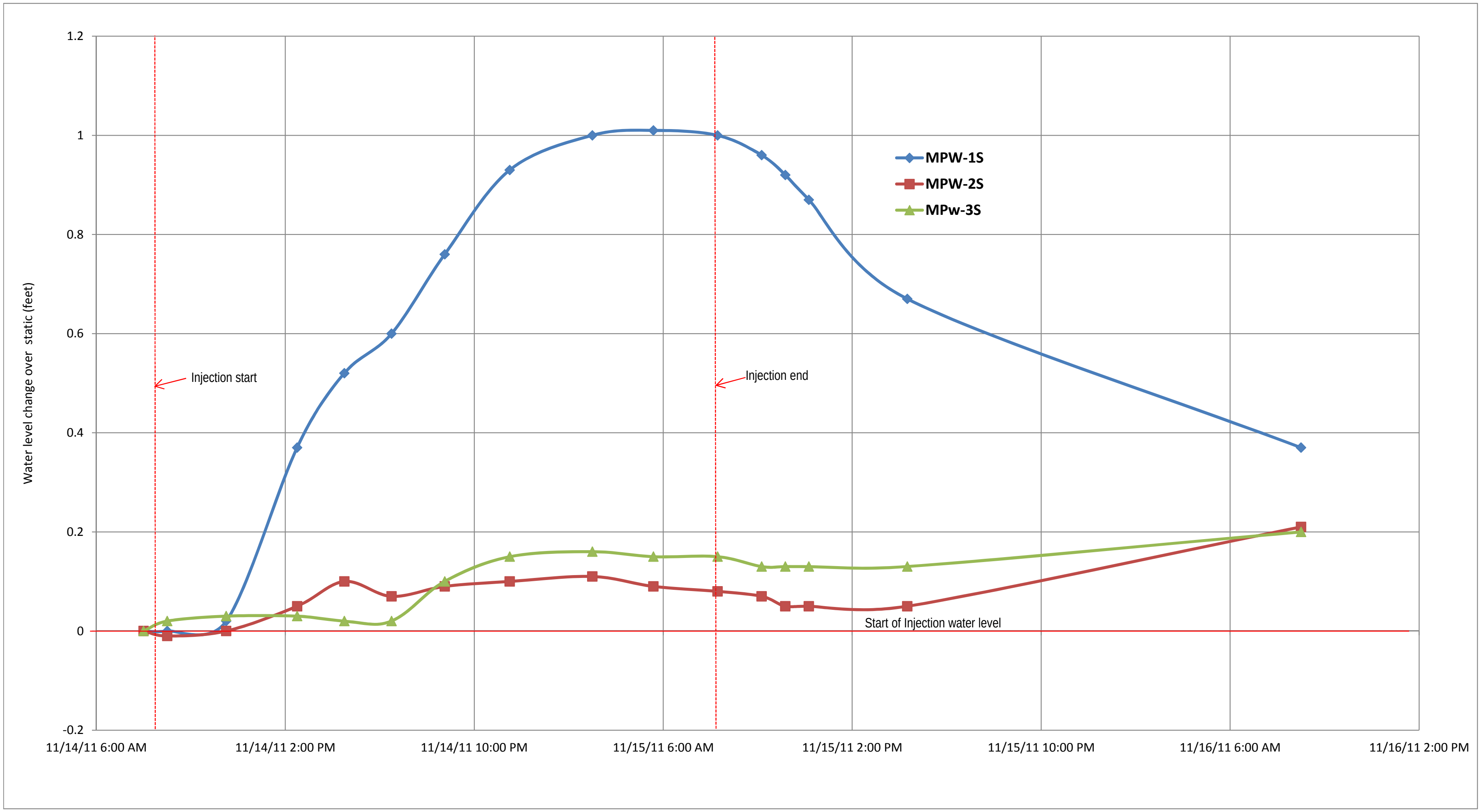
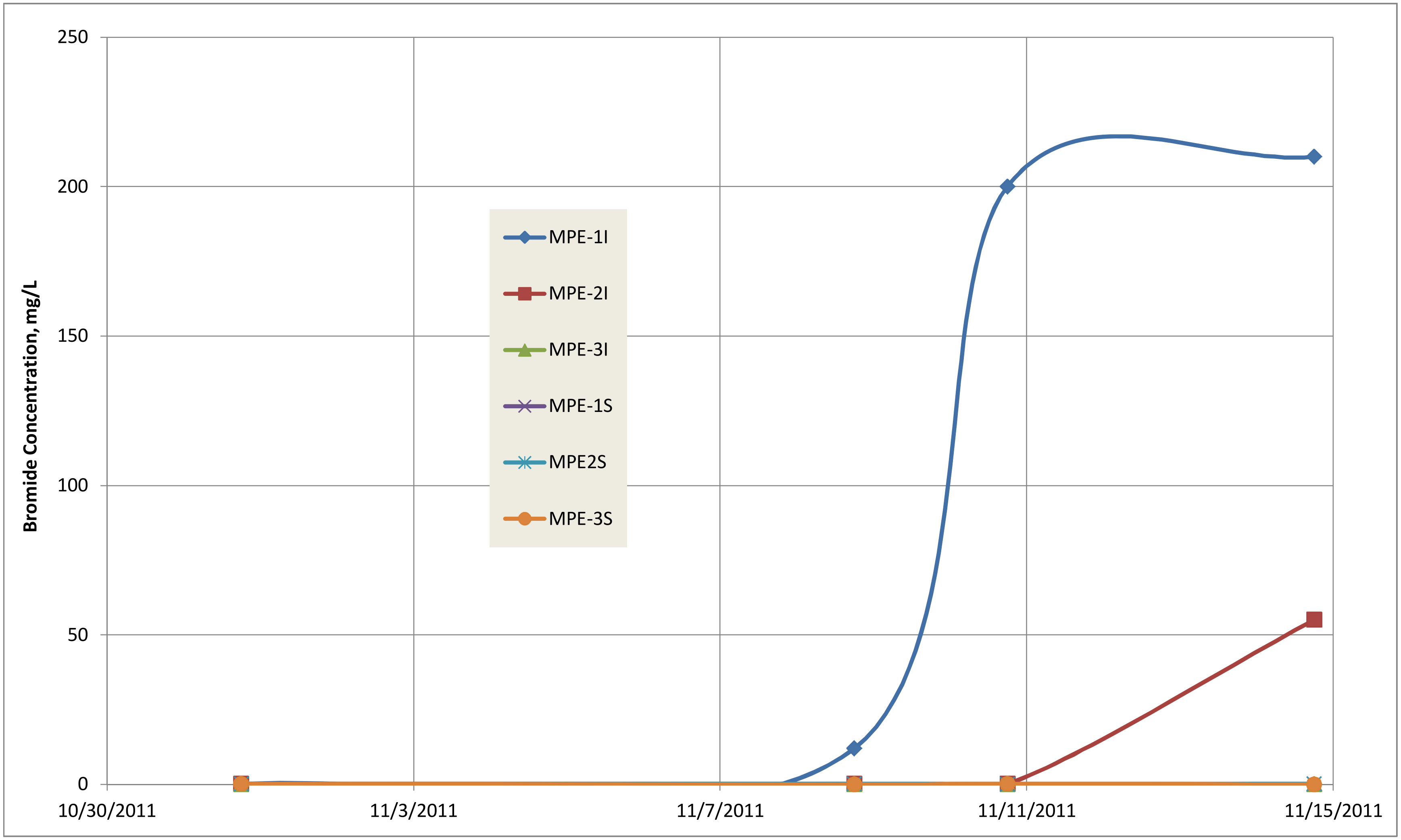


Figure 3-18 Bromide Analytical Results - Southwest TCE Area InjectionTest
Middle River Complex, Middle River, Maryland



REFERENCE PLANS & DATA:

1. UTILITY CROSS CONNECTION SURVEY PERFORMED BY TETRA TECH CREW: RAB & AN, DATED 10/6,10/10 & 10/11/2011
2. SURVEYED LOCATIONS OF UNDERGROUND ELECTRIC, WATER, COMMUNICATION LINES, ARE BASED ON GEOPHYSICAL SURVEYS CONDUCTED BY ENVIROSCAN, INC. LANCASTER, PA, AND UNKNOWN FEATURES.
3. SEWER PIPE CCTV REPORTS PREPARED BY VIDEO PIPE SERVICES, INC. DATED 9/26 & 10/12/2011
4. BLOCK G TOPOGRAPHIC SURVEY UPDATE PREPARED BY TETRA TECH CREW: RAB & AN, DATED: 06/07 & 06/08/2011
5. PRE-CONSTRUCTION SURVEY OF STORM DRAIN LINES FOR BLOCK E PREPARED BY TETRA TECH CREW: RAB & AN, DATED 08/15 & 08/16/ 2011.
6. BACKGROUND BASEMAP AND PROPERTY LINES ARE FROM CHESAPEAKE PARK SITE PLAN - LMC PROPERTIES, INC PREPARED BY TAI CONSULTING ENGINEERS, DATED 4/15/01. BACKGROUND DATA IS NOT FIELD VERIFIED AND FOR REFERENCE ONLY.

TETRA TECH

www.tetratech.com

MARK	DATE	DESCRIPTION	BY

NORTH TCE AREA INJECTION TEST LAYOUT
LOCKHEED MARTIN CORPORATION
MIDDLE RIVER COMPLEX
MIDDLE RIVER, MARYLAND

DATE:	3/22/12
PROJECT NO.:	112IC03835
DRAWN BY:	DWM
CHECKED BY:	BD

COPYRIGHT TETRA TECH INC.

FIGURE 3-19

C:\USERS\BORIS.DYNKIN\DOCUMENTS\LMC MRC\INJECTION TEST\UCC\MRC_N_TCE_INJ_LAYOUT.DWG DWM 3/22/12

Figure 3-20 Hydraulic Head Changes in Injection Wells - North TCE Area InjectionTest
Middle River Complex, Middle River, Maryland

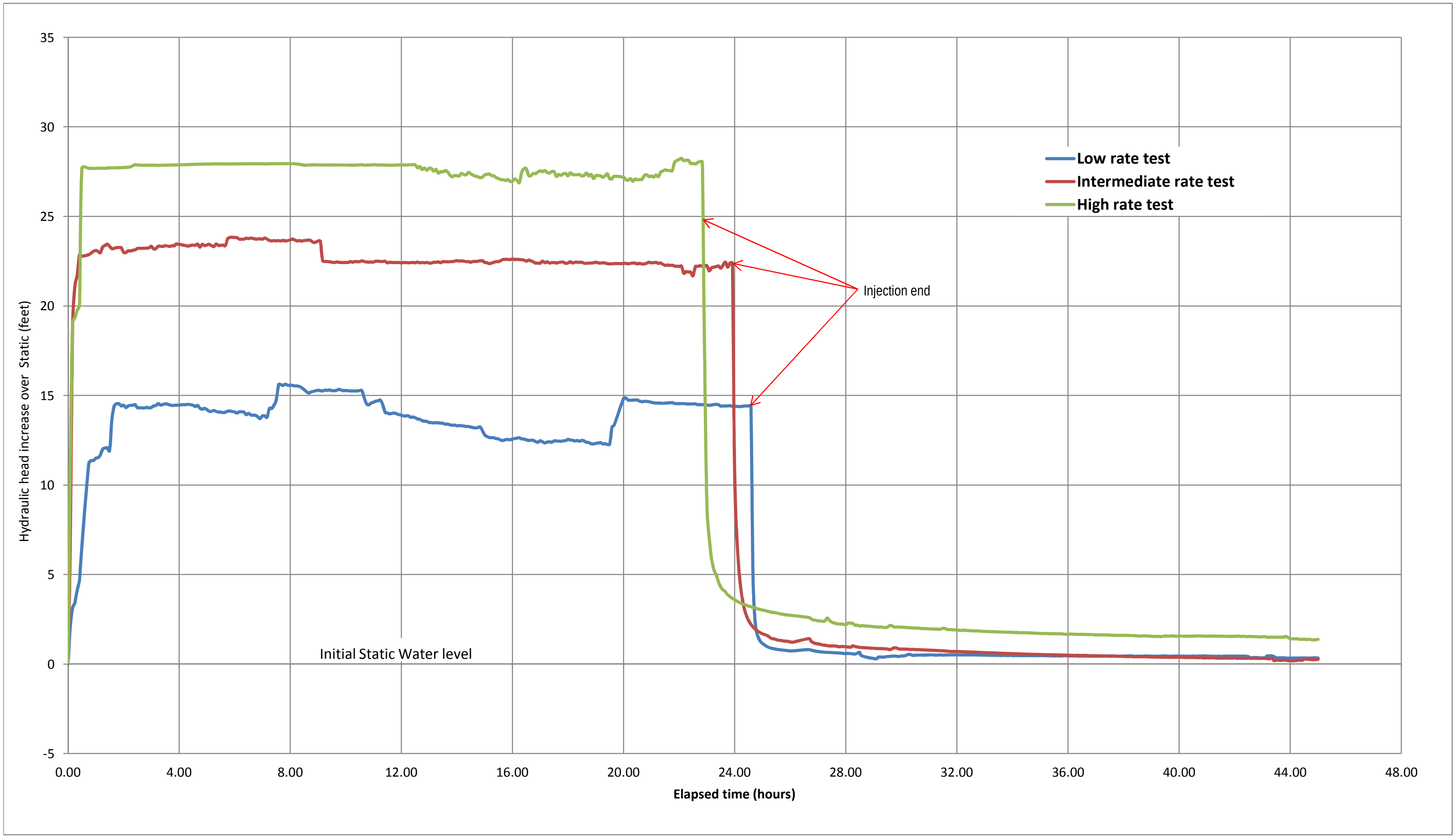


Figure 3-21 Water Level Changes in Deep Monitoring Well MPN-1I - Low Rate Injection Test
North TCE Area, Middle River Complex, Middle River, Maryland

Figure 3-22 Water Level Changes in Shallow Monitoring Wells - Low Rate Injection Test
North TCE Area, Middle River Complex, Middle River, Maryland

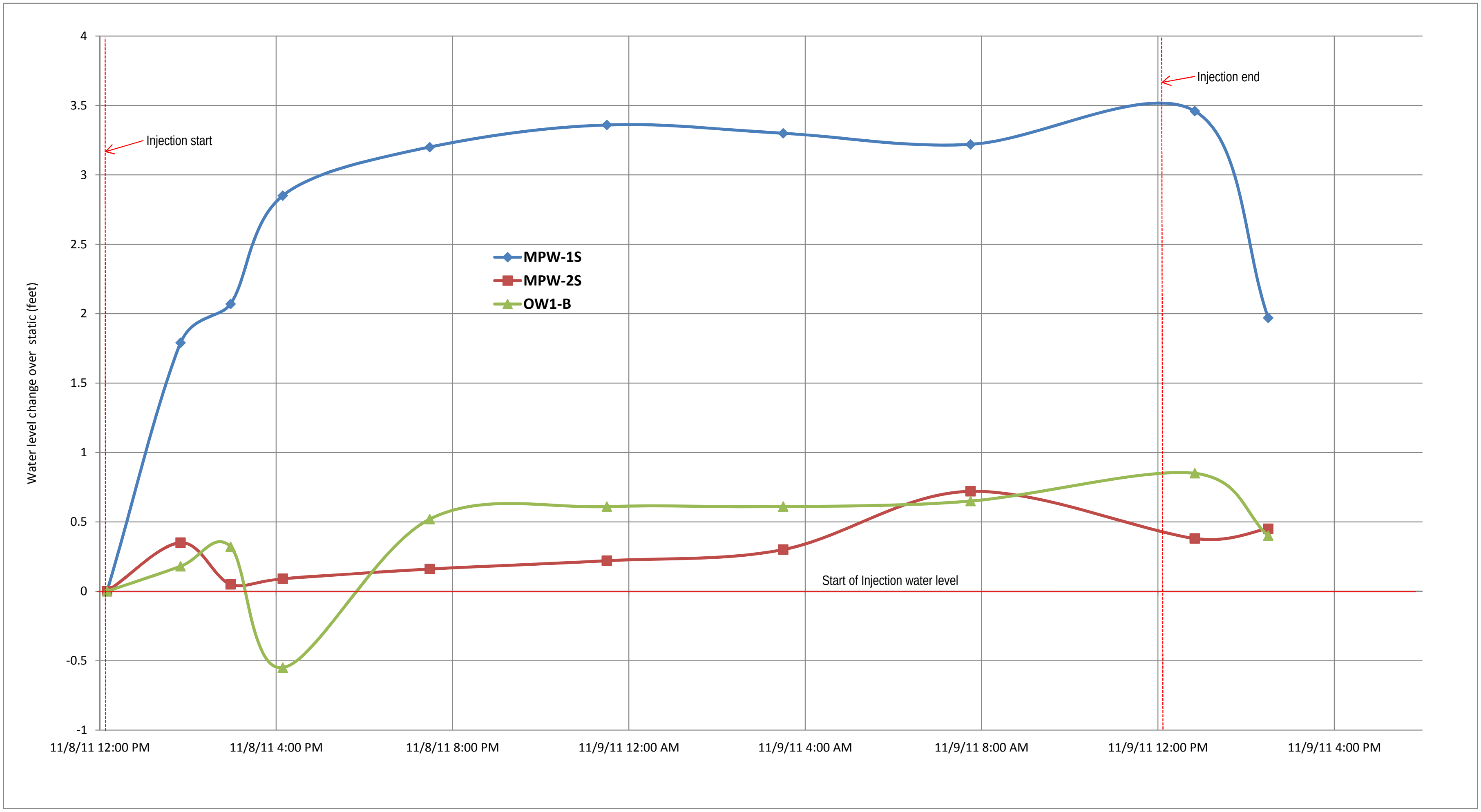
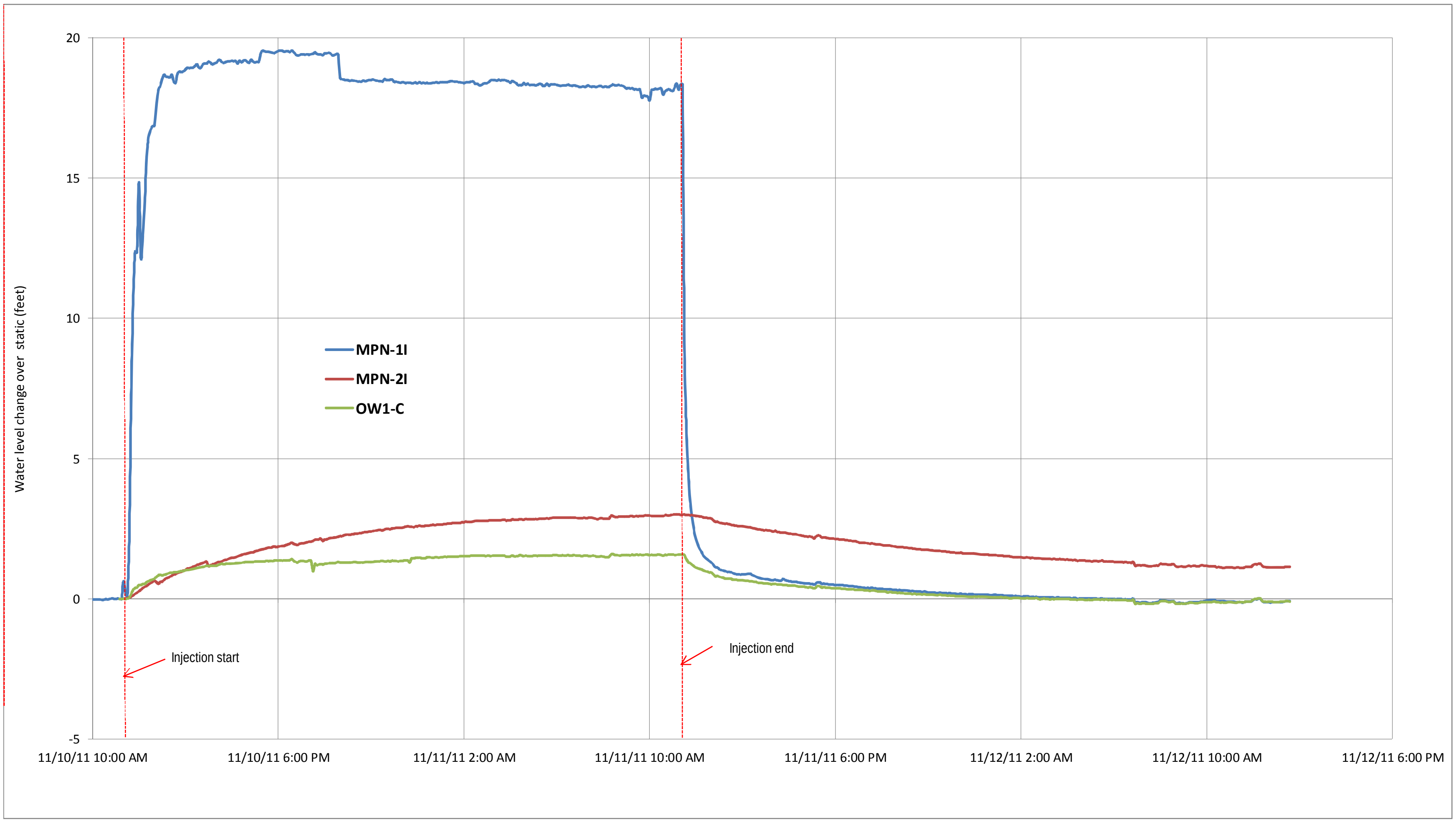


Figure 3-23 Water Level Changes in Deep Monitoring Wells - Intermediate Rate Injection Test
North TCE Area, Middle River Complex, Middle River, Maryland



0.166667

Figure 3-24 Water Level Changes in Shallow Monitoring Wells - Intermediate Rate Injection Test
North TCE Area, Middle River Complex, Middle River, Maryland

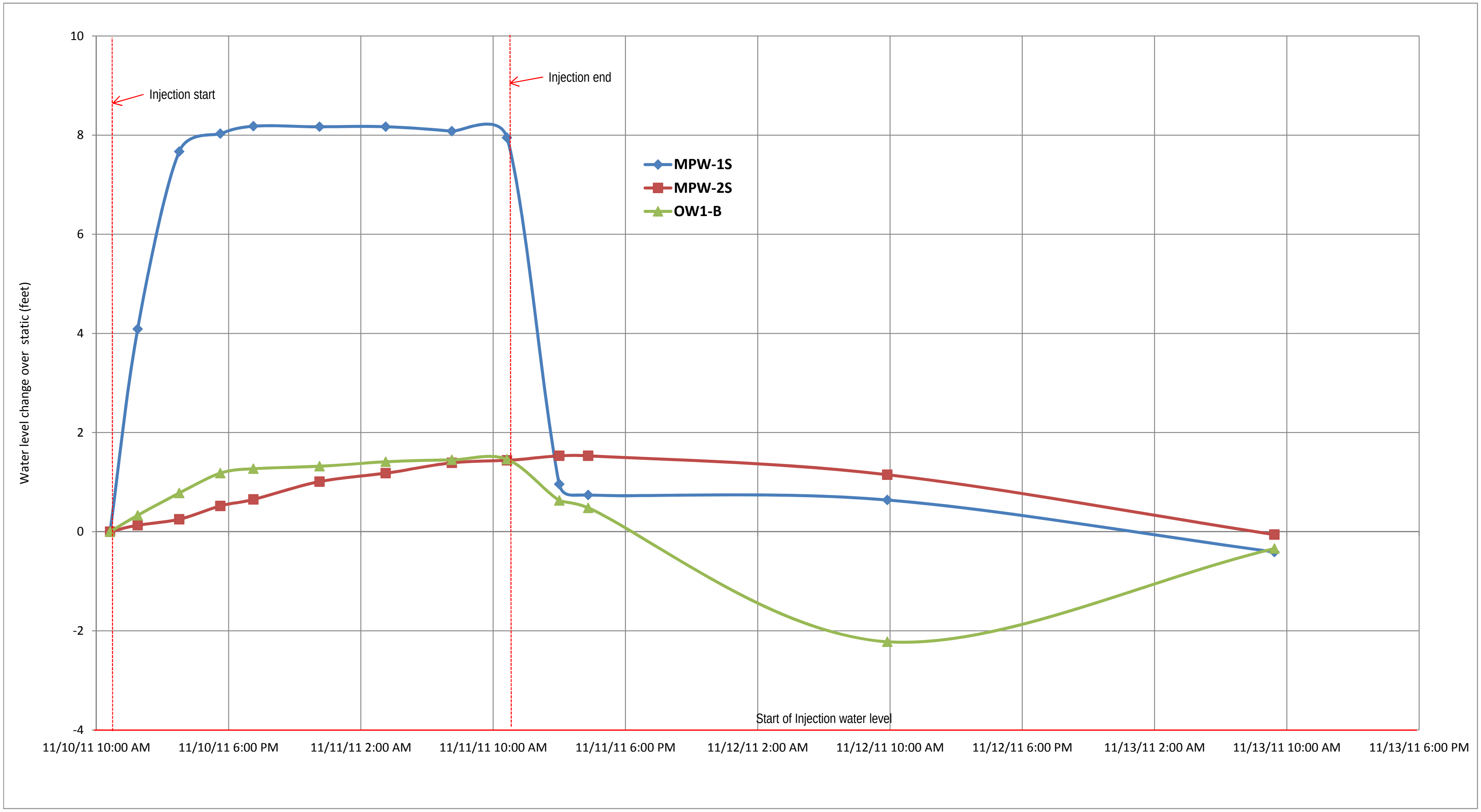


Figure 3-25 Water Level Changes in Deep Monitoring Wells - High Rate Injection Test
North TCE Area, Middle River Complex, Middle River, Maryland

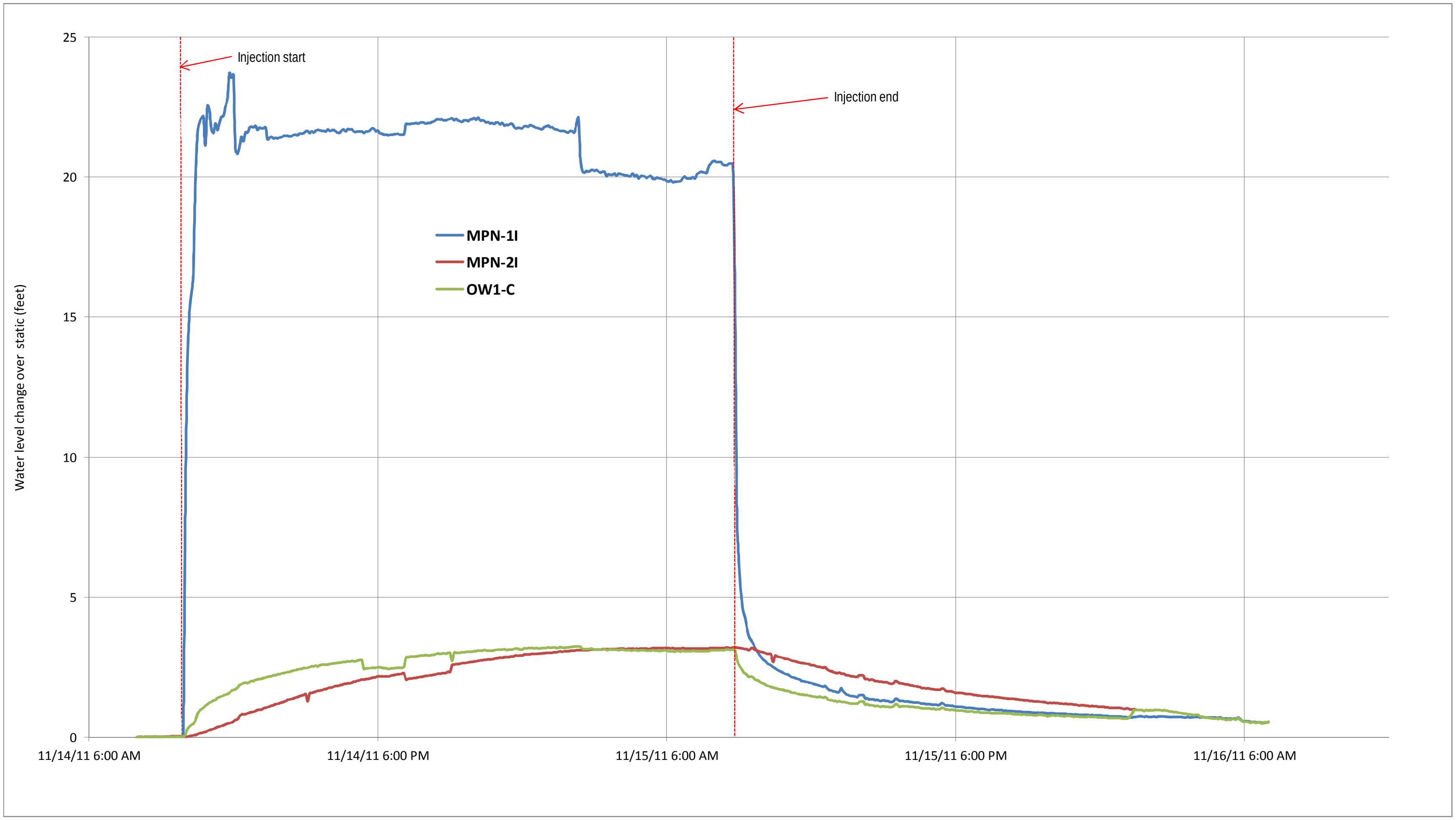


Figure 3-26 Water Level Changes in Shallow Monitoring Wells - High Rate Injection Test
North TCE Area, Middle River Complex, Middle River, Maryland

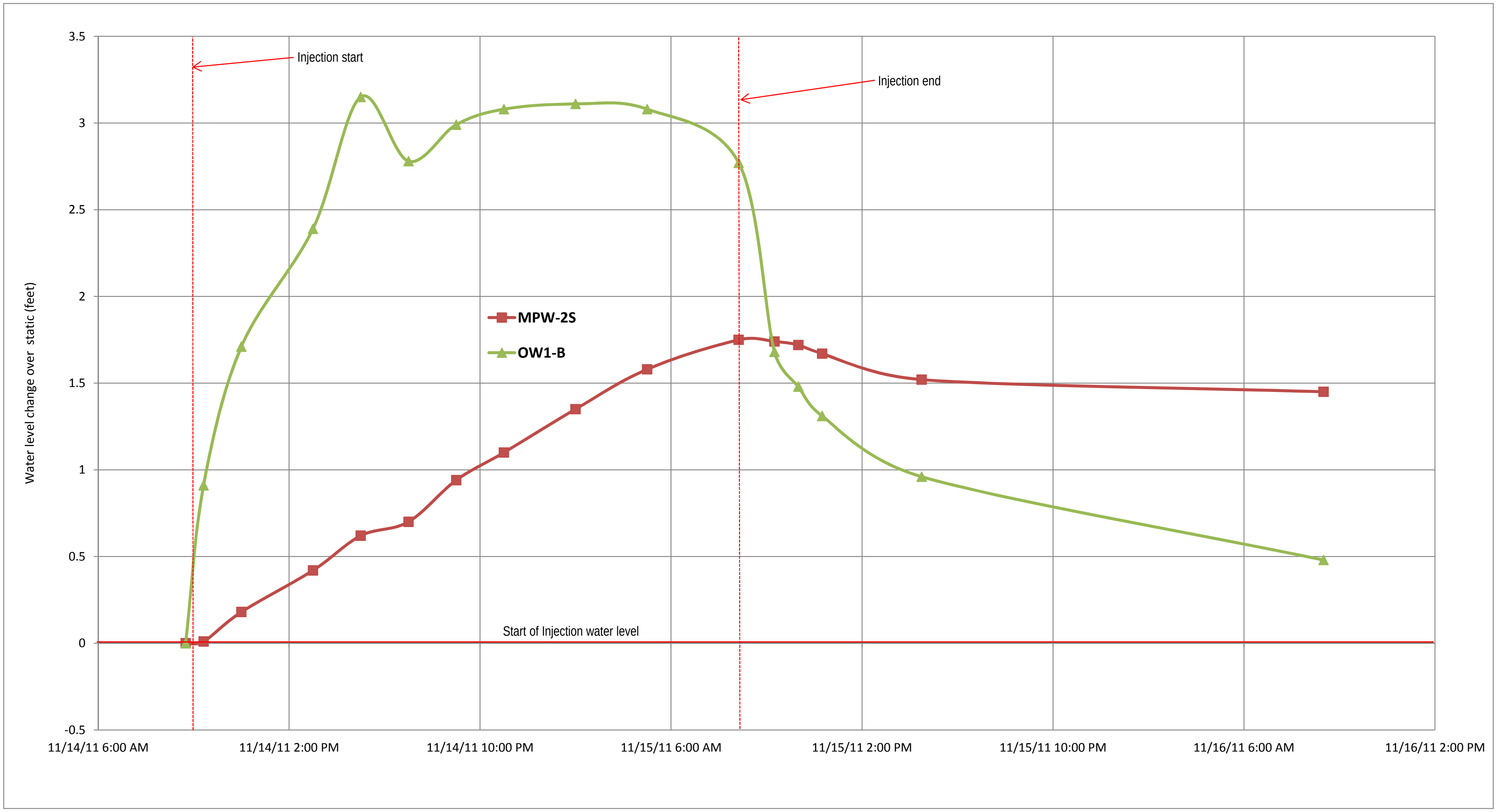
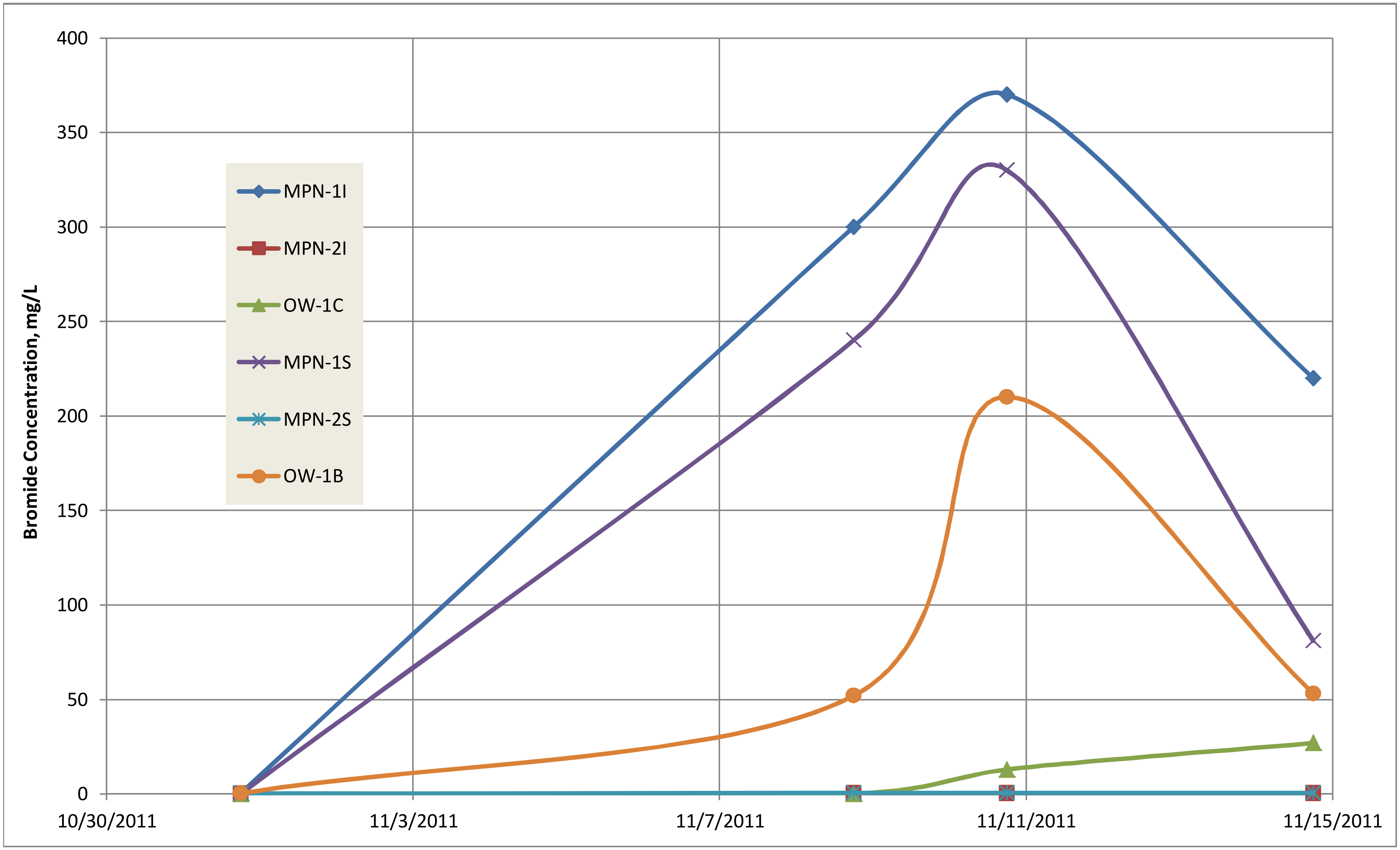


Figure 3-27 Bromide Analytical Results - North TCE Area Injection Test
Middle River Complex, Middle River, Maryland



Section 4
Summary and Conclusions

Injection pilot tests were performed at the Lockheed Martin Corporation Middle River Complex (MRC) in November 2011 (Figure 1-1) to determine key design parameters for the full-scale bioremediation system. The tests were performed in three locations at the MRC (Figure 2-1):

- southwest trichloroethene (TCE) area
- southeast TCE area
- northern TCE area

The test layout was similar at each of these locations: an injection well (typically screened at a depth interval of 15–35 feet) and three monitoring well clusters approximately five feet, 10 feet, and 15 feet from the injection well (Figure 2-2). Each monitoring well cluster consisted of two monitoring points: a deep interval (typically screened at 25–35 feet) and a shallow interval (typically screened at 10–20 feet). Tables 2-1 and 2-2 include a summary of the test wells' screened intervals, and Figure 2-2 provides a schematic for the test wells' design.

At each test location, three separate 24-hour injection tests were performed: (1) a low-rate test (approximately 0.3 gpm); (2) an intermediate-rate test (approximately 0.5 gpm); and (3) a high-rate test (approximately 1 gpm). Therefore, nine injection tests were performed. Each test was performed by injecting an aqueous sodium bromide tracer solution into the injection well and monitoring injection effects in nearby monitoring well clusters. The bromide solution was prepared in 2,400-gallon storage tanks deployed at each test location. The storage tanks were filled with potable water containing low levels of residual chlorine. The residual chlorine was removed from the injected stream by an online granular activated carbon (GAC) filter column.

The injection at each location was performed using a battery operated pump with a speed controller to achieve the desired injection rate. Figure 2-3 includes a schematic of the injection equipment and process. Data-logging submersible pressure transducers monitored the injection influence in the monitoring well clusters, and measured the injection well hydraulic head.

Bromide samples were collected from the monitoring well clusters and from nearby catch basins. Changes in hydraulic head and bromide tracer detections were used to evaluate the injections' radii of influence.

4.1 TEST AREAS COMPARISON

This section summarizes the injection test results and compares the different test areas. The summary is broken down into different test parameters, such as injection rates, pressures, hydraulic influence, and bromide tracer results.

***Achieved injection rates*—**The injection rates used during the tests were slightly above the values estimated in the work plan. Near constant injection rates were maintained throughout each test without frequent adjustments. The following average injection rates were used at each of the three test areas.

- low-rate test 0.28–0.3 gallons per minute (gpm)
- intermediate-rate test 0.51–0.57 gpm
- high-rate test 1.01–1.08 gpm

Note that achieving such relatively high sustainable injection rates at all three test areas was somewhat contrary to expectations. Earlier testing experiences with the direct push injection (i.e., *in situ* chemical oxidation [ISCO] pilot test) led to expectations that sustained injection, especially at higher rates (e.g., greater than 0.5 gpm) would be impossible without having injected fluid daylighting, or without producing excessive injection pressures, or other complications. Purpose installed injection wells with filter sand packs and full grouting were used during these injection tests. Such wells are likely better suited for injection than the direct push injection points used in earlier studies.

***Resultant injection pressures*—**The resultant injection pressures were different in the three tested areas. Such differences are expected due to the differences in the formation geology. The following table summarizes the injection pressures[3] for each of the tested areas:

Table 4-1
Resultant Injection Pressures Summary
Lockheed Martin, Middle River Complex

Test area	Typical injection hydraulic head (feet above static level)			Typical wellhead pressure (psig)			Average hydraulic conductivity (ft/day)
	Low-rate test	Intermediate-rate test	High-rate test	Low-rate test	Intermediate-rate test	High-rate test	
Southeast	1.5	2.8	5.0	< 0	< 0	< 0	2.0
Southwest	3.0	6.0	11.5	< 0	1	3	0.9
North	13.5	22.5	27.0	4	5	8	0.02

< less than
psig pound force per square inch gauge

Note that wellhead pressure below zero indicates that the liquid level in the injection well was below the wellhead pressure gauge. This was the case for all tests in the southeast TCE area and for the low-rate test in the southwest TCE area.

Comparing the estimated hydraulic conductivities for each test area (Tables 3-5, 3-11 and 3-17) shows that the southeast TCE area has the highest calculated hydraulic conductivity among the tested areas. Note that even during the high-rate test, the water level in the southeast area injection well was only approximately five feet above the static level (approximately three feet below ground surface). The southwest TCE area hydraulic conductivity is approximately two times lower than the hydraulic conductivity for the southeast TCE area. Note that the injection hydraulic head was approximately two times higher in the southwest area. However, in absolute terms, the injection pressures in the southwest TCE area were relatively low during all three tests.

[3]*Injection pressure in Table 4-1 is expressed as injection hydraulic head: feet of water column during injection above static level.*

The least conductive among the tested areas is the north TCE area (two orders of magnitude lower hydraulic conductivity compared to the southeast area). The injection pressures here were considerably higher than in both the southeast and southwest areas. The maximum wellhead pressure measured by the pressure gauge was 8.7 pounds force per square inch gauge (psig) during the high-rate test. In general, the injection pressures achieved in the north TCE area were close to what was anticipated at all injection areas before the tests.

***Hydraulic response*—**The hydraulic response measured in the deep monitoring wells was clear and immediate for the southeast and southwest TCE areas. However, the hydraulic response measured in the shallow monitoring wells was muted and delayed as compared to the deep wells. Analysis of the tracer results and the character of the hydraulic response support the conclusion that the deep intervals in both the southeast and southwest TCE areas are more permeable as compared to the shallow formation in those locations, and that the deep and shallow zones are to some degree hydraulically isolated from one another. The north TCE area hydraulic response in the deep and shallow monitoring wells was not clearly differentiated. Bromide tracer was found in both shallow and deep observation wells, leading to a conclusion that the difference between the shallow and the deep zone here may not be as pronounced in the north as it is in the southeast and southwest TCE areas.

***Monitoring wells' bromide tracer*—**In general, the bromide test results confirm the conclusions based on the hydraulic response observations. The bromide tracer was clearly detected in all deep monitoring wells in both the southeast and southwest TCE areas (except the most distant deep well in southwest). In contrast, no bromide tracer was detected in any shallow well in those areas. This confirms that the deep intervals in both the southeast and southwest TCE areas are more permeable compared to the shallow formation, and that a degree of hydraulic isolation occurs between the deep and shallow zones. Tables 3-6 and 3-12 contain the bromide tracer results for the southeast and southwest TCE areas, respectively.

The north TCE area bromide tracer concentrations in the deep and shallow monitoring wells were not clearly differentiated. The bromide tracer was clearly detected in both shallow and deep monitoring wells. These results support the conclusion that the difference between the shallow and the deep zone here is not as pronounced as for the southeast and southwest TCE areas. That could be due to natural formation characteristics, because of the history of construction in the area, and could certainly also be a result, in whole or in part, of the hydraulic fracturing conducted during the 2008 ARD pilot study.

Catch basins' bromide tracer**—**Bromide samples were also collected from the available catch basins. One catch basin at each test area was identified for sampling (Figure 2-1). The distances between the sampled catch basins and the injection well in each area range from approximately 115 feet in the southwest TCE area to 135 feet in the north TCE area. No appreciable levels of tracer were detected in the catch basins in the southwest and north TCE areas.

However, following the high-rate injection test, an elevated bromide concentration (1.7 mg/L versus 0.1 mg/L baseline) was detected in the southeast TCE area catch basin (MH-10/IL-3 in Figure 3-1). Follow-up sampling in the southeast TCE area catch basins on February 24, 2012 (Table 3-19, Appendix H) does not rule out that the bromide detection in MH10-/IL-3 was associated with the injection test. However, catch basin MH-10/IL-3 is upgradient from the injection well IWE-1 (approximately 1.5 feet of hydraulic head difference), and the resultant groundwater mounding was limited, and quickly dissipated away from the injection well (approximately one foot at 15 feet from the injection well).

Explaining how the tracer could travel upgradient from the injection well to the catch basin is difficult. Moreover, the complete absence of detections of bromide tracer in any shallow monitoring points as compared to the clear and significant tracer concentrations found in all deep monitoring points indicates that flow in the shallow zone is severely impeded. To be prudent, and despite the absence of an adequate engineering explanation, we will assume that bromide somehow traveled from the injection well to catch basin MH-10/IL-3, perhaps via an unknown existing preferential pathway. In light of this assumption, particular care will be taken during the design and implementation of any full-scale bioremediation system ultimately installed in this area.

4.2 POTENTIAL IMPACTS ON REMEDY DESIGN

As stated above, the main purpose of the injection test was to determine if the primary design parameters of the bioremediation system determined in the *Draft Groundwater Response Action Plan* for the Middle River Complex (Tetra Tech, 2011a) are indeed achievable and realistic. Those parameters include injection rates and volumes, radius of influence, injection pressures, injection wells' spacing, and other design criteria. This section presents a brief and preliminary discussion of the injection test results on the remedial system design parameters. The following preliminary conclusions are presented below:

1. ***Design injection rates and volumes:*** The design injection rate is assumed in the *Groundwater Response Action Plan* to be 0.15 gpm per injection well, with approximately 3000 gallons injection volume. The lowest injection rate during the injection test was approximately 0.3 gpm for all tested areas, with no indications of increased formation pressure in the course of injection. Therefore, the selected design injection rate is very conservative, and higher injection rates and volumes can be considered. Increased injection rates per well could lead to a lower number of required injection wells, with an associated reduction in underground piping and maintenance.

2. ***Injection radius of influence:*** The radius of influence per injection well assumed in the *Groundwater Response Action Plan* is relatively low, resulting in a fairly dense spacing of injection wells, as follows: approximately 20 feet between the injection wells in a row, and approximately 40 feet between the rows of injection wells. However, in the southeast TCE area, a high tracer concentration was detected 15-feet from the injection well after the intermediate-rate test, and even higher tracer concentrations were detected after the high-rate test. The tracer detections in the southwest and north TCE areas were found at a maximum of 10 feet from the injection well. However, we might reasonably expect that the injected tracer could move further in those areas if the injection was performed over a longer period. The hydraulic response to injection was very strong in the deep zone of both southeast and southwest TCE areas at all distances, which further confirms that longer radii of influence are achievable during injection in these two areas. Therefore, the selected spacing of the injection wells is conservative, and a reduced density grid of injection wells can be considered. As part of this consideration, the existing groundwater modeling simulations will be updated based on the data obtained during the injection tests.

3. ***Injection pressures:*** The injection tests demonstrate that low injection pressures can be achieved (e.g., less than 1 psig at wellhead), even with moderately high injection rates (e.g., 0.5 gpm) in the southeast and southwest TCE areas.

4. ***Preferential channeling and injected fluid daylighting:*** The only indication of preferential channeling is a single concentration of a bromide tracer detected in the southeast TCE area catch basin after the high-rate injection test. The potential impact of this observation to the full-scale design and implementation could involve selection of an especially conservative injection scenario and careful monitoring during injection implementation. No daylighting of injected fluid was observed in any location. However, note that these results (no preferential channeling and daylighting) were obtained using a single injection well in each area and a relatively small injection volume (approximately 2800 gallons total per injection well).

   The *Groundwater Response Action Plan* (Tetra Tech, 2011a) estimates total injection volumes of 237,000 gallons, 156,000 gallons and 51,000 gallons for the southwest, southeast, and north areas, respectively. Therefore, even though the injection test results are largely favorable in terms of preferential channeling and daylighting, some additional measures to prevent these negative effects can be considered. Such measures can include, for example, using extraction wells as a water source for the injection solution (or for depressing the groundwater level); considerably extending injection time by using only a small portion of the injection wells for injection at any given time; and abandoning underground utilities not currently in use. A longer duration low-flow injection test in the southeast TCE area can also be considered to evaluate the pathway to the catch basin. At this time, no additional testing is recommended.

5. ***Residual chlorine removal from potable water by granular activated carbon (GAC):*** GAC is a proven method for removing residual chlorine from aqueous sources. The GAC equipment selected provides a reliable method of chlorine removal and can be easily scaled up for full-scale implementation.

6. ***Limitation of groundwater mounding:*** Injection tests indicate that groundwater mounding quickly diminished with increasing distance from the injection wells. Full-scale injections will be managed to keep groundwater mounding below catch basins and other utilities. Cross-sections indicating the elevations of such utilities will be prepared as part of the full-scale system design.

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Section 5
References

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APPENDIX A—BORING LOGS

Tetra Tech NUS, Inc.

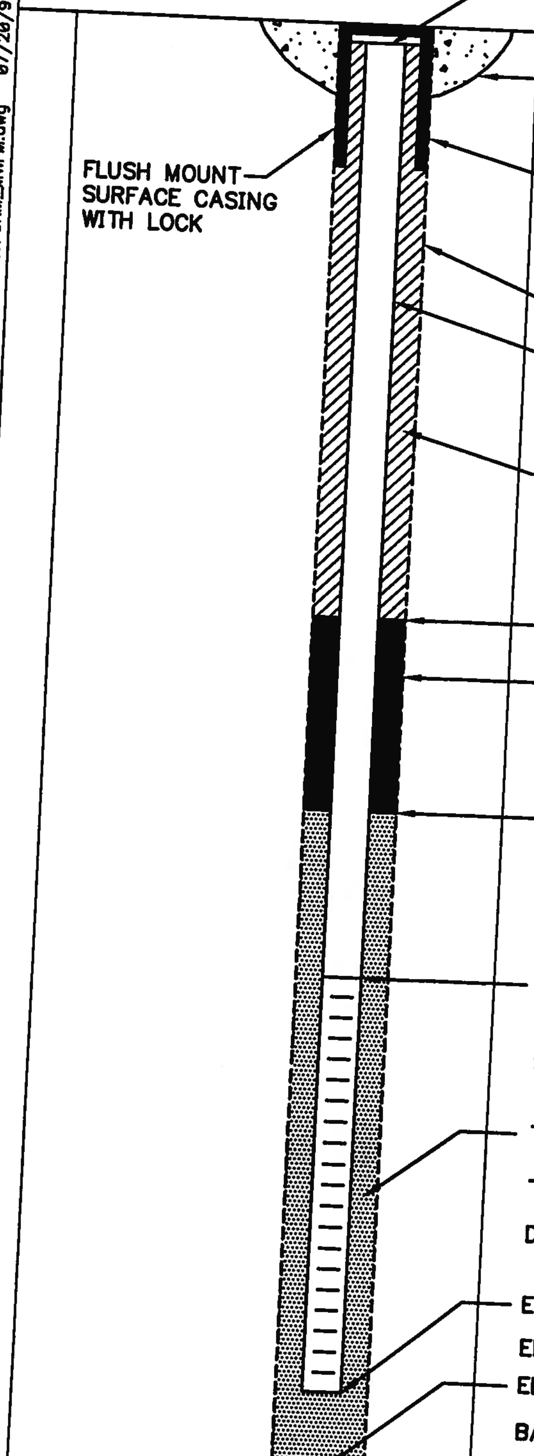
OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

WELL NO.: IW-E

PROJECT MRC INJECTION TEST
PROJECT NO.
DATE BEGUN 10/19/11
FIELD GEOLOGIST Walter O'Neill
GROUND ELEVATION

LOCATION Middle River, MD
BORING IW-E
DATE COMPLETED 10/24/11 Pad installed
DATUM

DRILLER ADAM ANDERSON
DRILLING METHOD ROTO SONIC
DEVELOPMENT METHOD



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: ~~Portland cement~~ High Strength Concrete

TYPE OF PROTECTIVE CASING: STEEL (Round)

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Portland cement/ bentonite gel grout

ELEVATION/DEPTH TOP OF SEAL: / 10'

TYPE OF SEAL: Bentonite Chips

ELEVATION/DEPTH TOP OF SAND: / 13'

ELEVATION/DEPTH TOP OF SCREEN: / ~~13~~ 15'
TYPE OF SCREEN: 2" PVC
SLOT SIZE x LENGTH: 0.01" X 20'

TYPE OF SAND PACK: 20 - 40 mesh silica

DIAMETER OF HOLE IN ~~BEDROCK~~:

ELEVATION / DEPTH BOTTOM OF SCREEN: / 35'
ELEVATION / DEPTH BOTTOM OF SAND: / 35'
ELEVATION/DEPTH BOTTOM OF HOLE: / 35'
BACKFILL MATERIAL BELOW SAND: N/A

ACAD:FORM_MWFM.dwg 07/20/99 INL

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: IW-E
DATE: 10/19/11
GEOLOGIST: Walter O'Neil
DRILLER: ADAM ANDERSON

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0				very slightly plastic		BROWN CLAYEY SILT SLIGHTLY MOIST			0.0			
					PLASTIC		TAN/~~GRAY~~ BROWN SILTY CLAY SLIGHTLY MOIST						
					SLIGHTLY PLASTIC		TAN/BROWN SILTY SAND W/ CLAY, SLIGHTLY MOIST			0.0			
	5				FRIABLE		RED, ORANGE, OFF-WHITE CLAYEY SILT, STIFF, DRY			0.3			
					STIFF		RED BROWN SILTY CLAY, DRY ~~STIFF~~ STIFF			0.0			
	10				STIFF		RED ORANGE CLAYEY SILT DRY			11.0			
					very slightly plastic		RED SILTY CLAY TO CLAYEY SILT very slightly moist			31.5 / 15.5			
	15				STIFF ~~PLASTIC~~		RED CLAY VERY SLIGHTLY MOIST			40.2			
					PLASTIC		RED SILTY CLAY W/ SAND SLIGHTLY MOIST			115			
	20				PLASTIC (MORE SO IN SPOTS clay)		RED SILTY CLAY TO CLAYEY SILT W/ SAND very slight moisture			336			
	25				soft		red brown silty sand w/ red clay lenses @ 21.5', 22.5', 23' & 24' moist to wet			80.0 / 179 / 56.2			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: IW-E

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: IW-E
DATE: 10/19/11
GEOLOGIST: Walter O'Neill
DRILLER: ADAM ANDERSON

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	25												
							RED BROWN			56.2			
					soft		SILTY SAND w/						
							red clay lenses @			5.8			
							21.5', 22.5', 23' &						
	30						24', moist to wet			2.8			
										1.9			
							red/brown/orange/						
					stiff		gray silty clay			1.4			
	35						dry						
										1.8			

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ___ Well I.D. #: IW-E

15

WELL NO.: MPE-15

Tetra Tech NUS, Inc.

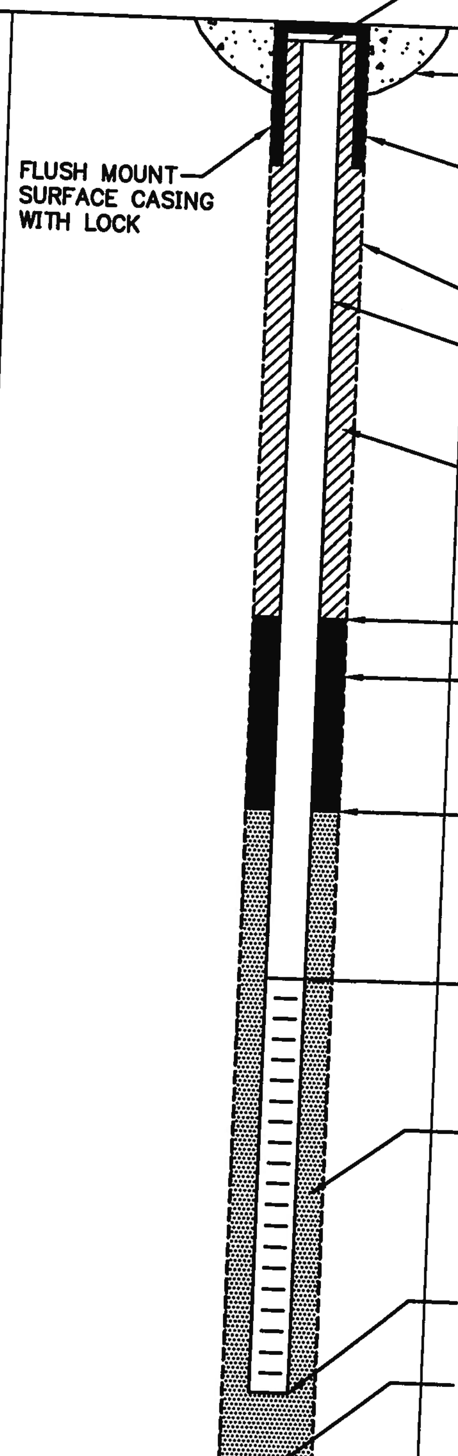
OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

PROJECT MRC Injection Test
PROJECT NO.
DATE BEGUN 10/19/11
FIELD GEOLOGIST Walter O'Neill
GROUND ELEVATION

LOCATION Middle River, MD
BORING MPE-15/1I
DATE COMPLETED 10/24/11 pad installed
DATUM

DRILLER ADAM ANDERSON
DRILLING METHOD BOART ROTO SONIC
DEVELOPMENT METHOD

ACAD: FORM_MWFM.dwg 07/20/99 INL



ELEVATION TOP OF RISER: ______

TYPE OF SURFACE SEAL: ~~Portland Cement~~ High strength concrete

TYPE OF PROTECTIVE CASING: round steel

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: Portland cement/bentonite gel grout

ELEVATION/DEPTH TOP OF SEAL: /

TYPE OF SEAL: Bentonite chips

ELEVATION/DEPTH TOP OF SAND: /

ELEVATION/DEPTH TOP OF SCREEN: / 11

TYPE OF SCREEN: 1" PVC

SLOT SIZE x LENGTH: 0.01" X

See MPE-1I

TYPE OF SAND PACK: 20-40 mesh Silica

DIAMETER OF HOLE IN ~~BEDROCK~~: N/A

ELEVATION / DEPTH BOTTOM OF SCREEN: / 21

ELEVATION / DEPTH BOTTOM OF SAND: / 21.5

ELEVATION/DEPTH BOTTOM OF HOLE: / 35

BACKFILL MATERIAL BELOW SAND: See

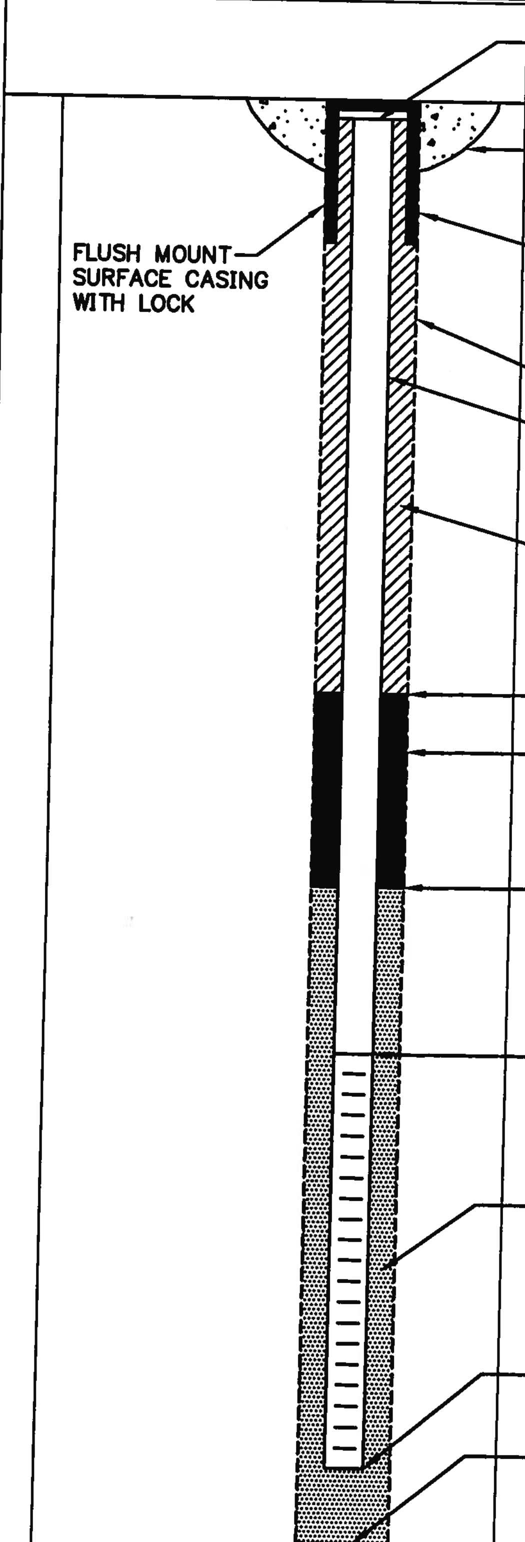
WELL NO.: MPE-1I

Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

PROJECT: MRC Injection test
LOCATION: Middle River MD
PROJECT NO.:
BORING: MPE-15/1I
DATE BEGUN: 10/19/11
DATE COMPLETED: prod installed 10/24/11
FIELD GEOLOGIST: Walter ONeill
GROUND ELEVATION:
DATUM:
DRILLER: ADAM ANDERSON
DRILLING METHOD: BOART ROTO SONIC
DEVELOPMENT METHOD:

ACAD: FORM_MWFM.dwg 07/20/99 INL



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: ~~Portland cement~~ High strength concrete

TYPE OF PROTECTIVE CASING: Round steel

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Portland cement w/ Bentonite gel grout

ELEVATION/DEPTH TOP OF SEAL: / 22.5

TYPE OF SEAL: Bentonite chips

ELEVATION/DEPTH TOP OF SAND: / 24

ELEVATION/DEPTH TOP OF SCREEN: / 25

TYPE OF SCREEN: 1" PVC

SLOT SIZE x LENGTH: 0.01" x

TYPE OF SAND PACK: 20-40 mesh silica

DIAMETER OF HOLE IN ~~BEDROCK~~: N/A

ELEVATION / DEPTH BOTTOM OF SCREEN: / 35

ELEVATION / DEPTH BOTTOM OF SAND: / 35

ELEVATION/DEPTH BOTTOM OF HOLE: / 35

BACKFILL MATERIAL BELOW SAND: N/A

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: MPE-1S/1I
DATE: 10/19/11
GEOLOGIST: Walter O'Neil
DRILLER: Adam Anderson

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0				compacted		red brown silty SAND & gravel slight moisture			0.5			
					slightly plastic		red, orange, brown silty clay to clayey silt v. slightly moist			0.3			
	5				Fairly soft		GRAY, RED ORANGE SILTY SAND slightly moist			0.3			
					stiff					0.3			
					slightly plastic		reddish brown silty clay, dense			0.4			
	10				stiff slightly plastic		dry						
					stiff		with white gray silty clay lenses @ 8.5' & 9.5'			5.5			
										4.6			
	15												
					plastic to slightly plastic		RED BROWN SANDY SILT w/ clay, v. slightly moist			3.5			
					slightly plastic		red brown silty clay, v. slightly moist			8.9			
	20				stiff		red brown clay dry			51.2			
					soft		red brown silty SAND slightly moist			179			
					stiff		Red brown silty clay v. slightly moist						
					slightly plastic		red brown silty SAND to sandy silt, slightly moist			222			
	25				stiff		red brown silty clay v. slightly moist						
							see next page			19.4			

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: 25 Yes X No ____ Well I.D. #: MPE-1S + MPE-1I

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: MPE-1S & 1I
DATE: 10/19/11
GEOLOGIST: Walter O'Neill
DRILLER: Adam Anderson

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	25								19.4				
							Red brown silty		1.8				
					SOFT		SAND, moist to						
							wet		1.1				
	30												
									1.0				
							RED, BROWN, ORANGE						
					Stiff		GRAY silty CLAY to		1.8				
							CLAY, dry						
	35								1.2				

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

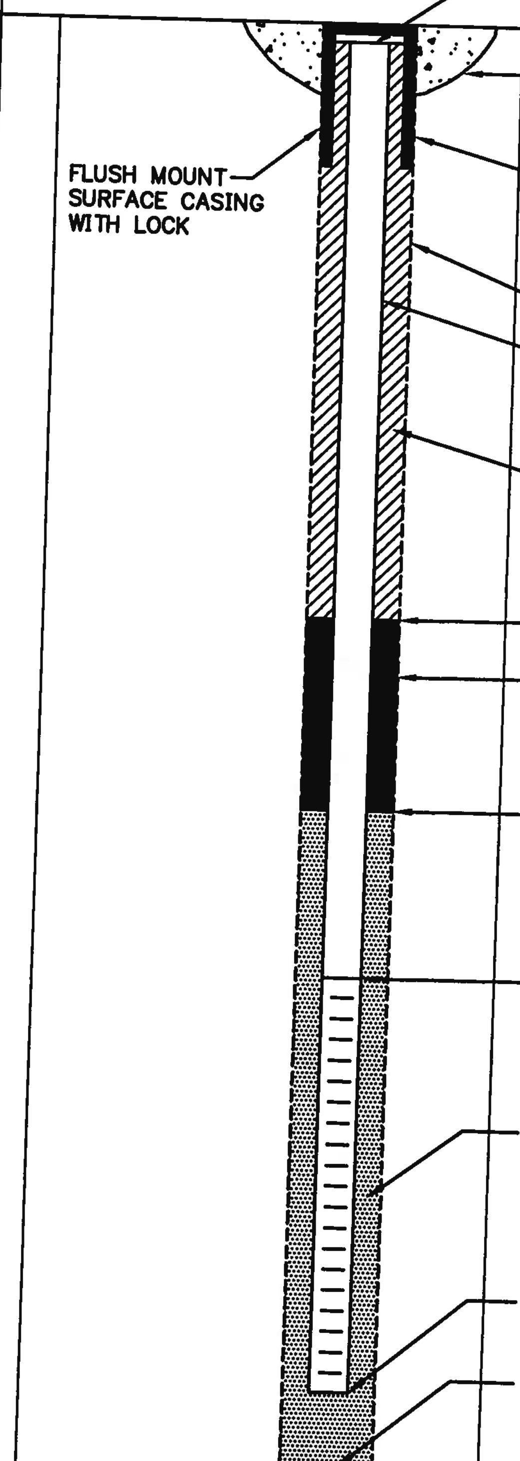
Converted to Well: Yes X No ____ Well I.D. #: MPE-1S & MPE-1I

WELL NO.: MPE-2S

Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

PROJECT MRC INJECTION TEST	LOCATION Middle River, MD	DRILLER ADAM ANDERSON
PROJECT NO.	BORING MPE-2I/2S	DRILLING METHOD ROTOSONIC
DATE BEGUN 10/20/11	DATE COMPLETED 10/24/11 pad installed	DEVELOPMENT METHOD
FIELD GEOLOGIST Walter O'Neill		
GROUND ELEVATION	DATUM	



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: ~~Portland Cement~~ High strength concrete

TYPE OF PROTECTIVE CASING: steel (round)

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: Portland Cement/Bentonite gel grout

ELEVATION/DEPTH TOP OF SEAL: / 8.0

TYPE OF SEAL: Bentonite chips

ELEVATION/DEPTH TOP OF SAND: / 10.5

ELEVATION/DEPTH TOP OF SCREEN: / 12.5

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.01" X 10'

TYPE OF SAND PACK: 20-40 mesh silica

DIAMETER OF HOLE IN ~~BEDROCK~~: N/A

ELEVATION / DEPTH BOTTOM OF SCREEN: / 22.5

ELEVATION / DEPTH BOTTOM OF SAND: / 23

ELEVATION/DEPTH BOTTOM OF HOLE: / 35'

BACKFILL MATERIAL BELOW SAND: See MPE-2I

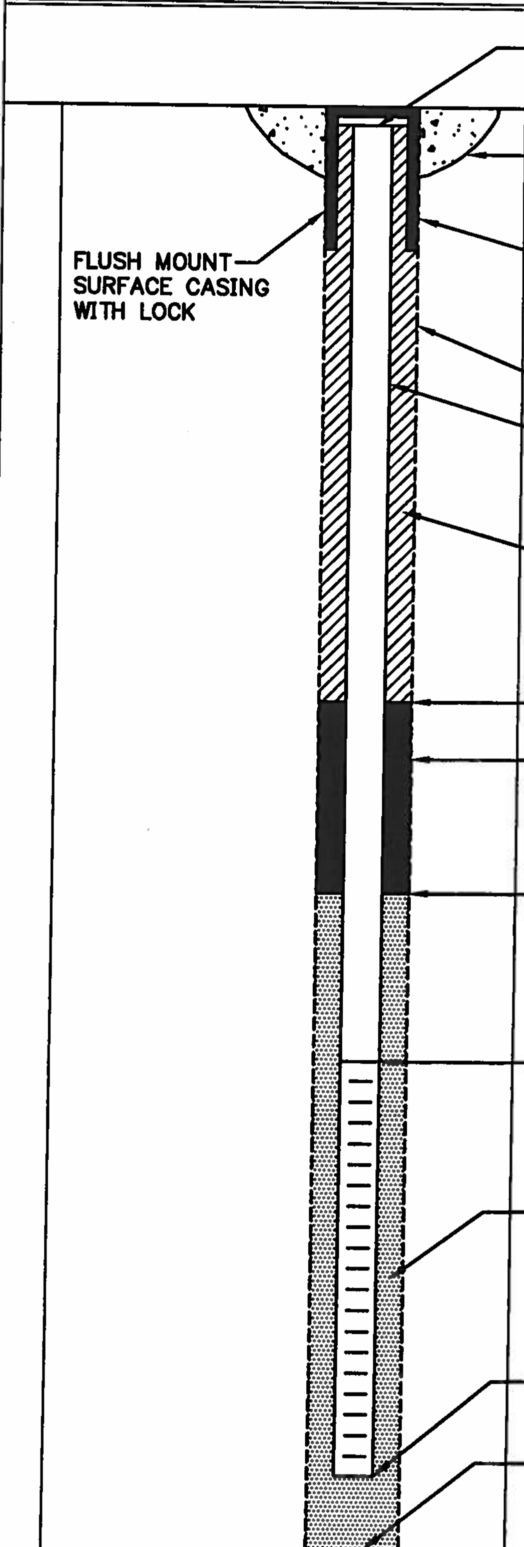
ACAD: FORM_MWFM.dwg 07/20/99 INL

WELL NO.: MPE-2I

Tetra Tech NUS, Inc.

OVERBURDEN
MONITORING WELL SHEET
FLUSH - MOUNT

PROJECT MRC INJECTION TEST	LOCATION Middle River, MD	DRILLER ADAM ANDERSON
PROJECT NO.	BORING MPE-2S/2I	DRILLING METHOD ROTOSONIC
DATE BEGUN 10/20/11	DATE COMPLETED 10/21/11 pal Installed	
FIELD GEOLOGIST Walter O'Neill		DEVELOPMENT METHOD
GROUND ELEVATION	DATUM	



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: ~~Portland Cement~~ High Strength Concrete

TYPE OF PROTECTIVE CASING: steel (round)

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: 1" PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: Portland Cement/ Bentonite gel grout

see MPE-2S

ELEVATION/DEPTH TOP OF SEAL: / 23

TYPE OF SEAL: Bentonite Chips

ELEVATION/DEPTH TOP OF SAND: / 24

ELEVATION/DEPTH TOP OF SCREEN: / 25

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.01" x 10'

TYPE OF SAND PACK: 20-40 mesh Silica

DIAMETER OF HOLE IN ~~BEDROCK~~: N/A

ELEVATION / DEPTH BOTTOM OF SCREEN: / 35'

ELEVATION / DEPTH BOTTOM OF SAND: / 35'

ELEVATION/DEPTH BOTTOM OF HOLE: / 35'

BACKFILL MATERIAL BELOW SAND: N/A

ACAD: FORM_MWFM.dwg 07/20/99 INL

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: MPE-25/2I
DATE: 10/20/11
GEOLOGIST: Walter O'Neill
DRILLER: Adam Anderson

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
					SOFT		BROWN SOIL, SLIGHTLY MOIST		0.0				
					FAIRLY SOFT		BROWN SILTY SANDY FILL W/ GRAVEL SLIGHTLY MOIST		0.0				
					SOFT		RED BROWN SILTY SAND SLIGHTLY MOIST						
	5				FRIABLE		RED BROWN SANDY SILT V. SLIGHTLY MOIST		0.0				
					STIFF FRIABLE		RED BROWN SANDY CLAY W/ GRAY STREAKS V. SLIGHTLY MOIST		0.0 / 0.1				
	10				SOFT PLASTIC		RED BROWN SANDY CLAY SLIGHTLY MOIST		10.0 / 30.9				
	15				PLASTIC		Red BROWN SILTY CLAY W/ SOME FINE SAND BROWN STREAKS @ 16' SLIGHTLY MOIST		172.0 / 148.0 / 88.1				
	20				DENSE		RED BROWN SILTY CLAY, V.S.M						
					SOFT		RED BROWN SILTY SAND MOIST		71.3				
	25				PLASTIC		RED BROWN SANDY CLAY TO CLAYEY SAND SLIGHTLY MOIST		290 / 82.4				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: 2 5 Yes X No ______ Well I.D. #: MPE-25 & MPE-2I

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: MPE-2S/2I
DATE: 10/20/11
GEOLOGIST: Walter O'Neill
DRILLER: Adam Anderson

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	25												
							Red Brown silty						
					SOFT		Sand w/ Clay lenses						
					(SAND) TO		@ 26.5' to 28'						
					PLASTIC (CLAY)		MOIST TO WET						
	30												
					SOFT		RED BROWN CLAYEY SAND TO SANDY CLAY, wet						
							Red, orange, brown,						
					dense		gray silty clay						
					stiff		clay						
	35												

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: MPE-2S & MPE-2I

WELL NO.: MPE-35

Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

PROJECT: MRC Injection Test
LOCATION: Middle River, MD
PROJECT NO.:
BORING: MPE-35/3I
DATE BEGUN: 10/20/11
DATE COMPLETED: 10/24/11 well installed
FIELD GEOLOGIST: Walter O'Neill
GROUND ELEVATION:
DATUM:

DRILLER: Adam Anderson
DRILLING METHOD: Roto Sonic
DEVELOPMENT METHOD:

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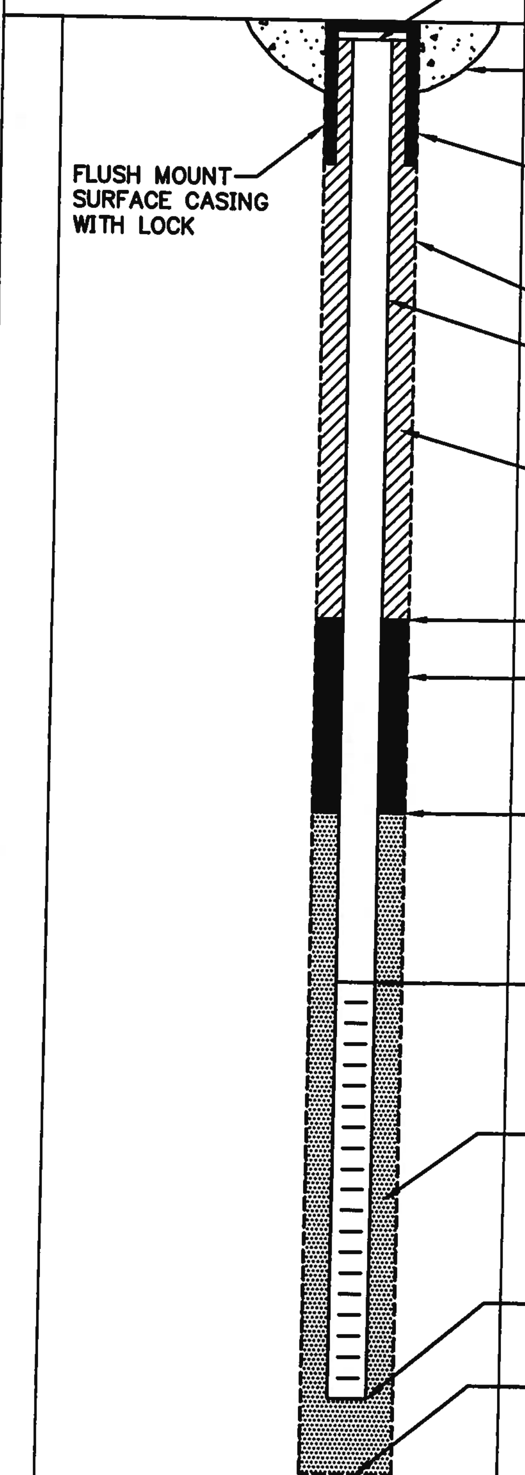

ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: ~~Portland Cement~~ High strength concrete

TYPE OF PROTECTIVE CASING: Steel (round)

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: Portland cement/ bentonite gel grout

ELEVATION/DEPTH TOP OF SEAL: /4

TYPE OF SEAL: Bentonite chips

ELEVATION/DEPTH TOP OF SAND: /6

ELEVATION/DEPTH TOP OF SCREEN: /8

TYPE OF SCREEN: 1" PVC

SLOT SIZE x LENGTH: 0.01" x 10'

TYPE OF SAND PACK: 20-40 mesh silica

DIAMETER OF HOLE IN ~~BEDROCK~~: NA

ELEVATION / DEPTH BOTTOM OF SCREEN: /18

ELEVATION / DEPTH BOTTOM OF SAND: /19

ELEVATION/DEPTH BOTTOM OF HOLE: /35

BACKFILL MATERIAL BELOW SAND: N/A

see MPE-3I

WELL NO.: MPE-3I

Tetra Tech NUS, Inc.

OVERBURDEN
MONITORING WELL SHEET
FLUSH - MOUNT

PROJECT: MRC INJECTION TEST	LOCATION: MIDDLE RIVER MD	DRILLER: ADAM ANDERSON
PROJECT NO.:	BORING: MPE-3S/3I	DRILLING METHOD: ROTOSONIC
DATE BEGUN: 10/20/11	DATE COMPLETED: 10/24/11 pad PV Stalled	DEVELOPMENT METHOD:
FIELD GEOLOGIST: Walter O'Neill		
GROUND ELEVATION:	DATUM:	

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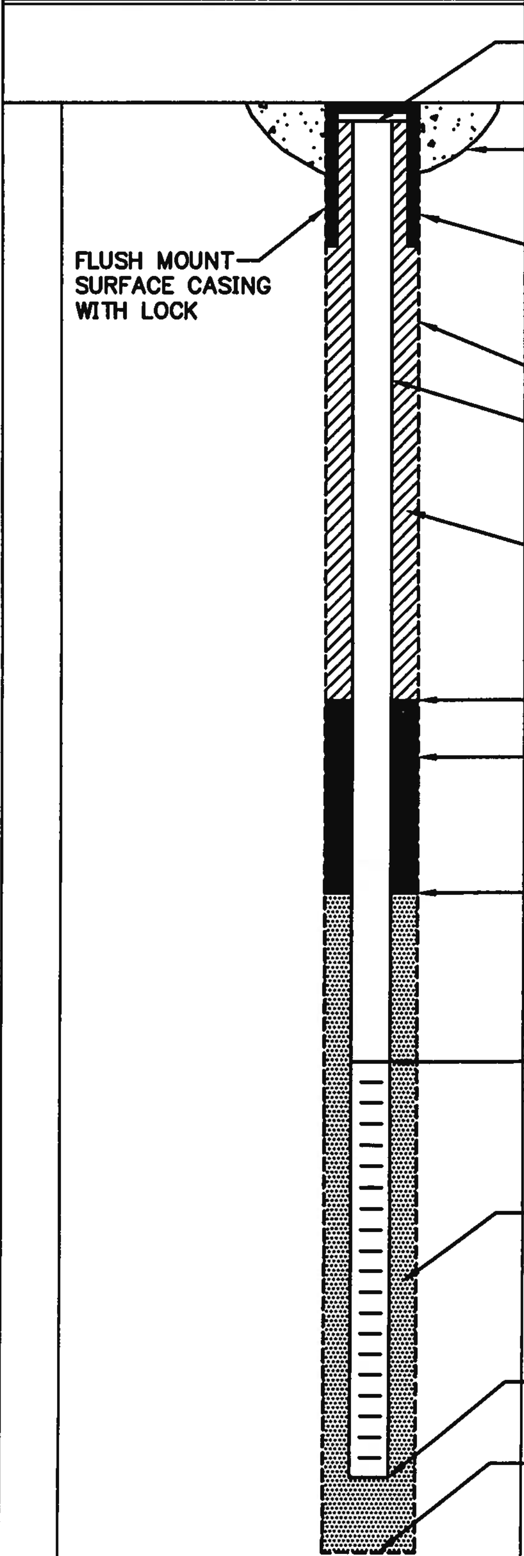

ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: ~~PORTLAND CEMENT~~ High Strength ~~CONCRETE~~

TYPE OF PROTECTIVE CASING: STEEL (ROUND)

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: Portland cement/ bentonite gel grout

ELEVATION/DEPTH TOP OF SEAL: / 19

TYPE OF SEAL: Bentonite Chips

ELEVATION/DEPTH TOP OF SAND: / 23

ELEVATION/DEPTH TOP OF SCREEN: / 25

TYPE OF SCREEN: 1" PVC

SLOT SIZE x LENGTH: 0.01 X 10'

TYPE OF SAND PACK: 20-40 mesh silica

DIAMETER OF HOLE IN ~~BEDROCK~~: NA

ELEVATION / DEPTH BOTTOM OF SCREEN: / 35

ELEVATION / DEPTH BOTTOM OF SAND: / 35

ELEVATION/DEPTH BOTTOM OF HOLE: / 35

BACKFILL MATERIAL BELOW SAND: N/A

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: MPE - 3S/3I
DATE: 10/20/11
GEOLOGIST: Walter O'Neill
DRILLER: Adam Anderson

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
					PLASTIC		DARK BROWN TO GRAY CLAYEY SILT, SLIGHTLY MOIST						
					SOFT TO		RED BROWN SANDY SILT						
					VERY SLIGHTLY PLASTIC		SLIGHTLY MOIST						
					SOFT		RED BROWN SILTY SAND SLIGHTLY MOIST						
	5				SLIGHTLY		RED BROWN CLAYEY						
					PLASTIC		SILT, V. SLIGHT MOISTURE						
					DENSE HARD		RED BROWN (TOP) TO ORANGE TAN SILTY CLAY TO CLAY, DRY						
					SLIGHTLY PLASTIC		RED BROWN CLAYEY SILT V. SLIGHT MOISTURE						
	10				FAIRLY SOFT		RED GRAY SANDY SILT V. SLIGHT MOISTURE						
							Red Brown sandy						
					slightly plastic		SILT, slightly moist						
	15												
					SLIGHTLY PLASTIC SOFT		RED BROWN SILTY SAND W/SOME CLAY MOIST						
					slightly		Red Brown silty						
					plastic		clay, slightly moist						
	20				dense to slightly		RED BROWN ORANGE SILTY CLAY TO CLAY, slightly moist						
					plastic								
					SOFT (SAND)		Red Brown silty						
					to PLASTIC		SAND to SANDY SILT						
					(clay)		moist (top) to wet (bottom)						
	25						clay lenses @ 23', 25' & 25.5'						

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ______ Well I.D. #: MPE-3S & MPE-3I
2 S

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: MPE - 3S/3I
DATE: 10/20/11
GEOLOGIST: Walter O'Niell
DRILLER: Adam Anderson

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	25						See Above						
							RED BROWN						
					SOFT		SILTY SAND,						
							MOIST TO WET						
	30												
							RED, BROWN, ORANGE						
					DENSE STIFF		SILTY CLAY to CLAY						
							DRY						
	35												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ______ No ______ Well I.D. #: ______

WELL NO.: IW-N

Tetra Tech NUS, Inc.

OVERBURDEN
MONITORING WELL SHEET
FLUSH - MOUNT

PROJECT MRC INJ. TEST	LOCATION MIDDLE RIVER MD	DRILLER ADAM ANDERSON
PROJECT NO.	BORING ~~[illegible]~~ IW-N	DRILLING METHOD Roto Sonic
DATE BEGUN 10/21/11	DATE COMPLETED 10/22/11 pvc installed	
FIELD GEOLOGIST Walter Ollic		DEVELOPMENT METHOD
GROUND ELEVATION	DATUM	

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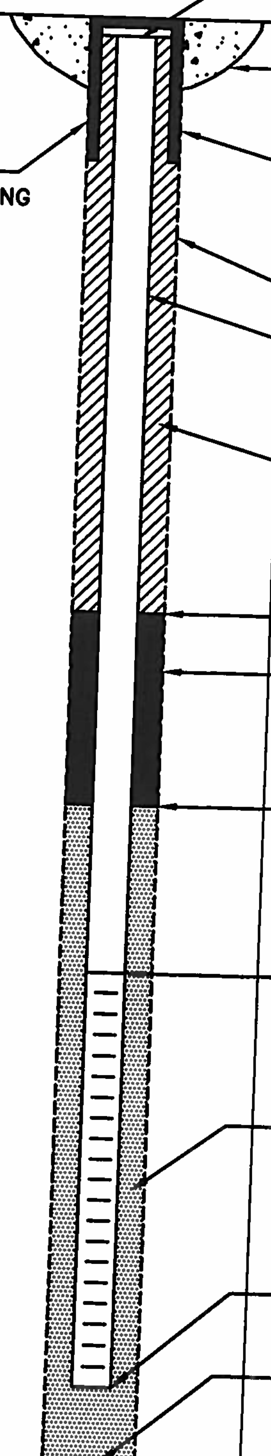
FLUSH MOUNT SURFACE CASING WITH LOCK



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: ~~Portland cement~~ High strength concrete

TYPE OF PROTECTIVE CASING: round steel

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Portland Cement/ Bentonite Gel Grout

ELEVATION/DEPTH TOP OF SEAL: / 15

TYPE OF SEAL: Bentonite chips

ELEVATION/DEPTH TOP OF SAND: / 18

ELEVATION/DEPTH TOP OF SCREEN: / 20

TYPE OF SCREEN: 1" PVC

SLOT SIZE x LENGTH: 0.01" X 15'

TYPE OF SAND PACK: 20-40 mesh silica

DIAMETER OF HOLE IN ~~BEDROCK:~~ N/A

ELEVATION / DEPTH BOTTOM OF SCREEN: / 35

ELEVATION / DEPTH BOTTOM OF SAND: / 35

ELEVATION/DEPTH BOTTOM OF HOLE: / 35

BACKFILL MATERIAL BELOW SAND: N/A

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: IW-N
DATE: 10/21/11
GEOLOGIST: Walter O'Niell
DRILLER: Adam Anderson

Depth (Ft.) or Run No.	Soil Density/ Consistency or Rock Hardness	Material Classification	Remarks (PID/FID Reading (ppm))
0	HARD	ASPHALT	
	STIFF	BROWN FILL W/ GRAVEL, DRY	0.0
	SOFT	OFF WHITE DECOMPOSED CONCRETE (TOP) TO	
	HARD	CONCRETE (BASE), DRY	
	SOFT TO SLIGHTLY PLASTIC	RED BROWN CLAYEY SILT, DRY	0.0
5	stiff	red/brown/off white silty clay, dry	0.0
	Friable	Red brown sandy silt w/ some clay, dry	0.0
	SLIGHTLY PLASTIC	BROWN SILTY CLAY TO CLAYEY SILT, VERY SLIGHTLY MOIST	
	FRIABLE	BROWN SILTY CLAY TO CLAYEY SILT, V. SLIGHTLY MOIST	3.5
10	SOFT	GRAY BROWN SILTY SAND, S. MOIST	
	SOFT	BROWN SILTY SAND MOIST	3.1
	SLIGHTLY PLASTIC	BROWN SILTY CLAY W/ GRAY STREAKS, VERY SLIGHT MOISTURE	16.4
15			11.2
	SLIGHTLY PLASTIC	BROWN SILTY CLAY VERY SLIGHT MOISTURE	10.4
			27.8
20			
			7.8
	PLASTIC	BROWN SILTY CLAY SLIGHTLY MOIST	
	SOFT	RED BROWN SILTY COARSE SAND, WET	56.9
25		SEE NEXT PAGE	54

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ___ Well I.D. #: IW-N

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: IW-N
DATE: 10/21/11
GEOLOGIST: Walter O'Neill
DRILLER: ADAM ANDERSON

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	25												
					STIFF		RED BROWN SILTY CLAY DRY						
					FRIABLE		RED BROWN SILTY COARSE SAND DRY						
					SLIGHTLY		RED BROWN SILTY CLAY						
					PLASTIC TO		W/ GRAY STREAKS @ 27-28', very						
	30				PLASTIC		slight moisture						
					PLASTIC		Red Brown silty clay						
							SLIGHTLY MOIST						
					STIFF ~~PLASTIC~~		GRAY SILTY CLAY ~~SLIGHTLY MOIST~~ DRY						
	35				PLASTIC		GRAY SILTY CLAY, SLIGHTLY PLASTIC						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: IW-N

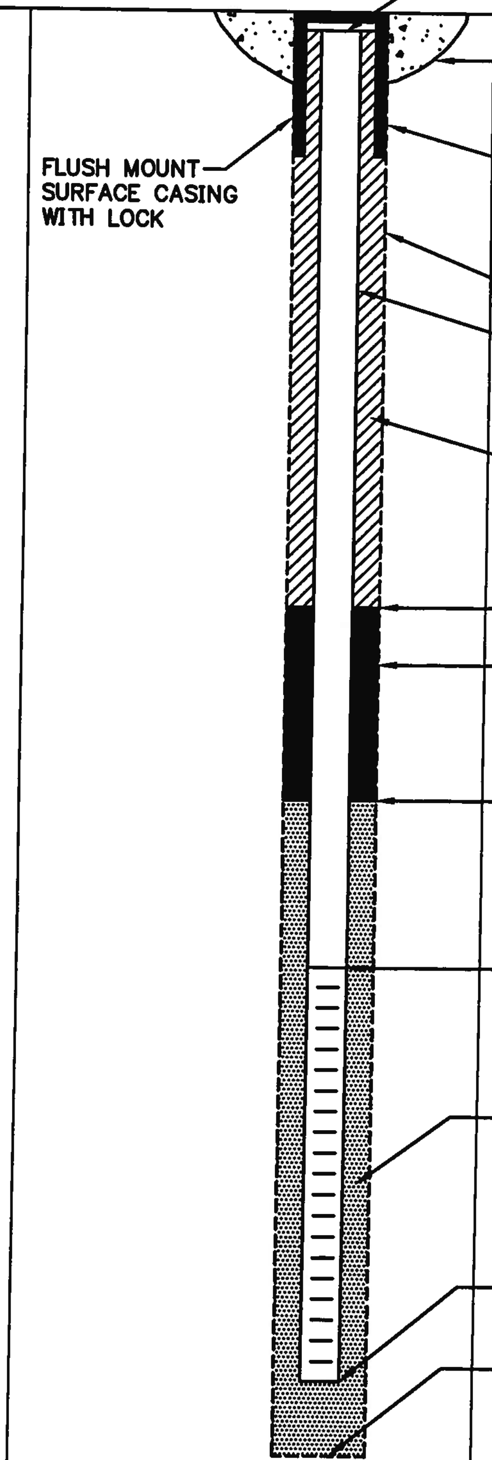
WELL NO.: MPN-1S

Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

PROJECT MRC INJECTION TEST LOCATION Middle River, MD
PROJECT NO. ________ BORING MPN-1S/1I
DATE BEGUN 10/22/11 DATE COMPLETED 10/22/11
FIELD GEOLOGIST Walter O'Neill
GROUND ELEVATION ________ DATUM ________

DRILLER Adam Anderson
DRILLING METHOD Roto Sonic
DEVELOPMENT METHOD ________



ELEVATION TOP OF RISER: ________

TYPE OF SURFACE SEAL: ~~Portland Cement~~ High strength concrete

TYPE OF PROTECTIVE CASING: Round Steel

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: Portland cement w/ bentonite gel grout

ELEVATION/DEPTH TOP OF SEAL: / 5

TYPE OF SEAL: Bentonite chips

ELEVATION/DEPTH TOP OF SAND: / 7

ELEVATION/DEPTH TOP OF SCREEN: / 9
TYPE OF SCREEN: 1" PVC
SLOT SIZE x LENGTH: 0.01" X 5'

TYPE OF SAND PACK: 20-40 mesh silica

DIAMETER OF HOLE IN ~~BEDROCK~~: N/A

ELEVATION / DEPTH BOTTOM OF SCREEN: / 14
ELEVATION / DEPTH BOTTOM OF SAND: / 15
ELEVATION/DEPTH BOTTOM OF HOLE: / 35
BACKFILL MATERIAL BELOW SAND: ← see MPN-1I

ACAD: FORM_MWFM.dwg 07/20/99 INL

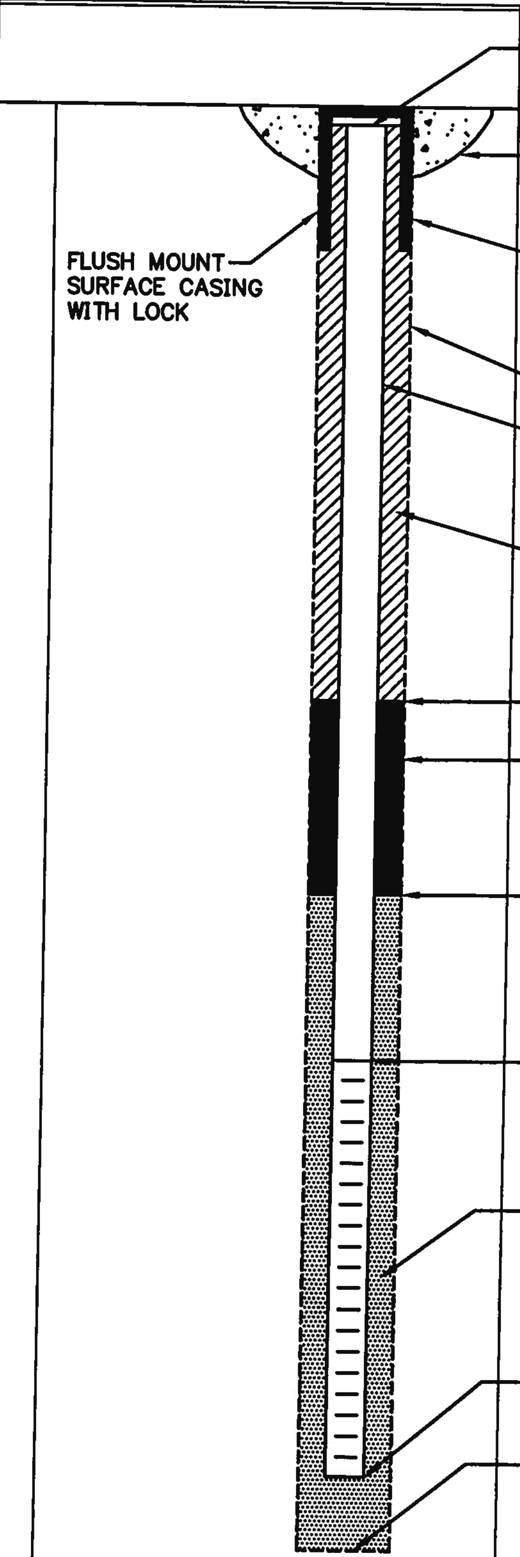
WELL NO.: MPN-1I

Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

PROJECT MRC INJECTION TEST
LOCATION Middle River, MD
PROJECT NO.
BORING MPN-15/1I
DATE BEGUN 10/22/11
DATE COMPLETED 10/22/11
FIELD GEOLOGIST Walter O'Neill
GROUND ELEVATION
DATUM

DRILLER Adam Anderson
DRILLING METHOD Robosonic
DEVELOPMENT METHOD



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: ~~Portland Cement~~ High strength concrete

TYPE OF PROTECTIVE CASING: ROUND STEEL

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: Portland cement/ Bentonite gel grout

ELEVATION/DEPTH TOP OF SEAL: / 15

TYPE OF SEAL: Bentonite Chips

ELEVATION/DEPTH TOP OF SAND: / 18

ELEVATION/DEPTH TOP OF SCREEN: / 20
TYPE OF SCREEN: 1" PVC
SLOT SIZE x LENGTH: 0.01" x 10'

TYPE OF SAND PACK: 20-40 mesh silica

DIAMETER OF HOLE IN BEDROCK: N/A

ELEVATION / DEPTH BOTTOM OF SCREEN: / 30
ELEVATION / DEPTH BOTTOM OF SAND: / ~~[illegible]~~ 31
ELEVATION/DEPTH BOTTOM OF HOLE: / ~~[illegible]~~ 35
BACKFILL MATERIAL BELOW SAND: ~~[illegible]~~ Bentonite Chips

ACAD: FORM_MWFM.dwg 07/20/99 INL

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MAC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: MPN-15/1I
DATE: 10/22/11
GEOLOGIST: Walter O'Neill
DRILLER: Adam Anderson

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0				HARD		ASPHALT						
					very slightly plastic		BROWN FILL MATERIAL SILT TO GRAVEL V. SLIGHTLY MOIST			0.0			
					slightly plastic		DECOMPOSED CONCRETE/CLAY SLIGHT						
							Concrete			0.0			
					STIFF		GRAY CLAY, DRY						
	5									0.0			
					SLIGHTLY PLASTIC		BROWNGRAY SILTY CLAY, V. slightly moist						
							BROWN SILT W/ CLAY V. slight moisture			1.0			
					slightly plastic		BROWN SILTY CLAY SLIGHTLY MOIST			4.3			
	10												
					SOFT		BROWN SILTY FINE SAND SLIGHTLY MOIST			17.6			
					STIFF		BROWN SILTY CLAY, GRAY STREAKS, DRY			18.0			
					STIFF		Red BROWN CLAY DENSE, DRY						
	15									48.1			
					VERY SLIGHTLY PLASTIC		BROWN SILTY CLAY W/ FINE SAND, VERY SLIGHT MOISTURE			46.8			
										86.1			
	20				FAIRLY SOFT		BROWN SILTY SAND, MOIST						
					SLIGHTLY PLASTIC		BROWN SILTY CLAY W/SAND SLIGHTLY MOIST			106			
					SLIGHTLY PLASTIC		RED BROWN SILTY TO SANDY CLAY SLIGHTLY MOIST						
					SOFT		RED BROWN SILTY COARSE SAND TO CLAY, MOIST			181			
					PLASTIC		RED BROWN SILTY CLAY SLIGHTLY MOIST						
	25						See Next page			79			

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: 25 Yes X No ______ Well I.D. #: MPN-15 & MPN-1I

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MAC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: Boart Longyear
DRILLING RIG: Spider Sonic

BORING No.: MPN-1S/1I
DATE: 10/22/11
GEOLOGIST: Walter O'Neill
DRILLER: Adam Anderson

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	25				very slightly plastic		Red, brown, gray silty clay, very slightly moist			79			
										30.7			
					STIFF		RED BROWN CLAY w/ GRAY STREAKS @ 27' & 28', dry			12.5			
	30				STIFF		Red Brown silty clay DRY						
					PLASTIC		RED BROWN SILTY CLAY SLIGHTLY MOIST			0.9			
					SLIGHTLY PLASTIC		Red/GRAY SILTY CLAY SLIGHTLY MOIST			0.0			
	35				STIFF		GRAY CLAY, DENSE DRY			0.0			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: MPN-1S & MPN-1I

2 9

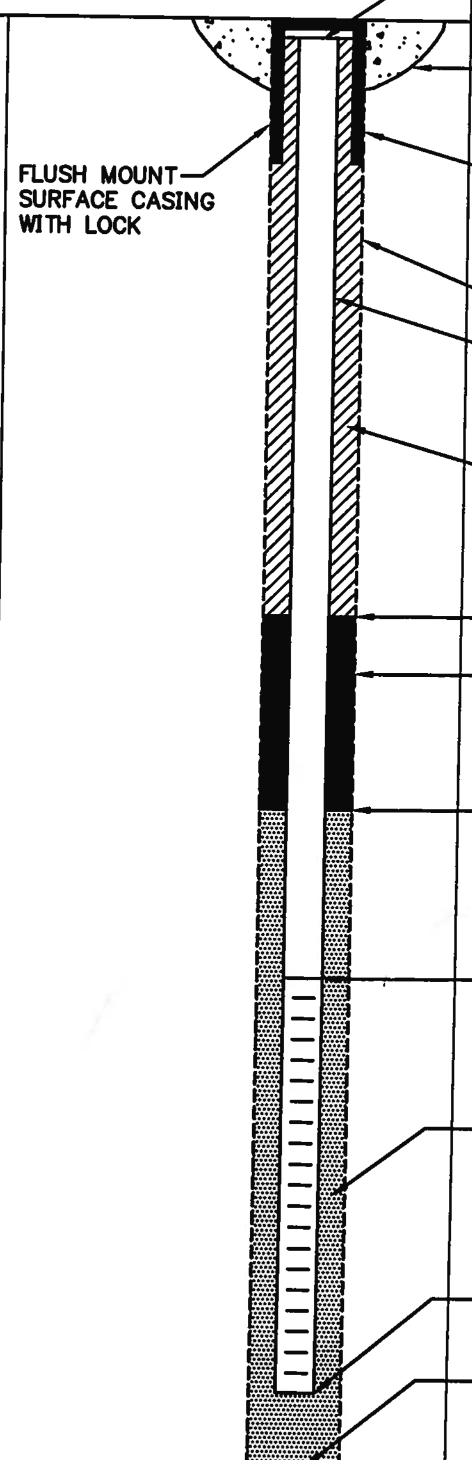
WELL NO.: MPN-2S

Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

PROJECT MRC INJECTION TEST	LOCATION Middle River, MD	DRILLER Adam Anderson
PROJECT NO.	BORING MPN - ~~2~~2S/2I	DRILLING METHOD Roto Sonic
DATE BEGUN 10/22/11	DATE COMPLETED 10/22/11	
FIELD GEOLOGIST Walter O'Neill		DEVELOPMENT METHOD
GROUND ELEVATION	DATUM	

ACAD: FORM_MWFM.dwg 07/20/99 INL



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: ~~Portland Cement~~ High strength concrete

TYPE OF PROTECTIVE CASING: Round Steel

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: Portland cement/ Bentonite gel grout

ELEVATION/DEPTH TOP OF SEAL: / 5

TYPE OF SEAL: Bentonite Chips

ELEVATION/DEPTH TOP OF SAND: / 7

ELEVATION/DEPTH TOP OF SCREEN: / 9

TYPE OF SCREEN: 1" PVC

SLOT SIZE x LENGTH: 0.01" X

TYPE OF SAND PACK: 20-40 mesh silica

DIAMETER OF HOLE IN ~~BEDROCK~~: NA

ELEVATION / DEPTH BOTTOM OF SCREEN: / 14

ELEVATION / DEPTH BOTTOM OF SAND: / 15

ELEVATION/DEPTH BOTTOM OF HOLE: / 35

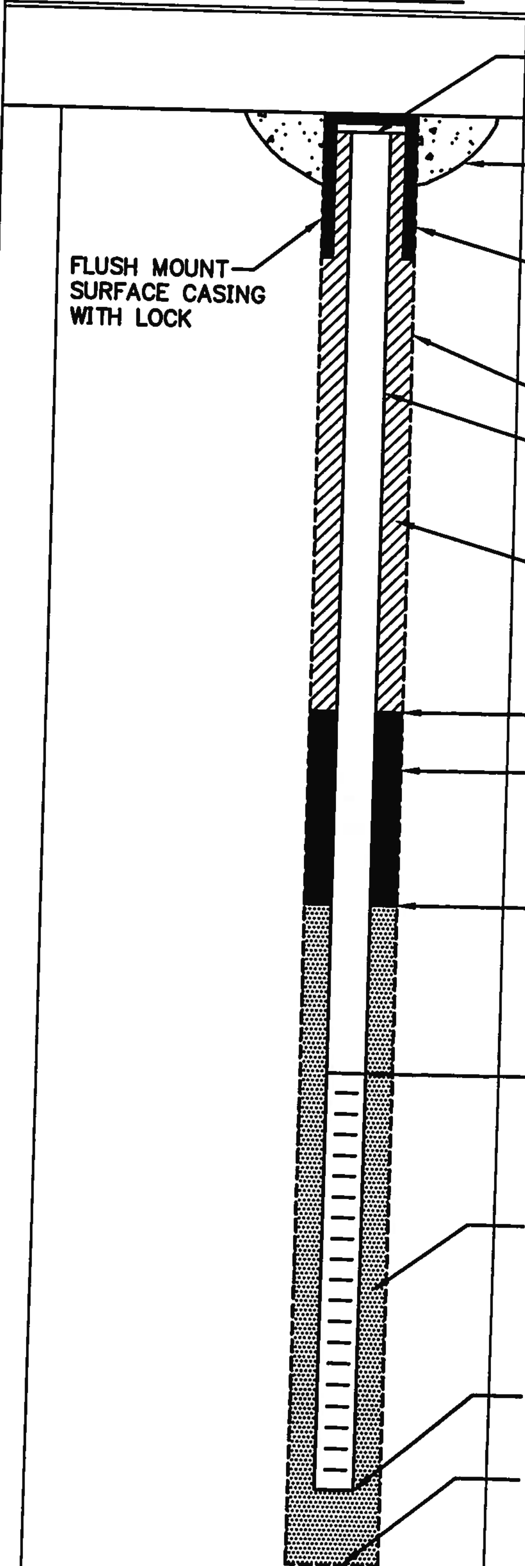
BACKFILL MATERIAL BELOW SAND: See MPN-2I

Tetra Tech NUS, Inc.

WELL NO.: MPN - 2I

OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

PROJECT MRC INJECTION TEST	LOCATION Middle River, MD	DRILLER ADAM ANDERSON
PROJECT NO.	BORING MPN - 2S/2I	DRILLING METHOD ROTO SONIC
DATE BEGUN 10/22/11	DATE COMPLETED 10/22/11	DEVELOPMENT METHOD
FIELD GEOLOGIST Walter O'Neill		
GROUND ELEVATION	DATUM	



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: ~~Portland Cement~~ High strength concrete

TYPE OF PROTECTIVE CASING: Round Steel

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: Portland cement/ Bentonite gel grout

ELEVATION/DEPTH TOP OF SEAL: / 15

TYPE OF SEAL: Bentonite Chips

ELEVATION/DEPTH TOP OF SAND: / 18

ELEVATION/DEPTH TOP OF SCREEN: / 20

TYPE OF SCREEN: 1" PVC

SLOT SIZE x LENGTH: 0.01" X

TYPE OF SAND PACK: 20-40 wash silica

DIAMETER OF HOLE IN BEDROCK: N/A

ELEVATION / DEPTH BOTTOM OF SCREEN: / 30

ELEVATION / DEPTH BOTTOM OF SAND: / 31

ELEVATION/DEPTH BOTTOM OF HOLE: / 35

BACKFILL MATERIAL BELOW SAND: BENTONITE CHIPS

ACAD:FORM_MWFM.dwg 07/20/99 INL

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: MPN-2S/2I
DATE: 10/22/11
GEOLOGIST: Walter O'Neill
DRILLER: Adam Anderson

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0				HARD		ASPHALT						
					SLIGHTLY PLASTIC		BROWN FILL MATERIAL SILT TO GRAVEL, SLIGHTLY MOIST			0.0			
					PLASTIC		DECOMPOSED CONCRETE TO CLAY SLIGHTLY MOIST CONCRETE			0.0			
					STIFF		RED BROWN GRAY CLAY TO SILTY CLAY, DRY						
	5												
					very slightly plastic		GRAY/RED SILT TO SANDY SILT very slightly moist			0.0			
					very slightly plastic		BROWN SILTY CLAY very slight moisture			0.0			
					FRIABLE		BROWN CLAYEY SILT DRY						
					SOFT		Red brown silty sand slightly moist to moist			3.2			
	10				PLASTIC		BROWN GRAY SILTY CLAY SLIGHTLY MOIST						
					SOFT		BROWN SILTY SAND, MOIST			8.8			
					SOFT		BROWN RED SANDY CLAY TO CLAYEY SAND SLIGHTLY MOIST			18.3			
	15						REDDISH BROWN			19.3			
					slightly plastic		SILTY CLAY, VERY SLIGHTLY MOIST						
										10.4			
					stiff		Red, brown, orange silty clay, dense, dry			12.6			
	20						Red, brown silty						
					very slighty plaste		clay w/ gray streaks			43.1			
							very slighty moist			70.7			
	25									97.5			

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: 2S Yes ____ No X Well I.D. #: MPN-2S & MPN-2I

Tetra Tech NUS, Inc.

BORING LOG

Page 2 of 2

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: MPN-25/2I
DATE: 10/22/11
GEOLOGIST: Walter O'Neill
DRILLER: Adam Anderson

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	25						see previous page			97.5			
					very slightly plastic		Red brown sandy clay very slightly moist			53.7			
										36.1			
	30				stiff		Red brown clay dense, dry						
					plastic		Red silty clay slightly moist			6.6			
										0.0			
	35				soft plastic		gray silty clay, moist			1.1			

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: 25 Yes X No

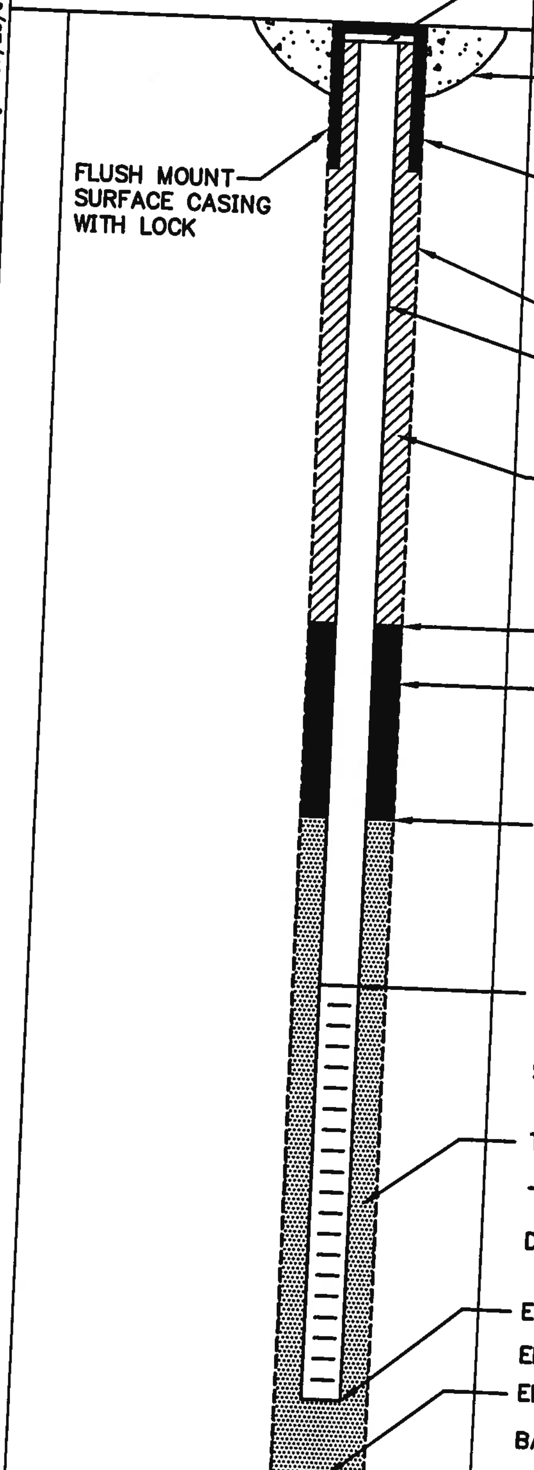
Well I.D. #: MPN-25 & MPN-2I

Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

WELL NO.: IW-W

PROJECT MRC Injection Test	LOCATION Middle River, MD	DRILLER Adam Anderson
PROJECT NO.	BORING IW-W	DRILLING METHOD Boart Longyear Rotosonic
DATE BEGUN 10/17/11	DATE COMPLETED 10/25/11 and R Stallet	
FIELD GEOLOGIST W. ONiell		DEVELOPMENT METHOD
GROUND ELEVATION	DATUM	



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: ~~Portland cement~~ High strength concrete

TYPE OF PROTECTIVE CASING: steel

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: 2" PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Portland cement w/ bentonite gel grout

ELEVATION/DEPTH TOP OF SEAL: / 11'

TYPE OF SEAL: Bentonite chips

ELEVATION/DEPTH TOP OF SAND: / 13'

ELEVATION/DEPTH TOP OF SCREEN: / 15'

TYPE OF SCREEN: 2" wire wrapped PVC

SLOT SIZE x LENGTH: 0.01 X 20'

TYPE OF SAND PACK: quartz sand 20 X 40 mesh

DIAME~~TER OF HOLE IN BEDROCK~~: N/A

ELEVATION / DEPTH BOTTOM OF SCREEN: / 35'

ELEVATION / DEPTH BOTTOM OF SAND: / 35'

ELEVATION/DEPTH BOTTOM OF HOLE: / 35'

BACKFILL MATERIAL BELOW SAND: N/A

ACAD:FORM_MWFM.dwg 07/28/99 INL

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC Injection Test
PROJECT NUMBER:
DRILLING COMPANY: Boart Longyear
DRILLING RIG: Spitzler Sonic

BORING No.: IW-W
DATE: 10/17/11
GEOLOGIST: W. O'Neill
DRILLER: Adam Anderson

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0						DARK BROWN soil						
							red Brown silty soil			0.9			
							reddish brown, moist slightly plastic sandy silt			0.6			
	5						reddish brown moist friable silty sand			0.5			
										1.5			
	10						reddish orange moist slightly plastic sandy silt			0.8			
							gray brown moist to v. slightly plastic silt to sandy silt, gravel in bottom foot			0.6			
							reddish brown, slightly moist, plastic silty clay w/ some v. fine sand			1.8			
	15						reddish brown slightly moist & plastic silty clay			1.8			
							reddish brown dense, very slightly moist & very slightly plastic silty clay			1.4			
	20						reddish brown, dry dense silty clay			1.5			
							reddish brown, very slightly moist to very slightly plastic, dense sandy clay			1.6			
							reddish brown very slightly moist & very slightly plastic silty clay			5.6			
	25						reddish brown, moist slightly plastic silty sand w/ some clay			5.9			

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: IW-W

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC Injection test
PROJECT NUMBER:
DRILLING COMPANY: Boart Longyear
DRILLING RIG: Spitler Sonic

BORING No.: IW-W
DATE: 10/17/11
GEOLOGIST: W. O'Neill
DRILLER: Adam Anderson

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	25						reddish brown, dry clayey, non-plastic silty clay		5.9				
									1.1				
							reddish brown to gray, moist, soft silty sand		6.4				
	30								4.2				
							reddish brown dry stiff silty clay		1.9				
	35								2.1				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.6

Converted to Well: Yes X No ______ Well I.D. #: IW-W

MPW-1S

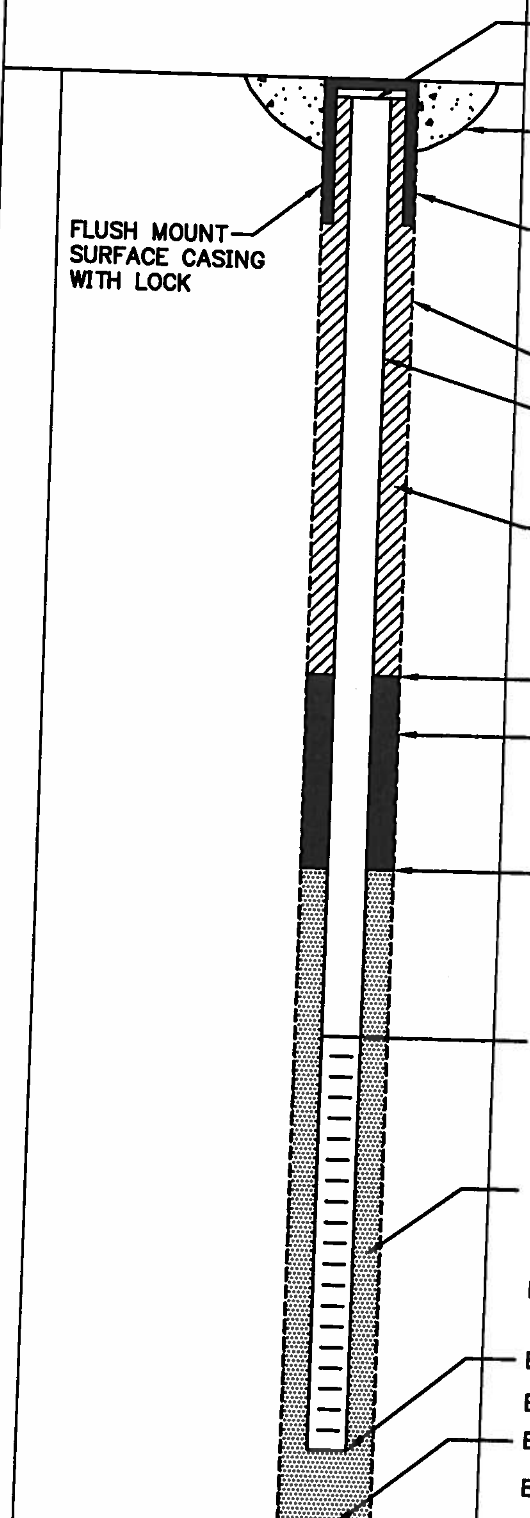
Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

WELL NO.: MPW ~~MWA~~ - 1S

MPW-1S

PROJECT MRC Injection Test	LOCATION Middle River MD	DRILLER Adam Anderson
PROJECT NO.	BORING ~~[illegible]~~	DRILLING METHOD Rotosonic
DATE BEGUN 10/18/11	DATE COMPLETED 10/25/11 pad installed	DEVELOPMENT METHOD
FIELD GEOLOGIST Walter ONiell		
GROUND ELEVATION	DATUM	



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: ~~Portland cement~~ High Strength concrete

TYPE OF PROTECTIVE CASING: STEEL

I.D. OF PROTECTIVE CASING: 12

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: Portland cement bentonite gel grout

ELEVATION/DEPTH TOP OF SEAL: / 6'

TYPE OF SEAL: Bentonite Chips

ELEVATION/DEPTH TOP OF SAND: / 8'

ELEVATION/DEPTH TOP OF SCREEN: / 10'

TYPE OF SCREEN:

SLOT SIZE x LENGTH: 0.01" X 5'

TYPE OF SAND PACK: 20X40 Mesh silica

DIAMETER OF HOLE IN BEDROCK: N/A

ELEVATION / DEPTH BOTTOM OF SCREEN: / ~~[illegible]~~ 15

ELEVATION / DEPTH BOTTOM OF SAND: / ~~[illegible]~~ 16'

ELEVATION/DEPTH BOTTOM OF HOLE: / 35

BACKFILL MATERIAL BELOW SAND: N/A

see well MPW-1I

ACAD: FORM_MWFM.dwg 07/20/99 INL

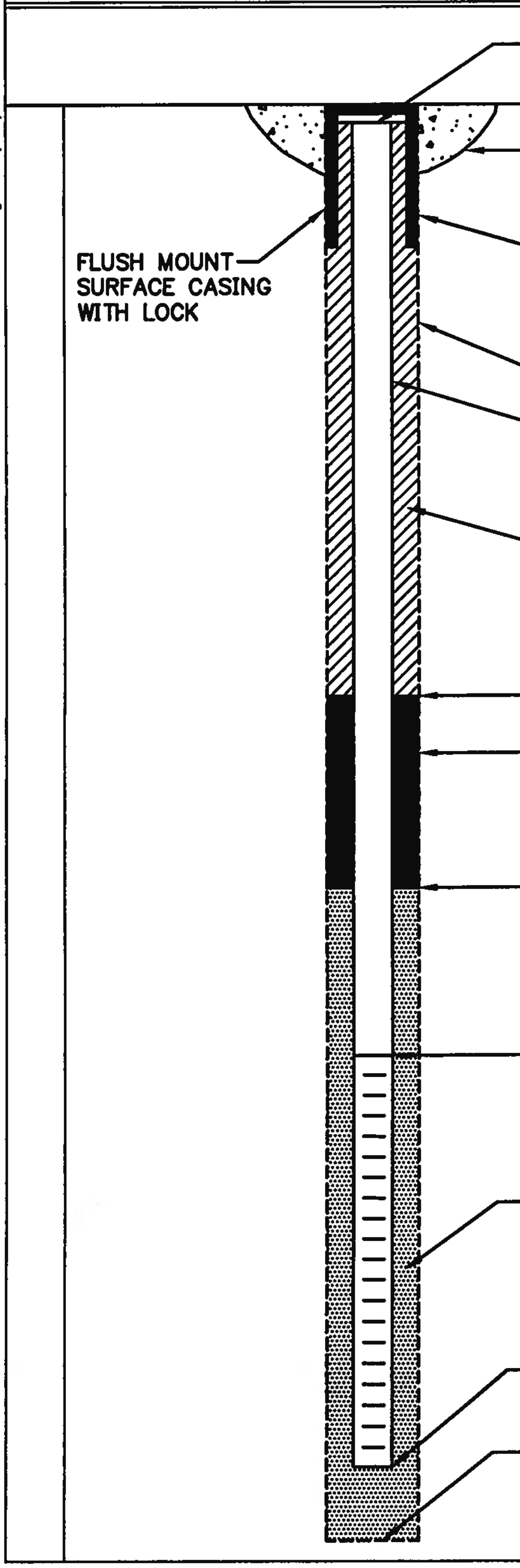
MPW - 1I

WELL NO.: MPW - 1I

Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

PROJECT MRC Injection Test	LOCATION Middle River, MD	DRILLER Adam Anderson
PROJECT NO.	BORING MPW - 1I	DRILLING METHOD Roto Sonic
DATE BEGUN 10/18/11	DATE COMPLETED 10/25/11 grd installed	
FIELD GEOLOGIST Walter ONeill		DEVELOPMENT METHOD
GROUND ELEVATION	DATUM	



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: ~~Portland cement~~ High strength concrete

TYPE OF PROTECTIVE CASING: steel

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: Portand cement / bentonite gel grout

ELEVATION/DEPTH TOP OF SEAL: / 16'

TYPE OF SEAL: Bentonite chips

ELEVATION/DEPTH TOP OF SAND: / 23'

ELEVATION/DEPTH TOP OF SCREEN: / 25'

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.01 X 10'

TYPE OF SAND PACK: 20-40 mesh silica

DIAMETER OF HOLE IN B~~EDROCK~~: N/A

ELEVATION / DEPTH BOTTOM OF SCREEN: /35'

ELEVATION / DEPTH BOTTOM OF SAND: / 35'

ELEVATION/DEPTH BOTTOM OF HOLE: /35'

BACKFILL MATERIAL BELOW SAND: N/A

ACAD:FORM_MWFM.dwg 07/20/99 INL

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: MPW - 15/1I
DATE: 10/18/11
GEOLOGIST: Walter O'Niell
DRILLER: Adam Anderson

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	U S C S *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0				Soft		GRAY BROWN SILTY SOIL		0.0				
					STIFF		MED. BROWN SILT, VERY SLIGHTLY MOIST, STIFF		0.4				
	5				SLIGHTLY Plastic		ORANGE, BROWN SANDY SILT W/ CLAY		1.4				
					SOFT		REDDISH BROWN SILTY SAND V. SLIGHTLY MOIST		1.1				
					very slightly plastic		ORANGE TO GRAY SILT MOIST		1.2				
	10						NO RECOVERY						
					SOFT		GRAY SILTY SAND MOIST		2.0				
					SOFT		RED BROWN SILTY SAND W/ GRAVEL, MOIST						
	15				SLIGHTLY PLASTIC		RED BROWN DENSE SILTY CLAY W/ SOME VERY FINE SAND, SLIGHTLY MOIST		3.3 3.4				
					SLIGHTLY PLASTIC		RED BROWN SANDY CLAY, DENSE, SLIGHTLY MOIST		2.9				
	20				SLIGHTLY PLASTIC		RED BROWN SILTY CLAY SLIGHTLY MOIST		1.3				
									0.7				
									2.8				
	25				SLIGHTLY PLASTIC		RED BROWN CLAY, DENSE, V. SLIGHTLY MOIST		7.3				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: MPW - 15 and 1I

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION PROJECT
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: MPW - 1S/1I
DATE: 10/18/11
GEOLOGIST: Walter O'Neill
DRILLER: Adam Anderson

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	25						SEE PREV. PAGE						
					very		RED BROWN		7.3				
					slightly plastic		SANDY CLAY DENSE SLIGHTLY MOIST		[illegible]				
					very slightly plastic		RED BROWN SANDY CLAY, DENSE, SLIGHTLY MOIST		Some pebbles				
							RED BROWN SILTY		8.3				
	30				SOFT		SAND, MOIST						
									4.9				
					SOFT		LIGHT GRAY SILTY SAND, wet		8.4				
	35				STIFF		RED BROWN SILTY CLAY W/GRAY MOTTLES, DRY		3.4				

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

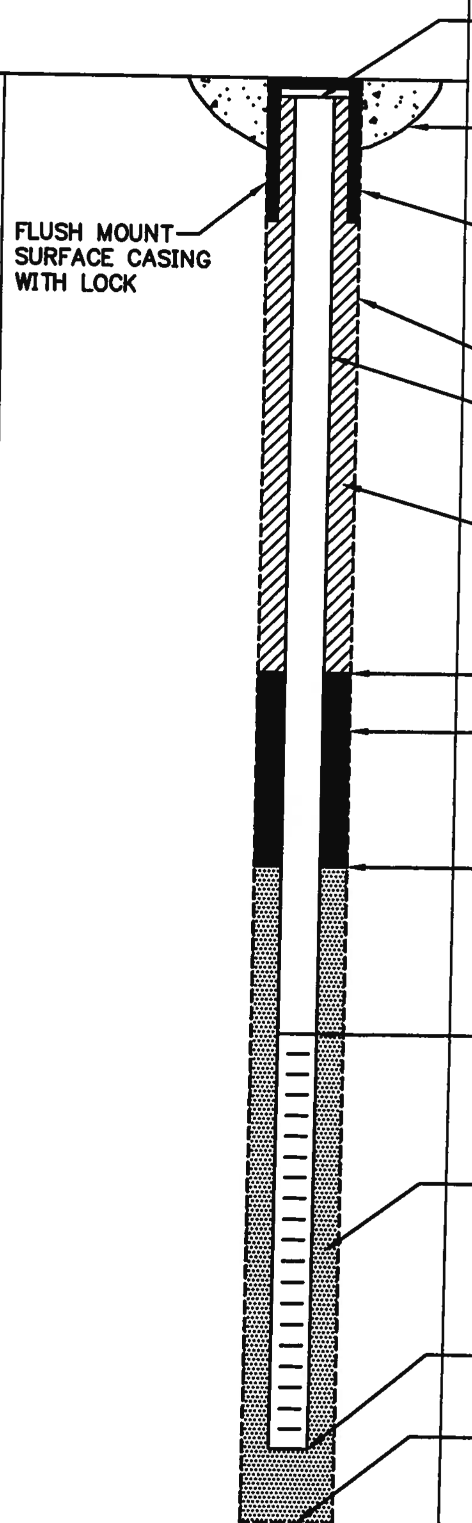
Converted to Well: Yes X No ____ Well I.D. #: MWP - 1S and 1I

Tetra Tech NUS, Inc.

WELL NO.: MPW-2S

OVERBURDEN
MONITORING WELL SHEET
FLUSH - MOUNT

PROJECT MRC Injection test PROJECT NO. ____ DATE BEGUN 10/18/11 FIELD GEOLOGIST Walter ONiell GROUND ELEVATION ____	LOCATION Middle River, MD BORING MPW-2S DATE COMPLETED 10/25/11 well installed DATUM ____	DRILLER Adam Anderson DRILLING METHOD Roto Sonic DEVELOPMENT METHOD ____



ELEVATION TOP OF RISER: ____

TYPE OF SURFACE SEAL: ~~Portland Cement~~ High strength concrete

TYPE OF PROTECTIVE CASING: steel

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: Portland Cement/bentonite gel grout

ELEVATION/DEPTH TOP OF SEAL: 103

TYPE OF SEAL: Bentonite chips

ELEVATION/DEPTH TOP OF SAND: 105

ELEVATION/DEPTH TOP OF SCREEN: 107

TYPE OF SCREEN: PVC (1")

SLOT SIZE x LENGTH: 0.01 X 10'

TYPE OF SAND PACK: 20-40 mesh silica

DIAMETER OF HOLE IN ~~BEDROCK~~: ____

ELEVATION / DEPTH BOTTOM OF SCREEN: 117

ELEVATION / DEPTH BOTTOM OF SAND: 118

ELEVATION/DEPTH BOTTOM OF HOLE: 135'

BACKFILL MATERIAL BELOW SAND: ____

See MPW-2I

ACAD: FORM_MWFM.dwg 07/20/99 INL

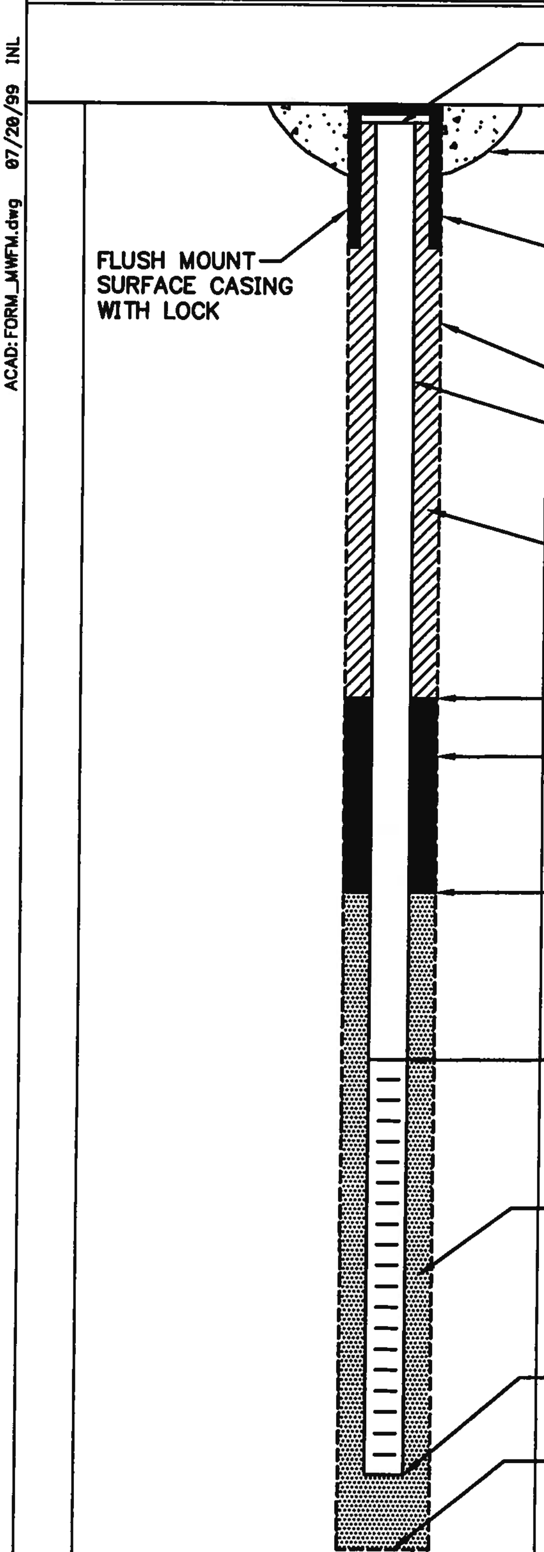
WELL NO.: MPW-2I

Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

PROJECT MRC Injection test	LOCATION Middle River, MD	DRILLER Adam Anderson
PROJECT NO.	BORING MPW-2I	DRILLING METHOD Roto Sonic
DATE BEGUN 10/18/11	DATE COMPLETED 10/25/11 pad installed	
FIELD GEOLOGIST Walter O'Neill		DEVELOPMENT METHOD
GROUND ELEVATION	DATUM	

ACAD: FORM_MWFM.dwg 07/20/99 INL



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: ~~Portland cement~~ High strength concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: Bentonite chips See MPW-1S

ELEVATION/DEPTH TOP OF SEAL: / 18

TYPE OF SEAL: Bentonite Chips

ELEVATION/DEPTH TOP OF SAND: / 23

ELEVATION/DEPTH TOP OF SCREEN: / 25

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.01 X 10'

TYPE OF SAND PACK: 20-40 mesh silica

DIAMETER OF HOLE IN ~~BEDROCK~~: NA

ELEVATION / DEPTH BOTTOM OF SCREEN: / 35

ELEVATION / DEPTH BOTTOM OF SAND: / 35

ELEVATION/DEPTH BOTTOM OF HOLE: / 35

BACKFILL MATERIAL BELOW SAND: N/A

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: MPW-25/2I
DATE: 10/18/11
GEOLOGIST: Walter O'Neill
DRILLER: ADAM ANDERSON

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0				SLIGHTLY PLASTIC		GRAY SILTY CLAY, SLIGHTLY MOIST						
					SLIGHTLY PLASTIC		LT. BROWN/GRAY SILTY CLAY W/ FINE SAND, SLIGHTLY MOIST		0.0				
					SOFT		RED TO REDDISH BROWN SILTY SAND MOIST		0.0				
	5								0.3				
					VERY SLIGHTLY PLASTIC		ORANGE SILTY SAND W/ ~~[illegible]~~ CLAY @ BASE, SLIGHTLY MOIST		0.1				
					SLIGHTLY PLASTIC		ORANGE GRAY CLAYEY SILT SLIGHTLY MOIST		0.1				
					SOFT		ORANGE SILTY SAND, MOIST						
	10				PLASTIC		GRAY CLAYEY SILT TO SILTY CLAY [illegible] MOIST						
					SLIGHTLY PLASTIC		REDDISH GRAY CLAYEY SILT, V. SLIGHTLY MOIST		1.5				
					PLASTIC		REDDISH GRAY TO TAN SILTY CLAY, SLIGHTLY MOIST		2.5				
	15								2.2				
					SLIGHTLY PLASTIC		REDDISH BROWN SILTY CLAY VERY SLIGHTLY MOIST		2.4				
									1.9				
	20				SOFT		RED BROWN SILTY SAND W/ CLAY MOIST						
					SLIGHTLY PLASTIC		REDDISH BROWN SILTY CLAY VERY SLIGHTLY MOIST		0.1				
									1.0				
	25								3.5				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Wells 2 Yes X No ____ Well I.D. #: MPW-25 & 2I

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: MPW- ~~#~~25 / 2I
DATE: 10/18/11
GEOLOGIST: Walter O'Neill
DRILLER: ADAM ANDERSON

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	25												
					SLIGHTLY PLASTIC		REDDISH BROWN SILTY CLAY V. SLIGHTLY MOIST		9.5				
									8.3				
					SOFT		REDDISH BROWN SILTY SAND, MOIST TO WET		6.4				
	30												
									2.0				
					SOFT		GRAY SILTY SAND WET		3.0				
					PLASTIC		REDDISH BROWN W/ GRAY MOTTLES, SILTY CLAY VERY SLIGHT MOISTURE						
	35								0.5				

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm):

Converted to Well: Yes X No ____ Well I.D. #: MPW-25 & MPW-2I

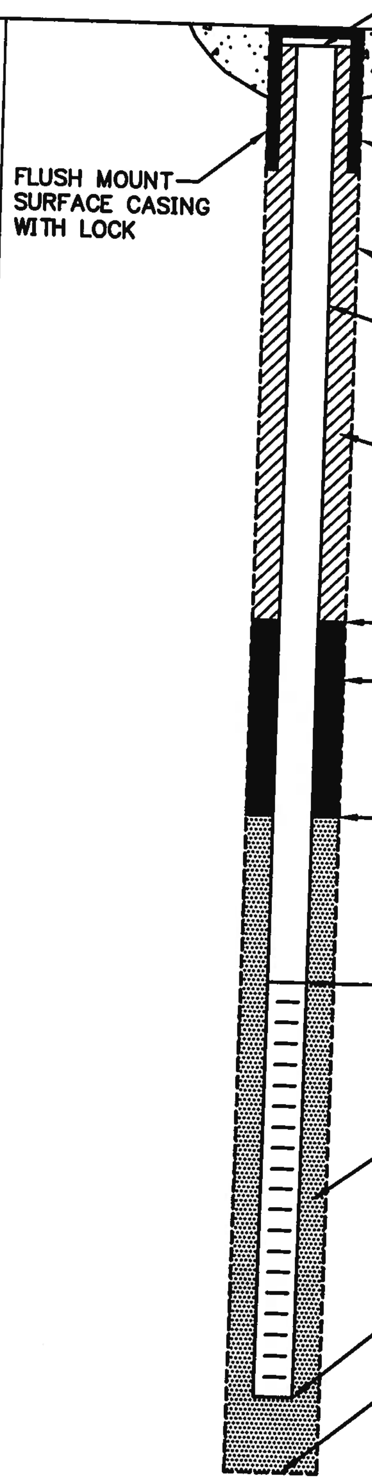
5
2

Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

WELL NO.: MPW-3S~~E~~

PROJECT: MRC INJECTION TEST	LOCATION: Middle River, MD	DRILLER: ADAM ANDERSON
PROJECT NO.:	BORING: MPW-3S	DRILLING METHOD: BOYART-LONGYEAR ROTO SONIC
DATE BEGUN: 10/18/11	DATE COMPLETED: 10/25/11	
FIELD GEOLOGIST: WALTER O'NJELL		DEVELOPMENT METHOD:
GROUND ELEVATION:	DATUM: pad installed	



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: ~~PORTLAND CEMENT~~ High strength concrete

TYPE OF PROTECTIVE CASING: STEEL

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: PORTLAND CEMENT/ BENTONITE GEL GROUT

ELEVATION/DEPTH TOP OF SEAL: / 4

TYPE OF SEAL: BENTONITE CHIPS

ELEVATION/DEPTH TOP OF SAND: / 6

ELEVATION/DEPTH TOP OF SCREEN: / 8

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.01" x 10'

TYPE OF SAND PACK: 20-40 mesh silica

DIAMETER OF HOLE IN ~~BEDROCK~~: N/A

ELEVATION / DEPTH BOTTOM OF SCREEN: / 13

ELEVATION / DEPTH BOTTOM OF SAND: / 14

ELEVATION/DEPTH BOTTOM OF HOLE: / 35

BACKFILL MATERIAL BELOW SAND: BENTONITE CHIPS (see MPW-3S

ACAD:FORM_MWFM.dwg 07/20/99 INL

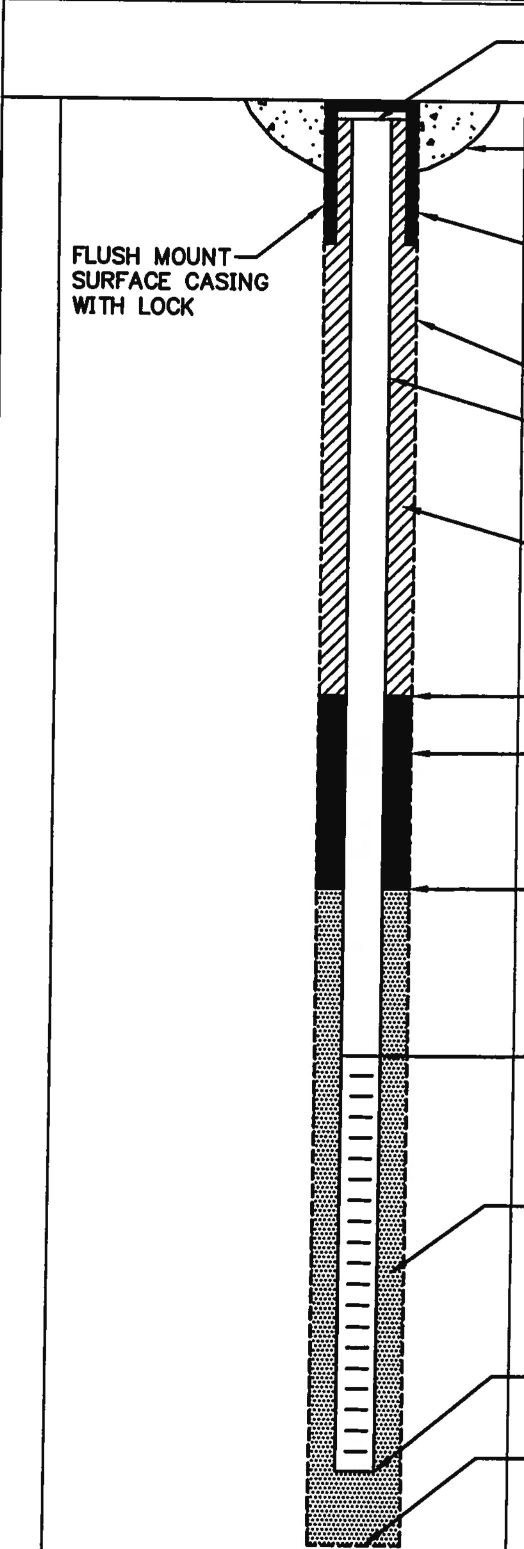
WELL NO.: MPW-3I

Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET FLUSH - MOUNT

PROJECT MRC INJECTION TEST	LOCATION Middle River, MD	DRILLER ADAM ANDERSON
PROJECT NO.	BORING MPW - 3I	DRILLING BOART LONGYEAR
DATE BEGUN 10/18/11	DATE COMPLETED 10/25/11	METHOD ROTO SONIC
FIELD GEOLOGIST Walter ONiell	pad installed	
GROUND ELEVATION	DATUM	DEVELOPMENT METHOD

ACAD: FORM_MWFM.dwg 07/20/99 INL



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: ~~PORTLAND CEMENT~~ High strength concrete

TYPE OF PROTECTIVE CASING: STEEL

I.D. OF PROTECTIVE CASING: 12"

DIAMETER OF HOLE: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 1"

TYPE OF BACKFILL/SEAL: Portland cement/ bentonite gel grout

ELEVATION/DEPTH TOP OF SEAL: / 14

TYPE OF SEAL: BENTONITE CHIPS

ELEVATION/DEPTH TOP OF SAND: / 23'

ELEVATION/DEPTH TOP OF SCREEN: / 25'

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.01 in x 10'

TYPE OF SAND PACK: 20-40 mesh silica

DIAMETER OF HOLE IN ~~BEDROCK~~: NA

ELEVATION / DEPTH BOTTOM OF SCREEN: / 35'

ELEVATION / DEPTH BOTTOM OF SAND: / 35'

ELEVATION/DEPTH BOTTOM OF HOLE: / 35'

BACKFILL MATERIAL BELOW SAND: N/A

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: MPW-3S/3I
DATE: 10/18/11
GEOLOGIST: Walter O'Neill
DRILLER: ADAM ANDERSON

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0				SOFT		DARK BROWN/GRAY SILTY SOIL, SLIGHTLY MOIST		0.0				
					SLIGHTLY PLASTIC		RED BROWN GRAY SANDY SILT SLIGHTLY MOIST						
					S. PLASTIC		ORANGE SILTY SAND, MOIST		1.8				
					PLASTIC		RED BROWN SANDY SILT TO SILTY SAND, MOIST						
	5				SOFT		SOFT, PLASTIC NEAR TOP		1.2				
					SOFT		ORANGE SANDY SILT MOIST		0.4				
									0.4				
	10				SOFT		ORANGE SILTY SAND, MOIST						
					PLASTIC		RED BROWN SILTY CLAY SLIGHTLY MOIST		2.8				
					PLASTIC		LT. BROWN SILTY CLAY W/ SAND SLIGHTLY MOIST		2.1				
	15				SLIGHTLY PLASTIC		RED BROWN SILTY CLAY SLIGHTLY MOIST		4.2				
									4.2				
					S. PLASTIC		RED BROWN SANDY CLAY TO CLAYEY SAND slightly moist						
					SLIGHTLY PLASTIC		Red Brown SILTY CLAY SLIGHTLY MOIST		1.9				
	20				SOFT		RED BROWN CLAYEY SILT						
					PLASTIC		SLIGHTLY MOIST		0.3				
					very SLIGHTLY PLASTIC		RED BROWN CLAYEY SILT, STIFF, VERY SLIGHTLY MOIST		0.0				
	25						See next page		8.2				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: 1S 2 Yes X No ________ Well I.D. #: MPW-3S & MPW-3I

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: MRC INJECTION TEST
PROJECT NUMBER:
DRILLING COMPANY: BOART LONGYEAR
DRILLING RIG: SPIDER SONIC

BORING No.: MPW-3S / 3I
DATE: 10/18/11
GEOLOGIST: Walter O'Neill
DRILLER: ADAM ANDERSON

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	25												
					V. slight Plastic		RED BROWN GRAY SANDY SILT & CLAY V. SLIGHTLY MOIST						
					V. slightly Plastic		RED BROWN CLAYEY SILT W/SAND, V. SLIGHTLY MOIST		8.2				
					SOFT		RED BROWN SILTY SAND TO SANDY SILT, SLIGHTLY MOIST		8.4				
							RED BROWN (TOP) TO GRAY (BOTTOM)		3.3				
	30												
					SOFT		SILTY SAND		0.9				
							MOIST TO WET						
									2.9				
					SLIGHTLY PLASTIC		red brown silty clay, dense, dry		1.1				
	35												

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes X No ____ Well I.D. #: MPW-3S & MPW-3I

2 5

APPENDIX B—WELL-DEVELOPMENT RECORDS

Tetra Tech NUS, Inc. **MONITORING WELL DEVELOPMENT RECORD**

Well: ~~[illegible]~~ IWN
Site: Middle River Center
Date Installed:
Date Developed: 10-25-11
Dev. Method:
Pump Type: Peristaltic pump

Depth to Bottom (ft.): 34.40
Static Water Level Before (ft.): 10.35
Static Water Level After (ft.):
Screen Length (ft.): 20
Specific Capacity:
Casing ID (in.): 2" PVC

Responsible Personnel: Walt Pa[illegible]
Drilling Co.:
Project Name: MRC
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1223	—	—	10.35	—	—	—	—	Initial, no odor
1224			10.90	25.00	5.50	0.274	302	Cloudy water
1229			11.20	23.45	4.72	0.266	273	
1234			11.15	23.57	4.75	0.264	322	
1244			11.15	23.75	4.88	0.258	306	
1254			11.15	23.36	4.97	0.258	275	
1304			11.15	23.14	5.02	0.259	227	
1314			11.15	22.96	5.05	0.260	160	
1319			11.15	22.93	5.07	0.261	162	
1324		3.0 gal	11.15	22.89	5.08	0.261	165	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPN-2S
Site: Middle River Center
Date Installed:
Date Developed: 10-25-11
Dev. Method:
Pump Type: Peristaltic pump

Depth to Bottom (ft.): 13.05
Static Water Level Before (ft.): 9.45
Static Water Level After (ft.):
Screen Length (ft.): 5'
Specific Capacity:
Casing ID (in.): 1" PVC

Responsible Personnel: Walt Payon
Drilling Co.:
Project Name: MRC
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1354	—	—	9.45	—	—	—	—	Initial, no odor
1355			9.98	25.98	6.18	0.635	>999	Brown water
1400			10.20	25.52	6.52	0.644	>999	
1405			10.80	25.23	6.61	0.648	>999	
1410			11.45	25.11	6.69	0.655	>999	
1415			11.65	25.07	6.73	0.644	>999	
1420			12.00	25.03	6.81	0.632	>999	
1425			12.40	25.00	6.92	0.629	>999	
1430			12.50	25.02	6.92	0.629	>999	
1435		1.5 gal	12.75	25.08	6.94	0.626	>999	
1440				Dry				

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPN-2I
Site: Middle River Center
Date Installed:
Date Developed: 10-25-11
Dev. Method:
Pump Type: Peristaltic pump

Depth to Bottom (ft.): 29.20
Static Water Level Before (ft.): 11.10
Static Water Level After (ft.):
Screen Length (ft.): 10
Specific Capacity:
Casing ID (in.): 1" PVC

Responsible Personnel: Walt Payne
Drilling Co.: Boart Longyear
Project Name: MRC
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/Cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1440	—	—	11.10	—	—	—	—	Initial, no odor
1441			13.40	25.16	7.46	0.313	>999	Brown water
1446			15.50	24.71	6.77	0.303	>999	
1451			17.50	24.54	6.40	0.301	>999	
1456			19.80	24.64	5.86	0.291	>999	
1501			20.40	24.42	5.66	0.284	>999	
1506			20.75	24.32	5.63	0.283	>999	
1511			21.00	24.29	5.64	0.283	>999	
1516			21.30	24.32	5.64	0.283	>999	
1521			21.60	24.29	5.63	0.284	>999	
1526			21.90	24.27	5.67	0.284	>999	
1531			22.20	24.26	5.71	0.287	>999	
1536			22.50	24.24	5.82	0.290	>999	
1541		2.5 gal	22.85	24.23	5.95	0.293	>999	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPN 1S
Site: Middle River Center
Date Installed:
Date Developed: 10-25-11
Dev. Method:
Pump Type: Peristaltic pump

Depth to Bottom (ft.): 13.45
Static Water Level Before (ft.): 10.20
Static Water Level After (ft.):
Screen Length (ft.): 5
Specific Capacity:
Casing ID (in.): 1" PVC

Responsible Personnel: Walt Payon
Drilling Co.:
Project Name: MRC
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0930		—	10.20	—	—	—	—	Initial, no odor Brown
0933			10.87	18.54	6.15	0.764	>999	
0938			11.45	19.94	6.41	0.756	>999	
0943			11.90	20.27	6.56	0.754	>999	
0948			12.22	20.44	6.57	0.753	>999	
0953			12.45	20.78	6.47	0.733	>999	
0958			12.55	21.15	6.29	0.710	>999	
1003			12.70	21.56	6.01	0.656	>999	
1008			12.85	21.80	5.88	0.615	>999	
1013			13.02	21.99	5.77	0.565	>999	
1018			13.20	22.10	5.74	0.542	>999	
1023		2.5 gallons	13.40	22.22	5.84	0.554	>999	
1028				Dry				

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPN 11
Site: Middle River Center
Date Installed:
Date Developed: 10-25-11
Dev. Method:
Pump Type: Peristaltic pump

Depth to Bottom (ft.): 24.55
Static Water Level Before (ft.): 11.25
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity:
Casing ID (in.): 1" PVC

Responsible Personnel: Walt Pryor
Drilling Co.:
Project Name: MRC
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1026	—	—	11.25	—	—	—	—	Initial, no odor, Tan
1029			11.30	22.41	5.67	0.293	>999	Cloudy water
1034			11.40	22.36	5.08	0.286	>999	
1039			11.45	22.25	5.00	0.279	235	
1049			11.50	22.34	5.07	0.277	52.5	Slightly Cloudy
1059			11.55	22.57	5.11	0.277	25.9	
1104			11.55	22.63	5.10	0.276	17.5	
1109		2.0 gal	11.55	22.70	5.12	0.275	18.3	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: IW-E
Site: MRC - Middle River
Date Installed: 10/19/11
Date Developed: 10/26/11
Dev. Method: peristaltic pump
Pump Type: "

Depth to Bottom (ft.): 34.80
Static Water Level Before (ft.): 7.40
Static Water Level After (ft.):
Screen Length (ft.): 20'
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear (Not during development)
Project Name: MRC Injection test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC) 7.40	Temperature (Degrees C)	pH	Specific Conductance (Units MS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0910	N/A	0	~~7.40~~	16.36	4.47	0.196	137	No odor
0920	"	0.125	7.70	16.43	4.19	0.190	168	
0930	"	1.5	7.75	16.37	4.25	0.191	137	
0940	"	2.25	7.75	16.38	4.30	0.192	111	
0950	"	2.60	7.75	16.38	4.31	0.194	53	
0955	"	2.90	7.75	16.38	4.33	0.196	267	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page 1 of ____

Well: MPE - 1S
Site: MRC Middle River, MD
Date Installed: 10/19 & 10/20/11
Date Developed: 10/26/11
Dev. Method: Pump
Pump Type: peristaltic pump

Depth to Bottom (ft.): 21'
Static Water Level Before (ft.): 7.24
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity: N/A
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear (not doing development)
Project Name: MRC INJECTION PROJECT
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1027	N/A	0	8.00	17.51	4.74	0.201	309	
1030	"	0.2	8.05	17.51	4.61	0.198	100.7	
1035	"	0.4	8.07	17.44	4.58	0.195	37.4	
1040	"	0.6	8.10	17.47	4.59	0.193	23.5	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPE-1I
Site: MRC Middle River
Date Installed: 10/19 & 10/20/11
Date Developed: 10/26/11
Dev. Method: Pumping
Pump Type: Peristaltic

Depth to Bottom (ft.): 35'
Static Water Level Before (ft.): 7.37
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity: N/A
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neil
Drilling Co.: BoArt-Longyear (Drillers no developing)
Project Name: MRC Injection Project
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units µS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
10:05	N/A	0	7.50	16.83	4.83	0.246	176	cloudy
10:10	"	0.2	7.55	16.71	4.69	0.243	59	
10:15	"	0.4	7.55	16.70	4.70	0.243	17.9	
10:20	"	0.6	7.55	16.71	4.71	0.245	8.07	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPE-2S
Site: MRC Middle River, MD
Date Installed: 10/20/11
Date Developed: 10/26/11
Dev. Method: Pump
Pump Type: peristaltic pump

Depth to Bottom (ft.): 22.5
Static Water Level Before (ft.): 7.27
Static Water Level After (ft.):
Screen Length (ft.): 10
Specific Capacity: N/A
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear (not developing)
Project Name: MRC Injection test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1120	NA	0	8.40	17.07	4.79	0.350	7209	
1125	"	0.2	8.35	17.36	4.79	0.344	174	
1130	"	0.4	8.40	17.38	4.82	0.342	165	
1135	"	0.6	8.40	17.38	4.84	0.339	134	
1140	"	0.8	8.40	17.34	4.82	0.338	50.2	
1145	"	1.0	8.40	17.32	4.83	0.337	19.2	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPE-2I
Site: MRC Middle River, MD
Date Installed: 10/20/11
Date Developed: 10/26/11
Dev. Method: pumping
Pump Type: peristaltic pump

Depth to Bottom (ft.): 35'
Static Water Level Before (ft.): 7.50'
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity: N/A
Casing ID (in.): 1"

Responsible Personnel: Walter O'Niell
Drilling Co.: Boart-Longyear (not doing developing)
Project Name: MRC Injection Test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1050	N/A	0	7.62	16.91	4.82	0.252	329	
1055		0.2	7.62	16.65	4.68	0.253	110	
1100		0.4	7.62	16.52	4.60	0.259	11.4	
1105		0.6	7.62	16.40	4.58	0.263	6.64	
1110		0.8	7.63	16.31	4.57	0.264	4.78	
1115		1.0	7.63	16.28	4.55	0.265	4.52	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPE -3S
Site: MRC Middle River, MD
Date Installed: 10/20/11
Date Developed: 10/26/11
Dev. Method: Pumping
Pump Type: peristaltic pump

Depth to Bottom (ft.): 18
Static Water Level Before (ft.): 7.04
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity: N/A
Casing ID (in.): 1"

Responsible Personnel: Walter O'Niell
Drilling Co.: Boart Longyear (Not doing developing)
Project Name: MRC Injection Test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1220	N/A	0	8.44	16.28	5.35	0.337	Err4	
1225		0.2	8.62	17.12	5.25	0.335	343	Reduce flow twice
1230		0.3	8.72	16.98	5.19	0.330	369	reduce flow rate
1235		0.35	8.83	17.27	5.06	0.309	380	
1240		0.40	8.91	17.31	5.00	0.300	318	
1245		0.45	8.97	17.33	5.26	0.283	216	
1250		0.50	9.02	17.35	5.11	0.276	166	
1255		0.55	9.07	17.40	5.09	0.275	140	
1300		0.60	9.16	17.34	5.07	0.273	78.6	
1305		0.65	9.26	17.36	5.05	0.275	55.5	
1310		0.70	9.37	17.64	5.03	0.277	45.6	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPE-3I
Site: MRC Middle River, MD
Date Installed: 10/20/11
Date Developed: 10/26/11
Dev. Method: Pump
Pump Type: Peristaltic pump

Depth to Bottom (ft.): 35
Static Water Level Before (ft.): 7.29
Static Water Level After (ft.):
Screen Length (ft.): 10
Specific Capacity: N/A
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear (Not doing developing)
Project Name: MRC Injection Test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
11:53	N/A	0	7.42	16.86	4.49	0.289	Err4	
11:55	"	0.1	7.42	16.04	4.43	0.297	330	
12:00	"	0.3	7.43	15.91	4.43	0.298	86.1	
12:05	"	0.5	7.43	15.86	4.42	0.297	45.9	
12:10	"	0.7	7.43	15.87	4.42	0.298	15.2	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: IW-W
Site: MRC Middle River
Date Installed: 10/17/11
Date Developed: 10/27/11
Dev. Method: pumping
Pump Type: peristaltic

Depth to Bottom (ft.): 35'
Static Water Level Before (ft.): 2.36'
Static Water Level After (ft.):
Screen Length (ft.): 20'
Specific Capacity: N/A
Casing ID (in.): 2"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear (not developing)
Project Name: MRC Injection Point
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0814	N/A	0	—	—	—	—	—	Initial, no odor
0815			2.68	16.86	5.12	0.486	72.1	slightly cloudy
0820			2.82	16.54	5.00	0.483	45.7	
0825			2.78	16.39	4.91	0.483	44.9	
0830			2.78	16.28	4.94	0.485	40.0	
0835		1.0 gallons	2.78	16.20	4.93	0.485	40.1	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page 1 of 1

Well: MPW-1S
Site: MRC Middle River, MD
Date Installed: 10/18/11
Date Developed: 10/27/11
Dev. Method: pumping
Pump Type: peristaltic

Depth to Bottom (ft.): 15
Static Water Level Before (ft.): 2.25
Static Water Level After (ft.):
Screen Length (ft.): 5
Specific Capacity: NA
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Brent Longyear (Not doing development)
Project Name: MRC Injection test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0840		0	4.40	16.66	5.53	0.553	20.8	
0845		0.4	6.70	16.87	5.70	0.558	38.2	
0850		0.8	8.40	17.04	5.61	0.612	52.5	
0855	1.2 →	1.6	9.60	16.96	5.57	0.690	94.9	
0900	1.4 →	0.40	10.05	16.99	5.51	0.704	205	
0905	1.6	0.45	10.00	17.19	5.45	0.740	338	
0910	1.8	0.50	10.30	17.28	5.43	0.737	281	
0920	2.0	0.55	10.60	17.36	5.66	0.476	3159	
0930	2.2	0.60	11.55	16.89	5.80	0.449	7680	
0940	2.4	0.70	12.20	16.42	5.84	0.449	7690	
0950	2.6	0.8	12.70	16.73	5.86	0.457	9872	
1010	3.0		13.12	16.63	5.89	0.449		
								Dry @ 10:13
								Pumped Dry @ 11:07
								for 2nd time.
								Still fairly turbid

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MOW-1I
Site: MRC middle Rearmo
Date Installed: 10/18/11
Date Developed: 10/27/11
Dev. Method: pumping
Pump Type: peristaltic

Depth to Bottom (ft.): 35'
Static Water Level Before (ft.): 2.30
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity: N/A
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Brant Longyear (Not doing development)
Project Name: MRC INJECTION TEST
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1020		0	2.45'	16.31	5.36	0.391	3303	
1030		[illegible]	2.50'	15.80	4.89	0.395	71.1	
1040			2.55'	15.68	4.78	0.402	20.5	
1050			2.57'	15.62	4.84	0.408	10.01	
1100		3	2.58'	15.61	4.87	0.409	[illegible]	9.33

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: ~~[illegible]~~ MPW - 25
Site: MRC Middle River, MD
Date Installed: 10/18/11
Date Developed: 10/27/11
Dev. Method: pumping
Pump Type: peristaltic

Depth to Bottom (ft.): 15
Static Water Level Before (ft.): 1.09'
Static Water Level After (ft.):
Screen Length (ft.): 5'
Specific Capacity: N/A
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear (Not doing development)
Project Name: MRC Injection test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1115		0						
1117			3.03	15.94	5.32	1.24	303	
1127			4.35	16.33	5.33	1.28	205	
1137			4.33	16.60	5.30	1.31	72.4	
1147			4.45	16.70	5.27	1.32	17.2	
1157		3	4.48	16.74	5.27	1.32	11.8	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPW ~~MRE~~ - 2I
Site: MRC Middle River MD
Date Installed: 10/18/11
Date Developed: 10/27/11
Dev. Method: Pump
Pump Type: peristaltic

Depth to Bottom (ft.): 35
Static Water Level Before (ft.): 2.10
Static Water Level After (ft.):
Screen Length (ft.): 10
Specific Capacity: N/A
Casing ID (in.): 1

Responsible Personnel: Walter O'Neill
Drilling Co.: Bo Art Longyear (Not doing development)
Project Name: MRC Injection test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1345		0	2.22	16.98	5.24	0.409	1068	
1355			2.26	16.41	4.83	0.388	39.3	
1400			2.30	16.32	4.70	0.388	14.4	
1405			2.30	16.23	4.67	0.387	8.35	
1410		1.5	2.30	16.15	4.73	0.388	7.40	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: ~~MWE~~ MPW - 3S
Site: MRC Middle River, MD
Date Installed: 10/18/11
Date Developed: 10/27/11
Dev. Method: pump
Pump Type: peristaltic

Depth to Bottom (ft.): 15'
Static Water Level Before (ft.): 0.90
Static Water Level After (ft.):
Screen Length (ft.): 5'
Specific Capacity: N/A
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear (not doing development)
Project Name: MRC Injection test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1450		0	2.80	17.04	5.45	0.987	1397	
1455			4.40	17.28	5.80	1.03	244	
1500			6.00	17.38	5.66	1.07	131	
1505			7.20	17.45	5.63	1.08	48.5	
1510			8.05	17.51	5.58	1.08	104.9	← well pumping dry
1515			8.40	17.60	5.52	1.10	688	& becoming more turbid
1520			8.95	17.64	5.54	1.03	1515	
1525		2	9.20	17.65	5.56	1.06	1802	Increase pump velocity
1537	DRY							to pump well dry
								because turbidity
								is increasing

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPW - 3I
Site: MRC Middle River
Date Installed: 10/18/11
Date Developed: 10/27/11
Dev. Method: pumping
Pump Type: peristaltic

Depth to Bottom (ft.): 35'
Static Water Level Before (ft.): 1.98
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity: NA
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear (Not doing development)
Project Name: MRC INJECTION TEST
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1420		0	2.29	17.02	5.19	0.389	82.6	
1425			2.30	17.01	5.12	0.385	34.8	
1430			2.30	16.97	5.26	0.380	17.8	
1435			2.30	16.94	4.97	0.379	9.80	
1440			2.30	16.91	4.97	0.380	10.86	
1445		2	2.30	16.88	4.99	0.381	7.71	

North Plume Area

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: IW-N
Site: MRC Middle River
Date Installed: 10/21/11
Date Developed: 10/23/11
Dev. Method: ~~[illegible]~~ Submersible pump
Pump Type: submersible pump

Depth to Bottom (ft.): 35'
Static Water Level Before (ft.): 9.79
Static Water Level After (ft.):
Screen Length (ft.): 20'
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear
Project Name: MRC Injection test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1040	N/A	1		18.18	7.80		Err4	very turbid (opaque)
1043		5		N/A	N/A		Err4	stopped pumping
1044		5					"	pumping again
1045		8					"	very turbid (opaque)
1100		10						less turbid than above
1110		15		19.47	5.40	0.279		same as above
1140		18	can't get past 22' in well	water is below 22'		@ 1145		same as above
stop pumping @ 11:40								
10/24/11	07:58		10.20				6632	very turbid, dry @ 0821
	0832	36	N/A	17.81	6.06	0.254	751	clearing
	0843		N/A				429	dry @ 0850 waiting for recharge
	0915	42	N/A	18.38	4.98	0.304	137	clearing
	0930		N/A	18.25	5.51	0.274	843	← Turbidity up as well pumps dry is surged
	0945	47	N/A	18.58	5.11	0.279	79.5	
	1000	52	N/A	18.72	5.56	0.281	64.7	

middle River, MD

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPN-1S
Site: MRC - NORTH PLUME AREA
Date Installed: 10/22/11
Date Developed: 10/23/11
Dev. Method: Airlift / Waterra
Pump Type: waterra

Depth to Bottom (ft.): 14'
Static Water Level Before (ft.): 9.95'
Static Water Level After (ft.):
Screen Length (ft.): 5'
Specific Capacity:
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear
Project Name: MRC Injection test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
10 09	N/A	~0.125	N/A AL	19.51	7.28	0.854	ERR4	very turbid
10 30	"	"	"	19.57	7.19	0.856	"	
10/24/11								
0800			10.03				ERR4	very turbid, not making any water

Middle River, MD

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPN - ~~20~~ 1I
Site: MRC - North Plume Area
Date Installed: 10/22/11
Date Developed: 10/23/11
Dev. Method: Airlift/Waterra
Pump Type: Waterra

Depth to Bottom (ft.): ~~33~~ 30'
Static Water Level Before (ft.): 10.16'
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity:
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear
Project Name: MRC Injection Test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
10:05	N/A	~~2~~ 1/2	N/A AL	19.47	7.22	0.537	Err4	very turbid
10:35	"	4	"	19.53	7.71	0.542	"	"
10/24/11 0811	"	~~6.5~~	11.02				Err4	very turbid
0821		6.5					Err4	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPN-2S
Site: MRC
Date Installed:
Date Developed: 10/24/11
Dev. Method: Air lift
Pump Type:

Depth to Bottom (ft.): 14'
Static Water Level Before (ft.): 8.62
Static Water Level After (ft.):
Screen Length (ft.): ~~3~~ 5'
Specific Capacity:
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear
Project Name: MRC Injection test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0839	N/A	0	8.62					
0847		~0.25	N/A				Err4	Very turbid
0900		0.5	"				"	"
0945		"	"				"	" no ~~chang~~ change
1000		"	"				"	well not producing water

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPN-2I
Site: MRC
Date Installed:
Date Developed: 10/24/11
Dev. Method: Air lift
Pump Type:

Depth to Bottom (ft.): 30'
Static Water Level Before (ft.):
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity:
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear
Project Name: MRC INJECTION TEST
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0840	N/A	0	8.42					
0847		1	N/A				Err4	Very turbid
0900		1.5	"				"	"
0945		"	"				"	No change. not producing water
1006		"	"				"	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page 1 of 1

Well: IW-E
Site: MRC
Date Installed:
Date Developed: 10/24/11
Dev. Method: Submersible pump
Pump Type: "

Depth to Bottom (ft.): 35
Static Water Level Before (ft.): 8.00
Static Water Level After (ft.):
Screen Length (ft.): 20
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: Walter O'Neill
Drilling Co.: Bart Longman
Project Name: MRC Injection test
Project Number:

start

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units uS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1247	N/A	0	—	—	—	—	Err 4	very turbid
1257	"	12	—				1740	
~~[illegible]~~ 1306	"	15	—	16.70	4.9	0.248	Err 4	stop @ 1303 to set up drums
13:13	"	27		16.46	4.87	0.245	776	
1323	"	39		16.44	4.73	0.232	>999	
1333	"	51		16.20	4.30	0.241	>999	
1343	"	63		16.09	4.09	0.244	50.0	
1353		75		16.00	4.00	0.245	48.0	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page 1 of 1

Well: MPE - 1S
Site: MRC
Date Installed:
Date Developed: 10/24/11
Dev. Method: Air lift
Pump Type: "

Depth to Bottom (ft.): 21'
Static Water Level Before (ft.): 7.41
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity:
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear
Project Name: MRC Injection test
Project Number:

start 1252

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
~~1252~~								
1255	N/A	2.0	N/A				Err 4	very turbid
1303		3.0						stop @ 1303 to setup drums
13:08		3.5						
13:12		4.0						
13:21		5.0						
1324		6.0						
1333		6.5						
1337		7.0						
1343		7.5						
1352		8.0						

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPE-1I
Site: MRC
Date Installed:
Date Developed: 10/24/11
Dev. Method: Air lift
Pump Type: "

Depth to Bottom (ft.): 35'
Static Water Level Before (ft.): 7.70
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity:
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Brant Longyear
Project Name: MRC injection test
Project Number:

	Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
start	12:52	0	0						
	12:55	N/A	3.0	N/A				ERW	very turbid
	12:59	"	5.0	"				"	"
	13:03	"	9.0	"				"	stopped 13:03 to set up drum
	13:08	"	11.0	"				"	
	13:12	"	13.0	"				"	
	13:15	"	18.0	"				"	
	13:21		22.0	"				"	
	1324		27.0	"				"	
	1333		32.0	"				"	
	1337		37.0	"				"	
	1343		42.0	"				"	
	1352		47.0	"				"	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPE-25
Site: MRC/Middle River
Date Installed: 10/20/11
Date Developed: 10/25/11
Dev. Method: Airlift
Pump Type: Airlift

Depth to Bottom (ft.): 22.5
Static Water Level Before (ft.): 7.42
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity:
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear
Project Name: MRC Injection Test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0825		0	N/A					
0830		2	"				Err4	
0836		2.5	"				"	
0842		3.25	"				"	
0847		4.0	"				"	
0852		4.5	"				"	
0857		5.0	"				"	
0906		6.0	"				"	
0911		7.0	"				N/A	Still turbid No meter
0916		8.0	"				"	
0921		9.0	"				"	
0925		9.25	"				"	
							"	stop development

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MDE-2 ~~0~~ I
Site: MRC Middle River, MD
Date Installed: 10/20/11
Date Developed: 10/25/11
Dev. Method: Air lift
Pump Type: "

Depth to Bottom (ft.): 35
Static Water Level Before (ft.): 7.19
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity:
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear
Project Name: MRC Injection test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0825		0	N/A				Err4	
0830		4	"				"	
0836		8	"				"	
0842		12	"				"	
0847		16	"				"	
0852		20	"				"	
0857		24	"				N/A	
0906		28	"				"	less turbid no meter to check
0911		32	"				"	
0916		36	"				"	No meter
0921		40	"				"	
0925		43	"				"	stop development

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page 1 of 1

Well: MPE - ~~[illegible]~~ 35
Site: MRC Middle River MD
Date Installed: 10/20/11
Date Developed: 10/25/11
Dev. Method: Airlift
Pump Type: "

Depth to Bottom (ft.): ~~[illegible]~~ 18
Static Water Level Before (ft.): 7.15
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity:
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: BOART LONGYEAR
Project Name: MRC INJECTION TEST
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0937	N/A	0	N/A				No meter	Very turbid
0942		1.5						
0945		2.0						
0949		2.25						
0953		2.35						
0956		2.40						
1000		2.45						
1003		2.50						
1006		2.60						
1010		2.60						
1013		2.65						
1016		2.70						
1020		2.75						
1024		2.80						
1027		2.85						
1031		2.90						
1035		3.0						
1037		3.10						

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPE - 3I
Site: MRC Middle River, MD
Date Installed: 10/20/11
Date Developed: 10/25/11
Dev. Method: Pump
Pump Type: "

Depth to Bottom (ft.): 35'
Static Water Level Before (ft.): 7.92
Static Water Level After (ft.):
Screen Length (ft.): 10
Specific Capacity:
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear
Project Name: MRC INJECTION TEST
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0937		0.0					No meter	Very turbid
0942		4.0						
0945		8.0						
0949		12.0						
0953		14.0						
0956		18.0						
1000		22.0						
1003		26.0						
1006		30.0						
1010		34.0						
1013		38.0						
1016		42						
1020		50						
1024		54						
1027		58						
1031		62						
1035		66						
1037		69						

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: IW-W
Site: MRC Middle River
Date Installed: 10/17/11
Date Developed: 10/25/11
Dev. Method: ~~[illegible]~~ pump
Pump Type: Submersible 12V

Depth to Bottom (ft.): 35
Static Water Level Before (ft.): N/A
Static Water Level After (ft.):
Screen Length (ft.): 20'
Specific Capacity:
Casing ID (in.): 2"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear
Project Name: MRC Injection Test
Project Number:

	Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
	1305		0	N/A				NO meter	very turbid
	1316		18	"					"
	1328		36						
	1336		48						stopped to allow
restart	1354		48						recharge 1336 less turbid to clear
	1357		~~[illegible]~~ 54						stopped pumping
restart	1403		54						water turbid after agitation
	1421		72						fairly clear
	1435		82						pumping clear
	1437		83						" " stopped

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

10/25/11

Well: MPW-15
Site: MRC Middle River
Date Installed: 10/18/11
Date Developed:
Dev. Method: Air lift
Pump Type: "

Depth to Bottom (ft.): 15'
Static Water Level Before (ft.): N/A
Static Water Level After (ft.):
Screen Length (ft.): 5'
Specific Capacity:
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear
Project Name: MRC Injection Test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ___)	Turbidity (NTU)	Remarks (odor, color, etc.)
1317		0	N/A					v. turbid
1321		1.0						
1327		1.1						
1333		1.35						
1346		2.0						still turbid, not making
1356		2.2						much water
1400		2.3						
1408		2.35						
1412		2.40						
1417		2.50						stop - still turbid

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPW-1I
Site: MRC Middle River
Date Installed: 10/18/11
Date Developed: 10/25/11
Dev. Method: Airlift
Pump Type: 1"

Depth to Bottom (ft.): 35'
Static Water Level Before (ft.): N/A
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity:
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Brant Longyear
Project Name: MRC INJECTION TEST
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1317		0						very turbid
1321		4.0						
1325		8.5						
1324		12.5						
1347		20.5						still turbid, but less than above
1350		24.5						
1353		~~40~~ 28.5						
1357		32.5						
1400		36.5						
1404		40.5						
1408		44.5						
~~1408~~ 1412		48.5						
1417		52.5						stop same as above

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPW-25
Site: MRC Middle River
Date Installed: 10/18/11
Date Developed: 10/25/11
Dev. Method: Air lift
Pump Type: "

Depth to Bottom (ft.): ~~[illegible]~~ 17'
Static Water Level Before (ft.): N/A
Static Water Level After (ft.):
Screen Length (ft.): ~~[illegible]~~ 10'
Specific Capacity:
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Bryant Longyear
Project Name: MRC Injection Test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1437		0	N/A				No meter	very turbid
1441		1.5						
1445		1.6						
1450		1.8						
1455		1.9						
1459		2.1						
1504		2.2						
1507		2.3						
1510		2.4						
1514		2.5						
1518		2.6						
1521		2.7						
1525		2.8						
1529		3.0						
1534		3.1						
1537		3.2						

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPW-2I
Site: MRC Middle River, MD
Date Installed: 10/18/11
Date Developed: 10/25/11
Dev. Method: Air lift
Pump Type: "

Depth to Bottom (ft.): 35
Static Water Level Before (ft.): N/A
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity:
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear
Project Name: MRC Injection Test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1437		0	N/A				No meter	Very turbid
1441		4.0						"
1445		8.0						"
1450		12.0						
1454		16.0						
1459		20.0						
1504		24.0						
1507		28.0						
1510		32.0						fairly turbid
1514		36.0						clearing somewhat
1518		40.0						
1521		44.0						
1525		48.0						
1529		52.0						
1534		56.0						
1537		60.0						

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPW-35
Site: MRC Middle River, MD
Date Installed: 10/18/11
Date Developed: 10/25/11
Dev. Method: Air lift
Pump Type: "

Depth to Bottom (ft.): 13
Static Water Level Before (ft.): N/A
Static Water Level After (ft.):
Screen Length (ft.): 5'
Specific Capacity:
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Brent Longyear
Project Name: MRC Injection Test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1551		0	N/A				No meter	very turbid
1556		1.2						"
1600		1.3						"
1608		1.6						"
1628		1.8						"
1640		2.3						"
1651		2.6						"
								less turbid stop developing

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MPW-3I
Site: MRC Middle River MD
Date Installed: 10/18/11
Date Developed: 10/25/11
Dev. Method: Air lift
Pump Type:

Depth to Bottom (ft.): 135'
Static Water Level Before (ft.): N/A
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity:
Casing ID (in.): 1"

Responsible Personnel: Walter O'Neill
Drilling Co.: Boart Longyear
Project Name: MRC Injection Test
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1551		0.0	N/A				No meter	Very turbid
1600		9.0						
1608		18.0						
1628		27.0						
1640		36.0						
1651		46.0						running fairly clear Stop development

APPENDIX C—WASTE DISPOSAL DOCUMENTATION

THE ENVIRONMENTAL QUALITY COMPANY ®

EQ Pennsylvania
730 Vogelsong Road
York, PA 17404

Emergency
Response #: (610) 656-4012
Phone: 717-846-1900
Fax: 717-854-6757

Work Order: 657100
Arrival Time: 01/13/2012
Date: 01/13/2012
Prepared By: Jane Englert

BILLING INFORMATION

Name: TETRA TECH-NUS, INC.
Acct. #: 4108-10
Phone: (412) 921-7090
Addr: 661 ANDERSON DRIVEFOSTER PLAZA #7
PITTSBURGH, PA 15220-2745

Contact: Peter Rich
Title: Env. MGR
Phone: (410) 350-6491
Mobile:
PO / Ref:

GENERATOR INFORMATION

Name: Lockheed Martin Corp. - Middle
EPA #: MDD985381318 (ID: 91098)
Phone: (610) 656-4012
Addr: 195 CHESAPEAKE PARK PLAZA
Baltimore, MD 21220

Contact: Michael Musheno
Title: Sr Staff Occ Safety
Phone: (610) 656-4012
Mobile:

TSDF INFORMATION

TSDF: ENVIRITE OF PENNSYLVANIA, INC
Addr: 730 VOGELSONG ROAD
YORK,PA 17404

TSDF Contact: BEN SMITH

EPA #: PAD010154045
Phone: (717) 846-1900
Fax: (717) 854-6757

Description: PICKUP WASTE CONTAINERS

Start Date and Time: ______ End Date and Time: ______ Total Hours: ______

Manifest: ______
TSDF Contact: BEN SMITH

TSDF: ENVIRITE OF PENNSYLVANIA, INC
Addr: 730 VOGELSONG ROAD
YORK,PA 17404

EPA #: PAD010154045
Phone: (717) 846-1900
Fax: (717) 854-6757

HM DESCRIPTION

		# OF CONT.	TYPE	QUANTITY	UNIT
X	1. Non-Regulated Solids Approval Code: G103030EPA (370223) Waste Codes: 507 Hand. Instruct:	19	DM	13300	P
X	2. Non-Regulated Liquid Approval Code: G103033EPA (370226) Waste Codes: 499 Hand. Instruct:	24	DM	1320	G

EQUIPMENT ACKNOWLEDGMENT

Customer acknowledges that this equipment is suitable for the transportation, storage or other service to be provided.

Tractor # 6117 Trailer # 3007 Tanker #____ Roll-Off Box #____ w/ liner?____ Spotted #____ Picked_up #____ Vac Fee ____

Louis Thompson 01-13-12 X Michael Musheno 01-13-12
Driver Signature Date Customer Signature Date

Pickup	Date	Time	Explanation
Arrive at Shipper:	01-13-12	800	
Start Loading:		830	
Finish Loading:		1130	
Leave Site:		1145	

SHIPMENT RECEIVED IN APPARENT GOOD ORDER (CONTENTS UNKNOWN) SUBJECT TO THE TERMS AND CONDITIONS OF THE UNIFORM STRAIGHT BILL OF LADING AND ANY GOVERNING CLASSIFICATIONS AND TARIFFS LAWFULLY ON FILE ON THE DATE OF SHIPMENT.

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION.

Louis Thompson 01-13-12 X Michael Musheno 01-13-12
Driver Signature Date Customer Signature Date

Delivery	Date	Time	Explanation
Arrive at TSDF:			
Start Unloading:			
Finish Unloading:			
Leave Site:			

Driver Signature Date Receiver Signature Date

EQ Authorized Representative Date On-Site Representative Date

Please comment on the job so we can continue to provide better service: ☐ Excellent ☐ Satisfactory ☐ Poor

Waste Identifcation and Classification Form

Remediation Project	Middle River Complex	**State Generated**	MD
Description of Waste			
Generic Name	Pilot Test Injection Well Study	**Solid, Liquid, Gas**	Solid and Liquid
		Additional Info.	
Date of Waste Generation	10/18/2011	**Ongoing (Y/N)?**	N

Description of Process Generating Waste

24 drums of water and 19 drums of soil were generated from the installation of monitoring/injection wells at Middle River Complex as part of the MRC Pilot Test Study.

Listed Waste ? (Y/N)	N	**F,K, P or U Codes**	NA

Justification for Waste Classification (attached supporting documentation)

The soil and water has been profiled as non hazardous based on the analytical data received from a representative composite waste characterization sample collected from the soil and water drums.

Form completed by	Tony Apanavage
Date	1/6/2012

APPENDIX D—SODIUM BROMIDE TRACER MSDS

Material Safety Data Sheet

Sodium bromide

ACC# 21060

Section 1 - Chemical Product and Company Identification

MSDS Name: Sodium bromide
Catalog Numbers: AC205130000, AC205130010, AC205131000, AC246900000, AC246901000, AC246905000, S255-3, S255-500
Synonyms: Bromide salt of sodium.
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7647-15-6	Sodium bromide	>99	231-599-9

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white crystalline powder.
Caution! Causes mild eye irritation. Hygroscopic (absorbs moisture from the air).
Target Organs: Central nervous system.

Potential Health Effects
Eye: Causes mild eye irritation.
Skin: May cause skin irritation. May be harmful if absorbed through the skin.
Ingestion: May cause irritation of the digestive tract. Symptoms may include: headache, excitement, fatigue, nausea, vomiting, stupor, and coma. May be harmful if swallowed.

Inhalation: Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. May cause respiratory tract irritation. May be harmful if inhaled.
Chronic: Chronic ingestion may cause central nervous system failure.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid imme diately.
Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Ingestion: Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.
Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.
Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.
Flash Point: Not applicable.
Autoignition Temperature: Not available.
Explosion Limits, Lower:N/A
Upper: N/A
NFPA Rating: (estimated) Health: 1; Flammability: 1; Instability: 1

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Use with adequate ventilation. Minimize dust generation and accumulation.

Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation.
Storage: Store in a cool, dry place. Store in a tightly closed container. Store protected from moisture.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Sodium bromide	none listed	none listed	none listed

OSHA Vacated PELs: Sodium bromide: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear appropriate gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to minimize contact with skin.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Crystalline powder
Appearance: white
Odor: not available
pH: 5-8.8 (5% aq soln)
Vapor Pressure: Not applicable.
Vapor Density: Not available.
Evaporation Rate: Not applicable.
Viscosity: Not available.
Boiling Point: 1390 deg C @ 760 mmHg
Freezing/Melting Point:755 deg C
Decomposition Temperature:800 deg C
Solubility: 95g/100 ml water (25°C)
Specific Gravity/Density:3.208
Molecular Formula: BrNa
Molecular Weight:102.89

Section 10 - Stability and Reactivity

Chemical Stability: Hygroscopic: absorbs moisture or water from the air.
Conditions to Avoid: Incompatible materials, dust generation, heating to decomposition, exposure to moist air or water.
Incompatibilities with Other Materials: Strong acids, bromine trifluoride.
Hazardous Decomposition Products: Hydrogen bromide, sodium oxide, bromine fumes.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 7647-15-6: VZ3150000
LD50/LC50:
CAS# 7647-15-6:
Oral, mouse: LD50 = 7 gm/kg;
Oral, rat: LD50 = 3500 mg/kg;
.

Carcinogenicity:
CAS# 7647-15-6: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.
Teratogenicity: No information found
Reproductive Effects: Adverse reproductive effects have occurred in experimental animals.
Mutagenicity: No information available.
Neurotoxicity: No information available.
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: Fish: Bluegill/Sunfish: >1000 mg/L; 96 h; LC50
Daphnia: Daphnia: >1000 mg/L; 48 h; LC50

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a

hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated	Not Regulated
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 7647-15-6 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 7647-15-6 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols:
Not available.
Risk Phrases:

Safety Phrases:
S 24/25 Avoid contact with skin and eyes.

WGK (Water Danger/Protection)
CAS# 7647-15-6: 1
Canada - DSL/NDSL
CAS# 7647-15-6 is listed on Canada's DSL List.
Canada - WHMIS
not available.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.
Canadian Ingredient Disclosure List
CAS# 7647-15-6 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 12/12/1997
Revision #8 Date: 2/15/2008

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

APPENDIX E—EQUIPMENT MANUFACTURERS' INFORMATION

Storage Tank Manufacturer’s Information

Rain for Rent

2,400 GALLON

EZ KLEEN™

STORAGE TANK

Features

- Totally enclosed tank
- Complete guard rail system
- Cross style internal bracing
- Quick Kleen "sloped" shaped floor
- Easy to move

Technical

- Wide range of chemical resistance
- Store waste water, storm water, caustics, acids, fertilizer, contaminated ground water
- 8'.5” in diameter
- Two 3" PVC butterfly valves with Viton seals
- Aluminum ladder with 24" work platform and safety chain

Available Accessories

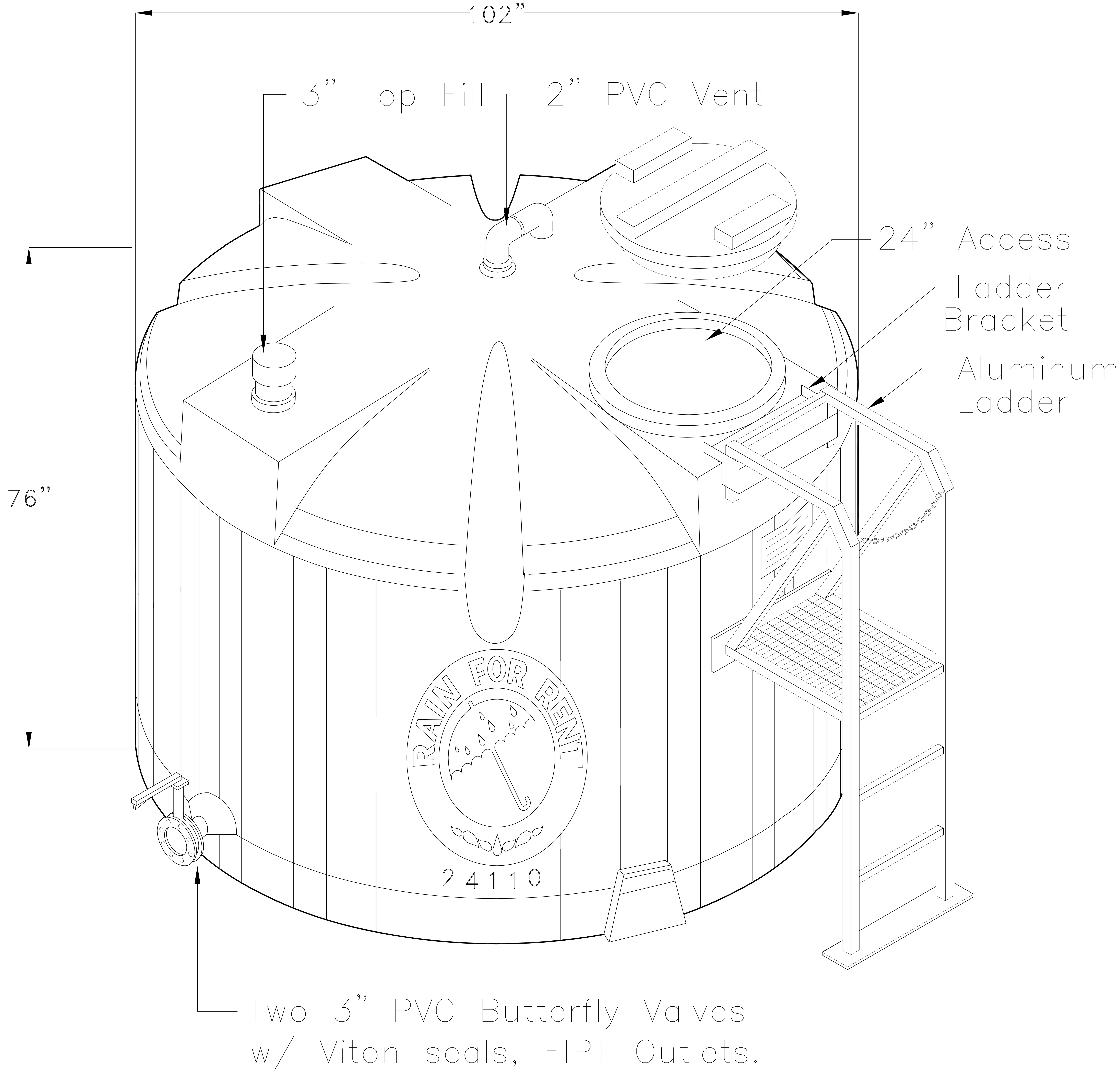
- Power Prime Pumps
- Spill Guard Containment berms
- Stainless Steel 304 and Carbon Steel storage tanks in
- Bi-Level, Mixer, Weir and Manifold configurations
- Polyethylene storage tanks
- Cartridge and bag filters
- HDPE pipe and fittings
- Roll off boxes, dewatering bins and vacuum boxes
- Flow meters and pressure reducing/ sustaining valves
- Aluminum Victaulic pipe and fittings
- Suction and discharge hose

Rain for Rent
P.O. Box 2248
Bakersfield CA 93303
800-742-7246
661-393-1542
FAX 661-393-1542
www.rainforrent.com
info@rainforrent.com

Rain for Rent is a registered trademark of Western Oilfields Supply Company. Features and Specifications are subject to change without notice.

REV.NO.	DESCRIPTION	PREVIOUS DWG	BY	DATE

ITEM	QTY.	REF.	DESCRIPTION



DATE: 3-25-03
SCALE: NTS
DESIGNED:
CHECKED:
DRAWN: S.HERNANDEZ
SHEET SIZE D

2,400 GALLON EZ KLEEN STORAGE TANK

STORAGE TANK

DETAIL

Rain For Rent
Engineering
3404 STATE ROAD PO BOX 2248 BAKERSFIELD CA 93303

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1 SHEET OF 1

DRAWING NUMBER
103425

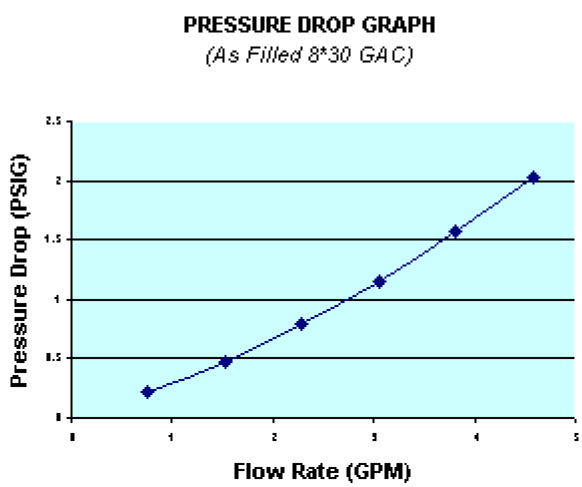
JOB NUMBER
1030004

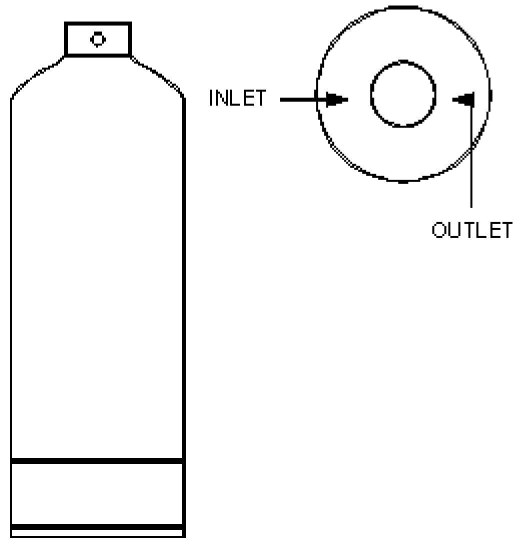
GAC Filter Manufacturer's Information

HPP SERIES FILTERS
MODEL HPP-50

The HPP-50 filter is a media filter vessel designed to treat liquid streams. While the typical design application is a activated carbon adsorbtion unit, the filter can easily accommodate many medias. Some applications include:

- Dissolved Organic Removal (Activated Carbon)
- Suspended Solids Removal (Sand Filter)
- Dissolved Minerals (Softener Resin)
- Oil and Grease Removal (Organo-Clays)
- Dissolved and Precipitated Metals Removal
- Special Organics (Resin/Carbon Blend)
- Catalytic Reactor (Chlorine and Peroxide Removal)
- Bio-Remediation Contactor Unit





HPP-50 SPECIFICATIONS			
Overall Height	3’11”	Vessel/Internal Piping Materials	Polyetheylene / SCH40 PVC
Diameter	10”	Internal Coating	Polyamide Epoxy Resin
Inlet / Outlet (FNPT)	3/4”	External Coating	Polyetheylene
Drain / Vent (FNPT)	NA	Maximum Pressure / Temp	125 PSIG / 120º F
GAC Fill (lbs)	50	Cross Sectional Bed Area	0.5 FT^2
Shipping / Operational Weight (lbs)	60/155	Bed Depth/Volume	3.1 FT / 1.7 FT^3

Tetrasolv Filtration, Inc. • 1200 East 26th Street • Anderson, Indiana 46016 • USA
Toll Free: 800-441-4034 Telephone: 765-643-3941 • Fax: 765-643-3949
www.tetrasolv.com • info@tetrasolv.com

Pump and Speed Controller Manufacturer’s Information

ECT 1-888-240-4328

Mini-Monsoon® DTW 70ft

Mini-Monsoon Pump Chart

Gallons Per Minute	Pump Discharge (DTW)
4.0	3
3.2	10
2.8	20
2.5	25
2.2	30
1.5	40
1.0	50
0.75	55
0.7	60
0.25	70

The Engineered Plastic Mini-MonsoonR pump is capable of pumping up to 70 feet from ground level by simply connecting it to a 12 volt battery. Its reliable design is suitable for continuous sampling and purging of groundwater wells. The Mini-Monsoon® can operate under harsh conditions with higher turbidity. The Mini-Monsoon® can run continuously in water without the need for a cool down! The Mini-Monsoon® has a 400 hour motor life! The Mini-Monsoon® has a sleek outside that minimizes well hang-ups.

195 WATTS (MAX)

12-15 At Source

13 AMPS

Low Flow Sampling Controller

The Proactive™ Low Flow Sampling Controller is engineered specifically for the Standard Engineered Plastic **Cyclone®**, **Mini-Typhoon®**, **Typhoon®**, **Tornado**, **Abyss®**, **Tempest®**, and **Mini-Monsoon®** pumps. This controller will not work with the **Super Twister®**. With the Low Flow Sampling Controller the user can precisely control the water discharge with the turn of a knob. The Low Flow Sampling Controller is used to monitor and regulate low flow sampling as low as 40ml/min.

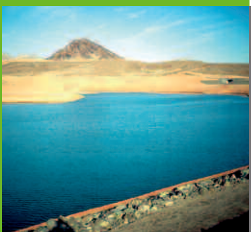
Engineered with reverse polarity protection
Advanced thermal overload protection
Heavy duty steel weatherproof case
Constant Voltage Boosting Technology (CVBT) allows the correct voltage to reach the pump motors
20 AMP "safety" fuse to protect electronics and user
6 month parts and labor warranty
'Ramp Up' control dial
3 foot wire lead to battery clamps and 5 foot wire leads to pump connector
Steel handle for comfort and control

Level Transducer Manufacturer’s Information

Groundwater Monitoring Solutions

Diver

Schlumberger WATER SERVICES



Groundwater Management System

Water Services

Water depletion, excess water (flooding), salinization and shortage of clean drinking water. Today these problems occur with growing frequency world-wide. Regular and reliable measuring and monitoring of groundwater levels has therefore become more important than ever before. The Diver, by Van Essen Instruments – part of Schlumberger Water Services (SWS) – is the ideal instrument for this purpose.

The Diver is a robust and compact datalogger for the automatic, accurate and reliable monitoring of groundwater levels. The Diver is available in a range of different models that can measure temperature and groundwater level. Depending on the model, the water conductivity can also be measured. In this way salinization and saltwater intrusion are simple to monitor.

Schlumberger Water Services

The Diver is part of a full range of products and services which are marketed by Schlumberger Water Services. In addition to a diverse product range, SWS also has build up many years of know-how and experience with Aquifer Storage and Recovery (ASR) and monitoring projects.

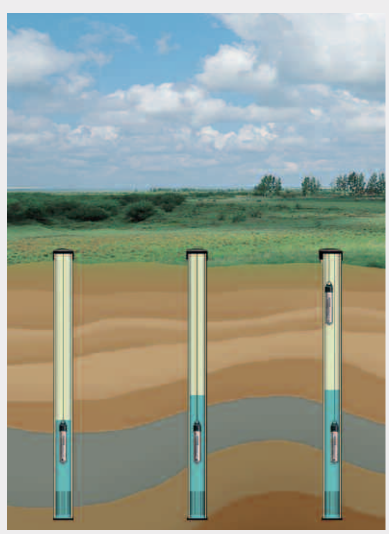
It goes without saying that this know-how and experience is available to support you in choosing a groundwater monitoring system. SWS offers more than consultancy alone, and can also take care of installation, data collection and maintenance of complete monitoring networks.

The policy of SWS is to constantly innovate our existing product range to market demands as well as initiating new developments. In this way you will always be assured of receiving proven and advanced technology from SWS, your reliable partner in present and future projects.

Suitable for any environment

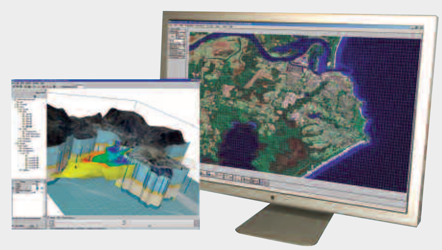
Divers incorporate the full experience built up by SWS in groundwater systems over many decades. These high-quality dataloggers are hermetically sealed to external effects, so moisture and/or electrical influences cannot affect the measurement result. The following four Diver models are available to suit various environments and areas of application.

- **Mini-Diver**
- **Micro-Diver**
- **Cera-Diver**
- **CTD-Diver**



Accuracy of measurement

The Diver monitors the groundwater level by measuring the pressure of the water column with a pressure sensor to an accuracy up to 0.05% FS (Full Scale). In addition to a pressure sensor and a temperature sensor, the CTD-Diver is equipped with a four-electrode sensor for determining the conductivity. In order to determine the groundwater level, the prevailing air pressure must be compensated by means of the BaroDiver. The Compensation Wizard in Logger Data Manager (LDM) compensates the barometric measurement data from the BaroDiver. The result: continuous and highly reliable measurements.



Installation, programming and readout

Diver dataloggers are simply suspended in a monitoring well from a steel wire or Diver Data Cable (DDC). Once installed the monitoring system is completely invisible above ground, reducing the risk of vandalism.

For programming of the Diver and for compensation and readout of measured data, SWS offers LDM software package for laptop or PC applications, and the Pocket-Diver package for PocketPC.

Micro-Diver datalogger

Schlumberger WATER SERVICES

Applications:

- Monitoring projects
- Groundwatermonitoring network automation
- Pumping tests

Micro-Diver: small in size, great in performance

With its length of 90 mm and diameter of only 18 mm, the Micro-Diver is the smallest Diver that is capable of recording groundwater levels and groundwater temperatures with extreme accuracy. The Micro-Diver is specifically designed for monitoring wells too small to accommodate larger data loggers. In spite of its small size, the Micro-Diver possesses a memory capacity of 48,000 measurements per parameter, sufficient to enable it to perform almost one measurement every ten minutes for a whole year. The built-in battery has a lifespan of about 10 years. With its range of measuring functions, the Micro-Diver can be used both for fixed, event-dependent and averaging as well as pumptest measurements.

Highlights:

- 3 year warranty
- Long-term and frequent measurements
- Various measurement methods:
  - fixed
  - event dependent
  - averaging
  - pumping tests
- Temperature corrected measurement
- Reliable and accurate measurement data
- Large memory capacity (non-volatile)
- Compact size
- Suitable for 19 mm monitoring wells
- Hermetically sealed in stainless steel housing
- Free of maintenance

Specifications:

Dimensions	Ø18 mm x 90 mm
Memory	48,000 measurements (non-volatile)
Sample rate *	0.5 sec to 99 hours
Housing material	RVS 316L
Pressure sensor material	ceramic (Al_2O_3)
Temperature range	-20 °C to 80 °C
- accuracy	±0.1 °C
- resolution	0.01 °C
- compensated range	0 °C to 40 °C
Battery life	10 years (depending on use)
Weight	60 grams

Micro-Diver® Technical specifications (pressure)

Type	DI 601	DI 602	DI 605	DI 610	DI 500 (Baro)
Range	10 m H_2O	20 m H_2O	50 m H_2O	100 m H_2O	1.5 m H_2O
- accuracy**	1 cm H_2O	2 cm H_2O	5 cm H_2O	10 cm H_2O	0.5 m H_2O
- resolution	0.2 cm H_2O	0.4 cm H_2O	1 cm H_2O	2 cm H_2O	0.1 cm H_2O

* various measuring methods available (fixed, event based, averaging and pumping tests)

** within temperature compensated range

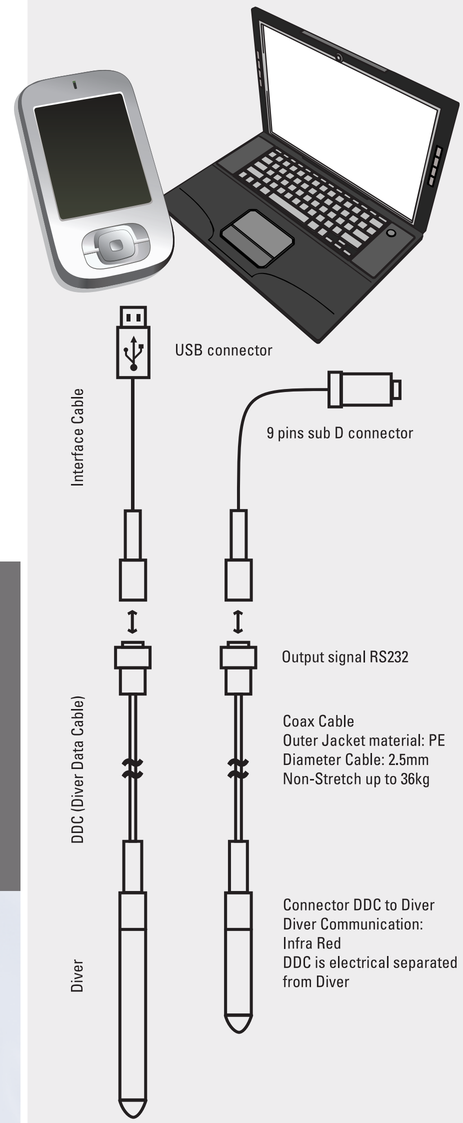
Accessories

Reading Unit

When the Diver is installed in the monitoring well by means of steel wire, the measured data can be readout on a PC, laptop or PocketPC with a Reading Unit equipped with a USB output. The dedicated software can also be used to program the Diver in the field or in the office. For reading and/or programming purposes, the mounting cap is removed from the Diver and the datalogger is placed in the Reading Unit. Subsequently the stored data can be readout and if necessary the Diver can be re-programmed.

Diver Data Cable

For optimized usability the Diver Data Cable (DDC) can be used. This makes it possible to read or program the Diver at the top of the monitoring well without withdrawing the instrument. The DDC is compatible with all Diver models and is available in several lengths up to 300 metres. In order to readout the Diver, a PC, laptop or PocketPC is connected to the DDC by an interface cable. The stored data can then be readout and if necessary the Diver can be re-programmed.



Software

Schlumberger WATER SERVICES

LoggerDataManager

To manage all your Diver data

The Logger Data Manager software package simplifies readout and programming of the Diver. These tasks can be done through a Reading Unit or directly through the Diver Data Cable and interface cable connected to a PC, laptop or PocketPC.

Programming
- Measuring site
- Instrument code
- Measurement method and frequency
- Direct or future start

Readout
- Groundwater level
- Groundwater temperature
- Electrical conductivity (CTD-Diver)
- Times of measurements

Data management and processing
- Smart Future Start
- Programming Divers, measuring sites and series
- Storing measurement data (name, code, height, assigned BaroDiver)
- Connecting multiple measuring sites to a given BaroDiver location
- CTD Calibration Wizard
- Barometric Compensation Wizard
- Manual measurement
- Graphical or tabular display or printout
- Export function for further processing
- Various export formats (e.g. CSV, MON, NITG)

Program & Readout

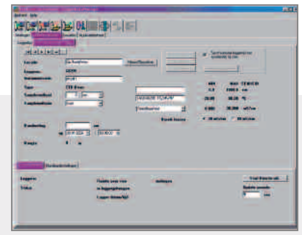
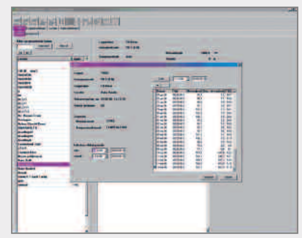
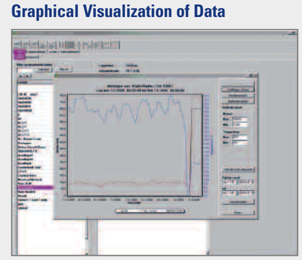


Table Visualization of Data



Graphical Visualization of Data



Pocket-Diver

Simple software solution for on the field

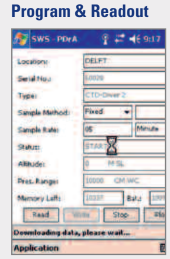
Pocket-Diver is a software package that can be used on a PocketPC for programming Divers and reading stored measurements. Pocket-Diver comes in two variants: the ‘Pocket-Diver Reader' enables you to read data, while 'Pocket-Diver Manager' also includes the Diver programming facility. For this purpose, the Divers must be connected to a Reading Unit or through an interface cable to the Diver Data Cable.

Programming
- Measuring site
- Instrument code
- Measurement frequency and method
- Direct or future start

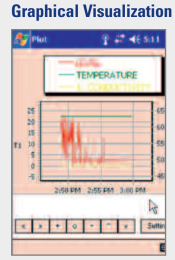
Readout
- Groundwater level
- Groundwater temperature
- Electrical conductivity (CTD-Diver)
- Times of measurements

Data management and processing
- Smart Future Start
- Barometric Compensation Wizard
- CTD-Diver Calibration Wizard
- All measured parameters of a series in a single graph
- Various export formats (CSV and MON)
- Software co-supplied
- Manual measurement

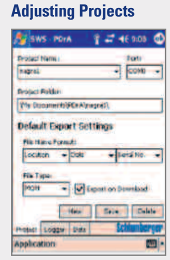
Program & Readout



Graphical Visualization



Adjusting Projects



APPENDIX F—BROMIDE ANALYTICAL RESULTS

APPENDIX F—BROMIDE ANALYTICAL RESULTS

ANALYTICAL REPORT

Job Number: 360-37292-1

SDG Number: 360-37292

Job Description: MRC Injection Project

For:
Tetra Tech NUS Inc
Foster Plaza VII
661 Anderson Drive
Pittsburgh, PA 15220-2745

Attention: Chris Pike

Approved for release.
Joe Chimi
Report Production Representative
11/8/2011 2:06 PM

Designee for
Lisa A Worthington
Project Manager II
lisa.worthington@testamericainc.com
11/08/2011

Results relate only to the items tested and the sample(s) as received by the laboratory. The test results in this report meet all NELAC requirements for accredited parameters, exceptions are noted in this report. Pursuant to NELAC, this report may not be reproduced except in full, and with written approval from the laboratory. TestAmerica Westfield Certifications and Approvals: MADEP MA014, RIDOH57, CTDPH 0494, VT DECWSD, NELAP NH DES 2539, NELAP NY 10843, NY ELAP 10843, North Carolina 647. Field sampling is performed under SOPs WE-FLD-001 and WE-FLD-002.

TestAmerica Laboratories, Inc.
TestAmerica Westfield Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085
Tel (413) 572-4000 Fax (413) 572-3707 www.testamericainc.com

Table of Contents

Table of Contents

I Christine Furcinite-Reynolds, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (413) 572-4000 if there are any questions or problems with the enclosed electronic deliverables.

Signature: Christine Furcinite-Reynolds Title: QA Manager Date: 11/8/11

Revision 8
ISG
08/10/10

CASE NARRATIVE

Client: Tetra Tech NUS Inc

Project: MRC Injection Project

Report Number: 360-37292-1

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

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

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

RECEIPT
The samples were received on 10/29/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 5.3 C.

ANIONS (28 DAY HOLD TIME)
Samples MPW-2I-102811 (360-37292-1), MPW-3I-102811 (360-37292-2), MPE-1I-102811 (360-37292-3), MPE-2I-102811 (360-37292-4), MPN-1I-102811 (360-37292-5) and MPN-2I-102811 (360-37292-6) were analyzed for anions (28 day hold time) in accordance with EPA Method 300.0. The samples were analyzed on 11/01/2011.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

SAMPLE SUMMARY

Client: Tetra Tech NUS Inc

Job Number: 360-37292-1
Sdg Number: 360-37292

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
360-37292-1	MPW-2I-102811	Water	10/28/2011 0815	10/29/2011 1130
360-37292-2	MPW-3I-102811	Water	10/28/2011 0850	10/29/2011 1130
360-37292-3	MPE-1I-102811	Water	10/28/2011 1120	10/29/2011 1130
360-37292-4	MPE-2I-102811	Water	10/28/2011 1205	10/29/2011 1130
360-37292-5	MPN-1I-102811	Water	10/28/2011 1305	10/29/2011 1130
360-37292-6	MPN-2I-102811	Water	10/28/2011 1325	10/29/2011 1130

EXECUTIVE SUMMARY - Detections

Client: Tetra Tech NUS Inc

Job Number: 360-37292-1
Sdg Number: 360-37292

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
360-37292-1	**MPW-2I-102811**					
Bromide		0.073		0.050	mg/L	300.0
360-37292-2	**MPW-3I-102811**					
Bromide		0.074		0.050	mg/L	300.0
360-37292-3	**MPE-1I-102811**					
Bromide		0.090		0.050	mg/L	300.0
360-37292-4	**MPE-2I-102811**					
Bromide		0.082		0.050	mg/L	300.0
360-37292-5	**MPN-1I-102811**					
Bromide		0.22		0.050	mg/L	300.0
360-37292-6	**MPN-2I-102811**					
Bromide		0.10		0.050	mg/L	300.0

METHOD SUMMARY

Client: Tetra Tech NUS Inc

Job Number: 360-37292-1
Sdg Number: 360-37292

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Anions, Ion Chromatography	TAL WFD	MCAWW 300.0	

Lab References:

TAL WFD = TestAmerica Westfield

Method References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

METHOD / ANALYST SUMMARY

Client: Tetra Tech NUS Inc

Job Number: 360-37292-1
Sdg Number: 360-37292

Method	Analyst	Analyst ID
MCAWW 300.0	Emerich, Rich W	RWE

General Chemistry

Client Sample ID: **MPW-2I-102811**

Lab Sample ID: 360-37292-1
Client Matrix: Water

Date Sampled: 10/28/2011 0815
Date Received: 10/29/2011 1130

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.073		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-82751		Analysis Date: 11/01/2011 1531				

General Chemistry

Client Sample ID: **MPW-3I-102811**

Lab Sample ID: 360-37292-2
Client Matrix: Water

Date Sampled: 10/28/2011 0850
Date Received: 10/29/2011 1130

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.074		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-82751		Analysis Date: 11/01/2011 1547				

Client: Tetra Tech NUS Inc

Job Number: 360-37292-1
Sdg Number: 360-37292

General Chemistry

Client Sample ID: **MPE-1I-102811**

Lab Sample ID: 360-37292-3
Client Matrix: Water

Date Sampled: 10/28/2011 1120
Date Received: 10/29/2011 1130

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.090		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-82751	Analysis Date: 11/01/2011 1603					

General Chemistry

Client Sample ID: **MPE-2I-102811**

Lab Sample ID: 360-37292-4 | Date Sampled: 10/28/2011 1205
Client Matrix: Water | Date Received: 10/29/2011 1130

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.082		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-82751	Analysis Date: 11/01/2011 1619					

Client: Tetra Tech NUS Inc

Job Number: 360-37292-1
Sdg Number: 360-37292

General Chemistry

Client Sample ID: **MPN-1I-102811**

Lab Sample ID: 360-37292-5
Client Matrix: Water

Date Sampled: 10/28/2011 1305
Date Received: 10/29/2011 1130

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.22		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-82751		Analysis Date: 11/01/2011 1635				

General Chemistry

Client Sample ID: **MPN-2I-102811**

Lab Sample ID: 360-37292-6
Client Matrix: Water

Date Sampled: 10/28/2011 1325
Date Received: 10/29/2011 1130

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.10		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-82751		Analysis Date: 11/01/2011 1651				

Quality Control Results

Client: Tetra Tech NUS Inc

Job Number: 360-37292-1
Sdg Number: 360-37292

Method Blank - Batch: 360-82751

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-82751/3	Analysis Batch:	360-82751	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/01/2011 1354	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Bromide	ND		0.050	0.050

Lab Control Sample - Batch: 360-82751

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-82751/4	Analysis Batch:	360-82751	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/01/2011 1410	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	4.00	4.02	100	85 - 115	

Client: Tetra Tech NUS Inc

Job Number: 360-37292-1
Sdg Number: 360-37292

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:360-82751					
LCS 360-82751/4	Lab Control Sample	T	Water	300.0	
MB 360-82751/3	Method Blank	T	Water	300.0	
360-37292-1	MPW-2I-102811	T	Water	300.0	
360-37292-2	MPW-3I-102811	T	Water	300.0	
360-37292-3	MPE-1I-102811	T	Water	300.0	
360-37292-4	MPE-2I-102811	T	Water	300.0	
360-37292-5	MPN-1I-102811	T	Water	300.0	
360-37292-6	MPN-2I-102811	T	Water	300.0	

Report Basis

T = Total

Client: Tetra Tech NUS Inc

Job Number: 360-37292-1
SDG: 360-37292

Laboratory Chronicle

Lab ID: **360-37292-1** **Client ID:** **MPW-2I-102811**

Sample Date/Time: 10/28/2011 08:15 Received Date/Time: 10/29/2011 11:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37292-A-1		360-82751		11/01/2011 15:31	1	TAL WFD	RWE

Lab ID: **360-37292-2** **Client ID:** **MPW-3I-102811**

Sample Date/Time: 10/28/2011 08:50 Received Date/Time: 10/29/2011 11:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37292-A-2		360-82751		11/01/2011 15:47	1	TAL WFD	RWE

Lab ID: **360-37292-3** **Client ID:** **MPE-1I-102811**

Sample Date/Time: 10/28/2011 11:20 Received Date/Time: 10/29/2011 11:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37292-A-3		360-82751		11/01/2011 16:03	1	TAL WFD	RWE

Lab ID: **360-37292-4** **Client ID:** **MPE-2I-102811**

Sample Date/Time: 10/28/2011 12:05 Received Date/Time: 10/29/2011 11:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37292-A-4		360-82751		11/01/2011 16:19	1	TAL WFD	RWE

Lab ID: **360-37292-5** **Client ID:** **MPN-1I-102811**

Sample Date/Time: 10/28/2011 13:05 Received Date/Time: 10/29/2011 11:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37292-A-5		360-82751		11/01/2011 16:35	1	TAL WFD	RWE

Lab ID: **360-37292-6** **Client ID:** **MPN-2I-102811**

Sample Date/Time: 10/28/2011 13:25 Received Date/Time: 10/29/2011 11:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37292-A-6		360-82751		11/01/2011 16:51	1	TAL WFD	RWE

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
A:300.0	MB 360-82751/3		360-82751		11/01/2011 13:54	1	TAL WFD	RWE

Client: Tetra Tech NUS Inc

Job Number: 360-37292-1
SDG: 360-37292

Laboratory Chronicle

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
A:300.0	LCS 360-82751/4		360-82751		11/01/2011 14:10	1	TAL WFD	RWE

Lab References:
TAL WFD = TestAmerica Westfield

Certification Summary

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Westfield	Connecticut	State Program	1	PH-0494
TestAmerica Westfield	Maine	State Program	1	MA00014
TestAmerica Westfield	Massachusetts	State Program	1	M-MA014
TestAmerica Westfield	New Hampshire	NELAC	1	2539
TestAmerica Westfield	New York	NELAC	2	10843
TestAmerica Westfield	North Carolina	North Carolina DENR	4	647
TestAmerica Westfield	Rhode Island	State Program	1	LAO00057
TestAmerica Westfield	Vermont	State Program	1	VT-10843

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.

State Accreditation Matrix

Method Name	Description	State where **Primary** Accreditation is Carried			
		New Hampshire (NELAC)	Mass	Conn	North Carolina
821-R-02-012	Toxicity, Acute (48-Hour)(list upon request)	NP			
SM 4500 Cl F	Chlorine, Residual		NP		
SM 9215E	Heterotrophic Plate Count (SimPlate)		P		
SM 9222D	Coliforms, Fecal (Membrane Filter)		P/NP		
SM 9223	Coliforms, Total, and E.Coli (Colilert-P/A)		P		
SM 9224	Coliforms, Total, and E.Coli (Enumeration)		P		
1103.1	E.coli		ambient/		
Enterolert	Enterococcus		source		
200.8 Rev 5.4	Metals (ICP/MS) (list upon request)	NP/P	NP/P		
200.7 Rev 4.4	Metals (ICP)(list upon request)	NP/P	NP/P		
6010B	Metals (ICP)(list upon request)	NP/SW			
245.1	Mercury (CVAA)	NP/P	NP		
7470A	Mercury (CVAA)	NP			
7471A	Mercury (CVAA)	SW			
SM 2340B	Total Hardness (as CaCO3) by calculation	NP/P	NP		
3005A	Preparation, Total Recoverable or Dissolved Metals	NP/P			
3010A	Preparation, Total Metals	NP/P			
3020A	Preparation, Total Metals	NP/P/SW			
3050B	Preparation, Metals	SW			
504.1	EDB, DBCP and 1,2,3-TCP (GC)	P	P		
608	Organochlorine Pest/PCBs (list upon request)	NP	NP		
625	Semivolatile Org Comp (GC/MS)(list upon request)	NP	NP		
3546	Microwave Extraction	SW			
3510C	Liquid-Liquid Extraction (Separatory Funnel)	NP			
3550B	Ultrasonic Extraction	SW			
8081A	Organochlorine Pesticides (GC)(list upon request)	NP/SW			
8082	PCBs by Gas Chromatography(list upon request)	NP/SW			
8270C	Semivolatile Comp.(GC/MS)(list upon request)	NP/SW			
CT ETPH	Conn - Ext. Total petroleum Hydrocarbons (GC)			NP/SW	
MA-EPH	Mass - Extractable Petroleum Hydrocarbons (GC)				NP/SW
524.2	Volatile Org Comp (GC/MS)(list upon request)	P	P		
524.2	Trihalomethane compounds	P	P		
624	Volatile Org Comp (GC/MS)(list upon request)	NP	NP		
5035	Closed System Purge and Trap	SW			
5030B	Purge and Trap	NP			
8260B	Volatile Org Comp. (GC/MS)(list upon request)	NP/SW			
MAVPH	Mass - Volatile Petroleum Hydrocarbons (GC)				NP/SW
180.1	Turbidity, Nephelometric	P	P		
300	Anions, Ion Chromatography	NP/P	NP/P		
410.4	COD	NP	NP		
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW			
10-107-06-2	Nitrogen, Total Kjeldahl	NP	NP		
7196A	Chromium, Hexavalent	NP/SW			
9012A	Cyanide, Total and/or Amenable	NP/SW			
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	NP			
9045C	pH	SW			
L107041C	Nitrogen, Nitrate	NP	P		
L107-06-1B	Nitrogen Ammonia	NP	NP		
L204001A CN	Cyanide, Total	P	NP/P		
L210-001A	Phenolics, Total Recoverable	NP	NP		
SM 2320B	Alkalinity	NP/P	NP/P		
SM 2510B	Conductivity, Specific Conductance	NP/P	NP/P		
SM 2540C	Solids, Total Dissolved (TDS)	NP/P	NP/P		
SM 2540D	Solids, Total Suspended (TSS)	NP	NP		
SM 3500 CR D	Chromium, Hexavalent	NP			
SM 4500 H+ B	pH	NP/P	NP/P		
SM 4500 NO2 B	Nitrogen, Nitrite	NP	P		
SM 4500 P E	Phosphorus, Orthophosphate	NP/P	NP		
SM 4500 P E	Phosphorus, Total	NP	NP		
SM 4500 S2 D	Sulfide, Total	NP			
SM 5210B	BOD, 5-Day	NP	NP		
SM 5310B	Organic Carbon, Total (TOC)	NP/P	NP		

Not all organic compounds are accreditied under NELAC

For methods with multiple compounds all compounds may not meet NELAC criteria, listing should be obtained from the laboratory

The lab carries additional accreditations with several states. This is the laboratories typcial listing but is subject to change based on the laboratories current certification standing.

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield

Job Number: 360-37292-1

SDG No.: 360-37292

Project: MRC Injection Project

Client Sample ID	Lab Sample ID
MPW-2I-102811	360-37292-1
MPW-3I-102811	360-37292-2
MPE-1I-102811	360-37292-3
MPE-2I-102811	360-37292-4
MPN-1I-102811	360-37292-5
MPN-2I-102811	360-37292-6

Comments:

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-2I-102811

Lab Sample ID: 360-37292-1

Lab Name: TestAmerica Westfield

Job No.: 360-37292-1

SDG ID.: 360-37292

Matrix: Water

Date Sampled: 10/28/2011 08:15

Reporting Basis: WET

Date Received: 10/29/2011 11:30

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.073	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-3I-102811

Lab Sample ID: 360-37292-2

Lab Name: TestAmerica Westfield

Job No.: 360-37292-1

SDG ID.: 360-37292

Matrix: Water

Date Sampled: 10/28/2011 08:50

Reporting Basis: WET

Date Received: 10/29/2011 11:30

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.074	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-1I-102811

Lab Sample ID: 360-37292-3

Lab Name: TestAmerica Westfield

Job No.: 360-37292-1

SDG ID.: 360-37292

Matrix: Water

Date Sampled: 10/28/2011 11:20

Reporting Basis: WET

Date Received: 10/29/2011 11:30

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.090	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-2I-102811

Lab Sample ID: 360-37292-4

Lab Name: TestAmerica Westfield

Job No.: 360-37292-1

SDG ID.: 360-37292

Matrix: Water

Date Sampled: 10/28/2011 12:05

Reporting Basis: WET

Date Received: 10/29/2011 11:30

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.082	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-1I-102811

Lab Sample ID: 360-37292-5

Lab Name: TestAmerica Westfield

Job No.: 360-37292-1

SDG ID.: 360-37292

Matrix: Water

Date Sampled: 10/28/2011 13:05

Reporting Basis: WET

Date Received: 10/29/2011 11:30

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.22	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-2I-102811

Lab Sample ID: 360-37292-6

Lab Name: TestAmerica Westfield

Job No.: 360-37292-1

SDG ID.: 360-37292

Matrix: Water

Date Sampled: 10/28/2011 13:25

Reporting Basis: WET

Date Received: 10/29/2011 11:30

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.10	0.050		mg/L			1	300.0

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37292-1

SDG No.: 360-37292

Analyst: RWE   Batch Start Date: 11/01/2011

Reporting Units: mg/L   Analytical Batch No.: 82751

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	13:22	Bromide	2.51	2.50	101	90-110		W11H_IC_ICV_00001
2	ICB	13:38	Bromide	ND					
15	CCV	17:07	Bromide	4.00	4.00	100	90-110		W11J_IC_LCS_00001
16	CCB	17:24	Bromide	ND					

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

FORM II-IN

3-IN
METHOD BLANK
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37292-1

SDG No.: 360-37292

Method	Lab Sample ID	Analyte	Result	Qual	Units	RL	Dil
Batch ID: 82751	Date: 11/01/2011 13:54						
300.0	MB 360-82751/3	Bromide	ND		mg/L	0.050	1

FORM III-IN

7A-IN
LAB CONTROL SAMPLE
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37292-1

SDG No.: 360-37292

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 82751		Date: 11/01/2011 14:10									
					LCS Source:	W11J_IC_LCS_00001					
300.0	LCS 360-82751/4	Bromide	4.02		mg/L	4.00	100	85-115			

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

FORM VIIA-IN

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield

Job Number: 360-37292-1

SDG Number: 360-37292

Matrix: Water

Instrument ID: Lachat 8500

Method: 300.0

RL Date: 10/27/2011 11:55

Analyte	Wavelength/ Mass	RL (mg/L)	
Bromide		0.05	

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield　　Job Number: 360-37292-1

SDG Number: 360-37292

Matrix: Water　　Instrument ID: Lachat 8500

Method: 300.0　　XMDL Date: 02/15/2011 13:03

Analyte	Wavelength/ Mass	XRL (mg/L)	XMDL (mg/L)
Bromide		0.1	0.01

FORM IX - IN

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield Job No.: 360-37292-1

SDG No.: 360-37292

Instrument ID: Lachat 8500 Method: 300.0

Start Date: 11/01/2011 13:22 End Date: 11/01/2011 20:37

Lab Sample ID	D/F	Type	Time	Analytes																			
				Br																			
ICV 360-82751/1	1		13:22	X																			
ZZZZZZ			13:22																				
ZZZZZZ			13:22																				
ZZZZZZ			13:22																				
ZZZZZZ			13:22																				
ZZZZZZ			13:22																				
ZZZZZZ			13:22																				
ZZZZZZ			13:22																				
ZZZZZZ			13:22																				
ZZZZZZ			13:22																				
ZZZZZZ			13:22																				
ZZZZZZ			13:22																				
ZZZZZZ			13:22																				
ICB 360-82751/2	1		13:38	X																			
MB 360-82751/3	1	T	13:54	X																			
LCS 360-82751/4	1	T	14:10	X																			
ZZZZZZ			14:26																				
ZZZZZZ			14:43																				
ZZZZZZ			14:59																				
ZZZZZZ			15:15																				
360-37292-1	1	T	15:31	X																			
360-37292-2	1	T	15:47	X																			
360-37292-3	1	T	16:03	X																			
360-37292-4	1	T	16:19	X																			
360-37292-5	1	T	16:35	X																			
360-37292-6	1	T	16:51	X																			
CCV 360-82751/15	1		17:07	X																			
CCB 360-82751/16	1		17:24	X																			
ZZZZZZ			17:40																				
ZZZZZZ			17:56																				
ZZZZZZ			18:12																				
ZZZZZZ			18:28																				
ZZZZZZ			18:44																				
ZZZZZZ			19:00																				
ZZZZZZ			19:16																				
ZZZZZZ			19:32																				
ZZZZZZ			19:49																				
ZZZZZZ			20:05																				
CCV 360-82751/27			20:21																				
CCB 360-82751/28			20:37																				

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name:	TestAmerica Westfield	Job No.:	360-37292-1
SDG No.:	360-37292		
Instrument ID:	Lachat 8500	Method:	300.0
Start Date:	11/01/2011 13:22	End Date:	11/01/2011 20:37

Prep Types
T = Total/NA

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review Coversheet—Inorganics Dept

Method Name: IC   Method Reference: 300.0 28D/48HS   Date of Analytical Run: 11/1/11

Primary Reviewer's Initials & Date: AMR 11/2/11   Secondary Reviewer's Initials & Date: 11/2/11 11/3/11

Batch Numbers	82751 82774	82758	82766	82770	[redacted]

[redacted]

QC Criteria—Non-MCP: ICV/CCV ±10%: [redacted] ±15%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%

QC Criteria—MCP/RCP: (9012 and 7196 only)
9012 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
9012 (soil): ICV/CCV ±15%: LCS/LCSD **: MS/MSD ±25%: ICB/MB/CCB <RL: MD RPD 35%: MSD/LCSD RPD ≤30%
7196 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
7196 (soil): ICV/CCV ±15%: LCS/LCSD **: MSS/MSI ±25%: ICB/MB/CCB <RL: MD RPD ≤35%: LCSD RPD ≤30%

FAILURES OF QC FOR ANYTHING OTHER THAN MS, MSD or MD ARE GROUNDS FOR INVALIDATING THE BATCH.

Criteria for QC	Yes	No	n/a	Notes/Comments
Were the ICV and CCVs within acceptable limits for QC recovery?	✓✓✓✓✓✓✓✓			
Were the ICB and CCBs all <RL?	✓✓✓✓✓✓✓			
Were all MB and CCB results <RL for the analytes of interest?	✓✓✓✓✓✓✓✓			
Was there a CCV/CCB combination run after every 10 samples or less?	✓✓✓✓✓✓✓✓			
Was there an LCS run with every batch of 20 samples or less?	✓✓✓✓✓✓✓✓			
Was there a MD, LCSD or MSD run with every batch of 20 samples or less?	✓✓✓✓✓✓	✓✓		
Were all LCS/LCSD results within acceptable limits for QC recovery?	✓✓✓✓✓✓✓✓			
Were all MS/MSD results within acceptable limits for QC recovery?	✓✓✓✓✓✓		✓✓	
Were all MD, LCSD and/or MSD %RPDs within acceptable limits for QC recovery?	✓✓✓✓✓✓		✓✓	
Were the raw data points for investigative samples within the working curve range, or if not, were the samples diluted to bring them within this range?	✓✓✓✓✓✓✓✓			
IF there were any MCP/RCP samples in this batch, did they meet all MCP/RCP requirements?	✓		✓✓✓✓✓✓✓	
Were there any holding time violations in this batch?	✓✓	✓✓✓✓✓✓		**NOTE!** The PM and QA Manager must be notified by email *immediately* of any holding time violations!!
Were any NCMs generated for any samples in the batch? (If so, list NCM numbers, and first-reviewer must check off any "No" answers above as applicable.)		✓✓✓✓✓✓✓✓		
Were any jobs in this batch Level 4? If "Yes" then scan all raw data & place in correct scan folder on the public drive before filing this paperwork.	✓	✓✓✓✓✓✓✓		

** LCS or LCSD must produce a recovery that is within the manufacturer's specified 95% confidence limits, must be matrix matched.

Original Run Filename: OM_11-1-2011_11-12-08AM.OMN *created 11/1/2011 11:12:08 AM*
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_11-1-2011_11-12-08AM.OMN last modified 11/2/2011 9:46:22 AM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Phosphate-P (mg/L)	Sulfate (mg/L)	Detection Time
Cal Stnd A	76	5.0000	50.0000	5.0000	5.0000	5.0000	5.0000	100.0000	11/1/2011@11:13:31 AM
Cal Stnd B	77	2.5000	25.0000	2.5000	2.5000	2.5000	2.5000	50.0000	11/1/2011@11:29:38 AM
Cal Stnd C	78	1.0000	10.0000	1.0000	1.0000	1.0000	1.0000	20.0000	11/1/2011@11:45:45 AM
Cal Stnd D	79	0.4000	4.0000	0.4000	0.4000	0.4000	0.4000	8.0000	11/1/2011@12:01:52 PM
Cal Stnd E	80	0.1000	1.0000	0.1000	0.1000	0.1000	0.1000	2.0000	11/1/2011@12:18:00 PM
Cal Stnd F	81	0.0500	0.5000	0.0500	0.0500	0.0500	0.0500	0.0500	11/1/2011@12:34:06 PM
Cal Stnd G	82	0.0000	0.0000	0.0000	0.0000	0.0100	0.0000	0.0000	11/1/2011@12:50:13 PM
BLANK RUN-IN	S11	0.0026	-0.0211	0.0071	0.0069	0.0033	0.1720	-0.9169	11/1/2011@1:06:20 PM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	Table/Fig. 7	
ICV	1	2.5146	25.5428	2.5075	2.5366	2.4981	7.2589	51.7268	11/1/2011@1:22:27 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	2.5000	50.0000	
ICB	S11	-1.0091e-4	-0.0231	0.0084	0.0069	0.0033	0.1678	-0.9190	11/1/2011@1:38:33 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0026	-0.0222	0.0084	0.0070	0.0032	0.1692	-0.9191	11/1/2011@1:54:40 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.0163	41.0364	4.0711	3.9809	4.1232	10.5152	81.3330	11/1/2011@2:10:47 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37301-A-1	2	0.0145	4.5567	0.0636	0.0108	5.0245e-4	0.1297	0.7506	11/1/2011@2:26:53 PM
360-37301-A-1@10	3	0.0017	0.5368	0.0132	0.0069	0.0040	0.1362	-0.7606	11/1/2011@2:43:00 PM
360-37301-A-1@10 MS	4	1.0493	11.3960	1.0924	1.0328	1.0802	0.5713	21.5499	11/1/2011@2:59:07 PM
360-37301-A-1@10 MSD	4	1.0399	11.3729	1.0907	1.0274	1.0782	-0.6742	21.4615	11/1/2011@3:15:14 PM
360-37292-A-1	5	0.0729	-110.7408	0.0883	0.0069	1.7124	0.1684	25.1505	11/1/2011@3:31:20 PM
360-37292-A-2	6	0.0741	-105.0257	0.0743	0.0069	1.2071	0.1775	11.6396	11/1/2011@3:47:27 PM
360-37292-A-3	7	0.0899	49.9996	0.1643	0.8052	0.0025	0.1517	4.3129	11/1/2011@4:03:33 PM
360-37292-A-4	8	0.0819	49.8867	0.1097	0.4421	-6.3921	0.1692	2.9548	11/1/2011@4:19:39 PM
360-37292-A-5	9	0.2241	24.9844	0.0659	0.0065	0.0025	0.1489	3.7989	11/1/2011@4:35:46 PM
360-37292-A-6	10	0.1009	84.9565	1.0026	0.2573	-0.1207	0.0187	125.5739	11/1/2011@4:51:51 PM
CCV	S12	4.0029	41.2908	4.1147	4.0080	4.1453	9.3244	82.0421	11/1/2011@5:07:58 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	-0.1551	-0.0253	0.0068	0.0085	0.0022	0.1692	-0.9191	11/1/2011@5:24:05 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37301-A-2	11	0.0026	3.5069	0.0292	2.3543	0.0025	0.1495	19.6161	11/1/2011@5:40:10 PM
360-37301-A-3	12	0.0233	2.0051	0.0299	0.3862	0.0169	0.1763	4.8740	11/1/2011@5:56:16 PM
360-37301-A-4	13	0.0331	2.6156	0.0461	0.0193	0.0025	0.1693	7.6994	11/1/2011@6:12:22 PM
360-37301-A-5	14	0.0231	11.8964	0.0589	0.0523	0.0025	0.1672	3.0252	11/1/2011@6:28:28 PM
360-37301-A-6	15	0.0647	16.2613	0.0422	0.0109	-0.0121	0.1683	11.0437	11/1/2011@6:44:32 PM
360-37301-A-7	16	0.0276	15.2874	0.0670	0.0118	0.0025	0.1696	4.8447	11/1/2011@7:00:39 PM
360-37301-A-8	17	0.0367	2.6914	0.0415	0.0095	0.0025	0.1483	7.3562	11/1/2011@7:16:46 PM
360-37301-A-9	18	0.0153	8.3898	0.0471	0.1959	0.0025	0.1521	1.9127	11/1/2011@7:32:53 PM
360-37301-A-10	19	0.0145	8.5366	0.0472	0.0345	0.0025	0.1610	1.9569	11/1/2011@7:49:00 PM

360-37301-C-11	20	0.0952	11.5549	0.0570	0.4474	0.0025	0.1477	2.4580	11/1/2011@8:05:07 PM
CCV	S12	4.1637	41.6982	4.1382	4.0925	4.1992	8.9019	82.6584	11/1/2011@8:21:13 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0026	-0.0249	0.0084	0.0087	0.0042	0.1684	-0.9399	11/1/2011@8:37:20 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	-0.0015	-0.0259	0.0084	0.0070	0.0039	0.1604	-0.9191	11/1/2011@8:53:27 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.1451	41.6838	4.1529	4.0903	4.1956	9.2738	82.7963	11/1/2011@9:09:33 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37301-C-12	21	0.0529	6.7906	0.0593	0.0130	0.0025	0.1317	2.2280	11/1/2011@9:25:40 PM
360-37301-C-12@10	22	0.0025	0.7313	0.0134	0.0101	0.0049	0.1708	-0.5669	11/1/2011@9:41:46 PM
360-37301-C-12@10 MS	23	1.0831	11.7022	1.0752	1.0572	1.0876	-0.7670	21.7151	11/1/2011@9:57:52 PM
360-37301-C-12@10 MSD	23	1.0741	11.6986	1.0802	1.0560	1.0855	-0.3076	21.7215	11/1/2011@10:13:58 PM
360-37311-D-1	51	0.0264	21.2294	0.0330	0.0654	0.0025	0.1692	26.4778	11/1/2011@10:30:05 PM
360-37311-D-2	52	0.1275	25.1791	0.0793	0.0069	0.0025	0.1685	132.7678	11/1/2011@10:46:11 PM
360-37311-D-3	53	0.1790	39.2137	0.2470	0.1317	0.0025	0.1694	112.2551	11/1/2011@11:02:17 PM
360-37311-D-4	54	0.2637	29.8479	0.5926	0.0406	0.0025	0.1695	88.9649	11/1/2011@11:18:23 PM
360-36908-A-1-A	24	-0.0067	0.7760	0.7302	0.8863	0.0194	-0.0493	5.2268	11/1/2011@11:34:29 PM
360-36908-A-2-A	25	0.0164	1.9257	0.6186	0.3706	0.0314	0.1309	5.3031	11/1/2011@11:50:34 PM
CCV	S12	4.1057	41.7613	4.1640	4.0668	4.1802	9.0805	82.9586	11/2/2011@12:06:41 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0024	-0.0285	0.0064	0.0075	0.0041	0.1539	-0.9215	11/2/2011@12:22:48 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-36908-A-7-A	30	0.0017	0.7862	0.7232	0.8182	0.0214	0.0483	4.2474	11/2/2011@12:38:53 AM
360-36908-A-8-A	31	0.0025	1.9384	0.5453	0.3537	0.0222	0.1373	4.7961	11/2/2011@12:55:00 AM
360-36908-A-9-A	32	7.6191e-4	2.0132	0.7542	0.9106	0.0204	0.1141	3.6111	11/2/2011@1:11:07 AM
360-36908-A-10-A	33	8.2506e-4	1.8872	0.6362	1.1666	0.0137	0.0457	7.3780	11/2/2011@1:27:13 AM
360-36908-A-11-A	34	0.0025	3.0389	0.7551	0.9208	0.0211	0.0821	5.1970	11/2/2011@1:43:20 AM
360-36908-A-12-A	35	-0.0011	2.4423	0.8354	0.8145	0.0179	0.0386	5.4736	11/2/2011@1:59:26 AM
360-36908-A-13-A	36	0.0081	0.3474	0.7072	0.0129	0.0164	0.1757	-0.7268	11/2/2011@2:15:33 AM
360-36908-A-3-A	26	-3.5492e-4	2.0111	0.6291	0.9168	0.0264	0.0992	3.6388	11/2/2011@2:31:39 AM
360-36908-A-4-A	27	0.0025	2.0366	0.7345	1.2297	0.0149	0.0543	7.9601	11/2/2011@2:47:44 AM
360-36908-A-5-A	28	0.0025	3.1005	0.7193	0.9271	0.0228	0.0768	5.2696	11/2/2011@3:03:50 AM
CCV	S12	4.0229	41.7822	4.1581	4.0445	4.1496	9.0267	83.2237	11/2/2011@3:19:56 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0086	-0.0306	0.0084	0.0052	0.0046	0.1675	-0.9224	11/2/2011@3:36:03 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0122	-0.0304	0.0061	0.0069	0.0045	0.1661	-0.9188	11/2/2011@3:52:09 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9979	41.9098	4.1819	4.0286	4.1686	9.3199	83.4600	11/2/2011@4:08:16 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-36908-A-6-A	29	0.0025	2.4313	0.6895	0.8086	0.0212	0.0318	5.0577	11/2/2011@4:24:22 AM
360-37267-B-5	40	0.1175	22.6373	0.0909	0.0065	0.0025	-2.6198	0.4431	11/2/2011@4:40:27 AM
360-37267-B-5@10	41	0.0123	2.0918	0.0161	0.0048	0.0056	-0.1675	-0.7662	11/2/2011@4:56:33 AM
360-37267-B-5@10 MS	42	1.0242	13.2701	1.0747	1.0092	1.0644	-1.1197	21.3961	11/2/2011@5:12:39 AM
360-37267-B-5@10 MSD	42	0.9737	13.2374	1.0737	0.9674	1.0520	-1.1247	21.3407	11/2/2011@5:28:44 AM
400-60513-D-1@10 SO4	43	0.0227	3.8246	0.0067	0.0083	0.0025	0.1583	11.4798	11/2/2011@5:44:49 AM
400-60513-D-3@10 SO4	44	0.0166	0.9373	0.0086	0.0069	0.0067	0.1879	47.8350	11/2/2011@6:00:55 AM
400-60513-D-10@10 SO4	45	0.0355	3.0374	0.0070	0.0114	0.0055	0.1679	23.6060	11/2/2011@6:17:00 AM

400-60513-D-11@10 SO4	46	0.0199	4.2264	0.0071	0.0094	0.0070	0.1723	10.1730	11/2/2011@6:33:08 AM
400-60513-D-12@10 SO4	47	0.0215	12.3452	0.0154	0.0069	0.0025	0.1688	28.6854	11/2/2011@6:49:15 AM
CCV	S12	3.7492	41.8451	4.1855	3.9312	4.0609	8.5065	83.7811	11/2/2011@7:05:21 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0024	-0.0325	0.0084	0.0070	0.0055	0.1556	-0.9210	11/2/2011@7:21:28 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37291-A-1-A@5	49	0.0025	1.1780	0.0129	0.0984	0.0173	0.1450	0.1693	11/2/2011@7:37:35 AM
360-37291-A-2-A@5	50	0.0019	0.9773	0.0143	0.0980	0.0138	0.1535	0.1981	11/2/2011@7:53:42 AM
360-37267-A-4	48	0.0637	-73.6481	0.0886	3.9179	1.9962	0.1178	51.6950	11/2/2011@8:09:48 AM
360-37267-A-1	37	0.0586	-77.8219	0.0720	1.7981	-151.0897	0.1621	41.0112	11/2/2011@8:25:54 AM
360-37267-A-2	38	0.0019	-74.5767	0.0538	0.5778	1.4999	0.1691	38.0747	11/2/2011@8:42:01 AM
360-37267-A-3	39	0.0783	3.4840	0.1263	7.8344	0.0235	-0.0771	37.2083	11/2/2011@8:58:07 AM
CCV	S12	3.9439	42.0804	4.2364	4.0304	4.1231	7.5757	84.2730	11/2/2011@9:14:14 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	-2.8473e-4	-0.0331	0.0084	0.0040	0.0061	0.1670	-0.9190	11/2/2011@9:30:20 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Original Run Filename: OM_11-1-2011_11-12-08AM.OMN created 11/1/2011 11:12:08 AM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_11-1-2011_11-12-08AM.OMN last modified 11/2/2011 9:46:22 AM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1							Detection Time
		Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Phosphate-P (mg/L)	Sulfate (mg/L)	
Cal Stnd A	76	5.0000	50.0000	5.0000	5.0000	5.0000	5.0000	100.0000	11/1/2011@11:13:31 AM
Cal Stnd B	77	2.5000	25.0000	2.5000	2.5000	2.5000	2.5000	50.0000	11/1/2011@11:29:38 AM
Cal Stnd C	78	1.0000	10.0000	1.0000	1.0000	1.0000	1.0000	20.0000	11/1/2011@11:45:45 AM
Cal Stnd D	79	0.4000	4.0000	0.4000	0.4000	0.4000	0.4000	8.0000	11/1/2011@12:01:52 PM
Cal Stnd E	80	0.1000	1.0000	0.1000	0.1000	0.1000	0.1000	2.0000	11/1/2011@12:18:00 PM
Cal Stnd F	81	0.0500	0.5000	0.0500	0.0500	0.0500	0.0500	0.0500	11/1/2011@12:34:06 PM
Cal Stnd G	82	0.0000	0.0000	0.0000	0.0000	0.0100	0.0000	0.0000	11/1/2011@12:50:13 PM
BLANK RUN-IN	S11	0.0026	-0.0211	0.0071	0.0069	0.0033	0.1720	-0.9169	11/1/2011@1:06:20 PM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	Table/Fig. 7	
ICV	1	2.5146	25.5428	2.5075	2.5366	2.4981	7.2589	51.7268	11/1/2011@1:22:27 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	2.5000	50.0000	
ICB	S11	-1.0091e-4	-0.0231	0.0084	0.0069	0.0033	0.1678	-0.9190	11/1/2011@1:38:33 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0026	-0.0222	0.0084	0.0070	0.0032	0.1692	-0.9191	11/1/2011@1:54:40 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.0163	41.0364	4.0711	3.9809	4.1232	10.5152	81.3330	11/1/2011@2:10:47 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37301-A-1	2	0.0145	4.5567	0.0636	0.0108	5.0245e-4	0.1297	0.7506	11/1/2011@2:26:53 PM
360-37301-A-1@10	3	0.0017	0.5368	0.0132	0.0069	0.0040	0.1362	-0.7606	11/1/2011@2:43:00 PM
360-37301-A-1@10 MS	4	1.0493	11.3960	1.0924	1.0328	1.0802	0.5713	21.5499	11/1/2011@2:59:07 PM
360-37301-A-1@10 MSD	4	1.0399	11.3729	1.0907	1.0274	1.0782	-0.6742	21.4615	11/1/2011@3:15:14 PM
360-37292-A-1	5	0.0729	-110.7408	0.0883	0.0069	1.7124	0.1684	25.1505	11/1/2011@3:31:20 PM
360-37292-A-2	6	0.0741	-105.0257	0.0743	0.0069	1.2071	0.1775	11.6396	11/1/2011@3:47:27 PM
360-37292-A-3	7	0.0899	49.9996	0.1643	0.8052	0.0025	0.1517	4.3129	11/1/2011@4:03:33 PM
360-37292-A-4	8	0.0819	49.8867	0.1097	0.4421	-6.3921	0.1692	2.9548	11/1/2011@4:19:39 PM
360-37292-A-5	9	0.2241	24.9844	0.0659	0.0065	0.0025	0.1489	3.7989	11/1/2011@4:35:46 PM
360-37292-A-6	10	0.1009	84.9565	1.0026	0.2573	-0.1207	0.0187	125.5739	11/1/2011@4:51:51 PM
CCV	S12	4.0029	41.2908	4.1147	4.0080	4.1453	9.3244	82.0421	11/1/2011@5:07:58 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	-0.1551	-0.0253	0.0068	0.0085	0.0022	0.1692	-0.9191	11/1/2011@5:24:05 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37301-A-2	11	0.0026	3.5069	0.0292	2.3543	0.0025	0.1495	19.6161	11/1/2011@5:40:10 PM
360-37301-A-3	12	0.0233	2.0051	0.0299	0.3862	0.0169	0.1763	4.8740	11/1/2011@5:56:16 PM
360-37301-A-4	13	0.0331	2.6156	0.0461	0.0193	0.0025	0.1693	7.6994	11/1/2011@6:12:22 PM
360-37301-A-5	14	0.0231	11.8964	0.0589	0.0523	0.0025	0.1672	3.0252	11/1/2011@6:28:28 PM
360-37301-A-6	15	0.0647	16.2613	0.0422	0.0109	-0.0121	0.1683	11.0437	11/1/2011@6:44:32 PM
360-37301-A-7	16	0.0276	15.2874	0.0670	0.0118	0.0025	0.1696	4.8447	11/1/2011@7:00:39 PM
360-37301-A-8	17	0.0367	2.6914	0.0415	0.0095	0.0025	0.1483	7.3562	11/1/2011@7:16:46 PM
360-37301-A-9	18	0.0153	8.3898	0.0471	0.1959	0.0025	0.1521	1.9127	11/1/2011@7:32:53 PM
360-37301-A-10	19	0.0145	8.5366	0.0472	0.0345	0.0025	0.1610	1.9569	11/1/2011@7:49:00 PM

360-37301-C-11	20	0.0952	11.5549	0.0570	0.4474	0.0025	0.1477	2.4580	11/1/2011@8:05:07 PM
CCV	S12	4.1637	41.6982	4.1382	4.0925	4.1992	8.9019	82.6584	11/1/2011@8:21:13 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0026	-0.0249	0.0084	0.0087	0.0042	0.1684	-0.9399	11/1/2011@8:37:20 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	-0.0015	-0.0259	0.0084	0.0070	0.0039	0.1604	-0.9191	11/1/2011@8:53:27 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.1451	41.6838	4.1529	4.0903	4.1956	9.2738	82.7963	11/1/2011@9:09:33 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37301-C-12	21	0.0529	6.7906	0.0593	0.0130	0.0025	0.1317	2.2280	11/1/2011@9:25:40 PM
360-37301-C-12@10	22	0.0025	0.7313	0.0134	0.0101	0.0049	0.1708	-0.5669	11/1/2011@9:41:46 PM
360-37301-C-12@10 MS	23	1.0831	11.7022	1.0752	1.0572	1.0876	-0.7670	21.7151	11/1/2011@9:57:52 PM
360-37301-C-12@10 MSD	23	1.0741	11.6986	1.0802	1.0560	1.0855	-0.3076	21.7215	11/1/2011@10:13:58 PM
360-37311-D-1	51	0.0264	21.2294	0.0330	0.0654	0.0025	0.1692	26.4778	11/1/2011@10:30:05 PM
360-37311-D-2	52	0.1275	25.1791	0.0793	0.0069	0.0025	0.1685	132.7678	11/1/2011@10:46:11 PM
360-37311-D-3	53	0.1790	39.2137	0.2470	0.1317	0.0025	0.1694	112.2551	11/1/2011@11:02:17 PM
360-37311-D-4	54	0.2637	29.8479	0.5926	0.0406	0.0025	0.1695	88.9649	11/1/2011@11:18:23 PM
360-36908-A-1-A	24	-0.0067	0.7760	0.7302	0.8863	0.0194	-0.0493	5.2268	11/1/2011@11:34:29 PM
360-36908-A-2-A	25	0.0164	1.9257	0.6186	0.3706	0.0314	0.1309	5.3031	11/1/2011@11:50:34 PM
CCV	S12	4.1057	41.7613	4.1640	4.0668	4.1802	9.0805	82.9586	11/2/2011@12:06:41 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0024	-0.0285	0.0064	0.0075	0.0041	0.1539	-0.9215	11/2/2011@12:22:48 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-36908-A-7-A	30	0.0017	0.7862	0.7232	0.8182	0.0214	0.0483	4.2474	11/2/2011@12:38:53 AM
360-36908-A-8-A	31	0.0025	1.9384	0.5453	0.3537	0.0222	0.1373	4.7961	11/2/2011@12:55:00 AM
360-36908-A-9-A	32	7.6191e-4	2.0132	0.7542	0.9106	0.0204	0.1141	3.6111	11/2/2011@1:11:07 AM
360-36908-A-10-A	33	8.2506e-4	1.8872	0.6362	1.1666	0.0137	0.0457	7.3780	11/2/2011@1:27:13 AM
360-36908-A-11-A	34	0.0025	3.0389	0.7551	0.9208	0.0211	0.0821	5.1970	11/2/2011@1:43:20 AM
360-36908-A-12-A	35	-0.0011	2.4423	0.8354	0.8145	0.0179	0.0386	5.4736	11/2/2011@1:59:26 AM
360-36908-A-13-A	36	0.0081	0.3474	0.7072	0.0129	0.0164	0.1757	-0.7268	11/2/2011@2:15:33 AM
360-36908-A-3-A	26	-3.5492e-4	2.0111	0.6291	0.9168	0.0264	0.0992	3.6388	11/2/2011@2:31:39 AM
360-36908-A-4-A	27	0.0025	2.0366	0.7345	1.2297	0.0149	0.0543	7.9601	11/2/2011@2:47:44 AM
360-36908-A-5-A	28	0.0025	3.1005	0.7193	0.9271	0.0228	0.0768	5.2696	11/2/2011@3:03:50 AM
CCV	S12	4.0229	41.7822	4.1581	4.0445	4.1496	9.0267	83.2237	11/2/2011@3:19:56 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0086	-0.0306	0.0084	0.0052	0.0046	0.1675	-0.9224	11/2/2011@3:36:03 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0122	-0.0304	0.0061	0.0069	0.0045	0.1661	-0.9188	11/2/2011@3:52:09 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9979	41.9098	4.1819	4.0286	4.1686	9.3199	83.4600	11/2/2011@4:08:16 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-36908-A-6-A	29	0.0025	2.4313	0.6895	0.8086	0.0212	0.0318	5.0577	11/2/2011@4:24:22 AM
360-37267-B-5	40	0.1175	22.6373	0.0909	0.0065	0.0025	-2.6198	0.4431	11/2/2011@4:40:27 AM
360-37267-B-5@10	41	0.0123	2.0918	0.0161	0.0048	0.0056	-0.1675	-0.7662	11/2/2011@4:56:33 AM
360-37267-B-5@10 MS	42	1.0242	13.2701	1.0747	1.0092	1.0644	-1.1197	21.3961	11/2/2011@5:12:39 AM
360-37267-B-5@10 MSD	42	0.9737	13.2374	1.0737	0.9674	1.0520	-1.1247	21.3407	11/2/2011@5:28:44 AM
400-60513-D-1@10 SO4	43	0.0227	3.8246	0.0067	0.0083	0.0025	0.1583	11.4798	11/2/2011@5:44:49 AM
400-60513-D-3@10 SO4	44	0.0166	0.9373	0.0086	0.0069	0.0067	0.1879	47.8350	11/2/2011@6:00:55 AM
400-60513-D-10@10 SO4	45	0.0355	3.0374	0.0070	0.0114	0.0055	0.1679	23.6060	11/2/2011@6:17:00 AM

* MB + LCS for 36908 reported w/ batch 82776. AMS 11/2/11.

400-60513-D-11@10 SO4	46	0.0199	4.2264	0.0071	0.0094	0.0070	0.1723	10.1730	11/2/2011@6:33:08 AM
400-60513-D-12@10 SO4	47	0.0215	12.3452	0.0154	0.0069	0.0025	0.1688	28.6854	11/2/2011@6:49:15 AM
CCV	S12	3.7492	41.8451	4.1855	3.9312	4.0609	8.5065	83.7811	11/2/2011@7:05:21 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0024	-0.0325	0.0084	0.0070	0.0055	0.1556	-0.9210	11/2/2011@7:21:28 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37291-A-1-A@5	49	0.0025	1.1780	0.0129	0.0984	0.0173	0.1450	0.1693	11/2/2011@7:37:35 AM
360-37291-A-2-A@5	50	0.0019	0.9773	0.0143	0.0980	0.0138	0.1535	0.1981	11/2/2011@7:53:42 AM
360-37267-A-4	48	0.0637	-73.6481	0.0886	3.9179	1.9962	0.1178	51.6950	11/2/2011@8:09:48 AM
360-37267-A-1	37	0.0586	-77.8219	0.0720	1.7981	-151.0897	0.1621	41.0112	11/2/2011@8:25:54 AM
360-37267-A-2	38	0.0019	-74.5767	0.0538	0.5778	1.4999	0.1691	38.0747	11/2/2011@8:42:01 AM
360-37267-A-3	39	0.0783	3.4840	0.1263	7.8344	0.0235	-0.0771	37.2083	11/2/2011@8:58:07 AM
CCV	S12	3.9439	42.0804	4.2364	4.0304	4.1231	7.5757	84.2730	11/2/2011@9:14:14 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	-2.8473e-4	-0.0331	0.0084	0.0040	0.0061	0.1670	-0.9190	11/2/2011@9:30:20 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Ion Chromatography QC Source Data Sheet—Inorganics Dept

Method (circle methods): IC 300_28D IC 300_48HR IC 9056_28D IC 9056_48HR

Date of Analytical Run: 11/1/11 Analyst's Initials: AMS / RWE

Working Curve Standard:

Manufacturer & Lot Number for Source Standard	Working Curve Standards Prepared On
Inorganic Ventures Lot E2-MEB394034	20 October 2011

QC Standard True Values for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.50	25.0	2.50	2.50	2.50	50.0
ICB	0	0	0	0	0	0
MB	0	0	0	0	0	0
LCS/LCSD	4.00	40.0	4.00	4.00	4.00	80.0
MS/MSD	1.00	10.0	1.00	1.00	1.00	20.0

QC Standard Acceptable Recovery Ranges for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.25-2.75	22.5-27.5	2.25-2.75	2.25-2.75	2.25-2.75	45.0-55.0
ICB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
MB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
LCS/LCSD	3.40-4.60	34.0-46.0	3.40-4.60	3.40-4.60	3.40-4.60	68.0-92.0
MS/MSD	0.75-1.25	7.50-12.5	0.75-1.25	0.75-1.25	0.75-1.25	15.0-25.0

Current Method RLs (mg/L):

	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
	0.10	1.00	0.010	0.10	0.050	2.0

0.25 *M* Sulfuric Acid Creation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Record the information below for creating the acid. When an entry is made do not use arrows to fill in information. All entries must be complete.

Recipe: to 2958mL of deionized water in a 1 gallon jug add 42mL of concentrated H_2SO_4 for a total volume of 3L.

Date Made	Analyst's Initials	Volume of 0.25 *M* Acid Made (L)	Source: Concentrated Sulfuric Acid (ACS grade) Manufacturer & Lot Number
10-24-11	RE	3	Baker lot #J22022
10/25/11	AMS	3	
10-27-11	RE	3	
10/26/11	AMS	3	
10-28-11	RE	3	
11-1-11	RE	3	

BL-WET-067

12

08/25/10

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Eluent Preparation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Prepare fresh daily; makes 3L of eluent. To make: in a one-gallon plastic container, mix:

- 60.0 mL of 100*M* $NaHCO_3$;
- 78.0 mL of 100*M* Na_2CO_3; and
- 2862 mL of deionized water.

Degas with helium for 3min before use.

Date Prepared	Analyst's Initials	Lot # 100*M* $NaHCO_3$	Lot # 100*M* Na_2CO_3	Number of Portions Prepared
10-24-11	RW	W11I RGT013	W11J RGT009	1
10/25/11	AMS	↓	↓	1
10-27-11	RW	W11J RGT018	↓	1
10-26-11	AMS	↓	↓	1
10-28-11	RW	↓	↓	1
11-1-11	RW	↓	↓	1

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-82461
Analyst: Stewart, Alyse M
Batch Open: 10/27/2011 2:54:21PM

Method Code: 360-DI_LEACH-360
Batch End:

Deionized Water Leaching Procedure

	Input Sample Lab ID (Analytical Method)	SDG	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~360-82461/1 N/A	N/A		250 g	250 mL	N/A	N/A	N/A		MB 360-82461/1-A
2	LCS~360-82461/2 N/A	N/A		250 g	250 mL	N/A	N/A	N/A		LCS 360-82461/2-A
3	360-36908-A-1 (300.0_28D)	N/A	Filter	250 g	250 mL	10/24/11	9_Days - R	1		360-36908-A-1-A
4	360-36908-A-2 (300.0_28D)	N/A	Filter	250 g	250 mL	10/24/11	9_Days - R	1		360-36908-A-2-A
5	360-36908-A-3 (300.0_28D)	N/A	Filter	250 g	250 mL	10/24/11	9_Days - R	1		360-36908-A-3-A
6	360-36908-A-4 (300.0_28D)	N/A	Filter	250 g	250 mL	10/24/11	9_Days - R	1		360-36908-A-4-A
7	360-36908-A-5 (300.0_28D)	N/A	Filter	250 g	250 mL	10/24/11	9_Days - R	1		360-36908-A-5-A
8	360-36908-A-6 (300.0_28D)	N/A	Filter	250 g	250 mL	10/24/11	9_Days - R	1		360-36908-A-6-A
9	360-36908-A-7 (300.0_28D)	N/A	Filter	250 g	250 mL	10/24/11	9_Days - R	1		360-36908-A-7-A
10	360-36908-A-8 (300.0_28D)	N/A	Filter	250 g	250 mL	10/24/11	9_Days - R	1		360-36908-A-8-A
11	360-36908-A-9 (300.0_28D)	N/A	Filter	250 g	250 mL	10/24/11	9_Days - R	1		360-36908-A-9-A
12	360-36908-A-10 (300.0_28D)	N/A	Filter	250 g	250 mL	10/24/11	9_Days - R	1		360-36908-A-10-A
13	360-36908-A-11 (300.0_28D)	N/A	Filter	250 g	250 mL	10/24/11	9_Days - R	1		360-36908-A-11-A
14	360-36908-A-12 (300.0_28D)	N/A	Filter	250 g	250 mL	10/24/11	9_Days - R	1		360-36908-A-12-A

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-82461 | Analyst: Stewart, Alyse M | Batch Open: 10/27/2011 2:54:21PM

Method Code: 360-DI_LEACH-360 | Batch End:

15	360-36908-A-13 (300.0_28D)	N/A	Filter	250 g	250 mL	10/24/11	9_Days - R	1	

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-82461 | Analyst: Stewart, Alyse M | Batch Open: 10/27/2011 2:54:21PM

Method Code: 360-DI_LEACH-360 | Batch End:

Batch Notes

Balance ID

Blank Soil Lot Number

Batch Comment

Comments

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-82461　　Analyst: Stewart, Alyse M　　Batch Open: 10/27/2011 2:54:21PM

Method Code: 360-DI_LEACH-360　　Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
LCS 360-82461/2	W11J_IC_LCS_00001	250 mL	250 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-82637

Method Code: 360-DI_LEACH-360

Analyst: Emerich, Rich W

Batch Open: 11/1/2011 10:19:48AM

Batch End:

Deionized Water Leaching Procedure

	Input Sample Lab ID (Analytical Method)	SDG	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~360-82637/1 N/A	N/A		10 g	100 mL	N/A	N/A	N/A		MB 360-82637/1-A
2	LCS~360-82637/2 N/A	N/A		10 g	100 mL	N/A	N/A	N/A		LCS 360-82637/2-A
3	360-37291-A-1 (300.0_28D)	N/A	Solid	10.18 g	100 mL	11/2/11	2_Day_RUSH -	1		360-37291-A-1-A
	360-37291-A-2 (300.0_28D)	N/A	Solid	10.46 g	100 mL	11/2/11	2_Day_RUSH -	1		360-37291-A-2-A

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-82637 | Analyst: Emerich, Rich W | Batch Open: 11/1/2011 10:19:48AM

Method Code: 360-DI_LEACH-360 | Batch End:

Batch Notes

Balance ID P602095003

Blank Soil Lot Number

Batch Comment

Comments

Login Comments for Job 37291: **PDF only**

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-82637
Method Code: 360-DI_LEACH-360

Analyst: Emerich, Rich W

Batch Open: 11/1/2011 10:19:48AM
Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
LCS 360-82637/2	W11J_IC_LCS_00001	100 mL	100 mL		

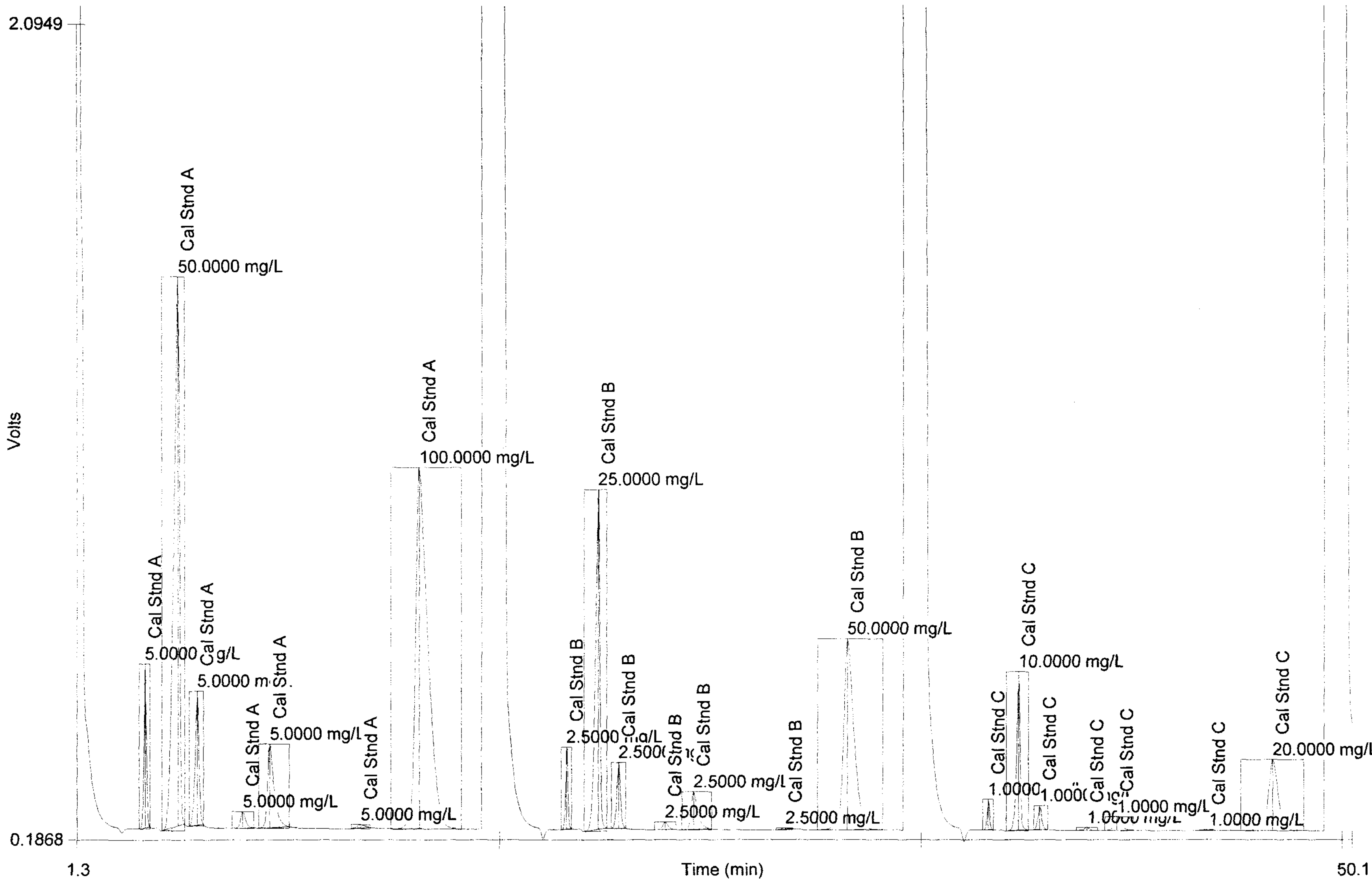
Other Reagents:

Reagent	Amount/Units	Lot#:

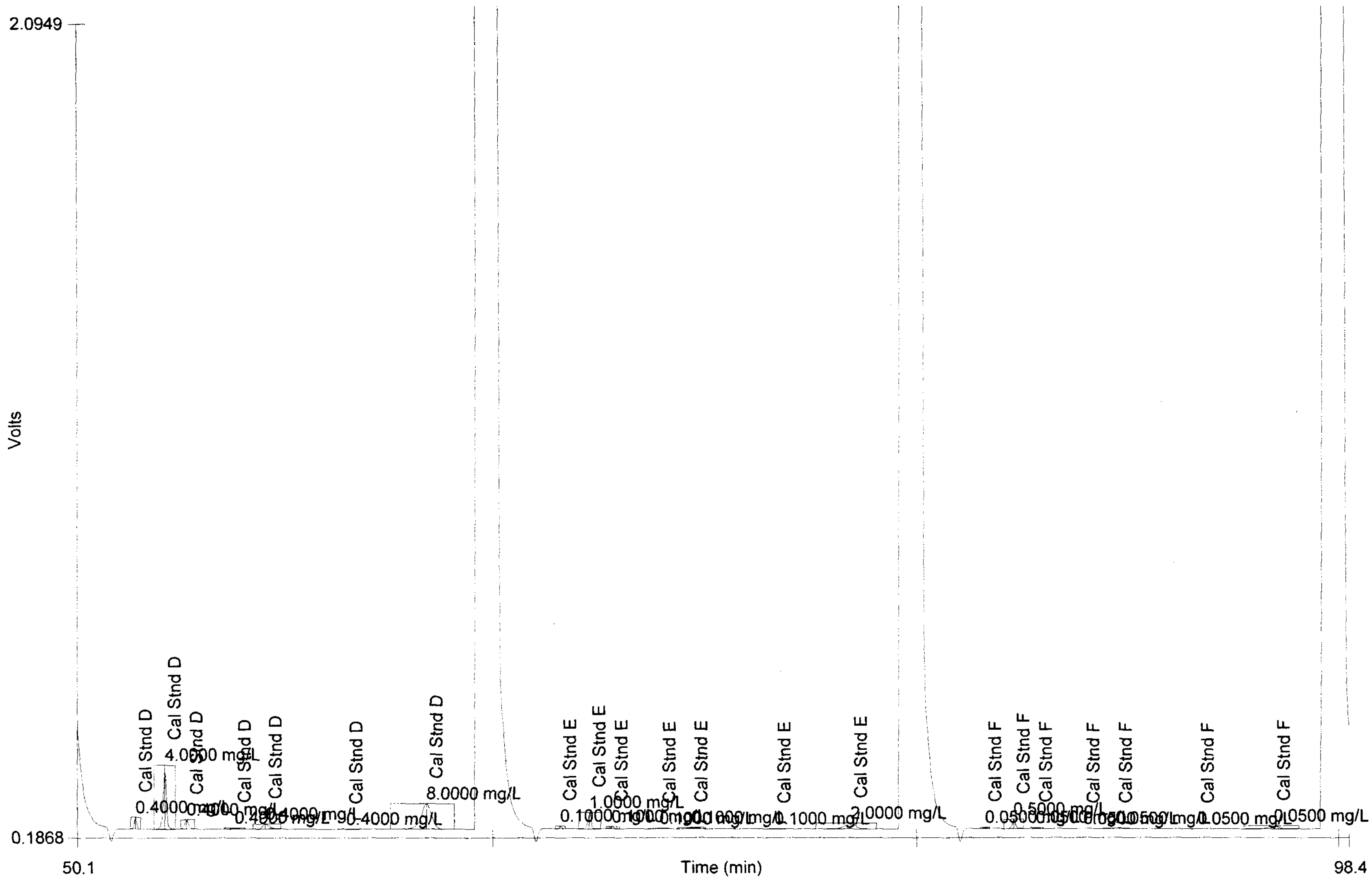
Author: EmerichR

Date : 11/2/2011

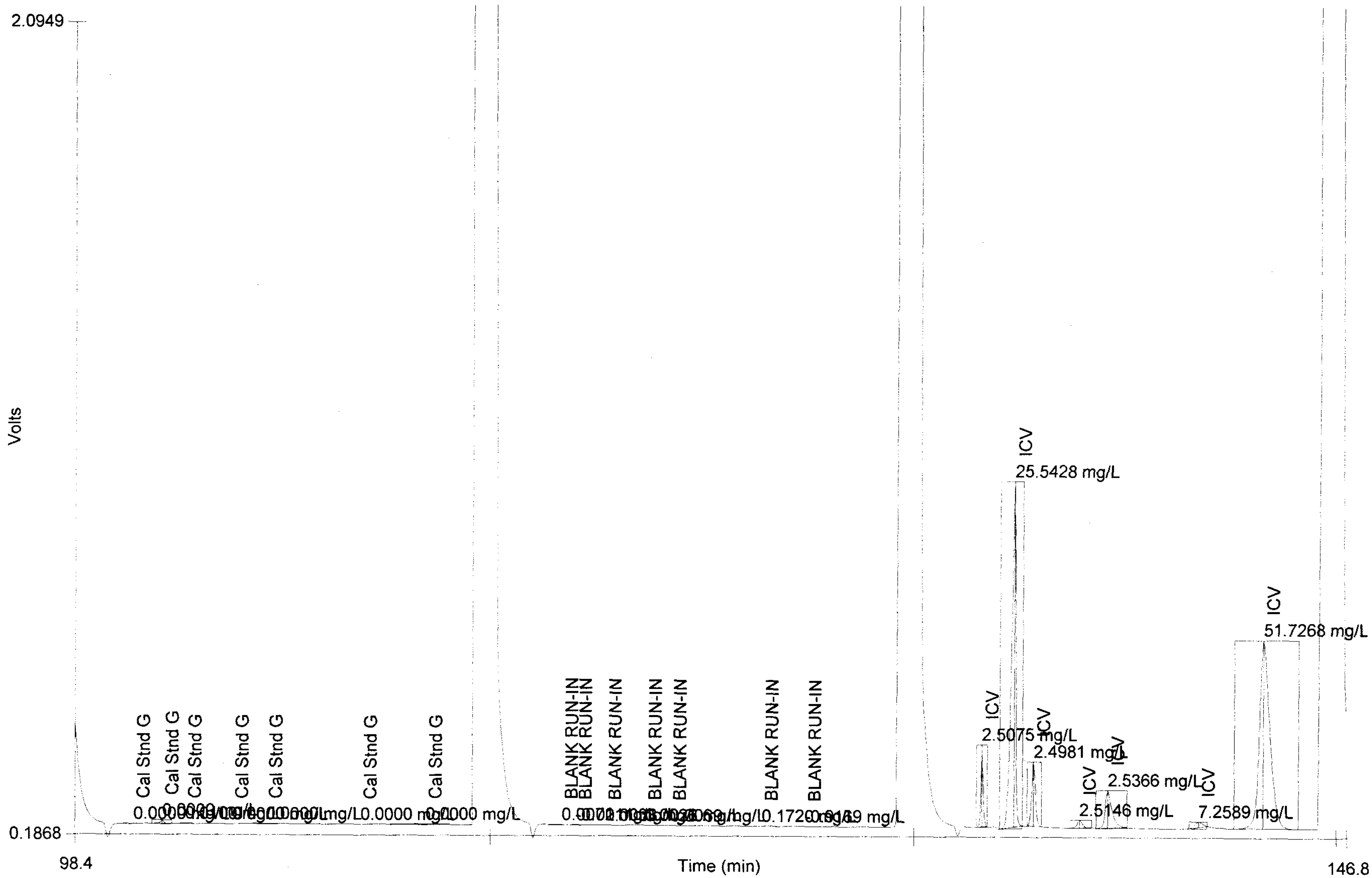
Channel 1 (Anions) : Set 1 of 28



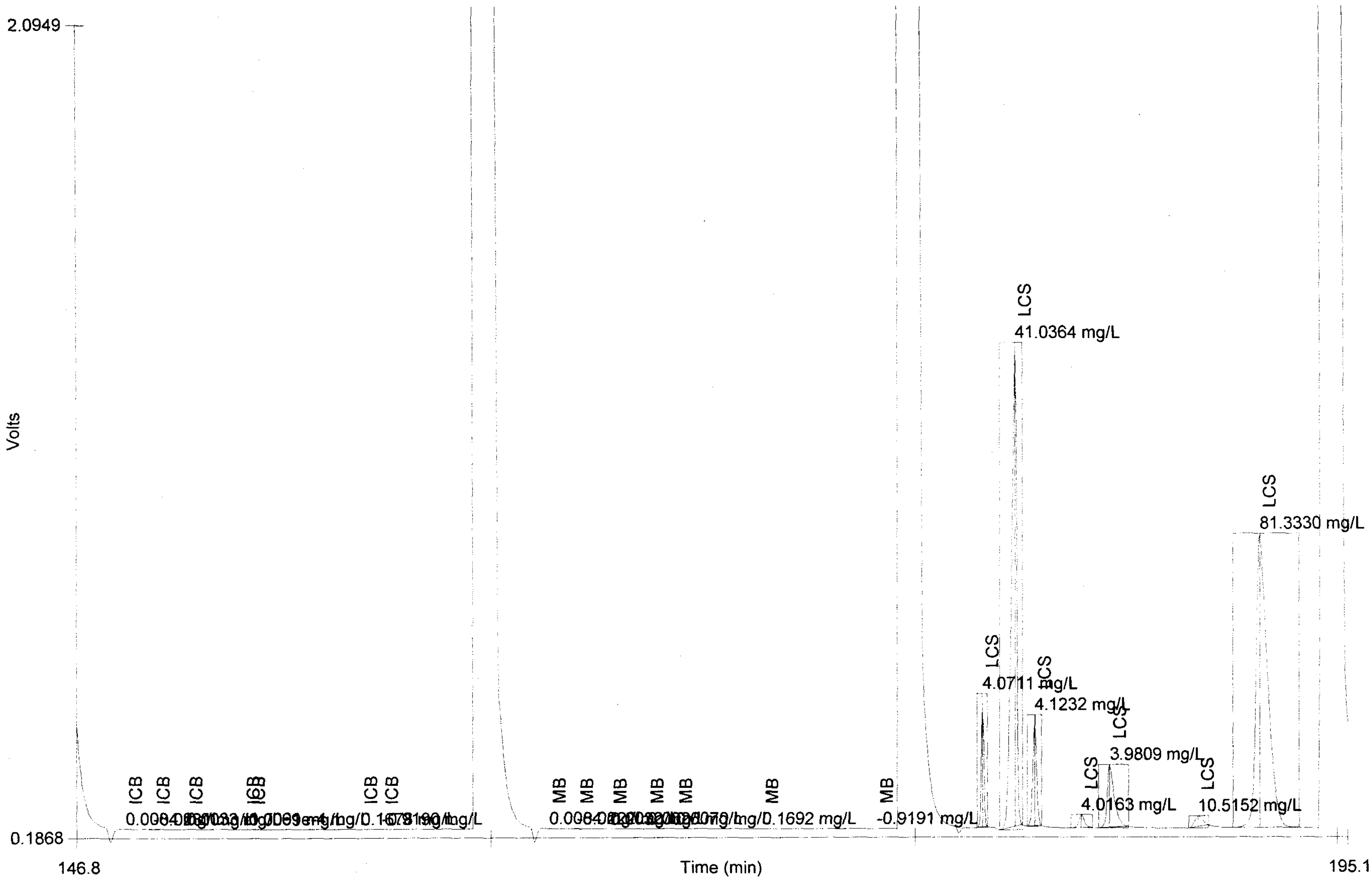
Channel 1 (Anions) : Set 2 of 28



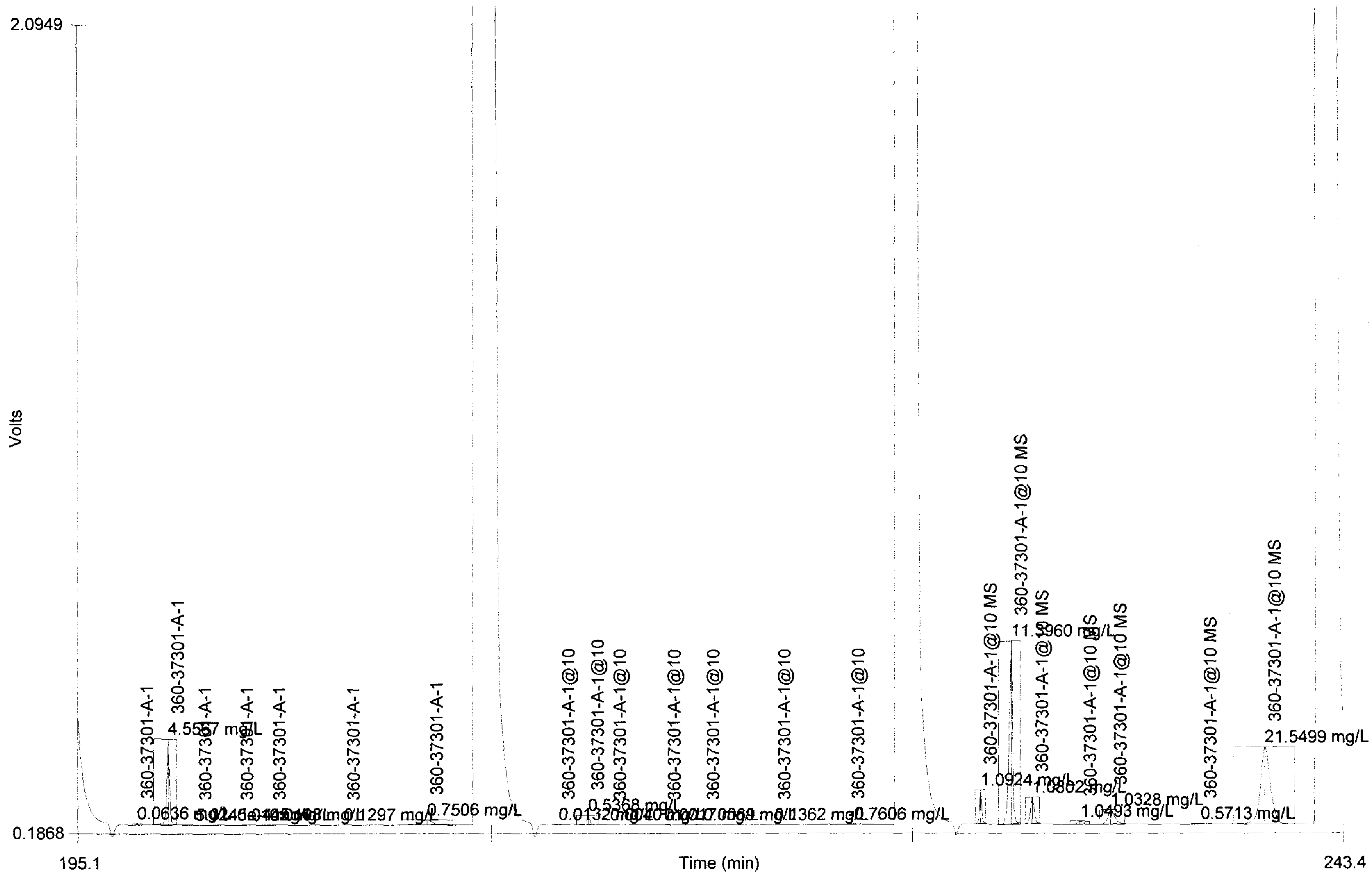
Channel 1 (Anions) : Set 3 of 28



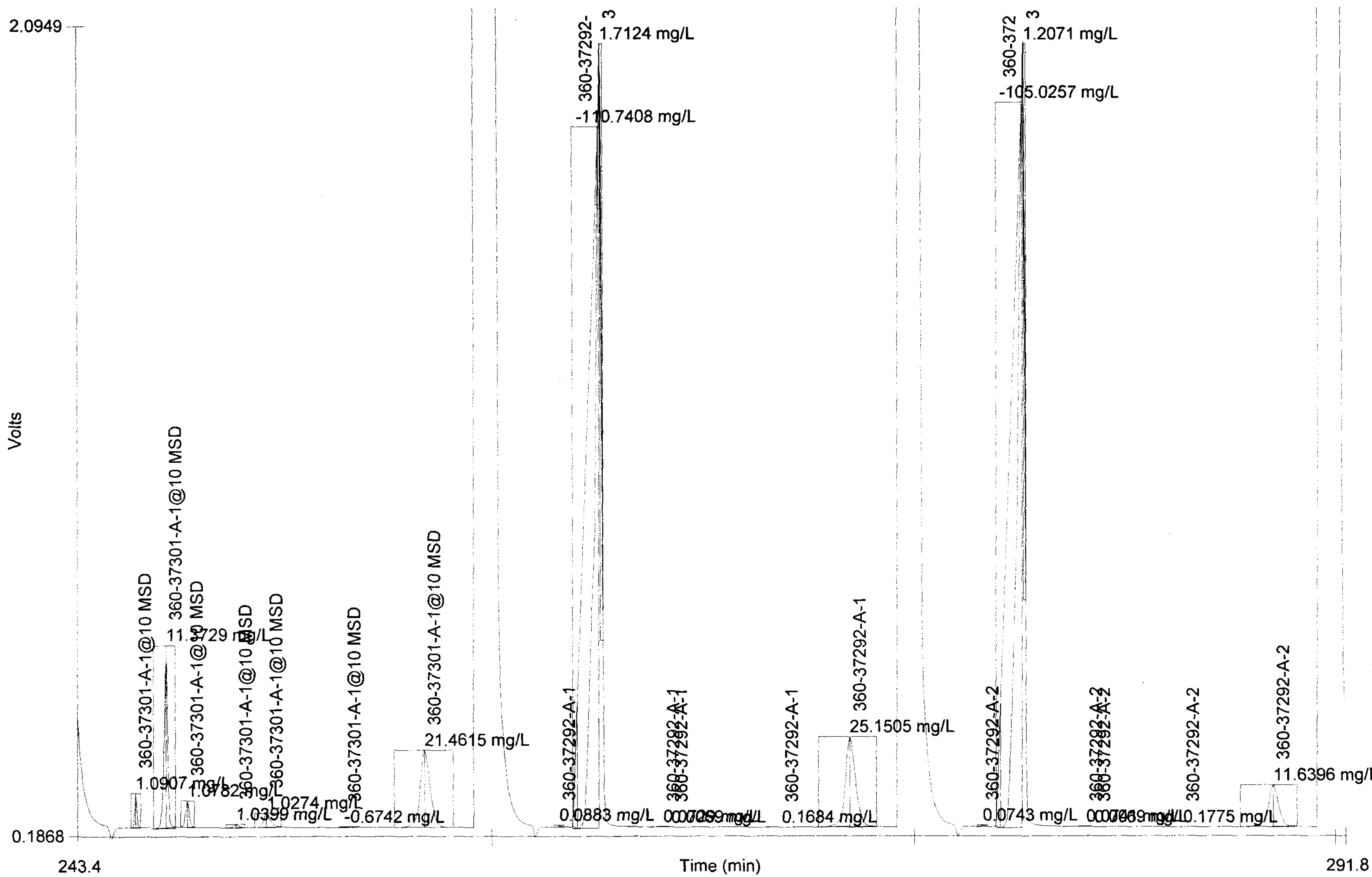
Channel 1 (Anions) : Set 4 of 28



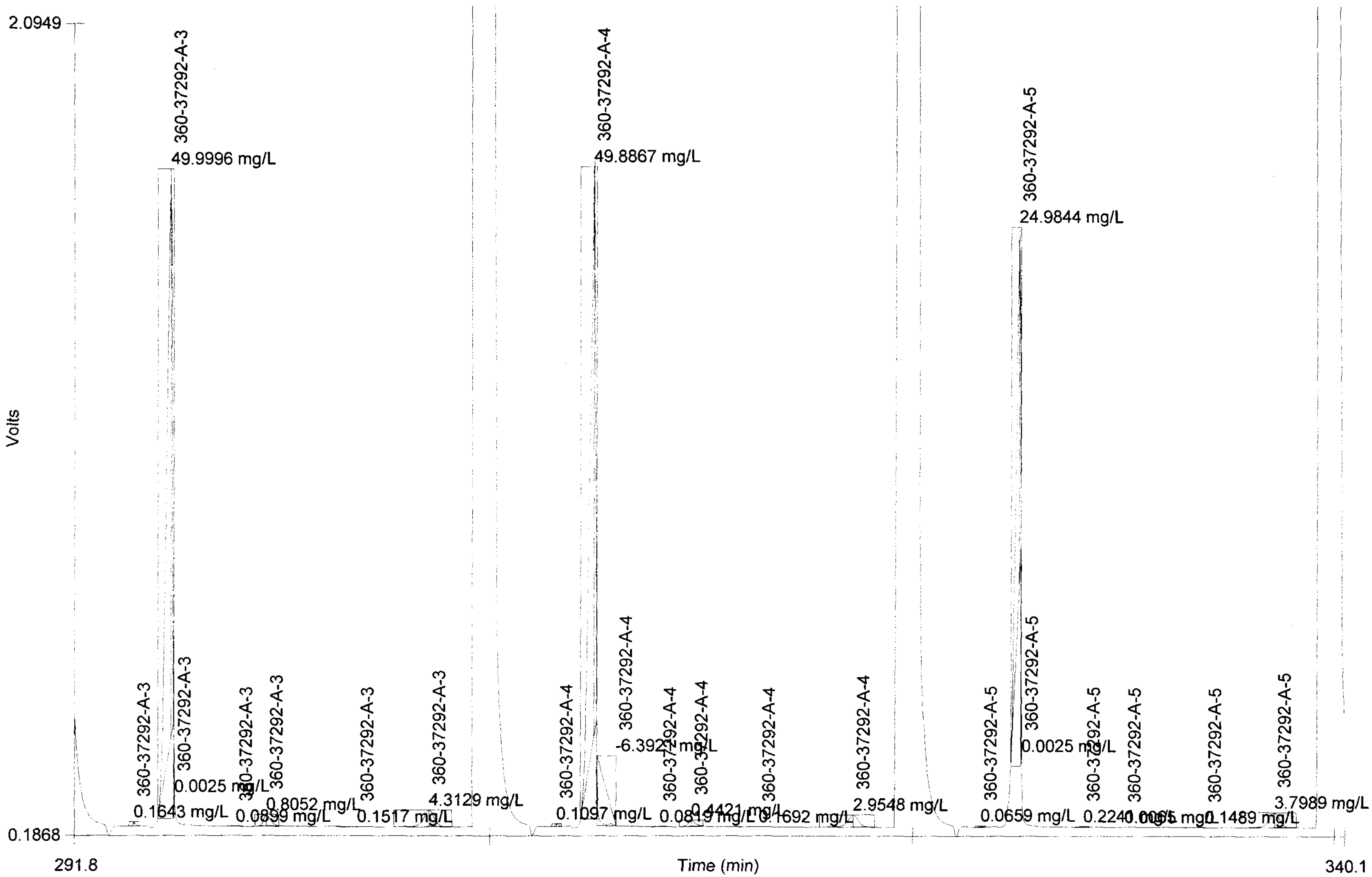
Channel 1 (Anions) : Set 5 of 28



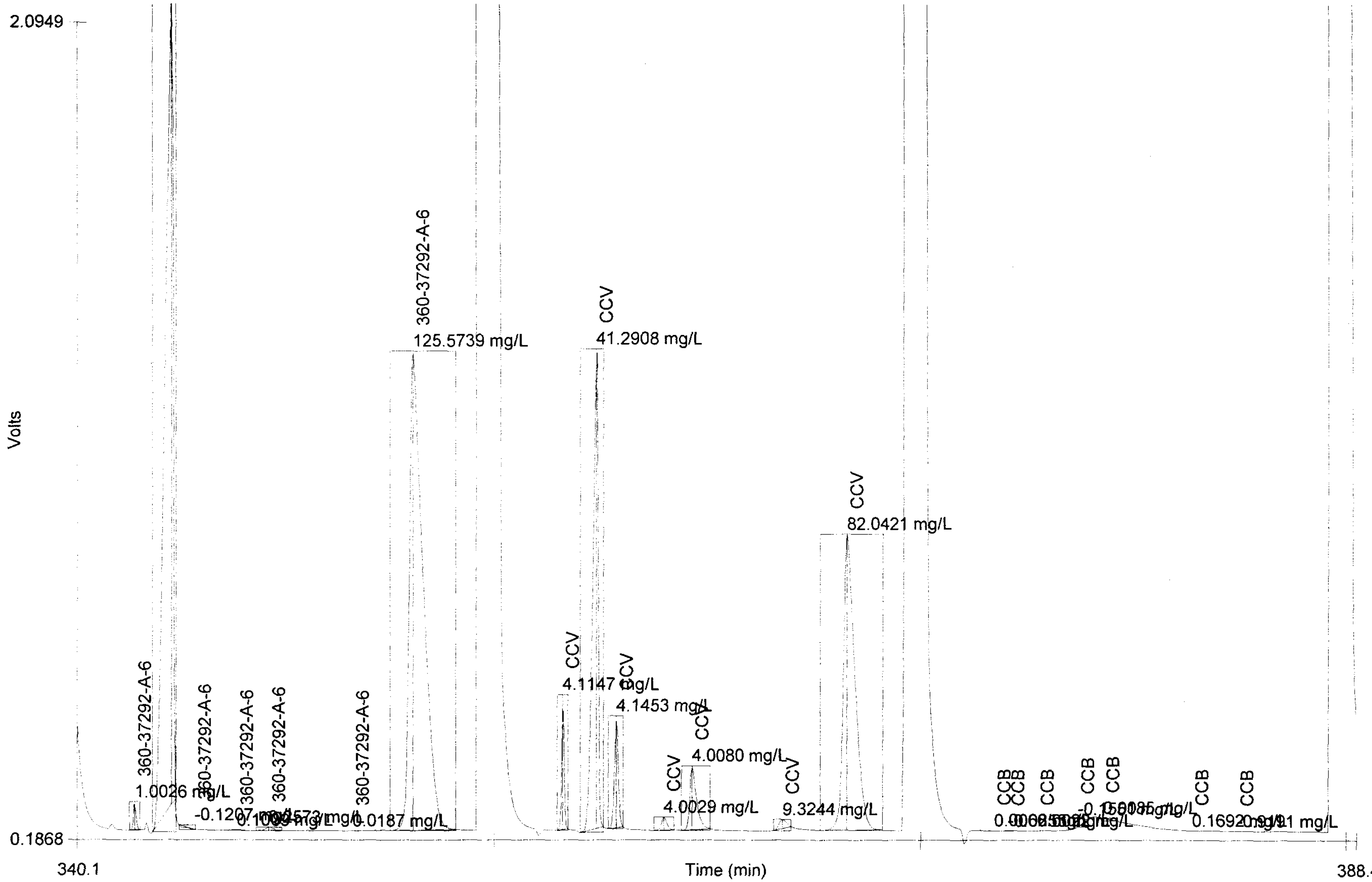
Channel 1 (Anions) : Set 6 of 28



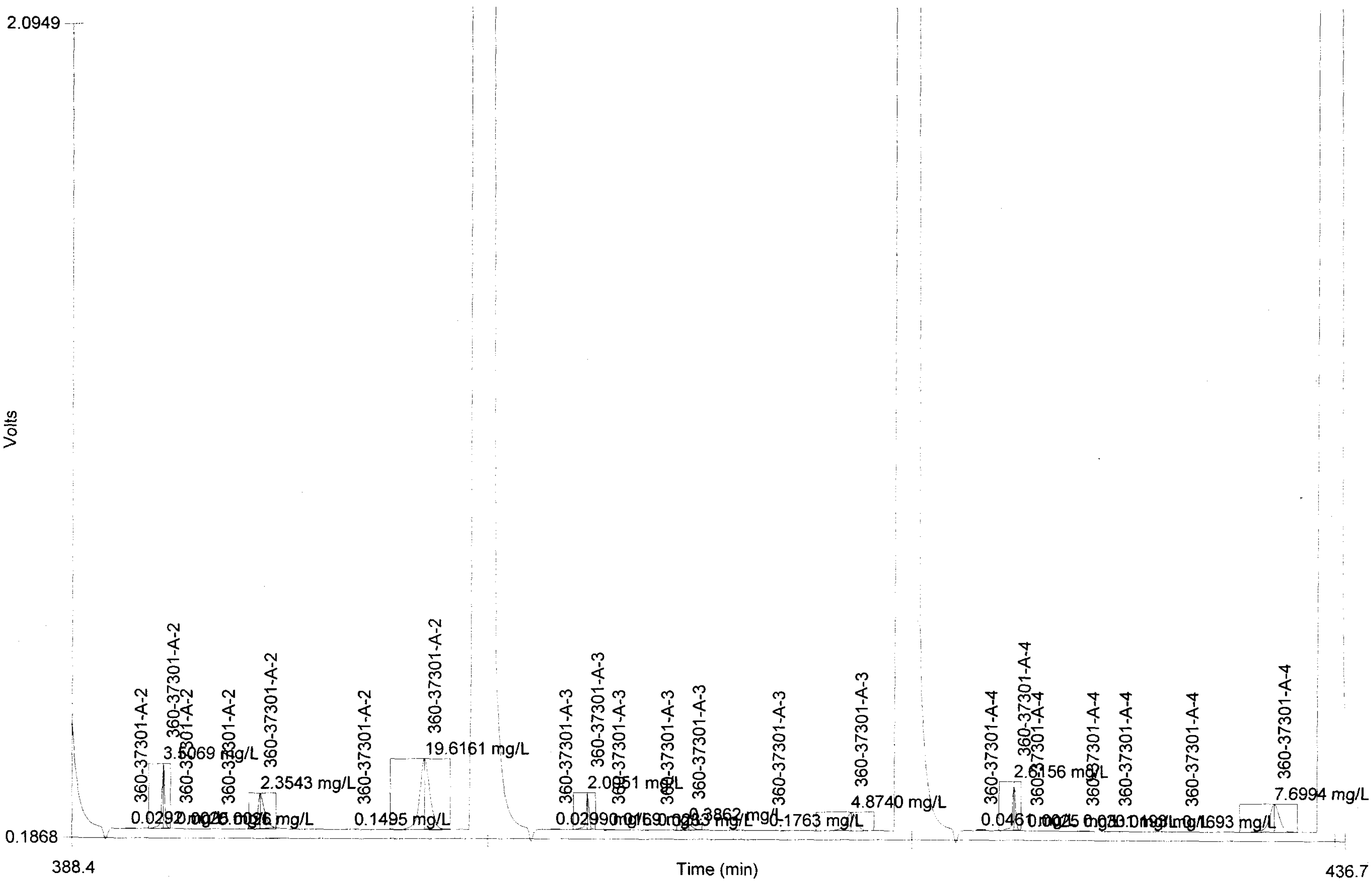
Channel 1 (Anions) : Set 7 of 28



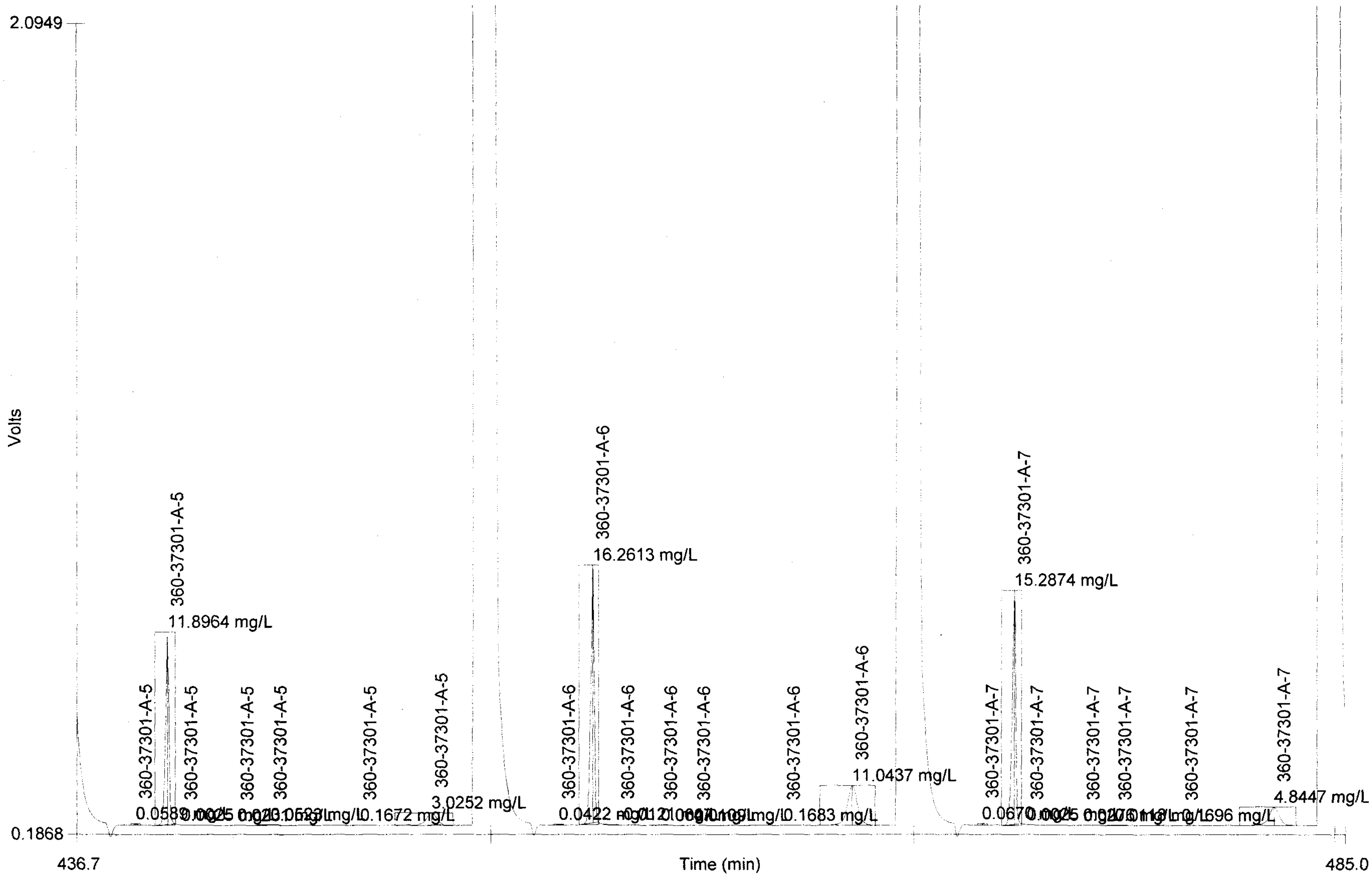
Channel 1 (Anions) : Set 8 of 28



Channel 1 (Anions) : Set 9 of 28



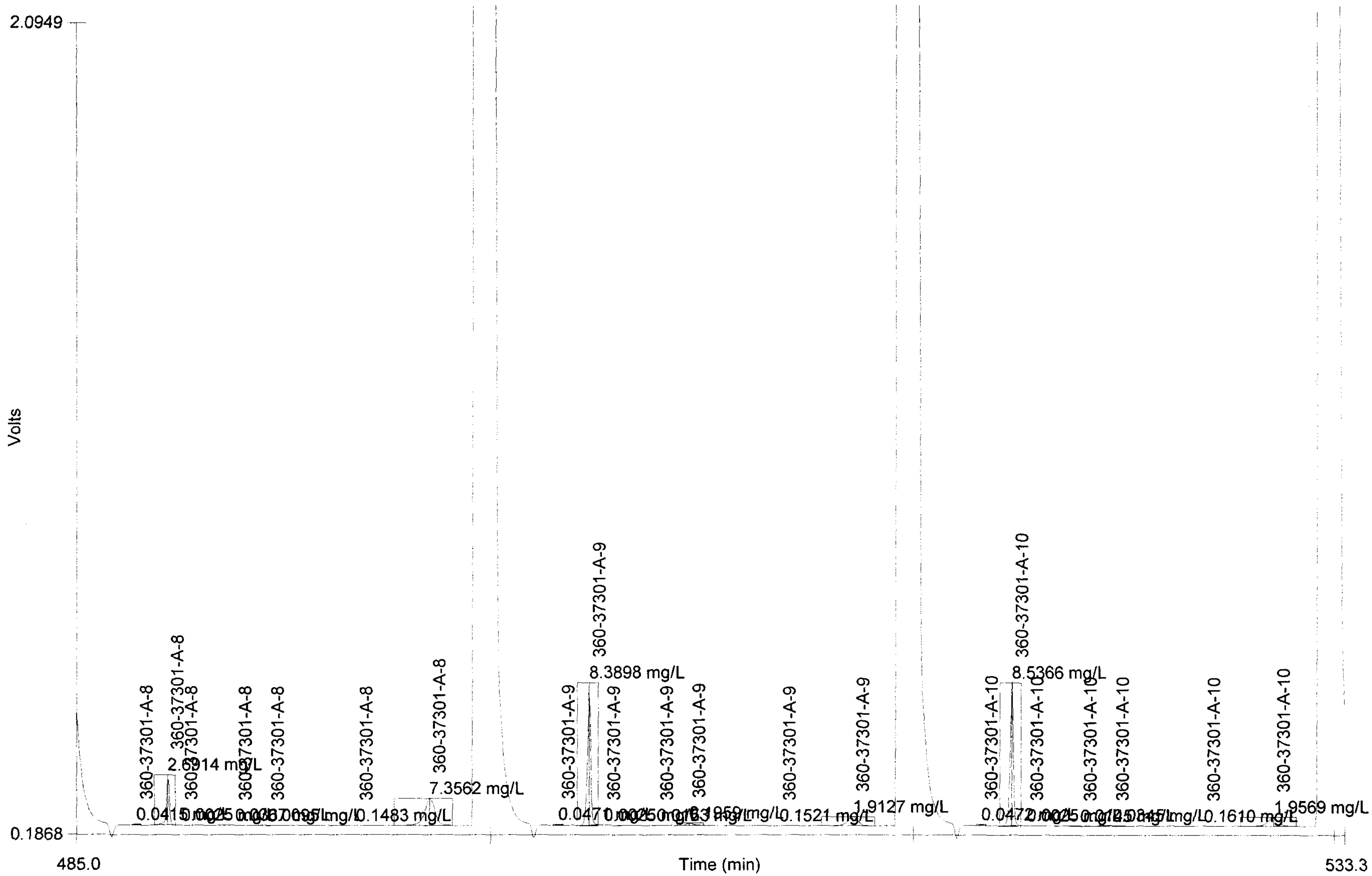
Channel 1 (Anions) : Set 10 of 28



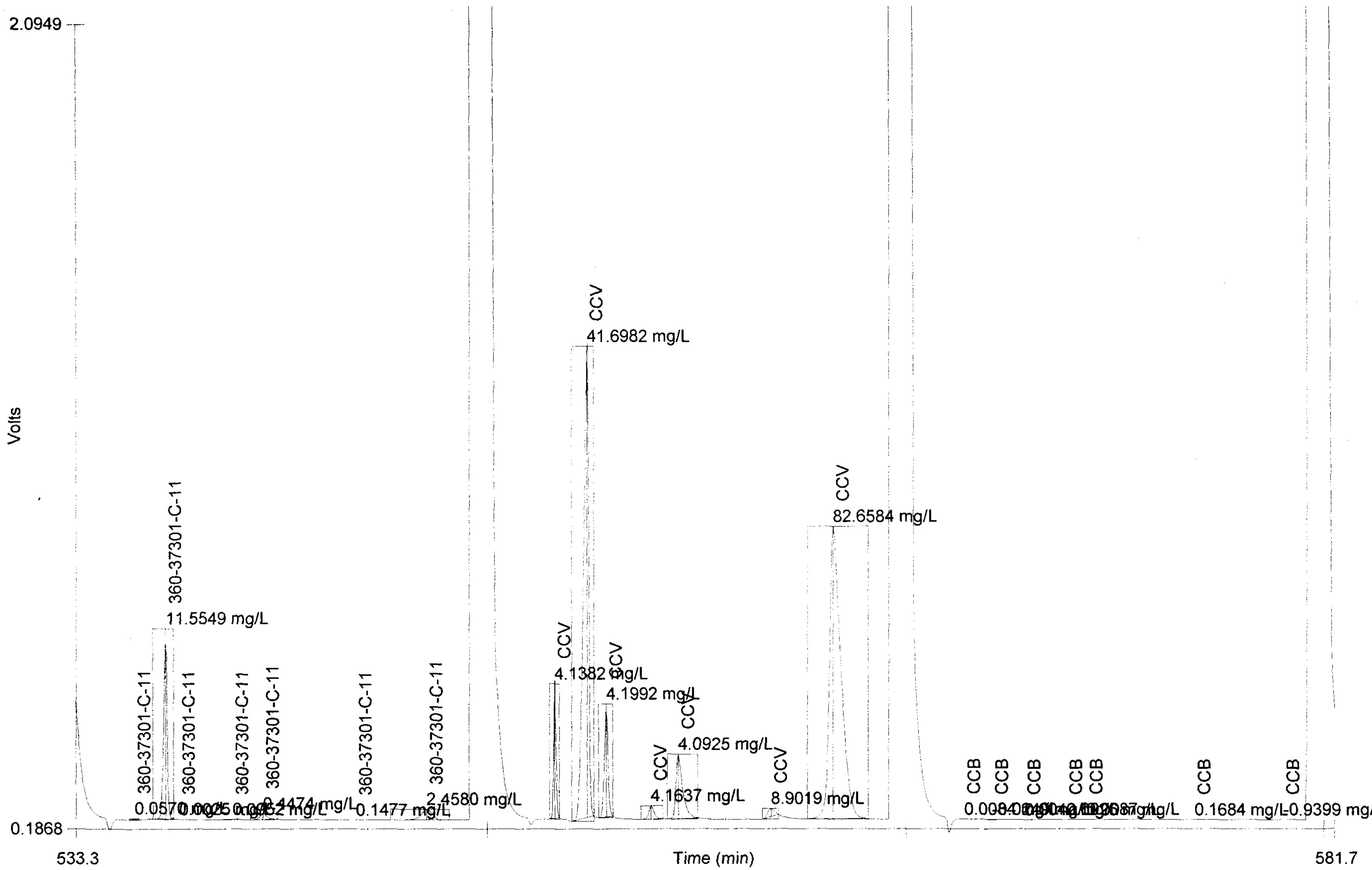
Author: EmerichR

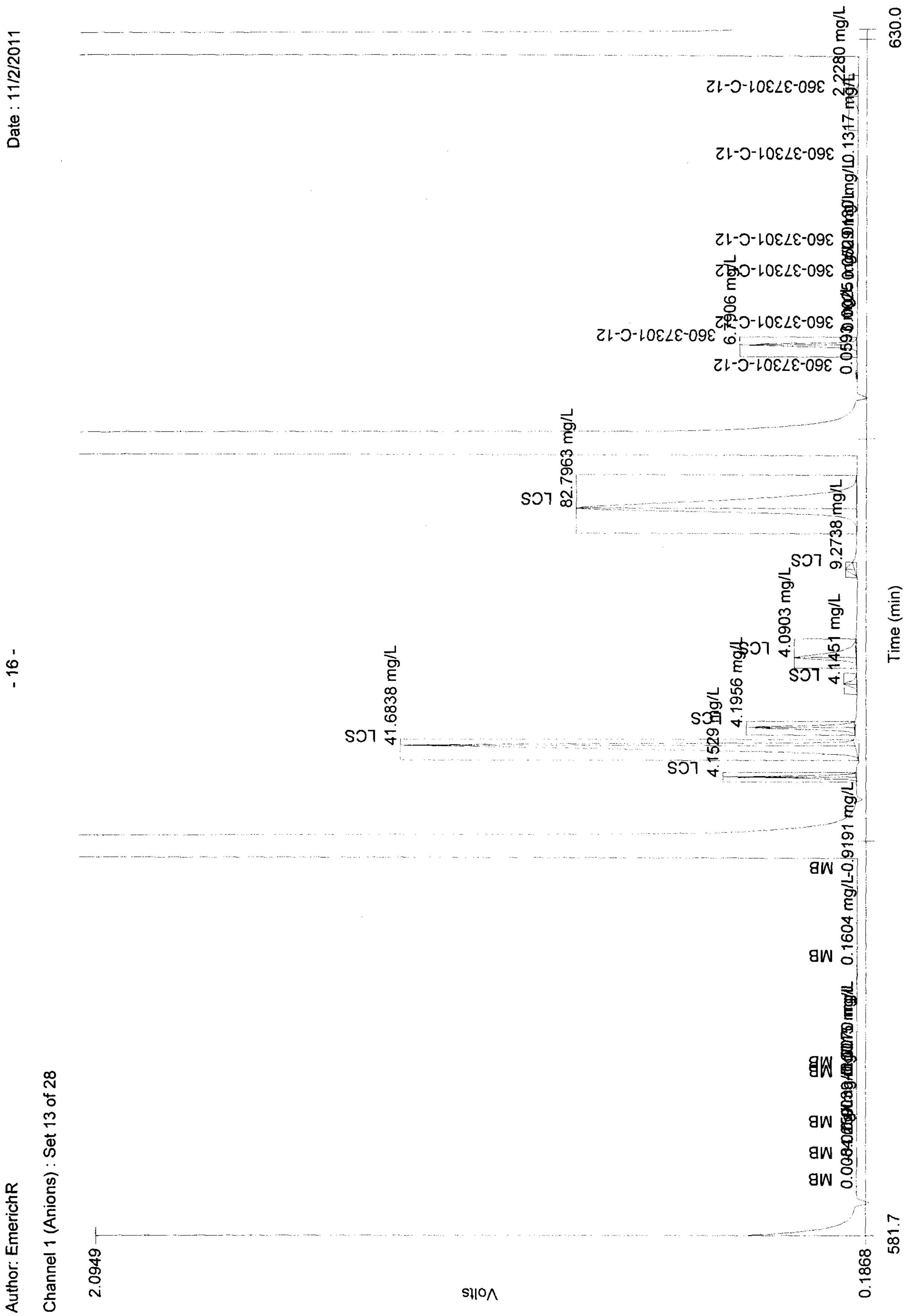
Date : 11/2/2011

Channel 1 (Anions) : Set 11 of 28



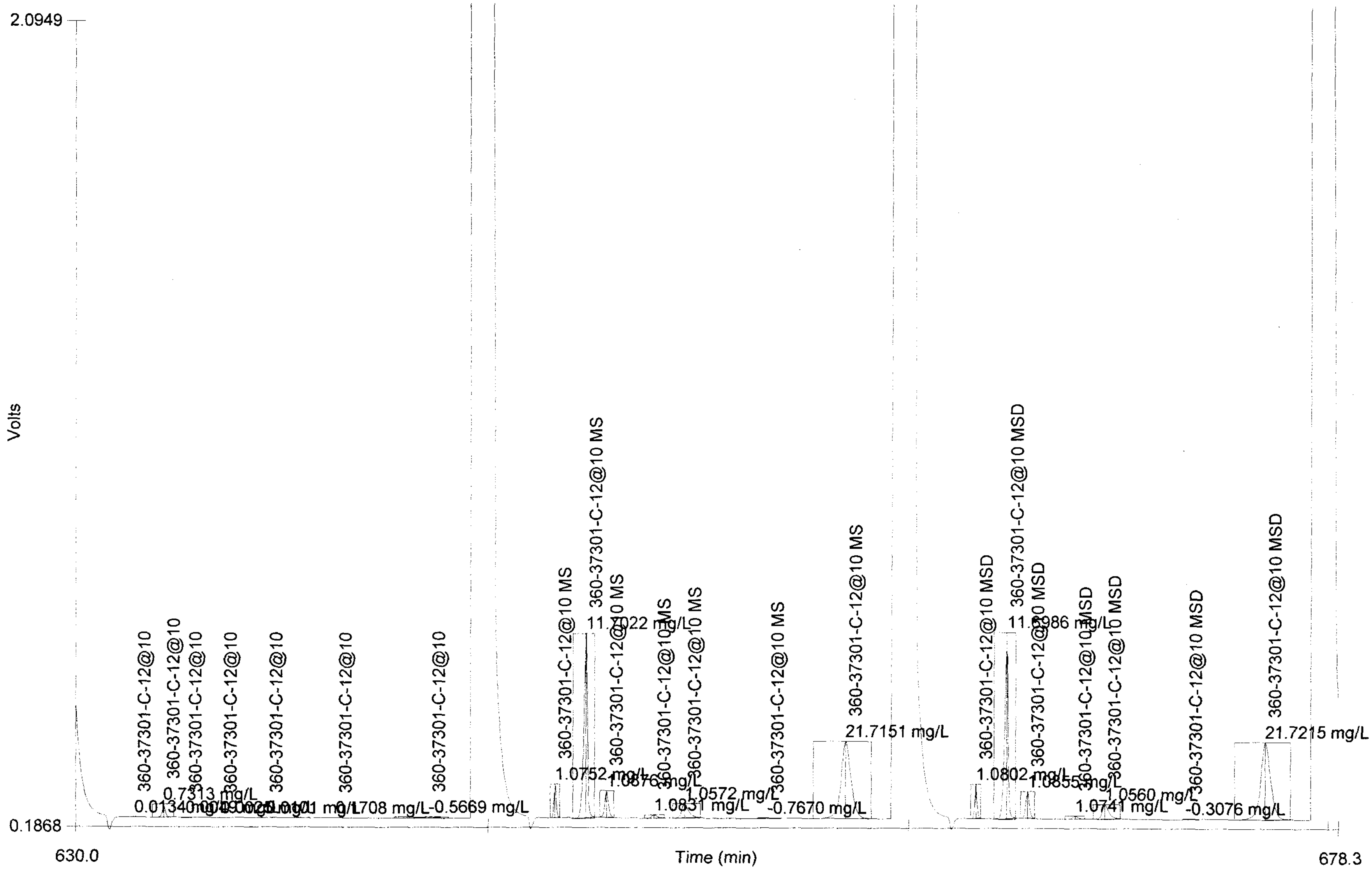
Channel 1 (Anions) : Set 12 of 28



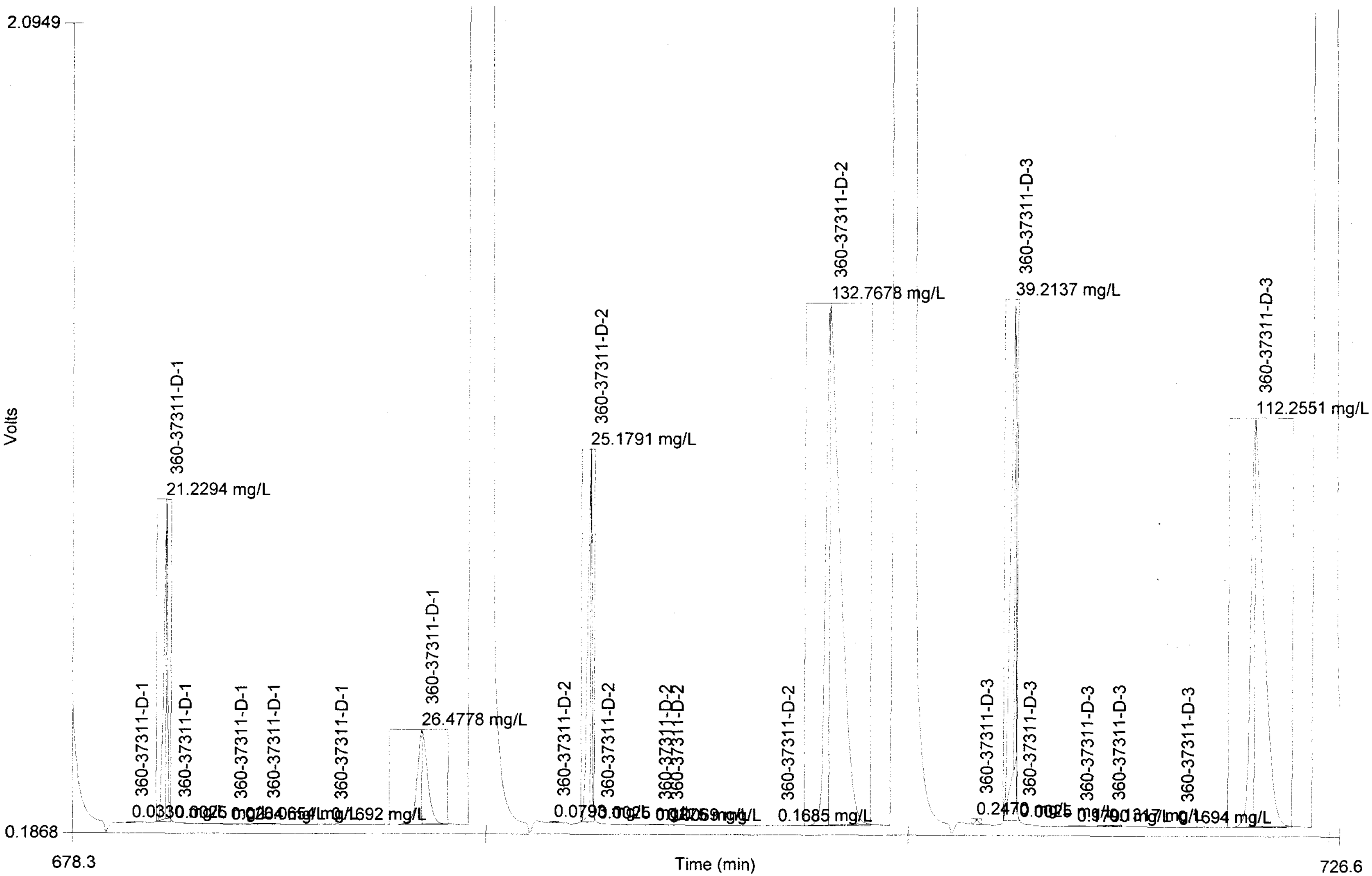


Author: EmerichR
Channel 1 (Anions) : Set 13 of 28
- 16 -
Date : 11/2/2011
2.0949
0.1868
Volts
581.7
630.0
Time (min)
MB
0.1604 mg/L
MB
0.9191 mg/L
LCS
4.1529 mg/L
LCS
41.6838 mg/L
4.1956 mg/L
LCS
4.1451 mg/L
LCS
4.0903 mg/L
LCS
9.2738 mg/L
LCS
82.7963 mg/L
360-37301-C-12
6.7906 mg/L
360-37301-C-12
0.1317 mg/L
360-37301-C-12
2.2280 mg/L

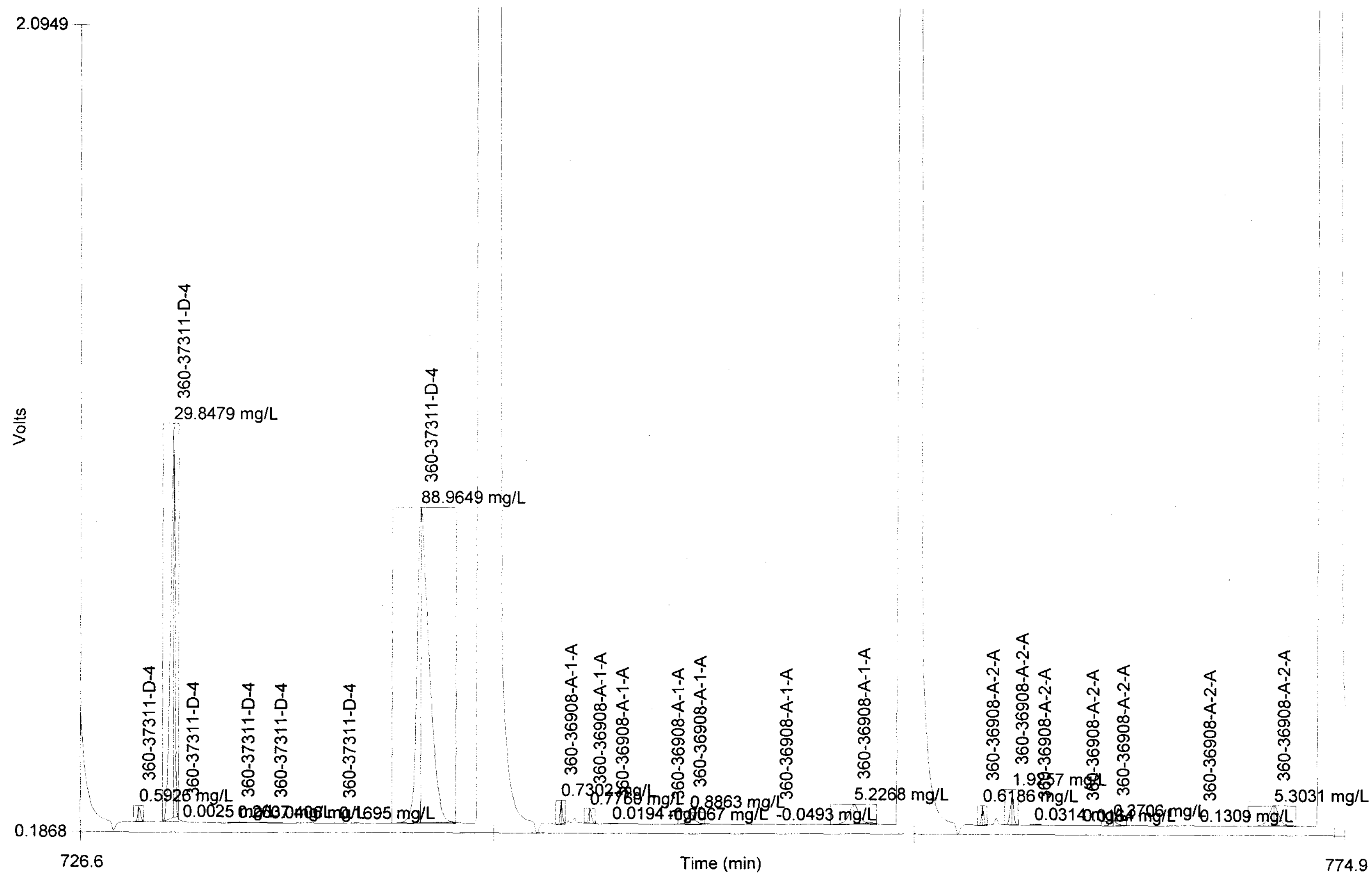
Channel 1 (Anions) : Set 14 of 28



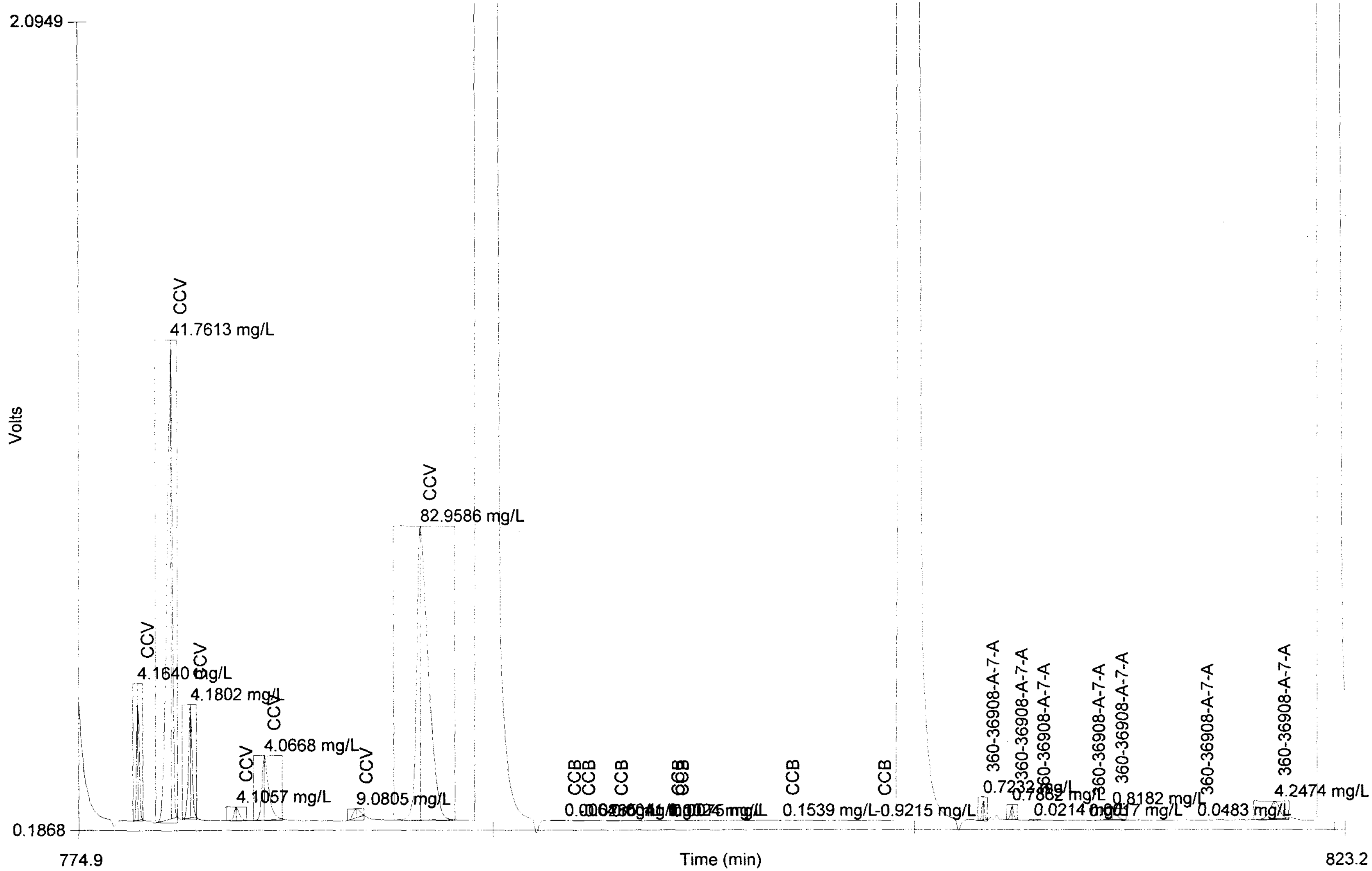
Channel 1 (Anions) : Set 15 of 28



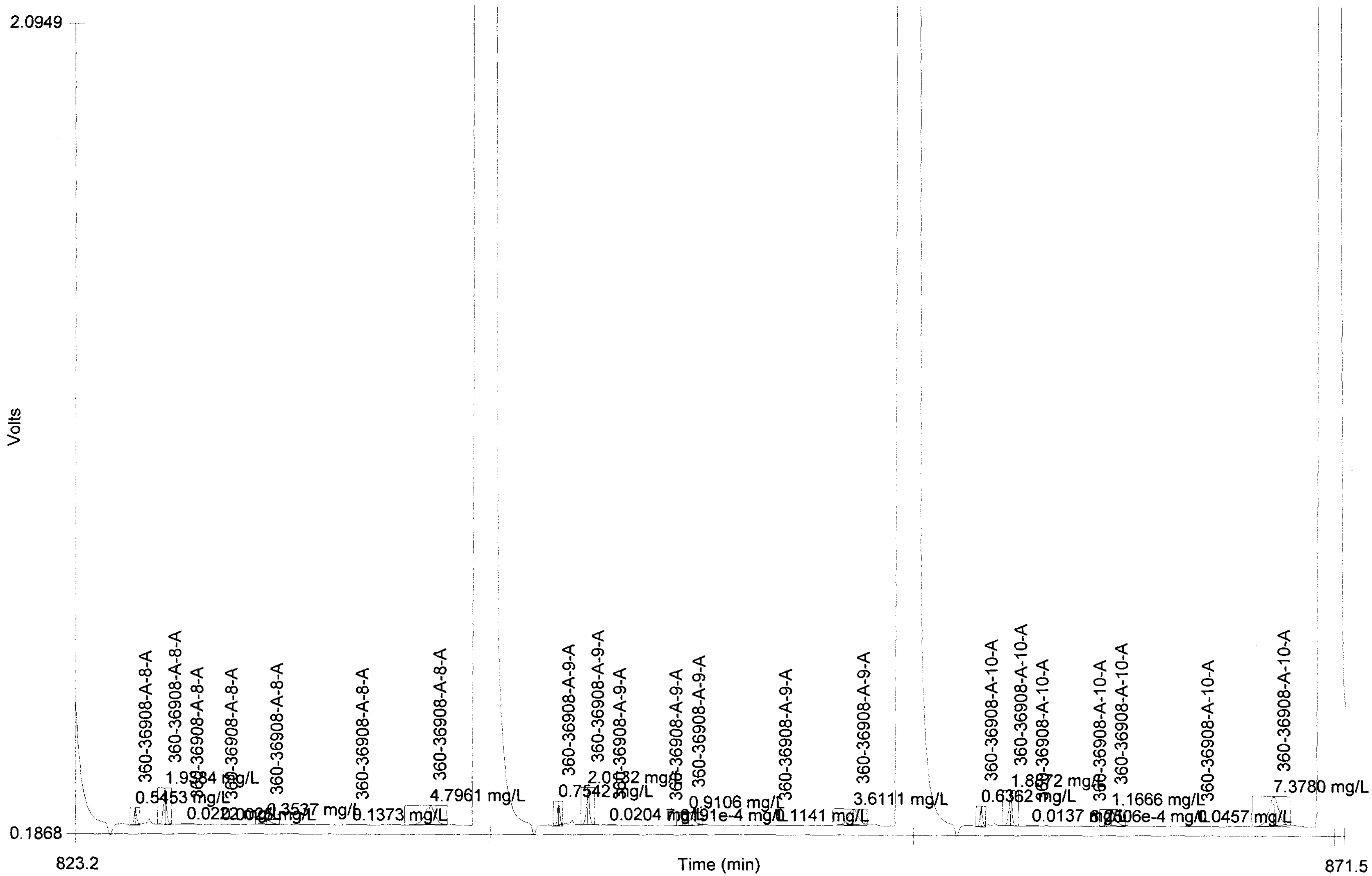
Channel 1 (Anions) : Set 16 of 28



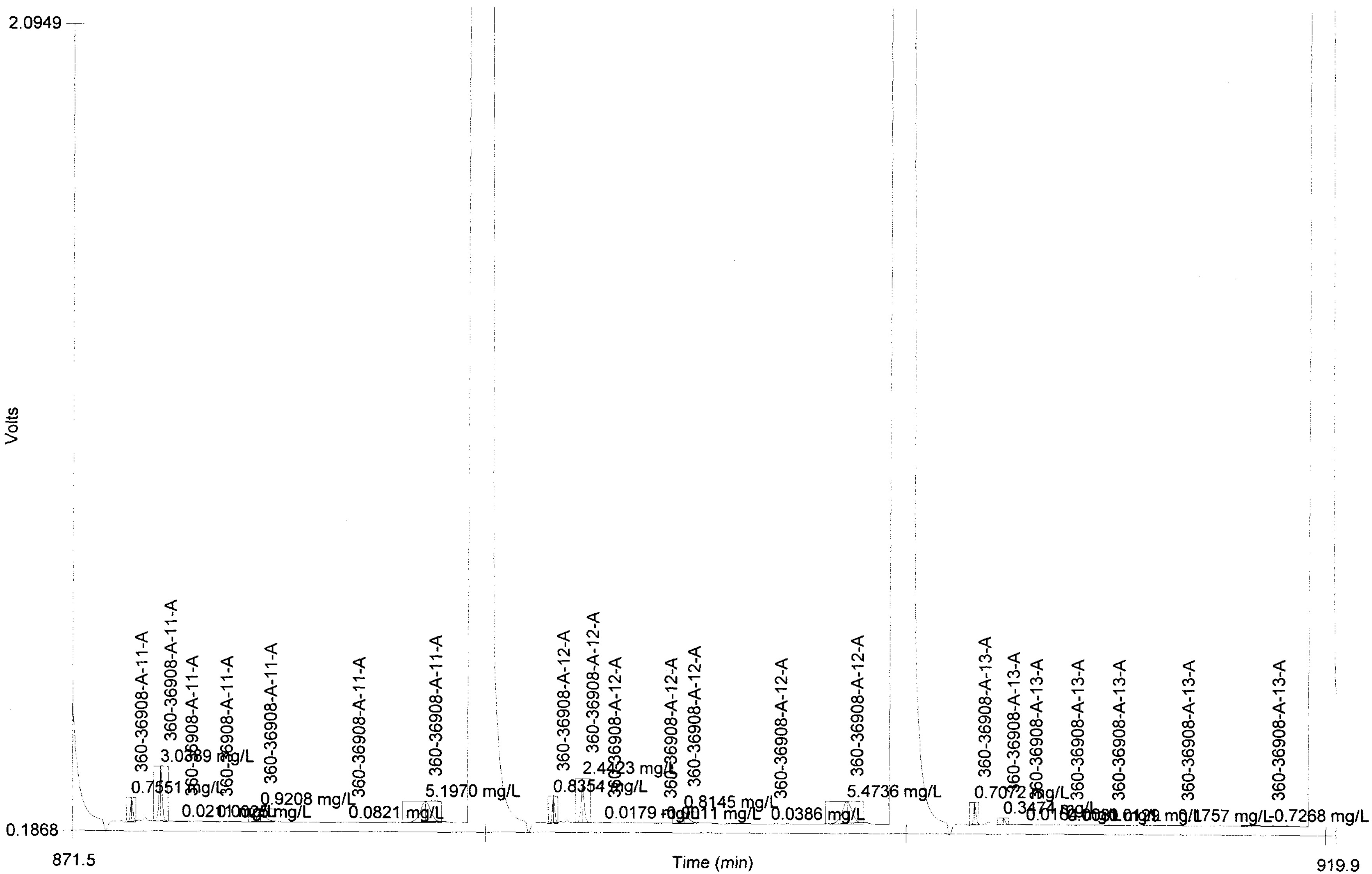
Channel 1 (Anions) : Set 17 of 28



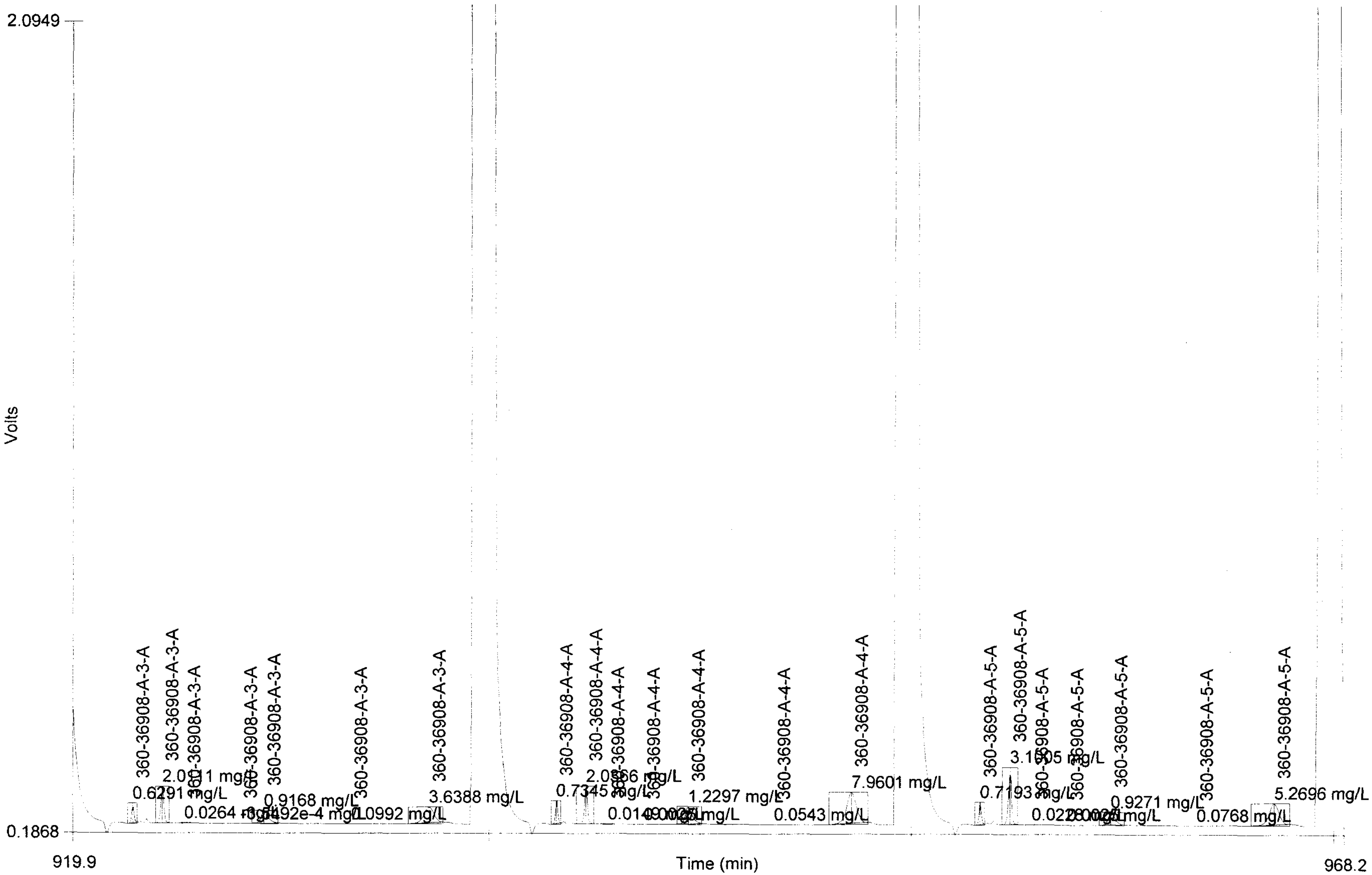
Channel 1 (Anions) : Set 18 of 28



Channel 1 (Anions) : Set 19 of 28



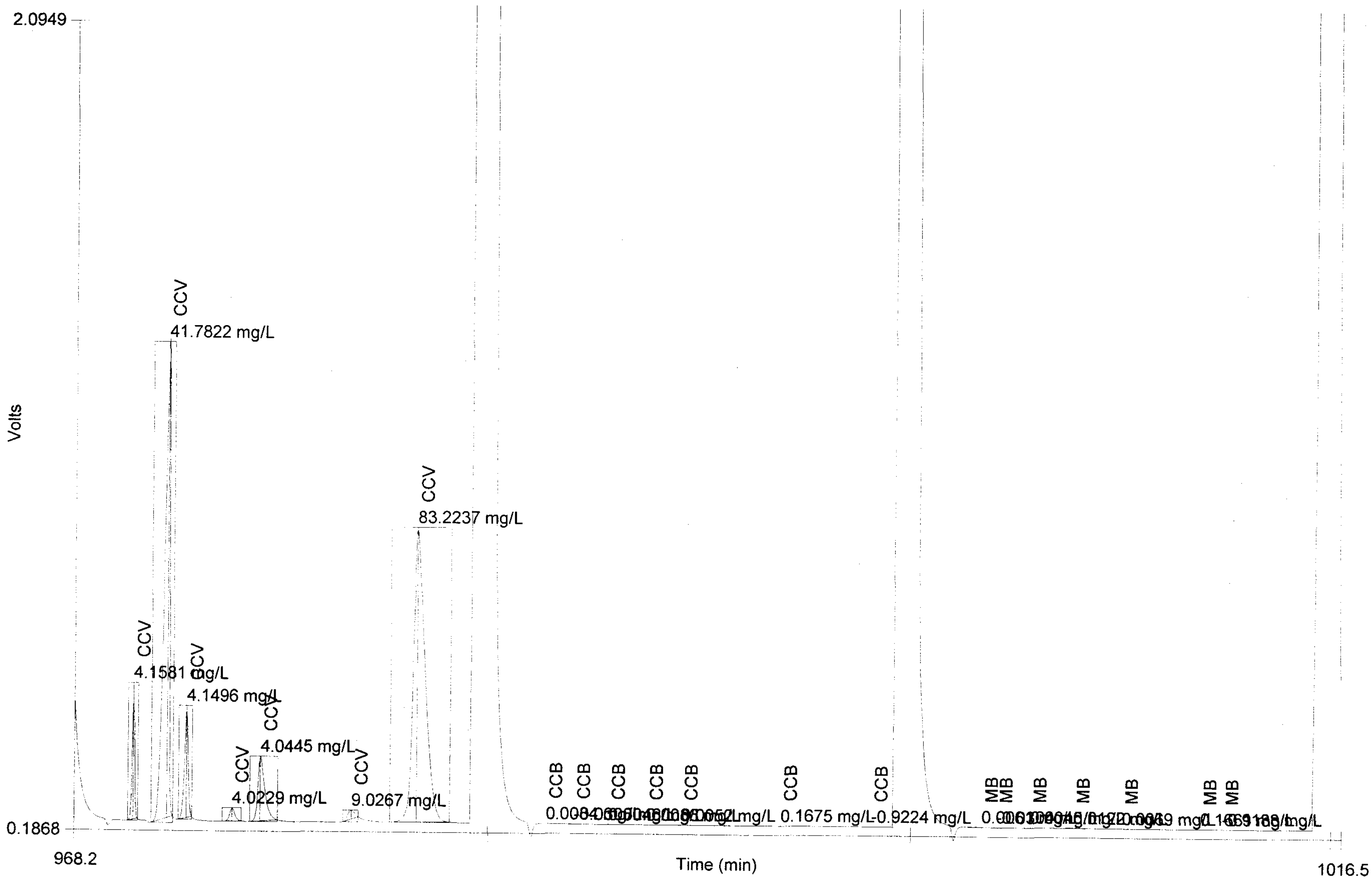
Channel 1 (Anions) : Set 20 of 28



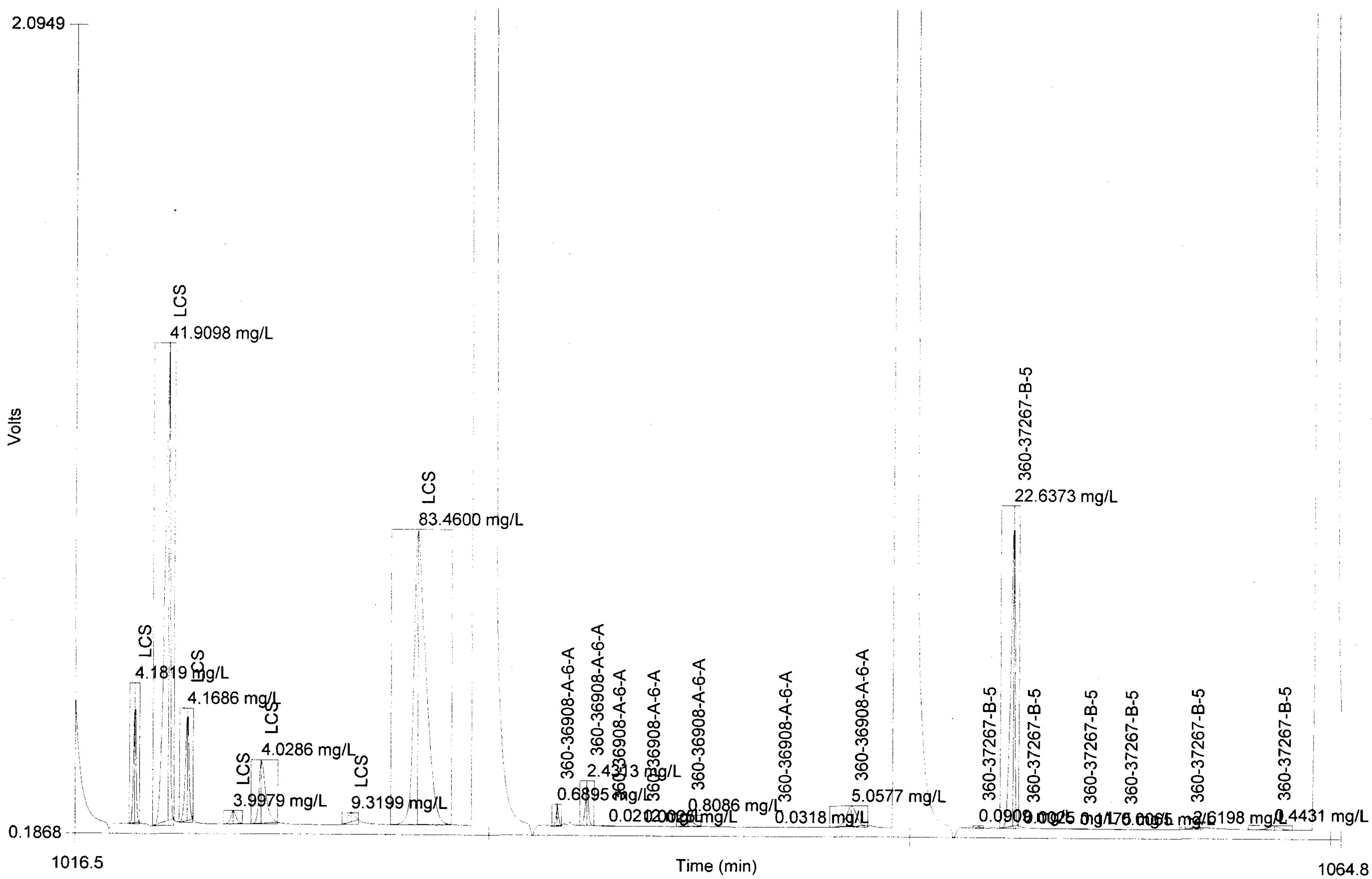
Author: EmerichR

Date : 11/2/2011

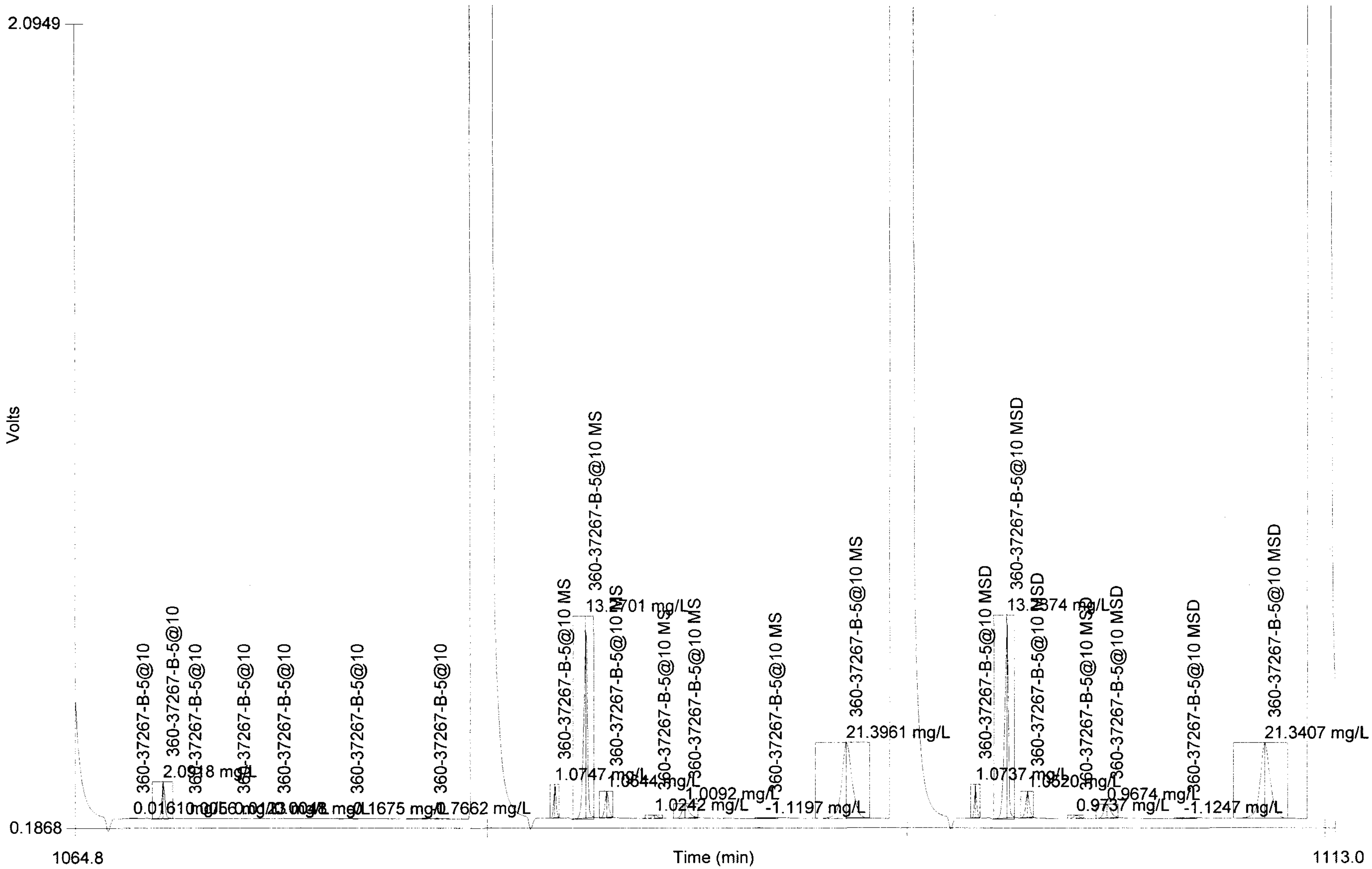
Channel 1 (Anions) : Set 21 of 28



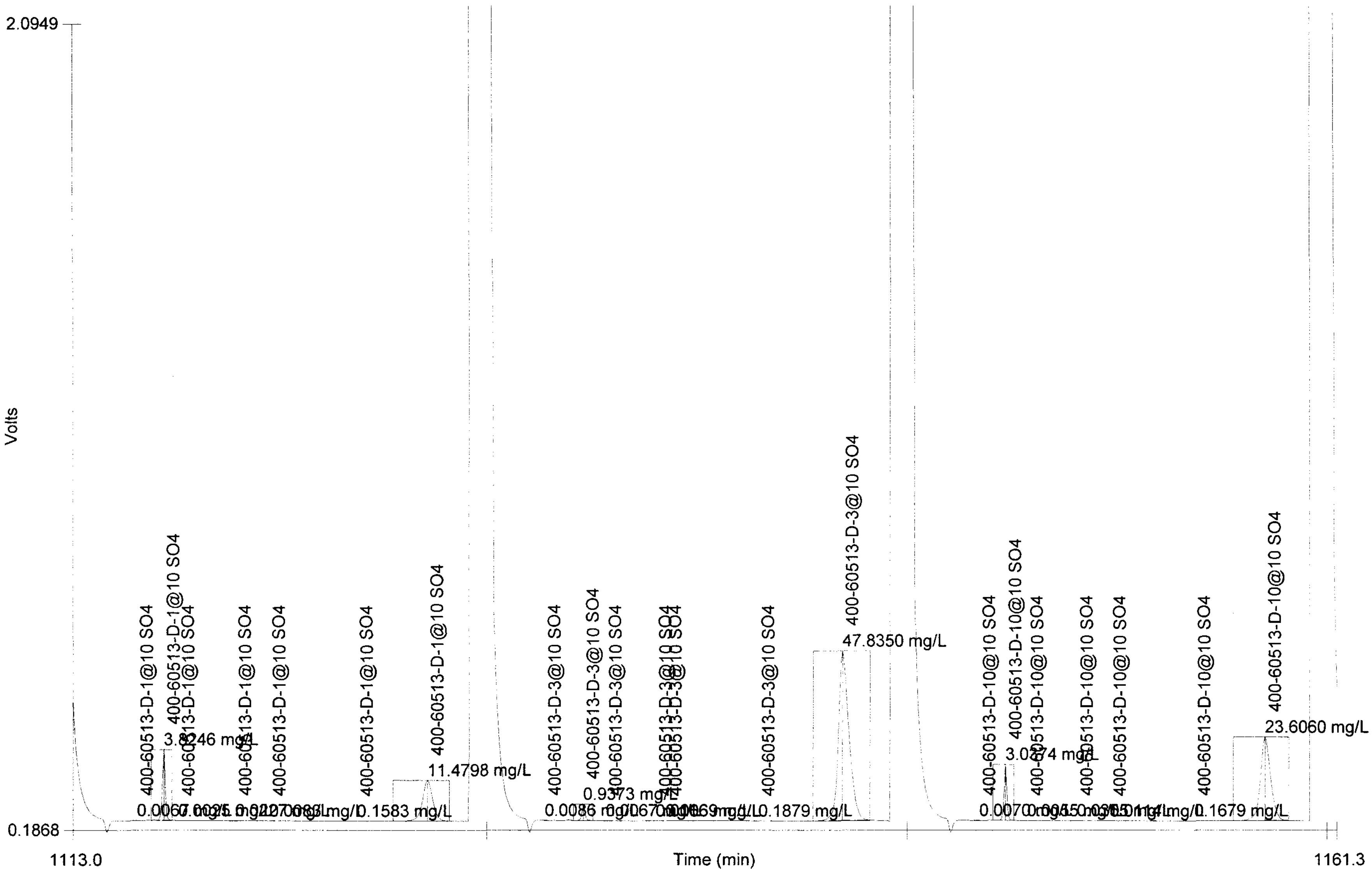
Channel 1 (Anions) : Set 22 of 28



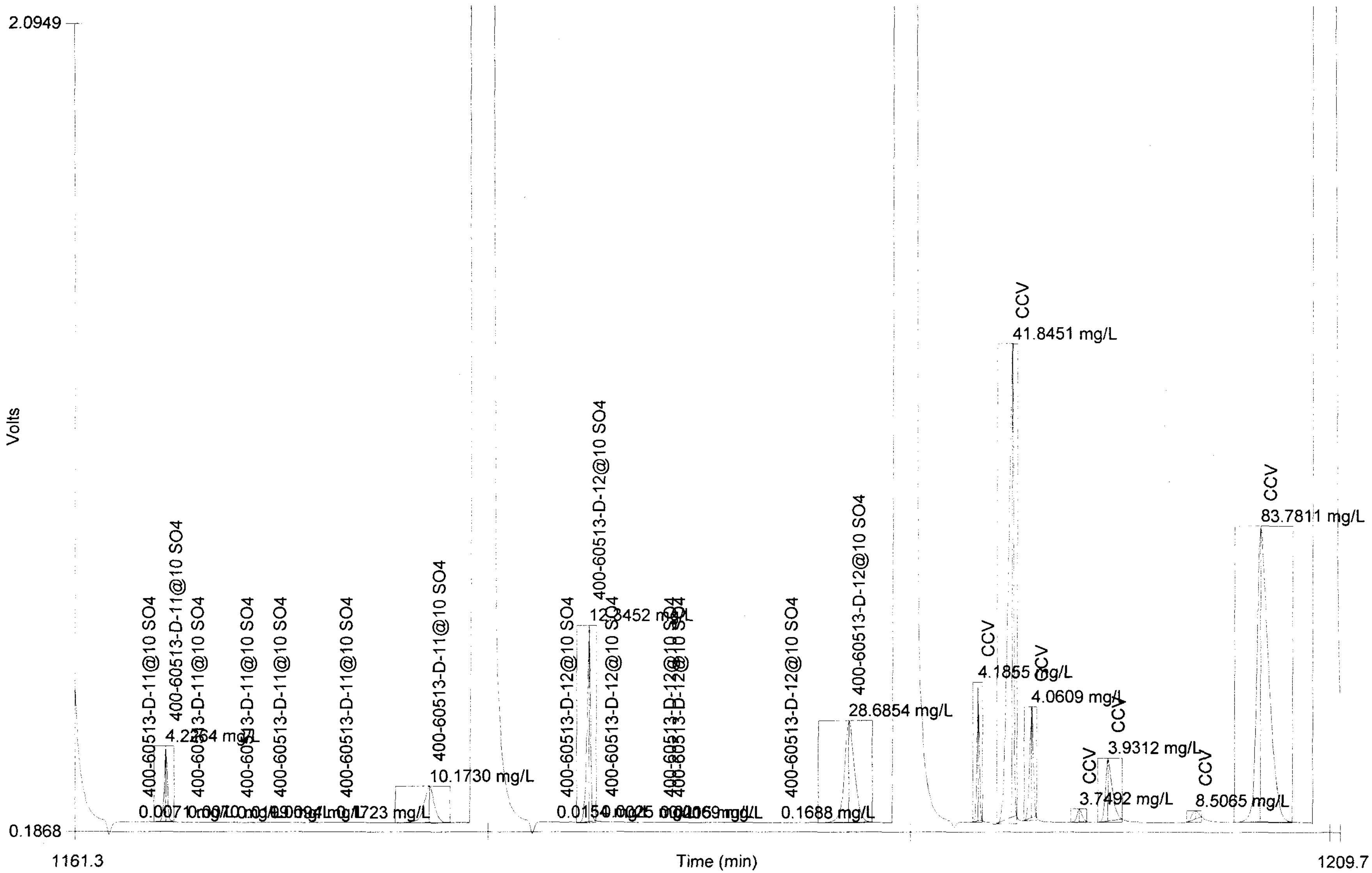
Channel 1 (Anions) : Set 23 of 28



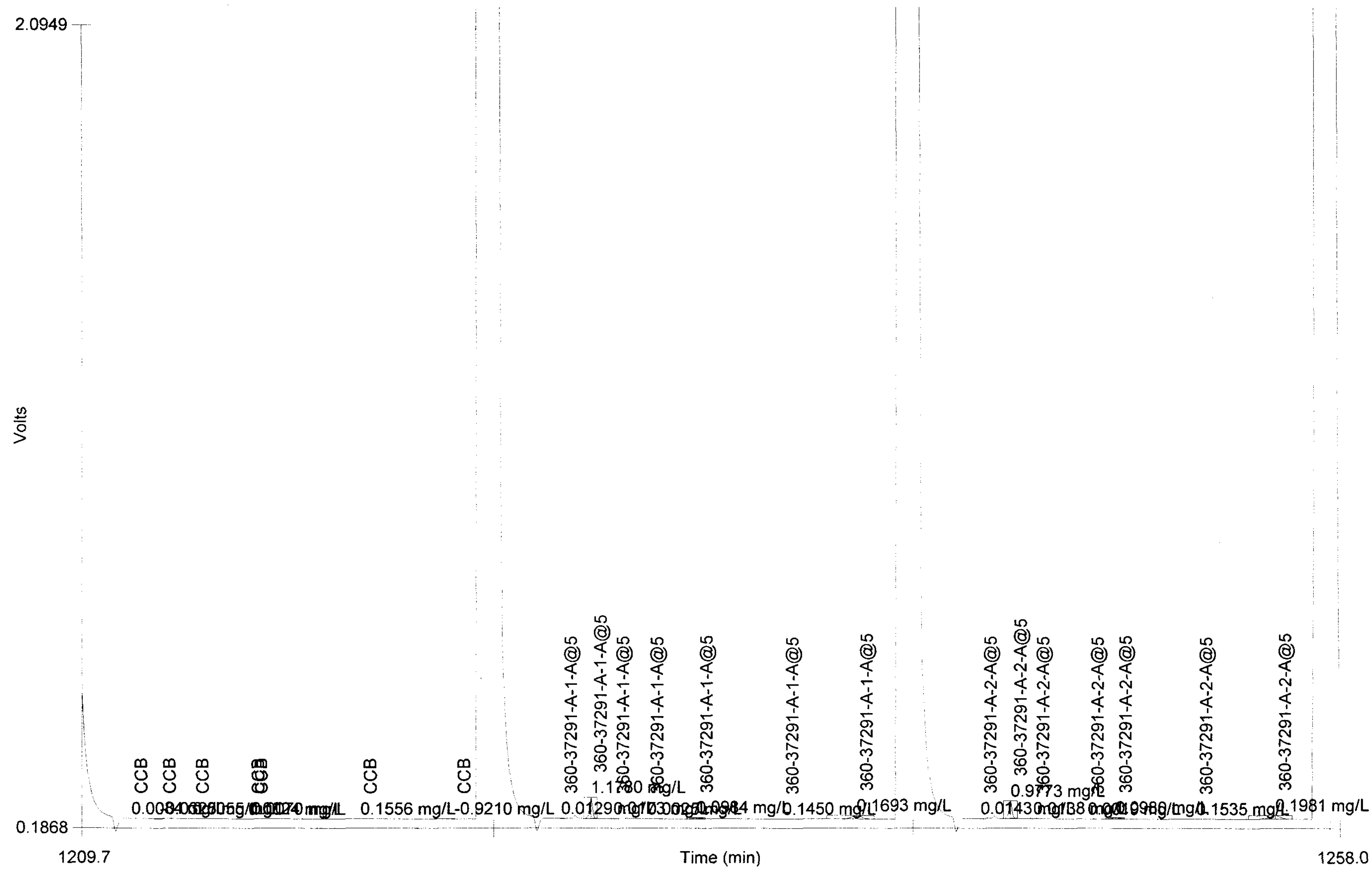
Channel 1 (Anions) : Set 24 of 28



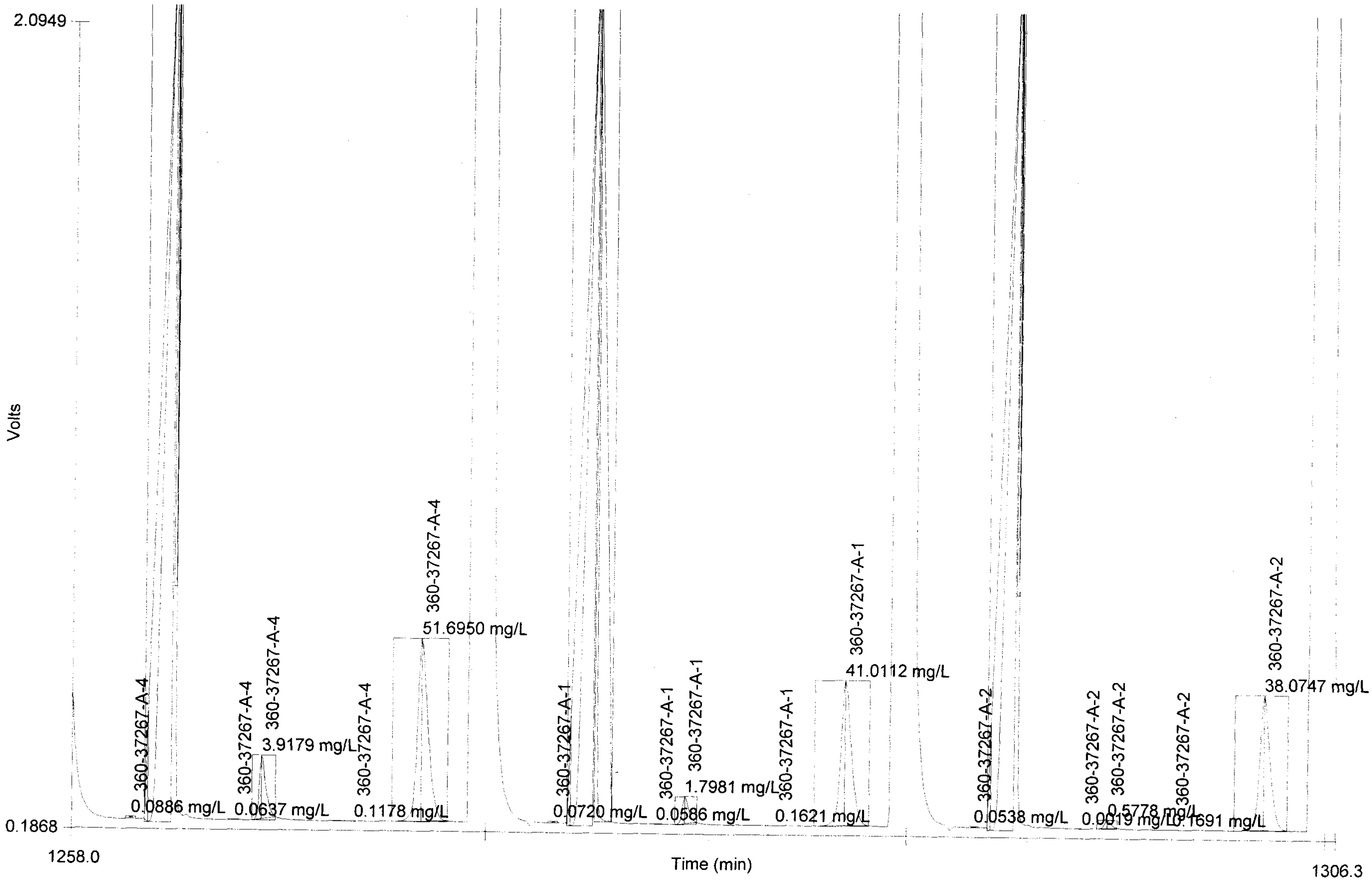
Channel 1 (Anions) : Set 25 of 28



Channel 1 (Anions) : Set 26 of 28



Channel 1 (Anions) : Set 27 of 28



Channel 1 (Anions) : Set 28 of 28

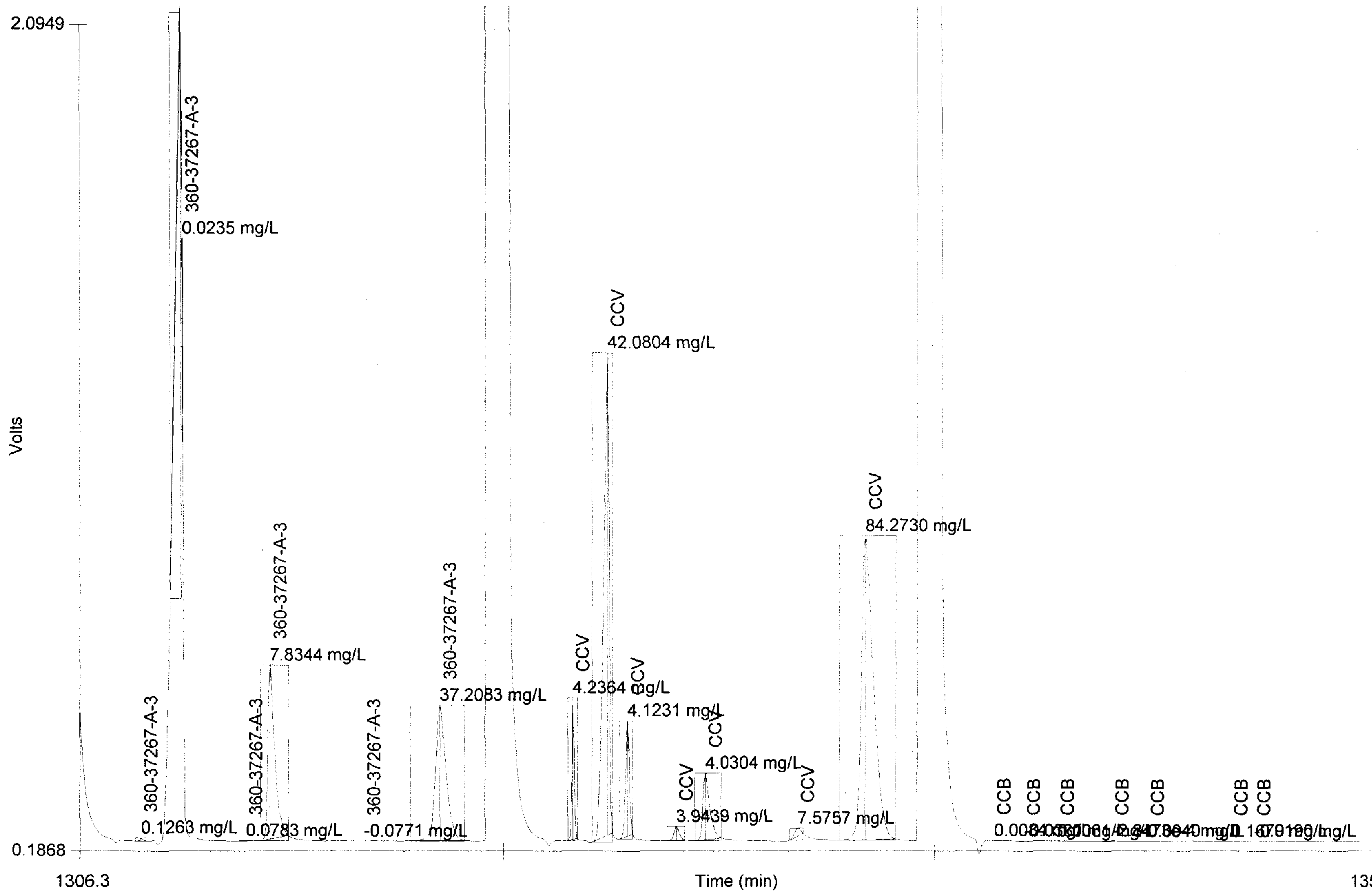
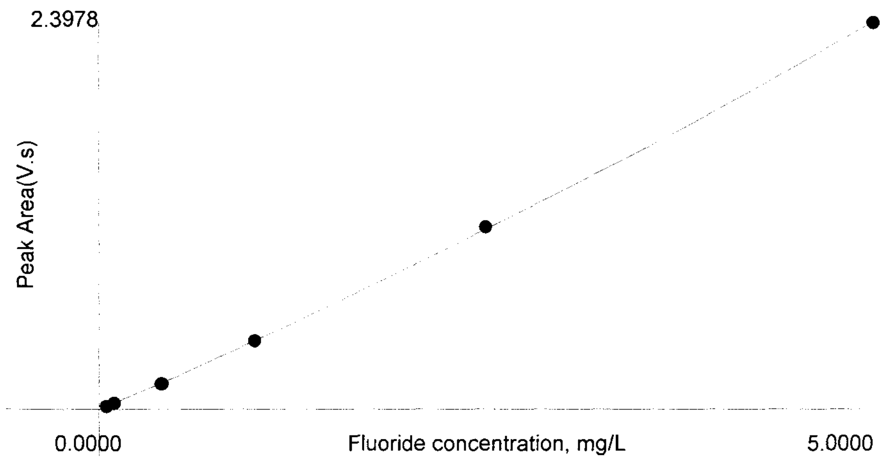


Table 1: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.3978	0.3834	0.3	11/2/2011	11:28:24 AM
2	2.5000	1	1.1331	0.1924	-1.3	11/2/2011	11:28:24 AM
3	1.0000	1	0.4237	0.0721	0.5	11/2/2011	11:28:24 AM
4	0.4000	1	0.1591	0.0275	3.8	11/2/2011	11:28:24 AM
5	0.1000	1	0.0382	0.0064	1.2	11/2/2011	11:28:24 AM
6	0.0500	1	0.0187	0.0033	-5.1	11/2/2011	11:28:25 AM

Figure 1: Fluoride



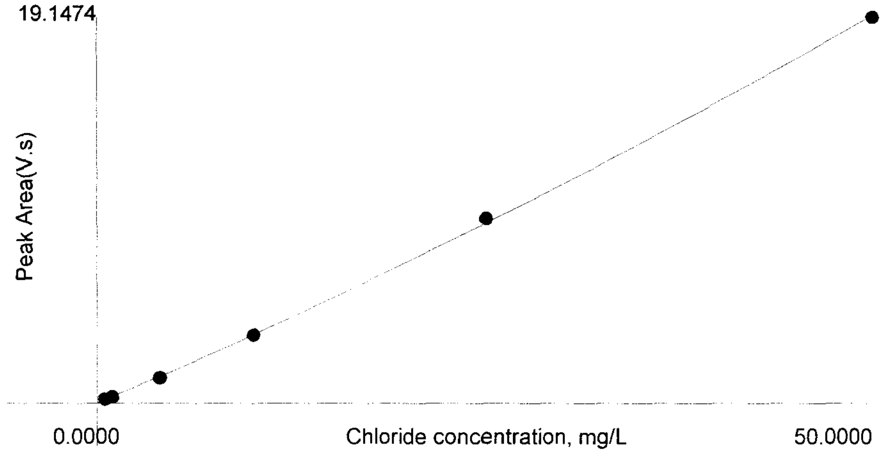
Area = 0.0131 * Conc^2 + 0.4160 * Conc - 0.0031
Conc = - 0.1236 * Area^2 + 2.3721 * Area + 0.0084
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 2: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	19.1474	1.2825	0.5	11/2/2011	11:28:24 AM
2	25.0000	1	9.0851	0.7929	-2.4	11/2/2011	11:28:24 AM
3	10.0000	1	3.3344	0.3715	1.1	11/2/2011	11:28:24 AM
4	4.0000	1	1.2395	0.1514	6.5	11/2/2011	11:28:24 AM
5	1.0000	1	0.3203	0.0390	4.1	11/2/2011	11:28:25 AM
6	0.5000	1	0.1870	0.0226	-9.4	11/2/2011	11:28:25 AM

Figure 2: Chloride



Area = 0.0012 * Conc^2 + 0.3244 * Conc + 0.0084
Conc = - 0.0224 * Area^2 + 3.0268 * Area - 0.0096
Correlation Coefficient (r) = 0.99998

1/x weighting

Table 3: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.1058	0.3141	0.4	11/2/2011	11:28:24 AM
2	2.5000	1	1.4779	0.1549	-1.9	11/2/2011	11:28:24 AM
3	1.0000	1	0.5495	0.0568	0.7	11/2/2011	11:28:24 AM
4	0.4000	1	0.2086	0.0214	3.7	11/2/2011	11:28:24 AM
5	0.1000	1	0.0500	0.0051	5.3	11/2/2011	11:28:25 AM
6	0.0500	1	0.0244	0.0025	5.2	11/2/2011	11:28:25 AM
7	0.0100	1	0.0049	5.2106e-4	-16.7	11/2/2011	11:28:25 AM

Figure 3: Nitrite-N

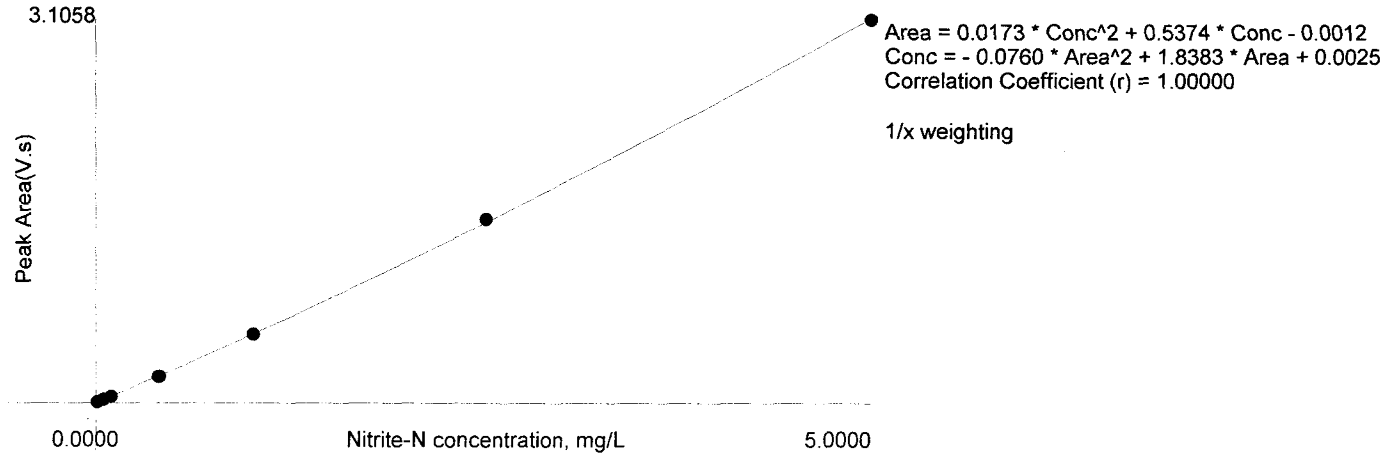
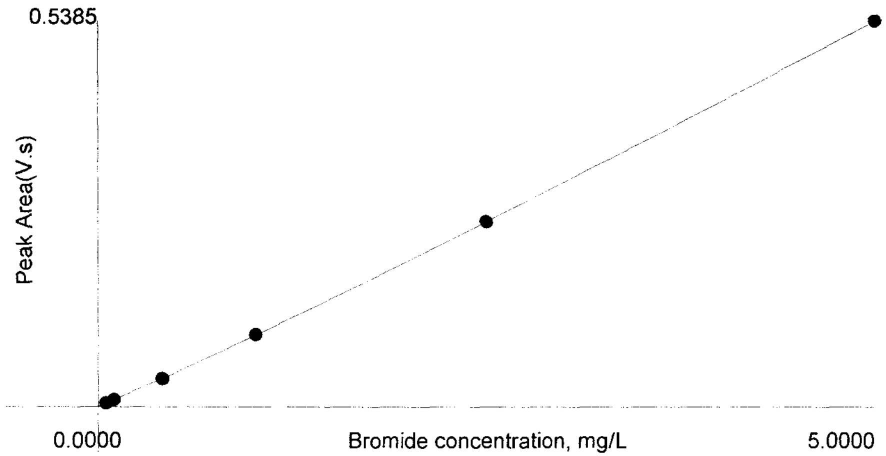


Table 4: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.5385	0.0392	0.0	11/2/2011	11:28:24 AM
2	2.5000	1	0.2561	0.0184	0.0	11/2/2011	11:28:24 AM
3	1.0000	1	0.0998	0.0071	-0.6	11/2/2011	11:28:24 AM
4	0.4000	1	0.0386	0.0027	1.2	11/2/2011	11:28:24 AM
5	0.1000	1	0.0095	6.6002e-4	0.9	11/2/2011	11:28:25 AM
6	0.0500	1	0.0048	3.3481e-4	-1.6	11/2/2011	11:28:25 AM

Figure 4: Bromide



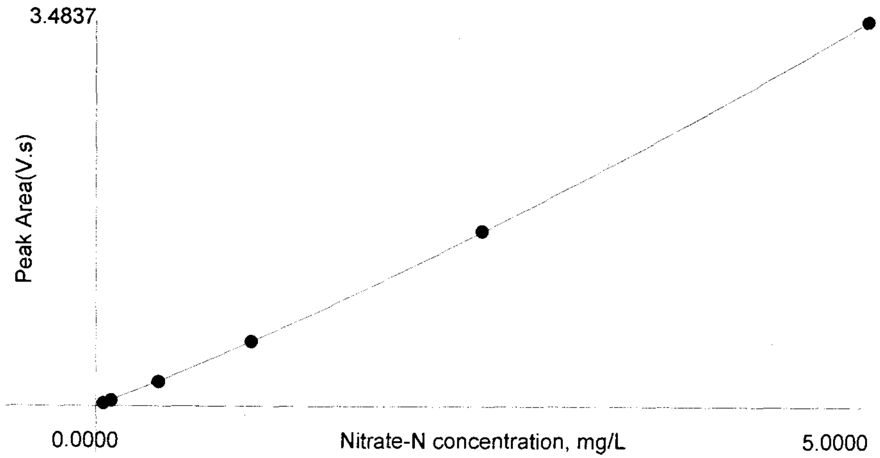
Area = 0.0021 * Conc^2 + 0.0973 * Conc - 1.9201e-4
Conc = - 1.7300 * Area^2 + 10.2083 * Area + 0.0025
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 5: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.4837	0.1962	0.1	11/2/2011	11:28:24 AM
2	2.5000	1	1.5712	0.0890	-0.7	11/2/2011	11:28:24 AM
3	1.0000	1	0.5790	0.0322	0.0	11/2/2011	11:28:24 AM
4	0.4000	1	0.2179	0.0119	2.4	11/2/2011	11:28:24 AM
5	0.1000	1	0.0519	0.0028	2.2	11/2/2011	11:28:25 AM
6	0.0500	1	0.0263	0.0014	-4.3	11/2/2011	11:28:25 AM

Figure 5: Nitrate-N



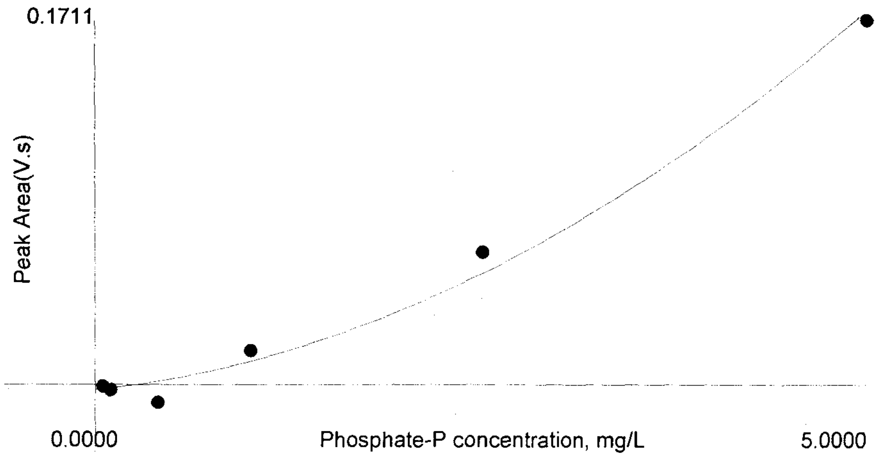
Area = 0.0291 * Conc^2 + 0.5526 * Conc - 0.0025
Conc = - 0.0931 * Area^2 + 1.7544 * Area + 0.0069
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 6: Phosphate-P

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.1711	0.0083	2.8	11/2/2011	11:28:24 AM
2	2.5000	1	0.0615	0.0031	-18.6	11/2/2011	11:28:24 AM
3	1.0000	1	0.0157	8.4557e-4	-45.1	11/2/2011	11:28:24 AM
4	0.4000	1	-0.0084	-2.4475e-4	653.2	11/2/2011	11:28:24 AM
5	0.1000	1	-0.0025	-8.9869e-5	-53.7	11/2/2011	11:28:25 AM
6	0.0500	1	-7.6213e-4	-1.7837e-5	62.9	11/2/2011	11:28:25 AM

Figure 6: Phosphate-P



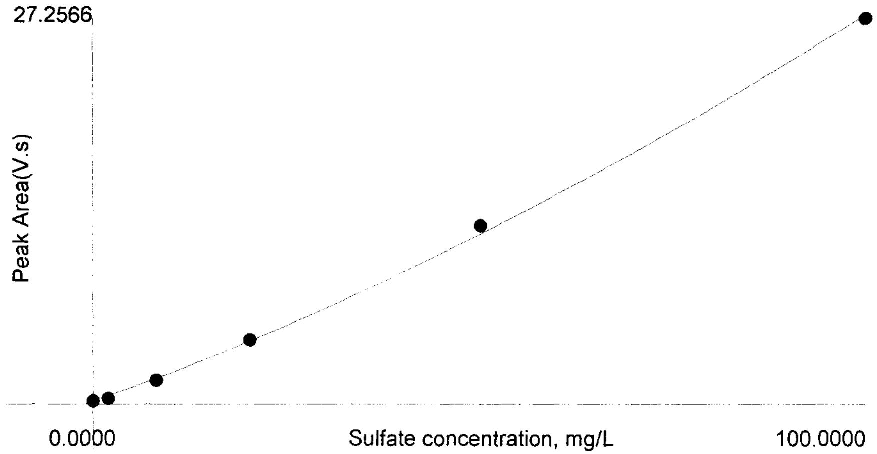
Area = 0.0056 * Conc^2 + 0.0077 * Conc - 0.0025
Conc = - 26.2944 * Area^2 + 33.4578 * Area + 0.1691
Correlation Coefficient (r) = 0.99703

1/x weighting

Table 7: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	27.2566	0.8442	1.0	11/2/2011	11:28:24 AM
2	50.0000	1	12.5157	0.4470	-4.9	11/2/2011	11:28:24 AM
3	20.0000	1	4.4741	0.1672	-1.1	11/2/2011	11:28:24 AM
4	8.0000	1	1.6543	0.0605	8.8	11/2/2011	11:28:24 AM
5	2.0000	1	0.3980	0.0142	32.5	11/2/2011	11:28:25 AM
6	0.0500	1	0.2093	0.0075	-2.6	11/2/2011	11:28:25 AM

Figure 7: Sulfate



Area = 7.7304e-4 * Conc^2 + 0.1962 * Conc + 0.1943
Conc = - 0.0411 * Area^2 + 4.7877 * Area - 0.9191
Correlation Coefficient (r) = 0.99999

1/x weighting

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield Job No.: 360-37292-1

SDG No.: 360-37292

Batch Number: 82751 Batch Start Date: 11/01/11 13:22 Batch Analyst: Emerich, Rich W

Batch Method: 300.0 Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11H_IC_ICV 00001	W11J_IC_LCS 00001			
ICV 360-82751/1		300.0		10 mL	1 mL				
LCS 360-82751/4		300.0		10 mL		10 mL			
CCV 360-82751/15		300.0		10 mL		10 mL			

Batch Notes	

Basis	Basis Description

Shipping and Receiving Documents

TETRA TECH ISG
TtNUS, Information Systems Group

Completion Ticket

On 11/8/2011 at 12:27 PM the following files were submitted to Tetra Tech by joe.chimi@testamericainc.com with TAWMA:

360-37292A1.txt, 360-37292A3.txt

If you need to identify this session at a later date refer to Ticket Key:

2011118_20527_ledd_TAWMA

You may print this page by clicking on the "Print This Page" button

Thank you for using the Data Checker, to upload more files click the "Upload/Check Files" link on navigation menu.

Print this Page | Back To Upload

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Login Sample Receipt Checklist

Client: Tetra Tech NUS Inc

Job Number: 360-37292-1
SDG Number: 360-37292

Login Number: 37292
List Number: 1
Creator: Mason, Becky C

List Source: TestAmerica Westfield

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

LABORATORY CHRONICLE - TestAmerica WESTFIELD

CLIENT: Tetra Tech NUS Inc.

Report No: 360-37292

Project: Middle River Complex

Date Sampled: 10/28/11

Date Received: 10/29/11

GENERAL CHEMISTRY

Sample No.	Preserv.	Relinquised by	Received by	Date/Time	Reason for change
37292A1	NONE	JB	RWS	11-1-11 / 0900	TAKEN FOR
A2					ANALYSIS
A3					
A4					
A5					
A6					
37292A1		RWS	JB	11-1-11 / 1730	RETURNED TO
A2					STORAGE -
A3					WALK-IN
A4					COOLER
A5					
A6					

Extractions:

Metals ______

Cyanide ______

Misc. ______

Analysis:

Metals: ______

Cyanide ______

Mics. Br

Chain of Custody Record

360-37292

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location:

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

COC No: 010153

1 of 1 COCs

Client Contact			
Company Name: Tetra Tech	Client Project Manager: Dev Murali/Chris Pike	Site Contact: Walter O'Neill	Lab Contact:
Address: 20251 Century Blvd, Ste 200	Telephone: 301-528-5552	Telephone: 706-201-3646	Telephone:
City/State/Zip: Germantown, MD 20874	Email: Dev.Murali@tetratech.com Chris.Pike@tetratech.com	Analysis Turnaround Time (in BUS days)	Analyses
Phone: 301-528-5552		☒ TAT if different from below 3 day; ☐ 3 weeks; ☐ 2 weeks; ☐ 1 week; ☐ 2 days; ☐ 1 day	
Project Name: MRC Injection Project	Method of Shipment/Carrier: Fed Ex		
Project Number:	Shipping/Tracking No:		
PO #			

For lab use only: Walk-in client ☐ Lab pickup ☐ Lab sampling ☐ Job/SDG No:

Sample Identification	Sample Date	Sample Time	Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C/Grab=G	BROMIDE	Sample Specific Notes / Special Instructions:
MPW-2I-102811	10/28/11	0815		X									X					Use method
MPW-3I-102811		0850																300 w/
MPE-1I-102811		1120																MDL = 10ug/L
MPE-2I-102811		1205																RL=50ug/L
MPN-1I-102811		1305																
MPN-2I-102811		1325																
Temp Blank																		

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return to Client ☐ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments: 3 day turn around time custody seal - 83434

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Walter O'Neill	Tetratech	10/28/11 1730	[signature]	Westfield	10/29/11 1130
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

FedEx 873 9 3571 0717 5.3/Ice

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TAL 0018-1 (04/10)

ANALYTICAL REPORT

Job Number: 360-37328-1

SDG Number: 360-37328

Job Description: MRC Injection Project

For:
Tetra Tech NUS Inc
Foster Plaza VII
661 Anderson Drive
Pittsburgh, PA 15220-2745

Attention: Samantha Brenner

Approved for release.
Joe Chimi
Report Production Representative
11/9/2011 10:25 AM

Designee for
Lisa A Worthington
Project Manager II
lisa.worthington@testamericainc.com
11/09/2011

cc: Chris Pike

Results relate only to the items tested and the sample(s) as received by the laboratory. The test results in this report meet all NELAC requirements for accredited parameters, exceptions are noted in this report. Pursuant to NELAC, this report may not be reproduced except in full, and with written approval from the laboratory. TestAmerica Westfield Certifications and Approvals: MADEP MA014, RIDOH57, CTDPH 0494, VT DECWSD, NELAP NH DES 2539, NELAP NY 10843, NY ELAP 10843, North Carolina 647. Field sampling is performed under SOPs WE-FLD-001 and WE-FLD-002.

TestAmerica Laboratories, Inc.
TestAmerica Westfield Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085
Tel (413) 572-4000 Fax (413) 572-3707 www.testamericainc.com

Table of Contents

Table of Contents

I Christine Furcinite-Reynolds as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (413) 572-4000 if there are any questions or problems with the enclosed electronic deliverables.

Signature: CFReynolds Title: QA Manager Date: 11/9/11

Revision 8
ISG
08/10/10

CASE NARRATIVE

Client: Tetra Tech NUS Inc

Project: MRC Injection Project

Report Number: 360-37328-1

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

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

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

RECEIPT

The samples were received on 11/02/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.1 C.

Note: All samples that require thermal preservation are considered acceptable if the arrival temperature is within the method's specified temperature range or for general analysis, ranging from 6°C to just above the freezing temperature of water. Samples that are hand delivered, immediately following collection, may not meet these criteria; however, they will be considered acceptable according to NELAC and State standards, if there is evidence that the chilling process has begun, such as stored and transported to the laboratory on ice.

ANIONS (28 DAY HOLD TIME)

Samples MPN-1S-110111 (360-37328-1), MPN-2S-110111 (360-37328-2), OW-1C-110111 (360-37328-3), OW-1B-110111 (360-37328-4), MPE-2S-110111 (360-37328-5) and MPE-3S-110111 (360-37328-6) were analyzed for anions (28 day hold time) in accordance with EPA Method 300.0. The samples were analyzed on 11/02/2011.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

SAMPLE SUMMARY

Client: Tetra Tech NUS Inc

Job Number: 360-37328-1
Sdg Number: 360-37328

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
360-37328-1	MPN-1S-110111	Water	11/01/2011 0950	11/02/2011 1005
360-37328-2	MPN-2S-110111	Water	11/01/2011 1035	11/02/2011 1005
360-37328-3	OW-1C-110111	Water	11/01/2011 1135	11/02/2011 1005
360-37328-4	OW-1B-110111	Water	11/01/2011 1225	11/02/2011 1005
360-37328-5	MPE-2S-110111	Water	11/01/2011 1355	11/02/2011 1005
360-37328-6	MPE-3S-110111	Water	11/01/2011 1430	11/02/2011 1005

EXECUTIVE SUMMARY - Detections

Client: Tetra Tech NUS Inc

Job Number: 360-37328-1
Sdg Number: 360-37328

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
360-37328-1	**MPN-1S-110111**					
Bromide		0.17		0.050	mg/L	300.0
360-37328-2	**MPN-2S-110111**					
Bromide		0.30		0.050	mg/L	300.0
360-37328-3	**OW-1C-110111**					
Bromide		0.083		0.050	mg/L	300.0
360-37328-4	**OW-1B-110111**					
Bromide		0.34		0.050	mg/L	300.0

METHOD SUMMARY

Client: Tetra Tech NUS Inc

Job Number: 360-37328-1
Sdg Number: 360-37328

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Anions, Ion Chromatography	TAL WFD	MCAWW 300.0	

Lab References:

TAL WFD = TestAmerica Westfield

Method References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

METHOD / ANALYST SUMMARY

Client: Tetra Tech NUS Inc

Job Number: 360-37328-1
Sdg Number: 360-37328

Method	Analyst	Analyst ID
MCAWW 300.0	Emerich, Rich W	RWE

Client: Tetra Tech NUS Inc

Job Number: 360-37328-1
Sdg Number: 360-37328

General Chemistry

Client Sample ID: **MPN-1S-110111**

Lab Sample ID: 360-37328-1
Client Matrix: Water

Date Sampled: 11/01/2011 0950
Date Received: 11/02/2011 1005

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.17		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-82847	Analysis Date: 11/02/2011 1600						

Client: Tetra Tech NUS Inc

Job Number: 360-37328-1
Sdg Number: 360-37328

General Chemistry

Client Sample ID: **MPN-2S-110111**

Lab Sample ID: 360-37328-2
Client Matrix: Water

Date Sampled: 11/01/2011 1035
Date Received: 11/02/2011 1005

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.30		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-82847	Analysis Date: 11/02/2011 1616					

General Chemistry

Client Sample ID: **OW-1C-110111**

Lab Sample ID: 360-37328-3 | Date Sampled: 11/01/2011 1135
Client Matrix: Water | Date Received: 11/02/2011 1005

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.083		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-82847	Analysis Date: 11/02/2011 1632						

Analytical Data

Client: Tetra Tech NUS Inc

Job Number: 360-37328-1
Sdg Number: 360-37328

General Chemistry

Client Sample ID: **OW-1B-110111**

Lab Sample ID: 360-37328-4
Client Matrix: Water

Date Sampled: 11/01/2011 1225
Date Received: 11/02/2011 1005

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.34		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-82847		Analysis Date: 11/02/2011 1648					

Client: Tetra Tech NUS Inc

Job Number: 360-37328-1
Sdg Number: 360-37328

General Chemistry

Client Sample ID: **MPE-2S-110111**

Lab Sample ID: 360-37328-5
Client Matrix: Water

Date Sampled: 11/01/2011 1355
Date Received: 11/02/2011 1005

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	ND		mg/L	0.050	0.050	1.0	300.0

Analysis Batch: 360-82847 Analysis Date: 11/02/2011 1705

Client: Tetra Tech NUS Inc

Job Number: 360-37328-1
Sdg Number: 360-37328

General Chemistry

Client Sample ID: **MPE-3S-110111**

Lab Sample ID: 360-37328-6
Client Matrix: Water

Date Sampled: 11/01/2011 1430
Date Received: 11/02/2011 1005

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	ND		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-82847	Analysis Date: 11/02/2011 1751					

Quality Control Results

Client: Tetra Tech NUS Inc

Job Number: 360-37328-1
Sdg Number: 360-37328

Method Blank - Batch: 360-82847

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-82847/3	Analysis Batch:	360-82847	Instrument ID:	Lachat 8500		
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A		
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL		
Analysis Date:	11/02/2011 1528	Units:	mg/L	Final Weight/Volume:	1.0 mL		
Prep Date:	N/A						
Leach Date:	N/A						

Analyte	Result	Qual	RL	RL
Bromide	ND		0.050	0.050

Lab Control Sample - Batch: 360-82847

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-82847/4	Analysis Batch:	360-82847	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/02/2011 1544	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	4.00	4.01	100	85 - 115	

Client: Tetra Tech NUS Inc

Job Number: 360-37328-1
Sdg Number: 360-37328

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:360-82847					
LCS 360-82847/4	Lab Control Sample	T	Water	300.0	
MB 360-82847/3	Method Blank	T	Water	300.0	
360-37328-1	MPN-1S-110111	T	Water	300.0	
360-37328-2	MPN-2S-110111	T	Water	300.0	
360-37328-3	OW-1C-110111	T	Water	300.0	
360-37328-4	OW-1B-110111	T	Water	300.0	
360-37328-5	MPE-2S-110111	T	Water	300.0	
360-37328-6	MPE-3S-110111	T	Water	300.0	

Report Basis
T = Total

Client: Tetra Tech NUS Inc

Job Number: 360-37328-1
SDG: 360-37328

Laboratory Chronicle

Lab ID: **360-37328-1** **Client ID:** **MPN-1S-110111**

Sample Date/Time: 11/01/2011 09:50 Received Date/Time: 11/02/2011 10:05

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37328-A-1		360-82847		11/02/2011 16:00	1	TAL WFD	RWE

Lab ID: **360-37328-2** **Client ID:** **MPN-2S-110111**

Sample Date/Time: 11/01/2011 10:35 Received Date/Time: 11/02/2011 10:05

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37328-A-2		360-82847		11/02/2011 16:16	1	TAL WFD	RWE

Lab ID: **360-37328-3** **Client ID:** **OW-1C-110111**

Sample Date/Time: 11/01/2011 11:35 Received Date/Time: 11/02/2011 10:05

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37328-A-3		360-82847		11/02/2011 16:32	1	TAL WFD	RWE

Lab ID: **360-37328-4** **Client ID:** **OW-1B-110111**

Sample Date/Time: 11/01/2011 12:25 Received Date/Time: 11/02/2011 10:05

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37328-A-4		360-82847		11/02/2011 16:48	1	TAL WFD	RWE

Lab ID: **360-37328-5** **Client ID:** **MPE-2S-110111**

Sample Date/Time: 11/01/2011 13:55 Received Date/Time: 11/02/2011 10:05

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37328-A-5		360-82847		11/02/2011 17:05	1	TAL WFD	RWE

Lab ID: **360-37328-6** **Client ID:** **MPE-3S-110111**

Sample Date/Time: 11/01/2011 14:30 Received Date/Time: 11/02/2011 10:05

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37328-A-6		360-82847		11/02/2011 17:51	1	TAL WFD	RWE

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
A:300.0	MB 360-82847/3		360-82847		11/02/2011 15:28	1	TAL WFD	RWE

Client: Tetra Tech NUS Inc

Job Number: 360-37328-1
SDG: 360-37328

Laboratory Chronicle

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
A:300.0	LCS 360-82847/4		360-82847		11/02/2011 15:44	1	TAL WFD	RWE

Lab References:
TAL WFD = TestAmerica Westfield

Certification Summary

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Westfield	Connecticut	State Program	1	PH-0494
TestAmerica Westfield	Maine	State Program	1	MA00014
TestAmerica Westfield	Massachusetts	State Program	1	M-MA014
TestAmerica Westfield	New Hampshire	NELAC	1	2539
TestAmerica Westfield	New York	NELAC	2	10843
TestAmerica Westfield	North Carolina	North Carolina DENR	4	647
TestAmerica Westfield	Rhode Island	State Program	1	LAO00057
TestAmerica Westfield	Vermont	State Program	1	VT-10843

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.

State Accreditation Matrix

Method Name	Description	New Hampshire (NELAC)	Mass	Conn	North Carolina
		State where **Primary** Accreditation is Carried			
821-R-02-012	Toxicity, Acute (48-Hour)(list upon request)	NP			
SM 4500 Cl F	Chlorine, Residual		NP		
SM 9215E	Heterotrophic Plate Count (SimPlate)		P		
SM 9222D	Coliforms, Fecal (Membrane Filter)		P/NP		
SM 9223	Coliforms, Total, and E.Coli (Colilert-P/A)		P		
SM 9224	Coliforms, Total, and E.Coli (Enumeration)		P		
1103.1	E.coli		ambient/		
Enterolert	Enterococcus		source		
200.8 Rev 5.4	Metals (ICP/MS) (list upon request)	NP/P	NP/P		
200.7 Rev 4.4	Metals (ICP)(list upon request)	NP/P	NP/P		
6010B	Metals (ICP)(list upon request)	NP/SW			
245.1	Mercury (CVAA)	NP/P	NP		
7470A	Mercury (CVAA)	NP			
7471A	Mercury (CVAA)	SW			
SM 2340B	Total Hardness (as CaCO3) by calculation	NP/P	NP		
3005A	Preparation, Total Recoverable or Dissolved Metals	NP/P			
3010A	Preparation, Total Metals	NP/P			
3020A	Preparation, Total Metals	NP/P/SW			
3050B	Preparation, Metals	SW			
504.1	EDB, DBCP and 1,2,3-TCP (GC)	P	P		
608	Organochlorine Pest/PCBs (list upon request)	NP	NP		
625	Semivolatile Org Comp (GC/MS)(list upon request)	NP	NP		
3546	Microwave Extraction	SW			
3510C	Liquid-Liquid Extraction (Separatory Funnel)	NP			
3550B	Ultrasonic Extraction	SW			
8081A	Organochlorine Pesticides (GC)(list upon request)	NP/SW			
8082	PCBs by Gas Chromatography(list upon request)	NP/SW			
8270C	Semivolatile Comp.(GC/MS)(list upon request)	NP/SW			
CT ETPH	Conn - Ext. Total petroleum Hydrocarbons (GC)			NP/SW	
MA-EPH	Mass - Extractable Petroleum Hydrocarbons (GC)				NP/SW
524.2	Volatile Org Comp (GC/MS)(list upon request)	P	P		
524.2	Trihalomethane compounds	P	P		
624	Volatile Org Comp (GC/MS)(list upon request)	NP	NP		
5035	Closed System Purge and Trap	SW			
5030B	Purge and Trap	NP			
8260B	Volatile Org Comp. (GC/MS)(list upon request)	NP/SW			
MAVPH	Mass - Volatile Petroleum Hydrocarbons (GC)				NP/SW
180.1	Turbidity, Nephelometric	P	P		
300	Anions, Ion Chromatography	NP/P	NP/P		
410.4	COD	NP	NP		
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW			
10-107-06-2	Nitrogen, Total Kjeldahl	NP	NP		
7196A	Chromium, Hexavalent	NP/SW			
9012A	Cyanide, Total and/or Amenable	NP/SW			
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	NP			
9045C	pH	SW			
L107041C	Nitrogen, Nitrate	NP	P		
L107-06-1B	Nitrogen Ammonia	NP	NP		
L204001A CN	Cyanide, Total	P	NP/P		
L210-001A	Phenolics, Total Recoverable	NP	NP		
SM 2320B	Alkalinity	NP/P	NP/P		
SM 2510B	Conductivity, Specific Conductance	NP/P	NP/P		
SM 2540C	Solids, Total Dissolved (TDS)	NP/P	NP/P		
SM 2540D	Solids, Total Suspended (TSS)	NP	NP		
SM 3500 CR D	Chromium, Hexavalent	NP			
SM 4500 H+ B	pH	NP/P	NP/P		
SM 4500 NO2 B	Nitrogen, Nitrite	NP	P		
SM 4500 P E	Phosphorus, Orthophosphate	NP/P	NP		
SM 4500 P E	Phosphorus, Total	NP	NP		
SM 4500 S2 D	Sulfide, Total	NP			
SM 5210B	BOD, 5-Day	NP	NP		
SM 5310B	Organic Carbon, Total (TOC)	NP/P	NP		

Not all organic compounds are accreditied under NELAC

For methods with multiple compounds all compounds may not meet NELAC criteria, listing should be obtained from the laboratory

The lab carries additional accreditations with several states. This is the laboratories typcial listing but is subject to change based on the laboratories current certification standing.

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job Number: 360-37328-1

SDG No.: 360-37328

Project: MRC Injection Project

Client Sample ID	Lab Sample ID
MPN-1S-110111	360-37328-1
MPN-2S-110111	360-37328-2
OW-1C-110111	360-37328-3
OW-1B-110111	360-37328-4
MPE-2S-110111	360-37328-5
MPE-3S-110111	360-37328-6

Comments:

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-1S-110111

Lab Sample ID: 360-37328-1

Lab Name: TestAmerica Westfield

Job No.: 360-37328-1

SDG ID.: 360-37328

Matrix: Water

Date Sampled: 11/01/2011 09:50

Reporting Basis: WET

Date Received: 11/02/2011 10:05

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.17	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-2S-110111

Lab Sample ID: 360-37328-2

Lab Name: TestAmerica Westfield

Job No.: 360-37328-1

SDG ID.: 360-37328

Matrix: Water

Date Sampled: 11/01/2011 10:35

Reporting Basis: WET

Date Received: 11/02/2011 10:05

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.30	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: OW-1C-110111

Lab Sample ID: 360-37328-3

Lab Name: TestAmerica Westfield

Job No.: 360-37328-1

SDG ID.: 360-37328

Matrix: Water

Date Sampled: 11/01/2011 11:35

Reporting Basis: WET

Date Received: 11/02/2011 10:05

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.083	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: OW-1B-110111

Lab Sample ID: 360-37328-4

Lab Name: TestAmerica Westfield

Job No.: 360-37328-1

SDG ID.: 360-37328

Matrix: Water

Date Sampled: 11/01/2011 12:25

Reporting Basis: WET

Date Received: 11/02/2011 10:05

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.34	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-2S-110111

Lab Sample ID: 360-37328-5

Lab Name: TestAmerica Westfield

Job No.: 360-37328-1

SDG ID.: 360-37328

Matrix: Water

Date Sampled: 11/01/2011 13:55

Reporting Basis: WET

Date Received: 11/02/2011 10:05

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	ND	0.050		mg/L			1	300.0

FORM IB-IN

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-3S-110111

Lab Sample ID: 360-37328-6

Lab Name: TestAmerica Westfield

Job No.: 360-37328-1

SDG ID.: 360-37328

Matrix: Water

Date Sampled: 11/01/2011 14:30

Reporting Basis: WET

Date Received: 11/02/2011 10:05

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	ND	0.050		mg/L			1	300.0

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37328-1

SDG No.: 360-37328

Analyst: RWE   Batch Start Date: 11/02/2011

Reporting Units: mg/L   Analytical Batch No.: 82847

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	14:56	Bromide	2.54	2.50	102	90-110		W11H_IC_ICV_00001
2	ICB	15:12	Bromide	ND					
11	CCV	18:41	Bromide	4.11	4.00	103	90-110		W11J_IC_LCS_00001
12	CCB	18:57	Bromide	ND					

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

FORM II-IN

3-IN
METHOD BLANK
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield Job No.: 360-37328-1

SDG No.: 360-37328

Method	Lab Sample ID	Analyte	Result	Qual	Units	RL	Dil
Batch ID: 82847		Date: 11/02/2011 15:28					
300.0	MB 360-82847/3	Bromide	ND		mg/L	0.050	1

FORM III-IN

7A-IN
LAB CONTROL SAMPLE
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37328-1

SDG No.: 360-37328

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 82847		Date: 11/02/2011 15:44									
					LCS Source:	W11J_IC_LCS_00001					
300.0	LCS 360-82847/4	Bromide	4.01		mg/L	4.00	100	85-115			

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

FORM VIIA-IN

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job Number: 360-37328-1

SDG Number: 360-37328

Matrix: Water   Instrument ID: Lachat 8500

Method: 300.0   RL Date: 10/27/2011 11:55

Analyte	Wavelength/ Mass	RL (mg/L)	
Bromide		0.05	

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield Job Number: 360-37328-1

SDG Number: 360-37328

Matrix: Water Instrument ID: Lachat 8500

Method: 300.0 XMDL Date: 02/15/2011 13:03

Analyte	Wavelength/ Mass	XRL (mg/L)	XMDL (mg/L)
Bromide		0.1	0.01

FORM IX - IN

ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37328-1

SDG No.: 360-37328

Instrument ID: Lachat 8500   Method: 300.0

Start Date: 11/02/2011 14:56   End Date: 11/02/2011 22:11

Lab Sample ID	D/F	Type	Time	Analytes																			
				Br																			
ICV 360-82847/1	1		14:56	X																			
ZZZZZZ			14:56																				
ZZZZZZ			14:56																				
ICB 360-82847/2	1		15:12	X																			
MB 360-82847/3	1	T	15:28	X																			
LCS 360-82847/4	1	T	15:44	X																			
360-37328-1	1	T	16:00	X																			
360-37328-2	1	T	16:16	X																			
360-37328-3	1	T	16:32	X																			
360-37328-4	1	T	16:48	X																			
360-37328-5	1	T	17:05	X																			
360-37328-6	1	T	17:51	X																			
CCV 360-82847/11	1		18:41	X																			
CCB 360-82847/12	1		18:57	X																			
ZZZZZZ			20:50																				
ZZZZZZ			21:06																				
ZZZZZZ			21:22																				
ZZZZZZ			21:38																				
CCV 360-82847/17			21:54																				
CCB 360-82847/18			22:11																				

Prep Types

T = Total/NA

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review Coversheet—Inorganics Dept

Method Name: IC Method Reference: 300-280 | 48HR Date of Analytical Run: 11-2-11

Primary Reviewer's Initials & Date: [initials] 11-3-11 Secondary Reviewer's Initials & Date: [initials] 11/7/11

Batch Numbers	82847	82848	82849	[redacted]	82863

QC Criteria—Non-MCP: ICV/CCV ±10%: LCS/LCSD ±15%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%

QC Criteria—MCP/RCP: (9012 and 7196 only)
9012 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
9012 (soil): ICV/CCV ±15%: LCS/LCSD **: MS/MSD ±25%: ICB/MB/CCB <RL: MD RPD 35%: MSD/LCSD RPD ≤30%
7196 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
7196 (soil): ICV/CCV ±15%: LCS/LCSD **: MSS/MSI ±25%: ICB/MB/CCB <RL: MD RPD ≤35%: LCSD RPD ≤30%

FAILURES OF QC FOR ANYTHING OTHER THAN MS, MSD or MD ARE GROUNDS FOR INVALIDATING THE BATCH.

Criteria for QC	Yes	No	n/a	Notes/Comments
Were the ICV and CCVs within acceptable limits for QC recovery?	✓✓✓✓✓			
Were the ICB and CCBs all <RL?	✓✓✓✓✓			
Were all MB and CCB results <RL for the analytes of interest?	✓✓✓✓✓			
Was there a CCV/CCB combination run after every 10 samples or less?	✓✓✓✓✓			
Was there an LCS run with every batch of 20 samples or less?	✓✓✓✓✓			
Was there a MD, LCSD or MSD run with every batch of 20 samples or less?	✓✓✓✓	✓		
Were all LCS/LCSD results within acceptable limits for QC recovery?	✓✓✓✓✓			
Were all MS/MSD results within acceptable limits for QC recovery?	✓✓✓✓		✓	
Were all MD, LCSD and/or MSD %RPDs within acceptable limits for QC recovery?	✓✓✓✓		✓	
Were the raw data points for investigative samples within the working curve range, or if not, were the samples diluted to bring them within this range?	✓✓✓✓✓			
IF there were any MCP/RCP samples in this batch, did they meet all MCP/RCP requirements?	✓✓✓✓		✓	
Were there any holding time violations in this batch?		✓✓✓✓✓		**NOTE!** The PM and QA Manager must be notified by email *immediately* of any holding time violations!!
Were any NCMs generated for any samples in the batch? (If so, list NCM numbers, and first-reviewer must check off any "No" answers above as applicable.)		✓✓✓✓✓		
Were any jobs in this batch Level 4? If "Yes" then scan all raw data & place in correct scan folder on the public drive before filing this paperwork.	✓✓	✓✓✓		

** LCS or LCSD must produce a recovery that is within the manufacturer's specified 95% confidence limits, must be matrix matched.

WI-WET-001Rev13
Printed 10/10/2011
TestAmerica Westfield • 53 Southampton Rd • Westfield MA 01085
Initiated 10/6/10

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Ion Chromatography QC Source Data Sheet—Inorganics Dept

Method (circle methods): IC 300_28D IC 300_48HR IC 9056_28D IC 9056_48HR

Date of Analytical Run: 11-2-11 Analyst's Initials: RWF

Working Curve Standard:

Manufacturer & Lot Number for Source Standard	Working Curve Standards Prepared On
Inorganic Ventures Lot E2-MEB394034	20 October 2011

QC Standard True Values for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.50	25.0	2.50	2.50	2.50	50.0
ICB	0	0	0	0	0	0
MB	0	0	0	0	0	0
LCS/LCSD	4.00	40.0	4.00	4.00	4.00	80.0
MS/MSD	1.00	10.0	1.00	1.00	1.00	20.0

QC Standard Acceptable Recovery Ranges for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.25-2.75	22.5-27.5	2.25-2.75	2.25-2.75	2.25-2.75	45.0-55.0
ICB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
MB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
LCS/LCSD	3.40-4.60	34.0-46.0	3.40-4.60	3.40-4.60	3.40-4.60	68.0-92.0
MS/MSD	0.75-1.25	7.50-12.5	0.75-1.25	0.75-1.25	0.75-1.25	15.0-25.0

Current Method RLs (mg/L):

	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
	0.10	1.00	0.010	0.10	0.050	2.0

Original Run Filename: OM_11-2-2011_02-38-42PM.OMN created 11/2/2011 2:38:42 PM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_11-2-2011_02-38-42PM.OMN last modified 11/3/2011 9:11:11 AM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Phosphate-P (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	0.0025	-0.0244	0.0084	0.0061	0.0025	0.1683	-0.9117	11/2/2011@2:40:03 PM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	Table/Fig. 7	
ICV	1	2.5379	25.8546	2.5204	2.5496	2.5518	5.3125	52.1803	11/2/2011@2:56:10 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	2.5000	50.0000	
ICB	S11	0.0011	-0.0226	0.0084	0.0069	0.0025	0.1515	-0.9229	11/2/2011@3:12:17 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0022	-0.0234	0.0084	0.0067	0.0025	0.1728	-0.9218	11/2/2011@3:28:24 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.0128	40.6941	4.0304	3.9636	4.0891	9.4156	80.7063	11/2/2011@3:44:30 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37328-A-1	2	0.1679	54.9961	0.3044	0.0069	0.0025	0.1394	49.6552	11/2/2011@4:00:37 PM
360-37328-A-2	3	0.2988	59.9573	0.2139	0.0061	0.0025	0.1537	93.9960	11/2/2011@4:16:44 PM
360-37328-A-3	4	0.0833	-94.5523	0.1517	0.1919	1.2430	0.1691	8.6154	11/2/2011@4:32:51 PM
360-37328-A-4	5	0.3385	-91.9771	0.1015	0.0064	1.7064	0.1692	10.9053	11/2/2011@4:48:58 PM
360-37328-A-5	6	0.0413	15.4321	0.3204	0.0333	-13.0992	0.1693	45.7807	11/2/2011@5:05:04 PM
360-37328-A-6	7	0.0455	21.3824	0.3625	0.0699	0.0025	0.1713	63.5760	11/2/2011@5:21:11 PM
360-37329-G-1	8	0.6572	76.1276	0.5981	0.0053	0.0025	0.0968	-0.0459	11/2/2011@5:37:17 PM
360-37329-G-1@10	9	0.0675	8.5573	0.0708	0.0069	0.0025	0.1791	79.2738	11/2/2011@5:53:23 PM
360-37329-G-1@10 MS	10	1.1577	19.8300	1.1190	1.0485	1.0686	-0.1798	95.7518	11/2/2011@6:09:28 PM
360-37329-G-1@10 MSD	10	1.0623	18.1923	1.0190	0.9582	0.9831	-0.2452	89.0688	11/2/2011@6:25:35 PM
CCV	S12	4.1066	41.1908	4.1068	4.0340	4.1664	8.7671	81.6136	11/2/2011@6:41:41 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0018	-0.0249	0.0066	0.0072	0.0039	0.1386	-0.9203	11/2/2011@6:57:48 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37329-F-2	11	1.6079	-79.3885	0.1353	0.9045	1.8446	0.1685	115.4731	11/2/2011@7:13:54 PM
360-37329-F-3	12	0.8279	-66.7963	0.2473	2.7874	0.0137	0.1689	102.5147	11/2/2011@7:29:59 PM
360-37329-G-4	13	0.6075	51.0786	0.0813	0.0157	0.0025	0.1513	109.3889	11/2/2011@7:46:04 PM
360-37329-G-5	14	0.7334	60.2624	0.0850	0.2077	0.0025	0.1330	55.2743	11/2/2011@8:02:10 PM
360-37329-F-6	15	0.7309	58.4817	0.0868	0.1843	0.0025	0.1695	56.5003	11/2/2011@8:18:15 PM
360-37329-G-7	16	0.0558	55.3561	0.3708	0.7186	-0.0780	0.1704	50.2177	11/2/2011@8:34:21 PM
360-37315-F-1	17	0.0419	5.1170	0.3326	1.7198	9.3091e-4	0.1639	10.6222	11/2/2011@8:50:28 PM
360-37315-F-2	18	0.0372	5.9285	0.4963	0.9721	0.0196	0.1606	8.4481	11/2/2011@9:06:35 PM
360-37315-F-3	19	0.0348	4.9412	0.3239	1.4377	0.0025	0.1697	10.1494	11/2/2011@9:22:42 PM
360-37315-F-4	20	0.0125	1.6302	0.5035	0.0071	0.0025	0.1601	-0.5449	11/2/2011@9:38:48 PM
CCV	S12	4.1698	41.3400	4.1167	4.0790	4.1920	8.9625	81.8524	11/2/2011@9:54:55 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0036	-0.0238	0.0078	0.0072	0.0036	0.1712	-0.9182	11/2/2011@10:11:01 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	2.959e-4	-0.0240	0.0077	0.0101	0.0036	0.1703	-0.9190	11/2/2011@10:27:08 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

LCS	S12	4.1616	41.3607	4.1165	4.0744	4.1908	9.4029	81.9001	11/2/2011@10:43:14 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37315-F-5	21	0.0725	50.2642	0.3173	0.0062	0.0025	0.1459	11.3446	11/2/2011@10:59:21 PM
360-37315-F-5@10	22	0.0148	4.9607	0.0364	0.0069	0.0025	0.1574	0.2780	11/2/2011@11:15:27 PM
360-37315-F-5@10 MS	23	1.0213	15.4275	1.0147	0.9738	1.0001	-0.8826	20.6746	11/2/2011@11:31:34 PM
360-37315-F-5@10 MSD	23	1.0239	15.4223	1.0129	0.9719	1.0007	-0.8566	20.6839	11/2/2011@11:47:40 PM
360-37315-F-6	24	0.0591	40.9857	0.6758	0.0127	0.0025	0.1476	11.4129	11/3/2011@12:03:46 AM
360-37315-F-7	25	0.0240	4.9169	0.2130	0.5854	0.0025	0.1438	8.8558	11/3/2011@12:19:51 AM
360-37315-F-9	26	0.0043	0.0766	0.0060	0.0096	0.0035	0.1476	-0.9191	11/3/2011@12:35:57 AM
360-37327-A-2	27	0.0482	61.3956	0.0553	5.8797	-14.5394	-0.2680	16.6817	11/3/2011@12:52:03 AM
360-37327-A-2@10	28	0.0027	8.6477	0.0065	0.5819	0.0206	0.1310	0.7233	11/3/2011@1:08:09 AM
360-37184-C-7@2 CL	29	0.9620	6.3872	0.0865	4.0160	3.8835	0.1712	37.9255	11/3/2011@1:24:14 AM
CCV	S12	4.0991	41.4059	4.1254	4.0452	4.1565	8.5363	82.1382	11/3/2011@1:40:21 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0024	-0.0273	0.0084	0.0073	0.0043	0.1516	-0.9176	11/3/2011@1:56:28 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37261-C-1@10 CL	30	2.6284e-4	15.3975	0.0138	0.0069	0.0025	0.1695	1.1279	11/3/2011@2:12:33 AM
360-37261-C-1@50 CL	31	0.0084	2.8024	0.0085	0.0069	0.0017	0.1756	-0.4846	11/3/2011@2:28:40 AM
360-37261-C-2@10 CL	32	0.0028	15.1249	0.0087	0.0229	9.0588e-4	0.1692	1.2302	11/3/2011@2:44:47 AM
360-37261-C-2@50 CL	33	0.0023	2.7429	0.0075	0.0112	0.0025	0.1791	-0.4641	11/3/2011@3:00:54 AM
360-37195-B-1@10 CL	34	0.0025	10.3414	0.0070	0.0110	0.0025	0.1696	8.6654	11/3/2011@3:17:00 AM
360-37230-C-1	35	0.0025	-15.0349	-0.0264	0.1410	-92.0266	0.1519	125.0191	11/3/2011@3:33:07 AM
360-37230-C-1@10	36	0.0025	48.8690	0.0063	0.0201	0.0025	0.1659	25.7940	11/3/2011@3:49:13 AM
360-37270-C-1 CL	37	0.0014	-16.7428	1.0754	0.0236	4.4167	0.1594	51.2214	11/3/2011@4:05:20 AM
360-37270-C-2 CL	38	0.0025	-16.6549	1.0846	0.0045	5.5360	0.1692	51.4574	11/3/2011@4:21:26 AM
360-37271-B-1@20 CL	39	0.0025	5.9054	0.0085	0.0373	0.0025	0.1692	0.0930	11/3/2011@4:37:32 AM
CCV	S12	4.0072	41.4794	4.1352	4.0194	4.1166	7.8843	82.5823	11/3/2011@4:53:38 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0033	-0.0387	0.0084	0.0068	0.0047	0.1214	-0.9191	11/3/2011@5:09:45 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0027	-0.0363	0.0069	0.0065	0.0042	0.1557	-0.9186	11/3/2011@5:25:52 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9014	41.5072	4.1386	3.9899	4.1040	8.5725	82.7277	11/3/2011@5:41:58 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37285-C-2@10 CL	40	3.5465e-4	5.2557	0.0478	0.1540	0.0018	0.1533	0.8321	11/3/2011@5:58:04 AM
360-37285-C-3@10 CL	41	0.0380	55.2144	0.0088	0.0069	-0.1236	0.1806	1.9342	11/3/2011@6:14:10 AM
360-37285-C-4@10 CL	42	0.0025	47.8064	0.0477	0.0069	-16.2919	0.1695	1.7462	11/3/2011@6:30:15 AM
360-37285-C-5@10 CL	43	0.0015	50.5181	0.0088	0.0532	0.0025	0.1683	0.8928	11/3/2011@6:46:21 AM
360-37285-C-8@10 CL	44	0.1065	22.9879	0.0065	0.2072	0.0025	0.1584	3.2769	11/3/2011@7:02:26 AM
360-37285-C-8@10 MS	45	1.1061	34.5541	1.0518	1.2263	1.0391	-0.8323	25.8103	11/3/2011@7:18:31 AM
360-37285-C-8@10 MSD	45	1.0845	34.5072	1.0476	1.2095	1.0298	-0.8009	25.7501	11/3/2011@7:34:37 AM
360-37239-A-1@50 CL	46	0.2804	23.9230	0.0074	0.0069	-0.0130	0.1691	0.0238	11/3/2011@7:50:43 AM
360-37239-A-2@10 CL	47	0.0313	21.7365	0.0146	0.0536	0.0025	0.1616	0.4051	11/3/2011@8:06:50 AM
360-37239-A-3@20 CL	48	0.0157	23.1339	0.0085	0.0711	0.0025	0.1832	0.7105	11/3/2011@8:22:56 AM
CCV	S12	3.9344	41.6865	4.1758	4.0145	4.1086	6.8224	83.2906	11/3/2011@8:39:03 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0025	-0.0321	0.0084	0.0068	0.0052	0.1568	-0.9187	11/3/2011@8:55:10 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Original Run Filename: OM_11-2-2011_02-38-42PM.OMN created 11/2/2011 2:38:42 PM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_11-2-2011_02-38-42PM.OMN last modified 11/3/2011 9:11:11 AM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Phosphate-P (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	0.0025	-0.0244	0.0084	0.0061	0.0025	0.1683	-0.9117	11/2/2011@2:40:03 PM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	Table/Fig. 7	
ICV	1	2.5379	25.8546	2.5204	2.5496	2.5518	5.3125	52.1803	11/2/2011@2:56:10 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	2.5000	50.0000	
ICB	S11	0.0011	-0.0226	0.0084	0.0069	0.0025	0.1515	-0.9229	11/2/2011@3:12:17 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0022	-0.0234	0.0084	0.0067	0.0025	0.1728	-0.9218	11/2/2011@3:28:24 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.0128	40.6941	4.0304	3.9636	4.0891	9.4156	80.7063	11/2/2011@3:44:30 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37328-A-1	2	0.1679	54.9961	0.3044	0.0069	0.0025	0.1394	49.6552	11/2/2011@4:00:37 PM
360-37328-A-2	3	0.2988	59.9573	0.2139	0.0061	0.0025	0.1537	93.9960	11/2/2011@4:16:44 PM
360-37328-A-3	4	0.0833	-94.5523	0.1517	0.1919	1.2430	0.1691	8.6154	11/2/2011@4:32:51 PM
360-37328-A-4	5	0.3385	-91.9771	0.1015	0.0064	1.7064	0.1692	10.9053	11/2/2011@4:48:58 PM
360-37328-A-5	6	0.0413	15.4321	0.3204	0.0333	-13.0992	0.1693	45.7807	11/2/2011@5:05:04 PM
360-37328-A-6	7	0.0455	21.3824	0.3625	0.0699	0.0025	0.1713	63.5760	11/2/2011@5:21:11 PM
360-37329-G-1	8	0.6572	76.1276	0.5981	0.0053	0.0025	0.0968	-0.0459	11/2/2011@5:37:17 PM
360-37329-G-1@10	9	0.0675	8.5573	0.0708	0.0069	0.0025	0.1791	79.2738	11/2/2011@5:53:23 PM
360-37329-G-1@10 MS	10	1.1577	19.8300	1.1190	1.0485	1.0686	-0.1798	95.7518	11/2/2011@6:09:28 PM
360-37329-G-1@10 MSD	10	1.0623	18.1923	1.0190	0.9582	0.9831	-0.2452	89.0688	11/2/2011@6:25:35 PM
CCV	S12	4.1066	41.1908	4.1068	4.0340	4.1664	8.7671	81.6136	11/2/2011@6:41:41 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0018	-0.0249	0.0066	0.0072	0.0039	0.1386	-0.9203	11/2/2011@6:57:48 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37329-F-2	11	1.6079	-79.3885	0.1353	0.9045	1.8446	0.1685	115.4731	11/2/2011@7:13:54 PM
360-37329-F-3	12	0.8279	-66.7963	0.2473	2.7874	0.0137	0.1689	102.5147	11/2/2011@7:29:59 PM
360-37329-G-4	13	0.6075	51.0786	0.0813	0.0157	0.0025	0.1513	109.3889	11/2/2011@7:46:04 PM
360-37329-G-5	14	0.7334	60.2624	0.0850	0.2077	0.0025	0.1330	55.2743	11/2/2011@8:02:10 PM
360-37329-F-6	15	0.7309	58.4817	0.0868	0.1843	0.0025	0.1695	56.5003	11/2/2011@8:18:15 PM
360-37329-G-7	16	0.0558	55.3561	0.3708	0.7186	-0.0780	0.1704	50.2177	11/2/2011@8:34:21 PM
360-37315-F-1	17	0.0419	5.1170	0.3326	1.7198	9.3091e-4	0.1639	10.6222	11/2/2011@8:50:28 PM
360-37315-F-2	18	0.0372	5.9285	0.4963	0.9721	0.0196	0.1606	8.4481	11/2/2011@9:06:35 PM
360-37315-F-3	19	0.0348	4.9412	0.3239	1.4377	0.0025	0.1697	10.1494	11/2/2011@9:22:42 PM
360-37315-F-4	20	0.0125	1.6302	0.5035	0.0071	0.0025	0.1601	-0.5449	11/2/2011@9:38:48 PM
CCV	S12	4.1698	41.3400	4.1167	4.0790	4.1920	8.9625	81.8524	11/2/2011@9:54:55 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0036	-0.0238	0.0078	0.0072	0.0036	0.1712	-0.9182	11/2/2011@10:11:01 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	2.959e-4	-0.0240	0.0077	0.0101	0.0036	0.1703	-0.9190	11/2/2011@10:27:08 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

LCS	S12	4.1616	41.3607	4.1165	4.0744	4.1908	9.4029	81.9001	11/2/2011@10:43:14 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37315-F-5	21	0.0725	50.2642	0.3173	0.0062	0.0025	0.1459	11.3446	11/2/2011@10:59:21 PM
360-37315-F-5@10	22	0.0148	4.9607	0.0364	0.0069	0.0025	0.1574	0.2780	11/2/2011@11:15:27 PM
360-37315-F-5@10 MS	23	1.0213	15.4275	1.0147	0.9738	1.0001	-0.8826	20.6746	11/2/2011@11:31:34 PM
360-37315-F-5@10 MSD	23	1.0239	15.4223	1.0129	0.9719	1.0007	-0.8566	20.6839	11/2/2011@11:47:40 PM
360-37315-F-6	24	0.0591	40.9857	0.6758	0.0127	0.0025	0.1476	11.4129	11/3/2011@12:03:46 AM
360-37315-F-7	25	0.0240	4.9169	0.2130	0.5854	0.0025	0.1438	8.8558	11/3/2011@12:19:51 AM
360-37315-F-9	26	0.0043	0.0766	0.0060	0.0096	0.0035	0.1476	-0.9191	11/3/2011@12:35:57 AM
360-37327-A-2	27	0.0482	61.3956	0.0553	5.8797	-14.5394	-0.2680	16.6817	11/3/2011@12:52:03 AM
360-37327-A-2@10	28	0.0027	8.6477	0.0065	0.5819	0.0206	0.1310	0.7233	11/3/2011@1:08:09 AM
360-37184-C-7@2 CL	29	0.9620	6.3872	0.0865	4.0160	3.8835	0.1712	37.9255	11/3/2011@1:24:14 AM
CCV	S12	4.0991	41.4059	4.1254	4.0452	4.1565	8.5363	82.1382	11/3/2011@1:40:21 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0024	-0.0273	0.0084	0.0073	0.0043	0.1516	-0.9176	11/3/2011@1:56:28 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37261-C-1@10 CL	30	2.6284e-4	15.3975	0.0138	0.0069	0.0025	0.1695	1.1279	11/3/2011@2:12:33 AM
360-37261-C-1@50 CL	31	0.0084	2.8024	0.0085	0.0069	0.0017	0.1756	-0.4846	11/3/2011@2:28:40 AM
360-37261-C-2@10 CL	32	0.0028	15.1249	0.0087	0.0229	9.0588e-4	0.1692	1.2302	11/3/2011@2:44:47 AM
360-37261-C-2@50 CL	33	0.0023	2.7429	0.0075	0.0112	0.0025	0.1791	-0.4641	11/3/2011@3:00:54 AM
360-37195-B-1@10 CL	34	0.0025	10.3414	0.0070	0.0110	0.0025	0.1696	8.6654	11/3/2011@3:17:00 AM
360-37230-C-1	35	0.0025	-15.0349	-0.0264	0.1410	-92.0266	0.1519	125.0191	11/3/2011@3:33:07 AM
360-37230-C-1@10	36	0.0025	48.8690	0.0063	0.0201	0.0025	0.1659	25.7940	11/3/2011@3:49:13 AM
360-37270-C-1 CL	37	0.0014	-16.7428	1.0754	0.0236	4.4167	0.1594	51.2214	11/3/2011@4:05:20 AM
360-37270-C-2 CL	38	0.0025	-16.6549	1.0846	0.0045	5.5360	0.1692	51.4574	11/3/2011@4:21:26 AM
360-37271-B-1@20 CL	39	0.0025	5.9054	0.0085	0.0373	0.0025	0.1692	0.0930	11/3/2011@4:37:32 AM
CCV	S12	4.0072	41.4794	4.1352	4.0194	4.1166	7.8843	82.5823	11/3/2011@4:53:38 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0033	-0.0387	0.0084	0.0068	0.0047	0.1214	-0.9191	11/3/2011@5:09:45 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0027	-0.0363	0.0069	0.0065	0.0042	0.1557	-0.9186	11/3/2011@5:25:52 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9014	41.5072	4.1386	3.9899	4.1040	8.5725	82.7277	11/3/2011@5:41:58 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37285-C-2@10 CL	40	3.5465e-4	5.2557	0.0478	0.1540	0.0018	0.1533	0.8321	11/3/2011@5:58:04 AM
360-37285-C-3@10 CL	41	0.0380	55.2144	0.0088	0.0069	-0.1236	0.1806	1.9342	11/3/2011@6:14:10 AM
360-37285-C-4@10 CL	42	0.0025	47.8064	0.0477	0.0069	-16.2919	0.1695	1.7462	11/3/2011@6:30:15 AM
360-37285-C-5@10 CL	43	0.0015	50.5181	0.0088	0.0532	0.0025	0.1683	0.8928	11/3/2011@6:46:21 AM
360-37285-C-8@10 CL	44	0.1065	22.9879	0.0065	0.2072	0.0025	0.1584	3.2769	11/3/2011@7:02:26 AM
360-37285-C-8@10 MS	45	1.1061	34.5541	1.0518	1.2263	1.0391	-0.8323	25.8103	11/3/2011@7:18:31 AM
360-37285-C-8@10 MSD	45	1.0845	34.5072	1.0476	1.2095	1.0298	-0.8009	25.7501	11/3/2011@7:34:37 AM
360-37239-A-1@50 CL	46	0.2804	23.9230	0.0074	0.0069	-0.0130	0.1691	0.0238	11/3/2011@7:50:43 AM
360-37239-A-2@10 CL	47	0.0313	21.7365	0.0146	0.0536	0.0025	0.1616	0.4051	11/3/2011@8:06:50 AM
360-37239-A-3@20 CL	48	0.0157	23.1339	0.0085	0.0711	0.0025	0.1832	0.7105	11/3/2011@8:22:56 AM
CCV	S12	3.9344	41.6865	4.1758	4.0145	4.1086	6.8224	83.2906	11/3/2011@8:39:03 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0025	-0.0321	0.0084	0.0068	0.0052	0.1568	-0.9187	11/3/2011@8:55:10 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Eluent Preparation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Prepare fresh daily; makes 3L of eluent. To make: in a one-gallon plastic container, mix:

- 60.0 mL of 100*M* $NaHCO_3$;
- 78.0 mL of 100*M* Na_2CO_3; and
- 2862 mL of deionized water.

Degas with helium for 3min before use.

Date Prepared	Analyst's Initials	Lot # 100*M* $NaHCO_3$	Lot # 100*M* Na_2CO_3	Number of Portions Prepared
10-24-11	RW	W11I RGT013	W11J RGT009	1
10/25/11	AMS			1
10-27-11	RW	W11J RGT018		1
10-26-11	AMS			1
10-28-11	RW			1
11-1-11	RW			1
11-2-11	RW			1
11-3-11	RW			1
			W11K RGT001	

0.25 *M* Sulfuric Acid Creation Log

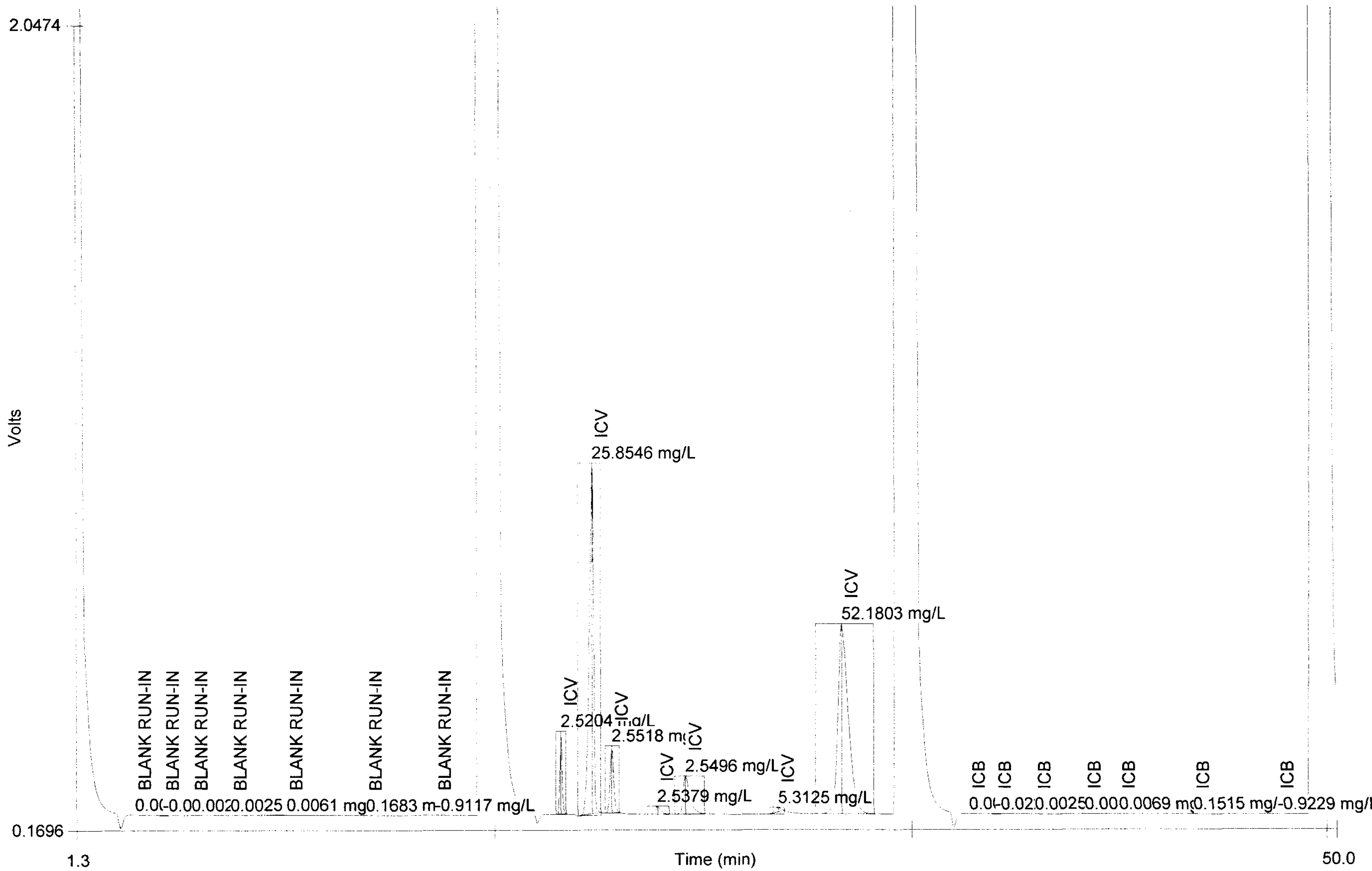
TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Record the information below for creating the acid. When an entry is made do not use arrows to fill in information. All entries must be complete.

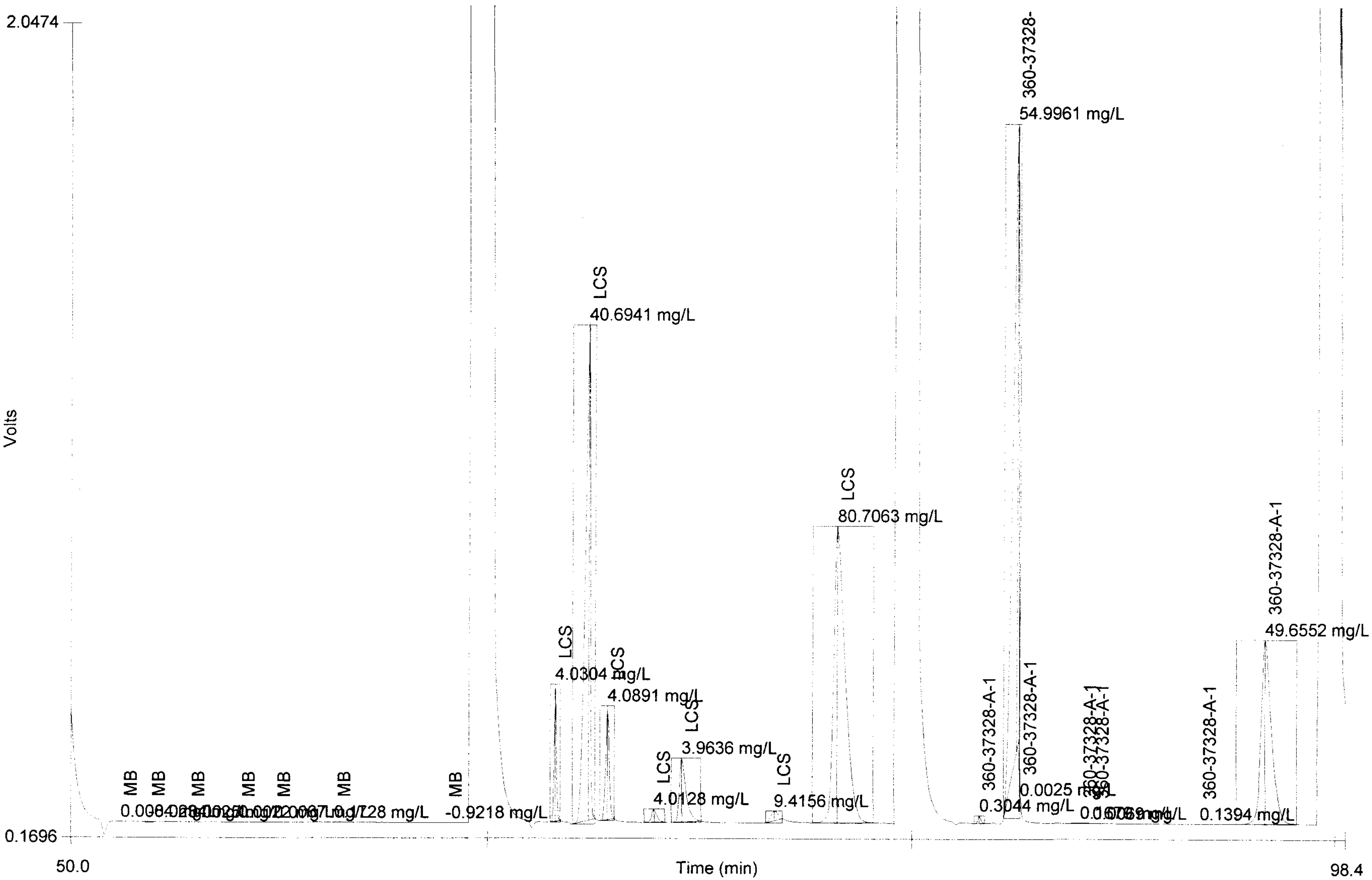
Recipe: to 2958mL of deionized water in a 1 gallon jug add 42mL of concentrated H_2SO_4 for a total volume of 3L.

Date Made	Analyst's Initials	Volume of 0.25 *M* Acid Made (L)	Source: Concentrated Sulfuric Acid (ACS grade) Manufacturer & Lot Number
10-24-11	RU	3	Baker lot # J22022
10/25/11	AMS	3	
10-27-11	RU	3	
10/26/11	AMS	3	
10-28-11	RU	3	
11-1-11	RU	3	
11-2-11	RU	3	
11-3-11	RU	3	

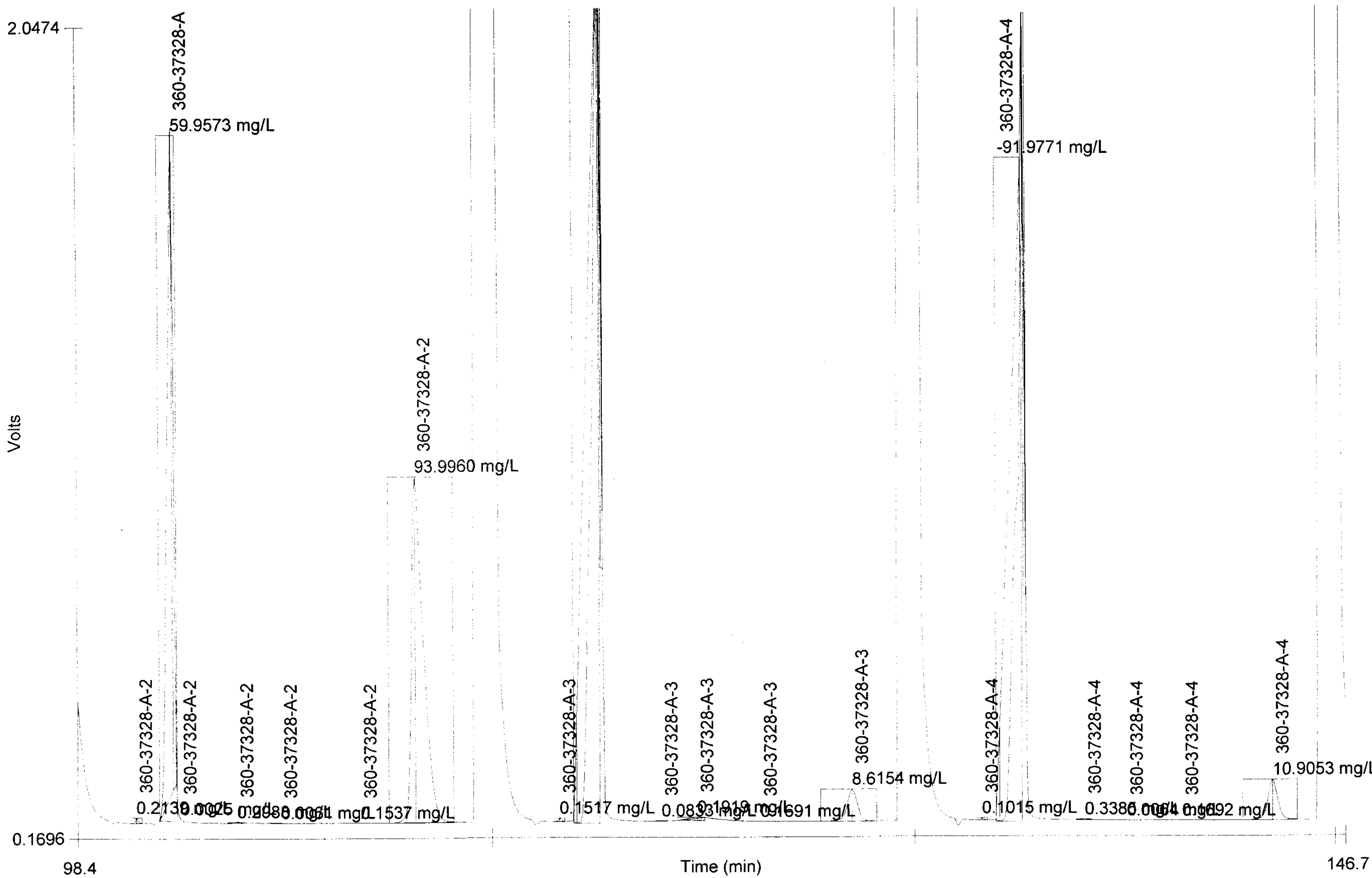
Channel 1 (Anions) : Set 1 of 23



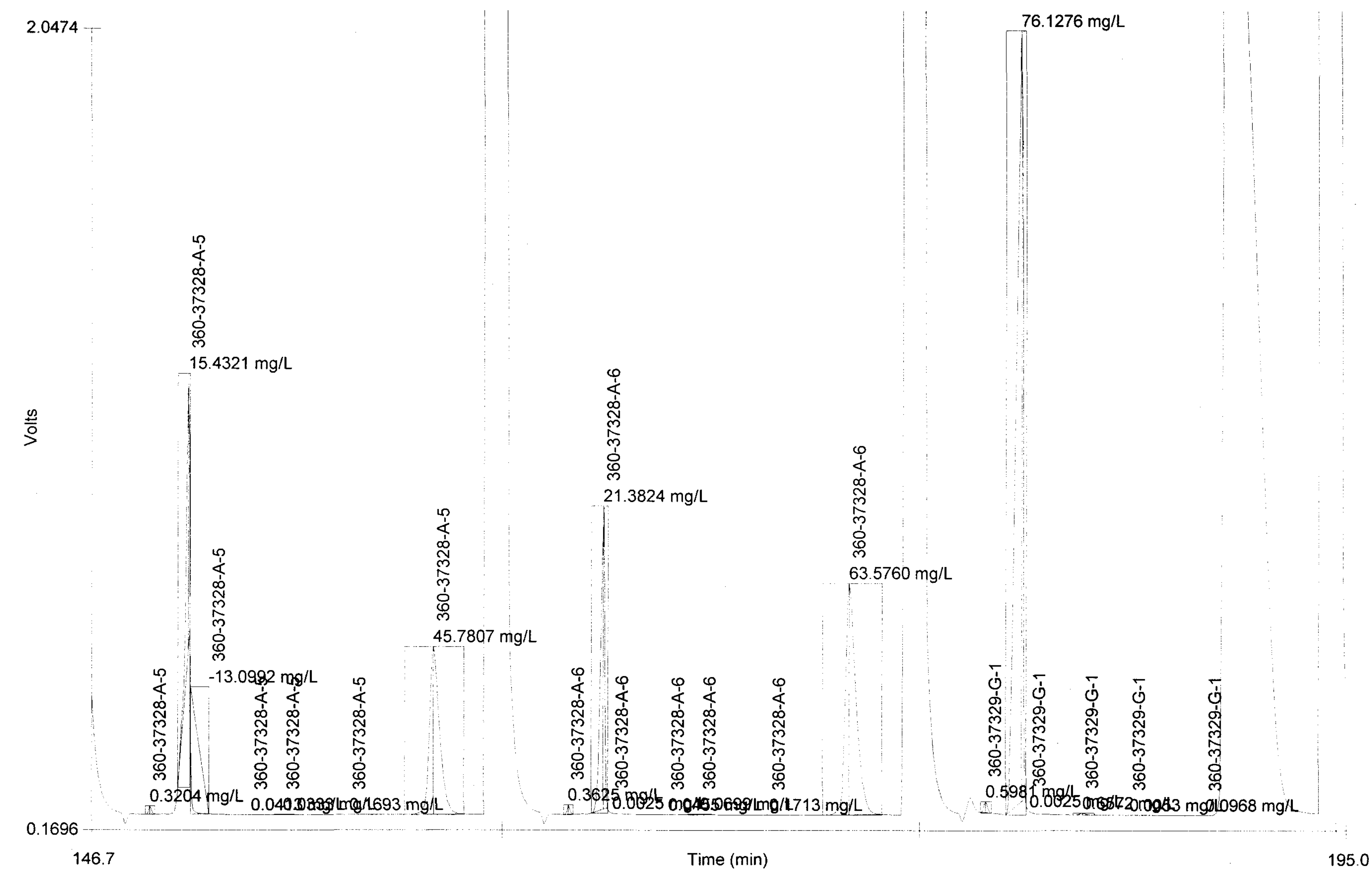
Channel 1 (Anions) : Set 2 of 23



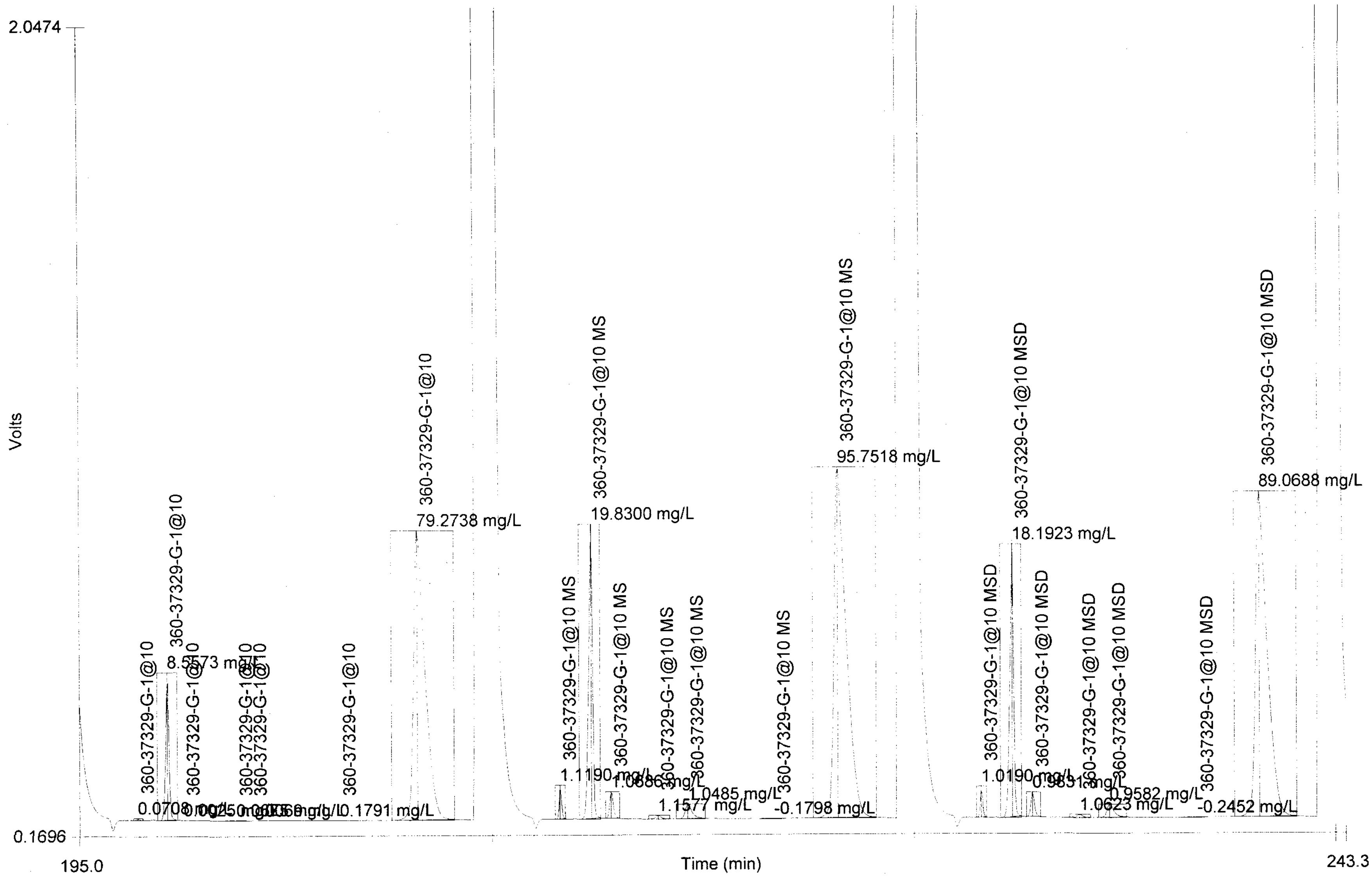
Channel 1 (Anions) : Set 3 of 23



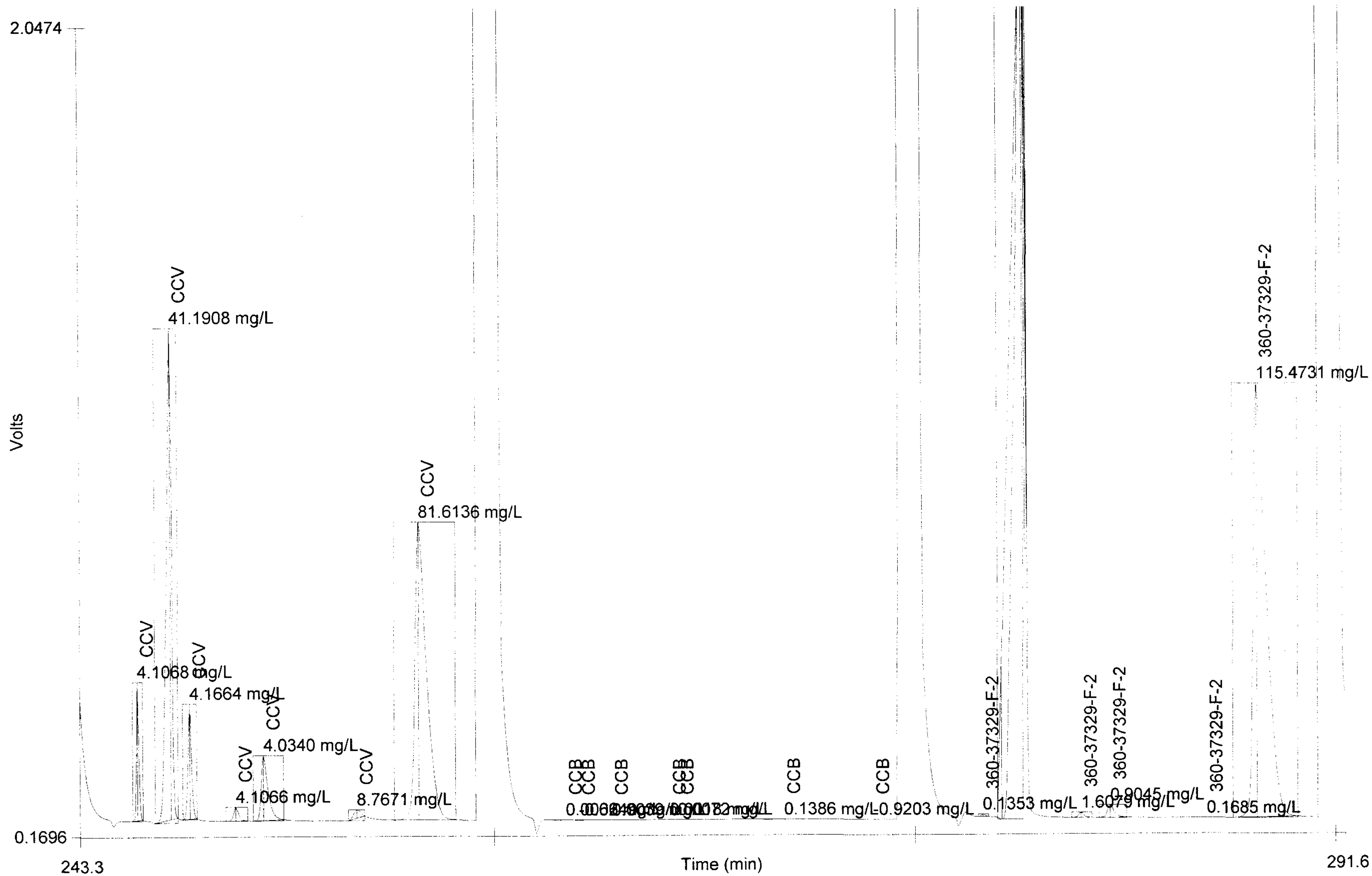
Channel 1 (Anions) : Set 4 of 23



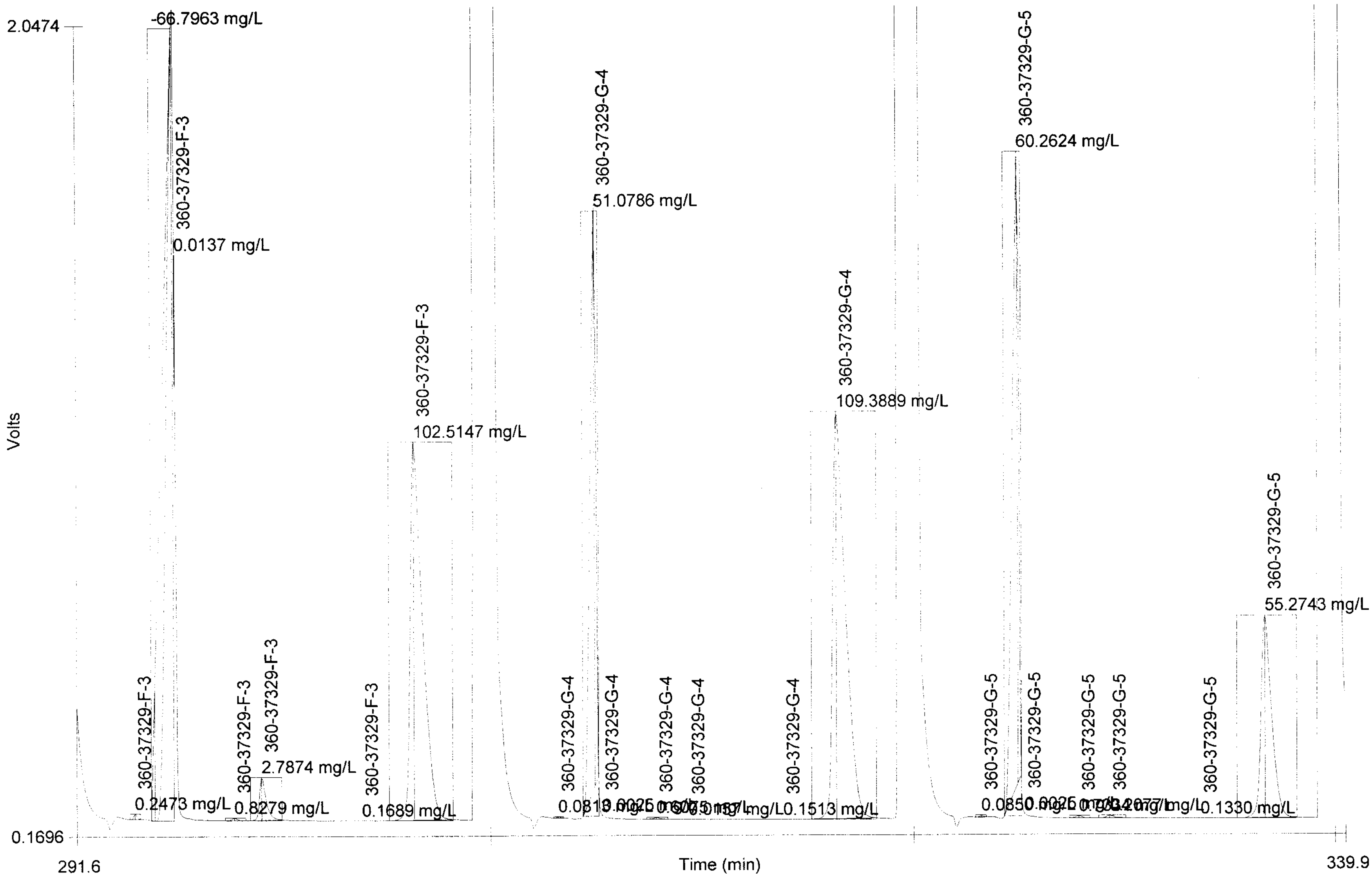
Channel 1 (Anions) : Set 5 of 23



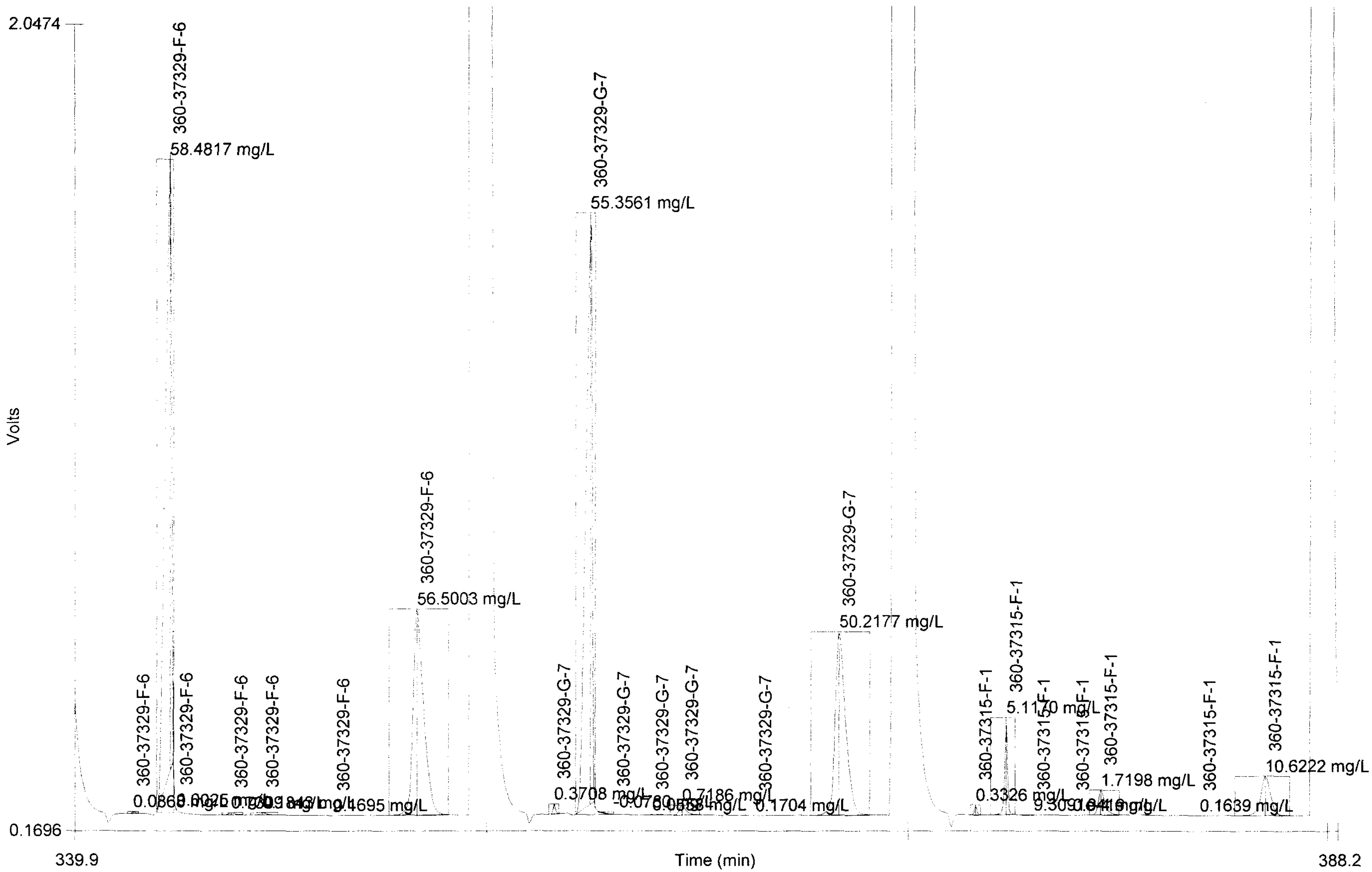
Channel 1 (Anions) : Set 6 of 23



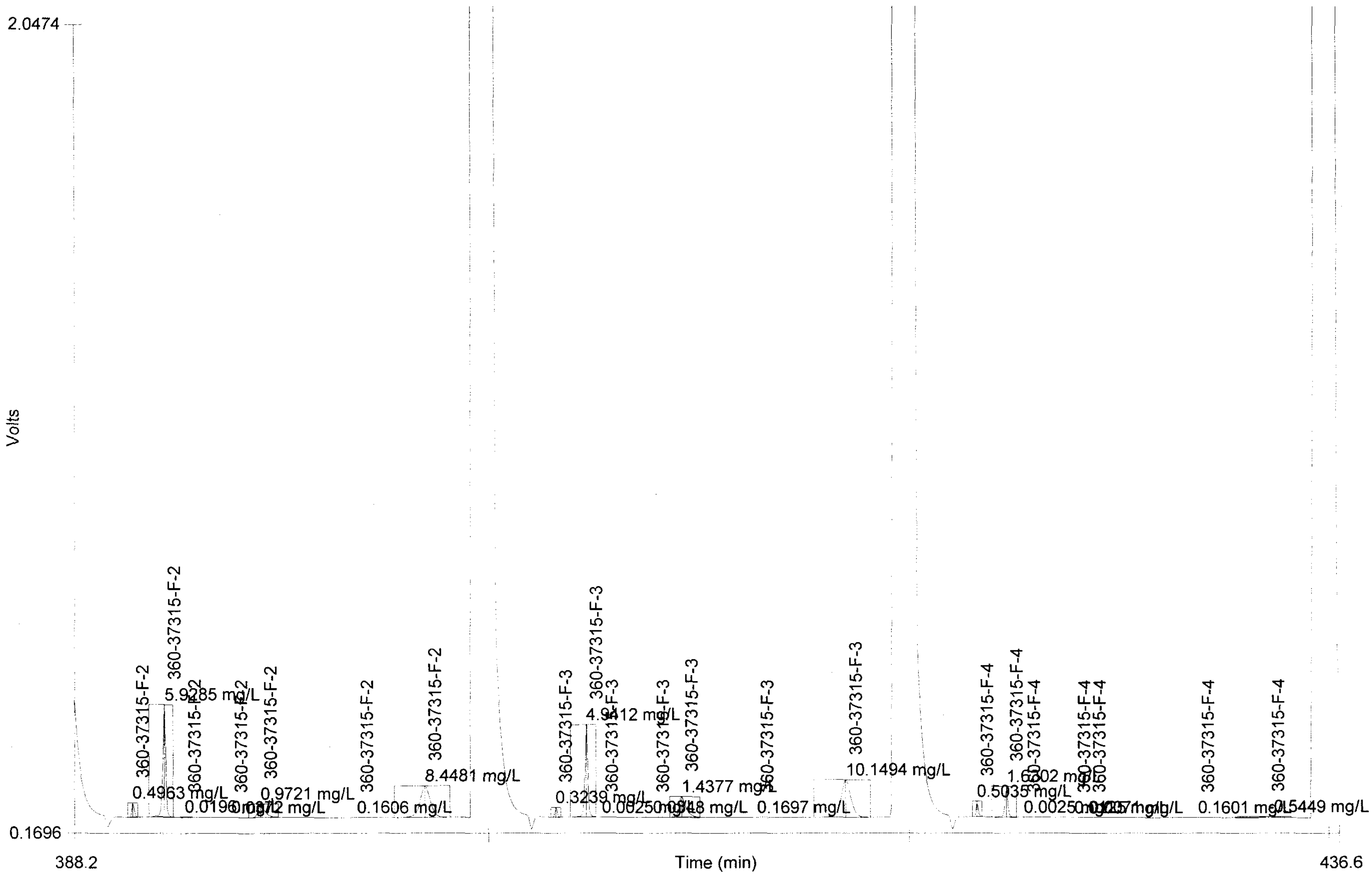
Channel 1 (Anions) : Set 7 of 23



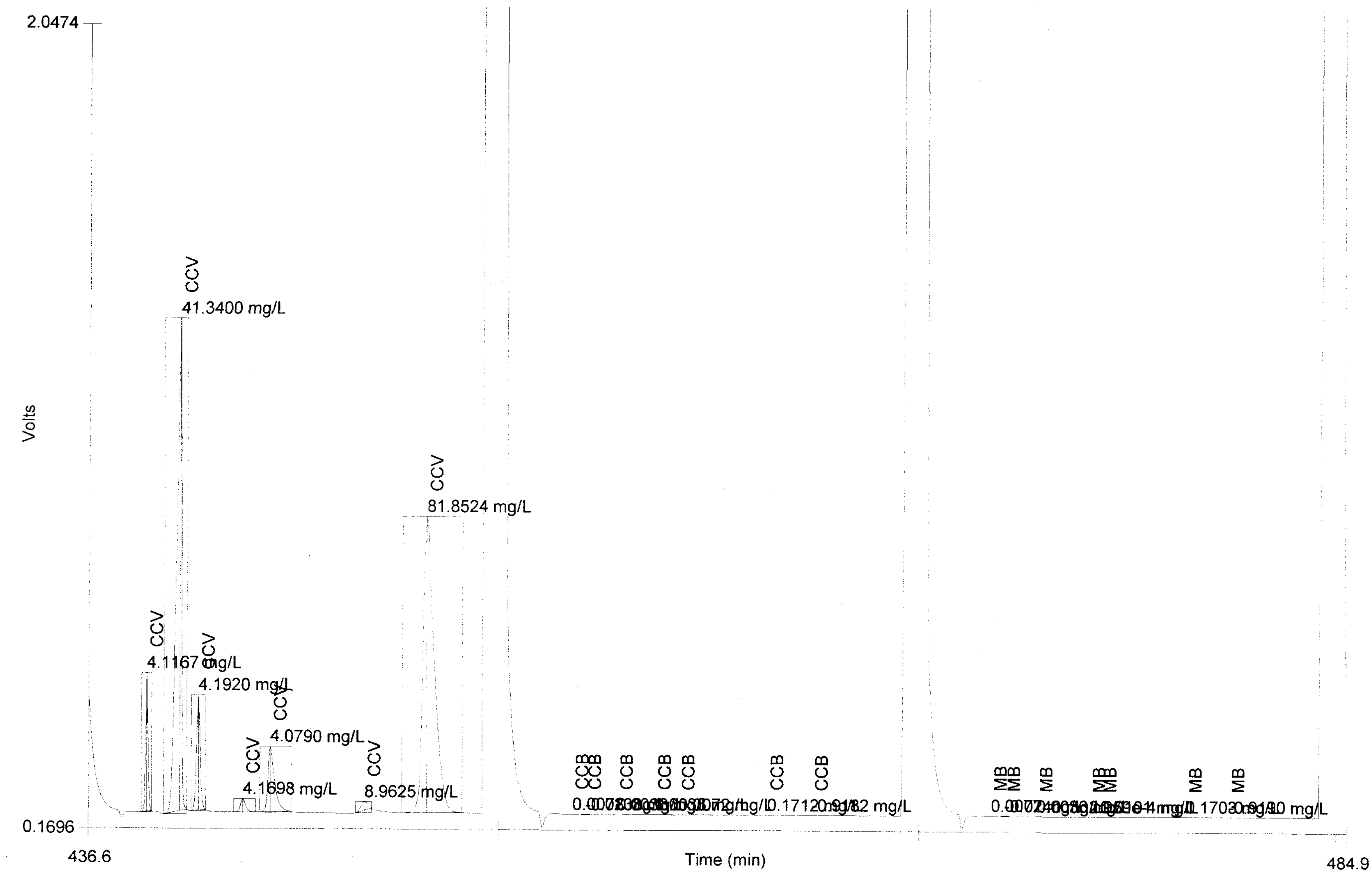
Channel 1 (Anions) : Set 8 of 23



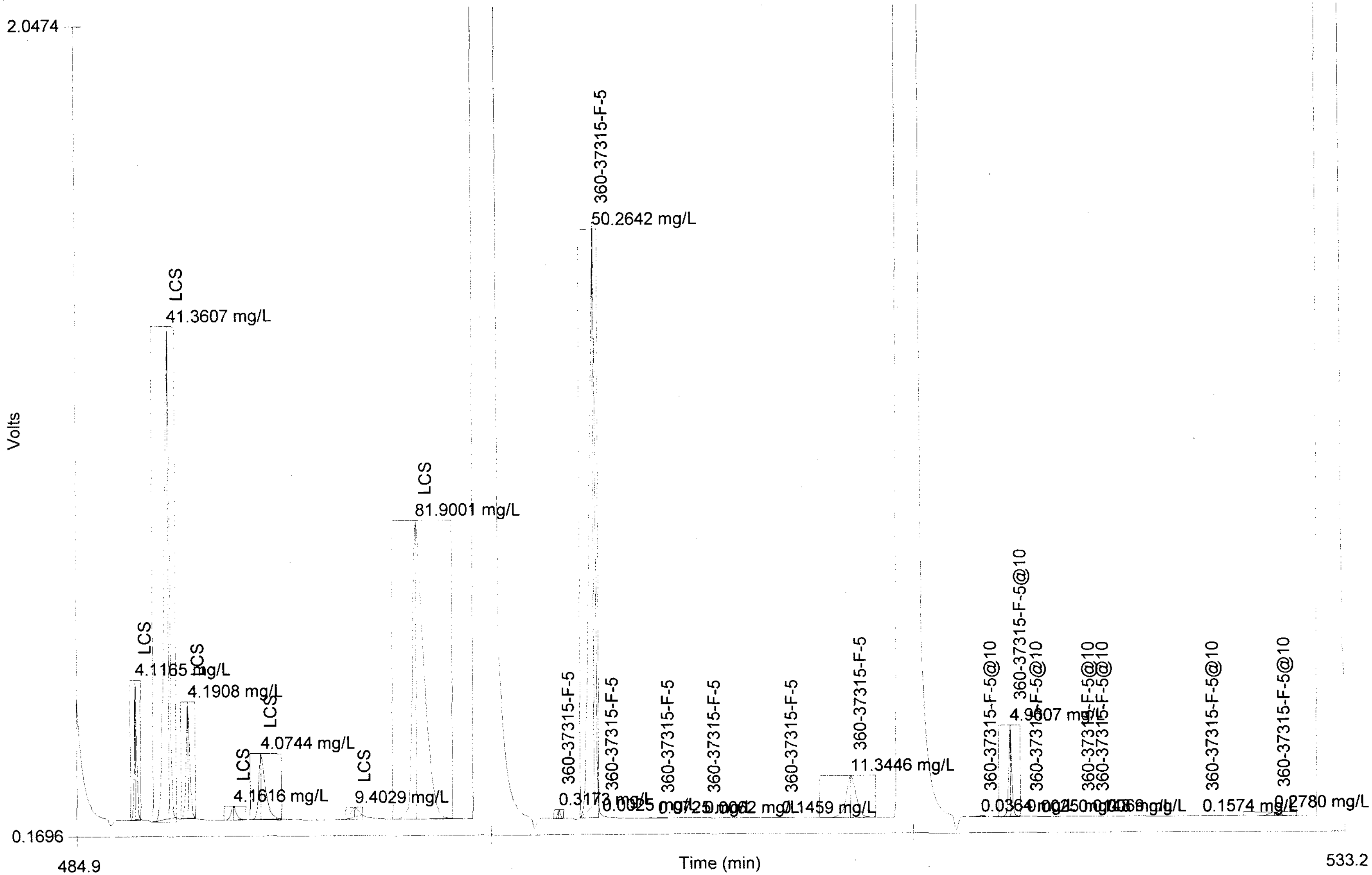
Channel 1 (Anions) : Set 9 of 23



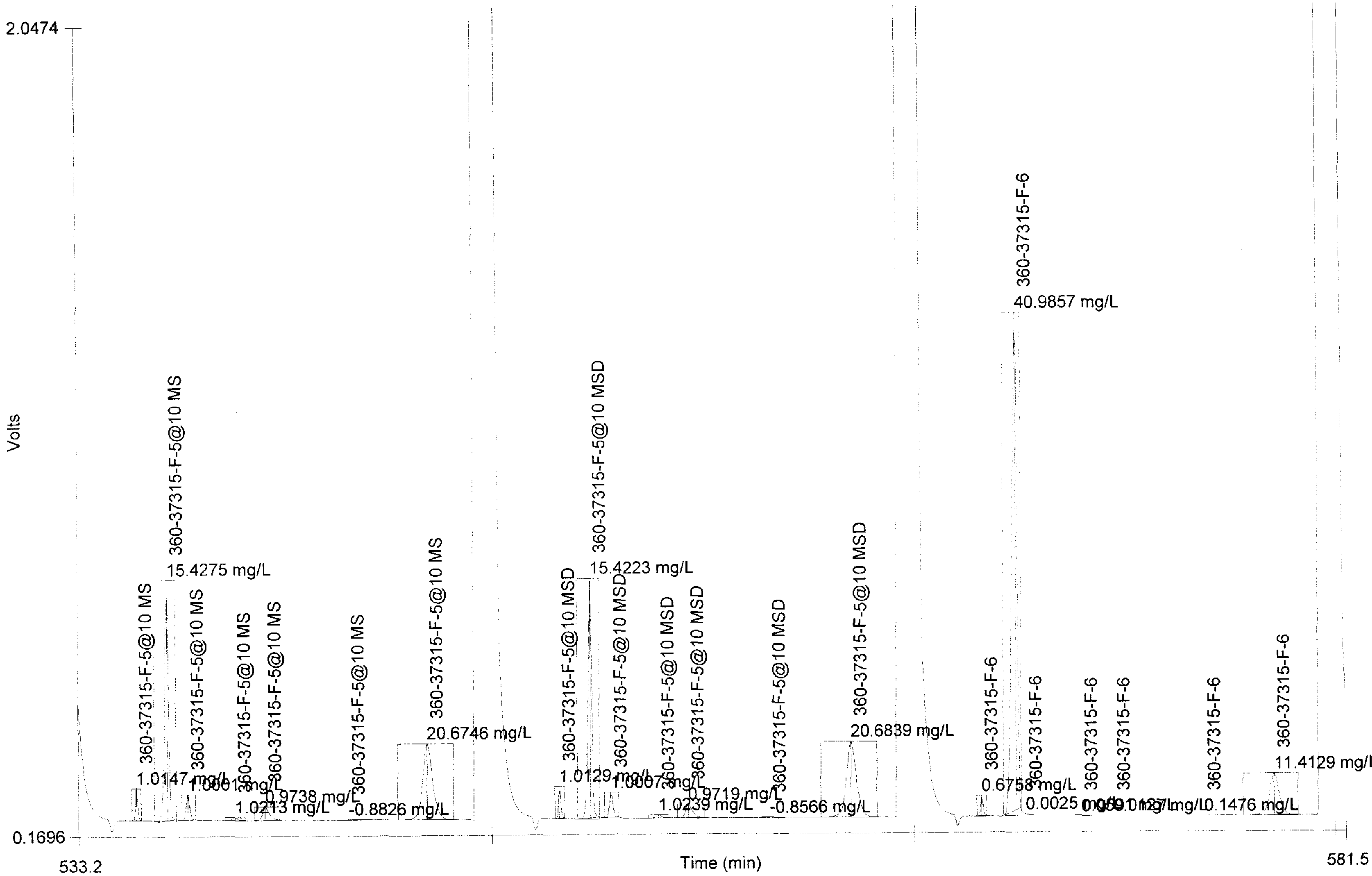
Channel 1 (Anions) : Set 10 of 23



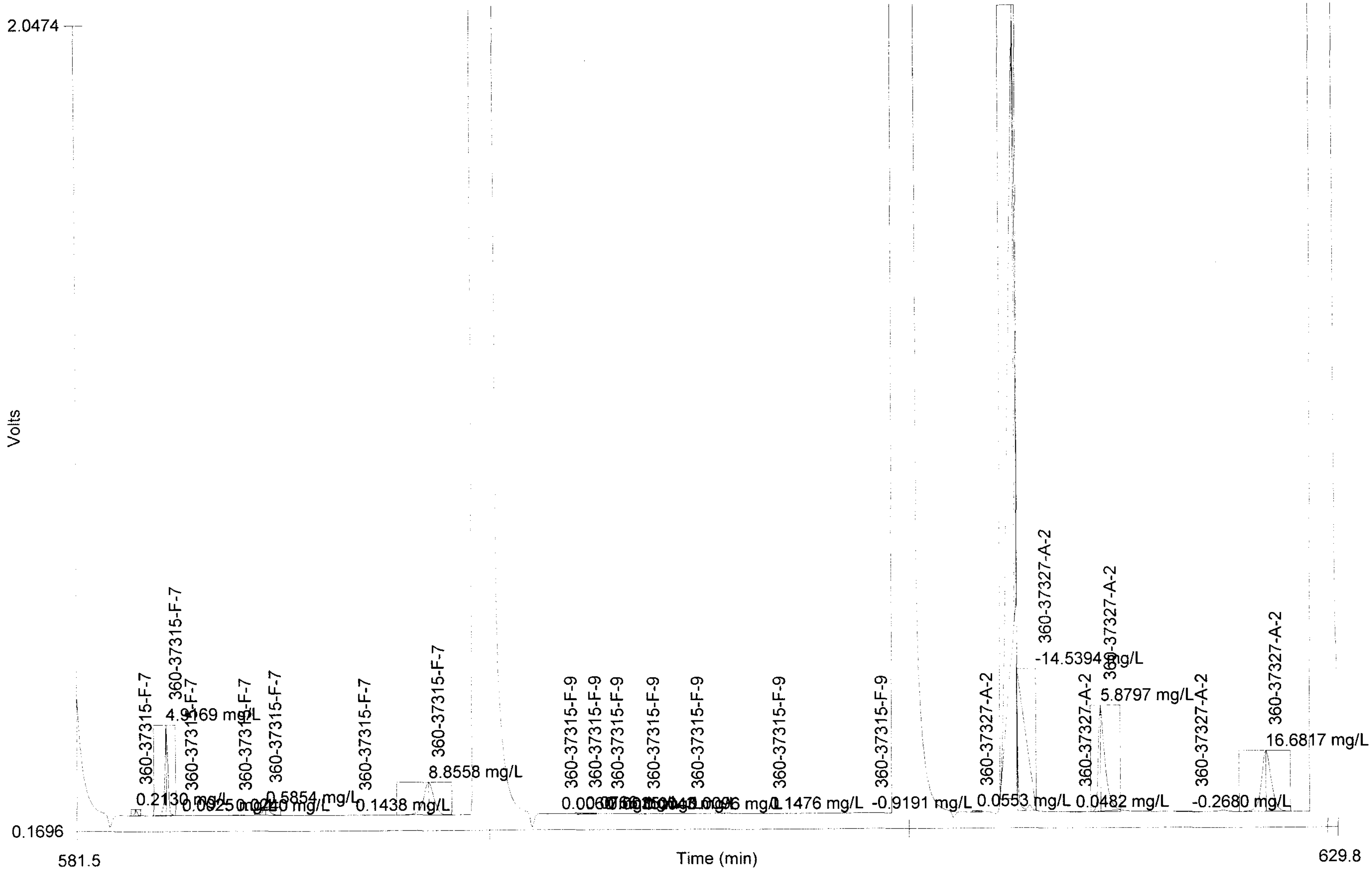
Channel 1 (Anions) : Set 11 of 23



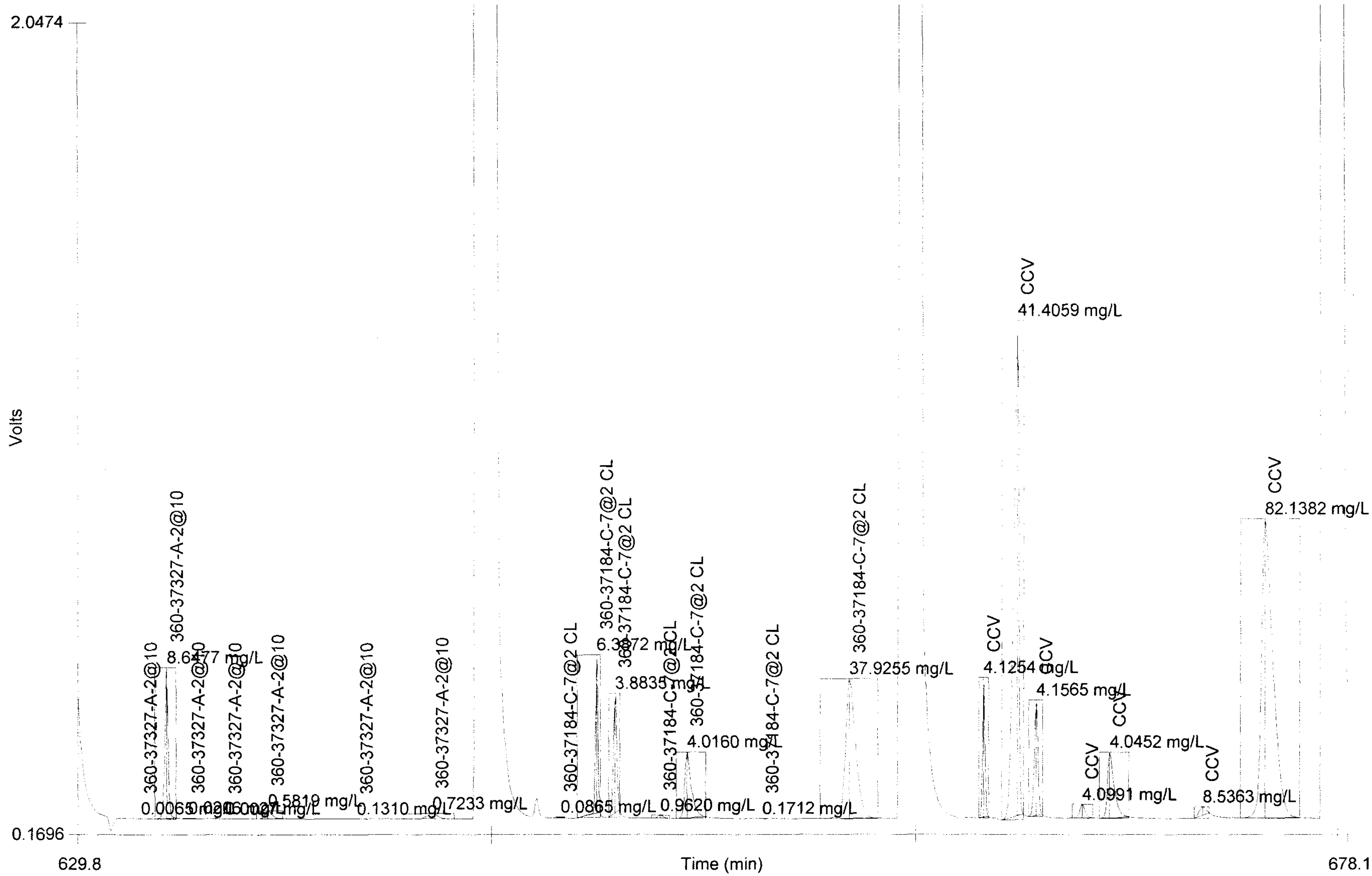
Channel 1 (Anions) : Set 12 of 23



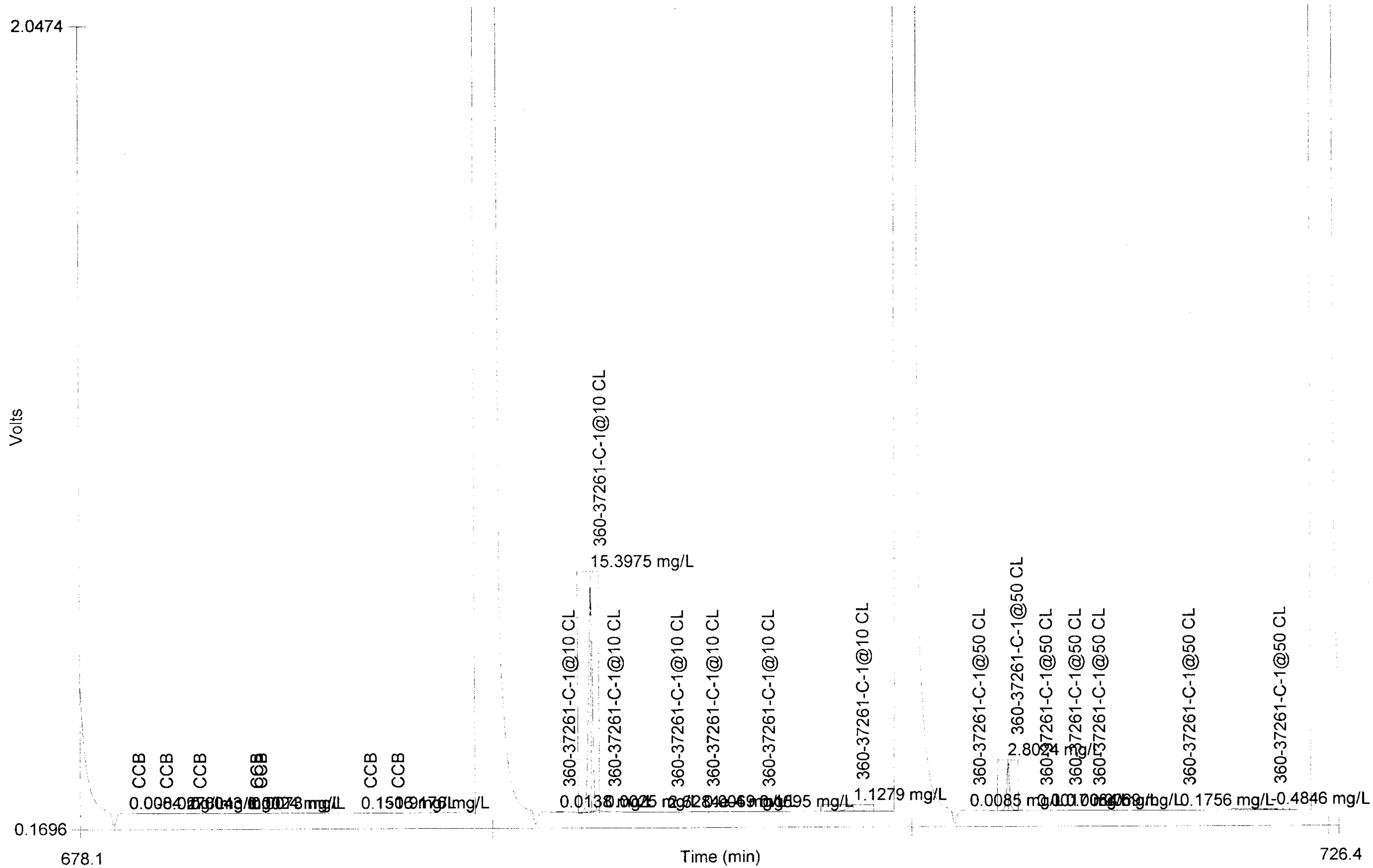
Channel 1 (Anions) : Set 13 of 23



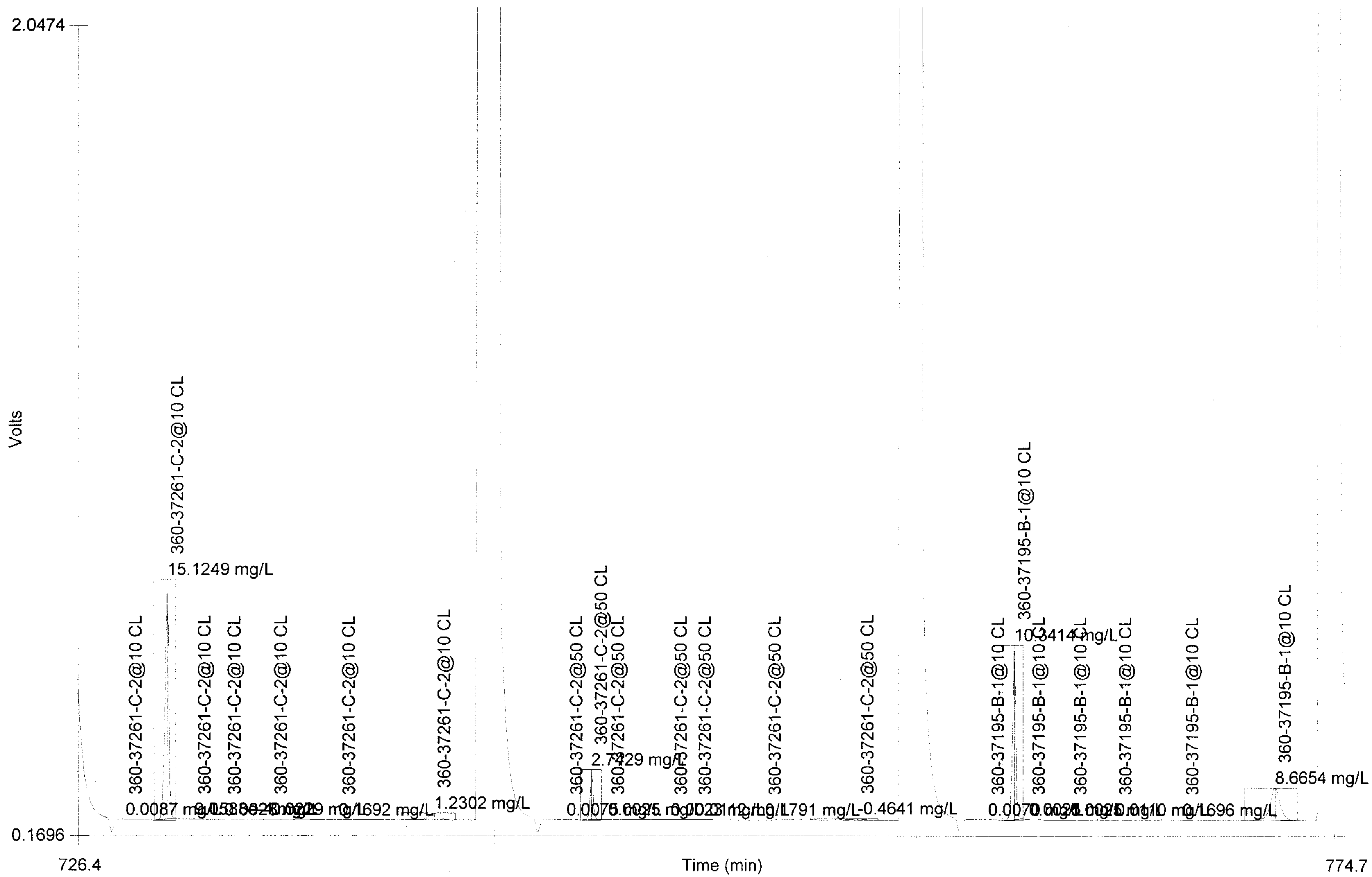
Channel 1 (Anions) : Set 14 of 23



Channel 1 (Anions) : Set 15 of 23



Channel 1 (Anions) : Set 16 of 23

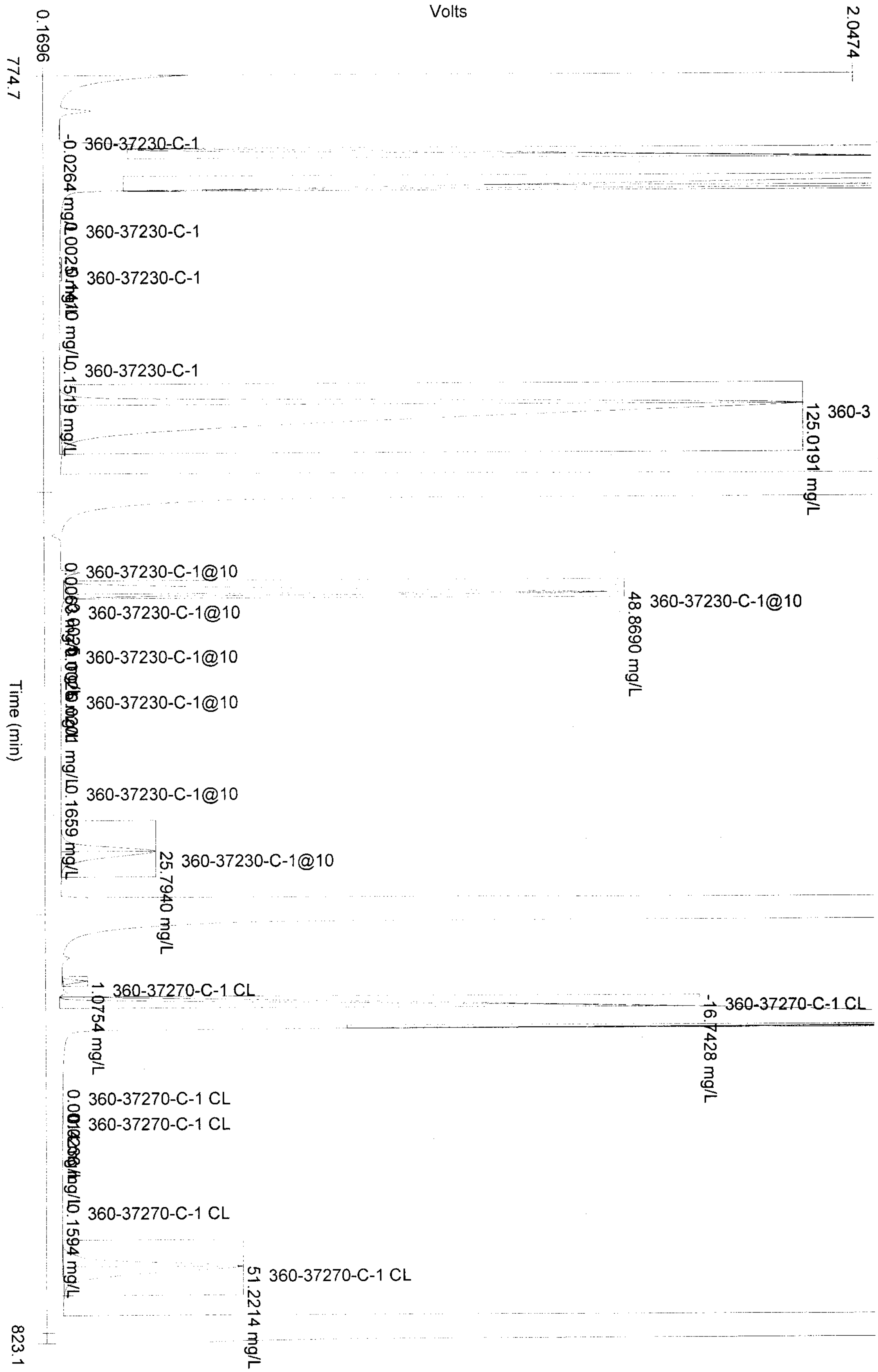


Author: EmerichR

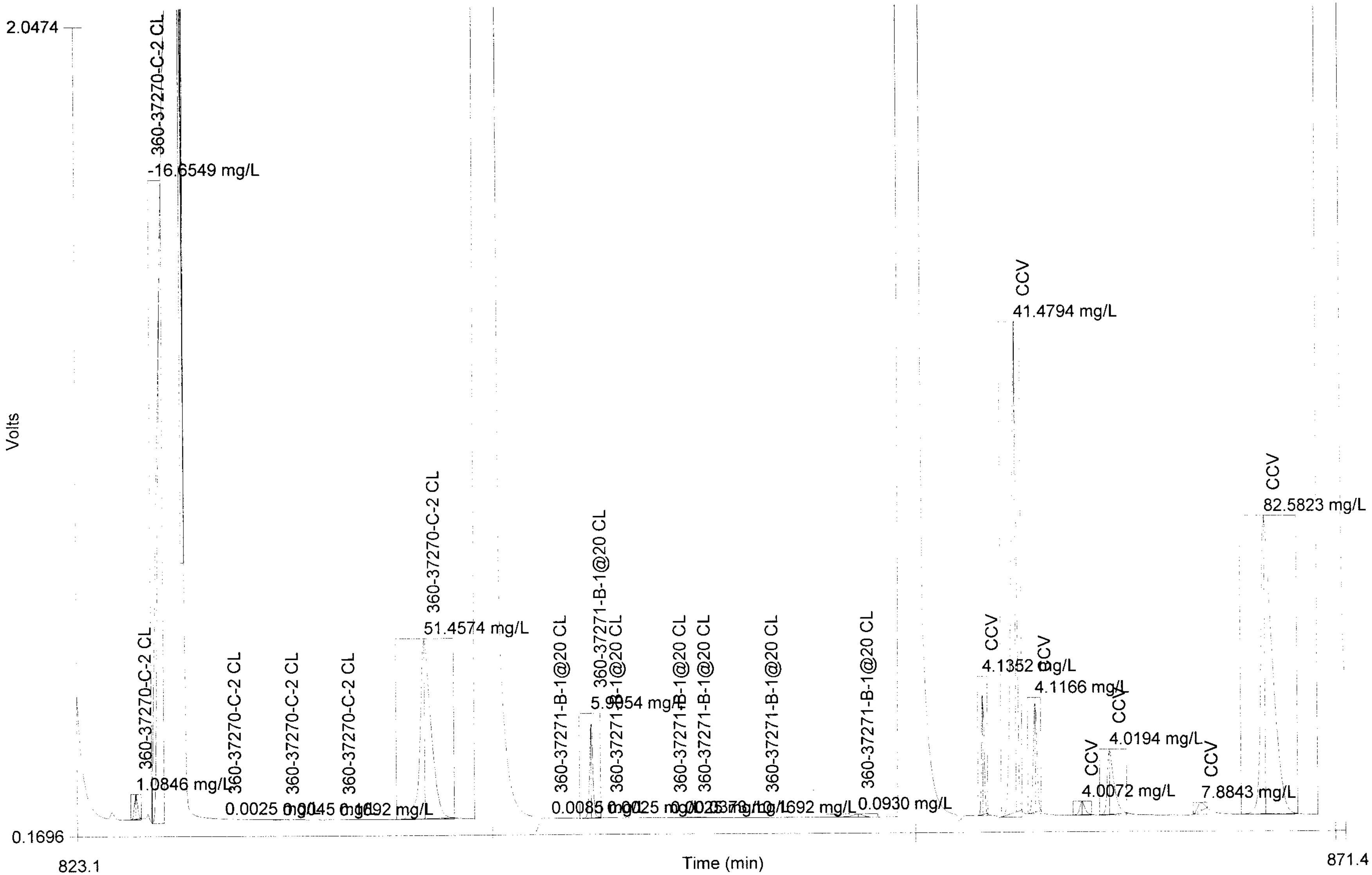
Channel 1 (Anions) : Set 17 of 23

- 19 -

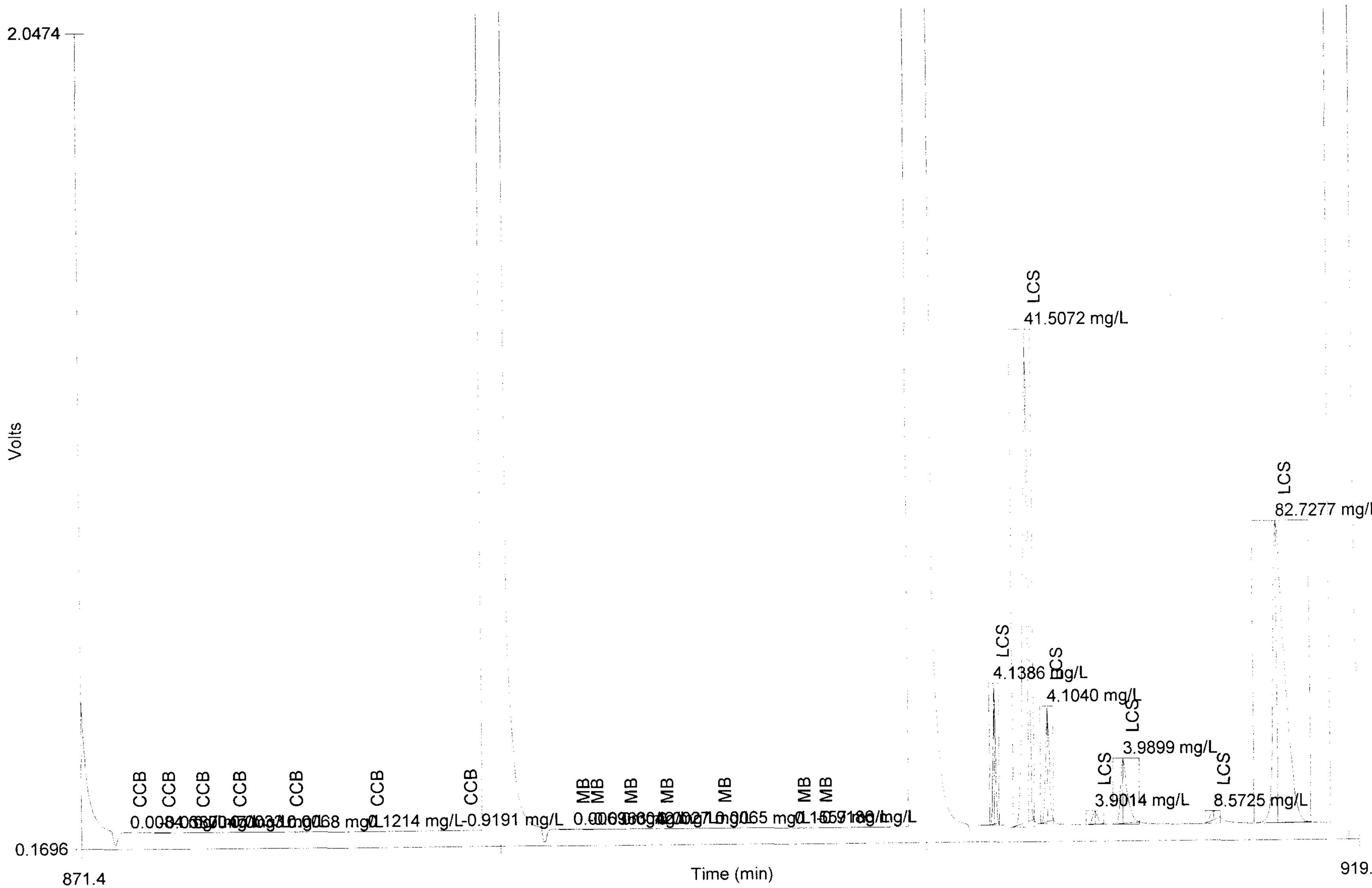
Date : 11/3/2011



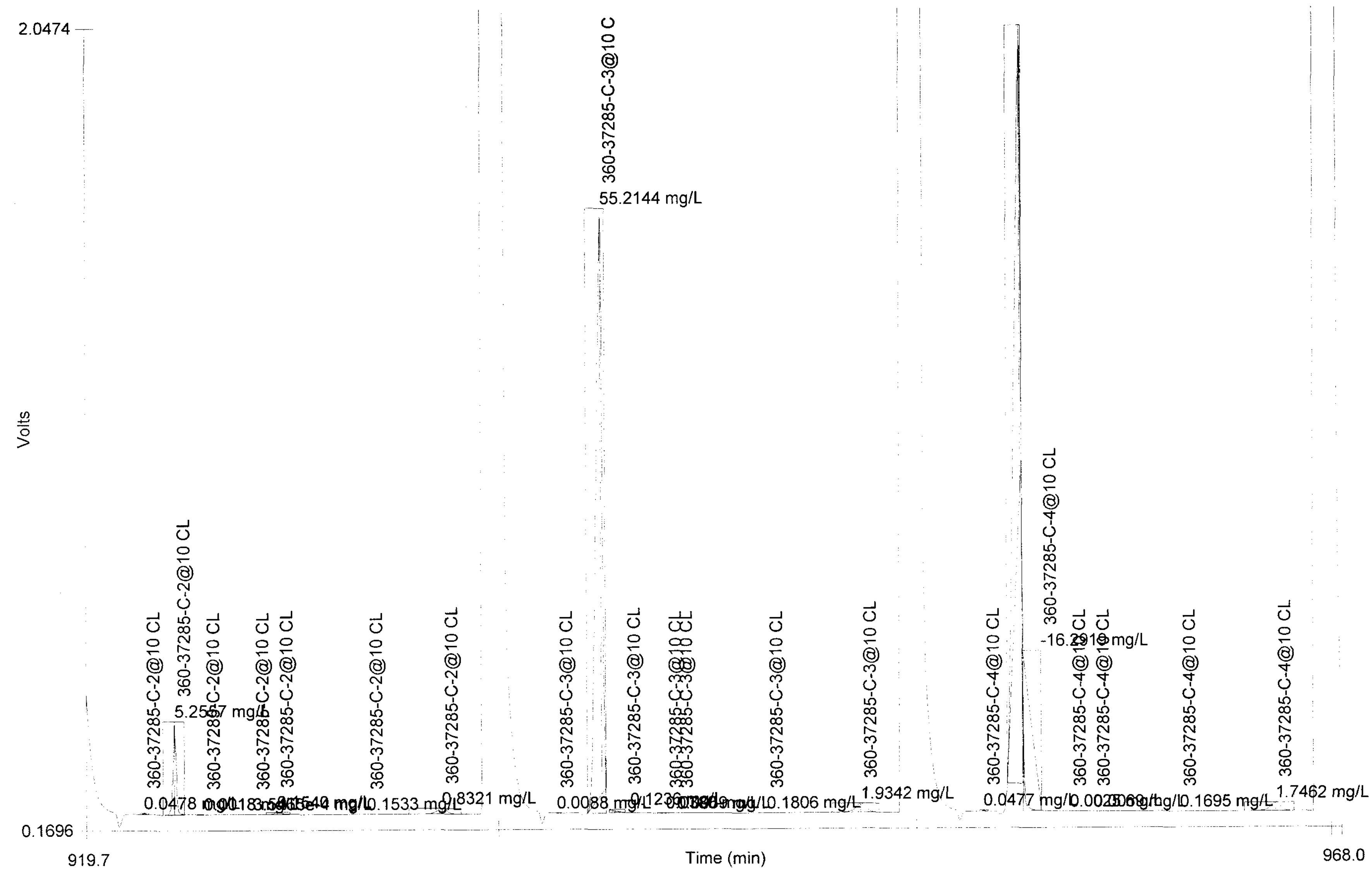
Channel 1 (Anions) : Set 18 of 23



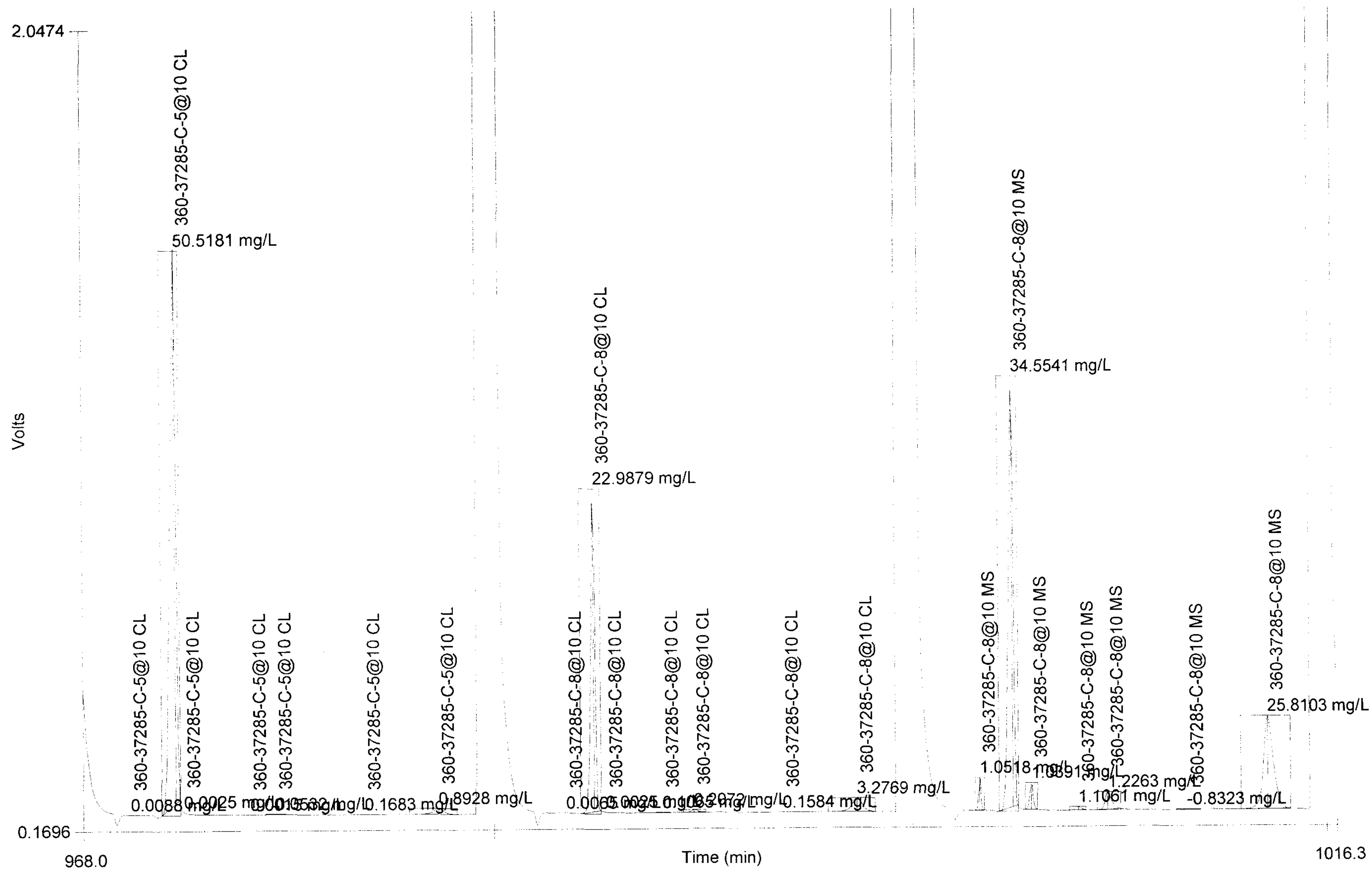
Channel 1 (Anions) : Set 19 of 23



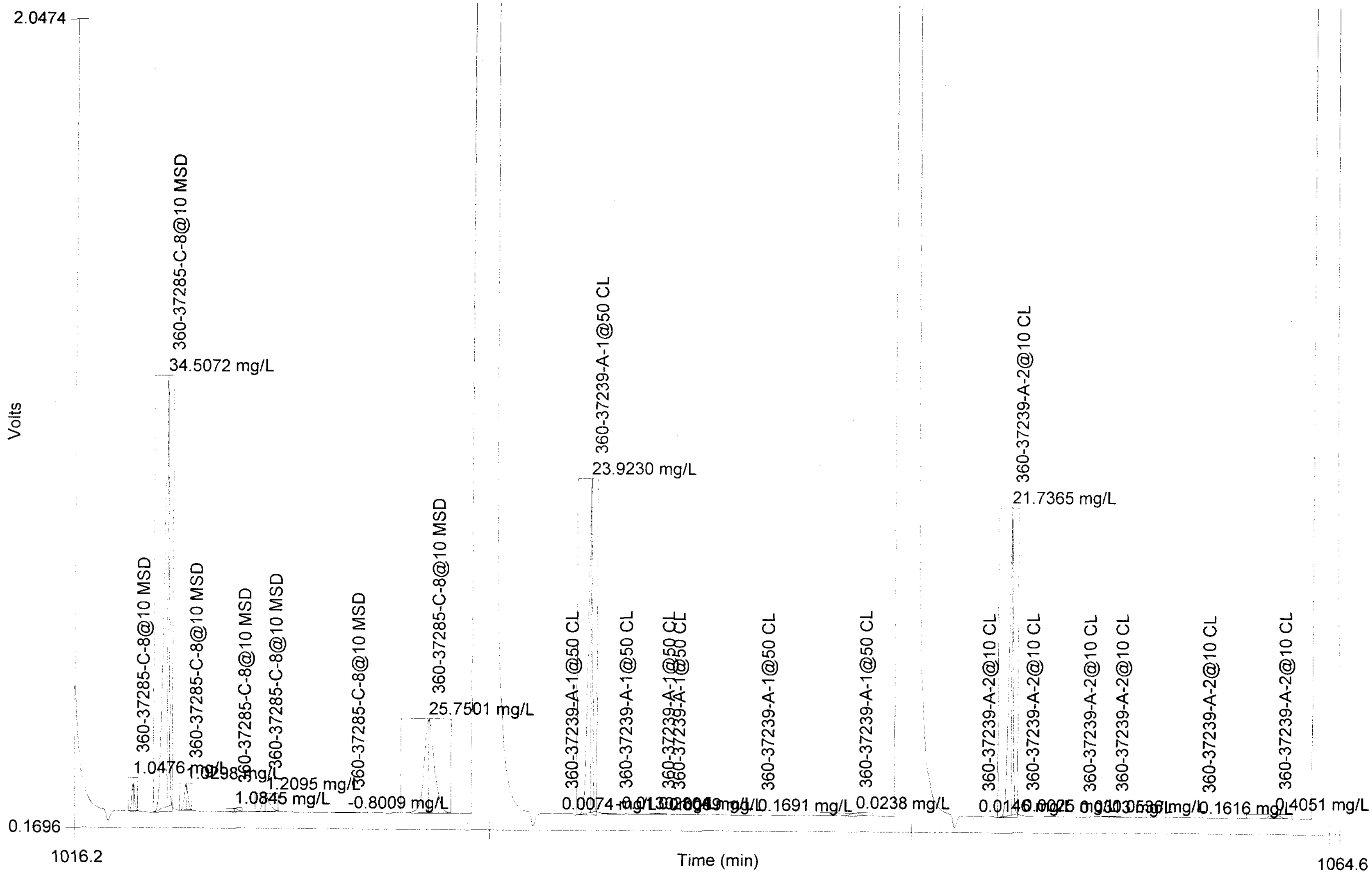
Channel 1 (Anions) : Set 20 of 23



Channel 1 (Anions) : Set 21 of 23



Channel 1 (Anions) : Set 22 of 23



Channel 1 (Anions) : Set 23 of 23

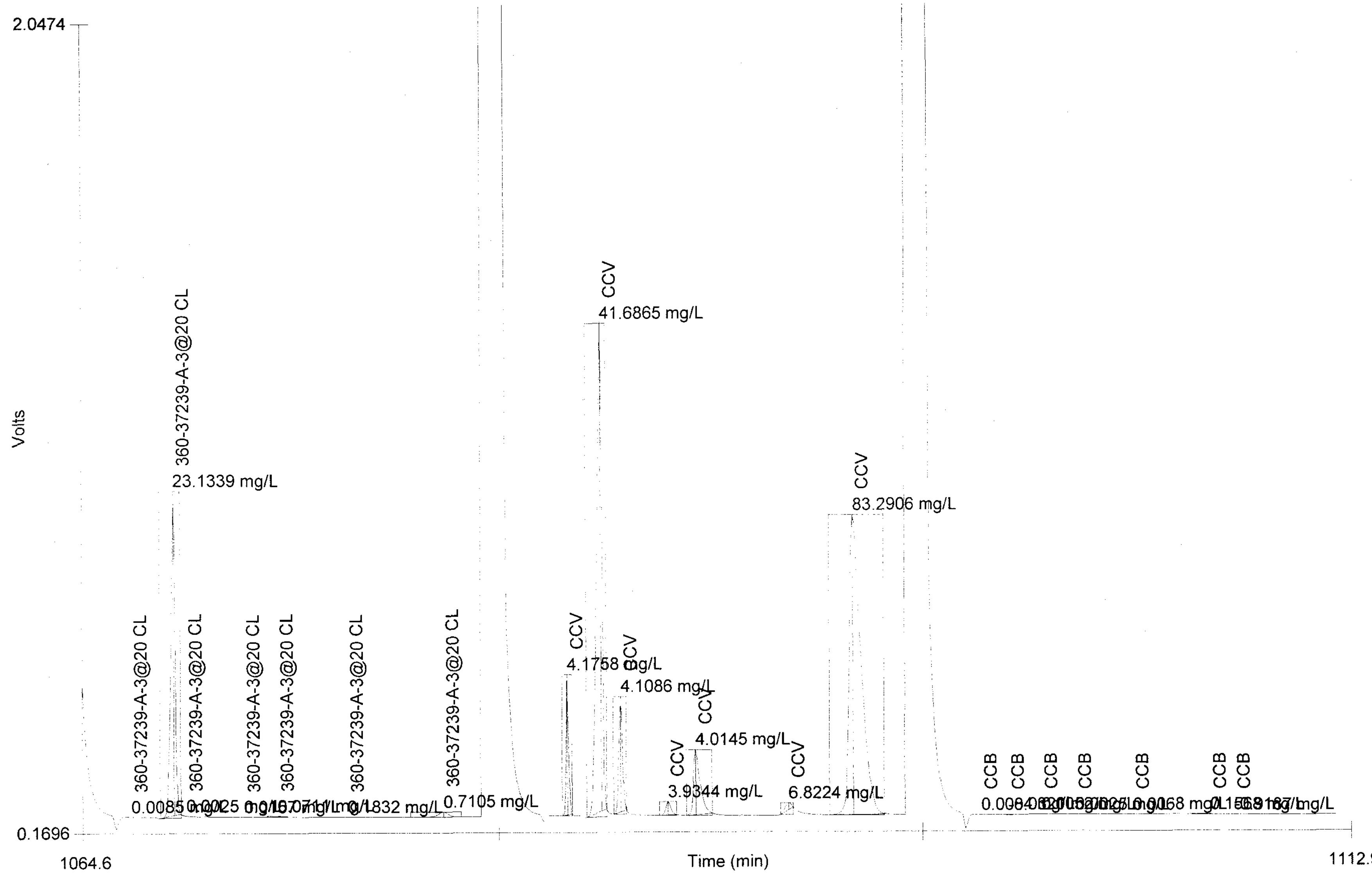
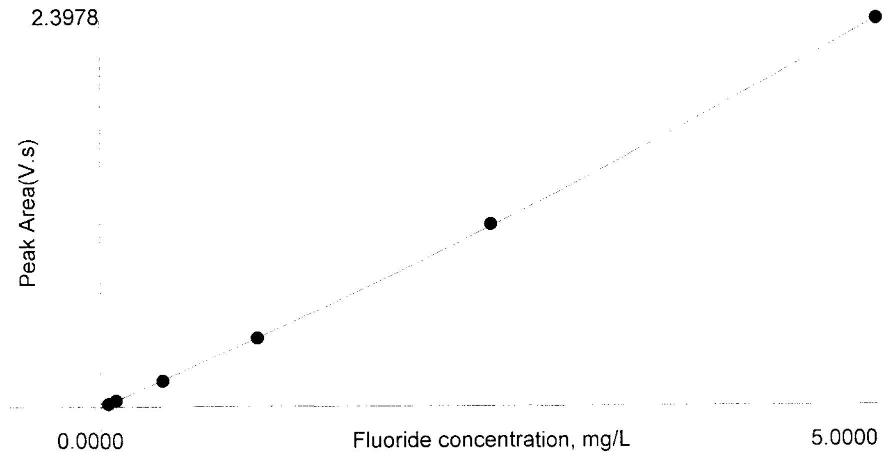


Table 1: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.3978	0.3834	0.3	11/2/2011	11:28:24 AM
2	2.5000	1	1.1331	0.1924	-1.3	11/2/2011	11:28:24 AM
3	1.0000	1	0.4237	0.0721	0.5	11/2/2011	11:28:24 AM
4	0.4000	1	0.1591	0.0275	3.8	11/2/2011	11:28:24 AM
5	0.1000	1	0.0382	0.0064	1.2	11/2/2011	11:28:24 AM
6	0.0500	1	0.0187	0.0033	-5.1	11/2/2011	11:28:25 AM

Figure 1: Fluoride



Area = 0.0131 * Conc^2 + 0.4160 * Conc - 0.0031
Conc = - 0.1236 * Area^2 + 2.3721 * Area + 0.0084
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 2: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	19.1474	1.2825	0.5	11/2/2011	11:28:24 AM
2	25.0000	1	9.0851	0.7929	-2.4	11/2/2011	11:28:24 AM
3	10.0000	1	3.3344	0.3715	1.1	11/2/2011	11:28:24 AM
4	4.0000	1	1.2395	0.1514	6.5	11/2/2011	11:28:24 AM
5	1.0000	1	0.3203	0.0390	4.1	11/2/2011	11:28:25 AM
6	0.5000	1	0.1870	0.0226	-9.4	11/2/2011	11:28:25 AM

Figure 2: Chloride

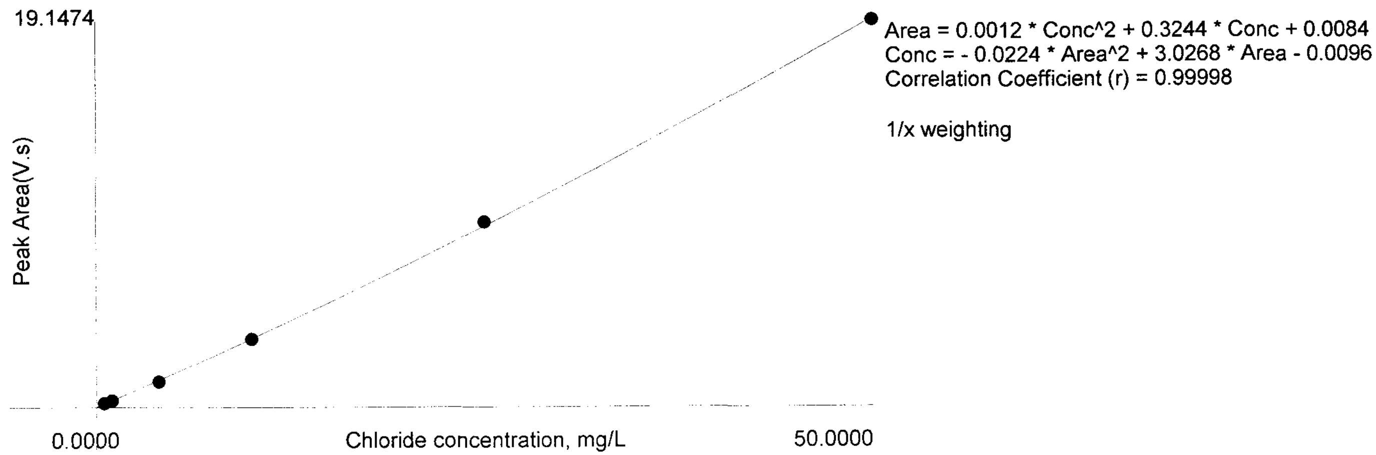
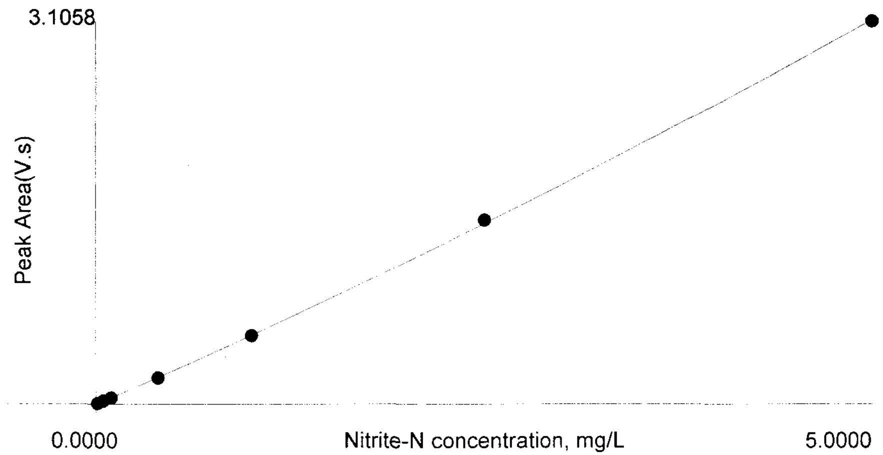


Table 3: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.1058	0.3141	0.4	11/2/2011	11:28:24 AM
2	2.5000	1	1.4779	0.1549	-1.9	11/2/2011	11:28:24 AM
3	1.0000	1	0.5495	0.0568	0.7	11/2/2011	11:28:24 AM
4	0.4000	1	0.2086	0.0214	3.7	11/2/2011	11:28:24 AM
5	0.1000	1	0.0500	0.0051	5.3	11/2/2011	11:28:25 AM
6	0.0500	1	0.0244	0.0025	5.2	11/2/2011	11:28:25 AM
7	0.0100	1	0.0049	5.2106e-4	-16.7	11/2/2011	11:28:25 AM

Figure 3: Nitrite-N



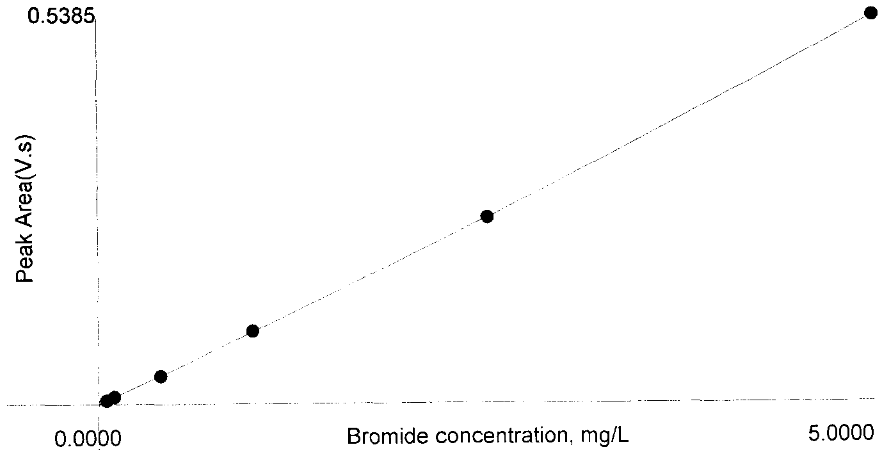
Area = 0.0173 * Conc^2 + 0.5374 * Conc - 0.0012
Conc = - 0.0760 * Area^2 + 1.8383 * Area + 0.0025
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 4: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.5385	0.0392	0.0	11/2/2011	11:28:24 AM
2	2.5000	1	0.2561	0.0184	0.0	11/2/2011	11:28:24 AM
3	1.0000	1	0.0998	0.0071	-0.6	11/2/2011	11:28:24 AM
4	0.4000	1	0.0386	0.0027	1.2	11/2/2011	11:28:24 AM
5	0.1000	1	0.0095	6.6002e-4	0.9	11/2/2011	11:28:25 AM
6	0.0500	1	0.0048	3.3481e-4	-1.6	11/2/2011	11:28:25 AM

Figure 4: Bromide



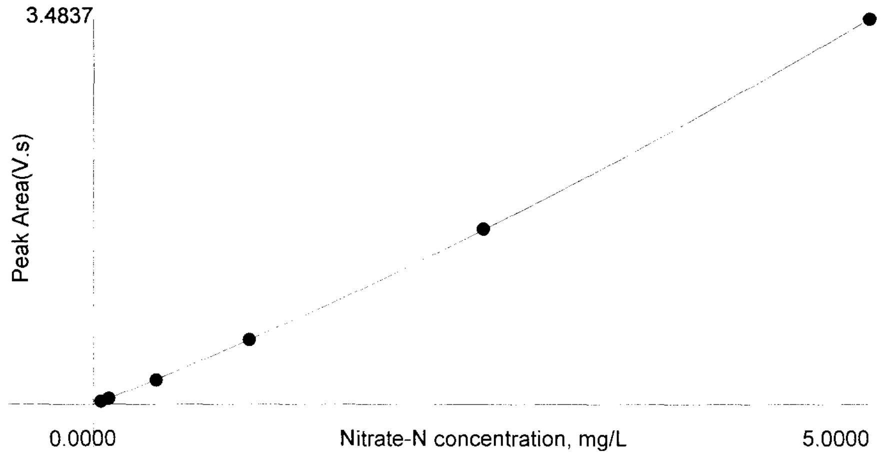
Area = 0.0021 * Conc^2 + 0.0973 * Conc - 1.9201e-4
Conc = - 1.7300 * Area^2 + 10.2083 * Area + 0.0025
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 5: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.4837	0.1962	0.1	11/2/2011	11:28:24 AM
2	2.5000	1	1.5712	0.0890	-0.7	11/2/2011	11:28:24 AM
3	1.0000	1	0.5790	0.0322	0.0	11/2/2011	11:28:24 AM
4	0.4000	1	0.2179	0.0119	2.4	11/2/2011	11:28:24 AM
5	0.1000	1	0.0519	0.0028	2.2	11/2/2011	11:28:25 AM
6	0.0500	1	0.0263	0.0014	-4.3	11/2/2011	11:28:25 AM

Figure 5: Nitrate-N



Area = 0.0291 * Conc^2 + 0.5526 * Conc - 0.0025
Conc = - 0.0931 * Area^2 + 1.7544 * Area + 0.0069
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 6: Phosphate-P

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.1711	0.0083	2.8	11/2/2011	11:28:24 AM
2	2.5000	1	0.0615	0.0031	-18.6	11/2/2011	11:28:24 AM
3	1.0000	1	0.0157	8.4557e-4	-45.1	11/2/2011	11:28:24 AM
4	0.4000	1	-0.0084	-2.4475e-4	653.2	11/2/2011	11:28:24 AM
5	0.1000	1	-0.0025	-8.9869e-5	-53.7	11/2/2011	11:28:25 AM
6	0.0500	1	-7.6213e-4	-1.7837e-5	62.9	11/2/2011	11:28:25 AM

Figure 6: Phosphate-P

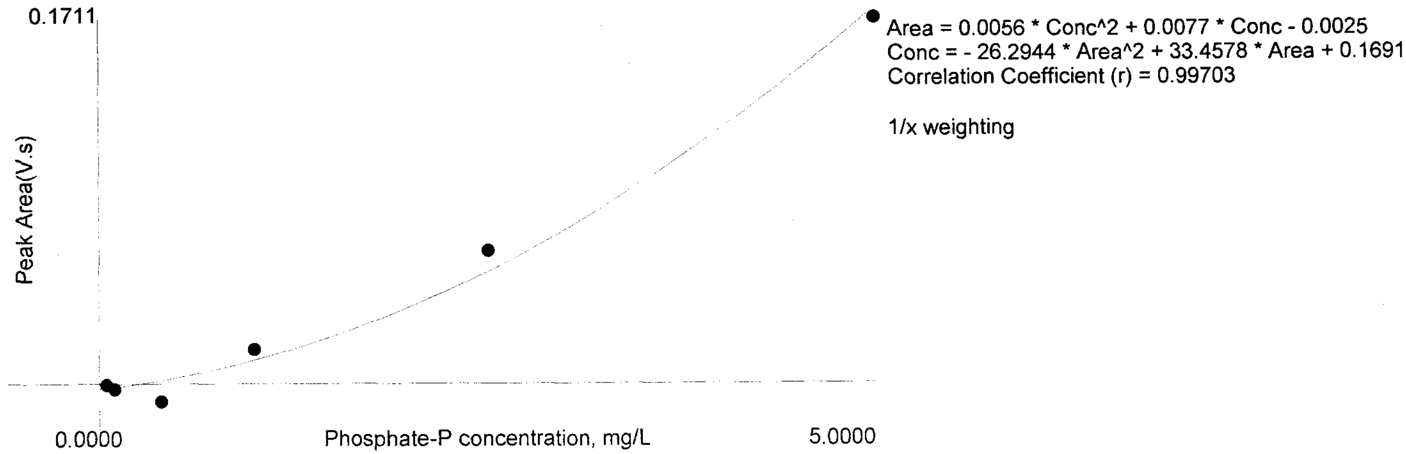
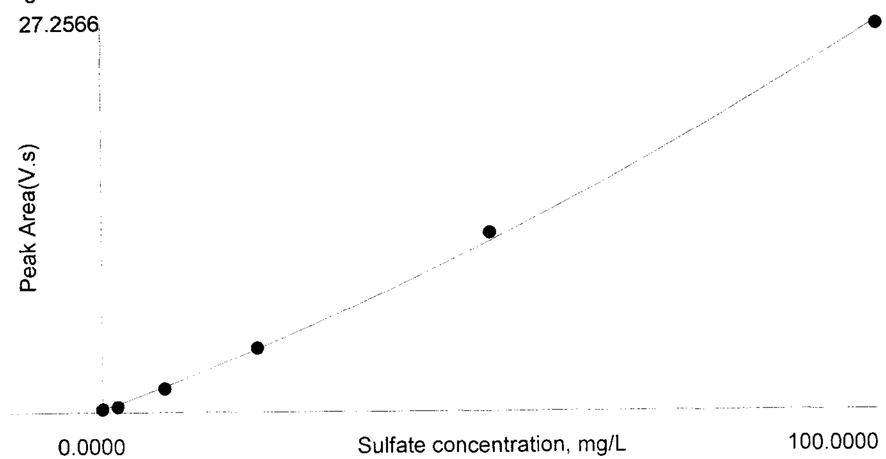


Table 7: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	27.2566	0.8442	1.0	11/2/2011	11:28:24 AM
2	50.0000	1	12.5157	0.4470	-4.9	11/2/2011	11:28:24 AM
3	20.0000	1	4.4741	0.1672	-1.1	11/2/2011	11:28:24 AM
4	8.0000	1	1.6543	0.0605	8.8	11/2/2011	11:28:24 AM
5	2.0000	1	0.3980	0.0142	32.5	11/2/2011	11:28:25 AM
6	0.0500	1	0.2093	0.0075	-2.6	11/2/2011	11:28:25 AM

Figure 7: Sulfate



Area = 7.7304e-4 * Conc^2 + 0.1962 * Conc + 0.1943
Conc = - 0.0411 * Area^2 + 4.7877 * Area - 0.9191
Correlation Coefficient (r) = 0.99999

1/x weighting

Original Run Filename: OM_11-2-2011_02-38-42PM.OMN created 11/2/2011 2:38:42 PM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_11-2-2011_02-38-42PM.OMN last modified 11/3/2011 9:11:11 AM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Phosphate-P (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	0.0025	-0.0244	0.0084	0.0061	0.0025	0.1683	-0.9117	11/2/2011@2:40:03 PM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	Table/Fig. 7	
ICV	1	2.5379	25.8546	2.5204	2.5496	2.5518	5.3125	52.1803	11/2/2011@2:56:10 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	2.5000	50.0000	
ICB	S11	0.0011	-0.0226	0.0084	0.0069	0.0025	0.1515	-0.9229	11/2/2011@3:12:17 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0022	-0.0234	0.0084	0.0067	0.0025	0.1728	-0.9218	11/2/2011@3:28:24 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.0128	40.6941	4.0304	3.9636	4.0891	9.4156	80.7063	11/2/2011@3:44:30 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37328-A-1	2	0.1679	54.9961	0.3044	0.0069	0.0025	0.1394	49.6552	11/2/2011@4:00:37 PM
360-37328-A-2	3	0.2988	59.9573	0.2139	0.0061	0.0025	0.1537	93.9960	11/2/2011@4:16:44 PM
360-37328-A-3	4	0.0833	-94.5523	0.1517	0.1919	1.2430	0.1691	8.6154	11/2/2011@4:32:51 PM
360-37328-A-4	5	0.3385	-91.9771	0.1015	0.0064	1.7064	0.1692	10.9053	11/2/2011@4:48:58 PM
360-37328-A-5	6	0.0413	15.4321	0.3204	0.0333	-13.0992	0.1693	45.7807	11/2/2011@5:05:04 PM
360-37328-A-6	7	0.0455	21.3824	0.3625	0.0699	0.0025	0.1713	63.5760	11/2/2011@5:21:11 PM
360-37329-G-1	8	0.6572	76.1276	0.5981	0.0053	0.0025	0.0968	-0.0459	11/2/2011@5:37:17 PM
360-37329-G-1@10	9	0.0675	8.5573	0.0708	0.0069	0.0025	0.1791	79.2738	11/2/2011@5:53:23 PM
360-37329-G-1@10 MS	10	1.1577	19.8300	1.1190	1.0485	1.0686	-0.1798	95.7518	11/2/2011@6:09:28 PM
360-37329-G-1@10 MSD	10	1.0623	18.1923	1.0190	0.9582	0.9831	-0.2452	89.0688	11/2/2011@6:25:35 PM
CCV	S12	4.1066	41.1908	4.1068	4.0340	4.1664	8.7671	81.6136	11/2/2011@6:41:41 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0018	-0.0249	0.0066	0.0072	0.0039	0.1386	-0.9203	11/2/2011@6:57:48 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37329-F-2	11	1.6079	-79.3885	0.1353	0.9045	1.8446	0.1685	115.4731	11/2/2011@7:13:54 PM
360-37329-F-3	12	0.8279	-66.7963	0.2473	2.7874	0.0137	0.1689	102.5147	11/2/2011@7:29:59 PM
360-37329-G-4	13	0.6075	51.0786	0.0813	0.0157	0.0025	0.1513	109.3889	11/2/2011@7:46:04 PM
360-37329-G-5	14	0.7334	60.2624	0.0850	0.2077	0.0025	0.1330	55.2743	11/2/2011@8:02:10 PM
360-37329-F-6	15	0.7309	58.4817	0.0868	0.1843	0.0025	0.1695	56.5003	11/2/2011@8:18:15 PM
360-37329-G-7	16	0.0558	55.3561	0.3708	0.7186	-0.0780	0.1704	50.2177	11/2/2011@8:34:21 PM
360-37315-F-1	17	0.0419	5.1170	0.3326	1.7198	9.3091e-4	0.1639	10.6222	11/2/2011@8:50:28 PM
360-37315-F-2	18	0.0372	5.9285	0.4963	0.9721	0.0196	0.1606	8.4481	11/2/2011@9:06:35 PM
360-37315-F-3	19	0.0348	4.9412	0.3239	1.4377	0.0025	0.1697	10.1494	11/2/2011@9:22:42 PM
360-37315-F-4	20	0.0125	1.6302	0.5035	0.0071	0.0025	0.1601	-0.5449	11/2/2011@9:38:48 PM
CCV	S12	4.1698	41.3400	4.1167	4.0790	4.1920	8.9625	81.8524	11/2/2011@9:54:55 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0036	-0.0238	0.0078	0.0072	0.0036	0.1712	-0.9182	11/2/2011@10:11:01 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	2.959e-4	-0.0240	0.0077	0.0101	0.0036	0.1703	-0.9190	11/2/2011@10:27:08 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

LCS	S12	4.1616	41.3607	4.1165	4.0744	4.1908	9.4029	81.9001	11/2/2011@10:43:14 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37315-F-5	21	0.0725	50.2642	0.3173	0.0062	0.0025	0.1459	11.3446	11/2/2011@10:59:21 PM
360-37315-F-5@10	22	0.0148	4.9607	0.0364	0.0069	0.0025	0.1574	0.2780	11/2/2011@11:15:27 PM
360-37315-F-5@10 MS	23	1.0213	15.4275	1.0147	0.9738	1.0001	-0.8826	20.6746	11/2/2011@11:31:34 PM
360-37315-F-5@10 MSD	23	1.0239	15.4223	1.0129	0.9719	1.0007	-0.8566	20.6839	11/2/2011@11:47:40 PM
360-37315-F-6	24	0.0591	40.9857	0.6758	0.0127	0.0025	0.1476	11.4129	11/3/2011@12:03:46 AM
360-37315-F-7	25	0.0240	4.9169	0.2130	0.5854	0.0025	0.1438	8.8558	11/3/2011@12:19:51 AM
360-37315-F-9	26	0.0043	0.0766	0.0060	0.0096	0.0035	0.1476	-0.9191	11/3/2011@12:35:57 AM
360-37327-A-2	27	0.0482	61.3956	0.0553	5.8797	-14.5394	-0.2680	16.6817	11/3/2011@12:52:03 AM
360-37327-A-2@10	28	0.0027	8.6477	0.0065	0.5819	0.0206	0.1310	0.7233	11/3/2011@1:08:09 AM
360-37184-C-7@2 CL	29	0.9620	6.3872	0.0865	4.0160	3.8835	0.1712	37.9255	11/3/2011@1:24:14 AM
CCV	S12	4.0991	41.4059	4.1254	4.0452	4.1565	8.5363	82.1382	11/3/2011@1:40:21 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0024	-0.0273	0.0084	0.0073	0.0043	0.1516	-0.9176	11/3/2011@1:56:28 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37261-C-1@10 CL	30	2.6284e-4	15.3975	0.0138	0.0069	0.0025	0.1695	1.1279	11/3/2011@2:12:33 AM
360-37261-C-1@50 CL	31	0.0084	2.8024	0.0085	0.0069	0.0017	0.1756	-0.4846	11/3/2011@2:28:40 AM
360-37261-C-2@10 CL	32	0.0028	15.1249	0.0087	0.0229	9.0588e-4	0.1692	1.2302	11/3/2011@2:44:47 AM
360-37261-C-2@50 CL	33	0.0023	2.7429	0.0075	0.0112	0.0025	0.1791	-0.4641	11/3/2011@3:00:54 AM
360-37195-B-1@10 CL	34	0.0025	10.3414	0.0070	0.0110	0.0025	0.1696	8.6654	11/3/2011@3:17:00 AM
360-37230-C-1	35	0.0025	-15.0349	-0.0264	0.1410	-92.0266	0.1519	125.0191	11/3/2011@3:33:07 AM
360-37230-C-1@10	36	0.0025	48.8690	0.0063	0.0201	0.0025	0.1659	25.7940	11/3/2011@3:49:13 AM
360-37270-C-1 CL	37	0.0014	-16.7428	1.0754	0.0236	4.4167	0.1594	51.2214	11/3/2011@4:05:20 AM
360-37270-C-2 CL	38	0.0025	-16.6549	1.0846	0.0045	5.5360	0.1692	51.4574	11/3/2011@4:21:26 AM
360-37271-B-1@20 CL	39	0.0025	5.9054	0.0085	0.0373	0.0025	0.1692	0.0930	11/3/2011@4:37:32 AM
CCV	S12	4.0072	41.4794	4.1352	4.0194	4.1166	7.8843	82.5823	11/3/2011@4:53:38 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0033	-0.0387	0.0084	0.0068	0.0047	0.1214	-0.9191	11/3/2011@5:09:45 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0027	-0.0363	0.0069	0.0065	0.0042	0.1557	-0.9186	11/3/2011@5:25:52 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9014	41.5072	4.1386	3.9899	4.1040	8.5725	82.7277	11/3/2011@5:41:58 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37285-C-2@10 CL	40	3.5465e-4	5.2557	0.0478	0.1540	0.0018	0.1533	0.8321	11/3/2011@5:58:04 AM
360-37285-C-3@10 CL	41	0.0380	55.2144	0.0088	0.0069	-0.1236	0.1806	1.9342	11/3/2011@6:14:10 AM
360-37285-C-4@10 CL	42	0.0025	47.8064	0.0477	0.0069	-16.2919	0.1695	1.7462	11/3/2011@6:30:15 AM
360-37285-C-5@10 CL	43	0.0015	50.5181	0.0088	0.0532	0.0025	0.1683	0.8928	11/3/2011@6:46:21 AM
360-37285-C-8@10 CL	44	0.1065	22.9879	0.0065	0.2072	0.0025	0.1584	3.2769	11/3/2011@7:02:26 AM
360-37285-C-8@10 MS	45	1.1061	34.5541	1.0518	1.2263	1.0391	-0.8323	25.8103	11/3/2011@7:18:31 AM
360-37285-C-8@10 MSD	45	1.0845	34.5072	1.0476	1.2095	1.0298	-0.8009	25.7501	11/3/2011@7:34:37 AM
360-37239-A-1@50 CL	46	0.2804	23.9230	0.0074	0.0069	-0.0130	0.1691	0.0238	11/3/2011@7:50:43 AM
360-37239-A-2@10 CL	47	0.0313	21.7365	0.0146	0.0536	0.0025	0.1616	0.4051	11/3/2011@8:06:50 AM
360-37239-A-3@20 CL	48	0.0157	23.1339	0.0085	0.0711	0.0025	0.1832	0.7105	11/3/2011@8:22:56 AM
CCV	S12	3.9344	41.6865	4.1758	4.0145	4.1086	6.8224	83.2906	11/3/2011@8:39:03 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0025	-0.0321	0.0084	0.0068	0.0052	0.1568	-0.9187	11/3/2011@8:55:10 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield   Job No.: 360-37328-1

SDG No.: 360-37328

Batch Number: 82847   Batch Start Date: 11/02/11 14:56   Batch Analyst: Emerich, Rich W

Batch Method: 300.0   Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11H_IC_ICV 00001	W11J_IC_LCS 00001			
ICV 360-82847/1		300.0		10 mL	1 mL				
LCS 360-82847/4		300.0		10 mL		10 mL			
CCV 360-82847/11		300.0		10 mL		10 mL			

Batch Notes	

Basis	Basis Description

Shipping and Receiving Documents

TETRA TECH ISG
TtNUS, Information Systems Group

Completion Ticket

On 11/9/2011 at 10:23 AM the following files were submitted to Tetra Tech by joe.chimi@testamericainc.com with TAWMA:

360-37328A1.txt, 360-37328A3.txt

If you need to identify this session at a later date refer to Ticket Key:

2011119_1908056_ledd_TAWMA

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Login Sample Receipt Checklist

Client: Tetra Tech NUS Inc

Job Number: 360-37328-1
SDG Number: 360-37328

Login Number: 37328
List Source: TestAmerica Westfield
List Number: 1
Creator: Beaumier, Janine E

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

360-37328

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Chain of Custody Record

TestAmerica Laboratory location: ______

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other ______

TestAmerica Laboratories, Inc.

Client Contact			
Company Name: Tetra Tech	Client Project Manager: Dev Murali	Site Contact: Stu Cameron	Lab Contact:
Address: 20251 Century Blvd Ste 200	Telephone: (301) 528-5552	Telephone: (703) 342-8384	Telephone: (413) 572-4000
City/State/Zip: Germantown, MD 20874	Email: Dev.Murali@Tetratech.com		
Phone: 301-528-5552			
Project Name: MRC Injection Project	Method of Shipment/Carrier:		
Project Number: 112IC03619-02	Shipping/Tracking No:		
P O #			

COC No: 010128

1 of 1 COCs

Analysis Turnaround Time (in BUS days)

TAT if different from below ______

☐ 3 weeks
☐ 2 weeks
☐ 1 week
☐ 2 days
☐ 1 day

For lab use only

Walk-in client ☐
Lab pickup ☐
Lab sampling ☐

Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: Bromide	Sample Specific Notes / Special Instructions:
MPN-1S-110111	11/1/11	0950		X									X		N	G	X	
MPN-2S-110111		1035																
OW-1C-110111		1135																
OW-1B-110111		1225																
MPE-2S-110111		1355																
MPE-3S-110111		1430																

TB 11/2/11

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☒ Disposal By Lab ☐ Archive For ______ Months

Special Instructions/QC Requirements & Comments:

3 Day Turn Around Time

1.1°C w/ ice

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Tetra Tech	11/1/11 - 1530	[signature]	TA	11/2/11 10:05
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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TAL 0018-1 (04/10)

Fed Ex Pr. Ov. 873926700663

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 360-37362-1

SDG Number: 360-37362

Job Description: MRC Injection Project

For:
Tetra Tech NUS Inc
Foster Plaza VII
661 Anderson Drive
Pittsburgh, PA 15220-2745

Attention: Chris Pike

Approved for release.
Joe Chimi
Report Production Representative
11/9/2011 3:23 PM

Designee for
Lisa A Worthington
Project Manager II
lisa.worthington@testamericainc.com

11/09/2011

Results relate only to the items tested and the sample(s) as received by the laboratory. The test results in this report meet all NELAC requirements for accredited parameters, exceptions are noted in this report. Pursuant to NELAC, this report may not be reproduced except in full, and with written approval from the laboratory. TestAmerica Westfield Certifications and Approvals: MADEP MA014, RIDOH57, CTDPH 0494, VT DECWSD, NELAP NH DES 2539, NELAP NY 10843, NY ELAP 10843, North Carolina 647. Field sampling is performed under SOPs WE-FLD-001 and WE-FLD-002.

TestAmerica Laboratories, Inc.
TestAmerica Westfield Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085
Tel (413) 572-4000 Fax (413) 572-3707 www.testamericainc.com

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Table of Contents

I Christine Furcinite-Reynolds, as the designated Quality Assurance Officer, herby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclose delectronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (413) 572-4000 if there are any questions or problems with the enclosed electronic deliverables.

Signature: CReynolds Title: QA Manager Date: 11/9/2011

Revision 8
ISG
08/10/10

CASE NARRATIVE

Client: Tetra Tech NUS Inc

Project: MRC Injection Project

Report Number: 360-37362-1

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

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

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

RECEIPT
The samples were received on 11/03/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.7 C.

ANIONS (28 DAY HOLD TIME)
Samples MPW-3S-110211 (360-37362-1), MPW-2S-110211 (360-37362-2), MPW-1S-110211 (360-37362-3), MPW-1I-110211 (360-37362-4), MPE-3I-110211 (360-37362-5) and MPE-1S-110211 (360-37362-6) were analyzed for anions (28 day hold time) in accordance with EPA Method 300.0. The samples were analyzed on 11/07/2011.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

SAMPLE SUMMARY

Client: Tetra Tech NUS Inc

Job Number: 360-37362-1
Sdg Number: 360-37362

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
360-37362-1	MPW-3S-110211	Water	11/02/2011 0835	11/03/2011 0950
360-37362-2	MPW-2S-110211	Water	11/02/2011 0925	11/03/2011 0950
360-37362-3	MPW-1S-110211	Water	11/02/2011 1015	11/03/2011 0950
360-37362-4	MPW-1I-110211	Water	11/02/2011 1055	11/03/2011 0950
360-37362-5	MPE-3I-110211	Water	11/02/2011 1215	11/03/2011 0950
360-37362-6	MPE-1S-110211	Water	11/02/2011 1300	11/03/2011 0950

EXECUTIVE SUMMARY - Detections

Client: Tetra Tech NUS Inc

Job Number: 360-37362-1
Sdg Number: 360-37362

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
360-37362-1	**MPW-3S-110211**					
Bromide		0.14		0.050	mg/L	300.0
360-37362-2	**MPW-2S-110211**					
Bromide		0.13		0.050	mg/L	300.0
360-37362-3	**MPW-1S-110211**					
Bromide		0.16		0.050	mg/L	300.0
360-37362-4	**MPW-1I-110211**					
Bromide		0.090		0.050	mg/L	300.0
360-37362-5	**MPE-3I-110211**					
Bromide		0.12		0.050	mg/L	300.0
360-37362-6	**MPE-1S-110211**					
Bromide		0.057		0.050	mg/L	300.0

METHOD SUMMARY

Client: Tetra Tech NUS Inc

Job Number: 360-37362-1
Sdg Number: 360-37362

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Anions, Ion Chromatography	TAL WFD	MCAWW 300.0	

Lab References:

TAL WFD = TestAmerica Westfield

Method References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

METHOD / ANALYST SUMMARY

Client: Tetra Tech NUS Inc

Job Number: 360-37362-1
Sdg Number: 360-37362

Method	Analyst	Analyst ID
MCAWW 300.0	Emerich, Rich W	RWE

Client: Tetra Tech NUS Inc

Job Number: 360-37362-1
Sdg Number: 360-37362

General Chemistry

Client Sample ID: **MPW-3S-110211**

Lab Sample ID: 360-37362-1
Client Matrix: Water

Date Sampled: 11/02/2011 0835
Date Received: 11/03/2011 0950

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.14		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-83017		Analysis Date: 11/07/2011 2100				

General Chemistry

Client Sample ID: **MPW-2S-110211**

Lab Sample ID: 360-37362-2
Client Matrix: Water

Date Sampled: 11/02/2011 0925
Date Received: 11/03/2011 0950

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.13		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-83017	Analysis Date: 11/07/2011 2148					

General Chemistry

Client Sample ID: **MPW-1S-110211**

Lab Sample ID: 360-37362-3
Client Matrix: Water

Date Sampled: 11/02/2011 1015
Date Received: 11/03/2011 0950

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.16		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-83017	Analysis Date: 11/07/2011 2204					

Client: Tetra Tech NUS Inc

Job Number: 360-37362-1
Sdg Number: 360-37362

General Chemistry

Client Sample ID: **MPW-1I-110211**

Lab Sample ID: 360-37362-4
Client Matrix: Water

Date Sampled: 11/02/2011 1055
Date Received: 11/03/2011 0950

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.090		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-83017	Analysis Date: 11/07/2011 2220					

Client: Tetra Tech NUS Inc

Job Number: 360-37362-1
Sdg Number: 360-37362

General Chemistry

Client Sample ID: **MPE-3I-110211**

Lab Sample ID: 360-37362-5
Client Matrix: Water

Date Sampled: 11/02/2011 1215
Date Received: 11/03/2011 0950

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.12		mg/L	0.050	0.050	1.0	300.0

Analysis Batch: 360-83017   Analysis Date: 11/07/2011 2236

Client: Tetra Tech NUS Inc

Job Number: 360-37362-1
Sdg Number: 360-37362

General Chemistry

Client Sample ID: **MPE-1S-110211**

Lab Sample ID: 360-37362-6
Client Matrix: Water

Date Sampled: 11/02/2011 1300
Date Received: 11/03/2011 0950

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.057		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-83017	Analysis Date: 11/07/2011 2252					

Quality Control Results

Client: Tetra Tech NUS Inc

Job Number: 360-37362-1
Sdg Number: 360-37362

Method Blank - Batch: 360-83017

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-83017/5	Analysis Batch:	360-83017	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/07/2011 2027	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Bromide	ND		0.050	0.050

Lab Control Sample - Batch: 360-83017

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-83017/6	Analysis Batch:	360-83017	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/07/2011 2044	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	4.00	4.20	105	85 - 115	

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-83017

Method: 300.0
Preparation: N/A

MS Lab Sample ID:	360-37362-1	Analysis Batch:	360-83017	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/07/2011 2116			Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

MSD Lab Sample ID:	360-37362-1	Analysis Batch:	360-83017	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/07/2011 2132			Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Bromide	112	111	75 - 125	1	20		

Client: Tetra Tech NUS Inc

Job Number: 360-37362-1
Sdg Number: 360-37362

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-83017

Method: 300.0
Preparation: N/A

MS Lab Sample ID:	360-37362-1	Units: mg/L	MSD Lab Sample ID:	360-37362-1
Client Matrix:	Water		Client Matrix:	Water
Dilution:	1.0		Dilution:	1.0
Analysis Date:	11/07/2011 2116		Analysis Date:	11/07/2011 2132
Prep Date:	N/A		Prep Date:	N/A
Leach Date:	N/A		Leach Date:	N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Bromide	0.14	1.00	1.00	1.26	1.25

Quality Control Results

Client: Tetra Tech NUS Inc

Job Number: 360-37362-1
Sdg Number: 360-37362

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:360-83017					
LCS 360-83017/6	Lab Control Sample	T	Water	300.0	
MB 360-83017/5	Method Blank	T	Water	300.0	
360-37362-1	MPW-3S-110211	T	Water	300.0	
360-37362-1MS	Matrix Spike	T	Water	300.0	
360-37362-1MSD	Matrix Spike Duplicate	T	Water	300.0	
360-37362-2	MPW-2S-110211	T	Water	300.0	
360-37362-3	MPW-1S-110211	T	Water	300.0	
360-37362-4	MPW-1I-110211	T	Water	300.0	
360-37362-5	MPE-3I-110211	T	Water	300.0	
360-37362-6	MPE-1S-110211	T	Water	300.0	

Report Basis
T = Total

Client: Tetra Tech NUS Inc

Job Number: 360-37362-1
SDG: 360-37362

Laboratory Chronicle

Lab ID: **360-37362-1** **Client ID:** **MPW-3S-110211**
Sample Date/Time: 11/02/2011 08:35 Received Date/Time: 11/03/2011 09:50

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37362-A-1		360-83017		11/07/2011 21:00	1	TAL WFD	RWE

Lab ID: **360-37362-1 MS** **Client ID:** **MPW-3S-110211**
Sample Date/Time: 11/02/2011 08:35 Received Date/Time: 11/03/2011 09:50

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37362-A-1 MS		360-83017		11/07/2011 21:16	1	TAL WFD	RWE

Lab ID: **360-37362-1 MSD** **Client ID:** **MPW-3S-110211**
Sample Date/Time: 11/02/2011 08:35 Received Date/Time: 11/03/2011 09:50

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37362-A-1 MSD		360-83017		11/07/2011 21:32	1	TAL WFD	RWE

Lab ID: **360-37362-2** **Client ID:** **MPW-2S-110211**
Sample Date/Time: 11/02/2011 09:25 Received Date/Time: 11/03/2011 09:50

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37362-A-2		360-83017		11/07/2011 21:48	1	TAL WFD	RWE

Lab ID: **360-37362-3** **Client ID:** **MPW-1S-110211**
Sample Date/Time: 11/02/2011 10:15 Received Date/Time: 11/03/2011 09:50

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37362-A-3		360-83017		11/07/2011 22:04	1	TAL WFD	RWE

Lab ID: **360-37362-4** **Client ID:** **MPW-1I-110211**
Sample Date/Time: 11/02/2011 10:55 Received Date/Time: 11/03/2011 09:50

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37362-A-4		360-83017		11/07/2011 22:20	1	TAL WFD	RWE

Lab ID: **360-37362-5** **Client ID:** **MPE-3I-110211**
Sample Date/Time: 11/02/2011 12:15 Received Date/Time: 11/03/2011 09:50

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37362-A-5		360-83017		11/07/2011 22:36	1	TAL WFD	RWE

Client: Tetra Tech NUS Inc

Job Number: 360-37362-1
SDG: 360-37362

Laboratory Chronicle

Lab ID: **360-37362-6** **Client ID:** **MPE-1S-110211**

Sample Date/Time: 11/02/2011 13:00 Received Date/Time: 11/03/2011 09:50

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37362-A-6		360-83017		11/07/2011 22:52	1	TAL WFD	RWE

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
A:300.0	MB 360-83017/5		360-83017		11/07/2011 20:27	1	TAL WFD	RWE

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
A:300.0	LCS 360-83017/6		360-83017		11/07/2011 20:44	1	TAL WFD	RWE

Lab References:
TAL WFD = TestAmerica Westfield

Certification Summary

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Westfield	Connecticut	State Program	1	PH-0494
TestAmerica Westfield	Maine	State Program	1	MA00014
TestAmerica Westfield	Massachusetts	State Program	1	M-MA014
TestAmerica Westfield	New Hampshire	NELAC	1	2539
TestAmerica Westfield	New York	NELAC	2	10843
TestAmerica Westfield	North Carolina	North Carolina DENR	4	647
TestAmerica Westfield	Rhode Island	State Program	1	LAO00057
TestAmerica Westfield	Vermont	State Program	1	VT-10843

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.

State Accreditation Matrix

Method Name	Description	State where **Primary** Accreditation is Carried			
		New Hampshire (NELAC)	Mass	Conn	North Carolina
821-R-02-012	Toxicity, Acute (48-Hour)(list upon request)	NP			
SM 4500 Cl F	Chlorine, Residual		NP		
SM 9215E	Heterotrophic Plate Count (SimPlate)		P		
SM 9222D	Coliforms, Fecal (Membrane Filter)		P/NP		
SM 9223	Coliforms, Total, and E.Coli (Colilert-P/A)		P		
SM 9224	Coliforms, Total, and E.Coli (Enumeration)		P		
1103.1	E.coli		ambient/		
Enterolert	Enterococcus		source		
200.8 Rev 5.4	Metals (ICP/MS) (list upon request)	NP/P	NP/P		
200.7 Rev 4.4	Metals (ICP)(list upon request)	NP/P	NP/P		
6010B	Metals (ICP)(list upon request)	NP/SW			
245.1	Mercury (CVAA)	NP/P	NP		
7470A	Mercury (CVAA)	NP			
7471A	Mercury (CVAA)	SW			
SM 2340B	Total Hardness (as CaCO3) by calculation	NP/P	NP		
3005A	Preparation, Total Recoverable or Dissolved Metals	NP/P			
3010A	Preparation, Total Metals	NP/P			
3020A	Preparation, Total Metals	NP/P/SW			
3050B	Preparation, Metals	SW			
504.1	EDB, DBCP and 1,2,3-TCP (GC)	P	P		
608	Organochlorine Pest/PCBs (list upon request)	NP	NP		
625	Semivolatile Org Comp (GC/MS)(list upon request)	NP	NP		
3546	Microwave Extraction	SW			
3510C	Liquid-Liquid Extraction (Separatory Funnel)	NP			
3550B	Ultrasonic Extraction	SW			
8081A	Organochlorine Pesticides (GC)(list upon request)	NP/SW			
8082	PCBs by Gas Chromatography(list upon request)	NP/SW			
8270C	Semivolatile Comp.(GC/MS)(list upon request)	NP/SW			
CT ETPH	Conn - Ext. Total petroleum Hydrocarbons (GC)			NP/SW	
MA-EPH	Mass - Extractable Petroleum Hydrocarbons (GC)				NP/SW
524.2	Volatile Org Comp (GC/MS)(list upon request)	P	P		
524.2	Trihalomethane compounds	P	P		
624	Volatile Org Comp (GC/MS)(list upon request)	NP	NP		
5035	Closed System Purge and Trap	SW			
5030B	Purge and Trap	NP			
8260B	Volatile Org Comp. (GC/MS)(list upon request)	NP/SW			
MAVPH	Mass - Volatile Petroleum Hydrocarbons (GC)				NP/SW
180.1	Turbidity, Nephelometric	P	P		
300	Anions, Ion Chromatography	NP/P	NP/P		
410.4	COD	NP	NP		
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW			
10-107-06-2	Nitrogen, Total Kjeldahl	NP	NP		
7196A	Chromium, Hexavalent	NP/SW			
9012A	Cyanide, Total and/or Amenable	NP/SW			
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	NP			
9045C	pH	SW			
L107041C	Nitrogen, Nitrate	NP	P		
L107-06-1B	Nitrogen Ammonia	NP	NP		
L204001A CN	Cyanide, Total	P	NP/P		
L210-001A	Phenolics, Total Recoverable	NP	NP		
SM 2320B	Alkalinity	NP/P	NP/P		
SM 2510B	Conductivity, Specific Conductance	NP/P	NP/P		
SM 2540C	Solids, Total Dissolved (TDS)	NP/P	NP/P		
SM 2540D	Solids, Total Suspended (TSS)	NP	NP		
SM 3500 CR D	Chromium, Hexavalent	NP			
SM 4500 H+ B	pH	NP/P	NP/P		
SM 4500 NO2 B	Nitrogen, Nitrite	NP	P		
SM 4500 P E	Phosphorus, Orthophosphate	NP/P	NP		
SM 4500 P E	Phosphorus, Total	NP	NP		
SM 4500 S2 D	Sulfide, Total	NP			
SM 5210B	BOD, 5-Day	NP	NP		
SM 5310B	Organic Carbon, Total (TOC)	NP/P	NP		

Not all organic compounds are accreditied under NELAC
For methods with multiple compounds all compounds may not meet NELAC criteria, listing should be obtained from the laboratory
The lab carries additional accreditations with several states. This is the laboratories typcial listing but is subject to change based on the laboratories current certification standing.

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job Number: 360-37362-1

SDG No.: 360-37362

Project: MRC Injection Project

Client Sample ID	Lab Sample ID
MPW-3S-110211	360-37362-1
MPW-2S-110211	360-37362-2
MPW-1S-110211	360-37362-3
MPW-1I-110211	360-37362-4
MPE-3I-110211	360-37362-5
MPE-1S-110211	360-37362-6

Comments:

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-3S-110211

Lab Sample ID: 360-37362-1

Lab Name: TestAmerica Westfield

Job No.: 360-37362-1

SDG ID.: 360-37362

Matrix: Water

Date Sampled: 11/02/2011 08:35

Reporting Basis: WET

Date Received: 11/03/2011 09:50

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.14	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-2S-110211

Lab Sample ID: 360-37362-2

Lab Name: TestAmerica Westfield

Job No.: 360-37362-1

SDG ID.: 360-37362

Matrix: Water

Date Sampled: 11/02/2011 09:25

Reporting Basis: WET

Date Received: 11/03/2011 09:50

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.13	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-1S-110211

Lab Sample ID: 360-37362-3

Lab Name: TestAmerica Westfield

Job No.: 360-37362-1

SDG ID.: 360-37362

Matrix: Water

Date Sampled: 11/02/2011 10:15

Reporting Basis: WET

Date Received: 11/03/2011 09:50

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.16	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-1I-110211

Lab Sample ID: 360-37362-4

Lab Name: TestAmerica Westfield

Job No.: 360-37362-1

SDG ID.: 360-37362

Matrix: Water

Date Sampled: 11/02/2011 10:55

Reporting Basis: WET

Date Received: 11/03/2011 09:50

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.090	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-3I-110211

Lab Sample ID: 360-37362-5

Lab Name: TestAmerica Westfield

Job No.: 360-37362-1

SDG ID.: 360-37362

Matrix: Water

Date Sampled: 11/02/2011 12:15

Reporting Basis: WET

Date Received: 11/03/2011 09:50

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.12	0.050		mg/L			1	300.0

FORM IB-IN

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-1S-110211

Lab Sample ID: 360-37362-6

Lab Name: TestAmerica Westfield

Job No.: 360-37362-1

SDG ID.: 360-37362

Matrix: Water

Date Sampled: 11/02/2011 13:00

Reporting Basis: WET

Date Received: 11/03/2011 09:50

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.057	0.050		mg/L			1	300.0

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37362-1

SDG No.: 360-37362

Analyst: RWE   Batch Start Date: 11/07/2011

Reporting Units: mg/L   Analytical Batch No.: 83017

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	12:56	Bromide	2.54	2.50	102	90-110		W11H_IC_ICV_00001
2	ICB	13:13	Bromide	ND					
3	CCV	19:55	Bromide	4.18	4.00	105	90-110		W11J_IC_LCS_00001
4	CCB	20:11	Bromide	ND					
15	CCV	23:41	Bromide	4.29	4.00	107	90-110		W11J_IC_LCS_00001
16	CCB	23:57	Bromide	ND					

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

FORM II-IN

3-IN
METHOD BLANK
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield Job No.: 360-37362-1

SDG No.: 360-37362

Method	Lab Sample ID	Analyte	Result	Qual	Units	RL	Dil
Batch ID: 83017		Date: 11/07/2011 20:27					
300.0	MB 360-83017/5	Bromide	ND		mg/L	0.050	1

FORM III-IN

5-IN
MATRIX SPIKE SAMPLE RECOVERY
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37362-1

SDG No.: 360-37362

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 83017	Date: 11/07/2011 21:16										
300.0	360-37362-1	Bromide	0.14		mg/L						
300.0	360-37362-1 MS	Bromide	1.26		mg/L	1.00	112	75-125			

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

FORM V-IN

5-IN
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37362-1

SDG No.: 360-37362

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 83017	Date: 11/07/2011 21:32										
300.0	360-37362-1 MSD	Bromide	1.25		mg/L	1.00	111	75-125	1	20	

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

FORM V-IN

7A-IN
LAB CONTROL SAMPLE
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield Job No.: 360-37362-1

SDG No.: 360-37362

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 83017	Date: 11/07/2011 20:44										
					LCS Source:	W11J_IC_LCS_00001					
300.0	LCS 360-83017/6	Bromide	4.20		mg/L	4.00	105	85-115			

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

FORM VIIA-IN

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job Number: 360-37362-1

SDG Number: 360-37362

Matrix: Water   Instrument ID: Lachat 8500

Method: 300.0   RL Date: 10/27/2011 11:55

Analyte	Wavelength/ Mass	RL (mg/L)	
Bromide		0.05	

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job Number: 360-37362-1

SDG Number: 360-37362

Matrix: Water   Instrument ID: Lachat 8500

Method: 300.0   XMDL Date: 02/15/2011 13:03

Analyte	Wavelength/ Mass	XRL (mg/L)	XMDL (mg/L)
Bromide		0.1	0.01

FORM IX - IN

ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37362-1

SDG No.: 360-37362

Instrument ID: Lachat 8500   Method: 300.0

Start Date: 11/07/2011 12:56   End Date: 11/08/2011 03:10

Lab Sample ID	D/F	Type	Time	Analytes: Br
ICV 360-83017/1	1		12:56	X
ZZZZZZ			12:56	
ZZZZZZ			12:56	
ZZZZZZ			12:56	
ZZZZZZ			12:56	
ZZZZZZ			12:56	
ZZZZZZ			12:56	
ZZZZZZ			12:56	
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ZZZZZZ			12:56	
ZZZZZZ			12:56	
ZZZZZZ			12:56	
ZZZZZZ			12:56	
ICB 360-83017/2	1		13:13	X
CCV 360-83017/3	1		19:55	X
CCB 360-83017/4	1		20:11	X
MB 360-83017/5	1	T	20:27	X
LCS 360-83017/6	1	T	20:44	X
360-37362-1	1	T	21:00	X
360-37362-1 MS	1	T	21:16	X
360-37362-1 MSD	1	T	21:32	X
360-37362-2	1	T	21:48	X
360-37362-3	1	T	22:04	X
360-37362-4	1	T	22:20	X
360-37362-5	1	T	22:36	X
360-37362-6	1	T	22:52	X
CCV 360-83017/15	1		23:41	X
CCB 360-83017/16	1		23:57	X
ZZZZZZ			01:50	
ZZZZZZ			02:22	
CCV 360-83017/19			02:54	
CCB 360-83017/20			03:10	

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name:	TestAmerica Westfield	Job No.:	360-37362-1
SDG No.:	360-37362		
Instrument ID:	Lachat 8500	Method:	300.0
Start Date:	11/07/2011 12:56	End Date:	11/08/2011 03:10

Prep Types

T = Total/NA

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review Coversheet—Inorganics Dept

Method Name: IC Method Reference: 300.0 48Hr/28D Date of Analytical Run: 11/7/11

Primary Reviewer's Initials & Date: AMS 11/8/11 Secondary Reviewer's Initials & Date: 11/8/11 11/9/11 AMS 11/8/11

Batch Numbers	83015	[redacted]	83019	[redacted]	[redacted]

QC Criteria—Non-MCP: ICV/CCV ±10%: LCS/LCSD ±15%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%

QC Criteria—MCP/RCP: (9012 and 7196 only)
9012 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
9012 (soil): ICV/CCV ±15%: LCS/LCSD **: MS/MSD ±25%: ICB/MB/CCB <RL: MD RPD 35%: MSD/LCSD RPD ≤30%
7196 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
7196 (soil): ICV/CCV ±15%: LCS/LCSD **: MSS/MSI ±25%: ICB/MB/CCB <RL: MD RPD ≤35%: LCSD RPD ≤30%

FAILURES OF QC FOR ANYTHING OTHER THAN MS, MSD or MD ARE GROUNDS FOR INVALIDATING THE BATCH.

Criteria for QC	Yes	No	n/a	Notes/Comments
Were the ICV and CCVs within acceptable limits for QC recovery?	✓✓✓✓✓			
Were the ICB and CCBs all <RL?	✓✓✓✓✓			
Were all MB and CCB results <RL for the analytes of interest?	✓✓✓✓✓			
Was there a CCV/CCB combination run after every 10 samples or less?	✓✓✓✓✓			
Was there an LCS run with every batch of 20 samples or less?	✓✓✓✓✓			
Was there a MD, LCSD or MSD run with every batch of 20 samples or less?	✓✓✓	✓✓		
Were all LCS/LCSD results within acceptable limits for QC recovery?	✓✓✓✓✓			
Were all MS/MSD results within acceptable limits for QC recovery?	✓✓✓		✓✓	
Were all MD, LCSD and/or MSD %RPDs within acceptable limits for QC recovery?	✓✓✓		✓✓	
Were the raw data points for investigative samples within the working curve range, or if not, were the samples diluted to bring them within this range?	✓✓✓✓✓			
IF there were any MCP/RCP samples in this batch, did they meet all MCP/RCP requirements?	✓✓		✓✓✓	
Were there any holding time violations in this batch?	✓✓	✓✓✓✓		NOTE! The PM and QA Manager must be notified by email *immediately* of any holding time violations!!
Were any NCMs generated for any samples in the batch? (If so, list NCM numbers, and first-reviewer must check off any "No" answers above as applicable.)	✓	✓✓✓✓		43019, 43020
Were any jobs in this batch Level 4? If "Yes" then scan all raw data & place in correct scan folder on the public drive before filing this paperwork.	✓	✓✓✓✓		

** LCS or LCSD must produce a recovery that is within the manufacturer's specified 95% confidence limits, must be matrix matched.

Original Run Filename: OM_11-7-2011_12-39-25PM.OMN created 11/7/2011 12:39:25 PM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_11-7-2011_12-39-25PM.OMN last modified 11/8/2011 5:51:35 AM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Phosphate-P (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	0.0025	-0.0255	0.0084	0.0071	0.0025	0.1697	-0.9013	11/7/2011@12:40:46 PM
	Calibration:	Table/Fig. 3	Table/Fig. 1		Table/Fig. 4	Table/Fig. 2	Table/Fig. 5	Table/Fig. 6	
ICV	1	2.5395	25.3369	2.4966	2.5601	2.5075	8.9158	51.5437	11/7/2011@12:56:54 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	2.5000	50.0000	
	Calibration:			Table/Fig. 7					
ICB	S11	0.0026	-0.0254	0.0084	0.0069	0.0028	0.1694	-0.9037	11/7/2011@1:13:01 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0027	-0.0253	0.0084	0.0081	0.0024	0.1708	-0.9051	11/7/2011@1:29:07 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.0888	41.4387	4.1295	4.1062	4.2134	10.8077	82.2090	11/7/2011@1:45:14 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37355-A-2@10 CL	2	0.0199	17.5239	0.0137	0.0069	0.0025	0.1675	0.8603	11/7/2011@2:01:21 PM
360-37355-A-2@10 MS	3	1.1361	29.3578	1.1043	1.1255	1.1061	1.1976	23.8520	11/7/2011@2:17:28 PM
360-37355-A-2@10 MSD	3	0.9986	26.0882	0.9682	0.9941	0.9694	0.9812	20.5029	11/7/2011@2:33:35 PM
360-37355-A-7@2 CL	4	0.0668	12.3388	0.0340	0.0110	0.0025	0.1677	15.8607	11/7/2011@2:49:42 PM
360-37343-D-2@10 CL/NO2	5	0.0823	11.6951	0.0238	0.0120	0.0025	0.1679	-0.0734	11/7/2011@3:05:49 PM
360-37343-D-8@10 CL	6	0.1100	5.9124	0.0331	0.0437	0.0080	0.1782	1.2278	11/7/2011@3:21:55 PM
360-37343-D-9@10 CL/NO2	7	0.3586	10.4334	0.0472	0.0101	0.0025	0.1642	-0.3310	11/7/2011@3:38:02 PM
360-37343-D-12@10 CL/NO2	8	0.1430	18.3119	0.0268	0.0155	0.0025	0.1691	0.1716	11/7/2011@3:54:08 PM
360-37343-D-13@10 CL/NO2	9	0.1657	15.7709	0.0222	0.0455	-7.8443e-4	0.1763	-0.8192	11/7/2011@4:10:14 PM
360-37343-D-14@10 CL/NO2	10	0.3183	21.0493	0.0352	0.0313	0.0025	0.1480	0.4213	11/7/2011@4:26:19 PM
CCV	S12	4.1701	41.9305	4.1807	4.1747	4.2610	10.8122	83.0015	11/7/2011@4:42:27 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0016	-0.0263	0.0062	0.0098	0.0036	0.1506	-0.9009	11/7/2011@4:58:34 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37343-D-15@10 CL/NO2	11	0.1428	10.4550	0.0322	0.0105	0.0025	0.1574	3.9270	11/7/2011@5:14:41 PM
360-37352-C-1@20 CL	12	0.5245	47.5575	0.0142	0.0064	0.0025	0.1630	-0.2374	11/7/2011@5:30:46 PM
360-37352-C-2	13	0.7350	1.9229	0.6335	0.0069	9.6578	0.1690	22.0973	11/7/2011@5:46:52 PM
360-37352-C-2@10	14	0.0787	5.0824	0.0731	0.0085	0.0013	0.1691	1.1930	11/7/2011@6:02:57 PM
360-37341-A-3 FL	15	-2.5135e-4	6.2622	1.0076	0.3510	0.2133	0.2387	2.4165	11/7/2011@6:19:02 PM
360-37239-A-4@20 CL	16	0.1249	26.2678	0.0195	0.2451	0.1120	0.1737	-0.6371	11/7/2011@6:35:09 PM
360-37239-A-6@20 CL	17	0.0393	21.2958	0.0135	0.0136	0.0025	0.1666	-0.2813	11/7/2011@6:51:16 PM
360-37239-A-7@10 CL/NO3	18	0.6897	25.3413	0.0367	3.0931	0.7684	0.1691	8.3757	11/7/2011@7:07:22 PM
360-37239-A-8@50 CL	19	0.2068	13.2817	0.0196	0.0358	0.0170	0.1746	0.6367	11/7/2011@7:23:29 PM
360-37239-A-9@10 CL	20	0.0190	12.6855	0.0638	0.2704	0.0025	0.1717	0.4538	11/7/2011@7:39:36 PM
CCV	S12	4.1844	42.1821	4.2165	4.1990	4.3066	10.8075	83.7053	11/7/2011@7:55:43 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	-0.0024	-0.0270	0.0065	0.0101	0.0036	0.1651	-0.8932	11/7/2011@8:11:49 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	2.7356e-4	-0.0282	0.0086	0.0107	0.0038	0.1691	-0.8943	11/7/2011@8:27:56 PM

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 11-7-11

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution Sample Aliquot 2	Units	Final Volume 2	Units	Comments
RWE	11-7-11	300.0	3739301	10X	1	mL	10	mL					
				50X	200	µL							
			02	10X	1	mL							
				50X	200	µL							
			E3	10X	1	mL							
				50X	200	µL							
			E5	10X	1	mL							
				50X	200	µL							

entries completed by day [new page each day]

Original Run Filename: OM_11-7-2011_12-39-25PM.OMN created 11/7/2011 12:39:25 PM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_11-7-2011_12-39-25PM.OMN last modified 11/8/2011 5:51:35 AM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Phosphate-P (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	0.0025	-0.0255	0.0084	0.0071	0.0025	0.1697	-0.9013	11/7/2011@12:40:46 PM
	Calibration:	Table/Fig. 3	Table/Fig. 1		Table/Fig. 4	Table/Fig. 2	Table/Fig. 5	Table/Fig. 6	
ICV	1	2.5395	25.3369	2.4966	2.5601	2.5075	8.9158	51.5437	11/7/2011@12:56:54 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	2.5000	50.0000	
	Calibration:			Table/Fig. 7					
ICB	S11	0.0026	-0.0254	0.0084	0.0069	0.0028	0.1694	-0.9037	11/7/2011@1:13:01 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0027	-0.0253	0.0084	0.0081	0.0024	0.1708	-0.9051	11/7/2011@1:29:07 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.0888	41.4387	4.1295	4.1062	4.2134	10.8077	82.2090	11/7/2011@1:45:14 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37355-A-2@10 CL	2	0.0199	17.5239	0.0137	0.0069	0.0025	0.1675	0.8603	11/7/2011@2:01:21 PM
360-37355-A-2@10 MS	3	1.1361	29.3578	1.1043	1.1255	1.1061	1.1976	23.8520	11/7/2011@2:17:28 PM
360-37355-A-2@10 MSD	3	0.9986	26.0882	0.9682	0.9941	0.9694	0.9812	20.5029	11/7/2011@2:33:35 PM
360-37355-A-7@2 CL	4	0.0668	12.3388	0.0340	0.0110	0.0025	0.1677	15.8607	11/7/2011@2:49:42 PM
360-37343-D-2@10 CL/NO2	5	0.0823	11.6951	0.0238	0.0120	0.0025	0.1679	-0.0734	11/7/2011@3:05:49 PM
360-37343-D-8@10 CL	6	0.1100	5.9124	0.0331	0.0437	0.0080	0.1782	1.2278	11/7/2011@3:21:55 PM
360-37343-D-9@10 CL/NO2	7	0.3586	10.4334	0.0472	0.0101	0.0025	0.1642	-0.3310	11/7/2011@3:38:02 PM
360-37343-D-12@10 CL/NO2	8	0.1430	18.3119	0.0268	0.0155	0.0025	0.1691	0.1716	11/7/2011@3:54:08 PM
360-37343-D-13@10 CL/NO2	9	0.1657	15.7709	0.0222	0.0455	-7.8443e-4	0.1763	-0.8192	11/7/2011@4:10:14 PM
360-37343-D-14@10 CL/NO2	10	0.3183	21.0493	0.0352	0.0313	0.0025	0.1480	0.4213	11/7/2011@4:26:19 PM
CCV	S12	4.1701	41.9305	4.1807	4.1747	4.2610	10.8122	83.0015	11/7/2011@4:42:27 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0016	-0.0263	0.0062	0.0098	0.0036	0.1506	-0.9009	11/7/2011@4:58:34 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37343-D-15@10 CL/NO2	11	0.1428	10.4550	0.0322	0.0105	0.0025	0.1574	3.9270	11/7/2011@5:14:41 PM
360-37352-C-1@20 CL	12	0.5245	47.5575	0.0142	0.0064	0.0025	0.1630	-0.2374	11/7/2011@5:30:46 PM
360-37352-C-2	13	0.7350	1.9229	0.6335	0.0069	9.6578	0.1690	22.0973	11/7/2011@5:46:52 PM
360-37352-C-2@10	14	0.0787	5.0824	0.0731	0.0085	0.0013	0.1691	1.1930	11/7/2011@6:02:57 PM
360-37341-A-3 FL	15	-2.5135e-4	6.2622	1.0076	0.3510	0.2133	0.2387	2.4165	11/7/2011@6:19:02 PM
360-37239-A-4@20 CL	16	0.1249	26.2678	0.0195	0.2451	0.1120	0.1737	-0.6371	11/7/2011@6:35:09 PM
360-37239-A-6@20 CL	17	0.0393	21.2958	0.0135	0.0136	0.0025	0.1666	-0.2813	11/7/2011@6:51:16 PM
360-37239-A-7@10 CL/NO3	18	0.6897	25.3413	0.0367	3.0931	0.7684	0.1691	8.3757	11/7/2011@7:07:22 PM
360-37239-A-8@50 CL	19	0.2068	13.2817	0.0196	0.0358	0.0170	0.1746	0.6367	11/7/2011@7:23:29 PM
360-37239-A-9@10 CL	20	0.0190	12.6855	0.0638	0.2704	0.0025	0.1717	0.4538	11/7/2011@7:39:36 PM
CCV	S12	4.1844	42.1821	4.2165	4.1990	4.3066	10.8075	83.7053	11/7/2011@7:55:43 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0024	-0.0270	0.0065	0.0101	0.0036	0.1651	-0.8932	11/7/2011@8:11:49 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	-2.7356e-4	-0.0282	0.0086	0.0107	0.0038	0.1691	-0.8943	11/7/2011@8:27:56 PM

Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.2048	42.2073	4.2252	4.2075	4.3111	10.8056	83.8877	11/7/2011@8:44:02 PM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37362-A-1	21	0.1422	-13.8332	0.2413	0.0028	3.9332	0.1292	135.3100	11/7/2011@9:00:09 PM
360-37362-A-1 MS	22	1.2640	-13.3609	1.3386	1.0971	4.5819	-0.5136	129.9876	11/7/2011@9:16:16 PM
360-37362-A-1 MSD	22	1.2540	-12.9819	1.3372	1.0989	4.2245	-0.5708	129.7677	11/7/2011@9:32:22 PM
360-37362-A-2	23	0.1275	65.4108	0.0333	0.0069	1.8430	0.1520	130.6953	11/7/2011@9:48:28 PM
360-37362-A-3	24	0.1606	-37.3819	0.0951	0.0040	1.4626	0.1531	114.3803	11/7/2011@10:04:34 PM
360-37362-A-4	25	-0.0902	-94.6853	0.0526	0.0069	0.0142	0.1554	31.4889	11/7/2011@10:20:40 PM
360-37362-A-5	26	0.1159	63.0226	0.1333	0.4213	-3.9922	0.1708	2.5576	11/7/2011@10:36:46 PM
360-37362-A-6	27	0.0565	15.1946	0.4579	0.1762	0.0642	0.1801	46.6943	11/7/2011@10:52:51 PM
360-37420-C-1@10 CL	28	0.0029	71.4230	0.0085	0.0085	-0.1446	0.1647	0.8639	11/7/2011@11:08:57 PM
360-37420-C-2@10 CL	29	-0.0036	70.1058	0.0085	0.0091	0.0025	0.1694	0.8327	11/7/2011@11:25:03 PM
CCV	S12	4.2909	42.2901	4.2190	4.2298	4.3272	10.7292	84.1045	11/7/2011@11:41:09 PM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	7.2879e-4	-0.0279	0.0084	0.0055	0.0043	0.1467	-0.8908	11/7/2011@11:57:16 PM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37423-C-1@10 CL	30	-0.0026	7.0107	0.0084	1.5830	0.0025	0.1689	-0.8649	11/8/2011@12:13:21 AM
360-37423-C-2@10 CL	31	-0.0034	17.0444	0.0086	1.5947	0.0025	0.1713	0.5619	11/8/2011@12:29:28 AM
360-37423-C-3@10 CL	32	-0.0025	16.0618	0.0085	1.5238	0.0025	0.1773	0.4598	11/8/2011@12:45:35 AM
360-37430-A-1-A@5	33	0.0028	1.4130	0.0074	0.0134	0.0064	0.1429	-0.2160	11/8/2011@1:01:41 AM
360-37430-A-2-A@5	34	0.0063	0.9401	0.0217	0.0276	0.0230	0.1368	-0.5430	11/8/2011@1:17:48 AM
360-37393-D-1@10 CL	35	0.2630	71.0196	0.0149	0.3567	0.0025	0.1681	5.5387	11/8/2011@1:33:54 AM
360-37393-D-1@50 CL	36	0.0610	16.8164	0.0076	0.0758	0.0025	0.1519	0.4148	11/8/2011@1:50:01 AM
360-37393-D-2@10 CL	37	0.2752	72.0419	0.0156	0.3614	0.0025	0.1747	5.9940	11/8/2011@2:06:07 AM
360-37393-D-2@50 CL	38	0.0674	16.9386	0.0074	0.0758	0.0025	0.1656	0.4720	11/8/2011@2:22:13 AM
360-37393-E-3@10 CL	39	0.9064	-24.1555	0.0442	0.1312	1.4706	0.1486	25.5676	11/8/2011@2:38:19 AM
CCV	S12	4.3262	42.3768	4.2237	4.2159	4.3373	10.7532	84.1777	11/8/2011@2:54:26 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0023	-0.0290	0.0084	0.0069	0.0050	0.1531	-0.9172	11/8/2011@3:10:32 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0030	-0.0284	0.0062	0.0069	0.0048	0.1531	-0.9016	11/8/2011@3:26:39 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.3426	42.4089	4.2249	4.2302	4.3412	10.8095	84.3977	11/8/2011@3:42:46 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
360-37393-E-3@50 CL	40	0.1695	37.9076	0.0148	0.0297	0.0025	0.1495	3.7061	11/8/2011@3:58:51 AM
360-37393-E-5@10 CL	41	0.7975	18.2228	0.0436	0.0778	0.7692	0.1527	24.2847	11/8/2011@4:14:57 AM
360-37393-E-5@50 CL	42	0.1678	38.9614	0.0150	0.0209	0.0025	0.1675	3.9219	11/8/2011@4:31:03 AM
360-37393-E-5@50 MS	43	1.2856	48.2507	1.0820	1.0985	1.0868	-0.5945	26.9021	11/8/2011@4:47:09 AM
360-37393-E-5@50 MSD	43	1.2739	48.2347	1.0787	1.0996	1.0858	0.6506	26.8781	11/8/2011@5:03:14 AM
CCV	S12	4.3329	42.4871	4.2286	4.2184	4.3361	10.7789	84.5714	11/8/2011@5:19:20 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	-1.6177e-4	-0.0292	0.0084	0.0063	0.0051	0.1399	-0.8956	11/8/2011@5:35:27 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-82934

Method Code: 360-DI_LEACH-360

Analyst: Emerich, Rich W

Batch Open: 11/7/2011 12:37:36PM

Batch End:

Deionized Water Leaching Procedure

	Input Sample Lab ID (Analytical Method)	SDG	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~360-82934/1 N/A	N/A		10 g	100 mL	N/A	N/A	N/A		MB 360-82934/1-A
2	LCS~360-82934/2 N/A	N/A		10 g	100 mL	N/A	N/A	N/A		LCS 360-82934/2-A
3	360-37430-A-1 (300.0_28D)	N/A	Solid	10.52 g	100 mL	11/8/11	1_Day_RUSH -	1		360-37430-A-1-A
	360-37430-A-2 (300.0_28D)	N/A	Solid	10.19 g	100 mL	11/8/11	1_Day_RUSH -	1		360-37430-A-2-A

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-82934
Method Code: 360-DI_LEACH-360

Analyst: Emerich, Rich W

Batch Open: 11/7/2011 12:37:36PM
Batch End:

Batch Notes

Balance ID	P602095003
Blank Soil Lot Number	
Batch Comment	

Comments

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-82934
Method Code: 360-DI_LEACH-360

Analyst: Emerich, Rich W

Batch Open: 11/7/2011 12:37:36PM
Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
LCS 360-82934/2	W11J_IC_LCS_00001	100 mL	100 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Ion Chromatography QC Source Data Sheet—Inorganics Dept

Method (circle methods): IC 300_28D IC 300_48HR IC 9056_28D IC 9056_48HR

Date of Analytical Run: 11/7/11 Analyst's Initials: RWE

Working Curve Standard:

Manufacturer & Lot Number for Source Standard	Working Curve Standards Prepared On
Inorganic Ventures Lot E2-MEB394034	20 October 2011

QC Standard True Values for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.50	25.0	2.50	2.50	2.50	50.0
ICB	0	0	0	0	0	0
MB	0	0	0	0	0	0
LCS/LCSD	4.00	40.0	4.00	4.00	4.00	80.0
MS/MSD	1.00	10.0	1.00	1.00	1.00	20.0

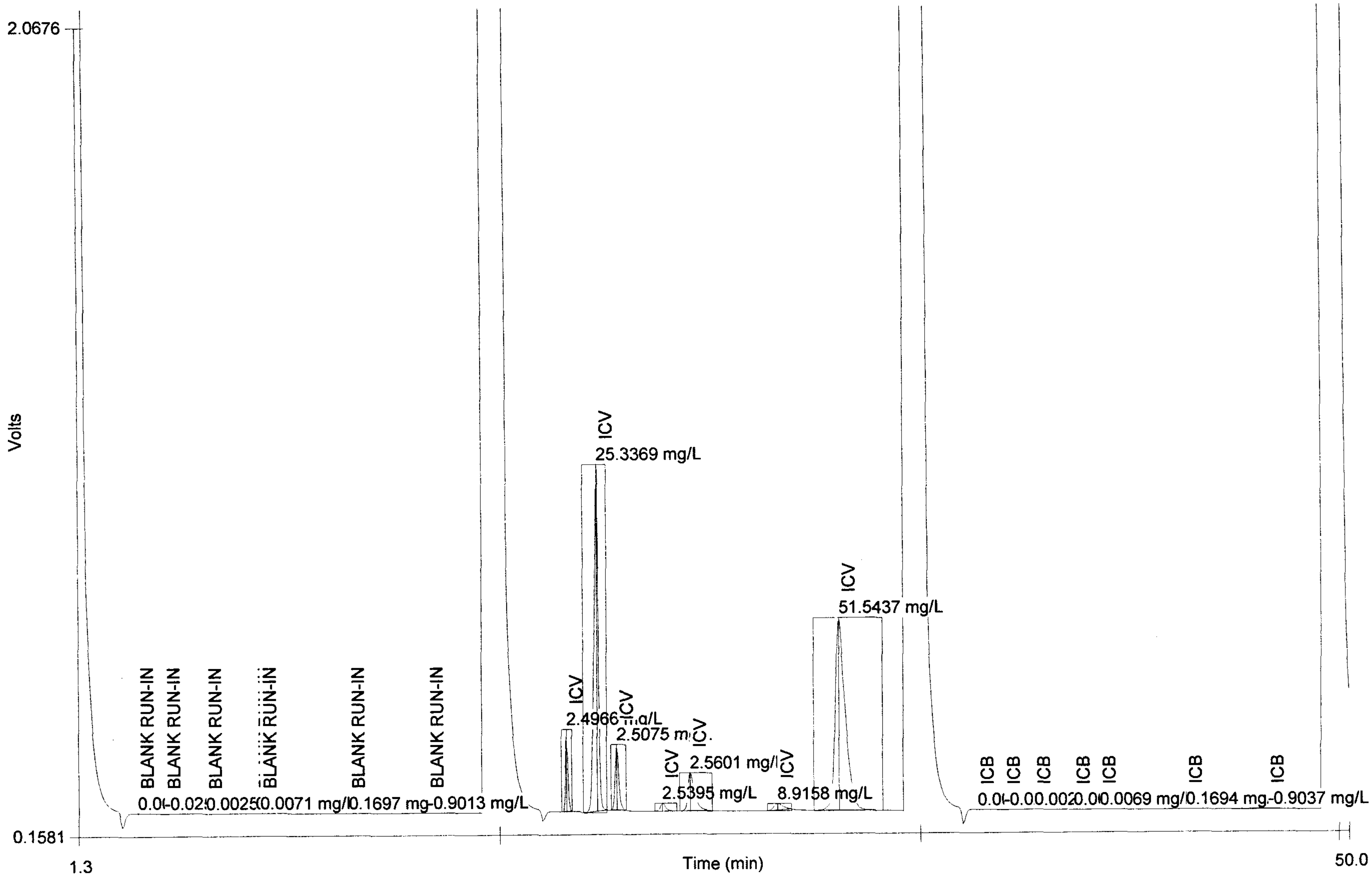
QC Standard Acceptable Recovery Ranges for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.25-2.75	22.5-27.5	2.25-2.75	2.25-2.75	2.25-2.75	45.0-55.0
ICB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
MB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
LCS/LCSD	3.40-4.60	34.0-46.0	3.40-4.60	3.40-4.60	3.40-4.60	68.0-92.0
MS/MSD	0.75-1.25	7.50-12.5	0.75-1.25	0.75-1.25	0.75-1.25	15.0-25.0

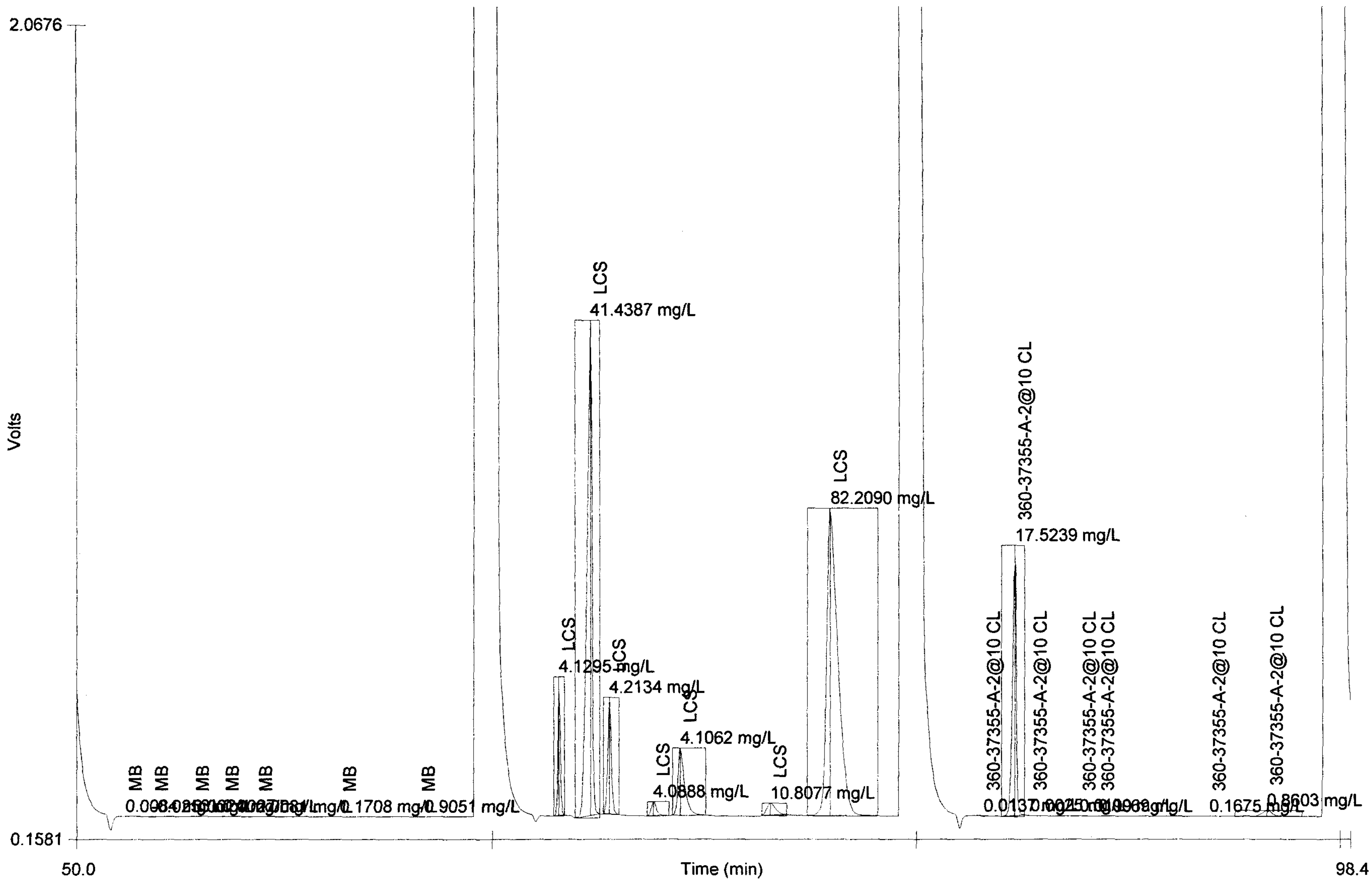
Current Method RLs (mg/L):

	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
	0.10	1.00	0.010	0.10	0.050	2.0

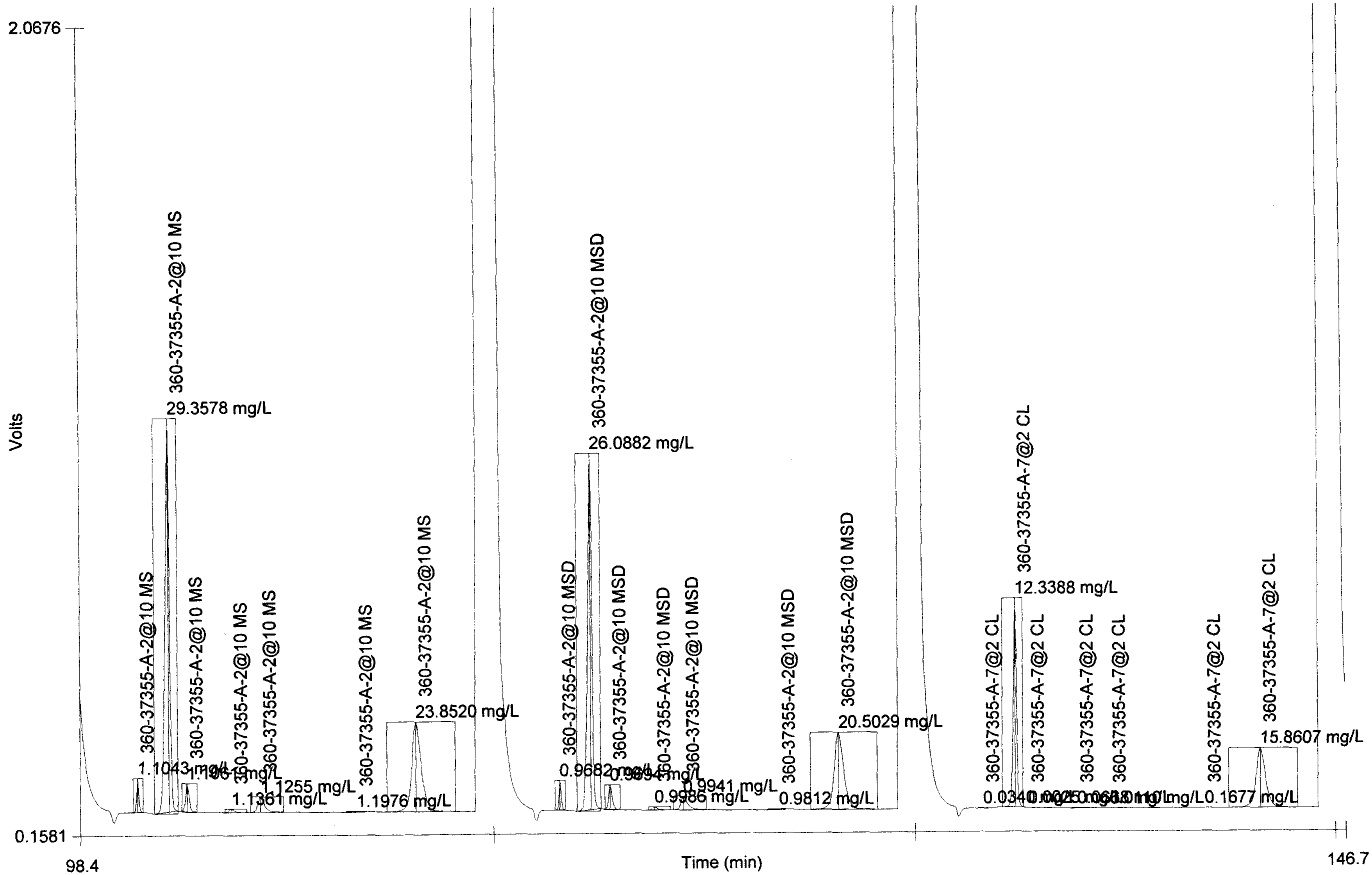
Channel 1 (Anions) : Set 1 of 22



Channel 1 (Anions) : Set 2 of 22



Channel 1 (Anions) : Set 3 of 22



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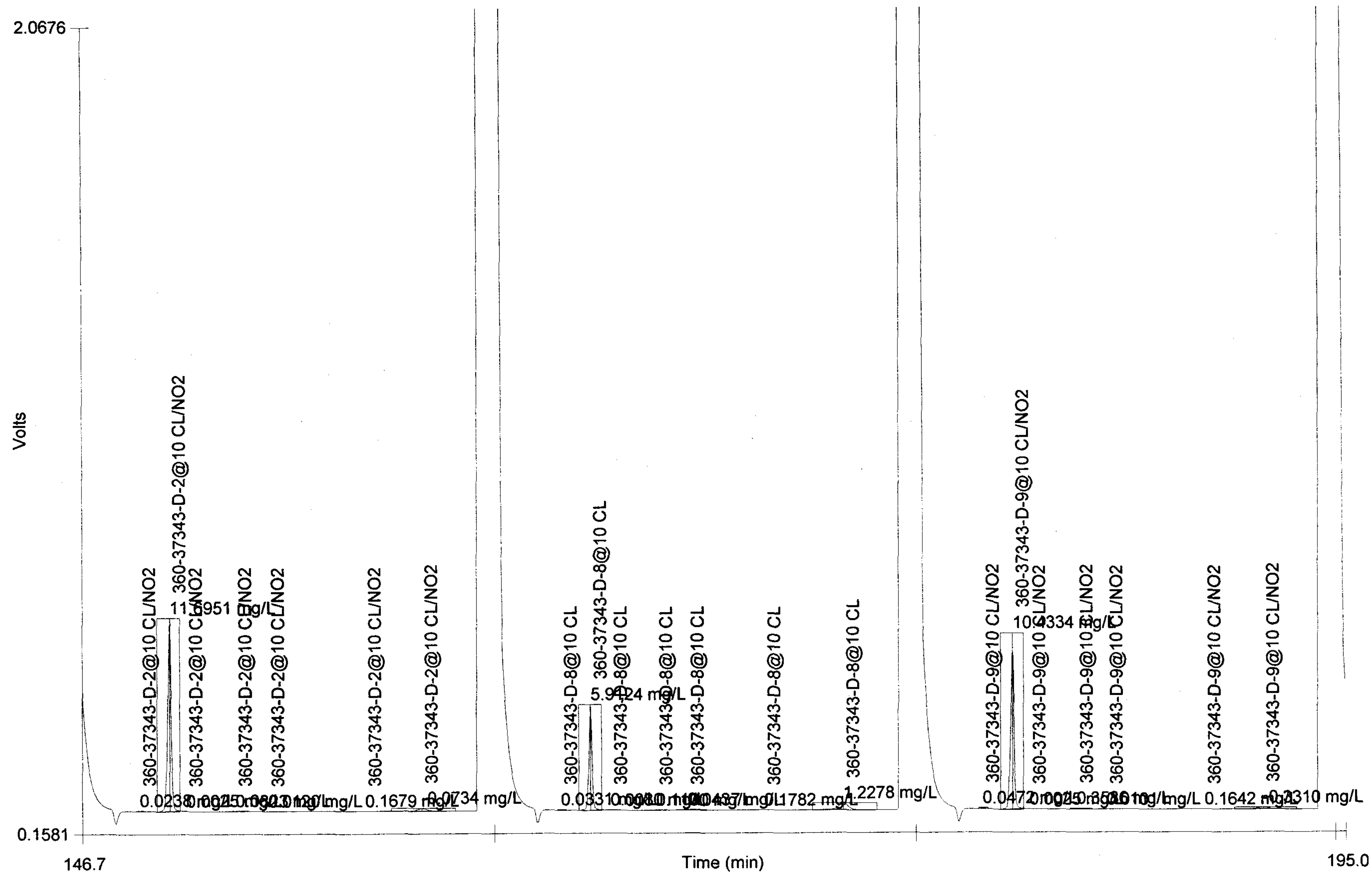

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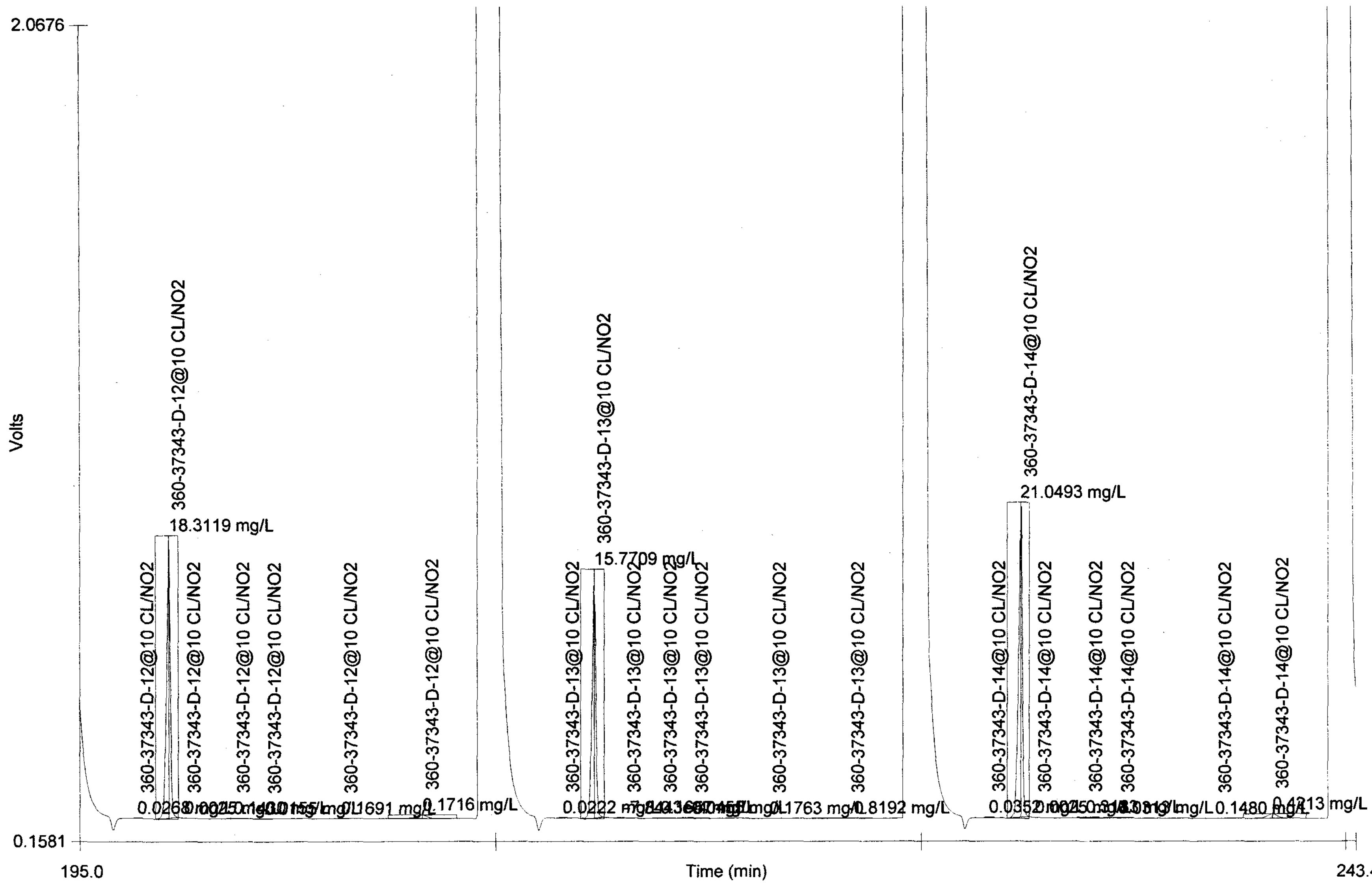

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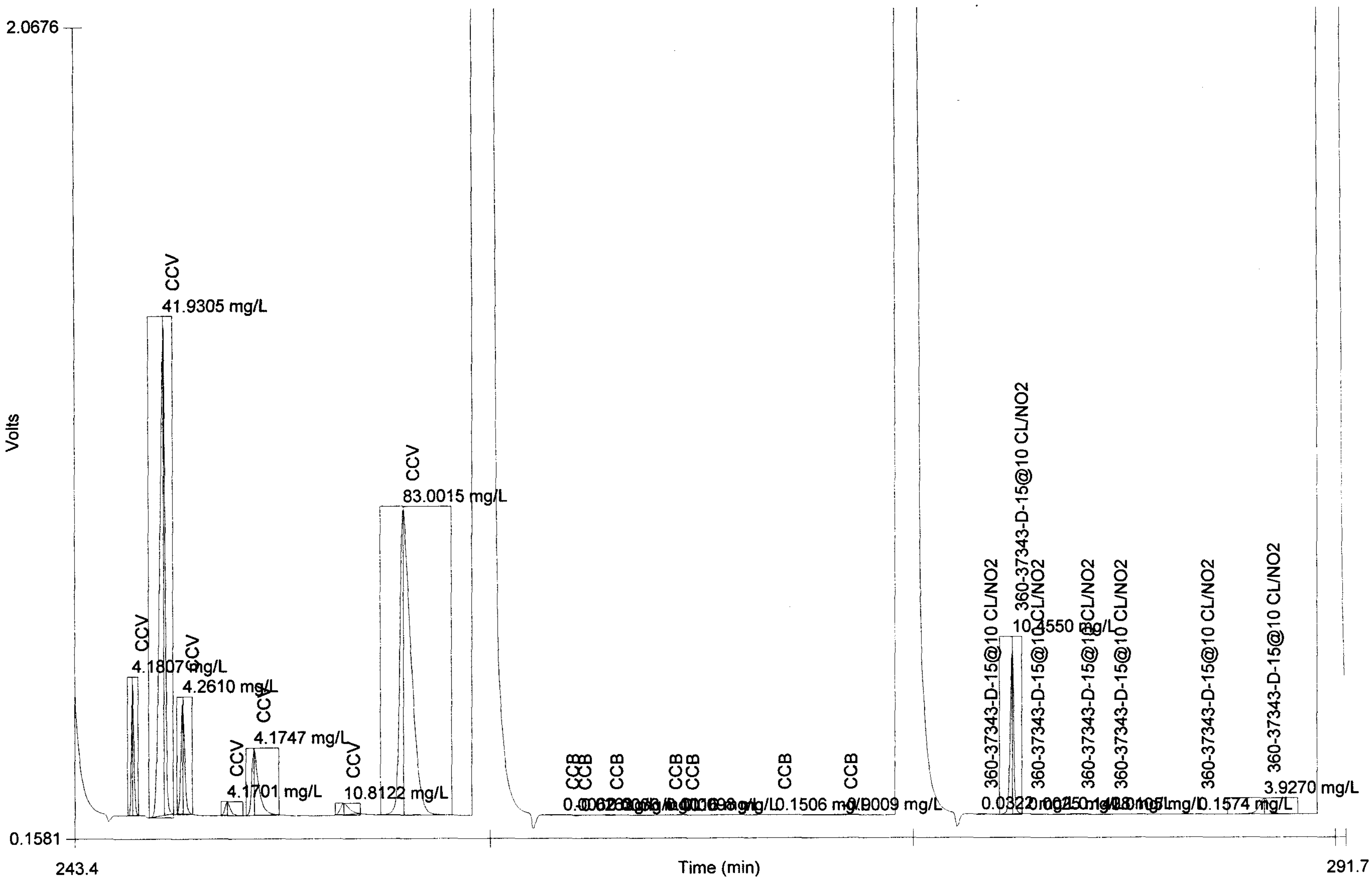

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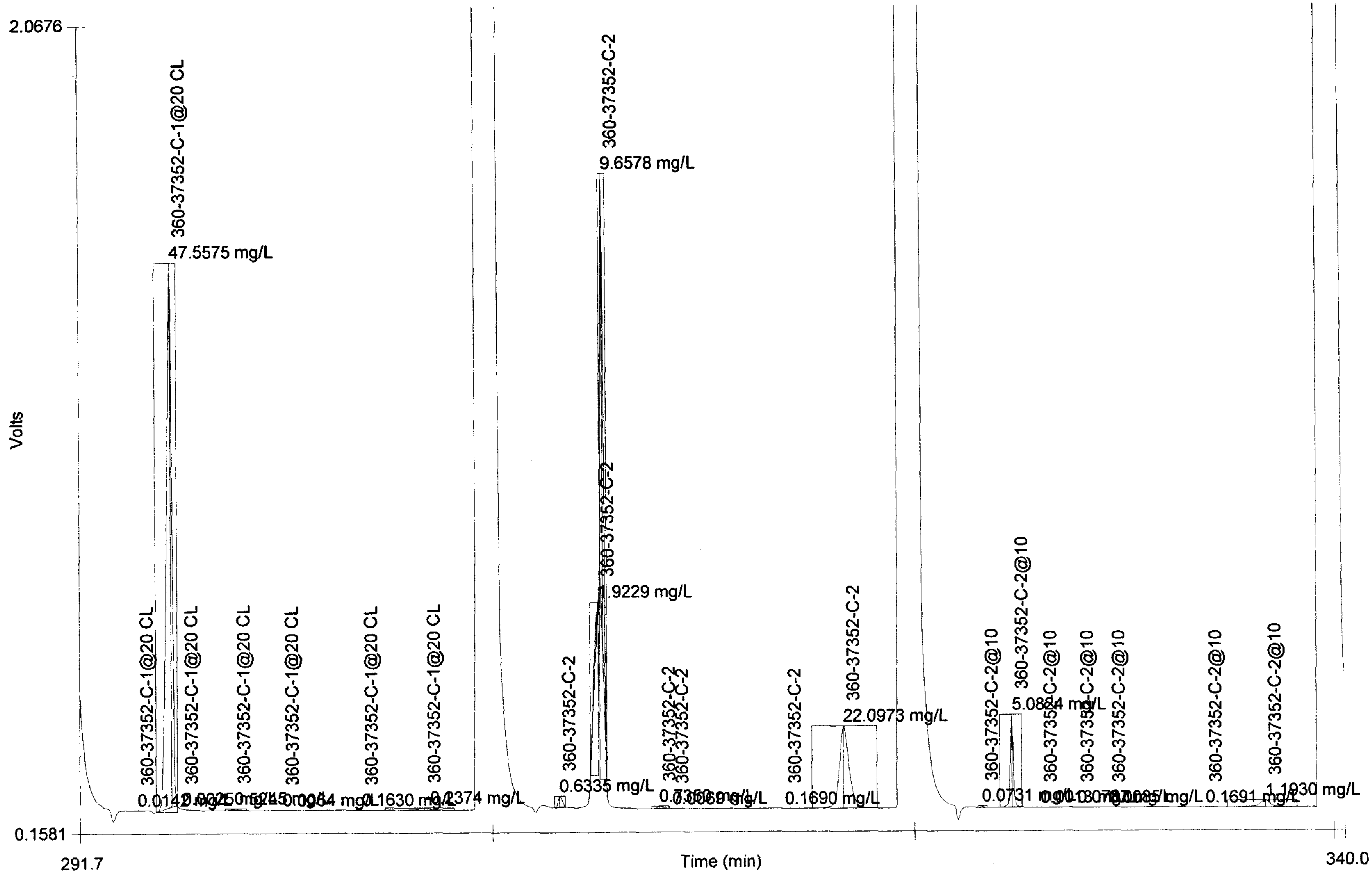

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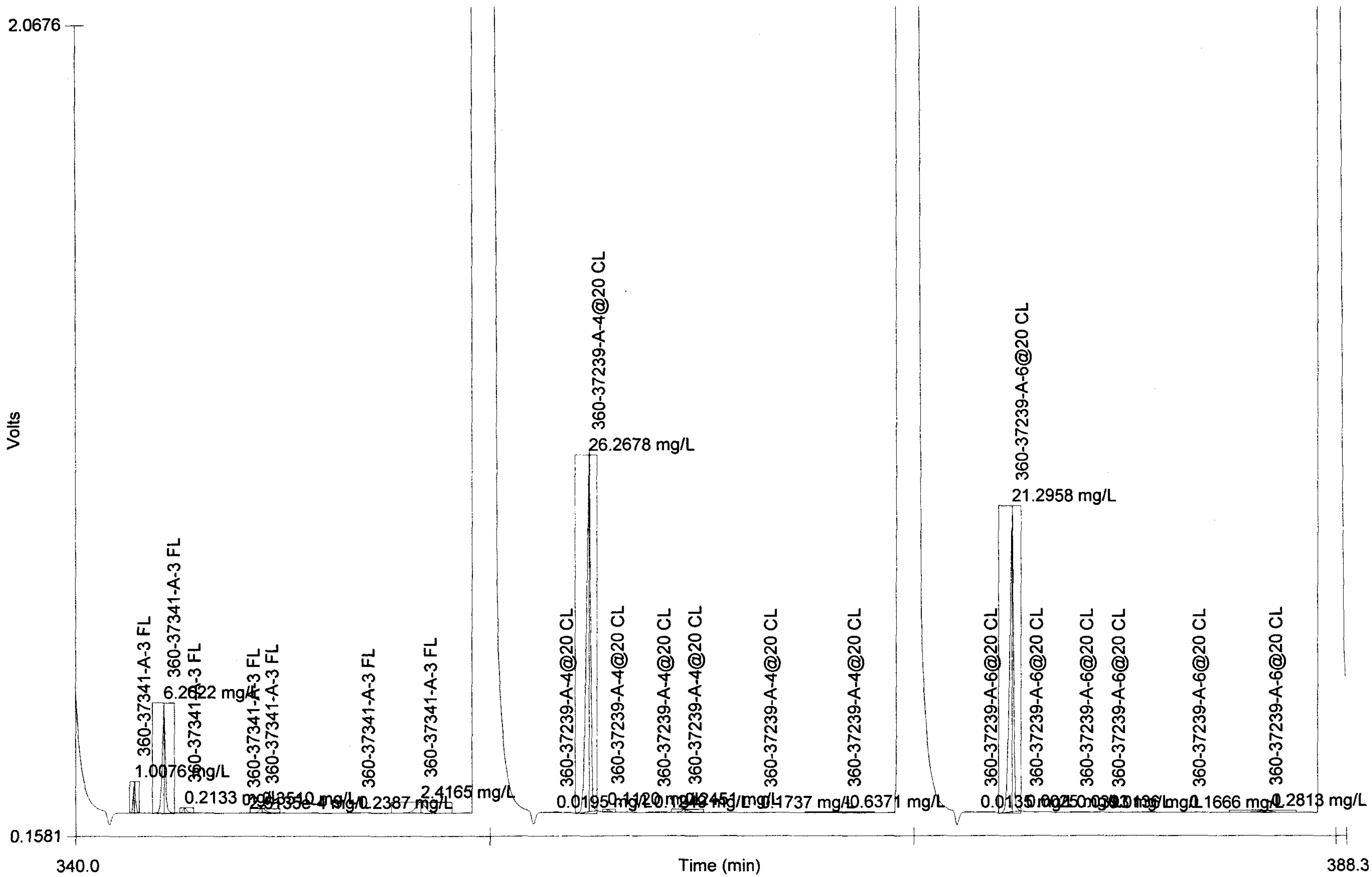
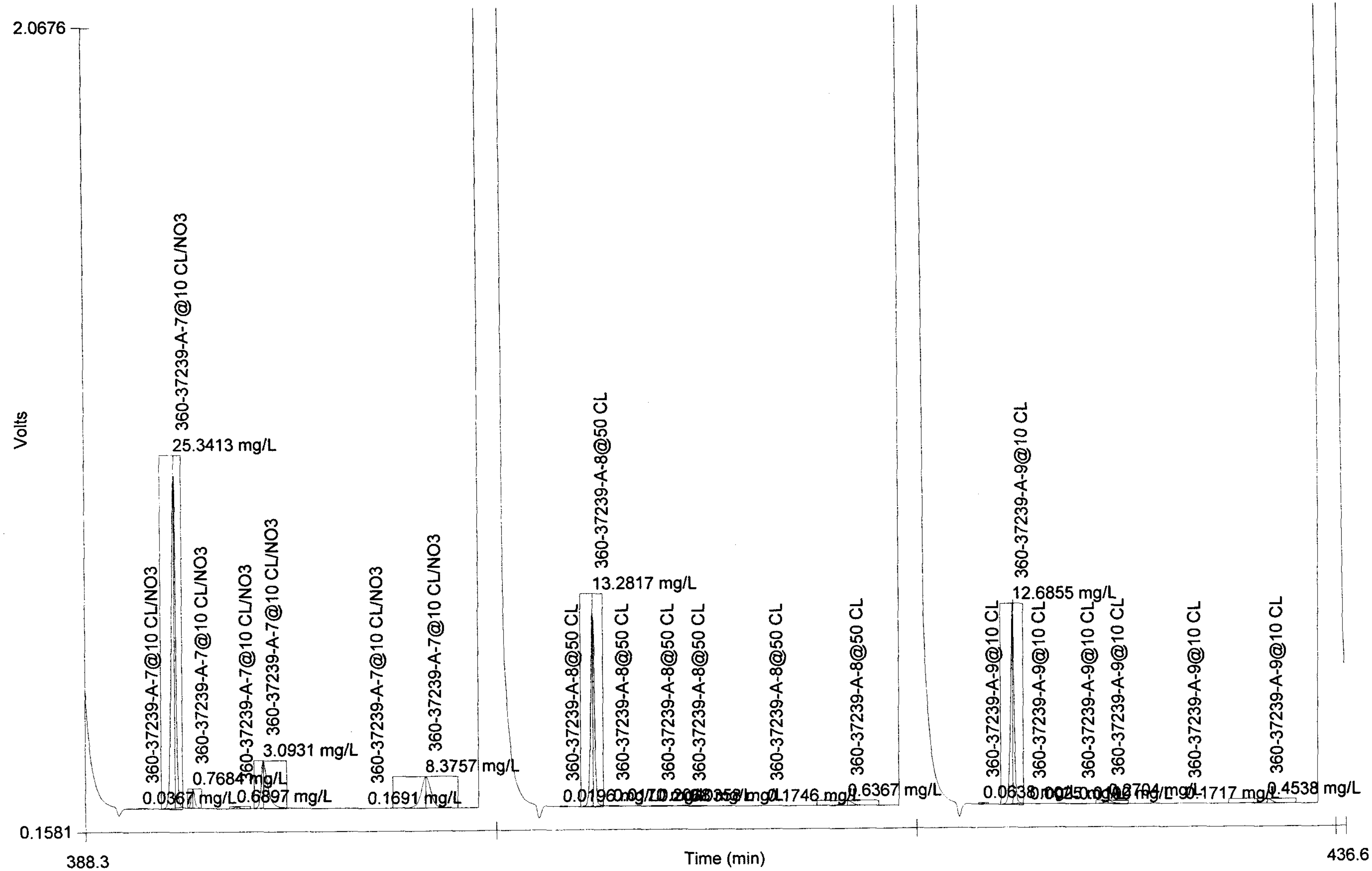


Channel 1 (Anions) : Set 9 of 22



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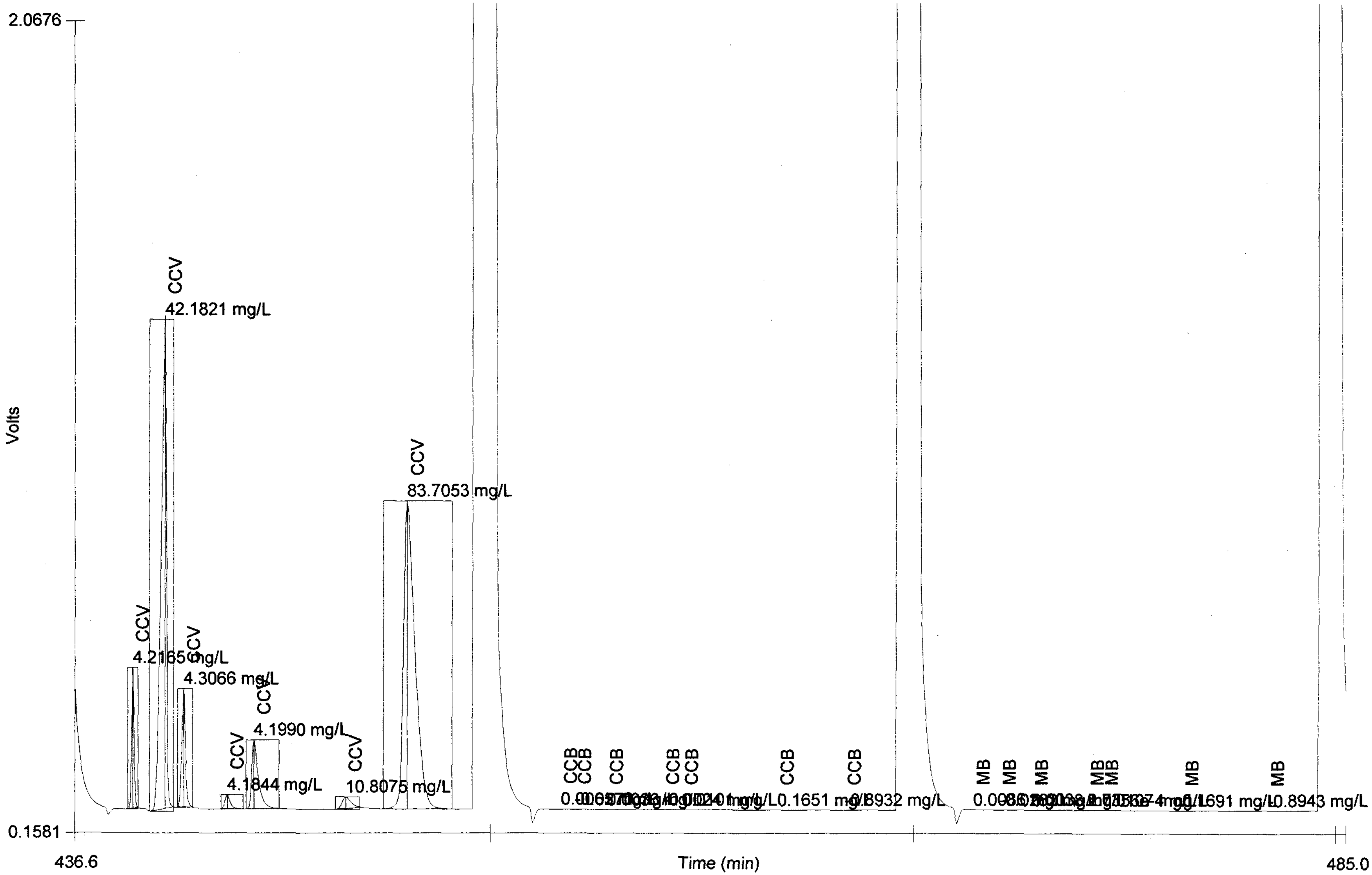
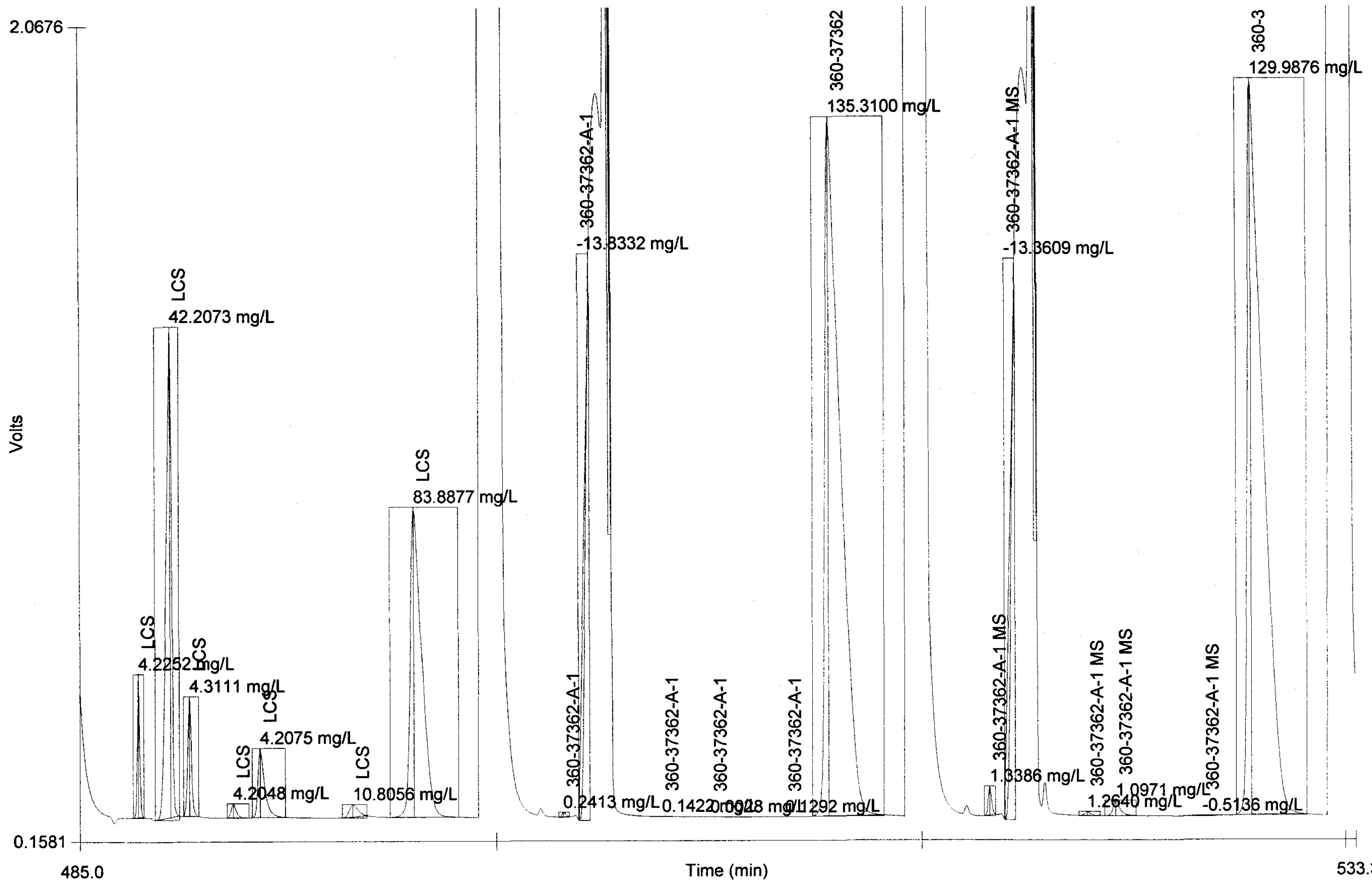


Channel 1 (Anions) : Set 11 of 22



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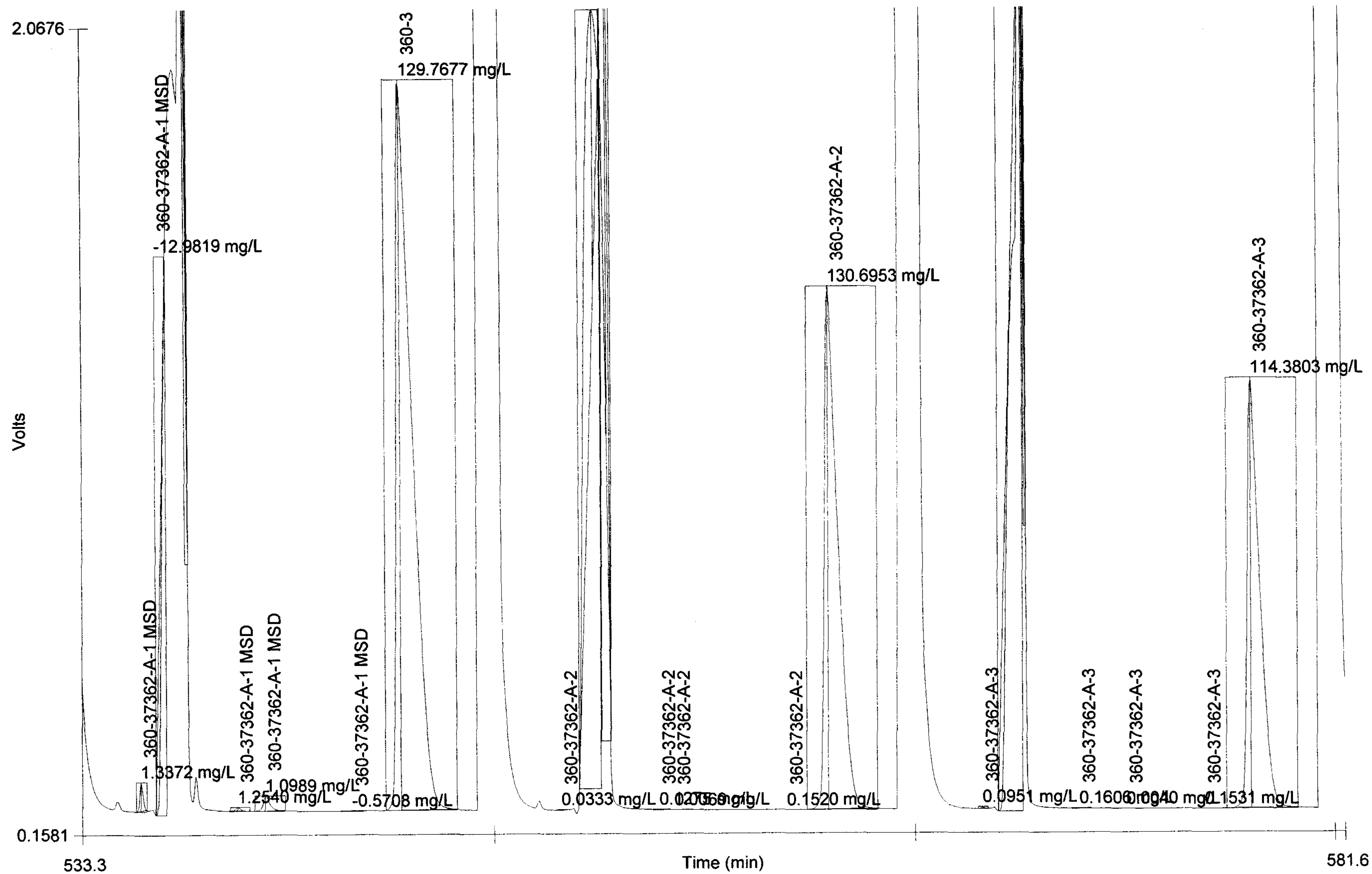

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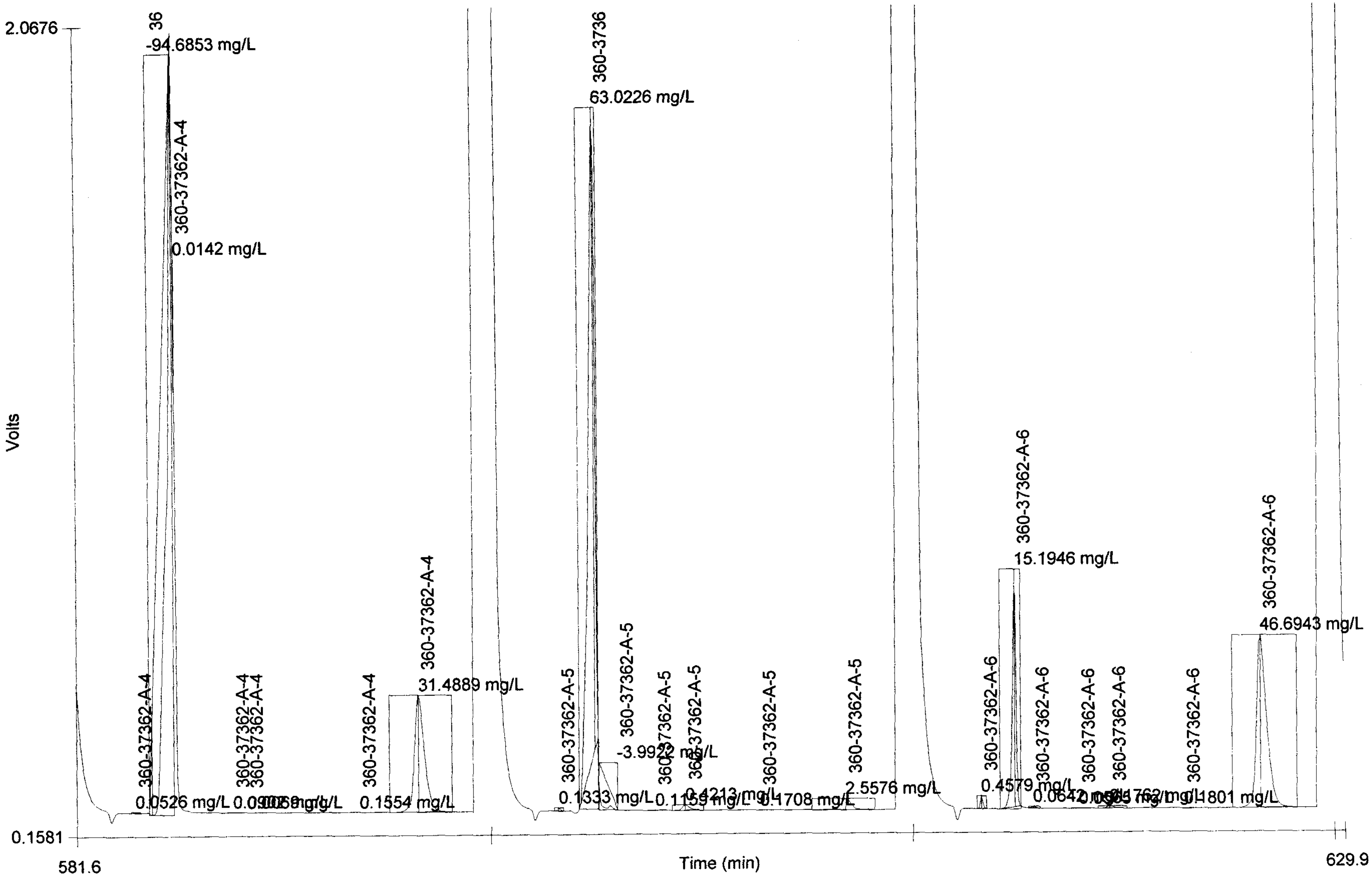

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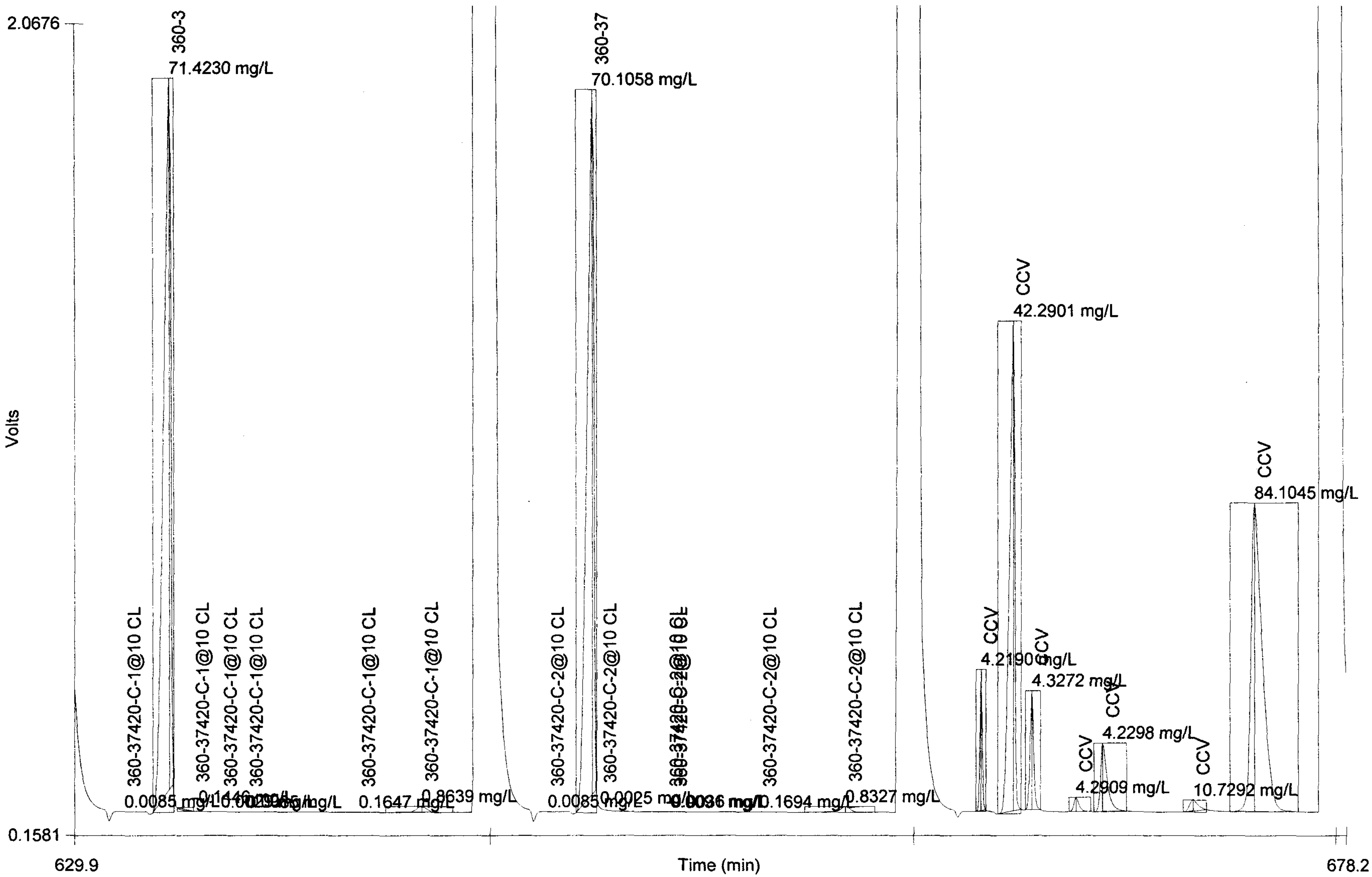

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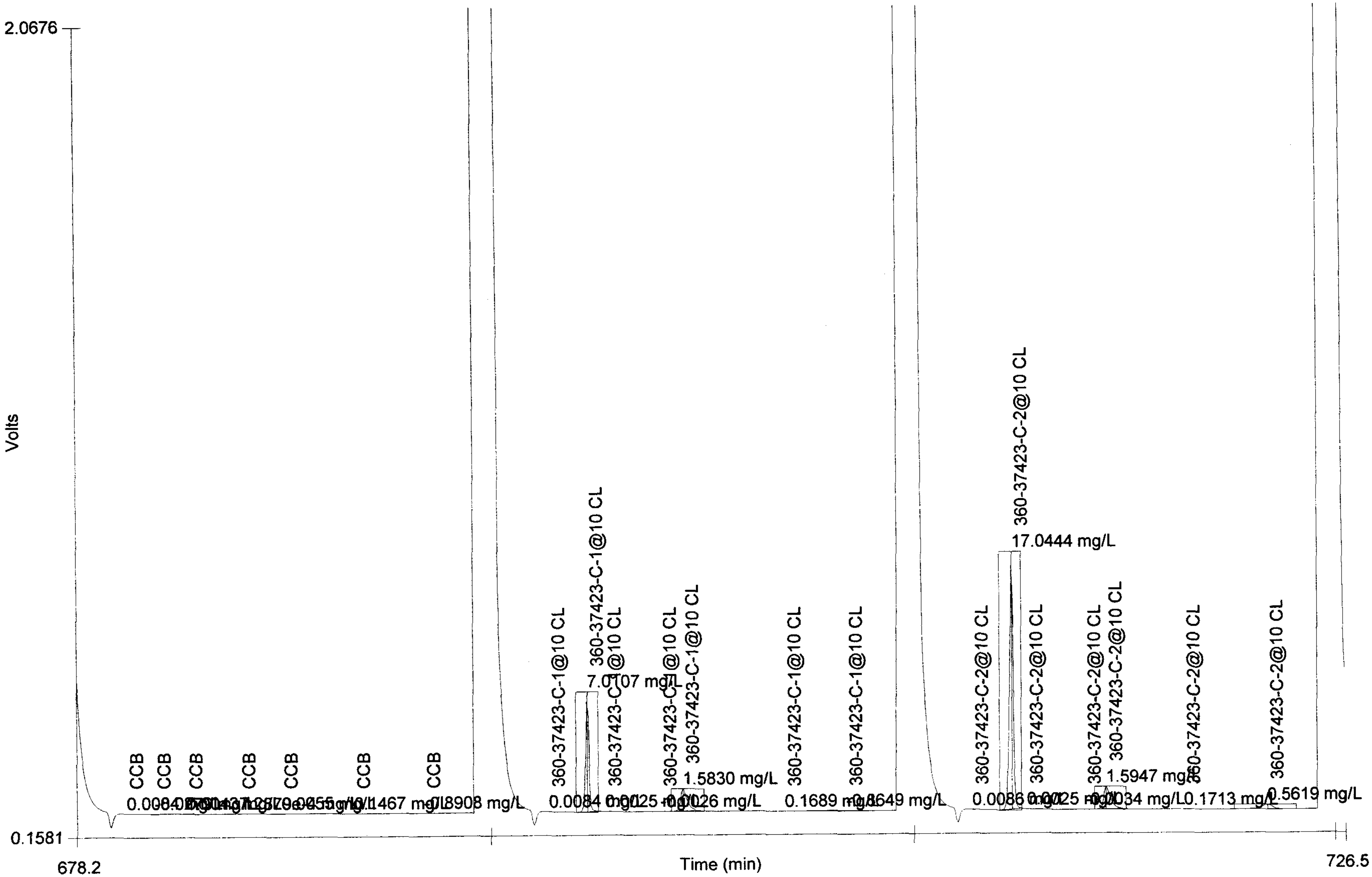

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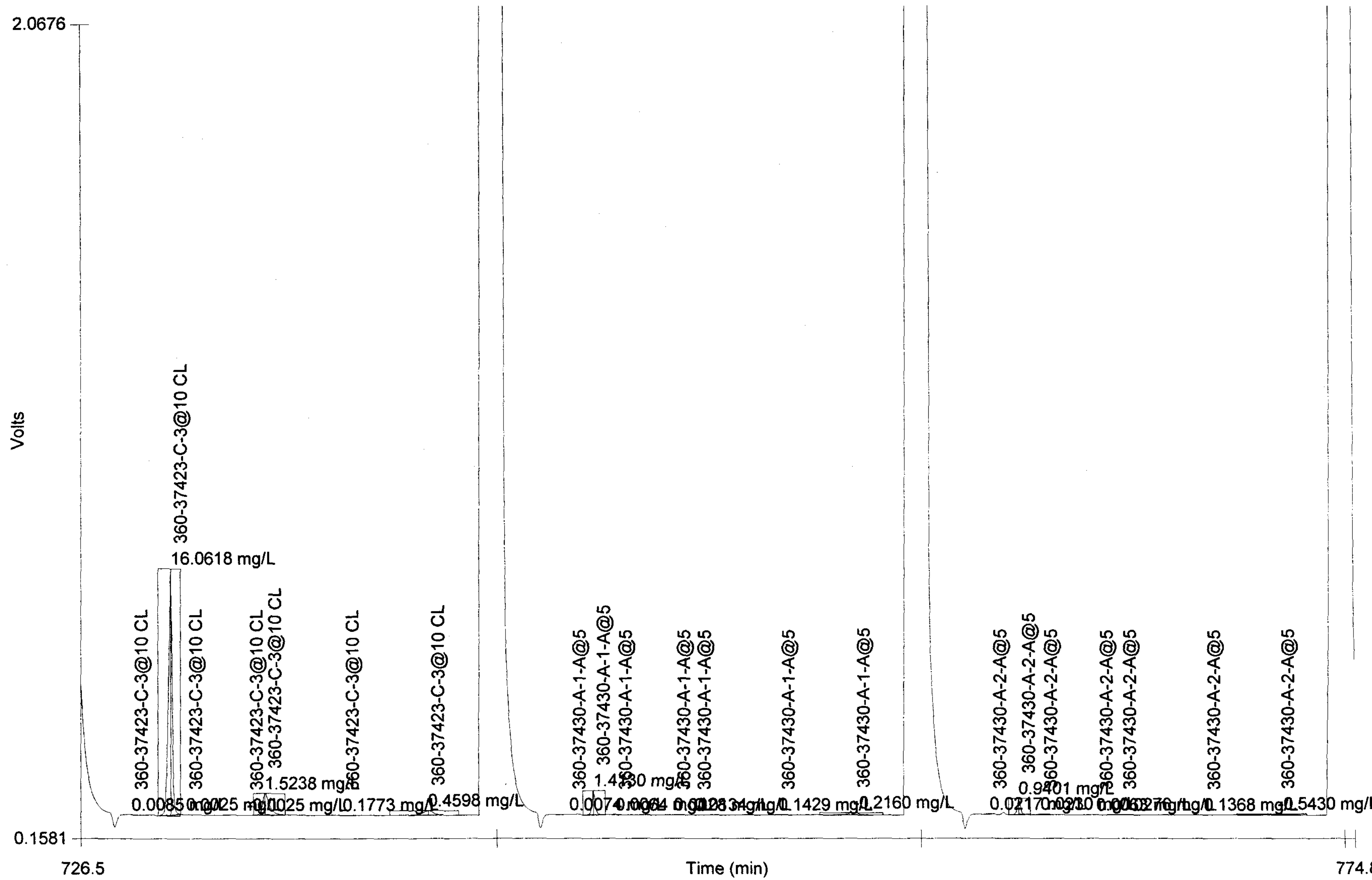
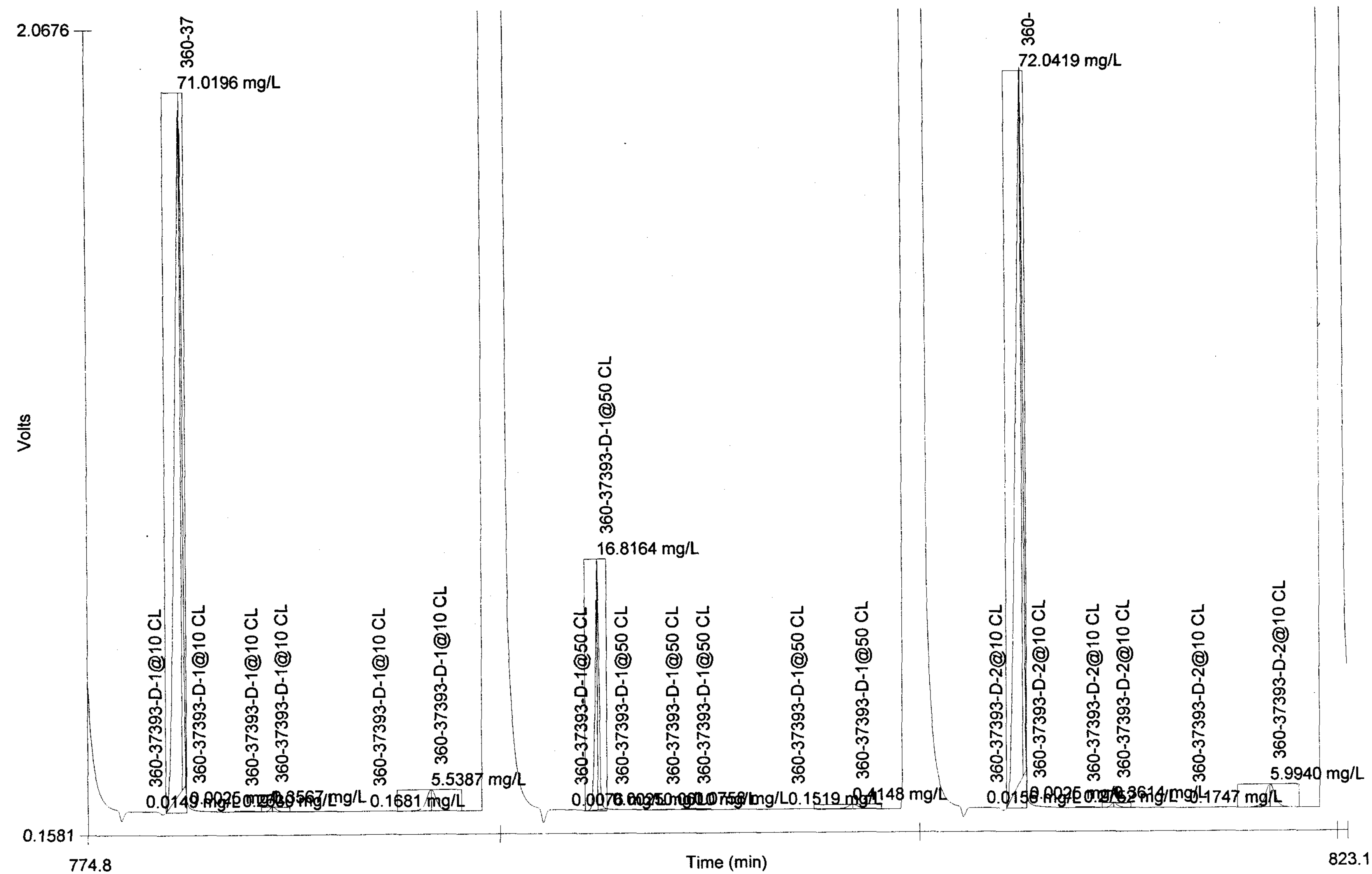


Author: EmerichR

Date : 11/8/2011

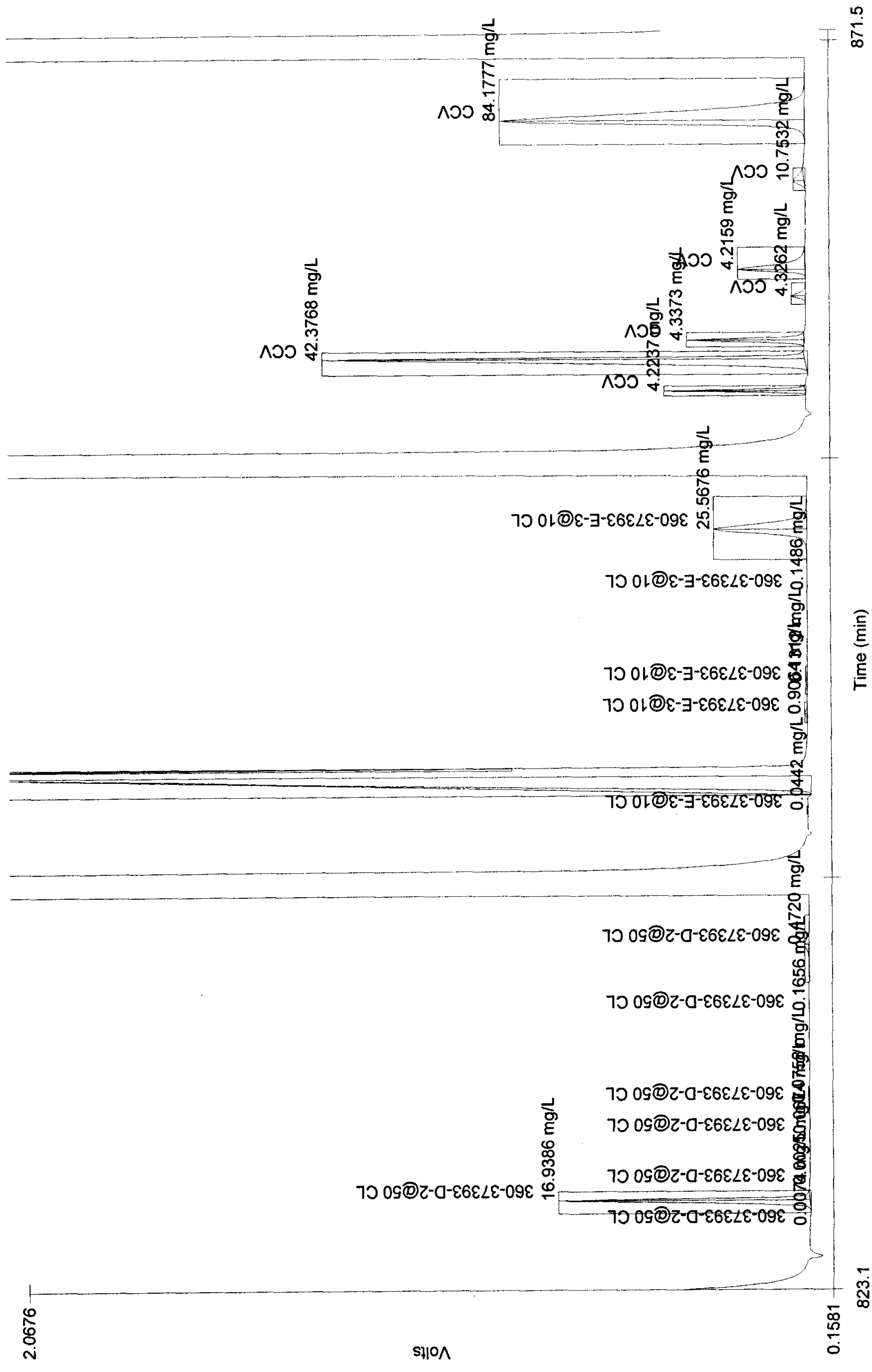
Channel 1 (Anions) : Set 17 of 22



Author: EmerichR

Channel 1 (Anions) : Set 18 of 22

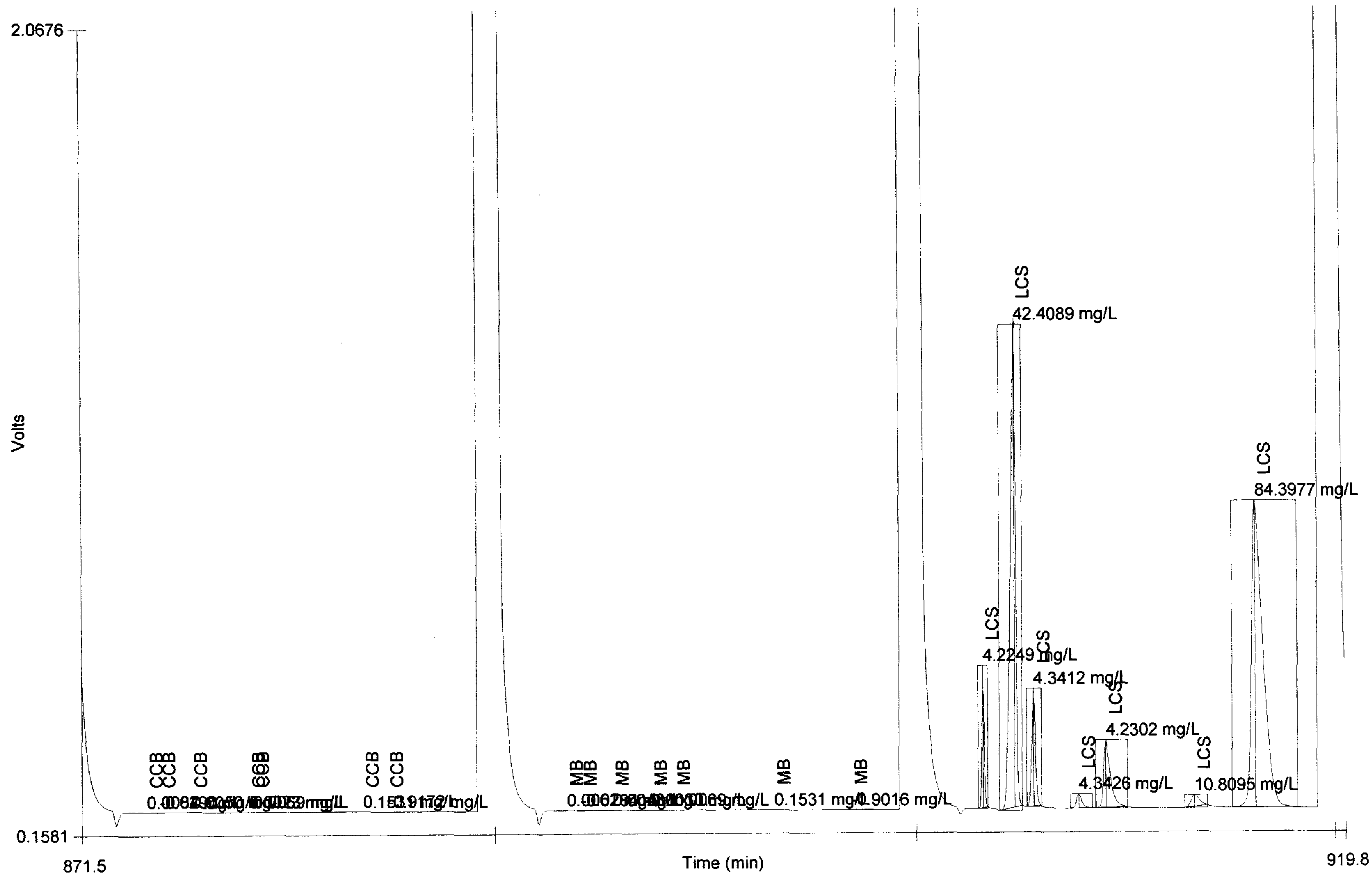
Date : 11/8/2011



Author: EmerichR

Date : 11/8/2011

Channel 1 (Anions) : Set 19 of 22



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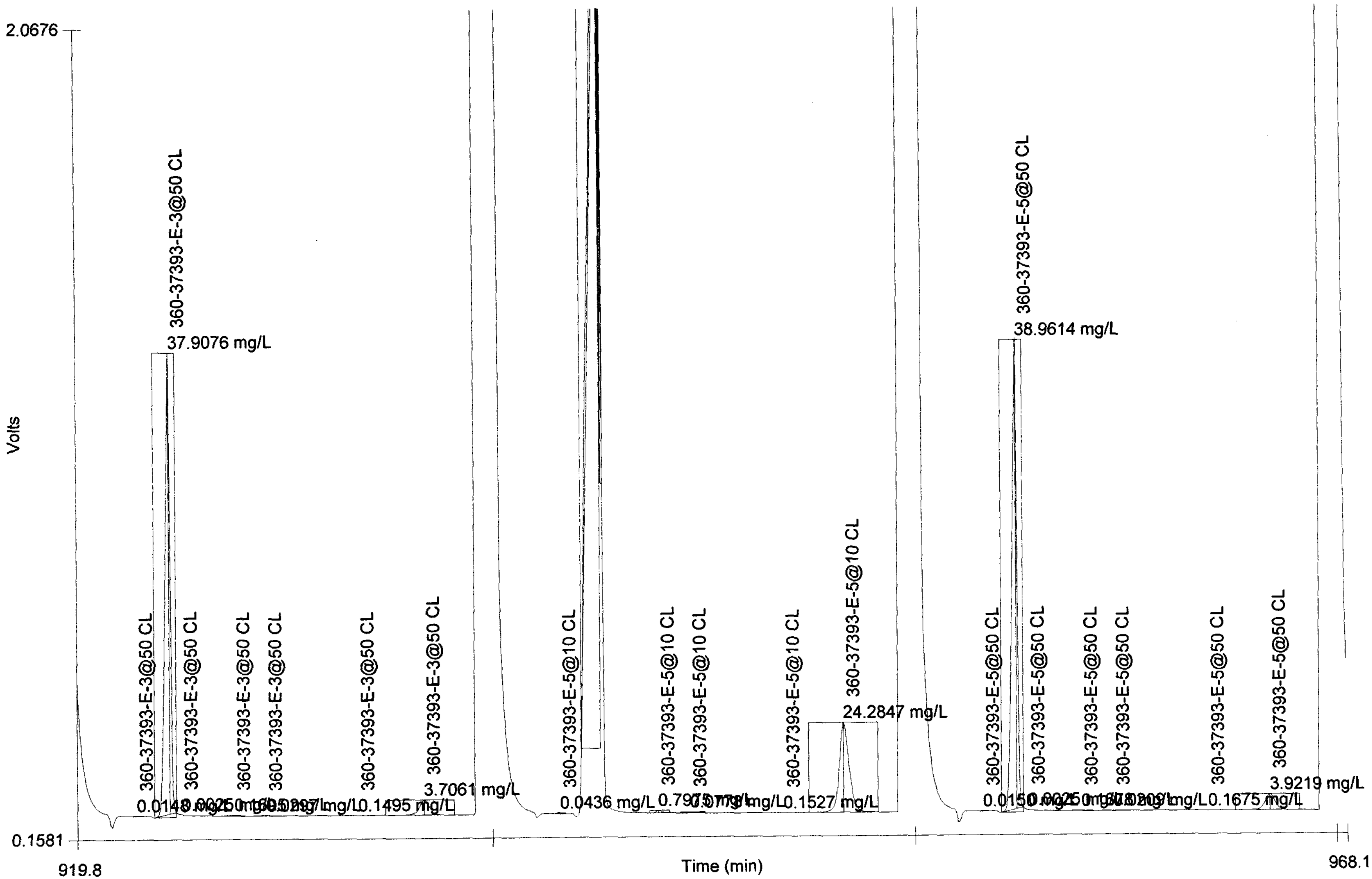

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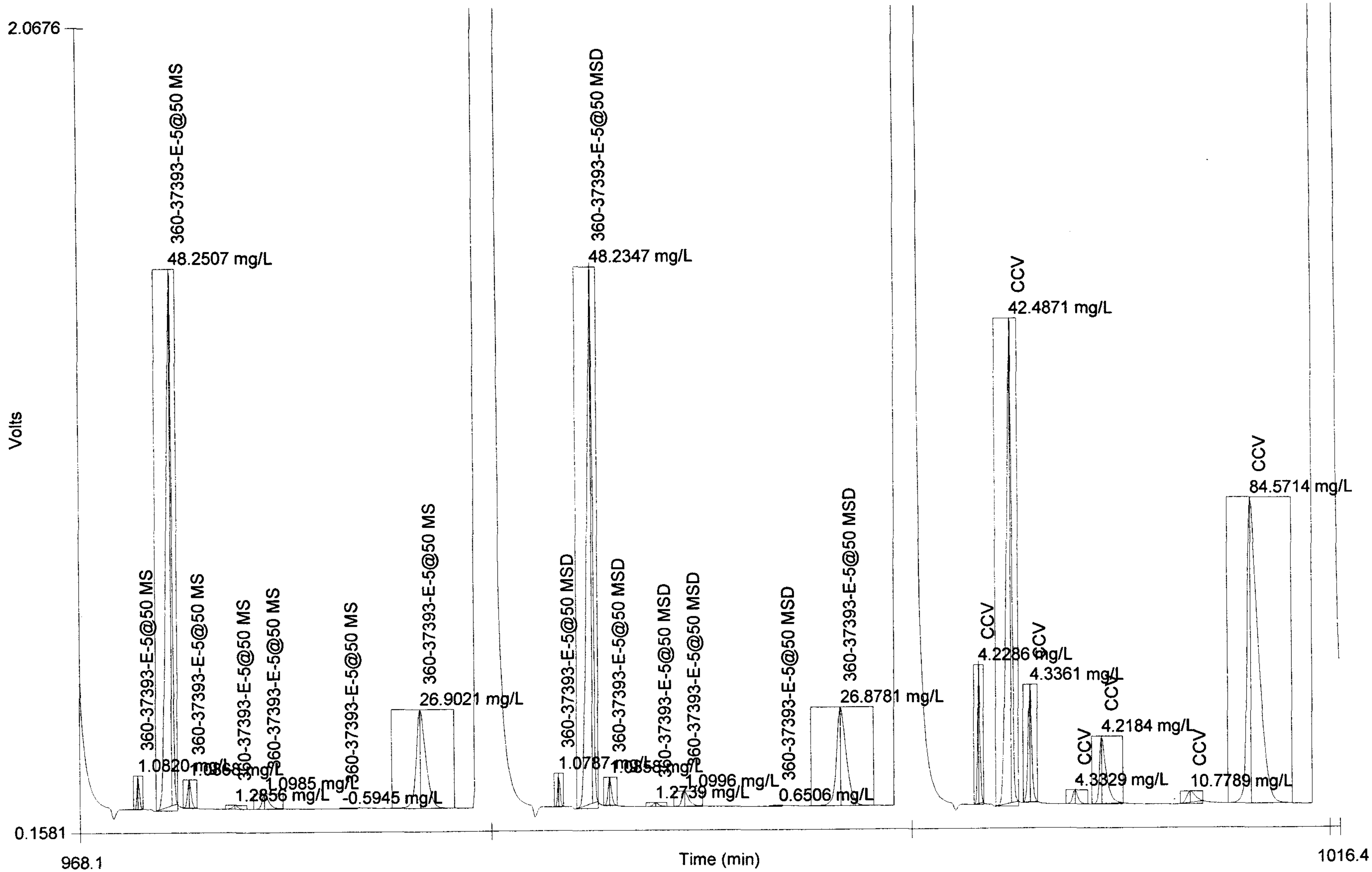

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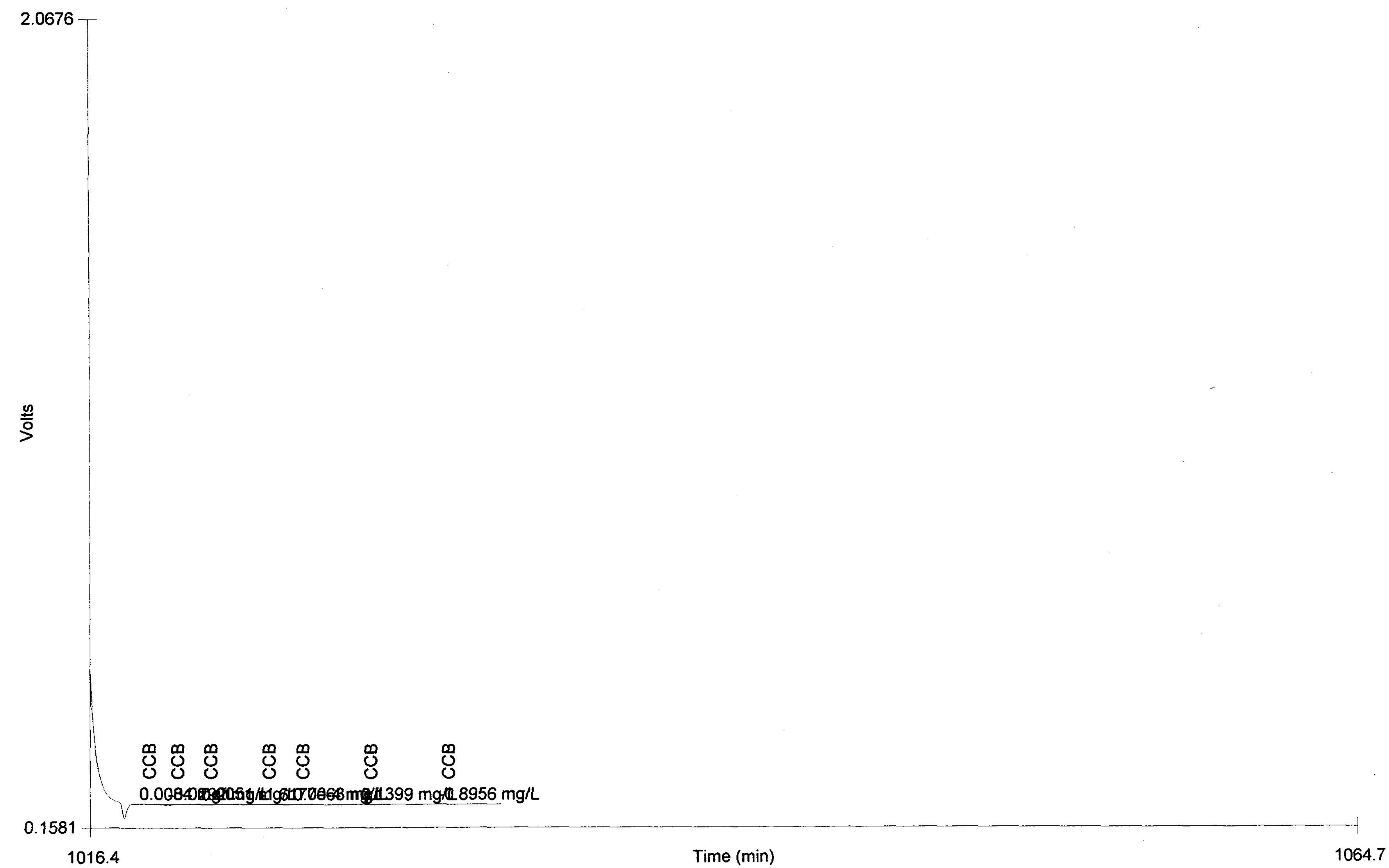
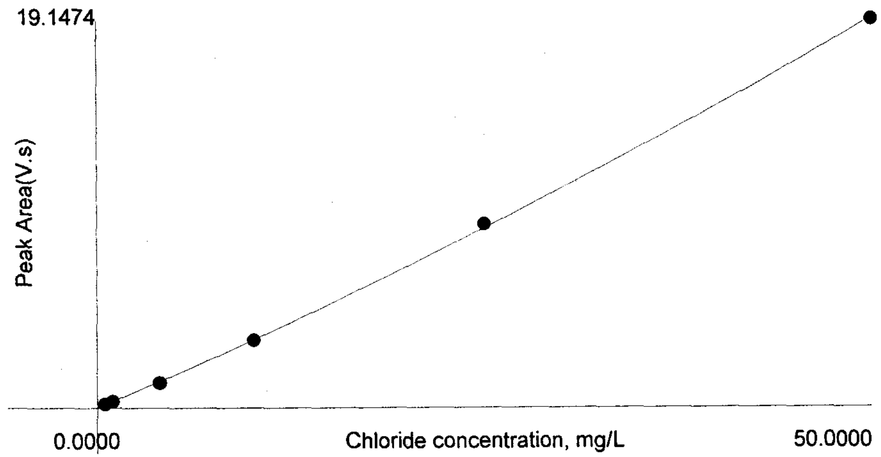


Table 1: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	19.1474	1.2825	0.5	11/2/2011	11:28:24 AM
2	25.0000	1	9.0851	0.7929	-2.4	11/2/2011	11:28:24 AM
3	10.0000	1	3.3344	0.3715	1.1	11/2/2011	11:28:24 AM
4	4.0000	1	1.2395	0.1514	6.5	11/2/2011	11:28:24 AM
5	1.0000	1	0.3203	0.0390	4.1	11/2/2011	11:28:25 AM
6	0.5000	1	0.1870	0.0226	-9.4	11/2/2011	11:28:25 AM

Figure 1: Chloride



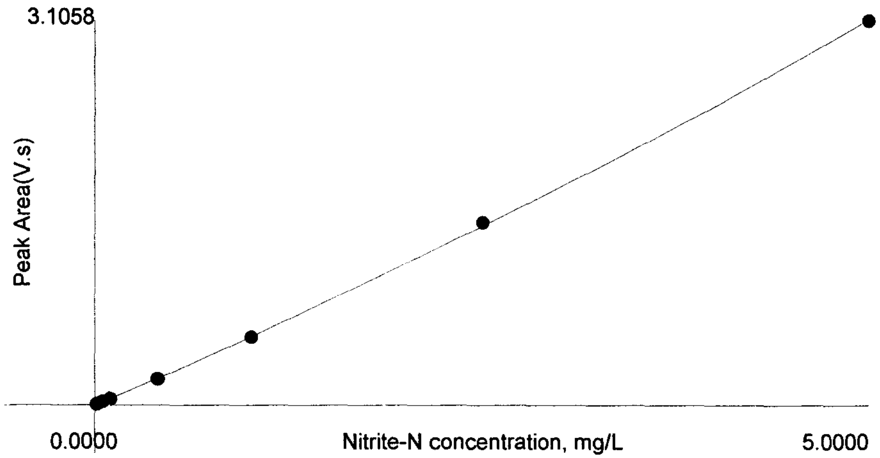
Area = 0.0012 * Conc^2 + 0.3244 * Conc + 0.0084
Conc = - 0.0224 * Area^2 + 3.0268 * Area - 0.0096
Correlation Coefficient (r) = 0.99998

1/x weighting

Table 2: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.1058	0.3141	0.4	11/2/2011	11:28:24 AM
2	2.5000	1	1.4779	0.1549	-1.9	11/2/2011	11:28:24 AM
3	1.0000	1	0.5495	0.0568	0.7	11/2/2011	11:28:24 AM
4	0.4000	1	0.2086	0.0214	3.7	11/2/2011	11:28:24 AM
5	0.1000	1	0.0500	0.0051	5.3	11/2/2011	11:28:25 AM
6	0.0500	1	0.0244	0.0025	5.2	11/2/2011	11:28:25 AM
7	0.0100	1	0.0049	5.2106e-4	-16.7	11/2/2011	11:28:25 AM

Figure 2: Nitrite-N



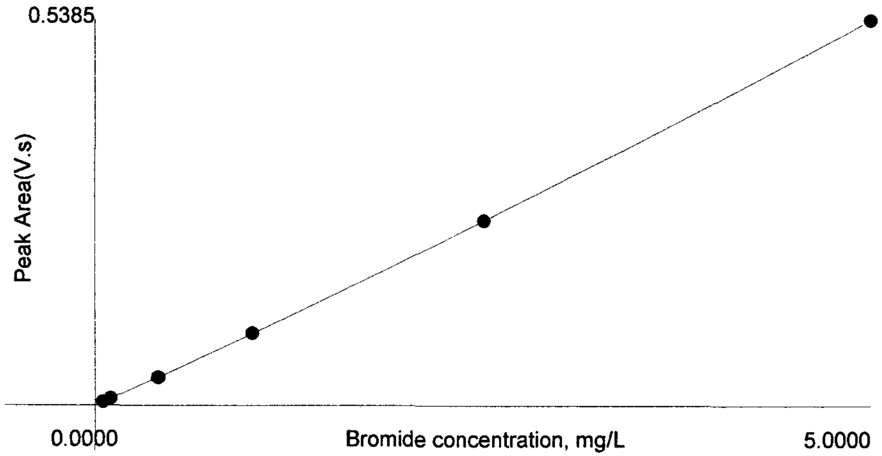
Area = 0.0173 * Conc^2 + 0.5374 * Conc - 0.0012
Conc = - 0.0760 * Area^2 + 1.8383 * Area + 0.0025
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 3: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.5385	0.0392	0.0	11/2/2011	11:28:24 AM
2	2.5000	1	0.2561	0.0184	0.0	11/2/2011	11:28:24 AM
3	1.0000	1	0.0998	0.0071	-0.6	11/2/2011	11:28:24 AM
4	0.4000	1	0.0386	0.0027	1.2	11/2/2011	11:28:24 AM
5	0.1000	1	0.0095	6.6002e-4	0.9	11/2/2011	11:28:25 AM
6	0.0500	1	0.0048	3.3481e-4	-1.6	11/2/2011	11:28:25 AM

Figure 3: Bromide



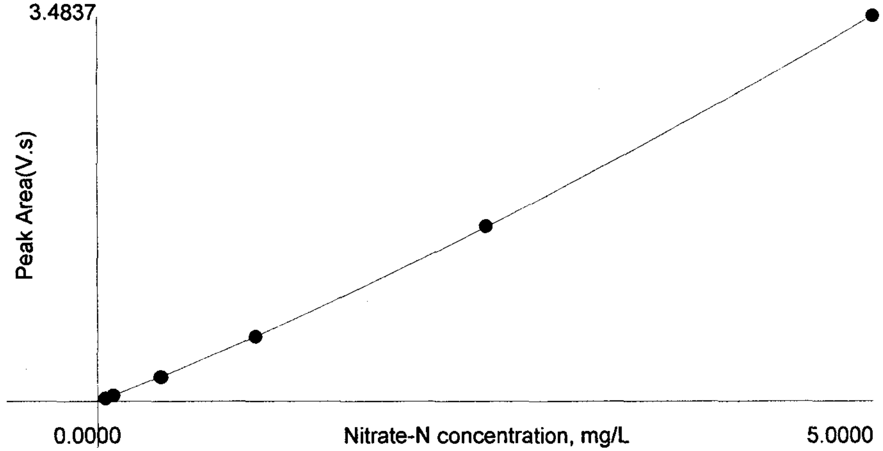
Area = 0.0021 * Conc^2 + 0.0973 * Conc - 1.9201e-4
Conc = - 1.7300 * Area^2 + 10.2083 * Area + 0.0025
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 4: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.4837	0.1962	0.1	11/2/2011	11:28:24 AM
2	2.5000	1	1.5712	0.0890	-0.7	11/2/2011	11:28:24 AM
3	1.0000	1	0.5790	0.0322	0.0	11/2/2011	11:28:24 AM
4	0.4000	1	0.2179	0.0119	2.4	11/2/2011	11:28:24 AM
5	0.1000	1	0.0519	0.0028	2.2	11/2/2011	11:28:25 AM
6	0.0500	1	0.0263	0.0014	-4.3	11/2/2011	11:28:25 AM

Figure 4: Nitrate-N



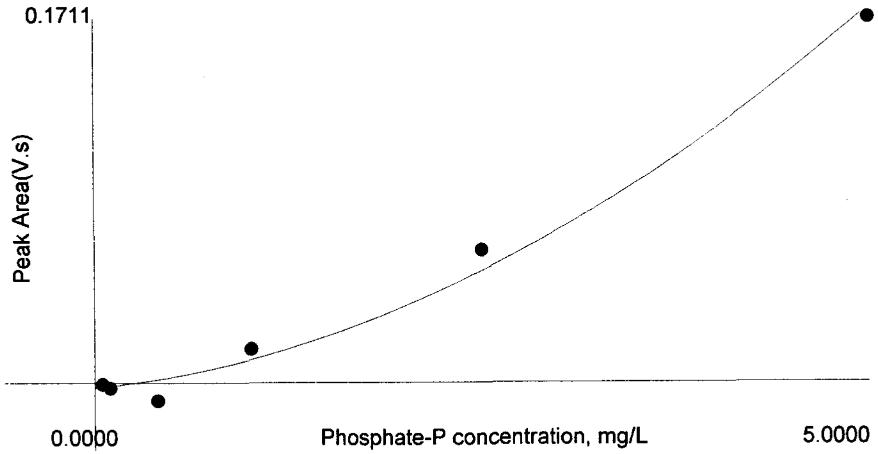
Area = 0.0291 * Conc^2 + 0.5526 * Conc - 0.0025
Conc = - 0.0931 * Area^2 + 1.7544 * Area + 0.0069
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 5: Phosphate-P

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.1711	0.0083	2.8	11/2/2011	11:28:24 AM
2	2.5000	1	0.0615	0.0031	-18.6	11/2/2011	11:28:24 AM
3	1.0000	1	0.0157	8.4557e-4	-45.1	11/2/2011	11:28:24 AM
4	0.4000	1	-0.0084	-2.4475e-4	653.2	11/2/2011	11:28:24 AM
5	0.1000	1	-0.0025	-8.9869e-5	-53.7	11/2/2011	11:28:25 AM
6	0.0500	1	-7.6213e-4	-1.7837e-5	62.9	11/2/2011	11:28:25 AM

Figure 5: Phosphate-P



Area = 0.0056 * Conc^2 + 0.0077 * Conc - 0.0025
Conc = - 26.2944 * Area^2 + 33.4578 * Area + 0.1691
Correlation Coefficient (r) = 0.99703

1/x weighting

Table 6: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	27.2566	0.8442	1.0	11/2/2011	11:28:24 AM
2	50.0000	1	12.5157	0.4470	-4.9	11/2/2011	11:28:24 AM
3	20.0000	1	4.4741	0.1672	-1.1	11/2/2011	11:28:24 AM
4	8.0000	1	1.6543	0.0605	8.8	11/2/2011	11:28:24 AM
5	2.0000	1	0.3980	0.0142	32.5	11/2/2011	11:28:25 AM
6	0.0500	1	0.2093	0.0075	-2.6	11/2/2011	11:28:25 AM

Figure 6: Sulfate

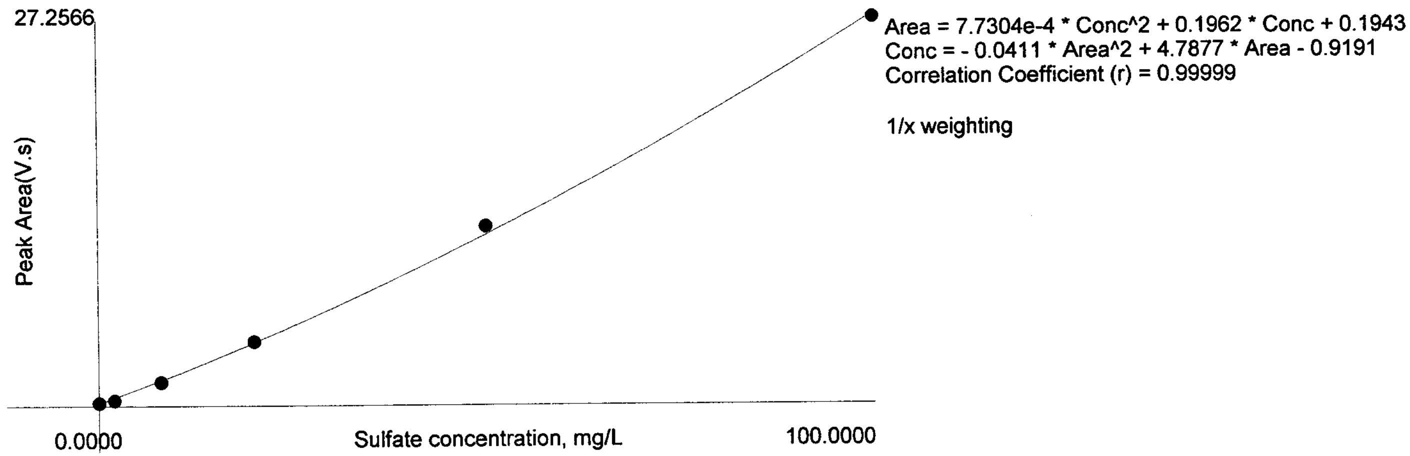
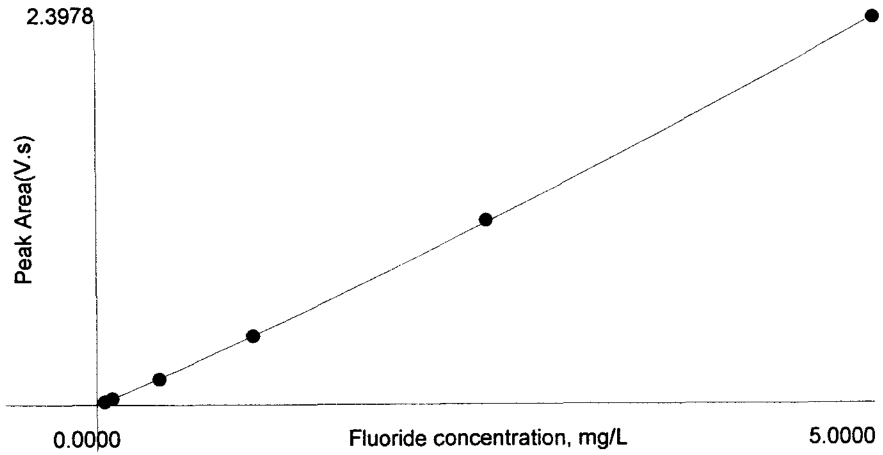


Table 7: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.3978	0.3834	0.3	11/2/2011	11:28:24 AM
2	2.5000	1	1.1331	0.1924	-1.3	11/2/2011	11:28:24 AM
3	1.0000	1	0.4237	0.0721	0.5	11/2/2011	11:28:24 AM
4	0.4000	1	0.1591	0.0275	3.8	11/2/2011	11:28:24 AM
5	0.1000	1	0.0382	0.0064	1.2	11/2/2011	11:28:24 AM
6	0.0500	1	0.0187	0.0033	-5.1	11/2/2011	11:28:25 AM

Figure 7: Fluoride



Area = 0.0131 * Conc^2 + 0.4160 * Conc - 0.0031
Conc = - 0.1236 * Area^2 + 2.3721 * Area + 0.0084
Correlation Coefficient (r) = 0.99999

1/x weighting

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield Job No.: 360-37362-1

SDG No.: 360-37362

Batch Number: 83017 Batch Start Date: 11/07/11 12:56 Batch Analyst: Emerich, Rich W

Batch Method: 300.0 Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11_IC_MS/MSD 00001	W11H_IC_ICV 00001	W11J_IC_LCS 00001		
ICV 360-83017/1		300.0		10 mL		1 mL			
CCV 360-83017/3		300.0		10 mL			10 mL		
LCS 360-83017/6		300.0		10 mL			10 mL		
360-37362-A-1 MS	MPW-3S-110211	300.0	T	10 mL	100 uL				
360-37362-A-1 MSD	MPW-3S-110211	300.0	T	10 mL	100 uL				
CCV 360-83017/15		300.0		10 mL			10 mL		

Batch Notes	

Basis	Basis Description
T	Total/NA

Shipping and Receiving Documents

TETRA TECH ISG
TtNUS, Information Systems Group

Completion Ticket

On 11/9/2011 at 3:02 PM the following files were submitted to Tetra Tech:

360-37362A1.txt, 360-37362A3.txt

If you need to identify this session at a later date refer to Ticket Key:

2011119_11753_ledd_TAWMA

You may print this page by clicking on the "Print This Page" button

Thank you for using the Data Checker, to upload more files click the "Upload/Check Files" link on navigation menu.

Print this Page | Back To Upload

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Login Sample Receipt Checklist

Client: Tetra Tech NUS Inc

Job Number: 360-37362-1
SDG Number: 360-37362

Login Number: 37362
List Source: TestAmerica Westfield
List Number: 1
Creator: Beaumier, Janine E

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

LABORATORY CHRONICLE - TestAmerica WESTFIELD

CLIENT: Tetra Tech
Report No: 360-37362
Project: 360-37362

Date Sampled: 11/2/11
Date Received: 11/3/11

GENERAL CHEMISTRY

Sample No.	Preserv.	Relinquised by	Received by	Date/Time	Reason for change
1	none	JB	RWS	11/3/11 1045	TAKEN FOR
2					ANALYSIS
3					
4					
5					
6					
A1		RWS	VA	11-3-11 1715	Return to
A2					Storage in
A3					Walk-in cooler
A4					
A5					
A6					
A1		JB	RWS	11-7-11 1220	TAKEN FOR
A2					RE-ANALYSIS
A3					
A4					
A5					
A6					
		RWS 11-7-11			

continued →

Extractions:
Metals ______
Cyanide ______
Misc. ______

Analysis:
Metals: ______
Cyanide ______
Mics.

cnfr\interncoc.xls

W-SR-010

LABORATORY CHRONICLE - TestAmerica WESTFIELD

CLIENT: Tetra Tech

Report No: 360 - 37362

Project: ✓

Date Sampled: 11-2-11

Date Received: 11-3-11

GENERAL CHEMISTRY

Sample No.	Preserv.	Relinquised by	Received by	Date/Time	Reason for change
A1	NONE	[illegible]	VA	11-7-11 1710	Returned to
A2					storage in
A3					walk-in cooler
A4					
A5					
A6					

Extractions:

Metals ________

Cyanide ________

Misc. ________

Analysis:

Metals: ________

Cyanide ________

Mics.

cnfr\interncoc.xls

W-SR-010

360-37362

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: ______

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other ______

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: Tetra Tech	Client Project Manager: Dev Murali	Site Contact: Stu Cameron	Lab Contact:	COC No: 010129
Address: 20251 Century Blvd Ste 200	Telephone: (301) 528-5552	Telephone: (703) 391-8389	Telephone: (413) 572-4000	1 of 1 COCs
City/State/Zip: Germantown MD, 20874	Email: Dev.Murali@TetraTech.com	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: (301) 528-5552		TAT if different from below ______ ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client ☐ Lab pickup ☐ Lab sampling ☐
Project Name: MRC Injection Project	Method of Shipment/Carrier:			
Project Number: 112IC03619-02	Shipping/Tracking No:			Job/SDG No:
PO#				

Sample Identification	Sample Date	Sample Time	Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C/Grab=G	Bromide	Sample Specific Notes / Special Instructions:
MPW-3S-110211	11/2/11	0835		X									X		N	G	X	
MPW-2S-110211	↓	0925		↓									↓		↓	↓	↓	
MPW-1S-110211	↓	1015		↓									↓		↓	↓	↓	
MPW-1I-110211	↓	1055		↓									↓		↓	↓	↓	
MPE-3I-110211	↓	1215		↓									↓		↓	↓	↓	
MPE-1S-110211	↓	1300		↓									↓		↓	↓	↓	

JB 11/3/11

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return to Client ☒ Disposal By Lab ☐ Archive For ______ Months

Special Instructions/QC Requirements & Comments:

3 Day turn around time 0.7°C w/ ice

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Tetra Tech	11-2-11/1400	[signature]	TA	11/3/11 09:50
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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Fed Ex Pr. Ov. 873935710739 0215

TAL 0018-1 (04/10)

ANALYTICAL REPORT

Job Number: 360-37706-1

Job Description: MRC-Block E Injection Wells

For:
Tetra Tech NUS Inc
Foster Plaza VII
661 Anderson Drive
Pittsburgh, PA 15220-2745

Attention: Chris Pike

Joseph A. Chimi Jr.

Approved for release.
Joe Chimi
Report Production Representative
12/6/2011 10:56 AM

Designee for
Lisa A Worthington
Project Manager II
lisa.worthington@testamericainc.com
12/06/2011

Results relate only to the items tested and the sample(s) as received by the laboratory. The test results in this report meet all NELAC requirements for accredited parameters, exceptions are noted in this report. Pursuant to NELAC, this report may not be reproduced except in full, and with written approval from the laboratory. TestAmerica Westfield Certifications and Approvals: MADEP MA014, RIDOH57, CTDPH 0494, VT DECWSD, NELAP NH DES 2539, NELAP NY 10843, NY ELAP 10843, North Carolina 647. Field sampling is performed under SOPs WE-FLD-001 and WE-FLD-002.

TestAmerica Laboratories, Inc.
TestAmerica Westfield Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085
Tel (413) 572-4000 Fax (413) 572-3707 www.testamericainc.com

Table of Contents

Table of Contents

I Christine Furcinite-Reynolds, as the designated Quality Assurance Officer, herby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (413) 572-4000 if there are any questions or problems with the enclosed electronic deliverables.

Signature: Christine Furcinite-Reynolds Title: QA Manager Date: 12/6/2011

Revision 8
ISG
08/10/10

CASE NARRATIVE

Client: Tetra Tech NUS Inc

Project: MRC-Block E Injection Wells

Report Number: 360-37706-1

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

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

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

RECEIPT

The samples were received on 11/17/2011; the samples arrived in good condition, properly preserved and on ice. The temperatures of the coolers at receipt were 0.1 and 0.3 C.

ANIONS (28 DAY HOLD TIME)

Samples MPE-1S-110911 (360-37706-1), MPE-1I-110911 (360-37706-2), MPE-2S-110911 (360-37706-3), MPE-2I-110911 (360-37706-4), MPE-3S-110911 (360-37706-5), MPE-3I-110911 (360-37706-6), MPW-1S-110911 (360-37706-7), MPW-1I-110911 (360-37706-8), MPW-2s-110911 (360-37706-9), MPN-1S-110911 (360-37706-10), MPN-2S-110911 (360-37706-11), MPN-2I-110911 (360-37706-12), OW1-B-110911 (360-37706-13), OW1-C-110911 (360-37706-14), MPN-1I-110911 (360-37706-15), E-MH10-SW-111011 (360-37706-16), G-IL-XI-SW-111011 (360-37706-17), I-XIIA-SW-111011 (360-37706-18), E-MH10-SW-111111 (360-37706-19), G-IL-X1-SW-111111 (360-37706-20), I-X11A-SW-111111 (360-37706-21), MPE-1S-111111 (360-37706-22), MPE-1I-111111 (360-37706-23), MPE-2S-111111 (360-37706-24), MPE-2I-111111 (360-37706-25), MPE-3S-111111 (360-37706-26), MPE-3I-111111 (360-37706-27), MPW-1S-111211 (360-37706-28), MPW-1I-111211 (360-37706-29), MPW-2S-111211 (360-37706-30), MPW-2I-111211 (360-37706-31), MPW-3S-111211 (360-37706-32), MPW-3I-111211 (360-37706-33), MPN-IS-111211 (360-37706-34), MPN-1I-111211 (360-37706-35), MPN-2S-111211 (360-37706-36), MPN-2I-111211 (360-37706-37), MPN-OW1B-111211 (360-37706-38), MPN-OW1C-111211 (360-37706-39), E-MH10-SW-111511 (360-37706-40), G-IL-X1-SW-111511 (360-37706-41), I-X11-SW-111511 (360-37706-42), MPE-1S-111511 (360-37706-43), MPE-1I-111511 (360-37706-44), MPE-2S-111511 (360-37706-45), MPE-3S-111511 (360-37706-46), MPE-3I-111511 (360-37706-47), MPE-2I-111511 (360-37706-48), MPW-1S-111611 (360-37706-49), MPW-1I-111611 (360-37706-50), MPW-2S-111611 (360-37706-51), MPW-2I-111611 (360-37706-52), MPW-3S-111611 (360-37706-53), MPW-3I-111611 (360-37706-54), OW1-B-111611 (360-37706-55), OW1-C-111611 (360-37706-56), MPN-1S-111611 (360-37706-57), MPN-1I-111611 (360-37706-58), MPN-2I-111611 (360-37706-59), MPN-2S-111611 (360-37706-60), MPN-2I-110911 (360-37706-61), MPW-3S-110911 (360-37706-62) and MPW-3I-110911 (360-37706-63) were analyzed for anions (28 day hold time) in accordance with EPA Method 300.0. The samples were analyzed on 11/21/2011, 11/22/2011, 11/24/2011, 11/29/2011, 11/30/2011, 12/01/2011, 12/03/2011 and 12/05/2011.

Samples MPW-1I-110911 (360-37706-8)[10X], MPN-1S-110911 (360-37706-10)[50X], OW1-B-110911 (360-37706-13)[20X], MPN-1I-110911 (360-37706-15)[200X], MPE-1I-111111 (360-37706-23)[10X], MPE-2I-111111 (360-37706-25)[10X], MPE-3I-111111 (360-37706-27)[10X], MPW-1I-111211 (360-37706-29)[50X], MPN-IS-111211 (360-37706-34)[100X], MPN-1I-111211 (360-37706-35) [100X], MPN-OW1B-111211 (360-37706-38)[100X], MPN-OW1C-111211 (360-37706-39)[100X], MPE-1I-111511 (360-37706-44)[100X], MPE-3I-111511 (360-37706-47)[100X], MPE-2I-111511 (360-37706-48)[100X], MPW-1I-111611 (360-37706-50)[100X], MPW-2I-111611 (360-37706-52)[100X], OW1-B-111611 (360-37706-55)[100X], OW1-C-111611 (360-37706-56)[100X], MPN-1S-111611 (360-37706-57) [100X] and MPN-1I-111611 (360-37706-58)[100X] required dilution prior to analysis due to high concentration. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

SAMPLE SUMMARY

Client: Tetra Tech NUS Inc

Job Number: 360-37706-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
360-37706-1	MPE-1S-110911	Water	11/09/2011 1200	11/17/2011 1055
360-37706-2	MPE-1I-110911	Water	11/09/2011 1223	11/17/2011 1055
360-37706-3	MPE-2S-110911	Water	11/09/2011 1250	11/17/2011 1055
360-37706-4	MPE-2I-110911	Water	11/09/2011 1320	11/17/2011 1055
360-37706-5	MPE-3S-110911	Water	11/09/2011 1350	11/17/2011 1055
360-37706-6	MPE-3I-110911	Water	11/09/2011 1351	11/17/2011 1055
360-37706-7	MPW-1S-110911	Water	11/09/2011 1600	11/17/2011 1055
360-37706-8	MPW-1I-110911	Water	11/09/2011 1603	11/17/2011 1055
360-37706-9	MPW-2s-110911	Water	11/09/2011 1605	11/17/2011 1055
360-37706-10	MPN-1S-110911	Water	11/09/2011 1715	11/17/2011 1055
360-37706-11	MPN-2S-110911	Water	11/09/2011 1730	11/17/2011 1055
360-37706-12	MPN-2I-110911	Water	11/09/2011 1740	11/17/2011 1055
360-37706-13	OW1-B-110911	Water	11/09/2011 1745	11/17/2011 1055
360-37706-14	OW1-C-110911	Water	11/09/2011 1750	11/17/2011 1055
360-37706-15	MPN-1I-110911	Water	11/09/2011 1720	11/17/2011 1055
360-37706-16	E-MH10-SW-111011	Water	11/10/2011 0935	11/17/2011 1055
360-37706-17	G-IL-XI-SW-111011	Water	11/10/2011 1025	11/17/2011 1055
360-37706-18	I-XIIA-SW-111011	Water	11/10/2011 1110	11/17/2011 1055
360-37706-19	E-MH10-SW-111111	Water	11/11/2011 1105	11/17/2011 1055
360-37706-20	G-IL-X1-SW-111111	Water	11/11/2011 1120	11/17/2011 1055
360-37706-21	I-X11A-SW-111111	Water	11/11/2011 1415	11/17/2011 1055
360-37706-22	MPE-1S-111111	Water	11/11/2011 1500	11/17/2011 1055
360-37706-23	MPE-1I-111111	Water	11/11/2011 1505	11/17/2011 1055
360-37706-24	MPE-2S-111111	Water	11/11/2011 1530	11/17/2011 1055
360-37706-25	MPE-2I-111111	Water	11/11/2011 1535	11/17/2011 1055
360-37706-26	MPE-3S-111111	Water	11/11/2011 1545	11/17/2011 1055
360-37706-27	MPE-3I-111111	Water	11/11/2011 1550	11/17/2011 1055
360-37706-28	MPW-1S-111211	Water	11/12/2011 1120	11/17/2011 1055
360-37706-29	MPW-1I-111211	Water	11/12/2011 1100	11/17/2011 1055
360-37706-30	MPW-2S-111211	Water	11/12/2011 1115	11/17/2011 1055
360-37706-31	MPW-2I-111211	Water	11/12/2011 1200	11/17/2011 1055
360-37706-32	MPW-3S-111211	Water	11/12/2011 1215	11/17/2011 1055
360-37706-33	MPW-3I-111211	Water	11/12/2011 1210	11/17/2011 1055
360-37706-34	MPN-IS-111211	Water	11/12/2011 1415	11/17/2011 1055
360-37706-35	MPN-1I-111211	Water	11/12/2011 1405	11/17/2011 1055
360-37706-36	MPN-2S-111211	Water	11/12/2011 1430	11/17/2011 1055
360-37706-37	MPN-2I-111211	Water	11/12/2011 1510	11/17/2011 1055
360-37706-38	MPN-OW1B-111211	Water	11/12/2011 1515	11/17/2011 1055
360-37706-39	MPN-OW1C-111211	Water	11/12/2011 1520	11/17/2011 1055
360-37706-40	E-MH10-SW-111511	Water	11/15/2011 1335	11/17/2011 1055
360-37706-41	G-IL-X1-SW-111511	Water	11/15/2011 1400	11/17/2011 1055
360-37706-42	I-X11-SW-111511	Water	11/15/2011 1415	11/17/2011 1055
360-37706-43	MPE-1S-111511	Water	11/15/2011 1515	11/17/2011 1055
360-37706-44	MPE-1I-111511	Water	11/15/2011 1520	11/17/2011 1055
360-37706-45	MPE-2S-111511	Water	11/15/2011 1525	11/17/2011 1055
360-37706-46	MPE-3S-111511	Water	11/15/2011 1550	11/17/2011 1055
360-37706-47	MPE-3I-111511	Water	11/15/2011 1555	11/17/2011 1055
360-37706-48	MPE-2I-111511	Water	11/15/2011 1600	11/17/2011 1055
360-37706-49	MPW-1S-111611	Water	11/16/2011 1000	11/17/2011 1055
360-37706-50	MPW-1I-111611	Water	11/16/2011 1005	11/17/2011 1055
360-37706-51	MPW-2S-111611	Water	11/16/2011 1010	11/17/2011 1055
360-37706-52	MPW-2I-111611	Water	11/16/2011 1030	11/17/2011 1055
360-37706-53	MPW-3S-111611	Water	11/16/2011 1035	11/17/2011 1055

SAMPLE SUMMARY

Client: Tetra Tech NUS Inc

Job Number: 360-37706-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
360-37706-54	MPW-3I-111611	Water	11/16/2011 1040	11/17/2011 1055
360-37706-55	OW1-B-111611	Water	11/16/2011 1250	11/17/2011 1055
360-37706-56	OW1-C-111611	Water	11/16/2011 1255	11/17/2011 1055
360-37706-57	MPN-1S-111611	Water	11/16/2011 1300	11/17/2011 1055
360-37706-58	MPN-1I-111611	Water	11/16/2011 1310	11/17/2011 1055
360-37706-59	MPN-2I-111611	Water	11/16/2011 1315	11/17/2011 1055
360-37706-60	MPN-2S-111611	Water	11/16/2011 1320	11/17/2011 1055
360-37706-61	MPN-2I-110911	Water	11/09/2011 1625	11/17/2011 1055
360-37706-62	MPW-3S-110911	Water	11/09/2011 1631	11/17/2011 1055
360-37706-63	MPW-3I-110911	Water	11/09/2011 1635	11/17/2011 1055

EXECUTIVE SUMMARY - Detections

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
360-37706-1	**MPE-1S-110911**					
Bromide		0.062		0.050	mg/L	300.0
360-37706-2	**MPE-1I-110911**					
Bromide		0.11		0.050	mg/L	300.0
360-37706-3	**MPE-2S-110911**					
Bromide		0.061		0.050	mg/L	300.0
360-37706-4	**MPE-2I-110911**					
Bromide		0.23		0.050	mg/L	300.0
360-37706-5	**MPE-3S-110911**					
Bromide		0.051		0.050	mg/L	300.0
360-37706-6	**MPE-3I-110911**					
Bromide		0.36		0.050	mg/L	300.0
360-37706-7	**MPW-1S-110911**					
Bromide		0.14		0.050	mg/L	300.0
360-37706-8	**MPW-1I-110911**					
Bromide		12		0.50	mg/L	300.0
360-37706-9	**MPW-2S-110911**					
Bromide		0.12		0.050	mg/L	300.0
360-37706-10	**MPN-1S-110911**					
Bromide		240		2.5	mg/L	300.0
360-37706-11	**MPN-2S-110911**					
Bromide		0.50		0.050	mg/L	300.0
360-37706-12	**MPN-2I-110911**					
Bromide		0.20		0.050	mg/L	300.0

EXECUTIVE SUMMARY - Detections

Client: Tetra Tech NUS Inc	Job Number: 360-37706-1

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
360-37706-13	**OW1-B-110911**					
Bromide		52		1.0	mg/L	300.0
360-37706-14	**OW1-C-110911**					
Bromide		0.15		0.050	mg/L	300.0
360-37706-15	**MPN-1I-110911**					
Bromide		300		10	mg/L	300.0
360-37706-16	**E-MH10-SW-111011**					
Bromide		0.10		0.050	mg/L	300.0
360-37706-17	**G-IL-XI-SW-111011**					
Bromide		0.082		0.050	mg/L	300.0
360-37706-19	**E-MH10-SW-111111**					
Bromide		0.11		0.050	mg/L	300.0
360-37706-21	**I-X11A-SW-111111**					
Bromide		0.072		0.050	mg/L	300.0
360-37706-22	**MPE-1S-111111**					
Bromide		0.053		0.050	mg/L	300.0
360-37706-23	**MPE-1I-111111**					
Bromide		16		0.50	mg/L	300.0
360-37706-24	**MPE-2S-111111**					
Bromide		0.062		0.050	mg/L	300.0
360-37706-25	**MPE-2I-111111**					
Bromide		6.1		0.50	mg/L	300.0
360-37706-26	**MPE-3S-111111**					
Bromide		0.054		0.050	mg/L	300.0

EXECUTIVE SUMMARY - Detections

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
360-37706-27	**MPE-3I-111111**					
Bromide		13		0.50	mg/L	300.0
360-37706-28	**MPW-1S-111211**					
Bromide		0.16		0.050	mg/L	300.0
360-37706-29	**MPW-1I-111211**					
Bromide		200		2.5	mg/L	300.0
360-37706-31	**MPW-2I-111211**					
Bromide		0.11		0.050	mg/L	300.0
360-37706-32	**MPW-3S-111211**					
Bromide		0.12		0.050	mg/L	300.0
360-37706-33	**MPW-3I-111211**					
Bromide		0.098		0.050	mg/L	300.0
360-37706-34	**MPN-IS-111211**					
Bromide		330		5.0	mg/L	300.0
360-37706-35	**MPN-1I-111211**					
Bromide		370		5.0	mg/L	300.0
360-37706-36	**MPN-2S-111211**					
Bromide		0.55		0.050	mg/L	300.0
360-37706-37	**MPN-2I-111211**					
Bromide		0.19		0.050	mg/L	300.0
360-37706-38	**MPN-OW1B-111211**					
Bromide		210		5.0	mg/L	300.0
360-37706-39	**MPN-OW1C-111211**					
Bromide		13		5.0	mg/L	300.0

EXECUTIVE SUMMARY - Detections

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
360-37706-40	**E-MH10-SW-111511**					
Bromide		1.7		0.050	mg/L	300.0
360-37706-42	**I-X11-SW-111511**					
Bromide		0.062		0.050	mg/L	300.0
360-37706-43	**MPE-1S-111511**					
Bromide		0.069		0.050	mg/L	300.0
360-37706-44	**MPE-1I-111511**					
Bromide		67		5.0	mg/L	300.0
360-37706-45	**MPE-2S-111511**					
Bromide		0.060		0.050	mg/L	300.0
360-37706-47	**MPE-3I-111511**					
Bromide		28		5.0	mg/L	300.0
360-37706-48	**MPE-2I-111511**					
Bromide		49		5.0	mg/L	300.0
360-37706-49	**MPW-1S-111611**					
Bromide		0.13		0.050	mg/L	300.0
360-37706-50	**MPW-1I-111611**					
Bromide		210		5.0	mg/L	300.0
360-37706-51	**MPW-2S-111611**					
Bromide		0.10		0.050	mg/L	300.0
360-37706-52	**MPW-2I-111611**					
Bromide		55		5.0	mg/L	300.0
360-37706-54	**MPW-3I-111611**					
Bromide		0.11		0.050	mg/L	300.0

EXECUTIVE SUMMARY - Detections

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
360-37706-55	**OW1-B-111611**					
Bromide		53		5.0	mg/L	300.0
360-37706-56	**OW1-C-111611**					
Bromide		27		5.0	mg/L	300.0
360-37706-57	**MPN-1S-111611**					
Bromide		81		5.0	mg/L	300.0
360-37706-58	**MPN-1I-111611**					
Bromide		220		5.0	mg/L	300.0
360-37706-59	**MPN-2I-111611**					
Bromide		0.20		0.050	mg/L	300.0
360-37706-60	**MPN-2S-111611**					
Bromide		0.56		0.050	mg/L	300.0
360-37706-61	**MPN-2I-110911**					
Bromide		0.092		0.050	mg/L	300.0
360-37706-63	**MPW-3I-110911**					
Bromide		0.096		0.050	mg/L	300.0

METHOD SUMMARY

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Anions, Ion Chromatography	TAL WFD	MCAWW 300.0	

Lab References:

TAL WFD = TestAmerica Westfield

Method References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

METHOD / ANALYST SUMMARY

Client: Tetra Tech NUS Inc

Job Number: 360-37706-1

Method	Analyst	Analyst ID
MCAWW 300.0	Emerich, Rich W	RWE
MCAWW 300.0	Stewart, Alyse M	AMS

General Chemistry

Client Sample ID: **MPE-1S-110911**

Lab Sample ID: 360-37706-1 Date Sampled: 11/09/2011 1200
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.062		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84104	Analysis Date: 11/21/2011 2311						

General Chemistry

Client Sample ID: **MPE-1I-110911**

Lab Sample ID: 360-37706-2 Date Sampled: 11/09/2011 1223

Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.11		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84104		Analysis Date: 11/21/2011 2327					

General Chemistry

Client Sample ID: **MPE-2S-110911**

Lab Sample ID: 360-37706-3
Client Matrix: Water

Date Sampled: 11/09/2011 1250
Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.061		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84104	Analysis Date: 11/21/2011 2344						

General Chemistry

Client Sample ID: **MPE-2I-110911**

Lab Sample ID: 360-37706-4 Date Sampled: 11/09/2011 1320
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.23		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84104		Analysis Date: 11/21/2011 0000				

General Chemistry

Client Sample ID: **MPE-3S-110911**

Lab Sample ID: 360-37706-5 Date Sampled: 11/09/2011 1350

Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.051		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84106	Analysis Date: 11/22/2011 0120						

General Chemistry

Client Sample ID: **MPE-3I-110911**

Lab Sample ID: 360-37706-6 Date Sampled: 11/09/2011 1351

Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.36		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84106		Analysis Date: 11/22/2011 0209					

Client: Tetra Tech NUS Inc Job Number: 360-37706-1

General Chemistry

Client Sample ID: **MPW-1S-110911**

Lab Sample ID: 360-37706-7 Date Sampled: 11/09/2011 1600
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.14		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84106		Analysis Date: 11/22/2011 0225					

General Chemistry

Client Sample ID: **MPW-1I-110911**

Lab Sample ID: 360-37706-8 Date Sampled: 11/09/2011 1603
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	12		mg/L	0.50	0.50	10	300.0

Analysis Batch: 360-84081 Analysis Date: 11/29/2011 0541

Client: Tetra Tech NUS Inc Job Number: 360-37706-1

General Chemistry

Client Sample ID: **MPW-2s-110911**

Lab Sample ID: 360-37706-9 Date Sampled: 11/09/2011 1605

Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.12		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84106	Analysis Date: 11/22/2011 0257						

General Chemistry

Client Sample ID: **MPN-1S-110911**

Lab Sample ID: 360-37706-10 Date Sampled: 11/09/2011 1715
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	240		mg/L	2.5	2.5	50	300.0
	Analysis Batch: 360-84081		Analysis Date: 11/29/2011 0613				

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

General Chemistry

Client Sample ID: **MPN-2S-110911**

Lab Sample ID: 360-37706-11 | Date Sampled: 11/09/2011 1730

Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.50		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84106		Analysis Date: 11/22/2011 0329				

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

General Chemistry

Client Sample ID: **MPN-2I-110911**

Lab Sample ID: 360-37706-12 | Date Sampled: 11/09/2011 1740

Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.20		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84106		Analysis Date: 11/22/2011 0345				

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

General Chemistry

Client Sample ID: **OW1-B-110911**

Lab Sample ID: 360-37706-13 | Date Sampled: 11/09/2011 1745

Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	52		mg/L	1.0	1.0	20	300.0

Analysis Batch: 360-84154 Analysis Date: 11/30/2011 1012

General Chemistry

Client Sample ID: **OW1-C-110911**

Lab Sample ID: 360-37706-14 | Date Sampled: 11/09/2011 1750
Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.15		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84106	Analysis Date: 11/22/2011 0450					

General Chemistry

Client Sample ID: **MPN-1I-110911**

Lab Sample ID: 360-37706-15 Date Sampled: 11/09/2011 1720

Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	300		mg/L	10	10	200	300.0
	Analysis Batch: 360-84209		Analysis Date: 12/01/2011 1825				

Client: Tetra Tech NUS Inc Job Number: 360-37706-1

General Chemistry

Client Sample ID: **E-MH10-SW-111011**

Lab Sample ID: 360-37706-16 Date Sampled: 11/10/2011 0935
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.10		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84106		Analysis Date: 11/22/2011 0522				

General Chemistry

Client Sample ID: **G-IL-XI-SW-111011**

Lab Sample ID: 360-37706-17 Date Sampled: 11/10/2011 1025
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.082		mg/L	0.050	0.050	1.0	300.0

Analysis Batch: 360-84106 Analysis Date: 11/22/2011 0538

General Chemistry

Client Sample ID: **I-XIIA-SW-111011**

Lab Sample ID: 360-37706-18 Date Sampled: 11/10/2011 1110
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	ND		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84106	Analysis Date: 11/22/2011 0554					

General Chemistry

Client Sample ID: **E-MH10-SW-111111**

Lab Sample ID: 360-37706-19 | Date Sampled: 11/11/2011 1105
Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.11		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84106	Analysis Date: 11/22/2011 0610					

General Chemistry

Client Sample ID: **G-IL-X1-SW-111111**

Lab Sample ID: 360-37706-20 Date Sampled: 11/11/2011 1120

Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	ND		mg/L	0.050	0.050	1.0	300.0

Analysis Batch: 360-84106 Analysis Date: 11/22/2011 0626

General Chemistry

Client Sample ID: **I-X11A-SW-111111**

Lab Sample ID: 360-37706-21 Date Sampled: 11/11/2011 1415

Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.072		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84106	Analysis Date: 11/22/2011 0642						

General Chemistry

Client Sample ID: **MPE-1S-111111**

Lab Sample ID: 360-37706-22 Date Sampled: 11/11/2011 1500
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.053		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84106	Analysis Date: 11/22/2011 0659						

General Chemistry

Client Sample ID: **MPE-1I-111111**

Lab Sample ID: 360-37706-23 | Date Sampled: 11/11/2011 1505
Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	16		mg/L	0.50	0.50	10	300.0

Analysis Batch: 360-84080 Analysis Date: 11/29/2011 0107

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

General Chemistry

Client Sample ID: **MPE-2S-111111**

Lab Sample ID: 360-37706-24 | Date Sampled: 11/11/2011 1530
Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.062		mg/L	0.050	0.050	1.0	300.0

Analysis Batch: 360-83987 Analysis Date: 11/24/2011 1317

General Chemistry

Client Sample ID: MPE-2I-111111

Lab Sample ID: 360-37706-25
Client Matrix: Water

Date Sampled: 11/11/2011 1535
Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	6.1		mg/L	0.50	0.50	10	300.0
	Analysis Batch: 360-84080	Analysis Date: 11/29/2011 0123					

General Chemistry

Client Sample ID: **MPE-3S-111111**

Lab Sample ID: 360-37706-26 Date Sampled: 11/11/2011 1545

Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.054		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-83987		Analysis Date: 11/24/2011 1350				

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

General Chemistry

Client Sample ID: **MPE-3I-111111**

Lab Sample ID: 360-37706-27 | Date Sampled: 11/11/2011 1550

Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	13		mg/L	0.50	0.50	10	300.0
	Analysis Batch: 360-84080		Analysis Date: 11/29/2011 0139				

General Chemistry

Client Sample ID: **MPW-1S-111211**

Lab Sample ID: 360-37706-28 | Date Sampled: 11/12/2011 1120
Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.16		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-83987	Analysis Date: 11/24/2011 1422					

General Chemistry

Client Sample ID: **MPW-1I-111211**

Lab Sample ID: 360-37706-29 Date Sampled: 11/12/2011 1100
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	200		mg/L	2.5	2.5	50	300.0
Analysis Batch: 360-84080			Analysis Date: 11/29/2011 0211				

General Chemistry

Client Sample ID: **MPW-2S-111211**

Lab Sample ID: 360-37706-30 Date Sampled: 11/12/2011 1115
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	ND		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84273	Analysis Date: 12/03/2011 1836					

Client: Tetra Tech NUS Inc

Job Number: 360-37706-1

General Chemistry

Client Sample ID: **MPW-2I-111211**

Lab Sample ID: 360-37706-31

Date Sampled: 11/12/2011 1200

Client Matrix: Water

Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.11		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84269		Analysis Date: 12/03/2011 1210				

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

General Chemistry

Client Sample ID: **MPW-3S-111211**

Lab Sample ID: 360-37706-32 | Date Sampled: 11/12/2011 1215
Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.12		mg/L	0.050	0.050	1.0	300.0

Analysis Batch: 360-84269 Analysis Date: 12/03/2011 1226

General Chemistry

Client Sample ID: **MPW-3I-111211**

Lab Sample ID: 360-37706-33 | Date Sampled: 11/12/2011 1210
Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.098		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84269	Analysis Date: 12/03/2011 1242						

General Chemistry

Client Sample ID: **MPN-IS-111211**

Lab Sample ID: 360-37706-34 Date Sampled: 11/12/2011 1415
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	330		mg/L	5.0	5.0	100	300.0
	Analysis Batch: 360-84269	Analysis Date: 12/03/2011 1523					

General Chemistry

Client Sample ID: **MPN-1I-111211**

Lab Sample ID: 360-37706-35   Date Sampled: 11/12/2011 1405
Client Matrix: Water   Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	370		mg/L	5.0	5.0	100	300.0
Analysis Batch: 360-84269	Analysis Date: 12/03/2011 1451						

General Chemistry

Client Sample ID: **MPN-2S-111211**

Lab Sample ID: 360-37706-36 Date Sampled: 11/12/2011 1430

Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.55		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84273	Analysis Date: 12/03/2011 2222						

General Chemistry

Client Sample ID: **MPN-2I-111211**

Lab Sample ID: 360-37706-37
Client Matrix: Water

Date Sampled: 11/12/2011 1510
Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.19		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84269	Analysis Date: 12/03/2011 1555						

General Chemistry

Client Sample ID: **MPN-OW1B-111211**

Lab Sample ID: 360-37706-38 Date Sampled: 11/12/2011 1515

Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	210		mg/L	5.0	5.0	100	300.0

Analysis Batch: 360-84269 Analysis Date: 12/03/2011 1611

Client: Tetra Tech NUS Inc

Job Number: 360-37706-1

General Chemistry

Client Sample ID: **MPN-OW1C-111211**

Lab Sample ID: 360-37706-39

Client Matrix: Water

Date Sampled: 11/12/2011 1520

Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	13		mg/L	5.0	5.0	100	300.0
	Analysis Batch: 360-84353	Analysis Date: 12/05/2011 1459					

General Chemistry

Client Sample ID: **E-MH10-SW-111511**

Lab Sample ID: 360-37706-40 Date Sampled: 11/15/2011 1335
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	1.7		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84269		Analysis Date: 12/03/2011 1644				

General Chemistry

Client Sample ID: **G-IL-X1-SW-111511**

Lab Sample ID: 360-37706-41 Date Sampled: 11/15/2011 1400
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	ND		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84269	Analysis Date: 12/03/2011 1700						

Client: Tetra Tech NUS Inc

Job Number: 360-37706-1

General Chemistry

Client Sample ID: **I-X11-SW-111511**

Lab Sample ID: 360-37706-42
Client Matrix: Water

Date Sampled: 11/15/2011 1415
Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.062		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84269	Analysis Date: 12/03/2011 1716					

General Chemistry

Client Sample ID: **MPE-1S-111511**

Lab Sample ID: 360-37706-43 Date Sampled: 11/15/2011 1515

Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.069		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84273		Analysis Date: 12/03/2011 1852				

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

General Chemistry

Client Sample ID: MPE-1I-111511

Lab Sample ID: 360-37706-44 | Date Sampled: 11/15/2011 1520
Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	67		mg/L	5.0	5.0	100	300.0

Analysis Batch: 360-84353 Analysis Date: 12/05/2011 1516

Client: Tetra Tech NUS Inc Job Number: 360-37706-1

General Chemistry

Client Sample ID: **MPE-2S-111511**

Lab Sample ID: 360-37706-45 Date Sampled: 11/15/2011 1525
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.060		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84273	Analysis Date: 12/03/2011 1925					

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

General Chemistry

Client Sample ID: **MPE-3S-111511**

Lab Sample ID: 360-37706-46 | Date Sampled: 11/15/2011 1550

Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	ND		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84081	Analysis Date: 11/29/2011 0750						

General Chemistry

Client Sample ID: **MPE-3I-111511**

Lab Sample ID: 360-37706-47 | Date Sampled: 11/15/2011 1555
Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	28		mg/L	5.0	5.0	100	300.0
	Analysis Batch: 360-84154	Analysis Date: 11/30/2011 1044					

General Chemistry

Client Sample ID: **MPE-2I-111511**

Lab Sample ID: 360-37706-48 Date Sampled: 11/15/2011 1600
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	49		mg/L	5.0	5.0	100	300.0
Analysis Batch: 360-84154	Analysis Date: 11/30/2011 1100						

General Chemistry

Client Sample ID: **MPW-1S-111611**

Lab Sample ID: 360-37706-49 | Date Sampled: 11/16/2011 1000

Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.13		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84081	Analysis Date: 11/29/2011 0838						

General Chemistry

Client Sample ID: **MPW-1I-111611**

Lab Sample ID: 360-37706-50 Date Sampled: 11/16/2011 1005

Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	210		mg/L	5.0	5.0	100	300.0
Analysis Batch: 360-84154	Analysis Date: 11/30/2011 1253						

Client: Tetra Tech NUS Inc　　Job Number: 360-37706-1

General Chemistry

Client Sample ID: **MPW-2S-111611**

Lab Sample ID: 360-37706-51　　Date Sampled: 11/16/2011 1010
Client Matrix: Water　　Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.10		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84081	Analysis Date: 11/29/2011 0910						

General Chemistry

Client Sample ID: **MPW-2I-111611**

Lab Sample ID: 360-37706-52
Client Matrix: Water

Date Sampled: 11/16/2011 1030
Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	55		mg/L	5.0	5.0	100	300.0

Analysis Batch: 360-84154 Analysis Date: 11/30/2011 1325

General Chemistry

Client Sample ID: **MPW-3S-111611**

Lab Sample ID: 360-37706-53 Date Sampled: 11/16/2011 1035
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	ND		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84209	Analysis Date: 12/01/2011 2034					

General Chemistry

Client Sample ID: **MPW-3I-111611**

Lab Sample ID: 360-37706-54 | Date Sampled: 11/16/2011 1040

Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.11		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84273		Analysis Date: 12/03/2011 1941				

Client: Tetra Tech NUS Inc Job Number: 360-37706-1

General Chemistry

Client Sample ID: **OW1-B-111611**

Lab Sample ID: 360-37706-55 Date Sampled: 11/16/2011 1250
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	53		mg/L	5.0	5.0	100	300.0

Analysis Batch: 360-84209 Analysis Date: 12/01/2011 2106

General Chemistry

Client Sample ID: **OW1-C-111611**

Lab Sample ID: 360-37706-56 Date Sampled: 11/16/2011 1255

Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	27		mg/L	5.0	5.0	100	300.0

Analysis Batch: 360-84273 Analysis Date: 12/03/2011 2150

General Chemistry

Client Sample ID: **MPN-1S-111611**

Lab Sample ID:	360-37706-57	Date Sampled:	11/16/2011 1300
Client Matrix:	Water	Date Received:	11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	81		mg/L	5.0	5.0	100	300.0

Analysis Batch: 360-84273 Analysis Date: 12/03/2011 2206

General Chemistry

Client Sample ID: **MPN-1I-111611**

Lab Sample ID: 360-37706-58   Date Sampled: 11/16/2011 1310
Client Matrix: Water   Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	220		mg/L	5.0	5.0	100	300.0
	Analysis Batch: 360-84269	Analysis Date: 12/03/2011 1507					

General Chemistry

Client Sample ID: **MPN-2I-111611**

Lab Sample ID: 360-37706-59 Date Sampled: 11/16/2011 1315

Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.20		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84207		Analysis Date: 12/01/2011 1440				

General Chemistry

Client Sample ID: **MPN-2S-111611**

Lab Sample ID: 360-37706-60 Date Sampled: 11/16/2011 1320
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.56		mg/L	0.050	0.050	1.0	300.0

Analysis Batch: 360-84207 Analysis Date: 12/01/2011 1456

General Chemistry

Client Sample ID: **MPN-2I-110911**

Lab Sample ID: 360-37706-61 Date Sampled: 11/09/2011 1625

Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.092		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84207	Analysis Date: 12/01/2011 1512						

General Chemistry

Client Sample ID: **MPW-3S-110911**

Lab Sample ID: 360-37706-62 Date Sampled: 11/09/2011 1631
Client Matrix: Water Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	ND		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-84209	Analysis Date: 12/01/2011 1721						

General Chemistry

Client Sample ID: **MPW-3I-110911**

Lab Sample ID: 360-37706-63 | Date Sampled: 11/09/2011 1635
Client Matrix: Water | Date Received: 11/17/2011 1055

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.096		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-84209	Analysis Date: 12/01/2011 1737					

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

Method Blank - Batch: 360-83987

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-83987/5	Analysis Batch:	360-83987	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/24/2011 0900	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Bromide	ND		0.050	0.050

Lab Control Sample - Batch: 360-83987

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-83987/6	Analysis Batch:	360-83987	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/24/2011 0916	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	4.00	4.24	106	85 - 115	

Client: Tetra Tech NUS Inc Job Number: 360-37706-1

Method Blank - Batch: 360-84080

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-84080/3	Analysis Batch:	360-84080	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/28/2011 2017	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Bromide	ND		0.050	0.050

Lab Control Sample - Batch: 360-84080

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-84080/4	Analysis Batch:	360-84080	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/28/2011 2033	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	4.00	3.93	98	85 - 115	

Client: Tetra Tech NUS Inc   Job Number: 360-37706-1

Method Blank - Batch: 360-84081

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-84081/5	Analysis Batch:	360-84081	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/29/2011 0316	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Bromide	ND		0.050	0.050

Lab Control Sample - Batch: 360-84081

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-84081/6	Analysis Batch:	360-84081	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/29/2011 0332	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	4.00	3.97	99	85 - 115	

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

Method Blank - Batch: 360-84104

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-84104/3	Analysis Batch:	360-84104	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/21/2011 1749	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Bromide	ND		0.050	0.050

Lab Control Sample - Batch: 360-84104

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-84104/4	Analysis Batch:	360-84104	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/21/2011 1805	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	4.00	3.90	98	85 - 115	

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

Method Blank - Batch: 360-84106

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-84106/5	Analysis Batch:	360-84106	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/22/2011 0048	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Bromide	ND		0.050	0.050

Lab Control Sample - Batch: 360-84106

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-84106/6	Analysis Batch:	360-84106	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/22/2011 0104	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	4.00	4.03	101	85 - 115	

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-84106

Method: 300.0
Preparation: N/A

MS Lab Sample ID:	360-37706-5	Analysis Batch:	360-84106	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/22/2011 0136			Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

MSD Lab Sample ID:	360-37706-5	Analysis Batch:	360-84106	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/22/2011 0152			Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Bromide	98	98	75 - 125	1	20		

Client: Tetra Tech NUS Inc   Job Number: 360-37706-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-84106

Method: 300.0
Preparation: N/A

MS Lab Sample ID:	360-37706-5	Units:	mg/L
Client Matrix:	Water		
Dilution:	1.0		
Analysis Date:	11/22/2011 0136		
Prep Date:	N/A		
Leach Date:	N/A		

MSD Lab Sample ID:	360-37706-5
Client Matrix:	Water
Dilution:	1.0
Analysis Date:	11/22/2011 0152
Prep Date:	N/A
Leach Date:	N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Bromide	0.051	1.00	1.00	1.03	1.03

Quality Control Results

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

Method Blank - Batch: 360-84154

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-84154/3	Analysis Batch:	360-84154	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/30/2011 0819	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Bromide	ND		0.050	0.050

Lab Control Sample - Batch: 360-84154

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-84154/4	Analysis Batch:	360-84154	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	11/30/2011 0835	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	4.00	3.83	96	85 - 115	

Quality Control Results

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

Method Blank - Batch: 360-84207

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-84207/3	Analysis Batch:	360-84207	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	12/01/2011 0901	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Bromide	ND		0.050	0.050

Lab Control Sample - Batch: 360-84207

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-84207/4	Analysis Batch:	360-84207	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	12/01/2011 0917	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	4.00	3.90	98	85 - 115	

Client: Tetra Tech NUS Inc — Job Number: 360-37706-1

Method Blank - Batch: 360-84209

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-84209/5	Analysis Batch:	360-84209	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	12/01/2011 1600	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Bromide	ND		0.050	0.050

Lab Control Sample - Batch: 360-84209

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-84209/6	Analysis Batch:	360-84209	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	12/01/2011 1616	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	4.00	4.02	100	85 - 115	

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

Method Blank - Batch: 360-84269

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-84269/3	Analysis Batch:	360-84269	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	12/03/2011 1105	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Bromide	ND		0.050	0.050

Lab Control Sample - Batch: 360-84269

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-84269/4	Analysis Batch:	360-84269	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	12/03/2011 1121	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	4.00	3.68	92	85 - 115	

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-84269

Method: 300.0
Preparation: N/A

MS Lab Sample ID:	360-37706-A-33 MS	Analysis Batch:	360-84269	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	10	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	12/03/2011 1314			Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

MSD Lab Sample ID:	360-37706-A-33 MSD	Analysis Batch:	360-84269	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	10	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	12/03/2011 1330			Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Bromide	103	102	75 - 125	1	20		

Client: Tetra Tech NUS Inc Job Number: 360-37706-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-84269

Method: 300.0
Preparation: N/A

MS Lab Sample ID:	360-37706-A-33 MS	Units: mg/L	MSD Lab Sample ID:	360-37706-A-33 MSD
Client Matrix:	Water		Client Matrix:	Water
Dilution:	10		Dilution:	10
Analysis Date:	12/03/2011 1314		Analysis Date:	12/03/2011 1330
Prep Date:	N/A		Prep Date:	N/A
Leach Date:	N/A		Leach Date:	N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Bromide	ND	10.0	10.0	10.3	10.2

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

Method Blank - Batch: 360-84273 | **Method: 300.0**
Preparation: N/A

Lab Sample ID:	MB 360-84273/5	Analysis Batch:	360-84273	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	12/03/2011 1804	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Bromide	ND		0.050	0.050

Lab Control Sample - Batch: 360-84273 | **Method: 300.0**
Preparation: N/A

Lab Sample ID:	LCS 360-84273/6	Analysis Batch:	360-84273	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	12/03/2011 1820	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	4.00	3.68	92	85 - 115	

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

Method Blank - Batch: 360-84353

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-84353/3	Analysis Batch:	360-84353	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	12/05/2011 1427	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Bromide	ND		0.050	0.050

Lab Control Sample - Batch: 360-84353

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-84353/4	Analysis Batch:	360-84353	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	12/05/2011 1443	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	4.00	4.01	100	85 - 115	

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-84353

Method: 300.0
Preparation: N/A

MS Lab Sample ID:	360-37706-44	Analysis Batch:	360-84353	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	100	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	12/05/2011 1532			Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

MSD Lab Sample ID:	360-37706-44	Analysis Batch:	360-84353	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	100	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	12/05/2011 1548			Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Bromide	94	94	75 - 125	0	20		

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-84353

Method: 300.0
Preparation: N/A

MS Lab Sample ID:	360-37706-44	Units:	mg/L
Client Matrix:	Water		
Dilution:	100		
Analysis Date:	12/05/2011 1532		
Prep Date:	N/A		
Leach Date:	N/A		

MSD Lab Sample ID:	360-37706-44
Client Matrix:	Water
Dilution:	100
Analysis Date:	12/05/2011 1548
Prep Date:	N/A
Leach Date:	N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Bromide	67	100	100	161	162

Client: Tetra Tech NUS Inc Job Number: 360-37706-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:360-83987					
LCS 360-83987/6	Lab Control Sample	T	Water	300.0	
MB 360-83987/5	Method Blank	T	Water	300.0	
360-37706-24	MPE-2S-111111	T	Water	300.0	
360-37706-26	MPE-3S-111111	T	Water	300.0	
360-37706-28	MPW-1S-111211	T	Water	300.0	
Analysis Batch:360-84080					
LCS 360-84080/4	Lab Control Sample	T	Water	300.0	
MB 360-84080/3	Method Blank	T	Water	300.0	
360-37706-23	MPE-1I-111111	T	Water	300.0	
360-37706-25	MPE-2I-111111	T	Water	300.0	
360-37706-27	MPE-3I-111111	T	Water	300.0	
360-37706-29	MPW-1I-111211	T	Water	300.0	
Analysis Batch:360-84081					
LCS 360-84081/6	Lab Control Sample	T	Water	300.0	
MB 360-84081/5	Method Blank	T	Water	300.0	
360-37706-8	MPW-1I-110911	T	Water	300.0	
360-37706-10	MPN-1S-110911	T	Water	300.0	
360-37706-46	MPE-3S-111511	T	Water	300.0	
360-37706-49	MPW-1S-111611	T	Water	300.0	
360-37706-51	MPW-2S-111611	T	Water	300.0	
Analysis Batch:360-84104					
LCS 360-84104/4	Lab Control Sample	T	Water	300.0	
MB 360-84104/3	Method Blank	T	Water	300.0	
360-37706-1	MPE-1S-110911	T	Water	300.0	
360-37706-2	MPE-1I-110911	T	Water	300.0	
360-37706-3	MPE-2S-110911	T	Water	300.0	
360-37706-4	MPE-2I-110911	T	Water	300.0	

Quality Control Results

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:360-84106					
LCS 360-84106/6	Lab Control Sample	T	Water	300.0	
MB 360-84106/5	Method Blank	T	Water	300.0	
360-37706-5	MPE-3S-110911	T	Water	300.0	
360-37706-5MS	Matrix Spike	T	Water	300.0	
360-37706-5MSD	Matrix Spike Duplicate	T	Water	300.0	
360-37706-6	MPE-3I-110911	T	Water	300.0	
360-37706-7	MPW-1S-110911	T	Water	300.0	
360-37706-9	MPW-2s-110911	T	Water	300.0	
360-37706-11	MPN-2S-110911	T	Water	300.0	
360-37706-12	MPN-2I-110911	T	Water	300.0	
360-37706-14	OW1-C-110911	T	Water	300.0	
360-37706-16	E-MH10-SW-111011	T	Water	300.0	
360-37706-17	G-IL-XI-SW-111011	T	Water	300.0	
360-37706-18	I-XIIA-SW-111011	T	Water	300.0	
360-37706-19	E-MH10-SW-111111	T	Water	300.0	
360-37706-20	G-IL-X1-SW-111111	T	Water	300.0	
360-37706-21	I-X11A-SW-111111	T	Water	300.0	
360-37706-22	MPE-1S-111111	T	Water	300.0	
Analysis Batch:360-84154					
LCS 360-84154/4	Lab Control Sample	T	Water	300.0	
MB 360-84154/3	Method Blank	T	Water	300.0	
360-37706-13	OW1-B-110911	T	Water	300.0	
360-37706-47	MPE-3I-111511	T	Water	300.0	
360-37706-48	MPE-2I-111511	T	Water	300.0	
360-37706-50	MPW-1I-111611	T	Water	300.0	
360-37706-52	MPW-2I-111611	T	Water	300.0	
Analysis Batch:360-84207					
LCS 360-84207/4	Lab Control Sample	T	Water	300.0	
MB 360-84207/3	Method Blank	T	Water	300.0	
360-37706-59	MPN-2I-111611	T	Water	300.0	
360-37706-60	MPN-2S-111611	T	Water	300.0	
360-37706-61	MPN-2I-110911	T	Water	300.0	
Analysis Batch:360-84209					
LCS 360-84209/6	Lab Control Sample	T	Water	300.0	
MB 360-84209/5	Method Blank	T	Water	300.0	
360-37706-15	MPN-1I-110911	T	Water	300.0	
360-37706-53	MPW-3S-111611	T	Water	300.0	
360-37706-55	OW1-B-111611	T	Water	300.0	
360-37706-62	MPW-3S-110911	T	Water	300.0	
360-37706-63	MPW-3I-110911	T	Water	300.0	

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:360-84269					
LCS 360-84269/4	Lab Control Sample	T	Water	300.0	
MB 360-84269/3	Method Blank	T	Water	300.0	
360-37706-31	MPW-2I-111211	T	Water	300.0	
360-37706-32	MPW-3S-111211	T	Water	300.0	
360-37706-A-33 MSMS	Matrix Spike	T	Water	300.0	
360-37706-A-33 MSDMSD	Matrix Spike Duplicate	T	Water	300.0	
360-37706-33	MPW-3I-111211	T	Water	300.0	
360-37706-34	MPN-IS-111211	T	Water	300.0	
360-37706-35	MPN-1I-111211	T	Water	300.0	
360-37706-37	MPN-2I-111211	T	Water	300.0	
360-37706-38	MPN-OW1B-111211	T	Water	300.0	
360-37706-40	E-MH10-SW-111511	T	Water	300.0	
360-37706-41	G-IL-X1-SW-111511	T	Water	300.0	
360-37706-42	I-X11-SW-111511	T	Water	300.0	
360-37706-58	MPN-1I-111611	T	Water	300.0	
Analysis Batch:360-84273					
LCS 360-84273/6	Lab Control Sample	T	Water	300.0	
MB 360-84273/5	Method Blank	T	Water	300.0	
360-37706-30	MPW-2S-111211	T	Water	300.0	
360-37706-36	MPN-2S-111211	T	Water	300.0	
360-37706-43	MPE-1S-111511	T	Water	300.0	
360-37706-45	MPE-2S-111511	T	Water	300.0	
360-37706-54	MPW-3I-111611	T	Water	300.0	
360-37706-56	OW1-C-111611	T	Water	300.0	
360-37706-57	MPN-1S-111611	T	Water	300.0	
Analysis Batch:360-84353					
LCS 360-84353/4	Lab Control Sample	T	Water	300.0	
MB 360-84353/3	Method Blank	T	Water	300.0	
360-37706-39	MPN-OW1C-111211	T	Water	300.0	
360-37706-44	MPE-1I-111511	T	Water	300.0	
360-37706-44MS	Matrix Spike	T	Water	300.0	
360-37706-44MSD	Matrix Spike Duplicate	T	Water	300.0	

Report Basis
T = Total

Client: Tetra Tech NUS Inc Job Number: 360-37706-1

Laboratory Chronicle

Lab ID: **360-37706-1** **Client ID:** **MPE-1S-110911**

Sample Date/Time: 11/09/2011 12:00 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-1		360-84104		11/21/2011 23:11	1	TAL WFD	RWE

Lab ID: **360-37706-2** **Client ID:** **MPE-1I-110911**

Sample Date/Time: 11/09/2011 12:23 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-2		360-84104		11/21/2011 23:27	1	TAL WFD	RWE

Lab ID: **360-37706-3** **Client ID:** **MPE-2S-110911**

Sample Date/Time: 11/09/2011 12:50 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-3		360-84104		11/21/2011 23:44	1	TAL WFD	RWE

Lab ID: **360-37706-4** **Client ID:** **MPE-2I-110911**

Sample Date/Time: 11/09/2011 13:20 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-4		360-84104		11/21/2011 00:00	1	TAL WFD	RWE

Lab ID: **360-37706-5** **Client ID:** **MPE-3S-110911**

Sample Date/Time: 11/09/2011 13:50 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-5		360-84106		11/22/2011 01:20	1	TAL WFD	RWE

Lab ID: **360-37706-5 MS** **Client ID:** **MPE-3S-110911**

Sample Date/Time: 11/09/2011 13:50 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-5 MS		360-84106		11/22/2011 01:36	1	TAL WFD	RWE

Lab ID: **360-37706-5 MSD** **Client ID:** **MPE-3S-110911**

Sample Date/Time: 11/09/2011 13:50 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-5 MSD		360-84106		11/22/2011 01:52	1	TAL WFD	RWE

Client: Tetra Tech NUS Inc — Job Number: 360-37706-1

Laboratory Chronicle

Lab ID: 360-37706-6 — **Client ID: MPE-3I-110911**

Sample Date/Time: 11/09/2011 13:51 — Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-6		360-84106		11/22/2011 02:09	1	TAL WFD	RWE

Lab ID: 360-37706-7 — **Client ID: MPW-1S-110911**

Sample Date/Time: 11/09/2011 16:00 — Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-7		360-84106		11/22/2011 02:25	1	TAL WFD	RWE

Lab ID: 360-37706-8 — **Client ID: MPW-1I-110911**

Sample Date/Time: 11/09/2011 16:03 — Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-8		360-84081		11/29/2011 05:41	10	TAL WFD	RWE

Lab ID: 360-37706-9 — **Client ID: MPW-2s-110911**

Sample Date/Time: 11/09/2011 16:05 — Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-9		360-84106		11/22/2011 02:57	1	TAL WFD	RWE

Lab ID: 360-37706-10 — **Client ID: MPN-1S-110911**

Sample Date/Time: 11/09/2011 17:15 — Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-10		360-84081		11/29/2011 06:13	50	TAL WFD	RWE

Lab ID: 360-37706-11 — **Client ID: MPN-2S-110911**

Sample Date/Time: 11/09/2011 17:30 — Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-11		360-84106		11/22/2011 03:29	1	TAL WFD	RWE

Lab ID: 360-37706-12 — **Client ID: MPN-2I-110911**

Sample Date/Time: 11/09/2011 17:40 — Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-12		360-84106		11/22/2011 03:45	1	TAL WFD	RWE

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

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Lab ID: **360-37706-13** **Client ID:** **OW1-B-110911**

Sample Date/Time: 11/09/2011 17:45 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-13		360-84154		11/30/2011 10:12	20	TAL WFD	AMS

Lab ID: **360-37706-14** **Client ID:** **OW1-C-110911**

Sample Date/Time: 11/09/2011 17:50 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-14		360-84106		11/22/2011 04:50	1	TAL WFD	RWE

Lab ID: **360-37706-15** **Client ID:** **MPN-1I-110911**

Sample Date/Time: 11/09/2011 17:20 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-15		360-84209		12/01/2011 18:25	200	TAL WFD	AMS

Lab ID: **360-37706-16** **Client ID:** **E-MH10-SW-111011**

Sample Date/Time: 11/10/2011 09:35 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-16		360-84106		11/22/2011 05:22	1	TAL WFD	RWE

Lab ID: **360-37706-17** **Client ID:** **G-IL-XI-SW-111011**

Sample Date/Time: 11/10/2011 10:25 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-17		360-84106		11/22/2011 05:38	1	TAL WFD	RWE

Lab ID: **360-37706-18** **Client ID:** **I-XIIA-SW-111011**

Sample Date/Time: 11/10/2011 11:10 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-18		360-84106		11/22/2011 05:54	1	TAL WFD	RWE

Lab ID: **360-37706-19** **Client ID:** **E-MH10-SW-111111**

Sample Date/Time: 11/11/2011 11:05 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-19		360-84106		11/22/2011 06:10	1	TAL WFD	RWE

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

Laboratory Chronicle

Lab ID: 360-37706-20 **Client ID: G-IL-X1-SW-111111**

Sample Date/Time: 11/11/2011 11:20 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-20		360-84106		11/22/2011 06:26	1	TAL WFD	RWE

Lab ID: 360-37706-21 **Client ID: I-X11A-SW-111111**

Sample Date/Time: 11/11/2011 14:15 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-21		360-84106		11/22/2011 06:42	1	TAL WFD	RWE

Lab ID: 360-37706-22 **Client ID: MPE-1S-111111**

Sample Date/Time: 11/11/2011 15:00 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-22		360-84106		11/22/2011 06:59	1	TAL WFD	RWE

Lab ID: 360-37706-23 **Client ID: MPE-1I-111111**

Sample Date/Time: 11/11/2011 15:05 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-23		360-84080		11/29/2011 01:07	10	TAL WFD	RWE

Lab ID: 360-37706-24 **Client ID: MPE-2S-111111**

Sample Date/Time: 11/11/2011 15:30 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-24		360-83987		11/24/2011 13:17	1	TAL WFD	RWE

Lab ID: 360-37706-25 **Client ID: MPE-2I-111111**

Sample Date/Time: 11/11/2011 15:35 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-25		360-84080		11/29/2011 01:23	10	TAL WFD	RWE

Lab ID: 360-37706-26 **Client ID: MPE-3S-111111**

Sample Date/Time: 11/11/2011 15:45 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-26		360-83987		11/24/2011 13:50	1	TAL WFD	RWE

Client: Tetra Tech NUS Inc — Job Number: 360-37706-1

Laboratory Chronicle

Lab ID: **360-37706-27** **Client ID:** **MPE-3I-111111**

Sample Date/Time: 11/11/2011 15:50 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-27		360-84080		11/29/2011 01:39	10	TAL WFD	RWE

Lab ID: **360-37706-28** **Client ID:** **MPW-1S-111211**

Sample Date/Time: 11/12/2011 11:20 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-28		360-83987		11/24/2011 14:22	1	TAL WFD	RWE

Lab ID: **360-37706-29** **Client ID:** **MPW-1I-111211**

Sample Date/Time: 11/12/2011 11:00 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-29		360-84080		11/29/2011 02:11	50	TAL WFD	RWE

Lab ID: **360-37706-30** **Client ID:** **MPW-2S-111211**

Sample Date/Time: 11/12/2011 11:15 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-30		360-84273		12/03/2011 18:36	1	TAL WFD	AMS

Lab ID: **360-37706-31** **Client ID:** **MPW-2I-111211**

Sample Date/Time: 11/12/2011 12:00 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-31		360-84269		12/03/2011 12:10	1	TAL WFD	AMS

Lab ID: **360-37706-32** **Client ID:** **MPW-3S-111211**

Sample Date/Time: 11/12/2011 12:15 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-32		360-84269		12/03/2011 12:26	1	TAL WFD	AMS

Lab ID: **360-37706-33** **Client ID:** **MPW-3I-111211**

Sample Date/Time: 11/12/2011 12:10 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-33		360-84269		12/03/2011 12:42	1	TAL WFD	AMS

Client: Tetra Tech NUS Inc

Job Number: 360-37706-1

Laboratory Chronicle

Lab ID: **360-37706-A-33 MS MS** **Client ID:**

Sample Date/Time: 11/12/2011 12:10 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-33 MS		360-84269		12/03/2011 13:14	10	TAL WFD	AMS

Lab ID: **360-37706-A-33 MSD MSD** **Client ID:**

Sample Date/Time: 11/12/2011 12:10 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-33 MSD		360-84269		12/03/2011 13:30	10	TAL WFD	AMS

Lab ID: **360-37706-34** **Client ID:** **MPN-IS-111211**

Sample Date/Time: 11/12/2011 14:15 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-34		360-84269		12/03/2011 15:23	100	TAL WFD	AMS

Lab ID: **360-37706-35** **Client ID:** **MPN-1I-111211**

Sample Date/Time: 11/12/2011 14:05 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-35		360-84269		12/03/2011 14:51	100	TAL WFD	AMS

Lab ID: **360-37706-36** **Client ID:** **MPN-2S-111211**

Sample Date/Time: 11/12/2011 14:30 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-36		360-84273		12/03/2011 22:22	1	TAL WFD	AMS

Lab ID: **360-37706-37** **Client ID:** **MPN-2I-111211**

Sample Date/Time: 11/12/2011 15:10 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-37		360-84269		12/03/2011 15:55	1	TAL WFD	AMS

Lab ID: **360-37706-38** **Client ID:** **MPN-OW1B-111211**

Sample Date/Time: 11/12/2011 15:15 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-38		360-84269		12/03/2011 16:11	100	TAL WFD	AMS

Client: Tetra Tech NUS Inc | Job Number: 360-37706-1

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Lab ID: **360-37706-39** | **Client ID:** **MPN-OW1C-111211**

Sample Date/Time: 11/12/2011 15:20 | Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-39		360-84353		12/05/2011 14:59	100	TAL WFD	AMS

Lab ID: **360-37706-40** | **Client ID:** **E-MH10-SW-111511**

Sample Date/Time: 11/15/2011 13:35 | Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-40		360-84269		12/03/2011 16:44	1	TAL WFD	AMS

Lab ID: **360-37706-41** | **Client ID:** **G-IL-X1-SW-111511**

Sample Date/Time: 11/15/2011 14:00 | Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-41		360-84269		12/03/2011 17:00	1	TAL WFD	AMS

Lab ID: **360-37706-42** | **Client ID:** **I-X11-SW-111511**

Sample Date/Time: 11/15/2011 14:15 | Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-42		360-84269		12/03/2011 17:16	1	TAL WFD	AMS

Lab ID: **360-37706-43** | **Client ID:** **MPE-1S-111511**

Sample Date/Time: 11/15/2011 15:15 | Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-43		360-84273		12/03/2011 18:52	1	TAL WFD	AMS

Lab ID: **360-37706-44** | **Client ID:** **MPE-1I-111511**

Sample Date/Time: 11/15/2011 15:20 | Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-44		360-84353		12/05/2011 15:16	100	TAL WFD	AMS

Lab ID: **360-37706-44 MS** | **Client ID:** **MPE-1I-111511**

Sample Date/Time: 11/15/2011 15:20 | Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-44 MS		360-84353		12/05/2011 15:32	100	TAL WFD	AMS

Client: Tetra Tech NUS Inc	Job Number: 360-37706-1

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Lab ID: **360-37706-44 MSD** **Client ID:** **MPE-1I-111511**

Sample Date/Time: 11/15/2011 15:20 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-44 MSD		360-84353		12/05/2011 15:48	100	TAL WFD	AMS

Lab ID: **360-37706-45** **Client ID:** **MPE-2S-111511**

Sample Date/Time: 11/15/2011 15:25 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-45		360-84273		12/03/2011 19:25	1	TAL WFD	AMS

Lab ID: **360-37706-46** **Client ID:** **MPE-3S-111511**

Sample Date/Time: 11/15/2011 15:50 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-46		360-84081		11/29/2011 07:50	1	TAL WFD	RWE

Lab ID: **360-37706-47** **Client ID:** **MPE-3I-111511**

Sample Date/Time: 11/15/2011 15:55 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-47		360-84154		11/30/2011 10:44	100	TAL WFD	AMS

Lab ID: **360-37706-48** **Client ID:** **MPE-2I-111511**

Sample Date/Time: 11/15/2011 16:00 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-48		360-84154		11/30/2011 11:00	100	TAL WFD	AMS

Lab ID: **360-37706-49** **Client ID:** **MPW-1S-111611**

Sample Date/Time: 11/16/2011 10:00 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-49		360-84081		11/29/2011 08:38	1	TAL WFD	RWE

Lab ID: **360-37706-50** **Client ID:** **MPW-1I-111611**

Sample Date/Time: 11/16/2011 10:05 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-50		360-84154		11/30/2011 12:53	100	TAL WFD	AMS

Client: Tetra Tech NUS Inc   Job Number: 360-37706-1

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Lab ID: **360-37706-51**   **Client ID:** **MPW-2S-111611**

Sample Date/Time: 11/16/2011 10:10   Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-51		360-84081		11/29/2011 09:10	1	TAL WFD	RWE

Lab ID: **360-37706-52**   **Client ID:** **MPW-2I-111611**

Sample Date/Time: 11/16/2011 10:30   Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-52		360-84154		11/30/2011 13:25	100	TAL WFD	AMS

Lab ID: **360-37706-53**   **Client ID:** **MPW-3S-111611**

Sample Date/Time: 11/16/2011 10:35   Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-53		360-84209		12/01/2011 20:34	1	TAL WFD	AMS

Lab ID: **360-37706-54**   **Client ID:** **MPW-3I-111611**

Sample Date/Time: 11/16/2011 10:40   Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-54		360-84273		12/03/2011 19:41	1	TAL WFD	AMS

Lab ID: **360-37706-55**   **Client ID:** **OW1-B-111611**

Sample Date/Time: 11/16/2011 12:50   Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-55		360-84209		12/01/2011 21:06	100	TAL WFD	AMS

Lab ID: **360-37706-56**   **Client ID:** **OW1-C-111611**

Sample Date/Time: 11/16/2011 12:55   Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-56		360-84273		12/03/2011 21:50	100	TAL WFD	AMS

Lab ID: **360-37706-57**   **Client ID:** **MPN-1S-111611**

Sample Date/Time: 11/16/2011 13:00   Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-57		360-84273		12/03/2011 22:06	100	TAL WFD	AMS

Client: Tetra Tech NUS Inc

Job Number: 360-37706-1

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Lab ID: **360-37706-58** **Client ID:** **MPN-1I-111611**

Sample Date/Time: 11/16/2011 13:10 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-58		360-84269		12/03/2011 15:07	100	TAL WFD	AMS

Lab ID: **360-37706-59** **Client ID:** **MPN-2I-111611**

Sample Date/Time: 11/16/2011 13:15 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-59		360-84207		12/01/2011 14:40	1	TAL WFD	AMS

Lab ID: **360-37706-60** **Client ID:** **MPN-2S-111611**

Sample Date/Time: 11/16/2011 13:20 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-60		360-84207		12/01/2011 14:56	1	TAL WFD	AMS

Lab ID: **360-37706-61** **Client ID:** **MPN-2I-110911**

Sample Date/Time: 11/09/2011 16:25 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-61		360-84207		12/01/2011 15:12	1	TAL WFD	AMS

Lab ID: **360-37706-62** **Client ID:** **MPW-3S-110911**

Sample Date/Time: 11/09/2011 16:31 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-62		360-84209		12/01/2011 17:21	1	TAL WFD	AMS

Lab ID: **360-37706-63** **Client ID:** **MPW-3I-110911**

Sample Date/Time: 11/09/2011 16:35 Received Date/Time: 11/17/2011 10:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-37706-A-63		360-84209		12/01/2011 17:37	1	TAL WFD	AMS

Client: Tetra Tech NUS Inc — Job Number: 360-37706-1

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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
A:300.0	MB 360-84104/3		360-84104		11/21/2011 17:49	1	TAL WFD	RWE
A:300.0	MB 360-84106/5		360-84106		11/22/2011 00:48	1	TAL WFD	RWE
A:300.0	MB 360-83987/5		360-83987		11/24/2011 09:00	1	TAL WFD	RWE
A:300.0	MB 360-84080/3		360-84080		11/28/2011 20:17	1	TAL WFD	RWE
A:300.0	MB 360-84081/5		360-84081		11/29/2011 03:16	1	TAL WFD	RWE
A:300.0	MB 360-84154/3		360-84154		11/30/2011 08:19	1	TAL WFD	AMS
A:300.0	MB 360-84207/3		360-84207		12/01/2011 09:01	1	TAL WFD	AMS
A:300.0	MB 360-84209/5		360-84209		12/01/2011 16:00	1	TAL WFD	AMS
A:300.0	MB 360-84269/3		360-84269		12/03/2011 11:05	1	TAL WFD	AMS
A:300.0	MB 360-84273/5		360-84273		12/03/2011 18:04	1	TAL WFD	AMS
A:300.0	MB 360-84353/3		360-84353		12/05/2011 14:27	1	TAL WFD	AMS

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
A:300.0	LCS 360-84104/4		360-84104		11/21/2011 18:05	1	TAL WFD	RWE
A:300.0	LCS 360-84106/6		360-84106		11/22/2011 01:04	1	TAL WFD	RWE
A:300.0	LCS 360-83987/6		360-83987		11/24/2011 09:16	1	TAL WFD	RWE
A:300.0	LCS 360-84080/4		360-84080		11/28/2011 20:33	1	TAL WFD	RWE
A:300.0	LCS 360-84081/6		360-84081		11/29/2011 03:32	1	TAL WFD	RWE
A:300.0	LCS 360-84154/4		360-84154		11/30/2011 08:35	1	TAL WFD	AMS
A:300.0	LCS 360-84207/4		360-84207		12/01/2011 09:17	1	TAL WFD	AMS
A:300.0	LCS 360-84209/6		360-84209		12/01/2011 16:16	1	TAL WFD	AMS
A:300.0	LCS 360-84269/4		360-84269		12/03/2011 11:21	1	TAL WFD	AMS
A:300.0	LCS 360-84273/6		360-84273		12/03/2011 18:20	1	TAL WFD	AMS
A:300.0	LCS 360-84353/4		360-84353		12/05/2011 14:43	1	TAL WFD	AMS

Lab References:
TAL WFD = TestAmerica Westfield

Certification Summary

Client: Tetra Tech NUS Inc | TestAmerica Job ID: 360-37706-1
Project/Site: MRC-Block E Injection Wells

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Westfield	Connecticut	State Program	1	PH-0494
TestAmerica Westfield	Maine	State Program	1	MA00014
TestAmerica Westfield	Massachusetts	State Program	1	M-MA014
TestAmerica Westfield	New Hampshire	NELAC	1	2539
TestAmerica Westfield	New York	NELAC	2	10843
TestAmerica Westfield	Rhode Island	State Program	1	LAO00057
TestAmerica Westfield	Vermont	State Program	1	VT-10843

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.

State Accreditation Matrix

Method Name	Description	State where **Primary** Accreditation is Carried		
		New Hampshire (NELAC)	Mass	Conn
821-R-02-012	Toxicity, Acute (48-Hour)(list upon request)	NP		
SM 4500 Cl F	Chlorine, Residual		NP	
SM 9215E	Heterotrophic Plate Count (SimPlate)		P	
SM 9222D	Coliforms, Fecal (Membrane Filter)		P/NP	
SM 9223	Coliforms, Total, and E.Coli (Colilert-P/A)		P	
SM 9224	Coliforms, Total, and E.Coli (Enumeration)		P	
1103.1	E.coli		ambient/	
Enterolert	Enterococcus		source	
200.8 Rev 5.4	Metals (ICP/MS) (list upon request)	NP/P	NP/P	
200.7 Rev 4.4	Metals (ICP)(list upon request)	NP/P	NP/P	
6010B/C	Metals (ICP)(list upon request)	NP/SW		
245.1	Mercury (CVAA)	NP/P	NP	
7470A	Mercury (CVAA)	NP		
7471A	Mercury (CVAA)	SW		
SM 2340B	Total Hardness (as CaCO3) by calculation	NP/P	NP	
3005A	Preparation, Total Recoverable or Dissolved Metals	NP/P		
3010A	Preparation, Total Metals	NP/P		
3020A	Preparation, Total Metals	NP/P/SW		
3050B	Preparation, Metals	SW		
504.1	EDB, DBCP and 1,2,3-TCP (GC)	P	P	
608	Organochlorine Pest/PCBs (list upon request)	NP	NP	
625	Semivolatile Org Comp (GC/MS)(list upon request)	NP	NP	
3546	Microwave Extraction	SW		
3510C	Liquid-Liquid Extraction (Separatory Funnel)	NP		
3550B	Ultrasonic Extraction	SW		
8081AB	Organochlorine Pesticides (GC)(list upon request)	NP/SW		
8082/A	PCBs by Gas Chromatography(list upon request)	NP/SW		
8270C/D	Semivolatile Comp.(GC/MS)(list upon request)	NP/SW		
CT ETPH	Conn - Ext. Total petroleum Hydrocarbons (GC)	NP/SW		NP/SW
MA-EPH	Mass - Extractable Petroleum Hydrocarbons (GC)	NP/SW		
524.2	Volatile Org Comp (GC/MS)(list upon request)	P	P	
524.2	Trihalomethane compounds	P	P	
624	Volatile Org Comp (GC/MS)(list upon request)	NP	NP	
5035	Closed System Purge and Trap	SW		
5030B	Purge and Trap	NP		
8260B/C	Volatile Org Comp. (GC/MS)(list upon request)	NP/SW		
MAVPH	Mass - Volatile Petroleum Hydrocarbons (GC)			
180.1	Turbidity, Nephelometric	P	P	
300	Anions, Ion Chromatography	NP/P	NP/P	
410.4	COD	NP	NP	
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW		
10-107-06-2	Nitrogen, Total Kjeldahl	NP	NP	
7196A	Chromium, Hexavalent	NP/SW		
9012A	Cyanide, Total and/or Amenable	NP/SW		
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	NP		
9045C	pH	SW		
L107041C	Nitrogen, Nitrate	NP	P	
L107-06-1B	Nitrogen Ammonia	NP	NP	
L204001A CN	Cyanide, Total	P	NP/P	
L210-001A	Phenolics, Total Recoverable	NP	NP	
SM 2320B	Alkalinity	NP/P	NP/P	
SM 2510B	Conductivity, Specific Conductance	NP/P	NP/P	
SM 2540C	Solids, Total Dissolved (TDS)	NP/P	NP/P	
SM 2540D	Solids, Total Suspended (TSS)	NP	NP	
SM 3500 CR D	Chromium, Hexavalent	NP		
SM 4500 H+ B	pH	NP/P	NP/P	
SM 4500 NO2 B	Nitrogen, Nitrite	NP	P	
SM 4500 P E	Phosphorus, Orthophosphate	NP/P	NP	
SM 4500 P E	Phosphorus, Total	NP	NP	
SM 4500 S2 D	Sulfide, Total	NP		
SM 5210B	BOD, 5-Day	NP	NP	
SM 5310B	Organic Carbon, Total (TOC)	NP/P	NP	

Not all organic compounds are accreditied under NELAC

For methods with multiple compounds all compounds may not meet NELAC criteria, listing should be obtained from the laboratory

The lab carries additional accreditations with several states. This is the laboratories typcial listing but is subject to change based on the laboratories current certification standing.

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job Number: 360-37706-1

SDG No.:

Project: MRC-Block E Injection Wells

Client Sample ID	Lab Sample ID
MPE-1S-110911	360-37706-1
MPE-1I-110911	360-37706-2
MPE-2S-110911	360-37706-3
MPE-2I-110911	360-37706-4
MPE-3S-110911	360-37706-5
MPE-3I-110911	360-37706-6
MPW-1S-110911	360-37706-7
MPW-1I-110911	360-37706-8
MPW-2s-110911	360-37706-9
MPN-1S-110911	360-37706-10
MPN-2S-110911	360-37706-11
MPN-2I-110911	360-37706-12
OW1-B-110911	360-37706-13
OW1-C-110911	360-37706-14
MPN-1I-110911	360-37706-15
E-MH10-SW-111011	360-37706-16
G-IL-XI-SW-111011	360-37706-17
I-XIIA-SW-111011	360-37706-18
E-MH10-SW-111111	360-37706-19
G-IL-X1-SW-111111	360-37706-20
I-X11A-SW-111111	360-37706-21
MPE-1S-111111	360-37706-22
MPE-1I-111111	360-37706-23
MPE-2S-111111	360-37706-24
MPE-2I-111111	360-37706-25
MPE-3S-111111	360-37706-26
MPE-3I-111111	360-37706-27
MPW-1S-111211	360-37706-28
MPW-1I-111211	360-37706-29
MPW-2S-111211	360-37706-30
MPW-2I-111211	360-37706-31
MPW-3S-111211	360-37706-32
MPW-3I-111211	360-37706-33
MPN-IS-111211	360-37706-34
MPN-1I-111211	360-37706-35
MPN-2S-111211	360-37706-36
MPN-2I-111211	360-37706-37
MPN-OW1B-111211	360-37706-38
MPN-OW1C-111211	360-37706-39
E-MH10-SW-111511	360-37706-40
G-IL-X1-SW-111511	360-37706-41
I-X11-SW-111511	360-37706-42
MPE-1S-111511	360-37706-43
MPE-1I-111511	360-37706-44
MPE-2S-111511	360-37706-45

Comments:

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job Number: 360-37706-1

SDG No.:

Project: MRC-Block E Injection Wells

Client Sample ID	Lab Sample ID
MPE-3S-111511	360-37706-46
MPE-3I-111511	360-37706-47
MPE-2I-111511	360-37706-48
MPW-1S-111611	360-37706-49
MPW-1I-111611	360-37706-50
MPW-2S-111611	360-37706-51
MPW-2I-111611	360-37706-52
MPW-3S-111611	360-37706-53
MPW-3I-111611	360-37706-54
OW1-B-111611	360-37706-55
OW1-C-111611	360-37706-56
MPN-1S-111611	360-37706-57
MPN-1I-111611	360-37706-58
MPN-2I-111611	360-37706-59
MPN-2S-111611	360-37706-60
MPN-2I-110911	360-37706-61
MPW-3S-110911	360-37706-62
MPW-3I-110911	360-37706-63

Comments:

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-1S-110911

Lab Sample ID: 360-37706-1

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/09/2011 12:00

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.062	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-1I-110911 Lab Sample ID: 360-37706-2

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG ID.:

Matrix: Water Date Sampled: 11/09/2011 12:23

Reporting Basis: WET Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.11	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-2S-110911

Lab Sample ID: 360-37706-3

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/09/2011 12:50

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.061	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-2I-110911

Lab Sample ID: 360-37706-4

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/09/2011 13:20

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.23	0.050		mg/L			1	300.0

FORM IB-IN

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-3S-110911

Lab Sample ID: 360-37706-5

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/09/2011 13:50

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.051	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-3I-110911

Lab Sample ID: 360-37706-6

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/09/2011 13:51

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.36	0.050		mg/L			1	300.0

FORM IB-IN

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-1S-110911 Lab Sample ID: 360-37706-7

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG ID.:

Matrix: Water Date Sampled: 11/09/2011 16:00

Reporting Basis: WET Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.14	0.050		mg/L			1	300.0

INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-1I-110911

Lab Sample ID: 360-37706-8

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/09/2011 16:03

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	12	0.50		mg/L			10	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-2s-110911

Lab Sample ID: 360-37706-9

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/09/2011 16:05

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.12	0.050		mg/L			1	300.0

INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-1S-110911

Lab Sample ID: 360-37706-10

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/09/2011 17:15

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	240	2.5		mg/L			50	300.0

INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-2S-110911

Lab Sample ID: 360-37706-11

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/09/2011 17:30

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.50	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-2I-110911

Lab Sample ID: 360-37706-12

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/09/2011 17:40

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.20	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: OW1-B-110911

Lab Sample ID: 360-37706-13

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/09/2011 17:45

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	52	1.0		mg/L			20	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: OW1-C-110911

Lab Sample ID: 360-37706-14

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/09/2011 17:50

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.15	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-1I-110911

Lab Sample ID: 360-37706-15

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/09/2011 17:20

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	300	10		mg/L			200	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: E-MH10-SW-111011

Lab Sample ID: 360-37706-16

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/10/2011 09:35

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.10	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: G-IL-XI-SW-111011 | Lab Sample ID: 360-37706-17

Lab Name: TestAmerica Westfield | Job No.: 360-37706-1

SDG ID.:

Matrix: Water | Date Sampled: 11/10/2011 10:25

Reporting Basis: WET | Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.082	0.050		mg/L			1	300.0

FORM IB-IN

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: I-XIIA-SW-111011

Lab Sample ID: 360-37706-18

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/10/2011 11:10

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	ND	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: E-MH10-SW-111111

Lab Sample ID: 360-37706-19

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/11/2011 11:05

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.11	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: G-IL-X1-SW-111111

Lab Sample ID: 360-37706-20

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/11/2011 11:20

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	ND	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: I-X11A-SW-111111

Lab Sample ID: 360-37706-21

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/11/2011 14:15

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.072	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-1S-111111

Lab Sample ID: 360-37706-22

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/11/2011 15:00

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.053	0.050		mg/L			1	300.0

FORM IB-IN

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-1I-111111 | Lab Sample ID: 360-37706-23

Lab Name: TestAmerica Westfield | Job No.: 360-37706-1

SDG ID.:

Matrix: Water | Date Sampled: 11/11/2011 15:05

Reporting Basis: WET | Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	16	0.50		mg/L			10	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-2S-111111 | Lab Sample ID: 360-37706-24

Lab Name: TestAmerica Westfield | Job No.: 360-37706-1

SDG ID.:

Matrix: Water | Date Sampled: 11/11/2011 15:30

Reporting Basis: WET | Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.062	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-2I-111111

Lab Sample ID: 360-37706-25

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/11/2011 15:35

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	6.1	0.50		mg/L			10	300.0

FORM IB-IN

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-3S-111111

Lab Sample ID: 360-37706-26

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/11/2011 15:45

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.054	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-3I-111111 Lab Sample ID: 360-37706-27

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG ID.:

Matrix: Water Date Sampled: 11/11/2011 15:50

Reporting Basis: WET Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	13	0.50		mg/L			10	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-1S-111211

Lab Sample ID: 360-37706-28

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/12/2011 11:20

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.16	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-1I-111211

Lab Sample ID: 360-37706-29

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/12/2011 11:00

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	200	2.5		mg/L			50	300.0

FORM IB-IN

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-2S-111211 | Lab Sample ID: 360-37706-30

Lab Name: TestAmerica Westfield | Job No.: 360-37706-1

SDG ID.:

Matrix: Water | Date Sampled: 11/12/2011 11:15

Reporting Basis: WET | Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	ND	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-2I-111211

Lab Sample ID: 360-37706-31

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/12/2011 12:00

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.11	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-3S-111211

Lab Sample ID: 360-37706-32

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/12/2011 12:15

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.12	0.050		mg/L			1	300.0

1B-IN

INORGANIC ANALYSIS DATA SHEET

GENERAL CHEMISTRY

Client Sample ID: MPW-3I-111211

Lab Sample ID: 360-37706-33

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/12/2011 12:10

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.098	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-IS-111211

Lab Sample ID: 360-37706-34

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/12/2011 14:15

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	330	5.0		mg/L			100	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-1I-111211 | Lab Sample ID: 360-37706-35

Lab Name: TestAmerica Westfield | Job No.: 360-37706-1

SDG ID.:

Matrix: Water | Date Sampled: 11/12/2011 14:05

Reporting Basis: WET | Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	370	5.0		mg/L			100	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-2S-111211

Lab Sample ID: 360-37706-36

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/12/2011 14:30

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.55	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-2I-111211

Lab Sample ID: 360-37706-37

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/12/2011 15:10

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.19	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-OW1B-111211 Lab Sample ID: 360-37706-38

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG ID.:

Matrix: Water Date Sampled: 11/12/2011 15:15

Reporting Basis: WET Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	210	5.0		mg/L			100	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-OW1C-111211

Lab Sample ID: 360-37706-39

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/12/2011 15:20

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	13	5.0		mg/L			100	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: E-MH10-SW-111511

Lab Sample ID: 360-37706-40

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/15/2011 13:35

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	1.7	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: G-IL-X1-SW-111511

Lab Sample ID: 360-37706-41

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/15/2011 14:00

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	ND	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: I-X11-SW-111511

Lab Sample ID: 360-37706-42

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/15/2011 14:15

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.062	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-1S-111511

Lab Sample ID: 360-37706-43

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/15/2011 15:15

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.069	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-1I-111511

Lab Sample ID: 360-37706-44

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/15/2011 15:20

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	67	5.0		mg/L			100	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-2S-111511

Lab Sample ID: 360-37706-45

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/15/2011 15:25

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.060	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-3S-111511

Lab Sample ID: 360-37706-46

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/15/2011 15:50

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	ND	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-3I-111511
Lab Sample ID: 360-37706-47
Lab Name: TestAmerica Westfield
Job No.: 360-37706-1
SDG ID.:
Matrix: Water
Date Sampled: 11/15/2011 15:55
Reporting Basis: WET
Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	28	5.0		mg/L			100	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPE-2I-111511

Lab Sample ID: 360-37706-48

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/15/2011 16:00

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	49	5.0		mg/L			100	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-1S-111611

Lab Sample ID: 360-37706-49

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/16/2011 10:00

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.13	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-1I-111611 Lab Sample ID: 360-37706-50

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG ID.:

Matrix: Water Date Sampled: 11/16/2011 10:05

Reporting Basis: WET Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	210	5.0		mg/L			100	300.0

FORM IB-IN

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-2S-111611

Lab Sample ID: 360-37706-51

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/16/2011 10:10

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.10	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-2I-111611 Lab Sample ID: 360-37706-52

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG ID.:

Matrix: Water Date Sampled: 11/16/2011 10:30

Reporting Basis: WET Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	55	5.0		mg/L			100	300.0

1B-IN

INORGANIC ANALYSIS DATA SHEET

GENERAL CHEMISTRY

Client Sample ID: MPW-3S-111611

Lab Sample ID: 360-37706-53

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/16/2011 10:35

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	ND	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-3I-111611

Lab Sample ID: 360-37706-54

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/16/2011 10:40

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.11	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: OW1-B-111611

Lab Sample ID: 360-37706-55

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/16/2011 12:50

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	53	5.0		mg/L			100	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: OW1-C-111611

Lab Sample ID: 360-37706-56

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/16/2011 12:55

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	27	5.0		mg/L			100	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-1S-111611

Lab Sample ID: 360-37706-57

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/16/2011 13:00

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	81	5.0		mg/L			100	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-1I-111611

Lab Sample ID: 360-37706-58

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/16/2011 13:10

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	220	5.0		mg/L			100	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-2I-111611 | Lab Sample ID: 360-37706-59

Lab Name: TestAmerica Westfield | Job No.: 360-37706-1

SDG ID.:

Matrix: Water | Date Sampled: 11/16/2011 13:15

Reporting Basis: WET | Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.20	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-2S-111611

Lab Sample ID: 360-37706-60

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/16/2011 13:20

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.56	0.050		mg/L			1	300.0

FORM IB-IN

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPN-2I-110911

Lab Sample ID: 360-37706-61

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/09/2011 16:25

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.092	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-3S-110911

Lab Sample ID: 360-37706-62

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/09/2011 16:31

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	ND	0.050		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MPW-3I-110911

Lab Sample ID: 360-37706-63

Lab Name: TestAmerica Westfield

Job No.: 360-37706-1

SDG ID.:

Matrix: Water

Date Sampled: 11/09/2011 16:35

Reporting Basis: WET

Date Received: 11/17/2011 10:55

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.096	0.050		mg/L			1	300.0

FORM IB-IN

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield | Job No.: 360-37706-1

SDG No.:

Analyst: RWE | Batch Start Date: 11/23/2011

Reporting Units: mg/L | Analytical Batch No.: 83987

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	11:30	Bromide	2.51	2.50	100	90-110		W11H_IC_ICV_00001
2	ICB	11:46	Bromide	ND					
3	CCV	08:27	Bromide	4.21	4.00	105	90-110		W11J_IC_LCS_00001
4	CCB	08:43	Bromide	ND					
16	CCV	12:13	Bromide	4.33	4.00	108	90-110		W11J_IC_LCS_00001
17	CCB	12:29	Bromide	ND					
22	CCV	15:26	Bromide	4.28	4.00	107	90-110		W11J_IC_LCS_00001
23	CCB	15:42	Bromide	ND					

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

FORM II-IN

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Analyst: RWE   Batch Start Date: 11/28/2011

Reporting Units: mg/L   Analytical Batch No.: 84080

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	19:45	Bromide	2.47	2.50	99	90-110		W11H_IC_ICV_00001
2	ICB	20:01	Bromide	ND					
15	CCV	23:30	Bromide	3.94	4.00	99	90-110		W11J_IC_LCS_00001
16	CCB	23:46	Bromide	ND					
25	CCV	02:44	Bromide	3.85	4.00	96	90-110		W11J_IC_LCS_00001
26	CCB	03:00	Bromide	ND					

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

FORM II-IN

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Analyst: RWE   Batch Start Date: 11/28/2011

Reporting Units: mg/L   Analytical Batch No.: 84081

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	19:45	Bromide	2.47	2.50	99	90-110		W11H_IC_ICV_00001
2	ICB	20:01	Bromide	ND					
3	CCV	02:44	Bromide	3.85	4.00	96	90-110		W11J_IC_LCS_00001
4	CCB	03:00	Bromide	ND					
11	CCV	06:29	Bromide	4.00	4.00	100	90-110		W11J_IC_LCS_00001
12	CCB	06:45	Bromide	ND					
16	CCV	09:43	Bromide	3.68	4.00	92	90-110		W11J_IC_LCS_00001
17	CCB	09:59	Bromide	ND					

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

FORM II-IN

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Analyst: RWE   Batch Start Date: 11/21/2011

Reporting Units: mg/L   Analytical Batch No.: 84104

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	17:17	Bromide	2.33	2.50	93	90-110		W11H_IC_ICV_00001
2	ICB	17:33	Bromide	ND					
14	CCV	21:02	Bromide	4.13	4.00	103	90-110		W11J_IC_LCS_00001
15	CCB	21:19	Bromide	ND					
23	CCV	00:16	Bromide	4.04	4.00	101	90-110		W11J_IC_LCS_00001
24	CCB	00:32	Bromide	ND					

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

FORM II-IN

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Analyst: RWE   Batch Start Date: 11/21/2011

Reporting Units: mg/L   Analytical Batch No.: 84106

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	17:17	Bromide	2.33	2.50	93	90-110		W11H_IC_ICV_00001
2	ICB	17:33	Bromide	ND					
3	CCV	00:16	Bromide	4.04	4.00	101	90-110		W11J_IC_LCS_00001
4	CCB	00:32	Bromide	ND					
15	CCV	04:01	Bromide	3.94	4.00	98	90-110		W11J_IC_LCS_00001
16	CCB	04:17	Bromide	ND					
25	CCV	07:15	Bromide	3.70	4.00	93	90-110		W11J_IC_LCS_00001
26	CCB	07:31	Bromide	ND					

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

FORM II-IN

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Analyst: AMS   Batch Start Date: 11/30/2011

Reporting Units: mg/L   Analytical Batch No.: 84154

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	07:47	Bromide	2.31	2.50	92	90-110		W11H_IC_ICV_00001
2	ICB	08:03	Bromide	ND					
14	CCV	11:32	Bromide	3.82	4.00	96	90-110		W11J_IC_LCS_00001
15	CCB	11:48	Bromide	ND					
24	CCV	14:45	Bromide	3.84	4.00	96	90-110		W11J_IC_LCS_00001
25	CCB	15:02	Bromide	ND					

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

FORM II-IN

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Analyst: AMS   Batch Start Date: 12/01/2011

Reporting Units: mg/L   Analytical Batch No.: 84207

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	08:29	Bromide	2.37	2.50	95	90-110		W11H_IC_ICV_00001
2	ICB	08:45	Bromide	ND					
15	CCV	12:14	Bromide	3.96	4.00	99	90-110		W11J_IC_LCS_00001
16	CCB	12:31	Bromide	ND					
22	CCV	15:28	Bromide	3.99	4.00	100	90-110		W11J_IC_LCS_00001
23	CCB	15:44	Bromide	ND					

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

FORM II-IN

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield | Job No.: 360-37706-1

SDG No.:

Analyst: AMS | Batch Start Date: 12/01/2011

Reporting Units: mg/L | Analytical Batch No.: 84209

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	08:29	Bromide	2.37	2.50	95	90-110		W11H_IC_ICV_00001
2	ICB	08:45	Bromide	ND					
3	CCV	15:28	Bromide	3.99	4.00	100	90-110		W11J_IC_LCS_00001
4	CCB	15:44	Bromide	ND					
16	CCV	19:13	Bromide	3.99	4.00	100	90-110		W11J_IC_LCS_00001
17	CCB	19:30	Bromide	ND					
23	CCV	22:27	Bromide	3.85	4.00	96	90-110		W11J_IC_LCS_00001
24	CCB	22:43	Bromide	ND					

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

FORM II-IN

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Analyst: AMS   Batch Start Date: 12/03/2011

Reporting Units: mg/L   Analytical Batch No.: 84269

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	10:33	Bromide	2.29	2.50	92	90-110		W11H_IC_ICV_00001
2	ICB	10:49	Bromide	ND					
13	CCV	14:19	Bromide	3.73	4.00	93	90-110		W11J_IC_LCS_00001
14	CCB	14:35	Bromide	ND					
23	CCV	17:32	Bromide	3.74	4.00	94	90-110		W11J_IC_LCS_00001
24	CCB	17:48	Bromide	ND					

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

FORM II-IN

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG No.:

Analyst: AMS Batch Start Date: 12/03/2011

Reporting Units: mg/L Analytical Batch No.: 84273

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	10:33	Bromide	2.29	2.50	92	90-110		W11H_IC_ICV_00001
2	ICB	10:49	Bromide	ND					
3	CCV	17:32	Bromide	3.74	4.00	94	90-110		W11J_IC_LCS_00001
4	CCB	17:48	Bromide	ND					
16	CCV	21:17	Bromide	3.63	4.00	91	90-110		W11J_IC_LCS_00001
17	CCB	21:34	Bromide	ND					
23	CCV	00:15	Bromide	3.76	4.00	94	90-110		W11J_IC_LCS_00001
24	CCB	00:31	Bromide	ND					

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

FORM II-IN

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Analyst: AMS   Batch Start Date: 12/05/2011

Reporting Units: mg/L   Analytical Batch No.: 84353

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	13:55	Bromide	2.34	2.50	94	90-110		W11H_IC_ICV_00001
2	ICB	14:11	Bromide	ND					
13	CCV	17:41	Bromide	3.65	4.00	91	90-110		W11J_IC_LCS_00001
14	CCB	17:57	Bromide	ND					

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

FORM II-IN

3-IN
METHOD BLANK
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Method	Lab Sample ID	Analyte	Result	Qual	Units	RL	Dil
Batch ID: 84104	Date: 11/21/2011 17:49						
300.0	MB 360-84104/3	Bromide	ND		mg/L	0.050	1
Batch ID: 84106	Date: 11/22/2011 00:48						
300.0	MB 360-84106/5	Bromide	ND		mg/L	0.050	1
Batch ID: 83987	Date: 11/24/2011 09:00						
300.0	MB 360-83987/5	Bromide	ND		mg/L	0.050	1
Batch ID: 84080	Date: 11/28/2011 20:17						
300.0	MB 360-84080/3	Bromide	ND		mg/L	0.050	1
Batch ID: 84081	Date: 11/29/2011 03:16						
300.0	MB 360-84081/5	Bromide	ND		mg/L	0.050	1
Batch ID: 84154	Date: 11/30/2011 08:19						
300.0	MB 360-84154/3	Bromide	ND		mg/L	0.050	1
Batch ID: 84207	Date: 12/01/2011 09:01						
300.0	MB 360-84207/3	Bromide	ND		mg/L	0.050	1
Batch ID: 84209	Date: 12/01/2011 16:00						
300.0	MB 360-84209/5	Bromide	ND		mg/L	0.050	1
Batch ID: 84269	Date: 12/03/2011 11:05						
300.0	MB 360-84269/3	Bromide	ND		mg/L	0.050	1
Batch ID: 84273	Date: 12/03/2011 18:04						
300.0	MB 360-84273/5	Bromide	ND		mg/L	0.050	1
Batch ID: 84353	Date: 12/05/2011 14:27						
300.0	MB 360-84353/3	Bromide	ND		mg/L	0.050	1

FORM III-IN

5-IN
MATRIX SPIKE SAMPLE RECOVERY
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 84106	Date: 11/22/2011 01:36										
300.0	360-37706-5	Bromide	0.051		mg/L						
300.0	360-37706-5 MS	Bromide	1.03		mg/L	1.00	98	75-125			
Batch ID: 84269	Date: 12/03/2011 13:14										
300.0	360-37706-A-3 3	Bromide	ND		mg/L						
300.0	360-37706-A-3 3 MS	Bromide	10.3		mg/L	10.0	103	75-125			
Batch ID: 84353	Date: 12/05/2011 15:32										
300.0	360-37706-44	Bromide	67		mg/L						
300.0	360-37706-44 MS	Bromide	161		mg/L	100	94	75-125			

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

FORM V-IN

5-IN
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 84106	Date: 11/22/2011 01:52										
300.0	360-37706-5 MSD	Bromide	1.03		mg/L	1.00	98	75-125	1	20	
Batch ID: 84269	Date: 12/03/2011 13:30										
300.0	360-37706-A-3 3 MSD	Bromide	10.2		mg/L	10.0	102	75-125	1	20	
Batch ID: 84353	Date: 12/05/2011 15:48										
300.0	360-37706-44 MSD	Bromide	162		mg/L	100	94	75-125	0	20	

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

FORM V-IN

7A-IN
LAB CONTROL SAMPLE
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG No.:

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 84104		Date: 11/21/2011 18:05									
					LCS Source:	W11J_IC_LCS_00001					
300.0	LCS 360-84104/4	Bromide	3.90		mg/L	4.00	98	85-115			
Batch ID: 84106		Date: 11/22/2011 01:04									
					LCS Source:	W11J_IC_LCS_00001					
300.0	LCS 360-84106/6	Bromide	4.03		mg/L	4.00	101	85-115			
Batch ID: 83987		Date: 11/24/2011 09:16									
					LCS Source:	W11J_IC_LCS_00001					
300.0	LCS 360-83987/6	Bromide	4.24		mg/L	4.00	106	85-115			
Batch ID: 84080		Date: 11/28/2011 20:33									
					LCS Source:	W11J_IC_LCS_00001					
300.0	LCS 360-84080/4	Bromide	3.93		mg/L	4.00	98	85-115			
Batch ID: 84081		Date: 11/29/2011 03:32									
					LCS Source:	W11J_IC_LCS_00001					
300.0	LCS 360-84081/6	Bromide	3.97		mg/L	4.00	99	85-115			
Batch ID: 84154		Date: 11/30/2011 08:35									
					LCS Source:	W11J_IC_LCS_00001					
300.0	LCS 360-84154/4	Bromide	3.83		mg/L	4.00	96	85-115			
Batch ID: 84207		Date: 12/01/2011 09:17									
					LCS Source:	W11J_IC_LCS_00001					
300.0	LCS 360-84207/4	Bromide	3.90		mg/L	4.00	98	85-115			
Batch ID: 84209		Date: 12/01/2011 16:16									
					LCS Source:	W11J_IC_LCS_00001					
300.0	LCS 360-84209/6	Bromide	4.02		mg/L	4.00	100	85-115			
Batch ID: 84269		Date: 12/03/2011 11:21									
					LCS Source:	W11J_IC_LCS_00001					
300.0	LCS 360-84269/4	Bromide	3.68		mg/L	4.00	92	85-115			
Batch ID: 84273		Date: 12/03/2011 18:20									
					LCS Source:	W11J_IC_LCS_00001					
300.0	LCS 360-84273/6	Bromide	3.68		mg/L	4.00	92	85-115			
Batch ID: 84353		Date: 12/05/2011 14:43									
					LCS Source:	W11J_IC_LCS_00001					
300.0	LCS 360-84353/4	Bromide	4.01		mg/L	4.00	100	85-115			

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

FORM VIIA-IN

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job Number: 360-37706-1

SDG Number:

Matrix: Water   Instrument ID: Lachat 8500

Method: 300.0   RL Date: 10/27/2011 11:55

Analyte	Wavelength/ Mass	RL (mg/L)	
Bromide		0.05	

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job Number: 360-37706-1

SDG Number:

Matrix: Water   Instrument ID: Lachat 8500

Method: 300.0   XMDL Date: 02/15/2011 13:03

Analyte	Wavelength/ Mass	XRL (mg/L)	XMDL (mg/L)
Bromide		0.1	0.01

FORM IX - IN

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG No.:

Instrument ID: Lachat 8500 Method: 300.0

Start Date: 11/21/2011 00:00 End Date: 11/22/2011 00:32

Lab Sample ID	D/F	Type	Time	Analytes: Br
360-37706-4	1	T	00:00	X
ICV 360-84104/1	1		17:17	X
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ICB 360-84104/2	1		17:33	X
MB 360-84104/3	1	T	17:49	X
LCS 360-84104/4	1	T	18:05	X
ZZZZZZ			18:21	
ZZZZZZ			18:37	
ZZZZZZ			18:54	
ZZZZZZ			19:10	
ZZZZZZ			19:26	
ZZZZZZ			19:42	
ZZZZZZ			19:58	
ZZZZZZ			20:14	
ZZZZZZ			20:46	
CCV 360-84104/14	1		21:02	X
CCB 360-84104/15	1		21:19	X
ZZZZZZ			21:35	
ZZZZZZ			22:07	
ZZZZZZ			22:39	
360-37706-1	1	T	23:11	X
360-37706-2	1	T	23:27	X
360-37706-3	1	T	23:44	X
CCV 360-84104/23	1		00:16	X
CCB 360-84104/24	1		00:32	X

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name:	TestAmerica Westfield	Job No.:	360-37706-1
SDG No.:			
Instrument ID:	Lachat 8500	Method:	300.0
Start Date:	11/21/2011 00:00	End Date:	11/22/2011 00:32

Prep Types
T = Total/NA

ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Instrument ID: Lachat 8500   Method: 300.0

Start Date: 11/21/2011 17:17   End Date: 11/22/2011 17:17

Lab Sample ID	D/F	Type	Time	Analytes: Br
ICV 360-84106/1	1		17:17	X
ICB 360-84106/2	1		17:33	X
CCV 360-84106/3	1		00:16	X
CCB 360-84106/4	1		00:32	X
MB 360-84106/5	1	T	00:48	X
LCS 360-84106/6	1	T	01:04	X
360-37706-5	1	T	01:20	X
360-37706-5 MS	1	T	01:36	X
360-37706-5 MSD	1	T	01:52	X
360-37706-6	1	T	02:09	X
360-37706-7	1	T	02:25	X
360-37706-9	1	T	02:57	X
360-37706-11	1	T	03:29	X
360-37706-12	1	T	03:45	X
CCV 360-84106/15	1		04:01	X
CCB 360-84106/16	1		04:17	X
360-37706-14	1	T	04:50	X
360-37706-16	1	T	05:22	X
360-37706-17	1	T	05:38	X
360-37706-18	1	T	05:54	X
360-37706-19	1	T	06:10	X
360-37706-20	1	T	06:26	X
360-37706-21	1	T	06:42	X
360-37706-22	1	T	06:59	X
CCV 360-84106/25	1		07:15	X
CCB 360-84106/26	1		07:31	X
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	
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ZZZZZZ			17:17	
ZZZZZZ			17:17	
ZZZZZZ			17:17	

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG No.:

Instrument ID: Lachat 8500 Method: 300.0

Start Date: 11/21/2011 17:17 End Date: 11/22/2011 17:17

Prep Types
T = Total/NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Instrument ID: Lachat 8500   Method: 300.0

Start Date: 11/23/2011 11:30   End Date: 11/24/2011 15:42

Lab Sample ID	D/F	Type	Time	Analytes: Br
ICV 360-83987/1	1		11:30	X
ICB 360-83987/2	1		11:46	X
CCV 360-83987/3	1		08:27	X
CCB 360-83987/4	1		08:43	X
MB 360-83987/5	1	T	09:00	X
LCS 360-83987/6	1	T	09:16	X
ZZZZZZ			09:32	
ZZZZZZ			09:48	
ZZZZZZ			10:04	
ZZZZZZ			10:20	
ZZZZZZ			10:36	
ZZZZZZ			10:52	
ZZZZZZ			11:08	
ZZZZZZ			11:25	
ZZZZZZ			11:30	
ZZZZZZ			11:30	
ZZZZZZ			11:30	
ZZZZZZ			11:30	
ZZZZZZ			11:30	
ZZZZZZ			11:30	
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ZZZZZZ			11:30	
ZZZZZZ			11:30	
ZZZZZZ			11:30	
ZZZZZZ			11:30	
ZZZZZZ			11:30	
ZZZZZZ			11:57	
CCV 360-83987/16	1		12:13	X
CCB 360-83987/17	1		12:29	X
ZZZZZZ			12:45	
360-37706-24	1	T	13:17	X
360-37706-26	1	T	13:50	X
360-37706-28	1	T	14:22	X
CCV 360-83987/22	1		15:26	X
CCB 360-83987/23	1		15:42	X

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name:	TestAmerica Westfield	Job No.:	360-37706-1
SDG No.:			
Instrument ID:	Lachat 8500	Method:	300.0
Start Date:	11/23/2011 11:30	End Date:	11/24/2011 15:42

Prep Types
T = Total/NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG No.:

Instrument ID: Lachat 8500 Method: 300.0

Start Date: 11/28/2011 19:45 End Date: 11/29/2011 03:00

Lab Sample ID	D/F	Type	Time	Analytes: Br
ICV 360-84080/1	1		19:45	X
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ICB 360-84080/2	1		20:01	X
MB 360-84080/3	1	T	20:17	X
LCS 360-84080/4	1	T	20:33	X
ZZZZZZ			20:49	
ZZZZZZ			21:05	
ZZZZZZ			21:21	
ZZZZZZ			21:38	
ZZZZZZ			21:54	
ZZZZZZ			22:10	
ZZZZZZ			22:26	
ZZZZZZ			22:42	
ZZZZZZ			22:58	
ZZZZZZ			23:14	
CCV 360-84080/15	1		23:30	X
CCB 360-84080/16	1		23:46	X
ZZZZZZ			00:03	
ZZZZZZ			00:19	
ZZZZZZ			00:35	
ZZZZZZ			00:51	
360-37706-23	10	T	01:07	X
360-37706-25	10	T	01:23	X
360-37706-27	10	T	01:39	X
360-37706-29	50	T	02:11	X
CCV 360-84080/25	1		02:44	X
CCB 360-84080/26	1		03:00	X

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name:	TestAmerica Westfield	Job No.:	360-37706-1
SDG No.:			
Instrument ID:	Lachat 8500	Method:	300.0
Start Date:	11/28/2011 19:45	End Date:	11/29/2011 03:00

Prep Types
T = Total/NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG No.:

Instrument ID: Lachat 8500 Method: 300.0

Start Date: 11/28/2011 19:45 End Date: 11/29/2011 19:45

Lab Sample ID	D/F	Type	Time	Analytes: Br
ICV 360-84081/1	1		19:45	X
ICB 360-84081/2	1		20:01	X
CCV 360-84081/3	1		02:44	X
CCB 360-84081/4	1		03:00	X
MB 360-84081/5	1	T	03:16	X
LCS 360-84081/6	1	T	03:32	X
ZZZZZZ			04:36	
ZZZZZZ			05:25	
360-37706-8	10	T	05:41	X
360-37706-10	50	T	06:13	X
CCV 360-84081/11	1		06:29	X
CCB 360-84081/12	1		06:45	X
360-37706-46	1	T	07:50	X
360-37706-49	1	T	08:38	X
360-37706-51	1	T	09:10	X
CCV 360-84081/16	1		09:43	X
CCB 360-84081/17	1		09:59	X
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
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ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	
ZZZZZZ			19:45	

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name:	TestAmerica Westfield	Job No.:	360-37706-1
SDG No.:			
Instrument ID:	Lachat 8500	Method:	300.0
Start Date:	11/28/2011 19:45	End Date:	11/29/2011 19:45

Prep Types
T = Total/NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Instrument ID: Lachat 8500   Method: 300.0

Start Date: 11/30/2011 07:47   End Date: 11/30/2011 15:02

Lab Sample ID	D/F	Type	Time	Analytes: Br
ICV 360-84154/1	1		07:47	X
ZZZZZZ			07:47	
ZZZZZZ			07:47	
ZZZZZZ			07:47	
ZZZZZZ			07:47	
ZZZZZZ			07:47	
ZZZZZZ			07:47	
ZZZZZZ			07:47	
ZZZZZZ			07:47	
ZZZZZZ			07:47	
ZZZZZZ			07:47	
ZZZZZZ			07:47	
ZZZZZZ			07:47	
ZZZZZZ			07:47	
ZZZZZZ			07:47	
ZZZZZZ			07:47	
ICB 360-84154/2	1		08:03	X
MB 360-84154/3	1	T	08:19	X
LCS 360-84154/4	1	T	08:35	X
ZZZZZZ			08:51	
ZZZZZZ			09:07	
ZZZZZZ			09:23	
ZZZZZZ			09:39	
ZZZZZZ			09:55	
360-37706-13	20	T	10:12	X
360-37706-47	100	T	10:44	X
360-37706-48	100	T	11:00	X
ZZZZZZ			11:16	
CCV 360-84154/14	1		11:32	X
CCB 360-84154/15	1		11:48	X
ZZZZZZ			12:04	
ZZZZZZ			12:20	
ZZZZZZ			12:37	
360-37706-50	100	T	12:53	X
360-37706-52	100	T	13:25	X
ZZZZZZ			13:41	
ZZZZZZ			13:57	
ZZZZZZ			14:29	
CCV 360-84154/24	1		14:45	X
CCB 360-84154/25	1		15:02	X

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name:	TestAmerica Westfield	Job No.:	360-37706-1
SDG No.:			
Instrument ID:	Lachat 8500	Method:	300.0
Start Date:	11/30/2011 07:47	End Date:	11/30/2011 15:02

Prep Types

T = Total/NA

ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Instrument ID: Lachat 8500   Method: 300.0

Start Date: 12/01/2011 08:29   End Date: 12/01/2011 15:44

				Analytes																			
Lab Sample ID	D/F	Type	Time	Br																			
ICV 360-84207/1	1		08:29	X																			
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ICB 360-84207/2	1		08:45	X																			
MB 360-84207/3	1	T	09:01	X																			
LCS 360-84207/4	1	T	09:17	X																			
ZZZZZZ			09:33																				
ZZZZZZ			09:49																				
ZZZZZZ			10:06																				
ZZZZZZ			10:22																				
ZZZZZZ			10:38																				
ZZZZZZ			10:54																				
ZZZZZZ			11:10																				
ZZZZZZ			11:26																				
ZZZZZZ			11:42																				
ZZZZZZ			11:58																				
CCV 360-84207/15	1		12:14	X																			
CCB 360-84207/16	1		12:31	X																			
ZZZZZZ			12:47																				
ZZZZZZ			13:03																				
360-37706-59	1	T	14:40	X																			
360-37706-60	1	T	14:56	X																			
360-37706-61	1	T	15:12	X																			
CCV 360-84207/22	1		15:28	X																			
CCB 360-84207/23	1		15:44	X																			

ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name:	TestAmerica Westfield	Job No.:	360-37706-1
SDG No.:			
Instrument ID:	Lachat 8500	Method:	300.0
Start Date:	12/01/2011 08:29	End Date:	12/01/2011 15:44

Prep Types

T = Total/NA

ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Instrument ID: Lachat 8500   Method: 300.0

Start Date: 12/01/2011 08:29   End Date: 12/01/2011 22:43

Lab Sample ID	D/F	Type	Time	Analytes																			
				Br																			
ICV 360-84209/1	1		08:29	X																			
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ZZZZZZ			08:29																				
ICB 360-84209/2	1		08:45	X																			
CCV 360-84209/3	1		15:28	X																			
CCB 360-84209/4	1		15:44	X																			
MB 360-84209/5	1	T	16:00	X																			
LCS 360-84209/6	1	T	16:16	X																			
ZZZZZZ			16:32																				
ZZZZZZ			16:48																				
ZZZZZZ			17:05																				
360-37706-62	1	T	17:21	X																			
360-37706-63	1	T	17:37	X																			
ZZZZZZ			17:52																				
360-37706-15	200	T	18:25	X																			
ZZZZZZ			18:41																				
ZZZZZZ			18:57																				
CCV 360-84209/16	1		19:13	X																			
CCB 360-84209/17	1		19:30	X																			
360-37706-53	1	T	20:34	X																			
360-37706-55	100	T	21:06	X																			
ZZZZZZ			21:22																				
ZZZZZZ			21:38																				
ZZZZZZ			21:55																				
CCV 360-84209/23	1		22:27	X																			
CCB 360-84209/24	1		22:43	X																			

Prep Types

T = Total/NA

ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG No.:

Instrument ID: Lachat 8500 Method: 300.0

Start Date: 12/03/2011 10:33 End Date: 12/03/2011 17:48

Lab Sample ID	D/F	Type	Time	Analytes																			
				Br																			
ICV 360-84269/1	1		10:33	X																			
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
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ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ICB 360-84269/2	1		10:49	X																			
MB 360-84269/3	1	T	11:05	X																			
LCS 360-84269/4	1	T	11:21	X																			
ZZZZZZ			11:37																				
ZZZZZZ			11:54																				
360-37706-31	1	T	12:10	X																			
360-37706-32	1	T	12:26	X																			
360-37706-33	1	T	12:42	X																			
ZZZZZZ			12:58																				
360-37706-A-33 MS	10	T	13:14	X																			
360-37706-A-33 MSD	10	T	13:30	X																			
CCV 360-84269/13	1		14:19	X																			
CCB 360-84269/14	1		14:35	X																			
360-37706-35	100	T	14:51	X																			
360-37706-58	100	T	15:07	X																			
360-37706-34	100	T	15:23	X																			
360-37706-37	1	T	15:55	X																			
360-37706-38	100	T	16:11	X																			
360-37706-40	1	T	16:44	X																			
360-37706-41	1	T	17:00	X																			
360-37706-42	1	T	17:16	X																			
CCV 360-84269/23	1		17:32	X																			
CCB 360-84269/24	1		17:48	X																			

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name:	TestAmerica Westfield	Job No.:	360-37706-1
SDG No.:			
Instrument ID:	Lachat 8500	Method:	300.0
Start Date:	12/03/2011 10:33	End Date:	12/03/2011 17:48

Prep Types
T = Total/NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Instrument ID: Lachat 8500   Method: 300.0

Start Date: 12/03/2011 10:33   End Date: 12/04/2011 00:31

				Analytes																			
Lab Sample ID	D/F	Type	Time	Br																			
ICV 360-84273/1	1		10:33	X																			
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
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ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ZZZZZZ			10:33																				
ICB 360-84273/2	1		10:49	X																			
CCV 360-84273/3	1		17:32	X																			
CCB 360-84273/4	1		17:48	X																			
MB 360-84273/5	1	T	18:04	X																			
LCS 360-84273/6	1	T	18:20	X																			
360-37706-30	1	T	18:36	X																			
360-37706-43	1	T	18:52	X																			
360-37706-45	1	T	19:25	X																			
360-37706-54	1	T	19:41	X																			
ZZZZZZ			19:57																				
ZZZZZZ			20:13																				
ZZZZZZ			20:29																				
ZZZZZZ			20:45																				
ZZZZZZ			21:01																				
CCV 360-84273/16	1		21:17	X																			
CCB 360-84273/17	1		21:34	X																			
360-37706-56	100	T	21:50	X																			
360-37706-57	100	T	22:06	X																			
360-37706-36	1	T	22:22	X																			
ZZZZZZ			23:42																				
ZZZZZZ			23:59																				
CCV 360-84273/23	1		00:15	X																			
CCB 360-84273/24	1		00:31	X																			

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name:	TestAmerica Westfield	Job No.:	360-37706-1
SDG No.:			
Instrument ID:	Lachat 8500	Method:	300.0
Start Date:	12/03/2011 10:33	End Date:	12/04/2011 00:31

Prep Types
T = Total/NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Instrument ID: Lachat 8500   Method: 300.0

Start Date: 12/05/2011 13:55   End Date: 12/05/2011 21:10

Lab Sample ID	D/F	Type	Time	Analytes: Br
ICV 360-84353/1	1		13:55	X
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ZZZZZZ			13:55	
ICB 360-84353/2	1		14:11	X
MB 360-84353/3	1	T	14:27	X
LCS 360-84353/4	1	T	14:43	X
360-37706-39	100	T	14:59	X
360-37706-44	100	T	15:16	X
360-37706-44 MS	100	T	15:32	X
360-37706-44 MSD	100	T	15:48	X
ZZZZZZ			16:04	
ZZZZZZ			16:36	
ZZZZZZ			17:08	
ZZZZZZ			17:24	
CCV 360-84353/13	1		17:41	X
CCB 360-84353/14	1		17:57	X
ZZZZZZ			18:13	
ZZZZZZ			18:29	
ZZZZZZ			18:45	
ZZZZZZ			19:33	
ZZZZZZ			19:49	
CCV 360-84353/20			20:54	
CCB 360-84353/21			21:10	

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name:	TestAmerica Westfield	Job No.:	360-37706-1
SDG No.:			
Instrument ID:	Lachat 8500	Method:	300.0
Start Date:	12/05/2011 13:55	End Date:	12/05/2011 21:10

Prep Types
T = Total/NA

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review Coversheet—Inorganics Dept

Method Name: IC Method Reference: 300.0 Date of Analytical Run: 11-21-11

Primary Reviewer's Initials & Date: [illegible] 11-28-11 Secondary Reviewer's Initials & Date: [illegible] 2011

Batch Numbers	84104	84106			

QC Criteria—Non-MCP: ICV/CCV ±10%: LCS/LCSD ±15%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%

QC Criteria—MCP/RCP: (9012 and 7196 only)
9012 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
9012 (soil): ICV/CCV ±15%: LCS/LCSD **: MS/MSD ±25%: ICB/MB/CCB <RL: MD RPD 35%: MSD/LCSD RPD ≤30%
7196 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
7196 (soil): ICV/CCV ±15%: LCS/LCSD **: MSS/MSI ±25%: ICB/MB/CCB <RL: MD RPD ≤35%: LCSD RPD ≤30%

FAILURES OF QC FOR ANYTHING OTHER THAN MS, MSD or MD ARE GROUNDS FOR INVALIDATING THE BATCH.

Criteria for QC	Yes	No	n/a	Notes/Comments
Were the ICV and CCVs within acceptable limits for QC recovery?	✓ ✓			
Were the ICB and CCBs all <RL?	✓ ✓			
Were all MB and CCB results <RL for the analytes of interest?	✓ ✓			
Was there a CCV/CCB combination run after every 10 samples or less?	✓ ✓			
Was there an LCS run with every batch of 20 samples or less?	✓ ✓			
Was there a MD, LCSD or MSD run with every batch of 20 samples or less?	✓ ✓			
Were all LCS/LCSD results within acceptable limits for QC recovery?	✓ ✓			
Were all MS/MSD results within acceptable limits for QC recovery?	✓ ✓			
Were all MD, LCSD and/or MSD %RPDs within acceptable limits for QC recovery?	✓ ✓			
Were the raw data points for investigative samples within the working curve range, or if not, were the samples diluted to bring them within this range?	✓ ✓			
IF there were any MCP/RCP samples in this batch, did they meet all MCP/RCP requirements?	✓		✓	
Were there any holding time violations in this batch?		✓ ✓		**NOTE!** The PM and QA Manager must be notified by email *immediately* of any holding time violations!!
Were any NCMs generated for any samples in the batch? (If so, list NCM numbers, and first-reviewer must check off any "No" answers above as applicable.)		✓ ✓		
Were any jobs in this batch Level 4? If "Yes" then scan all raw data & place in correct scan folder on the public drive before filing this paperwork.	✓ ✓ ✓			

** LCS or LCSD must produce a recovery that is within the manufacturer's specified 95% confidence limits, must be matrix matched.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Eluent Preparation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Prepare fresh daily; makes 3L of eluent. To make: in a one-gallon plastic container, mix:

- 60.0 mL of 100*M* $NaHCO_3$;
- 78.0 mL of 100*M* Na_2CO_3; and
- 2862 mL of deionized water.

Degas with helium for 3min before use.

Date Prepared	Analyst's Initials	Lot # 100*M* $NaHCO_3$	Lot # 100*M* Na_2CO_3	Number of Portions Prepared
11-17-11	[illegible]	W11J RGT018	W11K RGT001	1
11-18-11	RWE	W11K RGT016	W11K RGT017	2
11-21-11	RWE	↓	↓	1
11-22-11	RWE	↓	↓	1
11-23-11	RWE	↓	↓	2

0.25 *M* Sulfuric Acid Creation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Record the information below for creating the acid. When an entry is made do not use arrows to fill in information. All entries must be complete.

Recipe: to 2958mL of deionized water in a 1 gallon jug add 42mL of concentrated H_2SO_4 for a total volume of 3L.

Date Made	Analyst's Initials	Volume of 0.25 *M* Acid Made (L)	Source: Concentrated Sulfuric Acid (ACS grade) Manufacturer & Lot Number
11-18-11	RLE	3	Baker lot J22022
11-21-11	RLE	3	↓
11-22-11	RLE	3	↓
11-23-11	RLE	3	↓

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 11-21-11

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution: Sample Aliquot 2	Serial Dilution: Units	Serial Dilution: Final Volume 2	Serial Dilution: Units	Comments
RWE	11-21-11	300.0	37596 B1	10X	1	mL	10	mL					
			B2										
			B3										
			B4										
			B5										

entries completed by day [new page each day]

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Ion Chromatography QC Source Data Sheet—Inorganics Dept

Method (circle methods): IC 300_28D IC 300_48HR IC 9056_28D IC 9056_48HR

Date of Analytical Run: 11-21-11 Analyst's Initials: RHE

Working Curve Standard:

Manufacturer & Lot Number for Source Standard	Working Curve Standards Prepared On
Inorganic Ventures Lot E2-MEB394034	20 October 2011

QC Standard True Values for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.50	25.0	2.50	2.50	2.50	50.0
ICB	0	0	0	0	0	0
MB	0	0	0	0	0	0
LCS/LCSD	4.00	40.0	4.00	4.00	4.00	80.0
MS/MSD	1.00	10.0	1.00	1.00	1.00	20.0

QC Standard Acceptable Recovery Ranges for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.25-2.75	22.5-27.5	2.25-2.75	2.25-2.75	2.25-2.75	45.0-55.0
ICB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
MB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
LCS/LCSD	3.40-4.60	34.0-46.0	3.40-4.60	3.40-4.60	3.40-4.60	68.0-92.0
MS/MSD	0.75-1.25	7.50-12.5	0.75-1.25	0.75-1.25	0.75-1.25	15.0-25.0

Current Method RLs (mg/L):

	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
	0.10	1.00	0.010	0.10	0.050	2.0

Author: EmerichR

Date : 11/22/2011

Original Run Filename:	OM_11-21-2011_04-59-52PM.OMN created 11/21/2011 4:59:52 PM
Original Run Author's Signature:	[EmerichR]
Current Run Filename:	OM_11-21-2011_04-59-52PM.OMN last modified 11/22/2011 7:47:17 AM
Current Run Author's Signature:	[EmerichR]
Description:	Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	0.0038	0.0185	0.0093	0.0062	0.0017	-0.9825	11/21/2011@5:01:14 PM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	
ICV	1	2.3306	25.1805	2.4477	2.5024	2.4617	51.1328	11/21/2011@5:17:22 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
ICB	S11	0.0037	0.0188	0.0098	0.0042	0.0024	-0.9701	11/21/2011@5:33:29 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	4.1143e-4	0.0187	0.0074	0.0065	0.0025	-0.9826	11/21/2011@5:49:36 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9011	40.7044	4.0368	4.0253	4.1015	81.0732	11/21/2011@6:05:43 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37722-B-1@20 CL	2	0.0040	12.3985	0.0096	0.0362	0.0022	-0.2115	11/21/2011@6:21:50 PM
360-37722-B-1@20 MS	3	0.9839	23.3197	1.0166	1.0655	1.0299	21.0670	11/21/2011@6:37:57 PM
360-37722-B-1@20 MSD	3	0.9666	23.3489	1.0191	1.0620	1.0328	21.0874	11/21/2011@6:54:04 PM
360-37723-A-1 CL	4	0.1627	36.8165	0.0458	2.6460	-0.0201	8.3325	11/21/2011@7:10:11 PM
360-37729-A-1@50 CL	5	0.0041	17.8236	0.0079	0.0063	-0.0032	-0.4757	11/21/2011@7:26:17 PM
360-37730-B-1@10 CL	6	8.7829e-4	14.0632	0.0096	0.2692	-0.0015	1.0812	11/21/2011@7:42:25 PM
360-37596-B-1	7	0.3114	53.4286	-0.0099	0.0062	5.9333	31.9287	11/21/2011@7:58:31 PM
360-37596-B-1@10	8	0.0371	32.7289	0.0039	0.0088	-0.0104	2.1454	11/21/2011@8:14:38 PM
360-37596-B-5	9	0.1291	-53.3600	0.2220	0.0196	0.0022	101.2482	11/21/2011@8:30:44 PM
360-37596-B-5@10	10	0.0181	10.9541	0.0289	0.0089	0.0022	9.5509	11/21/2011@8:46:50 PM
CCV	S12	4.1293	40.9073	4.0620	4.0605	4.0757	81.3566	11/21/2011@9:02:57 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0035	0.0205	0.0055	0.0073	0.0023	-0.9882	11/21/2011@9:19:04 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37596-B-2	11	0.0452	19.6470	0.1165	0.5124	0.0022	69.0897	11/21/2011@9:35:10 PM
360-37596-B-2@10	12	0.0030	1.9337	0.0229	0.0581	0.0012	6.6340	11/21/2011@9:51:16 PM
360-37596-B-3	13	0.0459	4.3152	0.0388	0.2758	0.0163	37.7055	11/21/2011@10:07:22 PM
360-37596-B-3@10	14	0.0110	0.5632	0.0093	0.0352	0.0024	2.5762	11/21/2011@10:23:28 PM
360-37596-~~B-6~~ B4	15	0.0351	12.8772	0.1395	0.2391	0.1712	52.9532	11/21/2011@10:39:34 PM
360-37596-~~B-6~~@10 B4	16	0.0013	1.2994	0.0206	0.0299	0.0142	3.9788	11/21/2011@10:55:41 PM
360-37706-A-1	17	0.0617	15.9948	0.4876	0.2016	0.0080	41.2601	11/21/2011@11:11:48 PM
360-37706-A-2	18	0.1147	63.5490	0.1893	0.8481	0.0681	4.8285	11/21/2011@11:27:56 PM
360-37706-A-3	19	0.0606	29.6797	0.3850	0.0575	0.0022	42.5869	11/21/2011@11:44:02 PM
360-37706-A-4	20	0.2318	59.6422	0.0801	0.4331	0.0394	1.9600	11/22/2011@12:00:09 AM
CCV	S12	4.0426	41.0089	4.0531	4.0864	4.1132	81.6575	11/22/2011@12:16:17 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	

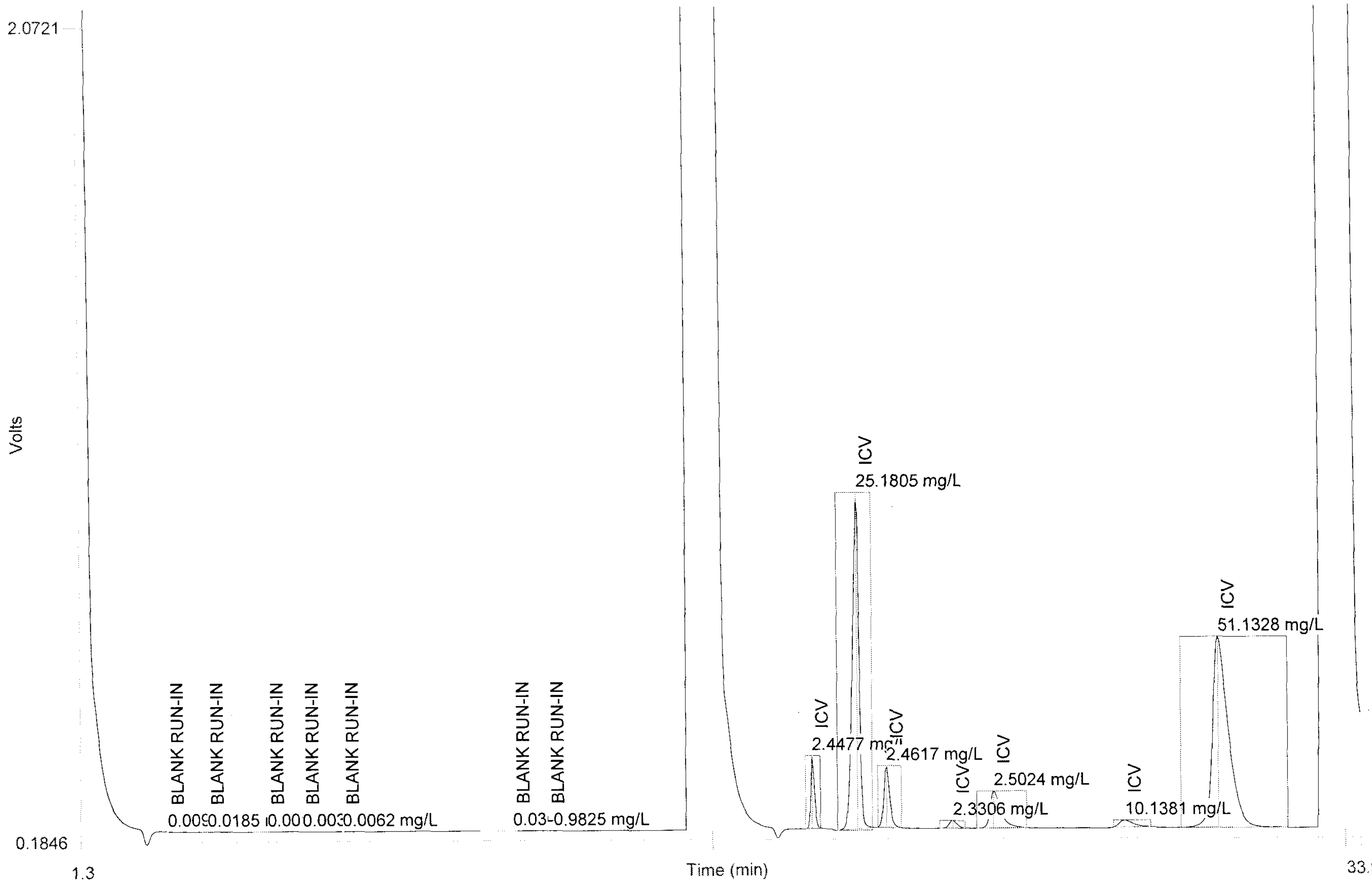
11-29-11

CCB	S11	7.3408e-4	0.0199	0.0096	0.0086	0.0020	-0.9823	11/22/2011@12:32:24 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0067	0.0182	0.0069	0.0062	0.0023	-0.9709	11/22/2011@12:48:30 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.0288	41.0091	4.0631	4.0839	4.1183	81.7773	11/22/2011@1:04:37 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37706-A-5	21	0.0506	23.5120	0.2128	0.0608	0.0022	54.0499	11/22/2011@1:20:44 AM
360-37706-A-5 MS	22	1.0256	33.9778	1.2465	1.0996	1.0341	74.4549	11/22/2011@1:36:51 AM
360-37706-A-5 MSD	22	1.0328	34.0411	1.2468	1.1025	1.0375	74.4789	11/22/2011@1:52:58 AM
360-37706-A-6	23	0.3602	65.1143	0.0904	0.4778	0.0493	2.3445	11/22/2011@2:09:05 AM
360-37706-A-7	24	0.1425	78.4057	0.0581	0.0063	0.0022	98.3422	11/22/2011@2:25:11 AM
360-37706-A-8	25	10.8011	59.7641	0.0284	-0.0142	0.0022	56.4033	11/22/2011@2:41:17 AM
360-37706-A-9	26	0.1177	3.1546	0.0294	0.0015	2.0505	110.8961	11/22/2011@2:57:23 AM
360-37706-A-10	27	-2.429e+3	69.4787	0.2873	0.0063	0.0022	20.0819	11/22/2011@3:13:29 AM
360-37706-A-11	28	0.4999	66.8144	0.1972	0.0050	0.0022	83.3011	11/22/2011@3:29:35 AM
360-37706-A-12	29	0.2020	52.3188	0.0633	0.0044	0.0022	14.3928	11/22/2011@3:45:41 AM
CCV	S12	3.9390	41.2083	4.0768	4.0737	4.1371	81.9527	11/22/2011@4:01:48 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0040	0.0193	0.0068	0.0062	0.0026	-0.9825	11/22/2011@4:17:54 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37706-A-13	30	-21.9792	69.4507	0.0689	0.0062	0.0022	4.1160	11/22/2011@4:34:00 AM
360-37706-A-14	31	0.1499	75.4768	0.1416	0.0406	0.0022	13.9593	11/22/2011@4:50:08 AM
360-37706-A-15	32	-4.083e+3	54.1951	0.5419	0.1310	0.0958	10.8387	11/22/2011@5:06:15 AM
360-37706-A-16	33	0.1003	-68.7698	0.1412	0.0435	-58.1853	7.6679	11/22/2011@5:22:21 AM
360-37706-A-17	34	0.0816	0.7892	0.1443	0.0306	4.8970	38.7743	11/22/2011@5:38:28 AM
360-37706-A-18	35	0.0038	61.1781	0.2071	0.8144	-0.0764	61.0714	11/22/2011@5:54:35 AM
360-37706-A-19	36	0.1104	-68.6696	0.1448	0.0508	-124.7147	8.0183	11/22/2011@6:10:42 AM
360-37706-A-20	37	0.0039	-15.3384	0.1429	0.0304	4.6419	45.5911	11/22/2011@6:26:49 AM
360-37706-A-21	38	0.0718	71.4605	0.1974	1.2530	0.0022	46.0205	11/22/2011@6:42:55 AM
360-37706-A-22	39	0.0532	16.8803	0.4023	0.2218	0.0022	40.1423	11/22/2011@6:59:02 AM
CCV	S12	3.7016	41.4046	4.1021	4.0723	4.1633	82.5686	11/22/2011@7:15:09 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0038	0.0154	0.0069	0.0063	0.0026	-0.9824	11/22/2011@7:31:15 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 1 of 28



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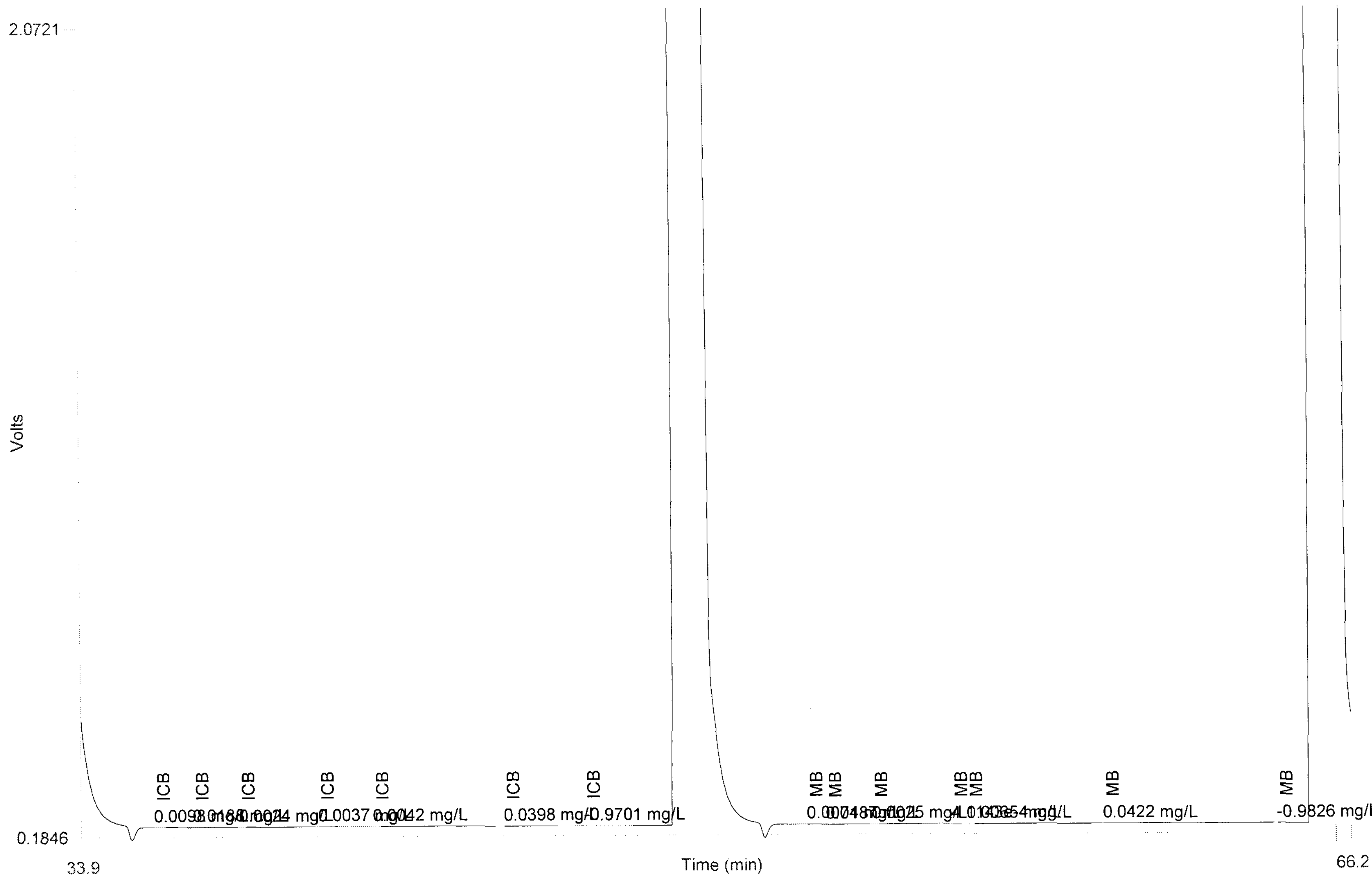
Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 2 of 28



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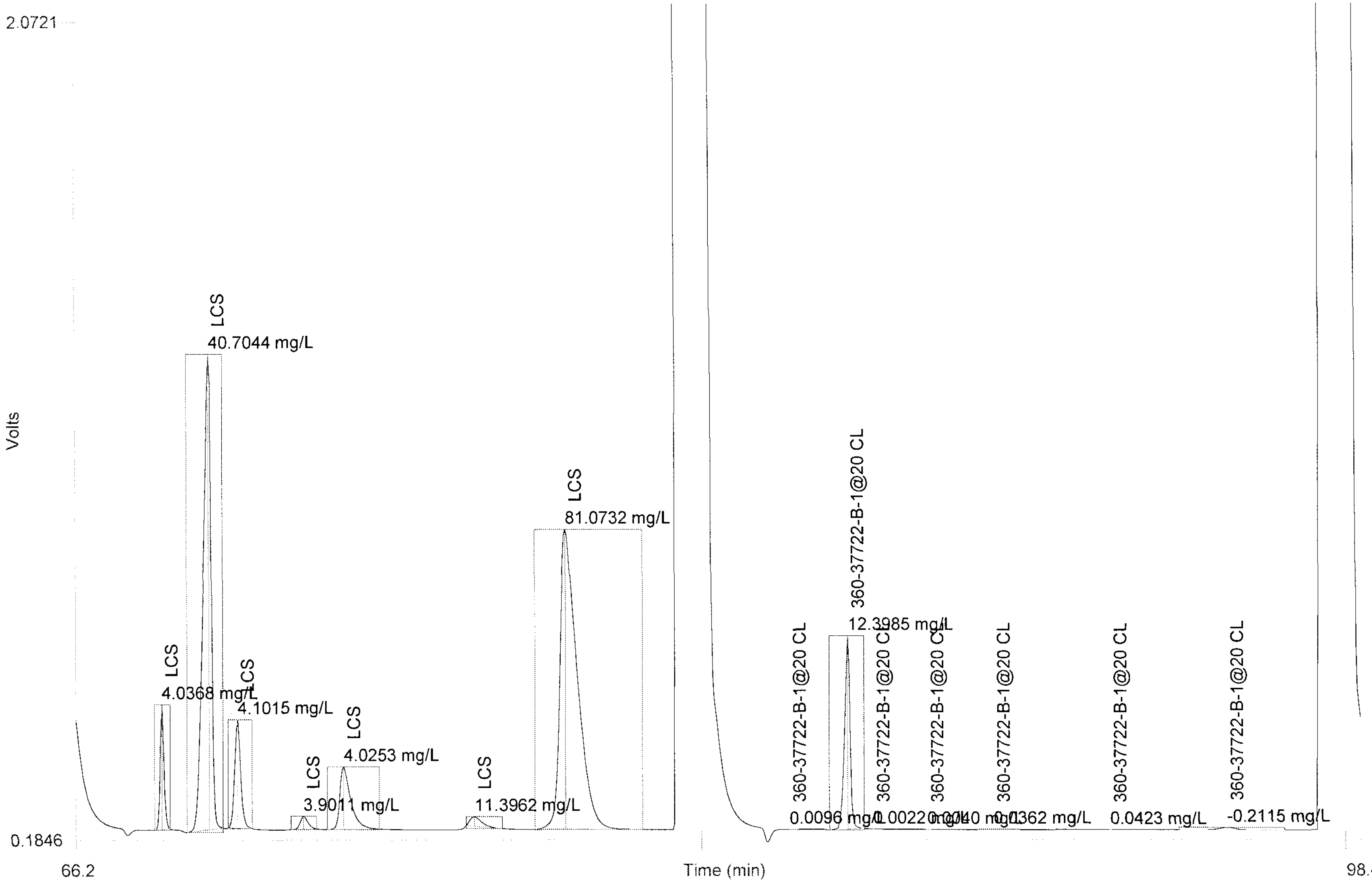
Author: EmerichR

Date : 11/22/2011

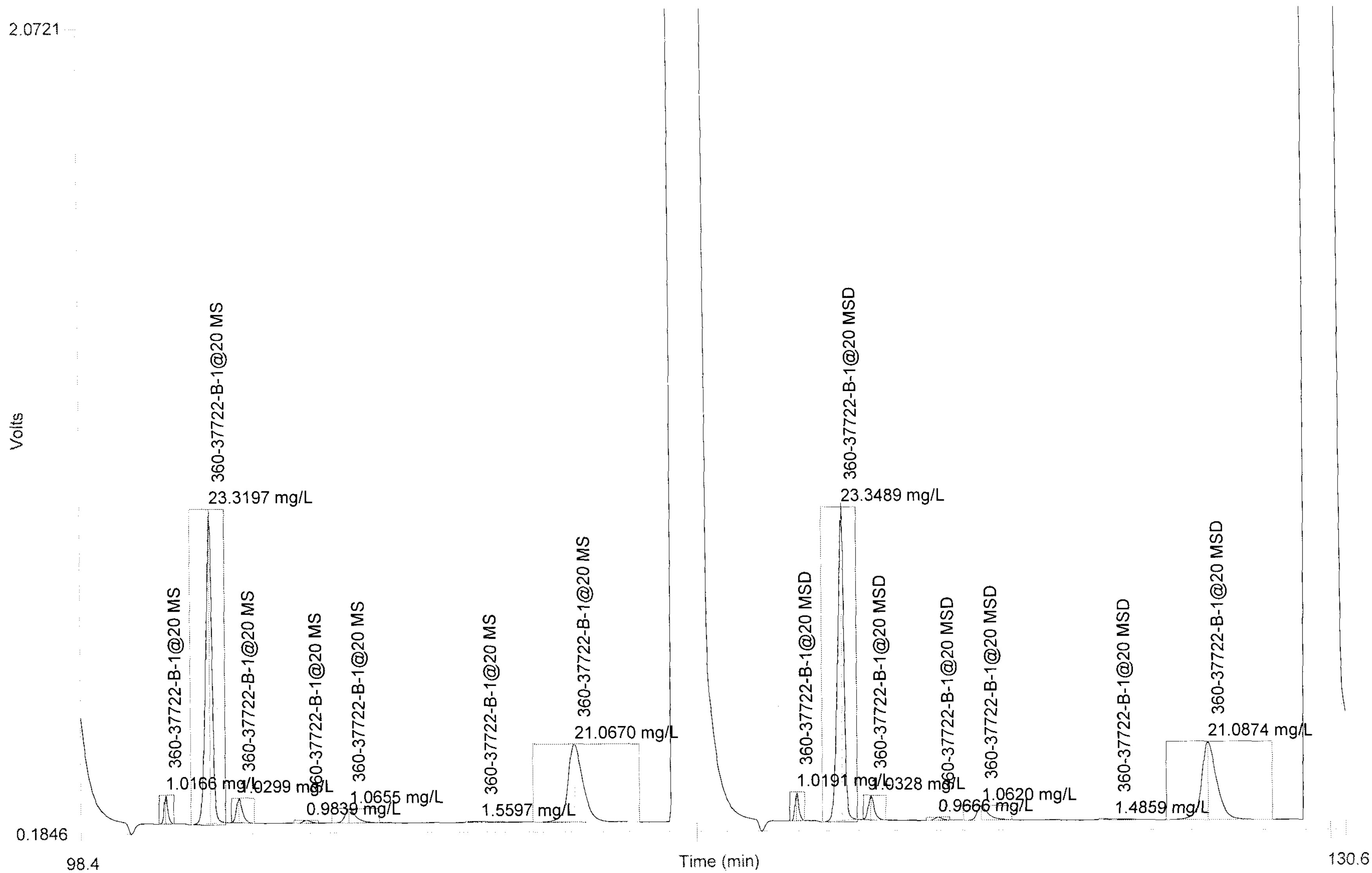
Channel 1 (Anions) : Set 3 of 28



Author: EmerichR

Date : 11/22/2011

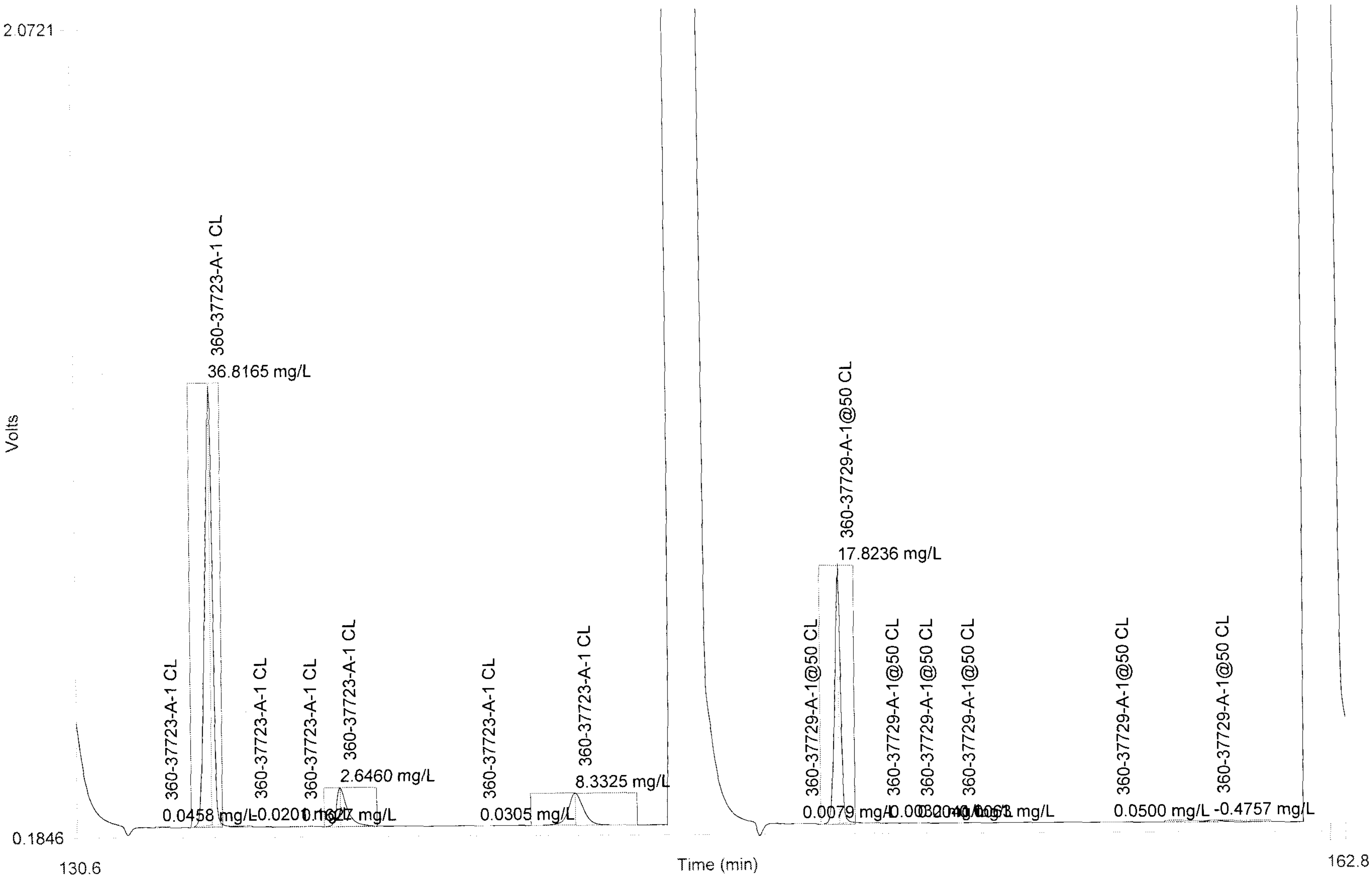
Channel 1 (Anions) : Set 4 of 28



Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 5 of 28



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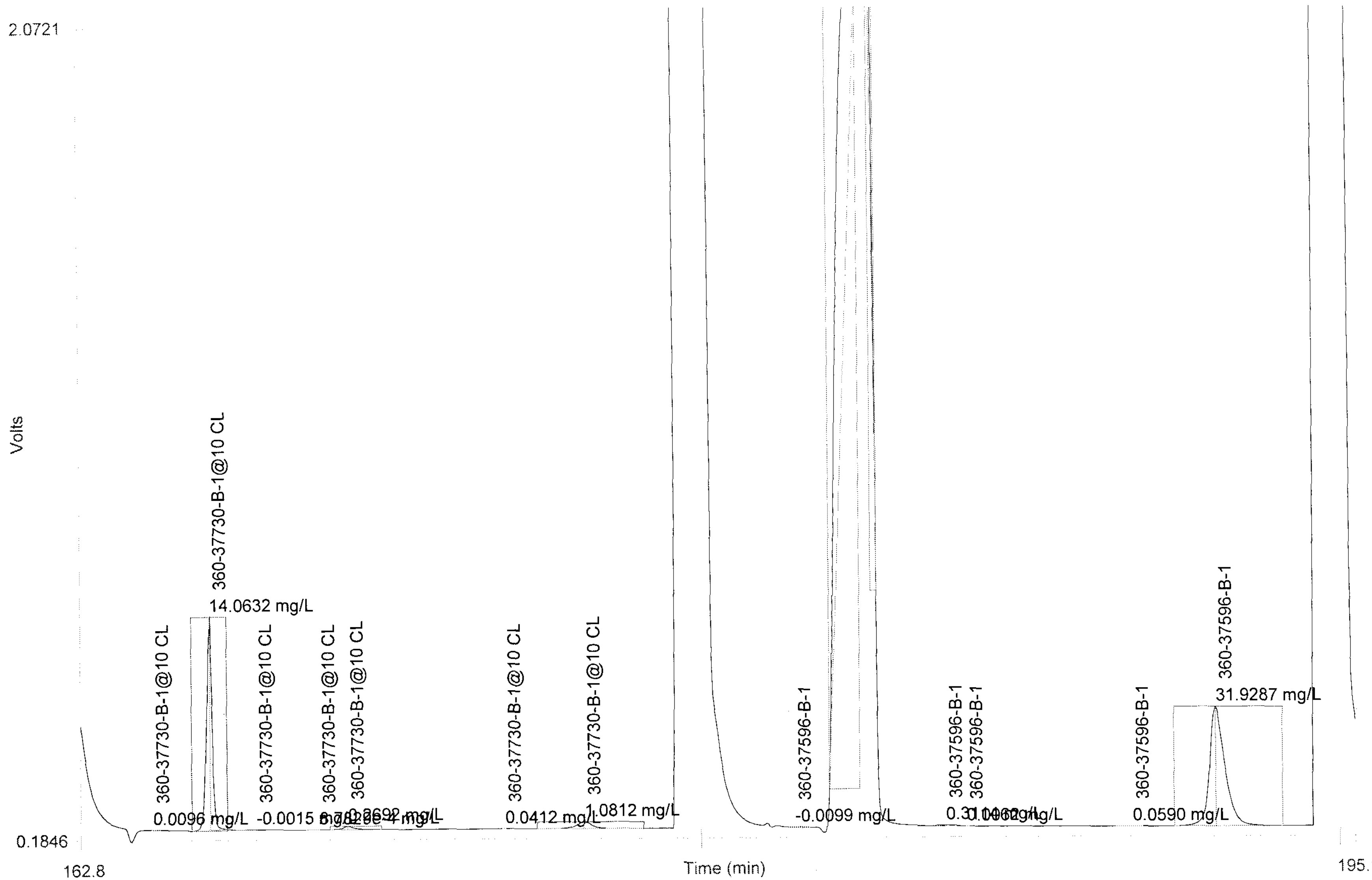
Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 6 of 28



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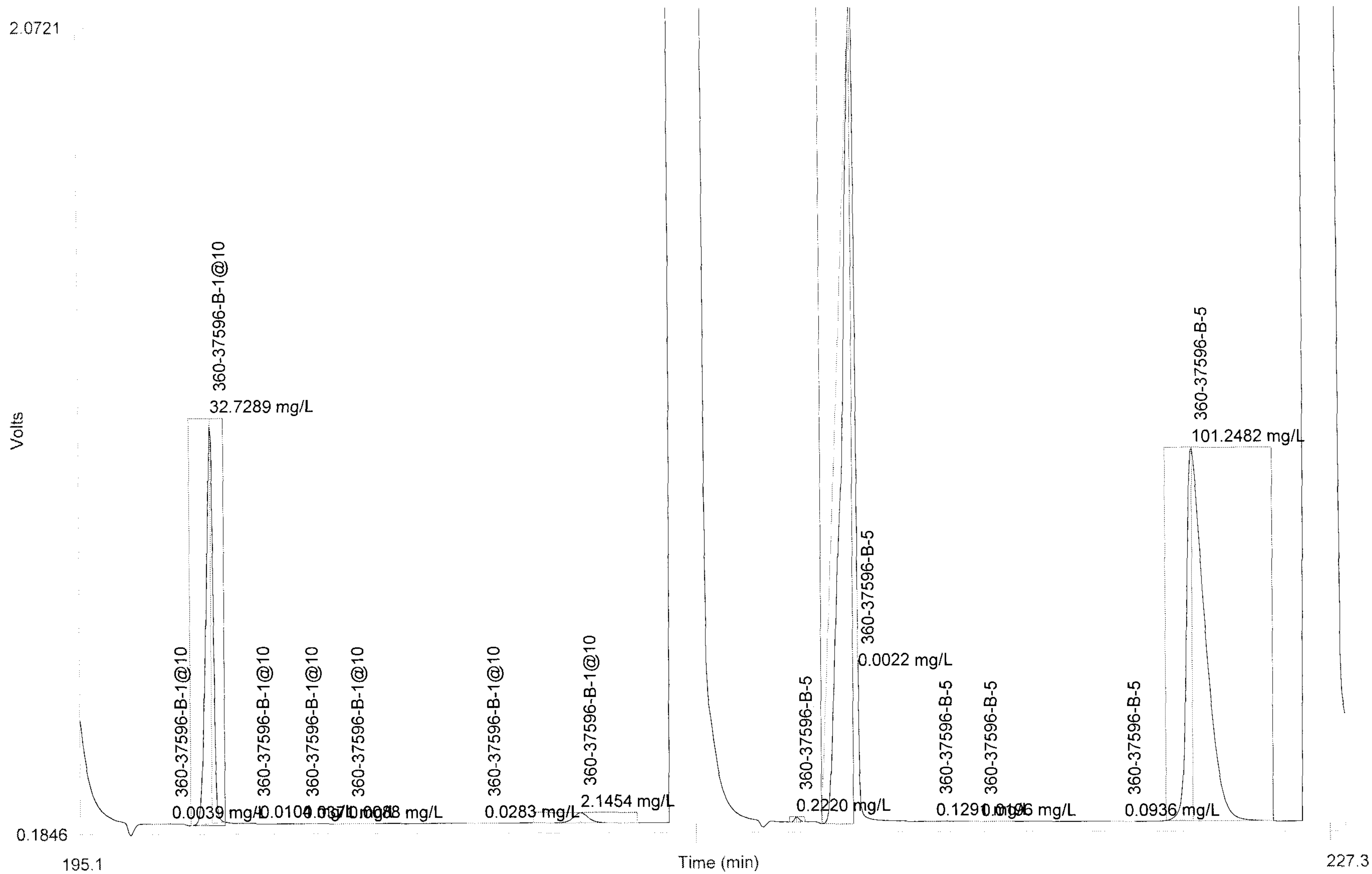
Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 7 of 28



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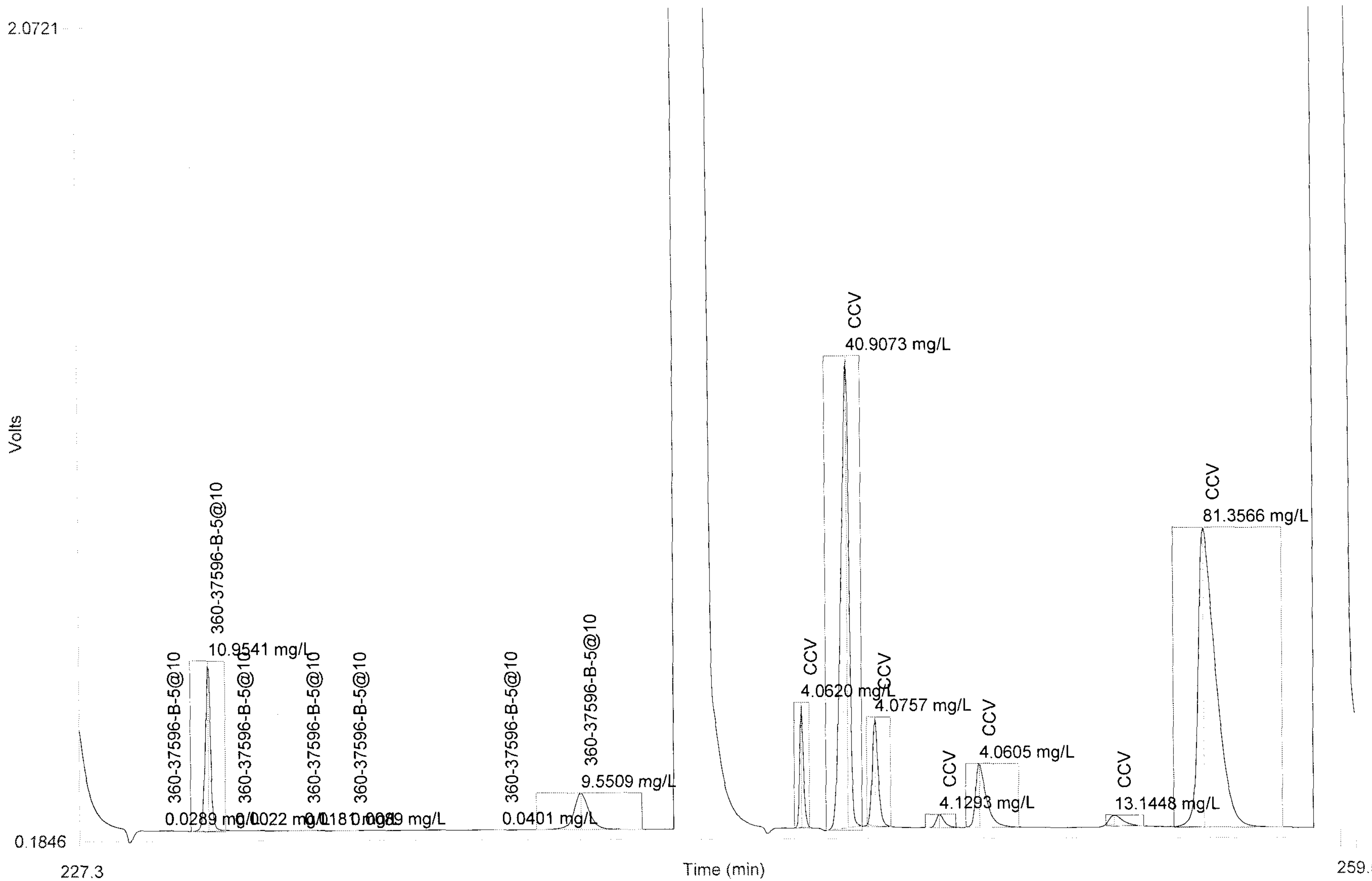
Author: EmerichR

Date : 11/22/2011

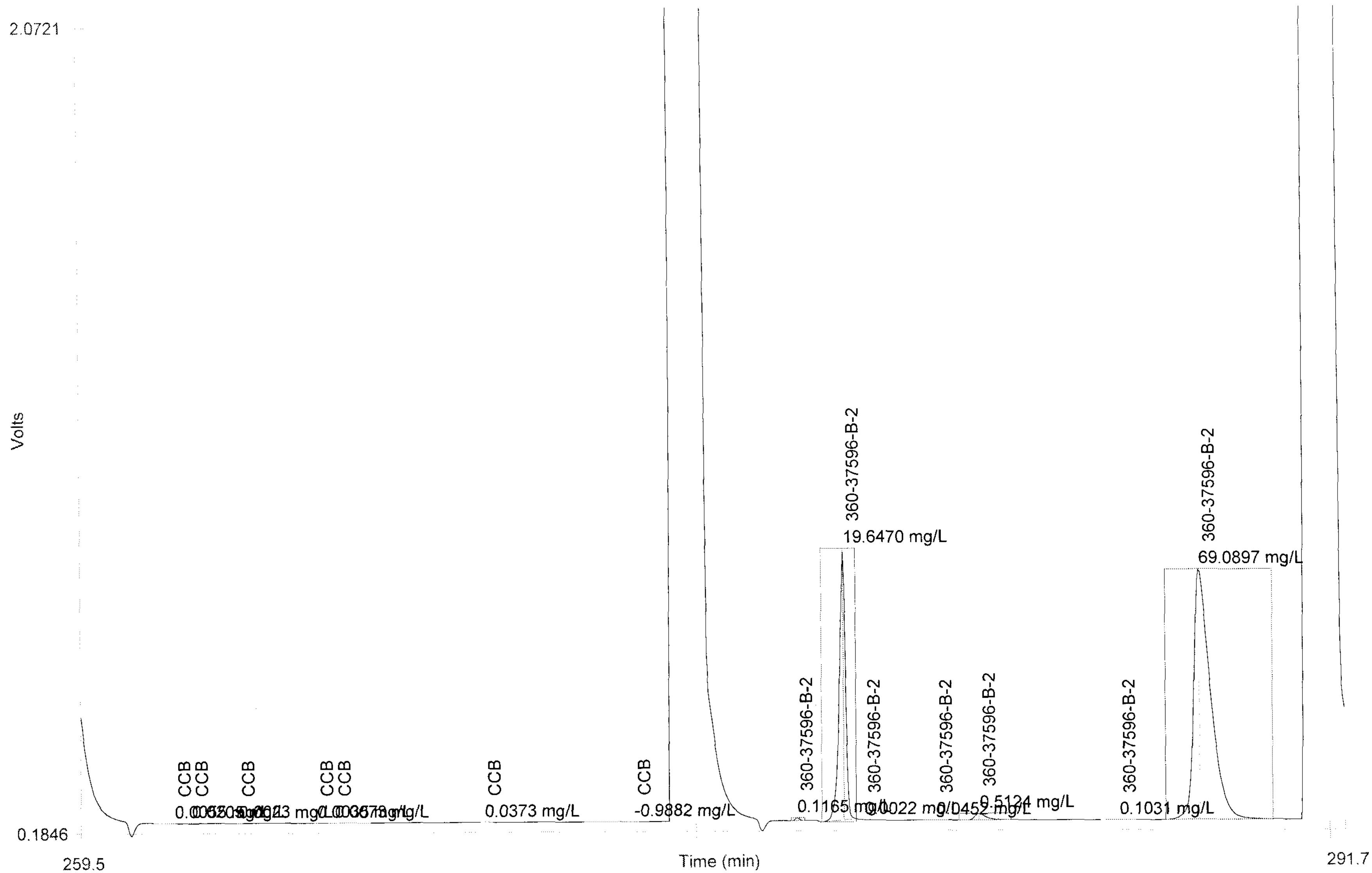
Channel 1 (Anions) : Set 8 of 28



Author: EmerichR

Date : 11/22/2011

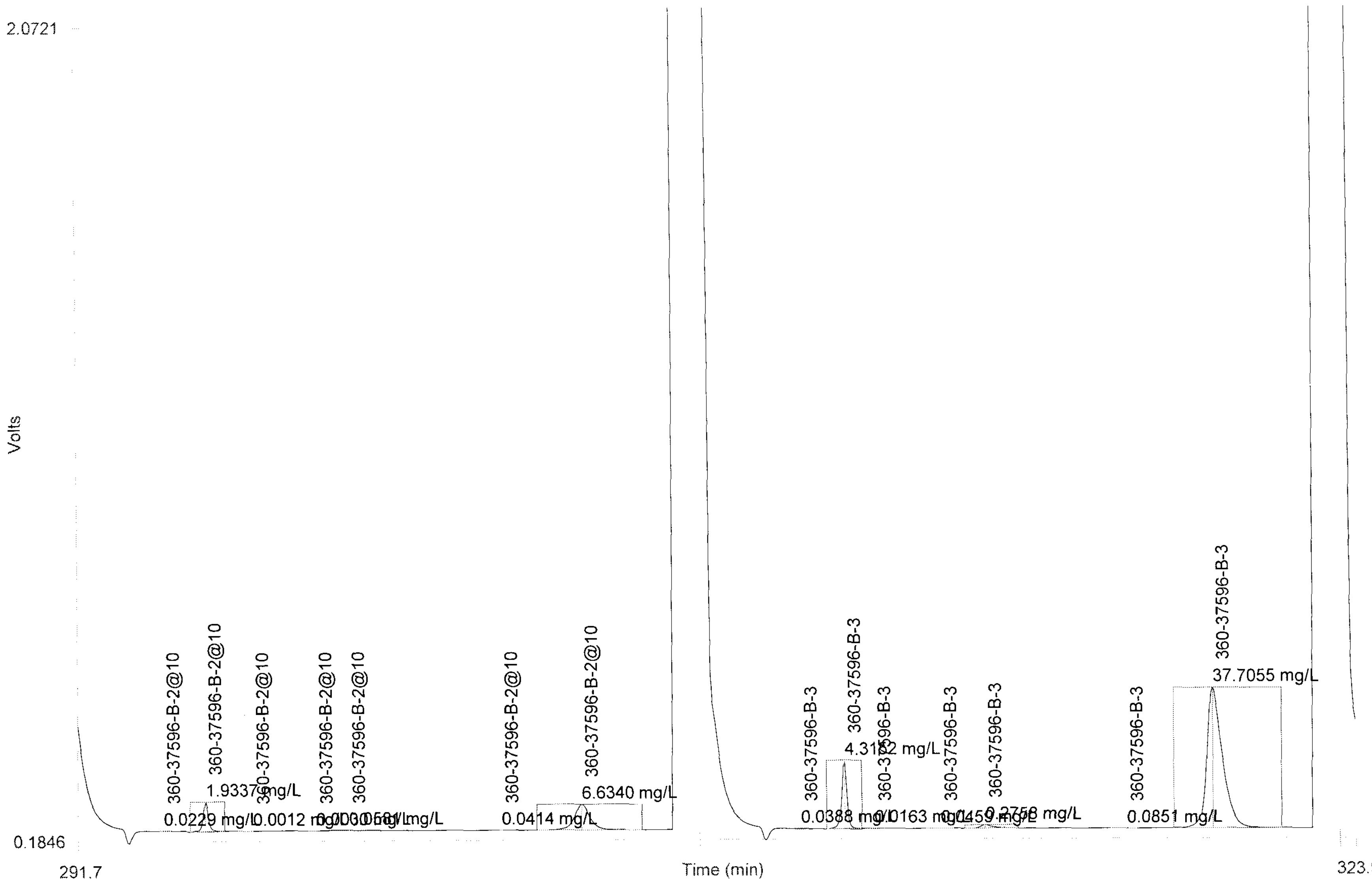
Channel 1 (Anions) : Set 9 of 28



Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 10 of 28



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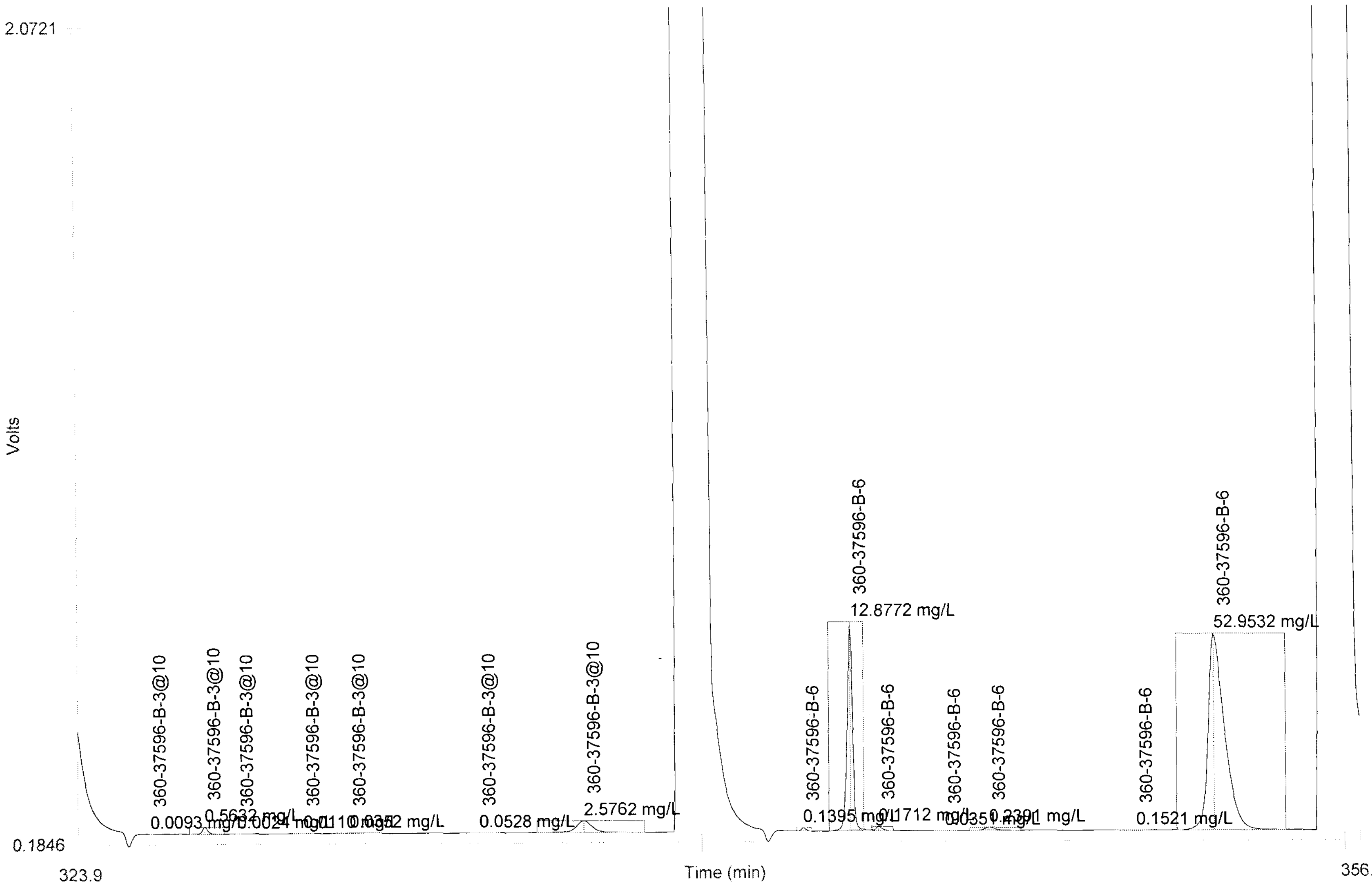
Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 11 of 28



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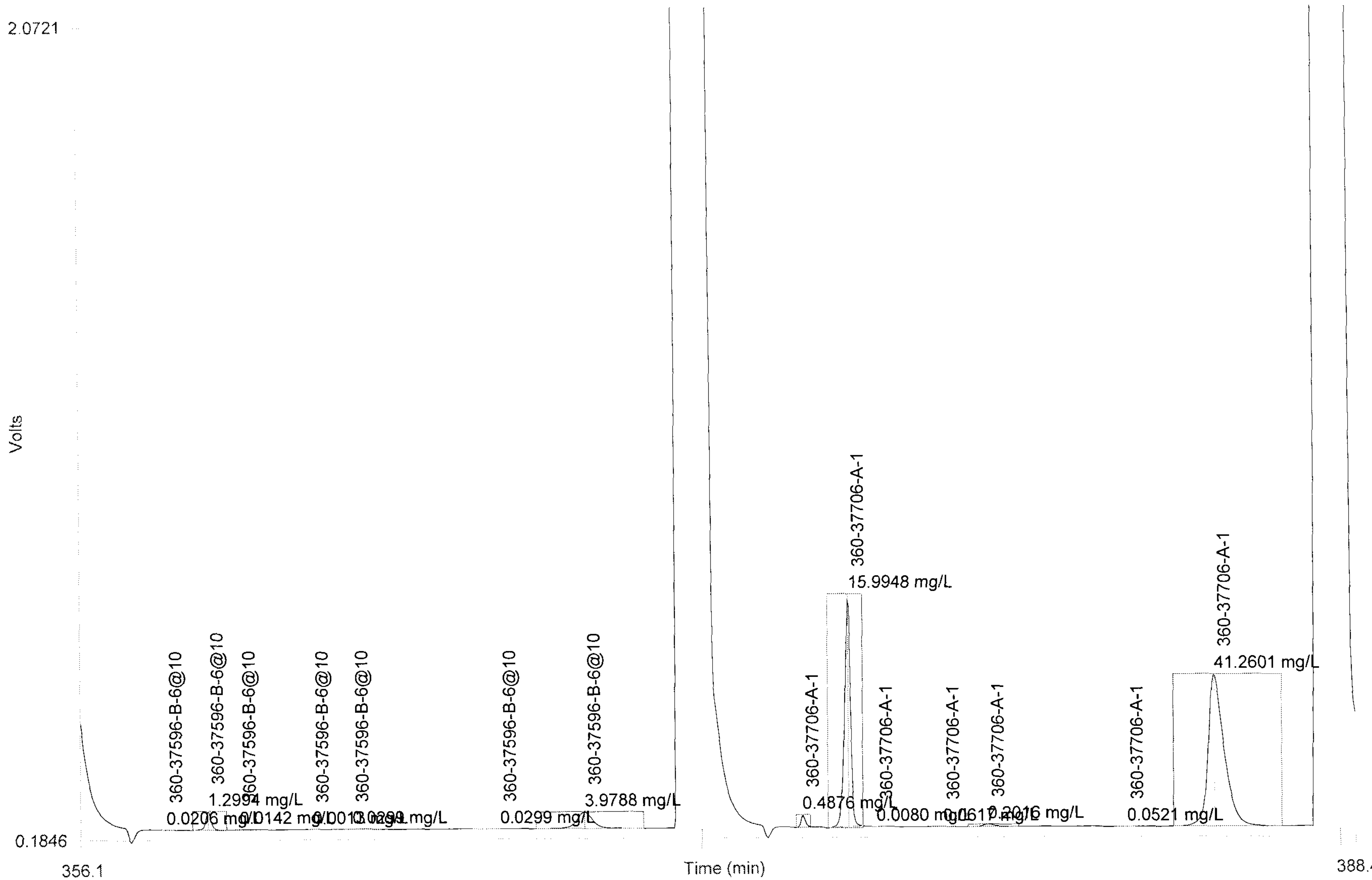
Author: EmerichR

Date : 11/22/2011

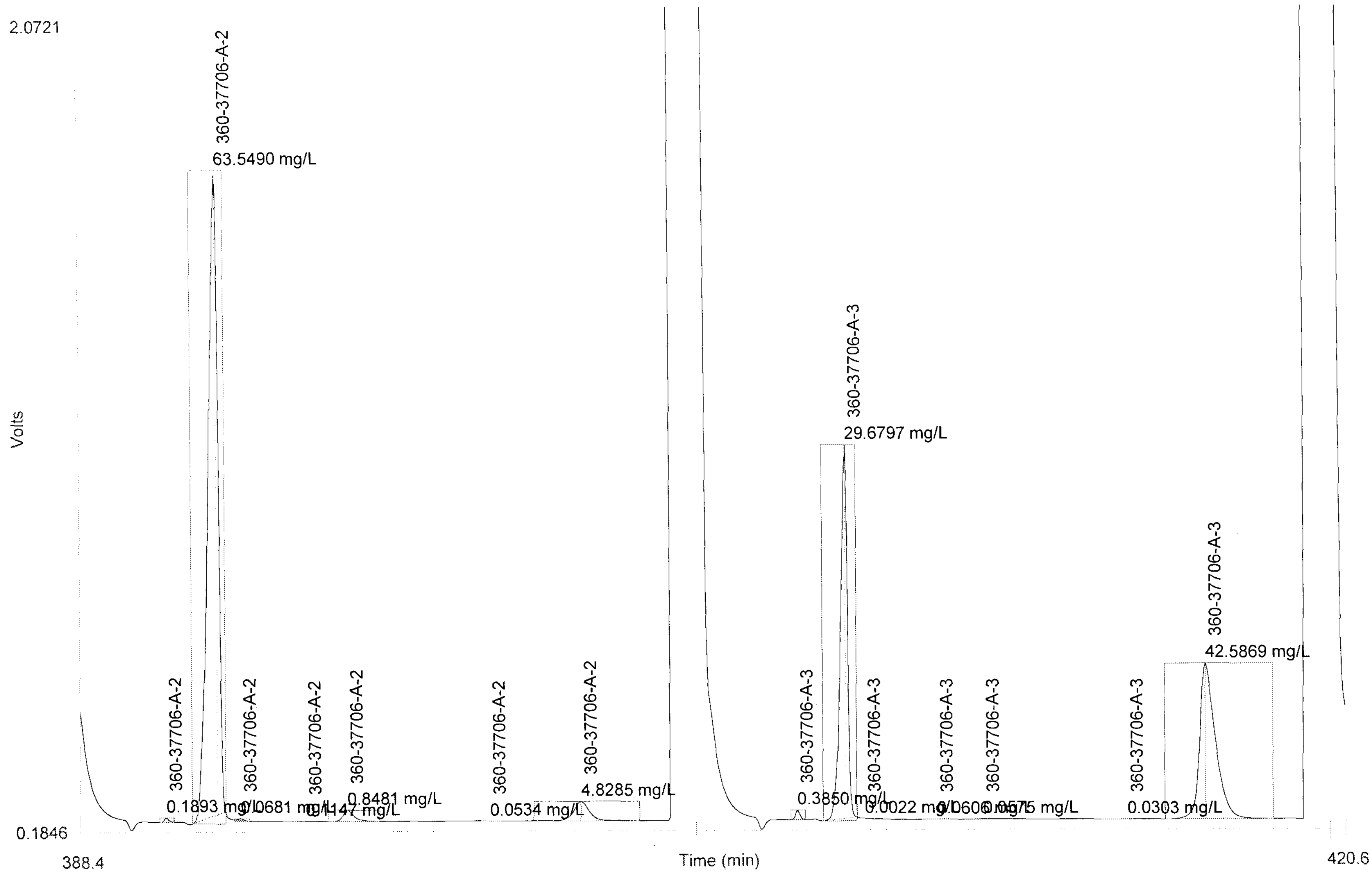
Channel 1 (Anions) : Set 12 of 28



Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 13 of 28



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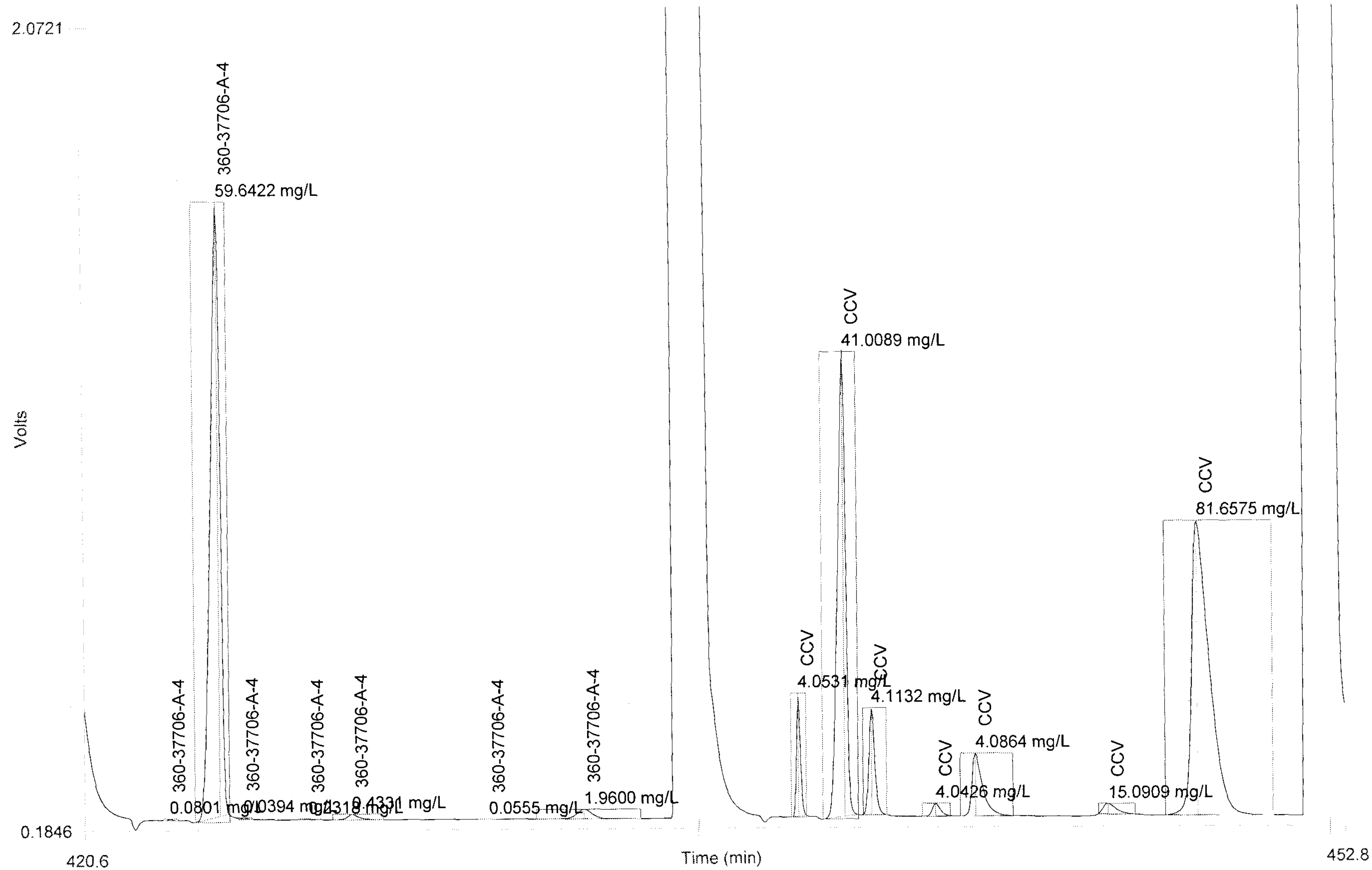
Author: EmerichR

Date : 11/22/2011

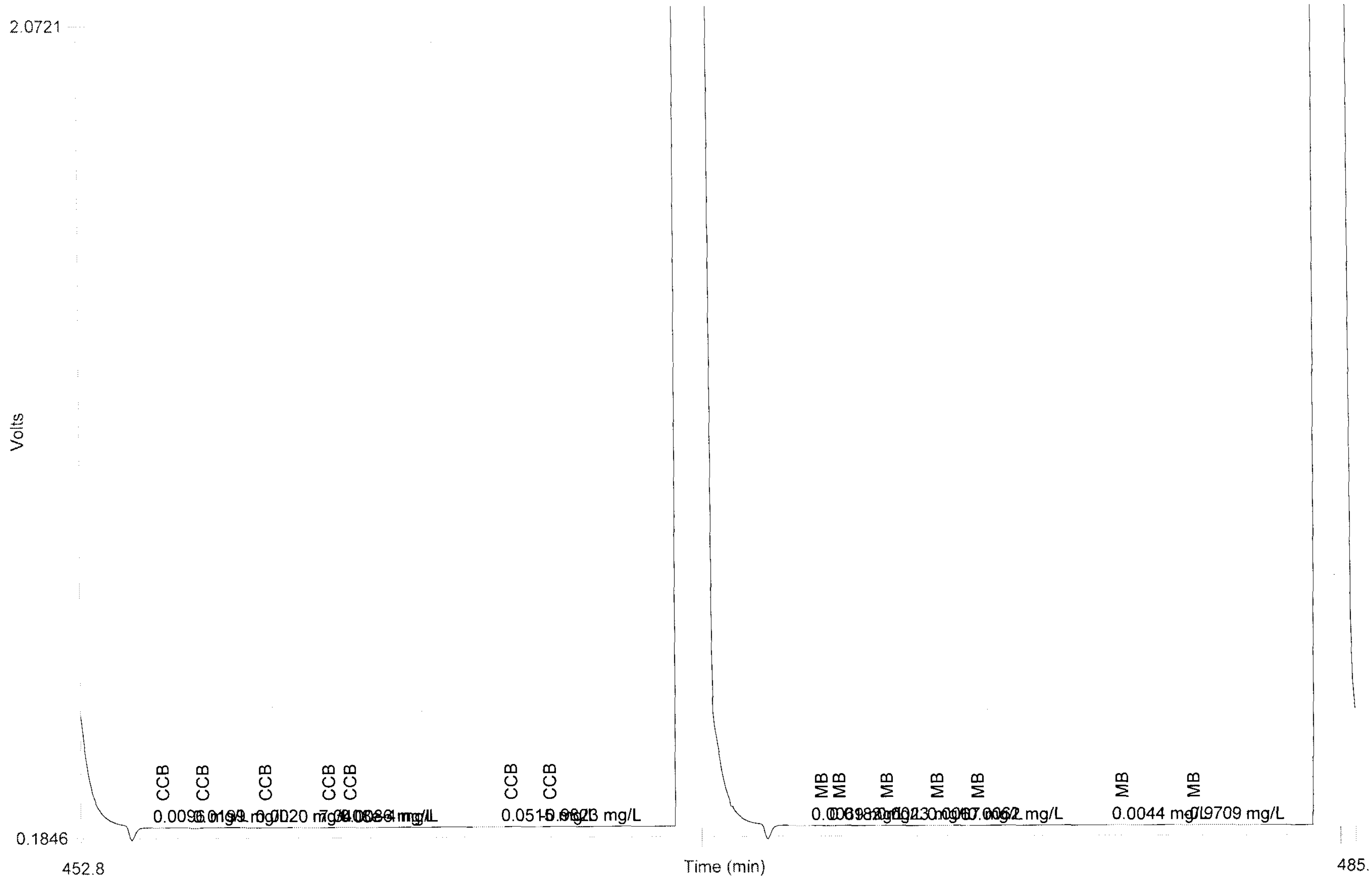
Channel 1 (Anions) : Set 14 of 28



Author: EmerichR

Date : 11/22/2011

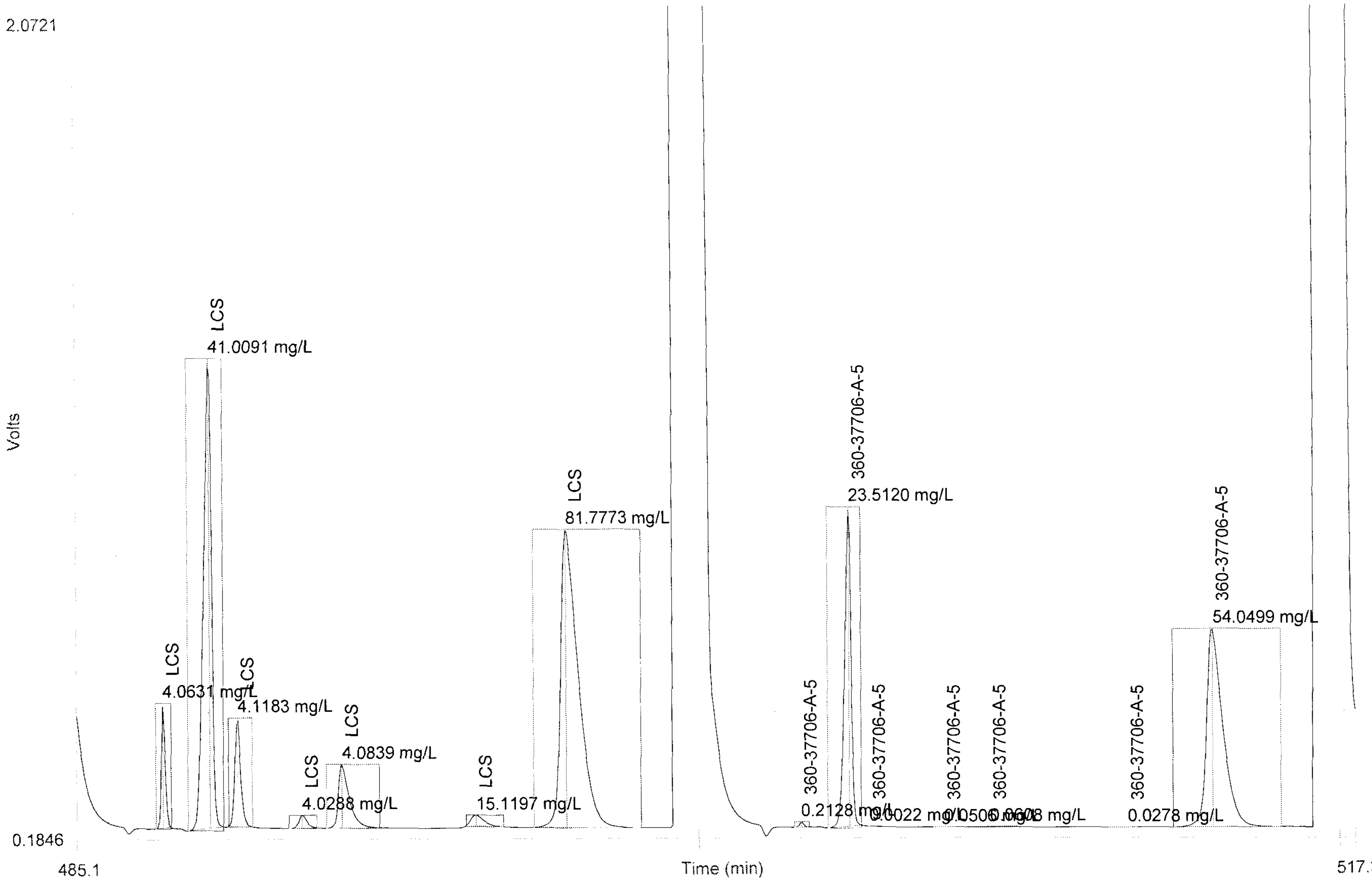
Channel 1 (Anions) : Set 15 of 28



Author: EmerichR

Date : 11/22/2011

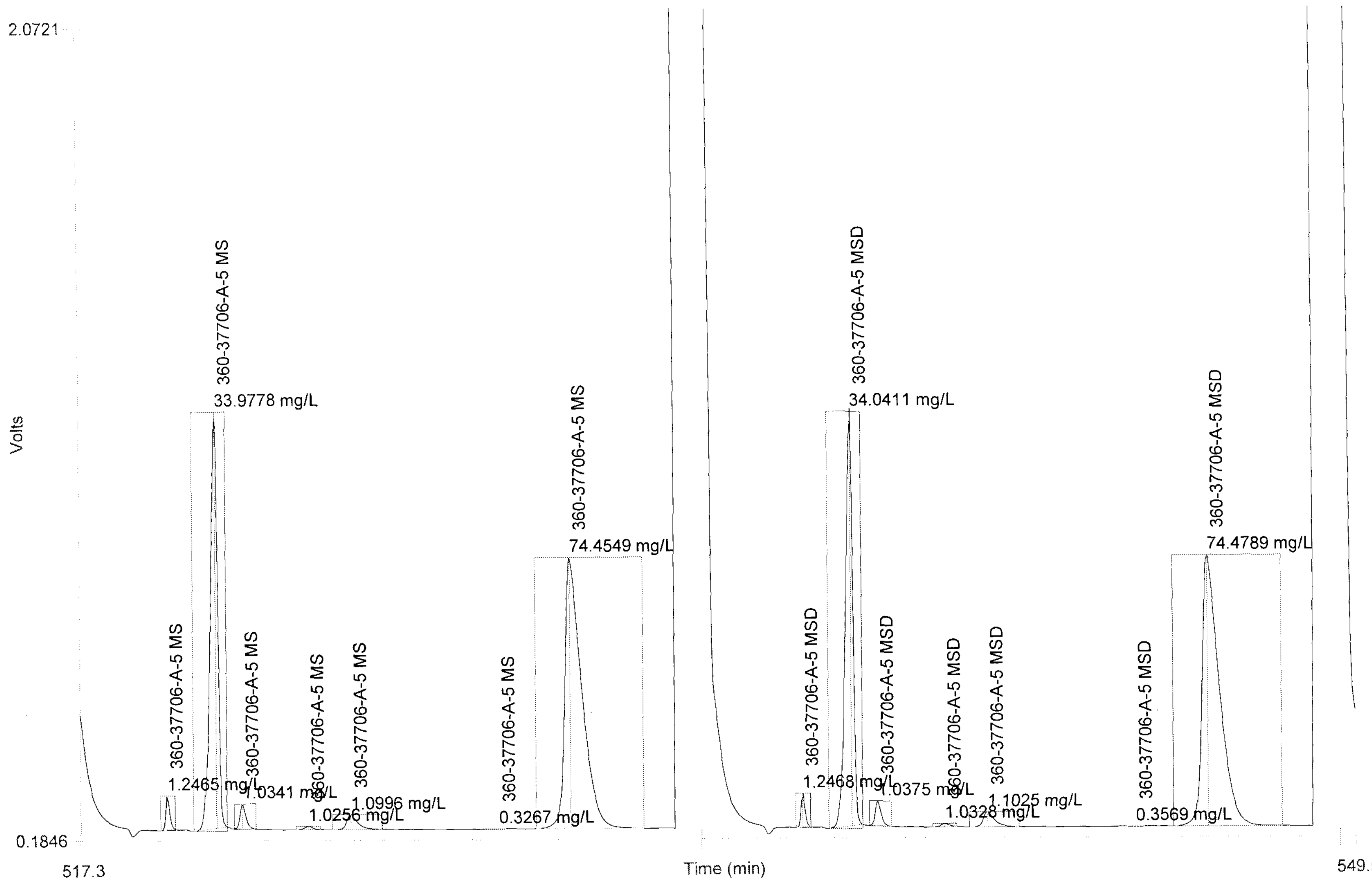
Channel 1 (Anions) : Set 16 of 28



Author: EmerichR

Date : 11/22/2011

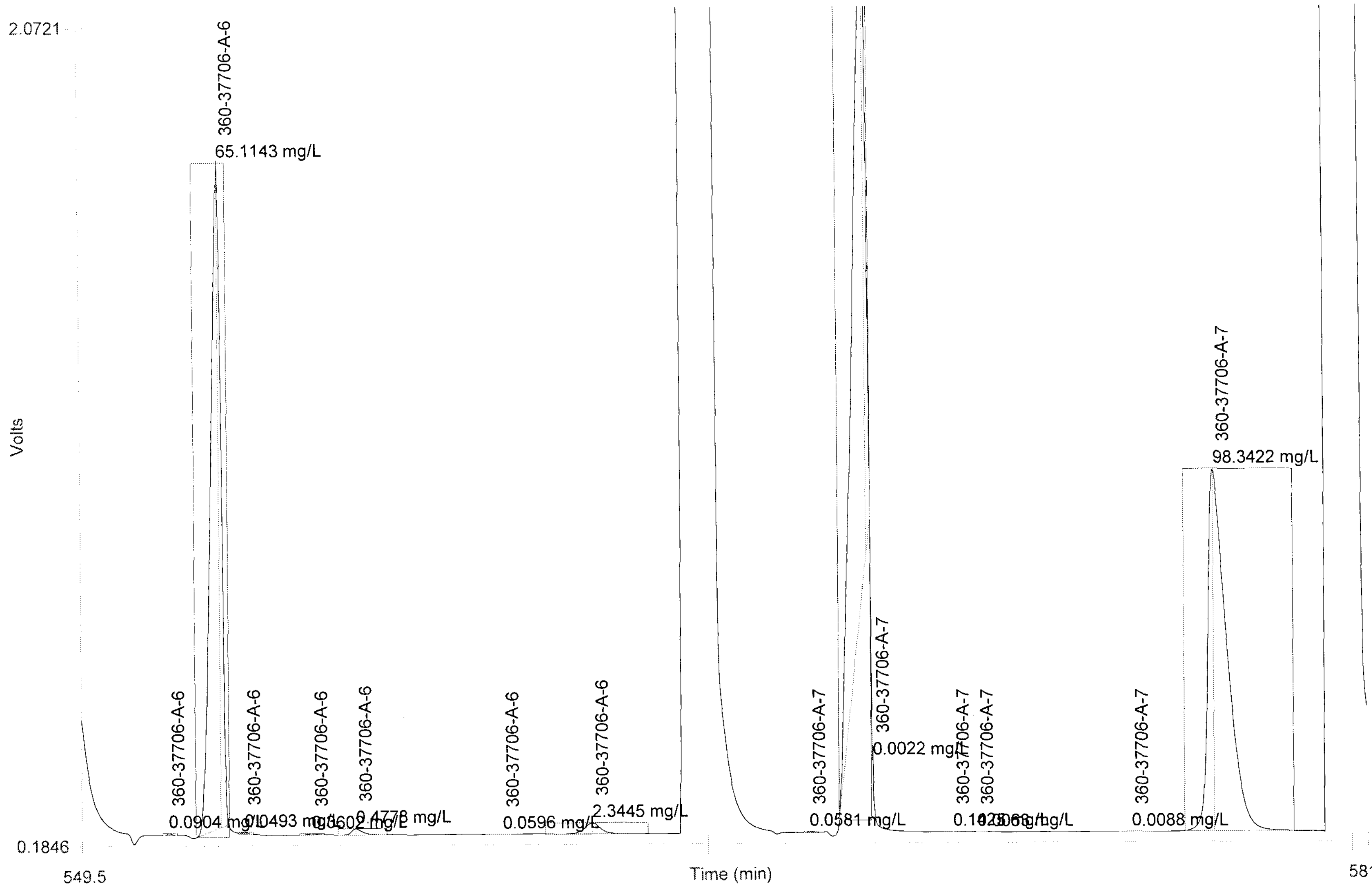
Channel 1 (Anions) : Set 17 of 28



Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 18 of 28



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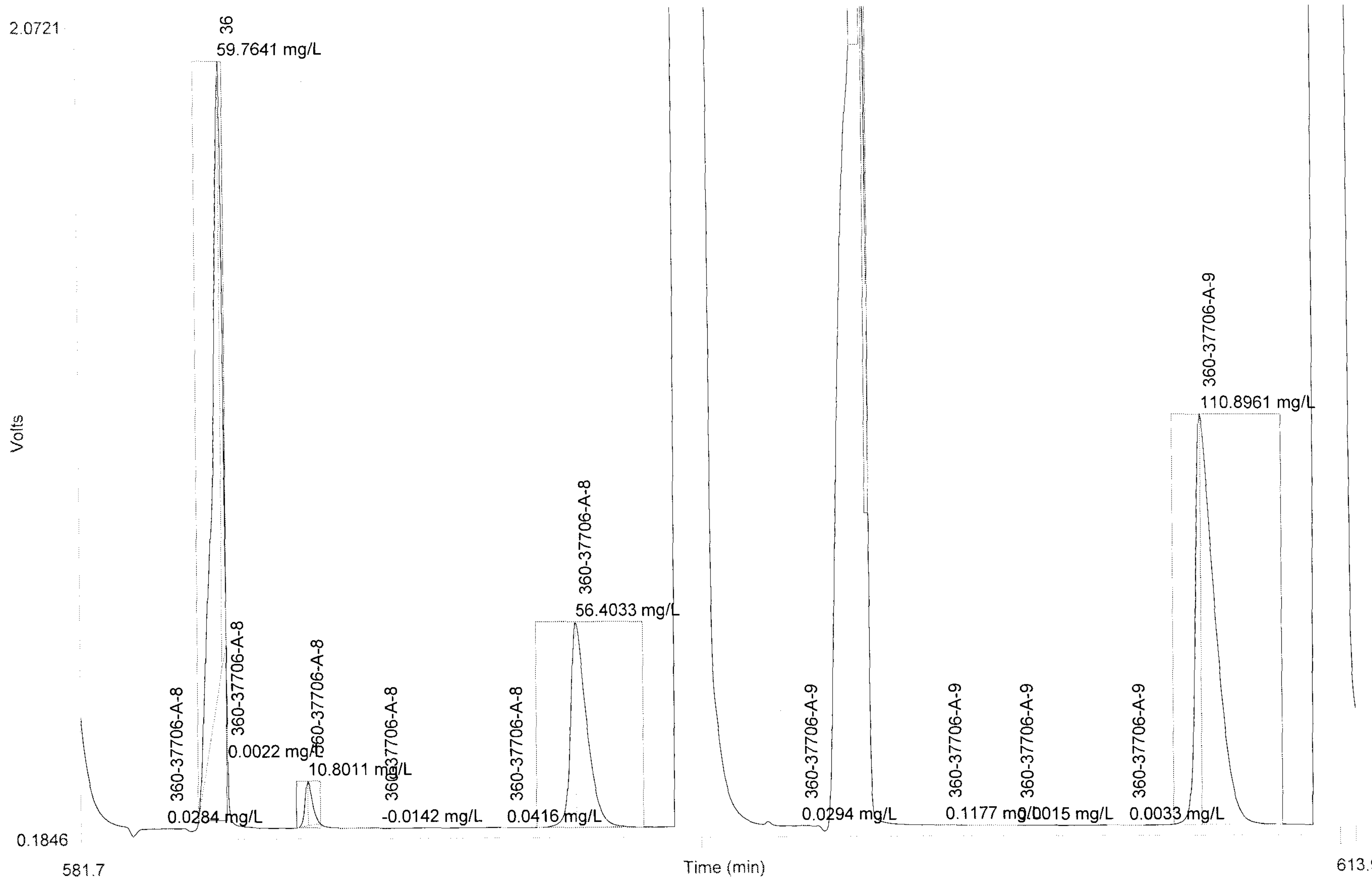
Author: EmerichR

Date : 11/22/2011

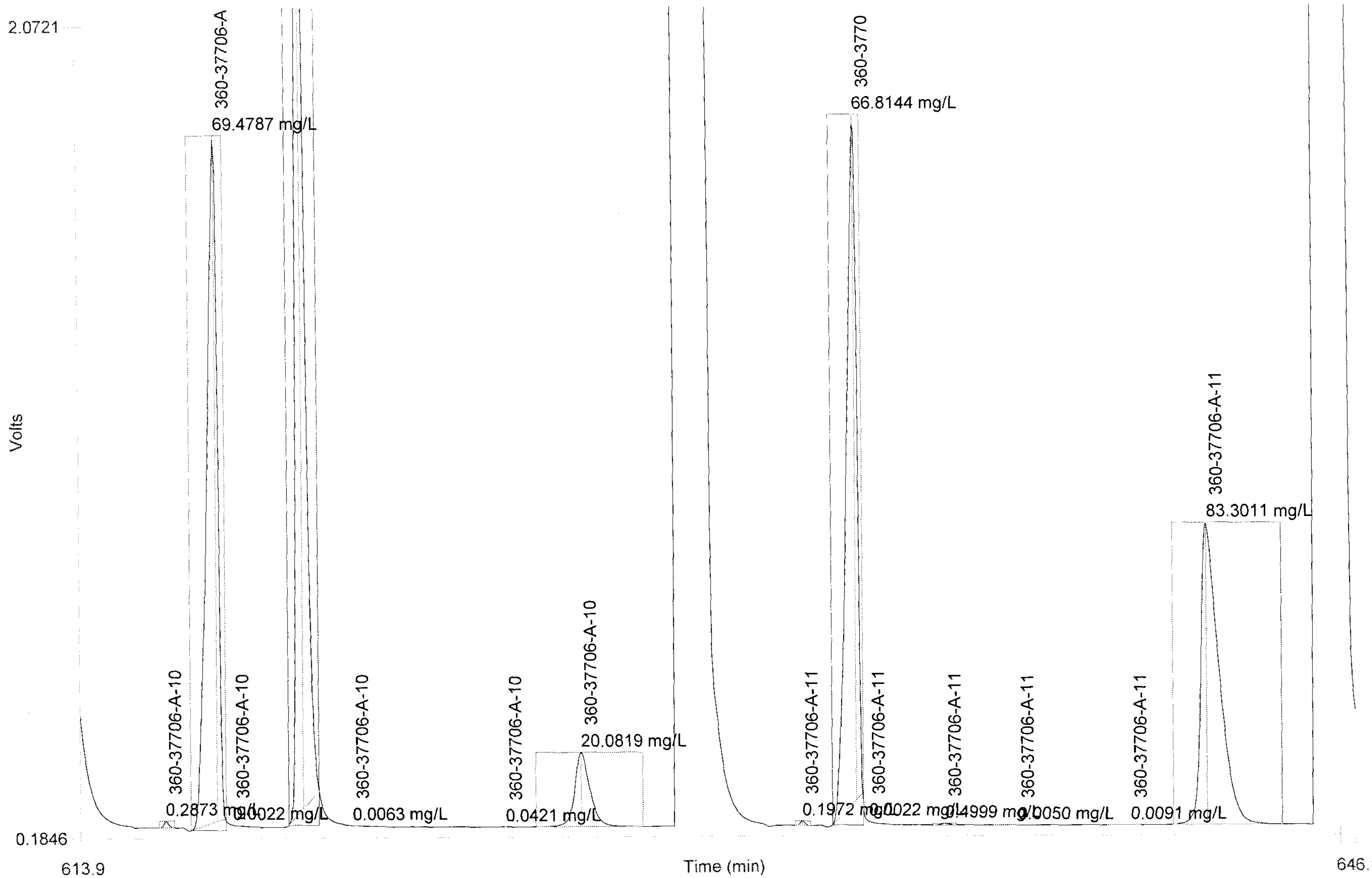
Channel 1 (Anions) : Set 19 of 28



Author: EmerichR

Date : 11/22/2011

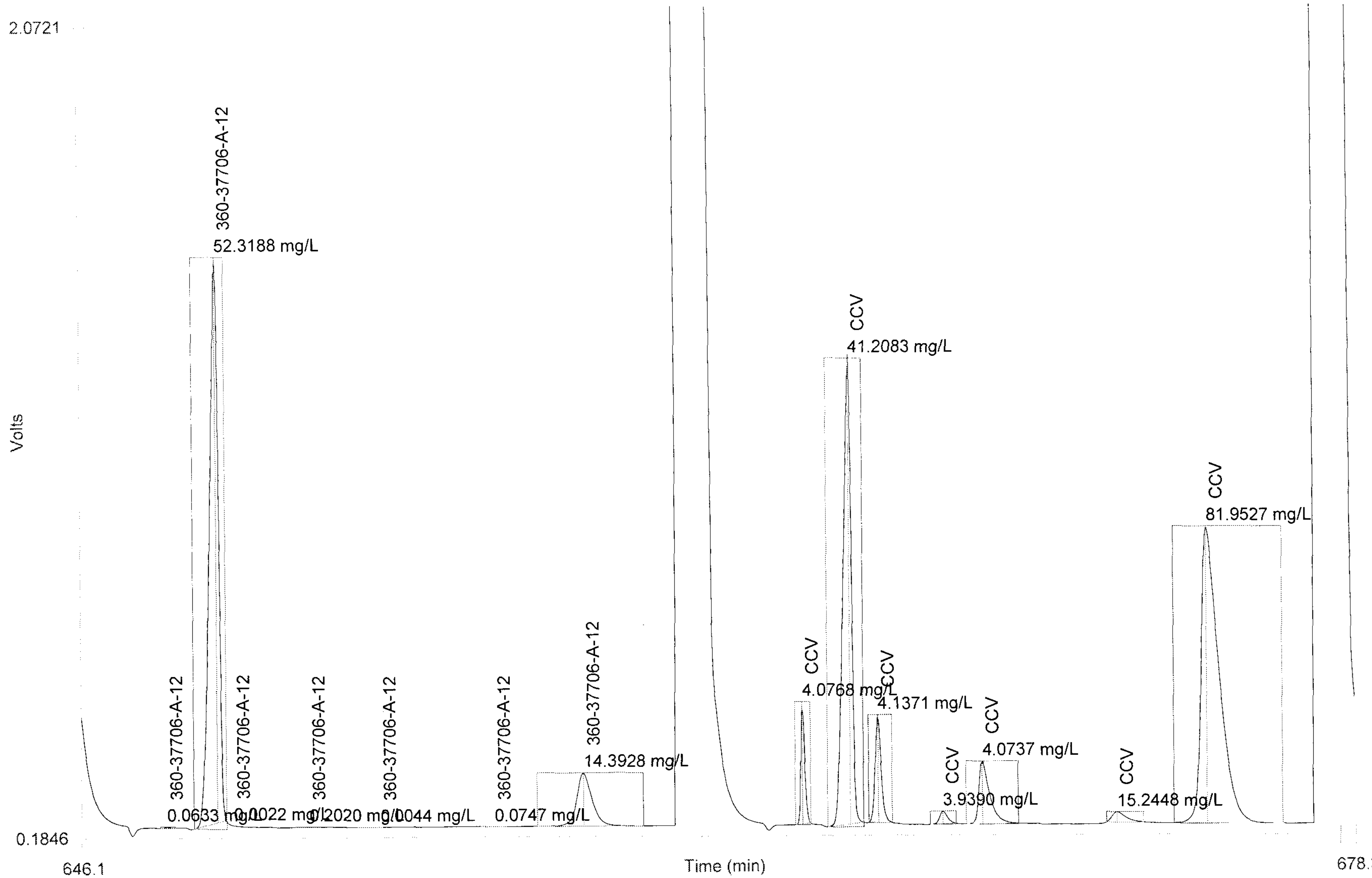
Channel 1 (Anions) : Set 20 of 28



Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 21 of 28



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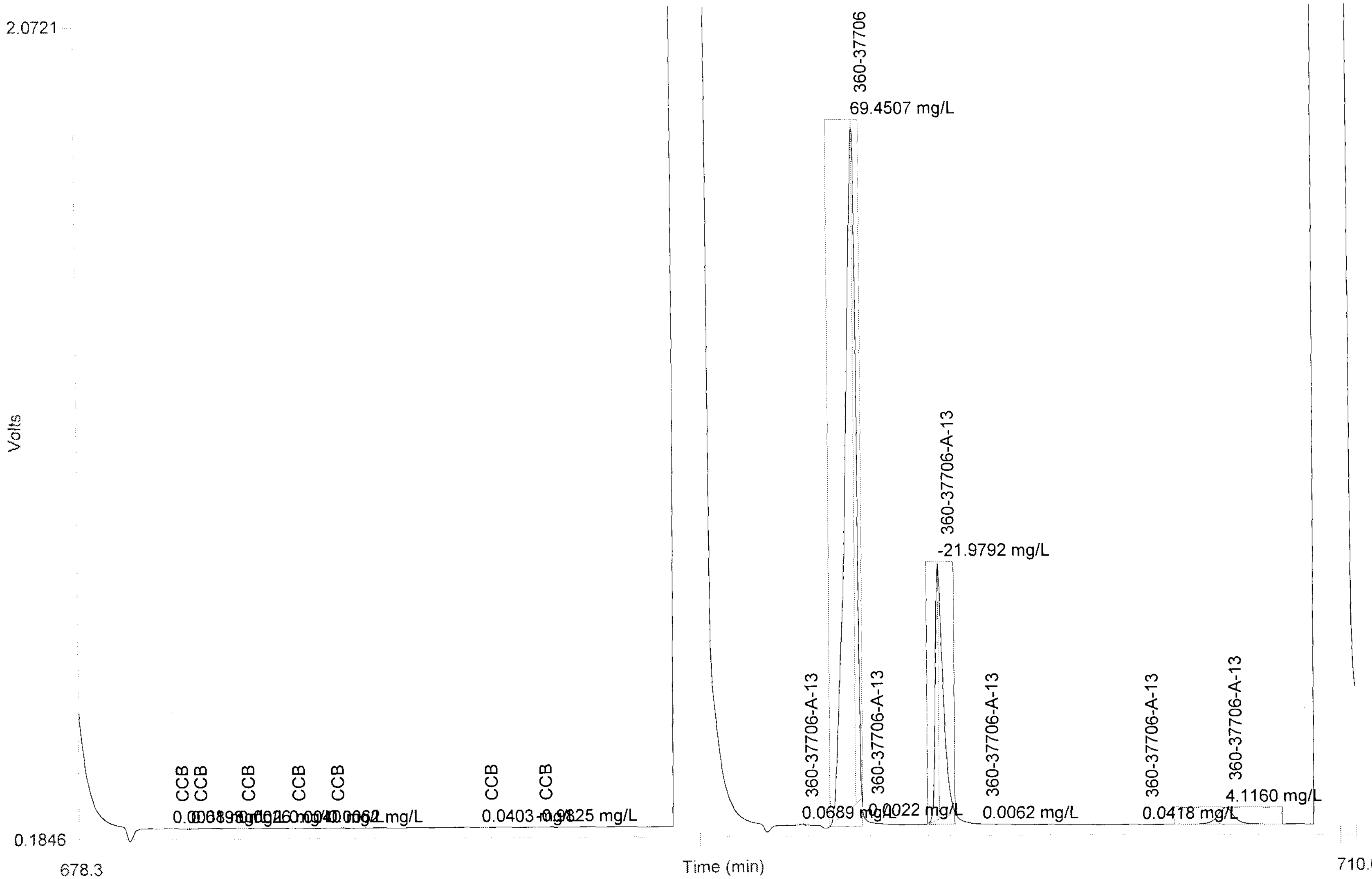
Author: EmerichR

Date : 11/22/2011

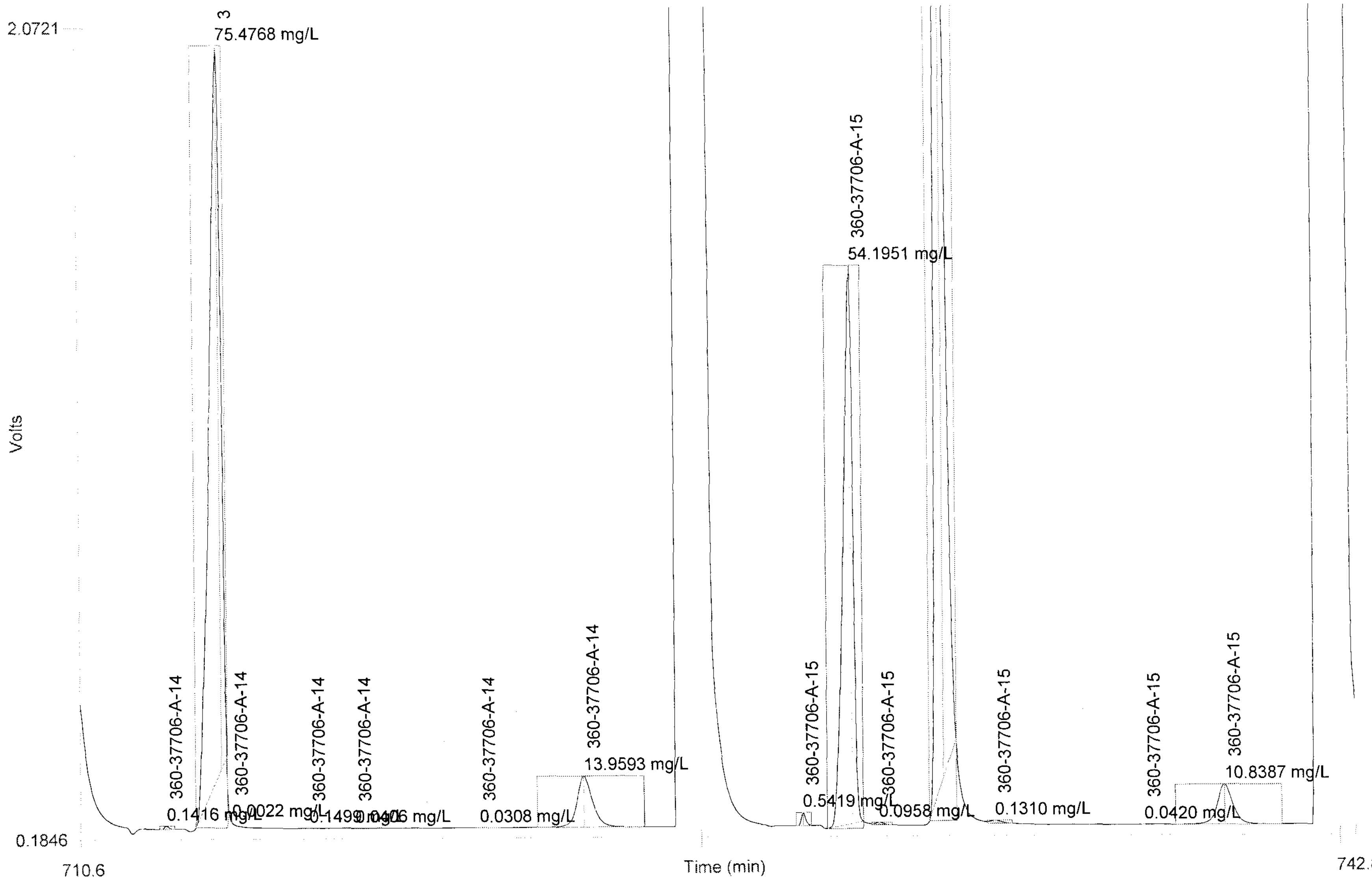
Channel 1 (Anions) : Set 22 of 28



Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 23 of 28



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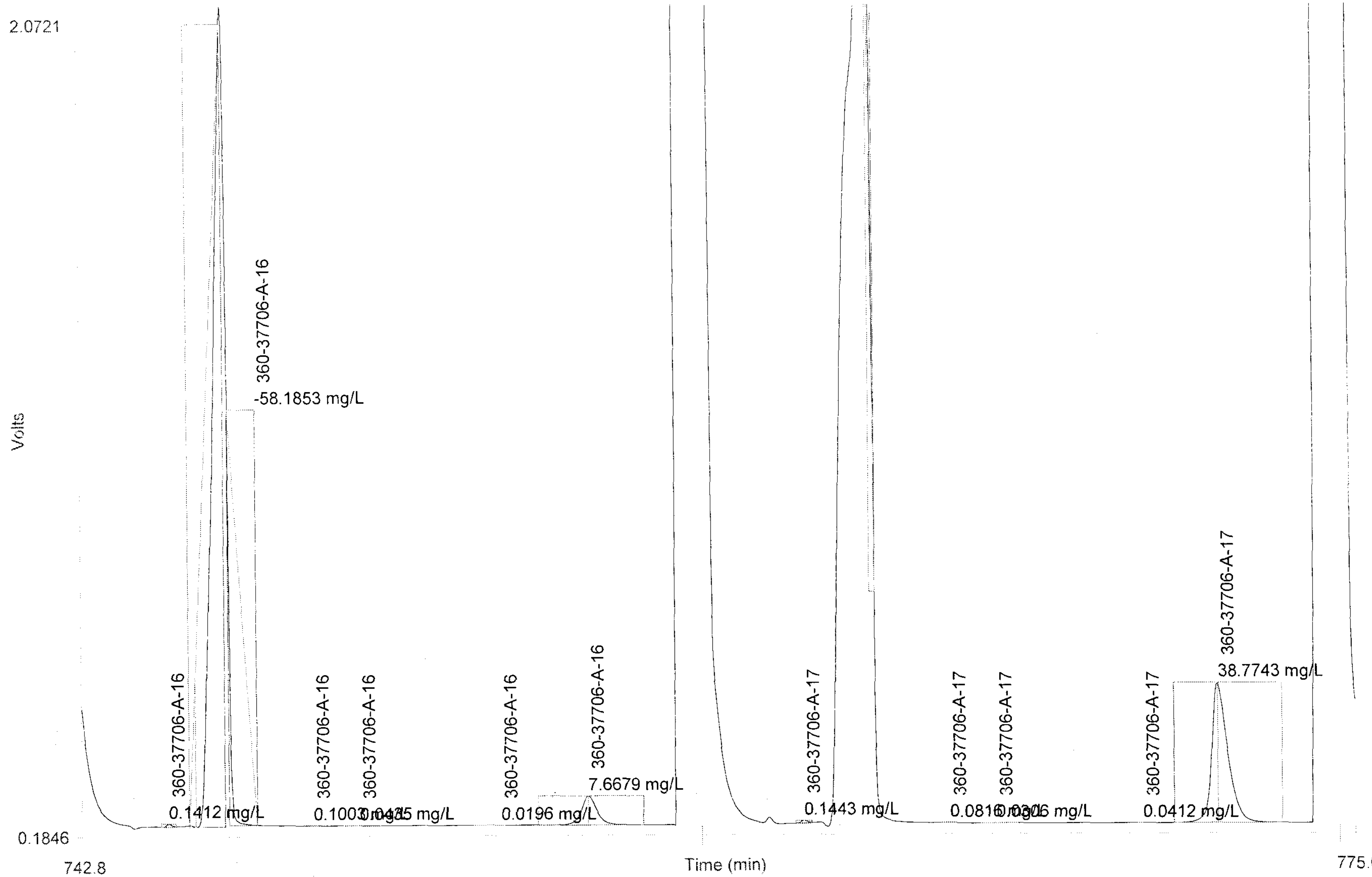
Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 24 of 28



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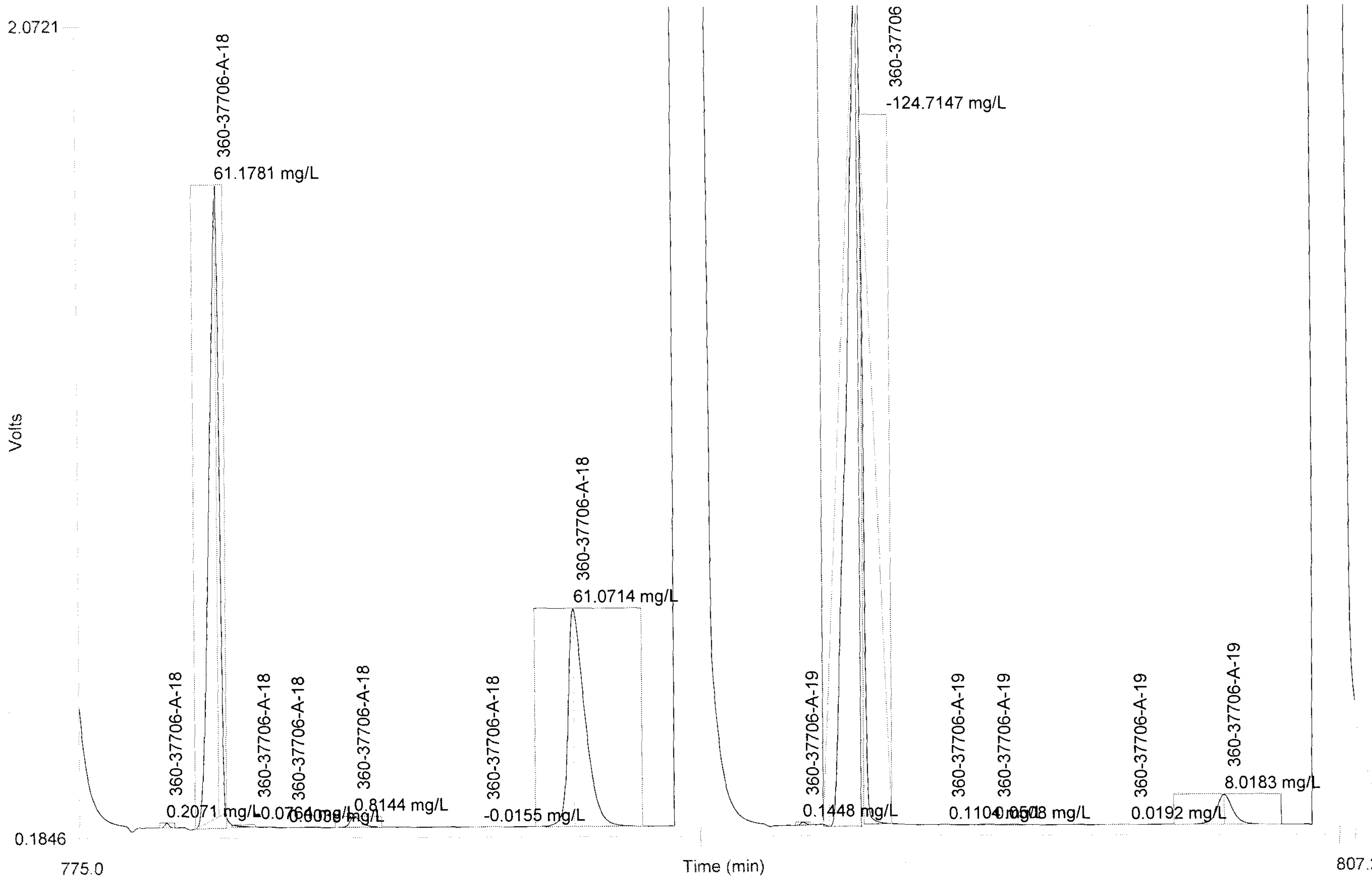
Author: EmerichR

Date : 11/22/2011

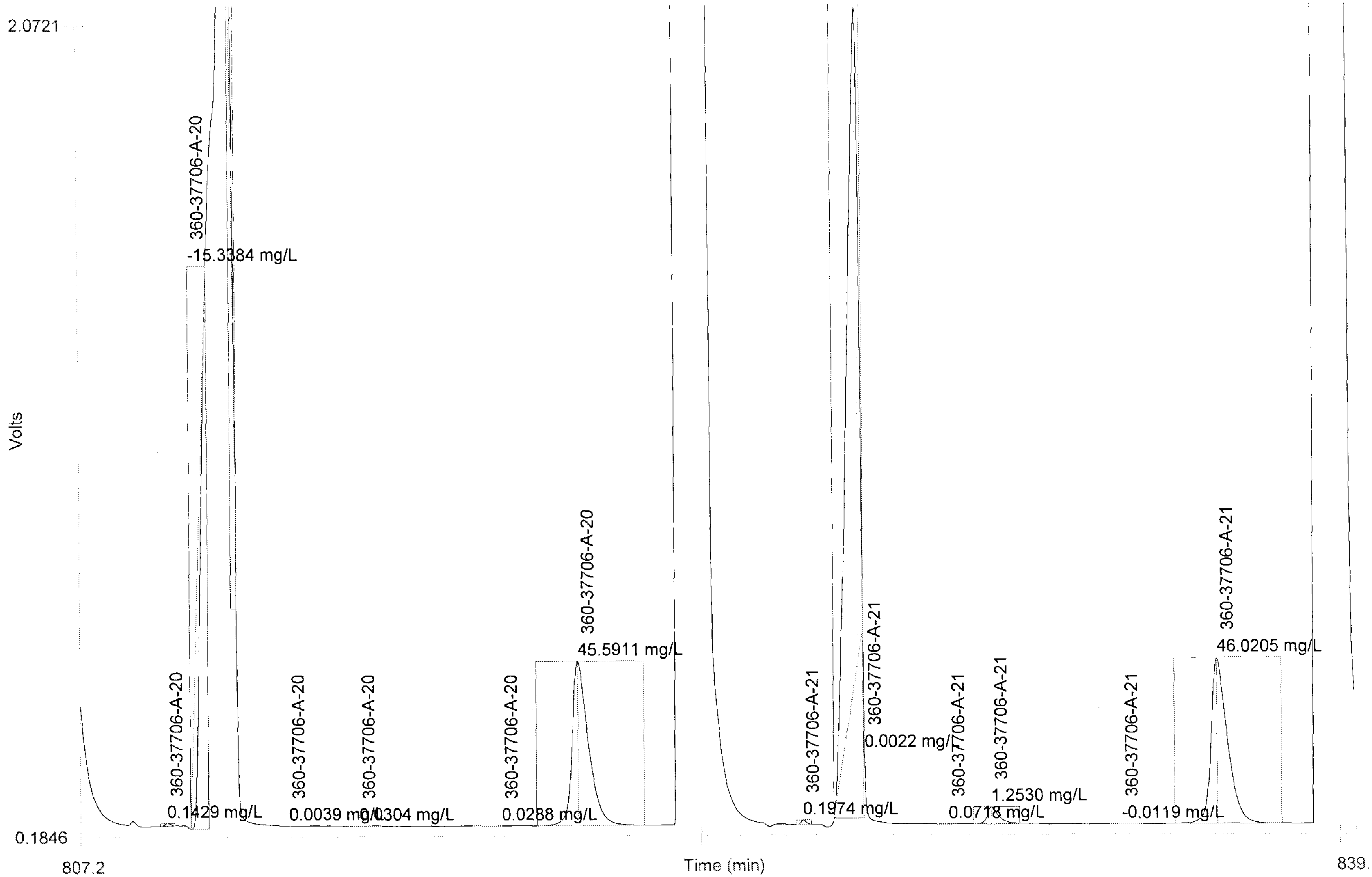
Channel 1 (Anions) : Set 25 of 28



Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 26 of 28



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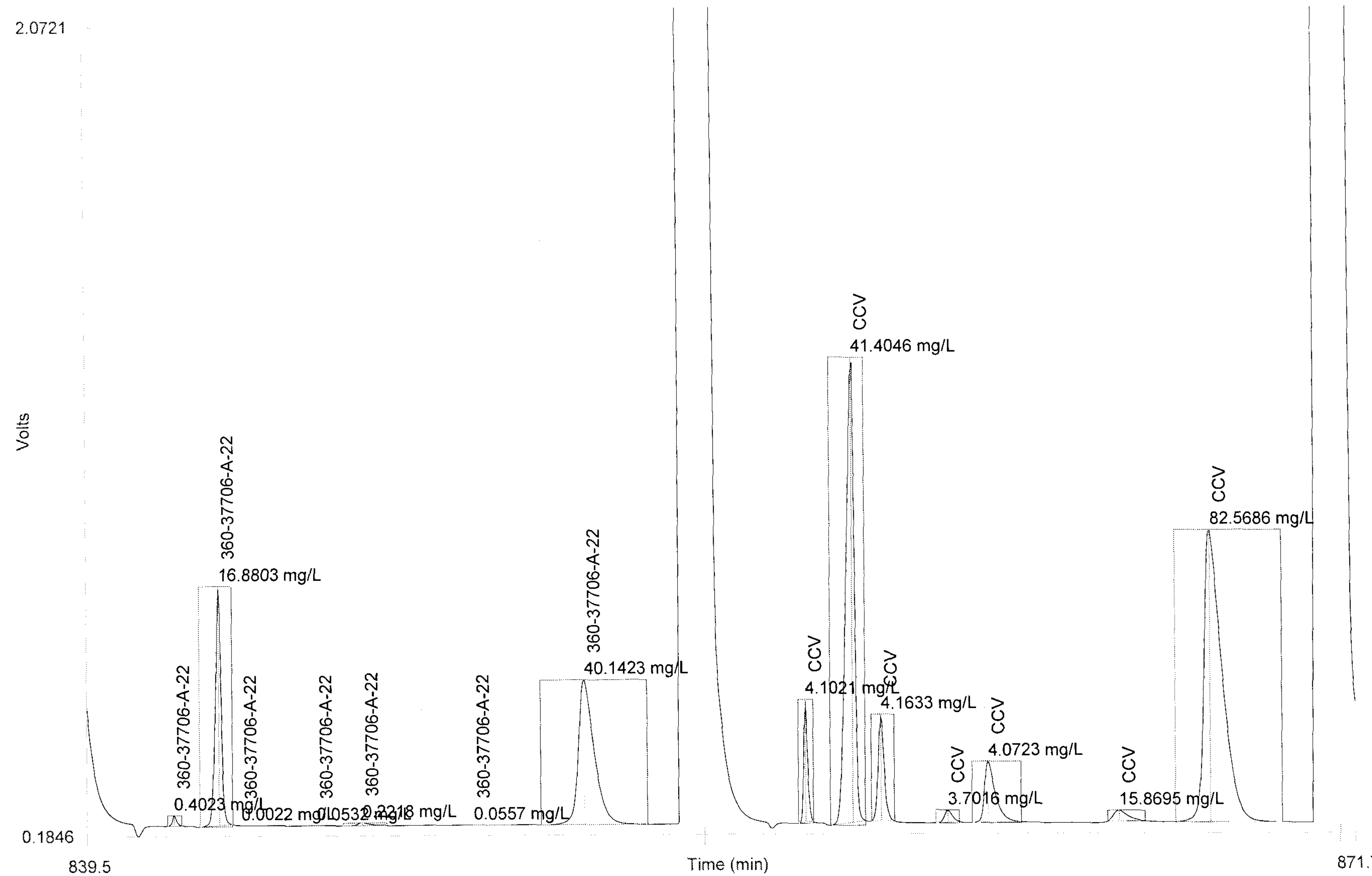
Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 27 of 28



Author: EmerichR

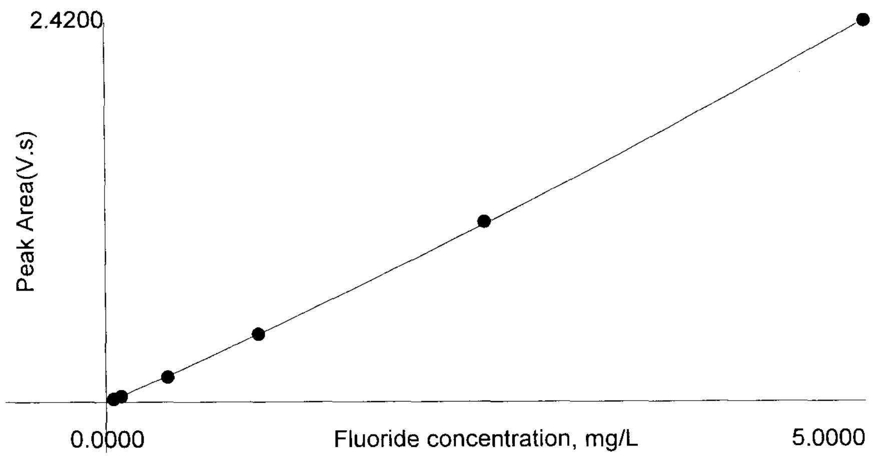
Date : 11/22/2011

Channel 1 (Anions) : Set 28 of 28

Table 1: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.4200	0.3882	0.3	11/15/2011	2:32:05 PM
2	2.5000	1	1.1432	0.1974	-1.3	11/15/2011	2:48:13 PM
3	1.0000	1	0.4295	0.0734	0.0	11/15/2011	3:04:20 PM
4	0.4000	1	0.1585	0.0271	4.9	11/15/2011	3:20:28 PM
5	0.1000	1	0.0379	0.0065	1.9	11/15/2011	3:36:35 PM
6	0.0500	1	0.0187	0.0032	-6.6	11/15/2011	3:52:42 PM

Figure 1: Fluoride



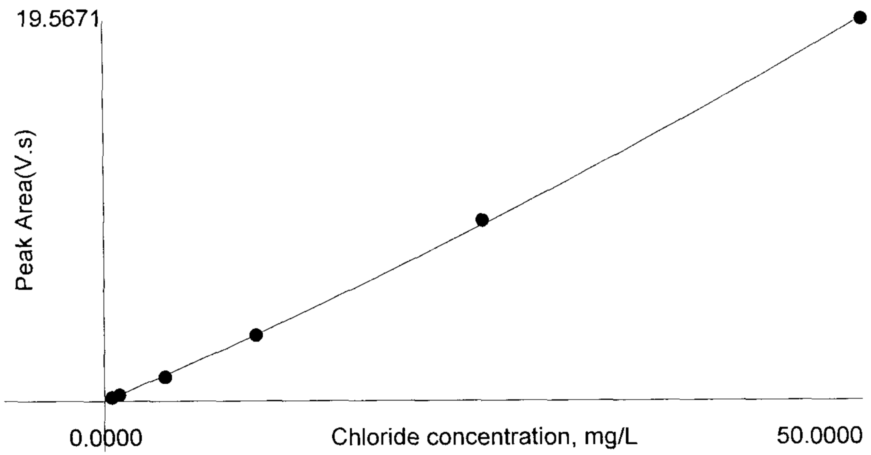
Area = 0.0132 * Conc^2 + 0.4199 * Conc - 0.0035
Conc = - 0.1211 * Area^2 + 2.3494 * Area + 0.0093
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 2: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	19.5671	1.3052	0.5	11/15/2011	2:32:05 PM
2	25.0000	1	9.2472	0.8077	-2.6	11/15/2011	2:48:13 PM
3	10.0000	1	3.3710	0.3697	1.0	11/15/2011	3:04:20 PM
4	4.0000	1	1.2235	0.1456	7.7	11/15/2011	3:20:28 PM
5	1.0000	1	0.3080	0.0351	4.1	11/15/2011	3:36:35 PM
6	0.5000	1	0.1732	0.0187	-11.1	11/15/2011	3:52:42 PM

Figure 2: Chloride



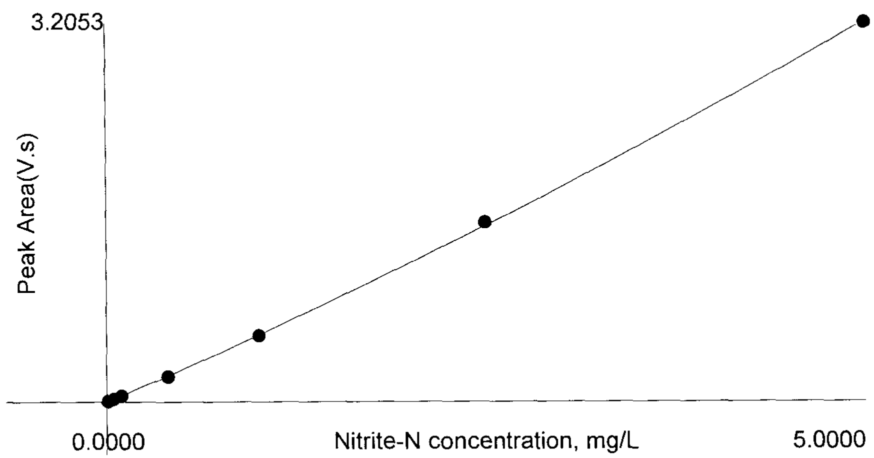
Area = 0.0013 * Conc^2 + 0.3283 * Conc - 0.0085
Conc = - 0.0226 * Area^2 + 2.9826 * Area + 0.0435
Correlation Coefficient (r) = 0.99997

1/x weighting

Table 3: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.2053	0.3249	0.4	11/15/2011	2:32:05 PM
2	2.5000	1	1.5145	0.1578	-1.9	11/15/2011	2:48:13 PM
3	1.0000	1	0.5600	0.0576	0.8	11/15/2011	3:04:20 PM
4	0.4000	1	0.2121	0.0216	3.8	11/15/2011	3:20:28 PM
5	0.1000	1	0.0502	0.0051	6.6	11/15/2011	3:36:35 PM
6	0.0500	1	0.0267	0.0026	-1.4	11/15/2011	3:52:42 PM
7	0.0100	1	0.0049	5.0658e-4	-10.2	11/15/2011	4:08:48 PM

Figure 3: Nitrite-N



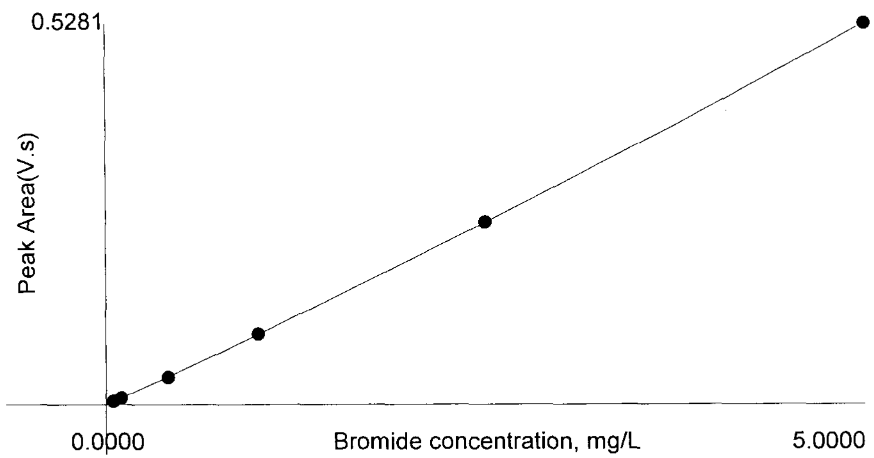
Area = 0.0195 * Conc^2 + 0.5461 * Conc - 0.0010
Conc = - 0.0787 * Area^2 + 1.8046 * Area + 0.0022
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 4: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.5281	0.0394	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	0.2527	0.0186	-0.2	11/15/2011	2:48:13 PM
3	1.0000	1	0.0981	0.0072	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.0379	0.0027	1.4	11/15/2011	3:20:28 PM
5	0.1000	1	0.0092	6.5877e-4	1.5	11/15/2011	3:36:35 PM
6	0.0500	1	0.0046	3.2836e-4	-2.5	11/15/2011	3:52:42 PM

Figure 4: Bromide



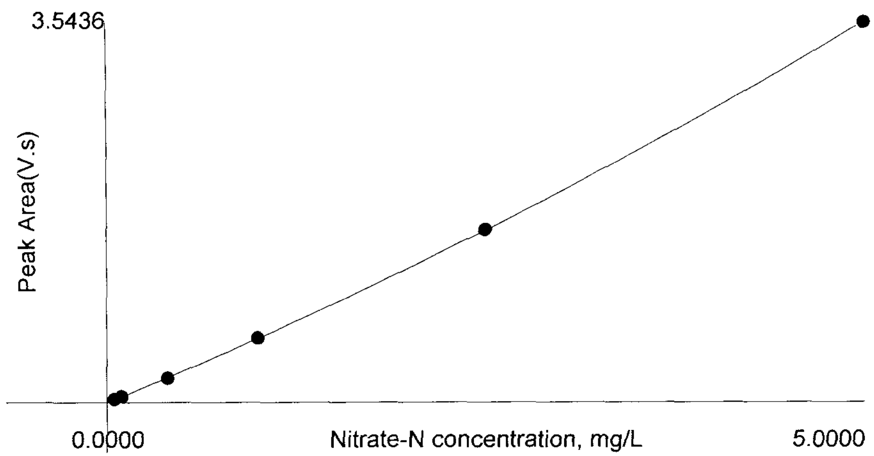
Area = 0.0019 * Conc^2 + 0.0962 * Conc - 3.2483e-4
Conc = - 1.6748 * Area^2 + 10.3373 * Area + 0.0038
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 5: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.5436	0.1988	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	1.6106	0.0905	-0.5	11/15/2011	2:48:13 PM
3	1.0000	1	0.6005	0.0330	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.2256	0.0121	2.5	11/15/2011	3:20:28 PM
5	0.1000	1	0.0531	0.0028	3.8	11/15/2011	3:36:35 PM
6	0.0500	1	0.0279	0.0014	-5.9	11/15/2011	3:52:42 PM

Figure 5: Nitrate-N



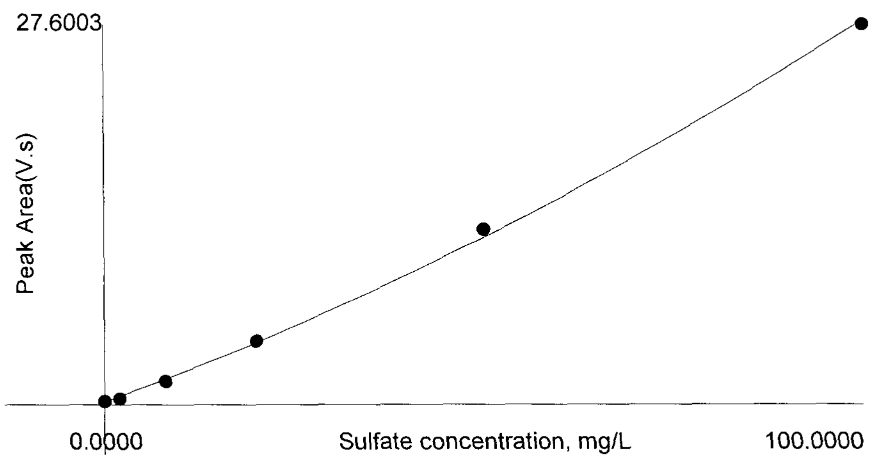
Area = 0.0273 * Conc^2 + 0.5736 * Conc - 0.0024
Conc = - 0.0824 * Area^2 + 1.6983 * Area + 0.0062
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 6: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	27.6003	0.8536	1.1	11/15/2011	2:32:05 PM
2	50.0000	1	12.7130	0.4540	-4.9	11/15/2011	2:48:13 PM
3	20.0000	1	4.5871	0.1729	-1.7	11/15/2011	3:04:20 PM
4	8.0000	1	1.6836	0.0620	9.3	11/15/2011	3:20:28 PM
5	2.0000	1	0.4027	0.0145	34.3	11/15/2011	3:36:35 PM
6	0.0500	1	0.2270	0.0081	-2.6	11/15/2011	3:52:42 PM

Figure 6: Sulfate



Area = 7.7408e-4 * Conc^2 + 0.1994 * Conc + 0.2113
Conc = - 0.0392 * Area^2 + 4.7046 * Area - 0.9825
Correlation Coefficient (r) = 0.99999

1/x weighting

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review Coversheet—Inorganics Dept

Method Name: IC Method Reference: 300.0 Date of Analytical Run: 11-21-11

Primary Reviewer's Initials & Date: [illegible] 11-28-11 Secondary Reviewer's Initials & Date: [illegible] 2011

Batch Numbers	84104	84106			

QC Criteria—Non-MCP: ICV/CCV ±10%: LCS/LCSD ±15%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%

QC Criteria—MCP/RCP: (9012 and 7196 only)
9012 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
9012 (soil): ICV/CCV ±15%: LCS/LCSD **: MS/MSD ±25%: ICB/MB/CCB <RL: MD RPD 35%: MSD/LCSD RPD ≤30%
7196 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
7196 (soil): ICV/CCV ±15%: LCS/LCSD **: MSS/MSI ±25%: ICB/MB/CCB <RL: MD RPD ≤35%: LCSD RPD ≤30%

FAILURES OF QC FOR ANYTHING OTHER THAN MS, MSD or MD ARE GROUNDS FOR INVALIDATING THE BATCH.

Criteria for QC	Yes	No	n/a	Notes/Comments
Were the ICV and CCVs within acceptable limits for QC recovery?	✓ ✓			
Were the ICB and CCBs all <RL?	✓ ✓			
Were all MB and CCB results <RL for the analytes of interest?	✓ ✓			
Was there a CCV/CCB combination run after every 10 samples or less?	✓ ✓			
Was there an LCS run with every batch of 20 samples or less?	✓ ✓			
Was there a MD, LCSD or MSD run with every batch of 20 samples or less?	✓ ✓			
Were all LCS/LCSD results within acceptable limits for QC recovery?	✓ ✓			
Were all MS/MSD results within acceptable limits for QC recovery?	✓ ✓			
Were all MD, LCSD and/or MSD %RPDs within acceptable limits for QC recovery?	✓ ✓			
Were the raw data points for investigative samples within the working curve range, or if not, were the samples diluted to bring them within this range?	✓ ✓			
IF there were any MCP/RCP samples in this batch, did they meet all MCP/RCP requirements?	✓		✓	
Were there any holding time violations in this batch?		✓ ✓		**NOTE!** The PM and QA Manager must be notified by email *immediately* of any holding time violations!!
Were any NCMs generated for any samples in the batch? (If so, list NCM numbers, and first-reviewer must check off any "No" answers above as applicable.)		✓ ✓		
Were any jobs in this batch Level 4? If "Yes" then scan all raw data & place in correct scan folder on the public drive before filing this paperwork.	✓ ✓ ✓			

** LCS or LCSD must produce a recovery that is within the manufacturer's specified 95% confidence limits, must be matrix matched.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Eluent Preparation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Prepare fresh daily; makes 3L of eluent. To make: in a one-gallon plastic container, mix:

- 60.0 mL of 100*M* $NaHCO_3$;
- 78.0 mL of 100*M* Na_2CO_3; and
- 2862 mL of deionized water.

Degas with helium for 3min before use.

Date Prepared	Analyst's Initials	Lot # 100*M* $NaHCO_3$	Lot # 100*M* Na_2CO_3	Number of Portions Prepared
11.17-11	[illegible]	W11J 2GT018	W11K RGT001	1
11-18-11	RWE	W11K RGT016	W11K RGT017	2
11-21-11	RWE	↓	↓	1
11-22-11	RWE	↓	↓	1
11-23-11	RWE	↓	↓	2

0.25 *M* Sulfuric Acid Creation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Record the information below for creating the acid. When an entry is made do not use arrows to fill in information. All entries must be complete.

Recipe: to 2958mL of deionized water in a 1 gallon jug add 42mL of concentrated H_2SO_4 for a total volume of 3L.

Date Made	Analyst's Initials	Volume of 0.25 *M* Acid Made (L)	Source: Concentrated Sulfuric Acid (ACS grade) Manufacturer & Lot Number
11-18-11	RWT	3	Baker lot J22022
11-21-11	RWT	3	↓
11-22-11	RWT	3	↓
11-23-11	RWT	3	↓

TestAmerica Westfield
Analytical Dilution Preparation Log

Date: 11-21-11

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution: Sample Aliquot 2	Serial Dilution: Units	Serial Dilution: Final Volume 2	Serial Dilution: Units	Comments
RWE	11-21-11	300.0	37596 B1	10X	1	mL	10	mL					
			B2										
			B3										
			B4										
			B5										

entries completed by day [new page each day]

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Ion Chromatography QC Source Data Sheet—Inorganics Dept

Method (circle methods): IC 300_28D IC 300_48HR IC 9056_28D IC 9056_48HR

Date of Analytical Run: 11-21-11 Analyst's Initials: RU

Working Curve Standard:

Manufacturer & Lot Number for Source Standard	Working Curve Standards Prepared On
Inorganic Ventures Lot E2-MEB394034	20 October 2011

QC Standard True Values for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.50	25.0	2.50	2.50	2.50	50.0
ICB	0	0	0	0	0	0
MB	0	0	0	0	0	0
LCS/LCSD	4.00	40.0	4.00	4.00	4.00	80.0
MS/MSD	1.00	10.0	1.00	1.00	1.00	20.0

QC Standard Acceptable Recovery Ranges for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.25-2.75	22.5-27.5	2.25-2.75	2.25-2.75	2.25-2.75	45.0-55.0
ICB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
MB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
LCS/LCSD	3.40-4.60	34.0-46.0	3.40-4.60	3.40-4.60	3.40-4.60	68.0-92.0
MS/MSD	0.75-1.25	7.50-12.5	0.75-1.25	0.75-1.25	0.75-1.25	15.0-25.0

Current Method RLs (mg/L):

	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
	0.10	1.00	0.010	0.10	0.050	2.0

Original Run Filename: OM_11-21-2011_04-59-52PM.OMN created 11/21/2011 4:59:52 PM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_11-21-2011_04-59-52PM.OMN last modified 11/22/2011 7:47:17 AM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

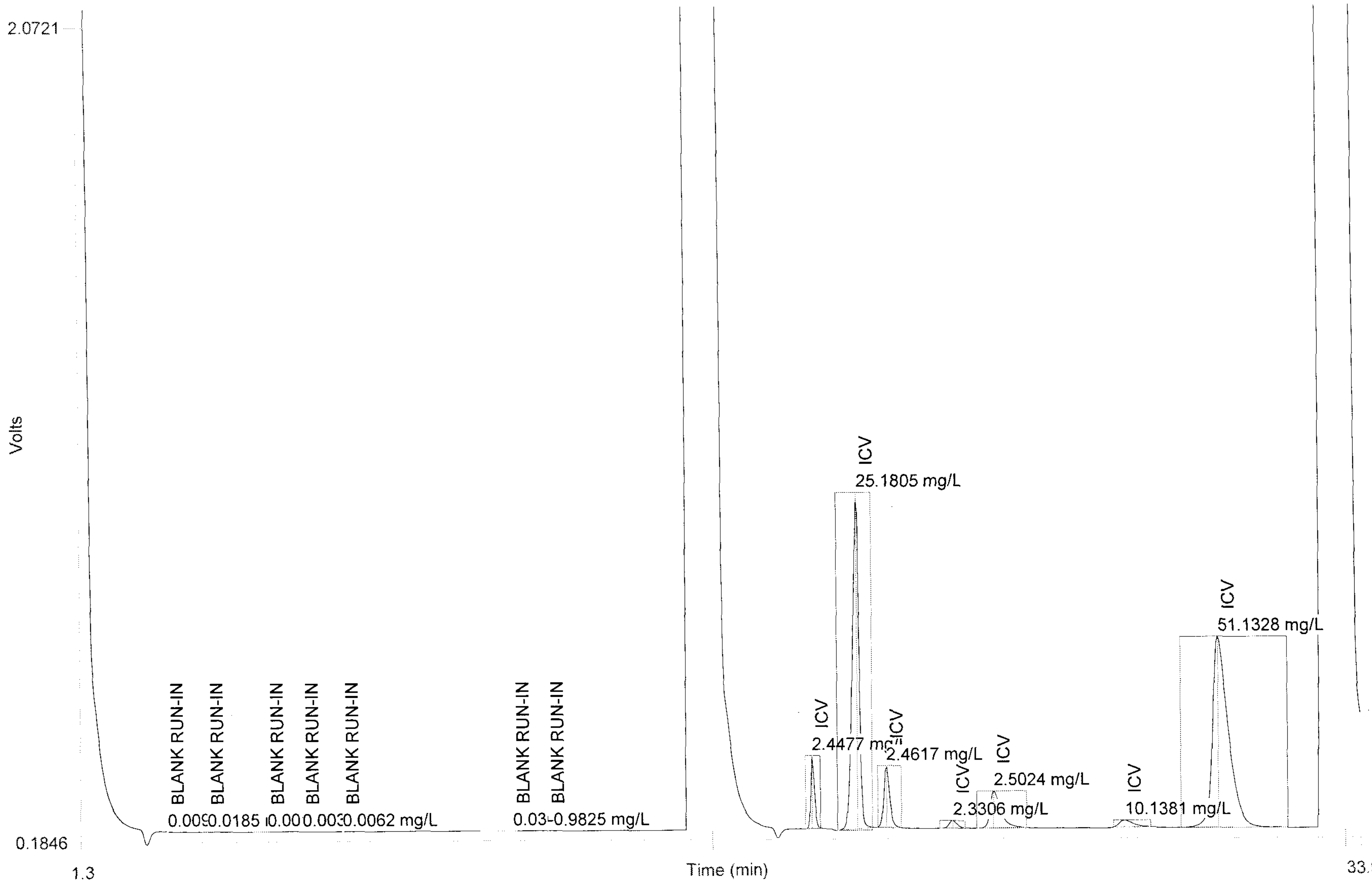
Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	0.0038	0.0185	0.0093	0.0062	0.0017	-0.9825	11/21/2011@5:01:14 PM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	
ICV	1	2.3306	25.1805	2.4477	2.5024	2.4617	51.1328	11/21/2011@5:17:22 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
ICB	S11	0.0037	0.0188	0.0098	0.0042	0.0024	-0.9701	11/21/2011@5:33:29 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	4.1143e-4	0.0187	0.0074	0.0065	0.0025	-0.9826	11/21/2011@5:49:36 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9011	40.7044	4.0368	4.0253	4.1015	81.0732	11/21/2011@6:05:43 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37722-B-1@20 CL	2	0.0040	12.3985	0.0096	0.0362	0.0022	-0.2115	11/21/2011@6:21:50 PM
360-37722-B-1@20 MS	3	0.9839	23.3197	1.0166	1.0655	1.0299	21.0670	11/21/2011@6:37:57 PM
360-37722-B-1@20 MSD	3	0.9666	23.3489	1.0191	1.0620	1.0328	21.0874	11/21/2011@6:54:04 PM
360-37723-A-1 CL	4	0.1627	36.8165	0.0458	2.6460	-0.0201	8.3325	11/21/2011@7:10:11 PM
360-37729-A-1@50 CL	5	0.0041	17.8236	0.0079	0.0063	-0.0032	-0.4757	11/21/2011@7:26:17 PM
360-37730-B-1@10 CL	6	8.7829e-4	14.0632	0.0096	0.2692	-0.0015	1.0812	11/21/2011@7:42:25 PM
360-37596-B-1	7	0.3114	53.4286	-0.0099	0.0062	5.9333	31.9287	11/21/2011@7:58:31 PM
360-37596-B-1@10	8	0.0371	32.7289	0.0039	0.0088	-0.0104	2.1454	11/21/2011@8:14:38 PM
360-37596-B-5	9	0.1291	-53.3600	0.2220	0.0196	0.0022	101.2482	11/21/2011@8:30:44 PM
360-37596-B-5@10	10	0.0181	10.9541	0.0289	0.0089	0.0022	9.5509	11/21/2011@8:46:50 PM
CCV	S12	4.1293	40.9073	4.0620	4.0605	4.0757	81.3566	11/21/2011@9:02:57 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0035	0.0205	0.0055	0.0073	0.0023	-0.9882	11/21/2011@9:19:04 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37596-B-2	11	0.0452	19.6470	0.1165	0.5124	0.0022	69.0897	11/21/2011@9:35:10 PM
360-37596-B-2@10	12	0.0030	1.9337	0.0229	0.0581	0.0012	6.6340	11/21/2011@9:51:16 PM
360-37596-B-3	13	0.0459	4.3152	0.0388	0.2758	0.0163	37.7055	11/21/2011@10:07:22 PM
360-37596-B-3@10	14	0.0110	0.5632	0.0093	0.0352	0.0024	2.5762	11/21/2011@10:23:28 PM
360-37596-~~B-6~~ B4	15	0.0351	12.8772	0.1395	0.2391	0.1712	52.9532	11/21/2011@10:39:34 PM
360-37596-~~B-6~~@10 B4	16	0.0013	1.2994	0.0206	0.0299	0.0142	3.9788	11/21/2011@10:55:41 PM
360-37706-A-1	17	0.0617	15.9948	0.4876	0.2016	0.0080	41.2601	11/21/2011@11:11:48 PM
360-37706-A-2	18	0.1147	63.5490	0.1893	0.8481	0.0681	4.8285	11/21/2011@11:27:56 PM
360-37706-A-3	19	0.0606	29.6797	0.3850	0.0575	0.0022	42.5869	11/21/2011@11:44:02 PM
360-37706-A-4	20	0.2318	59.6422	0.0801	0.4331	0.0394	1.9600	11/22/2011@12:00:09 AM
CCV	S12	4.0426	41.0089	4.0531	4.0864	4.1132	81.6575	11/22/2011@12:16:17 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	

CCB	S11	7.3408e-4	0.0199	0.0096	0.0086	0.0020	-0.9823	11/22/2011@12:32:24 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0067	0.0182	0.0069	0.0062	0.0023	-0.9709	11/22/2011@12:48:30 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.0288	41.0091	4.0631	4.0839	4.1183	81.7773	11/22/2011@1:04:37 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37706-A-5	21	0.0506	23.5120	0.2128	0.0608	0.0022	54.0499	11/22/2011@1:20:44 AM
360-37706-A-5 MS	22	1.0256	33.9778	1.2465	1.0996	1.0341	74.4549	11/22/2011@1:36:51 AM
360-37706-A-5 MSD	22	1.0328	34.0411	1.2468	1.1025	1.0375	74.4789	11/22/2011@1:52:58 AM
360-37706-A-6	23	0.3602	65.1143	0.0904	0.4778	0.0493	2.3445	11/22/2011@2:09:05 AM
360-37706-A-7	24	0.1425	78.4057	0.0581	0.0063	0.0022	98.3422	11/22/2011@2:25:11 AM
360-37706-A-8	25	10.8011	59.7641	0.0284	-0.0142	0.0022	56.4033	11/22/2011@2:41:17 AM
360-37706-A-9	26	0.1177	3.1546	0.0294	0.0015	2.0505	110.8961	11/22/2011@2:57:23 AM
360-37706-A-10	27	-2.429e+3	69.4787	0.2873	0.0063	0.0022	20.0819	11/22/2011@3:13:29 AM
360-37706-A-11	28	0.4999	66.8144	0.1972	0.0050	0.0022	83.3011	11/22/2011@3:29:35 AM
360-37706-A-12	29	0.2020	52.3188	0.0633	0.0044	0.0022	14.3928	11/22/2011@3:45:41 AM
CCV	S12	3.9390	41.2083	4.0768	4.0737	4.1371	81.9527	11/22/2011@4:01:48 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0040	0.0193	0.0068	0.0062	0.0026	-0.9825	11/22/2011@4:17:54 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37706-A-13	30	-21.9792	69.4507	0.0689	0.0062	0.0022	4.1160	11/22/2011@4:34:00 AM
360-37706-A-14	31	0.1499	75.4768	0.1416	0.0406	0.0022	13.9593	11/22/2011@4:50:08 AM
360-37706-A-15	32	-4.083e+3	54.1951	0.5419	0.1310	0.0958	10.8387	11/22/2011@5:06:15 AM
360-37706-A-16	33	0.1003	-68.7698	0.1412	0.0435	-58.1853	7.6679	11/22/2011@5:22:21 AM
360-37706-A-17	34	0.0816	0.7892	0.1443	0.0306	4.8970	38.7743	11/22/2011@5:38:28 AM
360-37706-A-18	35	0.0038	61.1781	0.2071	0.8144	-0.0764	61.0714	11/22/2011@5:54:35 AM
360-37706-A-19	36	0.1104	-68.6696	0.1448	0.0508	-124.7147	8.0183	11/22/2011@6:10:42 AM
360-37706-A-20	37	0.0039	-15.3384	0.1429	0.0304	4.6419	45.5911	11/22/2011@6:26:49 AM
360-37706-A-21	38	0.0718	71.4605	0.1974	1.2530	0.0022	46.0205	11/22/2011@6:42:55 AM
360-37706-A-22	39	0.0532	16.8803	0.4023	0.2218	0.0022	40.1423	11/22/2011@6:59:02 AM
CCV	S12	3.7016	41.4046	4.1021	4.0723	4.1633	82.5686	11/22/2011@7:15:09 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0038	0.0154	0.0069	0.0063	0.0026	-0.9824	11/22/2011@7:31:15 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 1 of 28



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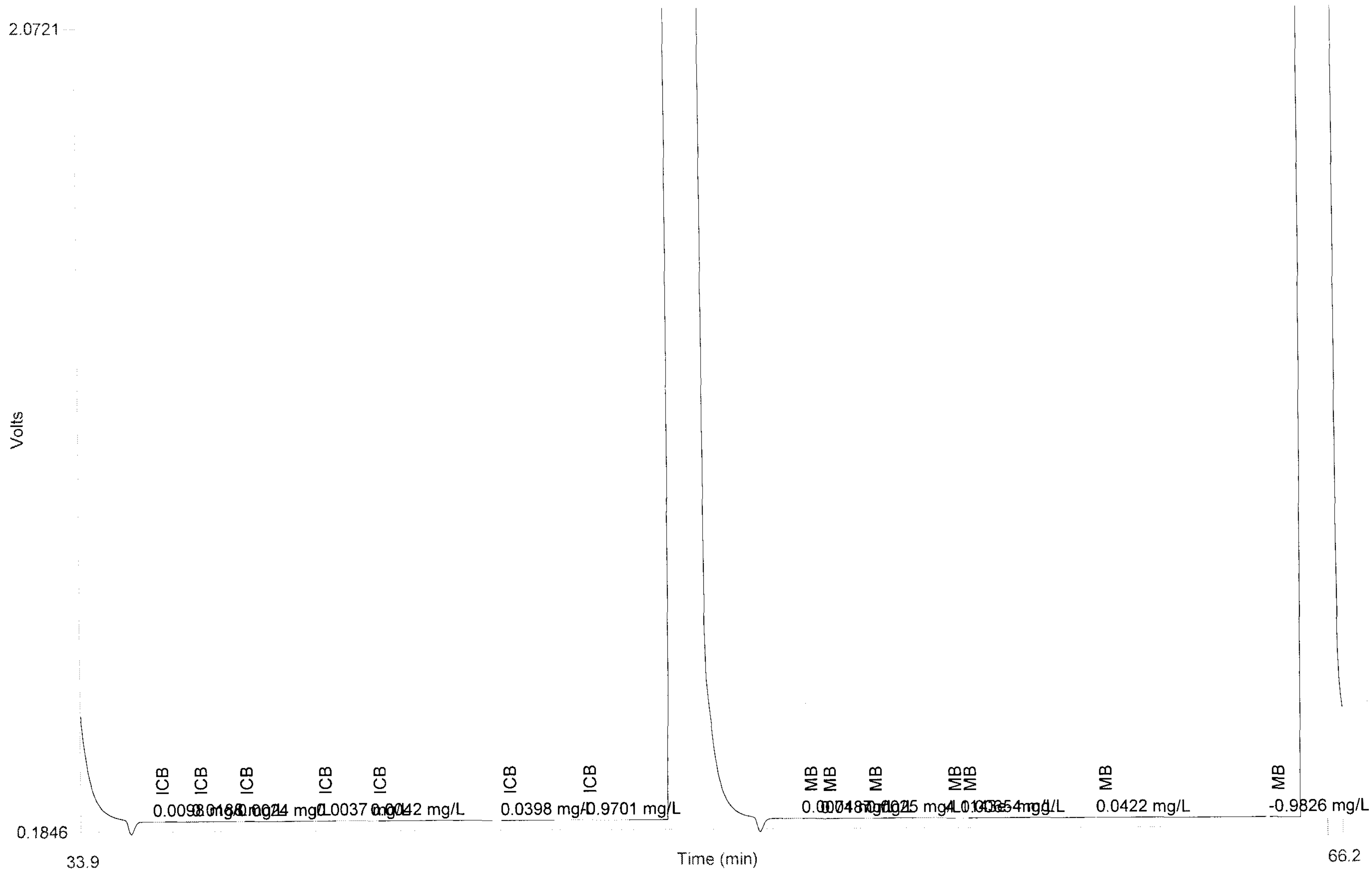
Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 2 of 28



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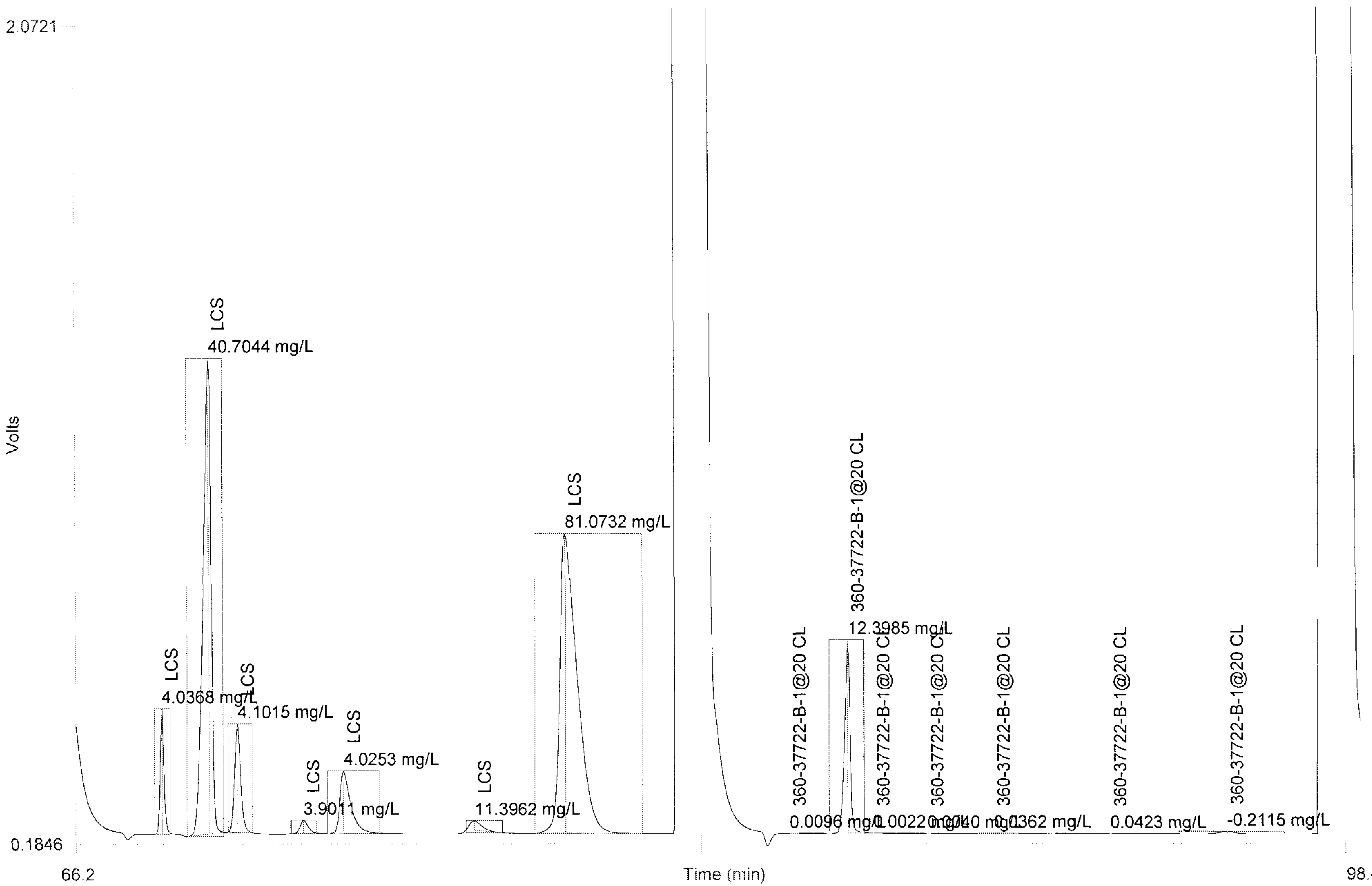
Author: EmerichR

Date : 11/22/2011

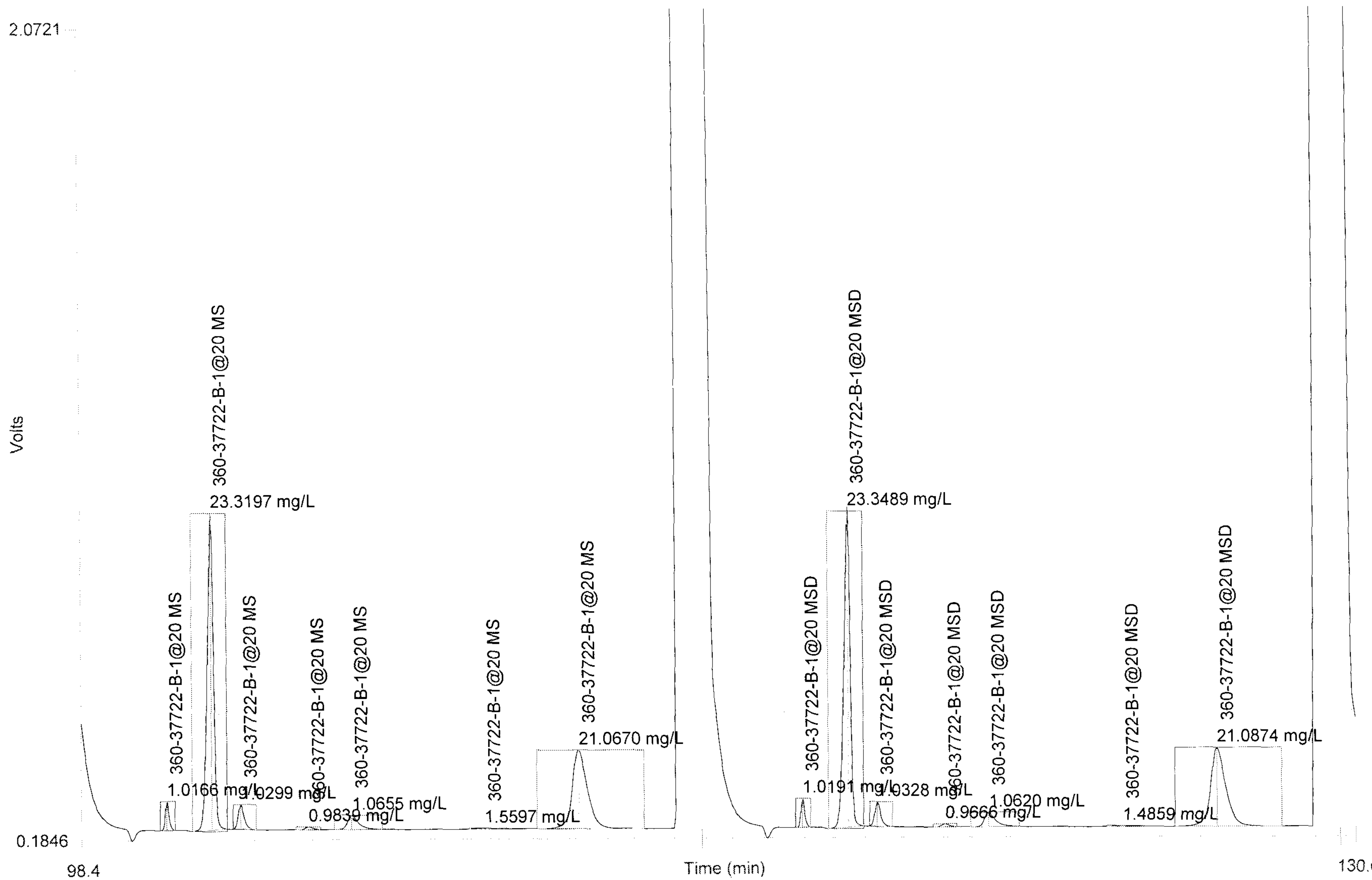
Channel 1 (Anions) : Set 3 of 28



Author: EmerichR

Date : 11/22/2011

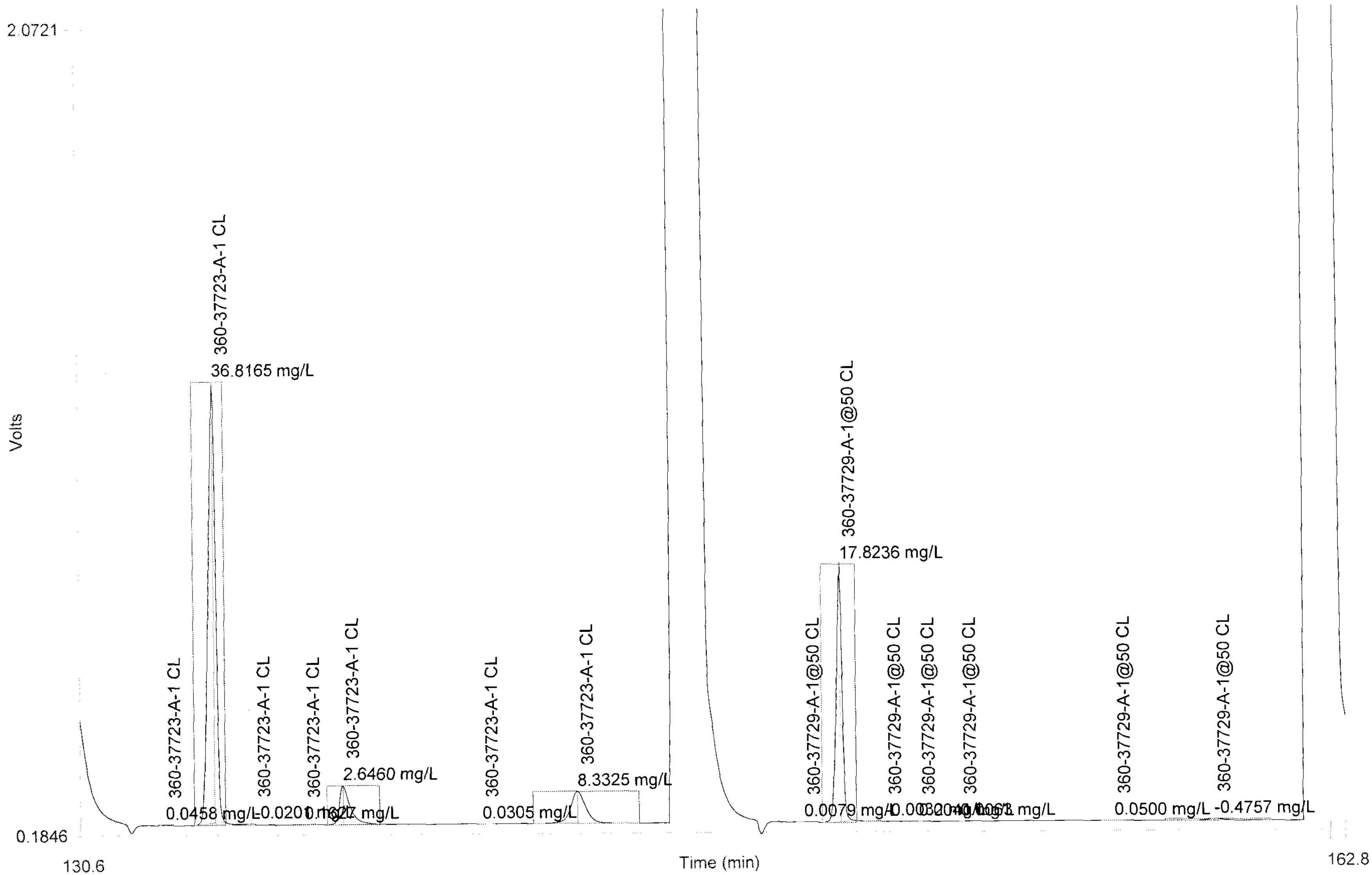
Channel 1 (Anions) : Set 4 of 28



Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 5 of 28



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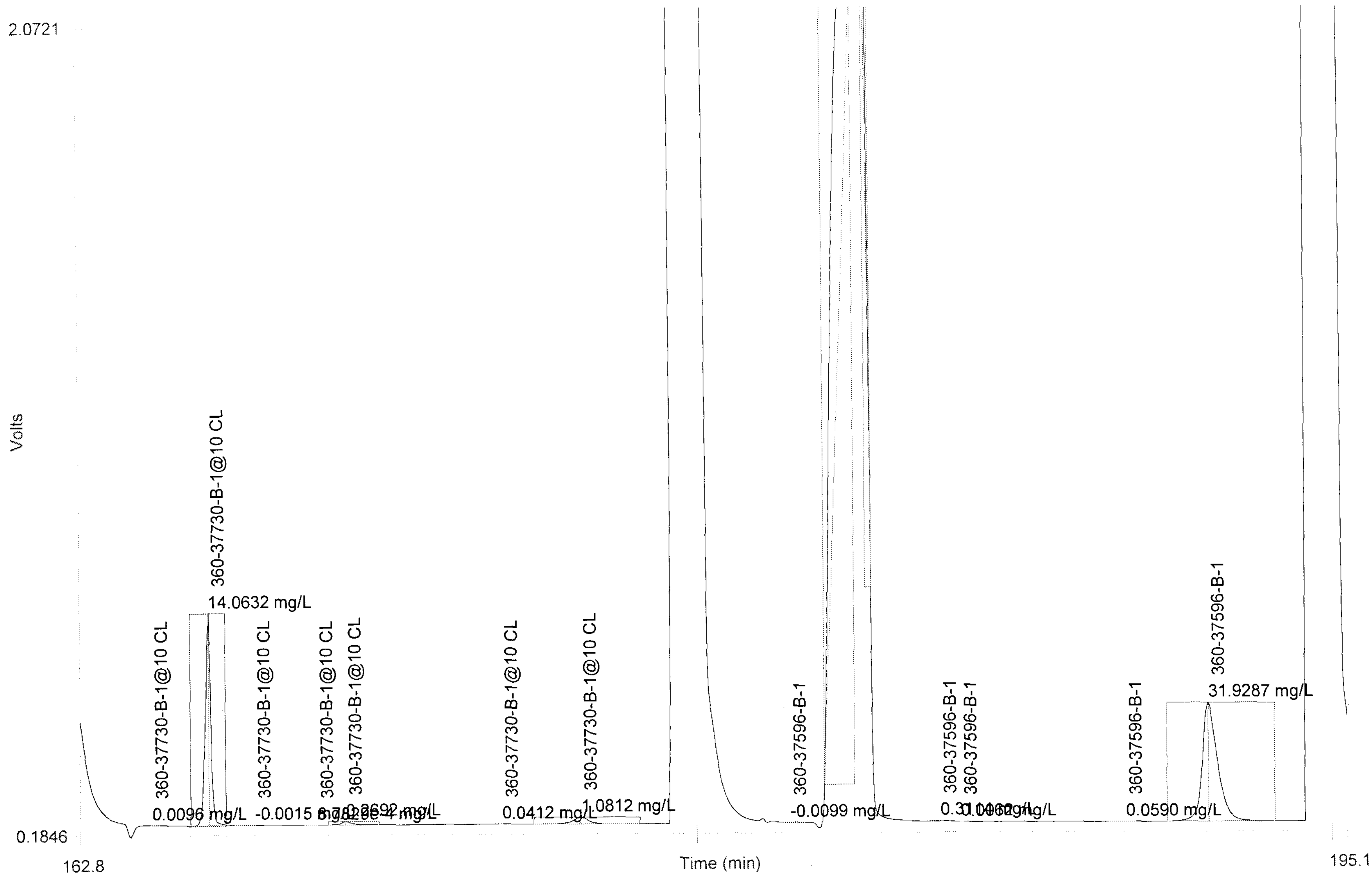
Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 6 of 28



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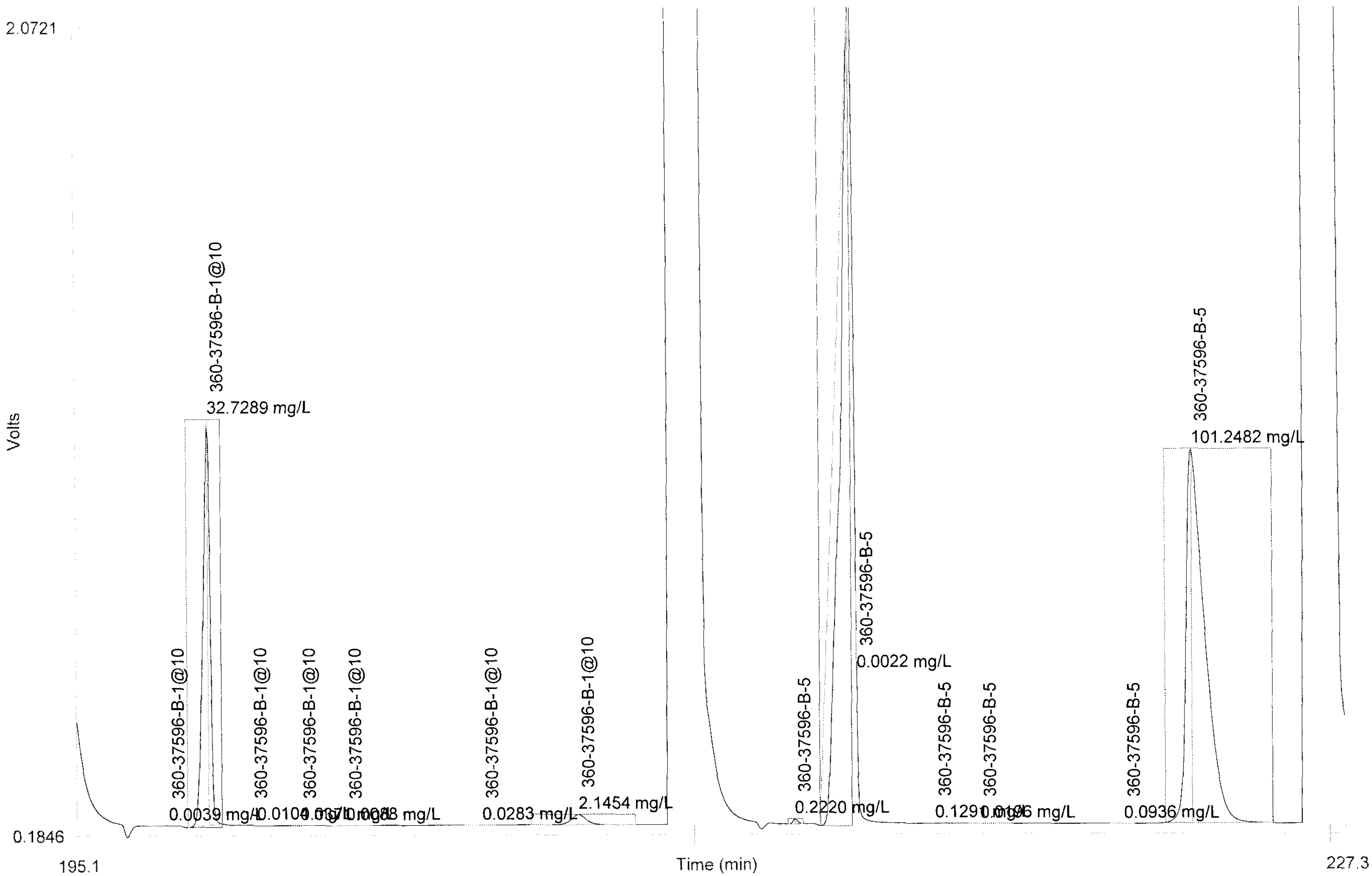
Author: EmerichR

Date : 11/22/2011

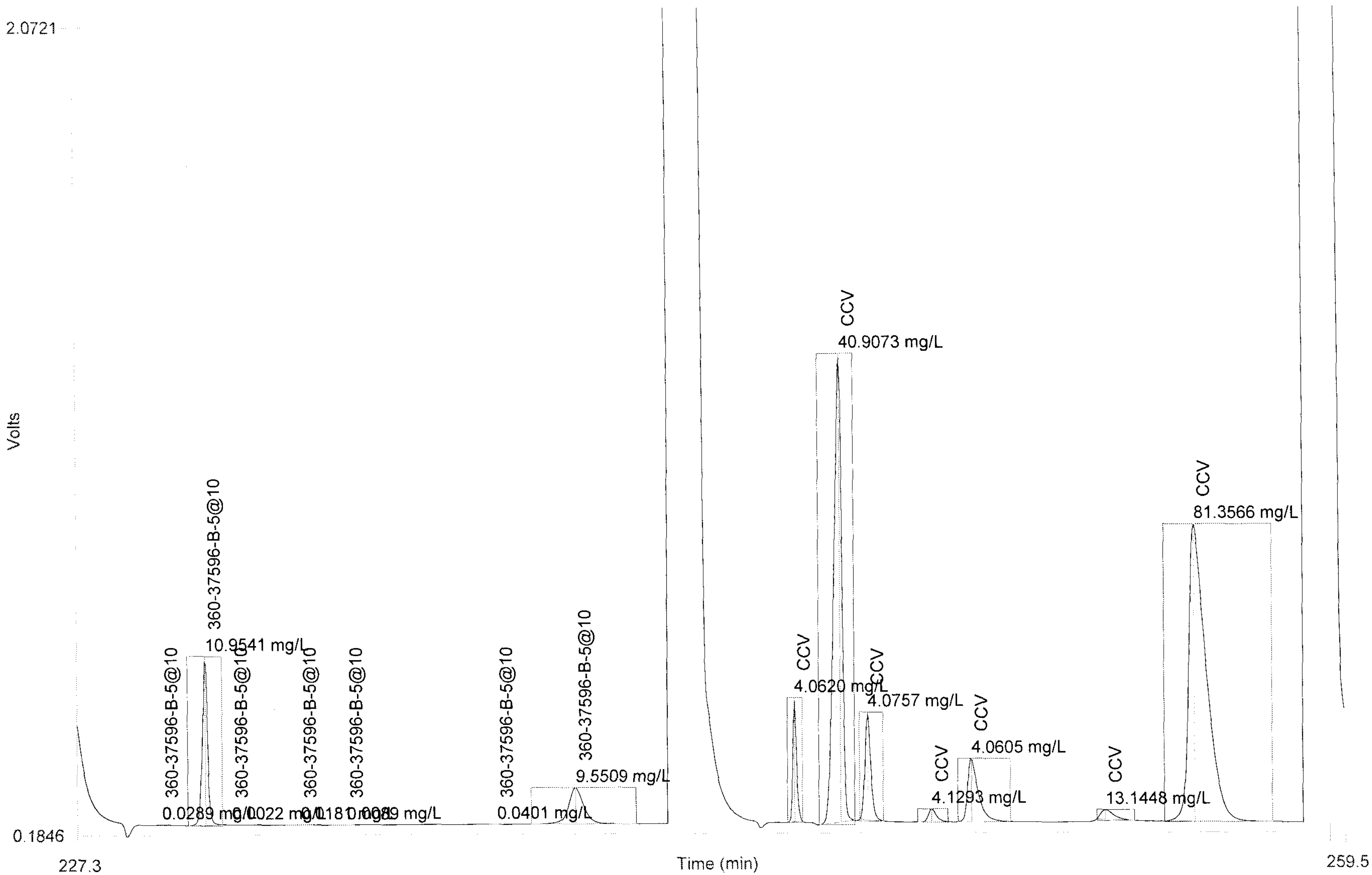
Channel 1 (Anions) : Set 7 of 28



Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 8 of 28



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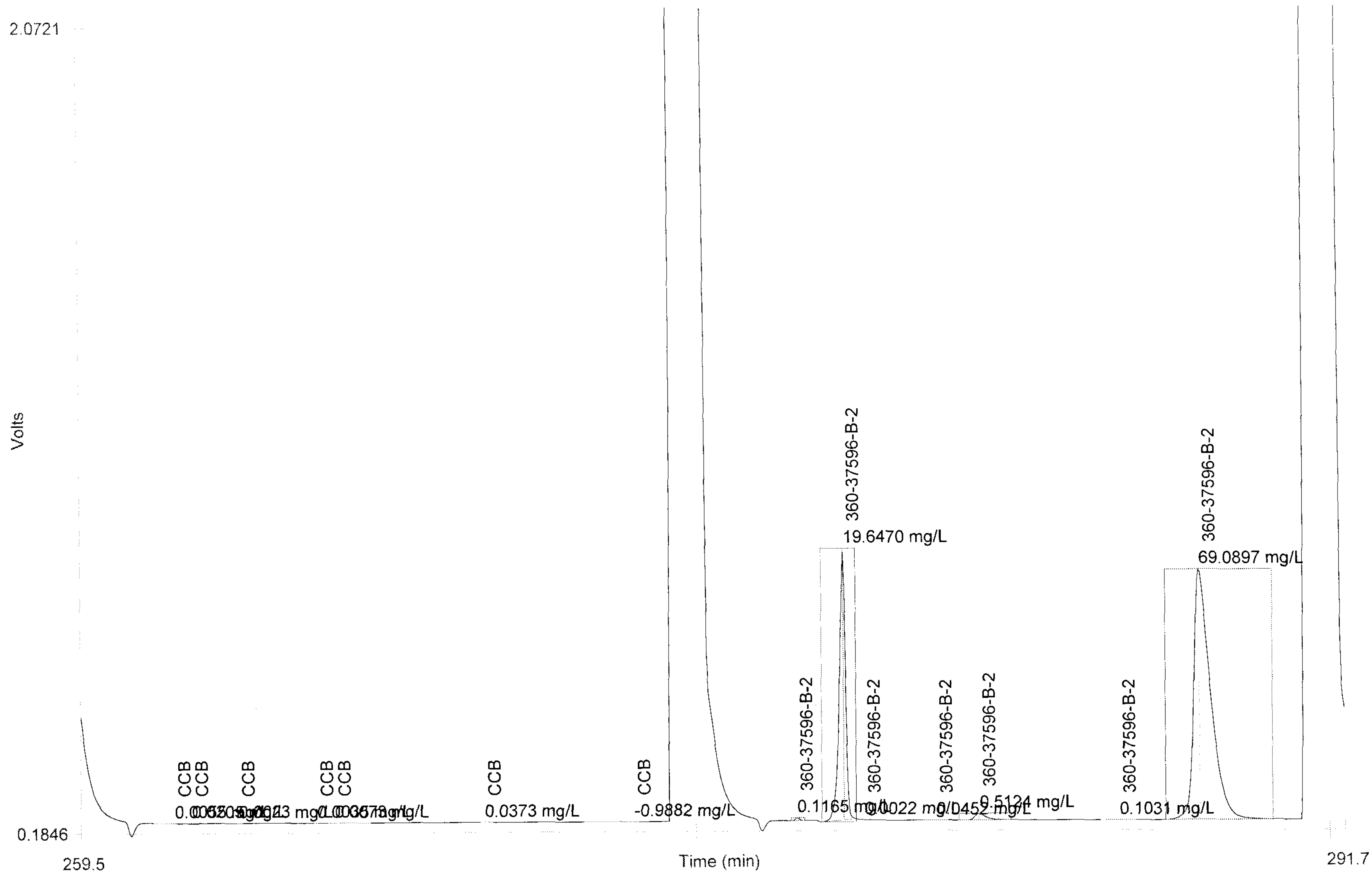
Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 9 of 28

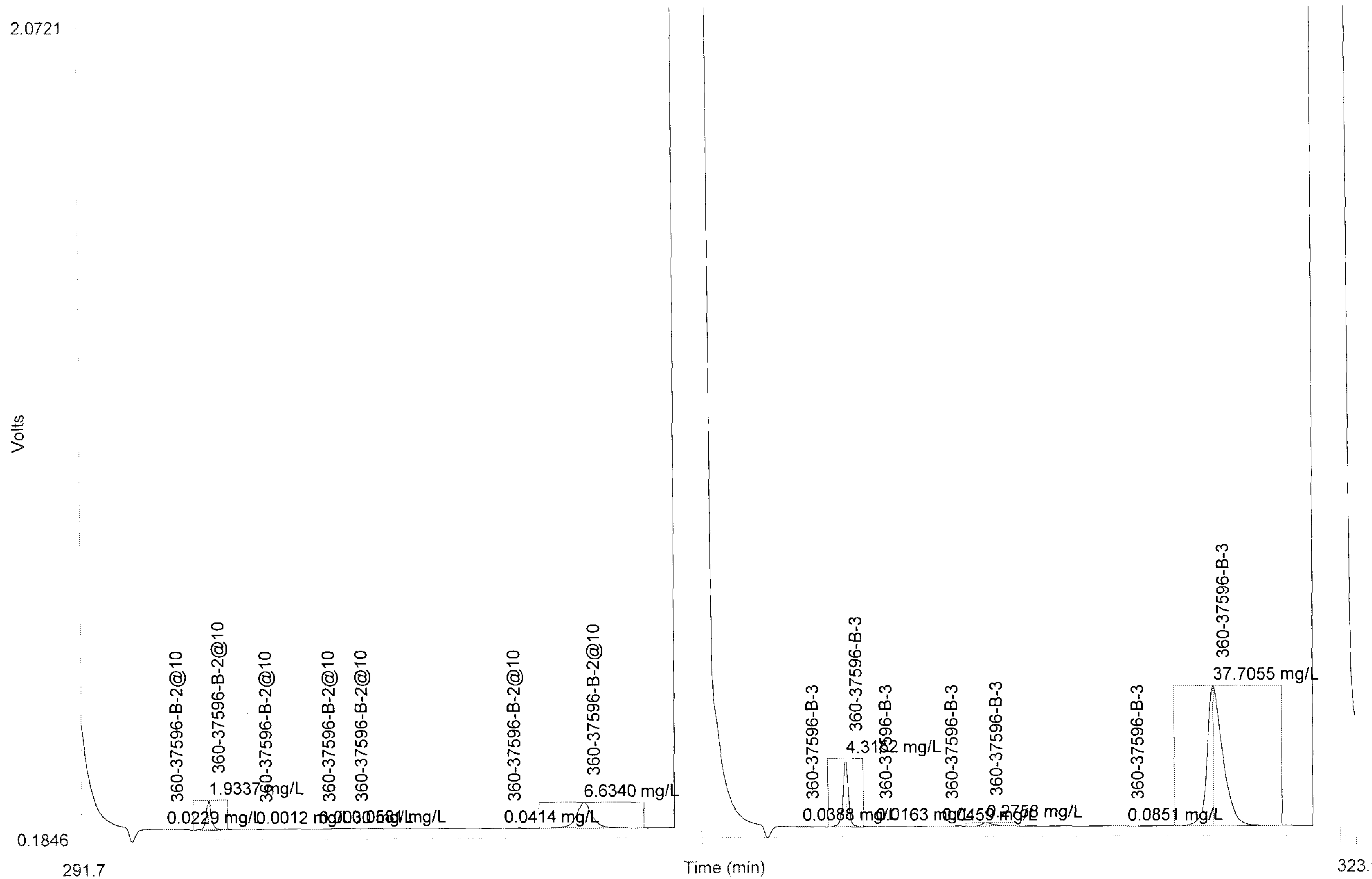


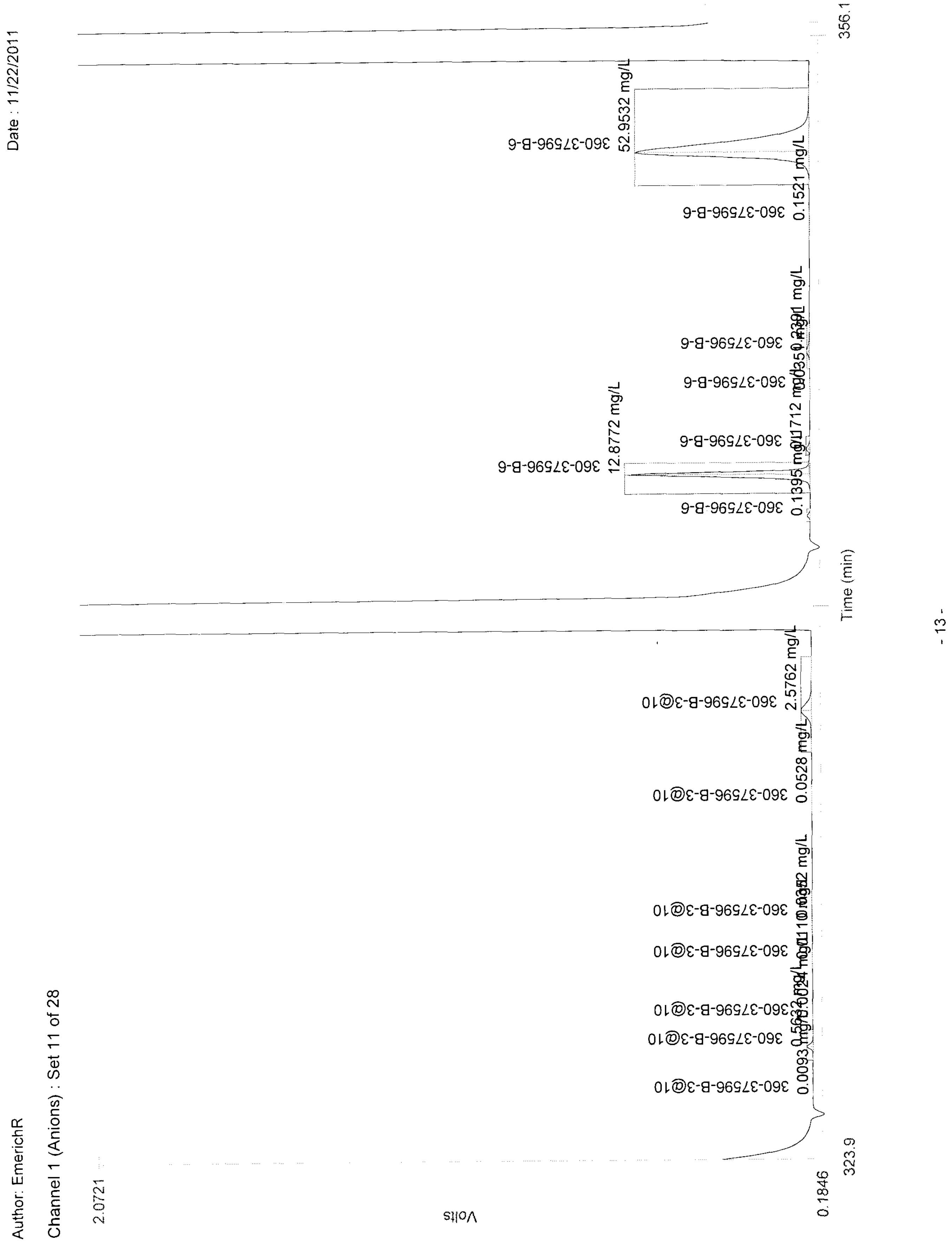
- 11 -

Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 10 of 28

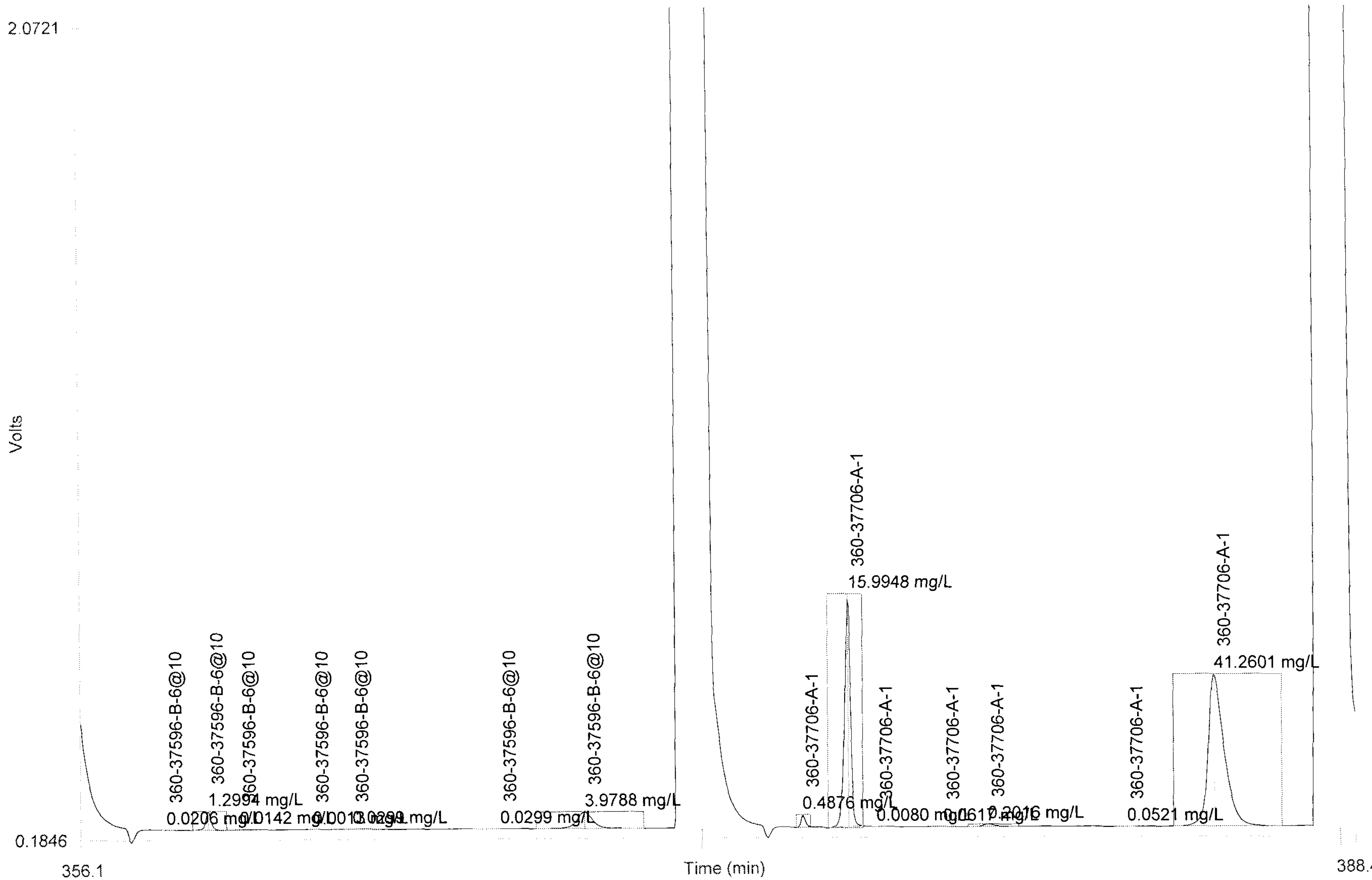



Author: EmerichR
Channel 1 (Anions) : Set 11 of 28
Date : 11/22/2011
2.0721
Volts
0.1846
323.9
356.1
Time (min)
360-37596-B-3@10 0.0093 mg/L
360-37596-B-3@10 0.5632 mg/L
360-37596-B-3@10 0.0024 mg/L
360-37596-B-3@10 0.0110 mg/L
360-37596-B-3@10 0.0052 mg/L
360-37596-B-3@10 0.0528 mg/L
360-37596-B-3@10 2.5762 mg/L
360-37596-B-6 0.1395 mg/L
360-37596-B-6 12.8772 mg/L
360-37596-B-6 0.1712 mg/L
360-37596-B-6 0.0351 mg/L
360-37596-B-6 0.2391 mg/L
360-37596-B-6 0.1521 mg/L
360-37596-B-6 52.9532 mg/L
- 13 -

Author: EmerichR

Date : 11/22/2011

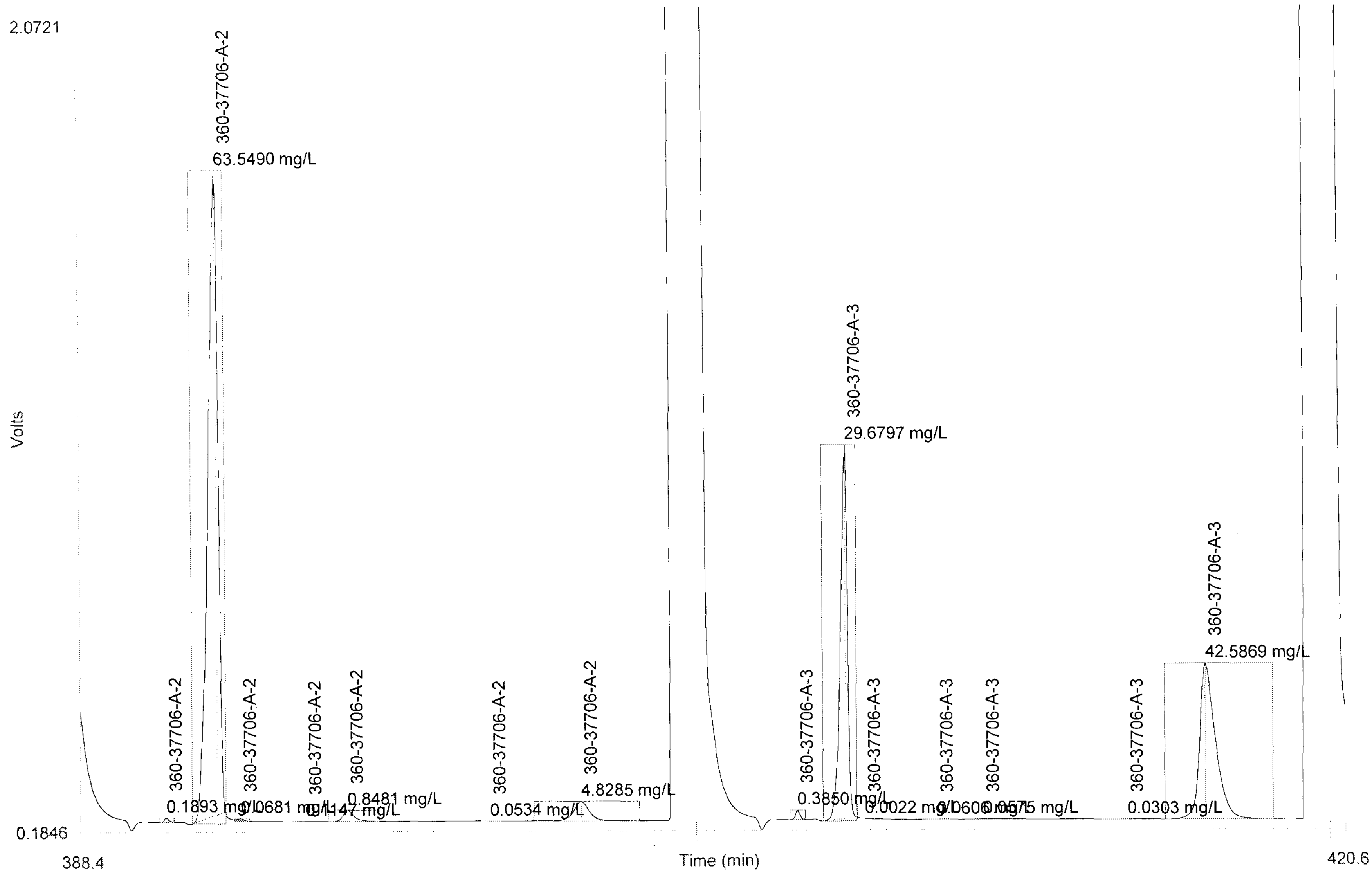
Channel 1 (Anions) : Set 12 of 28



Author: EmerichR

Date : 11/22/2011

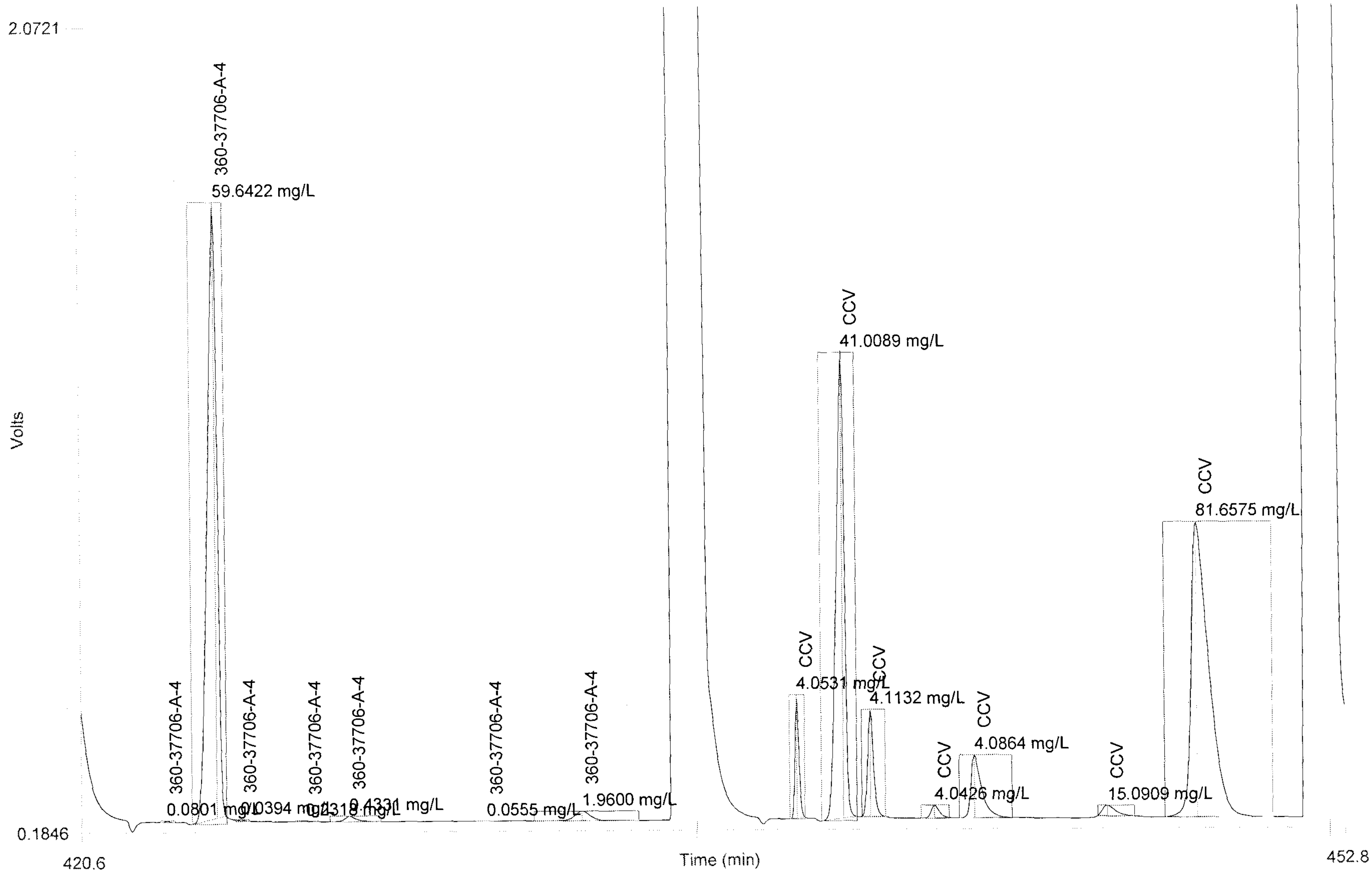
Channel 1 (Anions) : Set 13 of 28



Author: EmerichR

Date : 11/22/2011

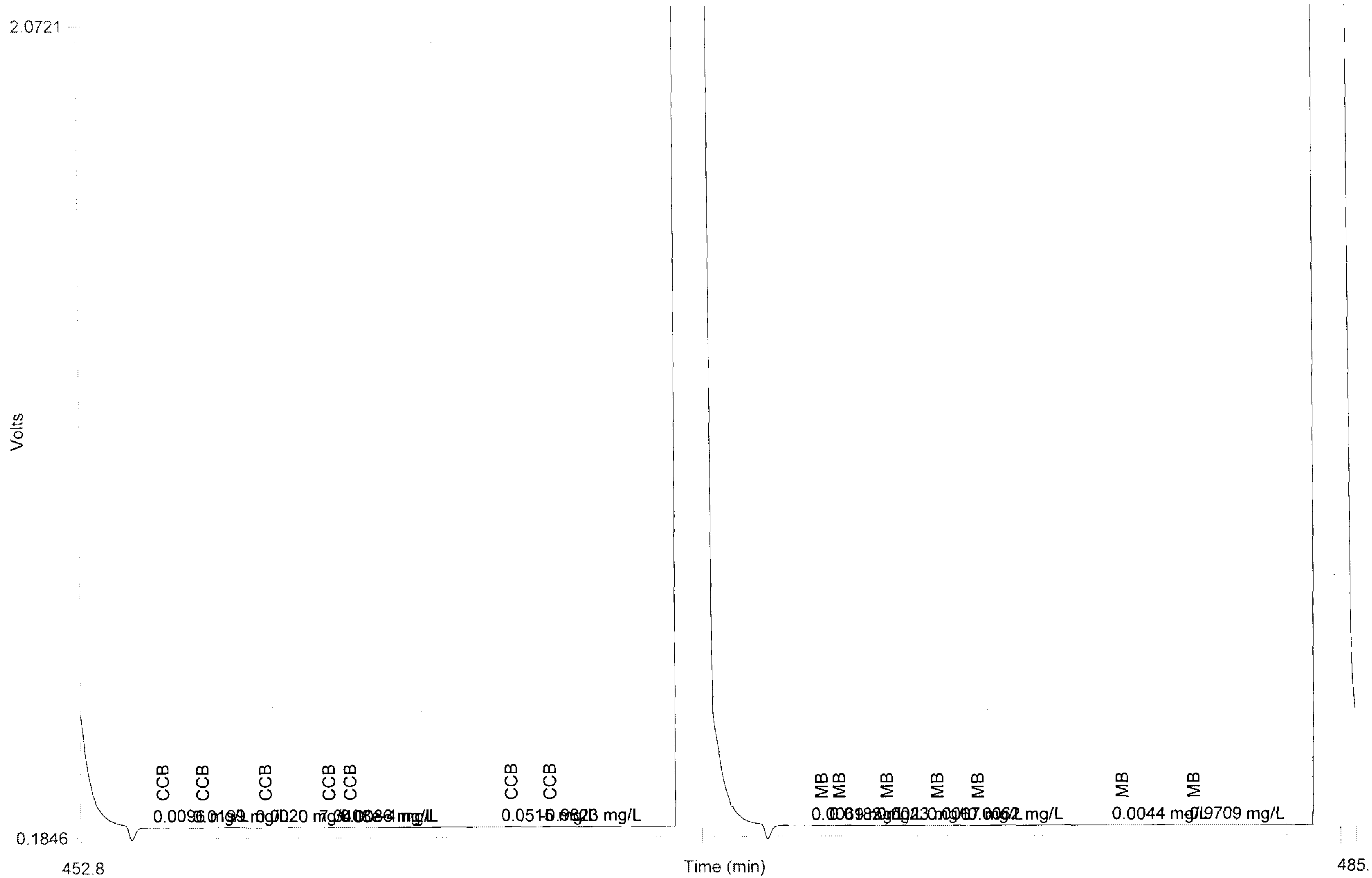
Channel 1 (Anions) : Set 14 of 28



Author: EmerichR

Date : 11/22/2011

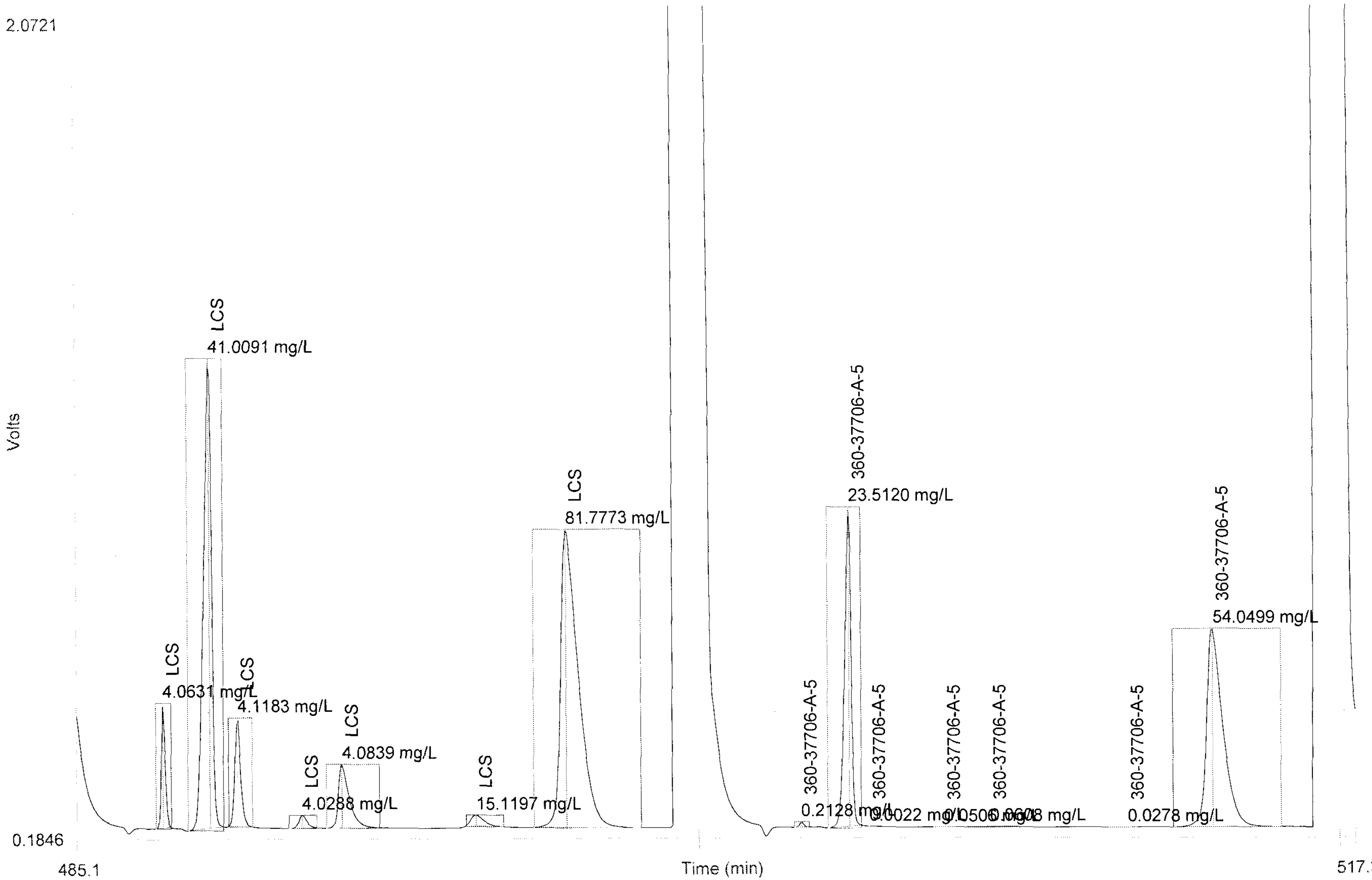
Channel 1 (Anions) : Set 15 of 28



Author: EmerichR

Channel 1 (Anions) : Set 16 of 28

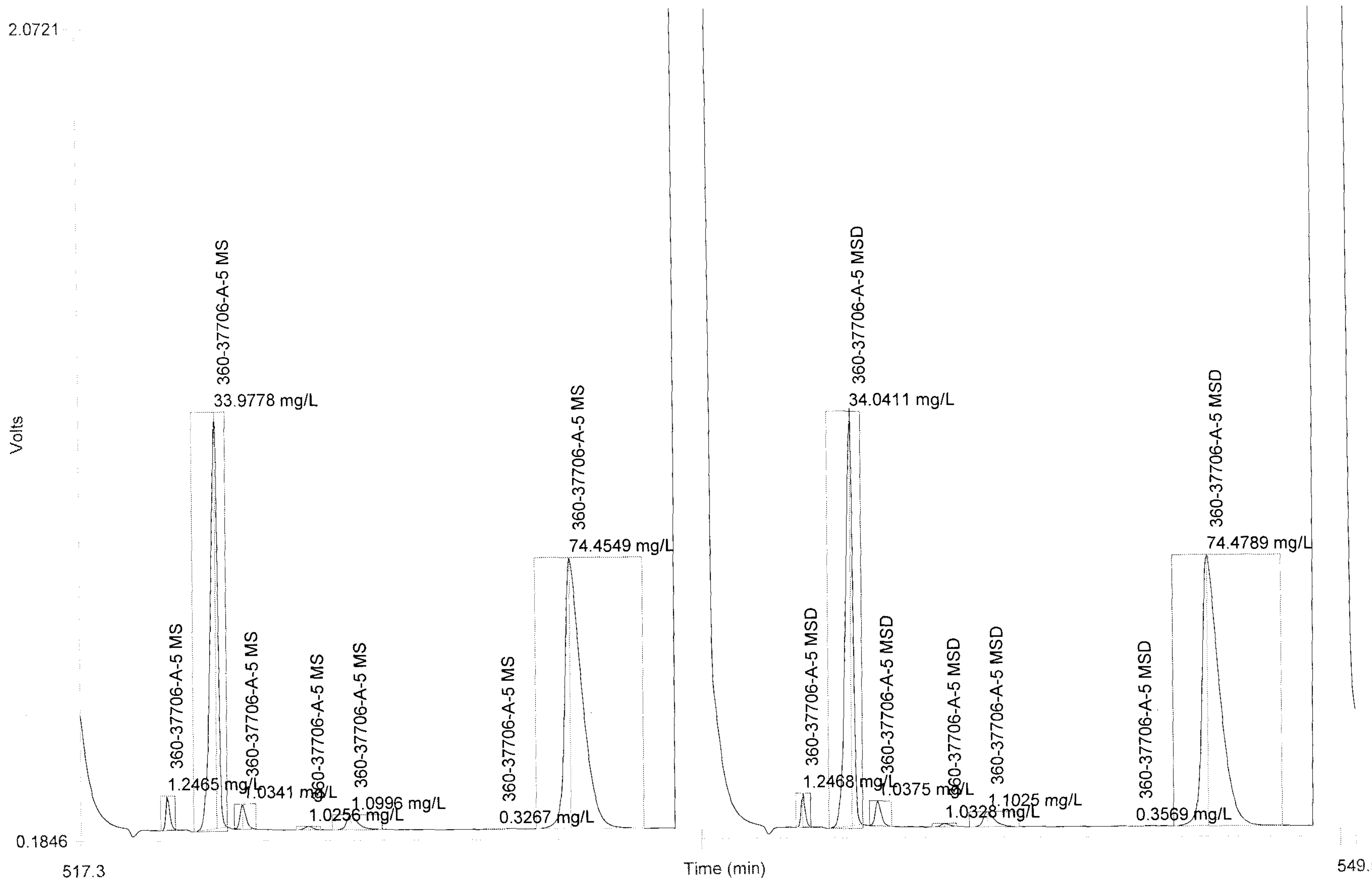
Date : 11/22/2011



Author: EmerichR

Date : 11/22/2011

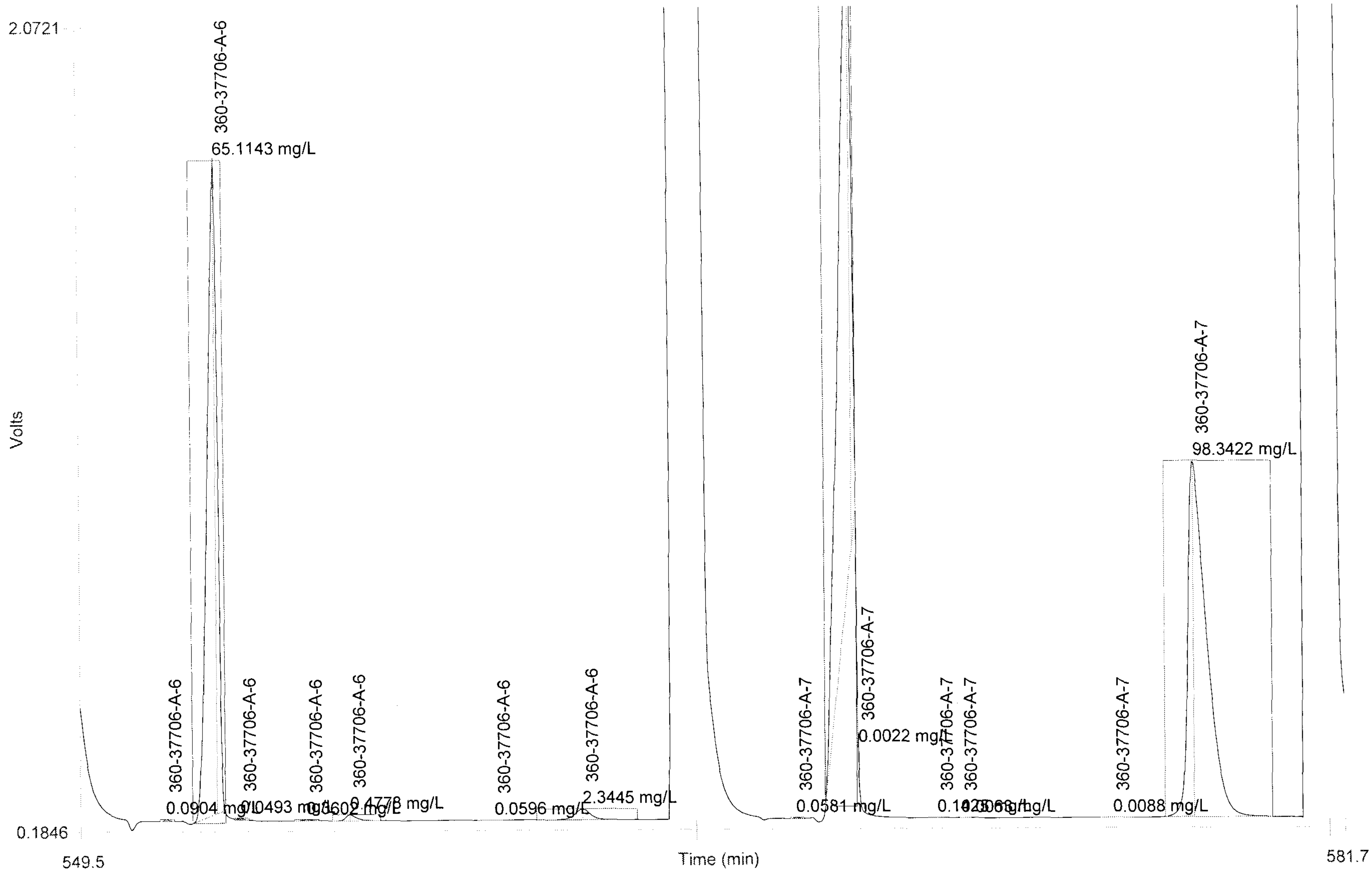
Channel 1 (Anions) : Set 17 of 28



Author: EmerichR

Date : 11/22/2011

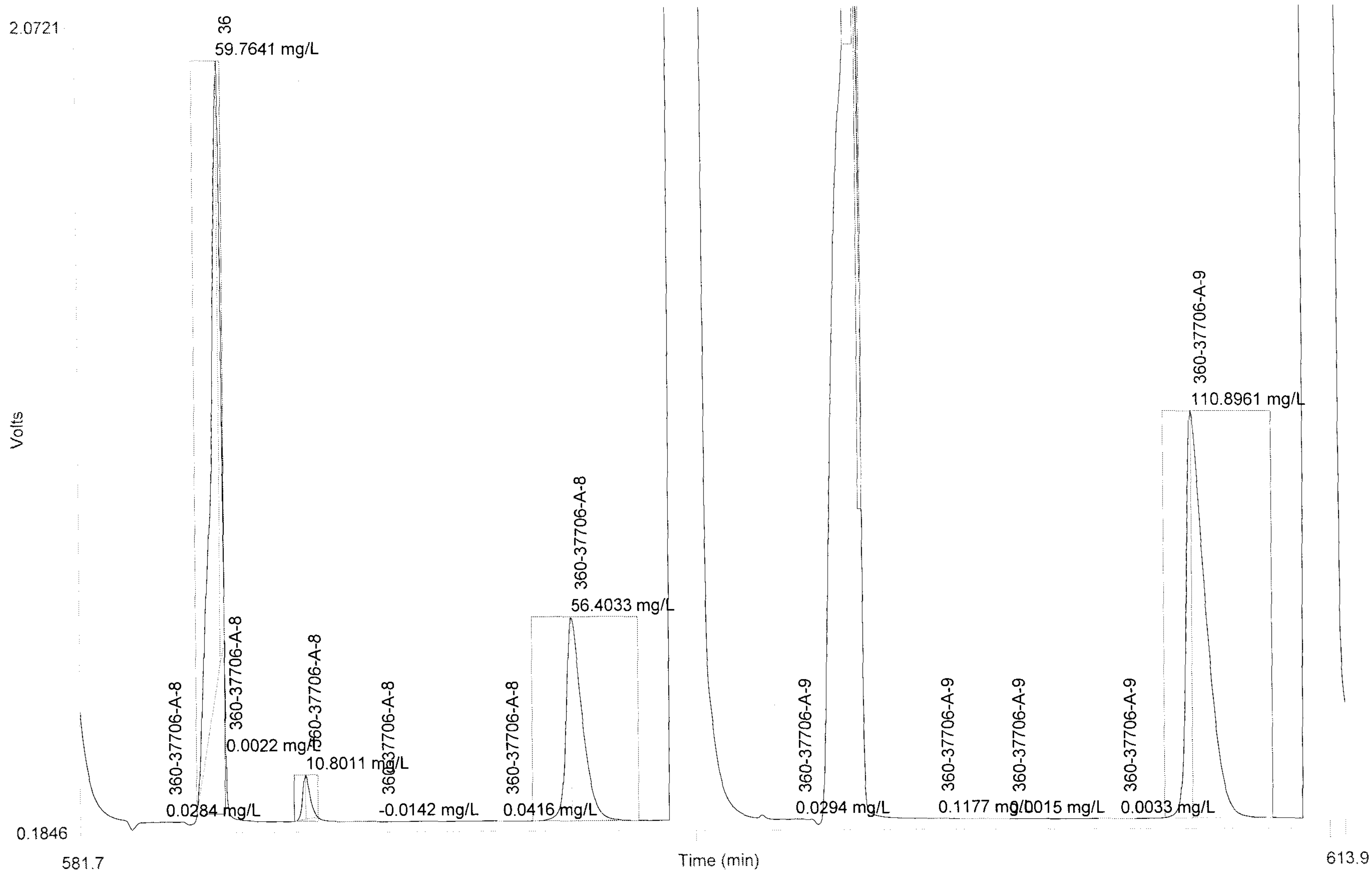
Channel 1 (Anions) : Set 18 of 28



Author: EmerichR

Date : 11/22/2011

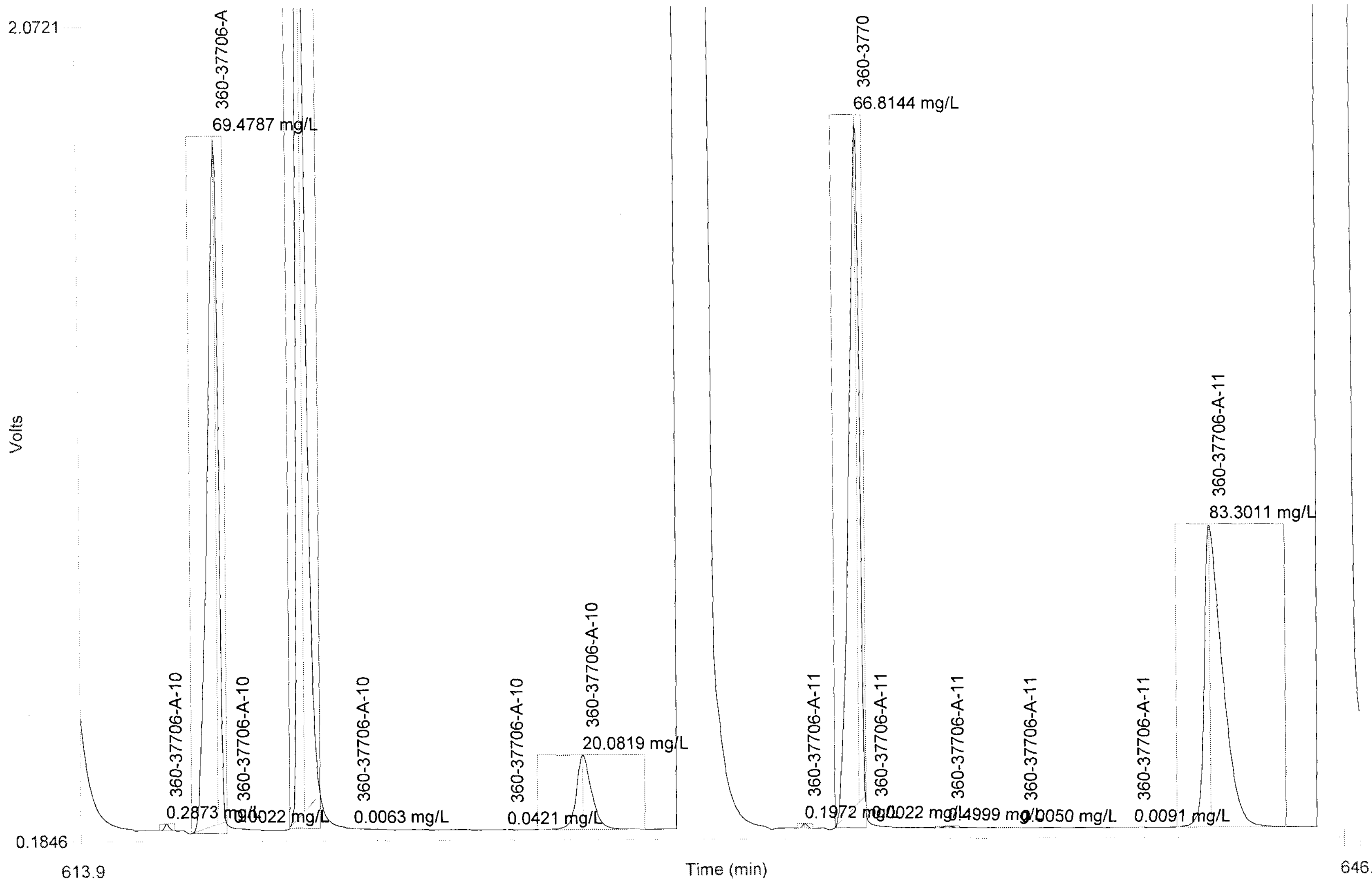
Channel 1 (Anions) : Set 19 of 28



Author: EmerichR

Date : 11/22/2011

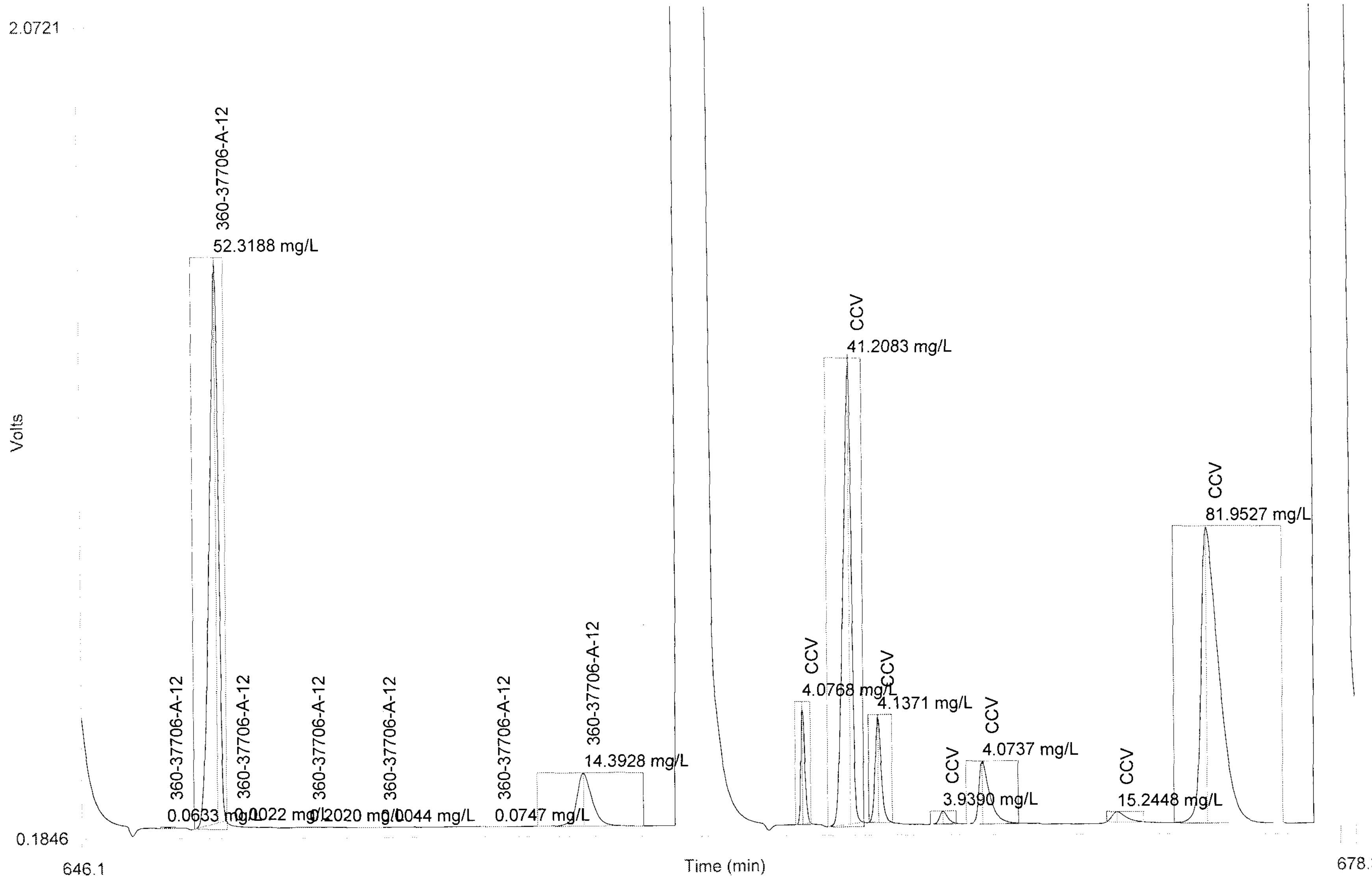
Channel 1 (Anions) : Set 20 of 28



Author: EmerichR

Date : 11/22/2011

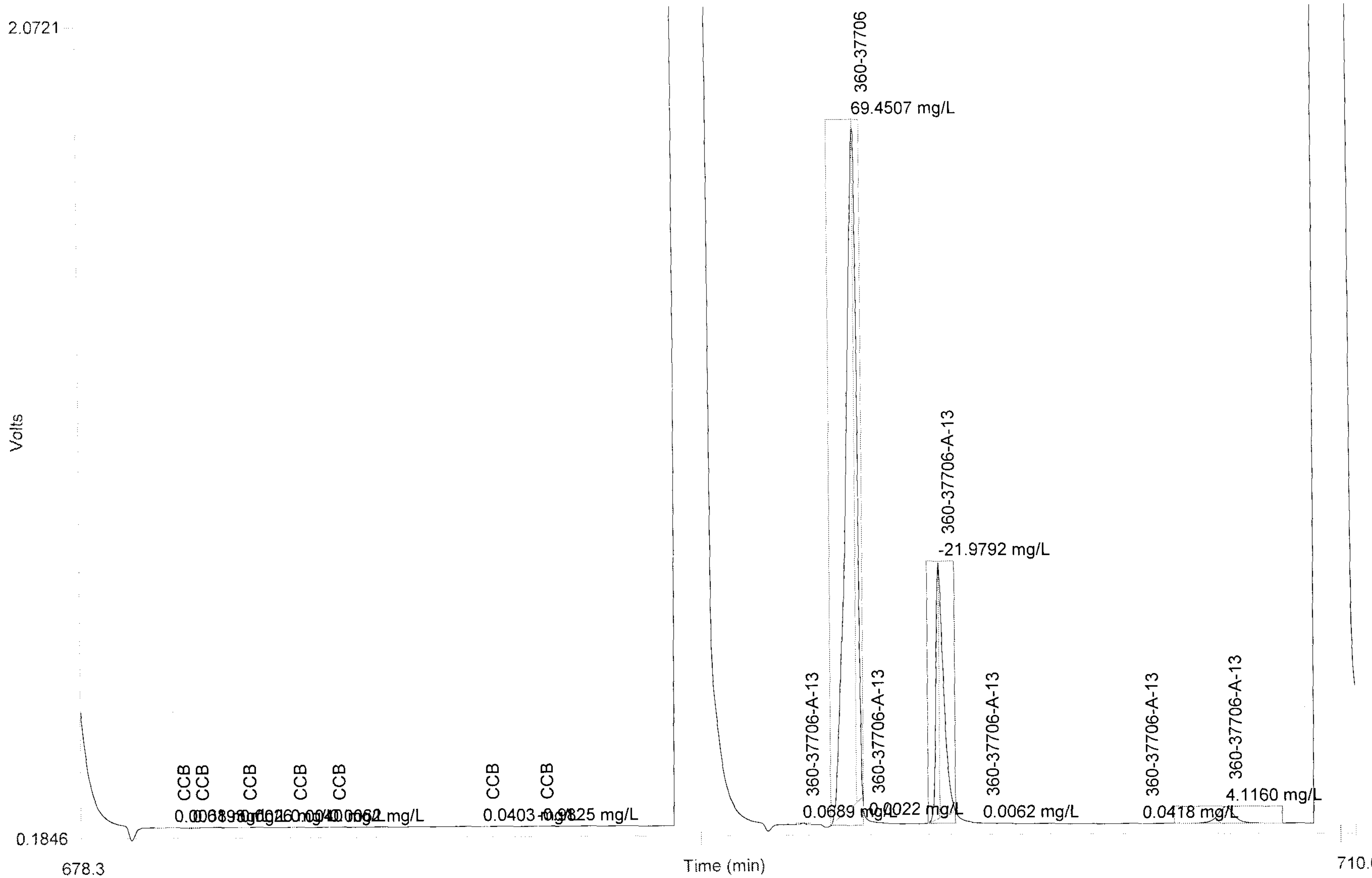
Channel 1 (Anions) : Set 21 of 28



Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 22 of 28

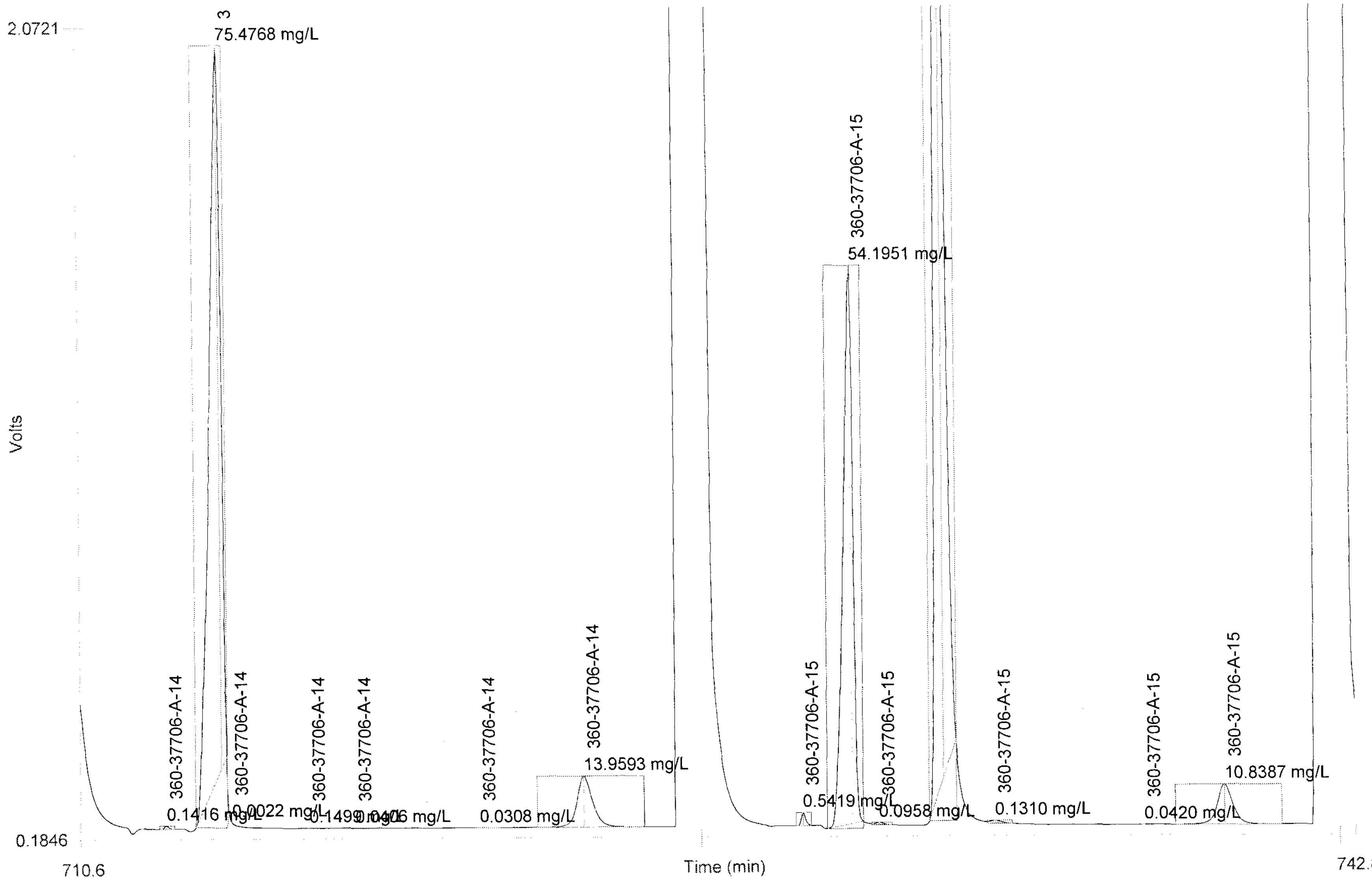


- 24 -

Author: EmerichR

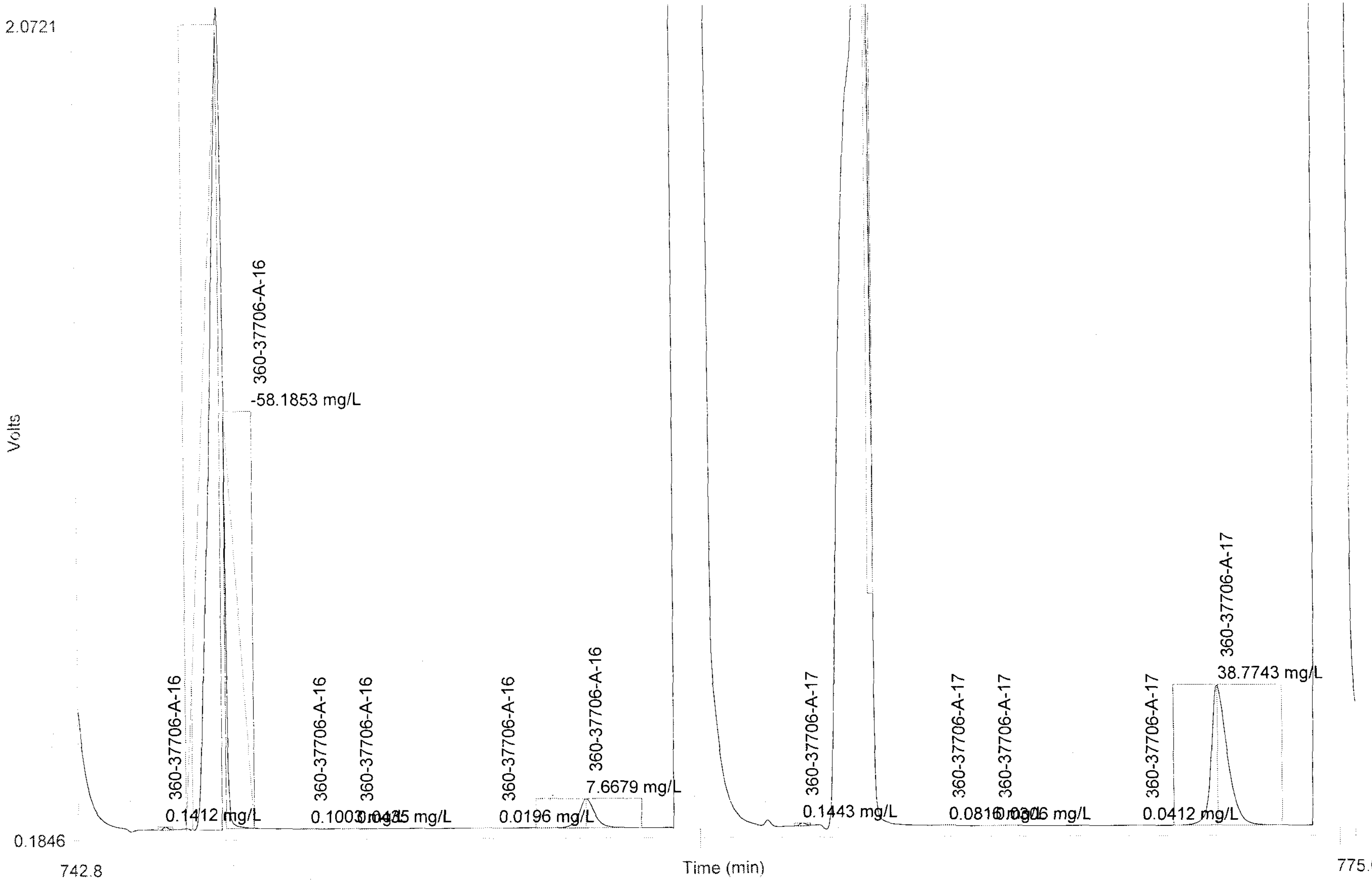
Date : 11/22/2011

Channel 1 (Anions) : Set 23 of 28



- 25 -

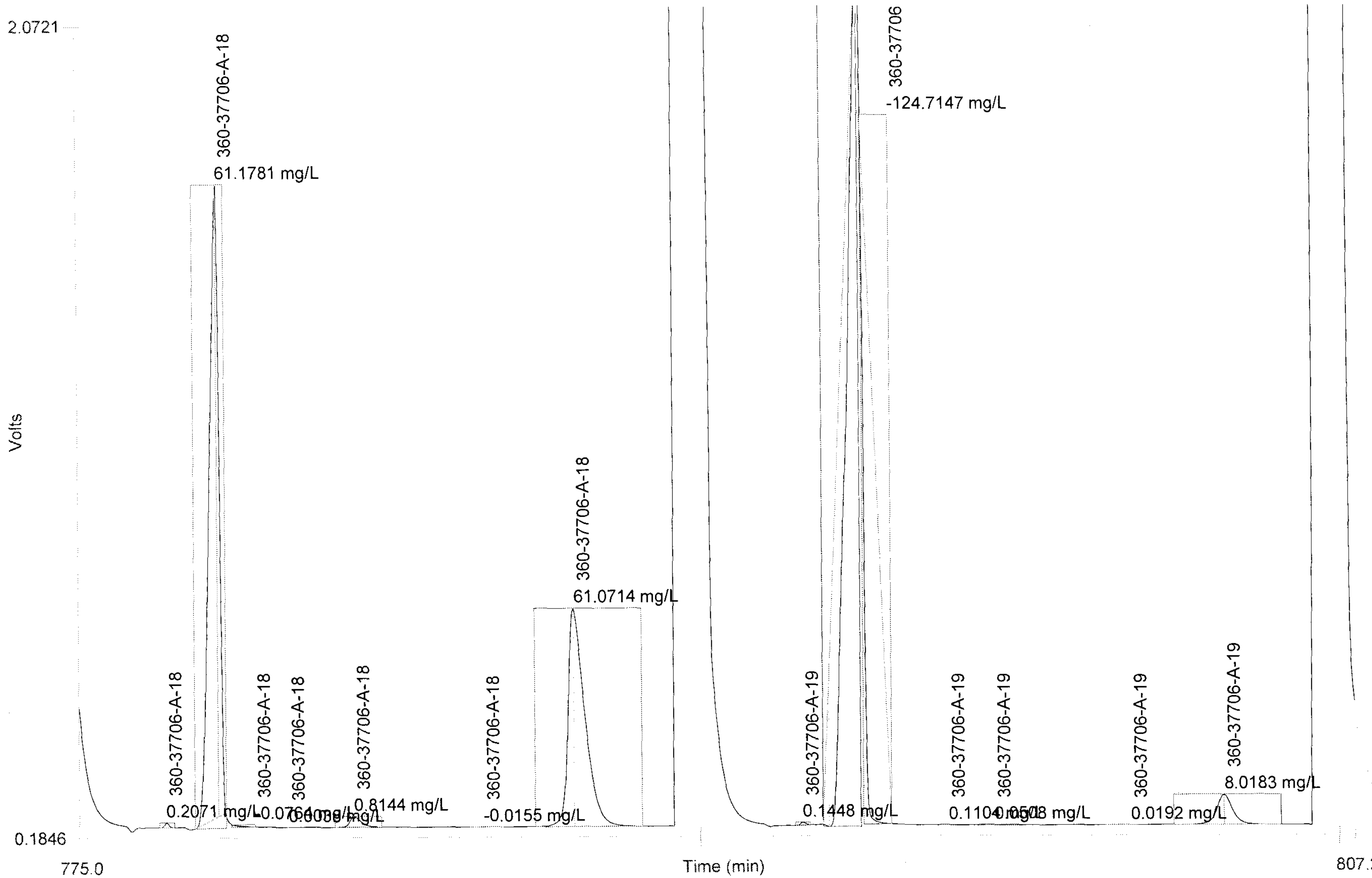
Channel 1 (Anions) : Set 24 of 28



Author: EmerichR

Date : 11/22/2011

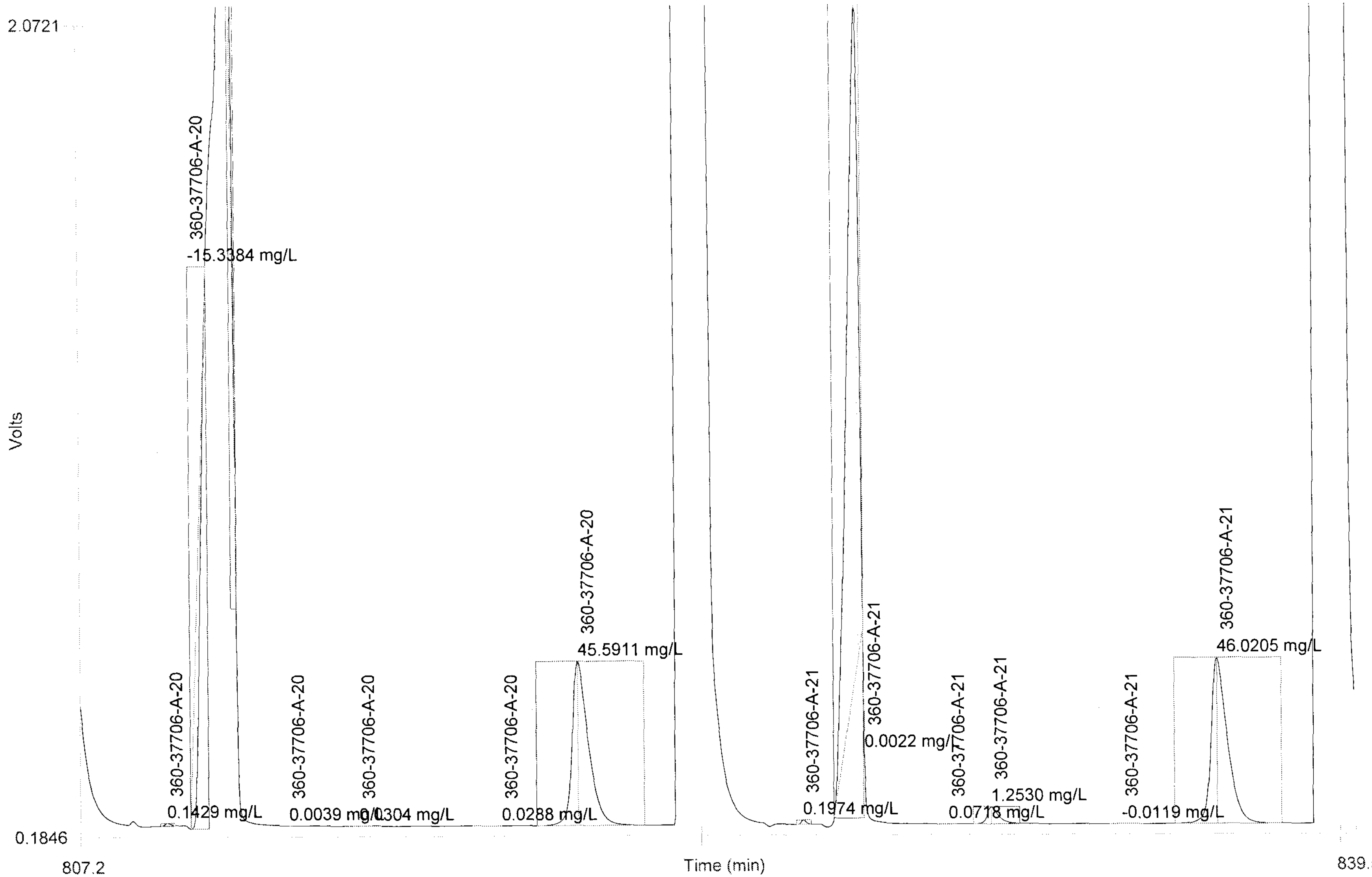
Channel 1 (Anions) : Set 25 of 28



Author: EmerichR

Date : 11/22/2011

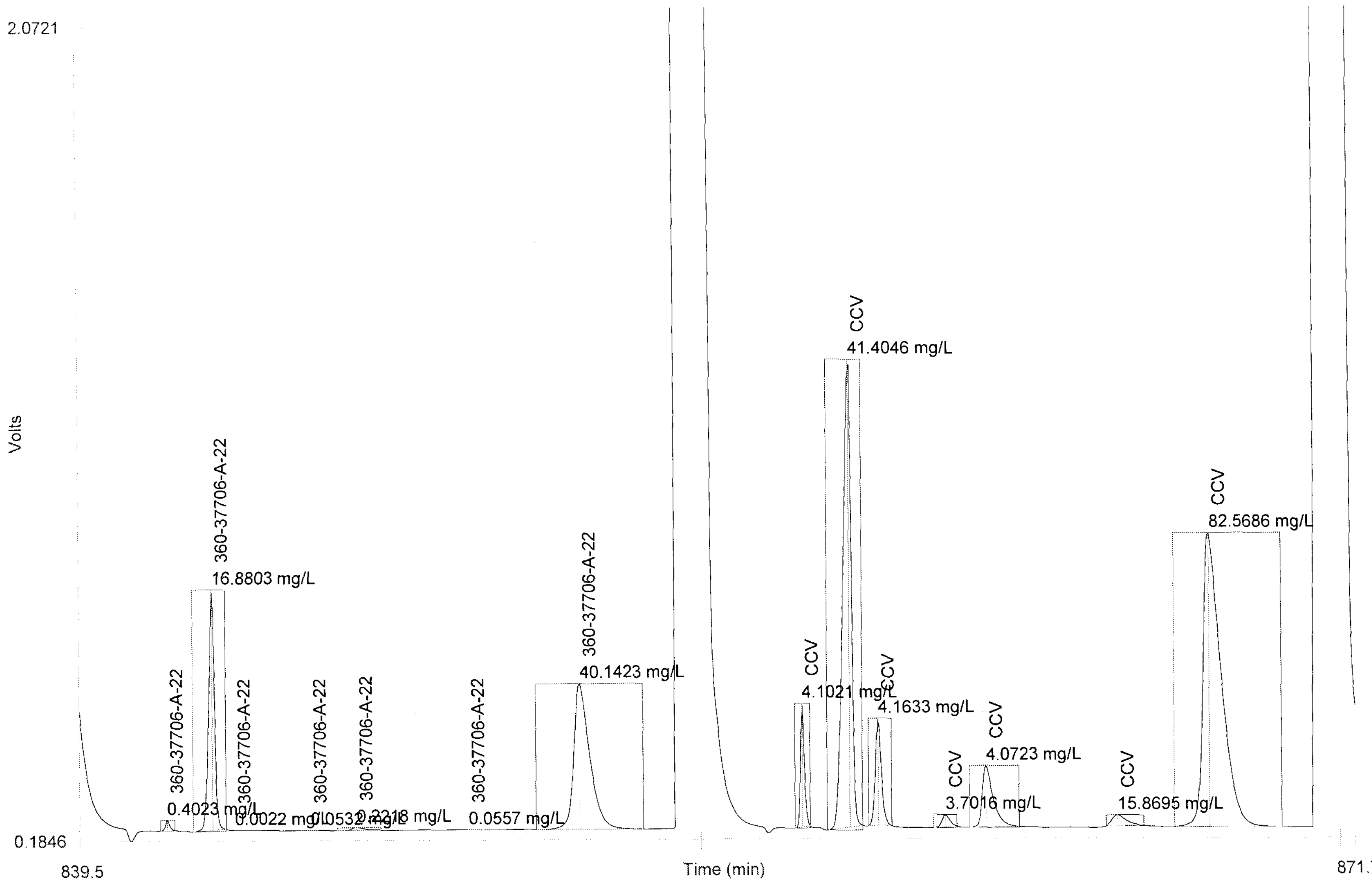
Channel 1 (Anions) : Set 26 of 28



Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 27 of 28



Author: EmerichR

Date : 11/22/2011

Channel 1 (Anions) : Set 28 of 28

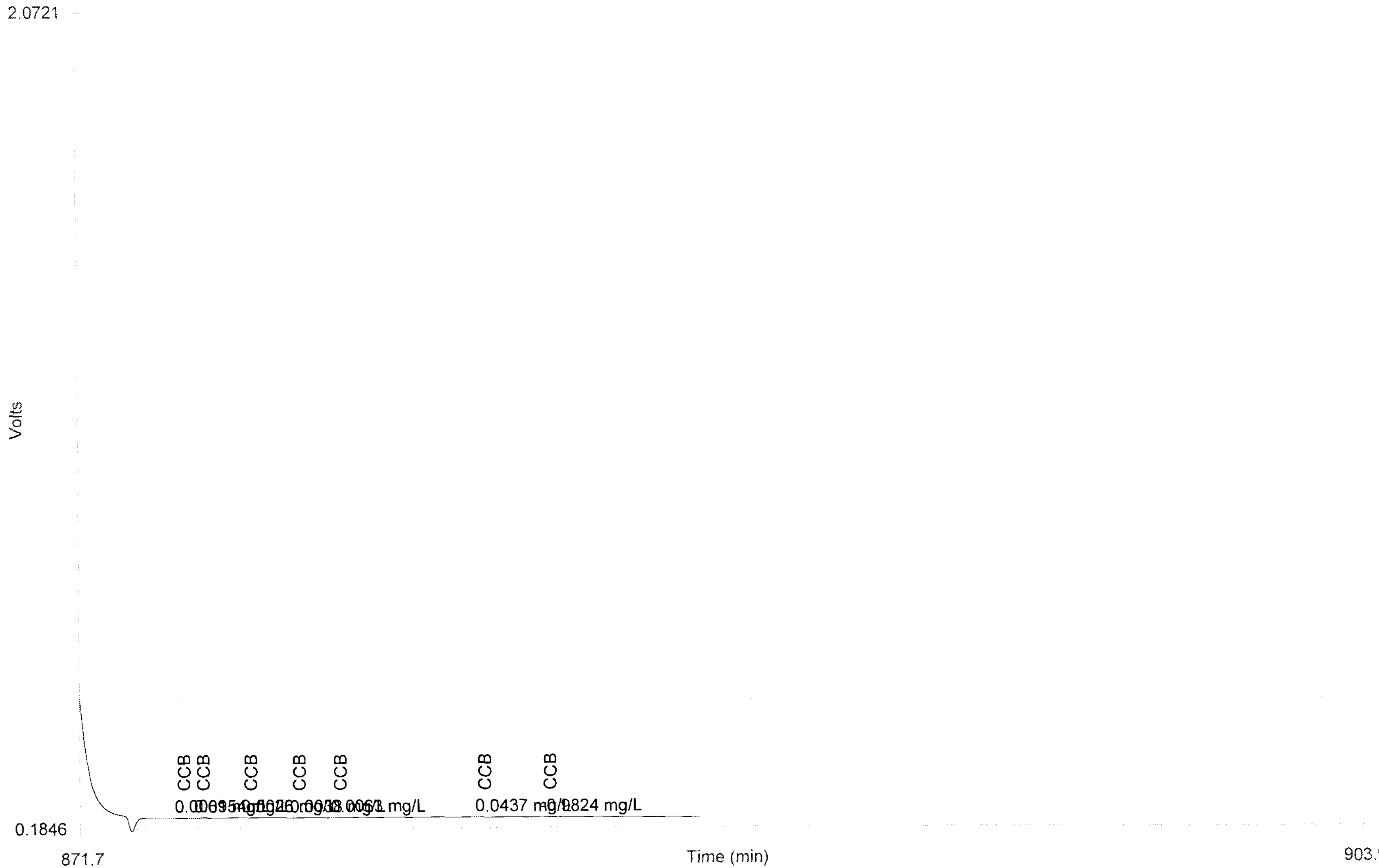
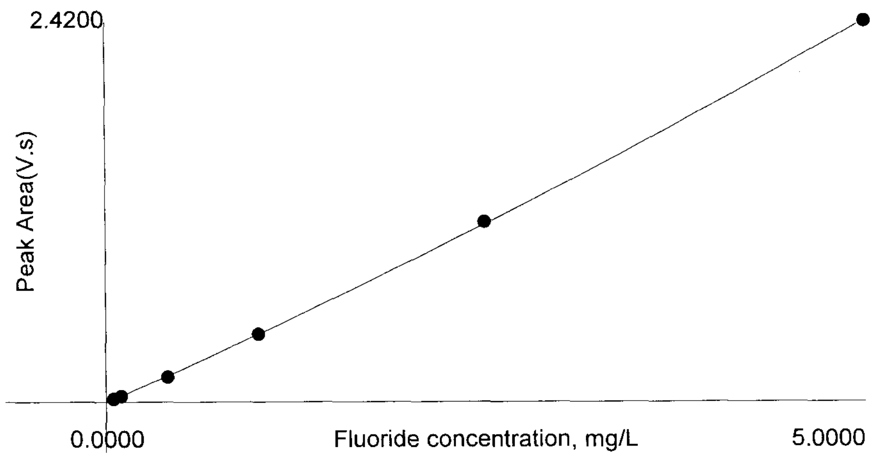


Table 1: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.4200	0.3882	0.3	11/15/2011	2:32:05 PM
2	2.5000	1	1.1432	0.1974	-1.3	11/15/2011	2:48:13 PM
3	1.0000	1	0.4295	0.0734	0.0	11/15/2011	3:04:20 PM
4	0.4000	1	0.1585	0.0271	4.9	11/15/2011	3:20:28 PM
5	0.1000	1	0.0379	0.0065	1.9	11/15/2011	3:36:35 PM
6	0.0500	1	0.0187	0.0032	-6.6	11/15/2011	3:52:42 PM

Figure 1: Fluoride



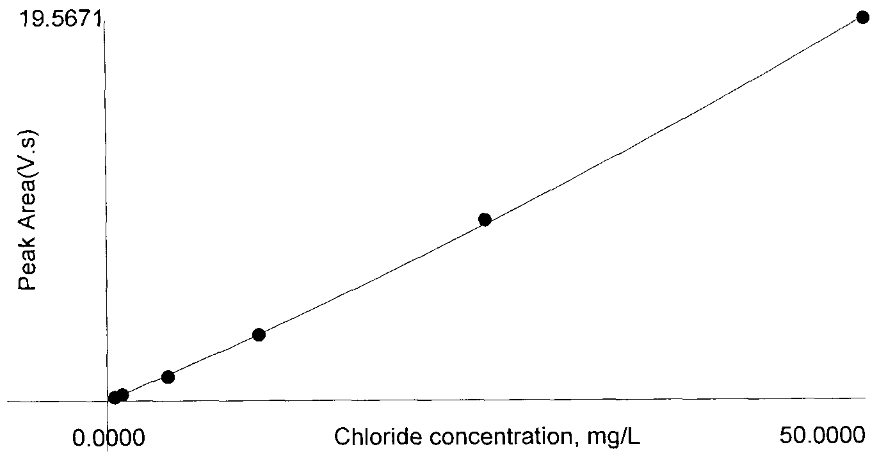
Area = 0.0132 * Conc^2 + 0.4199 * Conc - 0.0035
Conc = - 0.1211 * Area^2 + 2.3494 * Area + 0.0093
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 2: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	19.5671	1.3052	0.5	11/15/2011	2:32:05 PM
2	25.0000	1	9.2472	0.8077	-2.6	11/15/2011	2:48:13 PM
3	10.0000	1	3.3710	0.3697	1.0	11/15/2011	3:04:20 PM
4	4.0000	1	1.2235	0.1456	7.7	11/15/2011	3:20:28 PM
5	1.0000	1	0.3080	0.0351	4.1	11/15/2011	3:36:35 PM
6	0.5000	1	0.1732	0.0187	-11.1	11/15/2011	3:52:42 PM

Figure 2: Chloride



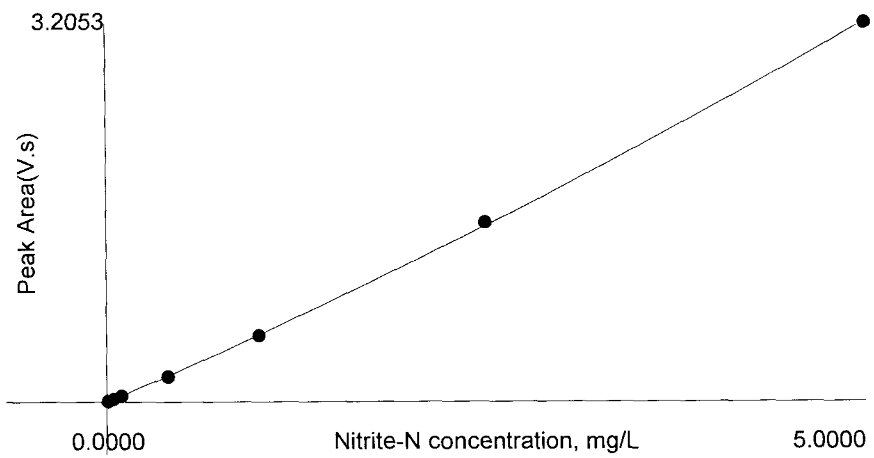
Area = 0.0013 * Conc^2 + 0.3283 * Conc - 0.0085
Conc = - 0.0226 * Area^2 + 2.9826 * Area + 0.0435
Correlation Coefficient (r) = 0.99997

1/x weighting

Table 3: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.2053	0.3249	0.4	11/15/2011	2:32:05 PM
2	2.5000	1	1.5145	0.1578	-1.9	11/15/2011	2:48:13 PM
3	1.0000	1	0.5600	0.0576	0.8	11/15/2011	3:04:20 PM
4	0.4000	1	0.2121	0.0216	3.8	11/15/2011	3:20:28 PM
5	0.1000	1	0.0502	0.0051	6.6	11/15/2011	3:36:35 PM
6	0.0500	1	0.0267	0.0026	-1.4	11/15/2011	3:52:42 PM
7	0.0100	1	0.0049	5.0658e-4	-10.2	11/15/2011	4:08:48 PM

Figure 3: Nitrite-N



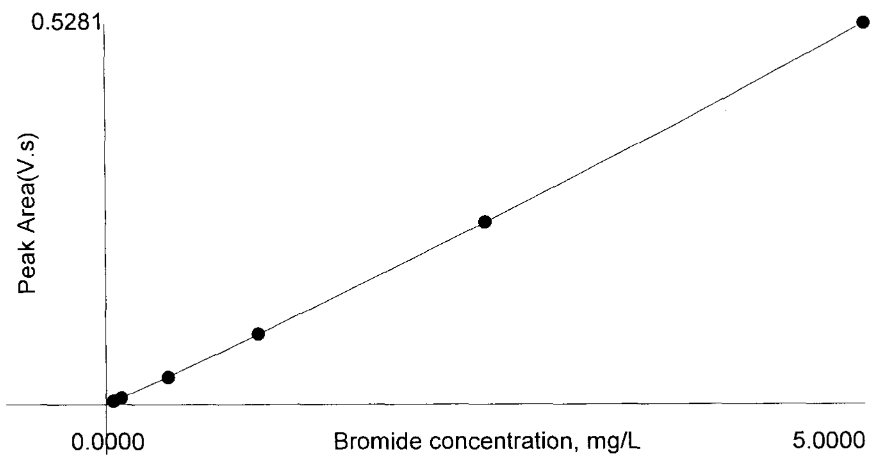
Area = 0.0195 * Conc^2 + 0.5461 * Conc - 0.0010
Conc = - 0.0787 * Area^2 + 1.8046 * Area + 0.0022
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 4: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.5281	0.0394	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	0.2527	0.0186	-0.2	11/15/2011	2:48:13 PM
3	1.0000	1	0.0981	0.0072	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.0379	0.0027	1.4	11/15/2011	3:20:28 PM
5	0.1000	1	0.0092	6.5877e-4	1.5	11/15/2011	3:36:35 PM
6	0.0500	1	0.0046	3.2836e-4	-2.5	11/15/2011	3:52:42 PM

Figure 4: Bromide



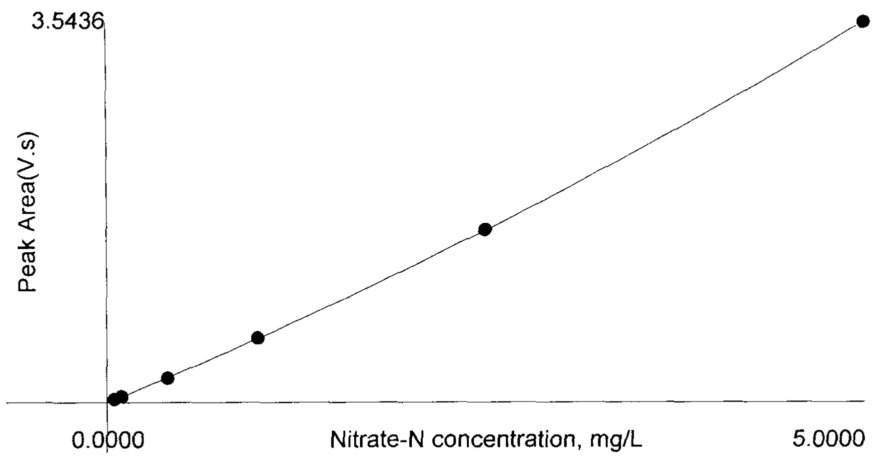
Area = 0.0019 * Conc^2 + 0.0962 * Conc - 3.2483e-4
Conc = - 1.6748 * Area^2 + 10.3373 * Area + 0.0038
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 5: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.5436	0.1988	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	1.6106	0.0905	-0.5	11/15/2011	2:48:13 PM
3	1.0000	1	0.6005	0.0330	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.2256	0.0121	2.5	11/15/2011	3:20:28 PM
5	0.1000	1	0.0531	0.0028	3.8	11/15/2011	3:36:35 PM
6	0.0500	1	0.0279	0.0014	-5.9	11/15/2011	3:52:42 PM

Figure 5: Nitrate-N



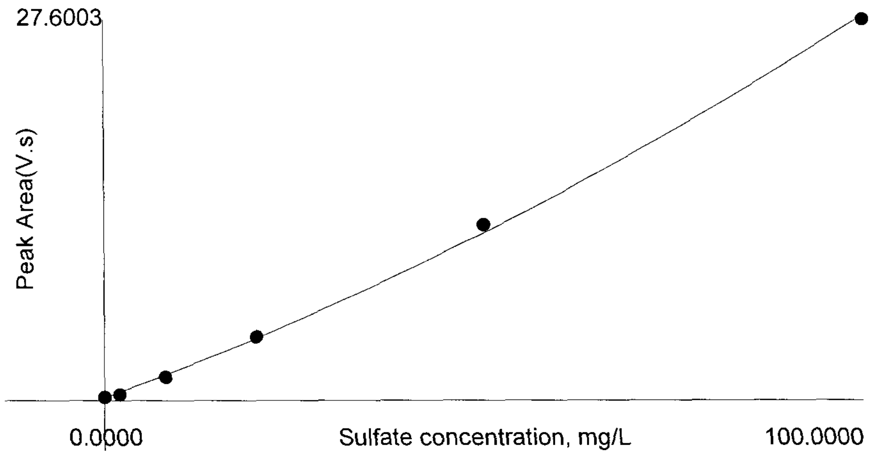
Area = 0.0273 * Conc^2 + 0.5736 * Conc - 0.0024
Conc = - 0.0824 * Area^2 + 1.6983 * Area + 0.0062
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 6: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	27.6003	0.8536	1.1	11/15/2011	2:32:05 PM
2	50.0000	1	12.7130	0.4540	-4.9	11/15/2011	2:48:13 PM
3	20.0000	1	4.5871	0.1729	-1.7	11/15/2011	3:04:20 PM
4	8.0000	1	1.6836	0.0620	9.3	11/15/2011	3:20:28 PM
5	2.0000	1	0.4027	0.0145	34.3	11/15/2011	3:36:35 PM
6	0.0500	1	0.2270	0.0081	-2.6	11/15/2011	3:52:42 PM

Figure 6: Sulfate



Area = 7.7408e-4 * Conc^2 + 0.1994 * Conc + 0.2113
Conc = - 0.0392 * Area^2 + 4.7046 * Area - 0.9825
Correlation Coefficient (r) = 0.99999

1/x weighting

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review Coversheet—Inorganics Dept

Method Name: IC Method Reference: 300.0 28D/48H Date of Analytical Run: 11/23/11

Primary Reviewer's Initials & Date: AMS 11/29/11 Secondary Reviewer's Initials & Date: ~~11/29/11~~ 11/30/11

Batch Numbers	83978 ✓	83979 ✓	83980 ✓	[redacted]	[redacted]
	84054	84056	84058	[redacted]	

QC Criteria—Non-MCP: ICV/CCV ±10%: LCS/LCSD ±15%: MS/MSD ±25%: ICB/M[redacted]D/MSD/LCSD RPD ≤20%

QC Criteria—MCP/RCP: (9012 and 7196 only)
9012 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
9012 (soil): ICV/CCV ±15%: LCS/LCSD **: MS/MSD ±25%: ICB/MB/CCB <RL: MD RPD 35%: MSD/LCSD RPD ≤30%
7196 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
7196 (soil): ICV/CCV ±15%: LCS/LCSD **: MSS/MSI ±25%: ICB/MB/CCB <RL: MD RPD ≤35%: LCSD RPD ≤30%

FAILURES OF QC FOR ANYTHING OTHER THAN MS, MSD or MD ARE GROUNDS FOR INVALIDATING THE BATCH.

Criteria for QC	Yes	No	n/a	Notes/Comments
Were the ICV and CCVs within acceptable limits for QC recovery?	✓✓✓✓✓✓✓			
Were the ICB and CCBs all <RL?	✓✓✓✓✓✓✓			
Were all MB and CCB results <RL for the analytes of interest?	✓✓✓✓✓✓✓			
Was there a CCV/CCB combination run after every 10 samples or less?	✓✓✓✓✓✓✓			
Was there an LCS run with every batch of 20 samples or less?	✓✓✓✓✓✓✓			
Was there a MD, LCSD or MSD run with every batch of 20 samples or less?	✓✓✓✓✓✓	✓		
Were all LCS/LCSD results within acceptable limits for QC recovery?	✓✓✓✓✓✓✓			
Were all MS/MSD results within acceptable limits for QC recovery?	✓✓✓✓✓	✓✓	✓	
Were all MD, LCSD and/or MSD %RPDs within acceptable limits for QC recovery?	✓✓✓✓✓	✓✓	✓	
Were the raw data points for investigative samples within the working curve range, or if not, were the samples diluted to bring them within this range?	✓✓✓✓✓✓✓			
IF there were any MCP/RCP samples in this batch, did they meet all MCP/RCP requirements?	✓✓✓✓✓		✓✓✓✓	
Were there any holding time violations in this batch?		✓✓✓✓✓✓✓✓		**NOTE!** The PM and QA Manager must be notified by email *immediately* of any holding time violations!!
Were any NCMs generated for any samples in the batch? (If so, list NCM numbers, and first-reviewer must check off any "No" answers above as applicable.)	✓✓	✓✓✓✓✓✓		43761, 43762
Were any jobs in this batch Level 4? If "Yes" then scan all raw data & place in correct scan folder on the public drive before filing this paperwork.	✓✓✓✓✓	✓✓✓		

** LCS or LCSD must produce a recovery that is within the manufacturer's specified 95% confidence limits, must be matrix matched.

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 11-23-11

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution: Sample Aliquot 2	Units	Final Volume 2	Units	Comments
RE	11-23-11	300.0	37526B5	10X	1	mL	10	mL					
				20X	500	µL							
			B6	10X	1	mL							
				20X	500	µL							
			C7	10X	1	mL							
			B8	10X	1	mL							

entries completed by day [new page each day]

0.25 *M* Sulfuric Acid Creation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Record the information below for creating the acid. When an entry is made do not use arrows to fill in information. All entries must be complete.

Recipe: to 2958mL of deionized water in a 1 gallon jug add 42mL of concentrated H_2SO_4 for a total volume of 3L.

Date Made	Analyst's Initials	Volume of 0.25 *M* Acid Made (L)	Source: Concentrated Sulfuric Acid (ACS grade) Manufacturer & Lot Number
11-18-11	RWO	3	Baker lot J22022
11-21-11	RWO	3	↓
11-22-11	RWO	3	↓
11-23-11	RWO	3	↓

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Eluent Preparation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Prepare fresh daily; makes 3L of eluent. To make: in a one-gallon plastic container, mix:

- 60.0 mL of 100*M* $NaHCO_3$;
- 78.0 mL of 100*M* Na_2CO_3; and
- 2862 mL of deionized water.

Degas with helium for 3min before use.

Date Prepared	Analyst's Initials	Lot # 100*M* $NaHCO_3$	Lot # 100*M* Na_2CO_3	Number of Portions Prepared
11-17-11	[illegible]	W11J 2GT018	W11K RGT001	1
11-18-11	RWE	W11K RGT016	W11K RGT017	2
11-21-11	RWE	↓	↓	1
11-22-11	RWE	↓	↓	1
11-23-11	RWE	↓	↓	2

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Ion Chromatography QC Source Data Sheet—Inorganics Dept

Method (circle methods): IC 300_28D IC 300_48HR IC 9056_28D IC 9056_48HR

Date of Analytical Run: 11/23/11 Analyst's Initials: AWC

Working Curve Standard:

Manufacturer & Lot Number for Source Standard	Working Curve Standards Prepared On
Inorganic Ventures Lot E2-MEB394034	20 October 2011

QC Standard True Values for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.50	25.0	2.50	2.50	2.50	50.0
ICB	0	0	0	0	0	0
MB	0	0	0	0	0	0
LCS/LCSD	4.00	40.0	4.00	4.00	4.00	80.0
MS/MSD	1.00	10.0	1.00	1.00	1.00	20.0

QC Standard Acceptable Recovery Ranges for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.25-2.75	22.5-27.5	2.25-2.75	2.25-2.75	2.25-2.75	45.0-55.0
ICB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
MB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
LCS/LCSD	3.40-4.60	34.0-46.0	3.40-4.60	3.40-4.60	3.40-4.60	68.0-92.0
MS/MSD	0.75-1.25	7.50-12.5	0.75-1.25	0.75-1.25	0.75-1.25	15.0-25.0

Current Method RLs (mg/L):

	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
	0.10	1.00	0.010	0.10	0.050	2.0

Original Run Filename: OM_11-23-2011_11-13-21AM.OMN created 11/23/2011 11:13:21 AM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_11-23-2011_11-13-21AM.OMN last modified 11/24/2011 6:07:56 PM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	1.389e-4	0.1444	0.0093	0.0065	0.0065	-0.8997	11/23/2011@11:14:43 AM
	Calibration:						Table/Fig. 1	
ICV	1	2.5085	25.5314	2.4923	2.5679	2.5317	51.5991	11/23/2011@11:30:50 AM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
	Calibration:	Table/Fig. 5	Table/Fig. 3	Table/Fig. 2	Table/Fig. 6	Table/Fig. 4		
ICB	S11	0.0037	0.1387	0.0093	0.0060	0.0022	-0.9952	11/23/2011@11:46:57 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0042	0.1382	0.0093	0.0062	0.0022	-0.9896	11/23/2011@12:03:04 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.2301	42.3625	4.1987	4.1959	4.2931	83.6971	11/23/2011@12:19:11 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37764-A-2	40	0.0612	77.4477	0.0430	8.3219	0.7328	17.9671	11/23/2011@12:35:17 PM
360-37764-A-2@10	41	5.2617e-4	9.3898	0.0094	1.1043	0.0794	1.1701	11/23/2011@12:51:23 PM
360-37764-A-2@10 MS	42	1.0971	20.1753	1.0629	2.1467	1.1755	22.9810	11/23/2011@1:07:29 PM
360-37764-A-2@10 MSD	42	1.1029	20.1792	1.0616	2.1492	1.1769	22.9506	11/23/2011@1:23:35 PM
360-37776-B-1	57	3.3913	86.2372	0.1429	-2.4873e+3	0.6131	106.7390	11/23/2011@1:39:41 PM
360-37776-B-1@10	58	0.4601	11.4935	0.0257	~~-1.1438~~	0.0022	42.6742	11/23/2011@1:55:48 PM
360-37781-A-1	91	0.0236	40.9724	0.2238	0.0570	0.0022	3.3363	11/23/2011@2:11:55 PM
360-37781-A-1@10	92	0.0025	3.8893	0.0288	0.0120	0.0022	-0.5421	11/23/2011@2:28:02 PM
360-37781-A-2	93	2.0521	30.1307	0.0580	0.0501	-1.3821	-0.0687	11/23/2011@2:44:10 PM
360-37781-A-2@10	94	0.2276	3.0768	0.0139	0.0148	0.0022	-0.8726	11/23/2011@3:00:17 PM
CCV	S12	4.2539	42.8026	4.2650	4.2328	4.2929	84.3349	11/23/2011@3:16:25 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0089	0.1394	0.0093	0.0068	0.0031	-0.9806	11/23/2011@3:32:33 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37781-A-3	95	4.1558	-21.4654	-0.0292	0.2261	8.9264	1.6766	11/23/2011@3:48:39 PM
360-37781-A-3@10	96	0.7535	11.9514	0.0144	0.0276	0.0022	-0.7154	11/23/2011@4:04:46 PM
360-37781-A-4	97	0.0116	2.9124	0.0270	2.0681	3.2495e-4	2.7744	11/23/2011@4:20:53 PM
360-37781-A-4@10	98	0.0028	0.5308	0.0068	0.1977	0.0036	-0.5918	11/23/2011@4:37:00 PM
360-37781-A-5	99	0.1776	6.3967	0.0453	0.0222	0.0240	-0.8393	11/23/2011@4:53:06 PM
360-37781-A-5@10	100	0.0324	0.7414	0.0093	0.0058	0.0036	-0.9609	11/23/2011@5:09:13 PM
360-37781-A-6	101	6.5448	76.1503	0.1492	0.0062	-8.5088	-0.6150	11/23/2011@5:25:19 PM
360-37781-A-6@10	102	0.7056	8.8886	0.0230	0.0062	0.0022	-0.9524	11/23/2011@5:41:25 PM
360-37781-A-7	103	0.5432	27.8380	0.0593	1.0759	0.0022	7.1202	11/23/2011@5:57:32 PM
360-37781-A-7@10	104	0.0608	2.6757	0.0138	0.1046	0.0022	-0.1665	11/23/2011@6:13:38 PM
CCV	S12	4.2810	42.9247	4.3585	4.2501	4.3564	84.5405	11/23/2011@6:29:46 PM

Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0082	0.1361	0.0094	0.0062	0.0042	-0.9824	11/23/2011@6:45:52 PM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0032	0.1363	0.0093	0.0062	0.0038	-0.9725	11/23/2011@7:01:59 PM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.2288	42.6585	4.2281	4.2177	4.3089	83.9302	11/23/2011@7:18:06 PM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37781-A-8	105	1.6447	42.0522	0.0743	0.1981	0.0022	19.0429	11/23/2011@7:34:13 PM
360-37781-A-8@10	106	0.1772	4.1013	0.0153	0.0247	0.0022	0.9616	11/23/2011@7:50:20 PM
360-37781-A-8@10 MS	107	0.5500	6.1967	0.4435	0.4715	0.4658	9.1573	11/23/2011@8:06:28 PM
360-37781-A-8@10 MSD	107	0.9321	11.0932	0.7666	0.8128	0.8021	16.7353	11/23/2011@8:22:35 PM
360-37654-A-33	108	0.0306	10.5371	0.0250	0.2572	0.0022	3.4892	11/23/2011@8:38:42 PM
360-37654-A-33@10	109	0.0180	5.0328	0.0161	0.1233	0.0022	1.0150	11/23/2011@8:54:49 PM
360-37654-A-34	110	0.0055	0.1451	0.0093	0.0101	0.0013	-0.9454	11/23/2011@9:10:56 PM
360-37654-A-34@10	111	0.0039	0.1352	0.0093	0.0062	0.0022	-0.9809	11/23/2011@9:27:03 PM
360-37654-A-36	112	0.0037	0.1333	0.0093	0.0048	0.0023	-0.9913	11/23/2011@9:43:10 PM
360-37654-A-36@10	113	0.0038	0.2791	0.0095	0.0167	0.0022	-0.8842	11/23/2011@9:59:17 PM
CCV	S12	3.9043	39.5884	3.8878	3.9114	3.9992	79.0145	11/23/2011@10:15:24 PM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0062	0.1335	0.0093	0.0057	0.0022	-0.9922	11/23/2011@10:31:31 PM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37654-A-38	114	0.0017	0.1548	0.0095	0.0062	0.0022	-0.9507	11/23/2011@10:47:37 PM
360-37654-A-38@10	115	0.0015	0.5249	0.0093	0.0291	0.0022	-0.6585	11/23/2011@11:03:45 PM
360-37654-A-39	116	0.0038	0.1583	0.0094	0.0062	0.0022	-0.9555	11/23/2011@11:19:51 PM
360-37654-A-39@10	117	0.0073	1.2198	0.0135	0.0064	0.0022	-0.3307	11/23/2011@11:35:59 PM
360-37654-A-40	118	0.0262	13.1364	0.0573	0.0103	-0.0250	6.4339	11/23/2011@11:52:05 PM
360-37654-A-40@10	119	0.0077	2.4842	0.0175	0.0053	-0.0023	0.4000	11/24/2011@12:08:12 AM
360-37654-A-41	120	0.0654	39.1213	0.1028	0.0191	0.0022	7.3532	11/24/2011@12:24:19 AM
360-37654-A-41@10	121	0.0109	3.6271	0.0173	0.0052	0.0022	-0.1755	11/24/2011@12:40:26 AM
360-37654-A-42	122	0.0768	35.4823	0.0809	0.0042	-0.1492	-0.2530	11/24/2011@12:56:34 AM
360-37654-A-42@10	123	0.0172	3.5230	0.0163	0.0070	-0.0035	-0.8907	11/24/2011@1:12:41 AM
CCV	S12	3.9971	40.5390	3.9837	4.0091	4.0877	80.5798	11/24/2011@1:28:48 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0038	0.1360	0.0093	0.0046	0.0022	-0.9909	11/24/2011@1:44:54 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0038	0.1383	0.0093	0.0062	0.0022	-0.9807	11/24/2011@2:01:01 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9602	40.1720	3.9323	3.9719	4.0547	79.7196	11/24/2011@2:17:09 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37654-A-43	124	0.0773	58.4058	0.1066	0.2600	0.0022	9.6967	11/24/2011@2:33:16 AM
360-37654-A-43@10	125	0.0133	5.6847	0.0177	0.0246	0.0022	0.0397	11/24/2011@2:49:23 AM
360-37654-A-43@10 MS	126	1.0084	16.6791	0.9837	1.0311	1.0105	20.5684	11/24/2011@3:05:29 AM
360-37654-A-43@10 MSD	126	0.9950	16.7889	0.9884	1.0351	1.0189	20.7341	11/24/2011@3:21:36 AM
360-37654-A-44	127	0.0779	32.1621	0.0811	0.0034	0.0022	0.2813	11/24/2011@3:37:43 AM
360-37654-A-44@10	128	0.0038	0.1934	0.0093	0.0041	0.0016	-0.9935	11/24/2011@3:53:50 AM

data rerun due to inconsistencies 11/27/11 AMS.

360-37654-A-45	129	0.2267	22.9024	0.0801	0.0035	-0.2412	41.4176	11/24/2011@4:09:57 AM
360-37654-A-45@10	130	0.0280	2.1732	0.0153	0.0062	0.0022	3.0858	11/24/2011@4:26:04 AM
360-37711-A-3@10 CL	131	0.0716	16.8894	0.0226	0.0062	0.0022	5.1242	11/24/2011@4:42:11 AM
360-37711-A-4@10 CL	132	0.0078	20.6327	0.0073	0.0563	0.0022	3.4631	11/24/2011@4:58:18 AM
CCV	S12	4.2791	43.2540	4.2785	4.2822	4.3677	85.0176	11/24/2011@5:14:25 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0039	0.1401	0.0093	0.0065	0.0038	-0.9825	11/24/2011@5:30:31 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37711-A-5@10 CL	133	0.0231	31.0678	0.0070	0.0901	-0.0388	-0.0579	11/24/2011@5:46:38 AM
360-37711-A-6@10 CL	134	0.0043	20.8320	0.0109	0.0524	-0.0300	3.4359	11/24/2011@6:02:45 AM
360-37711-A-7@10 CL	135	0.0130	22.5282	0.0110	0.0482	-0.0312	2.9431	11/24/2011@6:18:52 AM
360-37711-A-8@5 CL	136	7.8073e-4	13.6032	0.0094	0.0074	0.0022	1.5575	11/24/2011@6:35:00 AM
360-37711-A-9@5 CL	137	0.0702	15.3613	0.0073	0.0063	-0.0236	8.4447	11/24/2011@6:51:07 AM
360-37711-A-10@5 CL	138	0.0028	4.2546	0.0079	0.3383	-0.0033	0.1587	11/24/2011@7:07:14 AM
360-37711-A-11@5 CL	139	0.0036	0.7775	0.0086	0.0051	6.1253e-4	0.1562	11/24/2011@7:23:21 AM
360-37717-F-2@10 CL	140	0.0042	2.8011	0.0093	0.0059	0.0022	-0.2287	11/24/2011@7:39:28 AM
360-37717-F-3@10 CL	141	0.0044	0.1383	0.0093	0.0098	0.0022	-0.9894	11/24/2011@7:55:35 AM
360-37717-F-3@50 CL	142	0.0037	17.8831	0.0072	0.0062	0.0022	0.0586	11/24/2011@8:11:42 AM
CCV	S12	4.2104	43.9310	4.3220	4.3248	4.4143	86.1832	11/24/2011@8:27:49 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0038	0.1415	0.0093	0.0073	0.0034	-0.9826	11/24/2011@8:43:56 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0038	0.1413	0.0093	0.0064	0.0039	-0.9826	11/24/2011@9:00:02 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.2392	43.9424	4.3213	4.3339	4.4284	86.4525	11/24/2011@9:16:10 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37717-F-4@20 CL	143	0.0043	23.9086	0.0094	0.0315	-0.0385	1.0876	11/24/2011@9:32:16 AM
360-37717-F-4@20 MS	144	0.9275	33.1237	0.9402	1.0040	0.9722	21.1934	11/24/2011@9:48:24 AM
360-37717-F-4@20 MSD	144	0.9249	32.8072	0.9321	0.9946	0.9615	21.0366	11/24/2011@10:04:30 AM
360-37717-F-9@5 CL	145	0.0039	22.1164	0.0206	0.0230	-0.0377	5.5167	11/24/2011@10:20:37 AM
360-37526-B-5@10 CL	146	0.0670	14.3568	0.0199	0.0157	0.0022	106.8945	11/24/2011@10:36:44 AM
360-37526-B-5@20 SO4	147	0.0330	6.8652	0.0094	0.0126	-0.0063	59.1994	11/24/2011@10:52:51 AM
360-37526-B-6@10 CL	148	0.0671	16.5452	0.0059	0.0060	0.0473	102.8824	11/24/2011@11:08:58 AM
360-37526-B-6@20 SO4	149	0.0342	8.0180	0.0093	0.0061	0.0266	55.8561	11/24/2011@11:25:05 AM
360-37552-C-7@10 SO4	150	0.0971	29.6814	0.0979	0.0119	0.0022	139.1004	11/24/2011@11:41:12 AM
360-37526-B-8@10 CL/SO4	151	0.0291	15.1183	0.0194	0.0077	0.0022	20.1576	11/24/2011@11:57:19 AM
CCV	S12	4.3348	43.8909	4.3097	4.3485	4.4296	86.1614	11/24/2011@12:13:26 PM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0067	0.1391	0.0074	0.0069	0.0046	-0.9891	11/24/2011@12:29:33 PM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37762-B-16	30	0.0545	83.5586	0.0712	0.1061	-0.6496	5.9437	11/24/2011@12:45:38 PM
360-37706-A-23	31	13.8361	70.3449	0.1719	0.8853	-0.1829	5.2620	11/24/2011@1:01:46 PM
360-37706-A-24	32	0.0620	31.3751	0.3438	0.0913	0.0022	42.7314	11/24/2011@1:17:53 PM
360-37706-A-25	33	6.6092	64.2665	0.0881	0.4757	0.0022	1.8487	11/24/2011@1:34:00 PM
360-37706-A-26	34	0.0540	25.4377	0.1682	0.0165	0.0022	50.3353	11/24/2011@1:50:08 PM

360-37706-A-27	35	12.5833	68.3348	0.0938	0.5279	0.0022	2.6547	11/24/2011@2:06:15 PM
360-37706-A-28	36	0.1583	93.5754	0.0551	0.0051	-3.8710	82.5167	11/24/2011@2:22:22 PM
360-37706-A-29	37	-1.8727e+3	70.3861	0.0251	0.0877	0.0022	41.8305	11/24/2011@2:38:29 PM
360-37791-B-3	152	-414.3661	0.0458	0.0128	-445.3977	-0.0146	-966.1163	11/24/2011@2:54:36 PM
360-37791-B-3@20	153	0.2482	-6.9360	-0.1471	8.1324	6.6206	-0.9825	11/24/2011@3:10:43 PM
CCV	S12	4.2757	43.3438	4.2775	4.2647	4.3850	85.3619	11/24/2011@3:26:50 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0035	0.1395	0.0095	0.0126	0.0042	-0.9930	11/24/2011@3:42:57 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0039	0.1425	0.0093	0.0072	0.0045	-0.9819	11/24/2011@3:59:04 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.2301	43.0218	4.1963	4.2516	4.3392	84.9586	11/24/2011@4:15:11 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37799-B-2	154	0.1837	97.8248	0.2290	0.0062	-154.0151	32.5636	11/24/2011@4:31:19 PM
360-37799-B-2@10	155	0.0188	65.0158	0.0326	0.0063	0.0022	2.3144	11/24/2011@4:47:25 PM
360-37799-B-2@10 MS	156	1.0302	70.5070	1.0235	1.0326	0.9732	23.7191	11/24/2011@5:03:32 PM
360-37799-B-2@10 MSD	156	1.0446	70.1217	1.0181	1.0337	0.9687	23.6481	11/24/2011@5:19:39 PM
CCV	S12	4.3079	43.5824	4.2703	4.3200	4.4024	85.9632	11/24/2011@5:35:46 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0033	0.1432	0.0093	0.0070	0.0040	-0.9826	11/24/2011@5:51:54 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Original Run Filename: OM_11-23-2011_11-13-21AM.OMN created 11/23/2011 11:13:21 AM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_11-23-2011_11-13-21AM.OMN last modified 11/24/2011 6:07:56 PM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	1.389e-4	0.1444	0.0093	0.0065	0.0065	-0.8997	11/23/2011@11:14:43 AM
	Calibration:						Table/Fig. 1	
ICV	1	2.5085	25.5314	2.4923	2.5679	2.5317	51.5991	11/23/2011@11:30:50 AM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
	Calibration:	Table/Fig. 5	Table/Fig. 3	Table/Fig. 2	Table/Fig. 6	Table/Fig. 4		
ICB	S11	0.0037	0.1387	0.0093	0.0060	0.0022	-0.9952	11/23/2011@11:46:57 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0042	0.1382	0.0093	0.0062	0.0022	-0.9896	11/23/2011@12:03:04 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.2301	42.3625	4.1987	4.1959	4.2931	83.6971	11/23/2011@12:19:11 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37764-A-2	40	0.0612	77.4477	0.0430	8.3219	0.7328	17.9671	11/23/2011@12:35:17 PM
360-37764-A-2@10	41	5.2617e-4	9.3898	0.0094	1.1043	0.0794	1.1701	11/23/2011@12:51:23 PM
360-37764-A-2@10 MS	42	1.0971	20.1753	1.0629	2.1467	1.1755	22.9810	11/23/2011@1:07:29 PM
360-37764-A-2@10 MSD	42	1.1029	20.1792	1.0616	2.1492	1.1769	22.9506	11/23/2011@1:23:35 PM
360-37776-B-1	57	3.3913	86.2372	0.1429	-2.4873e+3	0.6131	106.7390	11/23/2011@1:39:41 PM
360-37776-B-1@10	58	0.4601	11.4935	0.0257	1.1438	0.0022	42.6742	11/23/2011@1:55:48 PM
360-37781-A-1	91	0.0236	40.9724	0.2238	0.0570	0.0022	3.3363	11/23/2011@2:11:55 PM
360-37781-A-1@10	92	0.0025	3.8893	0.0288	0.0120	0.0022	-0.5421	11/23/2011@2:28:02 PM
360-37781-A-2	93	2.0521	30.1307	0.0580	0.0501	-1.3821	-0.0687	11/23/2011@2:44:10 PM
360-37781-A-2@10	94	0.2276	3.0768	0.0139	0.0148	0.0022	-0.8726	11/23/2011@3:00:17 PM
CCV	S12	4.2539	42.8026	4.2650	4.2328	4.2929	84.3349	11/23/2011@3:16:25 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0089	0.1394	0.0093	0.0068	0.0031	-0.9806	11/23/2011@3:32:33 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37781-A-3	95	4.1558	-21.4654	-0.0292	0.2261	8.9264	1.6766	11/23/2011@3:48:39 PM
360-37781-A-3@10	96	0.7535	11.9514	0.0144	0.0276	0.0022	-0.7154	11/23/2011@4:04:46 PM
360-37781-A-4	97	0.0116	2.9124	0.0270	2.0681	3.2495e-4	2.7744	11/23/2011@4:20:53 PM
360-37781-A-4@10	98	0.0028	0.5308	0.0068	0.1977	0.0036	-0.5918	11/23/2011@4:37:00 PM
360-37781-A-5	99	0.1776	6.3967	0.0453	0.0222	0.0240	-0.8393	11/23/2011@4:53:06 PM
360-37781-A-5@10	100	0.0324	0.7414	0.0093	0.0058	0.0036	-0.9609	11/23/2011@5:09:13 PM
360-37781-A-6	101	6.5448	76.1503	0.1492	0.0062	-8.5088	-0.6150	11/23/2011@5:25:19 PM
360-37781-A-6@10	102	0.7056	8.8886	0.0230	0.0062	0.0022	-0.9524	11/23/2011@5:41:25 PM
360-37781-A-7	103	0.5432	27.8380	0.0593	1.0759	0.0022	7.1202	11/23/2011@5:57:32 PM
360-37781-A-7@10	104	0.0608	2.6757	0.0138	0.1046	0.0022	-0.1665	11/23/2011@6:13:38 PM
CCV	S12	4.2810	42.9247	4.3585	4.2501	4.3564	84.5405	11/23/2011@6:29:46 PM

	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0082	0.1361	0.0094	0.0062	0.0042	-0.9824	11/23/2011@6:45:52 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0032	0.1363	0.0093	0.0062	0.0038	-0.9725	11/23/2011@7:01:59 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.2288	42.6585	4.2281	4.2177	4.3089	83.9302	11/23/2011@7:18:06 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37781-A-8	105	1.6447	42.0522	0.0743	0.1981	0.0022	19.0429	11/23/2011@7:34:13 PM
360-37781-A-8@10	106	0.1772	4.1013	0.0153	0.0247	0.0022	0.9616	11/23/2011@7:50:20 PM
360-37781-A-8@10 MS	107	0.5500	6.1967	0.4435	0.4715	0.4658	9.1573	11/23/2011@8:06:28 PM
360-37781-A-8@10 MSD	107	0.9321	11.0932	0.7666	0.8128	0.8021	16.7353	11/23/2011@8:22:35 PM
360-37654-A-33	108	0.0306	10.5371	0.0250	0.2572	0.0022	3.4892	11/23/2011@8:38:42 PM
360-37654-A-33@10	109	0.0180	5.0328	0.0161	0.1233	0.0022	1.0150	11/23/2011@8:54:49 PM
360-37654-A-34	110	0.0055	0.1451	0.0093	0.0101	0.0013	-0.9454	11/23/2011@9:10:56 PM
360-37654-A-34@10	111	0.0039	0.1352	0.0093	0.0062	0.0022	-0.9809	11/23/2011@9:27:03 PM
360-37654-A-36	112	0.0037	0.1333	0.0093	0.0048	0.0023	-0.9913	11/23/2011@9:43:10 PM
360-37654-A-36@10	113	0.0038	0.2791	0.0095	0.0167	0.0022	-0.8842	11/23/2011@9:59:17 PM
CCV	S12	3.9043	39.5884	3.8878	3.9114	3.9992	79.0145	11/23/2011@10:15:24 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0062	0.1335	0.0093	0.0057	0.0022	-0.9922	11/23/2011@10:31:31 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37654-A-38	114	0.0017	0.1548	0.0095	0.0062	0.0022	-0.9507	11/23/2011@10:47:37 PM
360-37654-A-38@10	115	0.0015	0.5249	0.0093	0.0291	0.0022	-0.6585	11/23/2011@11:03:45 PM
360-37654-A-39	116	0.0038	0.1583	0.0094	0.0062	0.0022	-0.9555	11/23/2011@11:19:51 PM
360-37654-A-39@10	117	0.0073	1.2198	0.0135	0.0064	0.0022	-0.3307	11/23/2011@11:35:59 PM
360-37654-A-40	118	0.0262	13.1364	0.0573	0.0103	-0.0250	6.4339	11/23/2011@11:52:05 PM
360-37654-A-40@10	119	0.0077	2.4842	0.0175	0.0053	-0.0023	0.4000	11/24/2011@12:08:12 AM
360-37654-A-41	120	0.0654	39.1213	0.1028	0.0191	0.0022	7.3532	11/24/2011@12:24:19 AM
360-37654-A-41@10	121	0.0109	3.6271	0.0173	0.0052	0.0022	-0.1755	11/24/2011@12:40:26 AM
360-37654-A-42	122	0.0768	35.4823	0.0809	0.0042	-0.1492	-0.2530	11/24/2011@12:56:34 AM
360-37654-A-42@10	123	0.0172	3.5230	0.0163	0.0070	-0.0035	-0.8907	11/24/2011@1:12:41 AM
CCV	S12	3.9971	40.5390	3.9837	4.0091	4.0877	80.5798	11/24/2011@1:28:48 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0038	0.1360	0.0093	0.0046	0.0022	-0.9909	11/24/2011@1:44:54 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0038	0.1383	0.0093	0.0062	0.0022	-0.9807	11/24/2011@2:01:01 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9602	40.1720	3.9323	3.9719	4.0547	79.7196	11/24/2011@2:17:09 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37654-A-43	124	0.0773	58.4058	0.1066	0.2600	0.0022	9.6967	11/24/2011@2:33:16 AM
360-37654-A-43@10	125	0.0133	5.6847	0.0177	0.0246	0.0022	0.0397	11/24/2011@2:49:23 AM
360-37654-A-43@10 MS	126	1.0084	16.6791	0.9837	1.0311	1.0105	20.5684	11/24/2011@3:05:29 AM
360-37654-A-43@10 MSD	126	0.9950	16.7889	0.9884	1.0351	1.0189	20.7341	11/24/2011@3:21:36 AM
360-37654-A-44	127	0.0779	32.1621	0.0811	0.0034	0.0022	0.2813	11/24/2011@3:37:43 AM
360-37654-A-44@10	128	0.0038	0.1934	0.0093	0.0041	0.0016	-0.9935	11/24/2011@3:53:50 AM

data between these points rerun due to inconsistencies 11/29/11 AMS

360-37654-A-45	129	0.2267	22.9024	0.0801	0.0035	-0.2412	41.4176	11/24/2011@4:09:57 AM
360-37654-A-45@10	130	0.0280	2.1732	0.0153	0.0062	0.0022	3.0858	11/24/2011@4:26:04 AM
360-37711-A-3@10 CL	131	0.0716	16.8894	0.0226	0.0062	0.0022	5.1242	11/24/2011@4:42:11 AM
360-37711-A-4@10 CL	132	0.0078	20.6327	0.0073	0.0563	0.0022	3.4631	11/24/2011@4:58:18 AM
CCV	S12	4.2791	43.2540	4.2785	4.2822	4.3677	85.0176	11/24/2011@5:14:25 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0039	0.1401	0.0093	0.0065	0.0038	-0.9825	11/24/2011@5:30:31 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37711-A-5@10 CL	133	0.0231	31.0678	0.0070	0.0901	-0.0388	-0.0579	11/24/2011@5:46:38 AM
360-37711-A-6@10 CL	134	0.0043	20.8320	0.0109	0.0524	-0.0300	3.4359	11/24/2011@6:02:45 AM
360-37711-A-7@10 CL	135	0.0130	22.5282	0.0110	0.0482	-0.0312	2.9431	11/24/2011@6:18:52 AM
360-37711-A-8@5 CL	136	7.8073e-4	13.6032	0.0094	0.0074	0.0022	1.5575	11/24/2011@6:35:00 AM
360-37711-A-9@5 CL	137	0.0702	15.3613	0.0073	0.0063	-0.0236	8.4447	11/24/2011@6:51:07 AM
360-37711-A-10@5 CL	138	0.0028	4.2546	0.0079	0.3383	-0.0033	0.1587	11/24/2011@7:07:14 AM
360-37711-A-11@5 CL	139	0.0036	0.7775	0.0086	0.0051	6.1253e-4	0.1562	~~11/24/2011@7:23:21 AM~~
360-37717-F-2@10 CL	140	0.0042	2.8011	0.0093	0.0059	0.0022	-0.2287	11/24/2011@7:39:28 AM
360-37717-F-3@10 CL	141	0.0044	0.1383	0.0093	0.0098	0.0022	-0.9894	~~11/24/2011@7:55:35 AM~~
360-37717-F-3@50 CL	142	0.0037	17.8831	0.0072	0.0062	0.0022	0.0586	~~11/24/2011@8:11:42 AM~~
CCV	S12	4.2104	43.9310	4.3220	4.3248	4.4143	86.1832	11/24/2011@8:27:49 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0038	0.1415	0.0093	0.0073	0.0034	-0.9826	11/24/2011@8:43:56 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0038	0.1413	0.0093	0.0064	0.0039	-0.9826	11/24/2011@9:00:02 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.2392	43.9424	4.3213	4.3339	4.4284	86.4525	11/24/2011@9:16:10 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37717-F-4@20 CL	143	0.0043	23.9086	0.0094	0.0315	-0.0385	1.0876	11/24/2011@9:32:16 AM
360-37717-F-4@20 MS	144	0.9275	33.1237	0.9402	1.0040	0.9722	21.1934	11/24/2011@9:48:24 AM
360-37717-F-4@20 MSD	144	0.9249	32.8072	0.9321	0.9946	0.9615	21.0366	11/24/2011@10:04:30 AM
360-37717-F-9@5 CL	145	0.0039	22.1164	0.0206	0.0230	-0.0377	5.5167	11/24/2011@10:20:37 AM
360-37526-B-5@10 CL	146	0.0670	14.3568	0.0199	0.0157	0.0022	106.8945	11/24/2011@10:36:44 AM
360-37526-B-5@20 SO4	147	0.0330	6.8652	0.0094	0.0126	-0.0063	59.1994	11/24/2011@10:52:51 AM
360-37526-B-6@10 CL	148	0.0671	16.5452	0.0059	0.0060	0.0473	102.8824	11/24/2011@11:08:58 AM
360-37526-B-6@20 SO4	149	0.0342	8.0180	0.0093	0.0061	0.0266	55.8561	11/24/2011@11:25:05 AM
360-37552-C-7@10 SO4	150	0.0971	29.6814	0.0979	0.0119	0.0022	139.1004	11/24/2011@11:41:12 AM
360-37526-B-8@10 CL/SO4	151	0.0291	15.1183	0.0194	0.0077	0.0022	20.1576	11/24/2011@11:57:19 AM
CCV	S12	4.3348	43.8909	4.3097	4.3485	4.4296	86.1614	11/24/2011@12:13:26 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0067	0.1391	0.0074	0.0069	0.0046	-0.9891	11/24/2011@12:29:33 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37762-B-16	30	0.0545	83.5586	0.0712	0.1061	-0.6496	5.9437	11/24/2011@12:45:38 PM
360-37706-A-23	31	13.8361	70.3449	0.1719	0.8853	-0.1829	5.2620	11/24/2011@1:01:46 PM
360-37706-A-24	32	0.0620	31.3751	0.3438	0.0913	0.0022	42.7314	11/24/2011@1:17:53 PM
360-37706-A-25	33	6.6092	64.2665	0.0881	0.4757	0.0022	1.8487	11/24/2011@1:34:00 PM
360-37706-A-26	34	0.0540	25.4377	0.1682	0.0165	0.0022	50.3353	11/24/2011@1:50:08 PM

360-37706-A-27	35	12.5833	68.3348	0.0938	0.5279	0.0022	2.6547	11/24/2011@2:06:15 PM
360-37706-A-28*	36	0.1583	93.5754	0.0551	0.0051	-3.8710	82.5167	11/24/2011@2:22:22 PM
360-37706-A-29	37	-1.8727e+3	70.3861	0.0251	0.0877	0.0022	41.8305	11/24/2011@2:38:29 PM
360-37791-B-3	152	-414.3661	0.0458	0.0128	-445.3977	-0.0146	-966.1163	11/24/2011@2:54:36 PM
360-37791-B-3@20	153	0.2482	-6.9360	-0.1471	8.1324	6.6206	-0.9825	11/24/2011@3:10:43 PM
CCV	S12	4.2757	43.3438	4.2775	4.2647	4.3850	85.3619	11/24/2011@3:26:50 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0035	0.1395	0.0095	0.0126	0.0042	-0.9930	11/24/2011@3:42:57 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0039	0.1425	0.0093	0.0072	0.0045	-0.9819	11/24/2011@3:59:04 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.2301	43.0218	4.1963	4.2516	4.3392	84.9586	11/24/2011@4:15:11 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37799-B-2	154	0.1837	97.8248	0.2290	0.0062	-154.0151	32.5636	11/24/2011@4:31:19 PM
360-37799-B-2@10	155	0.0188	65.0158	0.0326	0.0063	0.0022	2.3144	11/24/2011@4:47:25 PM
360-37799-B-2@10 MS	156	1.0302	70.5070	1.0235	1.0326	0.9732	23.7191	11/24/2011@5:03:32 PM
360-37799-B-2@10 MSD	156	1.0446	70.1217	1.0181	1.0337	0.9687	23.6481	11/24/2011@5:19:39 PM
CCV	S12	4.3079	43.5824	4.2703	4.3200	4.4024	85.9632	11/24/2011@5:35:46 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0033	0.1432	0.0093	0.0070	0.0040	-0.9826	11/24/2011@5:51:54 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Author: EmerichR

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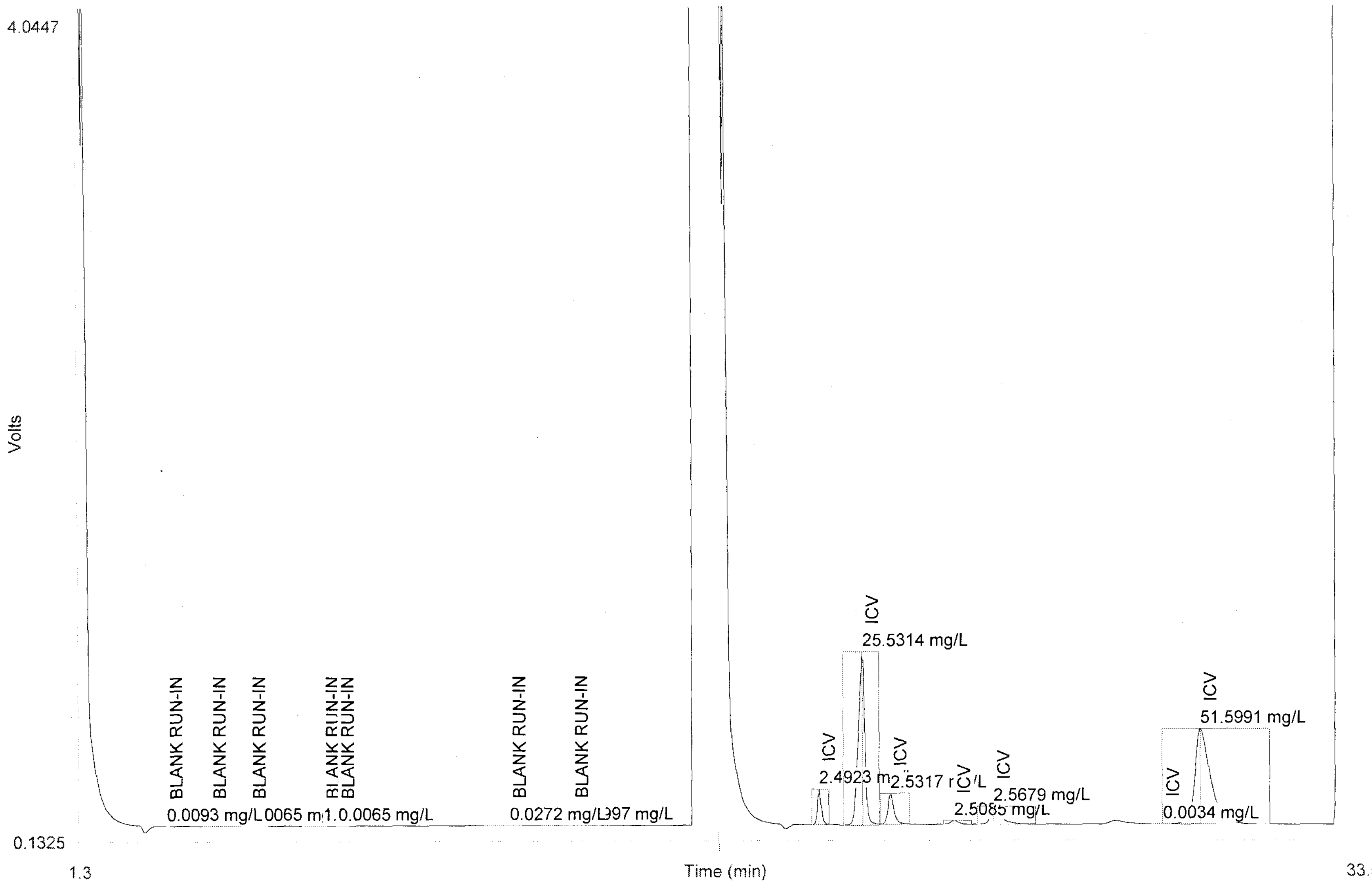
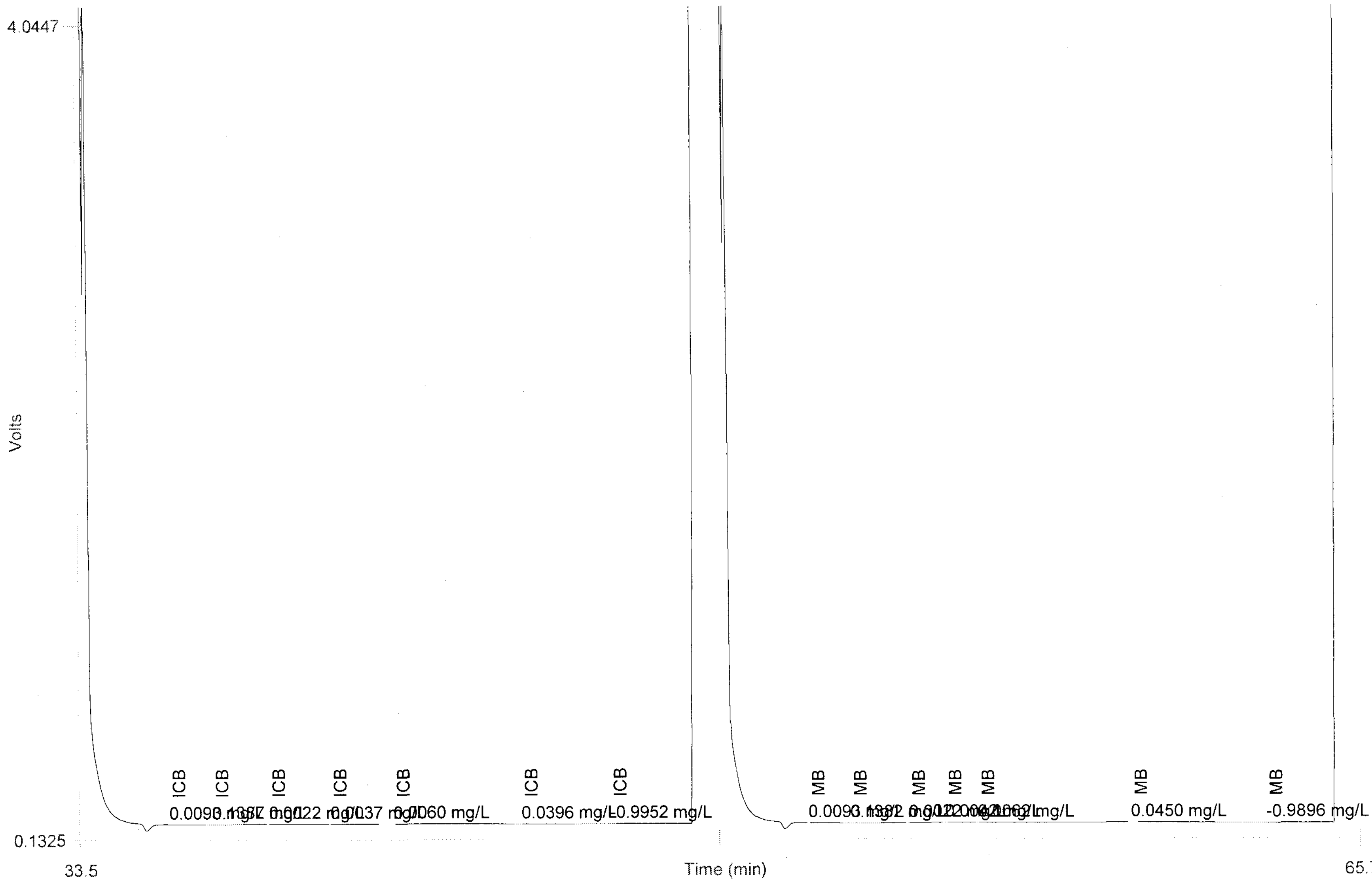
Channel 1 (Anions) : Set 1 of 58



Author: EmerichR

Date : 11/26/2011

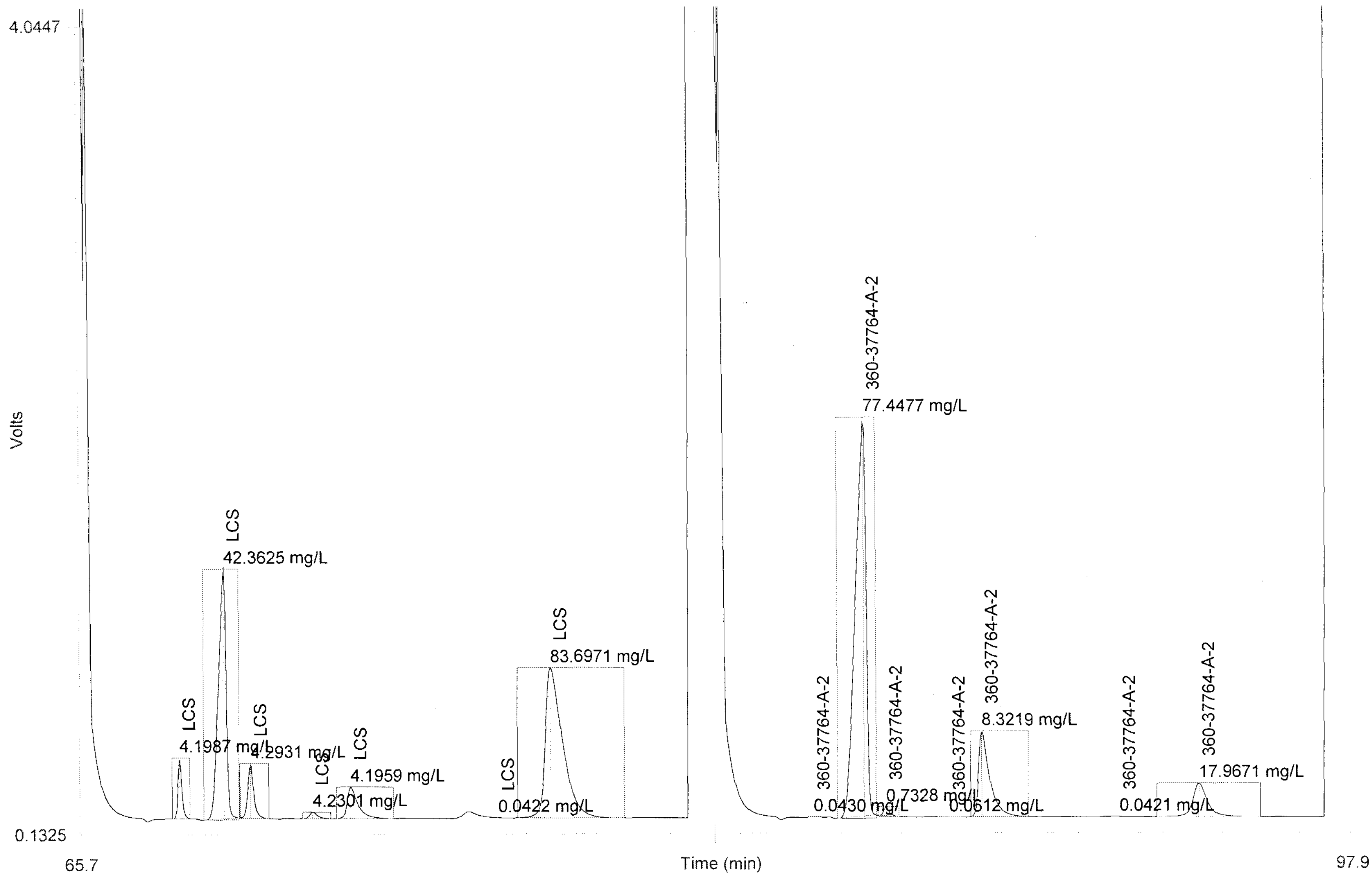
Channel 1 (Anions) : Set 2 of 58



Author: EmerichR

Date : 11/26/2011

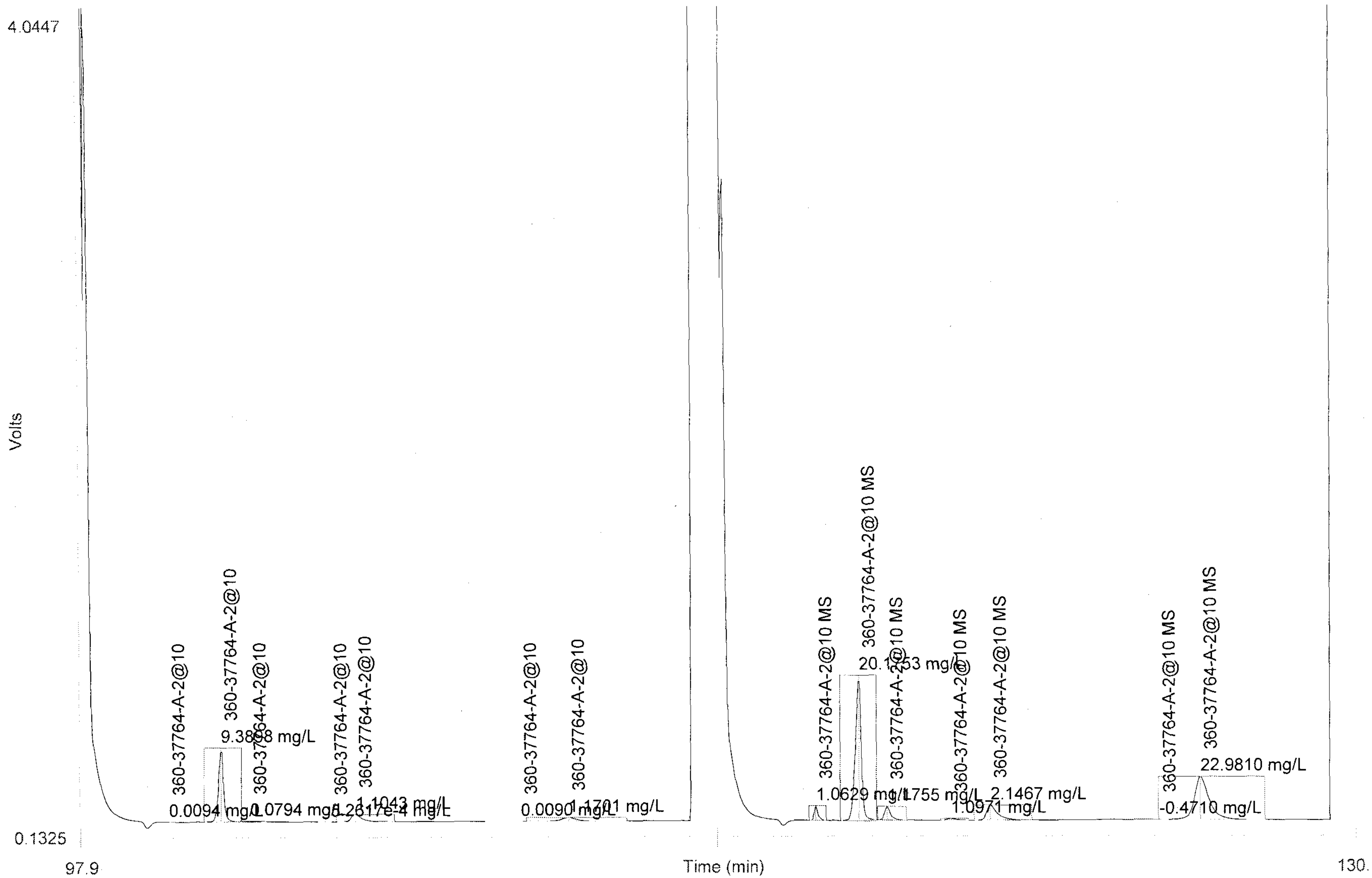
Channel 1 (Anions) : Set 3 of 58



Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 4 of 58



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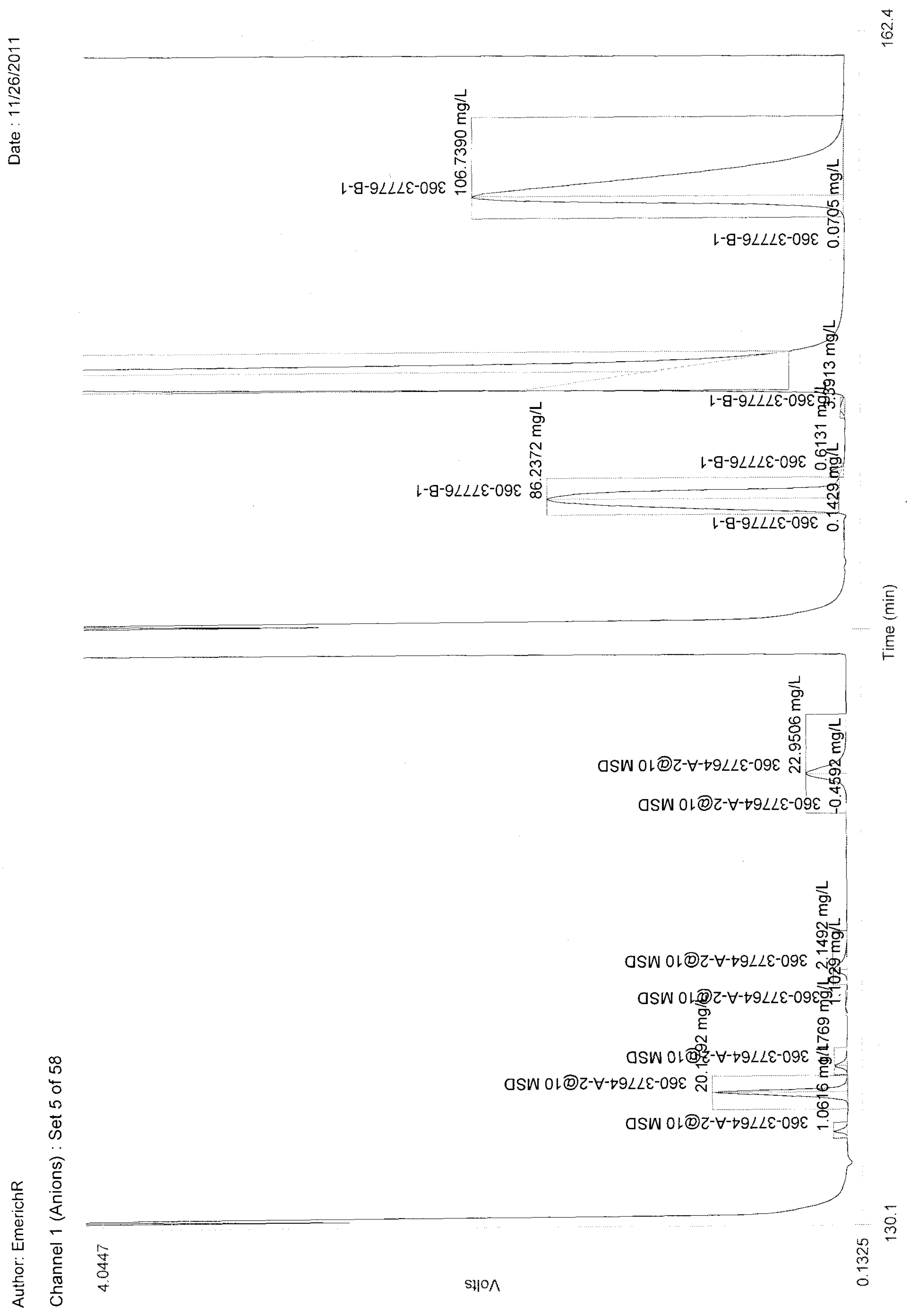
Author: EmerichR
Date : 11/26/2011
Channel 1 (Anions) : Set 5 of 58
4.0447
Volts
0.1325
130.1
Time (min)
162.4
360-37764-A-2@10 MSD 1.0616 mg/L
360-37764-A-2@10 MSD 20.1892 mg/L
360-37764-A-2@10 MSD 1.1769 mg/L
360-37764-A-2@10 MSD 1.1029 mg/L
360-37764-A-2@10 MSD 2.1492 mg/L
360-37764-A-2@10 MSD 0.4592 mg/L
360-37764-A-2@10 MSD 22.9506 mg/L
360-37776-B-1 0.1429 mg/L
360-37776-B-1 86.2372 mg/L
360-37776-B-1 0.6131 mg/L
360-37776-B-1 3.3913 mg/L
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360-37776-B-1 106.7390 mg/L
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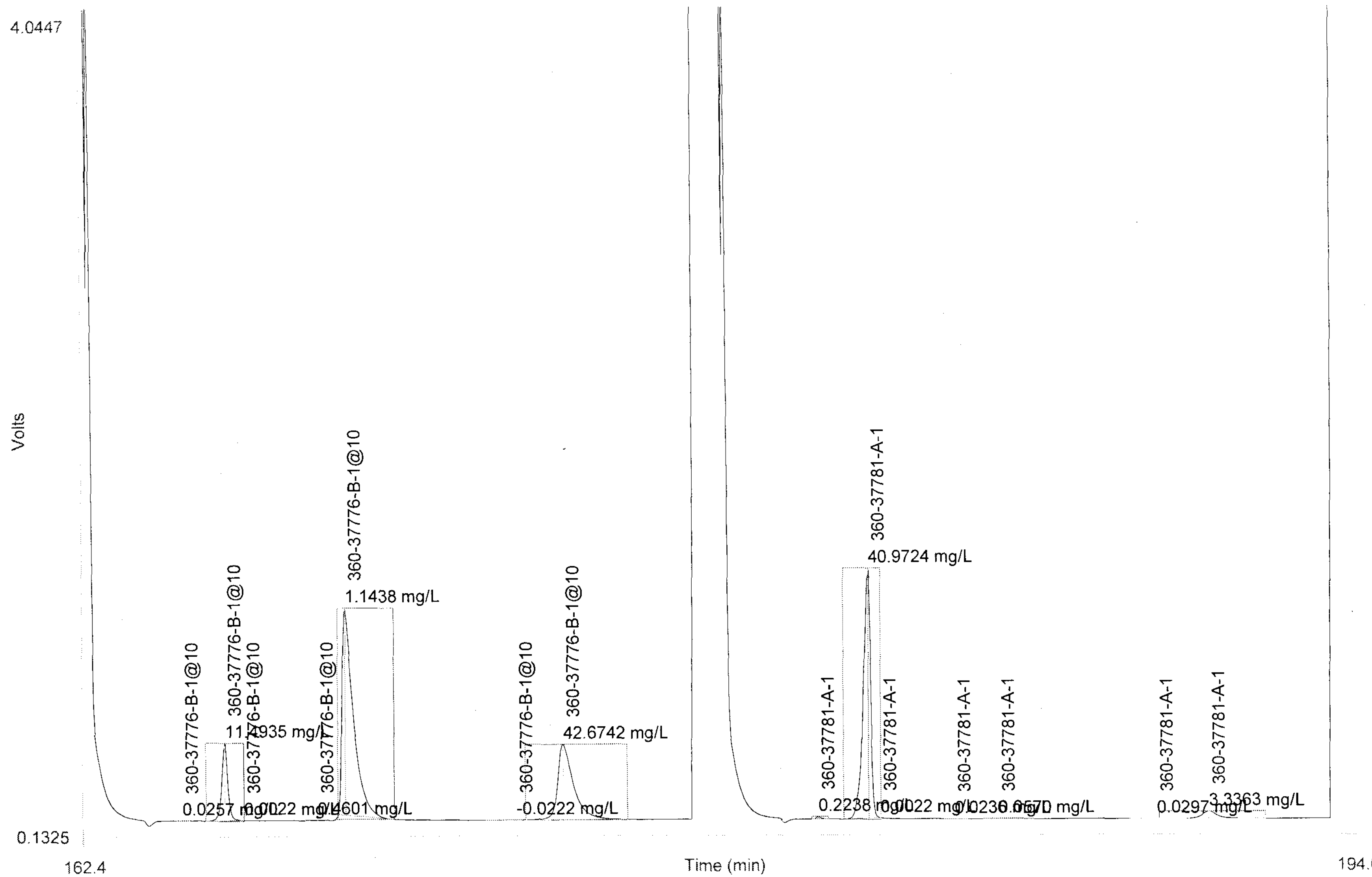
Author: EmerichR

Channel 1 (Anions) : Set 6 of 58



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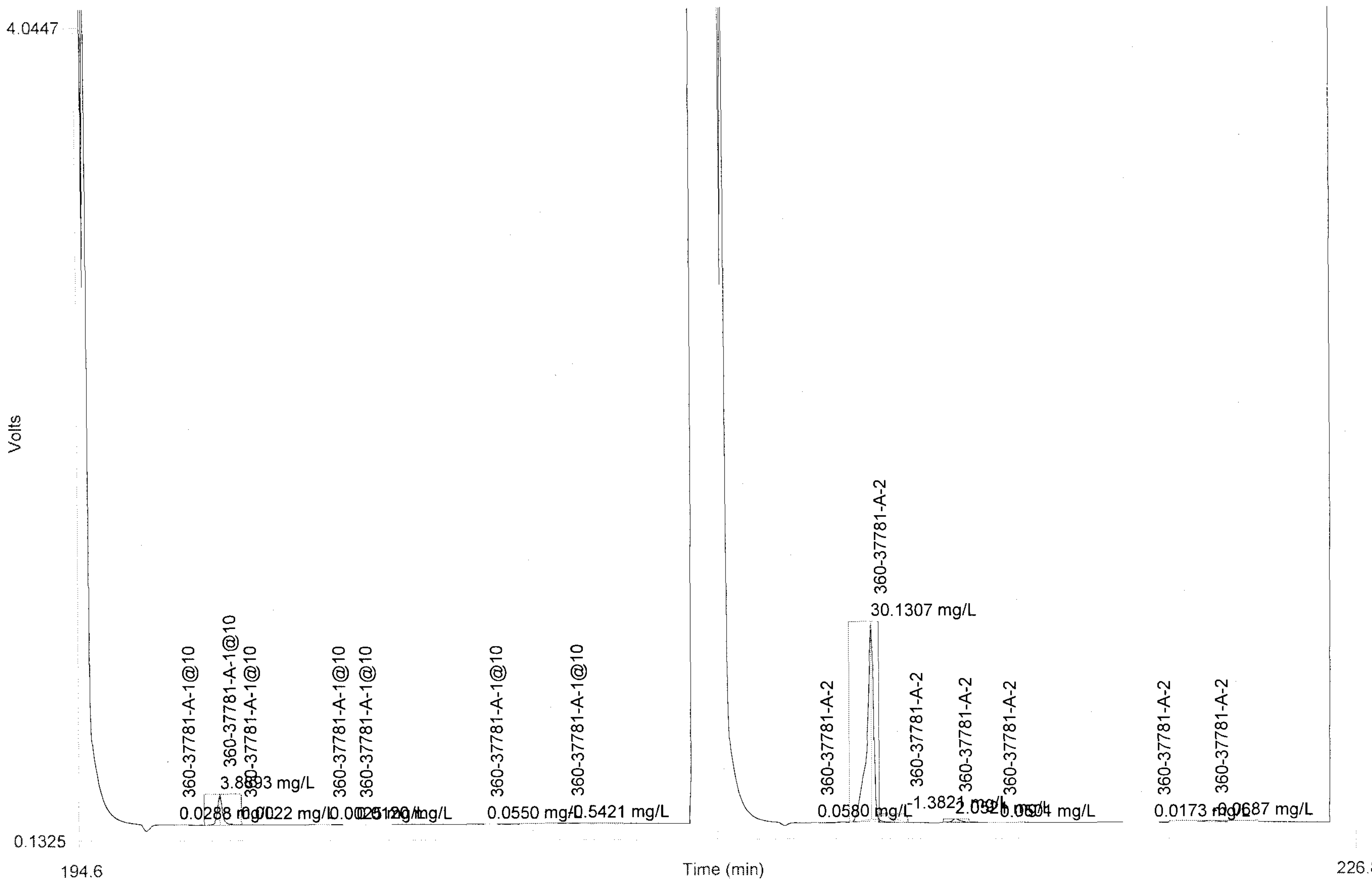
Channel 1 (Anions) : Set 7 of 58



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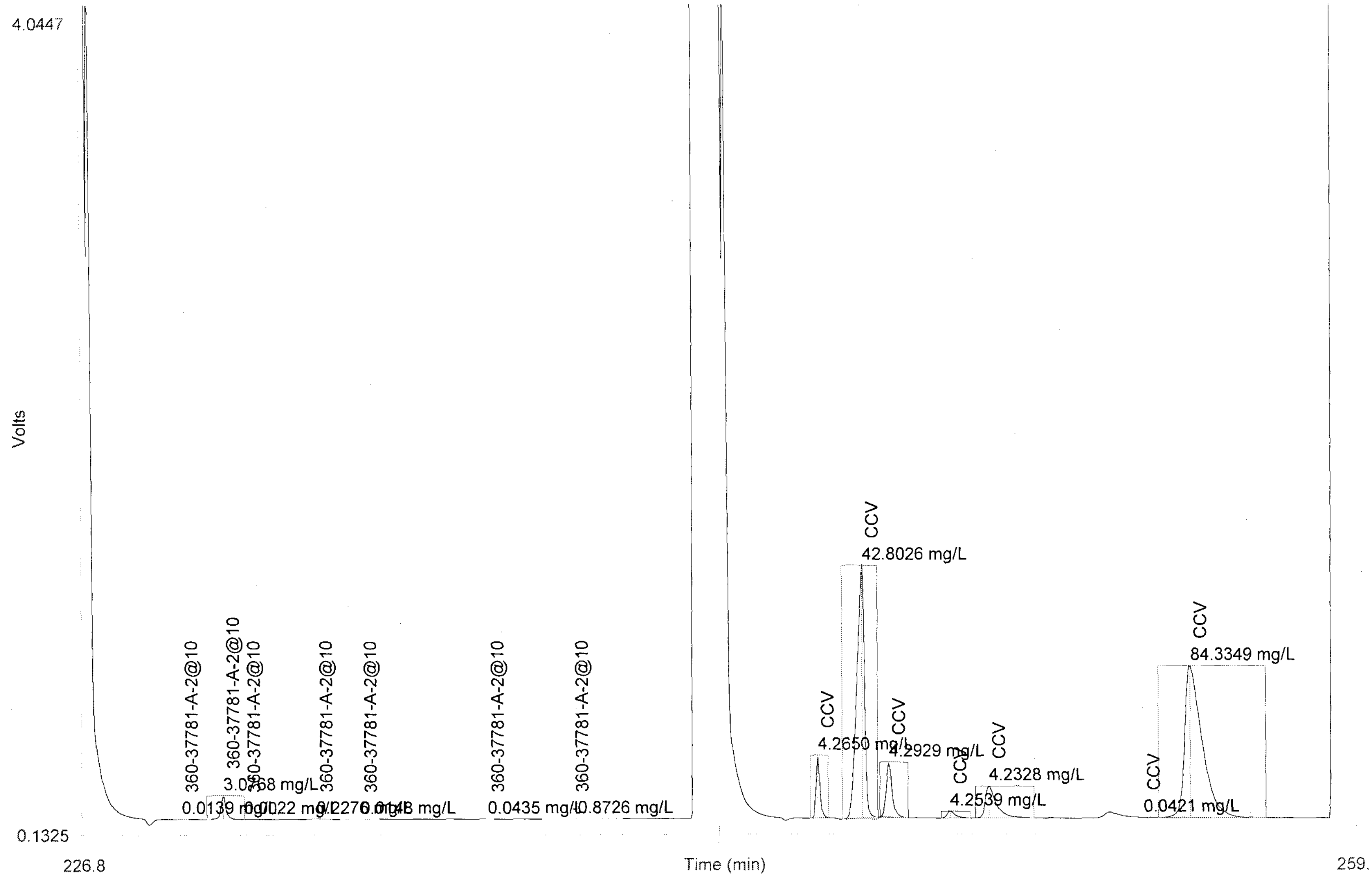
Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 8 of 58



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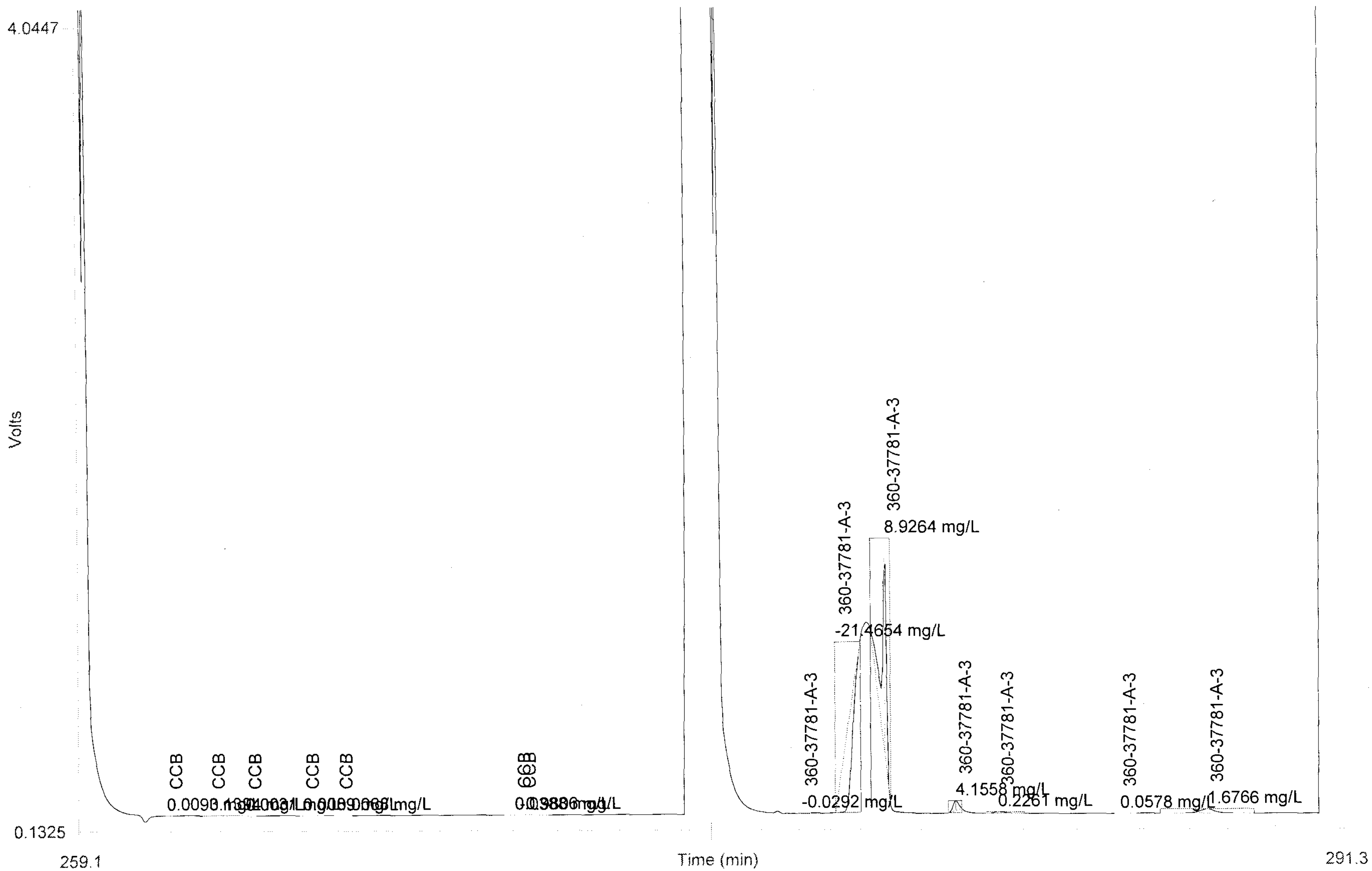
Author: EmerichR

Date : 11/26/2011

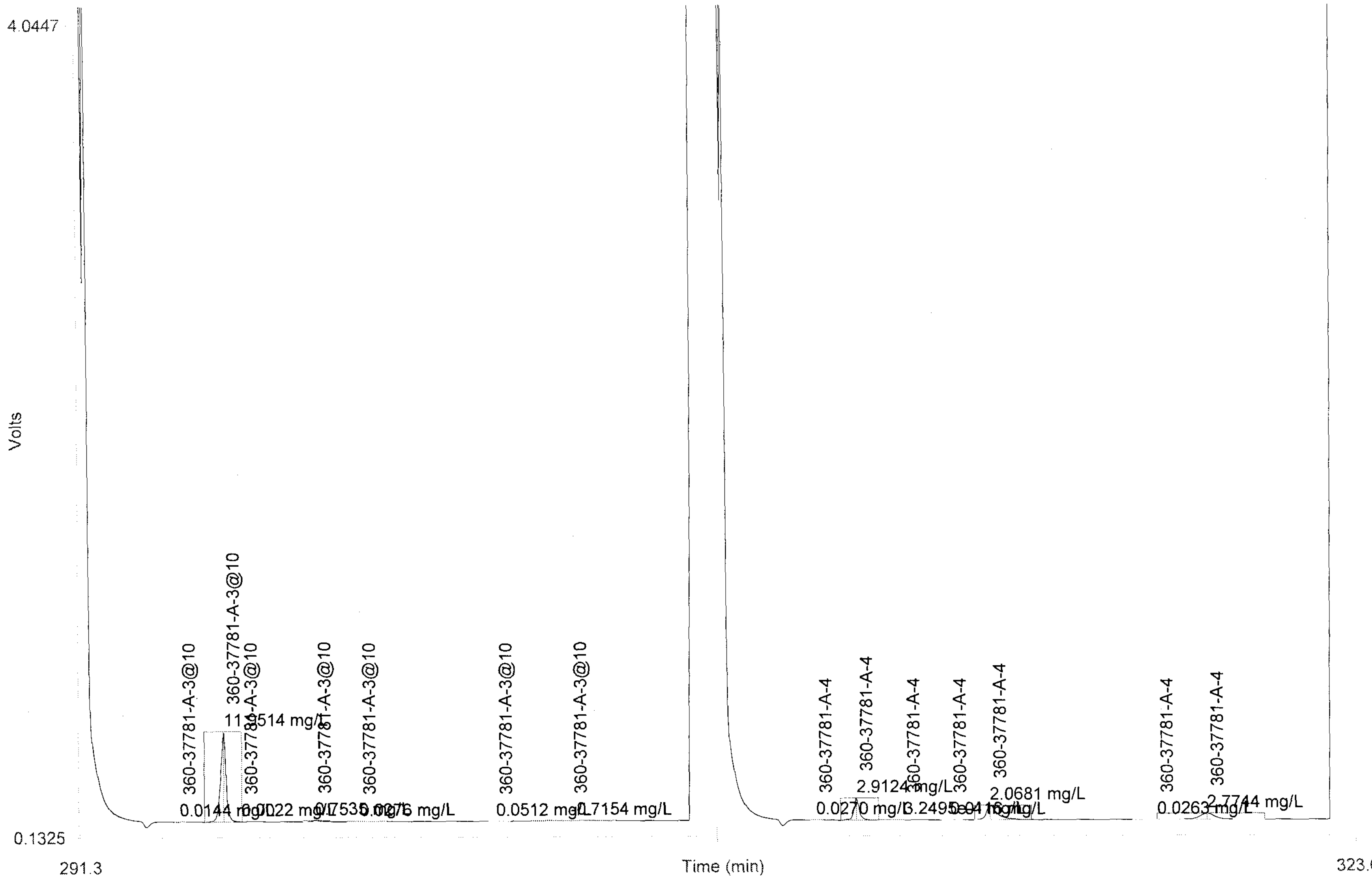
Channel 1 (Anions) : Set 9 of 58



Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 10 of 58

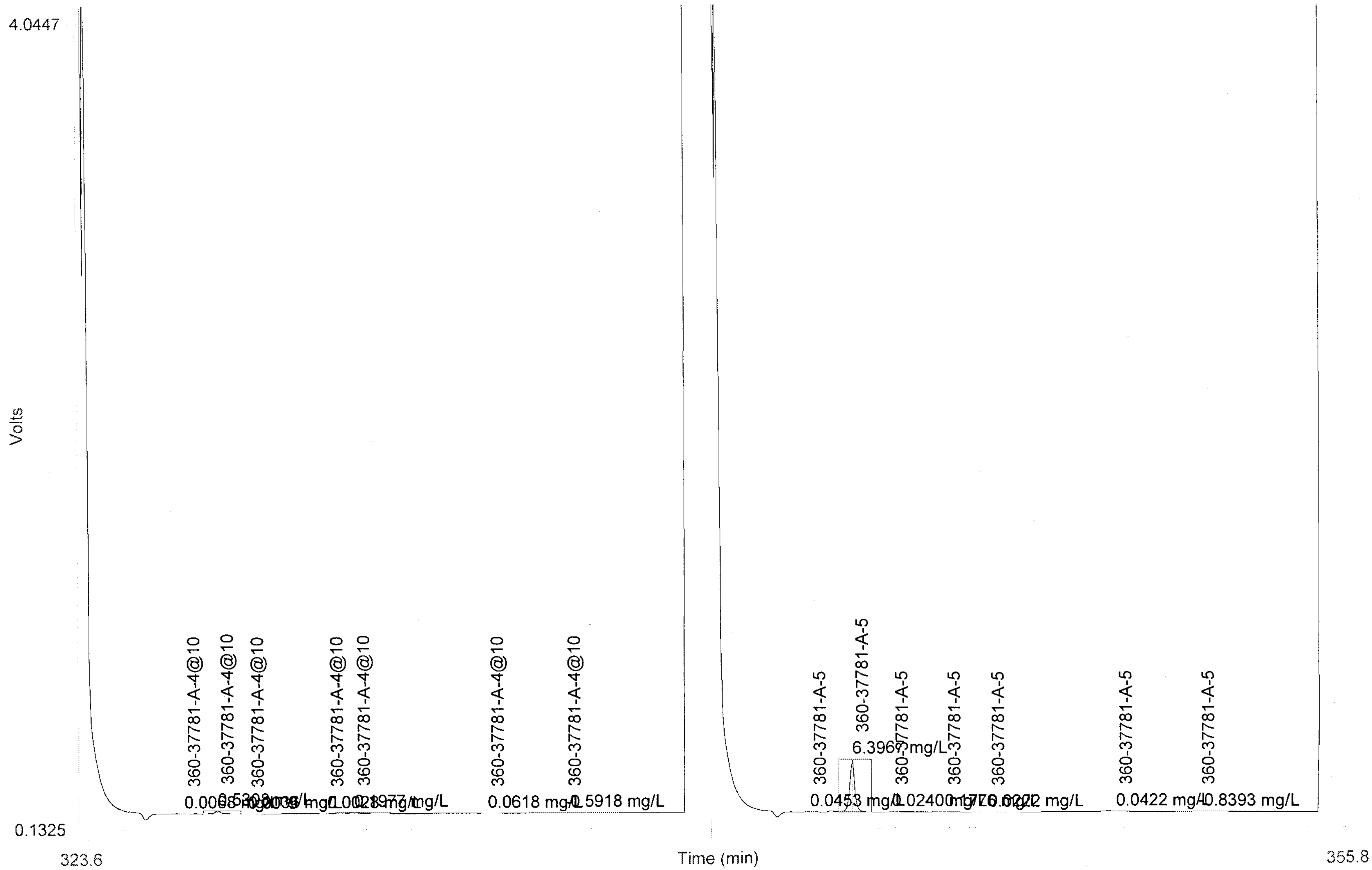


- 14 -

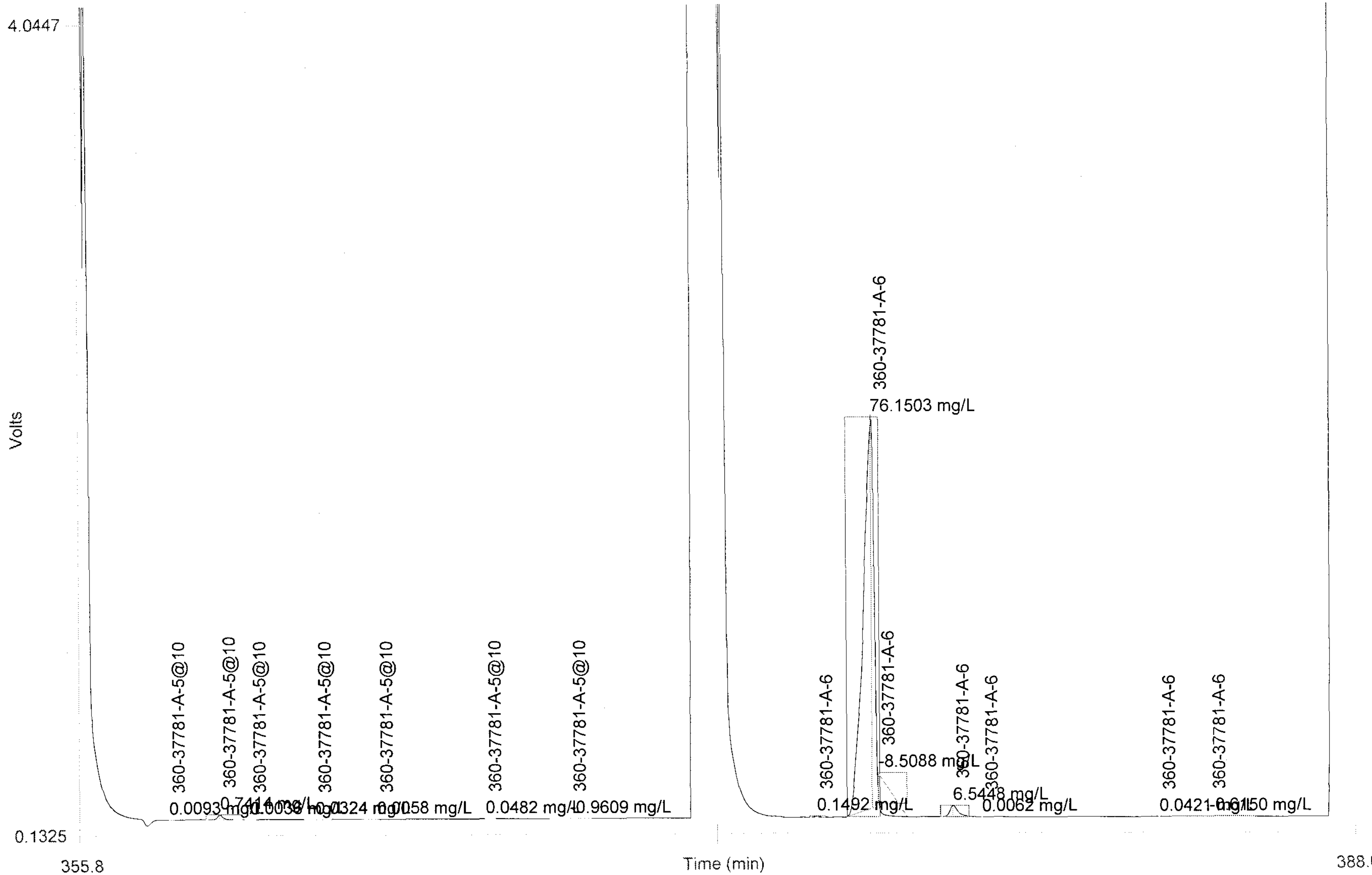
Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 11 of 58



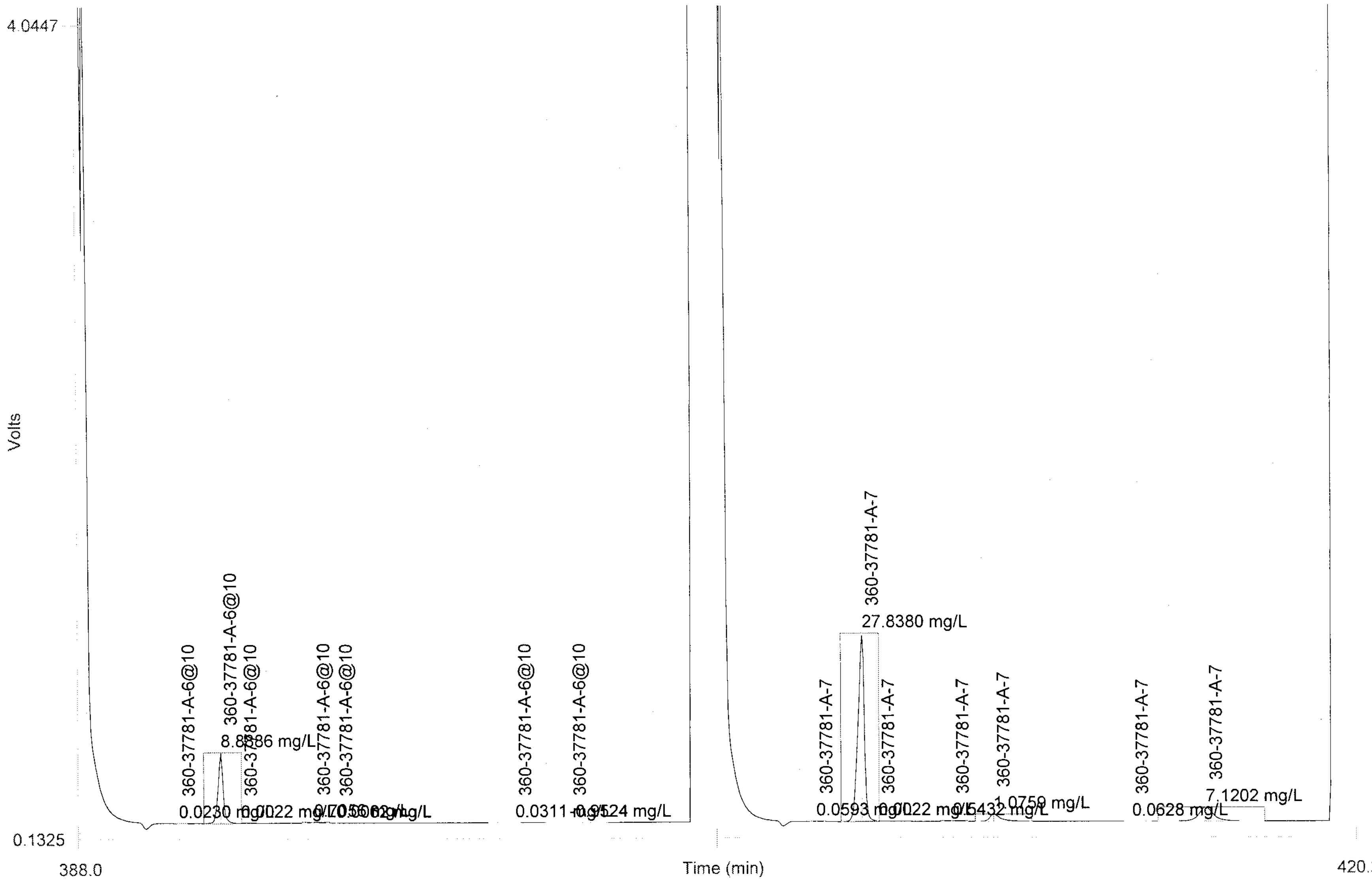
Channel 1 (Anions) : Set 12 of 58



Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 13 of 58



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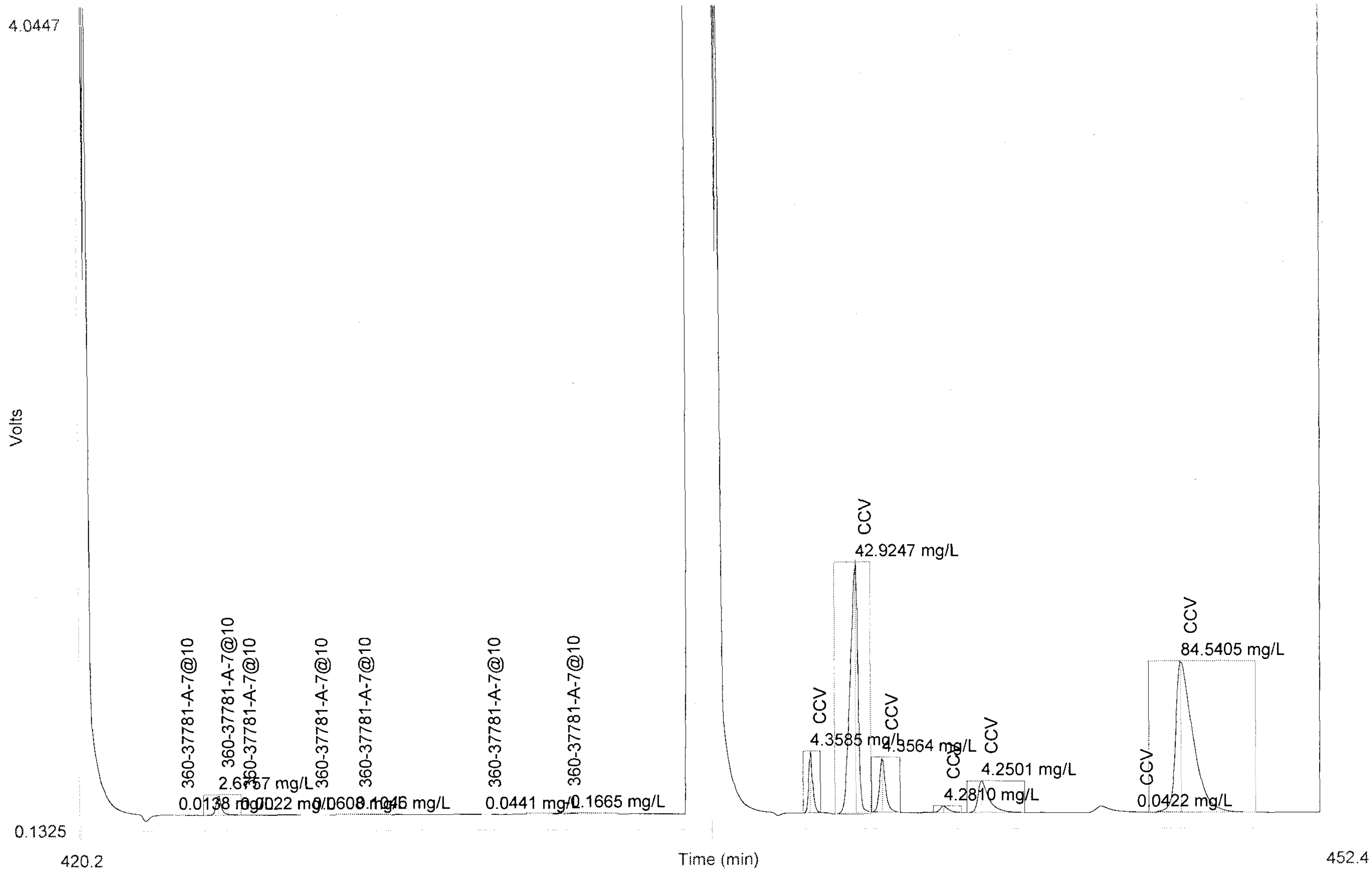
Author: EmerichR

Date : 11/26/2011

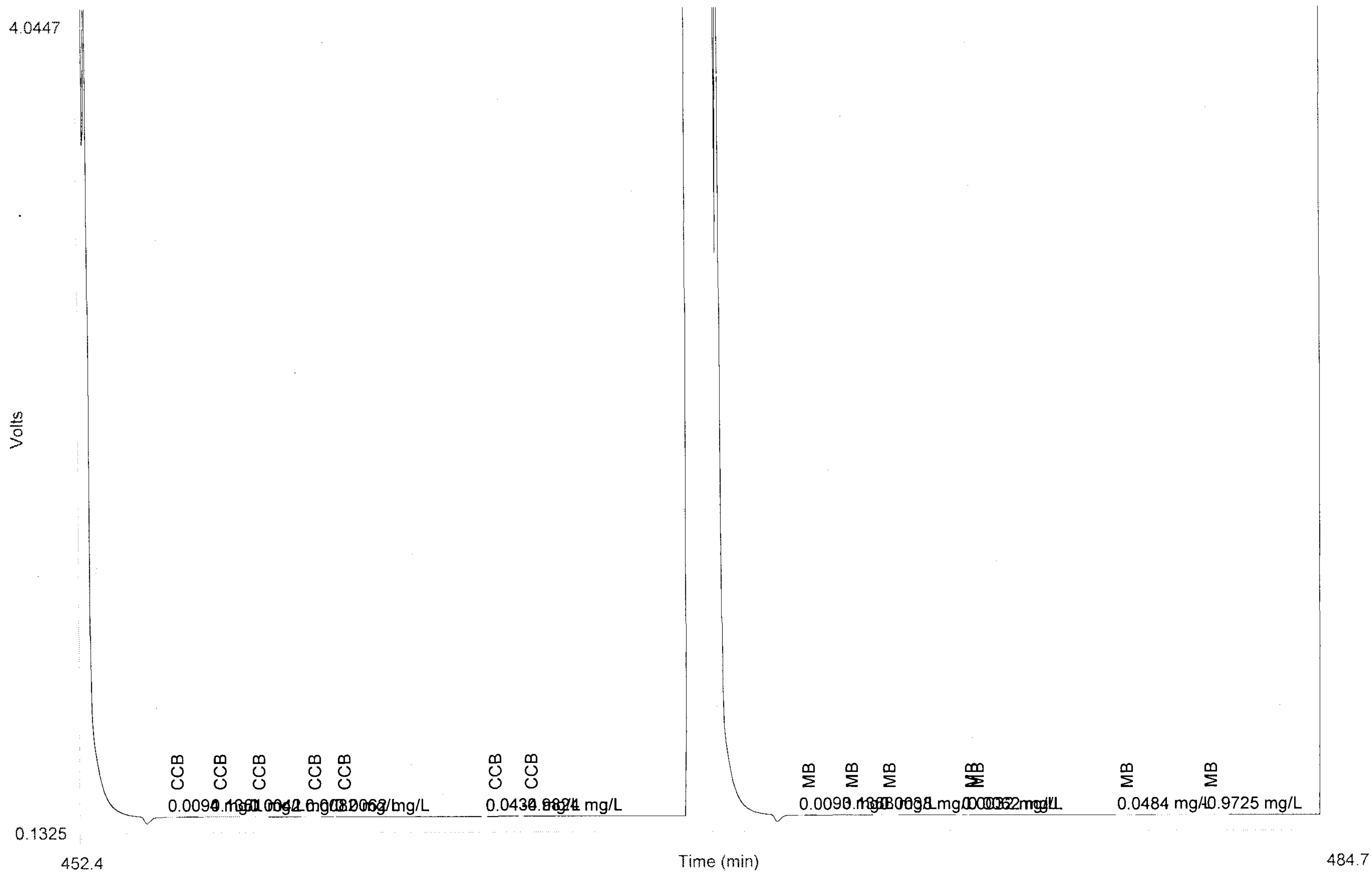
Channel 1 (Anions) : Set 14 of 58



Author: EmerichR

Date : 11/26/2011

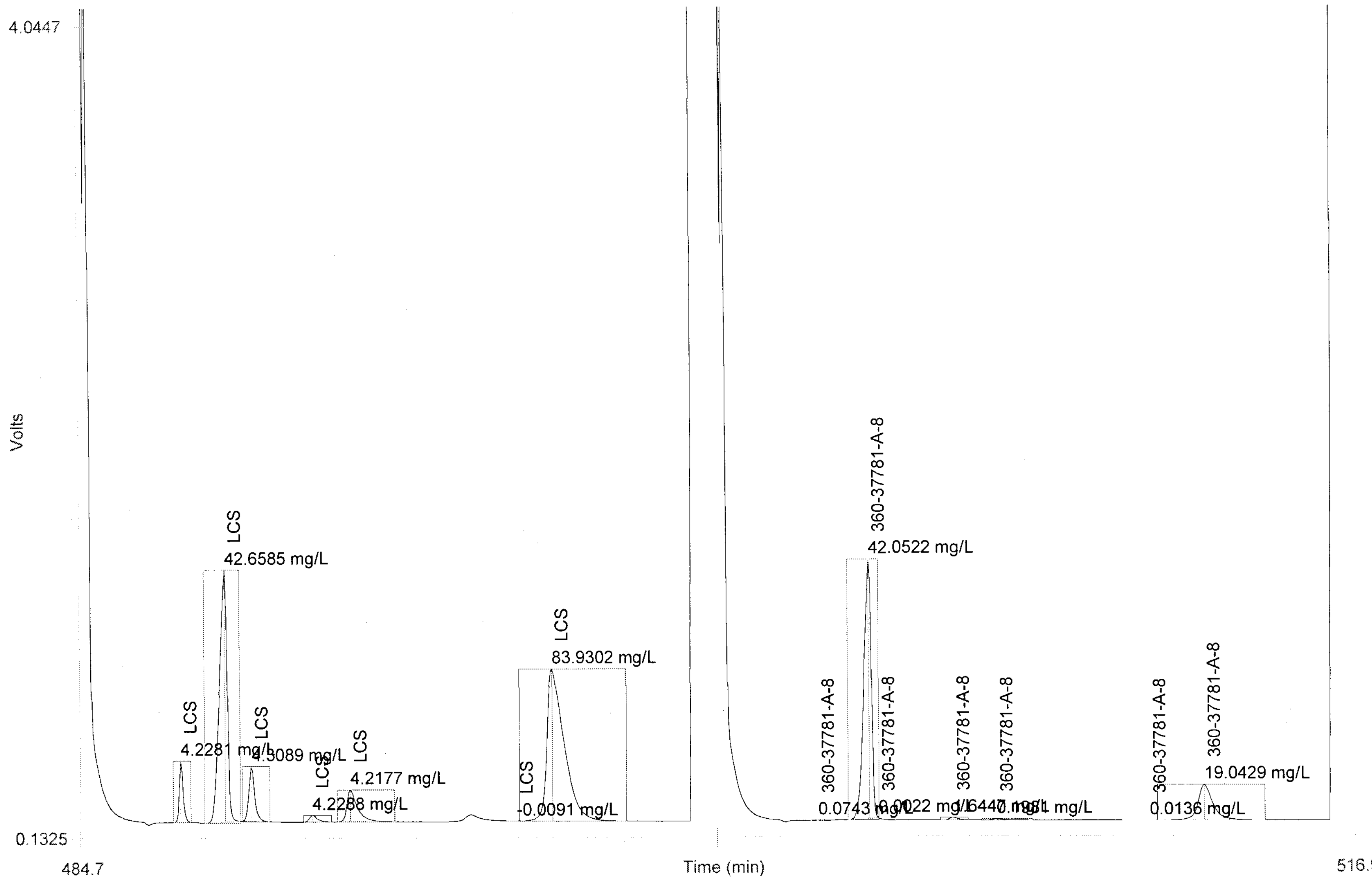
Channel 1 (Anions) : Set 15 of 58



Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 16 of 58



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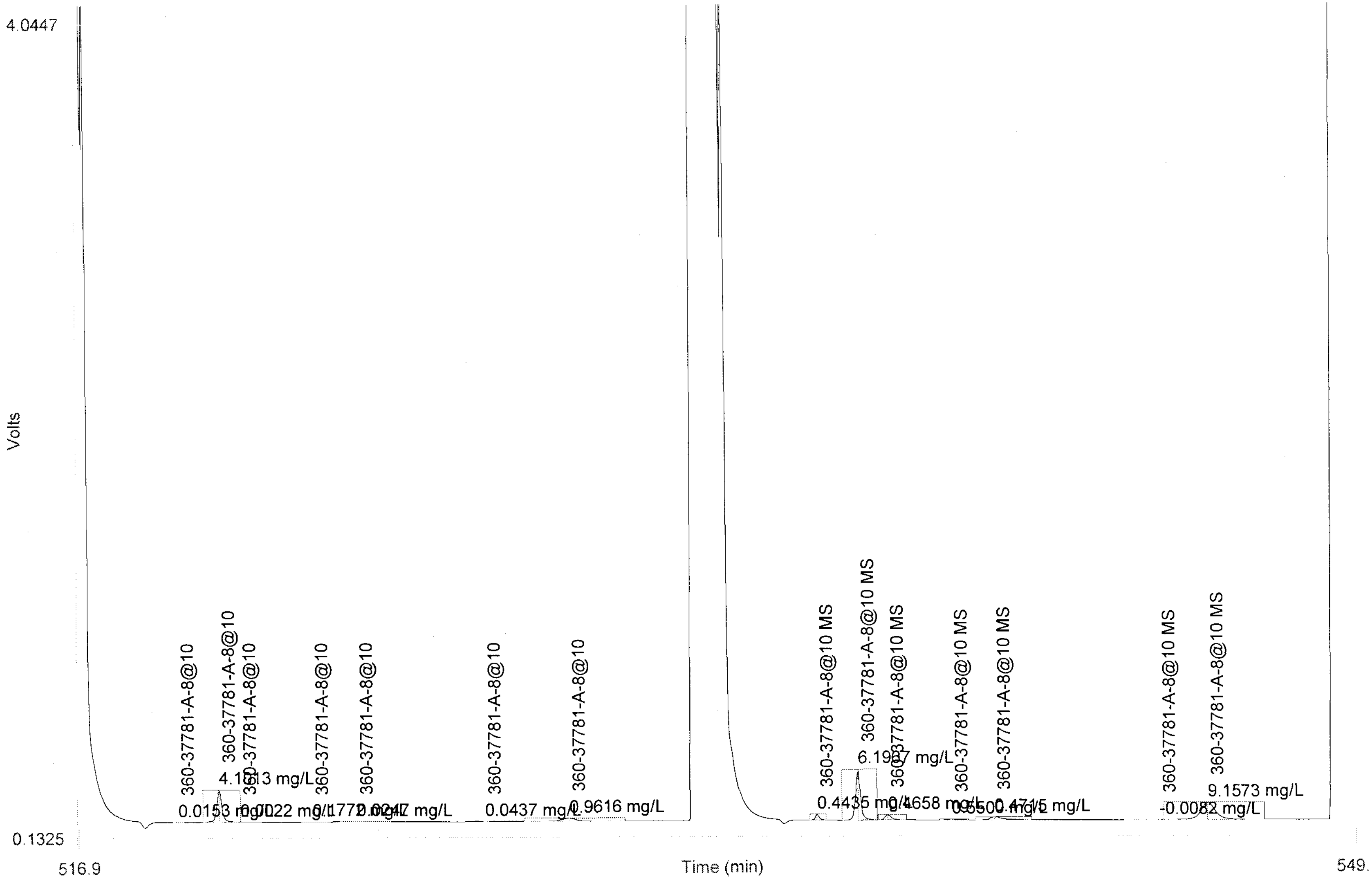
Author: EmerichR

Date : 11/26/2011

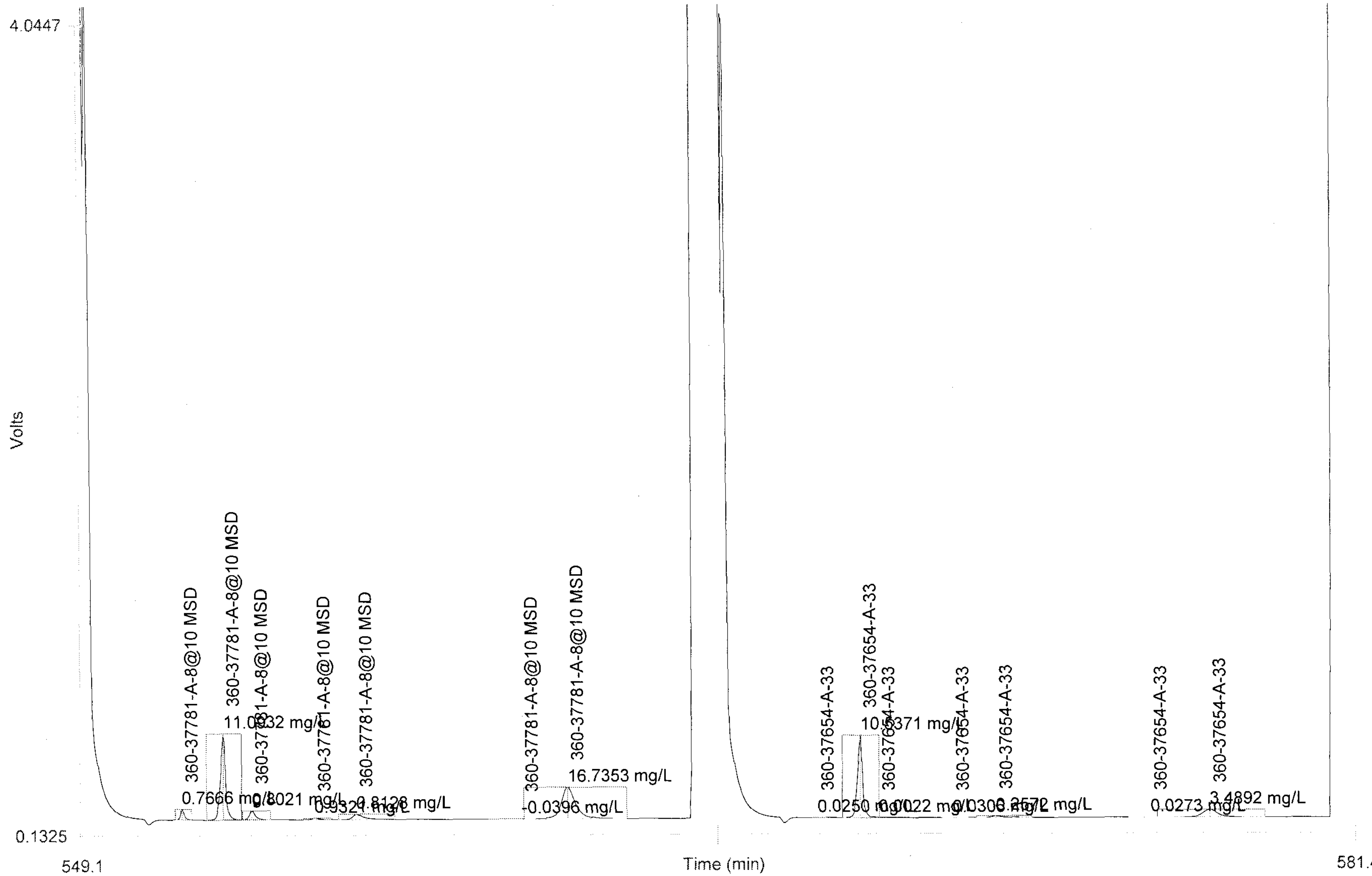
Channel 1 (Anions) : Set 17 of 58



Author: EmerichR

Date : 11/26/2011

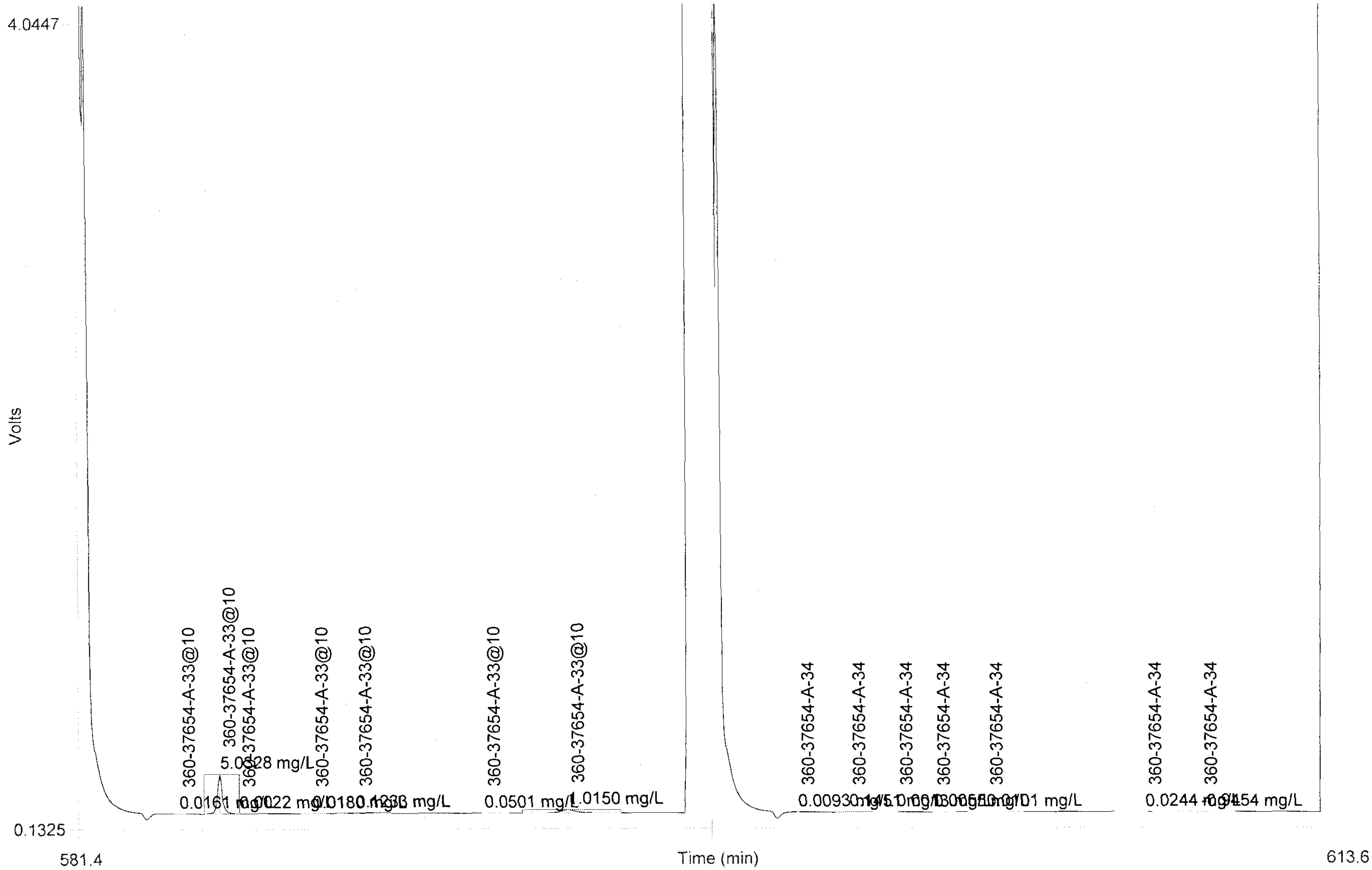
Channel 1 (Anions) : Set 18 of 58



Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 19 of 58



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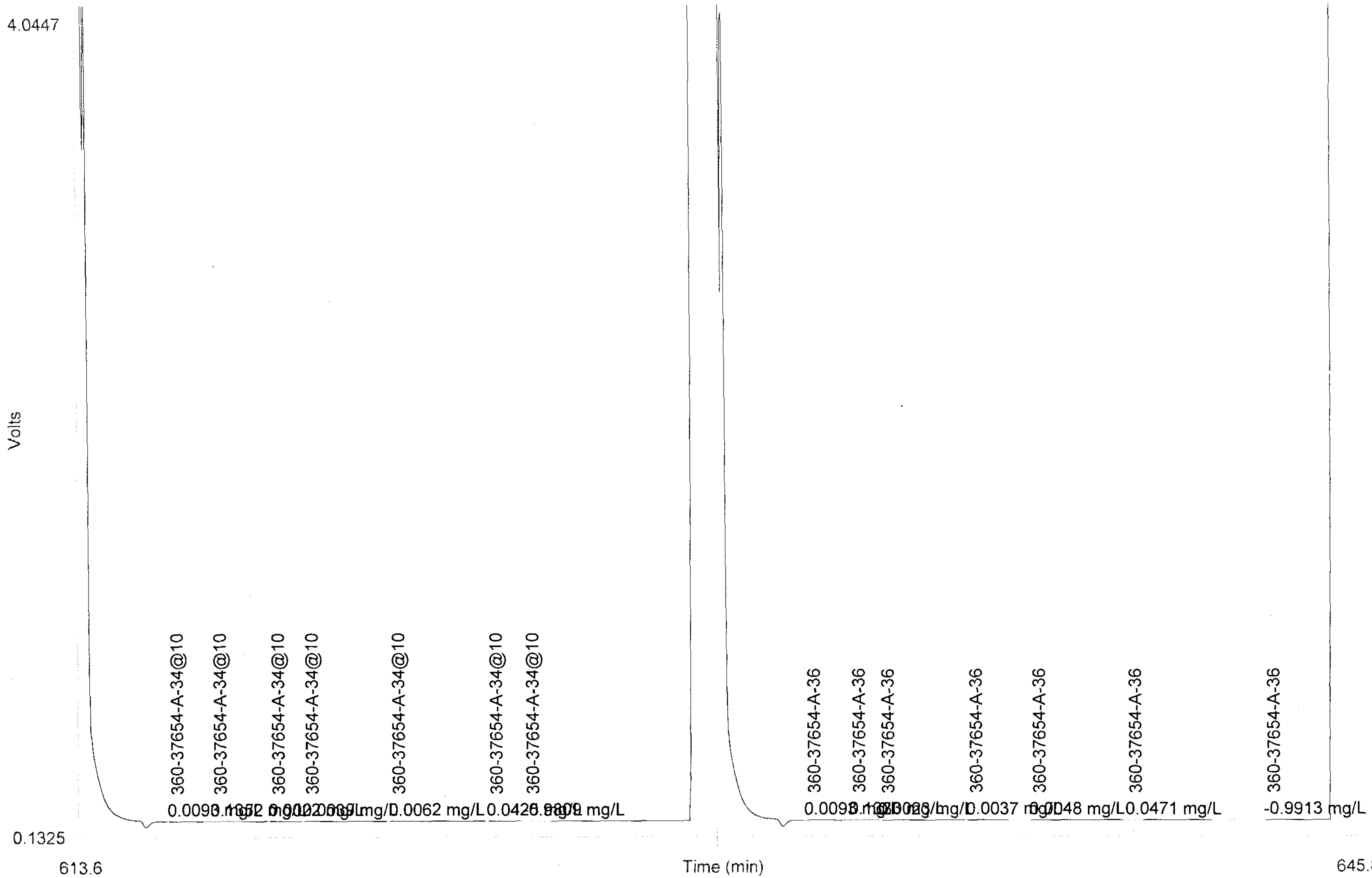
Author: EmerichR

Date : 11/26/2011

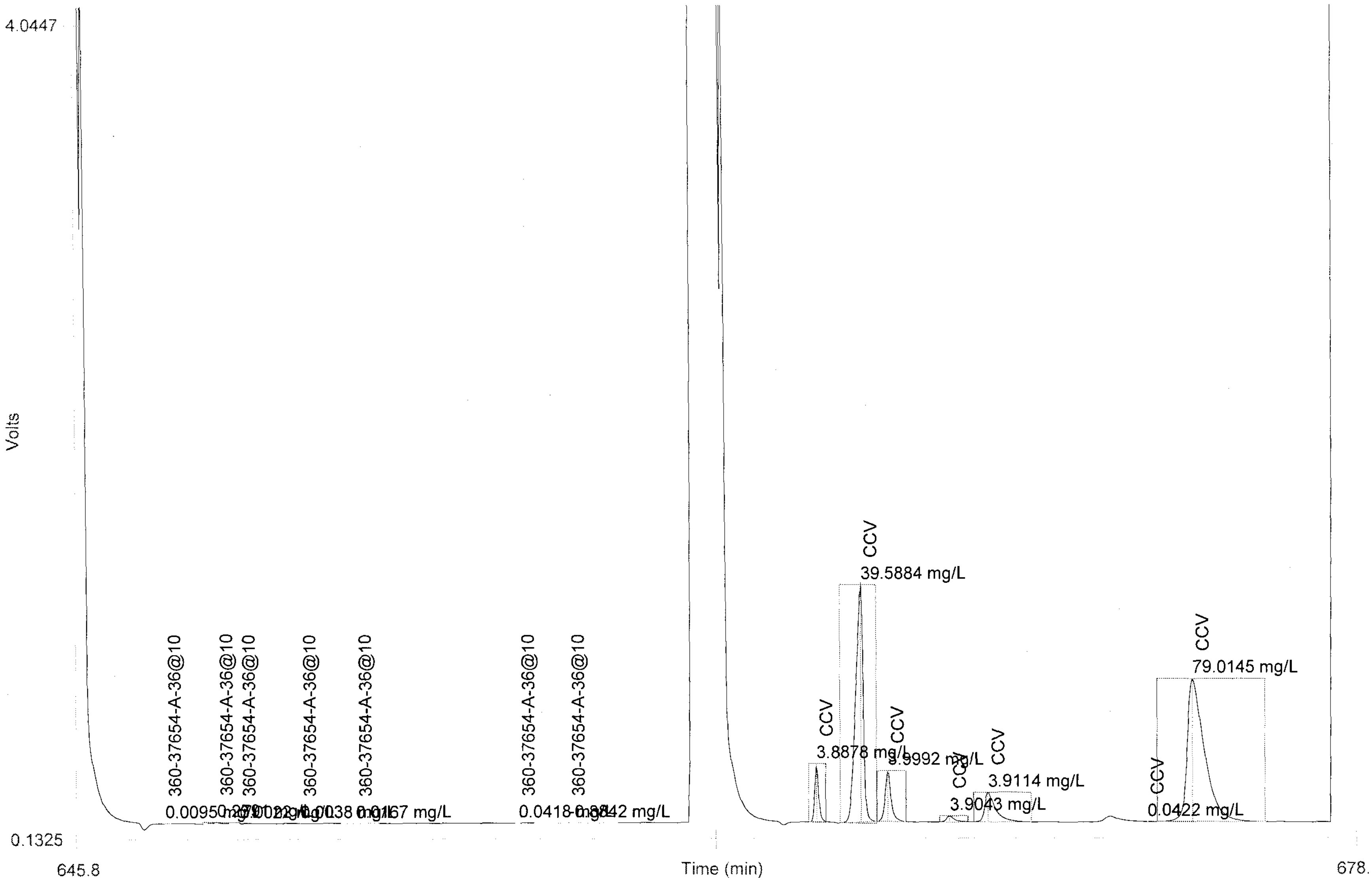
Channel 1 (Anions) : Set 20 of 58



Author: EmerichR

Date : 11/26/2011

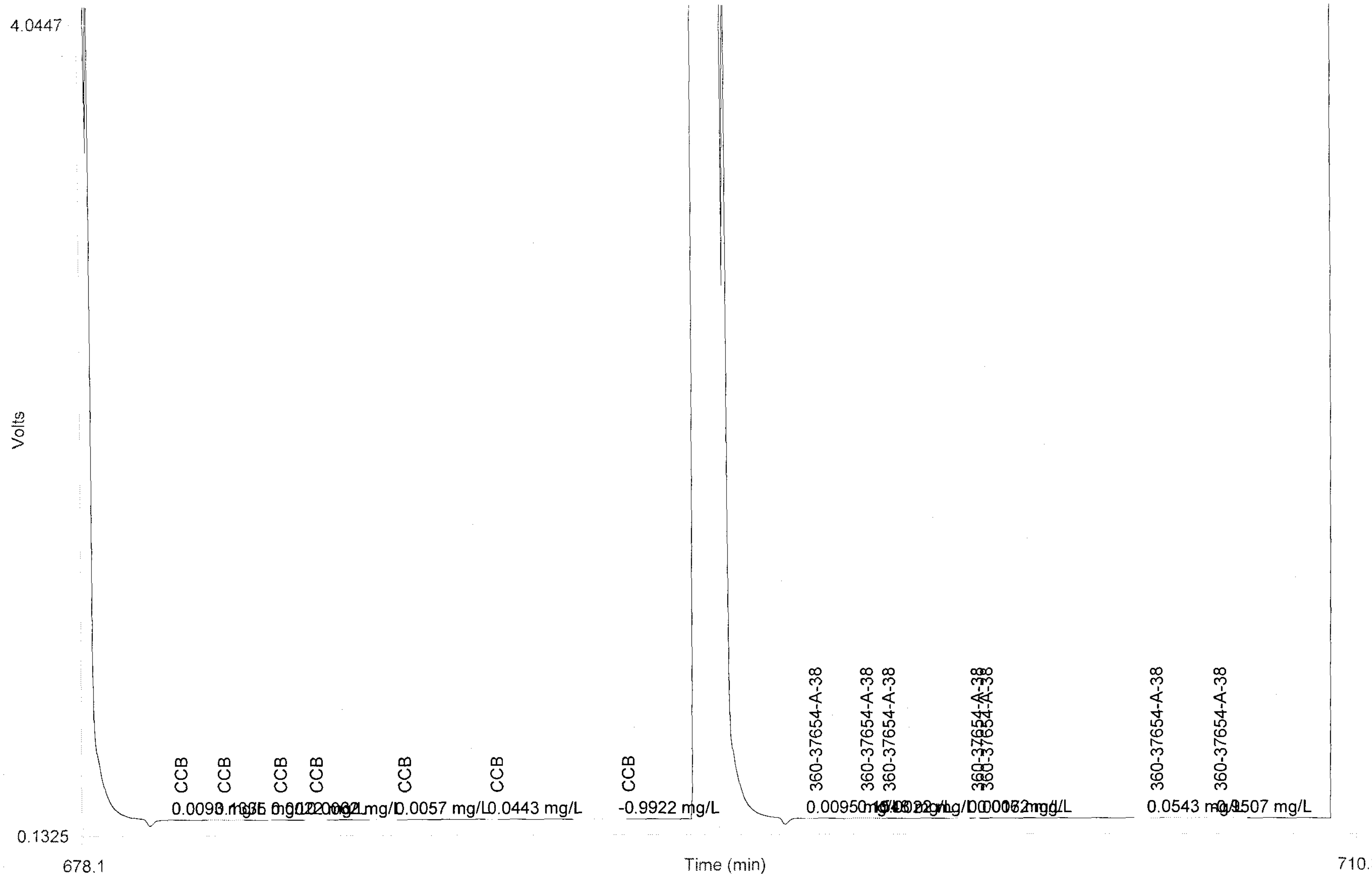
Channel 1 (Anions) : Set 21 of 58



Author: EmerichR

Date : 11/26/2011

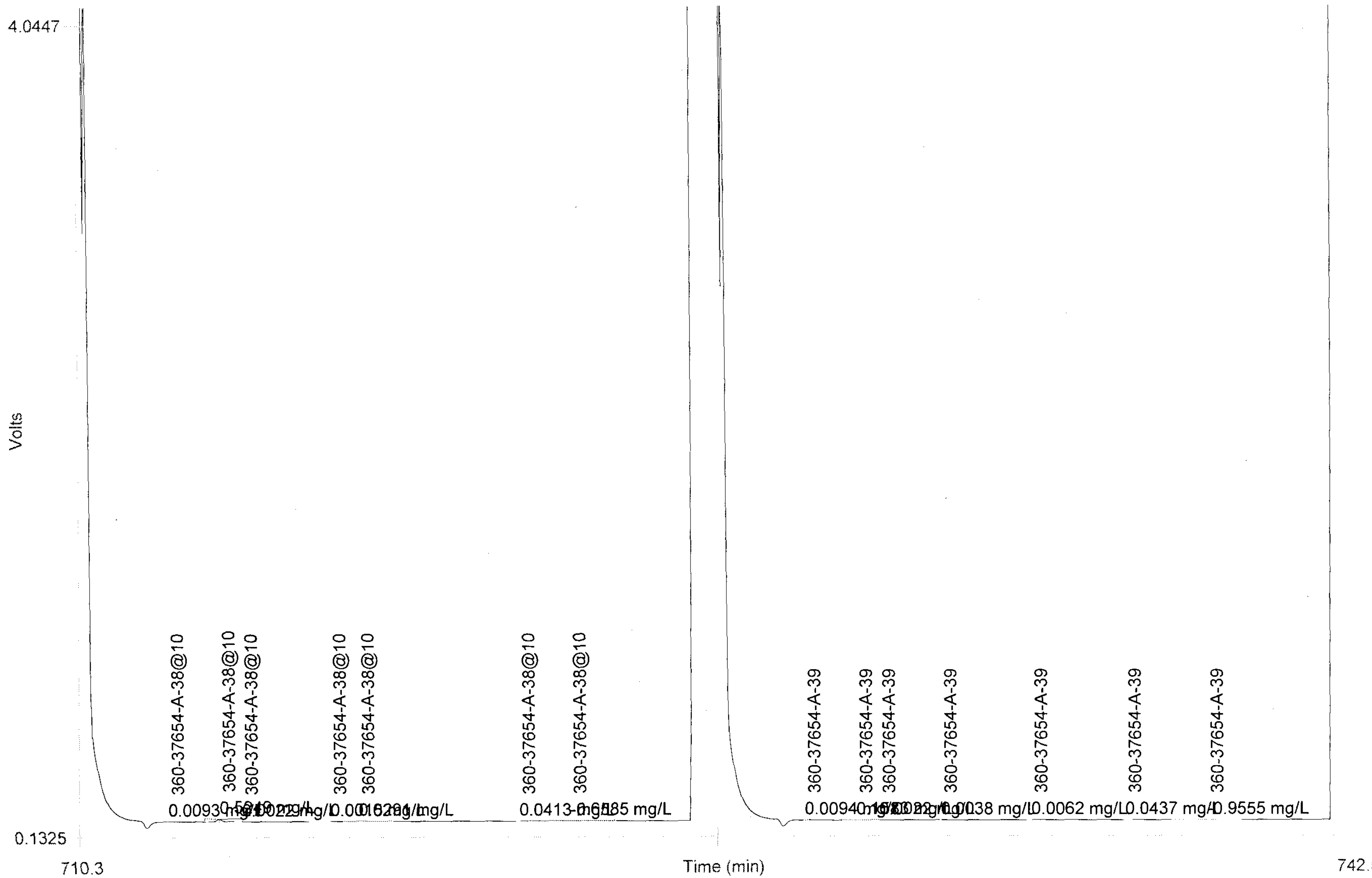
Channel 1 (Anions) : Set 22 of 58



Author: EmerichR

Date : 11/26/2011

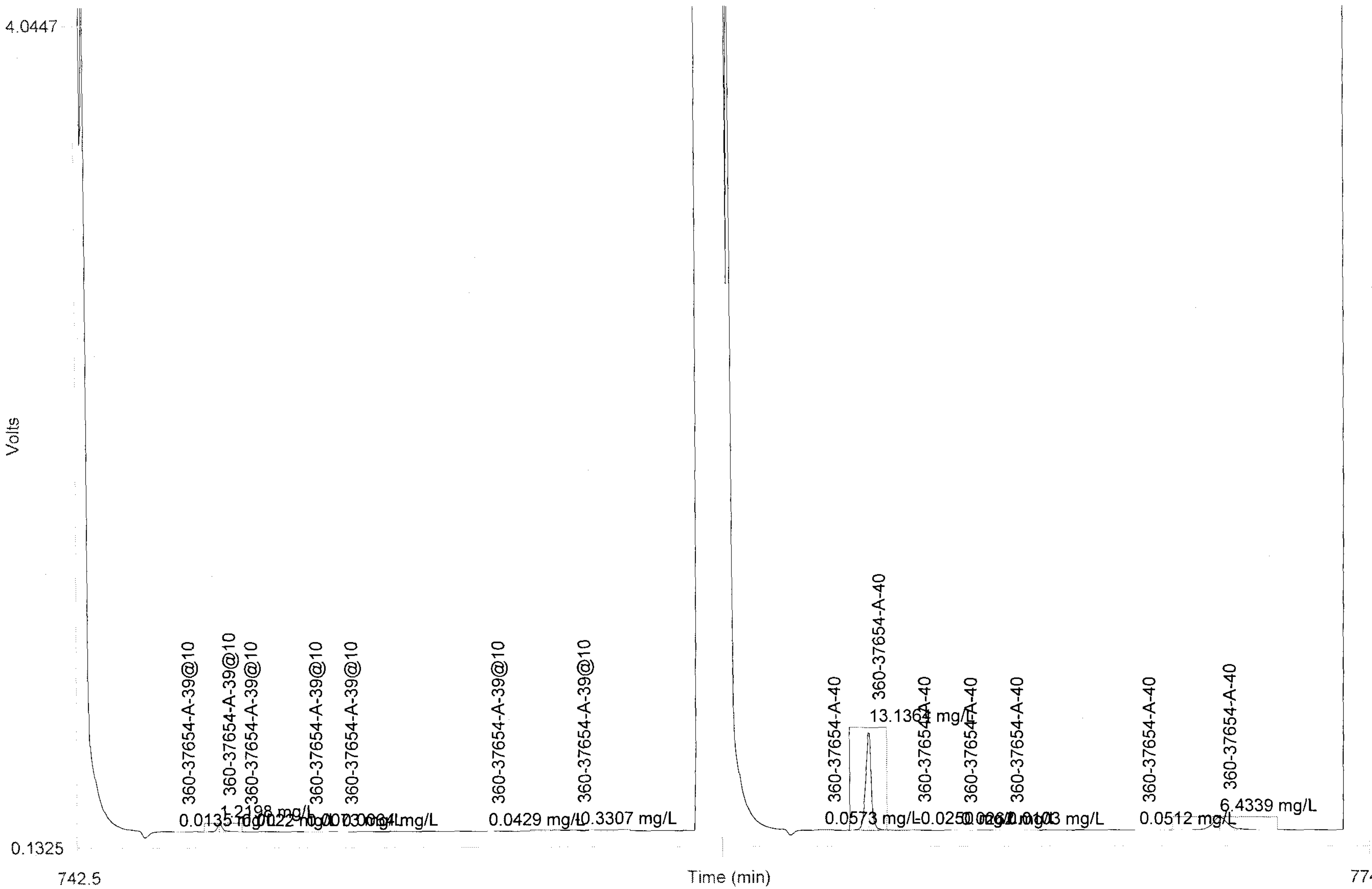
Channel 1 (Anions) : Set 23 of 58



Author: EmerichR

Date : 11/26/2011

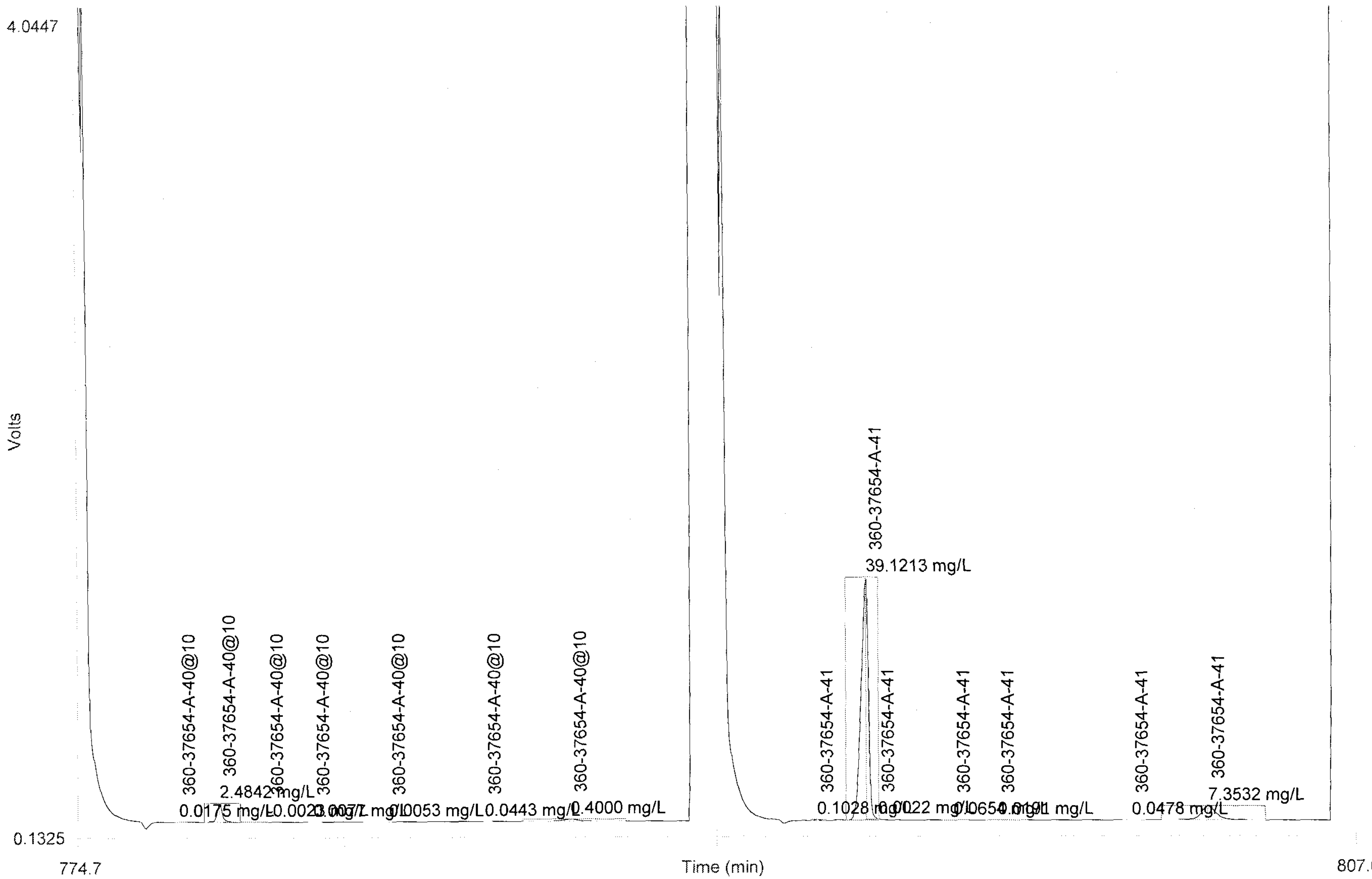
Channel 1 (Anions) : Set 24 of 58



Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 25 of 58



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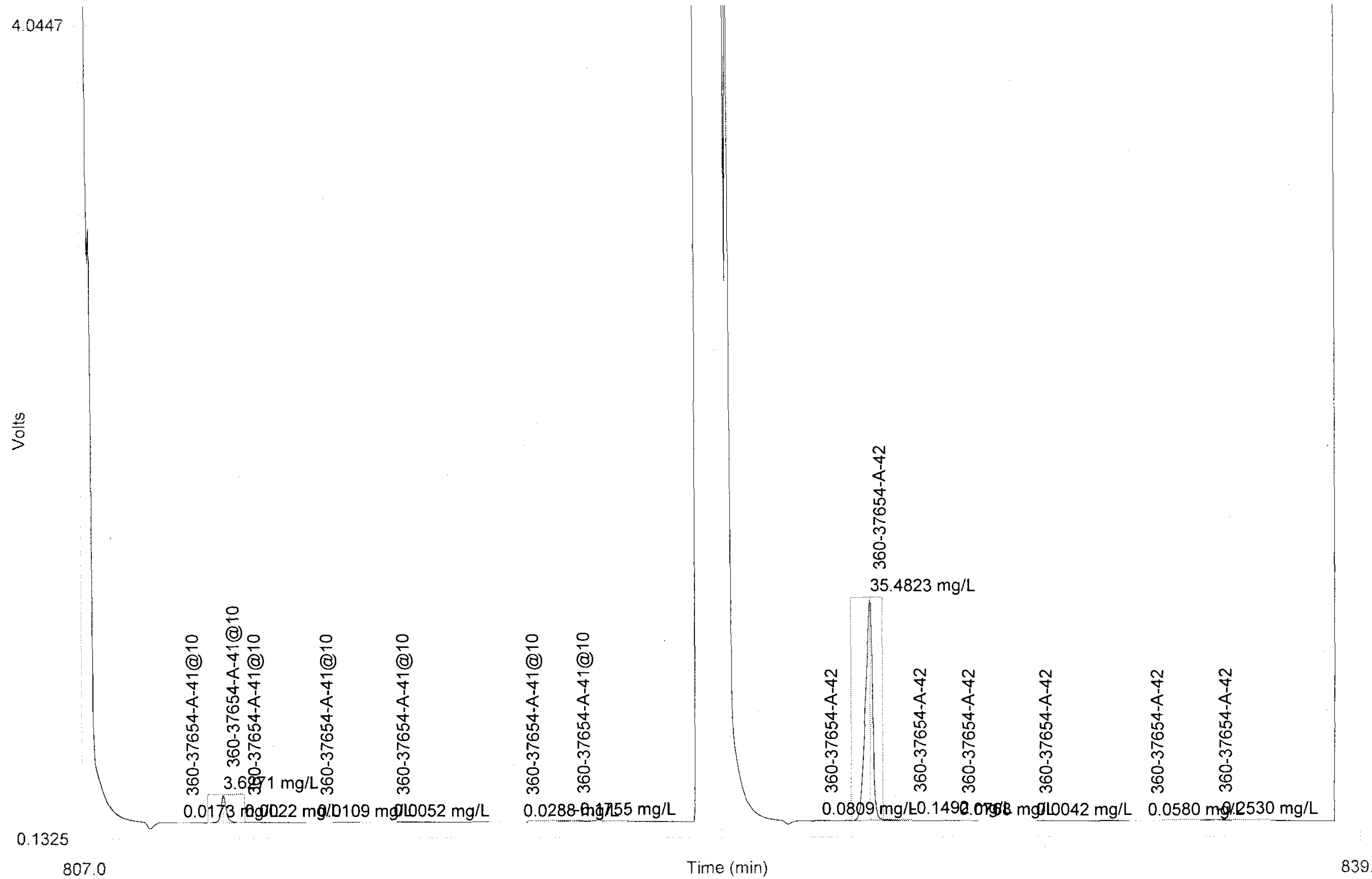
Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 26 of 58

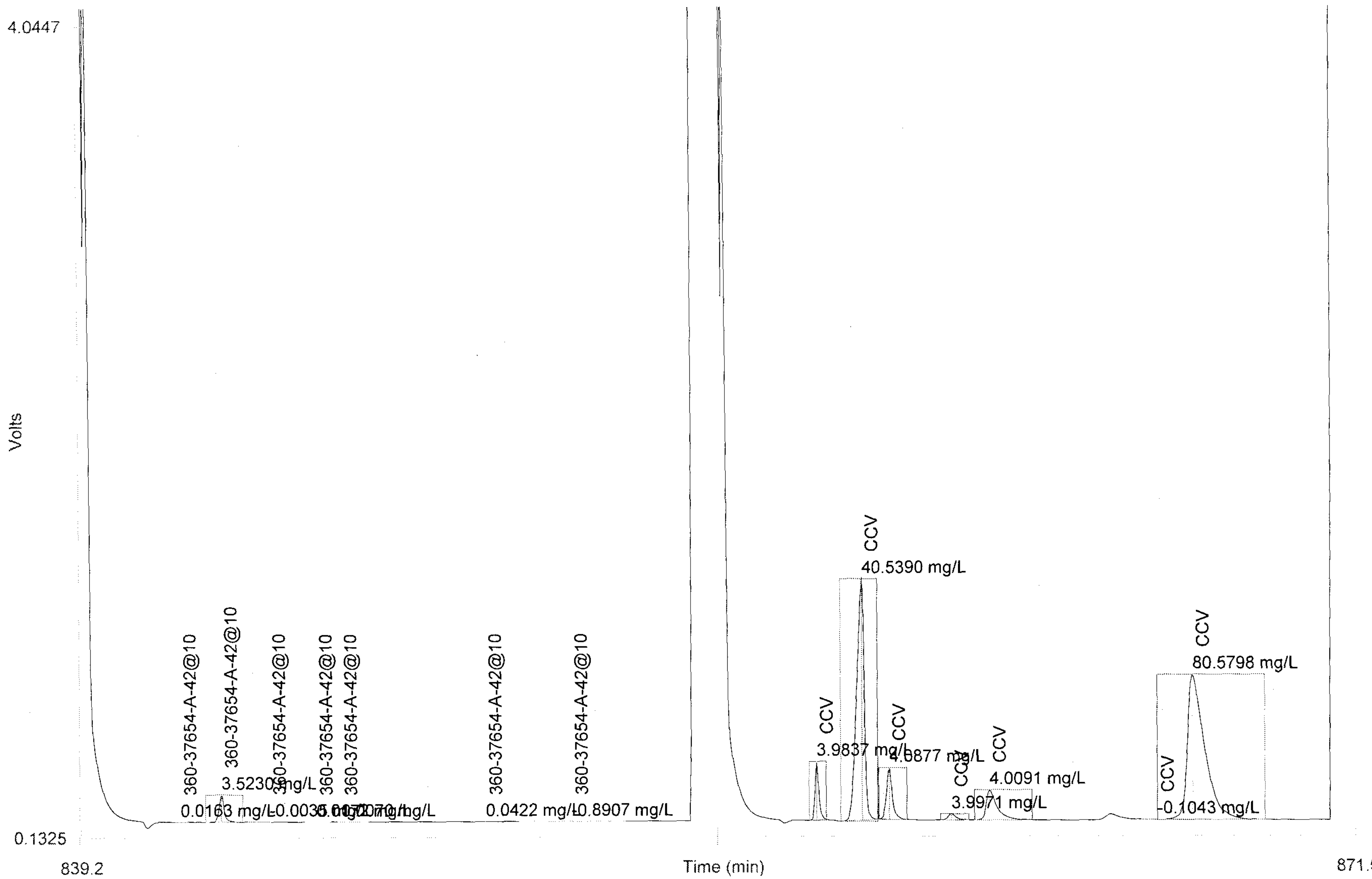


- 30 -

Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 27 of 58



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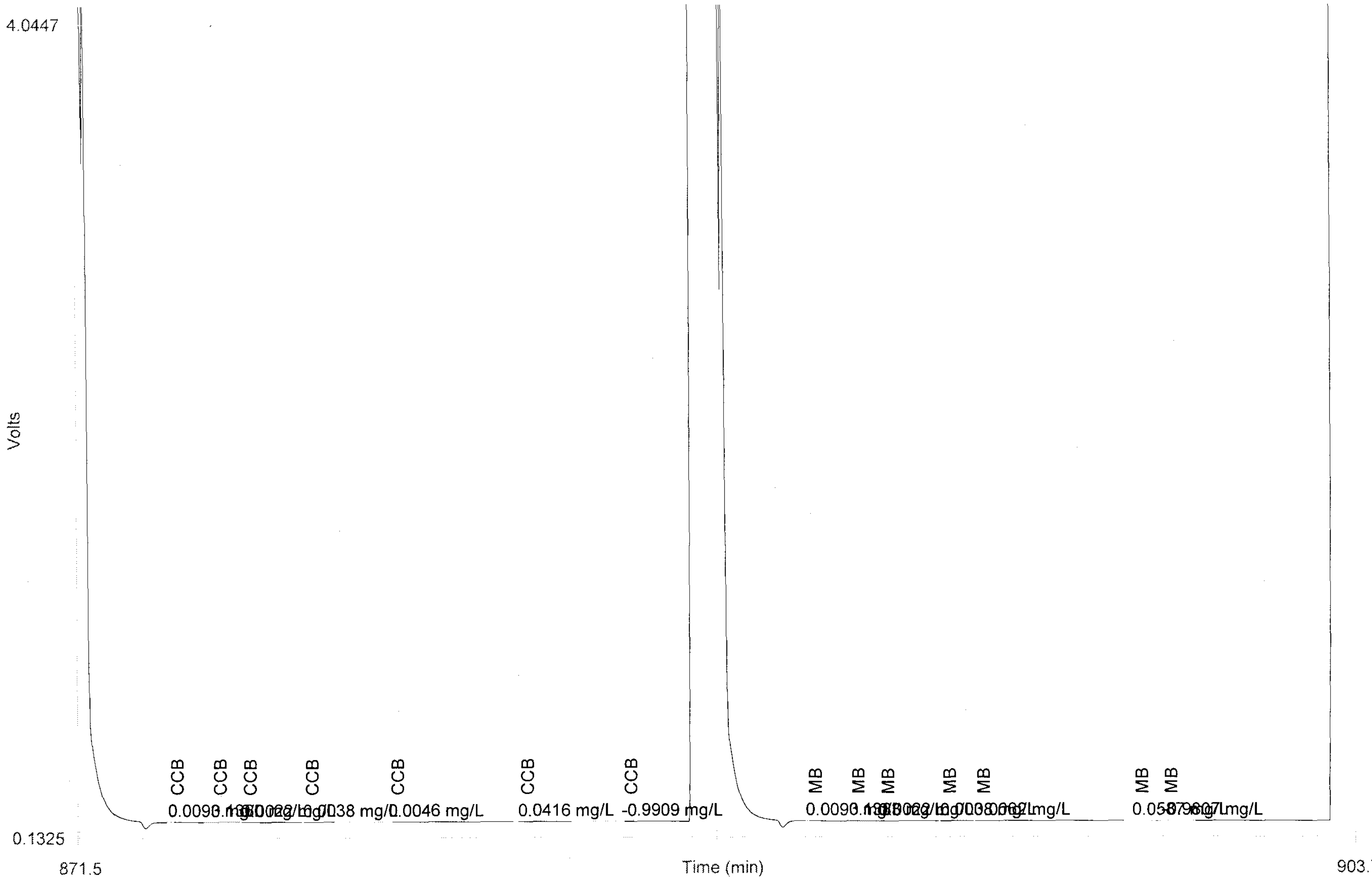
Author: EmerichR

Date : 11/26/2011

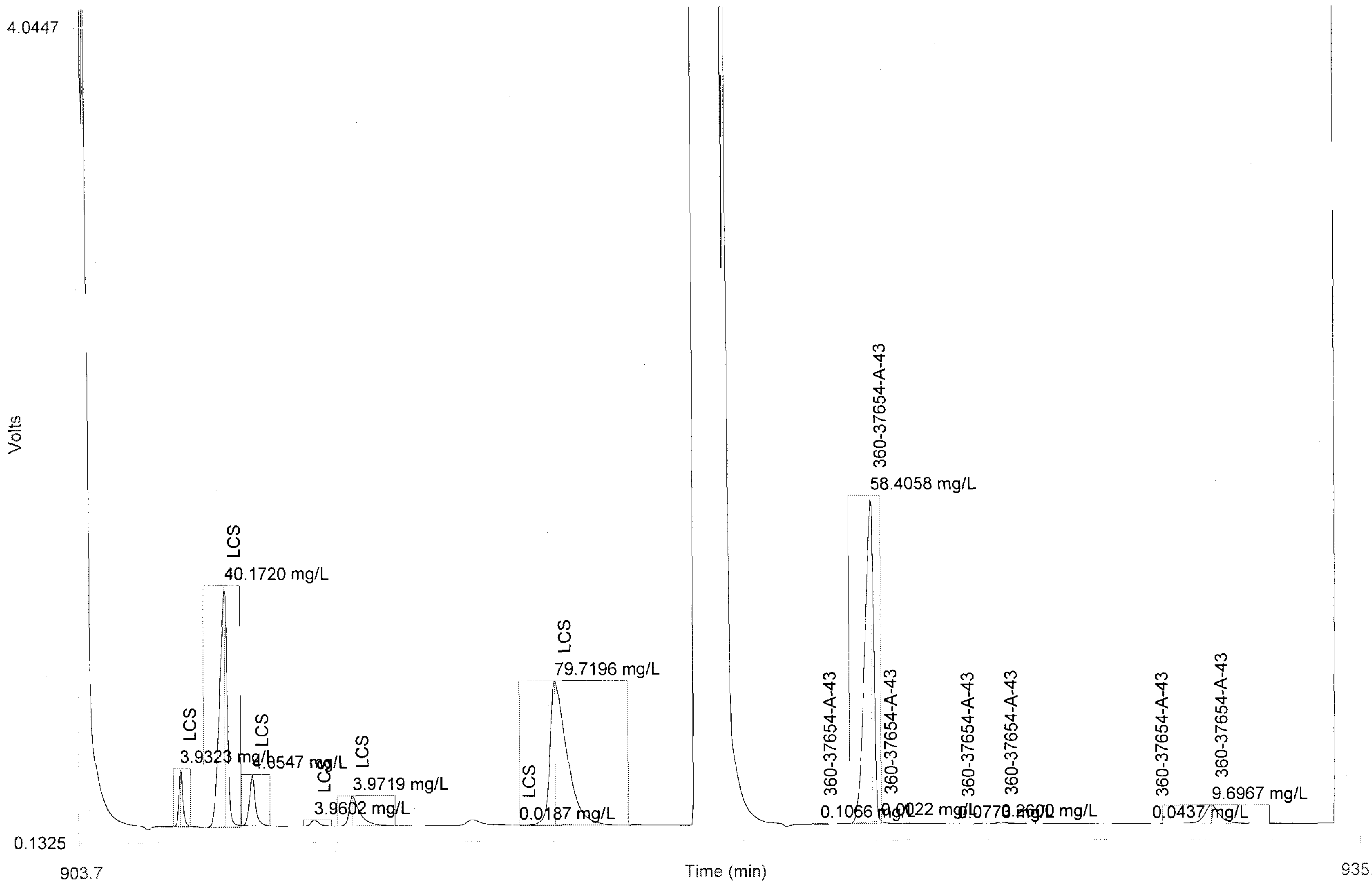
Channel 1 (Anions) : Set 28 of 58



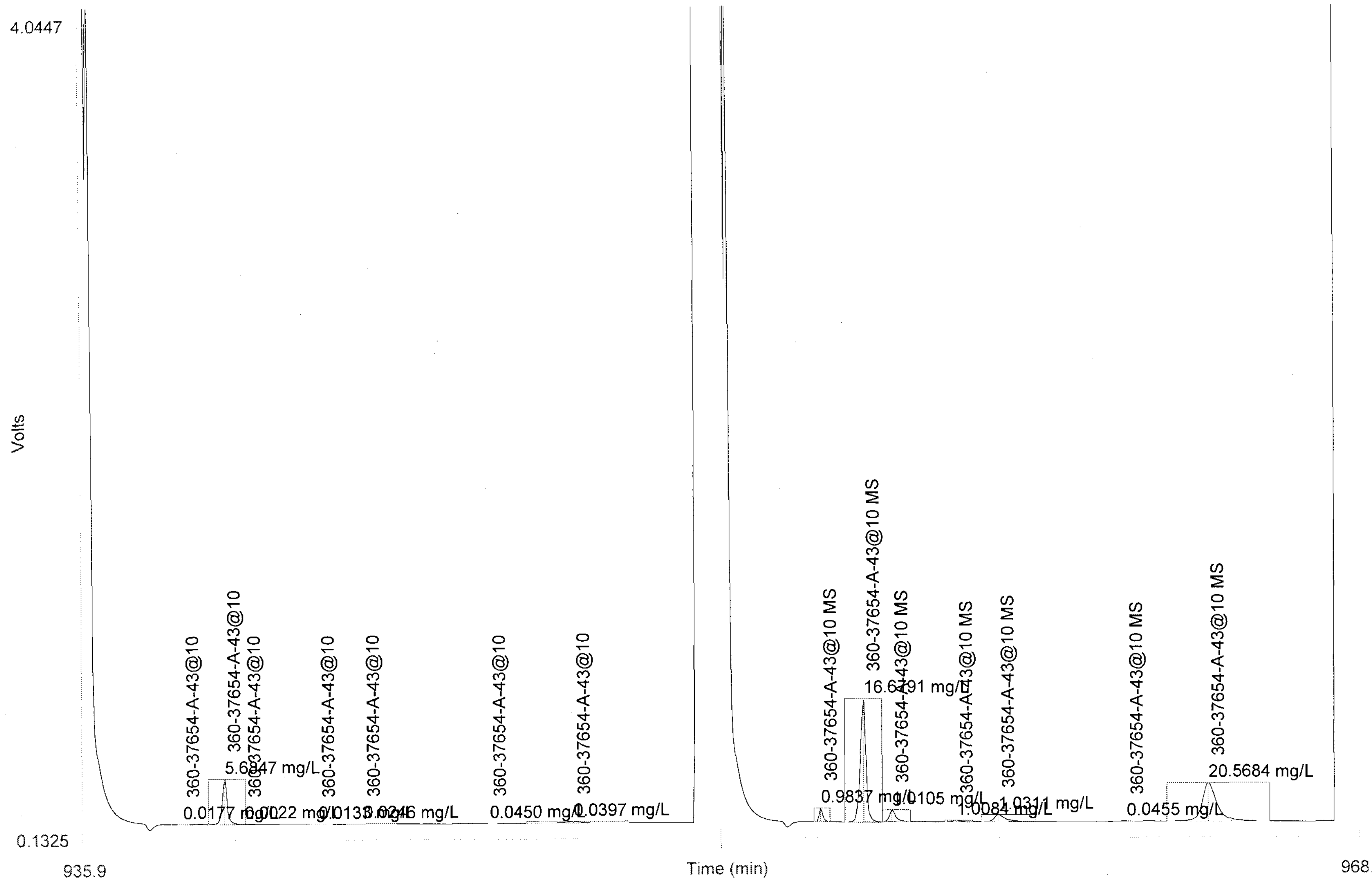
Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 29 of 58



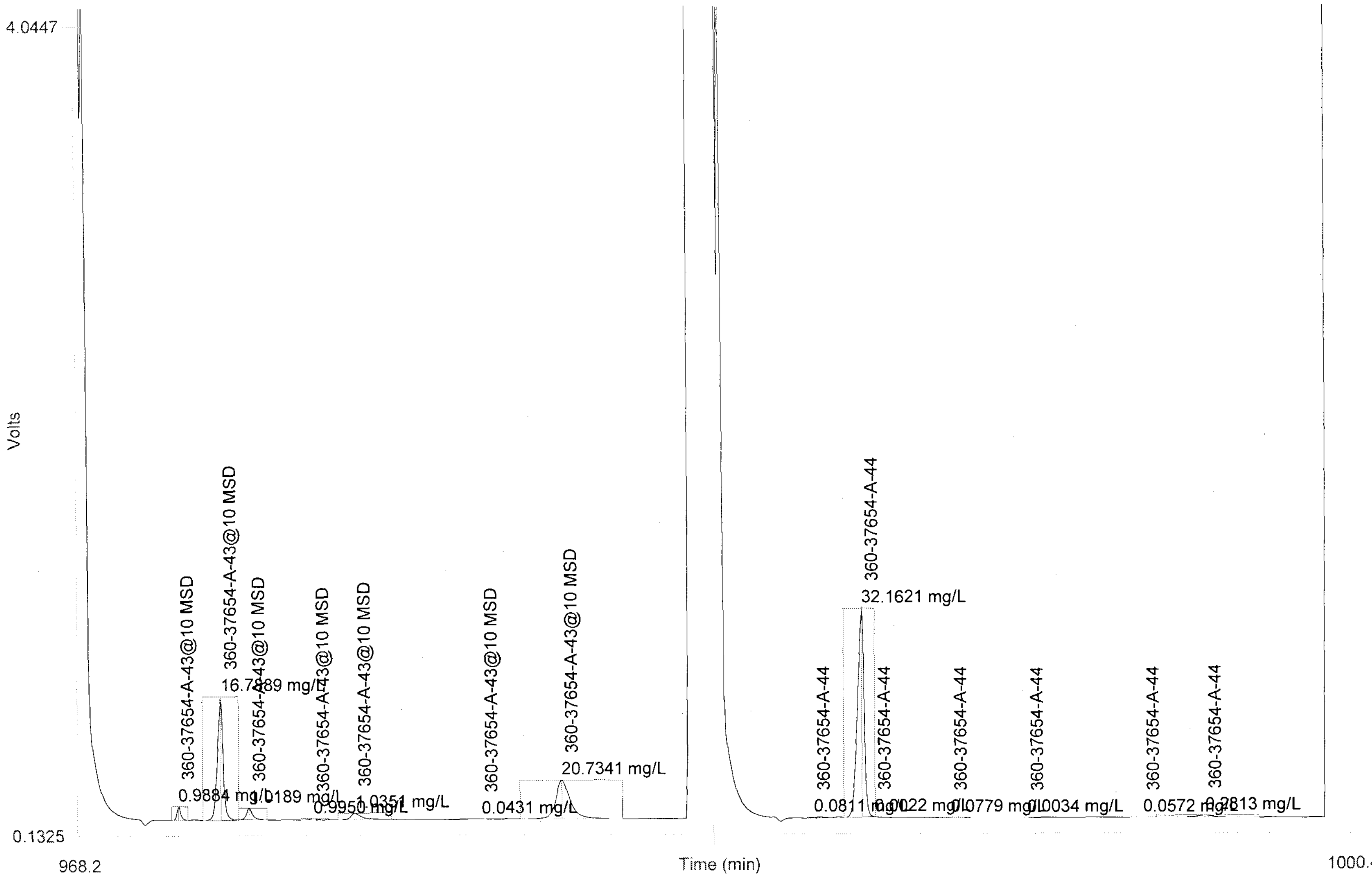
Channel 1 (Anions) : Set 30 of 58



Author: EmerichR

Date : 11/26/2011

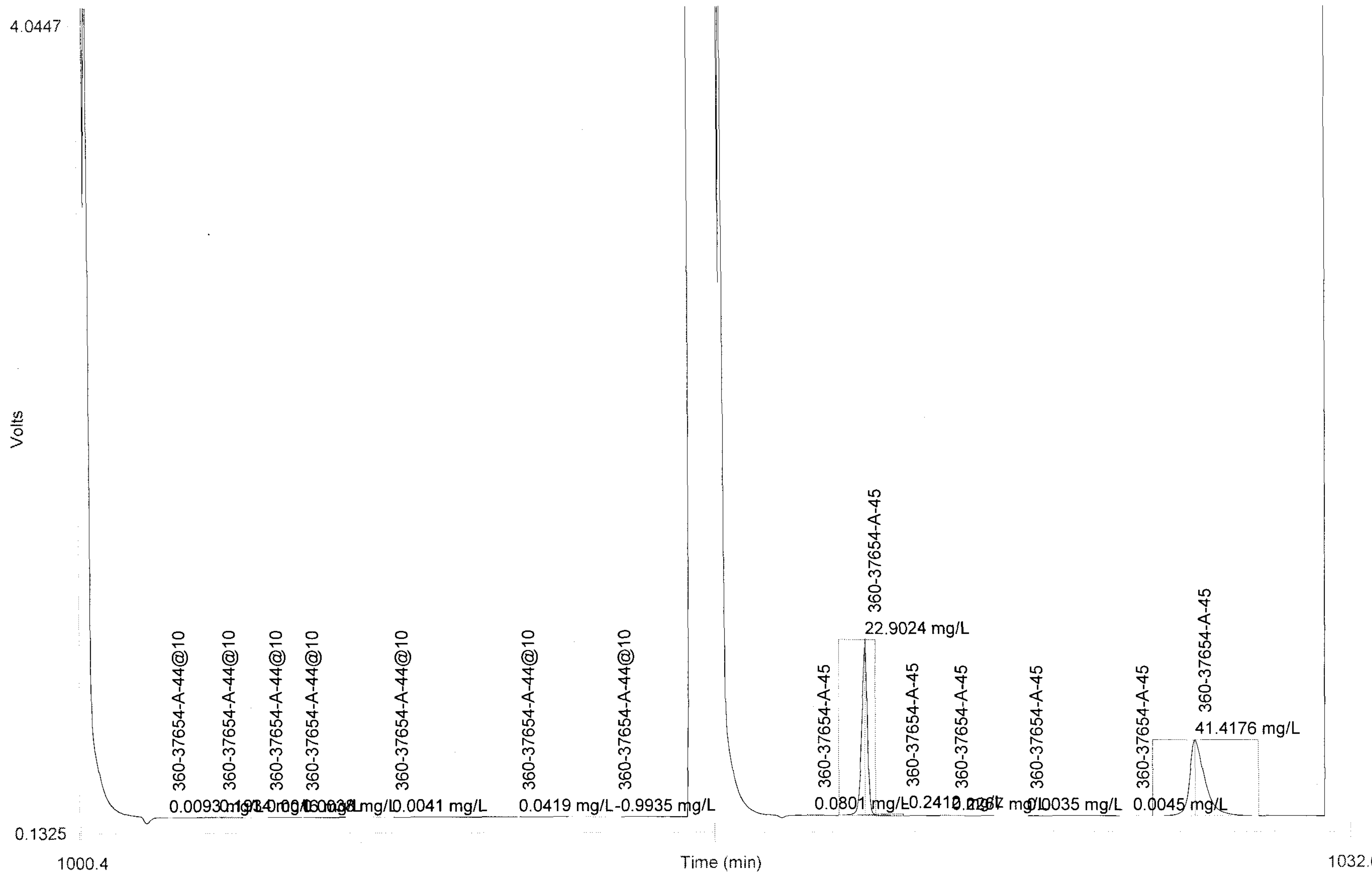
Channel 1 (Anions) : Set 31 of 58



Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 32 of 58



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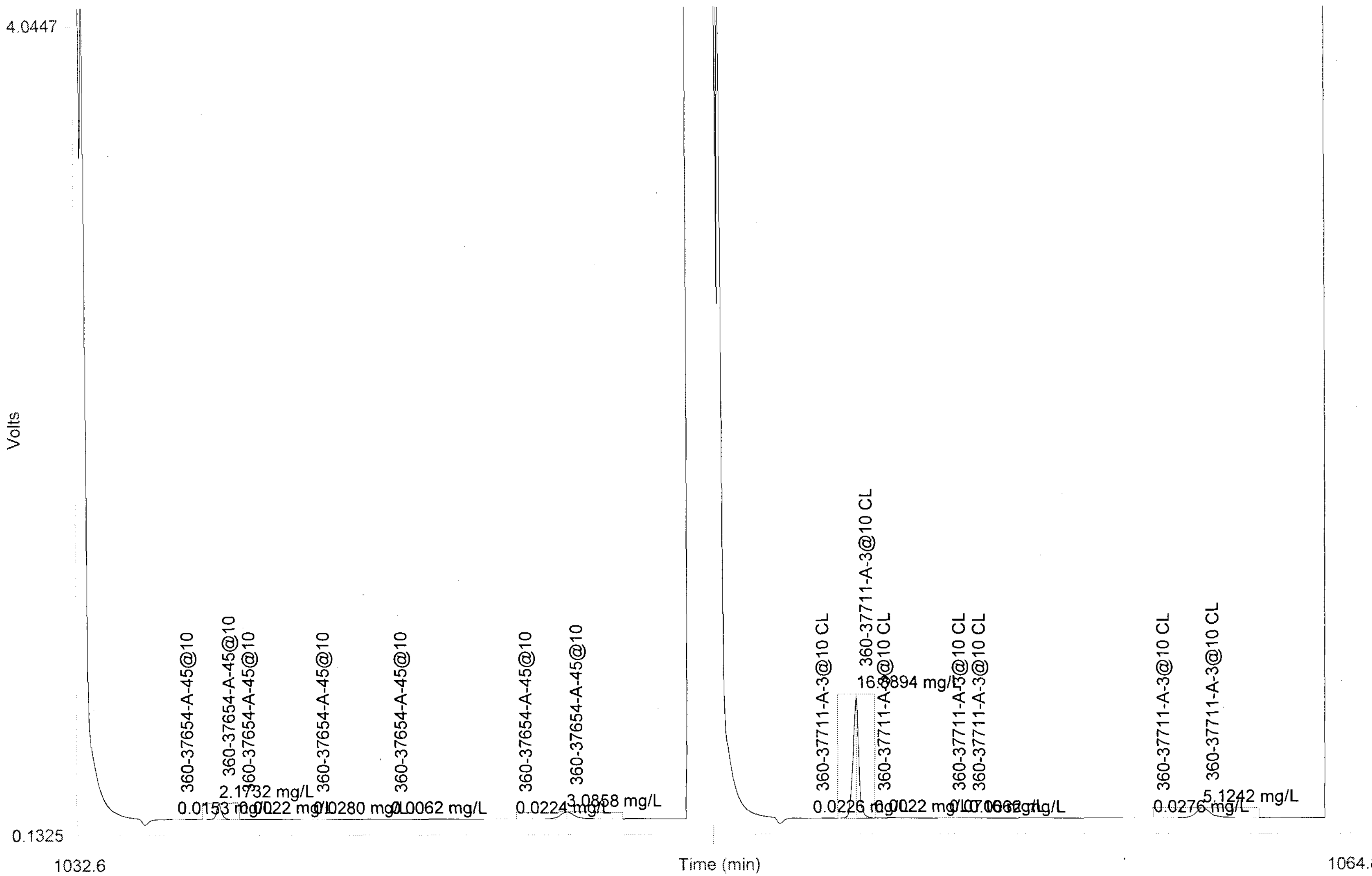
Author: EmerichR

Date : 11/26/2011

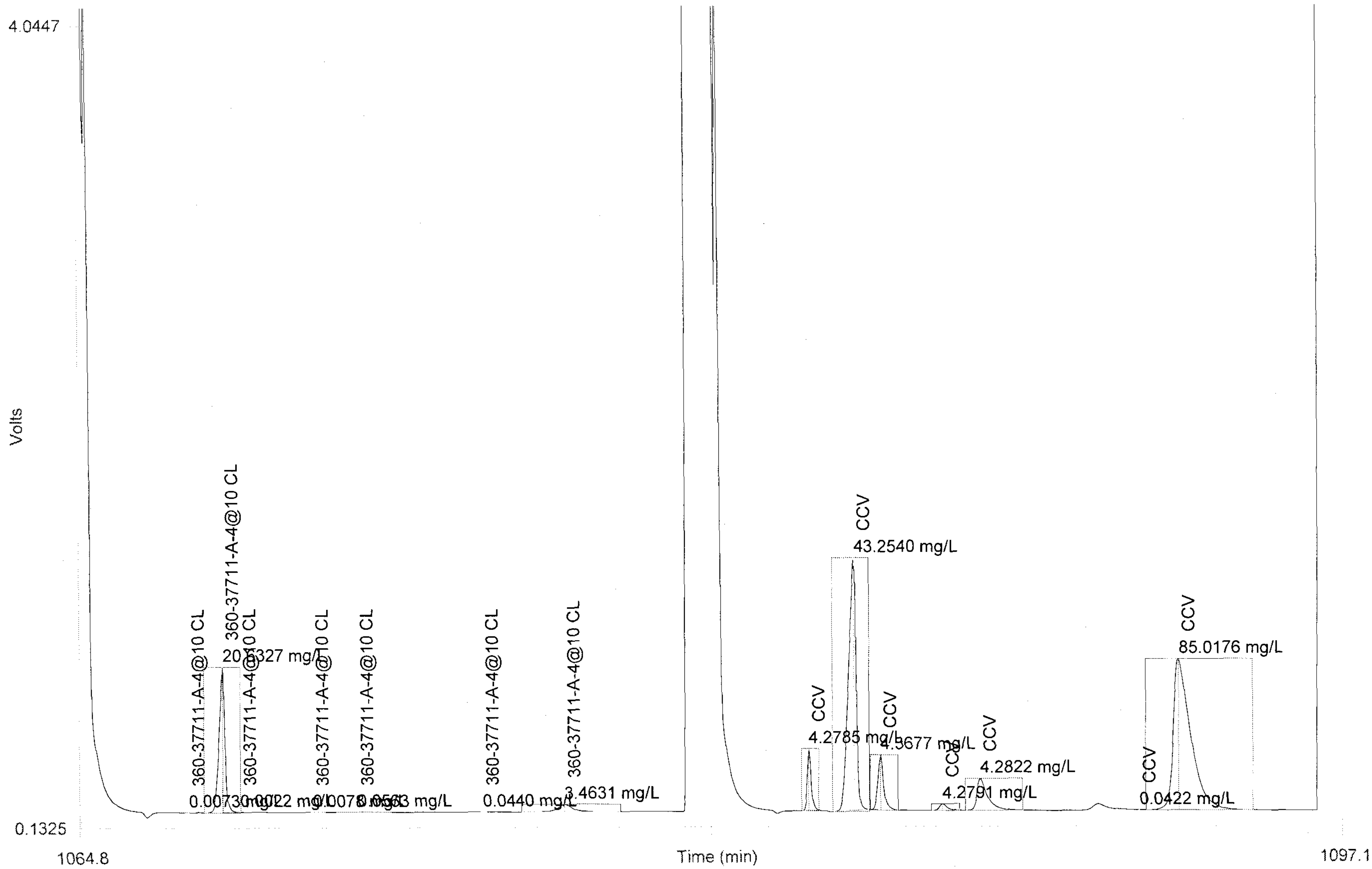
Channel 1 (Anions) : Set 33 of 58



Author: EmerichR

Date : 11/26/2011

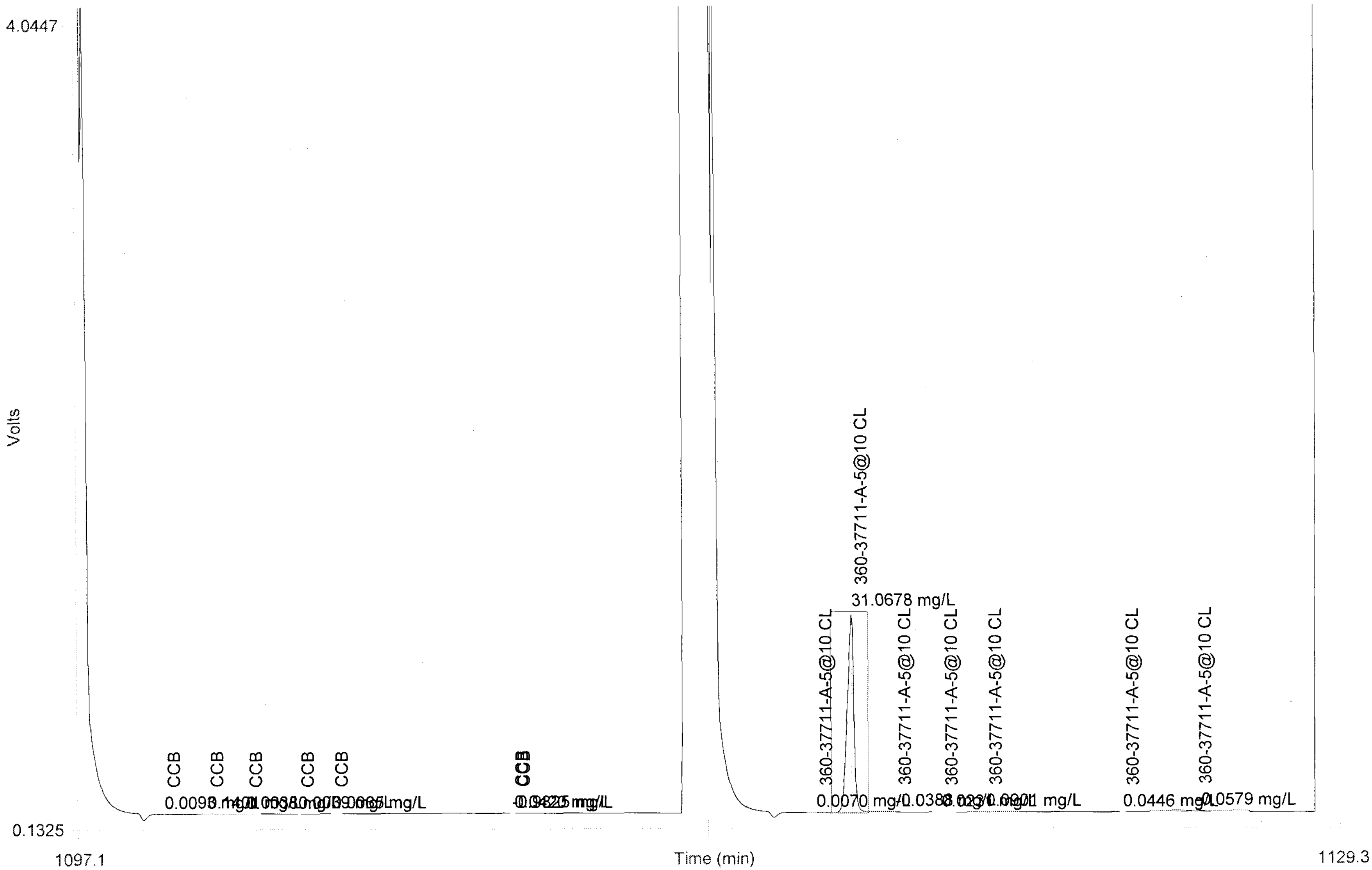
Channel 1 (Anions) : Set 34 of 58



Author: EmerichR

Date : 11/26/2011

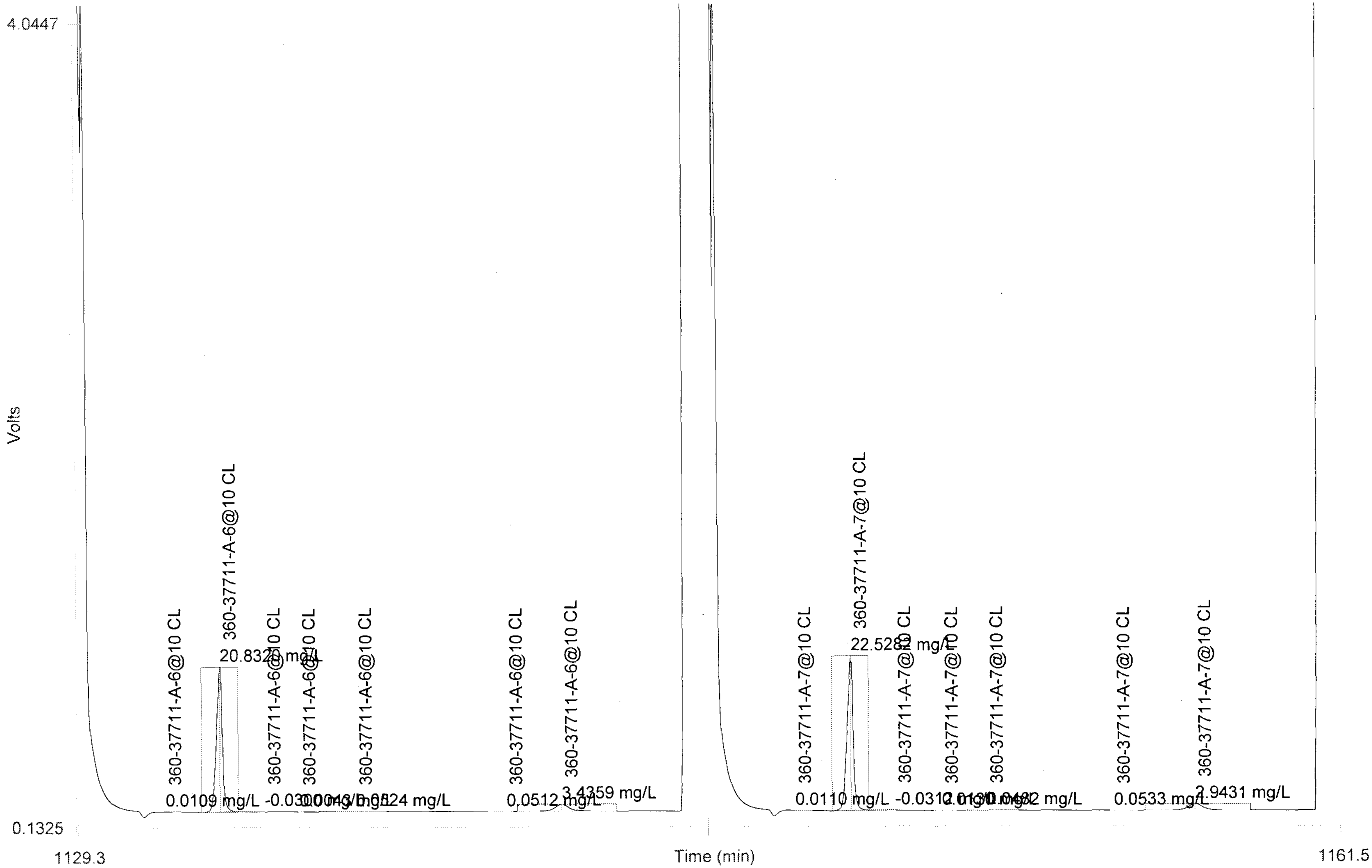
Channel 1 (Anions) : Set 35 of 58



Author: EmerichR

Date : 11/26/2011

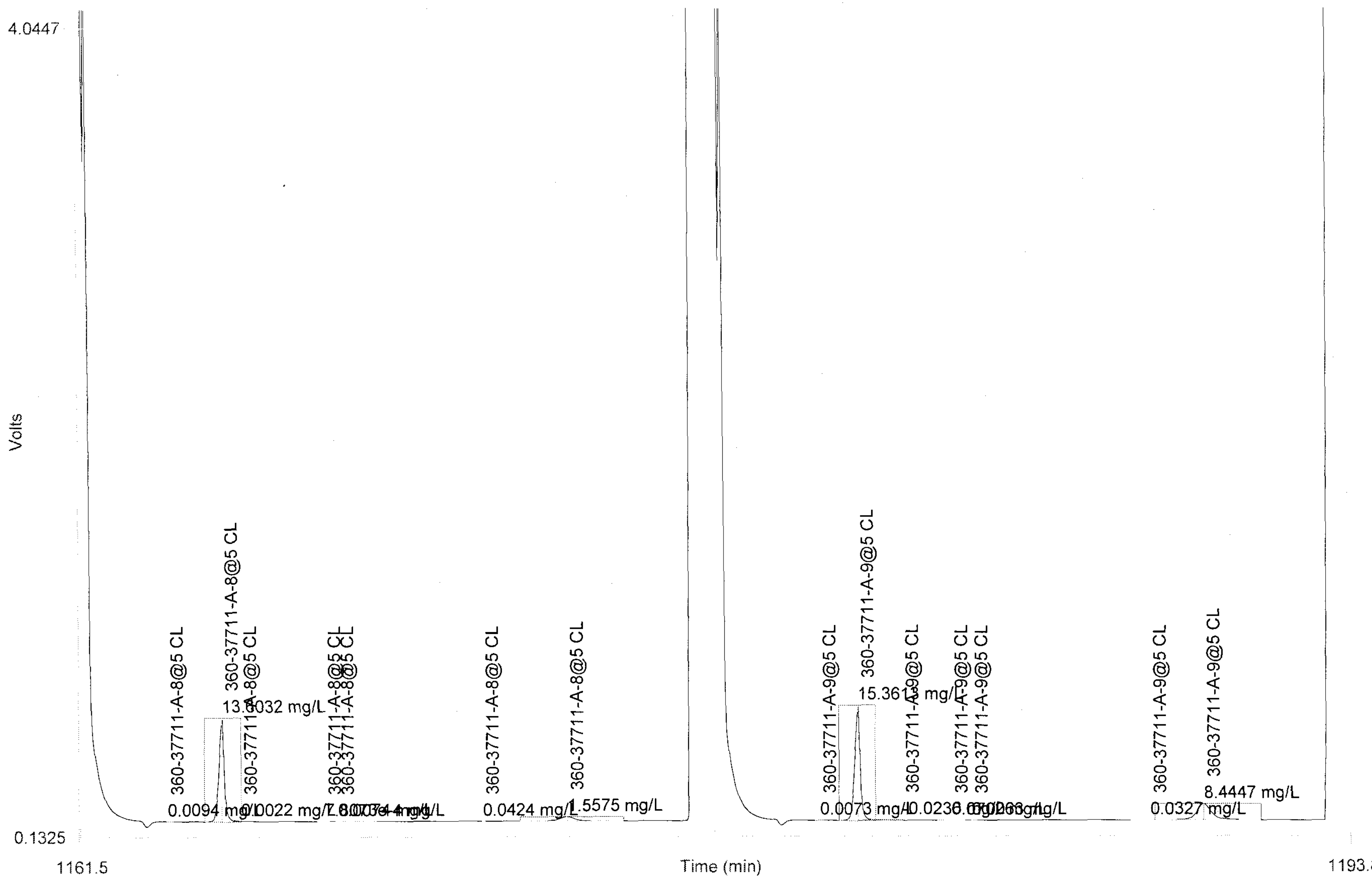
Channel 1 (Anions) : Set 36 of 58



Author: EmerichR

Date : 11/26/2011

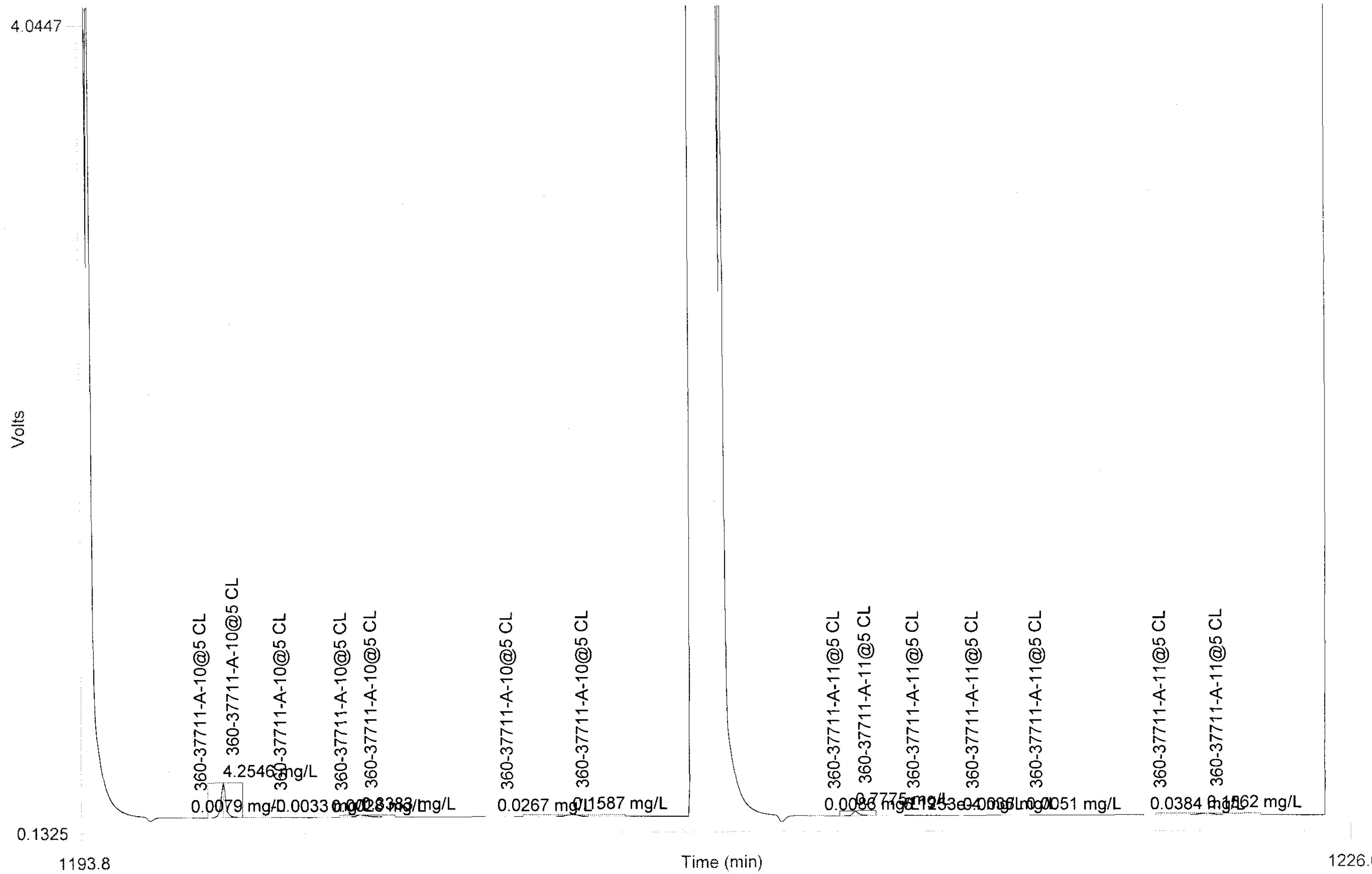
Channel 1 (Anions) : Set 37 of 58



Author: EmerichR

Date : 11/26/2011

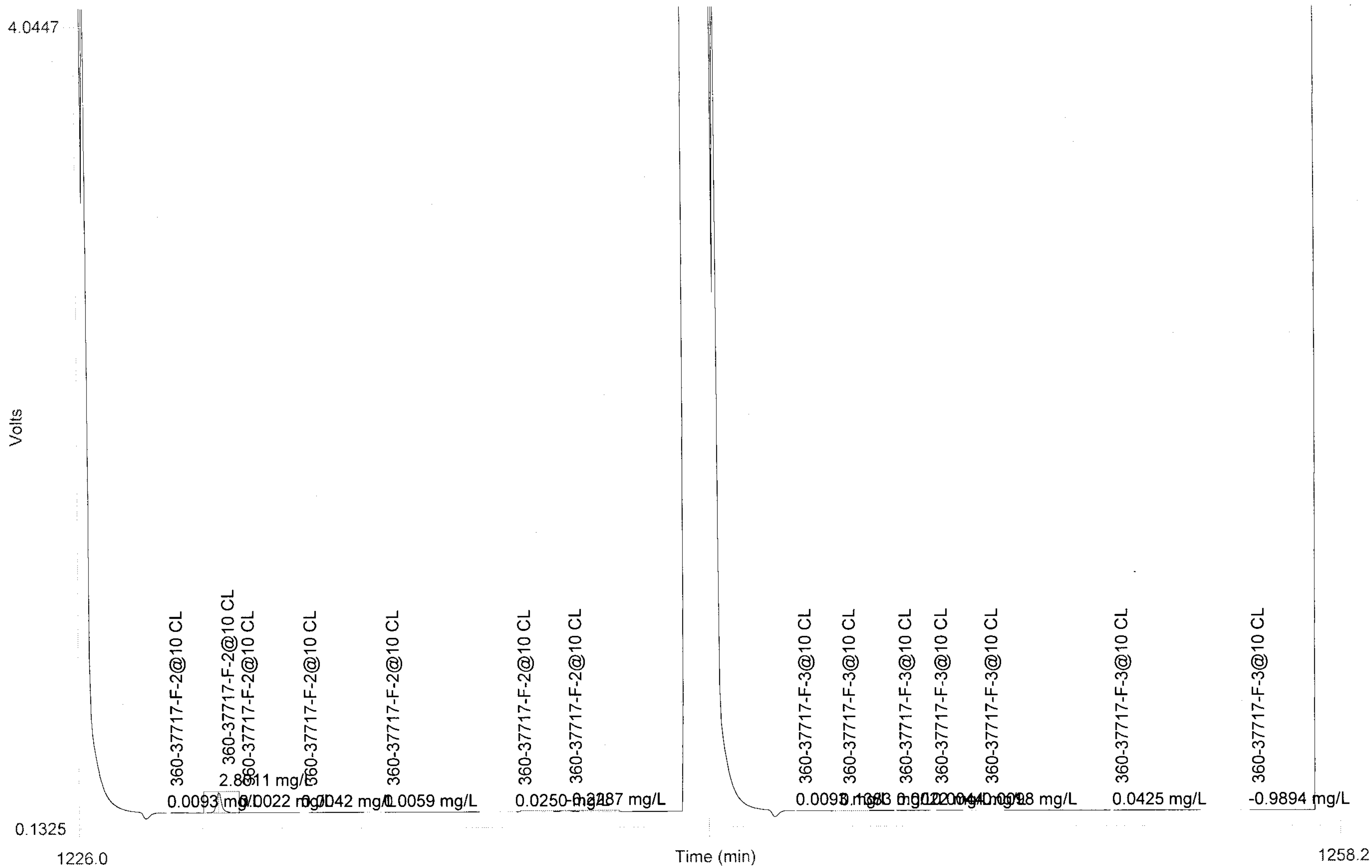
Channel 1 (Anions) : Set 38 of 58



Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 39 of 58



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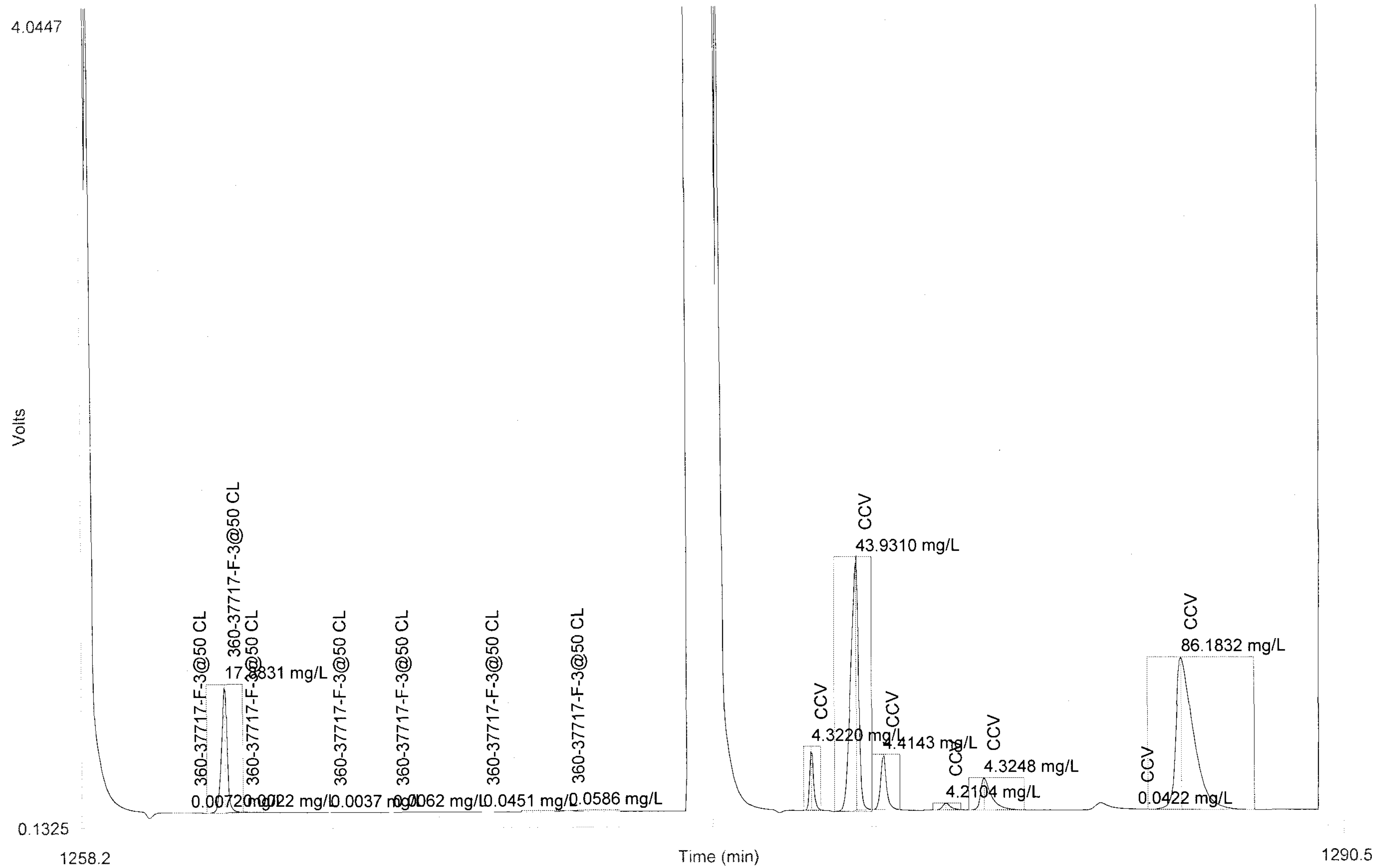
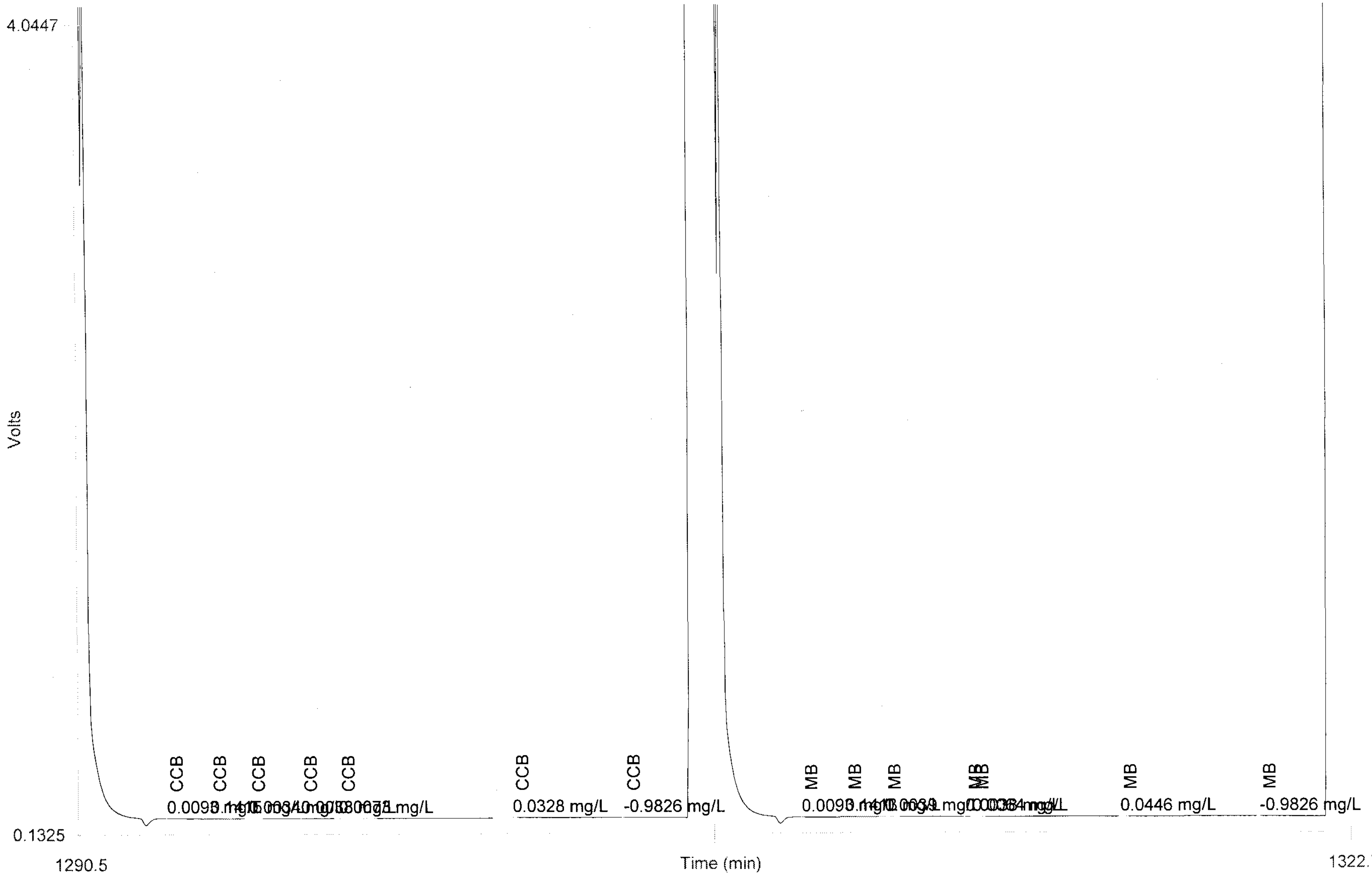
Channel 1 (Anions) : Set 40 of 58



Author: EmerichR

Date : 11/26/2011

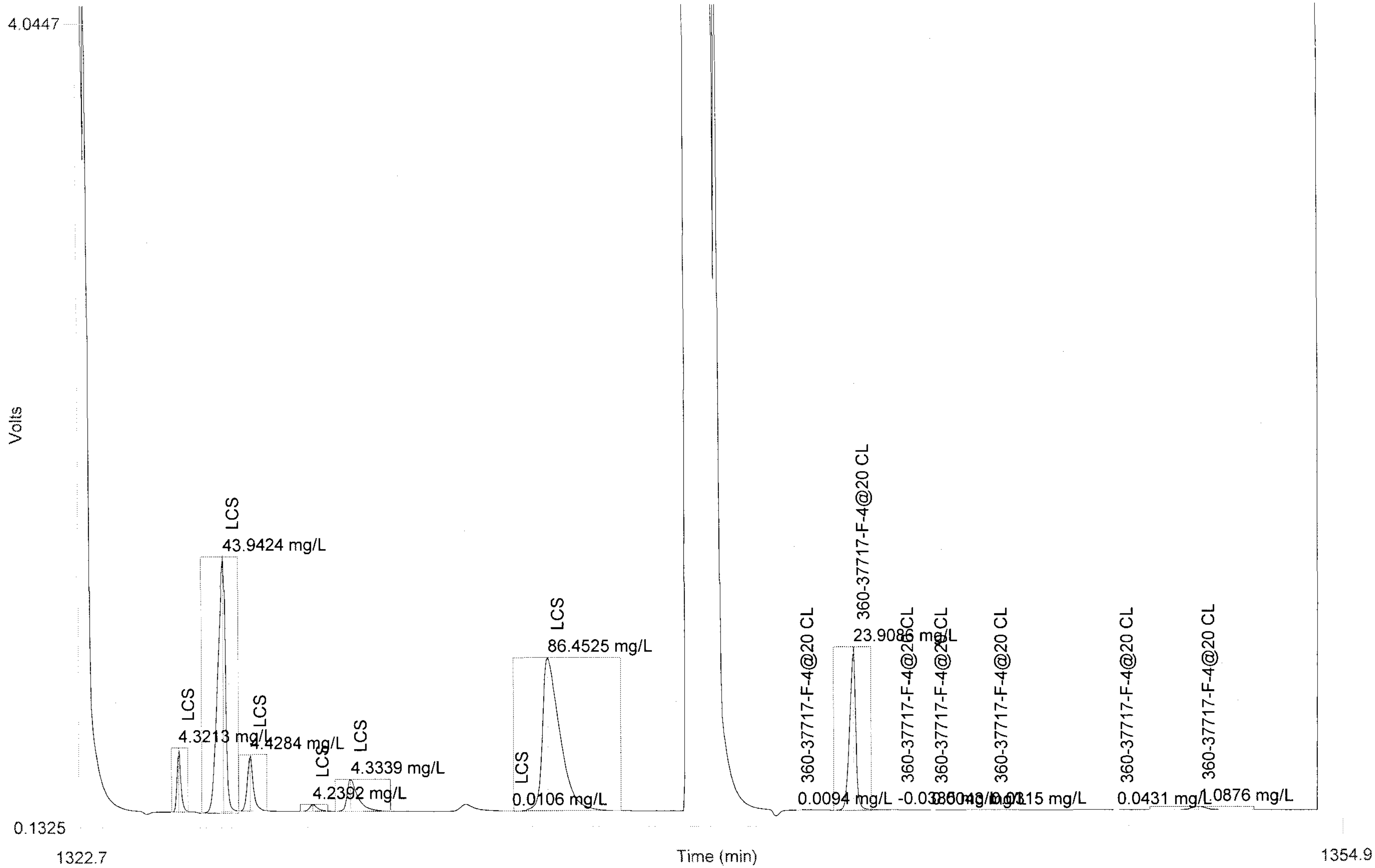
Channel 1 (Anions) : Set 41 of 58



Author: EmerichR

Date : 11/26/2011

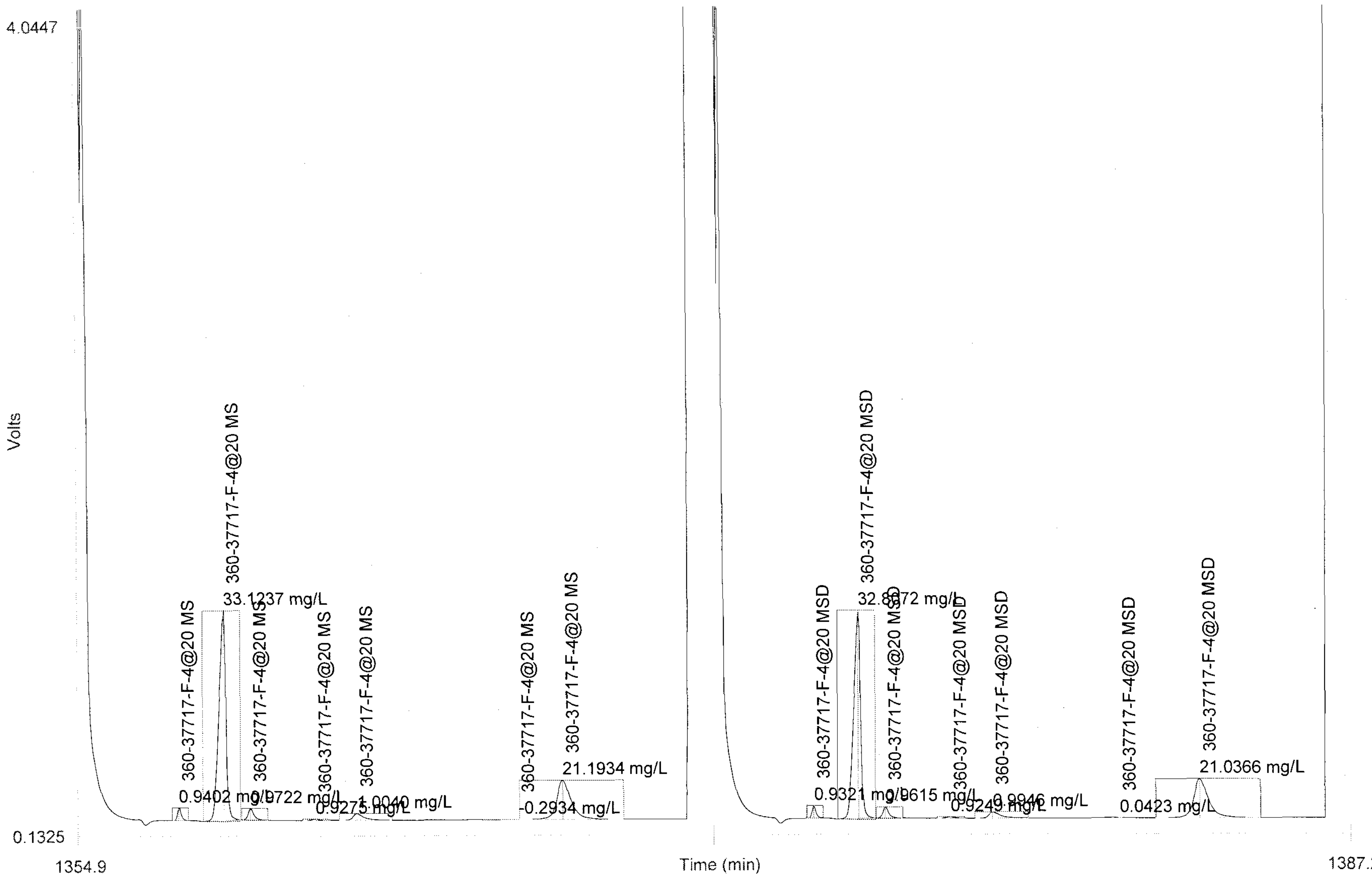
Channel 1 (Anions) : Set 42 of 58



Author: EmerichR

Date : 11/26/2011

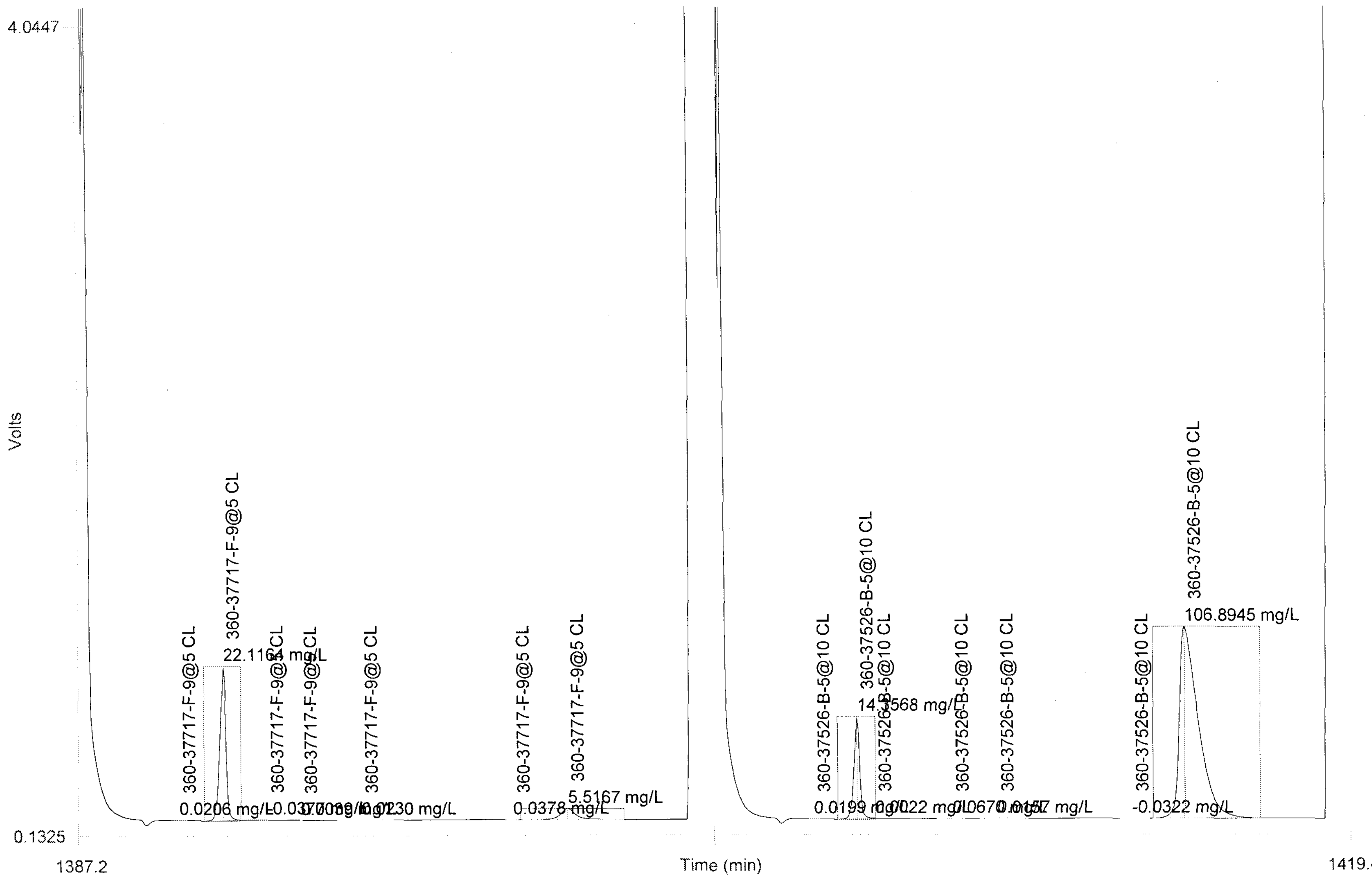
Channel 1 (Anions) : Set 43 of 58



Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 44 of 58



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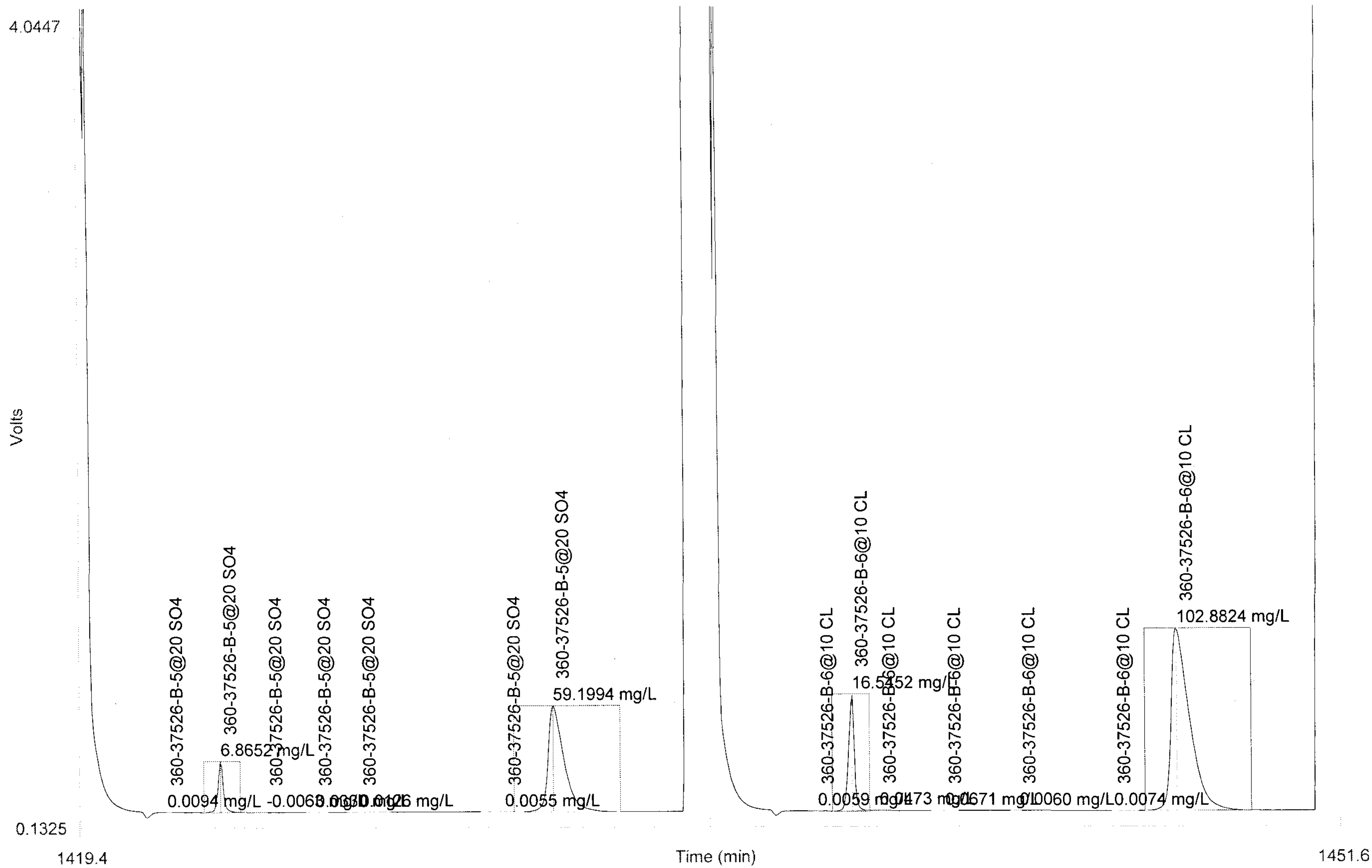
Author: EmerichR

Date : 11/26/2011

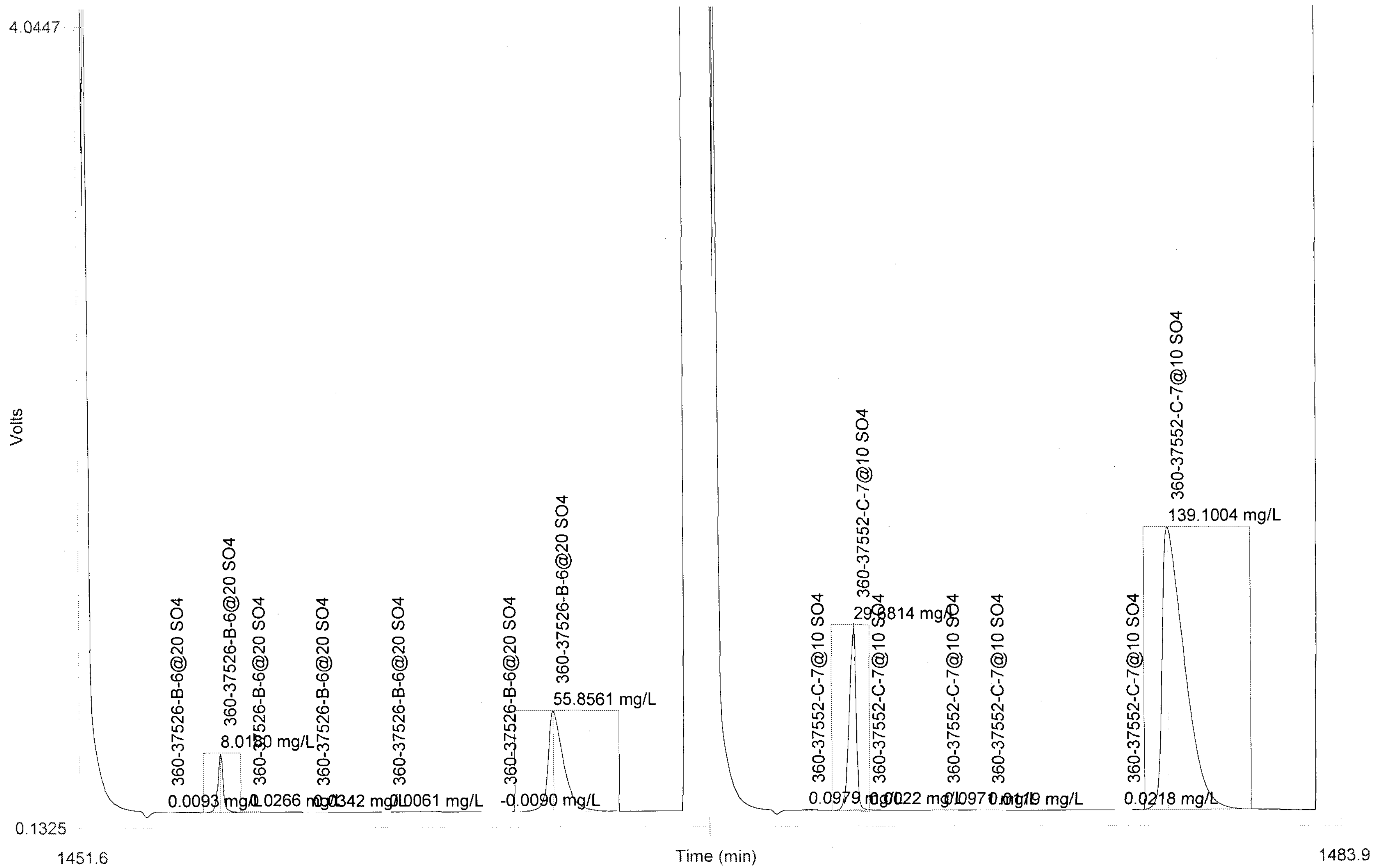
Channel 1 (Anions) : Set 45 of 58



Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 46 of 58



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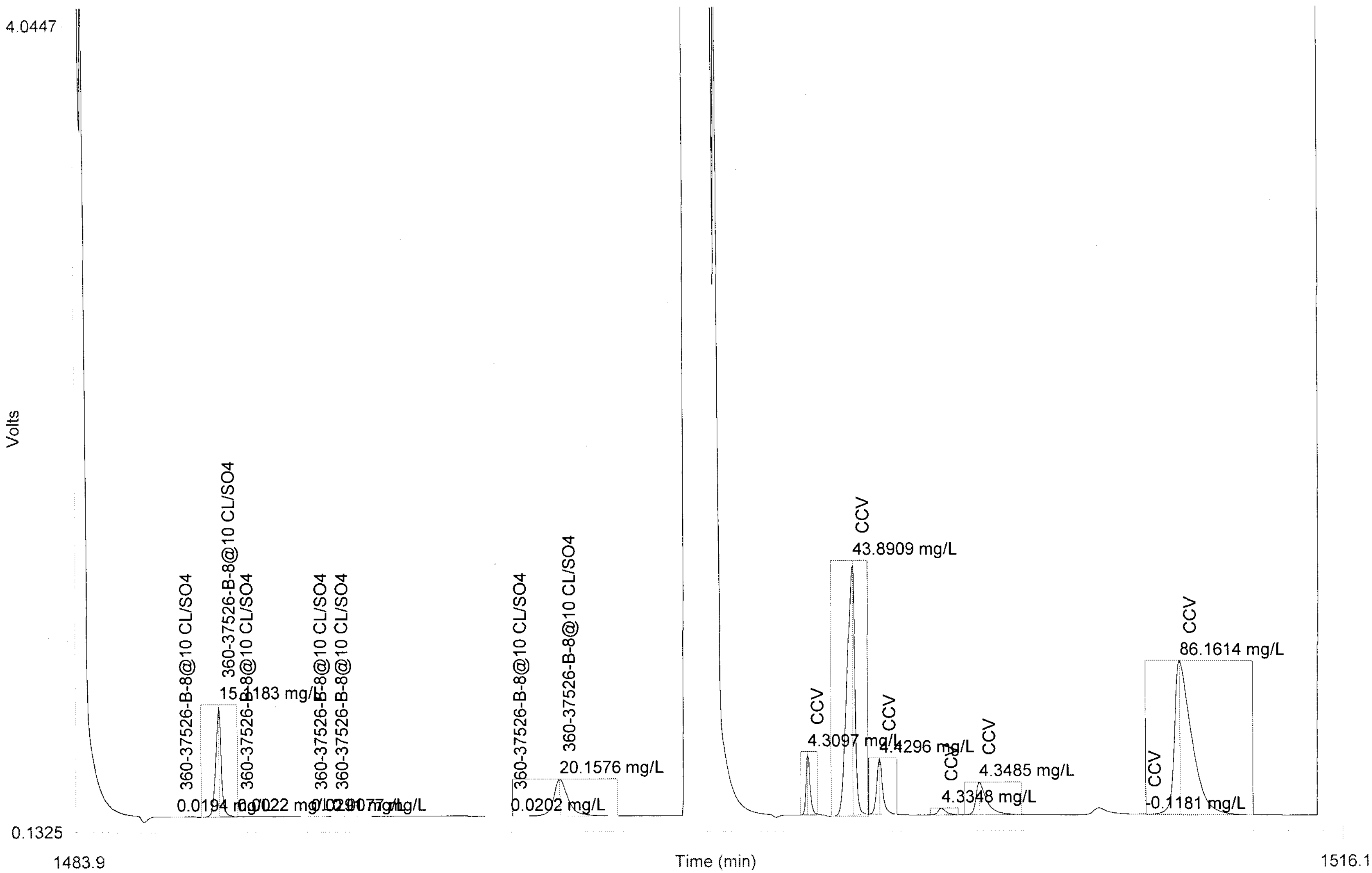
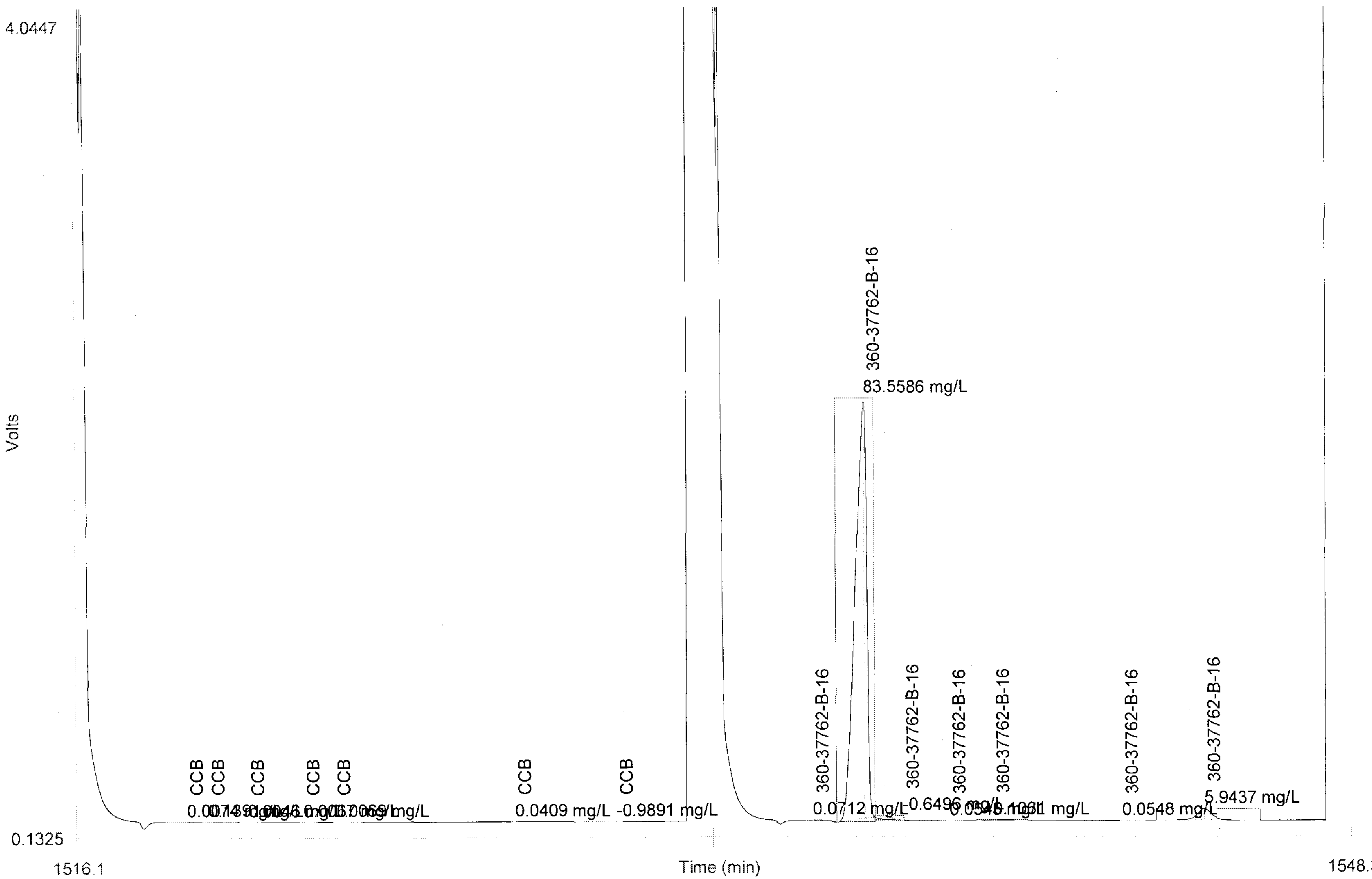
Channel 1 (Anions) : Set 47 of 58



Author: EmerichR

Date : 11/26/2011

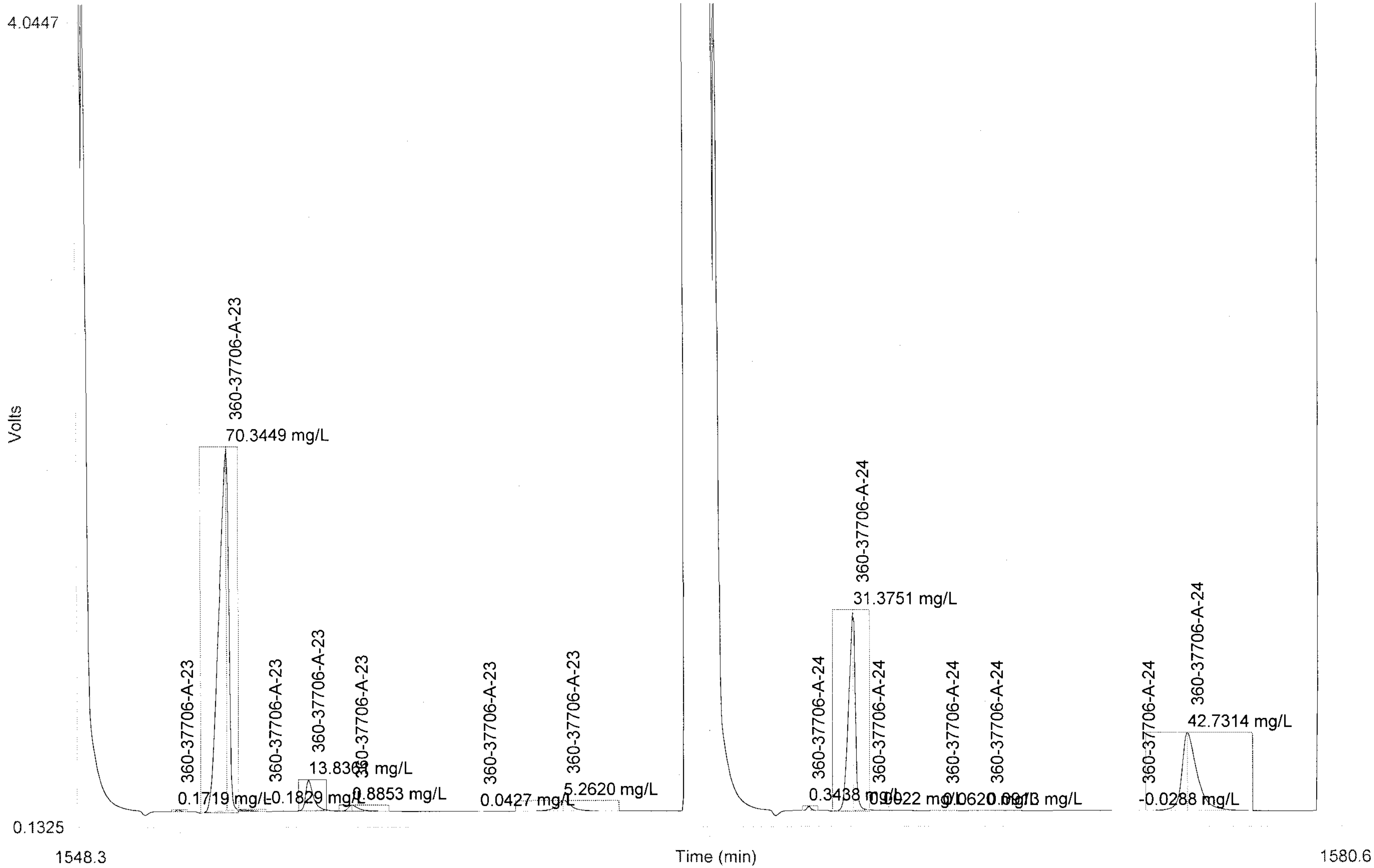
Channel 1 (Anions) : Set 48 of 58



Author: EmerichR

Date : 11/26/2011

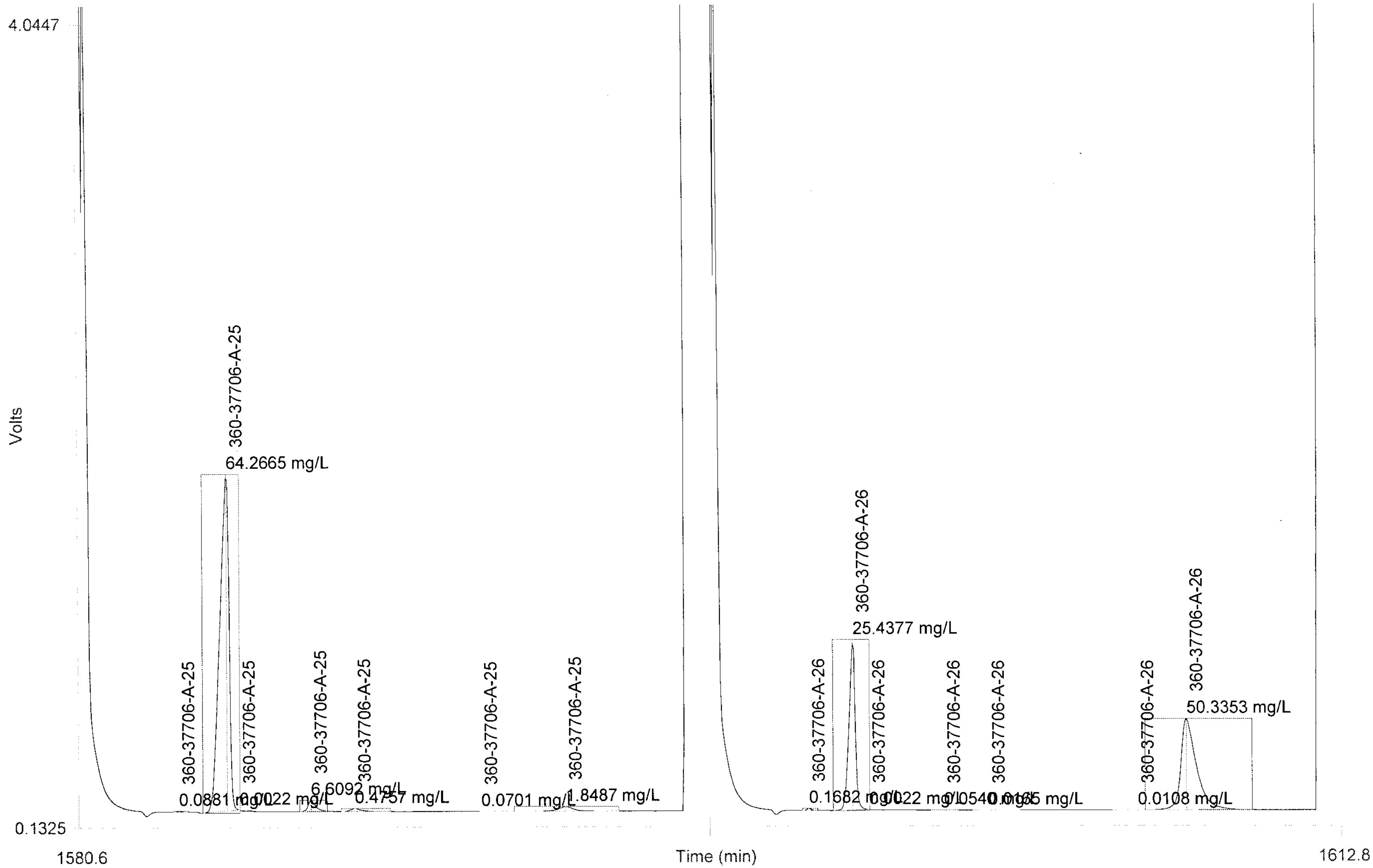
Channel 1 (Anions) : Set 49 of 58



Author: EmerichR

Date : 11/26/2011

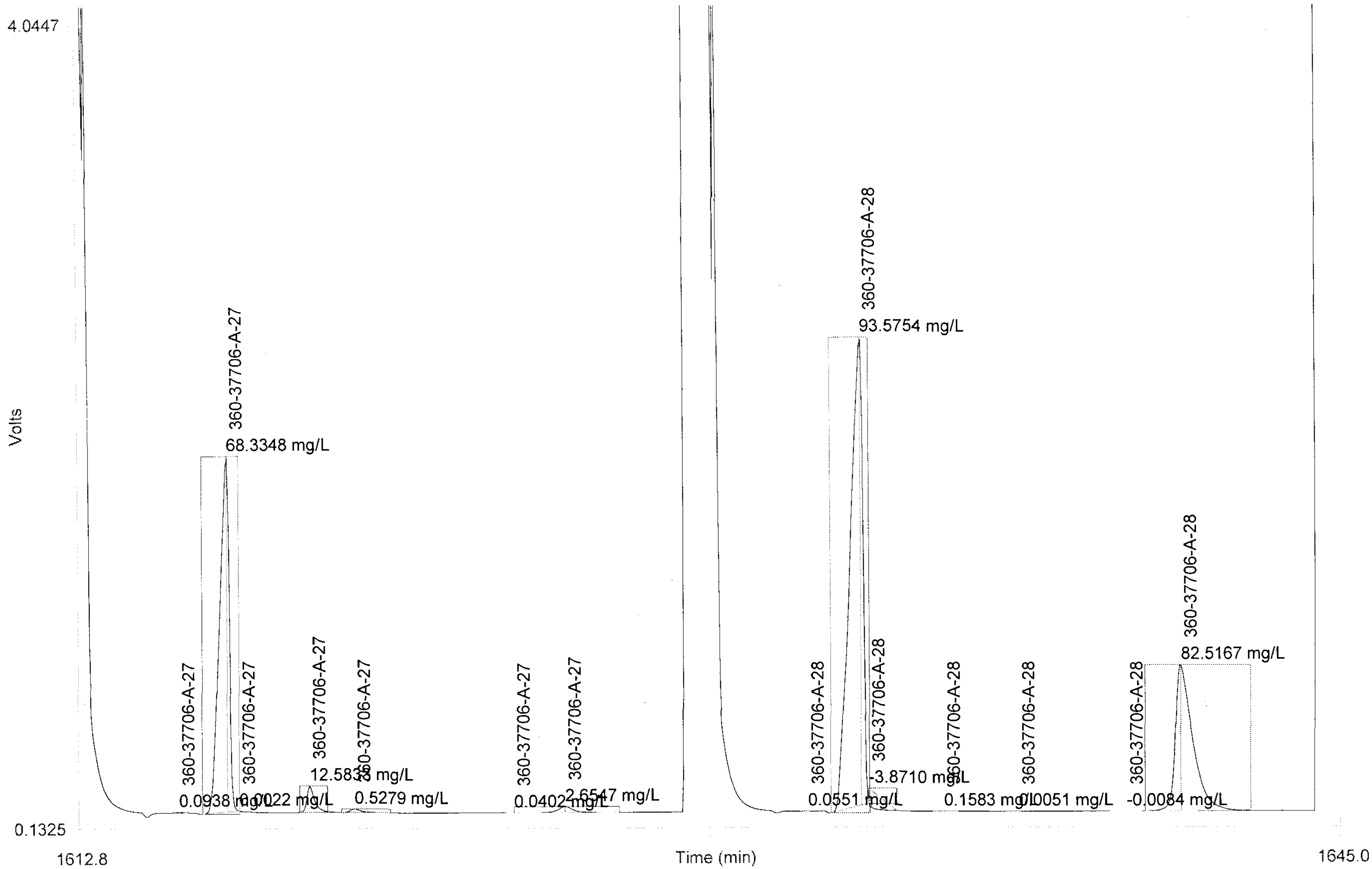
Channel 1 (Anions) : Set 50 of 58



Author: EmerichR

Date : 11/26/2011

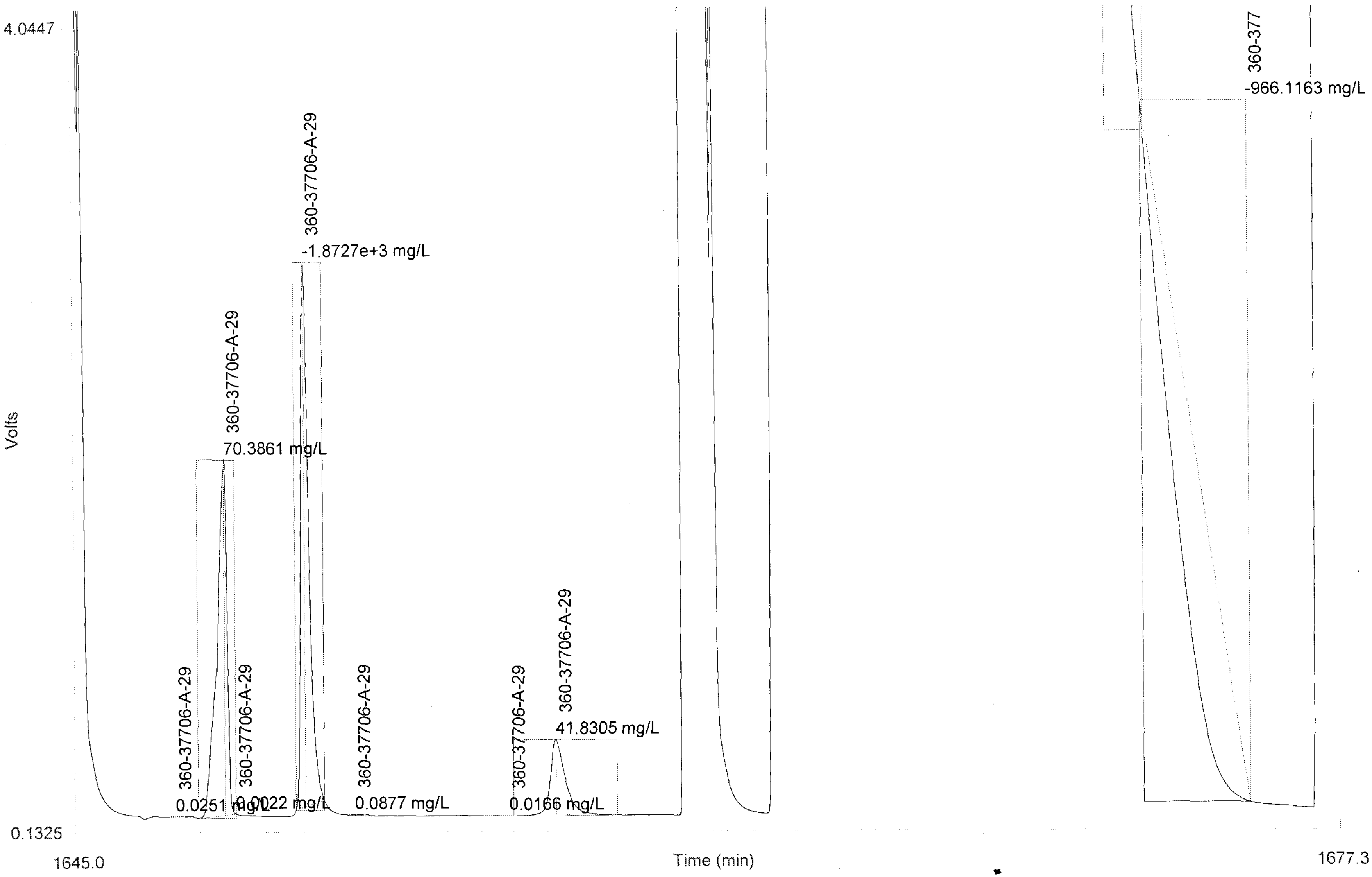
Channel 1 (Anions) : Set 51 of 58



Author: EmerichR

Date : 11/26/2011

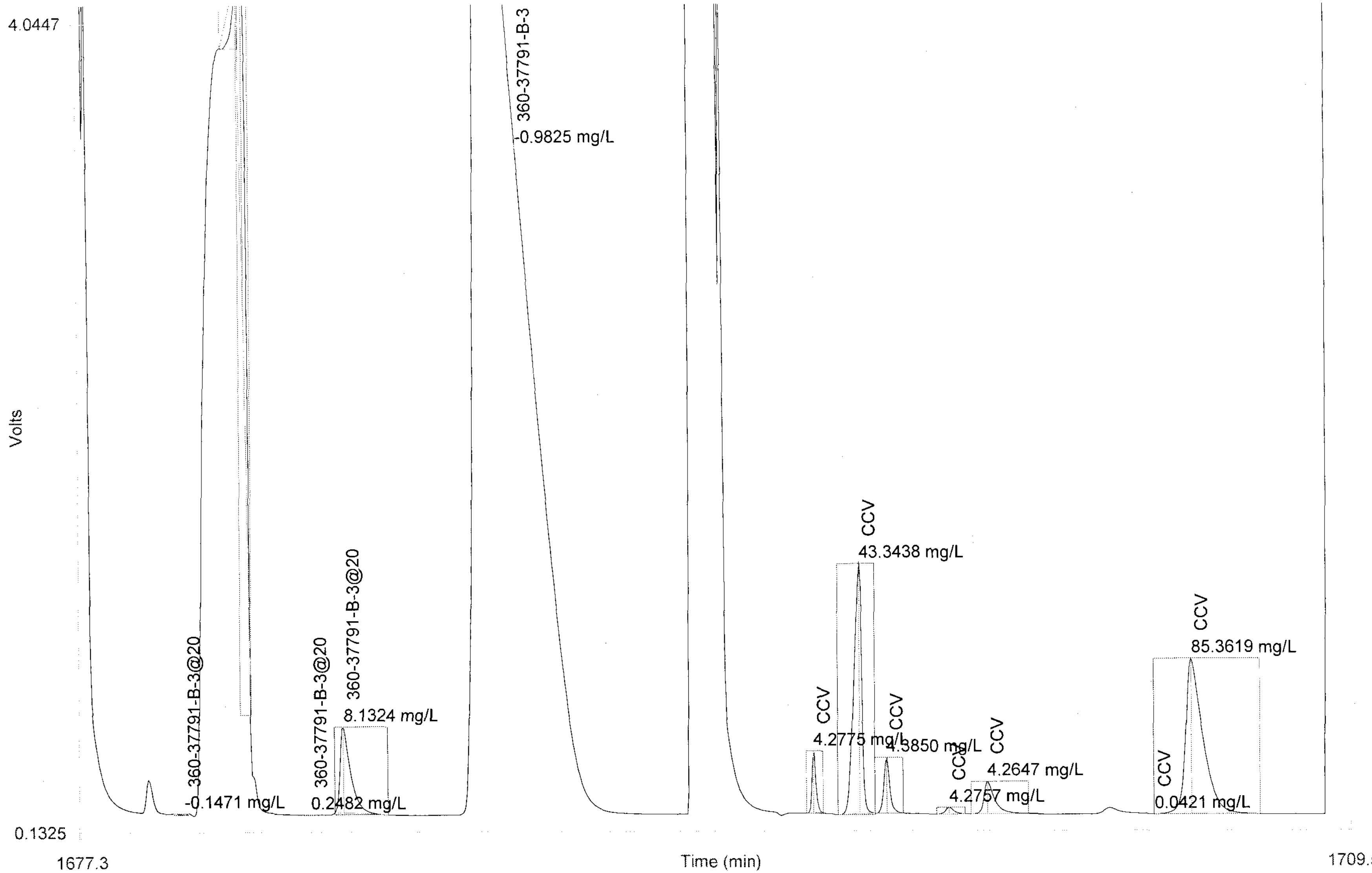
Channel 1 (Anions) : Set 52 of 58



Author: EmerichR

Date : 11/26/2011

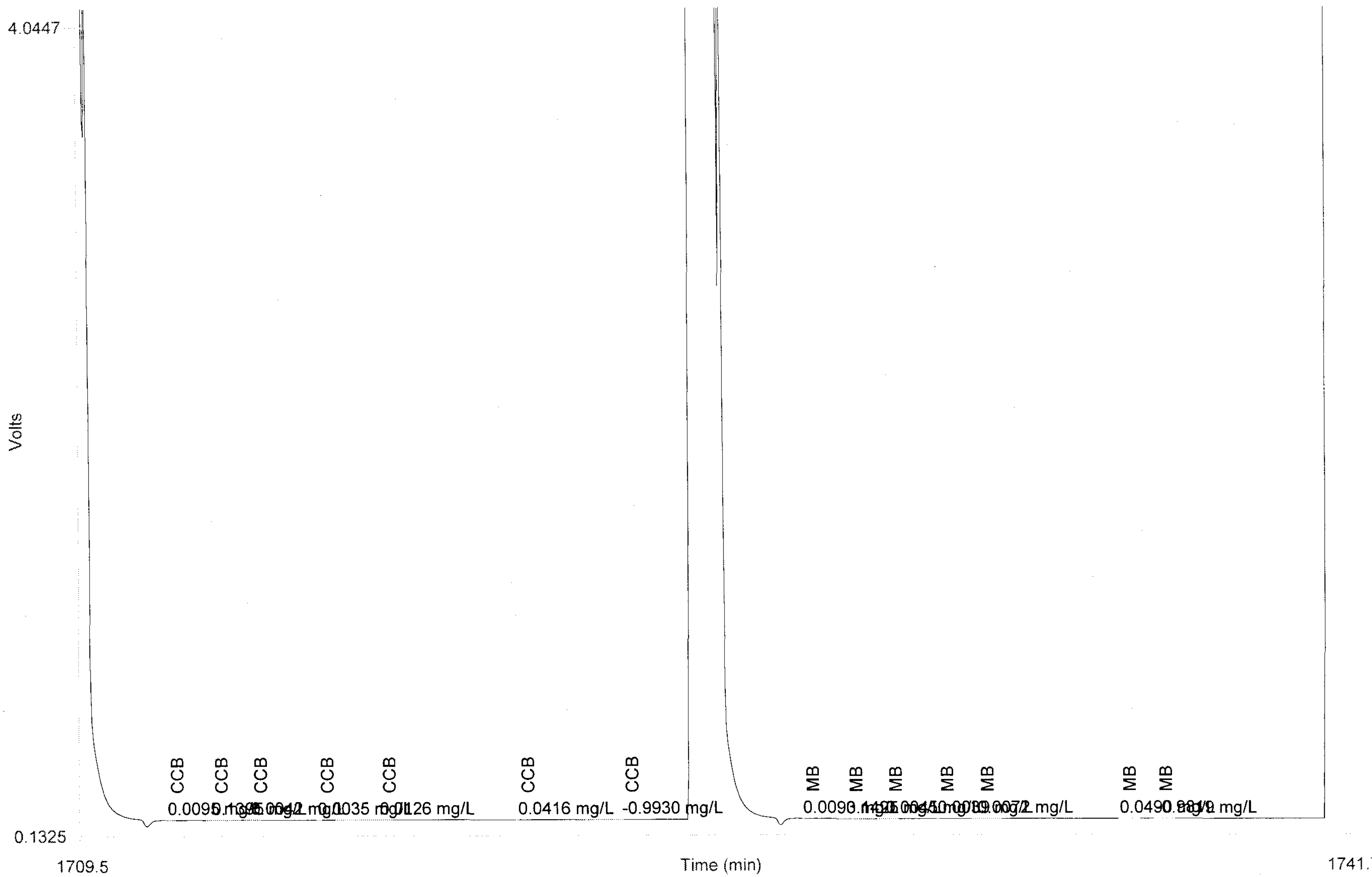
Channel 1 (Anions) : Set 53 of 58



Author: EmerichR

Date : 11/26/2011

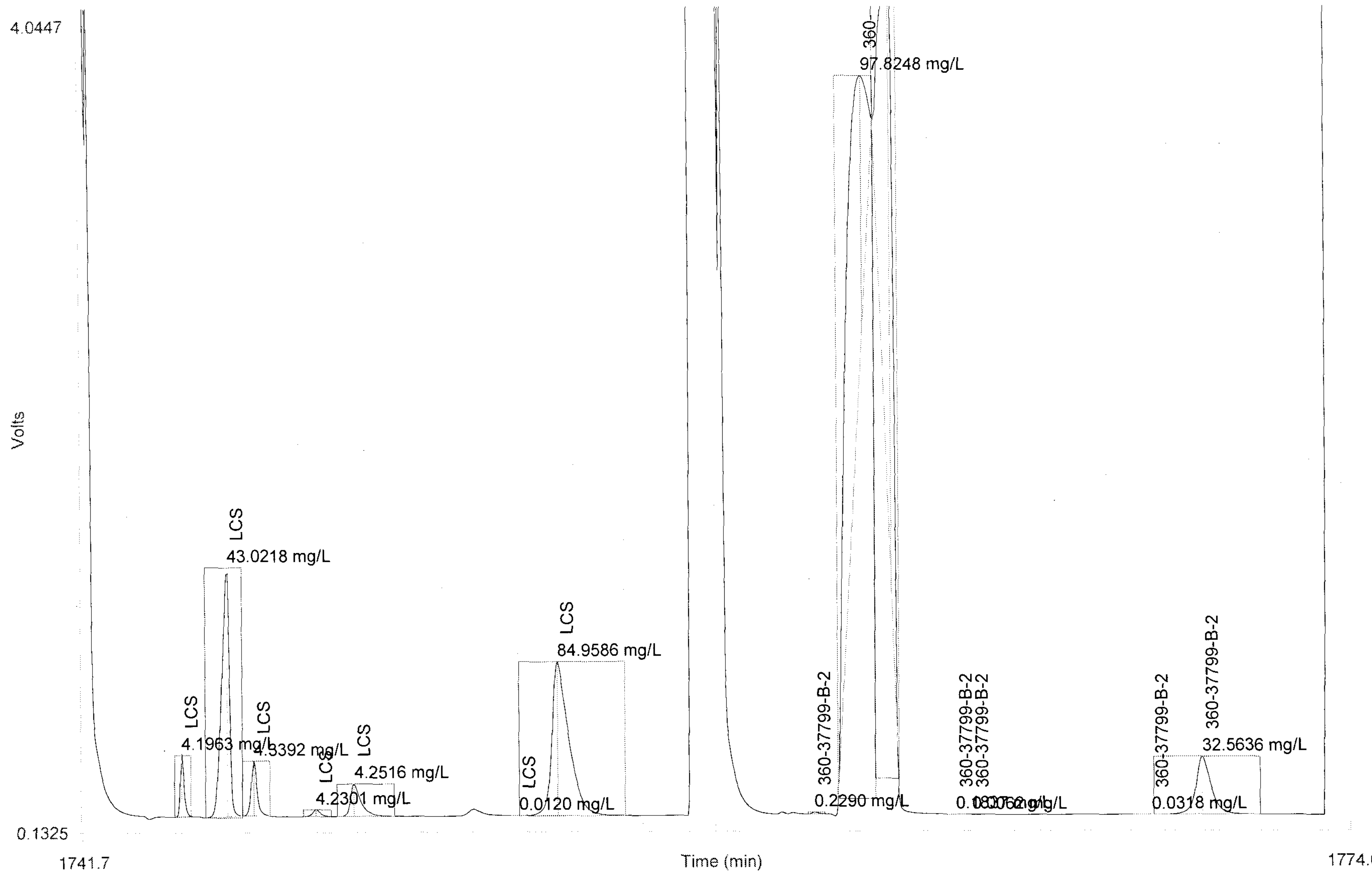
Channel 1 (Anions) : Set 54 of 58



Author: EmerichR

Date : 11/26/2011

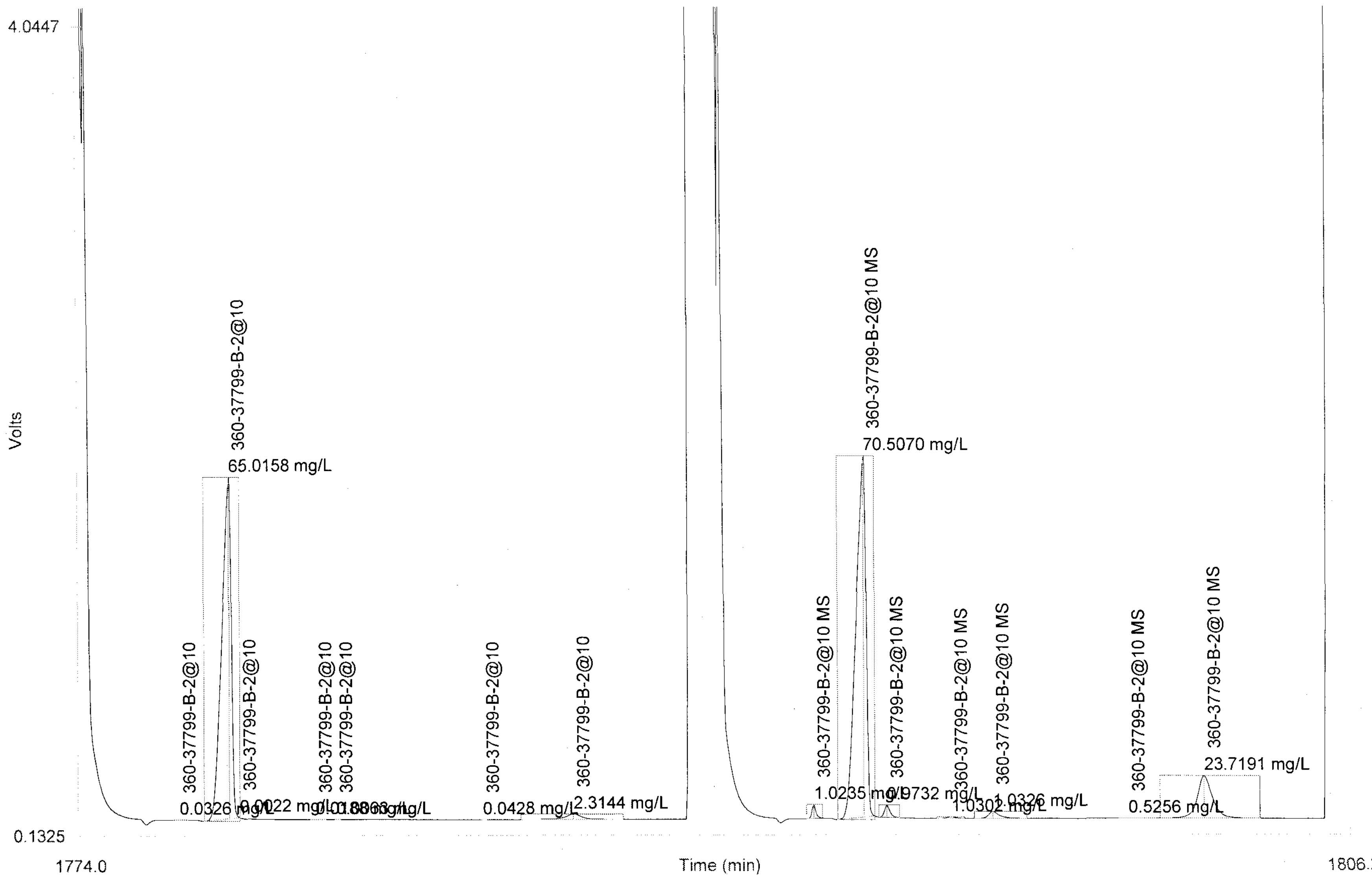
Channel 1 (Anions) : Set 55 of 58



Author: EmerichR

Date : 11/26/2011

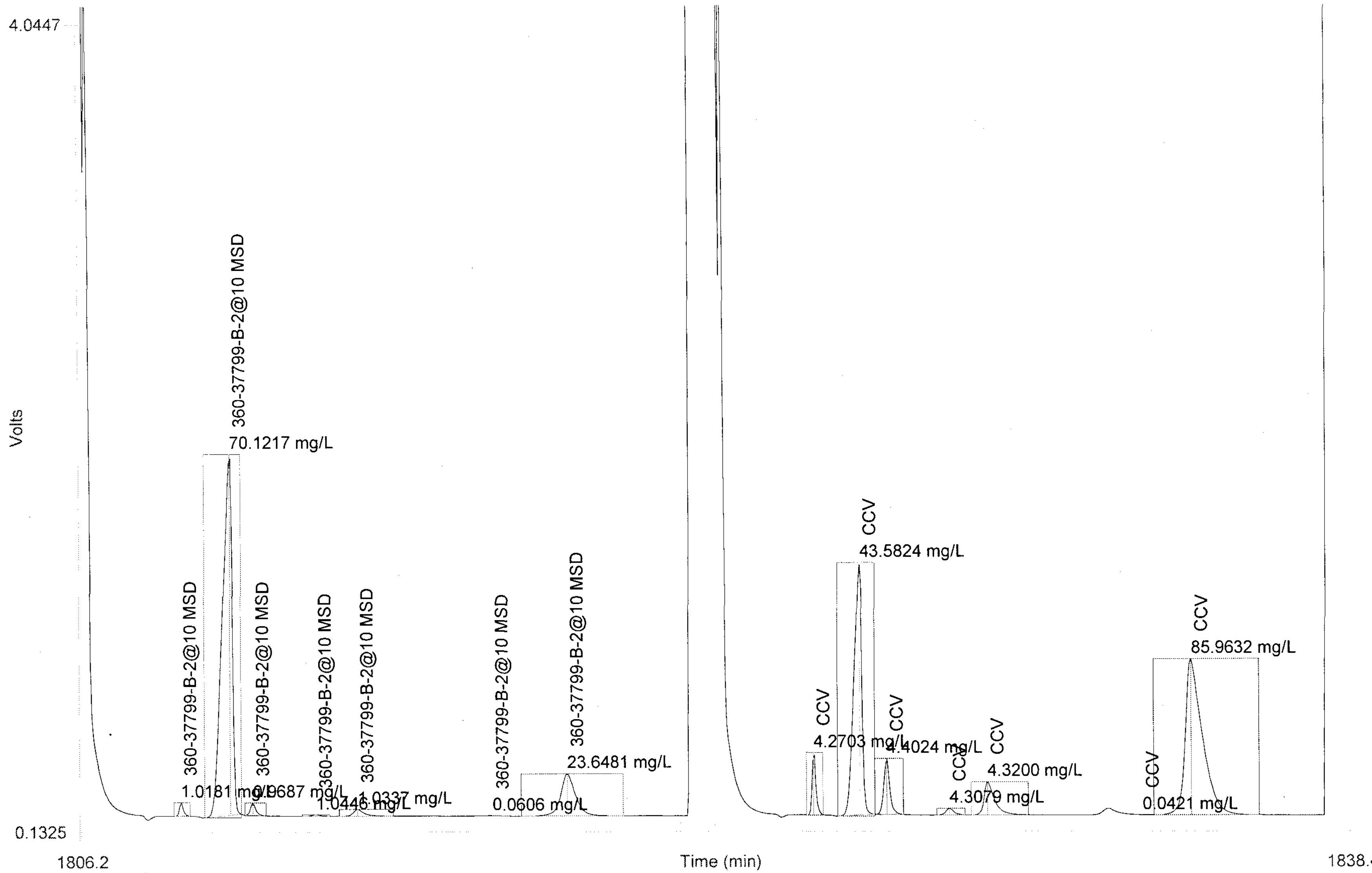
Channel 1 (Anions) : Set 56 of 58



Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 57 of 58



Author: EmerichR

Date : 11/26/2011

Channel 1 (Anions) : Set 58 of 58

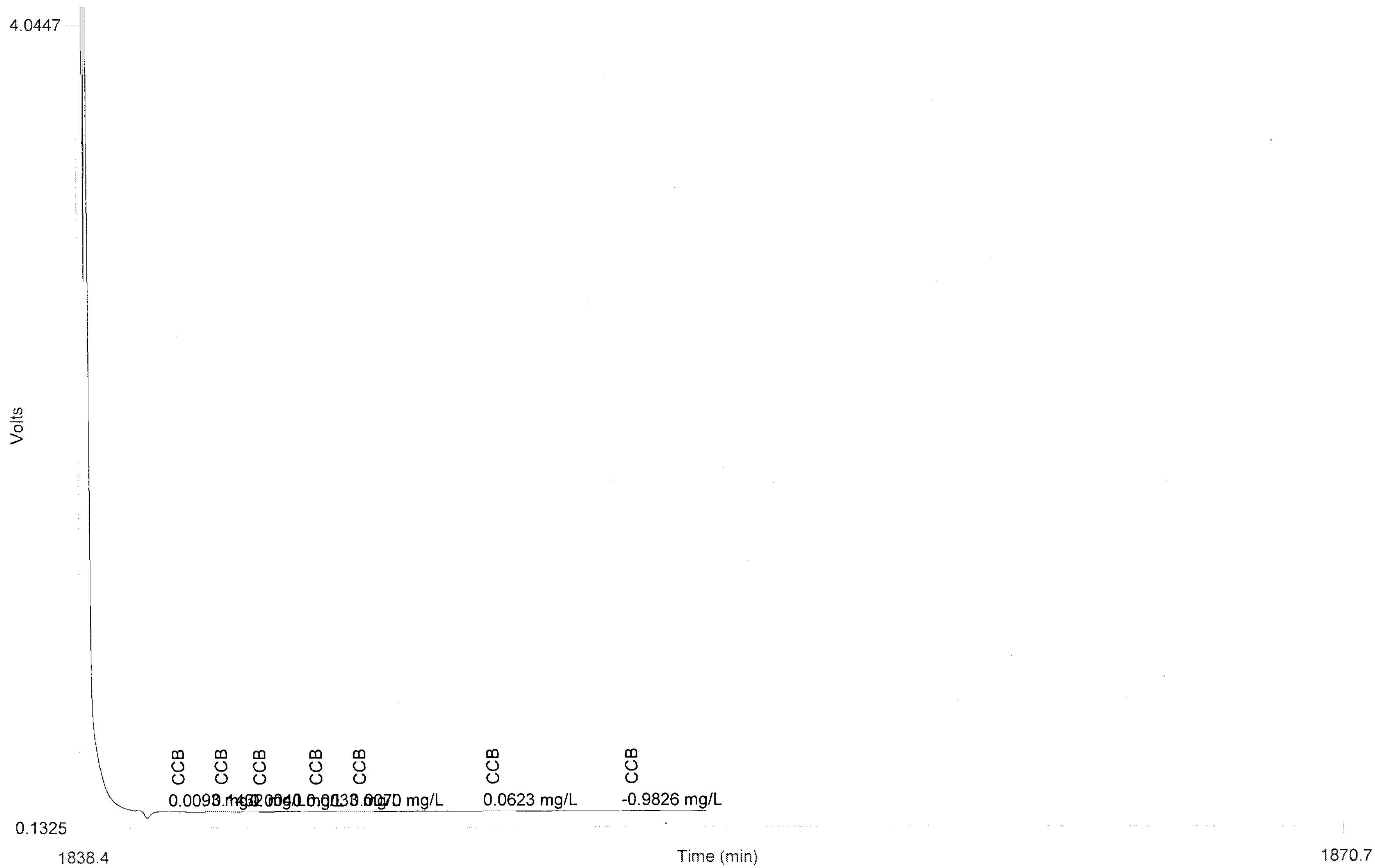
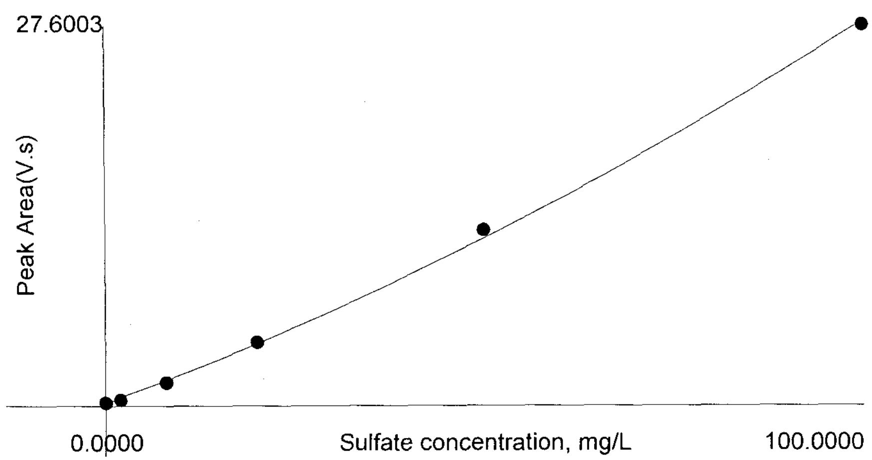


Table 1: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	27.6003	0.8536	1.1	11/15/2011	2:32:05 PM
2	50.0000	1	12.7130	0.4540	-4.9	11/15/2011	2:48:13 PM
3	20.0000	1	4.5871	0.1729	-1.7	11/15/2011	3:04:20 PM
4	8.0000	1	1.6836	0.0620	9.3	11/15/2011	3:20:28 PM
5	2.0000	1	0.4027	0.0145	34.3	11/15/2011	3:36:35 PM
6	0.0500	1	0.2270	0.0081	-2.6	11/15/2011	3:52:42 PM

Figure 1: Sulfate



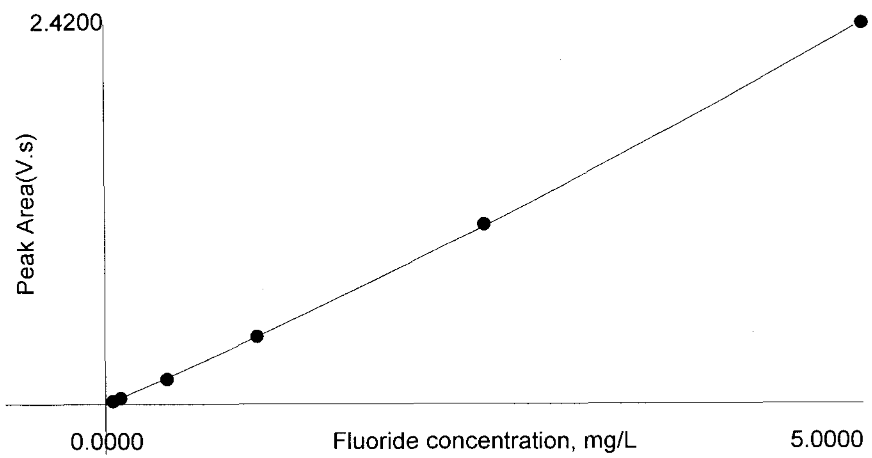
Area = 7.7408e-4 * Conc^2 + 0.1994 * Conc + 0.2113
Conc = - 0.0392 * Area^2 + 4.7046 * Area - 0.9825
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 2: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.4200	0.3882	0.3	11/15/2011	2:32:05 PM
2	2.5000	1	1.1432	0.1974	-1.3	11/15/2011	2:48:13 PM
3	1.0000	1	0.4295	0.0734	0.0	11/15/2011	3:04:20 PM
4	0.4000	1	0.1585	0.0271	4.9	11/15/2011	3:20:28 PM
5	0.1000	1	0.0379	0.0065	1.9	11/15/2011	3:36:35 PM
6	0.0500	1	0.0187	0.0032	-6.6	11/15/2011	3:52:42 PM

Figure 2: Fluoride



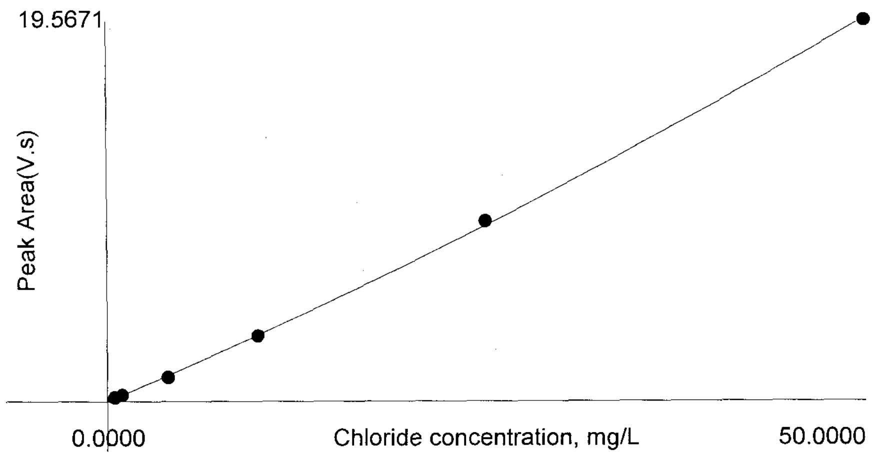
Area = 0.0132 * Conc^2 + 0.4199 * Conc - 0.0035
Conc = - 0.1211 * Area^2 + 2.3494 * Area + 0.0093
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 3: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	19.5671	1.3052	0.5	11/15/2011	2:32:05 PM
2	25.0000	1	9.2472	0.8077	-2.6	11/15/2011	2:48:13 PM
3	10.0000	1	3.3710	0.3697	1.0	11/15/2011	3:04:20 PM
4	4.0000	1	1.2235	0.1456	7.7	11/15/2011	3:20:28 PM
5	1.0000	1	0.3080	0.0351	4.1	11/15/2011	3:36:35 PM
6	0.5000	1	0.1732	0.0187	-11.1	11/15/2011	3:52:42 PM

Figure 3: Chloride



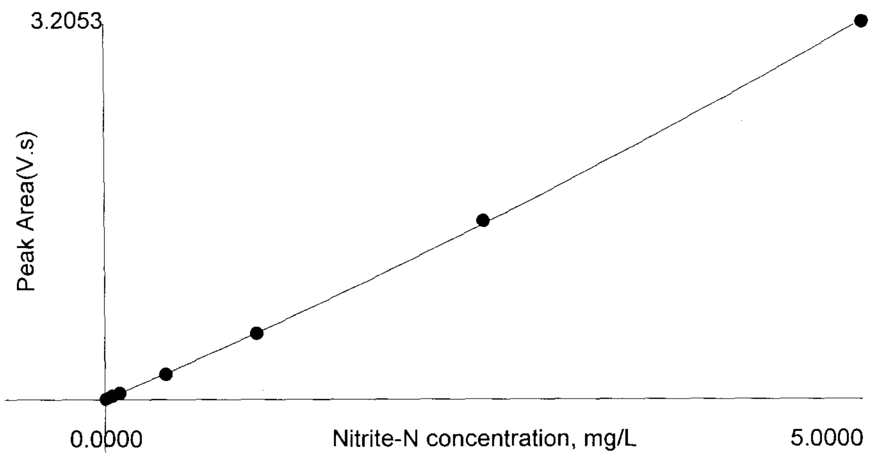
Area = 0.0013 * Conc^2 + 0.3283 * Conc - 0.0085
Conc = - 0.0226 * Area^2 + 2.9826 * Area + 0.0435
Correlation Coefficient (r) = 0.99997

1/x weighting

Table 4: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.2053	0.3249	0.4	11/15/2011	2:32:05 PM
2	2.5000	1	1.5145	0.1578	-1.9	11/15/2011	2:48:13 PM
3	1.0000	1	0.5600	0.0576	0.8	11/15/2011	3:04:20 PM
4	0.4000	1	0.2121	0.0216	3.8	11/15/2011	3:20:28 PM
5	0.1000	1	0.0502	0.0051	6.6	11/15/2011	3:36:35 PM
6	0.0500	1	0.0267	0.0026	-1.4	11/15/2011	3:52:42 PM
7	0.0100	1	0.0049	5.0658e-4	-10.2	11/15/2011	4:08:48 PM

Figure 4: Nitrite-N



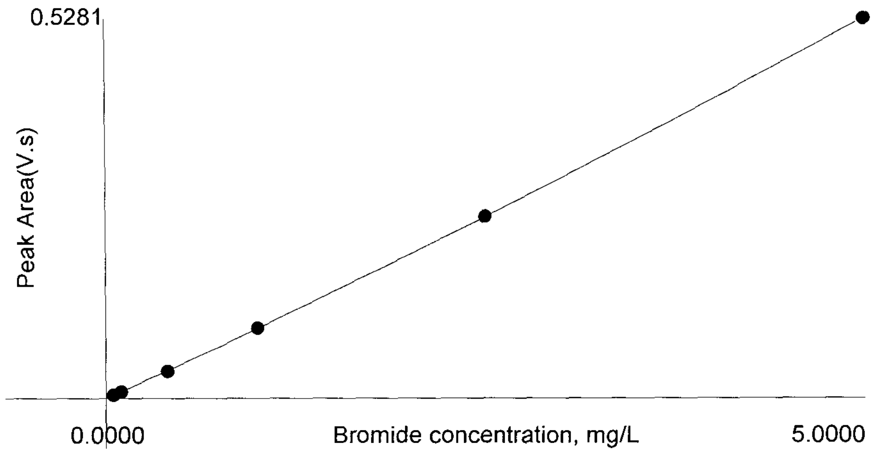
Area = 0.0195 * Conc^2 + 0.5461 * Conc - 0.0010
Conc = - 0.0787 * Area^2 + 1.8046 * Area + 0.0022
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 5: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.5281	0.0394	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	0.2527	0.0186	-0.2	11/15/2011	2:48:13 PM
3	1.0000	1	0.0981	0.0072	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.0379	0.0027	1.4	11/15/2011	3:20:28 PM
5	0.1000	1	0.0092	6.5877e-4	1.5	11/15/2011	3:36:35 PM
6	0.0500	1	0.0046	3.2836e-4	-2.5	11/15/2011	3:52:42 PM

Figure 5: Bromide



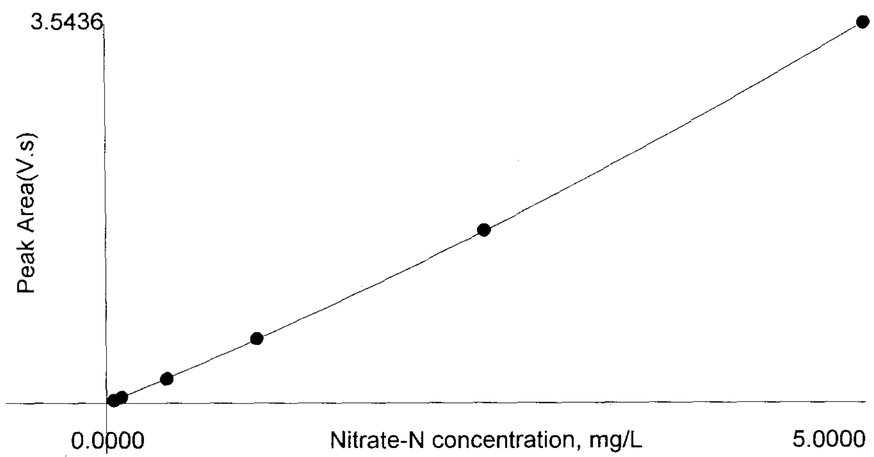
Area = 0.0019 * Conc^2 + 0.0962 * Conc - 3.2483e-4
Conc = - 1.6748 * Area^2 + 10.3373 * Area + 0.0038
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 6: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.5436	0.1988	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	1.6106	0.0905	-0.5	11/15/2011	2:48:13 PM
3	1.0000	1	0.6005	0.0330	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.2256	0.0121	2.5	11/15/2011	3:20:28 PM
5	0.1000	1	0.0531	0.0028	3.8	11/15/2011	3:36:35 PM
6	0.0500	1	0.0279	0.0014	-5.9	11/15/2011	3:52:42 PM

Figure 6: Nitrate-N



Area = 0.0273 * Conc^2 + 0.5736 * Conc - 0.0024
Conc = - 0.0824 * Area^2 + 1.6983 * Area + 0.0062
Correlation Coefficient (r) = 1.00000

1/x weighting

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review Coversheet—Inorganics Dept

Method Name: IC Method Reference: 300.0 Date of Analytical Run: 11/28/11

Primary Reviewer's Initials & Date: AMS 11/30/11 Secondary Reviewer's Initials & Date: [illegible] 11/30/11

Batch Numbers	84080	84082	84081		

QC Criteria—Non-MCP: ICV/CCV ±10%: LCS/LCSD ±15%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%

QC Criteria—MCP/RCP: (9012 and 7196 only)
9012 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
9012 (soil): ICV/CCV ±15%: LCS/LCSD **: MS/MSD ±25%: ICB/MB/CCB <RL: MD RPD 35%: MSD/LCSD RPD ≤30%
7196 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
7196 (soil): ICV/CCV ±15%: LCS/LCSD **: MSS/MSI ±25%: ICB/MB/CCB <RL: MD RPD ≤35%: LCSD RPD ≤30%

FAILURES OF QC FOR ANYTHING OTHER THAN MS, MSD or MD ARE GROUNDS FOR INVALIDATING THE BATCH.

Criteria for QC	Yes	No	n/a	Notes/Comments
Were the ICV and CCVs within acceptable limits for QC recovery?	✓ ✓ ✓			
Were the ICB and CCBs all <RL?	✓ ✓ ✓			
Were all MB and CCB results <RL for the analytes of interest?	✓ ✓ ✓			
Was there a CCV/CCB combination run after every 10 samples or less?	✓ ✓ ✓			
Was there an LCS run with every batch of 20 samples or less?	✓ ✓ ✓			
Was there a MD, LCSD or MSD run with every batch of 20 samples or less?	✓ ✓	✓		
Were all LCS/LCSD results within acceptable limits for QC recovery?	✓ ✓ ✓			
Were all MS/MSD results within acceptable limits for QC recovery?		✓ ✓	✓	
Were all MD, LCSD and/or MSD %RPDs within acceptable limits for QC recovery?	✓	~~✓~~ ✓ 11/30	✓	
Were the raw data points for investigative samples within the working curve range, or if not, were the samples diluted to bring them within this range?	✓ ✓ ✓			
IF there were any MCP/RCP samples in this batch, did they meet all MCP/RCP requirements?	✓		✓ ✓	
Were there any holding time violations in this batch?	✓ ✓	✓ ✓		**NOTE!** The PM and QA Manager must be notified by email *immediately* of any holding time violations!!
Were any NCMs generated for any samples in the batch? (If so, list NCM numbers, and first-reviewer must check off any "No" answers above as applicable.)	✓	✓ ✓		43764
Were any jobs in this batch Level 4? If "Yes" then scan all raw data & place in correct scan folder on the public drive before filing this paperwork.	✓ ✓	✓		

** LCS or LCSD must produce a recovery that is within the manufacturer's specified 95% confidence limits, must be matrix matched.

0.25 *M* Sulfuric Acid Creation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Record the information below for creating the acid. When an entry is made do not use arrows to fill in information. All entries must be complete.

Recipe: to 2958mL of deionized water in a 1 gallon jug add 42mL of concentrated H_2SO_4 for a total volume of 3L.

Date Made	Analyst's Initials	Volume of 0.25 *M* Acid Made (L)	Source: Concentrated Sulfuric Acid (ACS grade) Manufacturer & Lot Number
11-18-11	RW	3	Baker lot J22022
11-21-11	RW	3	↓
11-22-11	RW	3	↓
11-23-11	RW	3	↓
11-28-11	RW	3	↓

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Eluent Preparation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Prepare fresh daily; makes 3L of eluent. To make: in a one-gallon plastic container, mix:

- 60.0 mL of 100*M* $NaHCO_3$;
- 78.0 mL of 100*M* Na_2CO_3; and
- 2862 mL of deionized water.

Degas with helium for 3min before use.

Date Prepared	Analyst's Initials	Lot # 100*M* $NaHCO_3$	Lot # 100*M* Na_2CO_3	Number of Portions Prepared
11-17-11	[illegible]	W11J RGT018	W11K RGT001	1
11-18-11	RWT	W11K RGT016	W11K RGT017	2
11-21-11	RWT	↓	↓	1
11-22-11	RWT	↓	↓	1
11-23-11	RWT	↓	↓	2
11-28-11	RT	↓	↓	1
11-29-11	RWT	↓	↓	1

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 11-28-11

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution Sample Aliquot 2	Units	Final Volume 2	Units	Comments
RHE	11-28-11	300.0	37526 E3	20X	500	µL	10	mL					
			37552 C2	10X	1	mL							
			C3	10X	1	mL							
			C1	10X	1	mL							
			C6	10X	1	mL							
			C8	10X	1	mL							
			37526 B4	10X	1	mL							
				20X	500	µL							
			B1	10X	1	mL							
			B2	10X	1	mL							
			37552 C7	20X	500	µL							

entries completed by day [new page each day]

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Ion Chromatography QC Source Data Sheet—Inorganics Dept

Method (circle methods): IC 300_28D IC 300_48HR IC 9056_28D IC 9056_48HR

Date of Analytical Run: 11/28/11 Analyst's Initials: RWE

Working Curve Standard:

Manufacturer & Lot Number for Source Standard	Working Curve Standards Prepared On
Inorganic Ventures Lot E2-MEB394034	20 October 2011

QC Standard True Values for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.50	25.0	2.50	2.50	2.50	50.0
ICB	0	0	0	0	0	0
MB	0	0	0	0	0	0
LCS/LCSD	4.00	40.0	4.00	4.00	4.00	80.0
MS/MSD	1.00	10.0	1.00	1.00	1.00	20.0

QC Standard Acceptable Recovery Ranges for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.25-2.75	22.5-27.5	2.25-2.75	2.25-2.75	2.25-2.75	45.0-55.0
ICB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
MB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
LCS/LCSD	3.40-4.60	34.0-46.0	3.40-4.60	3.40-4.60	3.40-4.60	68.0-92.0
MS/MSD	0.75-1.25	7.50-12.5	0.75-1.25	0.75-1.25	0.75-1.25	15.0-25.0

Current Method RLs (mg/L):

	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
	0.10	1.00	0.010	0.10	0.050	2.0

Author: EmerichR

Date : 11/29/2011

Original Run Filename: OM_11-28-2011_07-27-49PM.OMN created 11/28/2011 7:27:49 PM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_11-28-2011_07-27-49PM.OMN last modified 11/29/2011 2:29:46 PM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	0.0036	0.0207	0.0079	0.0079	7.2923e-4	-0.9862	11/28/2011@7:29:06 PM
	Calibration:	Table/Fig. 3	Table/Fig. 1		Table/Fig. 4	Table/Fig. 2	Table/Fig. 5	
ICV	1	2.4660	25.2373	2.4699	2.5542	2.4847	49.6904	11/28/2011@7:45:13 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
	Calibration:			Table/Fig. 6				
ICB	S11	0.0039	0.0173	0.0097	0.0063	0.0034	-0.9835	11/28/2011@8:01:20 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	-2.6154e-4	0.0185	0.0096	0.0063	0.0022	-0.9851	11/28/2011@8:17:27 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9278	39.7665	3.9381	3.9565	4.0096	77.4296	11/28/2011@8:33:34 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37526-B-3@20 SO4	2	0.0522	3.7735	0.0068	0.0959	0.6841	69.9224	11/28/2011@8:49:41 PM
360-37526-B-3@20 MS	3	1.1447	15.0104	1.0778	1.2090	1.7914	88.2860	11/28/2011@9:05:48 PM
360-37526-B-3@20 MSD	3	1.0436	13.6620	0.9809	1.0966	1.6366	79.2764	11/28/2011@9:21:55 PM
360-37552-C-2@10 CL	4	0.0038	12.0750	0.0128	0.0064	0.0022	0.1846	11/28/2011@9:38:03 PM
360-37552-C-3@10 CL	5	0.0300	18.0052	0.0074	0.2442	0.0418	1.7807	11/28/2011@9:54:10 PM
360-37552-C-1@10 SO4	6	0.0150	0.9358	0.0167	0.2657	0.0023	9.3202	11/28/2011@10:10:16 PM
360-37552-C-6@10 SO4	7	0.0291	4.1053	0.0143	0.0279	1.4679	32.8414	11/28/2011@10:26:23 PM
360-37552-C-8@10 SO4	8	0.0793	2.0278	0.0058	0.0107	-0.0033	68.8837	11/28/2011@10:42:30 PM
360-37526-B-4@10 CL/SO4	9	0.0799	8.0659	0.0064	0.1722	1.0534	123.7495	11/28/2011@10:58:36 PM
360-37526-B-4@20 CL/SO4	10	0.0389	3.4012	0.0081	0.0766	0.4701	62.8820	11/28/2011@11:14:43 PM
CCV	S12	3.9432	39.9032	3.9678	3.9739	4.0294	77.7567	11/28/2011@11:30:50 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0014	0.0181	0.0095	0.0059	0.0038	-0.9851	11/28/2011@11:46:56 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37526-B-1@10 SO4	11	0.0324	2.3260	0.0074	0.0086	-0.0033	45.2573	11/29/2011@12:03:02 AM
360-37526-B-2@10 SO4	12	0.0280	0.7888	0.0188	0.0079	0.0125	20.0497	11/29/2011@12:19:08 AM
360-37654-A-24@2 CL	13	0.0360	8.8935	0.0667	0.0086	0.0022	5.1642	11/29/2011@12:35:14 AM
360-37654-A-25@10 CL	14	0.0127	4.7699	0.0158	0.2893	0.0022	0.0478	11/29/2011@12:51:20 AM
360-37706-A-23@10 BR	15	1.5943	6.7376	0.0226	0.0817	0.0022	-0.4309	11/29/2011@1:07:25 AM
360-37706-A-25@10 BR	16	0.6086	5.5988	0.0146	0.0446	0.0022	-0.7328	11/29/2011@1:23:33 AM
360-37706-A-27@10 BR	17	1.3374	6.1970	0.0152	0.0485	-0.0105	-0.6514	11/29/2011@1:39:40 AM
360-37706-A-29@10 BR	18	15.2311	6.9260	0.0075	-0.0123	-0.0166	2.7706	11/29/2011@1:55:47 AM
360-37706-A-29@50 BR	19	3.9399	1.3909	0.0076	0.0062	9.9786e-4	-0.3912	11/29/2011@2:11:54 AM
360-37552-C-7@20 SO4	20	0.0554	16.1989	0.0615	0.0062	0.0022	101.2697	11/29/2011@2:28:00 AM
CCV	S12	3.8548	38.8113	3.8379	3.8584	3.9192	75.6140	11/29/2011@2:44:07 AM

Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0074	0.0160	0.0077	0.0034	0.0022	-0.9796	11/29/2011@3:00:14 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0064	0.0130	0.0074	0.0052	0.0022	-0.9828	11/29/2011@3:16:21 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9693	39.9429	3.9549	3.9816	4.0365	77.5415	11/29/2011@3:32:28 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37791-B-3@50 NO3	21	0.1003	97.3839	0.0598	3.9977	0.0129	-284.8575	11/29/2011@3:48:35 AM
360-37791-B-3@50 MS	22	1.1854	96.2591	1.1072	4.6637	0.0022	-255.0089	11/29/2011@4:04:42 AM
360-37791-B-3@50 MSD	22	0.9393	97.4537	0.8710	3.7285	-27.3959	-42.6987	11/29/2011@4:20:48 AM
360-37711-A-11@2 CL	23	0.0374	30.3922	0.0076	0.0033	0.0022	43.4593	11/29/2011@4:36:55 AM
360-37717-F-3@2 CL	24	-0.0061	86.8540	0.0068	-5.741e-4	-35.1135	25.1280	11/29/2011@4:53:01 AM
360-37717-F-3@5 CL	25	0.0039	-12.4533	-0.0050	0.0062	10.3481	14.3082	11/29/2011@5:09:07 AM
360-37799-B-2@20 CL	26	0.0039	32.3595	0.0184	0.0062	0.0022	0.4797	11/29/2011@5:25:14 AM
360-37706-A-8@10 BR	27	1.2412	8.4218	0.0082	-0.0133	0.0022	4.2570	11/29/2011@5:41:20 AM
360-37706-A-10@10 BR	28	15.7717	6.8738	0.0352	0.0062	0.0022	0.8175	11/29/2011@5:57:26 AM
360-37706-A-10@50 BR	29	4.8176	1.5338	0.0144	-0.0199	0.0022	-0.5839	11/29/2011@6:13:31 AM
CCV	S12	3.9992	40.3750	3.9755	4.0099	4.0630	78.1467	11/29/2011@6:29:39 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0039	0.0094	0.0099	0.0043	0.0040	-0.9801	11/29/2011@6:45:45 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37706-A-13@10 BR	30	5.6579	7.7979	0.0141	0.0062	-0.0201	-0.3787	11/29/2011@7:01:50 AM
360-37706-A-15@10 BR	31	14.4012	5.3323	0.0594	0.0093	-0.0064	0.1136	11/29/2011@7:17:58 AM
360-37706-A-15@50 BR	32	6.0129	1.0653	0.0183	-0.0107	0.0063	-0.7533	11/29/2011@7:34:05 AM
360-37706-A-46	33	0.0491	23.2691	0.1380	0.0174	-0.1053	38.8742	11/29/2011@7:50:12 AM
360-37706-A-47	34	15.0854	61.4040	0.0806	0.5114	0.0022	2.5536	11/29/2011@8:06:19 AM
360-37706-A-48	35	-10.1313	56.0731	0.0877	0.3852	0.0022	2.1254	11/29/2011@8:22:26 AM
360-37706-A-49	36	0.1286	79.9426	0.0644	-0.0010	-16.5755	52.9949	11/29/2011@8:38:32 AM
360-37706-A-50	37	-1.7975e+3	56.1666	0.0249	0.1897	0.0022	19.2789	11/29/2011@8:54:41 AM
360-37706-A-51	38	0.1026	-24.0314	0.0278	0.0062	6.6041	95.9650	11/29/2011@9:10:47 AM
360-37706-A-52	39	-21.5766	68.2137	0.0242	0.0065	-15.9073	21.3619	11/29/2011@9:26:54 AM
CCV	S12	3.6815	40.0591	3.9174	3.9218	4.0114	77.2504	11/29/2011@9:43:02 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0037	0.0099	0.0102	0.0034	0.0046	-0.9826	11/29/2011@9:59:09 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0065	0.0091	0.0099	0.0037	0.0050	-0.9815	11/29/2011@10:15:16 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.7489	40.6906	3.9983	3.9916	4.0730	78.4749	11/29/2011@10:31:23 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37552-C-7@ 50	40	0.0194	5.1569	0.0245	0.0075	0.0022	35.4665	11/29/2011@10:47:29 AM
360-37552-C-7 @50 MS	41	1.0178	18.7071	1.1112	1.1438	1.1413	65.3057	11/29/2011@11:03:35 AM
360-37552-C-7 @50 MSD	41	0.7895	14.4320	0.8383	0.8903	0.8725	50.0245	11/29/2011@11:19:41 AM
360-37706-A-13 @20 BR	42	2.5312	3.5270	0.0095	0.0062	0.0022	0.2721	11/29/2011@11:35:47 AM
360-37706-A-15 @100 BR	43	2.5041	0.5587	0.0127	-0.0157	0.0022	-0.8665	11/29/2011@11:51:53 AM
360-37706-A-47 @100 BR	44	0.2343	0.5995	0.0080	0.0046	0.0015	-0.9275	11/29/2011@12:07:59 PM

360-37706-A-48 @100 BR	45	0.3919	0.5992	0.0097	0.0046	0.0022	-0.9270	11/29/2011@12:24:05 PM
360-37654-A-33	46	0.0953	43.8435	0.0673	1.1160	0.0022	16.2133	11/29/2011@12:40:12 PM
360-37831-A-1	55	0.0046	5.1322	0.0173	0.1706	0.0022	-0.2361	11/29/2011@12:56:18 PM
360-37831-A-2	56	0.0089	1.1661	0.0129	0.0084	0.0022	-0.7678	11/29/2011@1:12:24 PM
CCV	S12	0.0038	0.0096	0.0100	0.0042	0.0023	-0.9827	11/29/2011@1:28:32 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0037	0.0046	0.0103	0.0034	0.0022	-0.9784	11/29/2011@1:44:40 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37654-A-38	49	-0.0033	0.0049	0.0099	0.0074	0.0023	-0.9827	11/29/2011@2:00:47 PM

Original Run Filename: OM_11-28-2011_07-27-49PM.OMN created 11/28/2011 7:27:49 PM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_11-28-2011_07-27-49PM.OMN last modified 11/29/2011 2:29:46 PM
Current Run Author's Signature: [EmerichR]
Description: *Triggered autodilution test*

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	0.0036	0.0207	0.0079	0.0079	7.2923e-4	-0.9862	11/28/2011@7:29:06 PM
	Calibration:	Table/Fig. 3	Table/Fig. 1		Table/Fig. 4	Table/Fig. 2	Table/Fig. 5	
ICV	1	2.4660	25.2373	2.4699	2.5542	2.4847	49.6904	11/28/2011@7:45:13 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
	Calibration:			Table/Fig. 6				
ICB	S11	0.0039	0.0173	0.0097	0.0063	0.0034	-0.9835	11/28/2011@8:01:20 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	-2.6154e-4	0.0185	0.0096	0.0063	0.0022	-0.9851	11/28/2011@8:17:27 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9278	39.7665	3.9381	3.9565	4.0096	77.4296	11/28/2011@8:33:34 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37526-B-3@20 SO4	2	0.0522	3.7735	0.0068	0.0959	0.6841	69.9224	11/28/2011@8:49:41 PM
360-37526-B-3@20 MS	3	1.1447	15.0104	1.0778	1.2090	1.7914	88.2860	11/28/2011@9:05:48 PM
360-37526-B-3@20 MSD	3	1.0436	13.6620	0.9809	1.0966	1.6366	79.2764	11/28/2011@9:21:55 PM
360-37552-C-2@10 CL	4	0.0038	12.0750	0.0128	0.0064	0.0022	0.1846	11/28/2011@9:38:03 PM
360-37552-C-3@10 CL	5	0.0300	18.0052	0.0074	0.2442	0.0418	1.7807	11/28/2011@9:54:10 PM
360-37552-C-1@10 SO4	6	0.0150	0.9358	0.0167	0.2657	0.0023	9.3202	11/28/2011@10:10:16 PM
360-37552-C-6@10 SO4	7	0.0291	4.1053	0.0143	0.0279	1.4679	32.8414	11/28/2011@10:26:23 PM
360-37552-C-8@10 SO4	8	0.0793	2.0278	0.0058	0.0107	-0.0033	68.8837	11/28/2011@10:42:30 PM
360-37526-B-4@10 CL/SO4	9	0.0799	8.0659	0.0064	0.1722	1.0534	123.7495	11/28/2011@10:58:36 PM
360-37526-B-4@20 CL/SO4	10	0.0389	3.4012	0.0081	0.0766	0.4701	62.8820	11/28/2011@11:14:43 PM
CCV	S12	3.9432	39.9032	3.9678	3.9739	4.0294	77.7567	11/28/2011@11:30:50 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0014	0.0181	0.0095	0.0059	0.0038	-0.9851	11/28/2011@11:46:56 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37526-B-1@10 SO4	11	0.0324	2.3260	0.0074	0.0086	-0.0033	45.2573	11/29/2011@12:03:02 AM
360-37526-B-2@10 SO4	12	0.0280	0.7888	0.0188	0.0079	0.0125	20.0497	11/29/2011@12:19:08 AM
360-37654-A-24@2 CL	13	0.0360	8.8935	0.0667	0.0086	0.0022	5.1642	11/29/2011@12:35:14 AM
360-37654-A-25@10 CL	14	0.0127	4.7699	0.0158	0.2893	0.0022	0.0478	11/29/2011@12:51:20 AM
360-37706-A-23@10 BR	15	1.5943	6.7376	0.0226	0.0817	0.0022	-0.4309	11/29/2011@1:07:25 AM
360-37706-A-25@10 BR	16	0.6086	5.5988	0.0146	0.0446	0.0022	-0.7328	11/29/2011@1:23:33 AM
360-37706-A-27@10 BR	17	1.3374	6.1970	0.0152	0.0485	-0.0105	-0.6514	11/29/2011@1:39:40 AM
360-37706-A-29@10 BR	18	15.2311	6.9260	0.0075	-0.0123	-0.0166	2.7706	11/29/2011@1:55:47 AM
360-37706-A-29@50 BR	19	3.9399	1.3909	0.0076	0.0062	9.9786e-4	-0.3912	11/29/2011@2:11:54 AM
360-37552-C-7@20 SO4	20	0.0554	16.1989	0.0615	0.0062	0.0022	101.2697	11/29/2011@2:28:00 AM
CCV	S12	3.8548	38.8113	3.8379	3.8584	3.9192	75.6140	11/29/2011@2:44:07 AM

	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0074	0.0160	0.0077	0.0034	0.0022	-0.9796	11/29/2011@3:00:14 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0064	0.0130	0.0074	0.0052	0.0022	-0.9828	11/29/2011@3:16:21 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9693	39.9429	3.9549	3.9816	4.0365	77.5415	11/29/2011@3:32:28 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37791-B-3@50 NO3	21	0.1003	97.3839	0.0598	3.9977	0.0129	-284.8575	11/29/2011@3:48:35 AM
360-37791-B-3@50 MS	22	1.1854	96.2591	1.1072	4.6637	0.0022	-255.0089	11/29/2011@4:04:42 AM
360-37791-B-3@50 MSD	22	0.9393	97.4537	0.8710	3.7285	-27.3959	-42.6987	11/29/2011@4:20:48 AM
360-37711-A-11@2 CL	23	0.0374	30.3922	0.0076	0.0033	0.0022	43.4593	11/29/2011@4:36:55 AM
360-37717-F-3@2 CL	24	-0.0061	86.8540	0.0068	-5.741e-4	-35.1135	25.1280	11/29/2011@4:53:01 AM
360-37717-F-3@5 CL	25	0.0039	-12.4533	-0.0050	0.0062	10.3481	14.3082	11/29/2011@5:09:07 AM
360-37799-B-2@20 CL	26	0.0039	32.3595	0.0184	0.0062	0.0022	0.4797	11/29/2011@5:25:14 AM
360-37706-A-8@10 BR	27	1.2412	8.4218	0.0082	-0.0133	0.0022	4.2570	11/29/2011@5:41:20 AM
360-37706-A-10@10 BR	28	15.7717	6.8738	0.0352	0.0062	0.0022	0.8175	11/29/2011@5:57:26 AM
360-37706-A-10@50 BR	29	4.8176	1.5338	0.0144	-0.0199	0.0022	-0.5839	11/29/2011@6:13:31 AM
CCV	S12	3.9992	40.3750	3.9755	4.0099	4.0630	78.1467	11/29/2011@6:29:39 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0039	0.0094	0.0099	0.0043	0.0040	-0.9801	11/29/2011@6:45:45 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37706-A-13@10 BR	30	5.6579	7.7979	0.0141	0.0062	-0.0201	-0.3787	11/29/2011@7:01:50 AM
360-37706-A-15@10 BR	31	14.4012	5.3323	0.0594	0.0093	-0.0064	0.1136	11/29/2011@7:17:58 AM
360-37706-A-15@50 BR	32	6.0129	1.0653	0.0183	-0.0107	0.0063	-0.7533	11/29/2011@7:34:05 AM
360-37706-A-46	33	0.0491	23.2691	0.1380	0.0174	-0.1053	38.8742	11/29/2011@7:50:12 AM
360-37706-A-47	34	15.0854	61.4040	0.0806	0.5114	0.0022	2.5536	11/29/2011@8:06:19 AM
360-37706-A-48	35	-10.1313	56.0731	0.0877	0.3852	0.0022	2.1254	11/29/2011@8:22:26 AM
360-37706-A-49	36	0.1286	79.9426	0.0644	-0.0010	-16.5755	52.9949	11/29/2011@8:38:32 AM
360-37706-A-50	37	-1.7975e+3	56.1666	0.0249	0.1897	0.0022	19.2789	11/29/2011@8:54:41 AM
360-37706-A-51	38	0.1026	-24.0314	0.0278	0.0062	6.6041	95.9650	11/29/2011@9:10:47 AM
360-37706-A-52	39	-21.5766	68.2137	0.0242	0.0065	-15.9073	21.3619	11/29/2011@9:26:54 AM
CCV	S12	3.6815	40.0591	3.9174	3.9218	4.0114	77.2504	11/29/2011@9:43:02 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0037	0.0099	0.0102	0.0034	0.0046	-0.9826	11/29/2011@9:59:09 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0065	0.0091	0.0099	0.0037	0.0050	-0.9815	11/29/2011@10:15:16 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.7489	40.6906	3.9983	3.9916	4.0730	78.4749	11/29/2011@10:31:23 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37552-C-7@ 50	40	0.0194	5.1569	0.0245	0.0075	0.0022	35.4665	11/29/2011@10:47:29 AM
360-37552-C-7 @50 MS	41	1.0178	18.7071	1.1112	1.1438	1.1413	65.3057	11/29/2011@11:03:35 AM
360-37552-C-7 @50 MSD	41	0.7895	14.4320	0.8383	0.8903	0.8725	50.0245	11/29/2011@11:19:41 AM
360-37706-A-13 @20 BR	42	2.5312	3.5270	0.0095	0.0062	0.0022	0.2721	11/29/2011@11:35:47 AM
360-37706-A-15 @100 BR	43	2.5041	0.5587	0.0127	-0.0157	0.0022	-0.8665	11/29/2011@11:51:53 AM
360-37706-A-47 @100 BR	44	0.2343	0.5995	0.0080	0.0046	0.0015	-0.9275	11/29/2011@12:07:59 PM

Closing CCV failed - data after 11-29-11 @ 09:59:09 AM is not reportable.

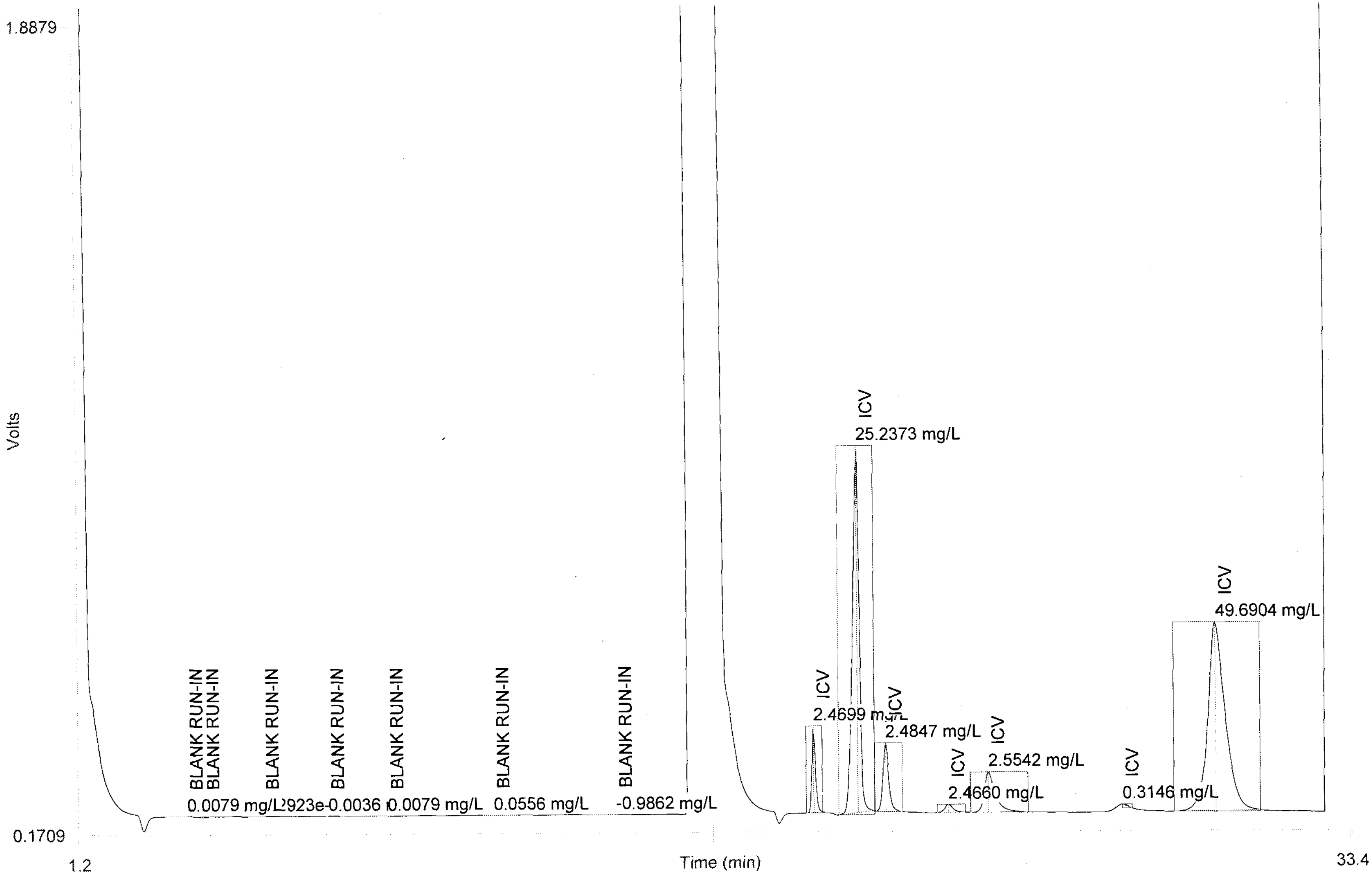
[initials] 11-30-11

360-37706-A-48 @100 BR	45	0.3919	0.5992	0.0097	0.0046	0.0022	-0.9270	11/29/2011@12:24:05 PM
360-37654-A-33	46	0.0953	43.8435	0.0673	1.1160	0.0022	16.2133	11/29/2011@12:40:12 PM
360-37831-A-1	55	0.0046	5.1322	0.0173	0.1706	0.0022	-0.2361	11/29/2011@12:56:18 PM
360-37831-A-2	56	0.0089	1.1661	0.0129	0.0084	0.0022	-0.7678	11/29/2011@1:12:24 PM
CCV	S12	0.0038	0.0096	0.0100	0.0042	0.0023	-0.9827	11/29/2011@1:28:32 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0037	0.0046	0.0103	0.0034	0.0022	-0.9784	11/29/2011@1:44:40 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37654-A-38	49	-0.0033	0.0049	0.0099	0.0074	0.0023	-0.9827	11/29/2011@2:00:47 PM

Author: EmerichR

Date : 11/29/2011

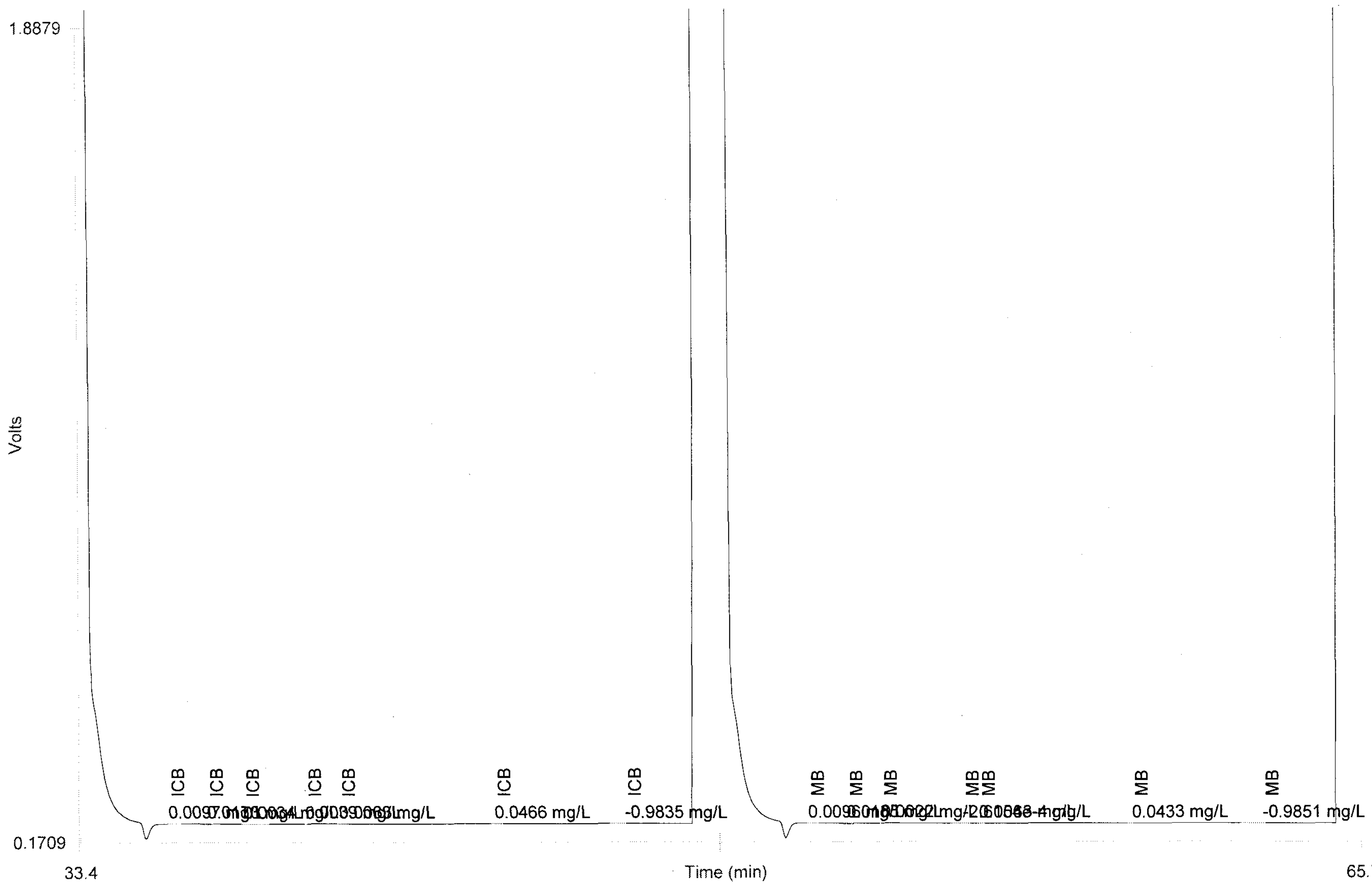
Channel 1 (Anions) : Set 1 of 35



Author: EmerichR

Date : 11/29/2011

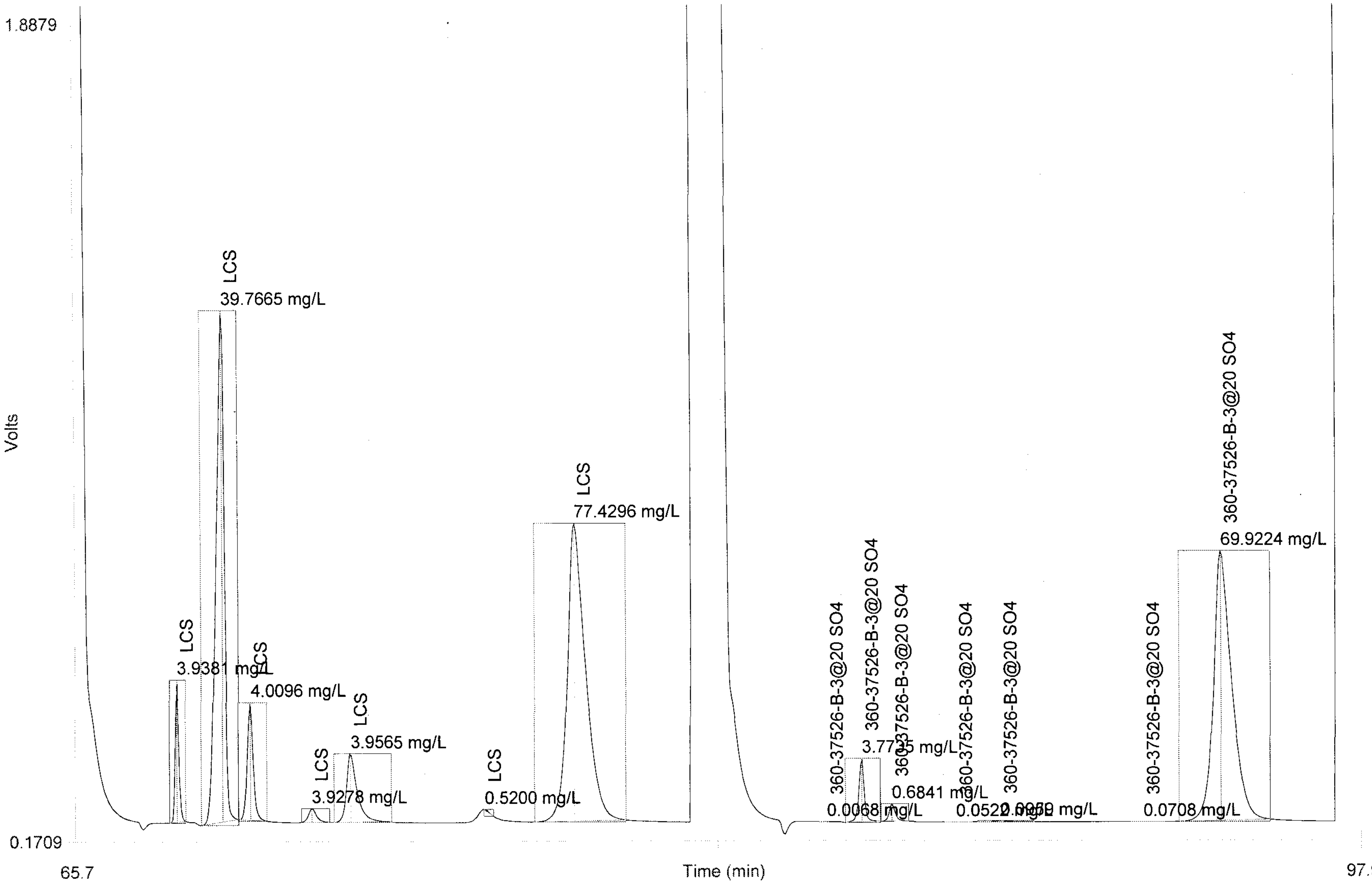
Channel 1 (Anions) : Set 2 of 35



Author: EmerichR

Date : 11/29/2011

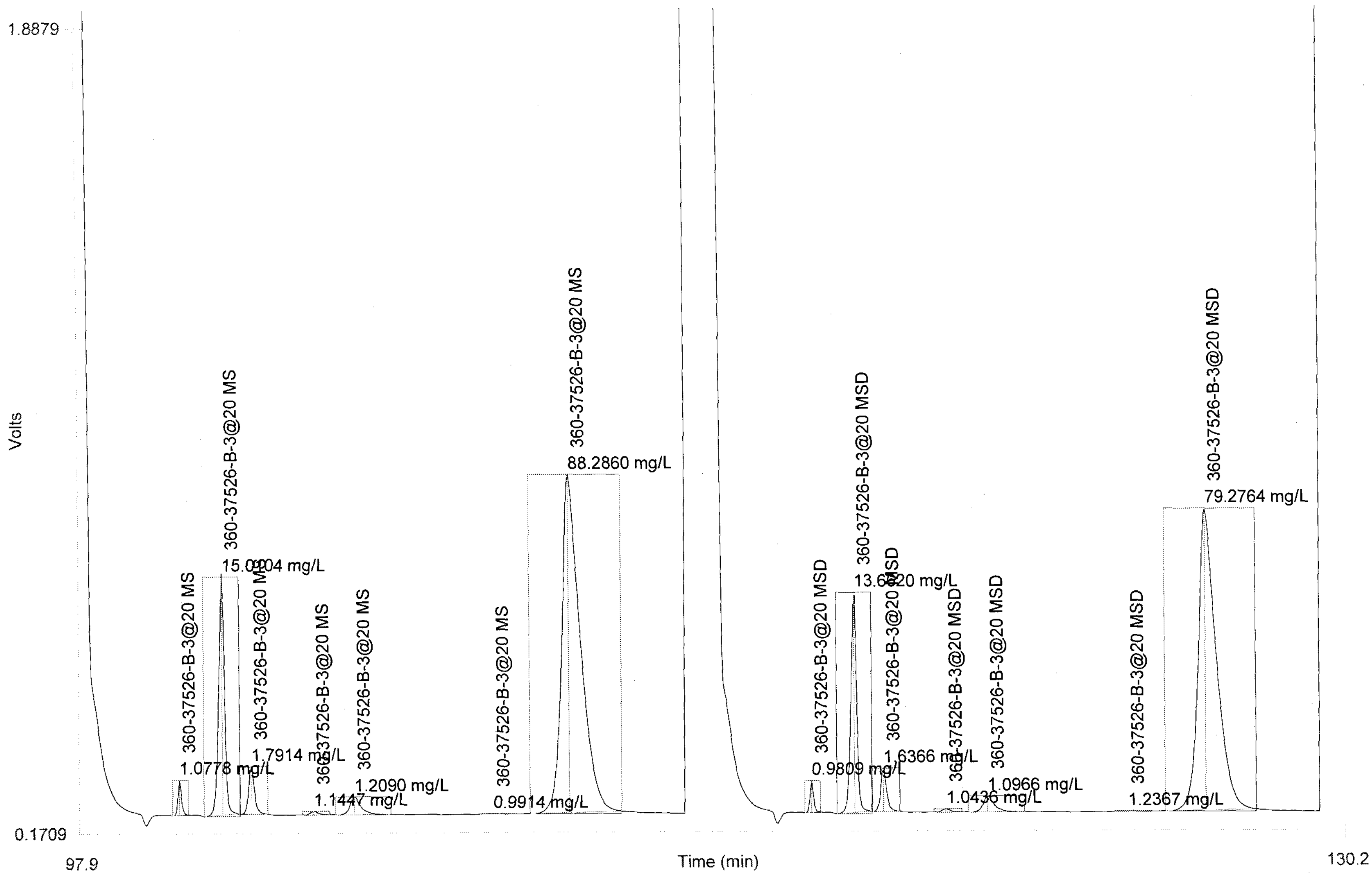
Channel 1 (Anions) : Set 3 of 35



Author: EmerichR

Date : 11/29/2011

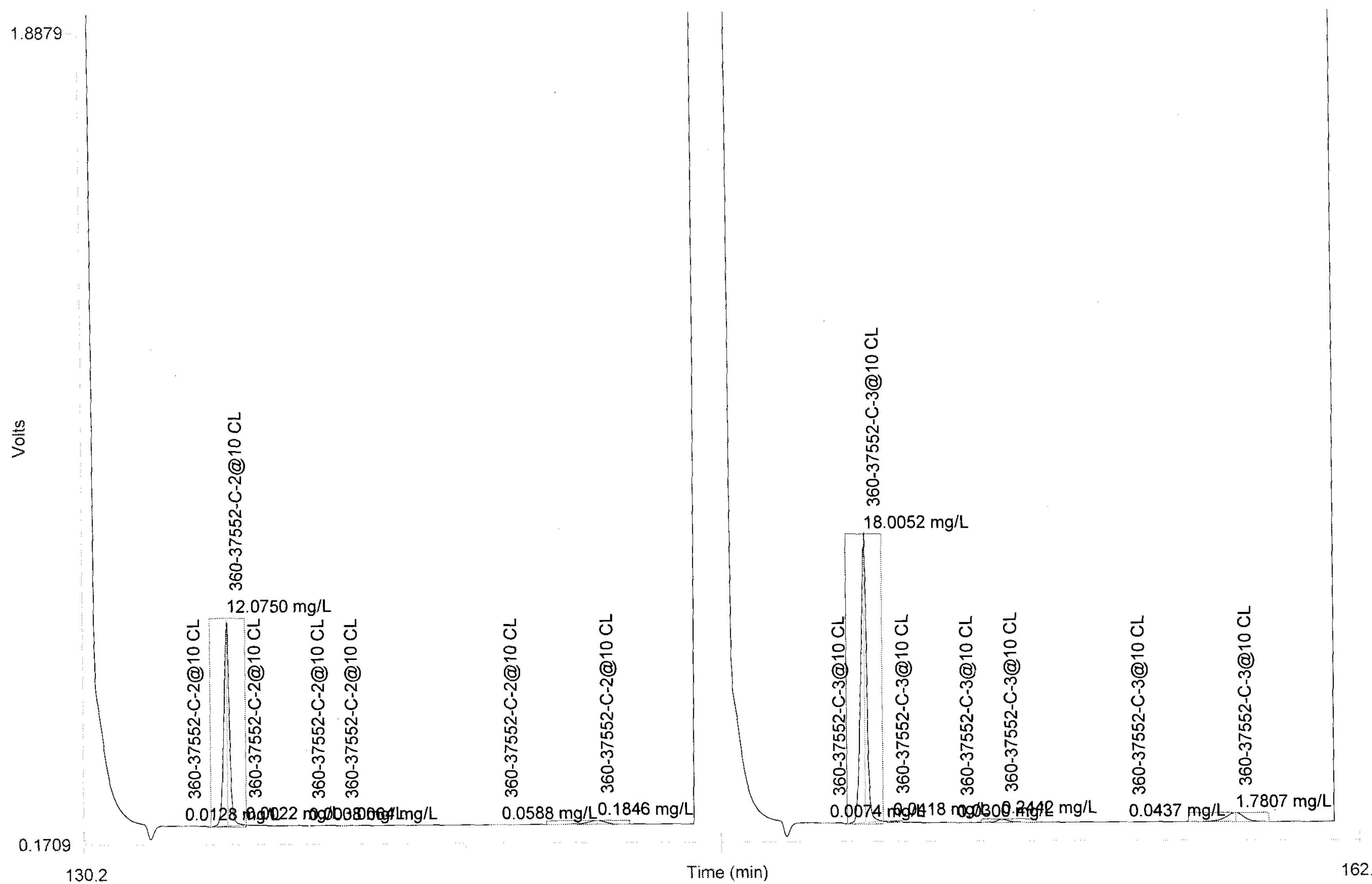
Channel 1 (Anions) : Set 4 of 35



Author: EmerichR

Date : 11/29/2011

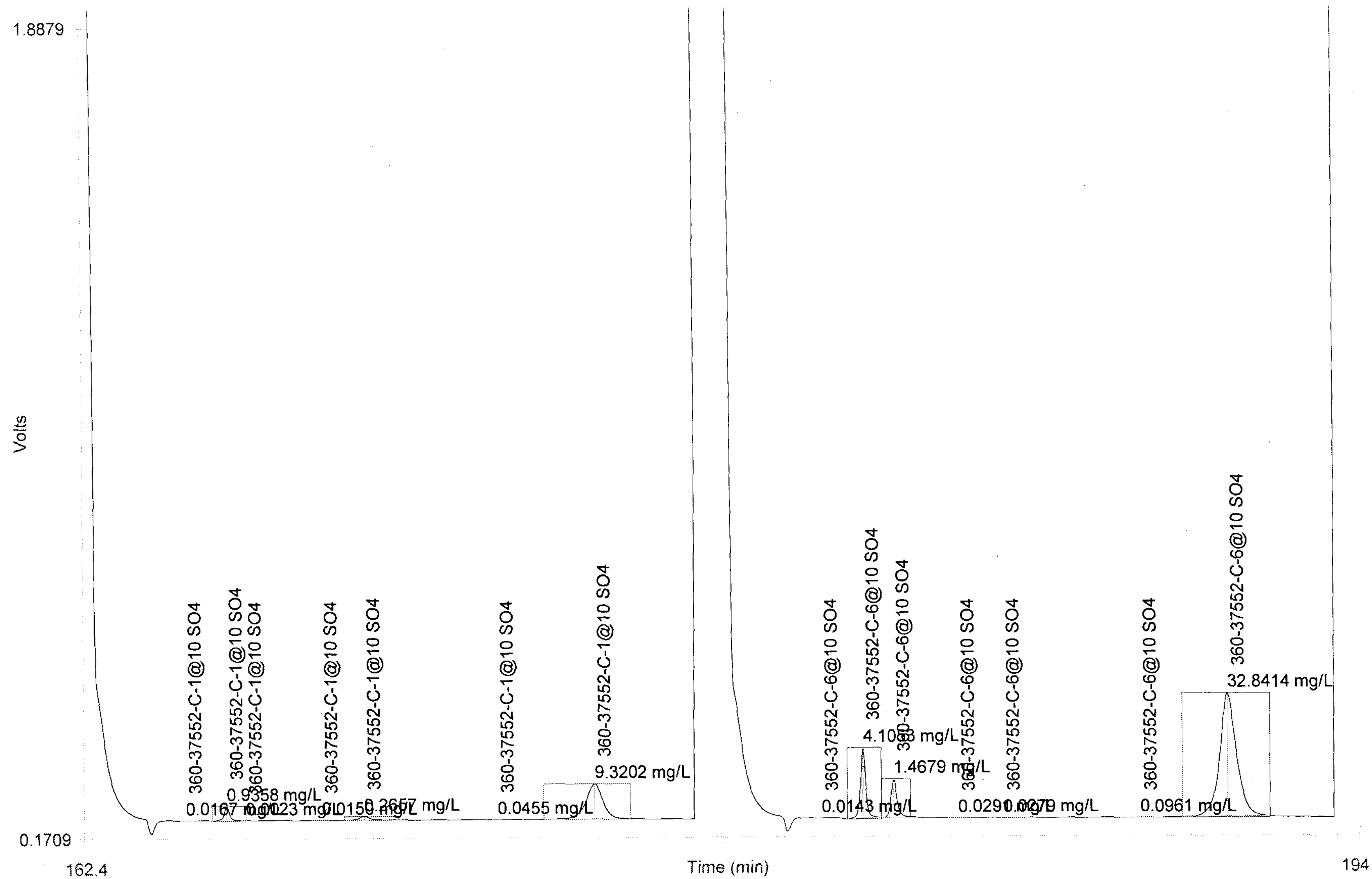
Channel 1 (Anions) : Set 5 of 35



Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 6 of 35



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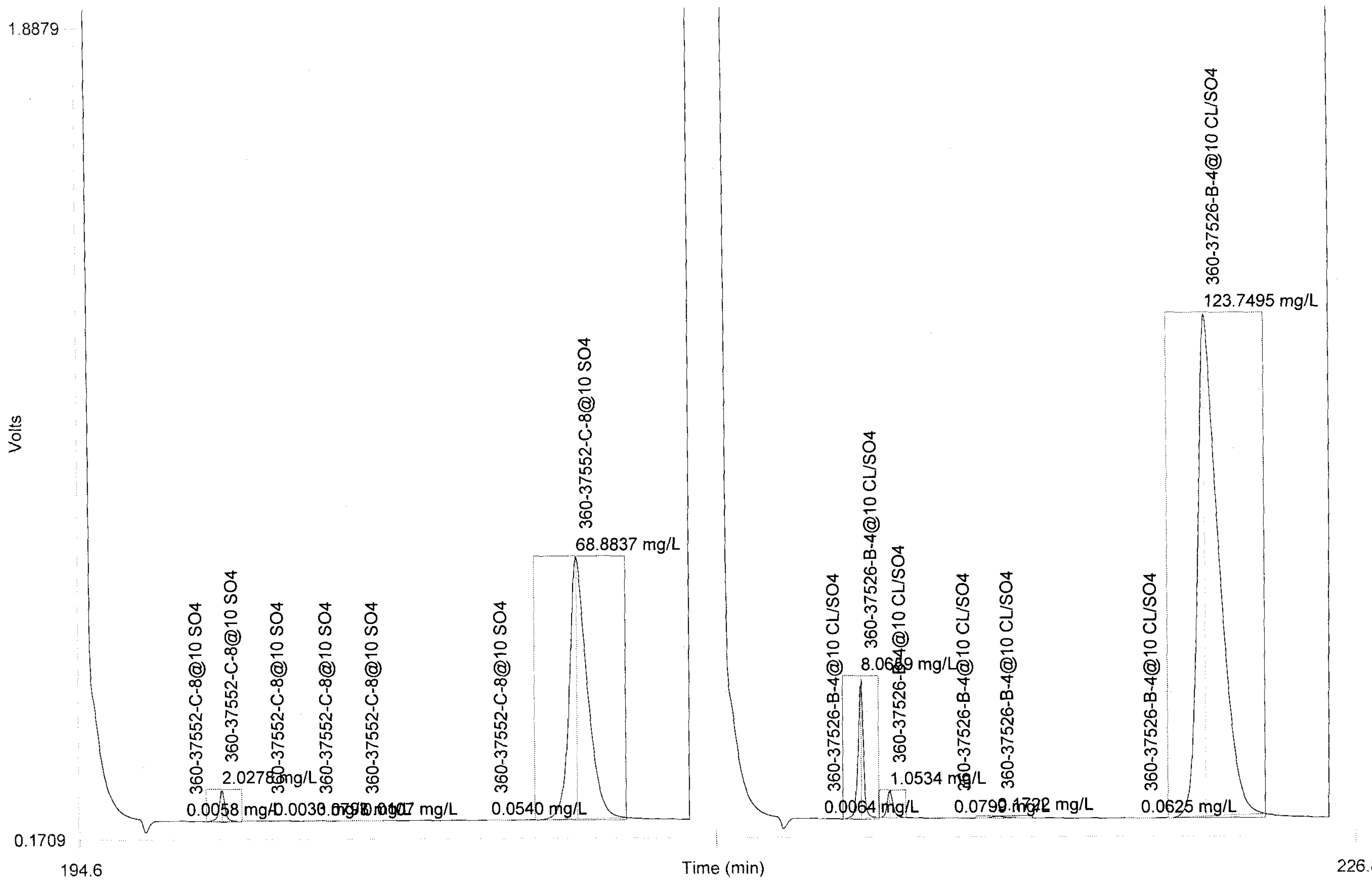
Author: EmerichR

Date : 11/29/2011

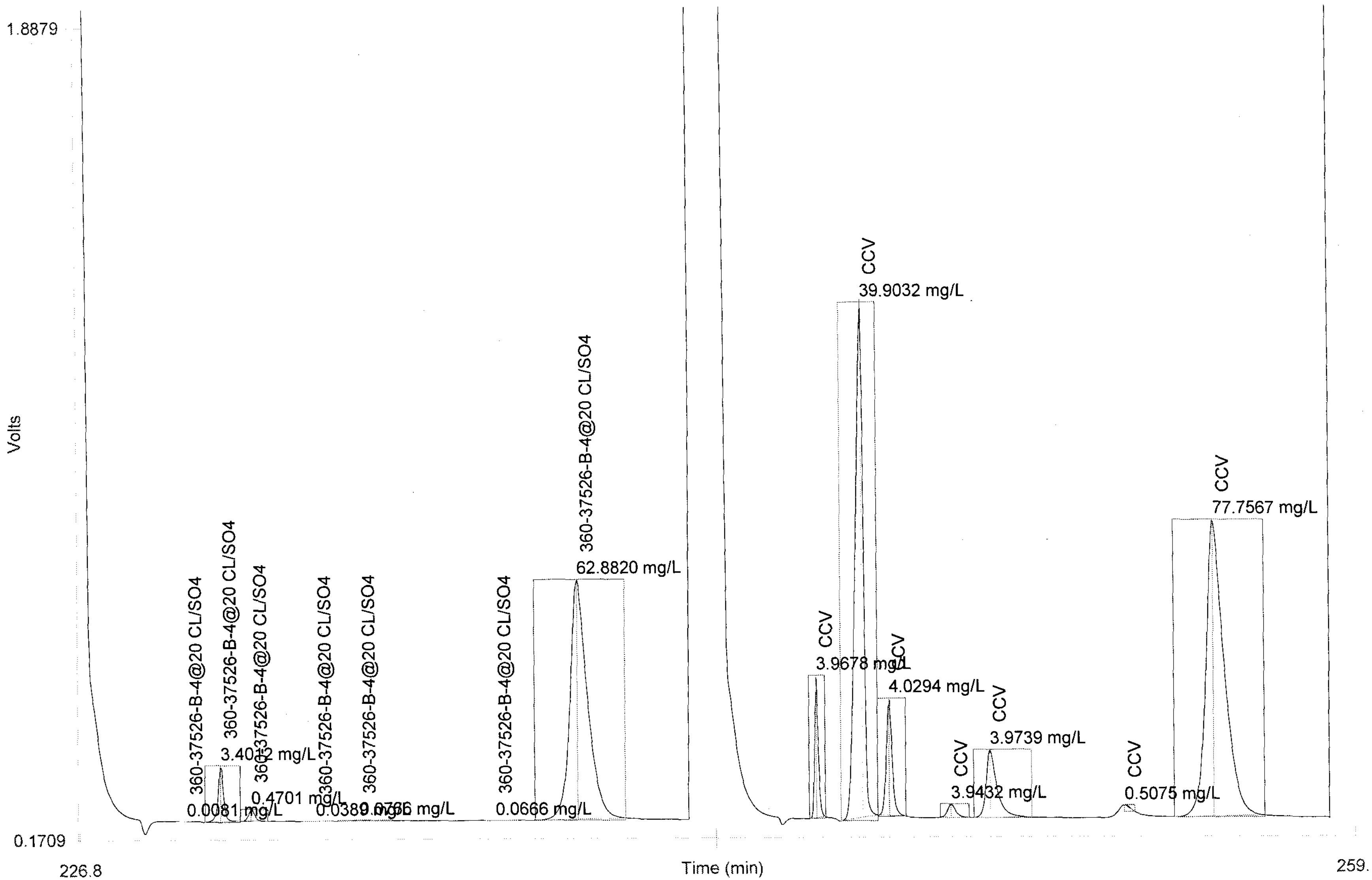
Channel 1 (Anions) : Set 7 of 35



Author: EmerichR

Date : 11/29/2011

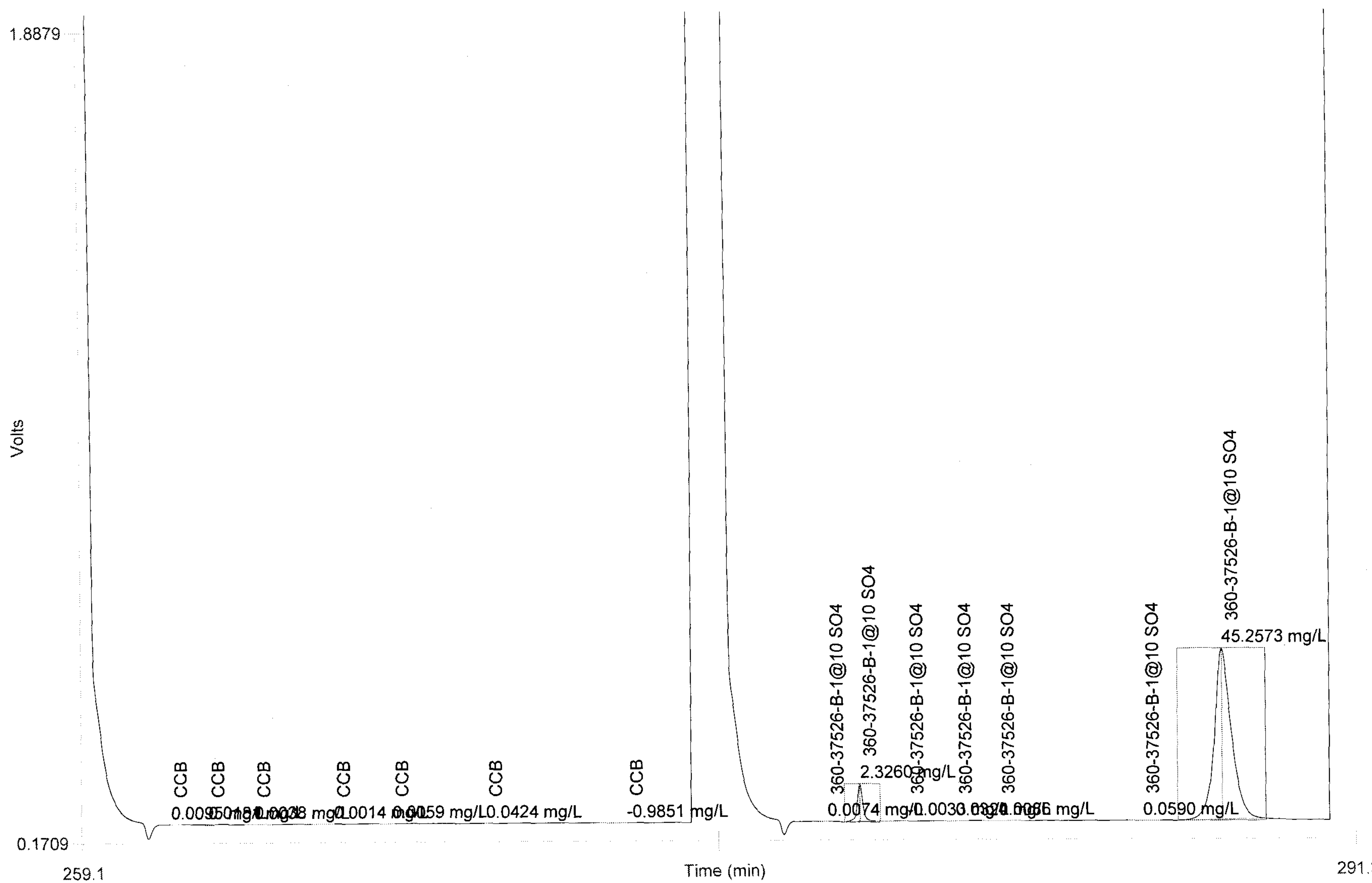
Channel 1 (Anions) : Set 8 of 35



Author: EmerichR

Date : 11/29/2011

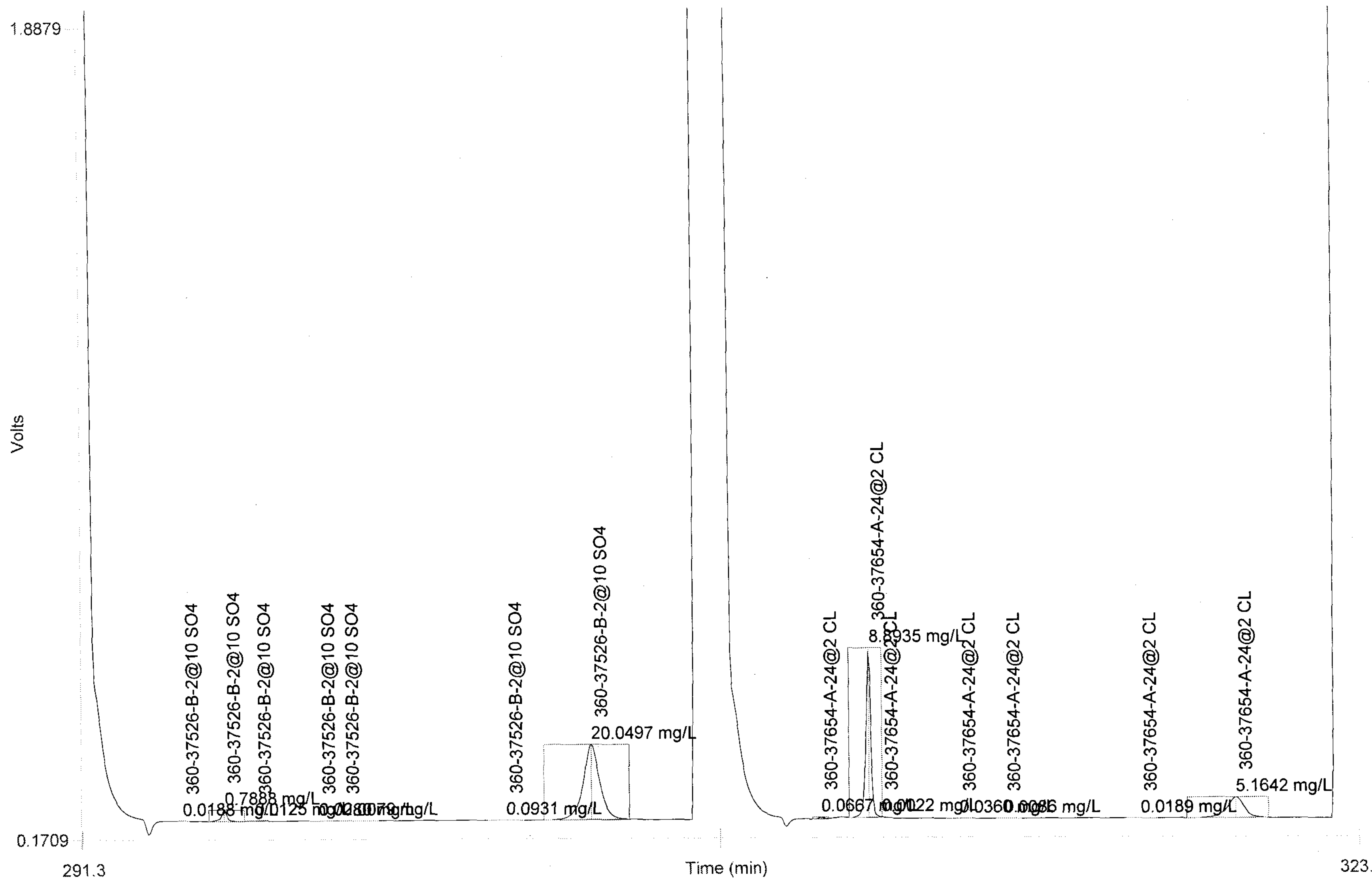
Channel 1 (Anions) : Set 9 of 35



Author: EmerichR

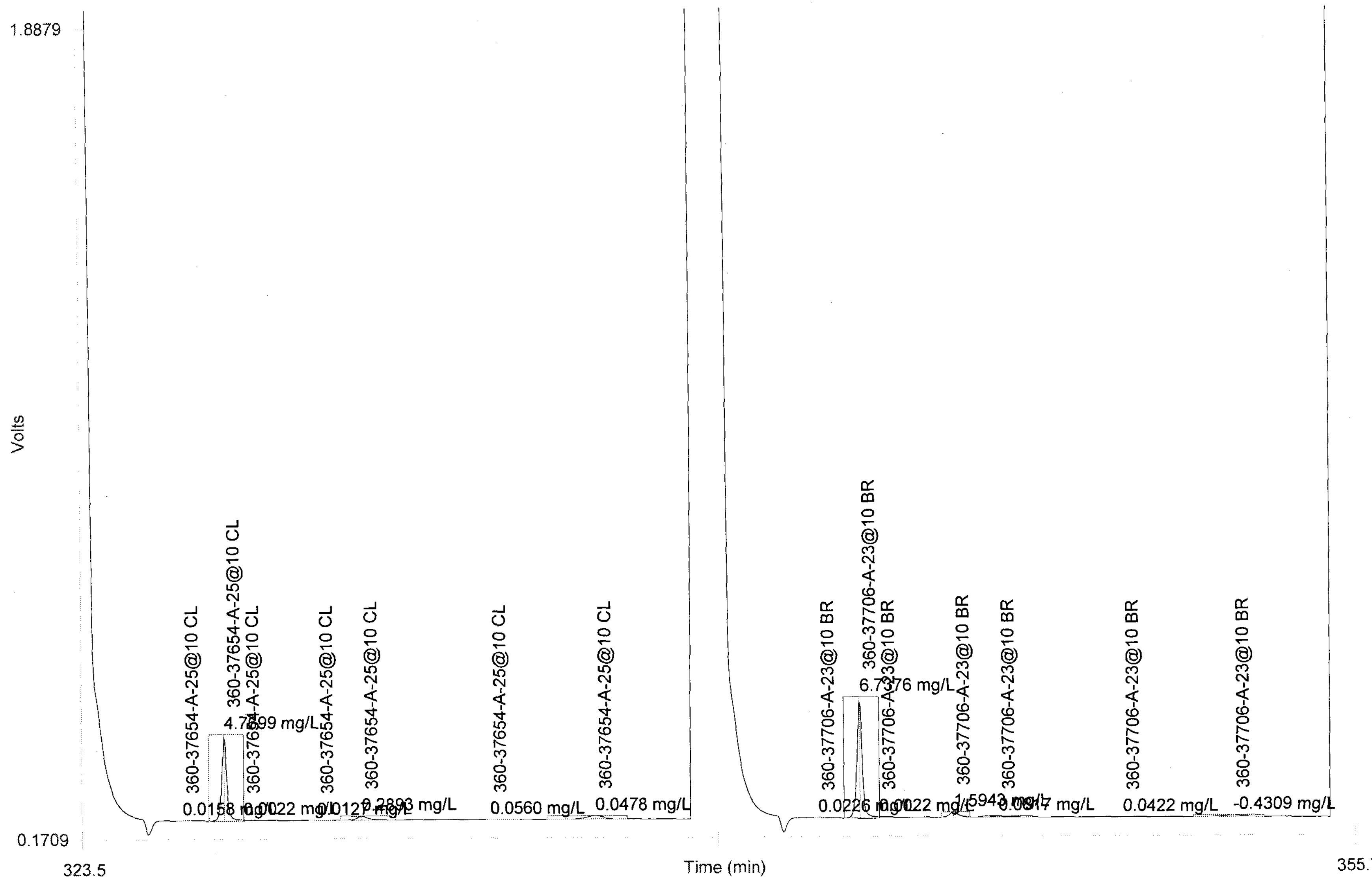
Date : 11/29/2011

Channel 1 (Anions) : Set 10 of 35



Author: EmerichR

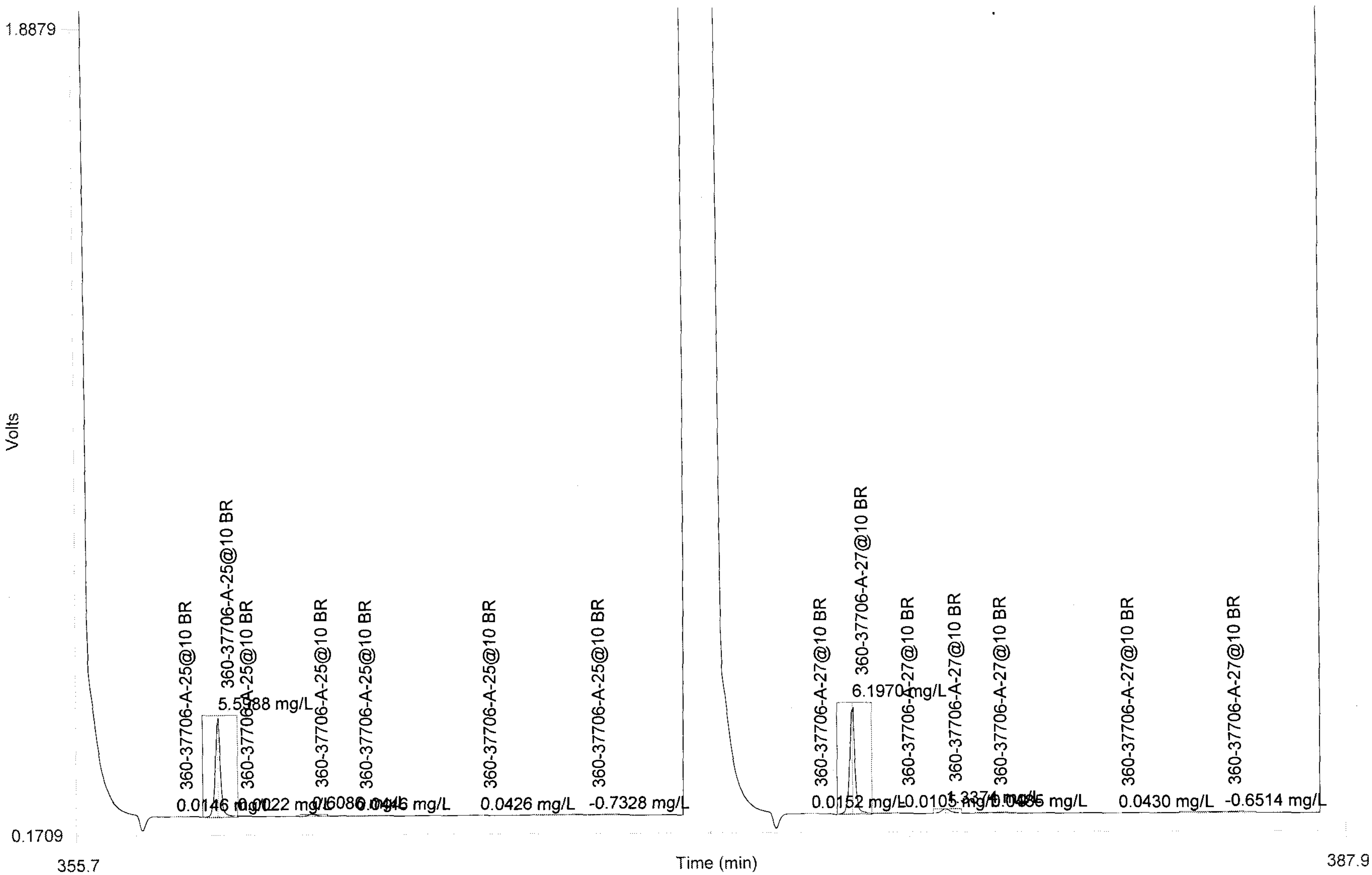
Channel 1 (Anions) : Set 11 of 35



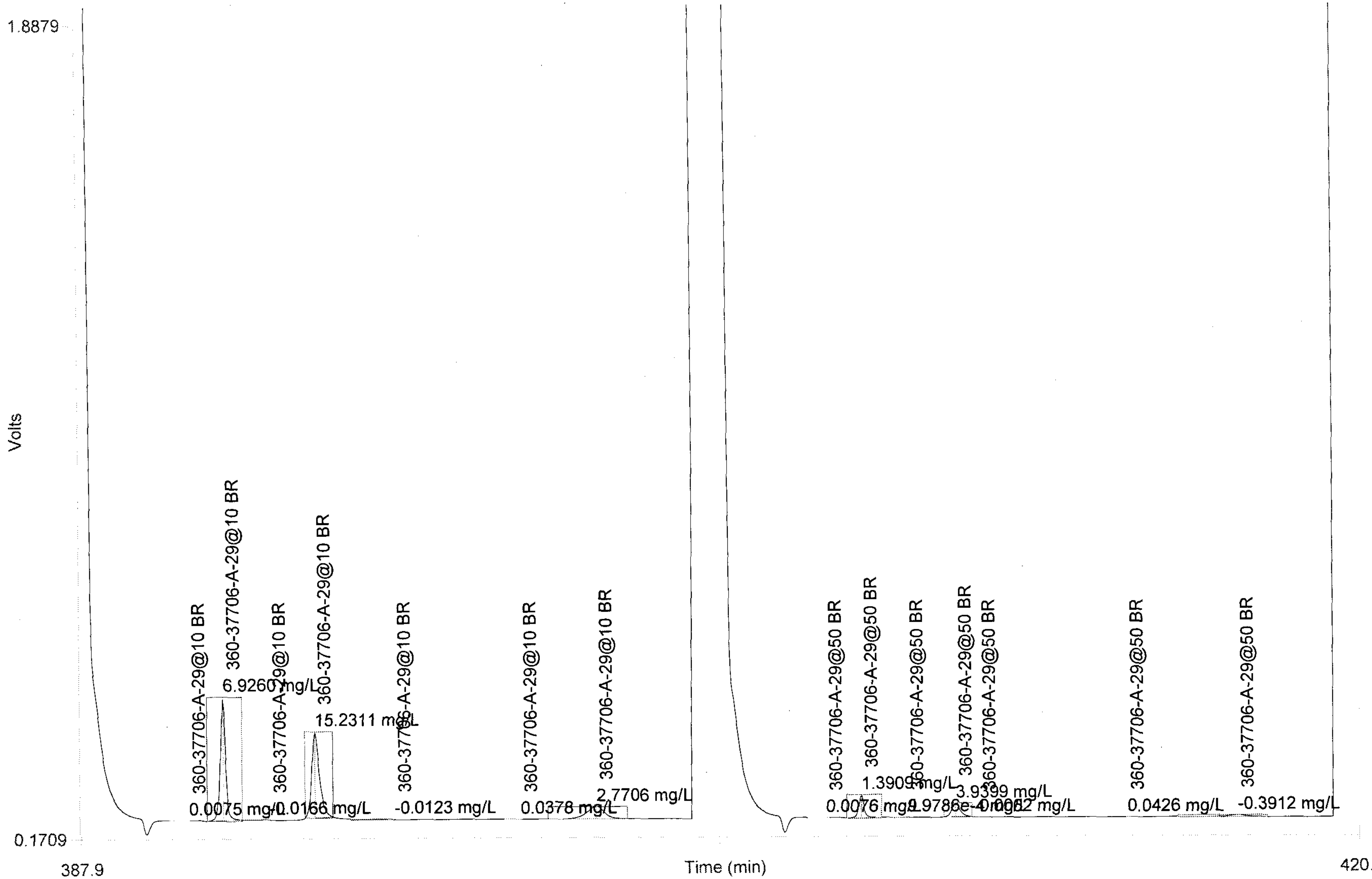
Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 12 of 35



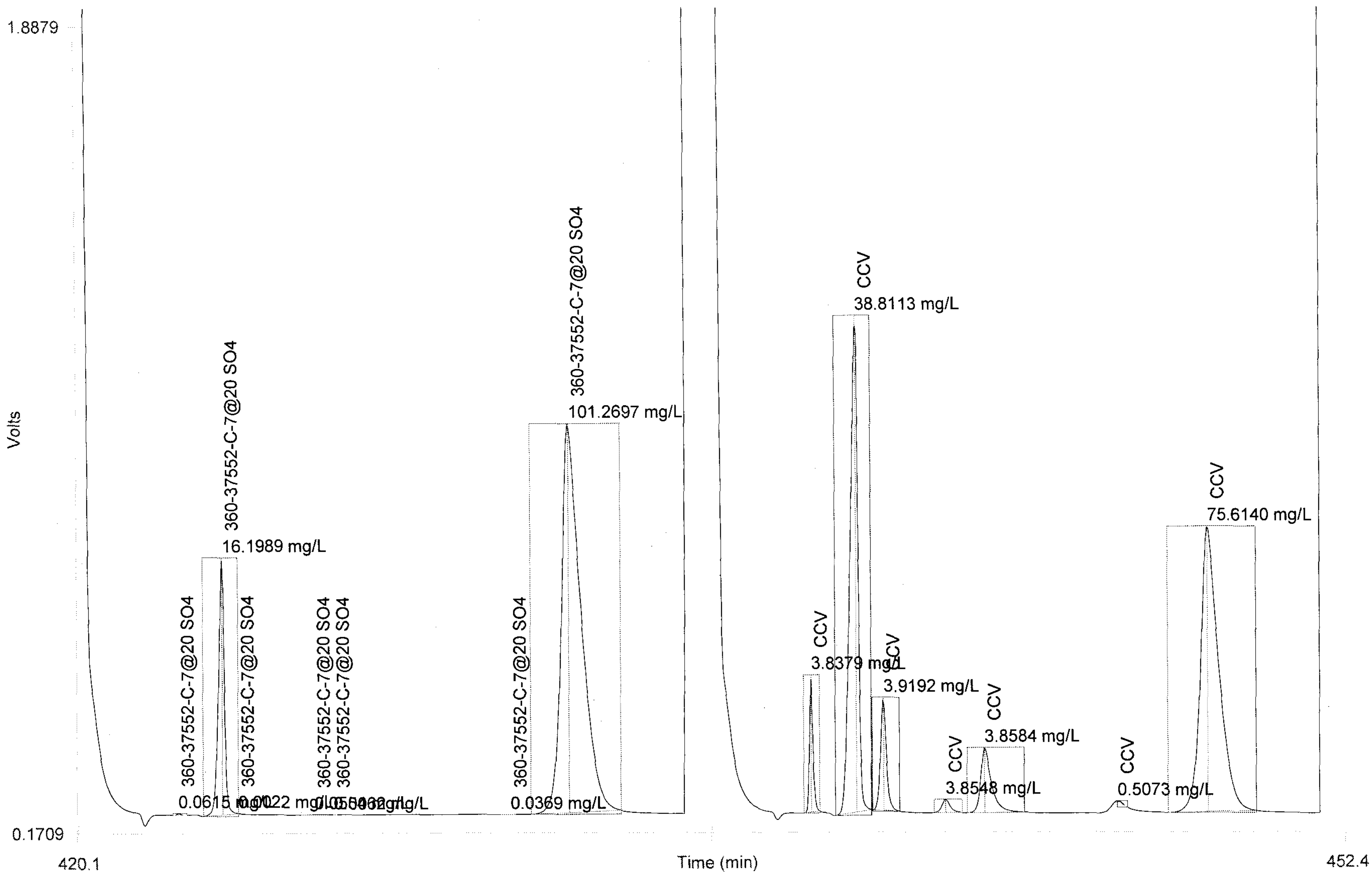
Channel 1 (Anions) : Set 13 of 35



Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 14 of 35



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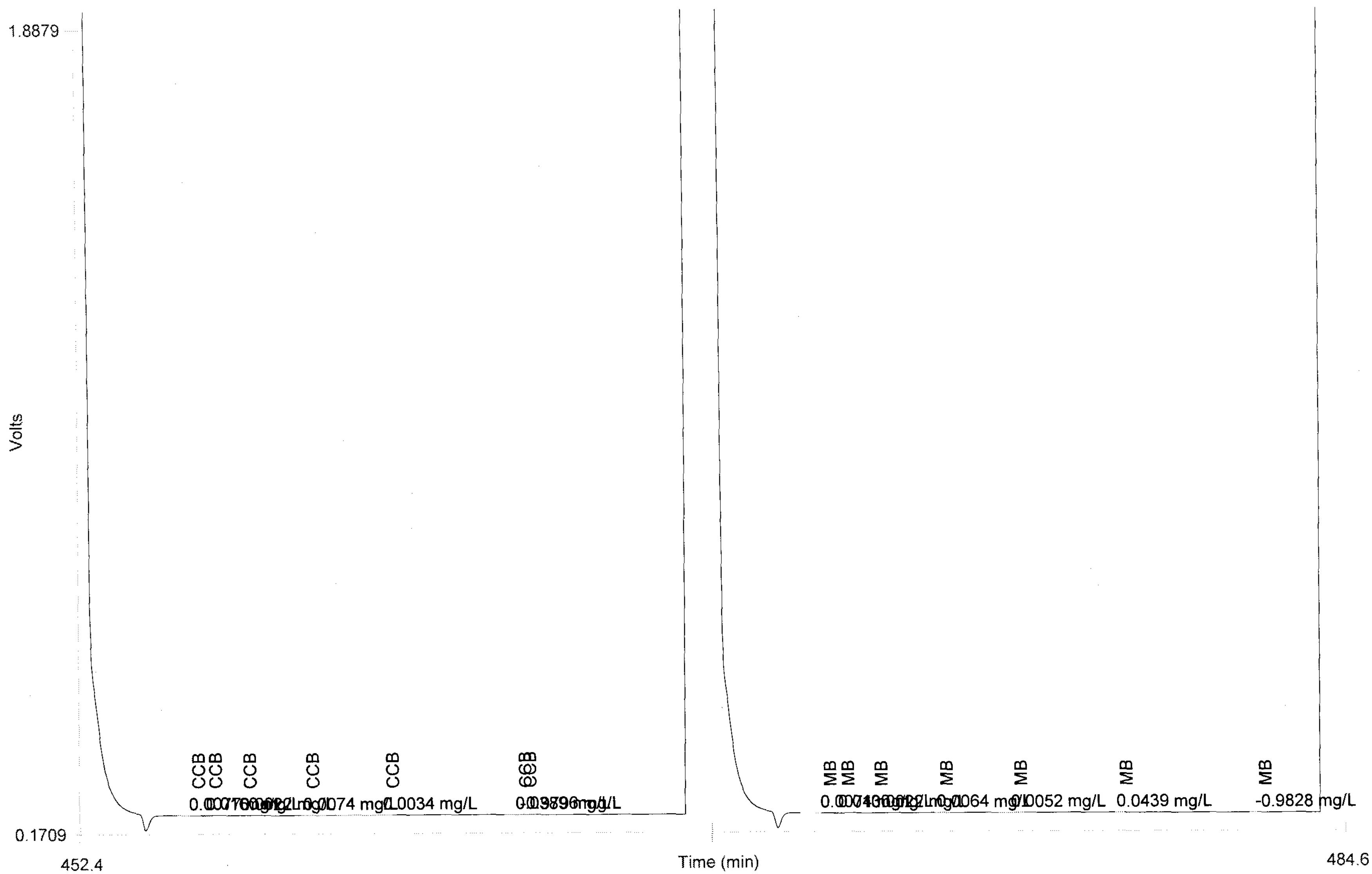
Author: EmerichR

Date : 11/29/2011

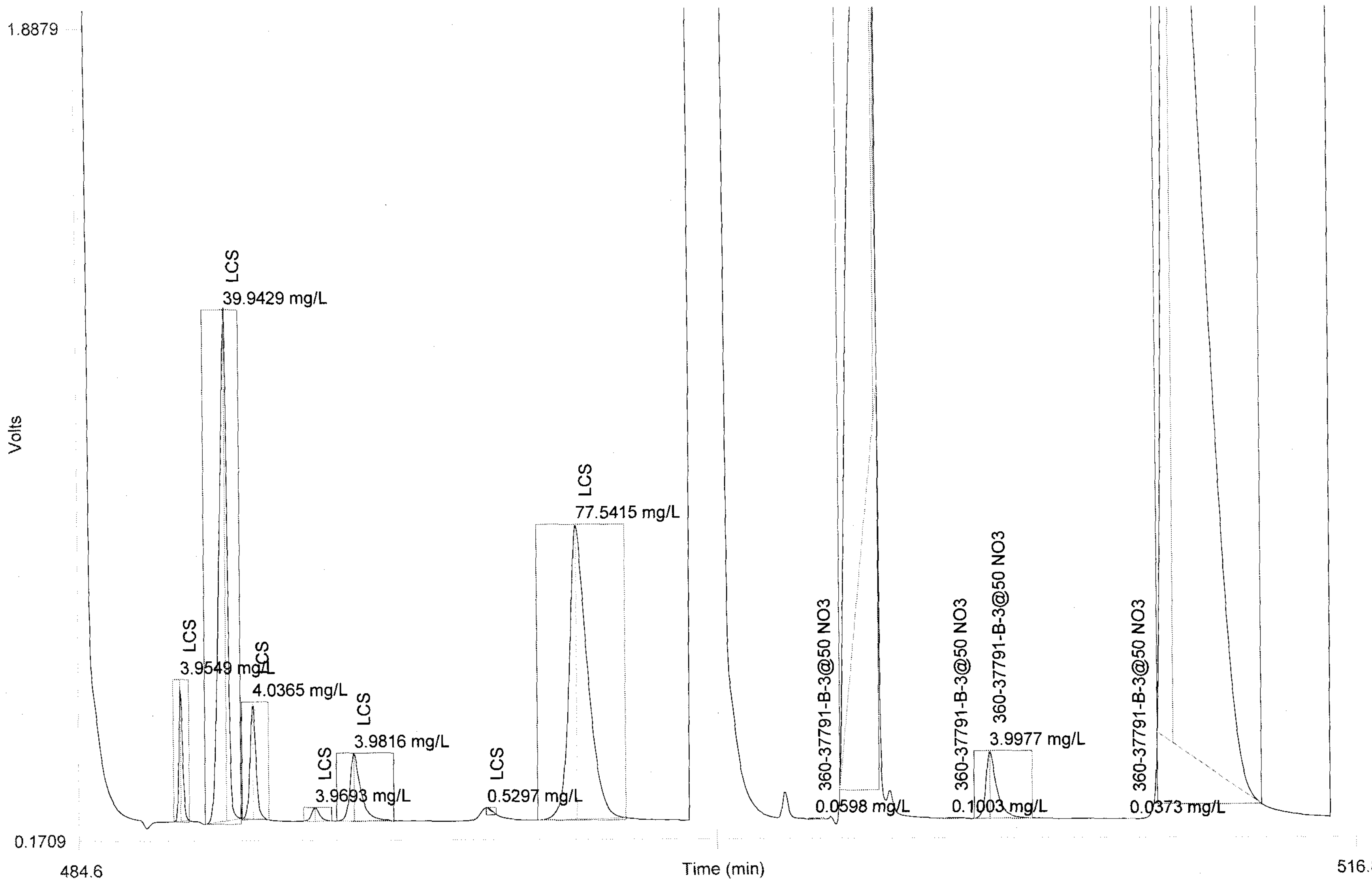
Channel 1 (Anions) : Set 15 of 35



Author: EmerichR

Date : 11/29/2011

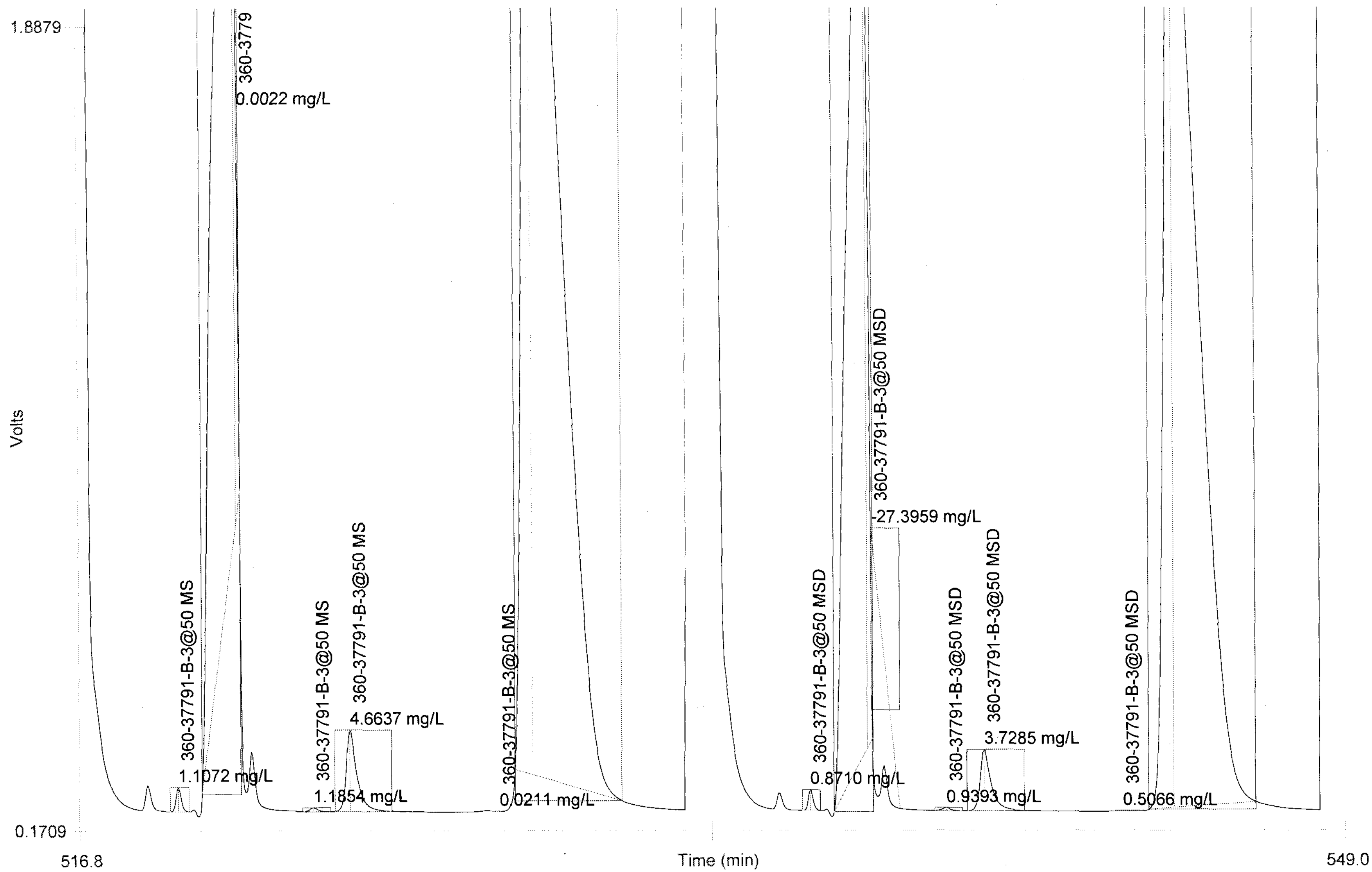
Channel 1 (Anions) : Set 16 of 35

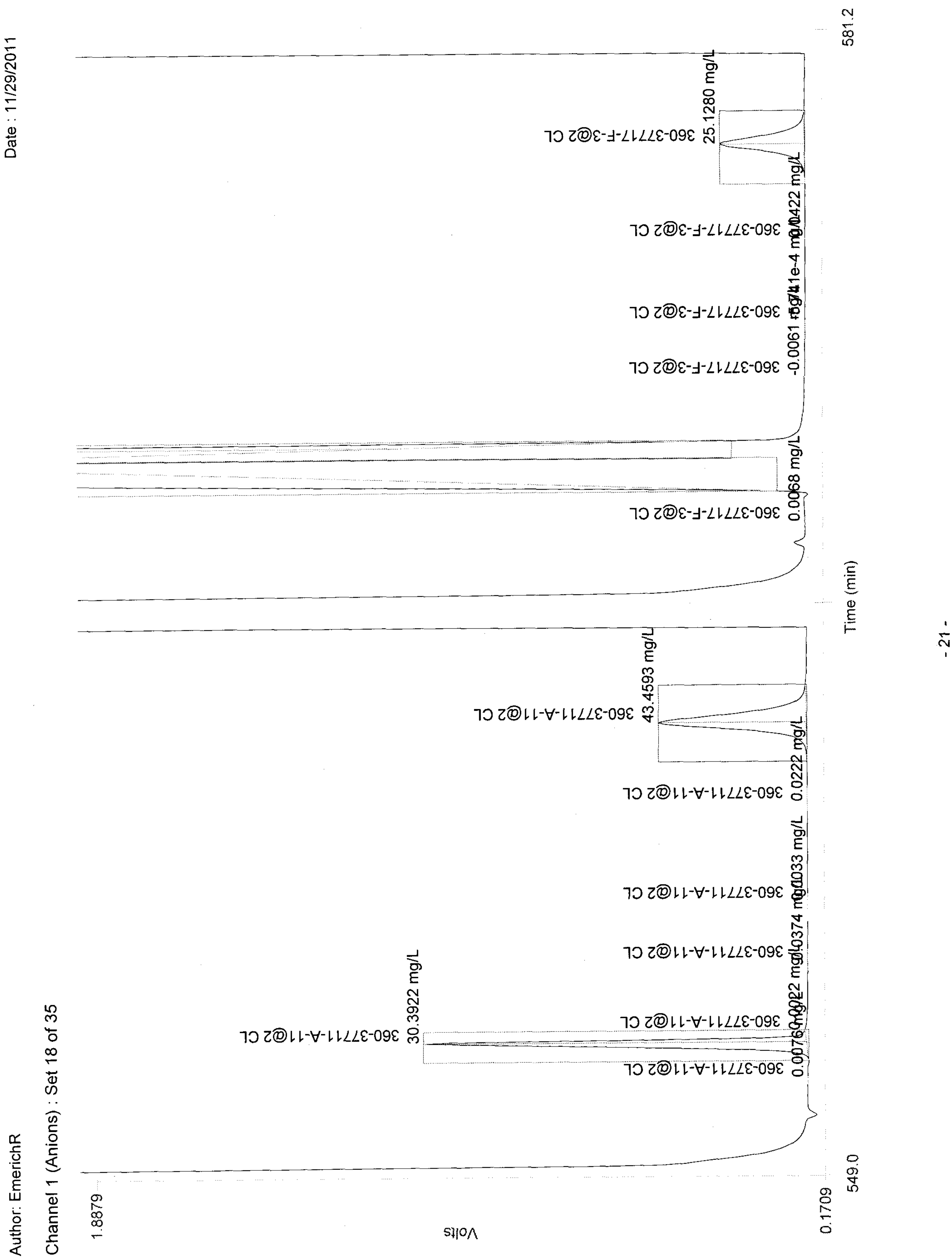


Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 17 of 35




Author: EmerichR
Date : 11/29/2011
Channel 1 (Anions) : Set 18 of 35
Volts
1.8879
0.1709
549.0
581.2
Time (min)
360-37711-A-11@2 CL 0.0076 mg/L
360-37711-A-11@2 CL 30.3922 mg/L
360-37711-A-11@2 CL 0.0082 mg/L
360-37711-A-11@2 CL 0.0374 mg/L
360-37711-A-11@2 CL 0.0033 mg/L
360-37711-A-11@2 CL 0.0222 mg/L
360-37711-A-11@2 CL 43.4593 mg/L
360-37717-F-3@2 CL 0.0068 mg/L
360-37717-F-3@2 CL -0.0061 mg/L
360-37717-F-3@2 CL 5.741e-4 mg/L
360-37717-F-3@2 CL 0.0422 mg/L
360-37717-F-3@2 CL 25.1280 mg/L

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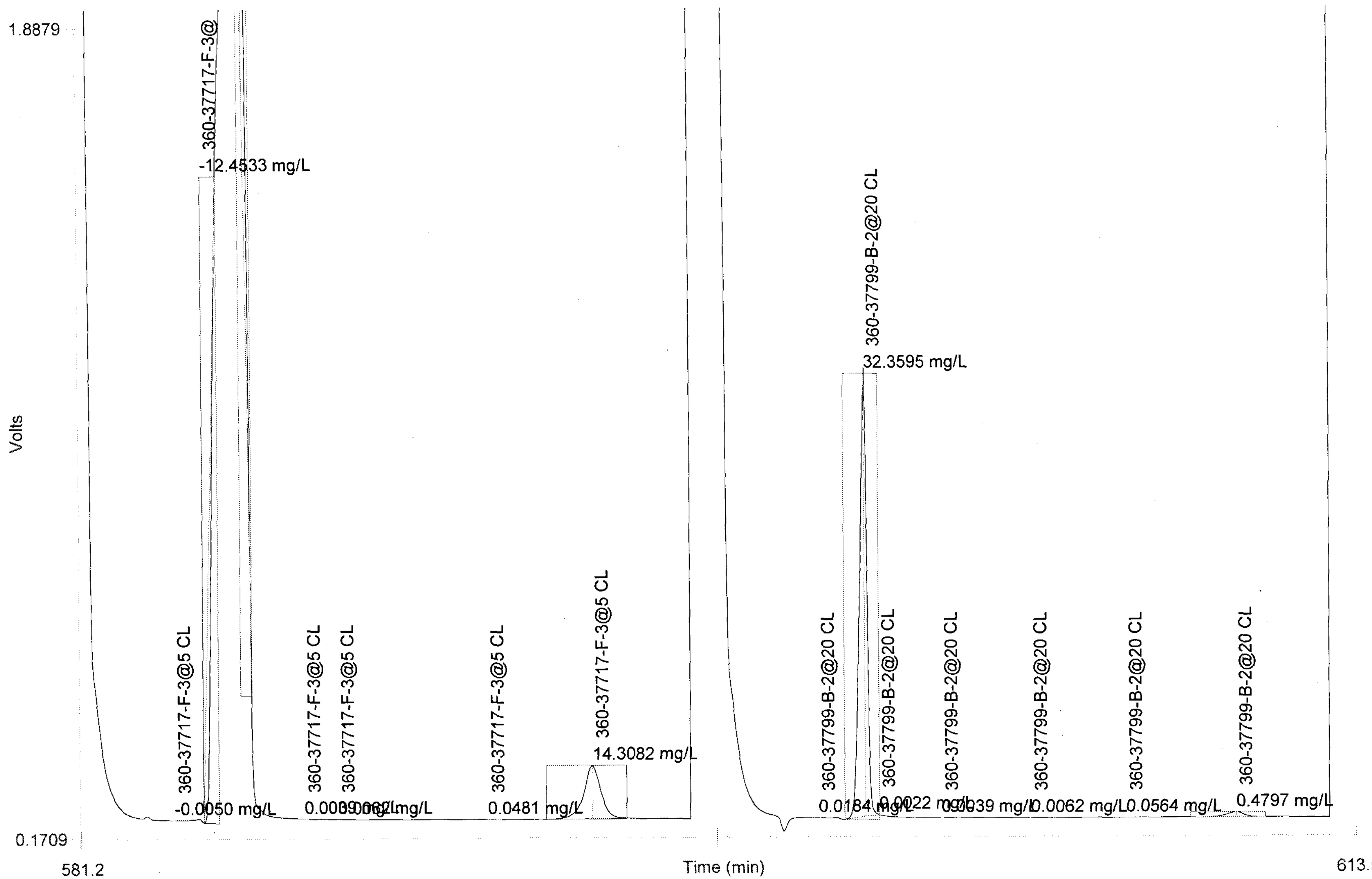
Author: EmerichR

Date : 11/29/2011

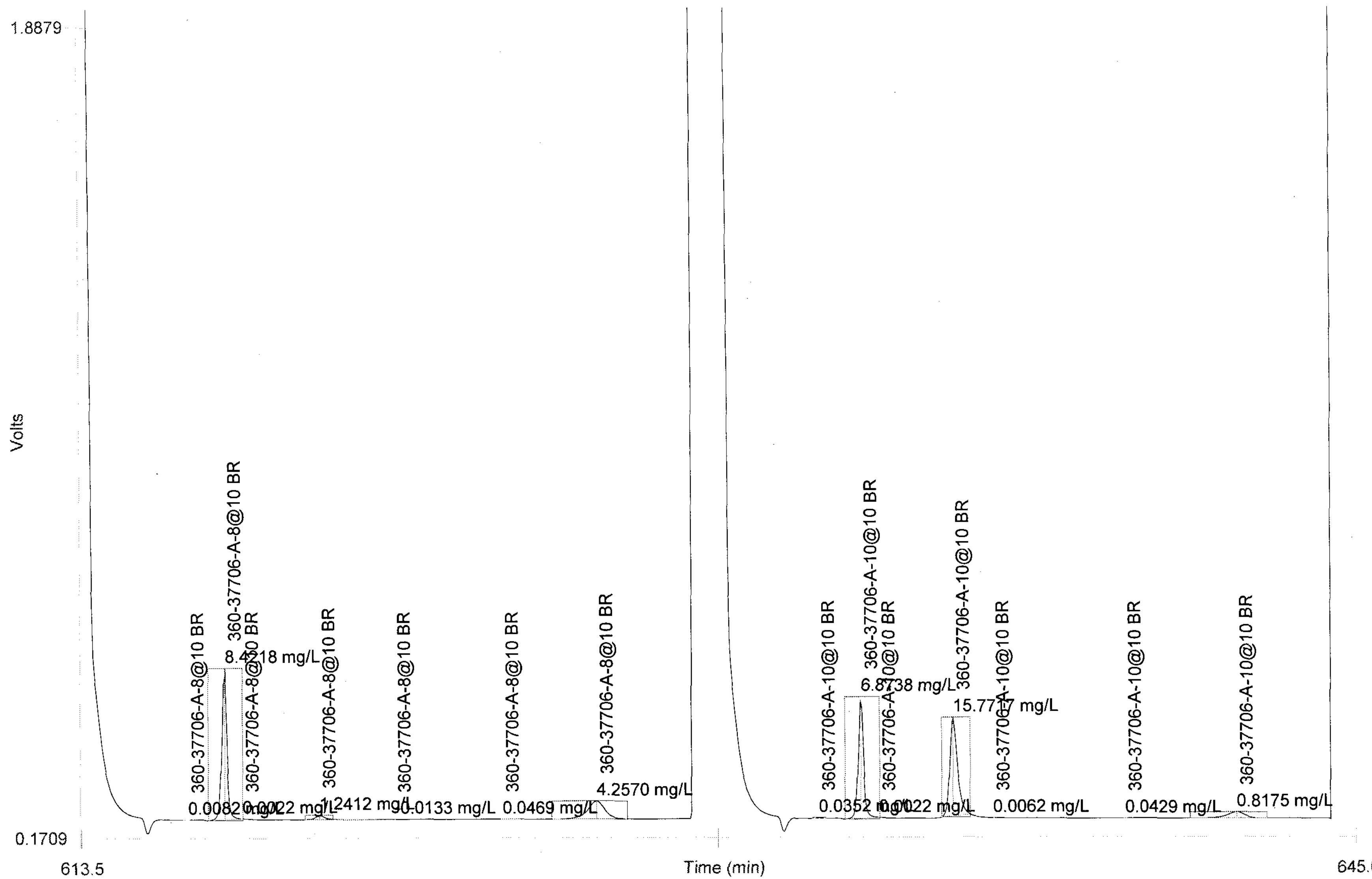
Channel 1 (Anions) : Set 19 of 35



Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 20 of 35



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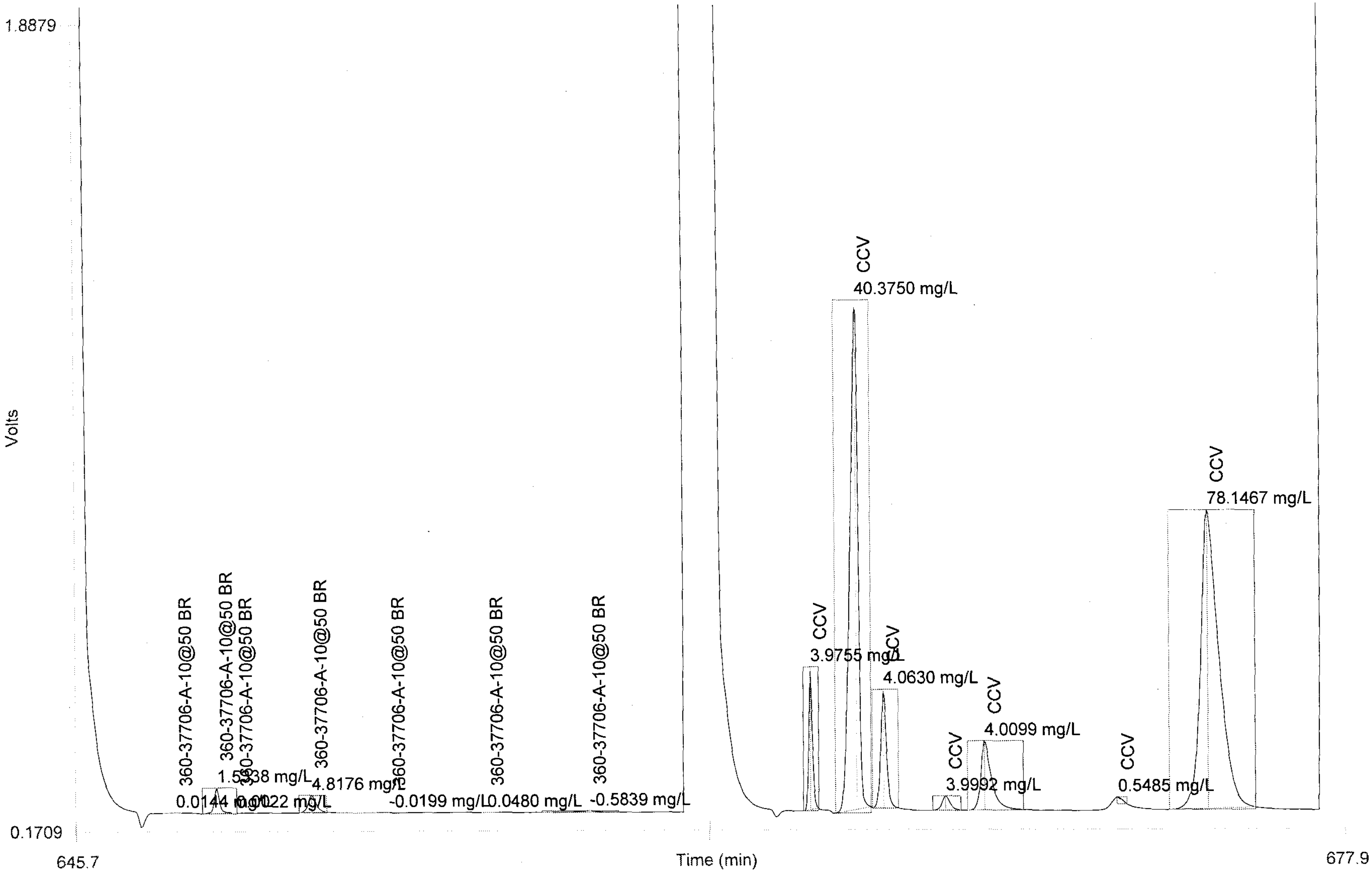
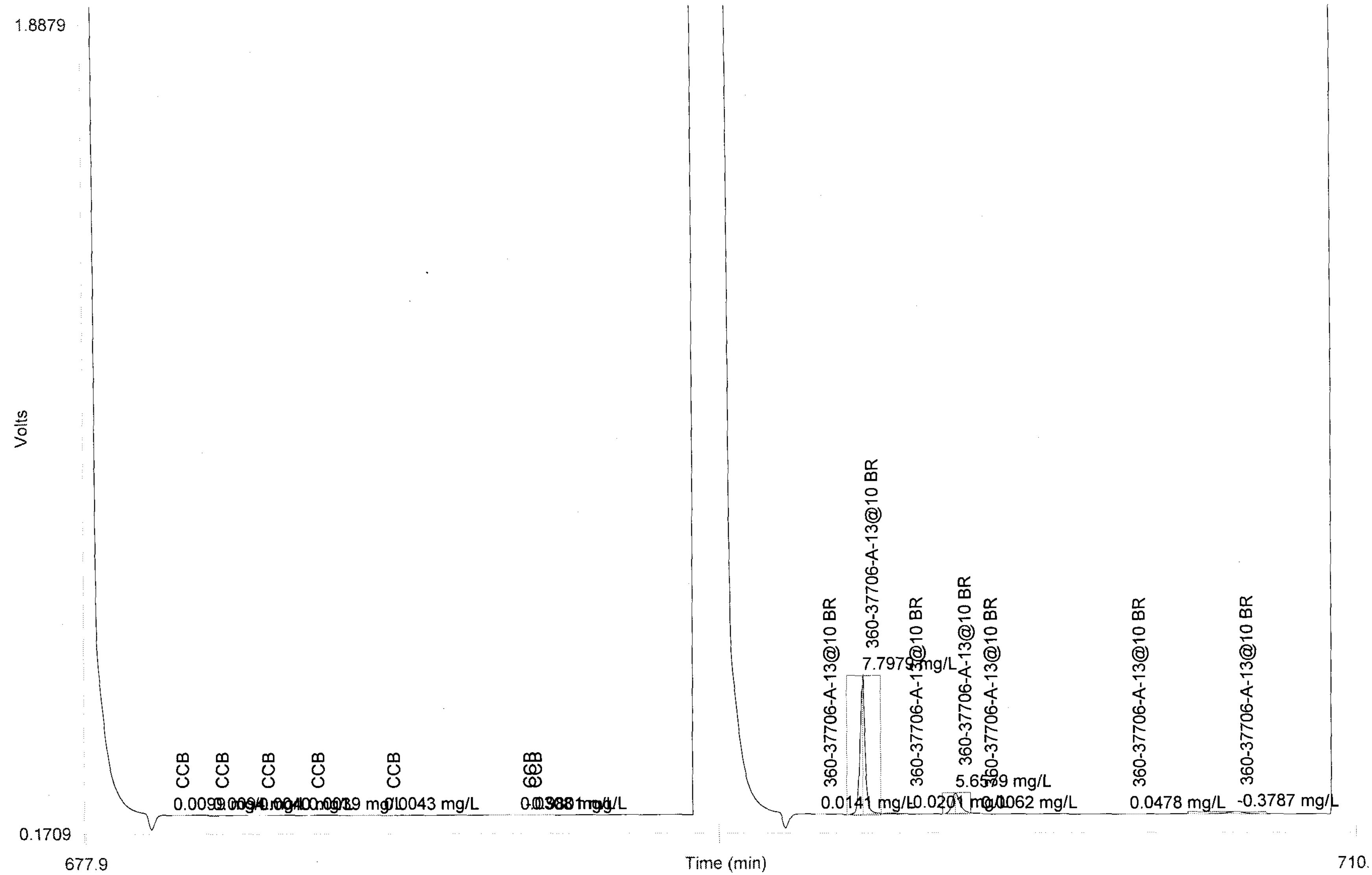
Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 21 of 35



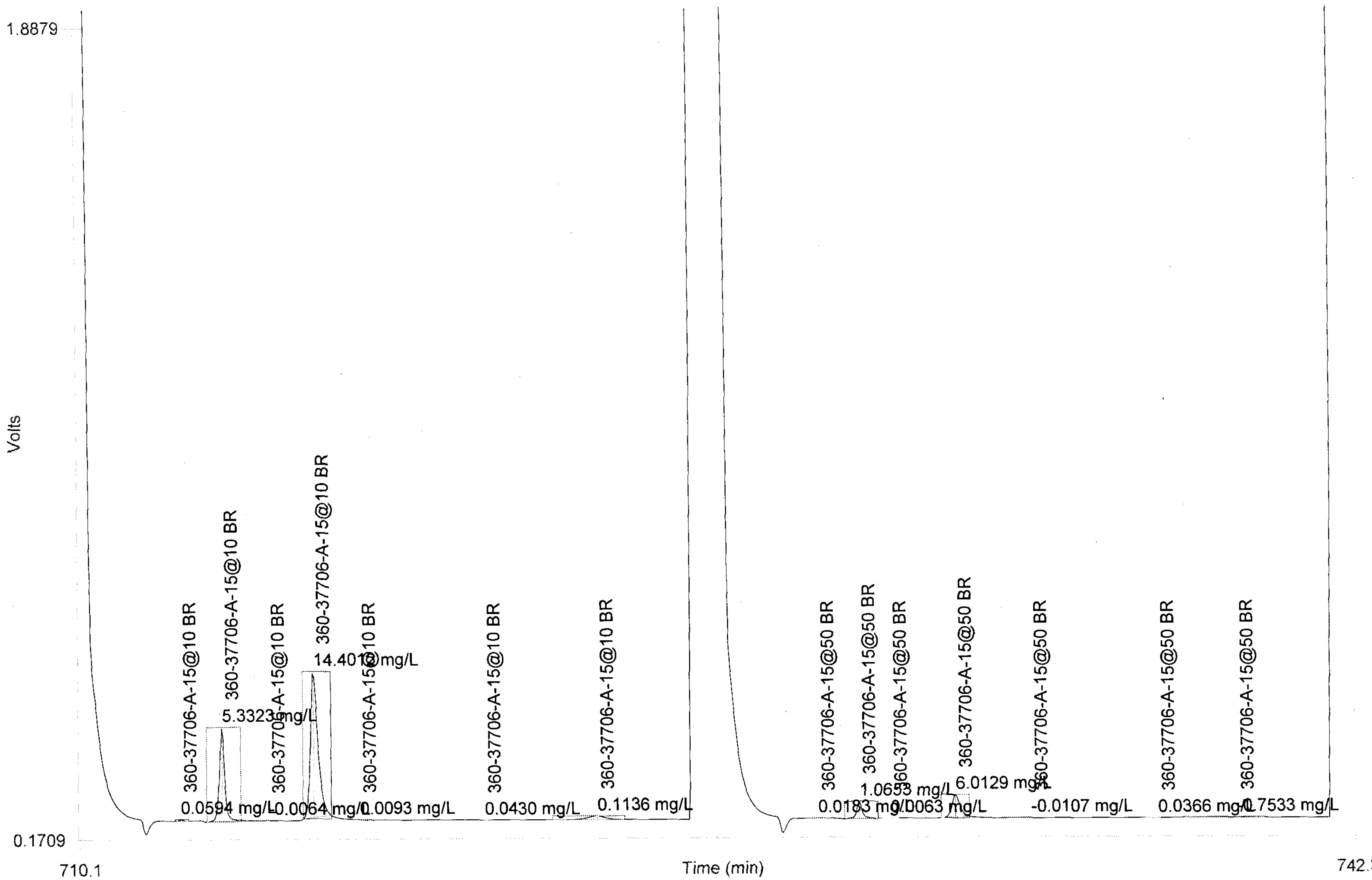
Channel 1 (Anions) : Set 22 of 35



Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 23 of 35

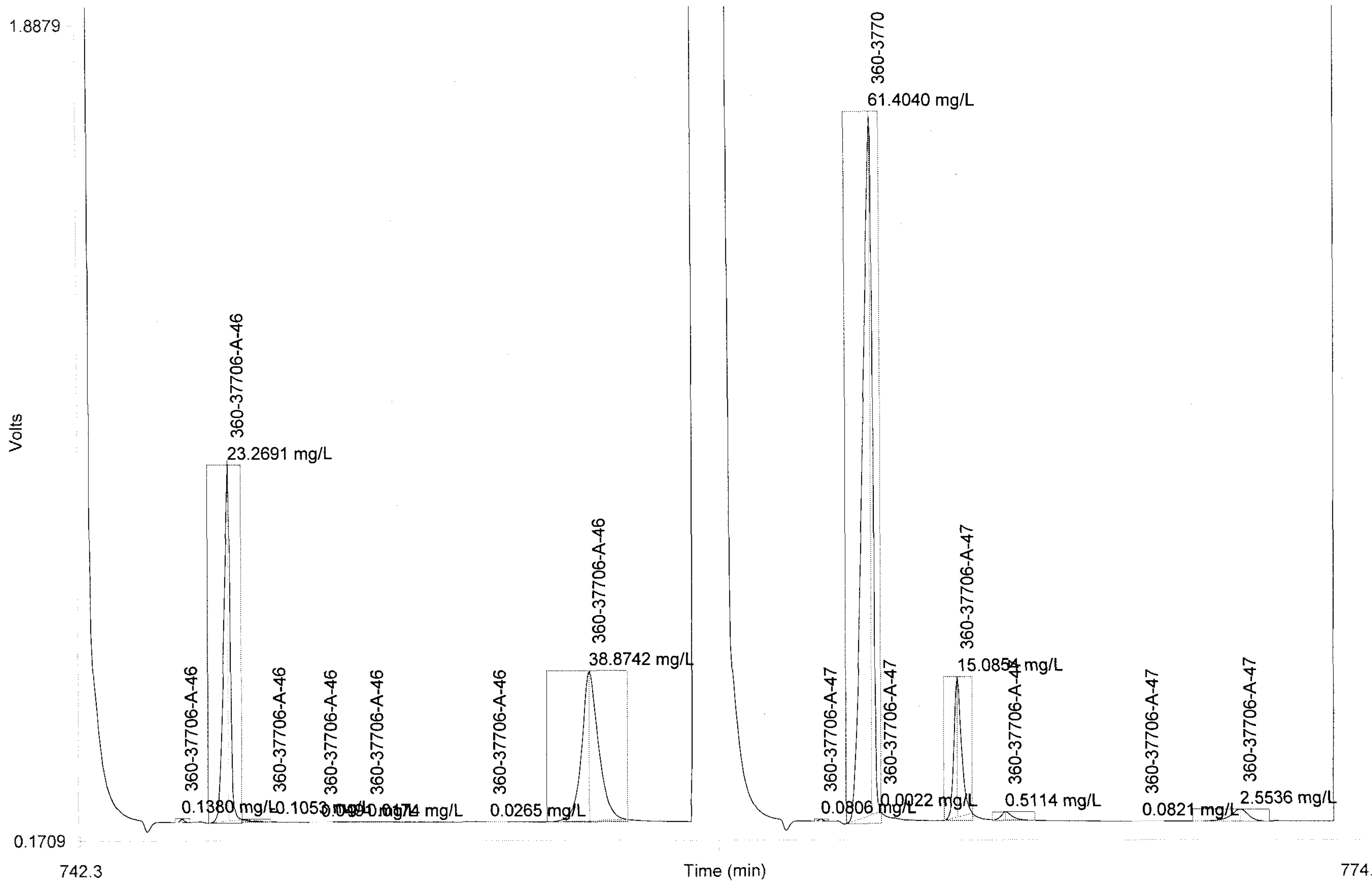


- 26 -

Author: EmerichR

Date : 11/29/2011

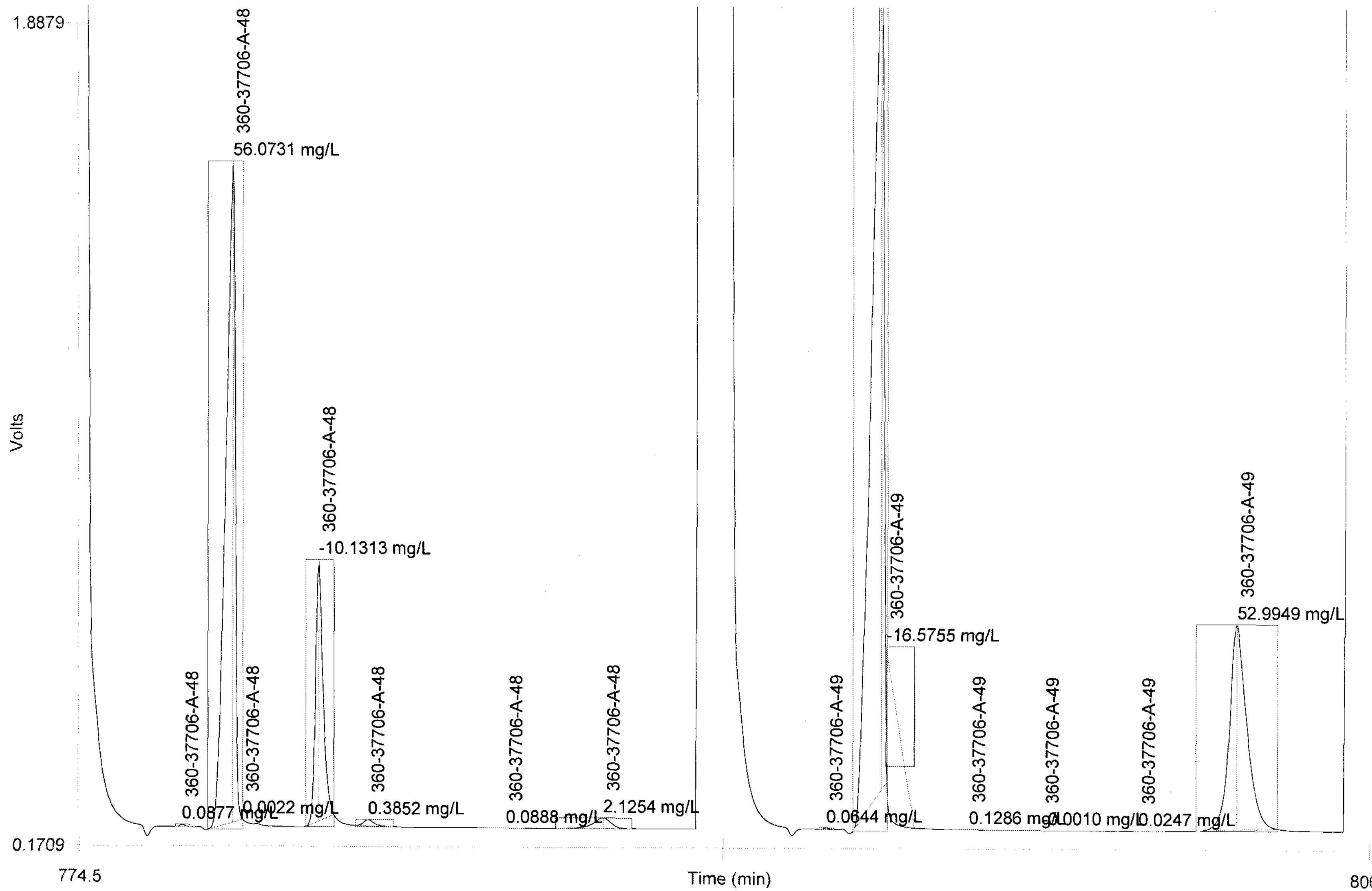
Channel 1 (Anions) : Set 24 of 35



Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 25 of 35

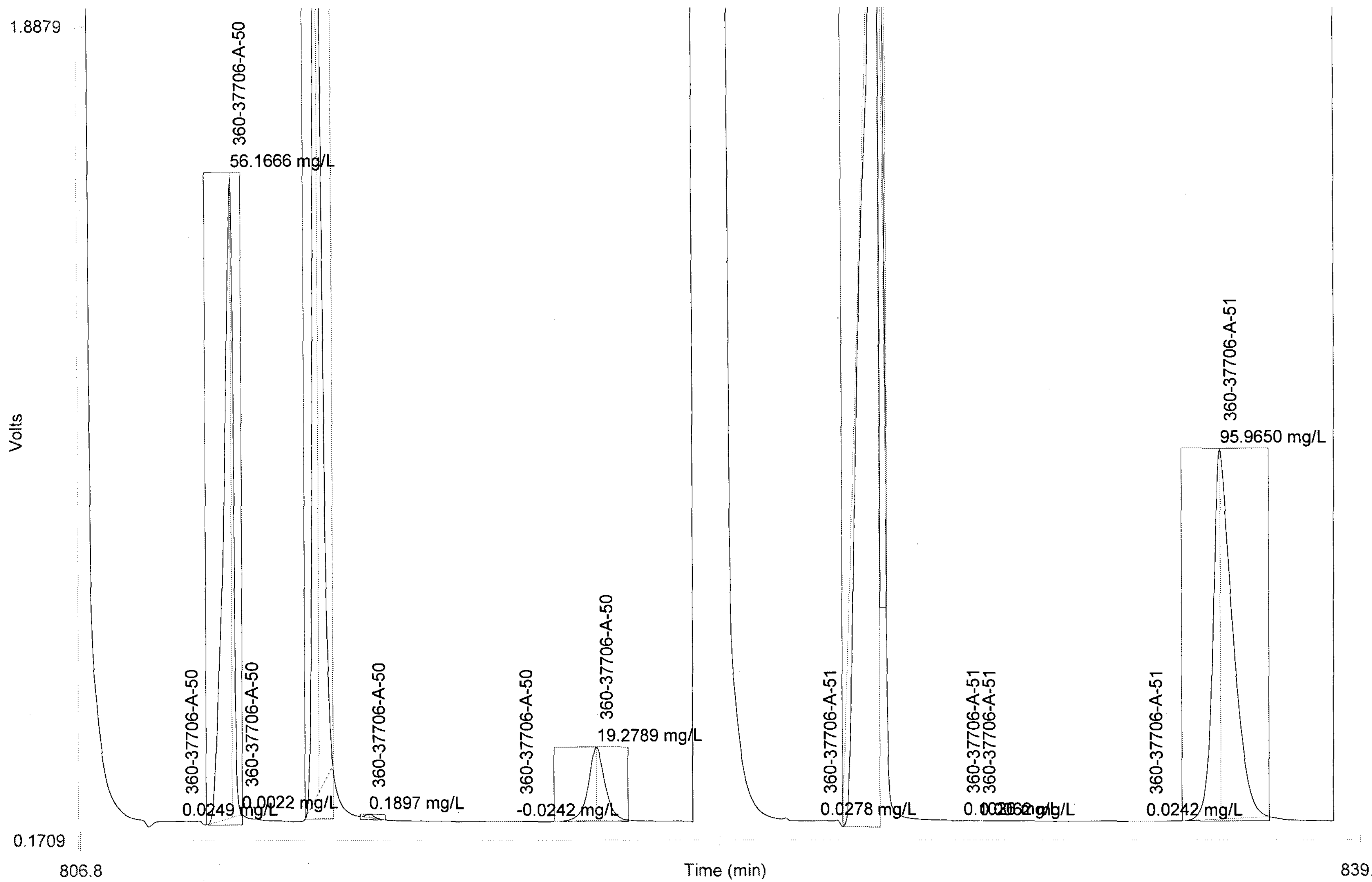


- 28 -

Author: EmerichR

Date : 11/29/2011

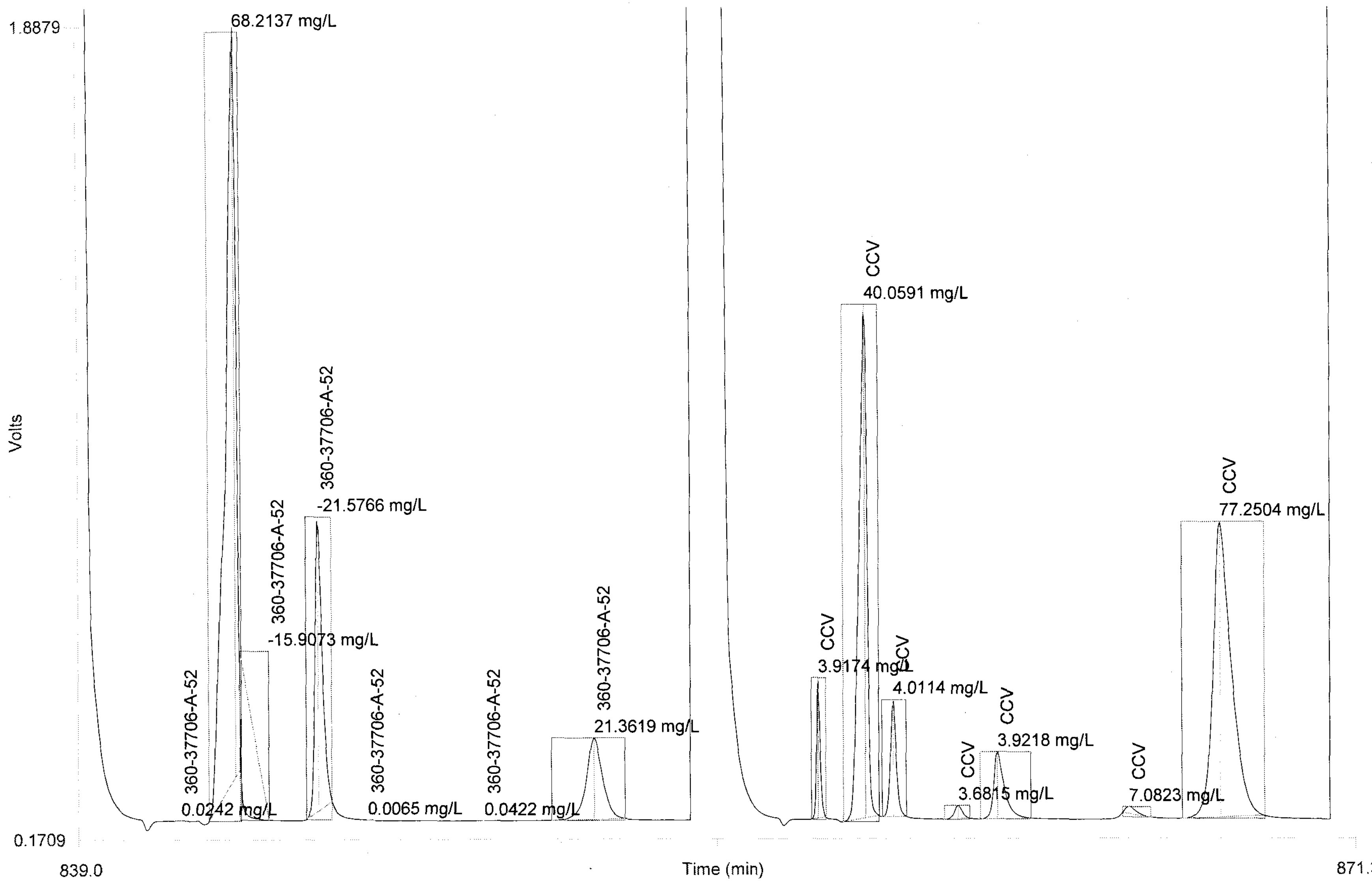
Channel 1 (Anions) : Set 26 of 35



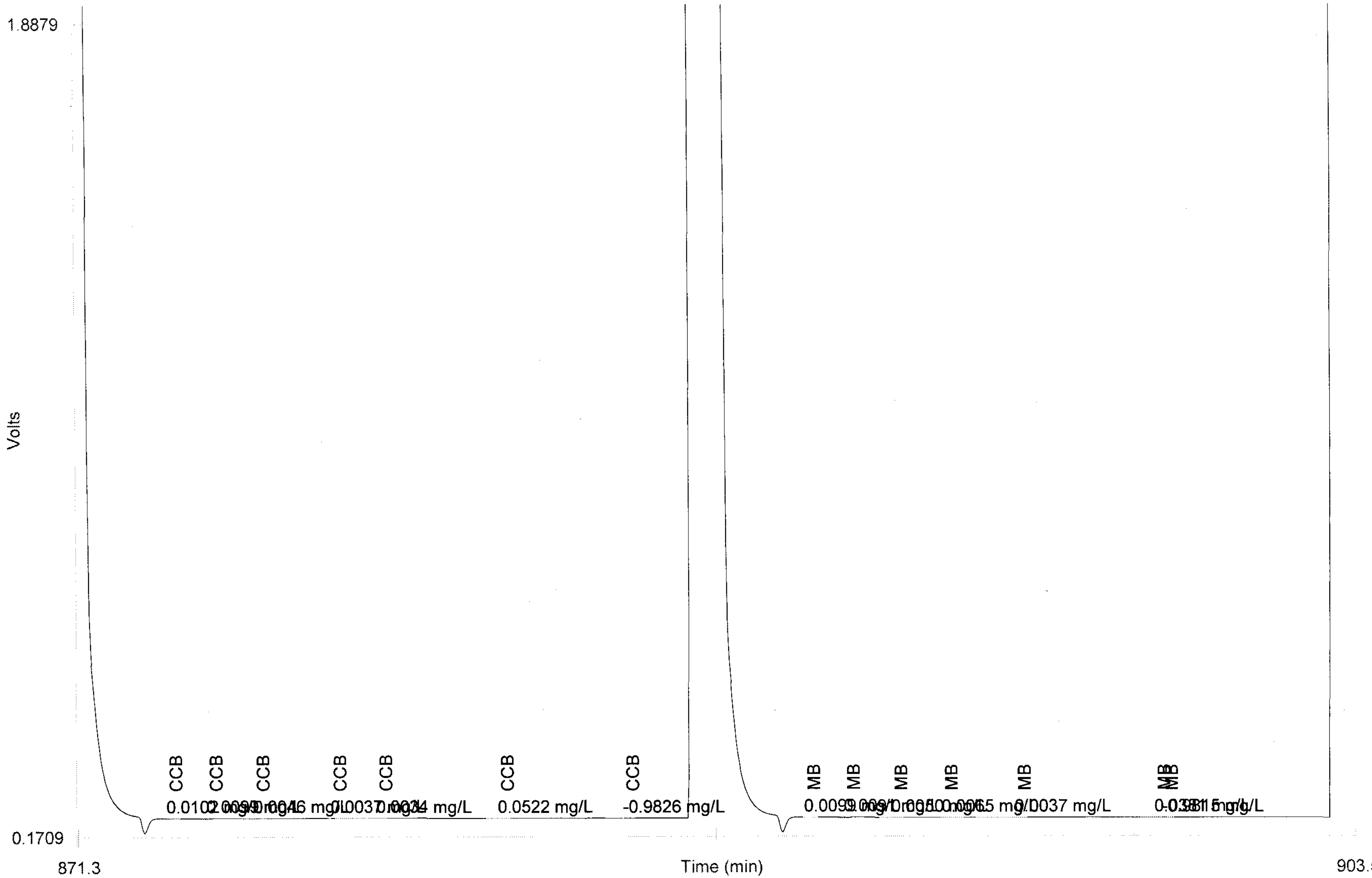
Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 27 of 35



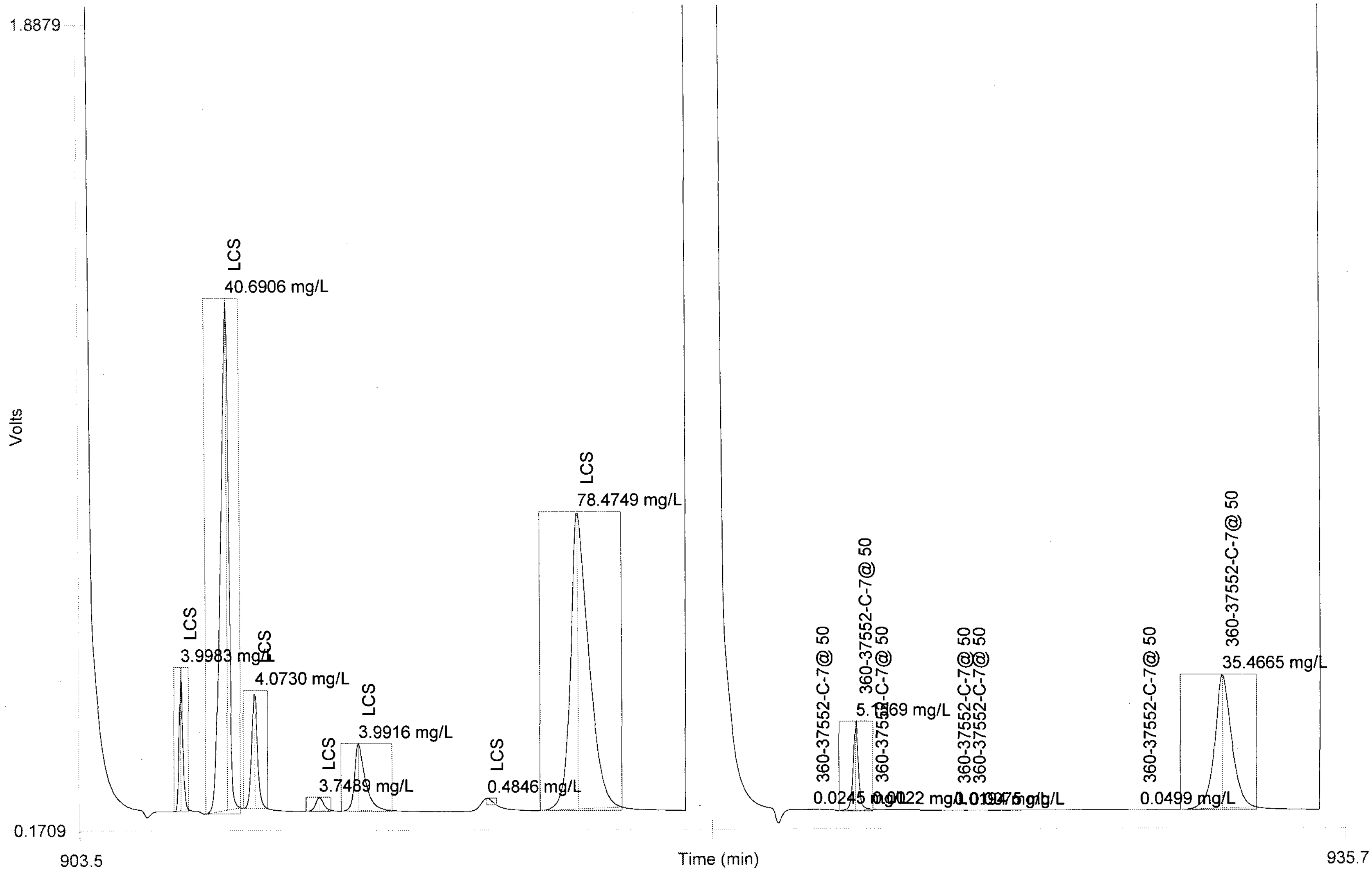
Channel 1 (Anions) : Set 28 of 35



Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 29 of 35

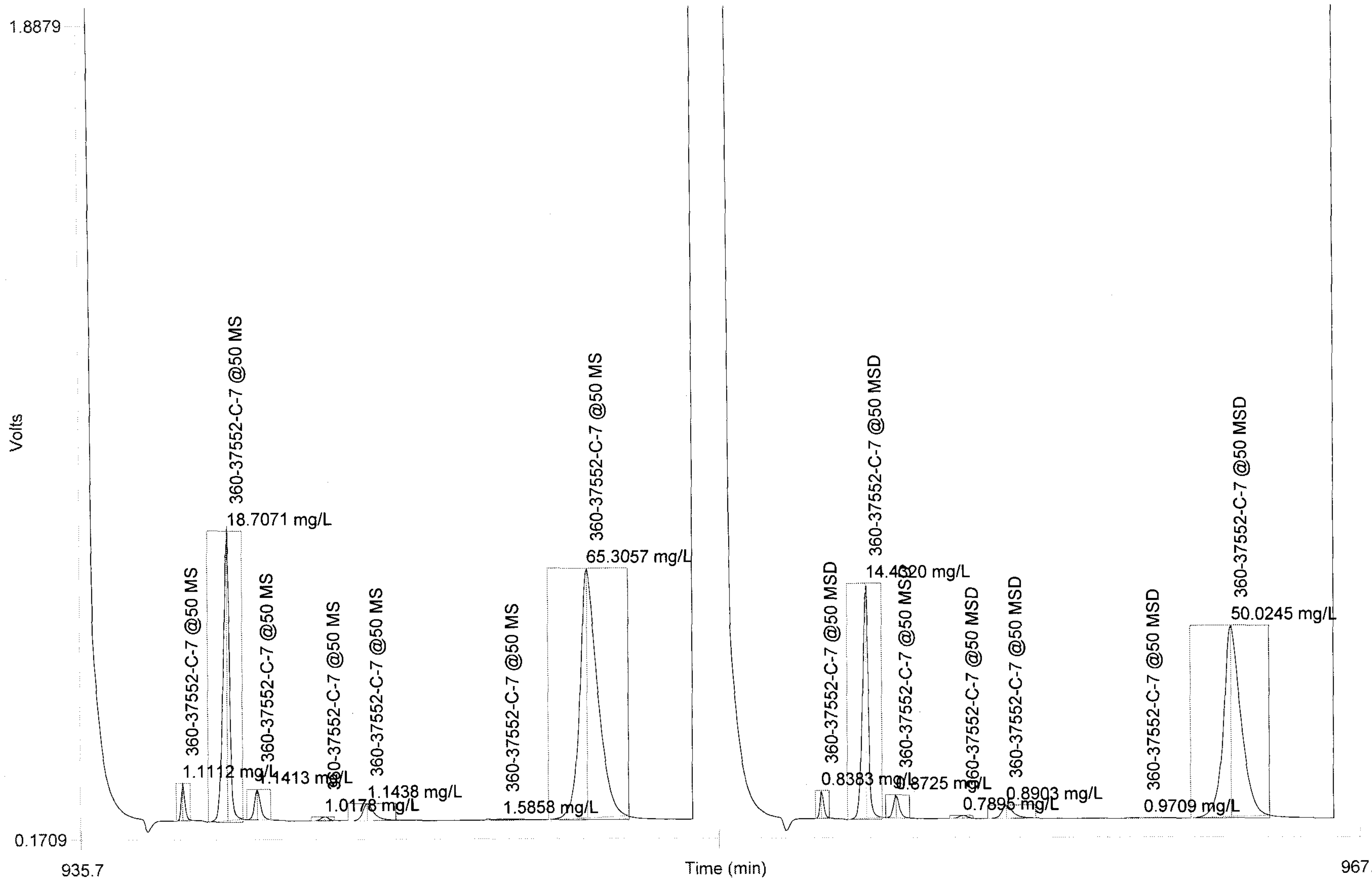


- 32 -

Author: EmerichR

Date : 11/29/2011

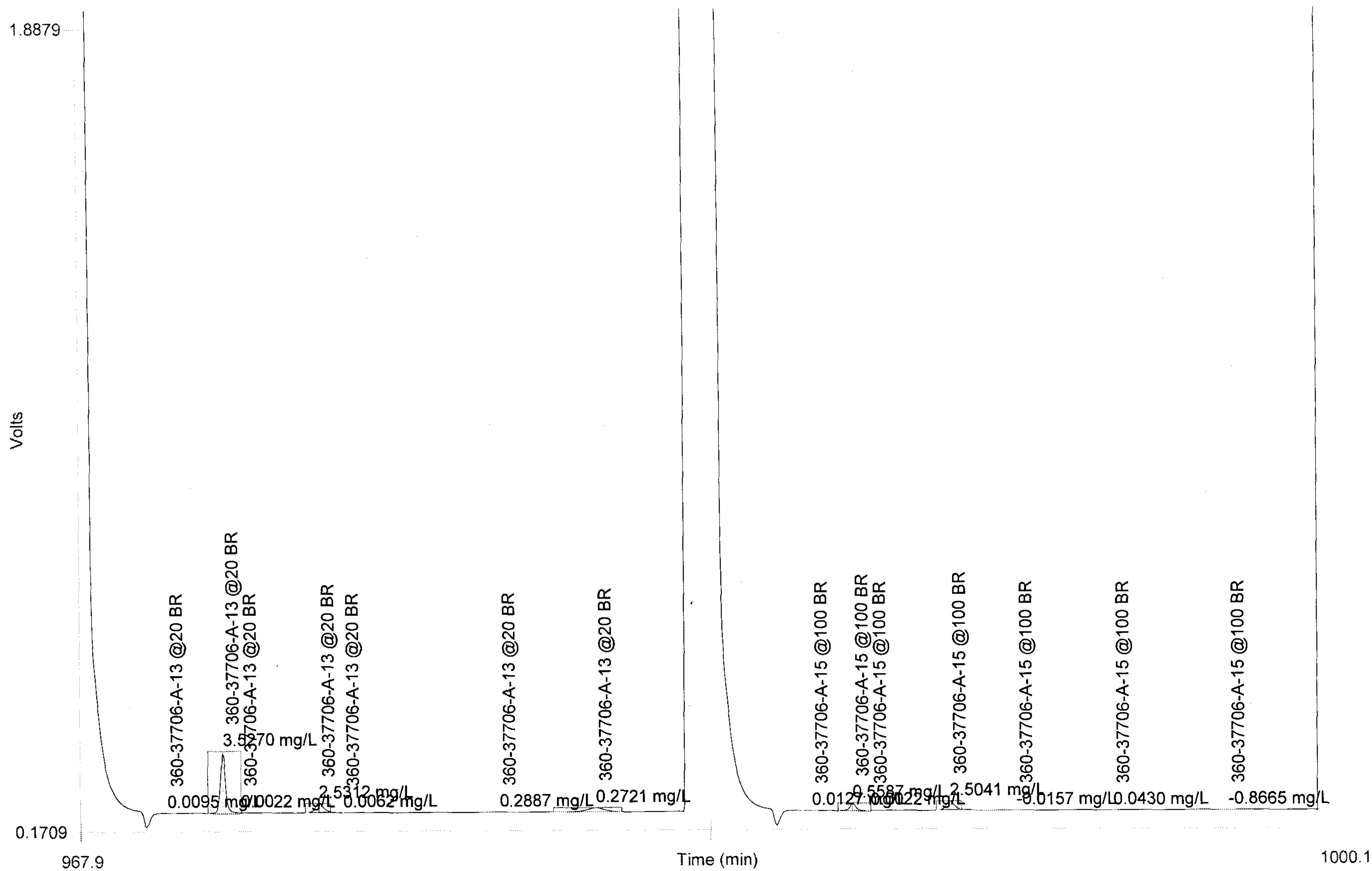
Channel 1 (Anions) : Set 30 of 35



Author: EmerichR

Date : 11/29/2011

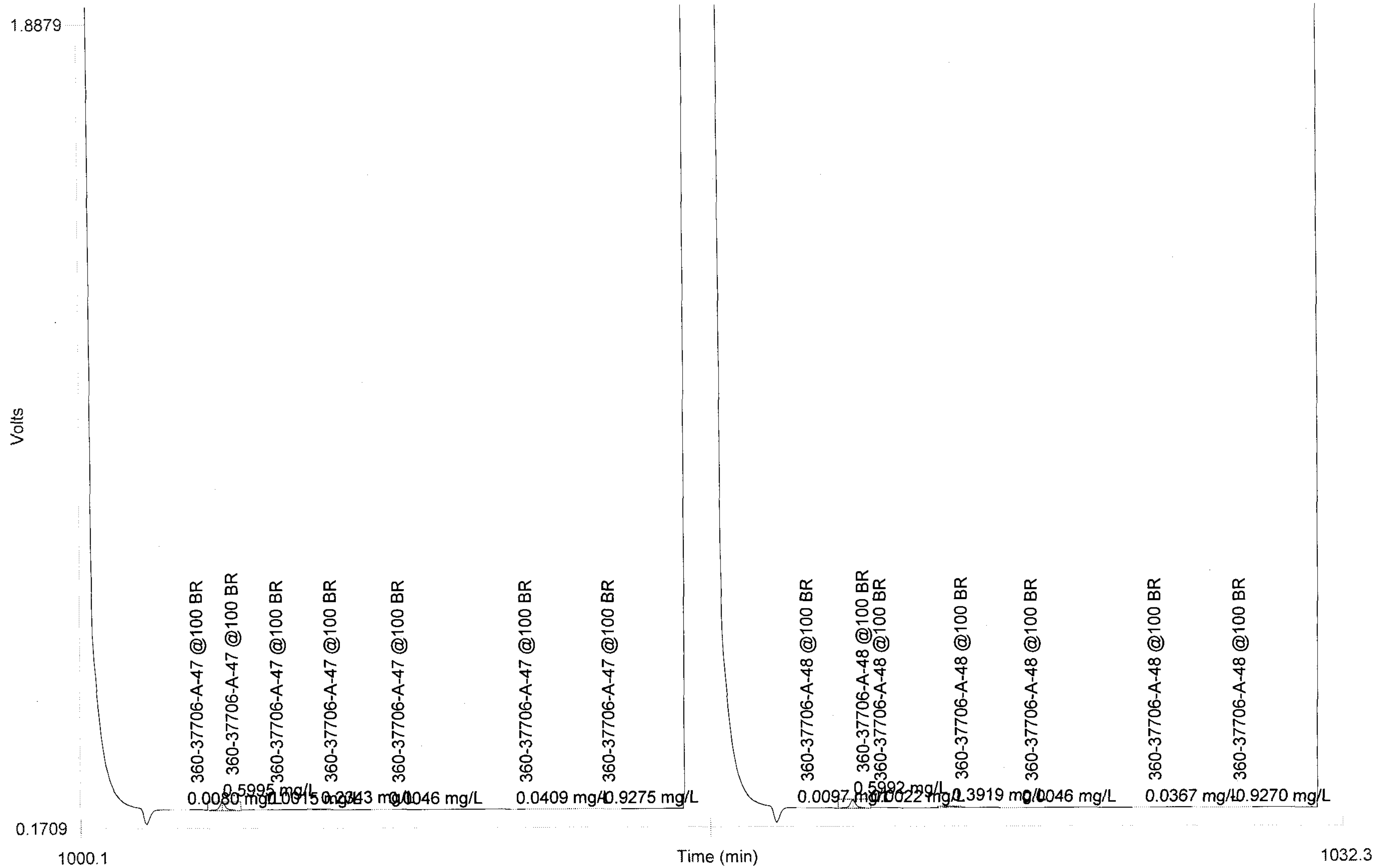
Channel 1 (Anions) : Set 31 of 35



Author: EmerichR

Date : 11/29/2011

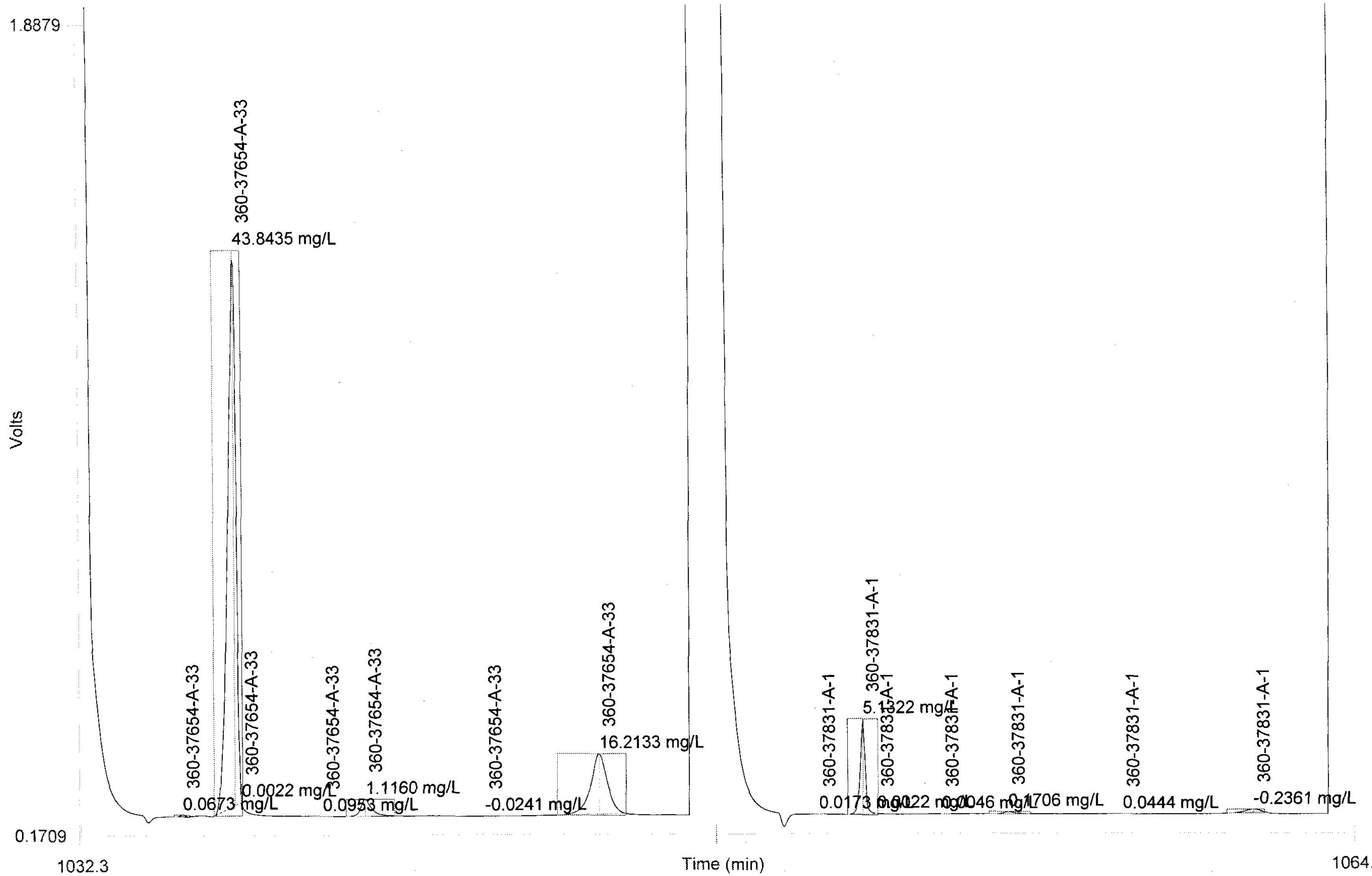
Channel 1 (Anions) : Set 32 of 35



Author: EmerichR

Date : 11/29/2011

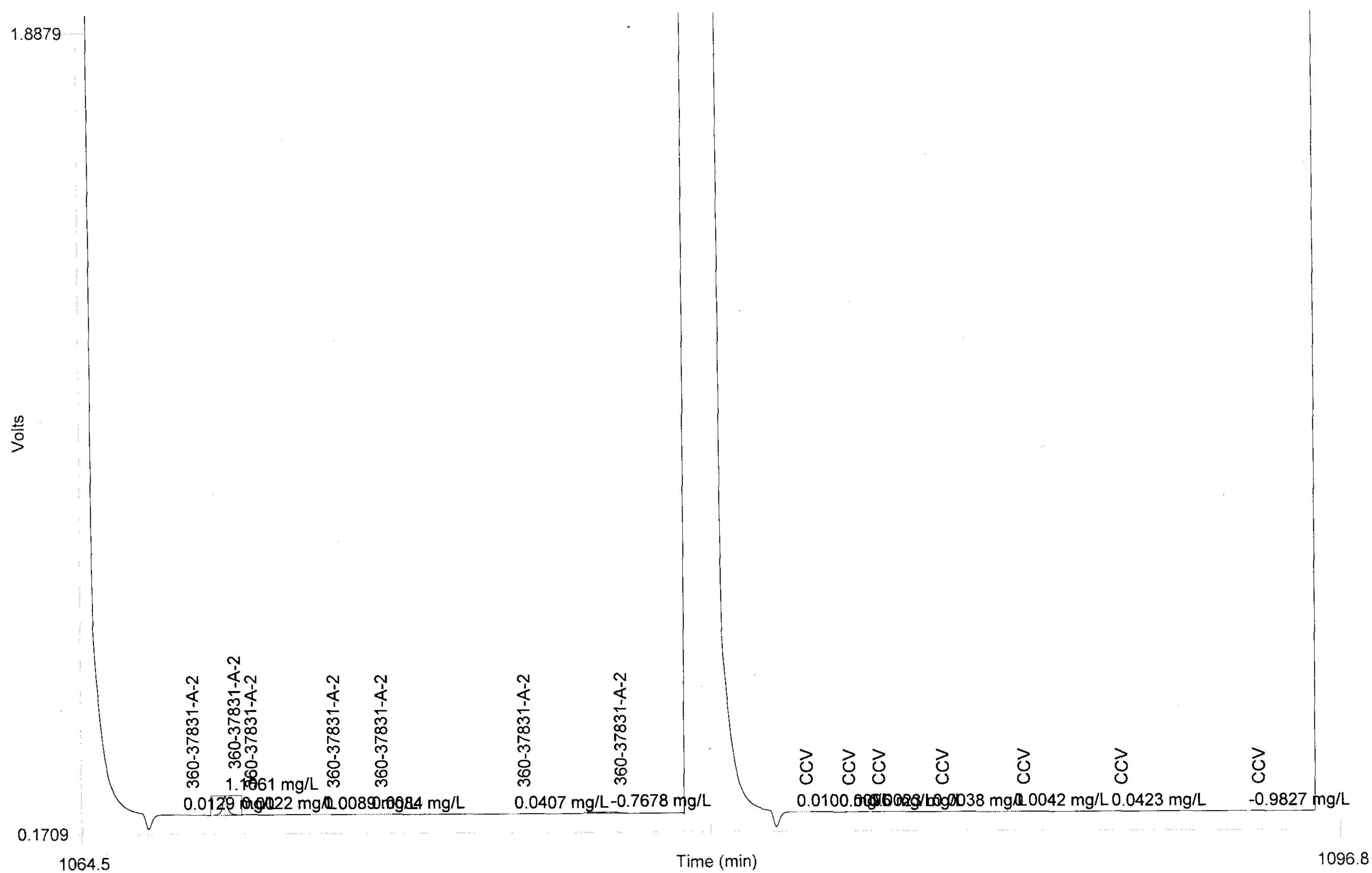
Channel 1 (Anions) : Set 33 of 35



Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 34 of 35



Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 35 of 35

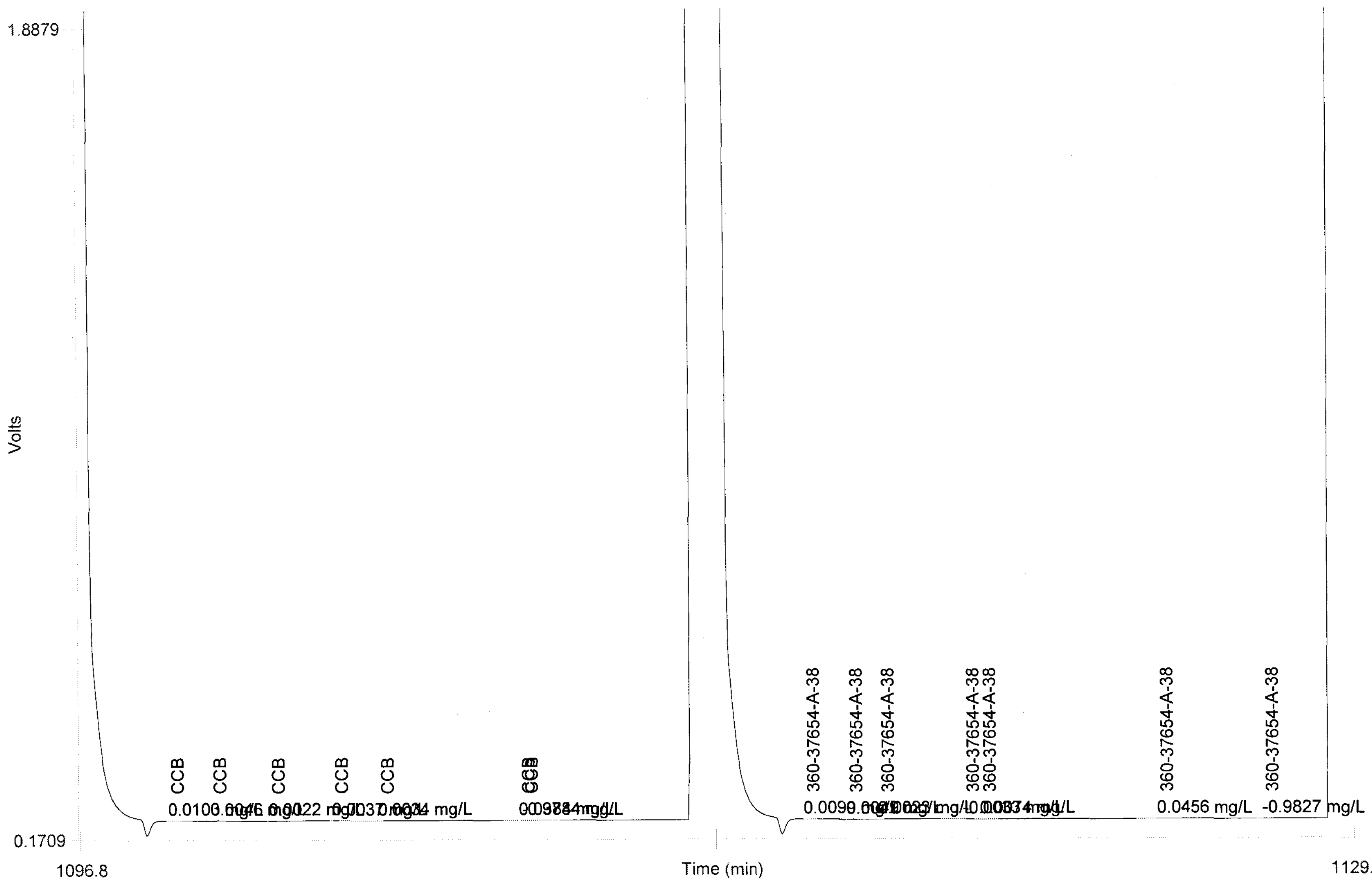
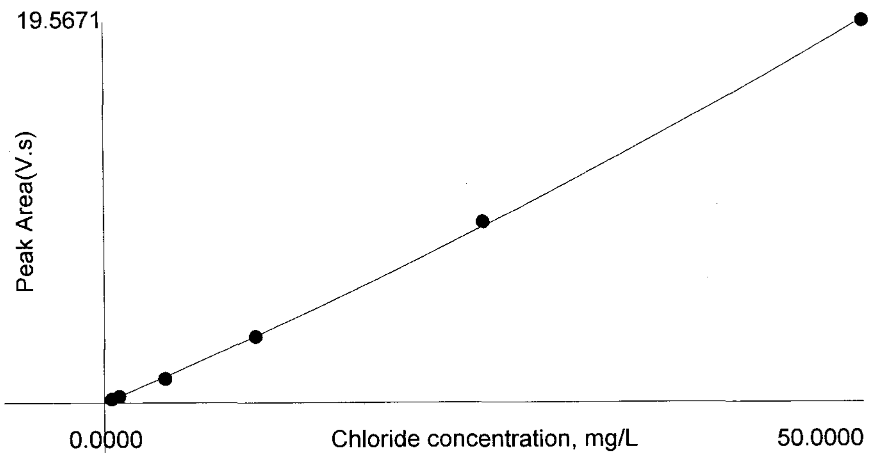


Table 1: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	19.5671	1.3052	0.5	11/15/2011	2:32:05 PM
2	25.0000	1	9.2472	0.8077	-2.6	11/15/2011	2:48:13 PM
3	10.0000	1	3.3710	0.3697	1.0	11/15/2011	3:04:20 PM
4	4.0000	1	1.2235	0.1456	7.7	11/15/2011	3:20:28 PM
5	1.0000	1	0.3080	0.0351	4.1	11/15/2011	3:36:35 PM
6	0.5000	1	0.1732	0.0187	-11.1	11/15/2011	3:52:42 PM

Figure 1: Chloride



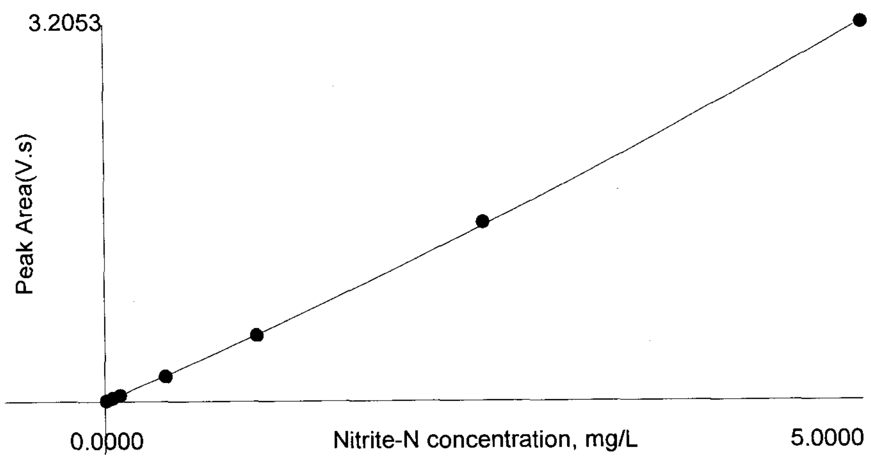
Area = 0.0013 * Conc^2 + 0.3283 * Conc - 0.0085
Conc = - 0.0226 * Area^2 + 2.9826 * Area + 0.0435
Correlation Coefficient (r) = 0.99997

1/x weighting

Table 2: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.2053	0.3249	0.4	11/15/2011	2:32:05 PM
2	2.5000	1	1.5145	0.1578	-1.9	11/15/2011	2:48:13 PM
3	1.0000	1	0.5600	0.0576	0.8	11/15/2011	3:04:20 PM
4	0.4000	1	0.2121	0.0216	3.8	11/15/2011	3:20:28 PM
5	0.1000	1	0.0502	0.0051	6.6	11/15/2011	3:36:35 PM
6	0.0500	1	0.0267	0.0026	-1.4	11/15/2011	3:52:42 PM
7	0.0100	1	0.0049	5.0658e-4	-10.2	11/15/2011	4:08:48 PM

Figure 2: Nitrite-N



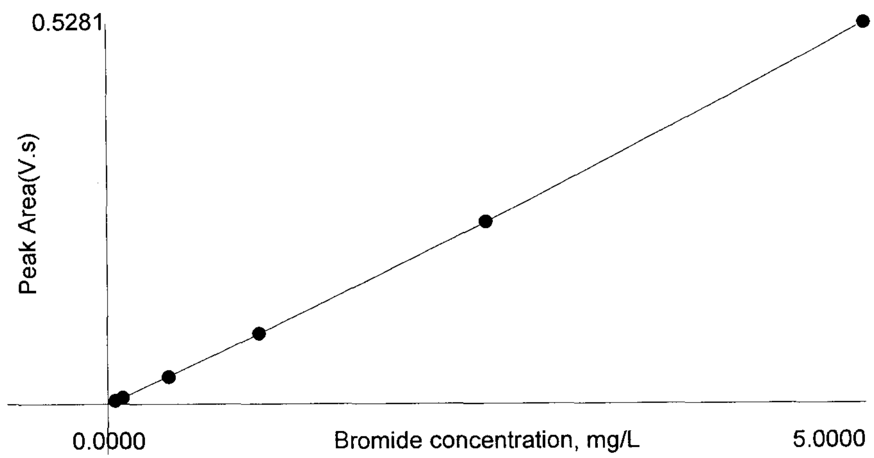
Area = 0.0195 * Conc^2 + 0.5461 * Conc - 0.0010
Conc = - 0.0787 * Area^2 + 1.8046 * Area + 0.0022
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 3: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.5281	0.0394	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	0.2527	0.0186	-0.2	11/15/2011	2:48:13 PM
3	1.0000	1	0.0981	0.0072	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.0379	0.0027	1.4	11/15/2011	3:20:28 PM
5	0.1000	1	0.0092	6.5877e-4	1.5	11/15/2011	3:36:35 PM
6	0.0500	1	0.0046	3.2836e-4	-2.5	11/15/2011	3:52:42 PM

Figure 3: Bromide



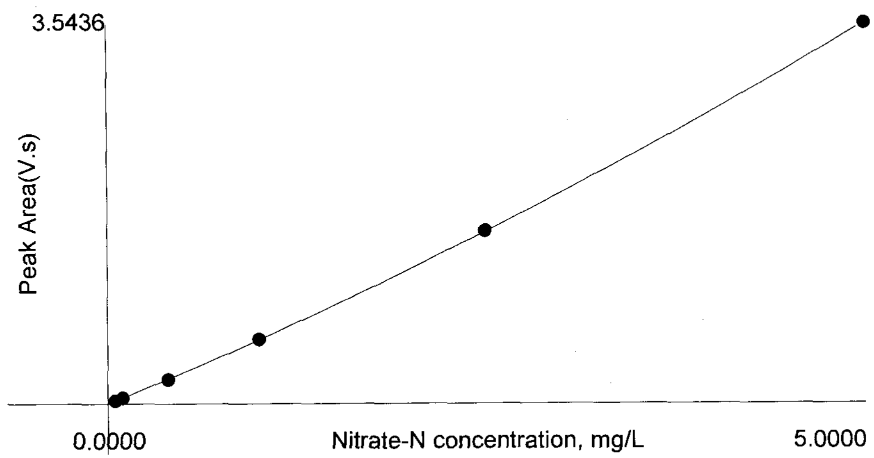
Area = 0.0019 * Conc^2 + 0.0962 * Conc - 3.2483e-4
Conc = - 1.6748 * Area^2 + 10.3373 * Area + 0.0038
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 4: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.5436	0.1988	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	1.6106	0.0905	-0.5	11/15/2011	2:48:13 PM
3	1.0000	1	0.6005	0.0330	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.2256	0.0121	2.5	11/15/2011	3:20:28 PM
5	0.1000	1	0.0531	0.0028	3.8	11/15/2011	3:36:35 PM
6	0.0500	1	0.0279	0.0014	-5.9	11/15/2011	3:52:42 PM

Figure 4: Nitrate-N



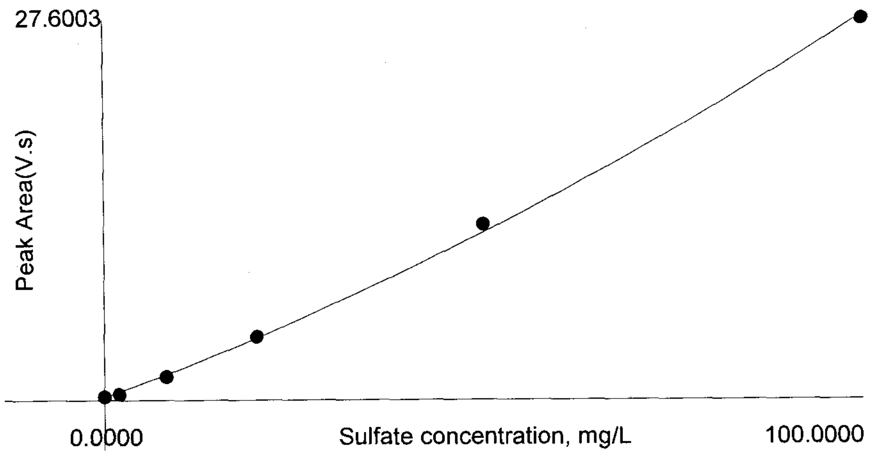
Area = 0.0273 * Conc^2 + 0.5736 * Conc - 0.0024
Conc = - 0.0824 * Area^2 + 1.6983 * Area + 0.0062
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 5: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	27.6003	0.8536	1.1	11/15/2011	2:32:05 PM
2	50.0000	1	12.7130	0.4540	-4.9	11/15/2011	2:48:13 PM
3	20.0000	1	4.5871	0.1729	-1.7	11/15/2011	3:04:20 PM
4	8.0000	1	1.6836	0.0620	9.3	11/15/2011	3:20:28 PM
5	2.0000	1	0.4027	0.0145	34.3	11/15/2011	3:36:35 PM
6	0.0500	1	0.2270	0.0081	-2.6	11/15/2011	3:52:42 PM

Figure 5: Sulfate



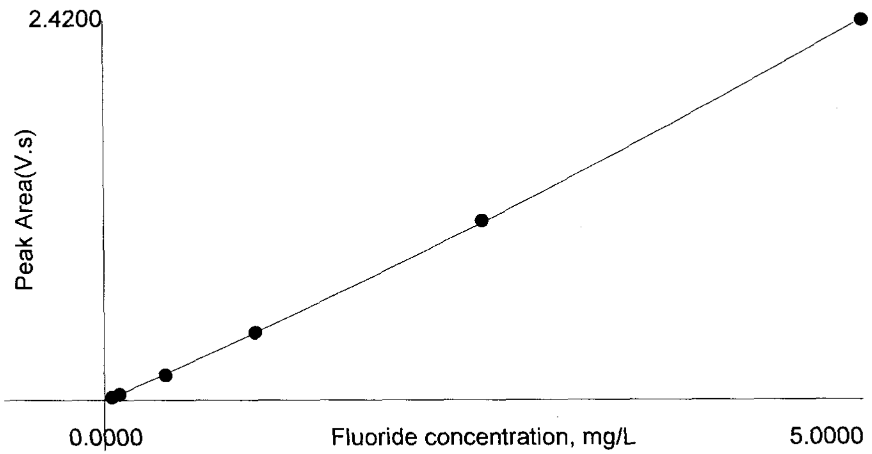
Area = 7.7408e-4 * Conc^2 + 0.1994 * Conc + 0.2113
Conc = - 0.0392 * Area^2 + 4.7046 * Area - 0.9825
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 6: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.4200	0.3882	0.3	11/15/2011	2:32:05 PM
2	2.5000	1	1.1432	0.1974	-1.3	11/15/2011	2:48:13 PM
3	1.0000	1	0.4295	0.0734	0.0	11/15/2011	3:04:20 PM
4	0.4000	1	0.1585	0.0271	4.9	11/15/2011	3:20:28 PM
5	0.1000	1	0.0379	0.0065	1.9	11/15/2011	3:36:35 PM
6	0.0500	1	0.0187	0.0032	-6.6	11/15/2011	3:52:42 PM

Figure 6: Fluoride



Area = 0.0132 * Conc^2 + 0.4199 * Conc - 0.0035
Conc = - 0.1211 * Area^2 + 2.3494 * Area + 0.0093
Correlation Coefficient (r) = 0.99999

1/x weighting

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review Coversheet—Inorganics Dept

Method Name: IC Method Reference: 300.0 Date of Analytical Run: 11/28/11

Primary Reviewer's Initials & Date: AMS 11/30/11 Secondary Reviewer's Initials & Date: [illegible] 11/30/11

Batch Numbers	84080	84082	84081		

QC Criteria—Non-MCP: ICV/CCV ±10%: LCS/LCSD ±15%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%

QC Criteria—MCP/RCP: (9012 and 7196 only)
9012 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
9012 (soil): ICV/CCV ±15%: LCS/LCSD **: MS/MSD ±25%: ICB/MB/CCB <RL: MD RPD 35%: MSD/LCSD RPD ≤30%
7196 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
7196 (soil): ICV/CCV ±15%: LCS/LCSD **: MSS/MSI ±25%: ICB/MB/CCB <RL: MD RPD ≤35%: LCSD RPD ≤30%

FAILURES OF QC FOR ANYTHING OTHER THAN MS, MSD or MD ARE GROUNDS FOR INVALIDATING THE BATCH.

Criteria for QC	Yes	No	n/a	Notes/Comments
Were the ICV and CCVs within acceptable limits for QC recovery?	✓ ✓ ✓			
Were the ICB and CCBs all <RL?	✓ ✓ ✓			
Were all MB and CCB results <RL for the analytes of interest?	✓ ✓ ✓			
Was there a CCV/CCB combination run after every 10 samples or less?	✓ ✓ ✓			
Was there an LCS run with every batch of 20 samples or less?	✓ ✓ ✓			
Was there a MD, LCSD or MSD run with every batch of 20 samples or less?	✓ ✓	✓		
Were all LCS/LCSD results within acceptable limits for QC recovery?	✓ ✓ ✓			
Were all MS/MSD results within acceptable limits for QC recovery?		✓ ✓	✓	
Were all MD, LCSD and/or MSD %RPDs within acceptable limits for QC recovery?	✓	~~✓~~ ✓ [illegible] 11/30	✓	
Were the raw data points for investigative samples within the working curve range, or if not, were the samples diluted to bring them within this range?	✓ ✓ ✓			
IF there were any MCP/RCP samples in this batch, did they meet all MCP/RCP requirements?	✓		✓ ✓	
Were there any holding time violations in this batch?	✓ ✓	✓ ✓		**NOTE!** The PM and QA Manager must be notified by email *immediately* of any holding time violations!!
Were any NCMs generated for any samples in the batch? (If so, list NCM numbers, and first-reviewer must check off any "No" answers above as applicable.)	✓	✓ ✓		43764
Were any jobs in this batch Level 4? If "Yes" then scan all raw data & place in correct scan folder on the public drive before filing this paperwork.	✓ ✓	✓		

** LCS or LCSD must produce a recovery that is within the manufacturer's specified 95% confidence limits, must be matrix matched.

0.25 *M* Sulfuric Acid Creation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Record the information below for creating the acid. When an entry is made do not use arrows to fill in information. All entries must be complete.

Recipe: to 2958mL of deionized water in a 1 gallon jug add 42mL of concentrated H_2SO_4 for a total volume of 3L.

Date Made	Analyst's Initials	Volume of 0.25 *M* Acid Made (L)	Source: Concentrated Sulfuric Acid (ACS grade) Manufacturer & Lot Number
11-18-11	RW	3	Baker lot J22022
11-21-11	RW	3	↓
11-22-11	RW	3	↓
11-23-11	RW	3	↓
11-28-11	RW	3	↓

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Eluent Preparation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Prepare fresh daily; makes 3L of eluent. To make: in a one-gallon plastic container, mix:

- 60.0 mL of 100*M* $NaHCO_3$;
- 78.0 mL of 100*M* Na_2CO_3; and
- 2862 mL of deionized water.

Degas with helium for 3min before use.

Date Prepared	Analyst's Initials	Lot # 100*M* $NaHCO_3$	Lot # 100*M* Na_2CO_3	Number of Portions Prepared
11-17-11	TB	W11J RGT018	W11K RGT001	1
11-18-11	RWO	W11K RGT016	W11K RGT017	2
11-21-11	RWO	↓	↓	1
11-22-11	RWO	↓	↓	1
11-23-11	RWO	↓	↓	2
11-28-11	RO	↓	↓	1
11-29-11	RWO	↓	↓	1

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 11-28-11

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution: Sample Aliquot 2	Serial Dilution: Units	Serial Dilution: Final Volume 2	Serial Dilution: Units	Comments
PHE	11-28-11	300.0	37526 E3	20X	500	µL	10	mL					
			37552 C2	10X	1	mL							
			C3	10X	1	mL							
			C1	10X	1	mL							
			C6	10X	1	mL							
			C8	10X	1	mL							
			37526 B4	10X	1	mL							
				20X	500	µL							
			B1	10X	1	mL							
			B2	10X	1	mL							
			37552 C7	20X	500	µL							

entries completed by day [new page each day]

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Ion Chromatography QC Source Data Sheet—Inorganics Dept

Method (circle methods): IC 300_28D IC 300_48HR IC 9056_28D IC 9056_48HR

Date of Analytical Run: 11/28/11 Analyst's Initials: RWE

Working Curve Standard:

Manufacturer & Lot Number for Source Standard	Working Curve Standards Prepared On
Inorganic Ventures Lot E2-MEB394034	20 October 2011

QC Standard True Values for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.50	25.0	2.50	2.50	2.50	50.0
ICB	0	0	0	0	0	0
MB	0	0	0	0	0	0
LCS/LCSD	4.00	40.0	4.00	4.00	4.00	80.0
MS/MSD	1.00	10.0	1.00	1.00	1.00	20.0

QC Standard Acceptable Recovery Ranges for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.25-2.75	22.5-27.5	2.25-2.75	2.25-2.75	2.25-2.75	45.0-55.0
ICB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
MB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
LCS/LCSD	3.40-4.60	34.0-46.0	3.40-4.60	3.40-4.60	3.40-4.60	68.0-92.0
MS/MSD	0.75-1.25	7.50-12.5	0.75-1.25	0.75-1.25	0.75-1.25	15.0-25.0

Current Method RLs (mg/L):

	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
	0.10	1.00	0.010	0.10	0.050	2.0

Original Run Filename: OM_11-28-2011_07-27-49PM.OMN created 11/28/2011 7:27:49 PM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_11-28-2011_07-27-49PM.OMN last modified 11/29/2011 2:29:46 PM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	0.0036	0.0207	0.0079	0.0079	7.2923e-4	-0.9862	11/28/2011@7:29:06 PM
	Calibration:	Table/Fig. 3	Table/Fig. 1		Table/Fig. 4	Table/Fig. 2	Table/Fig. 5	
ICV	1	2.4660	25.2373	2.4699	2.5542	2.4847	49.6904	11/28/2011@7:45:13 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
	Calibration:			Table/Fig. 6				
ICB	S11	0.0039	0.0173	0.0097	0.0063	0.0034	-0.9835	11/28/2011@8:01:20 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	-2.6154e-4	0.0185	0.0096	0.0063	0.0022	-0.9851	11/28/2011@8:17:27 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9278	39.7665	3.9381	3.9565	4.0096	77.4296	11/28/2011@8:33:34 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37526-B-3@20 SO4	2	0.0522	3.7735	0.0068	0.0959	0.6841	69.9224	11/28/2011@8:49:41 PM
360-37526-B-3@20 MS	3	1.1447	15.0104	1.0778	1.2090	1.7914	88.2860	11/28/2011@9:05:48 PM
360-37526-B-3@20 MSD	3	1.0436	13.6620	0.9809	1.0966	1.6366	79.2764	11/28/2011@9:21:55 PM
360-37552-C-2@10 CL	4	0.0038	12.0750	0.0128	0.0064	0.0022	0.1846	11/28/2011@9:38:03 PM
360-37552-C-3@10 CL	5	0.0300	18.0052	0.0074	0.2442	0.0418	1.7807	11/28/2011@9:54:10 PM
360-37552-C-1@10 SO4	6	0.0150	0.9358	0.0167	0.2657	0.0023	9.3202	11/28/2011@10:10:16 PM
360-37552-C-6@10 SO4	7	0.0291	4.1053	0.0143	0.0279	1.4679	32.8414	11/28/2011@10:26:23 PM
360-37552-C-8@10 SO4	8	0.0793	2.0278	0.0058	0.0107	-0.0033	68.8837	11/28/2011@10:42:30 PM
360-37526-B-4@10 CL/SO4	9	0.0799	8.0659	0.0064	0.1722	1.0534	123.7495	11/28/2011@10:58:36 PM
360-37526-B-4@20 CL/SO4	10	0.0389	3.4012	0.0081	0.0766	0.4701	62.8820	11/28/2011@11:14:43 PM
CCV	S12	3.9432	39.9032	3.9678	3.9739	4.0294	77.7567	11/28/2011@11:30:50 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0014	0.0181	0.0095	0.0059	0.0038	-0.9851	11/28/2011@11:46:56 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37526-B-1@10 SO4	11	0.0324	2.3260	0.0074	0.0086	-0.0033	45.2573	11/29/2011@12:03:02 AM
360-37526-B-2@10 SO4	12	0.0280	0.7888	0.0188	0.0079	0.0125	20.0497	11/29/2011@12:19:08 AM
360-37654-A-24@2 CL	13	0.0360	8.8935	0.0667	0.0086	0.0022	5.1642	11/29/2011@12:35:14 AM
360-37654-A-25@10 CL	14	0.0127	4.7699	0.0158	0.2893	0.0022	0.0478	11/29/2011@12:51:20 AM
360-37706-A-23@10 BR	15	1.5943	6.7376	0.0226	0.0817	0.0022	-0.4309	11/29/2011@1:07:25 AM
360-37706-A-25@10 BR	16	0.6086	5.5988	0.0146	0.0446	0.0022	-0.7328	11/29/2011@1:23:33 AM
360-37706-A-27@10 BR	17	1.3374	6.1970	0.0152	0.0485	-0.0105	-0.6514	11/29/2011@1:39:40 AM
360-37706-A-29@10 BR	18	15.2311	6.9260	0.0075	-0.0123	-0.0166	2.7706	11/29/2011@1:55:47 AM
360-37706-A-29@50 BR	19	3.9399	1.3909	0.0076	0.0062	9.9786e-4	-0.3912	11/29/2011@2:11:54 AM
360-37552-C-7@20 SO4	20	0.0554	16.1989	0.0615	0.0062	0.0022	101.2697	11/29/2011@2:28:00 AM
CCV	S12	3.8548	38.8113	3.8379	3.8584	3.9192	75.6140	11/29/2011@2:44:07 AM

Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0074	0.0160	0.0077	0.0034	0.0022	-0.9796	11/29/2011@3:00:14 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0064	0.0130	0.0074	0.0052	0.0022	-0.9828	11/29/2011@3:16:21 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9693	39.9429	3.9549	3.9816	4.0365	77.5415	11/29/2011@3:32:28 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37791-B-3@50 NO3	21	0.1003	97.3839	0.0598	3.9977	0.0129	-284.8575	11/29/2011@3:48:35 AM
360-37791-B-3@50 MS	22	1.1854	96.2591	1.1072	4.6637	0.0022	-255.0089	11/29/2011@4:04:42 AM
360-37791-B-3@50 MSD	22	0.9393	97.4537	0.8710	3.7285	-27.3959	-42.6987	11/29/2011@4:20:48 AM
360-37711-A-11@2 CL	23	0.0374	30.3922	0.0076	0.0033	0.0022	43.4593	11/29/2011@4:36:55 AM
360-37717-F-3@2 CL	24	-0.0061	86.8540	0.0068	-5.741e-4	-35.1135	25.1280	11/29/2011@4:53:01 AM
360-37717-F-3@5 CL	25	0.0039	-12.4533	-0.0050	0.0062	10.3481	14.3082	11/29/2011@5:09:07 AM
360-37799-B-2@20 CL	26	0.0039	32.3595	0.0184	0.0062	0.0022	0.4797	11/29/2011@5:25:14 AM
360-37706-A-8@10 BR	27	1.2412	8.4218	0.0082	-0.0133	0.0022	4.2570	11/29/2011@5:41:20 AM
360-37706-A-10@10 BR	28	15.7717	6.8738	0.0352	0.0062	0.0022	0.8175	11/29/2011@5:57:26 AM
360-37706-A-10@50 BR	29	4.8176	1.5338	0.0144	-0.0199	0.0022	-0.5839	11/29/2011@6:13:31 AM
CCV	S12	3.9992	40.3750	3.9755	4.0099	4.0630	78.1467	11/29/2011@6:29:39 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0039	0.0094	0.0099	0.0043	0.0040	-0.9801	11/29/2011@6:45:45 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37706-A-13@10 BR	30	5.6579	7.7979	0.0141	0.0062	-0.0201	-0.3787	11/29/2011@7:01:50 AM
360-37706-A-15@10 BR	31	14.4012	5.3323	0.0594	0.0093	-0.0064	0.1136	11/29/2011@7:17:58 AM
360-37706-A-15@50 BR	32	6.0129	1.0653	0.0183	-0.0107	0.0063	-0.7533	11/29/2011@7:34:05 AM
360-37706-A-46	33	0.0491	23.2691	0.1380	0.0174	-0.1053	38.8742	11/29/2011@7:50:12 AM
360-37706-A-47	34	15.0854	61.4040	0.0806	0.5114	0.0022	2.5536	11/29/2011@8:06:19 AM
360-37706-A-48	35	-10.1313	56.0731	0.0877	0.3852	0.0022	2.1254	11/29/2011@8:22:26 AM
360-37706-A-49	36	0.1286	79.9426	0.0644	-0.0010	-16.5755	52.9949	11/29/2011@8:38:32 AM
360-37706-A-50	37	-1.7975e+3	56.1666	0.0249	0.1897	0.0022	19.2789	11/29/2011@8:54:41 AM
360-37706-A-51	38	0.1026	-24.0314	0.0278	0.0062	6.6041	95.9650	11/29/2011@9:10:47 AM
360-37706-A-52	39	-21.5766	68.2137	0.0242	0.0065	-15.9073	21.3619	11/29/2011@9:26:54 AM
CCV	S12	3.6815	40.0591	3.9174	3.9218	4.0114	77.2504	11/29/2011@9:43:02 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0037	0.0099	0.0102	0.0034	0.0046	-0.9826	11/29/2011@9:59:09 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0065	0.0091	0.0099	0.0037	0.0050	-0.9815	11/29/2011@10:15:16 AM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.7489	40.6906	3.9983	3.9916	4.0730	78.4749	11/29/2011@10:31:23 AM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37552-C-7@ 50	40	0.0194	5.1569	0.0245	0.0075	0.0022	35.4665	11/29/2011@10:47:29 AM
360-37552-C-7 @50 MS	41	1.0178	18.7071	1.1112	1.1438	1.1413	65.3057	11/29/2011@11:03:35 AM
360-37552-C-7 @50 MSD	41	0.7895	14.4320	0.8383	0.8903	0.8725	50.0245	11/29/2011@11:19:41 AM
360-37706-A-13 @20 BR	42	2.5312	3.5270	0.0095	0.0062	0.0022	0.2721	11/29/2011@11:35:47 AM
360-37706-A-15 @100 BR	43	2.5041	0.5587	0.0127	-0.0157	0.0022	-0.8665	11/29/2011@11:51:53 AM
360-37706-A-47 @100 BR	44	0.2343	0.5995	0.0080	0.0046	0.0015	-0.9275	11/29/2011@12:07:59 PM

360-37706-A-48 @100 BR	45	0.3919	0.5992	0.0097	0.0046	0.0022	-0.9270	11/29/2011@12:24:05 PM
360-37654-A-33	46	0.0953	43.8435	0.0673	1.1160	0.0022	16.2133	11/29/2011@12:40:12 PM
360-37831-A-1	55	0.0046	5.1322	0.0173	0.1706	0.0022	-0.2361	11/29/2011@12:56:18 PM
360-37831-A-2	56	0.0089	1.1661	0.0129	0.0084	0.0022	-0.7678	11/29/2011@1:12:24 PM
CCV	S12	0.0038	0.0096	0.0100	0.0042	0.0023	-0.9827	11/29/2011@1:28:32 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0037	0.0046	0.0103	0.0034	0.0022	-0.9784	11/29/2011@1:44:40 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37654-A-38	49	-0.0033	0.0049	0.0099	0.0074	0.0023	-0.9827	11/29/2011@2:00:47 PM

Original Run Filename: OM_11-28-2011_07-27-49PM.OMN created 11/28/2011 7:27:49 PM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_11-28-2011_07-27-49PM.OMN last modified 11/29/2011 2:29:46 PM
Current Run Author's Signature: [EmerichR]
Description: *Triggered autodilution test*

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	0.0036	0.0207	0.0079	0.0079	7.2923e-4	-0.9862	11/28/2011@7:29:06 PM
	Calibration:	Table/Fig. 3	Table/Fig. 1		Table/Fig. 4	Table/Fig. 2	Table/Fig. 5	
ICV	1	2.4660	25.2373	2.4699	2.5542	2.4847	49.6904	11/28/2011@7:45:13 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
	Calibration:			Table/Fig. 6				
ICB	S11	0.0039	0.0173	0.0097	0.0063	0.0034	-0.9835	11/28/2011@8:01:20 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	-2.6154e-4	0.0185	0.0096	0.0063	0.0022	-0.9851	11/28/2011@8:17:27 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9278	39.7665	3.9381	3.9565	4.0096	77.4296	11/28/2011@8:33:34 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37526-B-3@20 SO4	2	0.0522	3.7735	0.0068	0.0959	0.6841	69.9224	11/28/2011@8:49:41 PM
360-37526-B-3@20 MS	3	1.1447	15.0104	1.0778	1.2090	1.7914	88.2860	11/28/2011@9:05:48 PM
360-37526-B-3@20 MSD	3	1.0436	13.6620	0.9809	1.0966	1.6366	79.2764	11/28/2011@9:21:55 PM
360-37552-C-2@10 CL	4	0.0038	12.0750	0.0128	0.0064	0.0022	0.1846	11/28/2011@9:38:03 PM
360-37552-C-3@10 CL	5	0.0300	18.0052	0.0074	0.2442	0.0418	1.7807	11/28/2011@9:54:10 PM
360-37552-C-1@10 SO4	6	0.0150	0.9358	0.0167	0.2657	0.0023	9.3202	11/28/2011@10:10:16 PM
360-37552-C-6@10 SO4	7	0.0291	4.1053	0.0143	0.0279	1.4679	32.8414	11/28/2011@10:26:23 PM
360-37552-C-8@10 SO4	8	0.0793	2.0278	0.0058	0.0107	-0.0033	68.8837	11/28/2011@10:42:30 PM
360-37526-B-4@10 CL/SO4	9	0.0799	8.0659	0.0064	0.1722	1.0534	123.7495	11/28/2011@10:58:36 PM
360-37526-B-4@20 CL/SO4	10	0.0389	3.4012	0.0081	0.0766	0.4701	62.8820	11/28/2011@11:14:43 PM
CCV	S12	3.9432	39.9032	3.9678	3.9739	4.0294	77.7567	11/28/2011@11:30:50 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0014	0.0181	0.0095	0.0059	0.0038	-0.9851	11/28/2011@11:46:56 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37526-B-1@10 SO4	11	0.0324	2.3260	0.0074	0.0086	-0.0033	45.2573	11/29/2011@12:03:02 AM
360-37526-B-2@10 SO4	12	0.0280	0.7888	0.0188	0.0079	0.0125	20.0497	11/29/2011@12:19:08 AM
360-37654-A-24@2 CL	13	0.0360	8.8935	0.0667	0.0086	0.0022	5.1642	11/29/2011@12:35:14 AM
360-37654-A-25@10 CL	14	0.0127	4.7699	0.0158	0.2893	0.0022	0.0478	11/29/2011@12:51:20 AM
360-37706-A-23@10 BR	15	1.5943	6.7376	0.0226	0.0817	0.0022	-0.4309	11/29/2011@1:07:25 AM
360-37706-A-25@10 BR	16	0.6086	5.5988	0.0146	0.0446	0.0022	-0.7328	11/29/2011@1:23:33 AM
360-37706-A-27@10 BR	17	1.3374	6.1970	0.0152	0.0485	-0.0105	-0.6514	11/29/2011@1:39:40 AM
360-37706-A-29@10 BR	18	15.2311	6.9260	0.0075	-0.0123	-0.0166	2.7706	11/29/2011@1:55:47 AM
360-37706-A-29@50 BR	19	3.9399	1.3909	0.0076	0.0062	9.9786e-4	-0.3912	11/29/2011@2:11:54 AM
360-37552-C-7@20 SO4	20	0.0554	16.1989	0.0615	0.0062	0.0022	101.2697	11/29/2011@2:28:00 AM
CCV	S12	3.8548	38.8113	3.8379	3.8584	3.9192	75.6140	11/29/2011@2:44:07 AM

	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0074	0.0160	0.0077	0.0034	0.0022	-0.9796	11/29/2011@3:00:14 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0064	0.0130	0.0074	0.0052	0.0022	-0.9828	11/29/2011@3:16:21 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9693	39.9429	3.9549	3.9816	4.0365	77.5415	11/29/2011@3:32:28 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37791-B-3@50 NO3	21	0.1003	97.3839	0.0598	3.9977	0.0129	-284.8575	11/29/2011@3:48:35 AM
360-37791-B-3@50 MS	22	1.1854	96.2591	1.1072	4.6637	0.0022	-255.0089	11/29/2011@4:04:42 AM
360-37791-B-3@50 MSD	22	0.9393	97.4537	0.8710	3.7285	-27.3959	-42.6987	11/29/2011@4:20:48 AM
360-37711-A-11@2 CL	23	0.0374	30.3922	0.0076	0.0033	0.0022	43.4593	11/29/2011@4:36:55 AM
360-37717-F-3@2 CL	24	-0.0061	86.8540	0.0068	-5.741e-4	-35.1135	25.1280	11/29/2011@4:53:01 AM
360-37717-F-3@5 CL	25	0.0039	-12.4533	-0.0050	0.0062	10.3481	14.3082	11/29/2011@5:09:07 AM
360-37799-B-2@20 CL	26	0.0039	32.3595	0.0184	0.0062	0.0022	0.4797	11/29/2011@5:25:14 AM
360-37706-A-8@10 BR	27	1.2412	8.4218	0.0082	-0.0133	0.0022	4.2570	11/29/2011@5:41:20 AM
360-37706-A-10@10 BR	28	15.7717	6.8738	0.0352	0.0062	0.0022	0.8175	11/29/2011@5:57:26 AM
360-37706-A-10@50 BR	29	4.8176	1.5338	0.0144	-0.0199	0.0022	-0.5839	11/29/2011@6:13:31 AM
CCV	S12	3.9992	40.3750	3.9755	4.0099	4.0630	78.1467	11/29/2011@6:29:39 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0039	0.0094	0.0099	0.0043	0.0040	-0.9801	11/29/2011@6:45:45 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37706-A-13@10 BR	30	5.6579	7.7979	0.0141	0.0062	-0.0201	-0.3787	11/29/2011@7:01:50 AM
360-37706-A-15@10 BR	31	14.4012	5.3323	0.0594	0.0093	-0.0064	0.1136	11/29/2011@7:17:58 AM
360-37706-A-15@50 BR	32	6.0129	1.0653	0.0183	-0.0107	0.0063	-0.7533	11/29/2011@7:34:05 AM
360-37706-A-46	33	0.0491	23.2691	0.1380	0.0174	-0.1053	38.8742	11/29/2011@7:50:12 AM
360-37706-A-47	34	15.0854	61.4040	0.0806	0.5114	0.0022	2.5536	11/29/2011@8:06:19 AM
360-37706-A-48	35	-10.1313	56.0731	0.0877	0.3852	0.0022	2.1254	11/29/2011@8:22:26 AM
360-37706-A-49	36	0.1286	79.9426	0.0644	-0.0010	-16.5755	52.9949	11/29/2011@8:38:32 AM
360-37706-A-50	37	-1.7975e+3	56.1666	0.0249	0.1897	0.0022	19.2789	11/29/2011@8:54:41 AM
360-37706-A-51	38	0.1026	-24.0314	0.0278	0.0062	6.6041	95.9650	11/29/2011@9:10:47 AM
360-37706-A-52	39	-21.5766	68.2137	0.0242	0.0065	-15.9073	21.3619	11/29/2011@9:26:54 AM
CCV	S12	3.6815	40.0591	3.9174	3.9218	4.0114	77.2504	11/29/2011@9:43:02 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0037	0.0099	0.0102	0.0034	0.0046	-0.9826	11/29/2011@9:59:09 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0065	0.0091	0.0099	0.0037	0.0050	-0.9815	11/29/2011@10:15:16 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.7489	40.6906	3.9983	3.9916	4.0730	78.4749	11/29/2011@10:31:23 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37552-C-7@ 50	40	0.0194	5.1569	0.0245	0.0075	0.0022	35.4665	11/29/2011@10:47:29 AM
360-37552-C-7 @50 MS	41	1.0178	18.7071	1.1112	1.1438	1.1413	65.3057	11/29/2011@11:03:35 AM
360-37552-C-7 @50 MSD	41	0.7895	14.4320	0.8383	0.8903	0.8725	50.0245	11/29/2011@11:19:41 AM
360-37706-A-13 @20 BR	42	2.5312	3.5270	0.0095	0.0062	0.0022	0.2721	11/29/2011@11:35:47 AM
360-37706-A-15 @100 BR	43	2.5041	0.5587	0.0127	-0.0157	0.0022	-0.8665	11/29/2011@11:51:53 AM
360-37706-A-47 @100 BR	44	0.2343	0.5995	0.0080	0.0046	0.0015	-0.9275	11/29/2011@12:07:59 PM

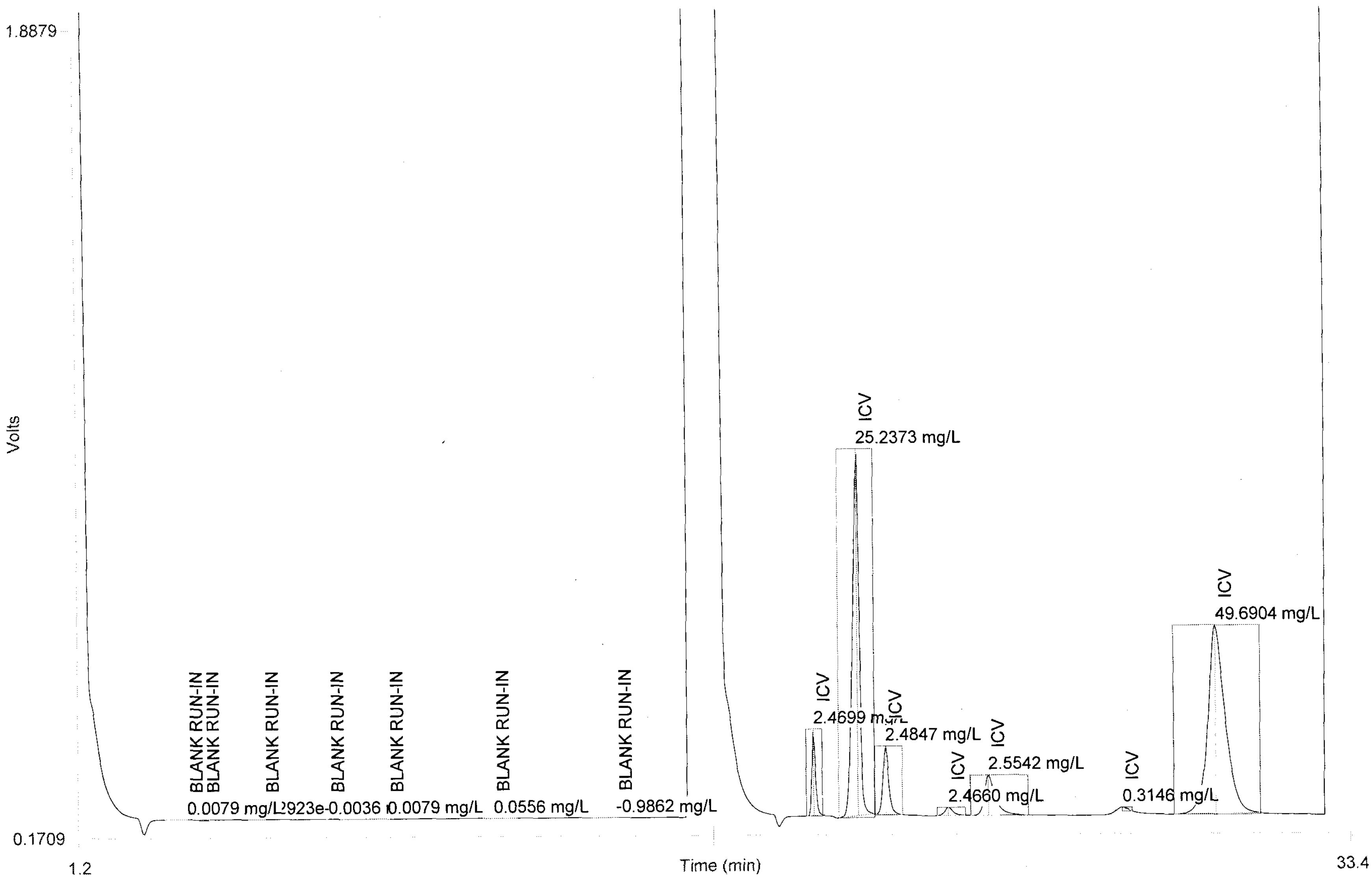
closing CCV failed - data after 11-29-11 @ 09:59:09 Am is not reportable.
[illegible] 11-30-11

360-37706-A-48 @100 BR	45	0.3919	0.5992	0.0097	0.0046	0.0022	-0.9270	11/29/2011@12:24:05 PM
360-37654-A-33	46	0.0953	43.8435	0.0673	1.1160	0.0022	16.2133	11/29/2011@12:40:12 PM
360-37831-A-1	55	0.0046	5.1322	0.0173	0.1706	0.0022	-0.2361	11/29/2011@12:56:18 PM
360-37831-A-2	56	0.0089	1.1661	0.0129	0.0084	0.0022	-0.7678	11/29/2011@1:12:24 PM
CCV	S12	0.0038	0.0096	0.0100	0.0042	0.0023	-0.9827	11/29/2011@1:28:32 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0037	0.0046	0.0103	0.0034	0.0022	-0.9784	11/29/2011@1:44:40 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37654-A-38	49	-0.0033	0.0049	0.0099	0.0074	0.0023	-0.9827	11/29/2011@2:00:47 PM

Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 1 of 35

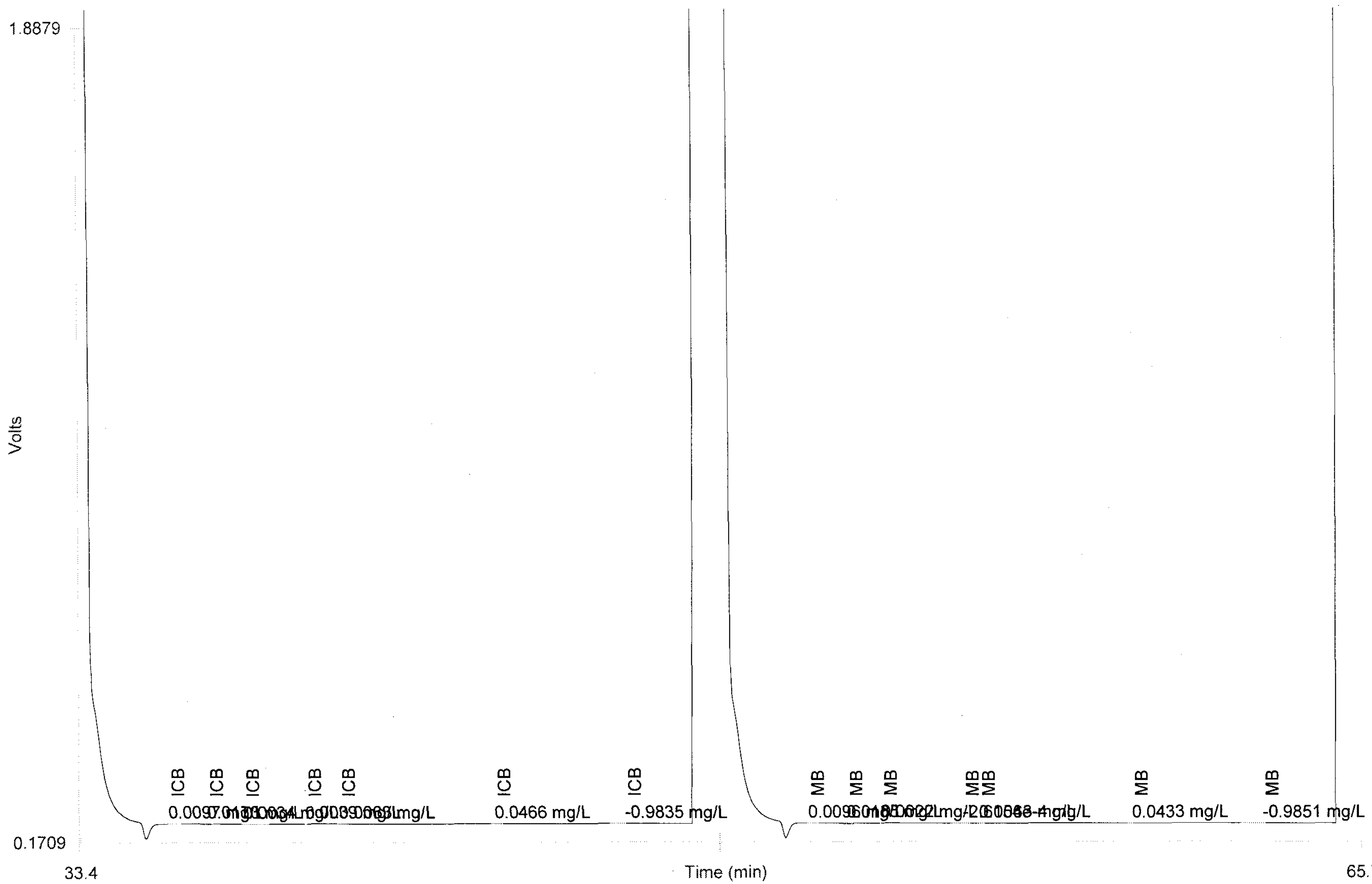


- 4 -

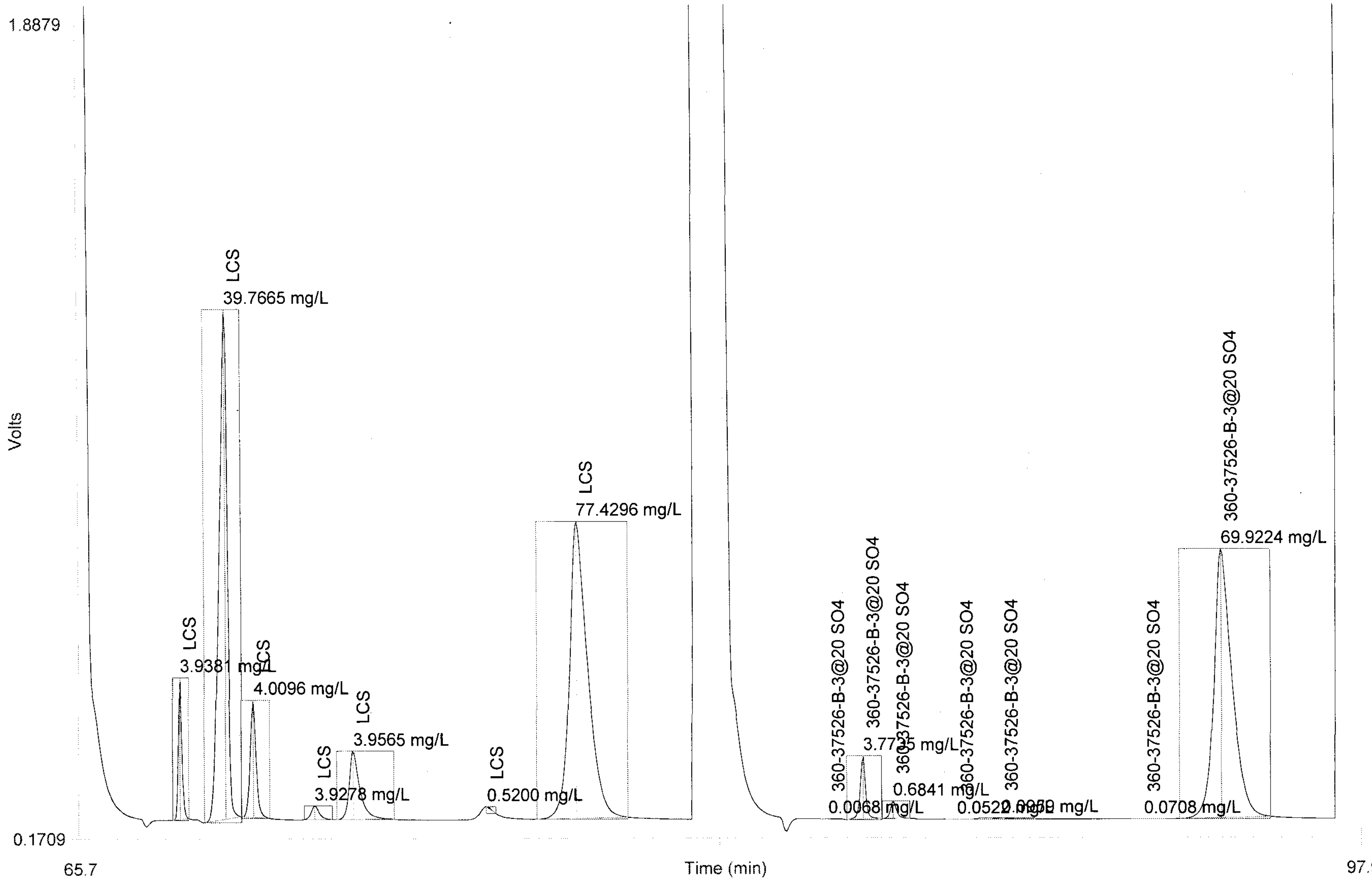
Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 2 of 35



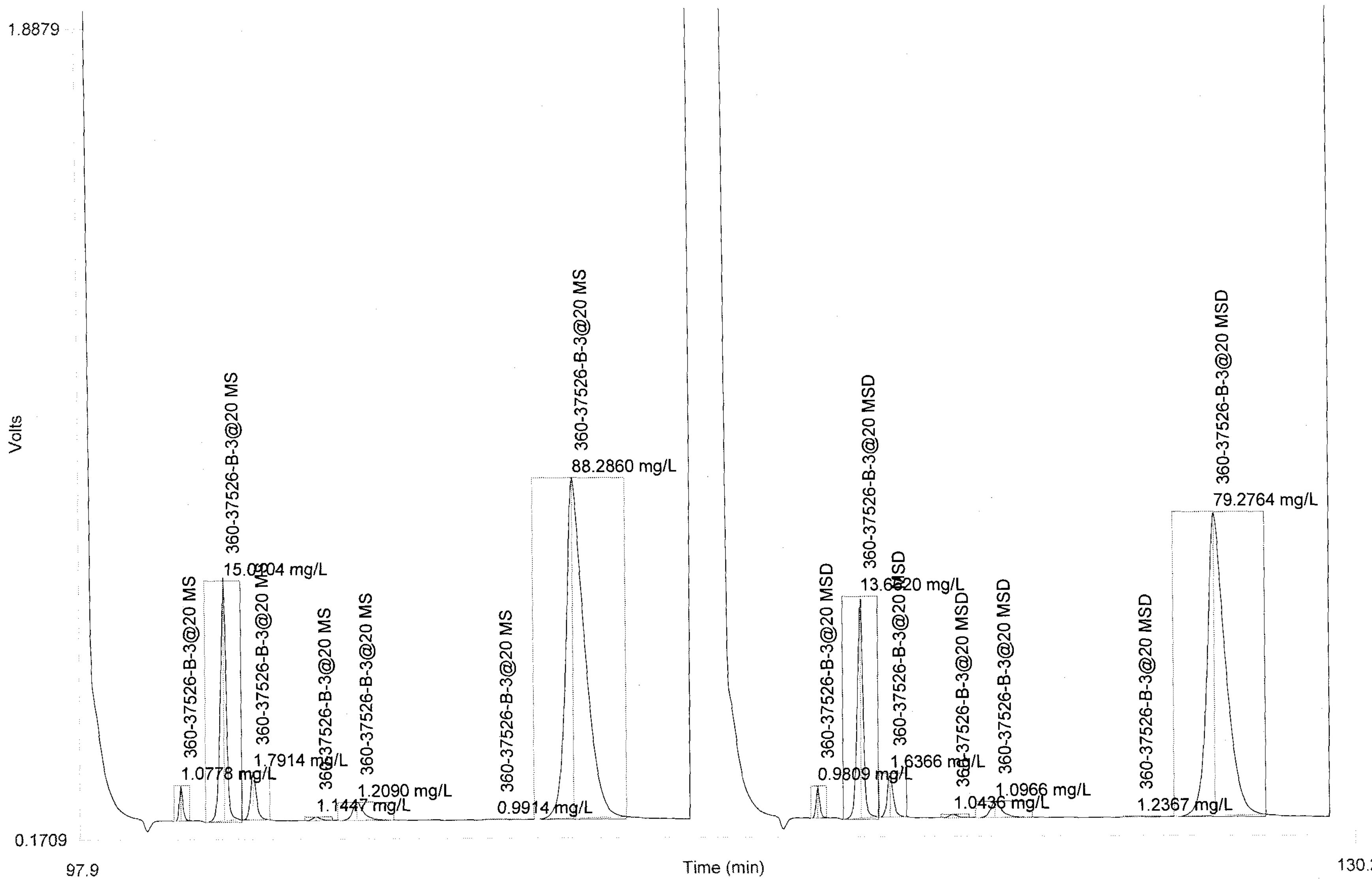
Channel 1 (Anions) : Set 3 of 35



Author: EmerichR

Date : 11/29/2011

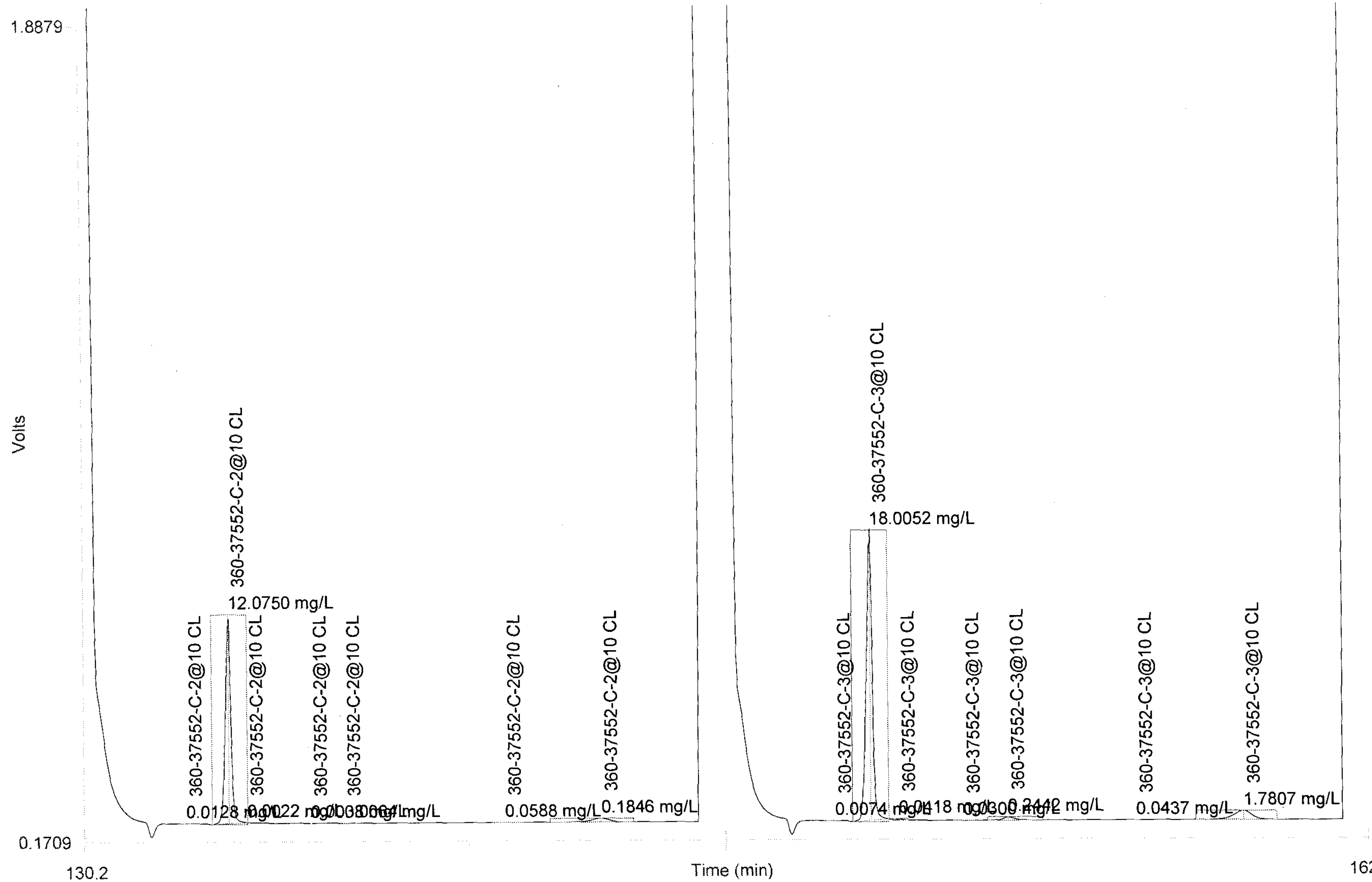
Channel 1 (Anions) : Set 4 of 35



Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 5 of 35

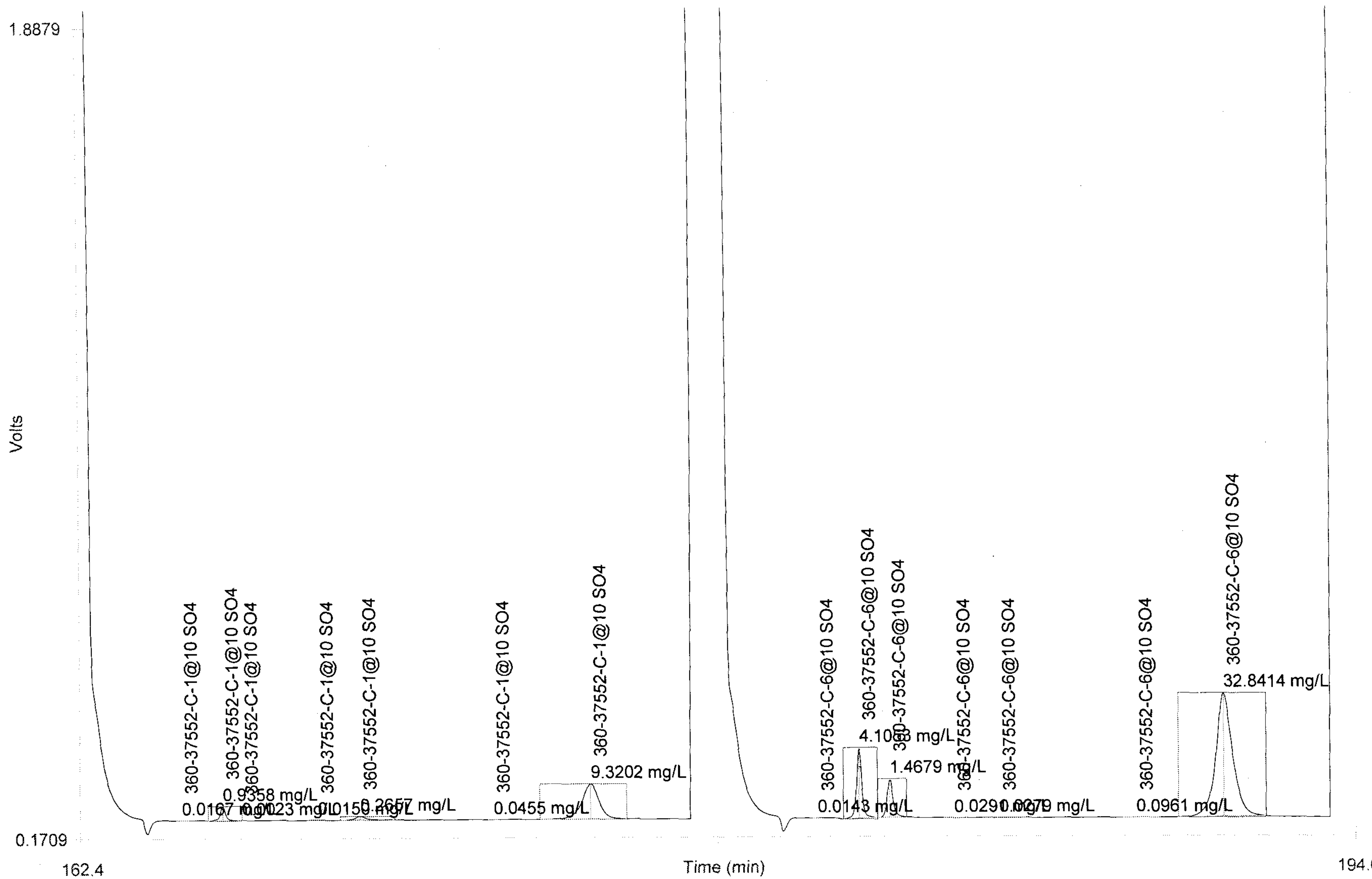


- 8 -

Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 6 of 35

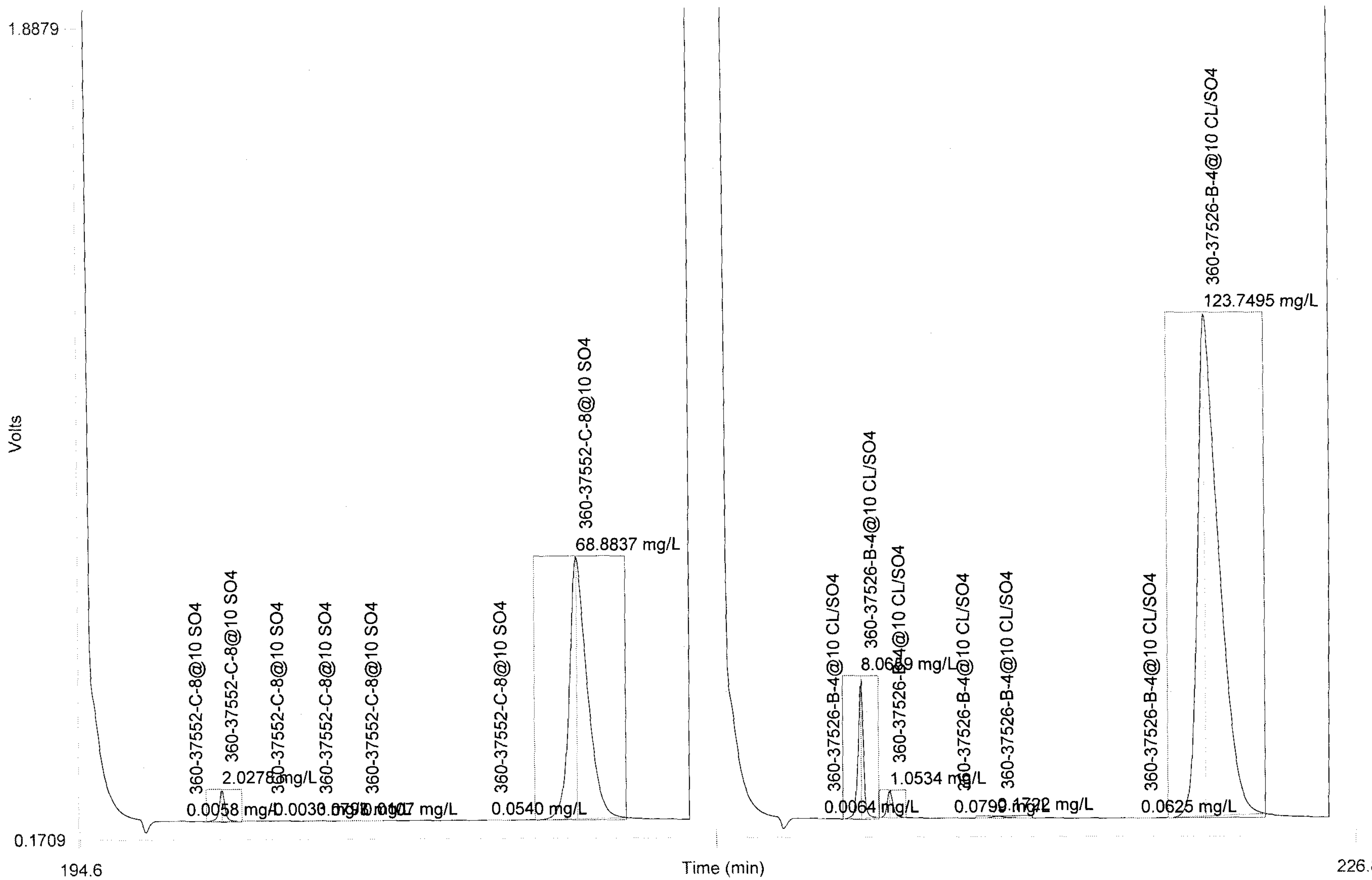


- 9 -

Author: EmerichR

Date : 11/29/2011

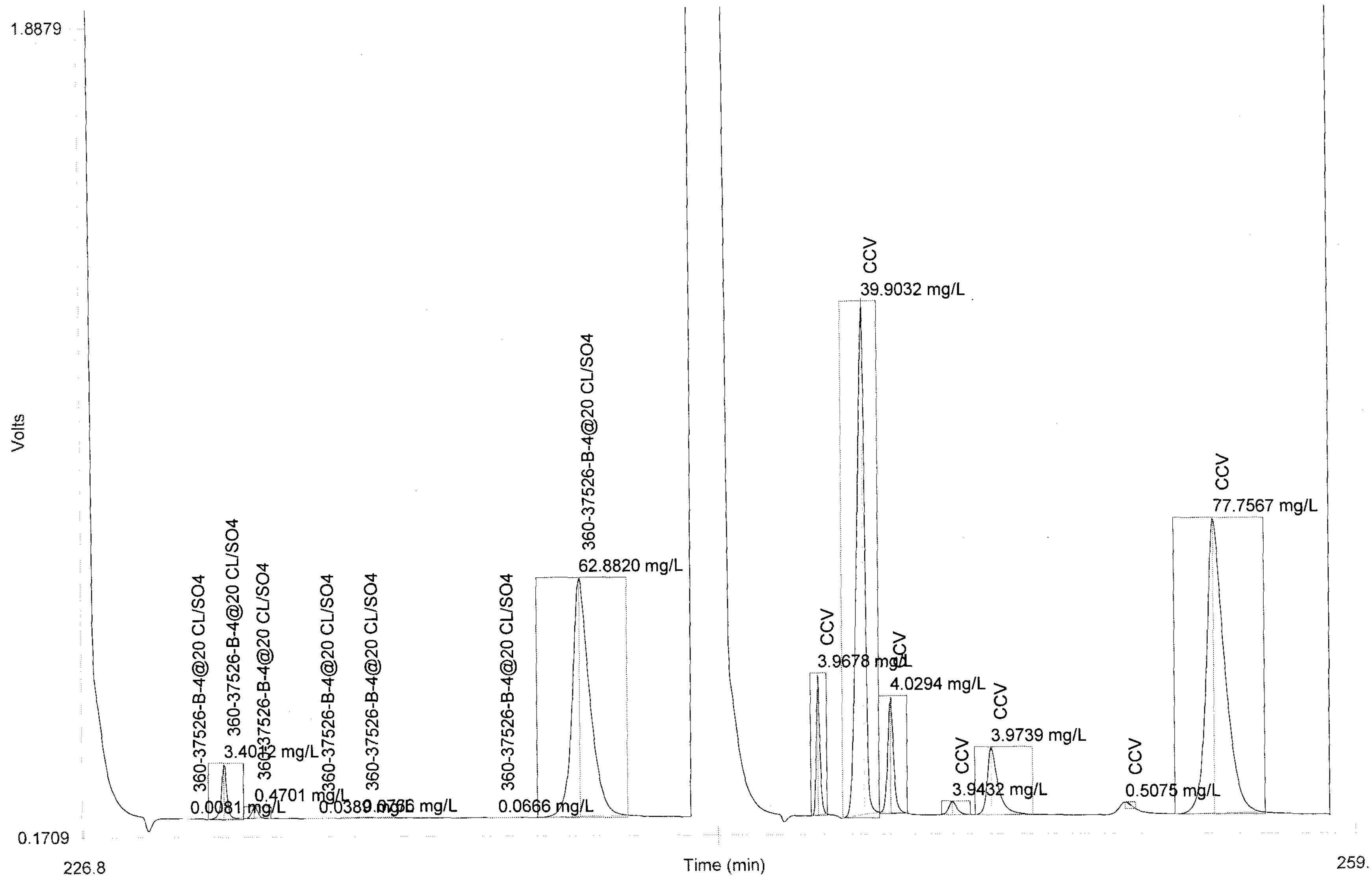
Channel 1 (Anions) : Set 7 of 35



Author: EmerichR

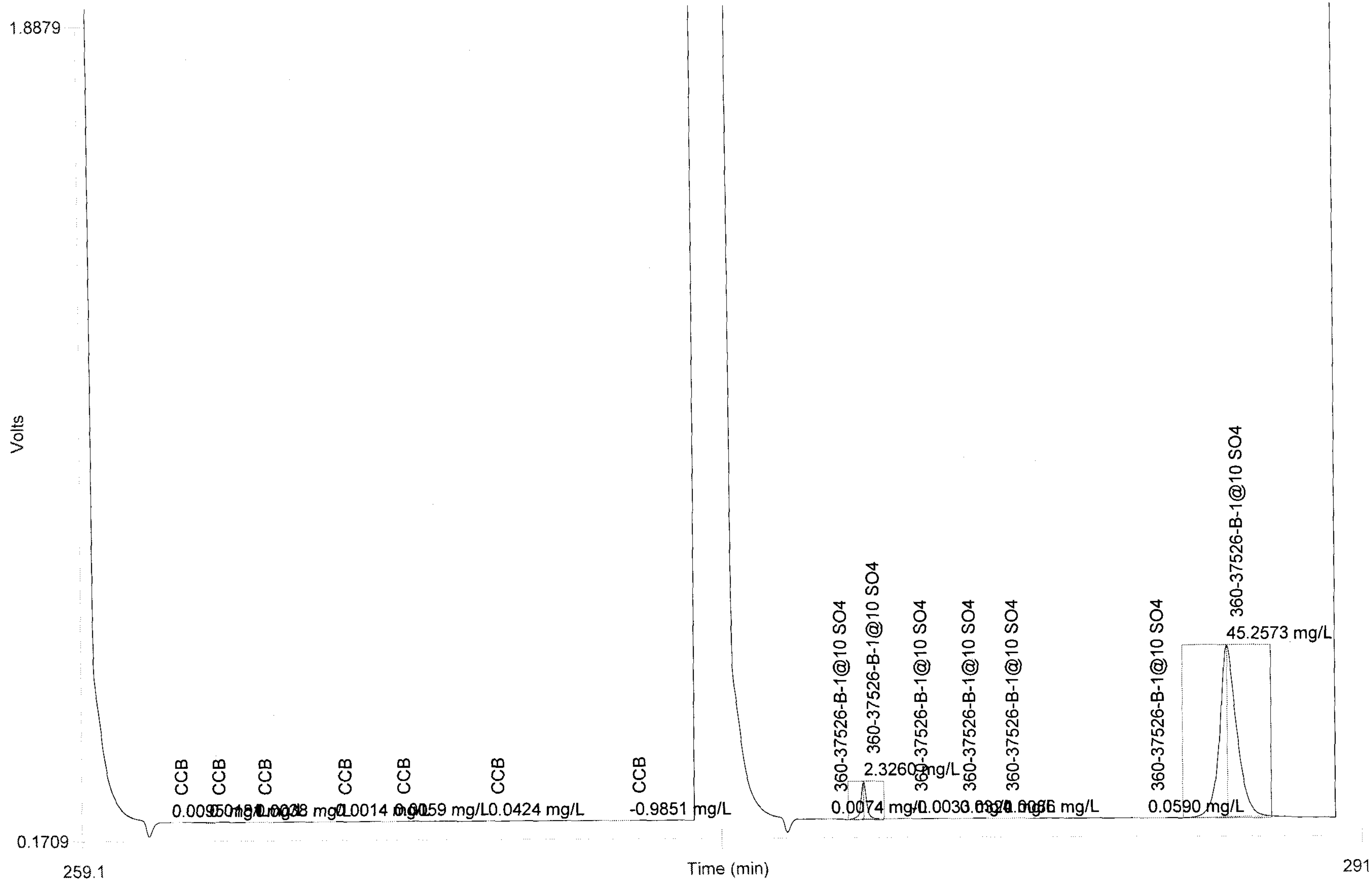
Date : 11/29/2011

Channel 1 (Anions) : Set 8 of 35



Author: EmerichR

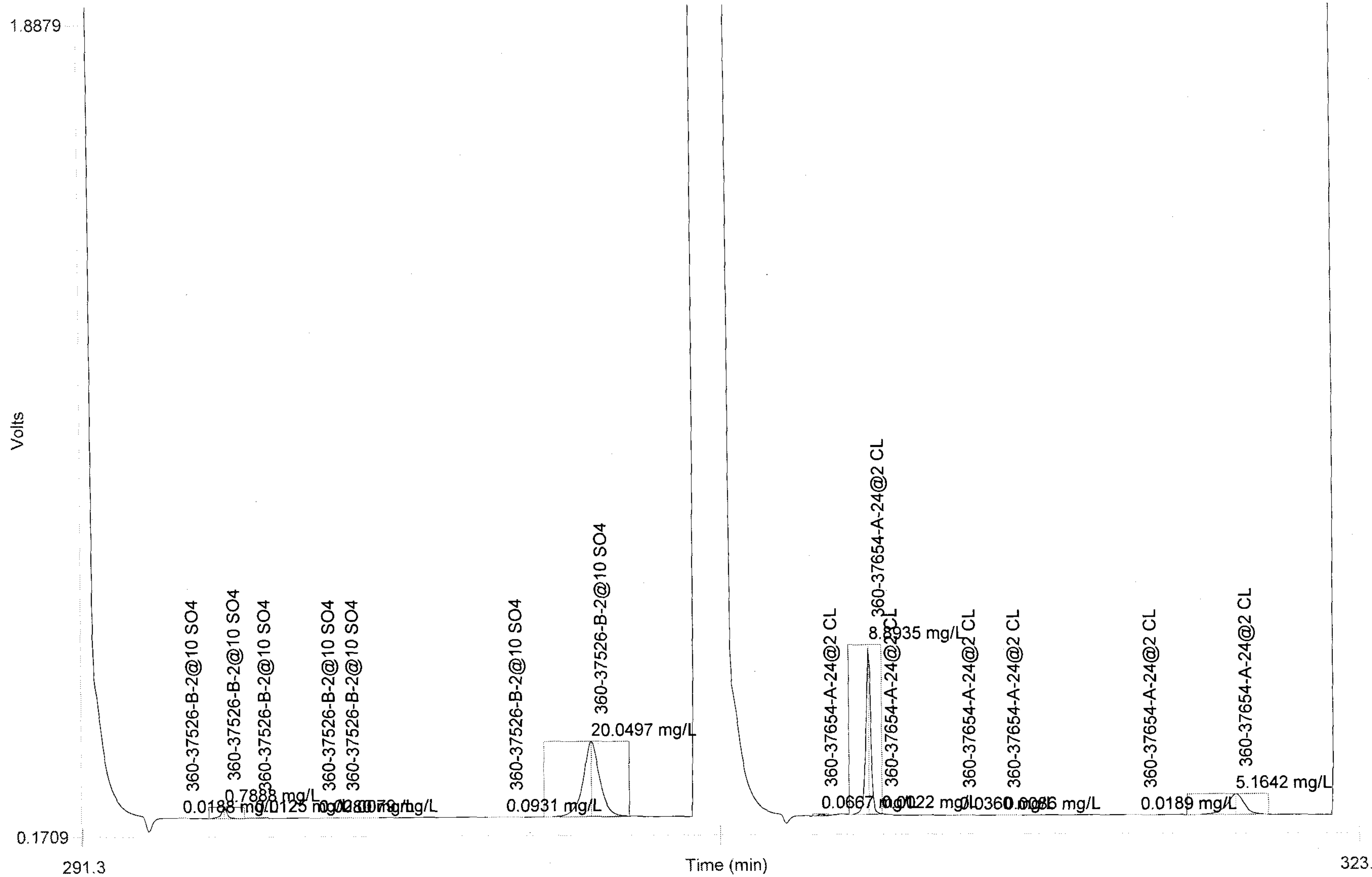
Channel 1 (Anions) : Set 9 of 35



Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 10 of 35

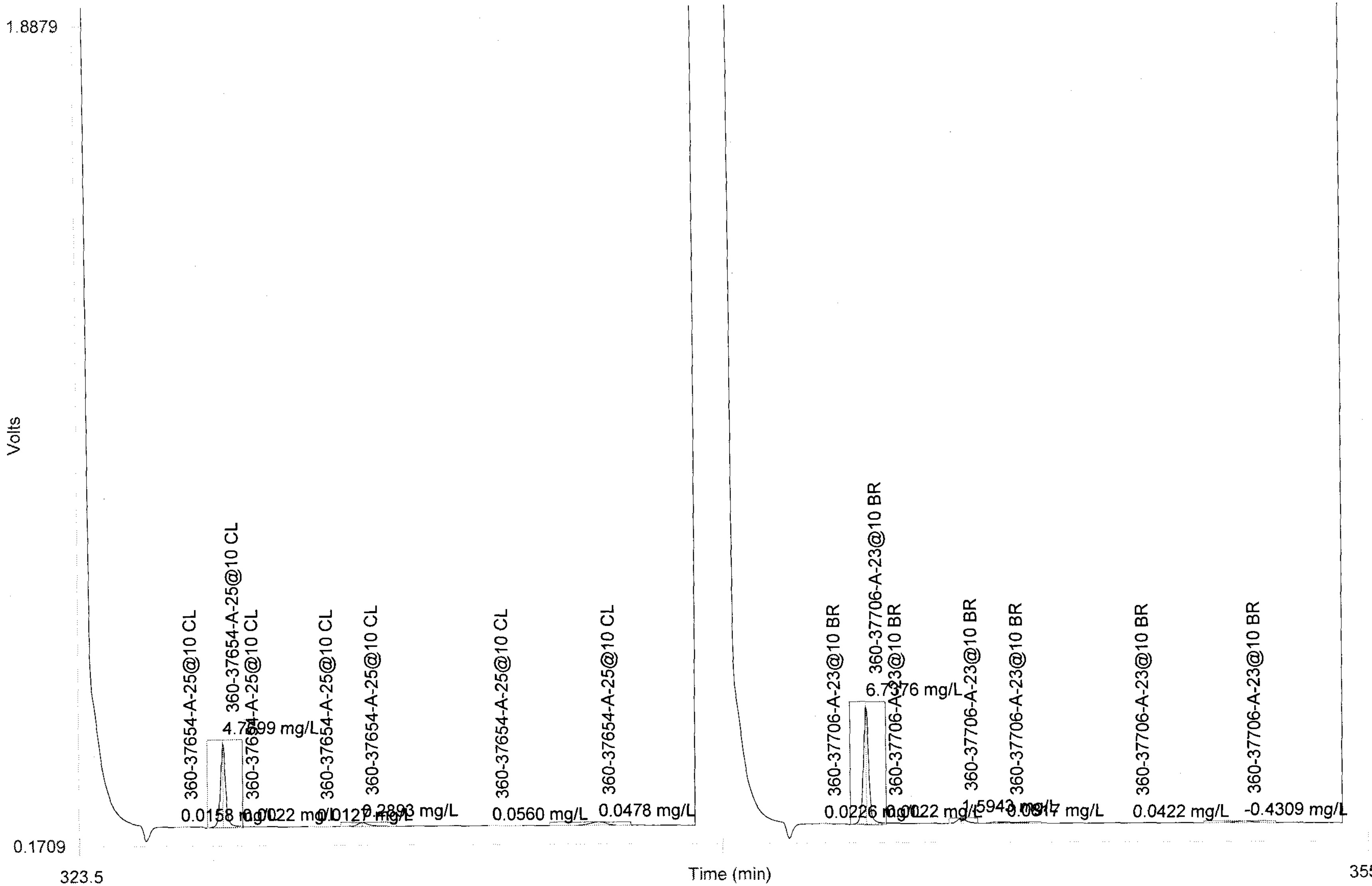


- 13 -

Author: EmerichR

Date : 11/29/2011

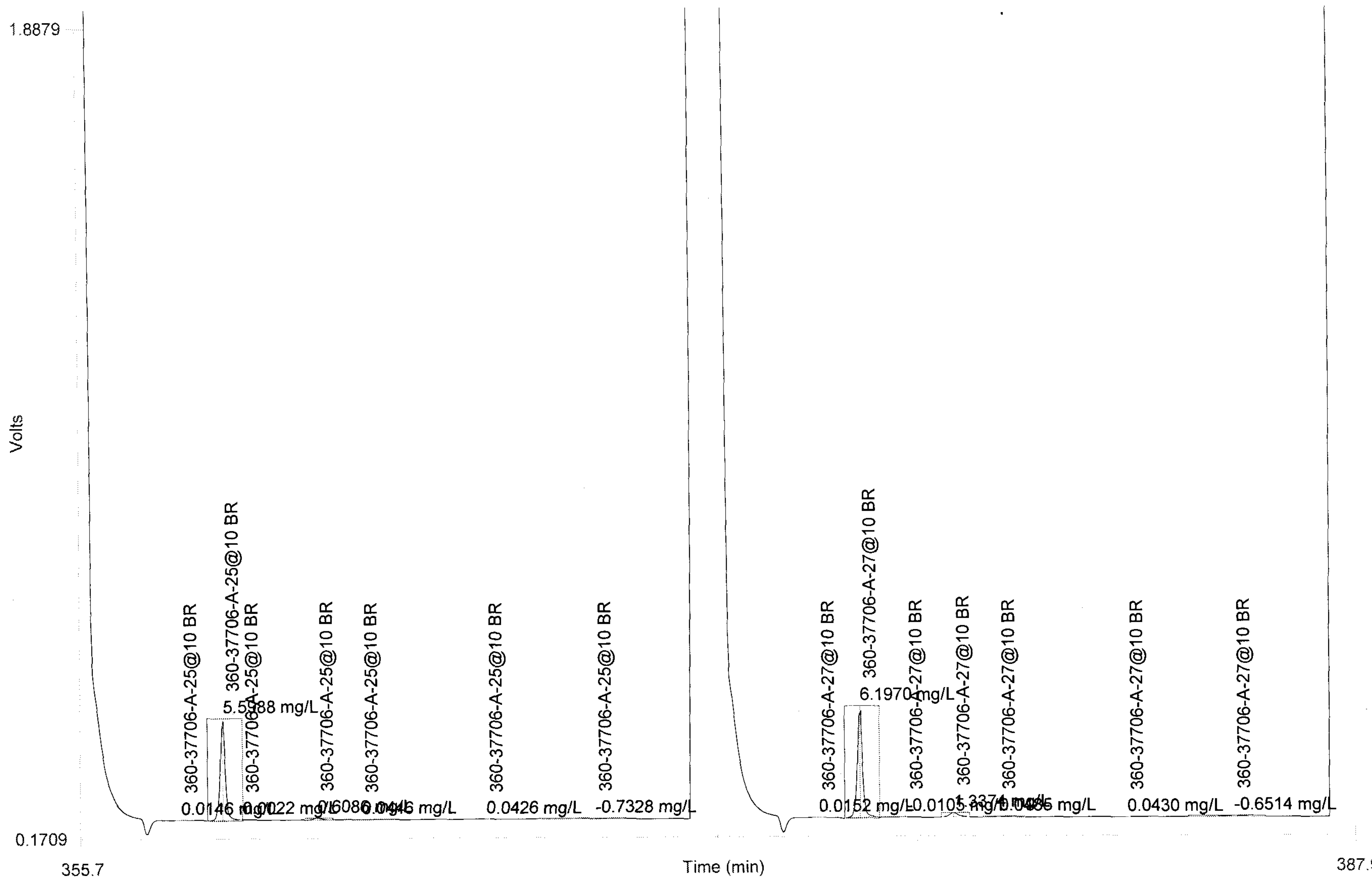
Channel 1 (Anions) : Set 11 of 35



Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 12 of 35

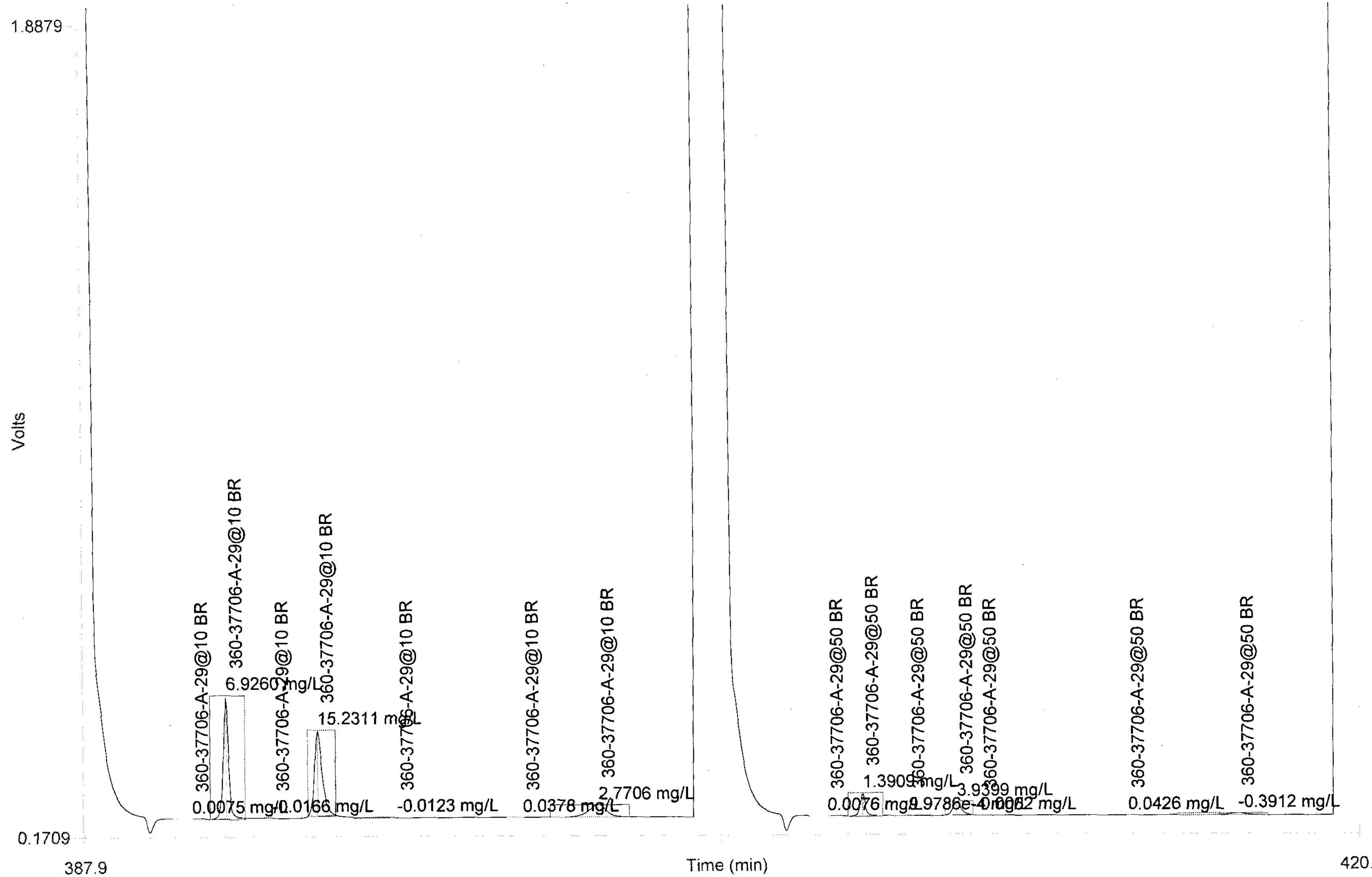


- 15 -

Author: EmerichR

Date : 11/29/2011

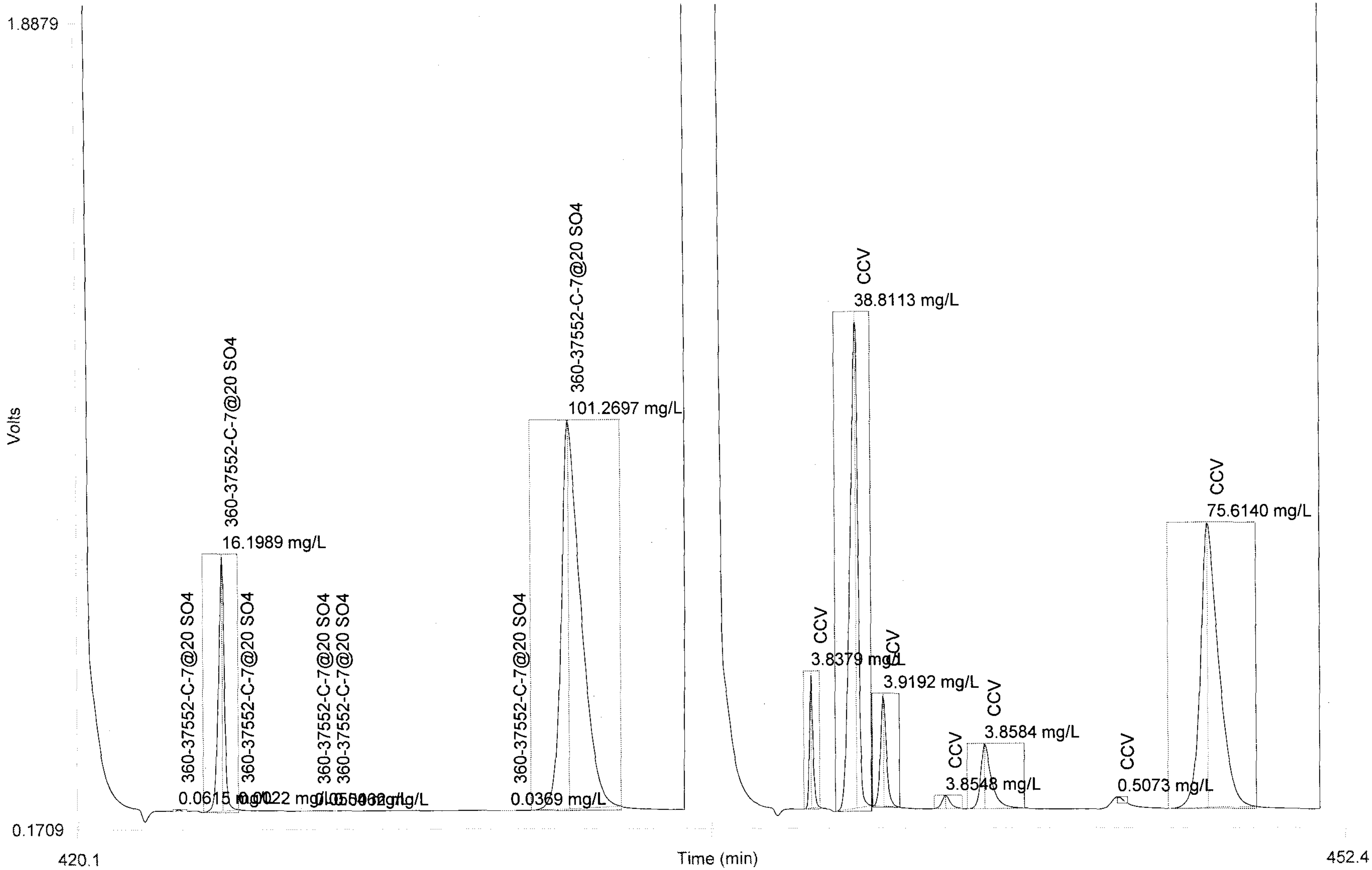
Channel 1 (Anions) : Set 13 of 35



Author: EmerichR

Date : 11/29/2011

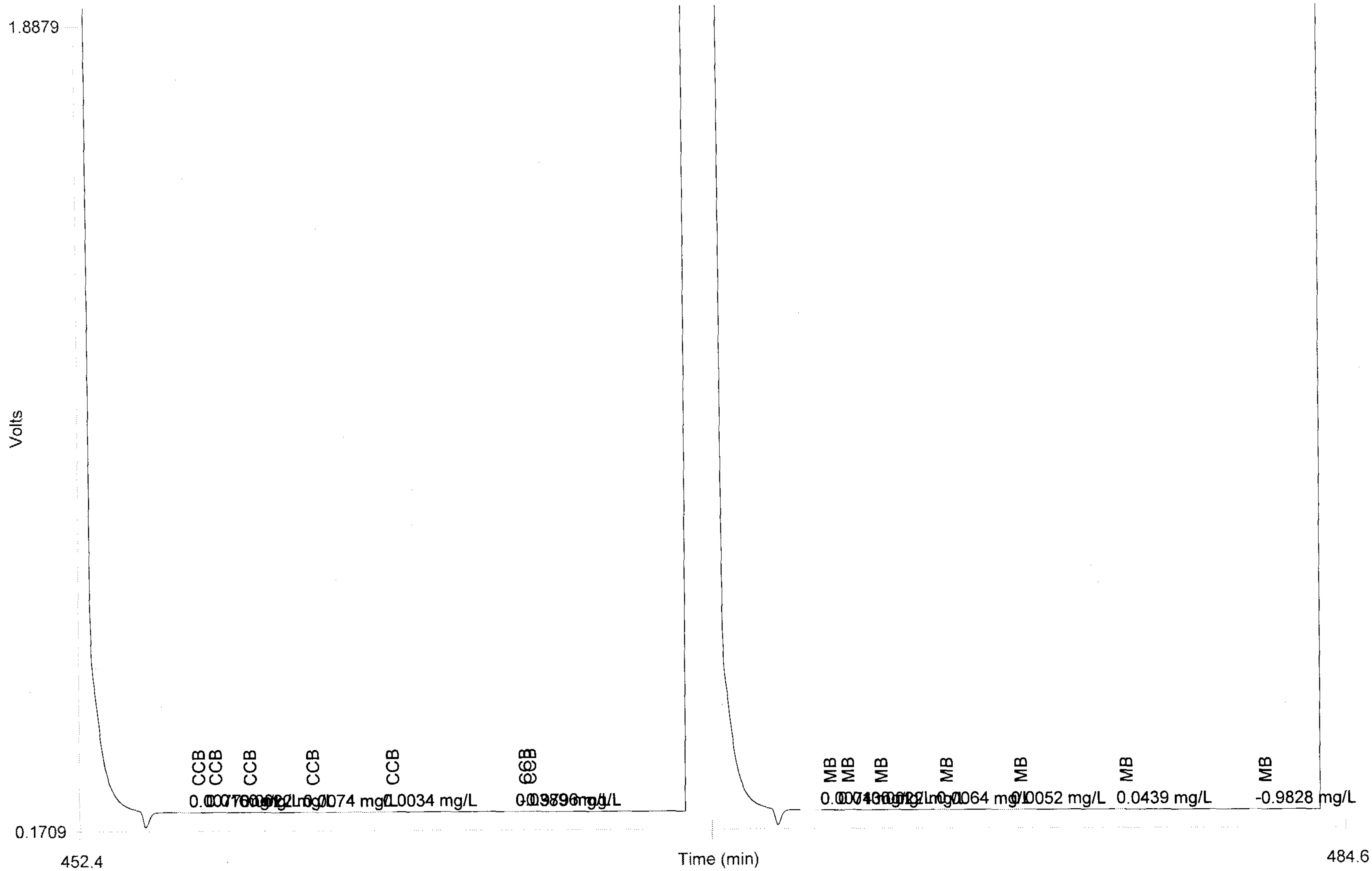
Channel 1 (Anions) : Set 14 of 35



Author: EmerichR

Date : 11/29/2011

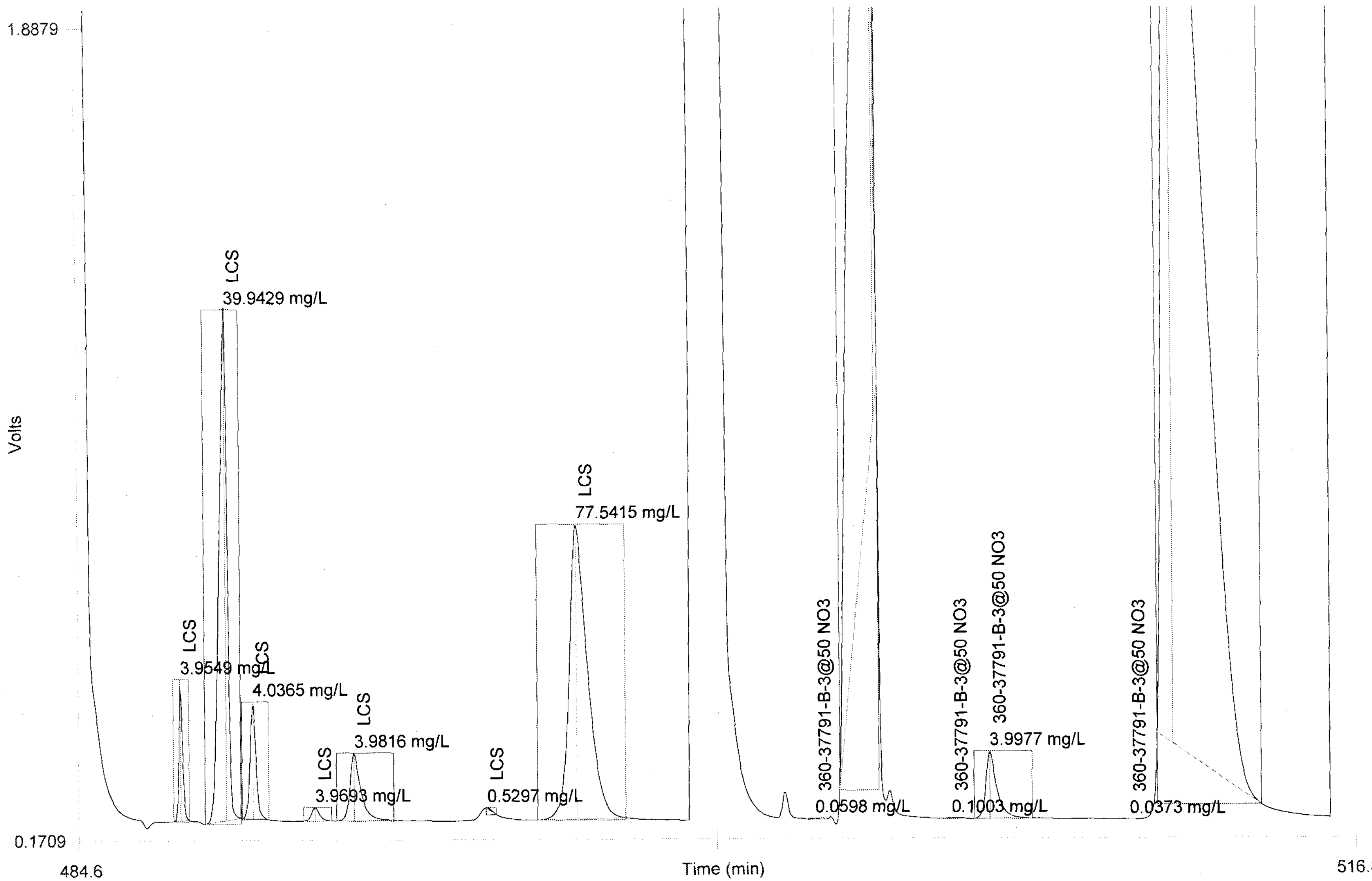
Channel 1 (Anions) : Set 15 of 35



Author: EmerichR

Date : 11/29/2011

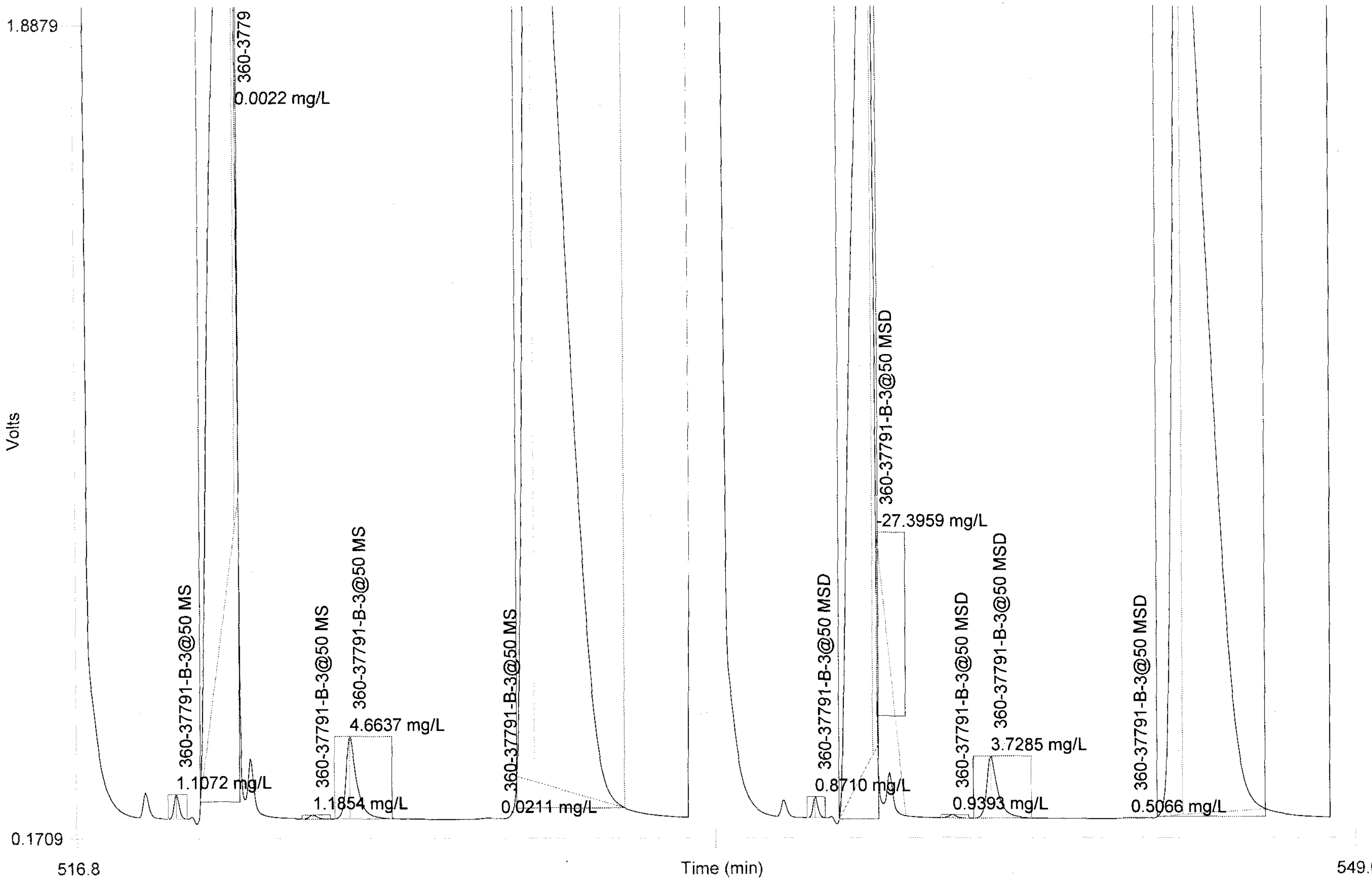
Channel 1 (Anions) : Set 16 of 35



Author: EmerichR

Date : 11/29/2011

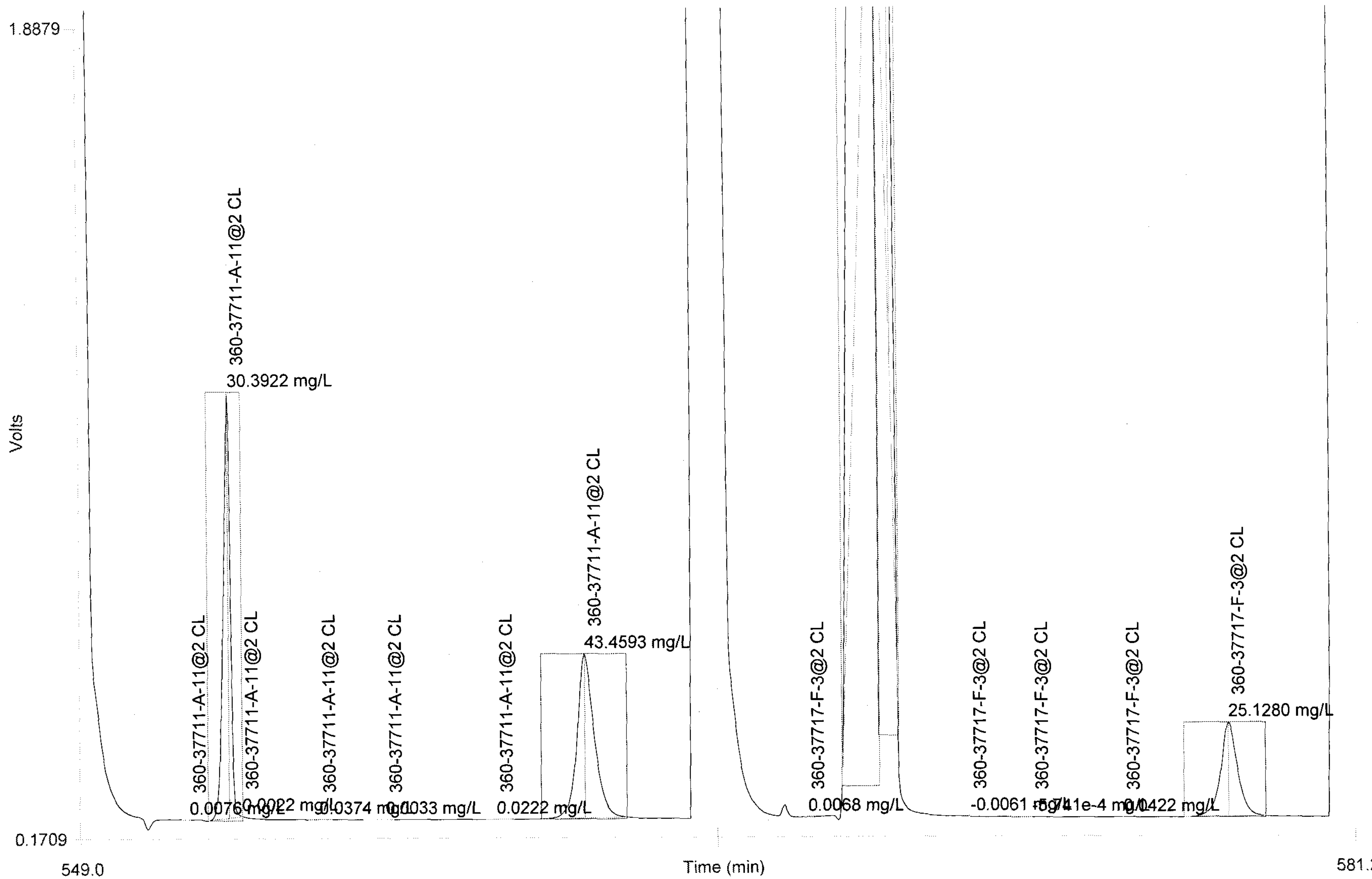
Channel 1 (Anions) : Set 17 of 35



Author: EmerichR

Date : 11/29/2011

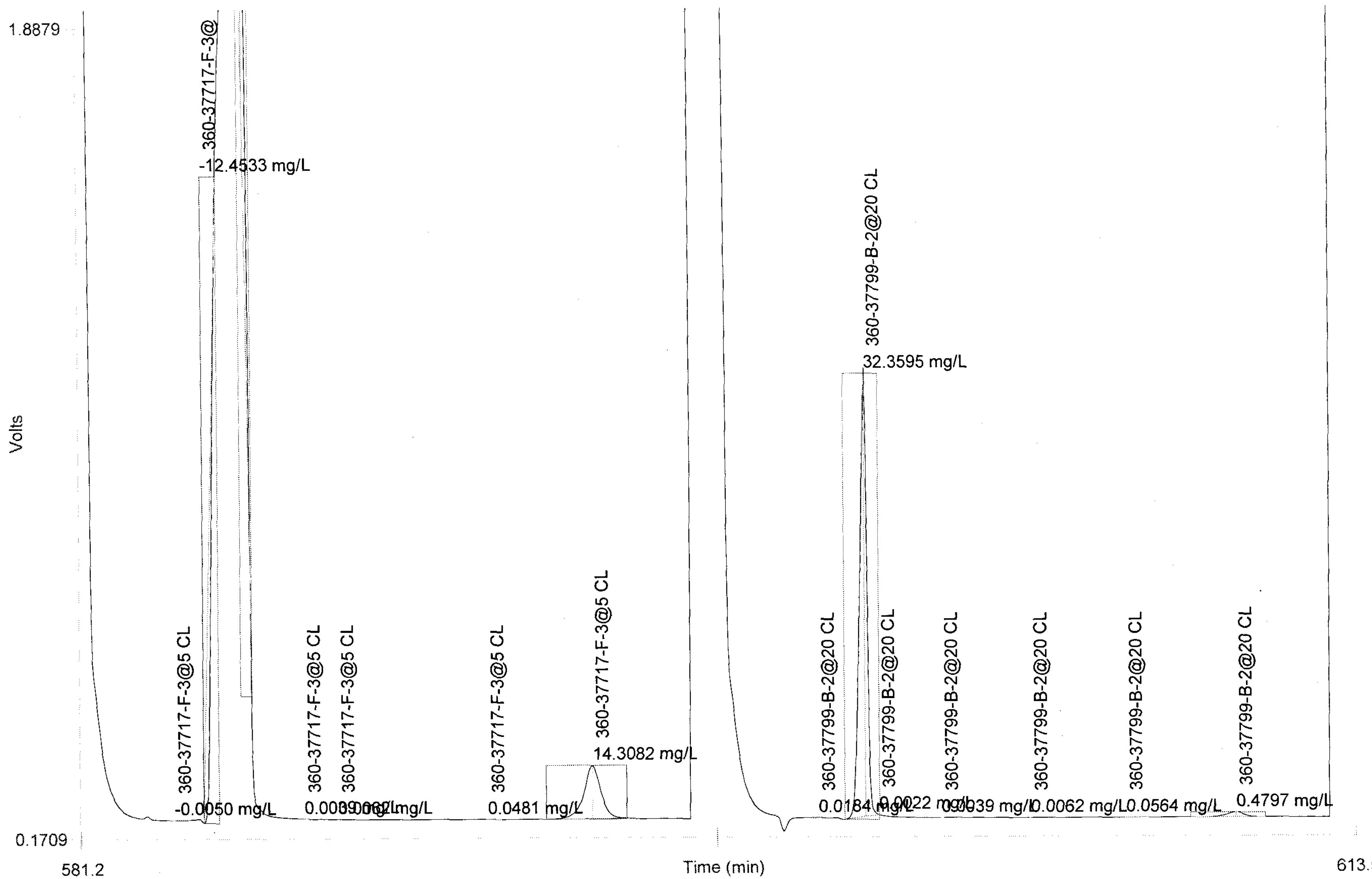
Channel 1 (Anions) : Set 18 of 35



Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 19 of 35

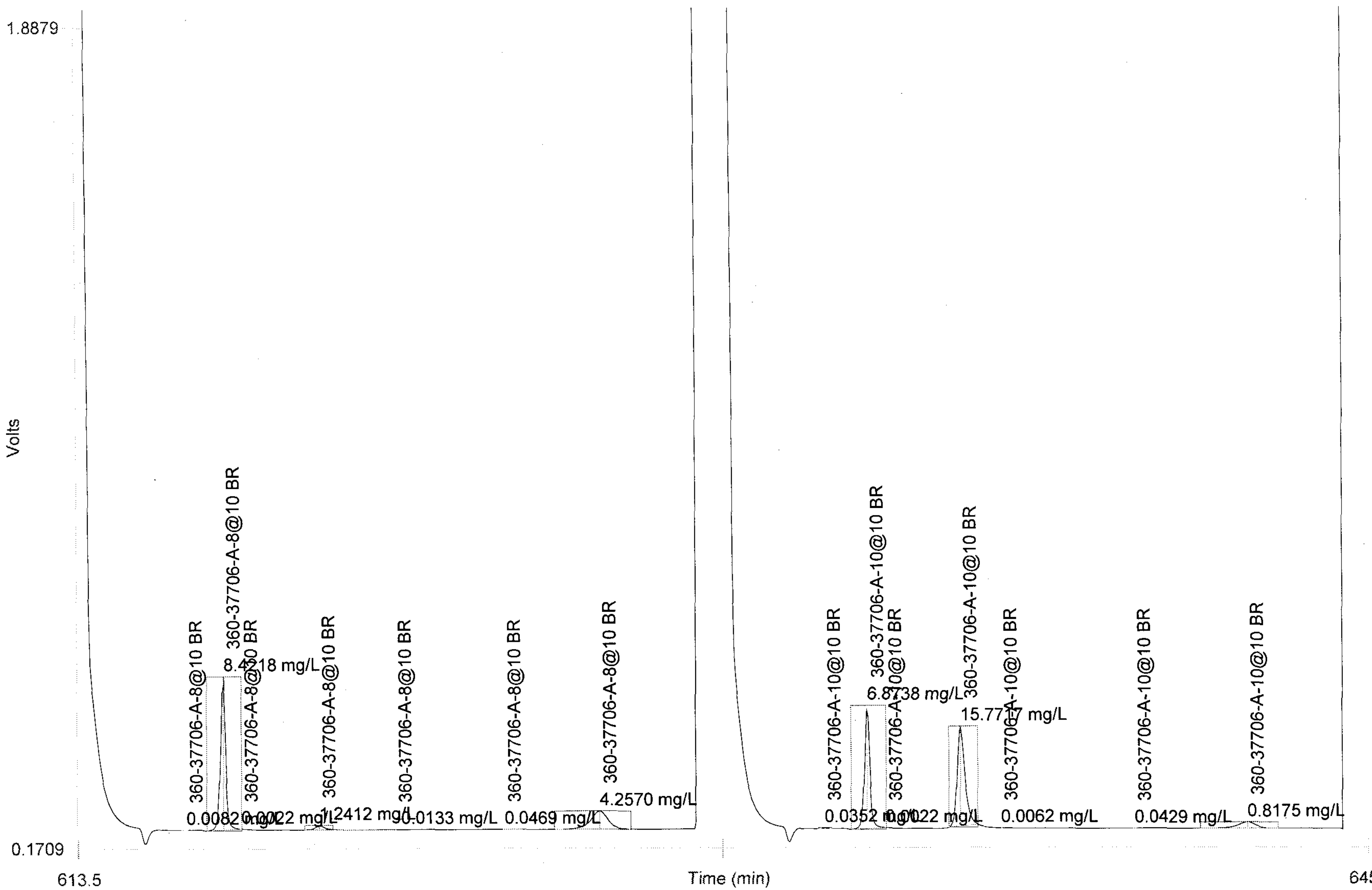


- 22 -

Author: EmerichR

Date : 11/29/2011

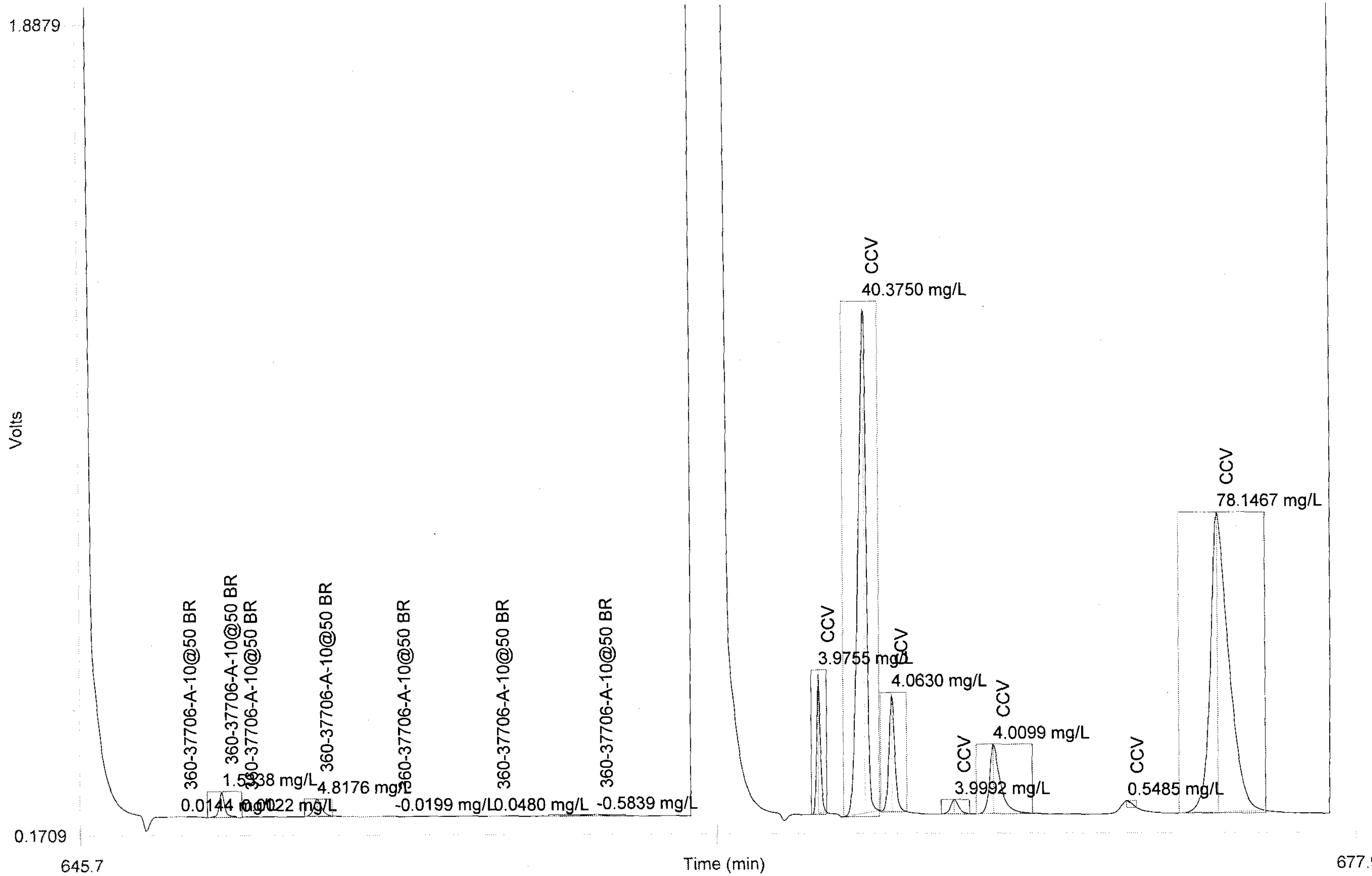
Channel 1 (Anions) : Set 20 of 35



Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 21 of 35

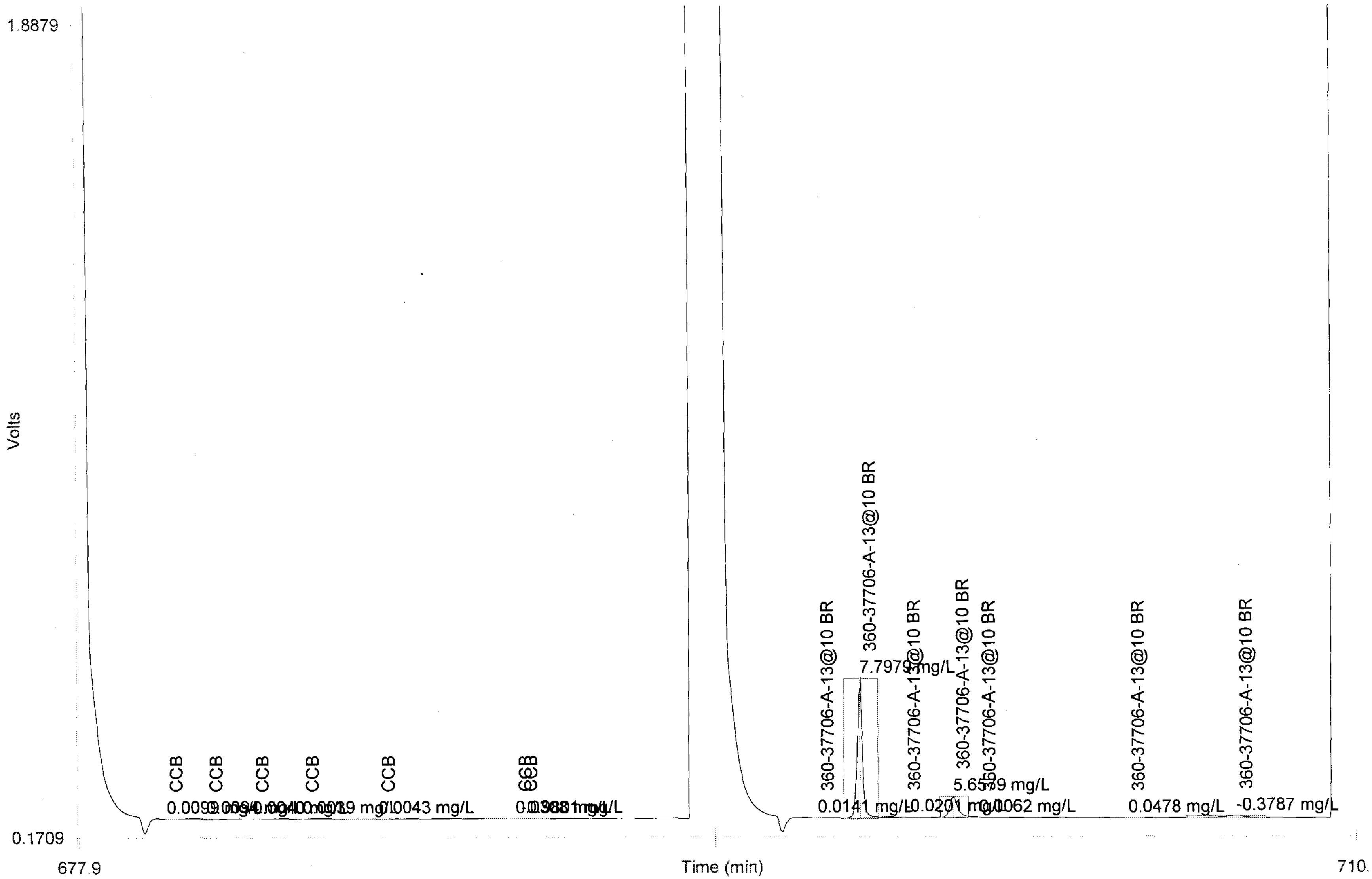


- 24 -

Author: EmerichR

Date : 11/29/2011

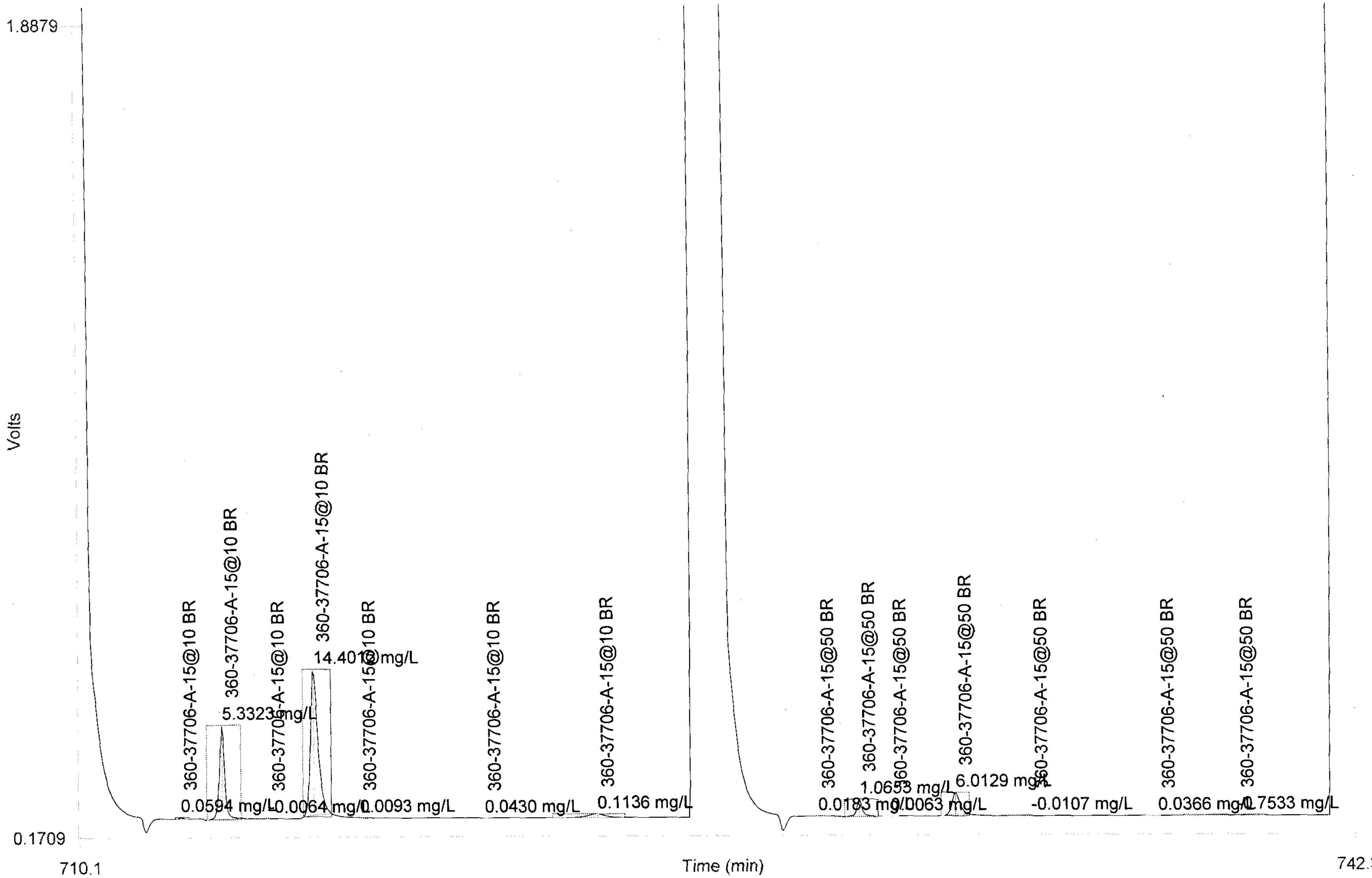
Channel 1 (Anions) : Set 22 of 35



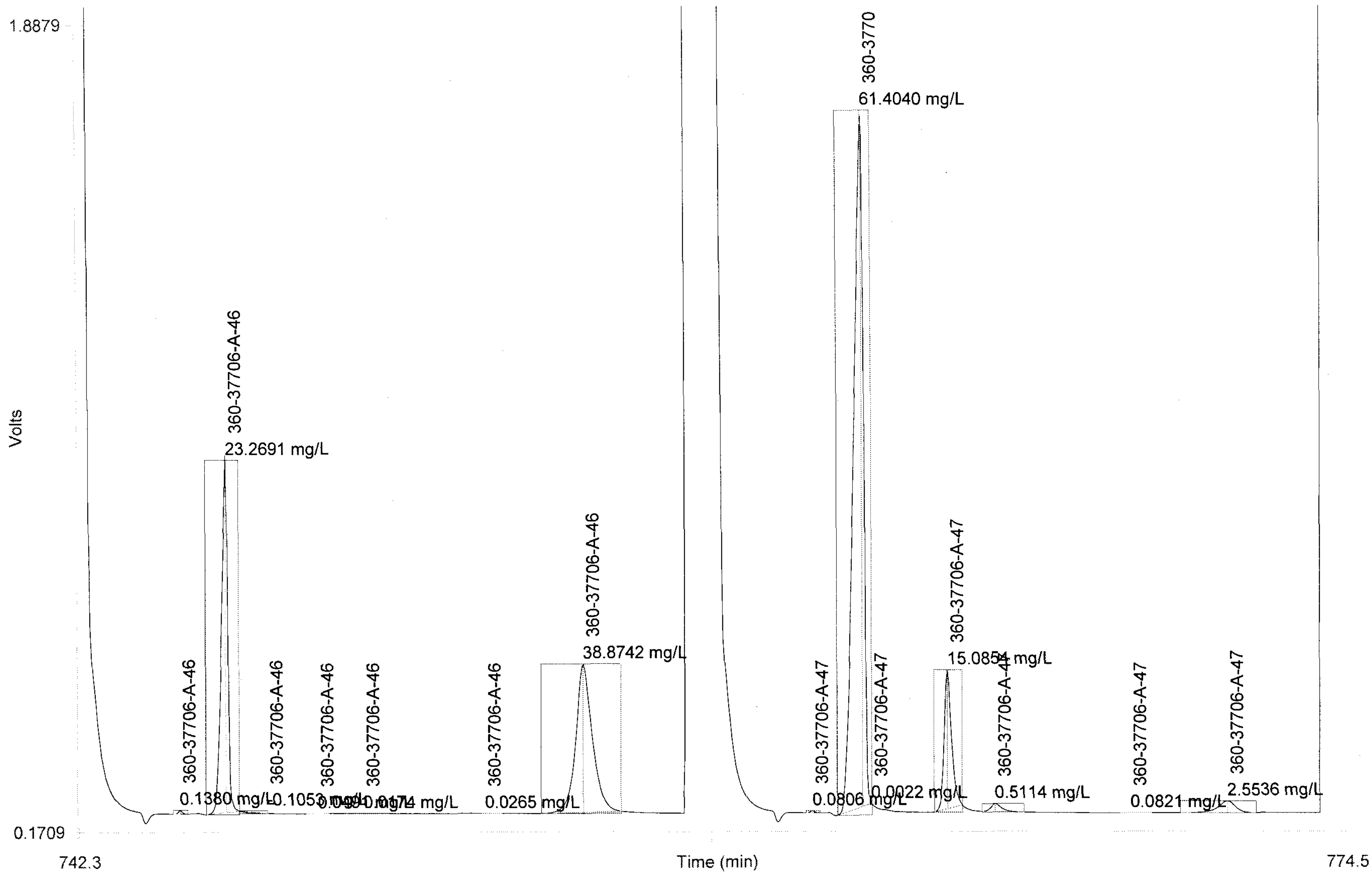
Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 23 of 35



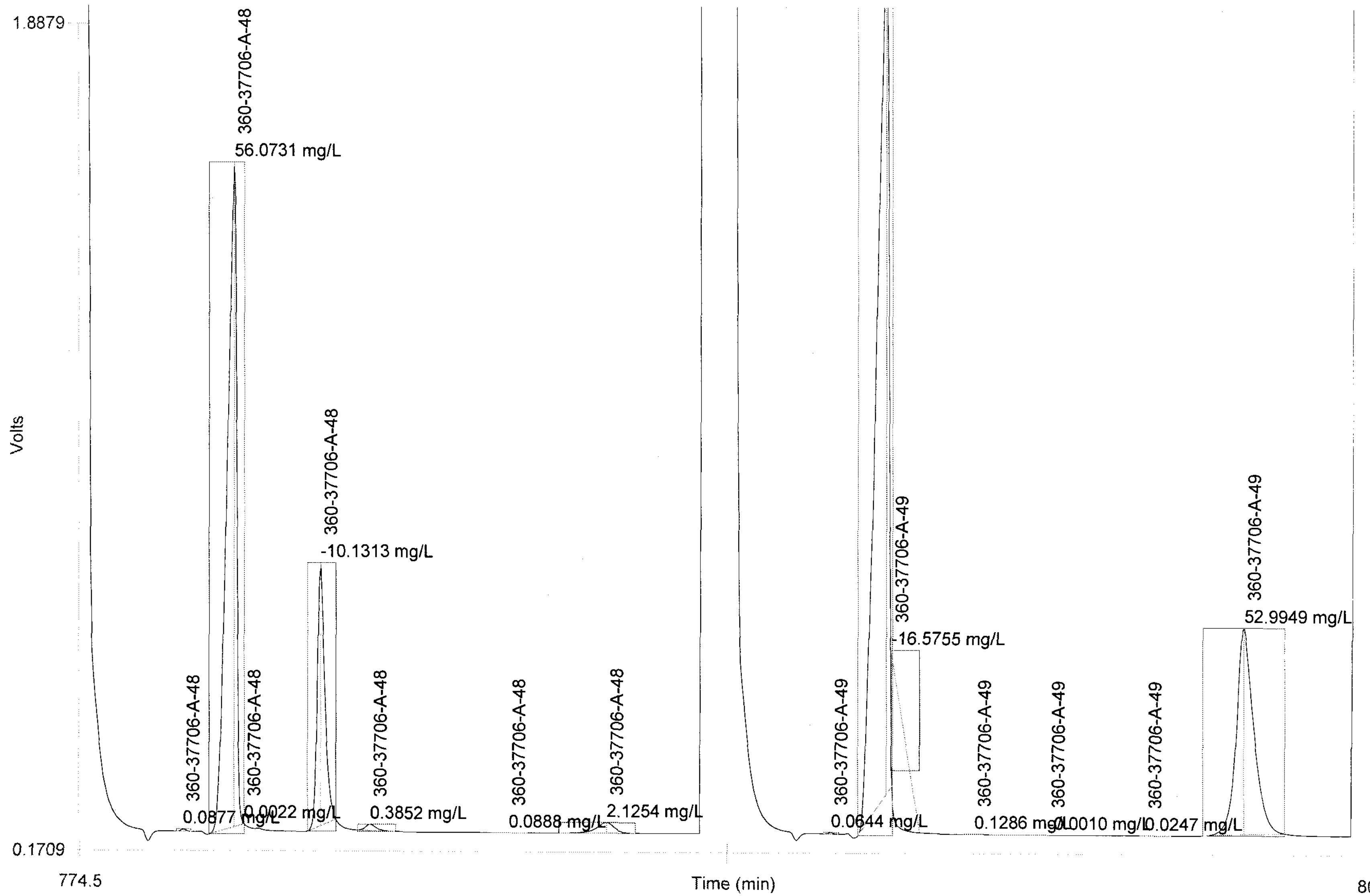
Channel 1 (Anions) : Set 24 of 35



Author: EmerichR

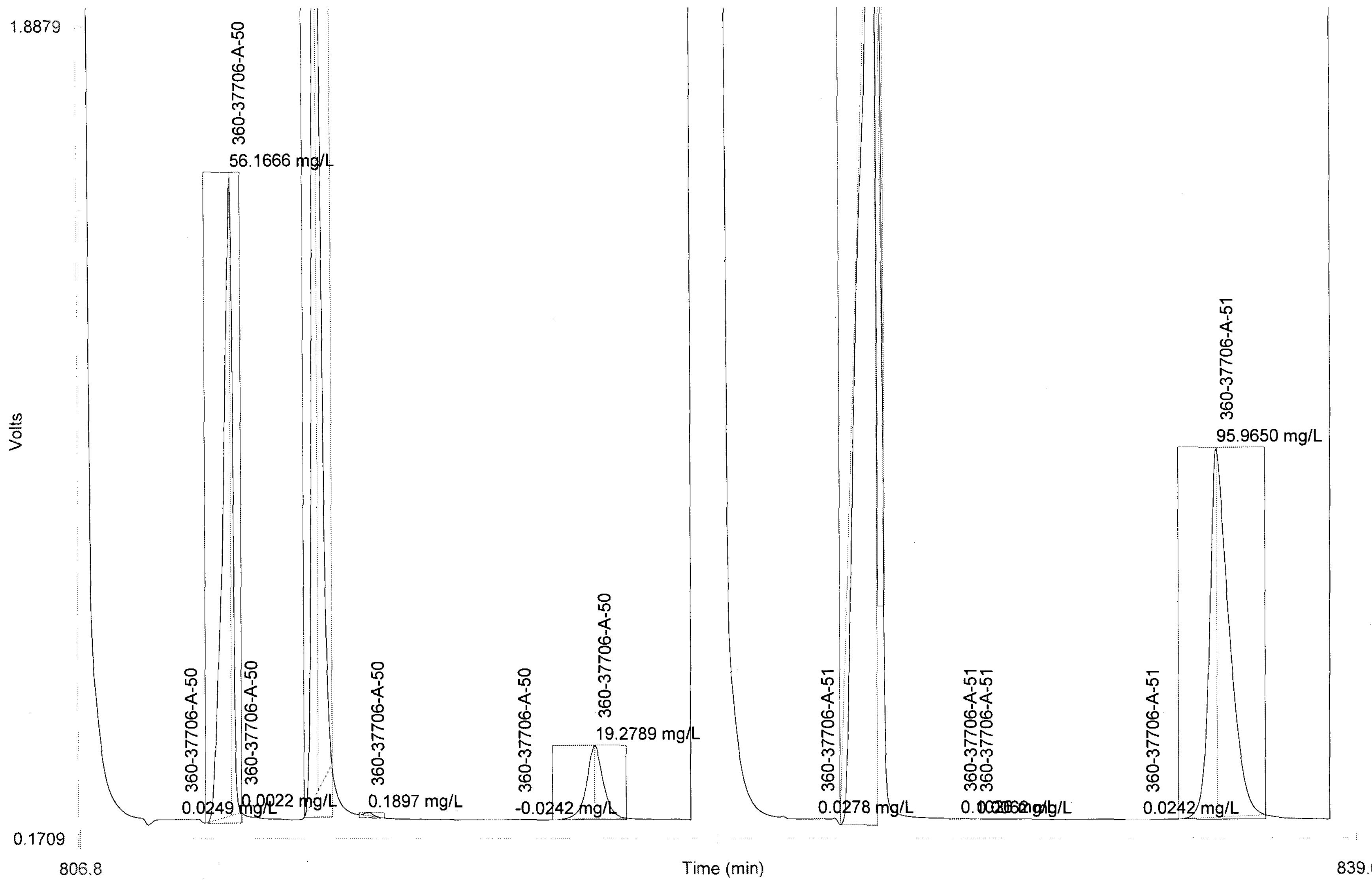
Date : 11/29/2011

Channel 1 (Anions) : Set 25 of 35



- 28 -

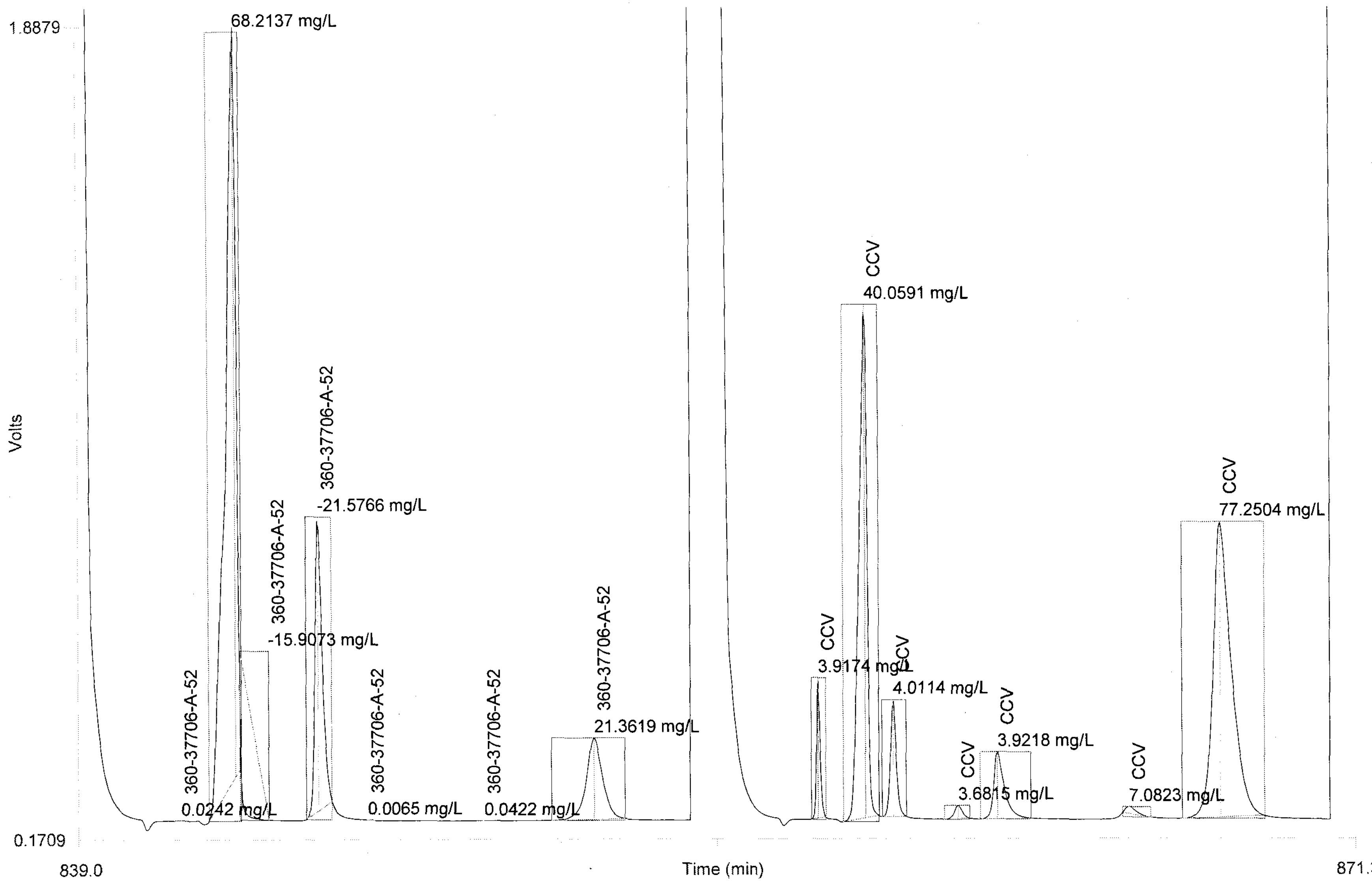
Channel 1 (Anions) : Set 26 of 35



Author: EmerichR

Date : 11/29/2011

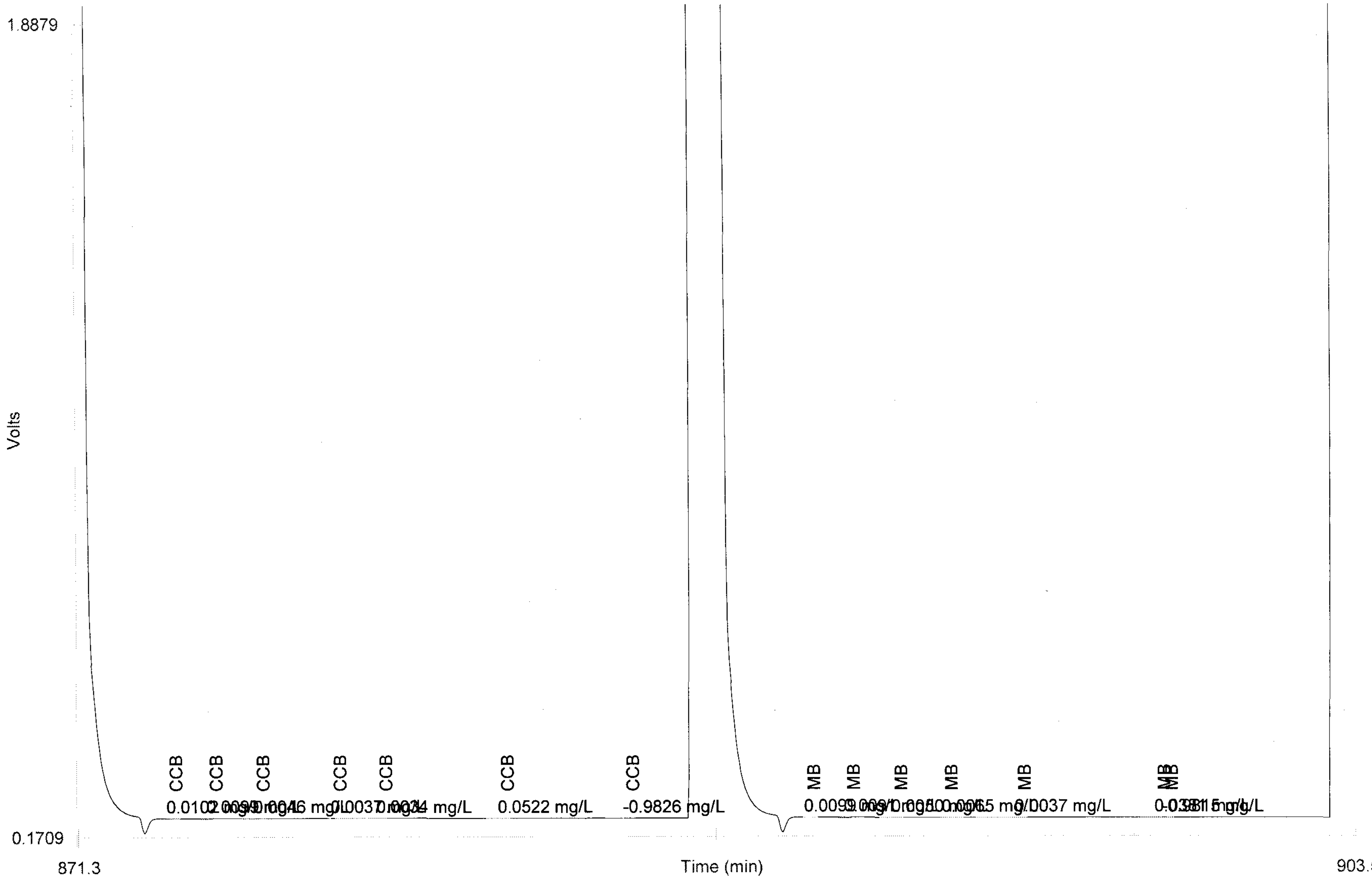
Channel 1 (Anions) : Set 27 of 35



Author: EmerichR

Date : 11/29/2011

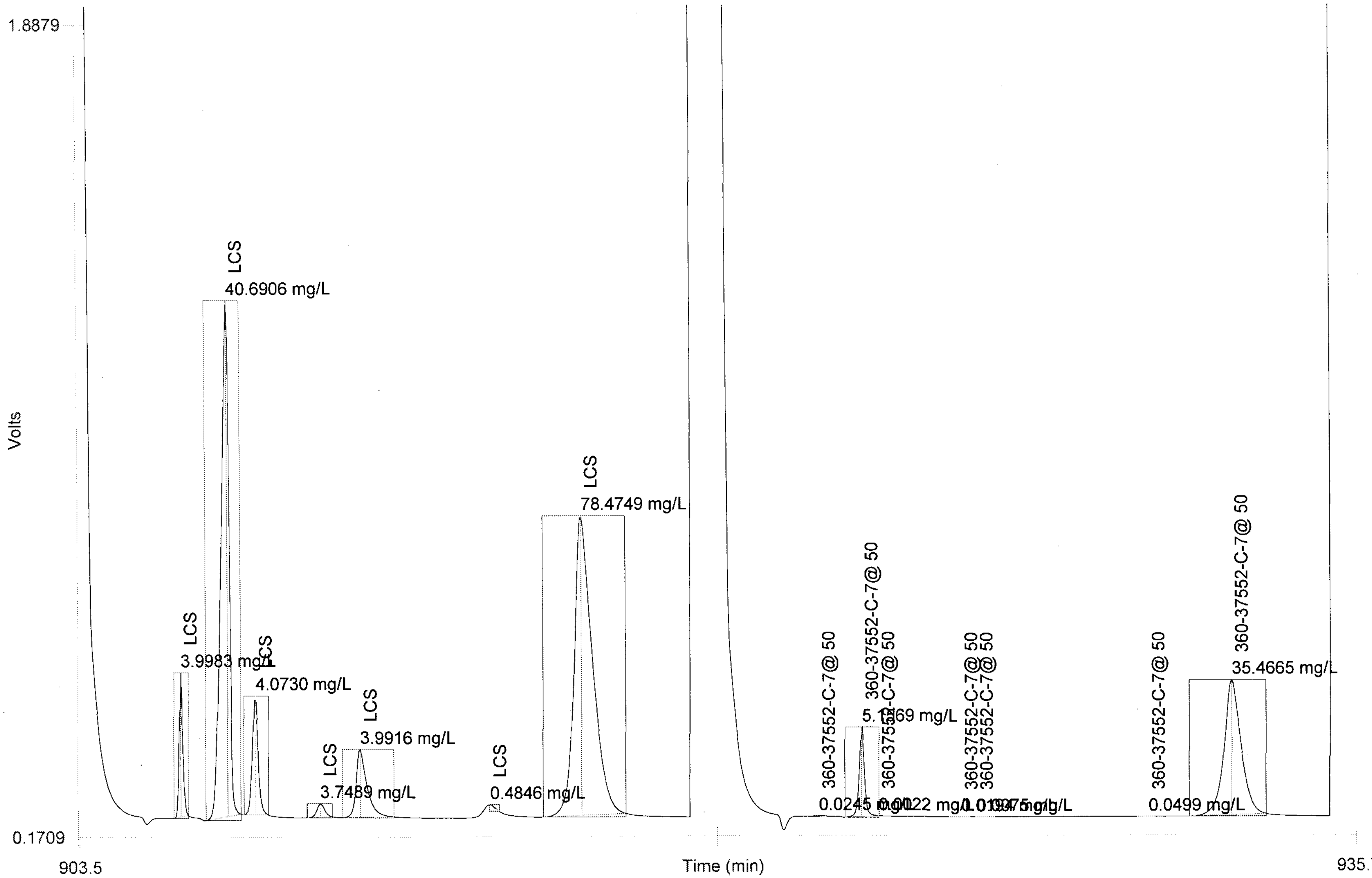
Channel 1 (Anions) : Set 28 of 35



Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 29 of 35

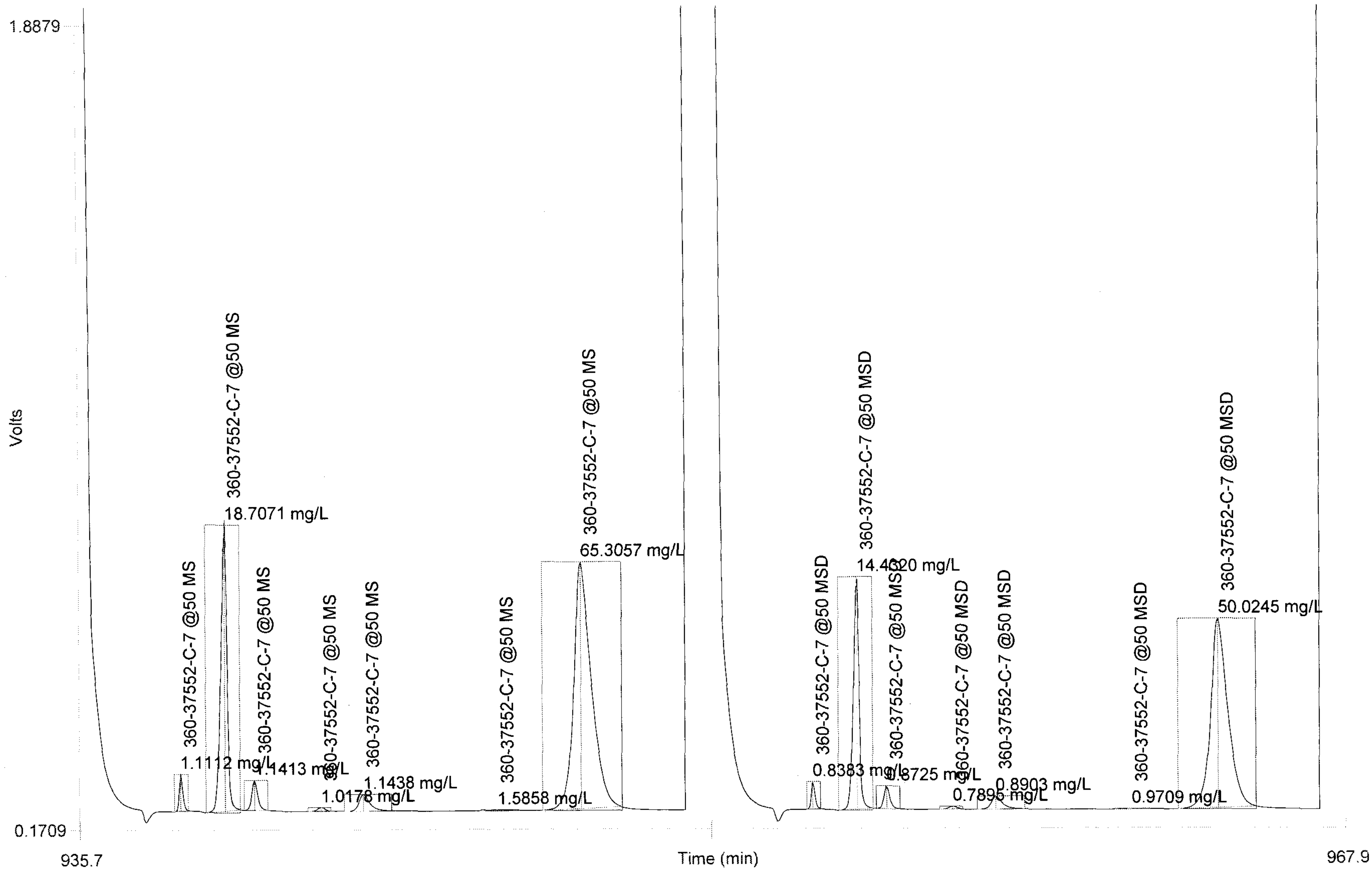


- 32 -

Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 30 of 35

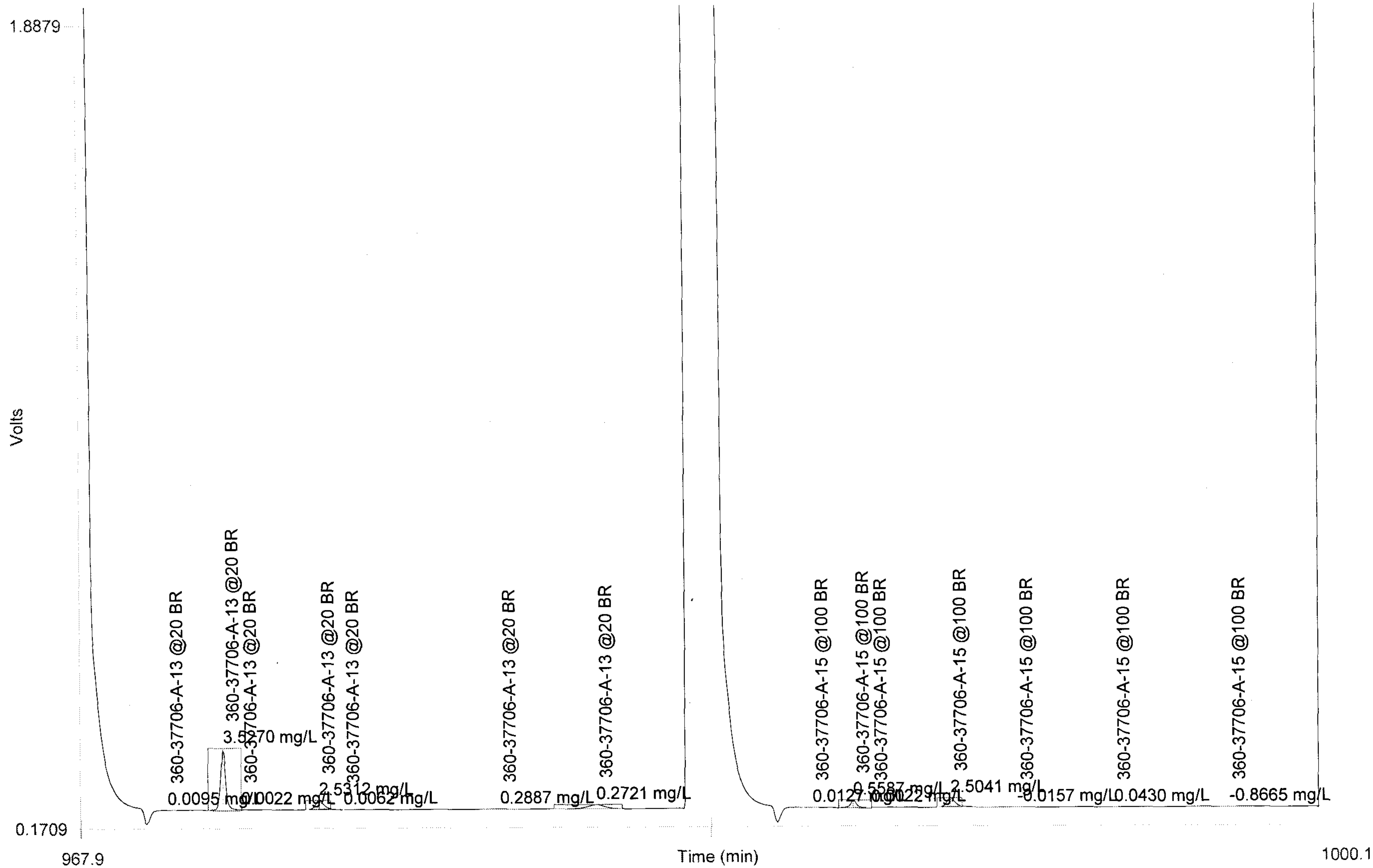


- 33 -

Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 31 of 35

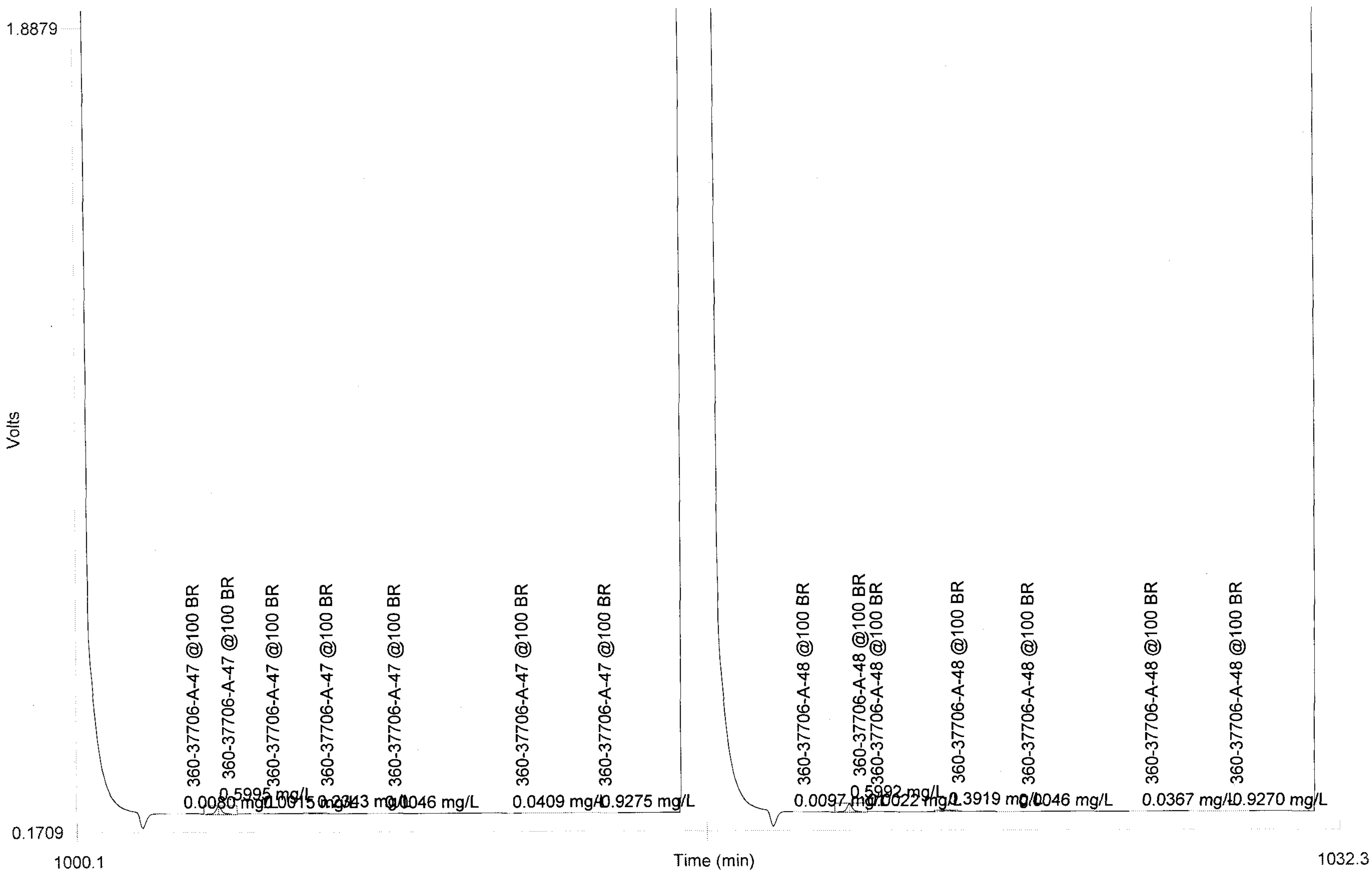


- 34 -

Author: EmerichR

Date : 11/29/2011

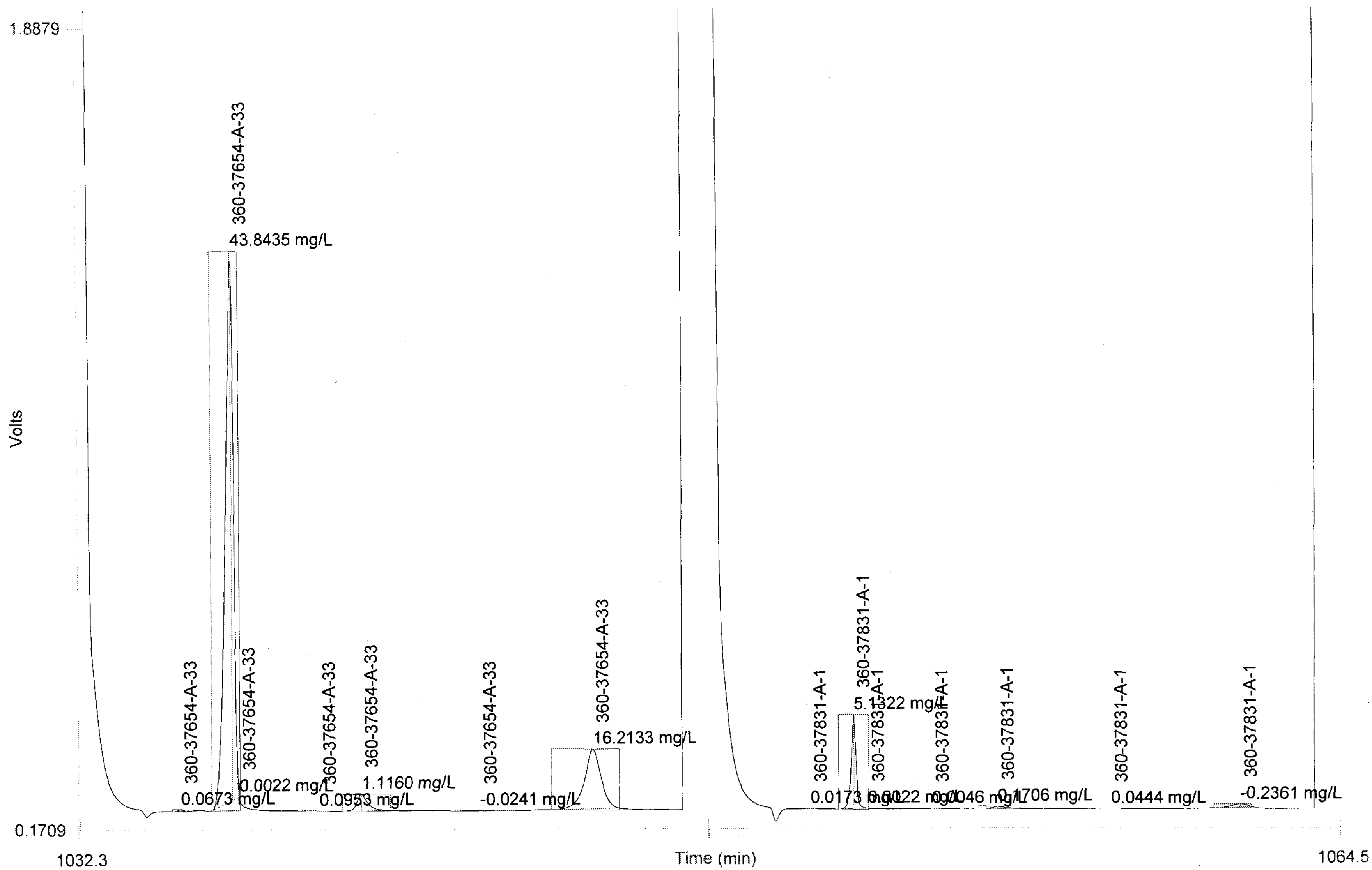
Channel 1 (Anions) : Set 32 of 35



Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 33 of 35

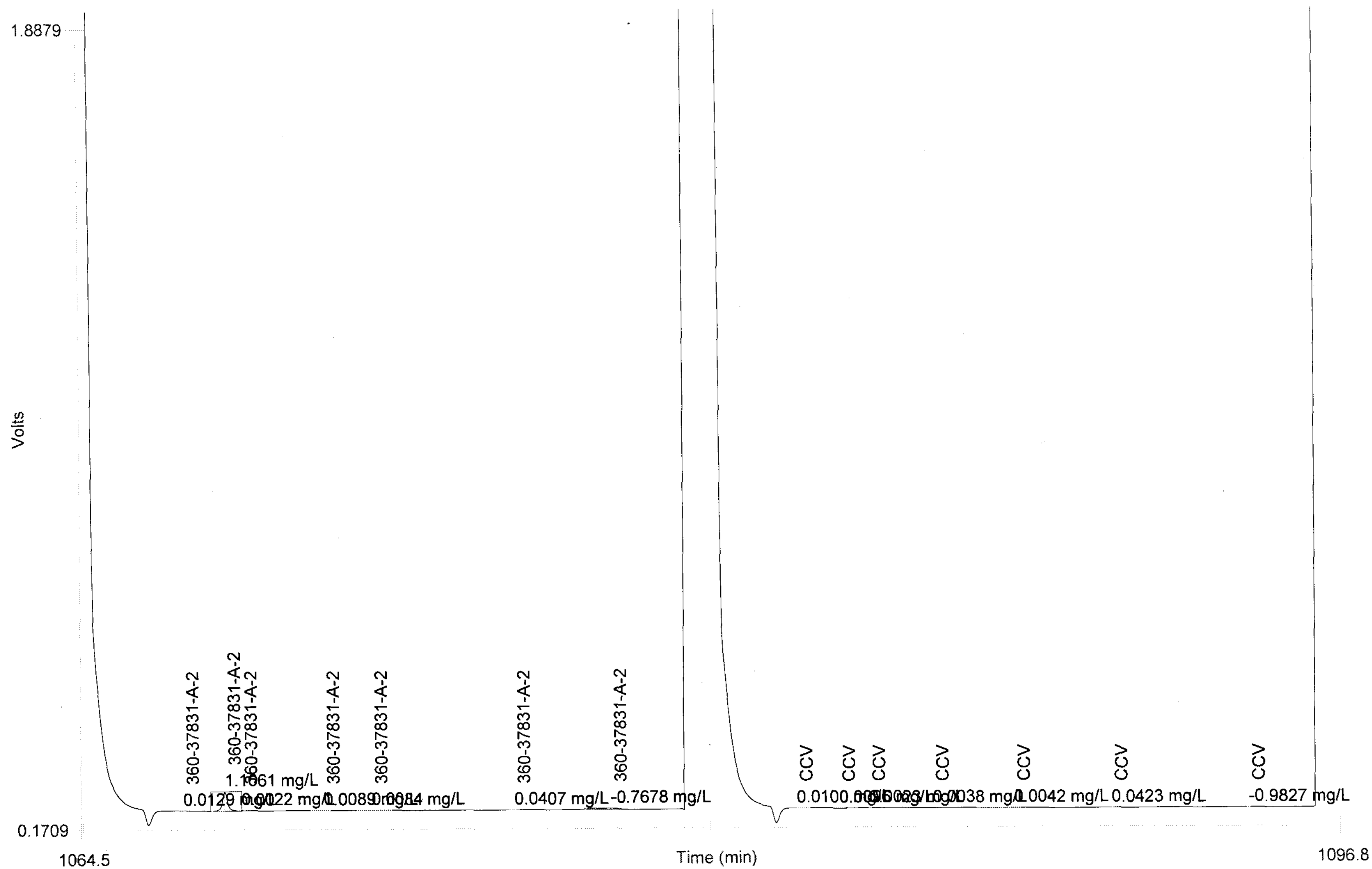


- 36 -

Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 34 of 35



Author: EmerichR

Date : 11/29/2011

Channel 1 (Anions) : Set 35 of 35

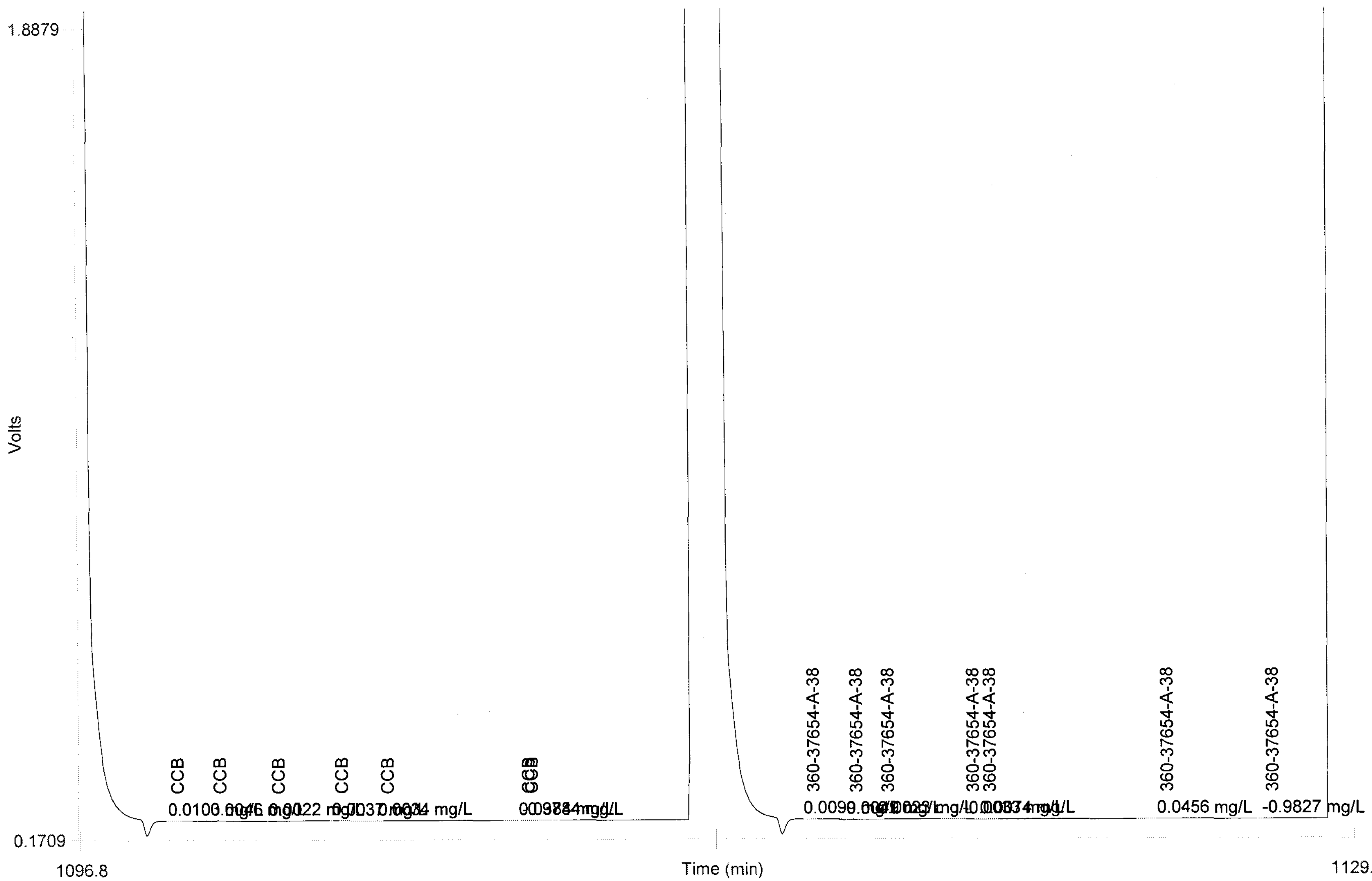
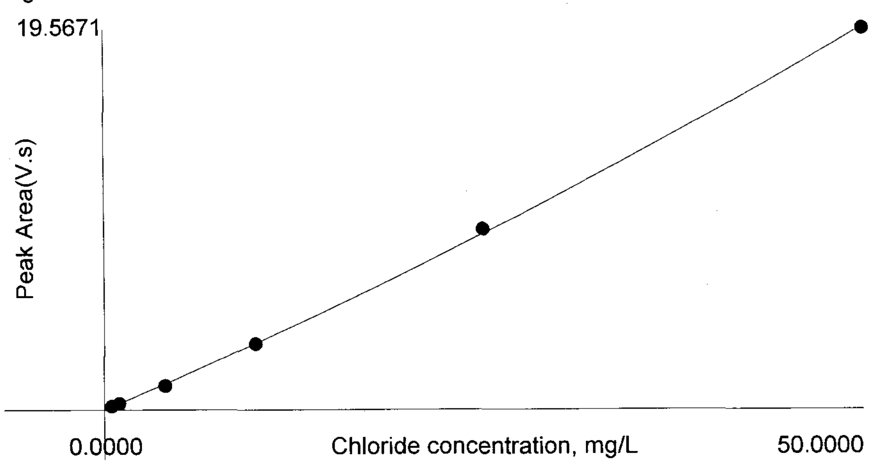


Table 1: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	19.5671	1.3052	0.5	11/15/2011	2:32:05 PM
2	25.0000	1	9.2472	0.8077	-2.6	11/15/2011	2:48:13 PM
3	10.0000	1	3.3710	0.3697	1.0	11/15/2011	3:04:20 PM
4	4.0000	1	1.2235	0.1456	7.7	11/15/2011	3:20:28 PM
5	1.0000	1	0.3080	0.0351	4.1	11/15/2011	3:36:35 PM
6	0.5000	1	0.1732	0.0187	-11.1	11/15/2011	3:52:42 PM

Figure 1: Chloride



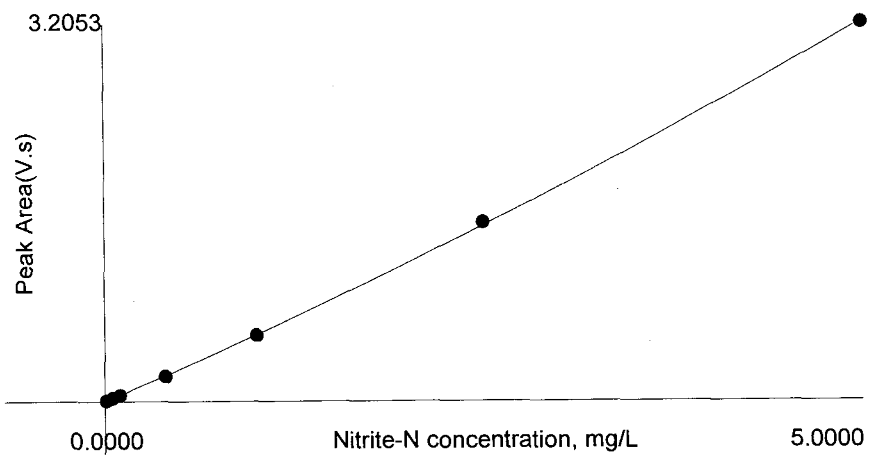
Area = 0.0013 * Conc^2 + 0.3283 * Conc - 0.0085
Conc = - 0.0226 * Area^2 + 2.9826 * Area + 0.0435
Correlation Coefficient (r) = 0.99997

1/x weighting

Table 2: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.2053	0.3249	0.4	11/15/2011	2:32:05 PM
2	2.5000	1	1.5145	0.1578	-1.9	11/15/2011	2:48:13 PM
3	1.0000	1	0.5600	0.0576	0.8	11/15/2011	3:04:20 PM
4	0.4000	1	0.2121	0.0216	3.8	11/15/2011	3:20:28 PM
5	0.1000	1	0.0502	0.0051	6.6	11/15/2011	3:36:35 PM
6	0.0500	1	0.0267	0.0026	-1.4	11/15/2011	3:52:42 PM
7	0.0100	1	0.0049	5.0658e-4	-10.2	11/15/2011	4:08:48 PM

Figure 2: Nitrite-N



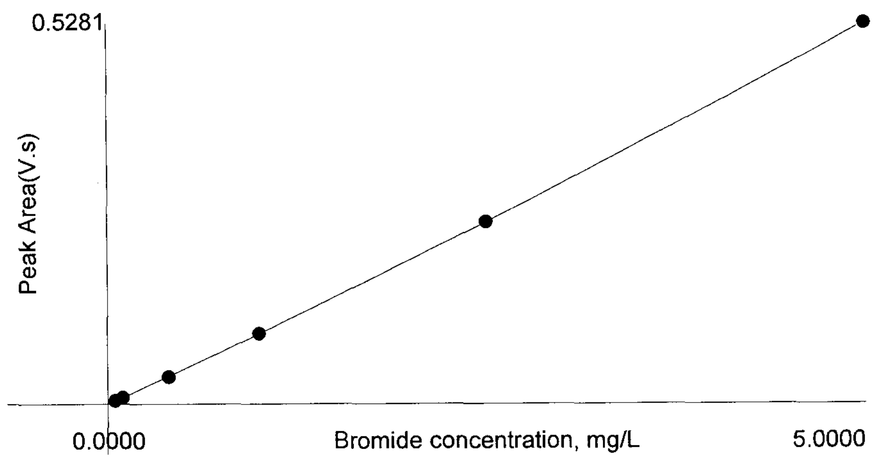
Area = 0.0195 * Conc^2 + 0.5461 * Conc - 0.0010
Conc = - 0.0787 * Area^2 + 1.8046 * Area + 0.0022
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 3: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.5281	0.0394	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	0.2527	0.0186	-0.2	11/15/2011	2:48:13 PM
3	1.0000	1	0.0981	0.0072	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.0379	0.0027	1.4	11/15/2011	3:20:28 PM
5	0.1000	1	0.0092	6.5877e-4	1.5	11/15/2011	3:36:35 PM
6	0.0500	1	0.0046	3.2836e-4	-2.5	11/15/2011	3:52:42 PM

Figure 3: Bromide



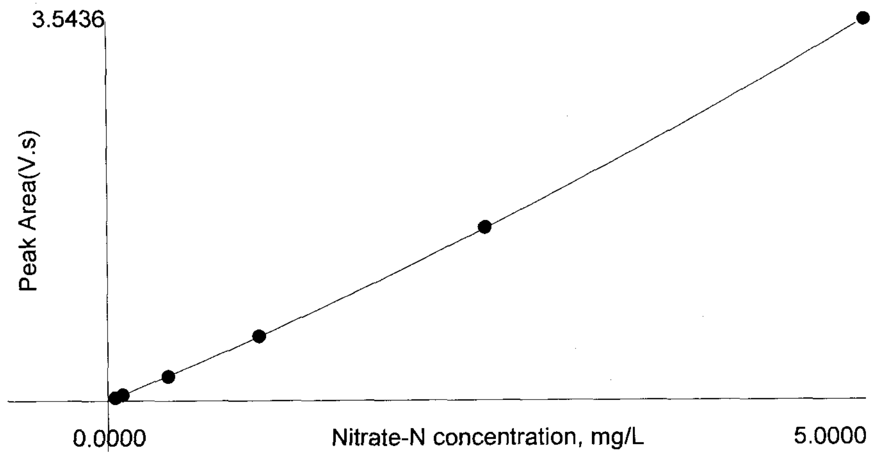
Area = 0.0019 * Conc^2 + 0.0962 * Conc - 3.2483e-4
Conc = - 1.6748 * Area^2 + 10.3373 * Area + 0.0038
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 4: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.5436	0.1988	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	1.6106	0.0905	-0.5	11/15/2011	2:48:13 PM
3	1.0000	1	0.6005	0.0330	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.2256	0.0121	2.5	11/15/2011	3:20:28 PM
5	0.1000	1	0.0531	0.0028	3.8	11/15/2011	3:36:35 PM
6	0.0500	1	0.0279	0.0014	-5.9	11/15/2011	3:52:42 PM

Figure 4: Nitrate-N



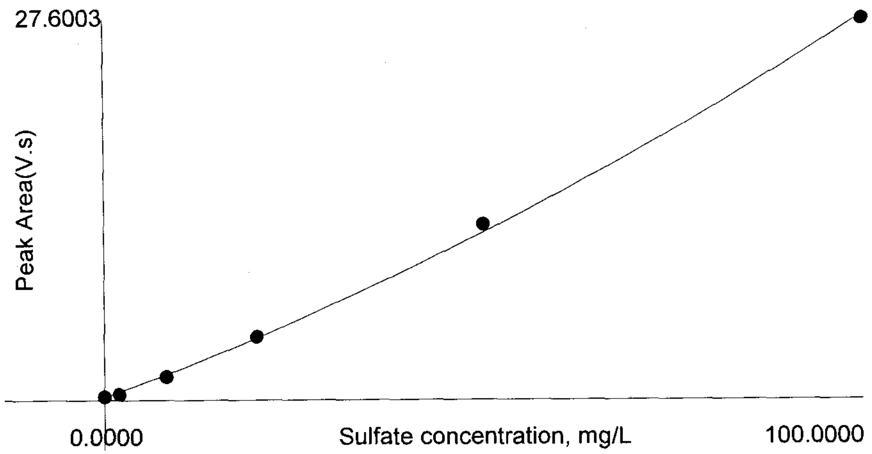
Area = 0.0273 * Conc^2 + 0.5736 * Conc - 0.0024
Conc = - 0.0824 * Area^2 + 1.6983 * Area + 0.0062
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 5: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	27.6003	0.8536	1.1	11/15/2011	2:32:05 PM
2	50.0000	1	12.7130	0.4540	-4.9	11/15/2011	2:48:13 PM
3	20.0000	1	4.5871	0.1729	-1.7	11/15/2011	3:04:20 PM
4	8.0000	1	1.6836	0.0620	9.3	11/15/2011	3:20:28 PM
5	2.0000	1	0.4027	0.0145	34.3	11/15/2011	3:36:35 PM
6	0.0500	1	0.2270	0.0081	-2.6	11/15/2011	3:52:42 PM

Figure 5: Sulfate



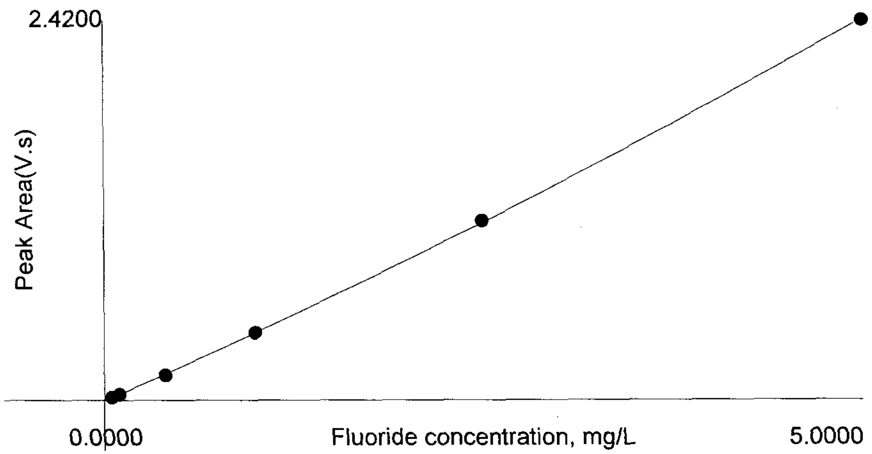
Area = 7.7408e-4 * Conc^2 + 0.1994 * Conc + 0.2113
Conc = - 0.0392 * Area^2 + 4.7046 * Area - 0.9825
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 6: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.4200	0.3882	0.3	11/15/2011	2:32:05 PM
2	2.5000	1	1.1432	0.1974	-1.3	11/15/2011	2:48:13 PM
3	1.0000	1	0.4295	0.0734	0.0	11/15/2011	3:04:20 PM
4	0.4000	1	0.1585	0.0271	4.9	11/15/2011	3:20:28 PM
5	0.1000	1	0.0379	0.0065	1.9	11/15/2011	3:36:35 PM
6	0.0500	1	0.0187	0.0032	-6.6	11/15/2011	3:52:42 PM

Figure 6: Fluoride



Area = 0.0132 * Conc^2 + 0.4199 * Conc - 0.0035
Conc = - 0.1211 * Area^2 + 2.3494 * Area + 0.0093
Correlation Coefficient (r) = 0.99999

1/x weighting

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review Coversheet—Inorganics Dept

Method Name: IC Method Reference: 300.0 Date of Analytical Run: 11/30/11

Primary Reviewer's Initials & Date: AMS 12/1/11 Secondary Reviewer's Initials & Date: [signature] 12-1-11

Batch Numbers	84154	84161	84164	[redacted]	84169

QC Criteria—Non-MCP: ICV/CCV ±10%: LCS/LCSD ±15%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%

QC Criteria—MCP/RCP: (9012 and 7196 only)
9012 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
9012 (soil): ICV/CCV ±15%: LCS/LCSD **: MS/MSD ±25%: ICB/MB/CCB <RL: MD RPD 35%: MSD/LCSD RPD ≤30%
7196 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
7196 (soil): ICV/CCV ±15%: LCS/LCSD **: MSS/MSI ±25%: ICB/MB/CCB <RL: MD RPD ≤35%: LCSD RPD ≤30%

FAILURES OF QC FOR ANYTHING OTHER THAN MS, MSD or MD ARE GROUNDS FOR INVALIDATING THE BATCH.

Criteria for QC	Yes	No	n/a	Notes/Comments
Were the ICV and CCVs within acceptable limits for QC recovery?	✓ ✓ ✓ ✓ ✓			
Were the ICB and CCBs all <RL?	✓ ✓ ✓ ✓ ✓			
Were all MB and CCB results <RL for the analytes of interest?	✓ ✓ ✓ ✓ ✓			
Was there a CCV/CCB combination run after every 10 samples or less?	✓ ✓ ✓ ✓ ✓			
Was there an LCS run with every batch of 20 samples or less?	✓ ✓ ✓ ✓ ✓			
Was there a MD, LCSD or MSD run with every batch of 20 samples or less?	✓ ✓ ✓	✓ ✓		
Were all LCS/LCSD results within acceptable limits for QC recovery?	✓ ✓ ✓ ✓ ✓			
Were all MS/MSD results within acceptable limits for QC recovery?	✓ ✓ ✓		✓ ✓	
Were all MD, LCSD and/or MSD %RPDs within acceptable limits for QC recovery?	✓ ✓ ✓		✓ ✓	
Were the raw data points for investigative samples within the working curve range, or if not, were the samples diluted to bring them within this range?	✓ ✓ ✓ ✓ ✓			
IF there were any MCP/RCP samples in this batch, did they meet all MCP/RCP requirements?	✓ ✓ ✓ ✓		✓	
Were there any holding time violations in this batch?	✓ ✓ ✓	✓ ✓ ✓		**NOTE!** The PM and QA Manager must be notified by email *immediately* of any holding time violations!!
Were any NCMs generated for any samples in the batch? (If so, list NCM numbers, and first-reviewer must check off any "No" answers above as applicable.)	✓ ✓ ✓ ✓	✓ ✓		43824, 43825, 43826
Were any jobs in this batch Level 4? If "Yes" then scan all raw data & place in correct scan folder on the public drive before filing this paperwork.	✓ ✓ ✓ ✓	✓		

** LCS or LCSD must produce a recovery that is within the manufacturer's specified 95% confidence limits, must be matrix matched.

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 11/30/11

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution: Sample Aliquot 2	Serial Dilution: Units	Serial Dilution: Final Volume 2	Serial Dilution: Units	Comments
AMB	11/30	300.0	3755267	50	200	µL	10	mL					
			3764483	10	1	mL	10	mL					
			MS										
			MSD										

entries completed by day [new page each day]

0.25 *M* Sulfuric Acid Creation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Record the information below for creating the acid. When an entry is made do not use arrows to fill in information. All entries must be complete.

Recipe: to 2958mL of deionized water in a 1 gallon jug add 42mL of concentrated H_2SO_4 for a total volume of 3L.

Date Made	Analyst's Initials	Volume of 0.25 *M* Acid Made (L)	Source: Concentrated Sulfuric Acid (ACS grade) Manufacturer & Lot Number
11-18-11	RW	3	Baker lot J22022
11-21-11	RW	3	↓
11-22-11	RW	3	↓
11-23-11	RW	3	↓
11-28-11	RW	3	↓
11/30/11	AMS	3	↓

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Eluent Preparation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Prepare fresh daily; makes 3L of eluent. To make: in a one-gallon plastic container, mix:

- 60.0 mL of 100*M* $NaHCO_3$;
- 78.0 mL of 100*M* Na_2CO_3; and
- 2862 mL of deionized water.

Degas with helium for 3min before use.

Date Prepared	Analyst's Initials	Lot # 100*M* $NaHCO_3$	Lot # 100*M* Na_2CO_3	Number of Portions Prepared
11-17-11	[illegible]	W11J 2GT018	W11K RGT001	1
11-18-11	RWE	W11K RGT016	W11K RGT017	2
11-21-11	RWE	↓	↓	1
11-22-11	RWE	↓	↓	1
11-23-11	RWE	↓	↓	2
11-28-11	RE	↓	↓	1
11-29-11	RWE	↓	↓	1

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Ion Chromatography QC Source Data Sheet—Inorganics Dept

Method (circle methods): IC 300_28D IC 300_48HR IC 9056_28D IC 9056_48HR

Date of Analytical Run: 11/30/11 Analyst's Initials: AMS

Working Curve Standard:

Manufacturer & Lot Number for Source Standard	Working Curve Standards Prepared On
Inorganic Ventures Lot E2-MEB394034	20 October 2011

QC Standard True Values for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.50	25.0	2.50	2.50	2.50	50.0
ICB	0	0	0	0	0	0
MB	0	0	0	0	0	0
LCS/LCSD	4.00	40.0	4.00	4.00	4.00	80.0
MS/MSD	1.00	10.0	1.00	1.00	1.00	20.0

QC Standard Acceptable Recovery Ranges for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.25-2.75	22.5-27.5	2.25-2.75	2.25-2.75	2.25-2.75	45.0-55.0
ICB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
MB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
LCS/LCSD	3.40-4.60	34.0-46.0	3.40-4.60	3.40-4.60	3.40-4.60	68.0-92.0
MS/MSD	0.75-1.25	7.50-12.5	0.75-1.25	0.75-1.25	0.75-1.25	15.0-25.0

Current Method RLs (mg/L):

	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
	0.10	1.00	0.010	0.10	0.050	2.0

Author: EmerichR

Date : 12/1/2011

Original Run Filename: OM_11-30-2011_07-29-35AM.OMN created 11/30/2011 7:29:35 AM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_11-30-2011_07-29-35AM.OMN last modified 12/1/2011 5:15:50 AM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	0.0044	0.1149	0.0094	0.0064	0.0023	-0.9979	11/30/2011@7:30:56 AM
	Calibration:	Table/Fig. 3	Table/Fig. 1		Table/Fig. 4	Table/Fig. 2	Table/Fig. 5	
ICV	1	2.3085	25.4232	2.3936	2.4302	2.3078	48.6936	11/30/2011@7:47:05 AM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
	Calibration:			Table/Fig. 6				
ICB	S11	0.0038	0.0140	0.0076	0.0063	0.0021	-0.9436	11/30/2011@8:03:11 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0046	0.0147	0.0093	0.0062	0.0018	-0.9870	11/30/2011@8:19:18 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.8310	41.1605	3.9735	3.8649	3.8412	77.9907	11/30/2011@8:35:25 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37831-A-1	55	0.0038	49.2695	0.1192	2.1097	0.0024	14.8914	11/30/2011@8:51:32 AM
360-37831-A-2	56	0.0796	34.8734	0.1232	0.0958	-2.7021	8.9718	11/30/2011@9:07:37 AM
360-37552-C-7@ 50	40	0.0173	5.2873	0.0270	0.0062	0.0022	34.9720	11/30/2011@9:23:44 AM
360-37552-C-7 @50 MS	41	1.0048	16.3370	1.0177	1.0119	0.9649	56.7424	11/30/2011@9:39:50 AM
360-37552-C-7 @50 MSD	41	0.9621	15.5557	0.9634	0.9657	0.9197	53.4895	11/30/2011@9:55:57 AM
360-37706-A-13 @20 BR	42	2.6054	3.5065	0.0094	0.0062	-0.0264	-0.7123	11/30/2011@10:12:03 AM
360-37706-A-15 @100 BR	43	5.4688	1.1351	0.0179	-0.2681	0.0022	-0.7350	11/30/2011@10:28:08 AM
360-37706-A-47 @100 BR	44	0.2831	0.6806	0.0104	-0.0137	-0.0023	-0.9338	11/30/2011@10:44:14 AM
360-37706-A-48 @100 BR	45	0.4855	0.6799	0.0104	0.0062	0.0022	-0.8931	11/30/2011@11:00:20 AM
360-37654-A-33	46	0.1074	45.3515	0.0819	1.2961	-25.1555	19.9501	11/30/2011@11:16:27 AM
CCV	S12	3.8233	41.4195	3.9926	3.8965	3.8650	78.1916	11/30/2011@11:32:34 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0040	0.0176	0.0075	0.0062	0.0042	-0.9825	11/30/2011@11:48:41 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37654-A-38	49	0.0013	42.6388	0.0779	2.9900	0.0022	32.2022	11/30/2011@12:04:48 PM
360-37654-A-39	50	0.0363	24.5220	0.1041	0.0062	0.0022	12.5440	11/30/2011@12:20:54 PM
360-37654-A-40	51	0.0428	26.5570	0.1008	0.0149	0.0022	13.0662	11/30/2011@12:37:01 PM
360-37706-A-50@100 BR	52	2.1098	0.8898	0.0075	0.0062	0.0022	-0.7303	11/30/2011@12:53:08 PM
360-37706-A-50@1000 BR	53	0.1309	0.3314	0.0105	0.0062	0.0087	-0.9044	11/30/2011@1:09:15 PM
360-37706-A-52@100 BR	54	0.5466	0.9572	0.0082	-0.0274	0.0022	-0.6980	11/30/2011@1:25:21 PM
360-37654-A-34	47	0.2169	8.5576	0.0094	0.0062	-4.9950	15.5632	11/30/2011@1:41:28 PM
360-37654-A-36	48	0.0040	36.9209	0.0896	3.5483	-2.3542	15.5291	11/30/2011@1:57:35 PM
360-37596-B-4 @10	57	0.0022	1.2240	0.0208	0.2676	0.6291	4.2102	11/30/2011@2:13:41 PM
360-37637-D-1	58	0.0442	17.9345	0.4069	1.2131	0.0022	107.5841	11/30/2011@2:29:47 PM
CCV	S12	3.8401	41.7048	4.0405	3.9201	3.8867	78.9916	11/30/2011@2:45:53 PM

Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	-0.0058	0.0154	0.0093	0.0067	0.0041	-0.9825	11/30/2011@3:02:00 PM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0107	0.0148	0.0095	0.0047	0.0045	-0.9846	11/30/2011@3:18:07 PM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.8640	41.9682	4.0555	3.9522	3.9449	79.1738	11/30/2011@3:34:14 PM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37644-B-3	59	0.0541	3.7933	0.0685	-0.0040	-0.1170	135.0218	11/30/2011@3:50:20 PM
360-37644-B-3@10	60	0.0039	0.6263	0.0094	0.0062	-0.0029	16.5651	11/30/2011@4:06:26 PM
360-37644-B-3@10 MS	61	0.9169	10.6016	0.9737	0.9676	0.9471	37.4600	11/30/2011@4:22:34 PM
360-37644-B-3@10 MSD	61	0.9210	10.5988	0.9680	0.9656	0.9496	37.4501	11/30/2011@4:38:41 PM
360-37644-B-1	62	0.0472	1.5026	0.0163	1.3279	0.3502	-570.2848	11/30/2011@4:54:48 PM
360-37644-B-2	63	0.1029	2.6273	0.0360	6.0716	6.0159	-1.0937e+3	11/30/2011@5:10:55 PM
360-37637-C-2	64	0.0036	15.5104	0.7451	0.1996	0.0022	4.0820	11/30/2011@5:27:02 PM
360-37644-B-4	65	0.0025	1.5030	0.0097	0.0061	0.0022	27.4446	11/30/2011@5:43:09 PM
360-37644-B-5	66	0.0024	47.7090	0.0452	1.4553	-1.2216	31.3795	11/30/2011@5:59:16 PM
360-37644-B-6	67	0.0482	3.4437	0.0714	0.0060	0.0022	117.2019	11/30/2011@6:15:23 PM
CCV	S12	3.8712	40.7968	3.9058	3.8687	3.8111	77.3356	11/30/2011@6:31:30 PM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0038	0.0125	0.0054	0.0063	0.0022	-0.9872	11/30/2011@6:47:36 PM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37654-A-28	68	0.0377	7.7930	0.0799	0.0050	0.0022	21.1986	11/30/2011@7:03:43 PM
360-37654-A-29	69	0.0292	40.4310	0.1857	0.0062	0.0022	5.2465	11/30/2011@7:19:49 PM
360-37654-A-30	70	-0.0012	-51.2099	0.2405	0.2252	0.0965	14.3492	11/30/2011@7:35:55 PM
360-37654-A-31	71	0.0263	23.5803	0.1065	0.0062	0.0022	13.5200	11/30/2011@7:52:01 PM
360-37654-A-32	72	0.0809	28.8965	0.1806	0.0061	0.0022	21.9151	11/30/2011@8:08:07 PM
360-37662-G-1	73	-1.8845e+3	2.4467	0.0684	0.3333	1.8044	67.0934	11/30/2011@8:24:14 PM
360-37681-C-1 @10 CI	74	0.0029	24.8768	0.0097	0.2758	0.0022	0.7284	11/30/2011@8:40:20 PM
360-37681-C-2 @10 CI	75	-0.0092	25.1652	0.0084	0.2796	0.0022	0.6918	11/30/2011@8:56:26 PM
360-37721-B-1	76	0.0038	50.0491	0.0267	1.0113	0.0022	13.6737	11/30/2011@9:12:33 PM
360-37721-B-2	77	9.4351e-4	10.4725	0.0276	0.0421	0.0022	14.6216	11/30/2011@9:28:40 PM
CCV	S12	3.9417	41.0132	3.9008	3.9371	3.8397	77.5410	11/30/2011@9:44:47 PM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0034	0.0097	0.0097	0.0056	0.0019	-0.9860	11/30/2011@10:00:54 PM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	-2.9901e-4	0.0076	0.0103	0.0049	0.0019	-0.9824	11/30/2011@10:17:01 PM
Known Conc:		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9355	41.0980	3.9316	3.9409	3.8628	77.8083	11/30/2011@10:33:08 PM
Known Conc:		4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37762-B-1 @10*	78	0.0652	2.2885	0.0081	0.0055	0.0022	-0.9322	11/30/2011@10:49:15 PM
360-37762-B-2	79	0.0016	13.5965	0.0824	0.0227	-0.1132	1.8970	11/30/2011@11:05:22 PM
360-37762-B-4	80	-4.1868e-4	-23.5676	0.0100	0.0892	4.4918	5.1424	11/30/2011@11:21:28 PM
360-37762-B-4@10	81	0.0037	18.6162	0.0095	0.0146	0.0022	-0.3038	11/30/2011@11:37:35 PM
360-37762-B-4@10 MS	82	1.0778	29.8009	1.0177	1.0717	0.9748	20.5263	11/30/2011@11:53:42 PM
360-37762-B-4@10 MSD	82	1.0688	29.8266	1.0114	1.0654	0.9741	20.4759	12/1/2011@12:09:48 AM

360-37762-B-5	83	0.0038	50.4044	0.1188	0.0062	-76.1668	-0.9885	12/1/2011@12:25:55 AM
360-37762-B-6	84	0.0121	5.4658	0.0357	0.8466	0.0022	4.2115	12/1/2011@12:42:02 AM
360-37762-B-8	85	0.0038	18.0969	0.0377	0.0417	10.3397	11.1054	12/1/2011@12:58:08 AM
360-37762-B-9	86	0.0038	69.3926	0.0505	0.5234	0.0022	3.1956	12/1/2011@1:14:14 AM
CCV	S12	3.9543	41.1455	3.9502	3.9378	3.8541	77.5963	12/1/2011@1:30:21 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0032	0.0059	0.0095	0.0074	0.0022	-0.9826	12/1/2011@1:46:28 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37762-B-10	87	0.0029	-34.8553	0.0272	1.0162	0.2192	3.9394	12/1/2011@2:02:34 AM
360-37762-B-11@10*	88	0.0546	2.3522	0.0094	0.0061	0.0022	-0.9324	12/1/2011@2:18:40 AM
360-37762-B-12	89	0.0040	2.8161	0.0543	-0.0026	0.8579	2.3185	12/1/2011@2:34:46 AM
360-37762-B-13	90	0.0026	57.4070	0.0412	0.0203	-35.0104	2.9753	12/1/2011@2:50:52 AM
360-37762-B-14	91	0.0039	2.7656	0.0657	0.0789	0.5392	5.1336	12/1/2011@3:06:59 AM
360-37762-B-15	92	0.0038	53.3558	0.0553	0.0515	-27.0443	9.3551	12/1/2011@3:23:07 AM
360-37762-B-16	93	0.0038	-44.3443	0.0624	0.0885	0.4746	5.0767	12/1/2011@3:39:13 AM
360-37706-A-53	94	0.0029	45.1531	0.1198	-0.0465	8.9895	140.2721	12/1/2011@3:55:20 AM
360-37706-A-54	95	0.0024	0.1220	0.0305	-2.7371	1.4962	1.1490	12/1/2011@4:11:27 AM
360-37706-A-55	96	-61.6362	-0.9353	0.0092	0.0062	0.0025	1.4154	12/1/2011@4:27:34 AM
CCV	S12	-2.7205	-0.1573	0.0093	0.0062	0.0022	-0.9825	12/1/2011@4:43:41 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0039	-0.2062	0.0094	-0.4896	0.0022	-0.9808	12/1/2011@4:59:48 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Instrument ran out of element 12/1/11

Author: EmerichR

Date : 12/1/2011

Original Run Filename: OM_11-30-2011_07-29-35AM.OMN created 11/30/2011 7:29:35 AM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_11-30-2011_07-29-35AM.OMN last modified 12/1/2011 5:15:50 AM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	0.0044	0.1149	0.0094	0.0064	0.0023	-0.9979	11/30/2011@7:30:56 AM
	Calibration:	Table/Fig. 3	Table/Fig. 1		Table/Fig. 4	Table/Fig. 2	Table/Fig. 5	
ICV	1	2.3085	25.4232	2.3936	2.4302	2.3078	48.6936	11/30/2011@7:47:05 AM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
	Calibration:			Table/Fig. 6				
ICB	S11	0.0038	0.0140	0.0076	0.0063	0.0021	-0.9436	11/30/2011@8:03:11 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0046	0.0147	0.0093	0.0062	0.0018	-0.9870	11/30/2011@8:19:18 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.8310	41.1605	3.9735	3.8649	3.8412	77.9907	11/30/2011@8:35:25 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37831-A-1	55	0.0038	49.2695	0.1192	2.1097	0.0024	14.8914	11/30/2011@8:51:32 AM
360-37831-A-2	56	0.0796	34.8734	0.1232	0.0958	-2.7021	8.9718	11/30/2011@9:07:37 AM
360-37552-C-7@ 50	40	0.0173	5.2873	0.0270	0.0062	0.0022	34.9720	11/30/2011@9:23:44 AM
360-37552-C-7 @50 MS	41	1.0048	16.3370	1.0177	1.0119	0.9649	56.7424	11/30/2011@9:39:50 AM
360-37552-C-7 @50 MSD	41	0.9621	15.5557	0.9634	0.9657	0.9197	53.4895	11/30/2011@9:55:57 AM
360-37706-A-13 @20 BR	42	2.6054	3.5065	0.0094	0.0062	-0.0264	-0.7123	11/30/2011@10:12:03 AM
360-37706-A-15 @100 BR	43	5.4688	1.1351	0.0179	-0.2681	0.0022	-0.7350	11/30/2011@10:28:08 AM
360-37706-A-47 @100 BR	44	0.2831	0.6806	0.0104	-0.0137	-0.0023	-0.9338	11/30/2011@10:44:14 AM
360-37706-A-48 @100 BR	45	0.4855	0.6799	0.0104	0.0062	0.0022	-0.8931	11/30/2011@11:00:20 AM
360-37654-A-33	46	0.1074	45.3515	0.0819	1.2961	-25.1555	19.9501	11/30/2011@11:16:27 AM
CCV	S12	3.8233	41.4195	3.9926	3.8965	3.8650	78.1916	11/30/2011@11:32:34 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0040	0.0176	0.0075	0.0062	0.0042	-0.9825	11/30/2011@11:48:41 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37654-A-38	49	0.0013	42.6388	0.0779	2.9900	0.0022	32.2022	11/30/2011@12:04:48 PM
360-37654-A-39	50	0.0363	24.5220	0.1041	0.0062	0.0022	12.5440	11/30/2011@12:20:54 PM
360-37654-A-40	51	0.0428	26.5570	0.1008	0.0149	0.0022	13.0662	11/30/2011@12:37:01 PM
360-37706-A-50@100 BR	52	2.1098	0.8898	0.0075	0.0062	0.0022	-0.7303	11/30/2011@12:53:08 PM
360-37706-A-50@1000 BR	53	0.1309	0.3314	0.0105	0.0062	0.0087	-0.9044	11/30/2011@1:09:15 PM
360-37706-A-52@100 BR	54	0.5466	0.9572	0.0082	-0.0274	0.0022	-0.6980	11/30/2011@1:25:21 PM
360-37654-A-34	47	0.2169	8.5576	0.0094	0.0062	-4.9950	15.5632	11/30/2011@1:41:28 PM
360-37654-A-36	48	0.0040	36.9209	0.0896	3.5483	-2.3542	15.5291	11/30/2011@1:57:35 PM
360-37596-B-4 @10	57	0.0022	1.2240	0.0208	0.2676	0.6291	4.2102	11/30/2011@2:13:41 PM
360-37637-D-1	58	0.0442	17.9345	0.4069	1.2131	0.0022	107.5841	11/30/2011@2:29:47 PM
CCV	S12	3.8401	41.7048	4.0405	3.9201	3.8867	78.9916	11/30/2011@2:45:53 PM

	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	-0.0058	0.0154	0.0093	0.0067	0.0041	-0.9825	11/30/2011@3:02:00 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0107	0.0148	0.0095	0.0047	0.0045	-0.9846	11/30/2011@3:18:07 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.8640	41.9682	4.0555	3.9522	3.9449	79.1738	11/30/2011@3:34:14 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37644-B-3	59	0.0541	3.7933	0.0685	-0.0040	-0.1170	135.0218	11/30/2011@3:50:20 PM
360-37644-B-3@10	60	0.0039	0.6263	0.0094	0.0062	-0.0029	16.5651	11/30/2011@4:06:26 PM
360-37644-B-3@10 MS	61	0.9169	10.6016	0.9737	0.9676	0.9471	37.4600	11/30/2011@4:22:34 PM
360-37644-B-3@10 MSD	61	0.9210	10.5988	0.9680	0.9656	0.9496	37.4501	11/30/2011@4:38:41 PM
360-37644-B-1	62	0.0472	1.5026	0.0163	1.3279	0.3502	-570.2848	11/30/2011@4:54:48 PM
360-37644-B-2	63	0.1029	2.6273	0.0360	6.0716	6.0159	-1.0937e+3	11/30/2011@5:10:55 PM
360-37637-C-2	64	0.0036	15.5104	0.7451	0.1996	0.0022	4.0820	11/30/2011@5:27:02 PM
360-37644-B-4	65	0.0025	1.5030	0.0097	0.0061	0.0022	27.4446	11/30/2011@5:43:09 PM
360-37644-B-5	66	0.0024	47.7090	0.0452	1.4553	-1.2216	31.3795	11/30/2011@5:59:16 PM
360-37644-B-6	67	0.0482	3.4437	0.0714	0.0060	0.0022	117.2019	11/30/2011@6:15:23 PM
CCV	S12	3.8712	40.7968	3.9058	3.8687	3.8111	77.3356	11/30/2011@6:31:30 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0038	0.0125	0.0054	0.0063	0.0022	-0.9872	11/30/2011@6:47:36 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37654-A-28	68	0.0377	7.7930	0.0799	0.0050	0.0022	21.1986	11/30/2011@7:03:43 PM
360-37654-A-29	69	0.0292	40.4310	0.1857	0.0062	0.0022	5.2465	11/30/2011@7:19:49 PM
360-37654-A-30	70	-0.0012	-51.2099	0.2405	0.2252	0.0965	14.3492	11/30/2011@7:35:55 PM
360-37654-A-31	71	0.0263	23.5803	0.1065	0.0062	0.0022	13.5200	11/30/2011@7:52:01 PM
360-37654-A-32	72	0.0809	28.8965	0.1806	0.0061	0.0022	21.9151	11/30/2011@8:08:07 PM
360-37662-G-1	73	-1.8845e+3	2.4467	0.0684	0.3333	1.8044	67.0934	11/30/2011@8:24:14 PM
360-37681-C-1 @10 CI	74	0.0029	24.8768	0.0097	0.2758	0.0022	0.7284	11/30/2011@8:40:20 PM
360-37681-C-2 @10 CI	75	-0.0092	25.1652	0.0084	0.2796	0.0022	0.6918	11/30/2011@8:56:26 PM
360-37721-B-1	76	0.0038	50.0491	0.0267	1.0113	0.0022	13.6737	11/30/2011@9:12:33 PM
360-37721-B-2	77	9.4351e-4	10.4725	0.0276	0.0421	0.0022	14.6216	11/30/2011@9:28:40 PM
CCV	S12	3.9417	41.0132	3.9008	3.9371	3.8397	77.5410	11/30/2011@9:44:47 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0034	0.0097	0.0097	0.0056	0.0019	-0.9860	11/30/2011@10:00:54 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	-2.9901e-4	0.0076	0.0103	0.0049	0.0019	-0.9824	11/30/2011@10:17:01 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9355	41.0980	3.9316	3.9409	3.8628	77.8083	11/30/2011@10:33:08 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37762-B-1 @10*	78	0.0652	2.2885	0.0081	0.0055	0.0022	-0.9322	11/30/2011@10:49:15 PM
360-37762-B-2	79	0.0016	13.5965	0.0824	0.0227	-0.1132	1.8970	11/30/2011@11:05:22 PM
360-37762-B-4	80	-4.1868e-4	-23.5676	0.0100	0.0892	4.4918	5.1424	11/30/2011@11:21:28 PM
360-37762-B-4@10	81	0.0037	18.6162	0.0095	0.0146	0.0022	-0.3038	11/30/2011@11:37:35 PM
360-37762-B-4@10 MS	82	1.0778	29.8009	1.0177	1.0717	0.9748	20.5263	11/30/2011@11:53:42 PM
360-37762-B-4@10 MSD	82	1.0688	29.8266	1.0114	1.0654	0.9741	20.4759	12/1/2011@12:09:48 AM

360-37762-B-5	83	0.0038	50.4044	0.1188	0.0062	-76.1668	-0.9885	12/1/2011@12:25:55 AM
360-37762-B-6	84	0.0121	5.4658	0.0357	0.8466	0.0022	4.2115	12/1/2011@12:42:02 AM
360-37762-B-8	85	0.0038	18.0969	0.0377	0.0417	10.3397	11.1054	12/1/2011@12:58:08 AM
360-37762-B-9	86	0.0038	69.3926	0.0505	0.5234	0.0022	3.1956	12/1/2011@1:14:14 AM
CCV	S12	3.9543	41.1455	3.9502	3.9378	3.8541	77.5963	12/1/2011@1:30:21 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0032	0.0059	0.0095	0.0074	0.0022	-0.9826	12/1/2011@1:46:28 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37762-B-10	87	0.0029	-34.8553	0.0272	1.0162	0.2192	3.9394	12/1/2011@2:02:34 AM
360-37762-B-11@10*	88	0.0546	2.3522	0.0094	0.0061	0.0022	-0.9324	12/1/2011@2:18:40 AM
360-37762-B-12	89	0.0040	2.8161	0.0543	-0.0026	0.9579	2.3185	12/1/2011@2:34:46 AM
360-37762-B-13	90	0.0026	57.4070	0.0412	0.0203	-35.0104	2.9753	12/1/2011@2:50:52 AM
360-37762-B-14	91	0.0039	2.7656	0.0657	0.0789	0.5392	5.1336	12/1/2011@3:06:59 AM
360-37762-B-15	92	0.0038	53.3558	0.0553	0.0515	-27.0443	9.3551	12/1/2011@3:23:07 AM
360-37762-B-16	93	0.0038	-44.3443	0.0624	0.0885	0.4746	5.0767	12/1/2011@3:39:13 AM
360-37706-A-53	94	0.0029	45.1531	0.1198	-0.0465	8.9895	140.2721	12/1/2011@3:55:20 AM
360-37706-A-54	95	0.0024	0.1220	0.0305	-2.7371	1.4962	1.1490	12/1/2011@4:11:27 AM
360-37706-A-55	96	-61.6362	-0.9353	0.0092	0.0062	0.0025	1.4154	12/1/2011@4:27:34 AM
CCV	S12	-2.7205	-0.1573	0.0093	0.0062	0.0022	-0.9825	12/1/2011@4:43:41 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0039	-0.2062	0.0094	-0.4896	0.0022	-0.9808	12/1/2011@4:59:48 AM
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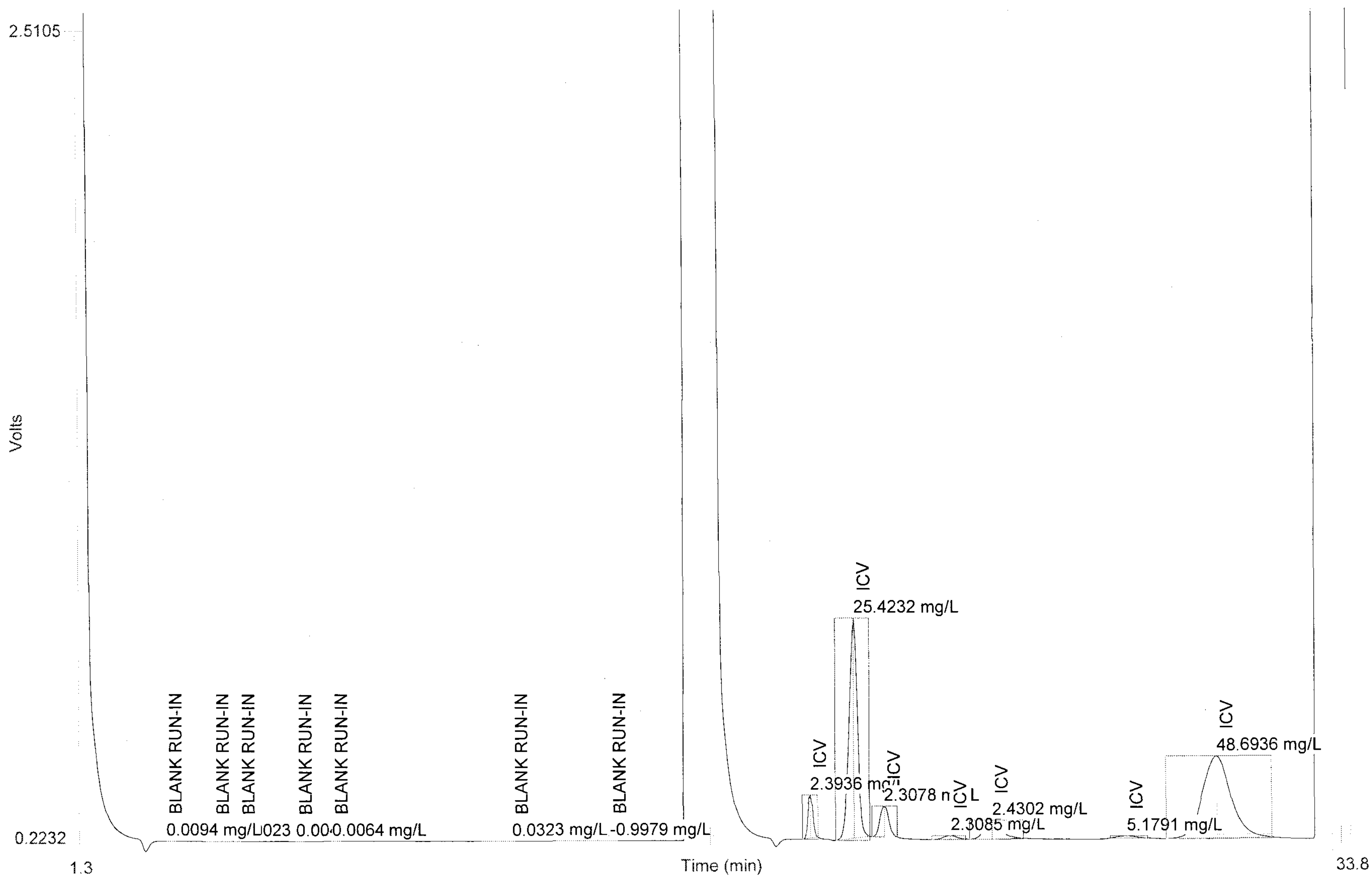
data reran
eluent ran out
AMS 12/1/11

Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 1 of 41



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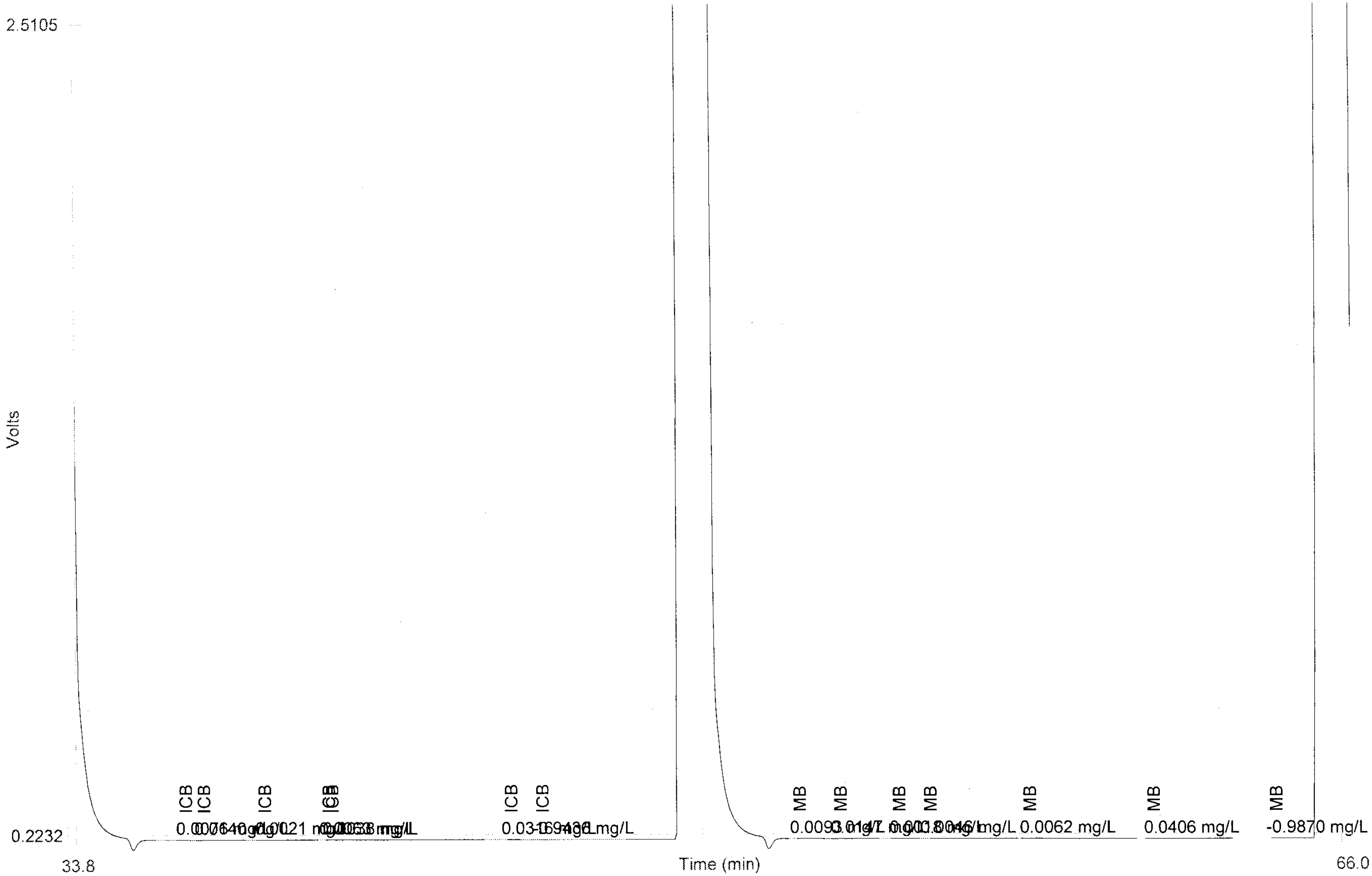
Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 2 of 41



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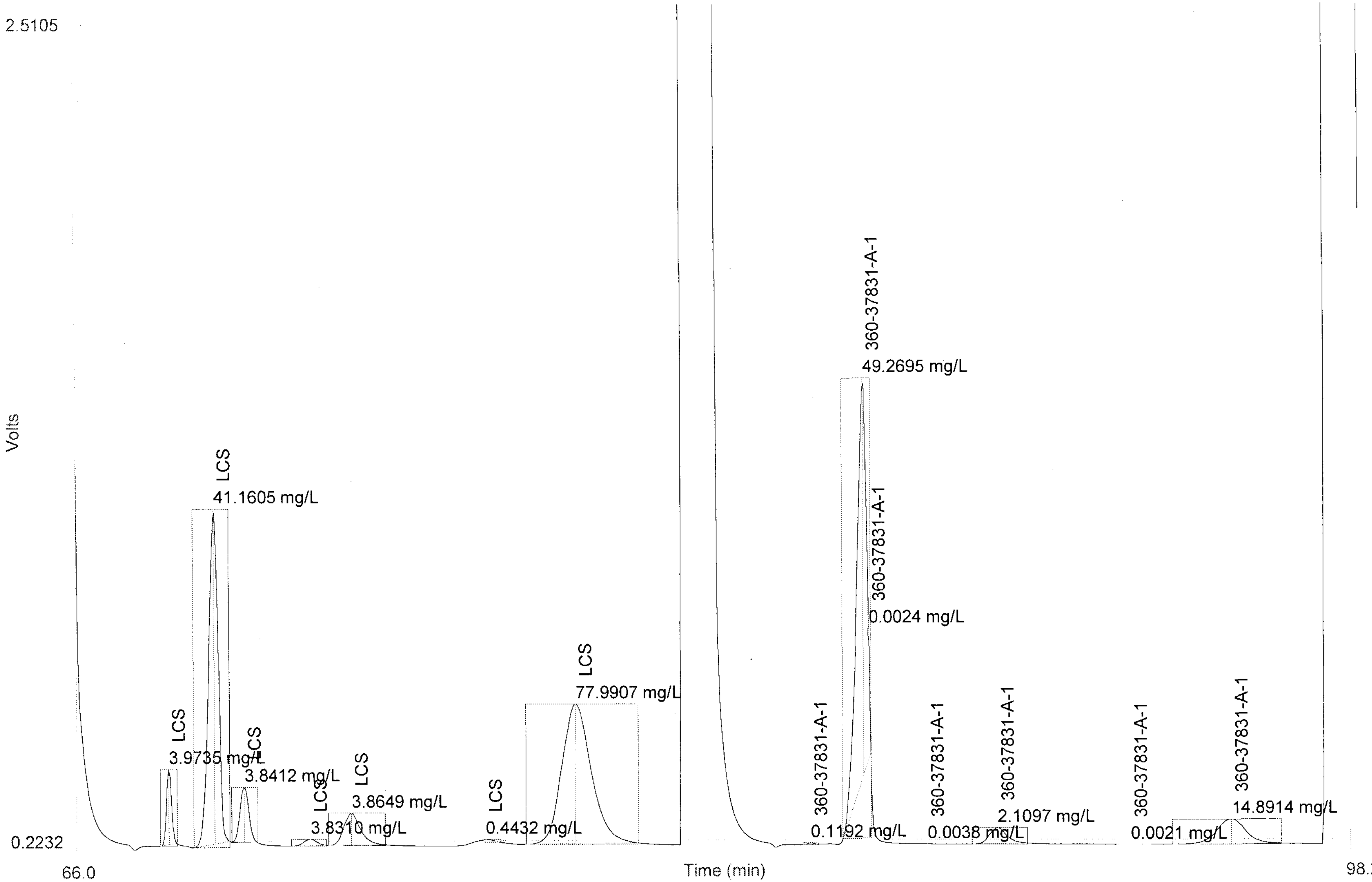
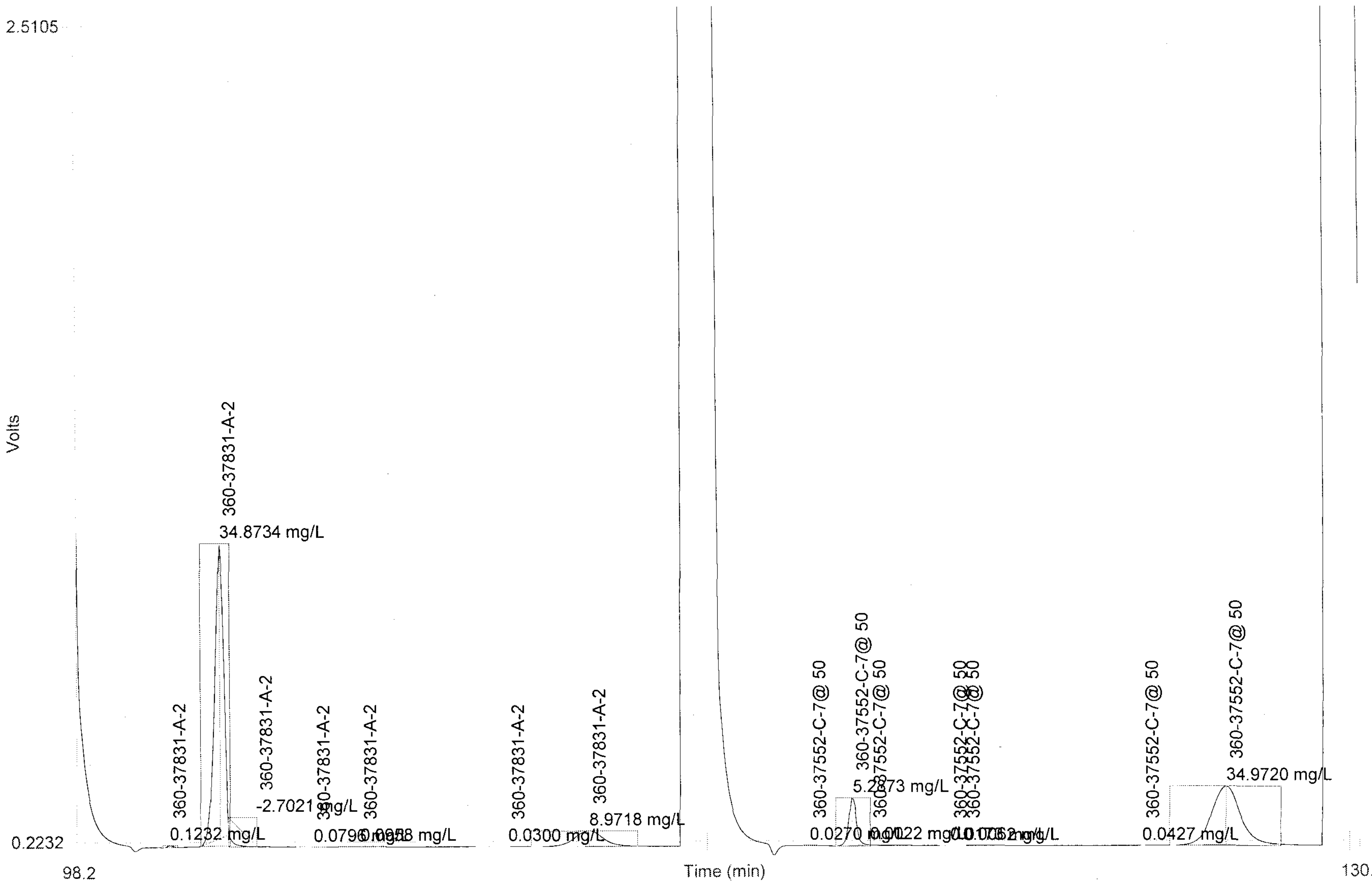
Channel 1 (Anions) : Set 3 of 41



Author: EmerichR

Date : 12/1/2011

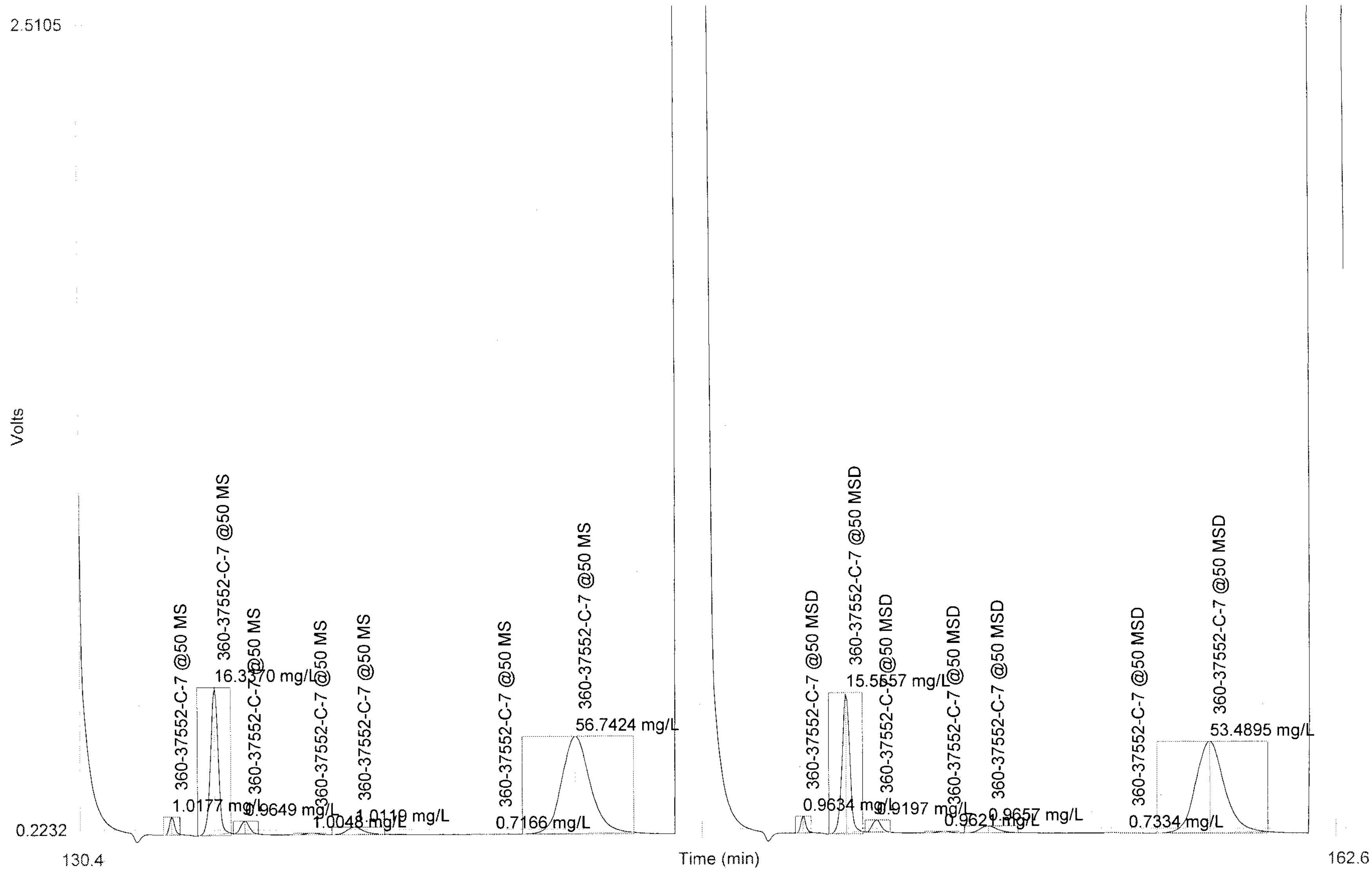
Channel 1 (Anions) : Set 4 of 41



Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 5 of 41



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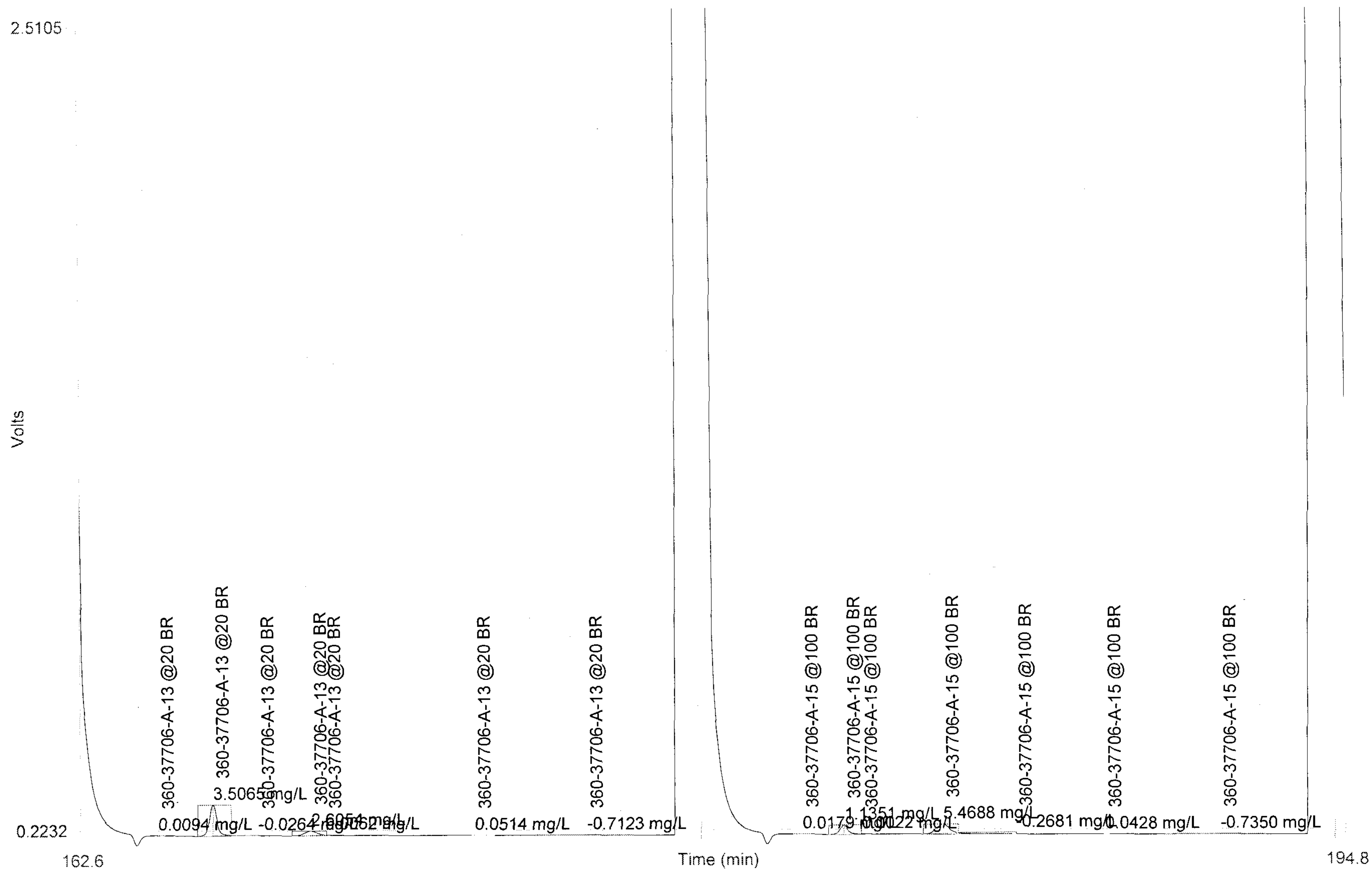
Author: EmerichR

Date : 12/1/2011

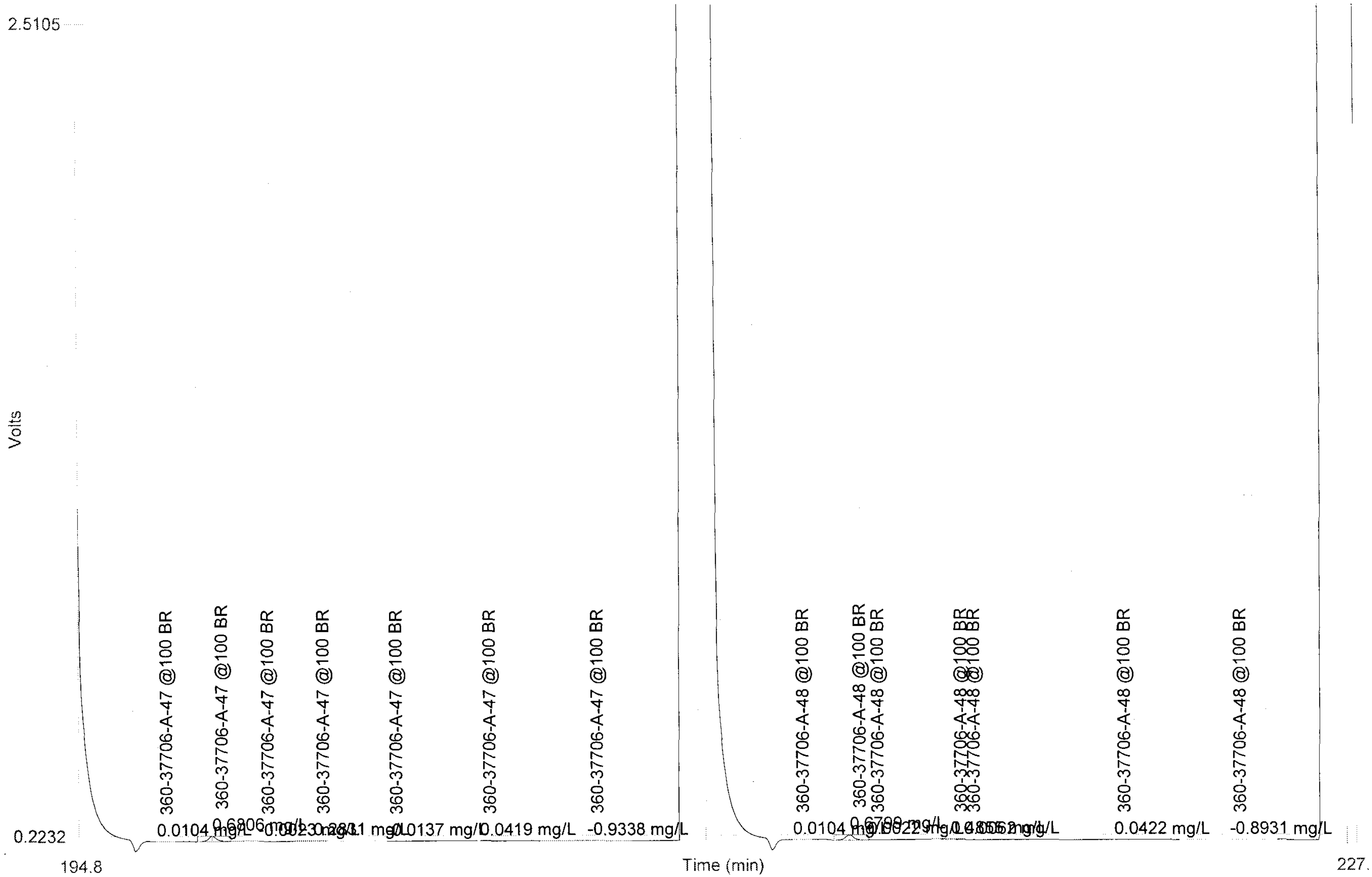
Channel 1 (Anions) : Set 6 of 41



Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 7 of 41



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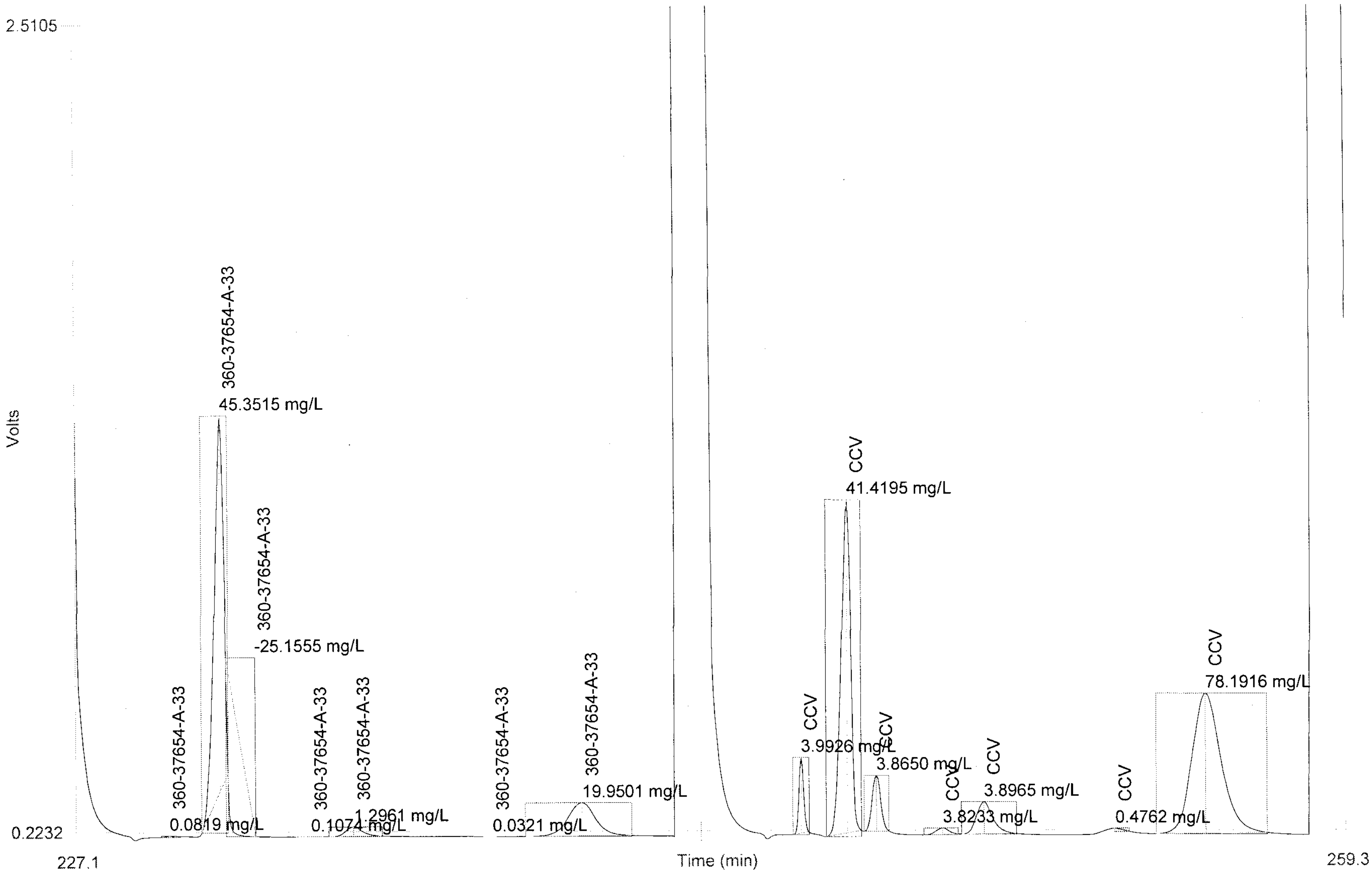
Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 8 of 41



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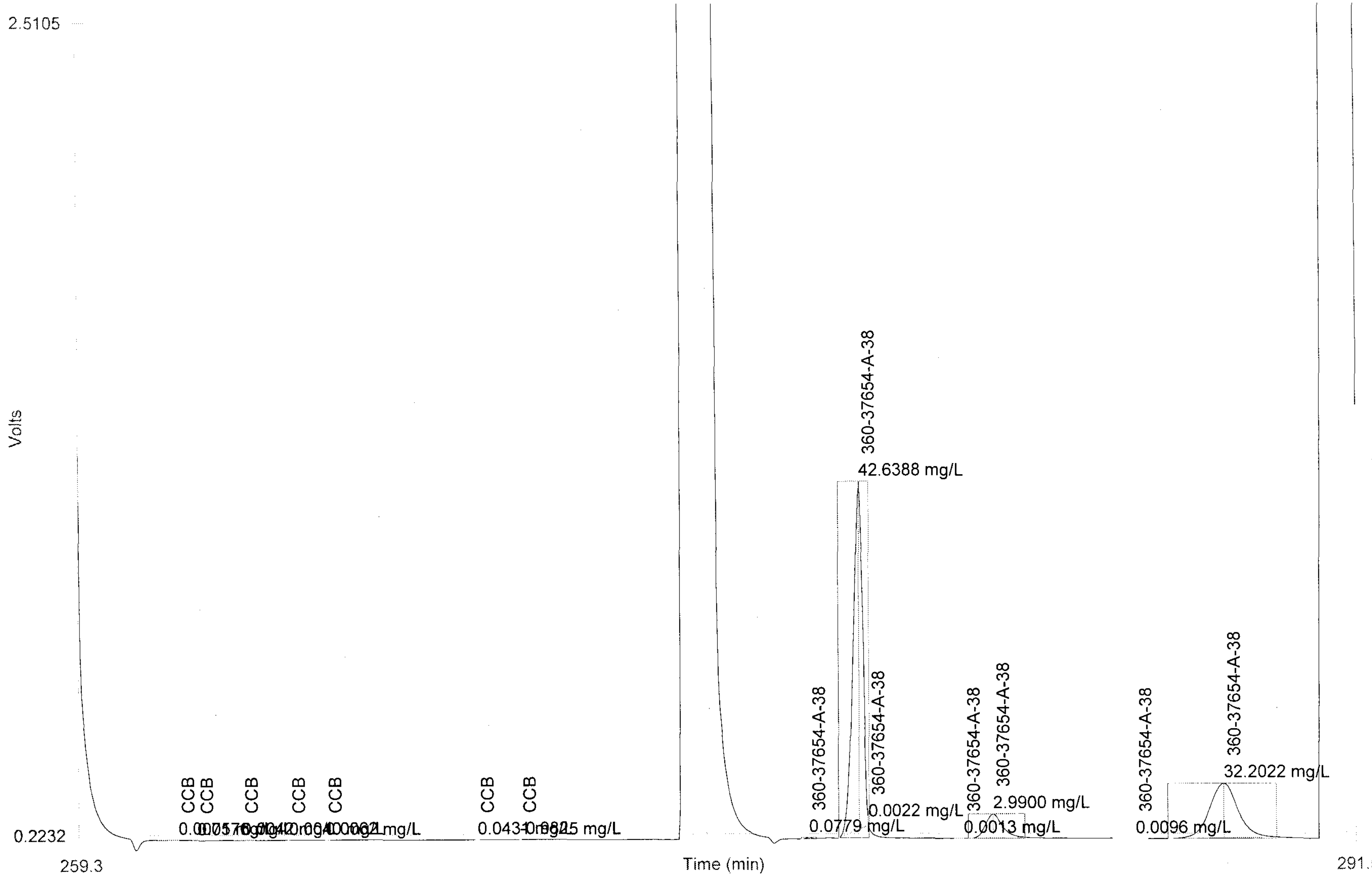
Author: EmerichR

Date : 12/1/2011

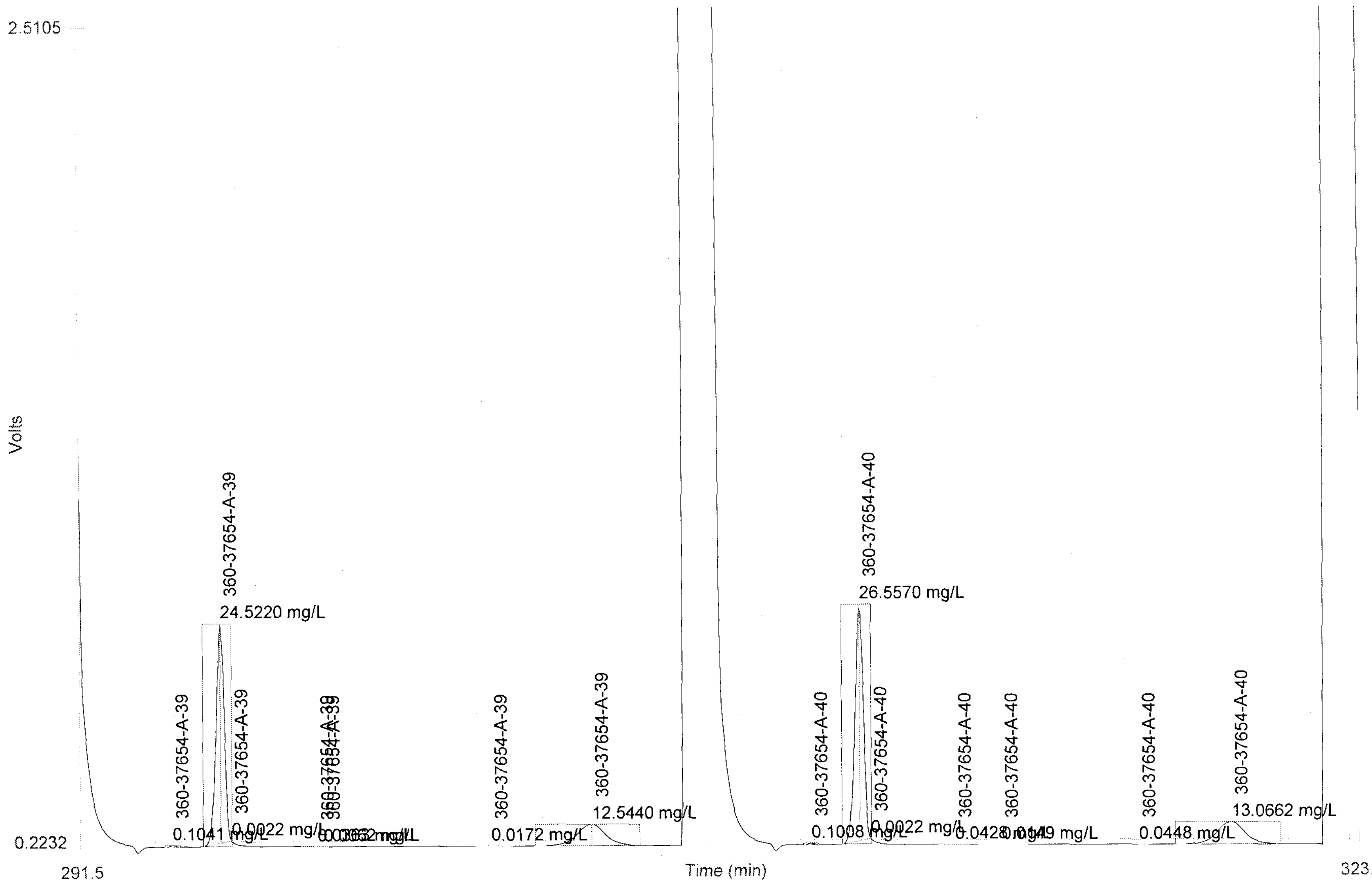
Channel 1 (Anions) : Set 9 of 41



Author: EmerichR

Date : 12/1/2011

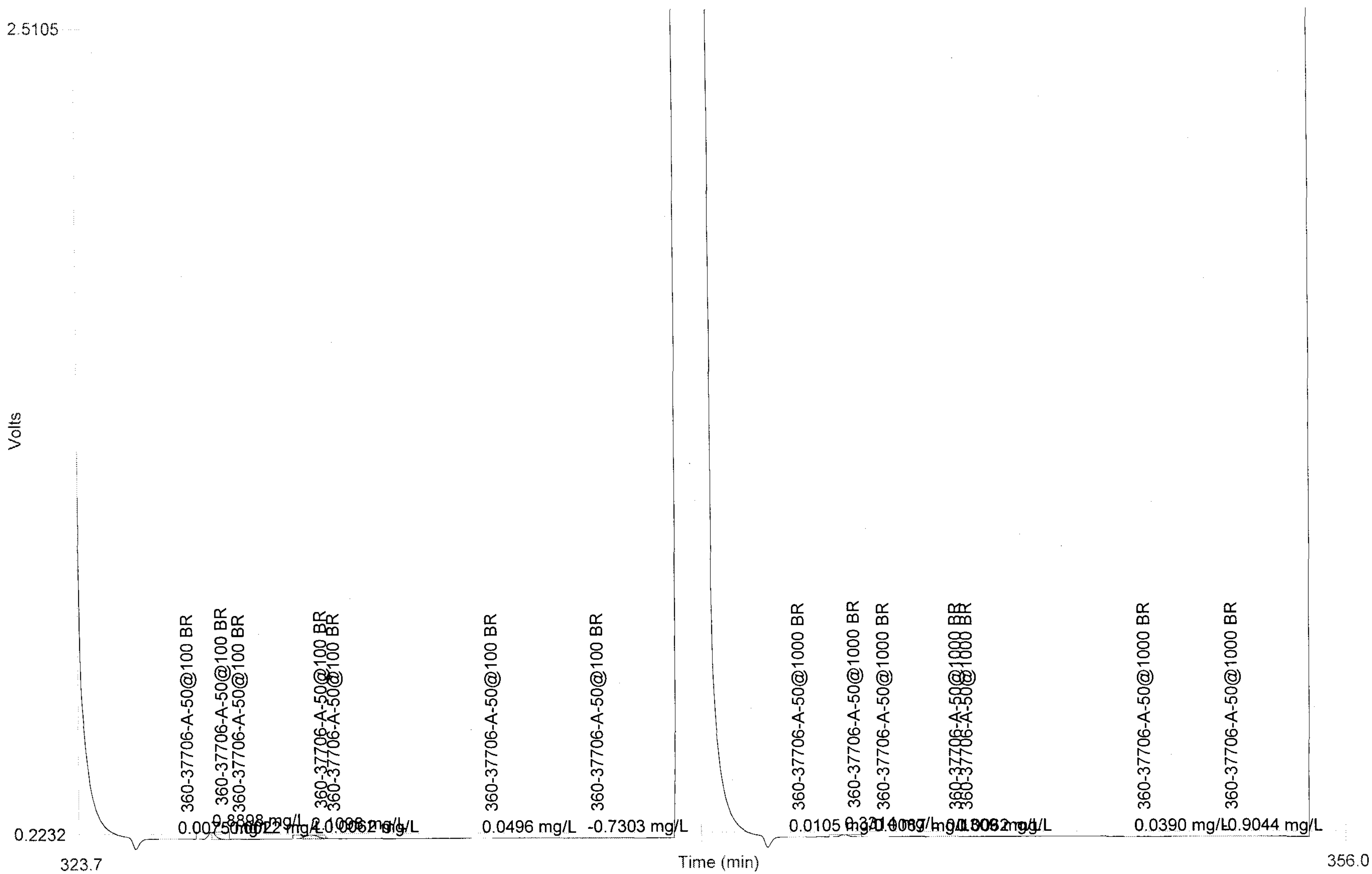
Channel 1 (Anions) : Set 10 of 41



Author: EmerichR

Date : 12/1/2011

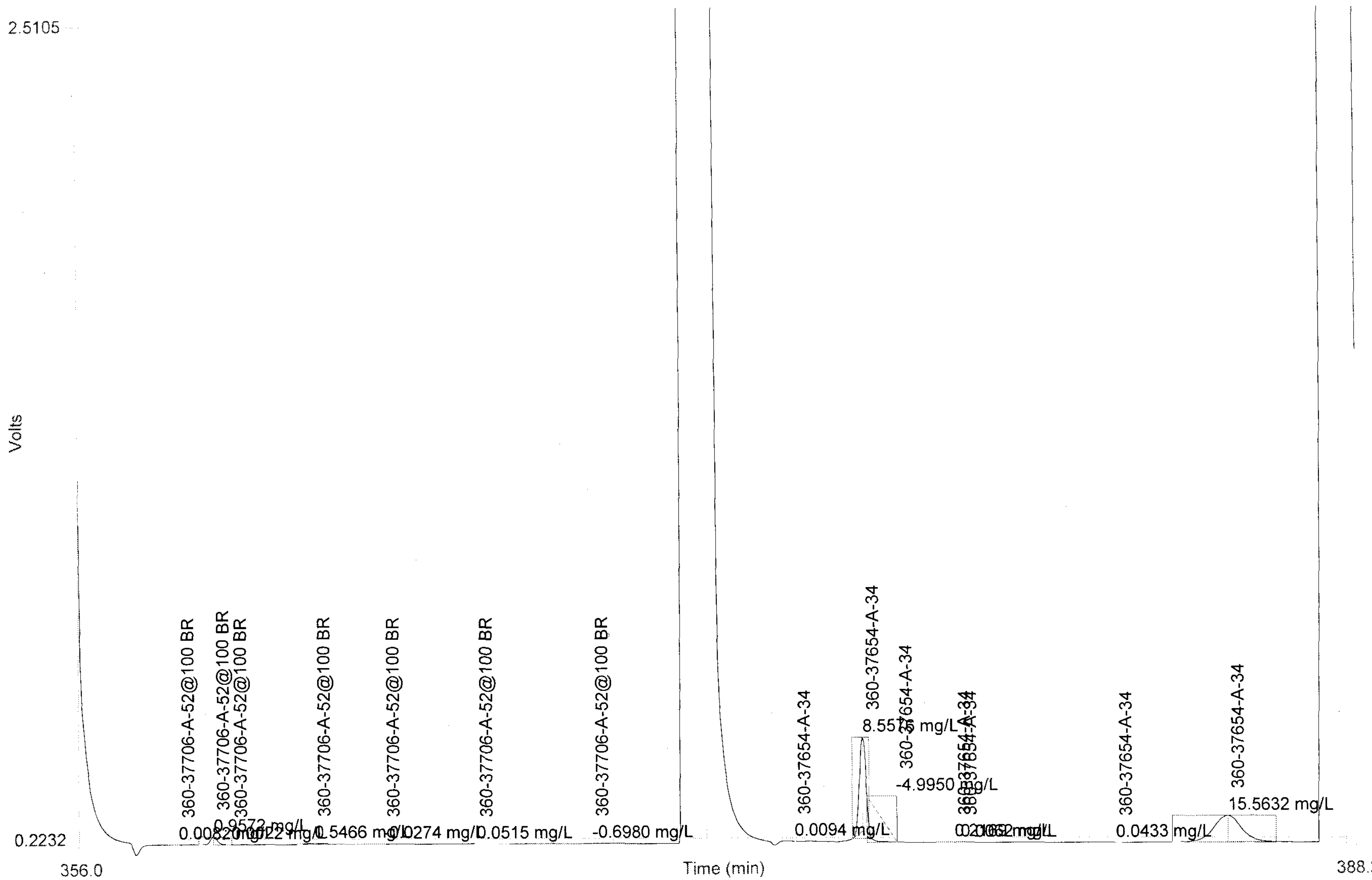
Channel 1 (Anions) : Set 11 of 41



Author: EmerichR

Date : 12/1/2011

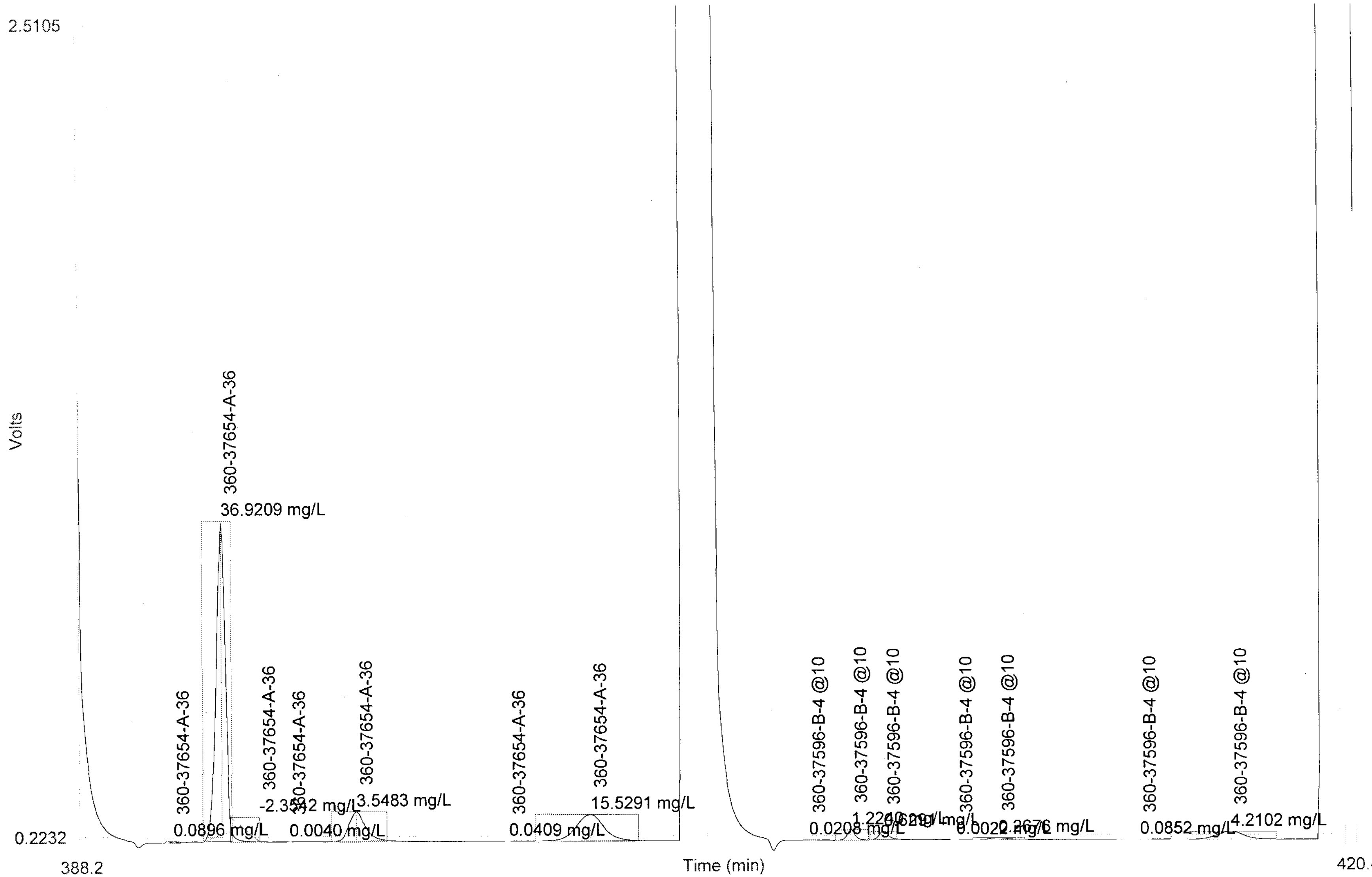
Channel 1 (Anions) : Set 12 of 41



Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 13 of 41



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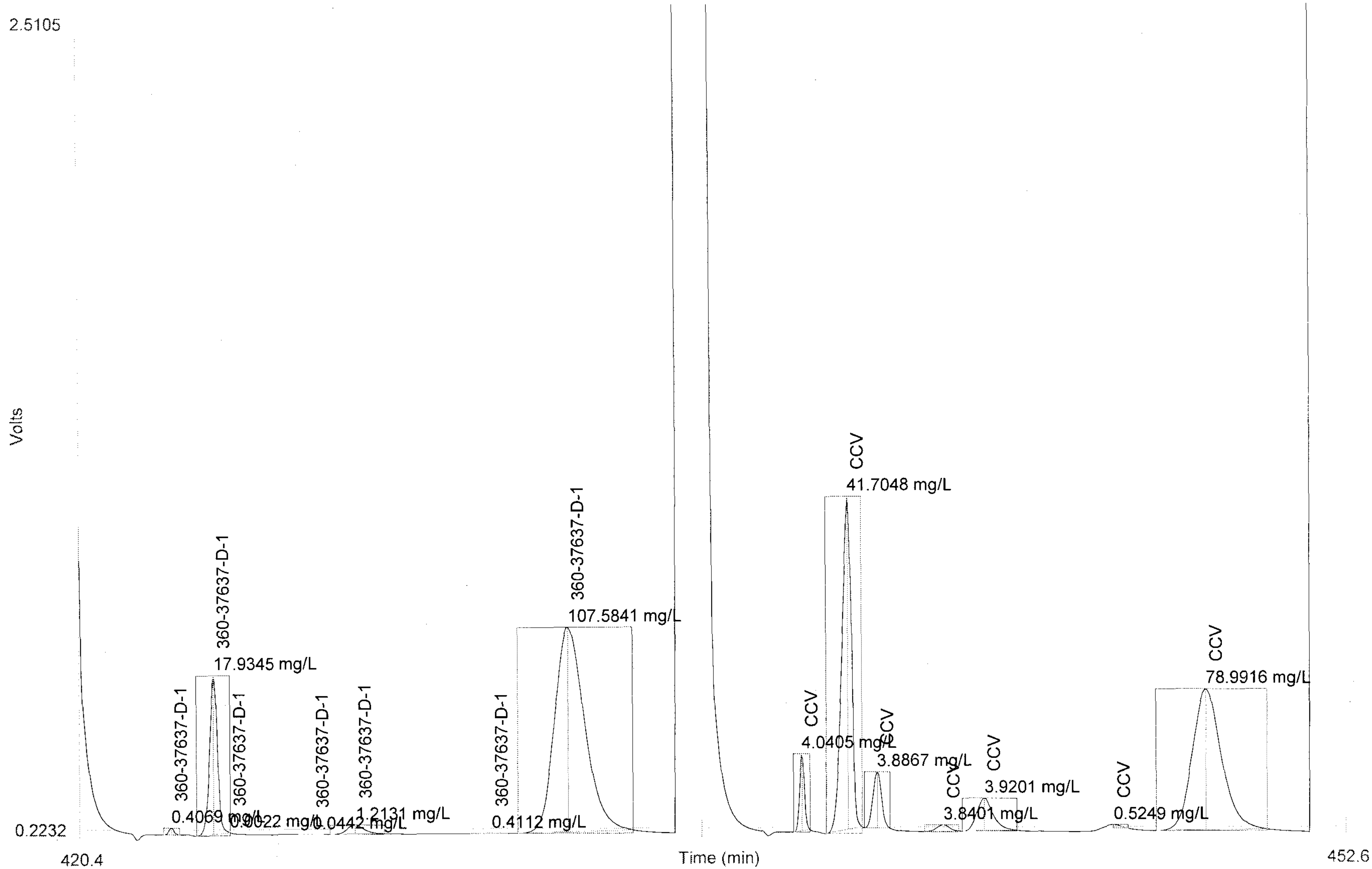
Date : 12/1/2011

Channel 1 (Anions) : Set 14 of 41



Author: EmerichR

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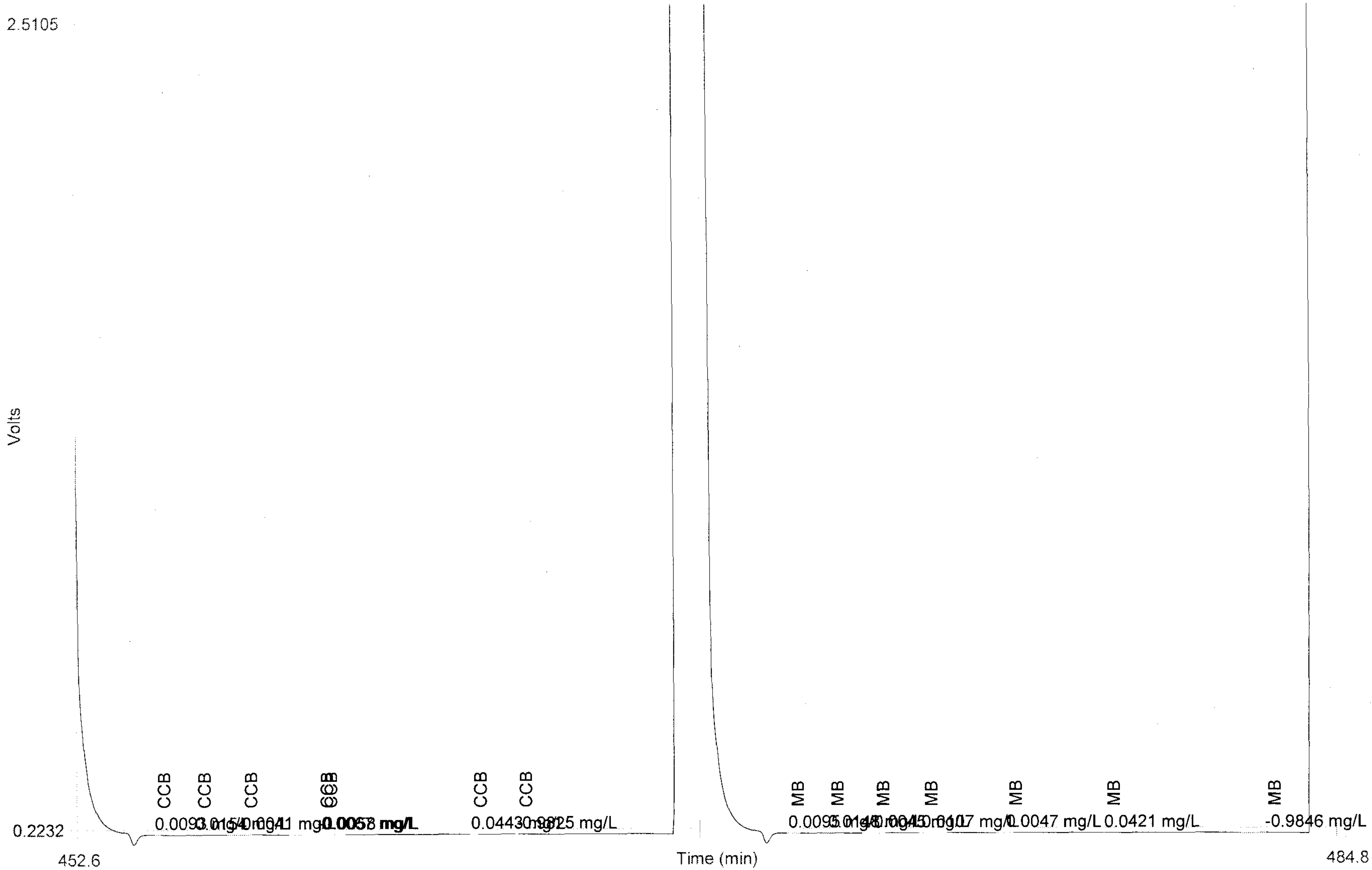
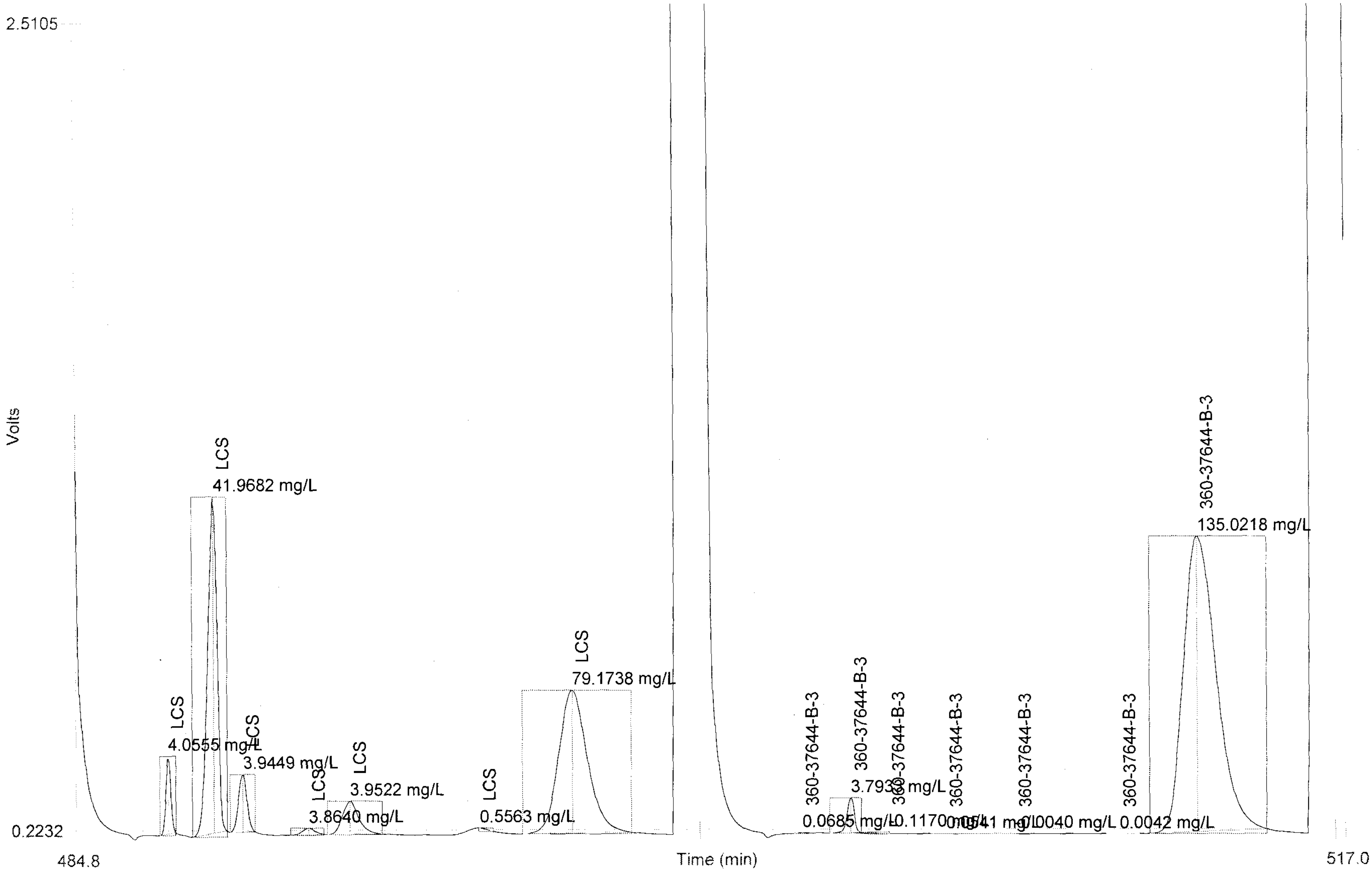
Channel 1 (Anions) : Set 15 of 41



Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 16 of 41



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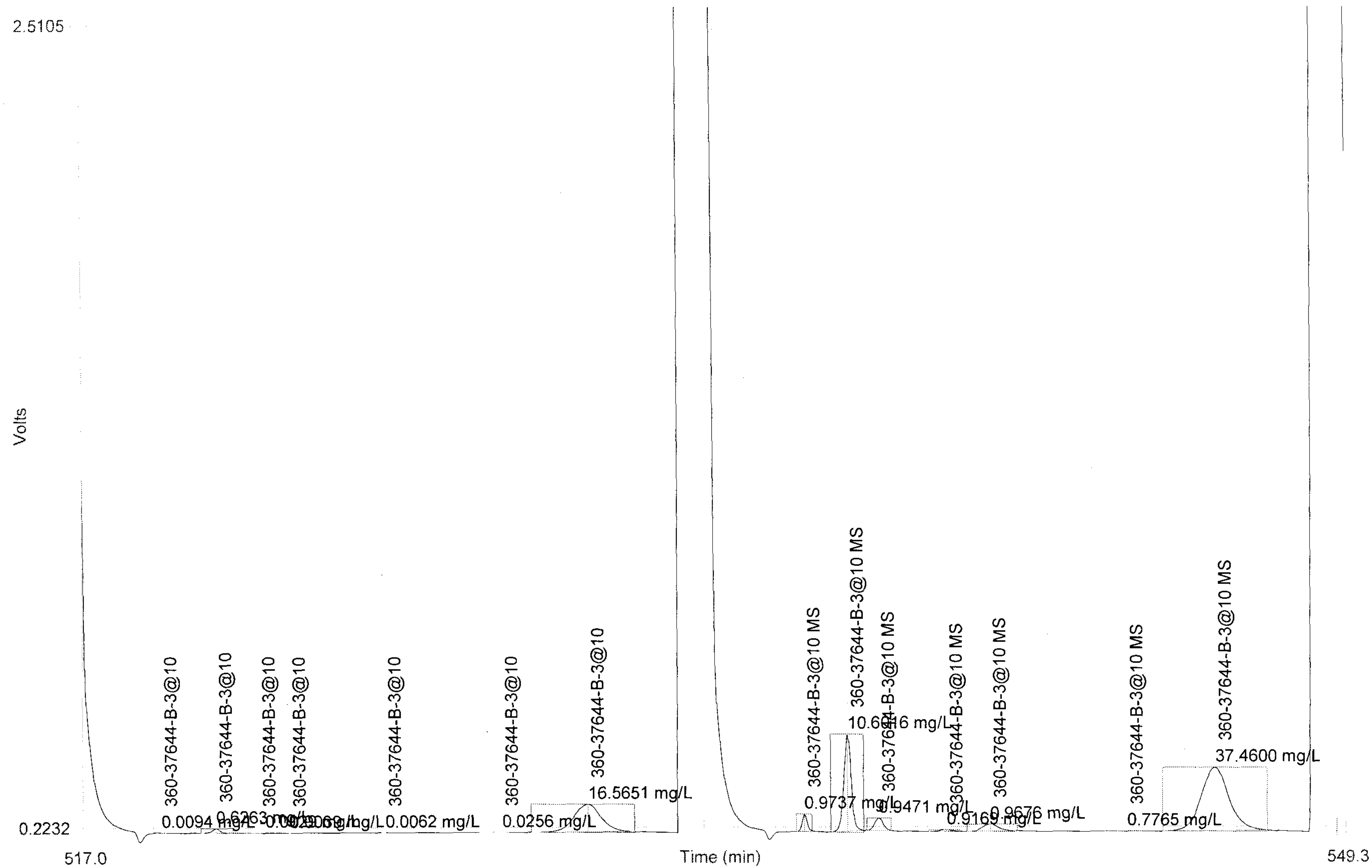
Channel 1 (Anions) : Set 17 of 41



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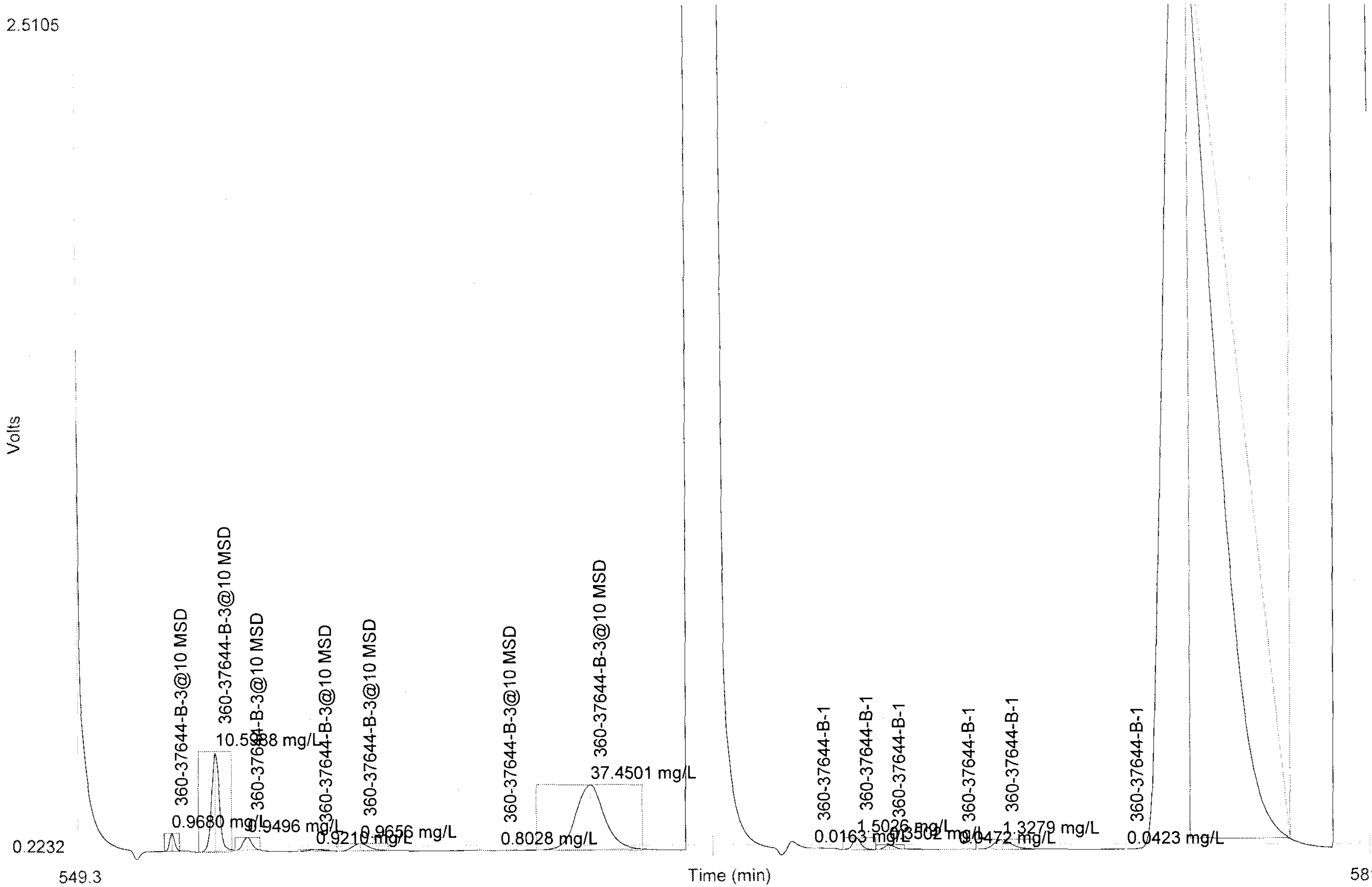
Date : 12/1/2011

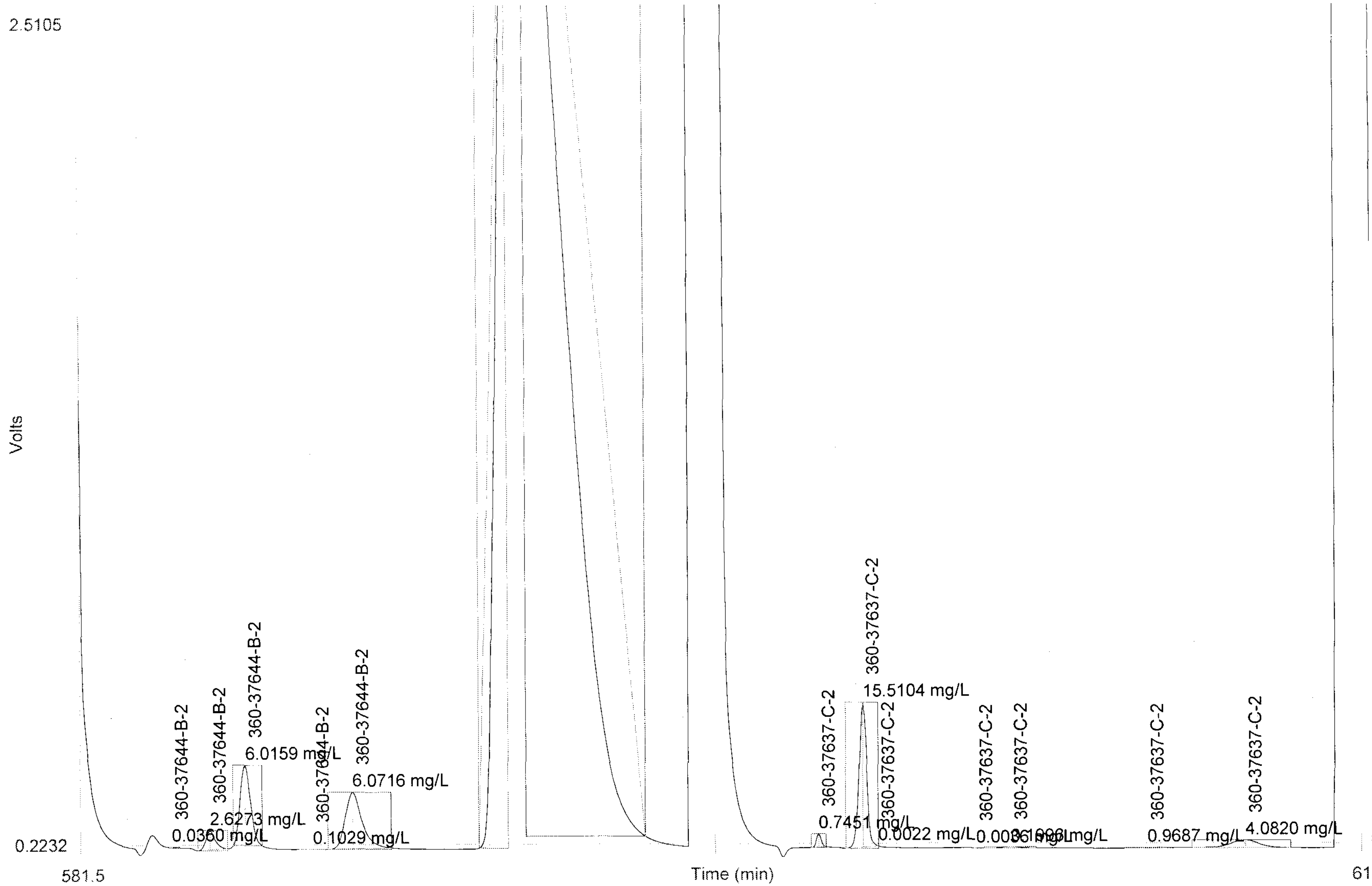
Channel 1 (Anions) : Set 18 of 41



Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 19 of 41



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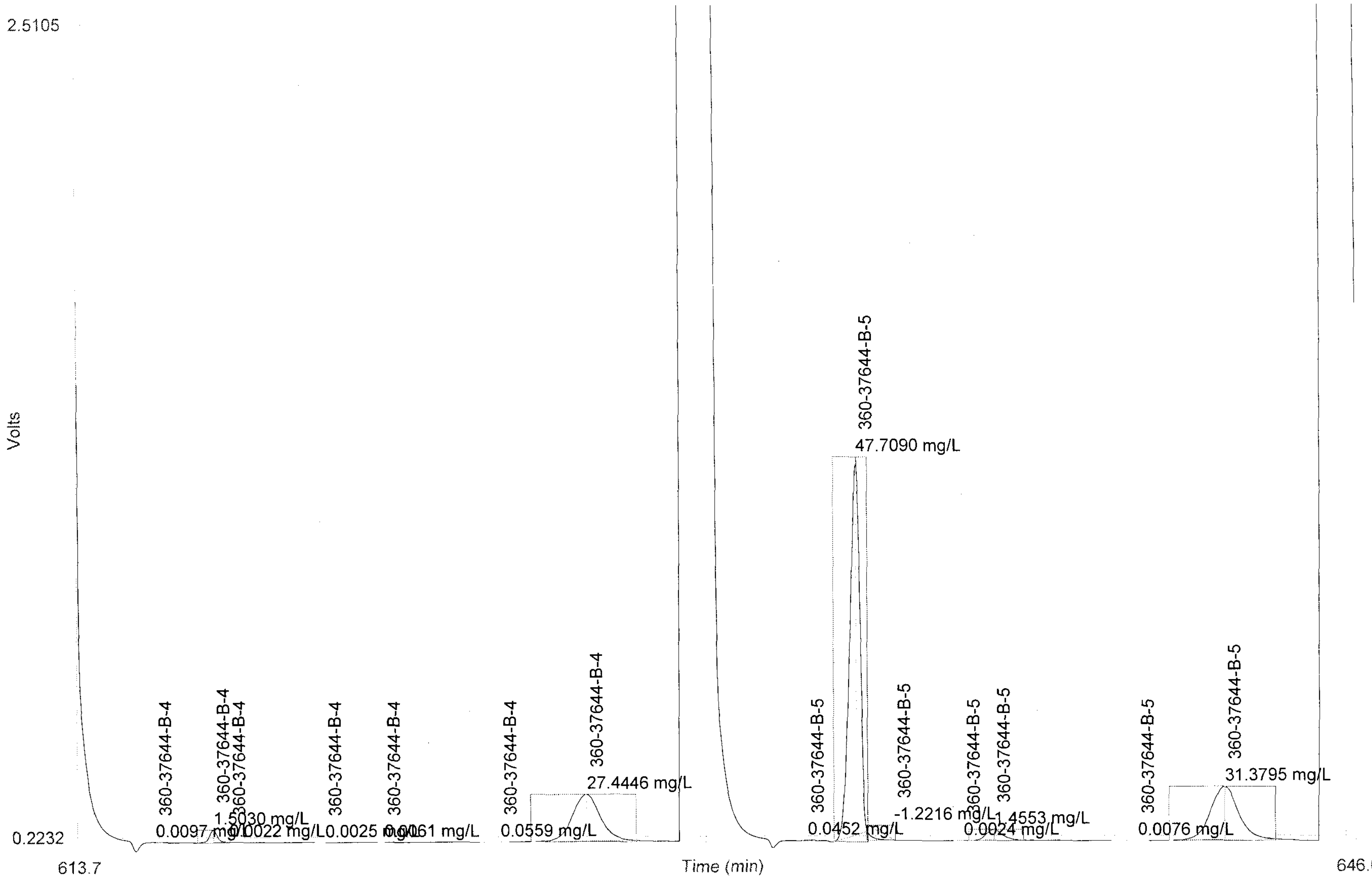
Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 20 of 41



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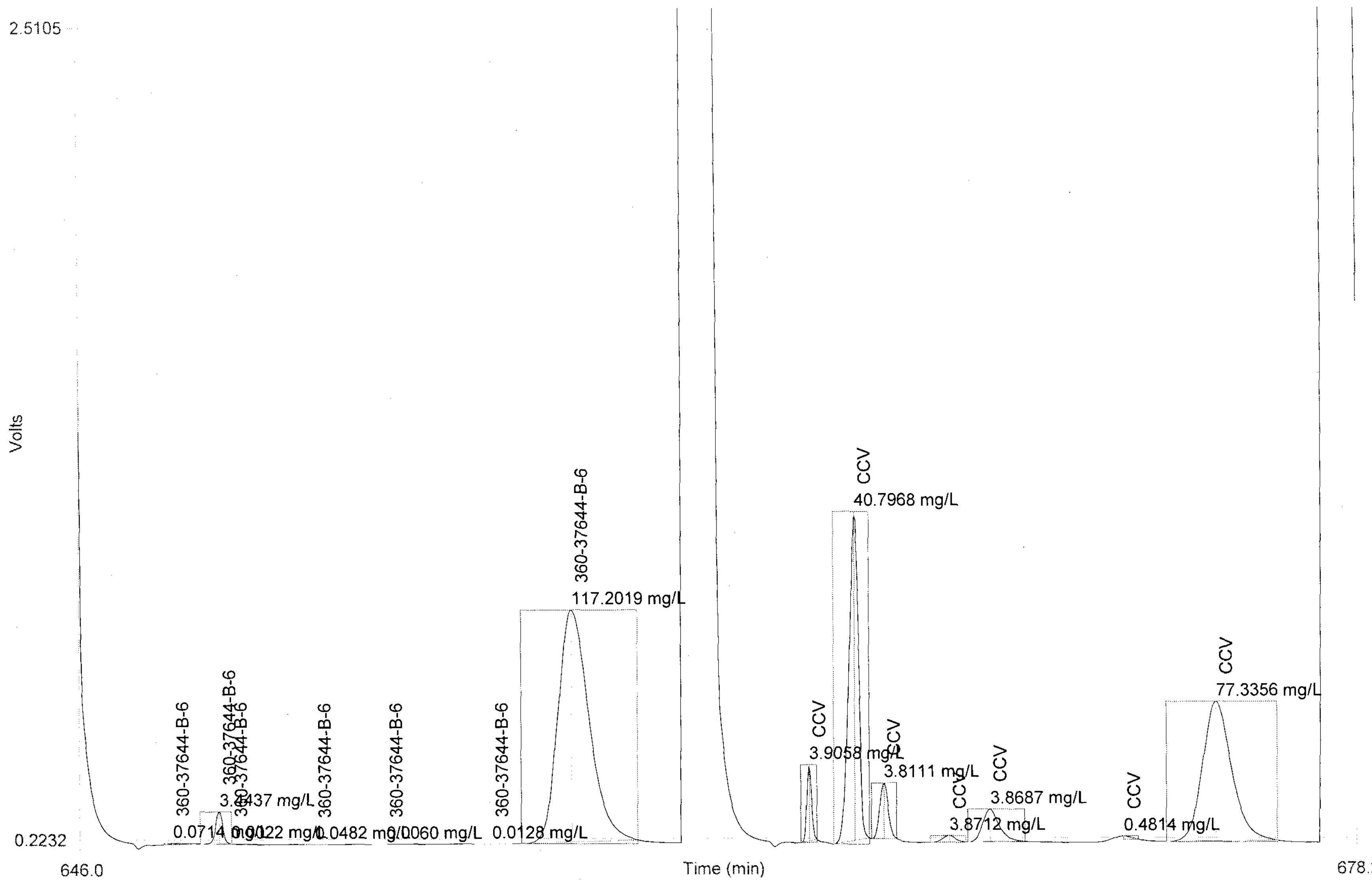
Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 21 of 41



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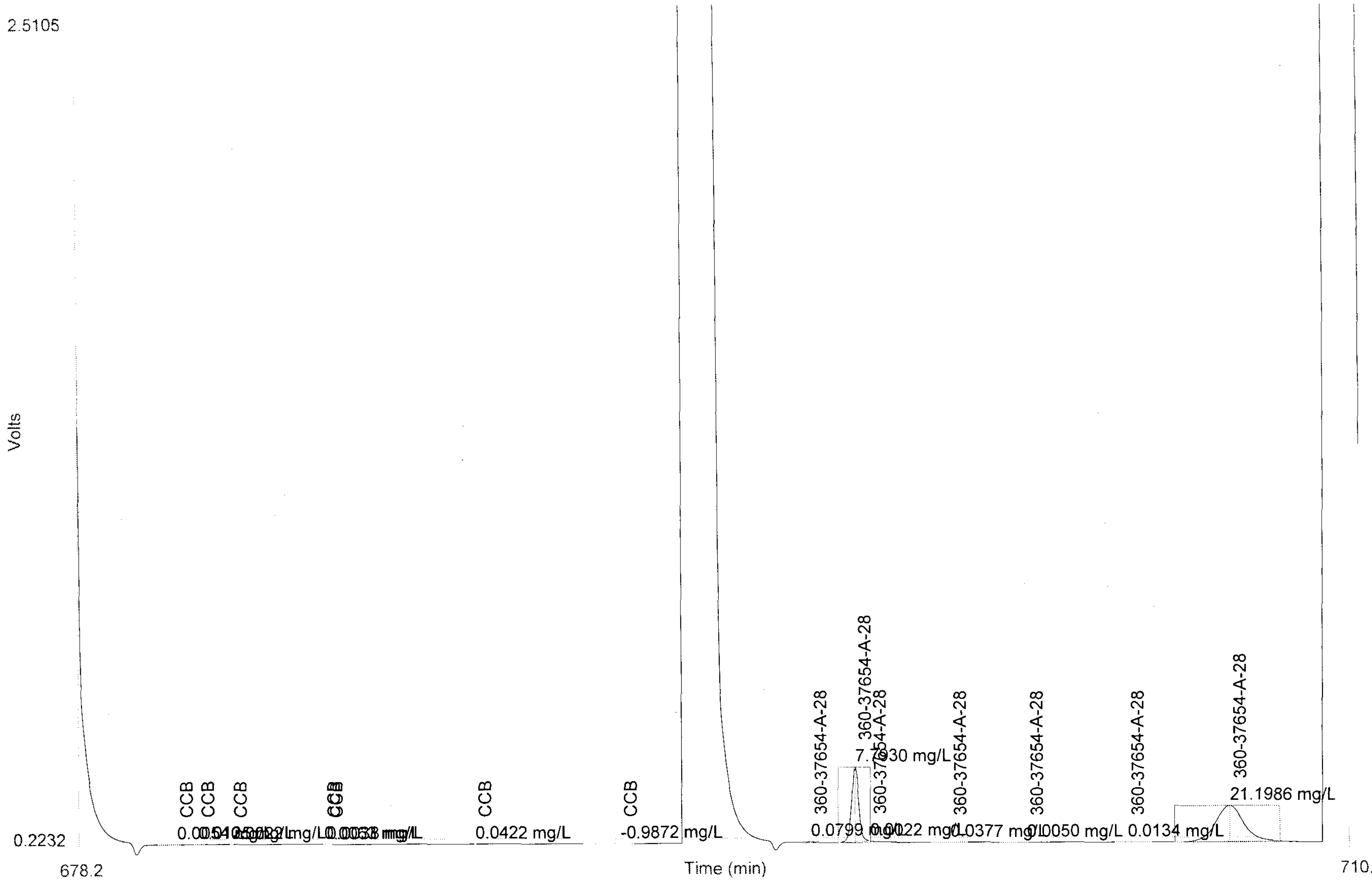
Date : 12/1/2011

Channel 1 (Anions) : Set 22 of 41



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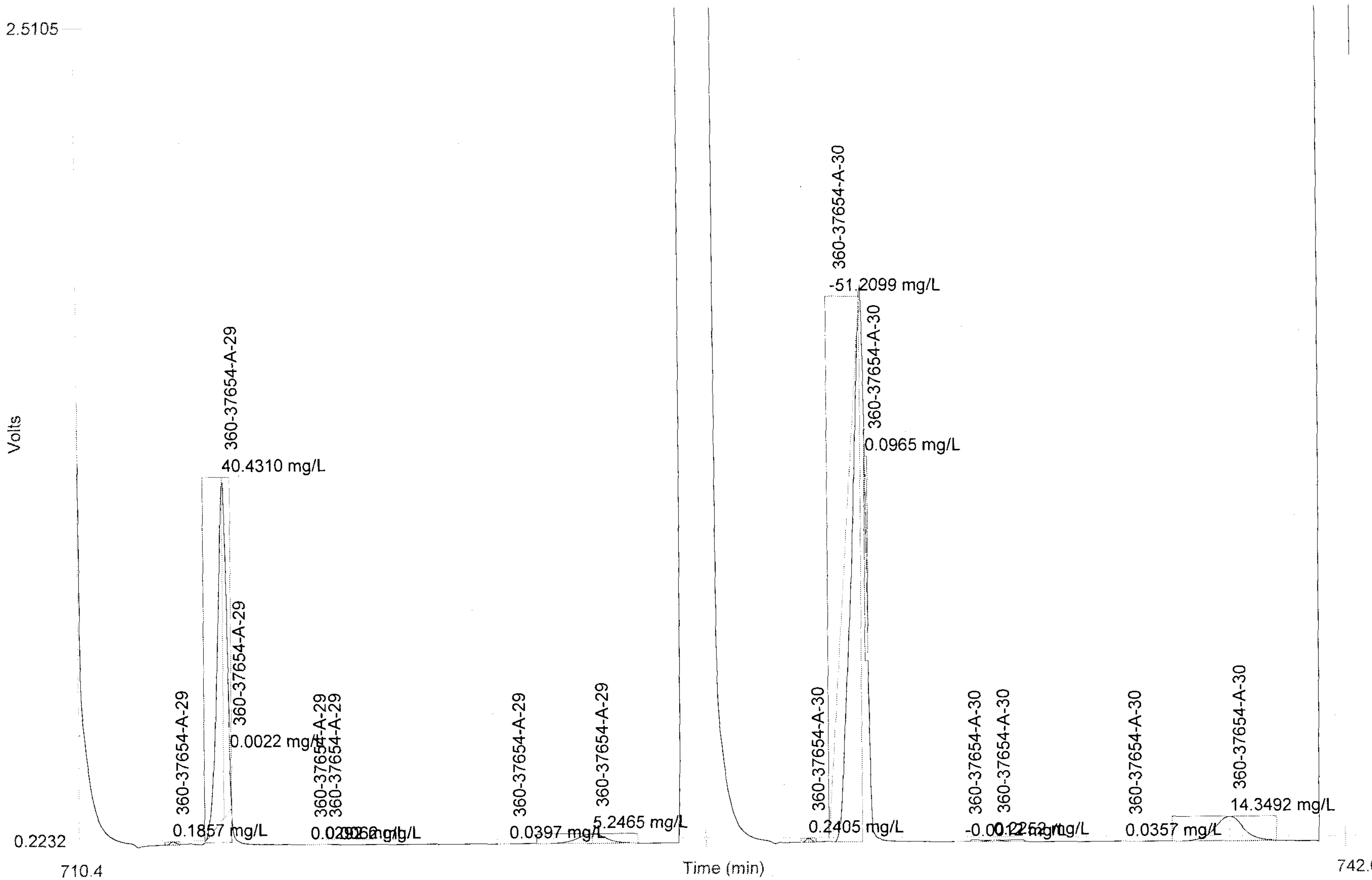
Author: EmerichR

Date : 12/1/2011

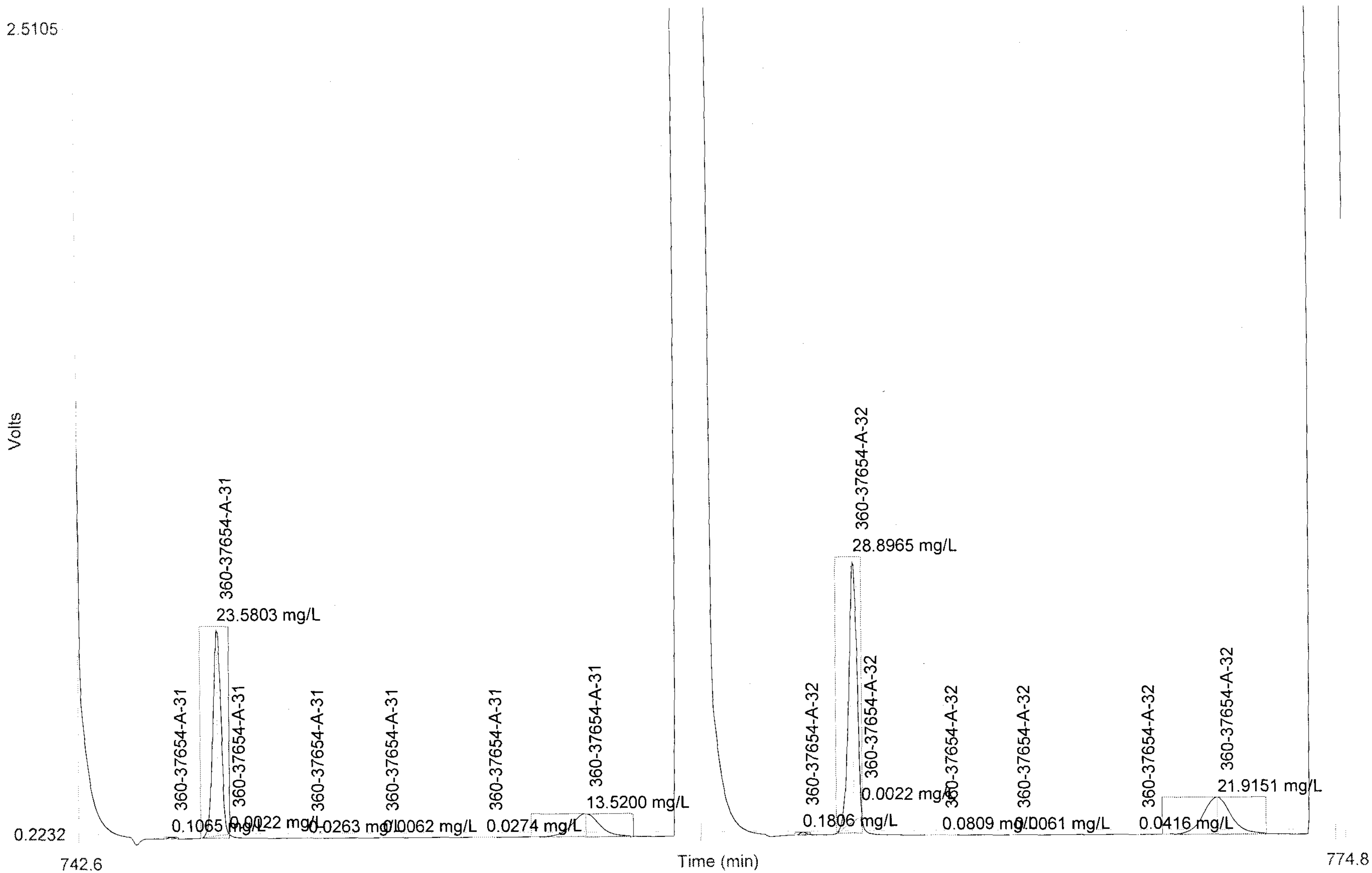
Channel 1 (Anions) : Set 23 of 41



Author: EmerichR

Date : 12/1/2011

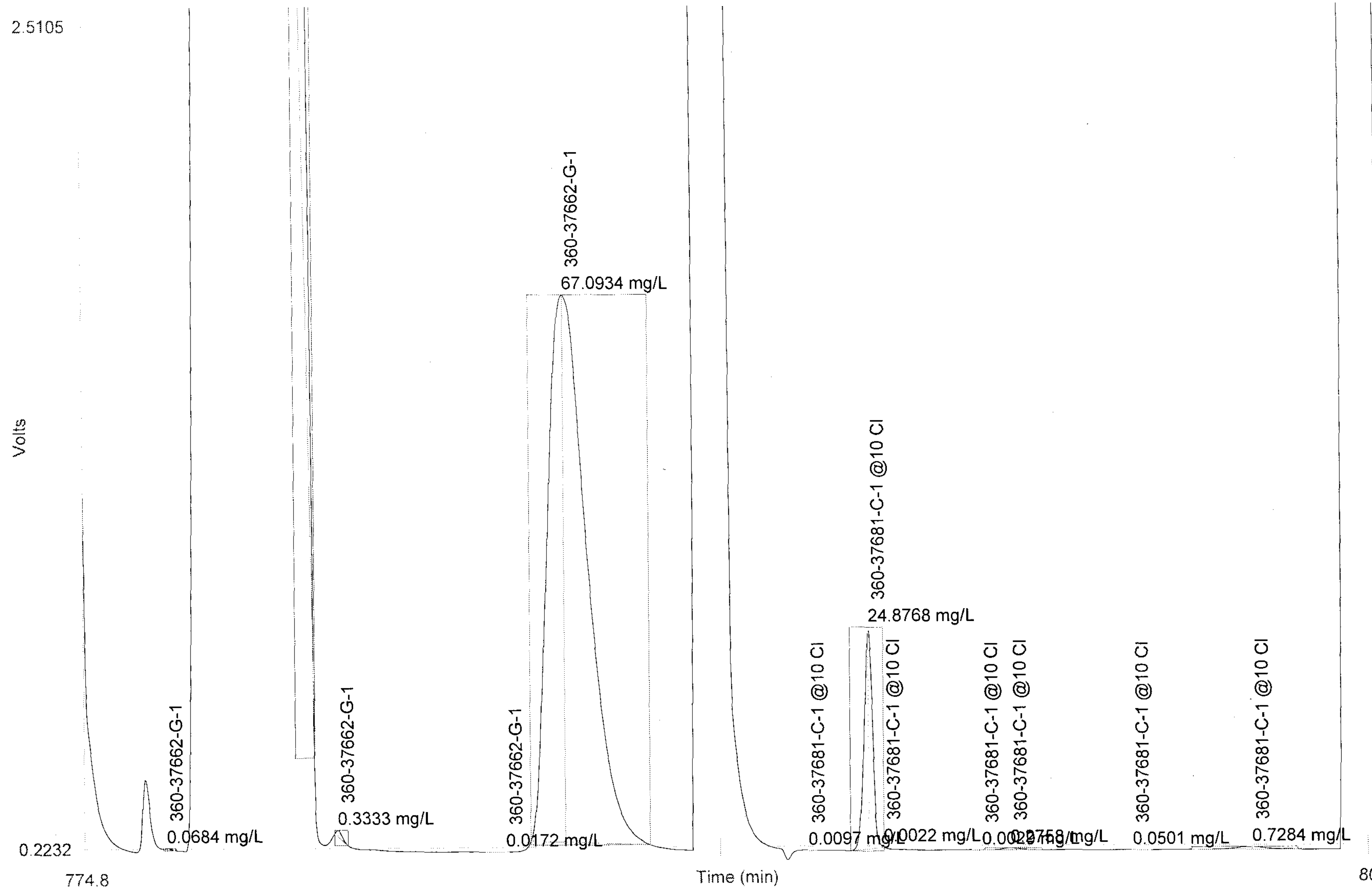
Channel 1 (Anions) : Set 24 of 41



Author: EmerichR

Date : 12/1/2011

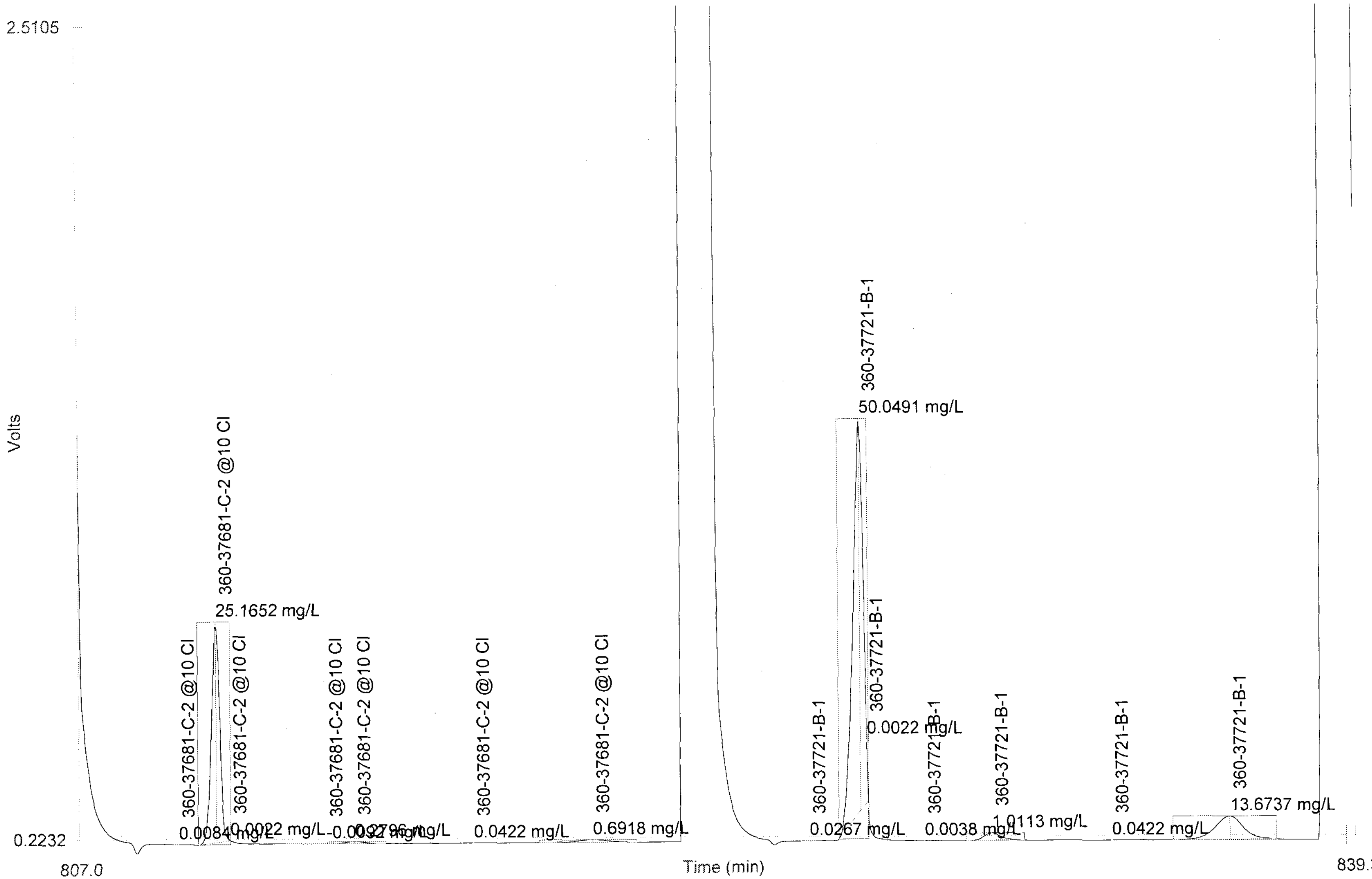
Channel 1 (Anions) : Set 25 of 41



Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 26 of 41



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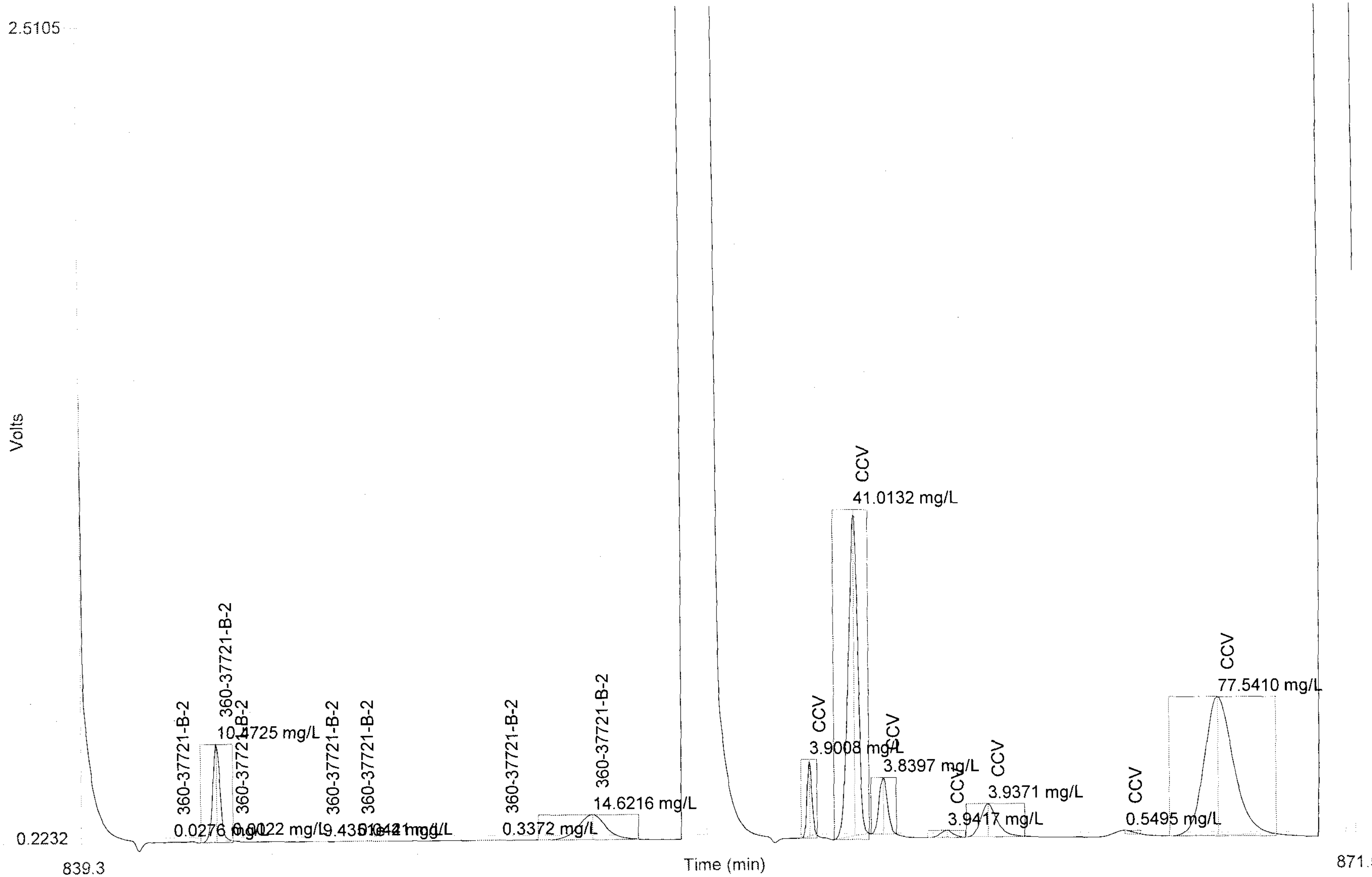
Date : 12/1/2011

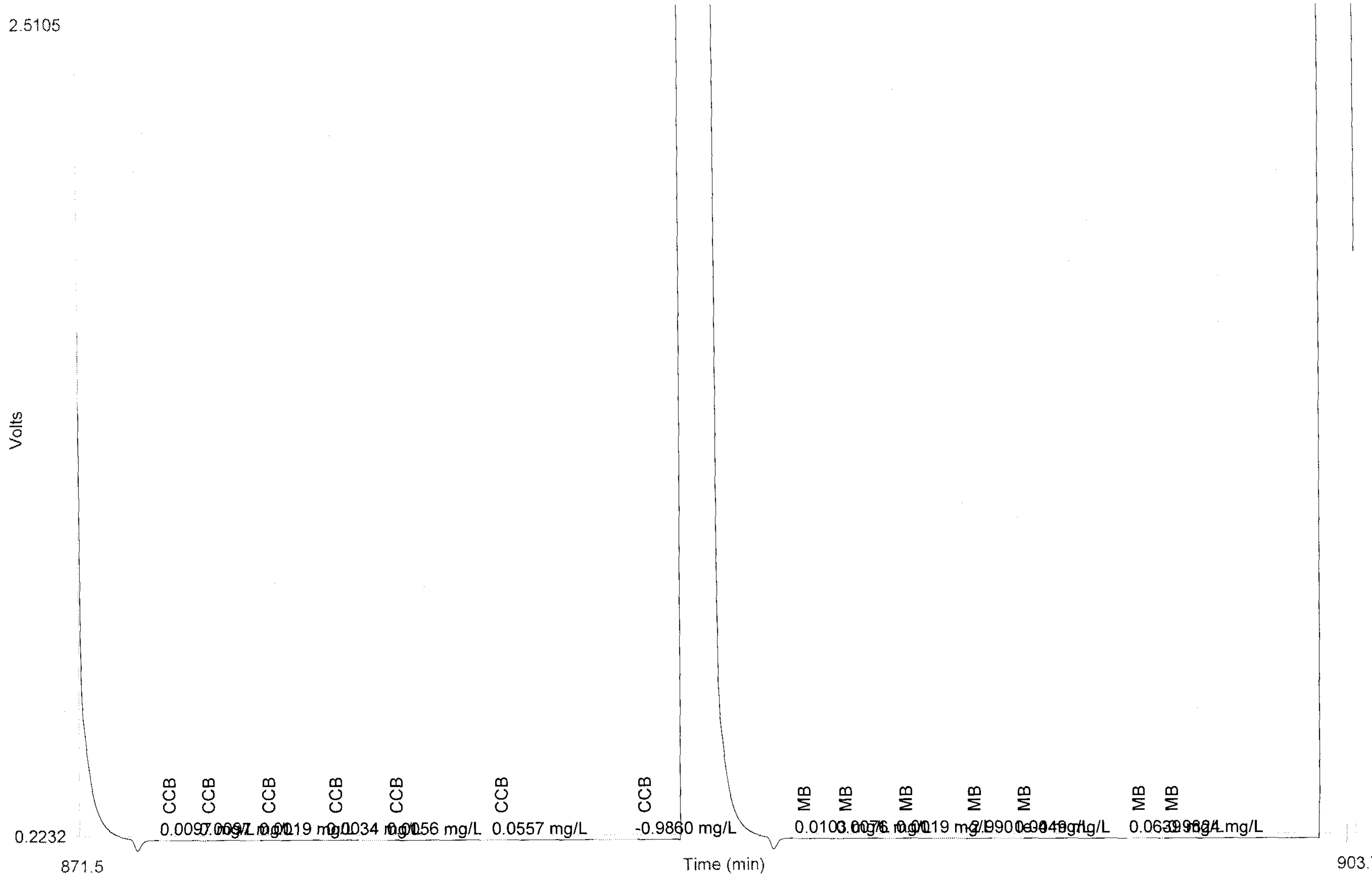
Channel 1 (Anions) : Set 27 of 41



Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 28 of 41



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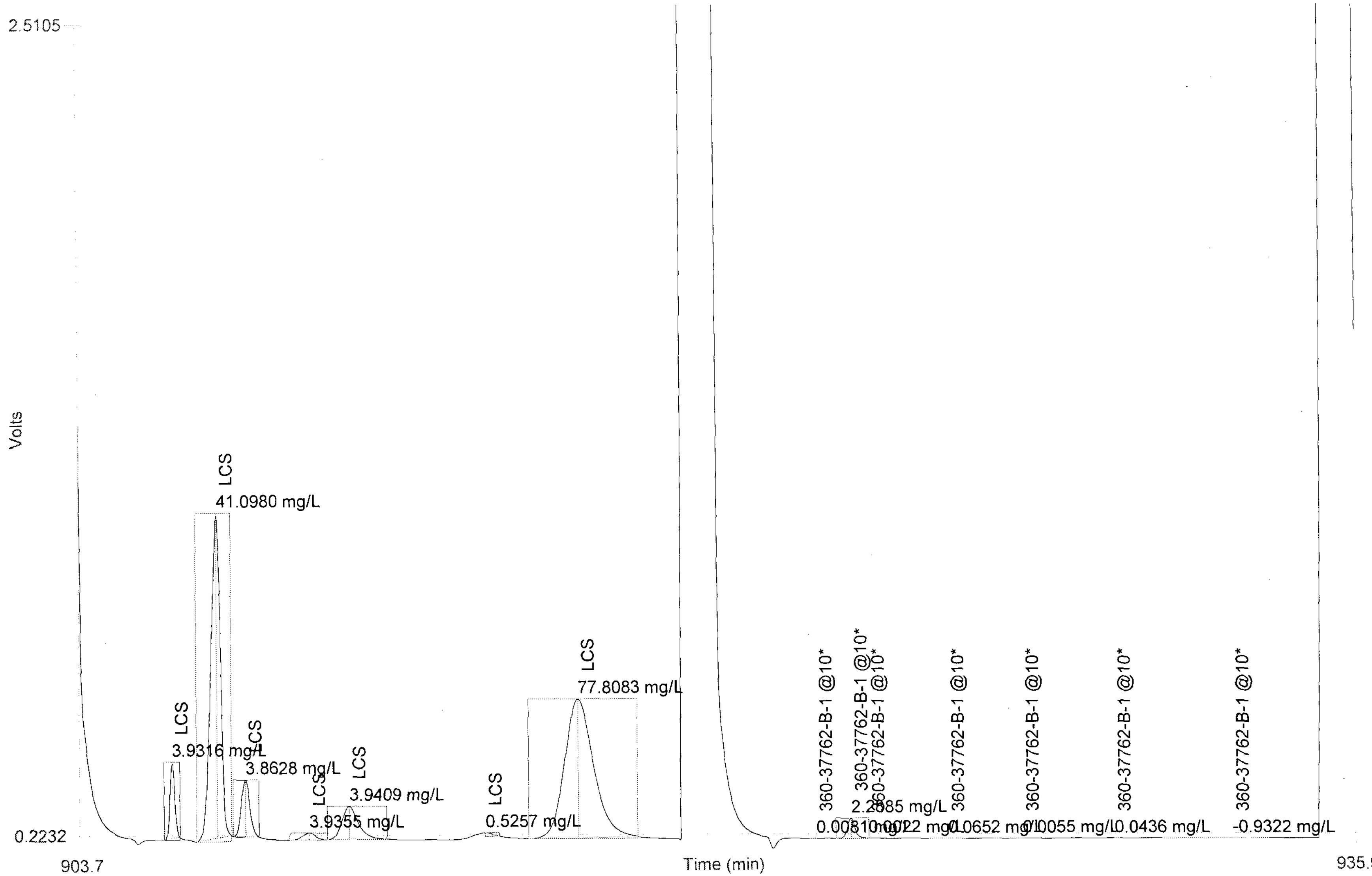
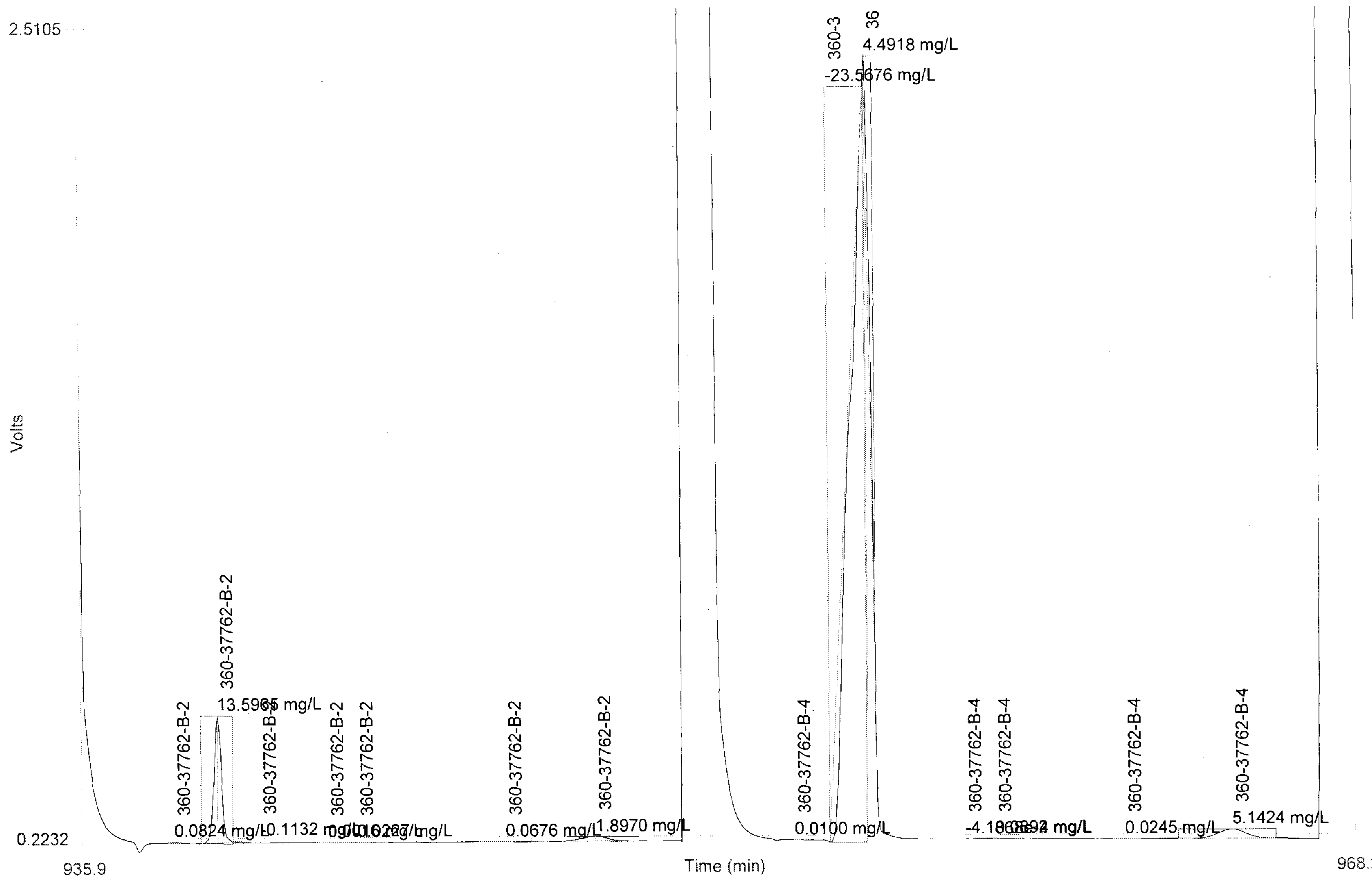
Channel 1 (Anions) : Set 29 of 41



Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 30 of 41



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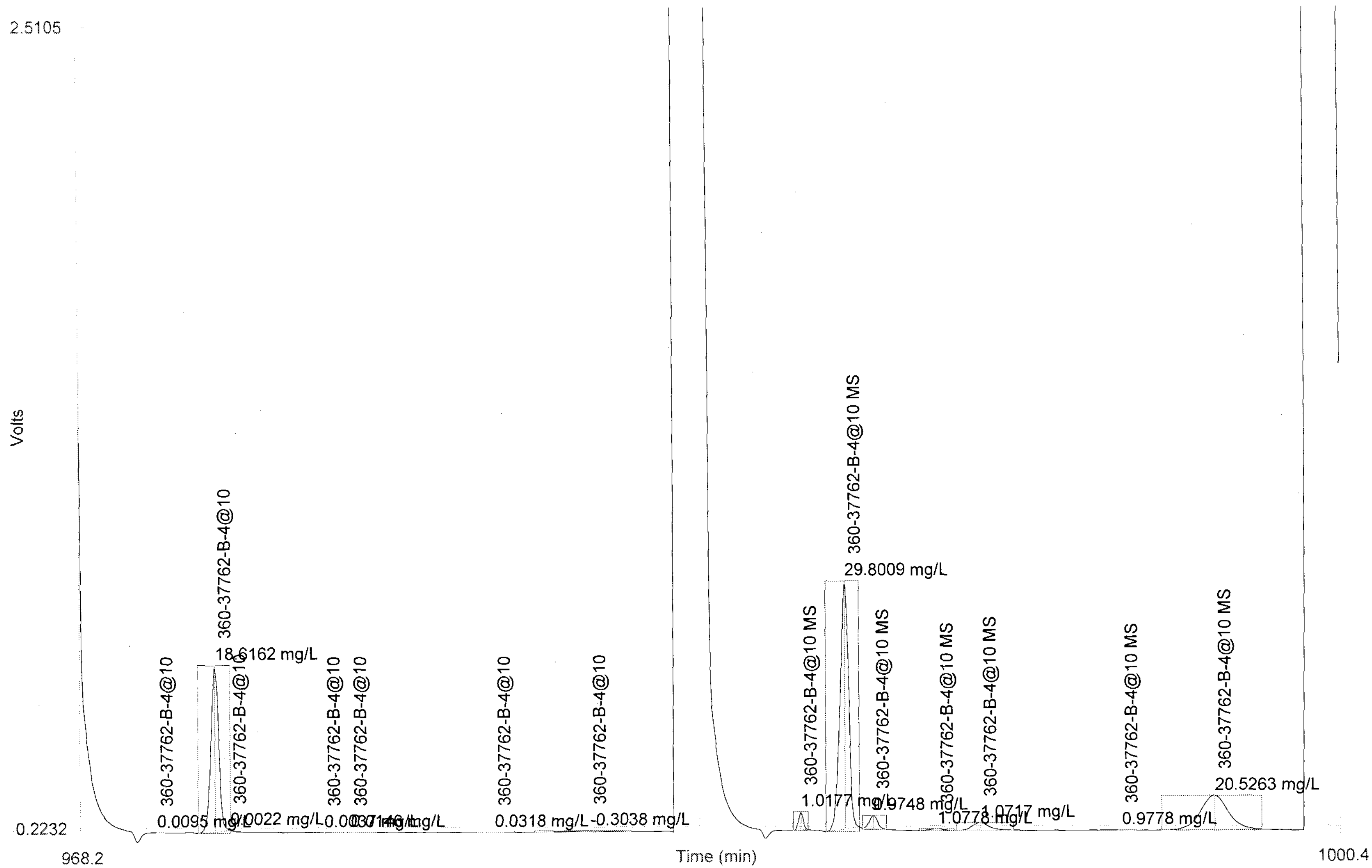
Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 31 of 41



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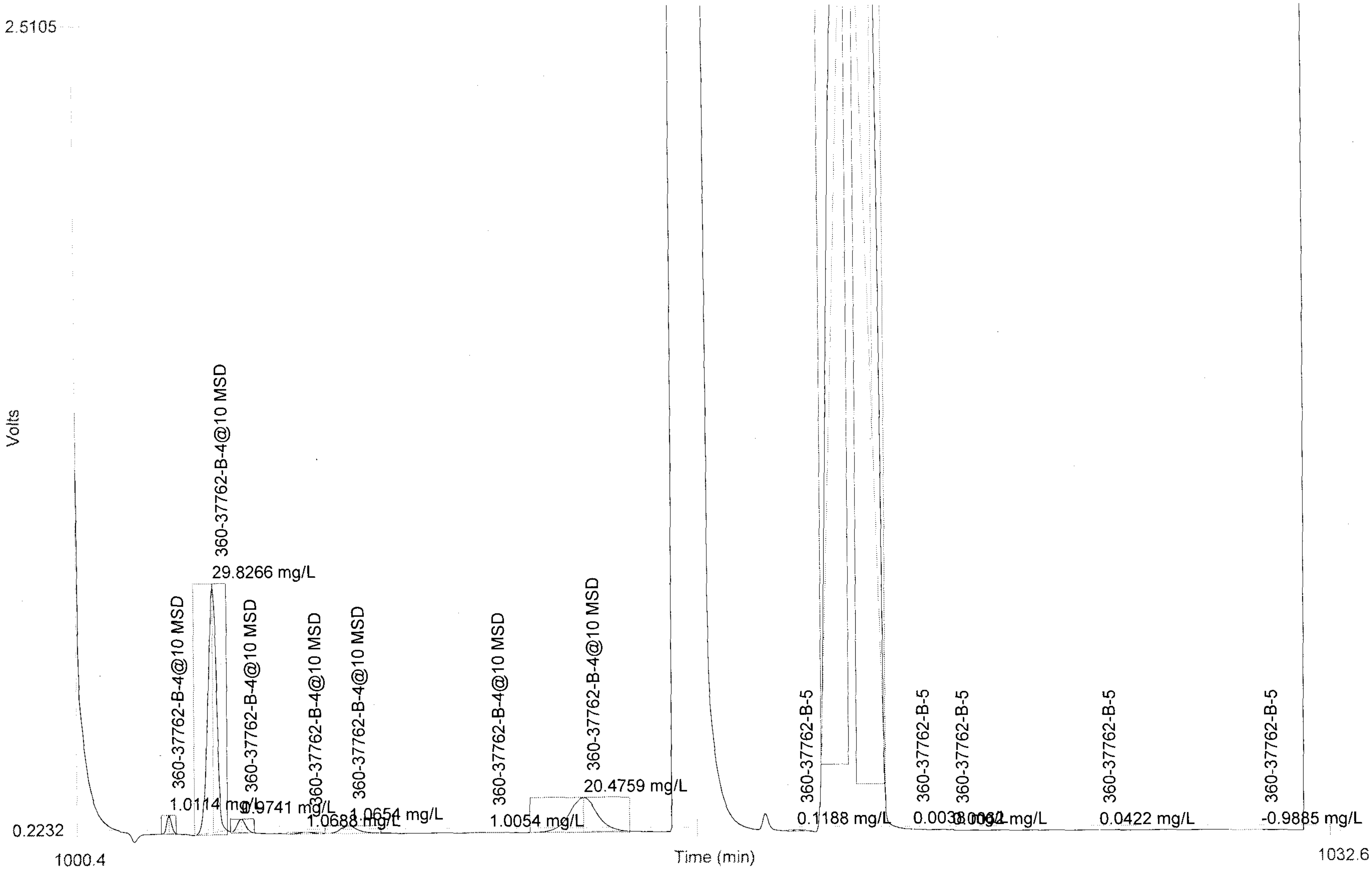
Author: EmerichR

Date : 12/1/2011

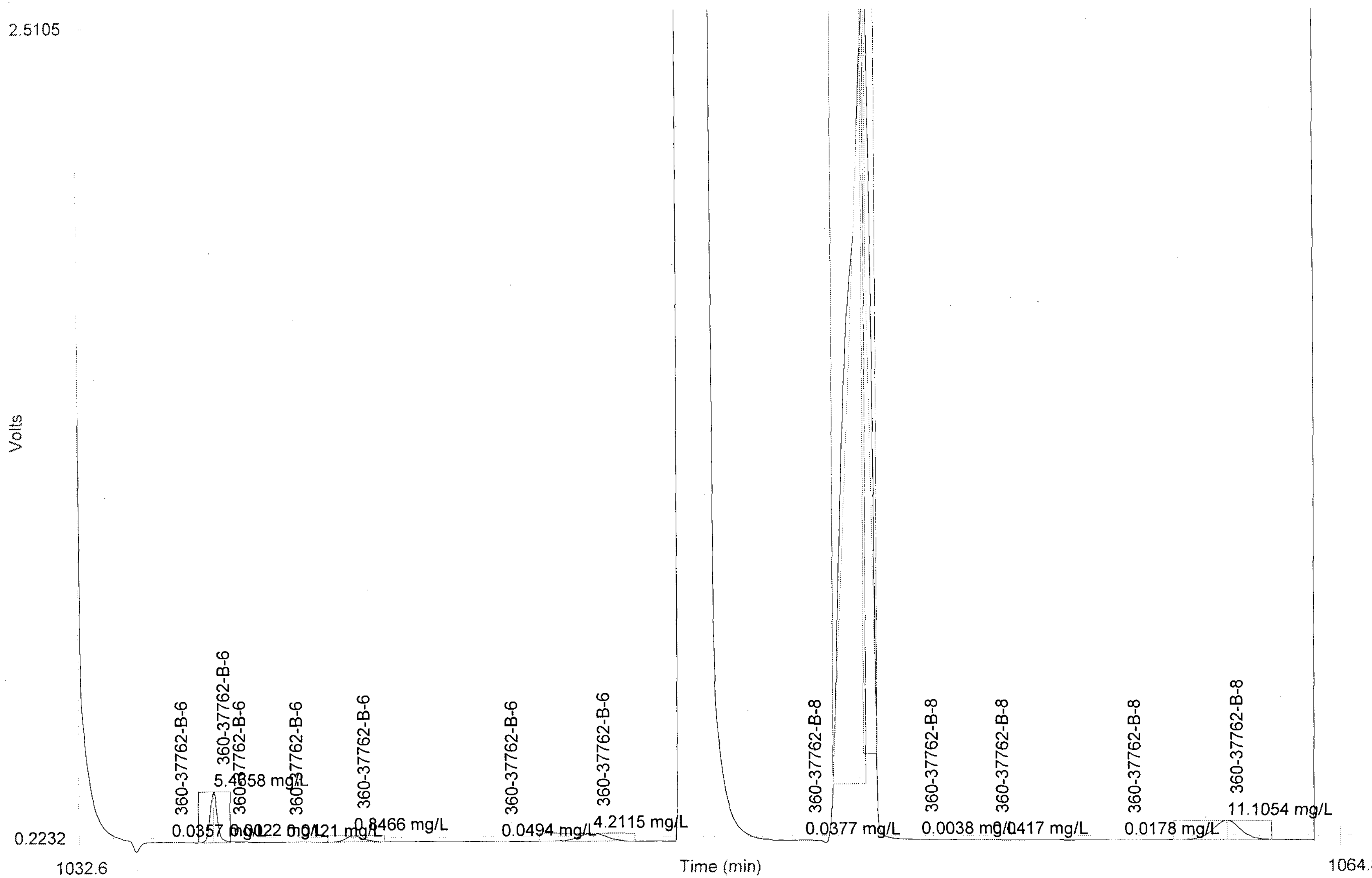
Channel 1 (Anions) : Set 32 of 41



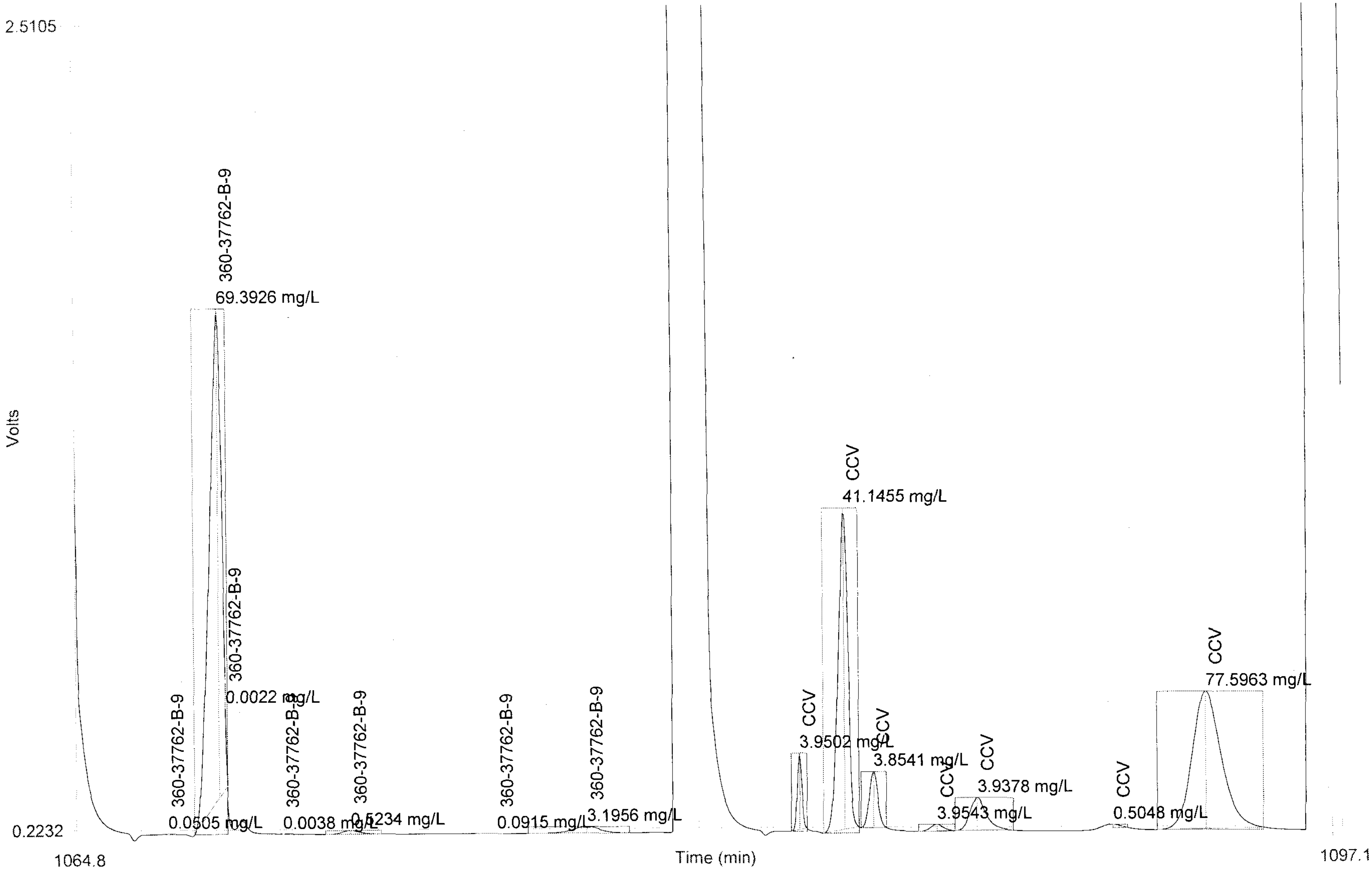
Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 33 of 41



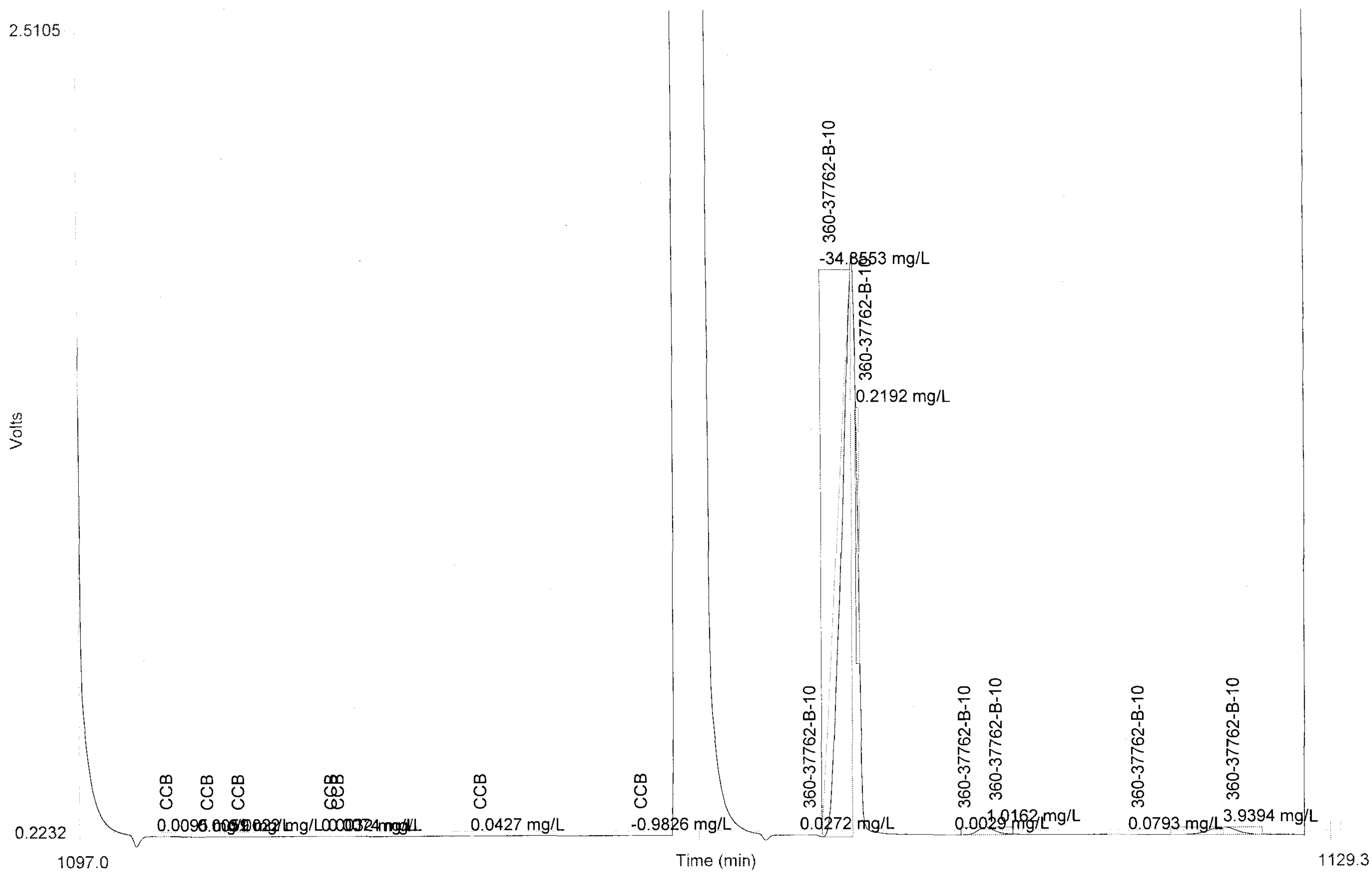
Channel 1 (Anions) : Set 34 of 41



Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 35 of 41

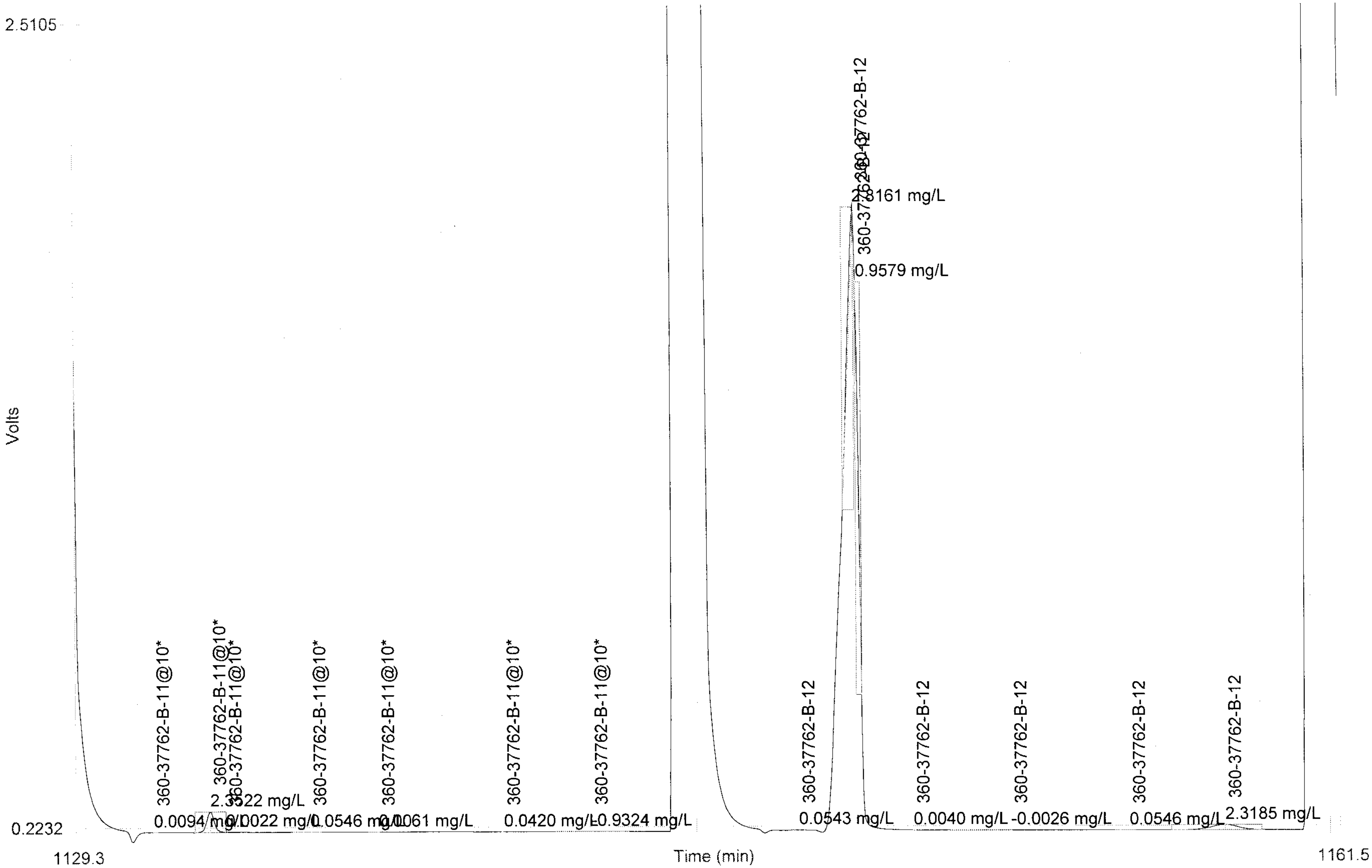


- 38 -

Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 36 of 41

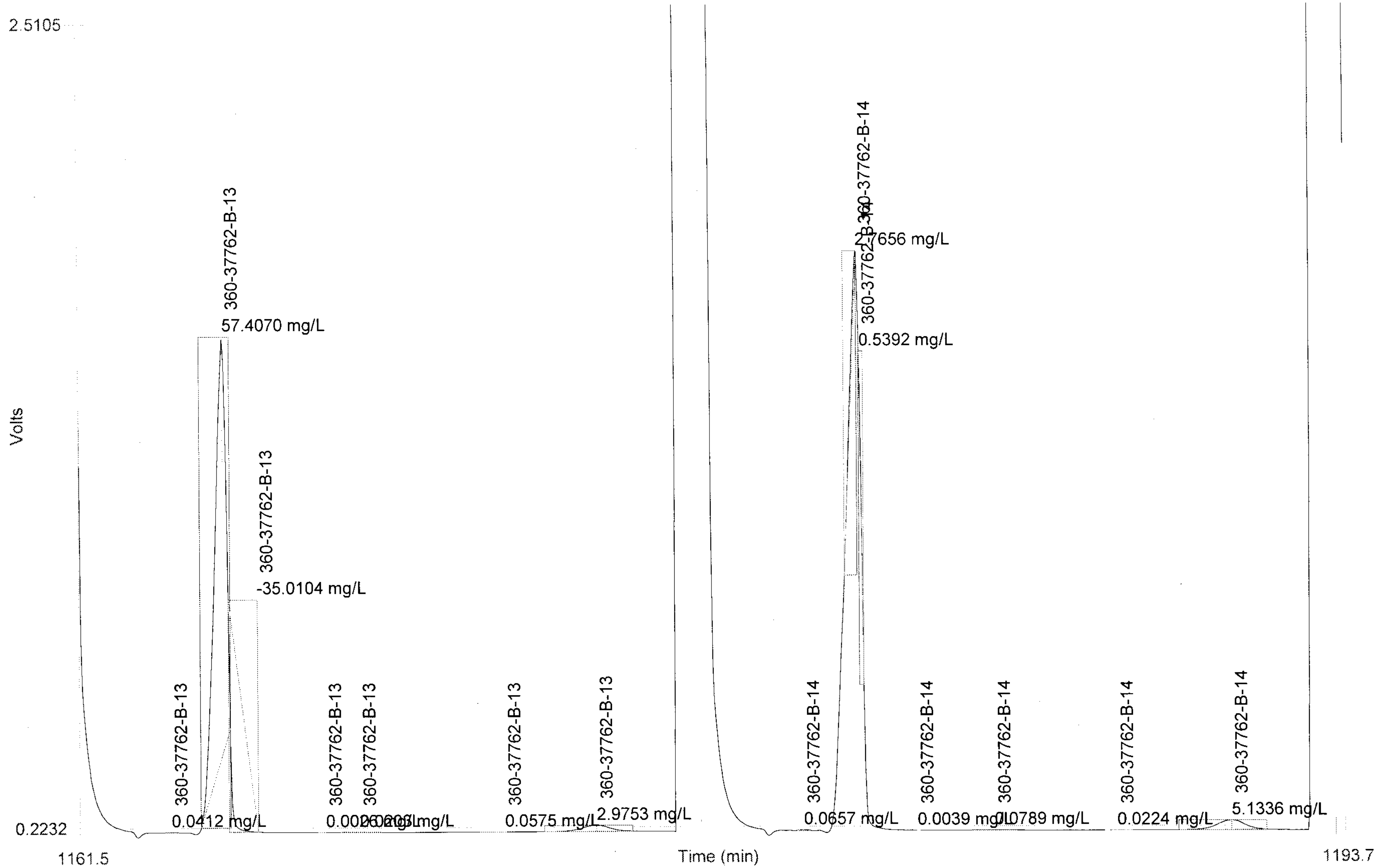


- 39 -

Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 37 of 41

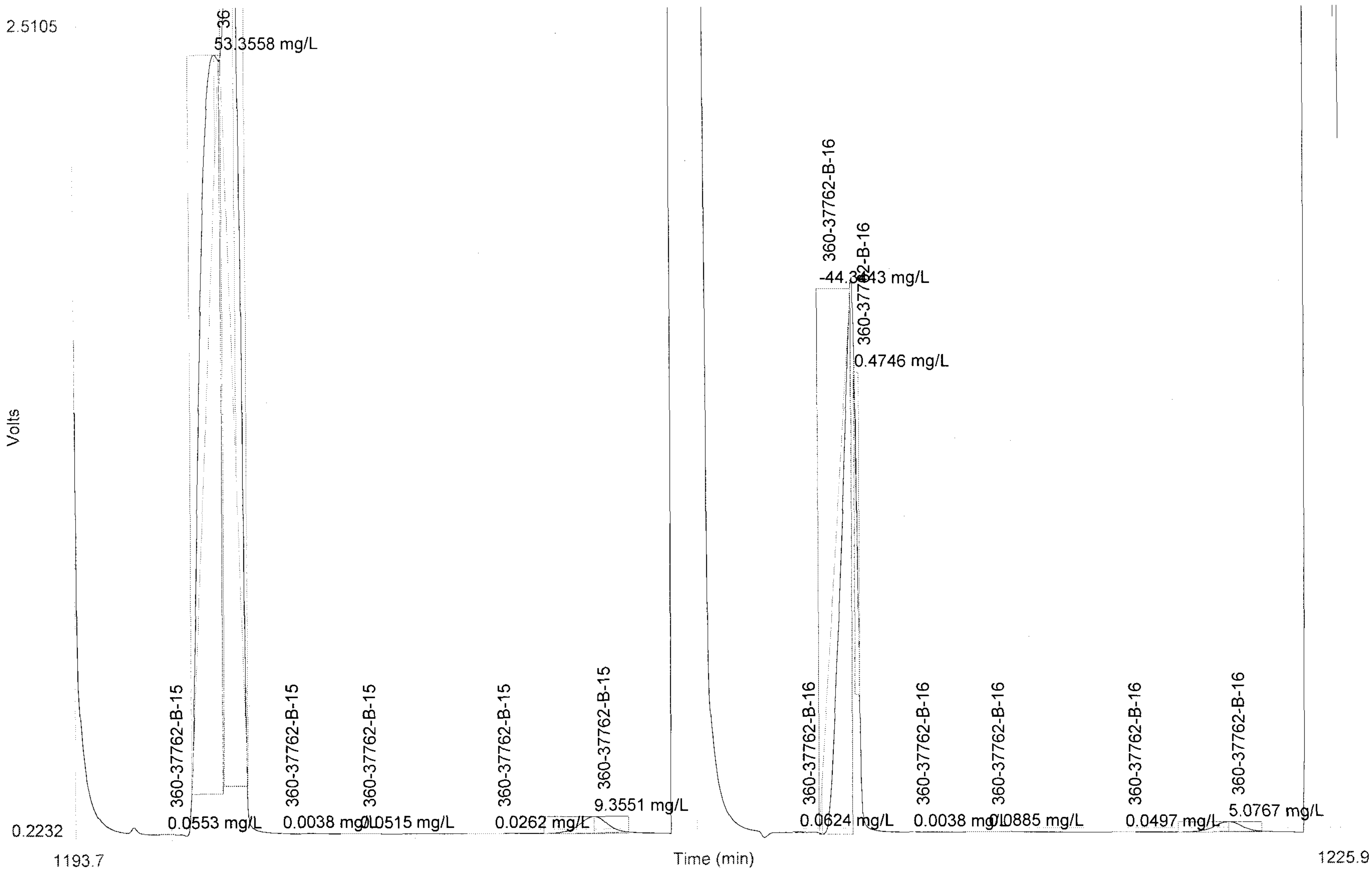


- 40 -

Author: EmerichR

Date : 12/1/2011

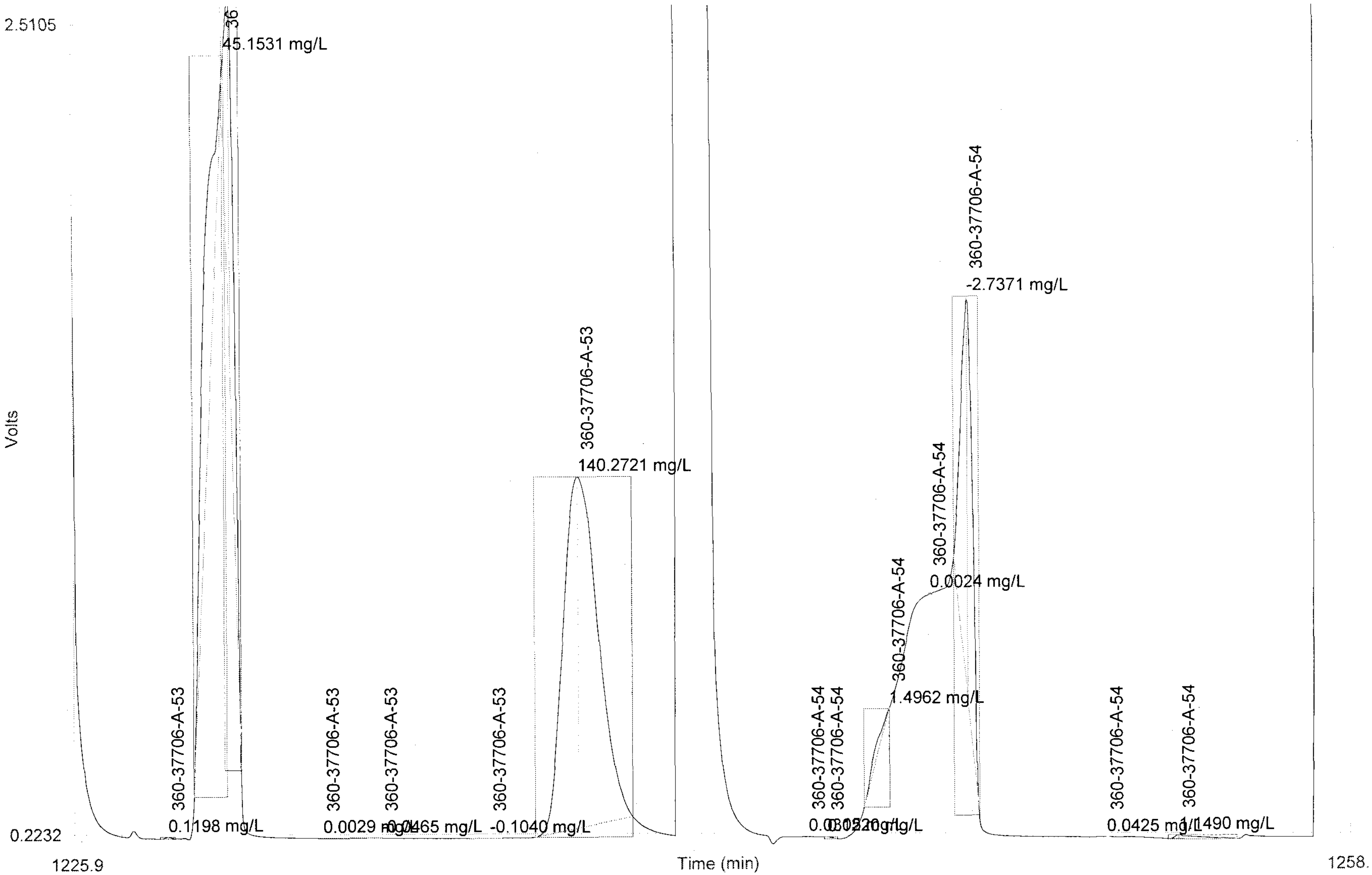
Channel 1 (Anions) : Set 38 of 41



Author: EmerichR

Date : 12/1/2011

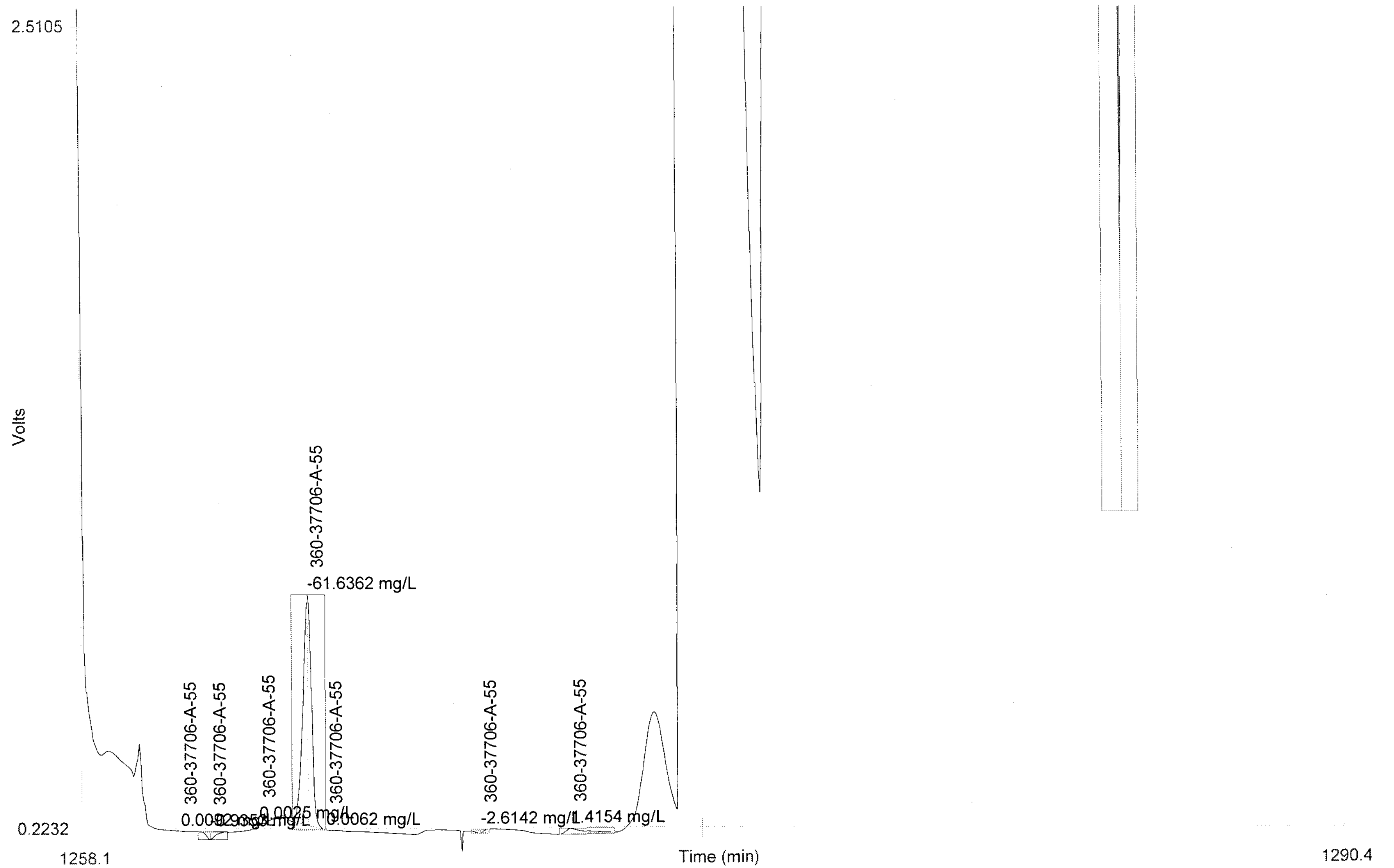
Channel 1 (Anions) : Set 39 of 41



Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 40 of 41



Author: EmerichR

Date : 12/1/2011

Channel 1 (Anions) : Set 41 of 41

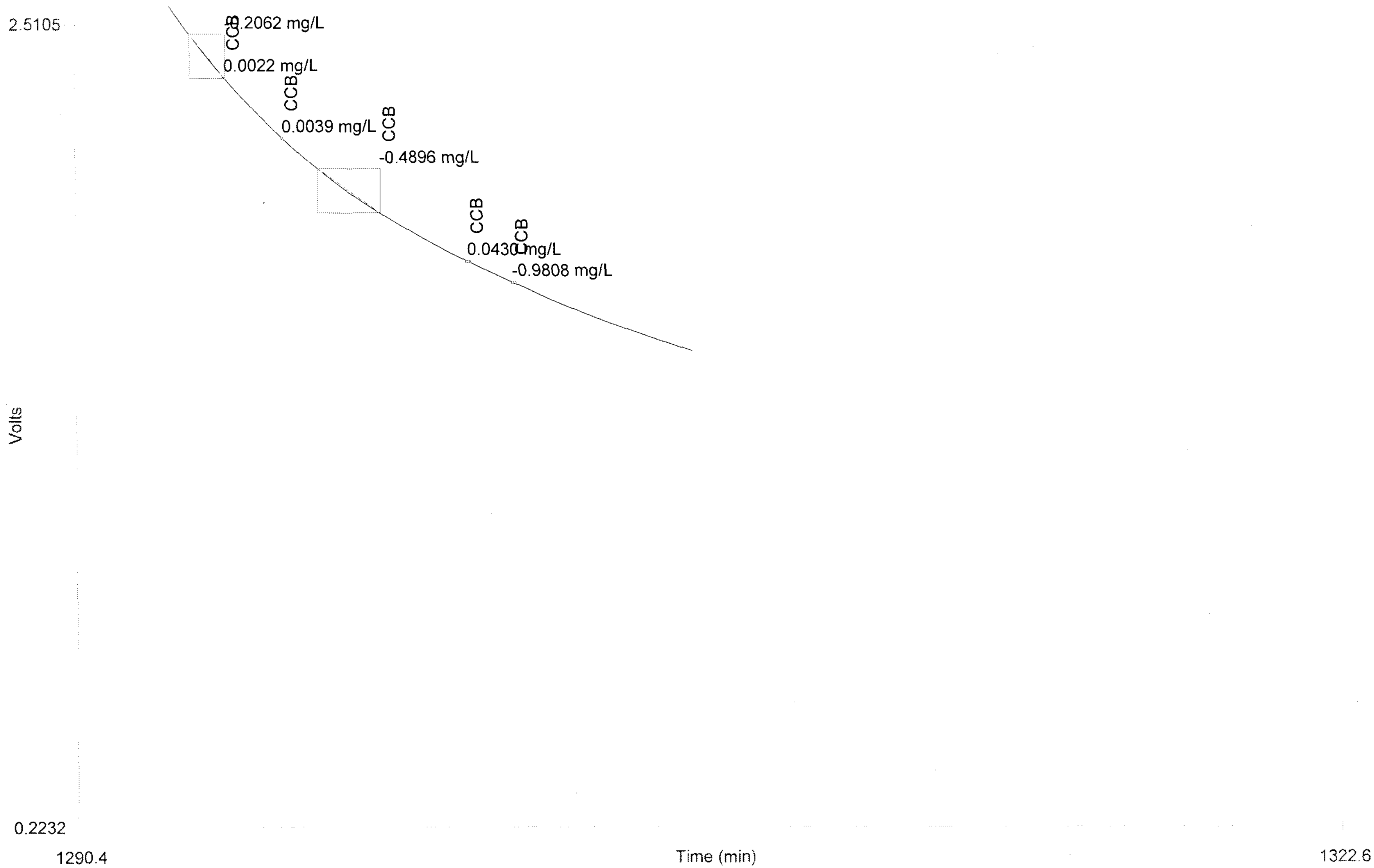
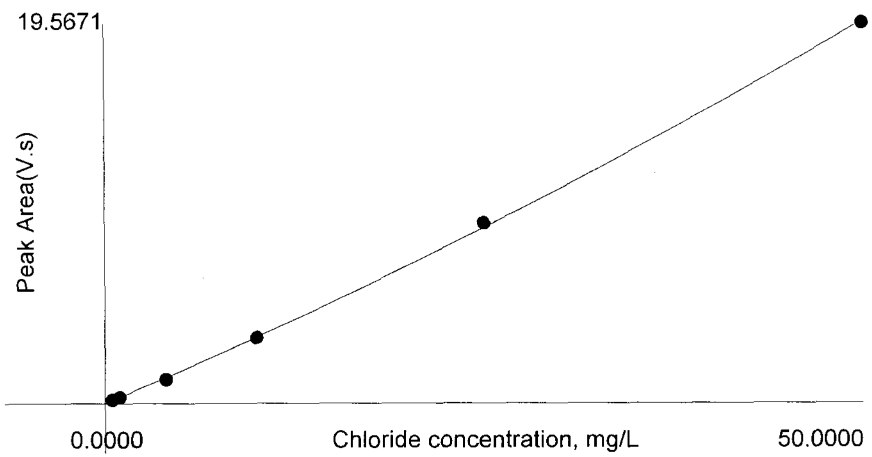


Table 1: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	19.5671	1.3052	0.5	11/15/2011	2:32:05 PM
2	25.0000	1	9.2472	0.8077	-2.6	11/15/2011	2:48:13 PM
3	10.0000	1	3.3710	0.3697	1.0	11/15/2011	3:04:20 PM
4	4.0000	1	1.2235	0.1456	7.7	11/15/2011	3:20:28 PM
5	1.0000	1	0.3080	0.0351	4.1	11/15/2011	3:36:35 PM
6	0.5000	1	0.1732	0.0187	-11.1	11/15/2011	3:52:42 PM

Figure 1: Chloride



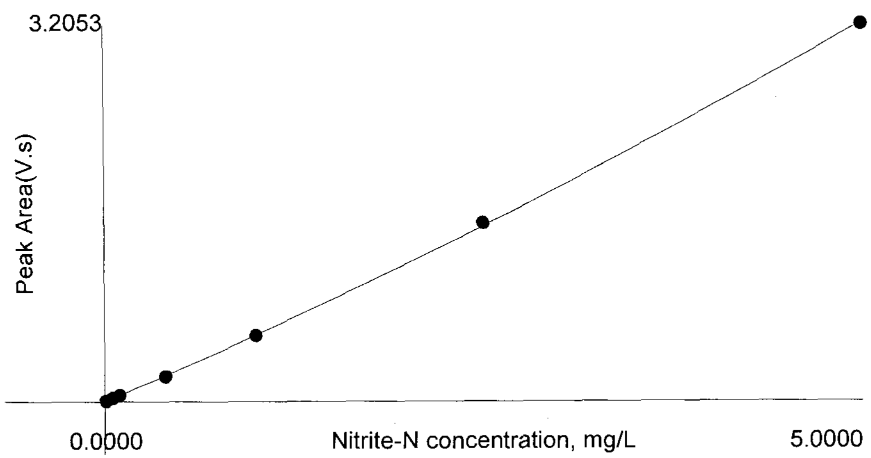
Area = 0.0013 * Conc^2 + 0.3283 * Conc - 0.0085
Conc = - 0.0226 * Area^2 + 2.9826 * Area + 0.0435
Correlation Coefficient (r) = 0.99997

1/x weighting

Table 2: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.2053	0.3249	0.4	11/15/2011	2:32:05 PM
2	2.5000	1	1.5145	0.1578	-1.9	11/15/2011	2:48:13 PM
3	1.0000	1	0.5600	0.0576	0.8	11/15/2011	3:04:20 PM
4	0.4000	1	0.2121	0.0216	3.8	11/15/2011	3:20:28 PM
5	0.1000	1	0.0502	0.0051	6.6	11/15/2011	3:36:35 PM
6	0.0500	1	0.0267	0.0026	-1.4	11/15/2011	3:52:42 PM
7	0.0100	1	0.0049	5.0658e-4	-10.2	11/15/2011	4:08:48 PM

Figure 2: Nitrite-N



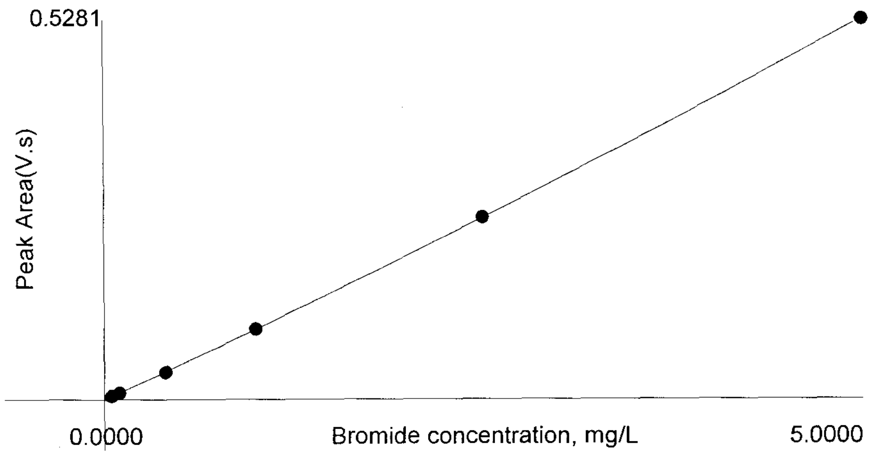
Area = 0.0195 * Conc^2 + 0.5461 * Conc - 0.0010
Conc = - 0.0787 * Area^2 + 1.8046 * Area + 0.0022
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 3: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.5281	0.0394	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	0.2527	0.0186	-0.2	11/15/2011	2:48:13 PM
3	1.0000	1	0.0981	0.0072	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.0379	0.0027	1.4	11/15/2011	3:20:28 PM
5	0.1000	1	0.0092	6.5877e-4	1.5	11/15/2011	3:36:35 PM
6	0.0500	1	0.0046	3.2836e-4	-2.5	11/15/2011	3:52:42 PM

Figure 3: Bromide



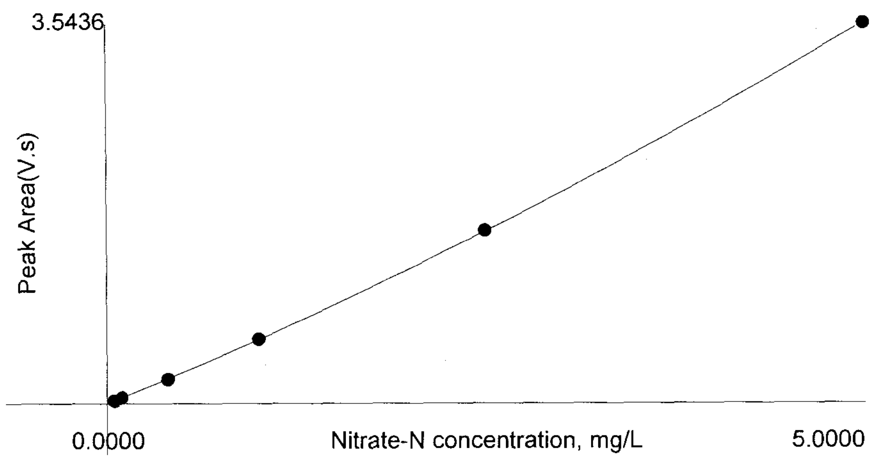
Area = 0.0019 * Conc^2 + 0.0962 * Conc - 3.2483e-4
Conc = - 1.6748 * Area^2 + 10.3373 * Area + 0.0038
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 4: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.5436	0.1988	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	1.6106	0.0905	-0.5	11/15/2011	2:48:13 PM
3	1.0000	1	0.6005	0.0330	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.2256	0.0121	2.5	11/15/2011	3:20:28 PM
5	0.1000	1	0.0531	0.0028	3.8	11/15/2011	3:36:35 PM
6	0.0500	1	0.0279	0.0014	-5.9	11/15/2011	3:52:42 PM

Figure 4: Nitrate-N



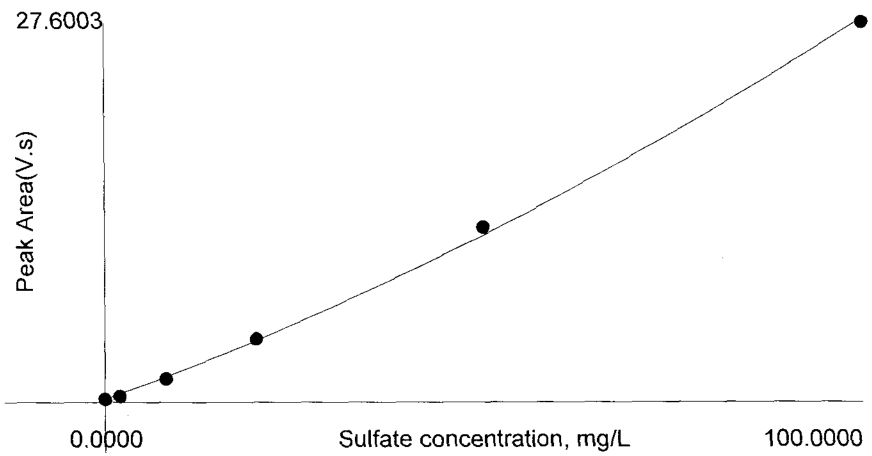
Area = 0.0273 * Conc^2 + 0.5736 * Conc - 0.0024
Conc = - 0.0824 * Area^2 + 1.6983 * Area + 0.0062
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 5: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	27.6003	0.8536	1.1	11/15/2011	2:32:05 PM
2	50.0000	1	12.7130	0.4540	-4.9	11/15/2011	2:48:13 PM
3	20.0000	1	4.5871	0.1729	-1.7	11/15/2011	3:04:20 PM
4	8.0000	1	1.6836	0.0620	9.3	11/15/2011	3:20:28 PM
5	2.0000	1	0.4027	0.0145	34.3	11/15/2011	3:36:35 PM
6	0.0500	1	0.2270	0.0081	-2.6	11/15/2011	3:52:42 PM

Figure 5: Sulfate



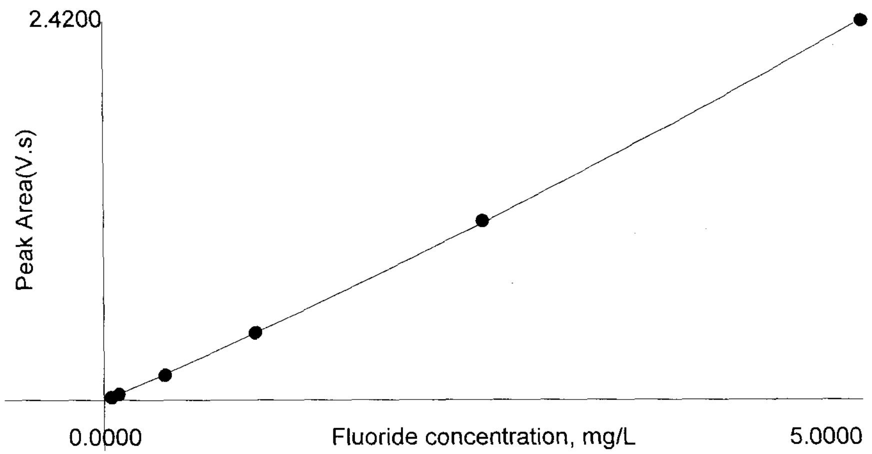
Area = 7.7408e-4 * Conc^2 + 0.1994 * Conc + 0.2113
Conc = - 0.0392 * Area^2 + 4.7046 * Area - 0.9825
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 6: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.4200	0.3882	0.3	11/15/2011	2:32:05 PM
2	2.5000	1	1.1432	0.1974	-1.3	11/15/2011	2:48:13 PM
3	1.0000	1	0.4295	0.0734	0.0	11/15/2011	3:04:20 PM
4	0.4000	1	0.1585	0.0271	4.9	11/15/2011	3:20:28 PM
5	0.1000	1	0.0379	0.0065	1.9	11/15/2011	3:36:35 PM
6	0.0500	1	0.0187	0.0032	-6.6	11/15/2011	3:52:42 PM

Figure 6: Fluoride



Area = 0.0132 * Conc^2 + 0.4199 * Conc - 0.0035
Conc = - 0.1211 * Area^2 + 2.3494 * Area + 0.0093
Correlation Coefficient (r) = 0.99999

1/x weighting

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review Coversheet—Inorganics Dept

Method Name: IC Method Reference: 300.0 Date of Analytical Run: 12/1/11

Primary Reviewer's Initials & Date: AMS 12/2/11 Secondary Reviewer's Initials & Date: 12/2/11

Batch Numbers	84207	84209			

QC Criteria—Non-MCP: ICV/CCV ±10%: LCS/LCSD ±15%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%

QC Criteria—MCP/RCP: (9012 and 7196 only)
9012 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
9012 (soil): ICV/CCV ±15%: LCS/LCSD **: MS/MSD ±25%: ICB/MB/CCB <RL: MD RPD 35%: MSD/LCSD RPD ≤30%
7196 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
7196 (soil): ICV/CCV ±15%: LCS/LCSD **: MSS/MSI ±25%: ICB/MB/CCB <RL: MD RPD ≤35%: LCSD RPD ≤30%

FAILURES OF QC FOR ANYTHING OTHER THAN MS, MSD or MD ARE GROUNDS FOR INVALIDATING THE BATCH.

Criteria for QC	Yes	No	n/a	Notes/Comments
Were the ICV and CCVs within acceptable limits for QC recovery?	✓ ✓			
Were the ICB and CCBs all <RL?	✓ ✓			
Were all MB and CCB results <RL for the analytes of interest?	✓ ✓			
Was there a CCV/CCB combination run after every 10 samples or less?	✓ ✓			
Was there an LCS run with every batch of 20 samples or less?	✓ ✓			
Was there a MD, LCSD or MSD run with every batch of 20 samples or less?	✓ ✓			
Were all LCS/LCSD results within acceptable limits for QC recovery?	✓ ✓			
Were all MS/MSD results within acceptable limits for QC recovery?	✓ ✓			
Were all MD, LCSD and/or MSD %RPDs within acceptable limits for QC recovery?	✓ ✓			
Were the raw data points for investigative samples within the working curve range, or if not, were the samples diluted to bring them within this range?	✓ ✓			
IF there were any MCP/RCP samples in this batch, did they meet all MCP/RCP requirements?	✓ ✓			
Were there any holding time violations in this batch?		✓ ✓		**NOTE!** The PM and QA Manager must be notified by email *immediately* of any holding time violations!!
Were any NCMs generated for any samples in the batch? (If so, list NCM numbers, and first-reviewer must check off any "No" answers above as applicable.)		✓ ✓		
Were any jobs in this batch Level 4? If "Yes" then scan all raw data & place in correct scan folder on the public drive before filing this paperwork.	✓ ✓			

** LCS or LCSD must produce a recovery that is within the manufacturer's specified 95% confidence limits, must be matrix matched.

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 12/1/11

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution: Sample Aliquot 2	Serial Dilution: Units	Serial Dilution: Final Volume 2	Serial Dilution: Units	Comments
AMS	12/1/11	300.0	37526~~A~~B7	10x	1	mL	10	mL					
			12/1/11 AS	20x	500	μL							
			37644B1	20x									
			B2										

entries completed by day [new page each day]

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Eluent Preparation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Prepare fresh daily; makes 3L of eluent. To make: in a one-gallon plastic container, mix:

- 60.0 mL of 100*M* $NaHCO_3$;
- 78.0 mL of 100*M* Na_2CO_3; and
- 2862 mL of deionized water.

Degas with helium for 3min before use.

Date Prepared	Analyst's Initials	Lot # 100*M* $NaHCO_3$	Lot # 100*M* Na_2CO_3	Number of Portions Prepared
11-17-11	[illegible]	W111J 2GT018	W111K RGT001	1
11-18-11	RWE	W111K RGT016	W111K RGT017	2
11-21-11	RWE	↓	↓	1
11-22-11	RWE	↓	↓	1
11-23-11	RWE	↓	↓	2
11-28-11	RE	↓	↓	1
11-29-11	RE	↓	↓	1
12/1/11	AMS	↓	↓	1
12/2/11	AMS	↓	↓	1

0.25 *M* Sulfuric Acid Creation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Record the information below for creating the acid. When an entry is made do not use arrows to fill in information. All entries must be complete.

Recipe: to 2958mL of deionized water in a 1 gallon jug add 42mL of concentrated H_2SO_4 for a total volume of 3L.

Date Made	Analyst's Initials	Volume of 0.25 *M* Acid Made (L)	Source: Concentrated Sulfuric Acid (ACS grade) Manufacturer & Lot Number
11-18-11	RLE	3	Baker lot J22022
11-21-11	RLE	3	
11-22-11	RLE	3	
11-23-11	RLE	3	
11-28-11	RLE	3	
11/30/11	AMS	3	
12/1/11	AMS	3	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Ion Chromatography QC Source Data Sheet—Inorganics Dept

Method (circle methods): IC 300_28D   IC 300_48HR   IC 9056_28D   IC 9056_48HR

Date of Analytical Run: 12/1/11   Analyst's Initials: AMS

Working Curve Standard:

Manufacturer & Lot Number for Source Standard	Working Curve Standards Prepared On
Inorganic Ventures Lot E2-MEB394034	20 October 2011

QC Standard True Values for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.50	25.0	2.50	2.50	2.50	50.0
ICB	0	0	0	0	0	0
MB	0	0	0	0	0	0
LCS/LCSD	4.00	40.0	4.00	4.00	4.00	80.0
MS/MSD	1.00	10.0	1.00	1.00	1.00	20.0

QC Standard Acceptable Recovery Ranges for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.25-2.75	22.5-27.5	2.25-2.75	2.25-2.75	2.25-2.75	45.0-55.0
ICB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
MB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
LCS/LCSD	3.40-4.60	34.0-46.0	3.40-4.60	3.40-4.60	3.40-4.60	68.0-92.0
MS/MSD	0.75-1.25	7.50-12.5	0.75-1.25	0.75-1.25	0.75-1.25	15.0-25.0

Current Method RLs (mg/L):

	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
	0.10	1.00	0.010	0.10	0.050	2.0

Original Run Filename: OM_12-1-2011_08-11-48AM.OMN created 12/1/2011 8:11:48 AM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_12-1-2011_08-11-48AM.OMN last modified 12/2/2011 7:12:01 AM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	0.0041	0.0223	0.0071	0.0062	0.0024	-0.9663	12/1/2011@8:13:09 AM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	
ICV	1	2.3727	24.8451	2.3714	2.4298	2.3280	48.0327	12/1/2011@8:29:17 AM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
ICB	S11	0.0035	0.1380	0.0093	0.0062	0.0022	-0.9416	12/1/2011@8:45:24 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0043	0.1415	0.0095	0.0034	0.0014	-0.9440	12/1/2011@9:01:31 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9001	40.3708	3.9021	3.8807	3.8810	77.0797	12/1/2011@9:17:38 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37836-A-1	2	0.0041	1.6861	0.0372	0.0974	0.0022	3.2975	12/1/2011@9:33:45 AM
360-37836-A-1@10	3	0.0038	0.4137	0.0093	0.0157	9.739e-4	-0.4125	12/1/2011@9:49:53 AM
360-37836-A-1@10 MS	4	0.9944	9.7351	0.9478	0.9764	0.9469	18.7756	12/1/2011@10:06:00 AM
360-37836-A-1@10 MSD	4	0.9920	9.7311	0.9442	0.9759	0.9475	18.7813	12/1/2011@10:22:07 AM
360-37836-A-2	5	-0.0755	-3.6990	-0.0291	0.0067	0.5604	9.9380	12/1/2011@10:38:14 AM
360-37836-A-7	6	-0.0056	3.6037	0.0639	0.2419	0.0022	6.6491	12/1/2011@10:54:22 AM
360-37836-A-10	7	-0.0515	-4.4384	0.0093	0.0238	1.7363	15.8962	12/1/2011@11:10:29 AM
360-37836-A-4	8	0.0181	-188.1870	0.0092	0.2520	1.9901	1.3373	12/1/2011@11:26:37 AM
360-37836-A-8	9	0.0434	43.8598	0.0700	0.0232	0.0022	8.3559	12/1/2011@11:42:43 AM
360-37836-A-3	10	0.3851	2.2927	0.1516	7.8679	8.9845	3.6301	12/1/2011@11:58:50 AM
CCV	S12	3.9630	41.0092	3.9655	3.9453	3.9484	78.0434	12/1/2011@12:14:58 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0039	0.1474	0.0093	0.0062	0.0022	-0.9407	12/1/2011@12:31:05 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37836-A-5	11	0.5607	-77.7868	0.0306	-0.0013	5.4304	1.0642	12/1/2011@12:47:12 PM
360-37836-A-6	12	7.8798e-4	26.6419	0.0275	2.4336	0.0022	11.2735	12/1/2011@1:03:19 PM
360-37854-A-2	13	0.0014	73.0701	0.0437	6.6583	0.0022	16.6422	12/1/2011@1:19:26 PM
360-37854-A-2@10	14	-0.0103	8.2409	0.0094	0.7312	0.0550	0.7579	12/1/2011@1:35:32 PM
360-37843-B-3@50	15	0.1442	-6.7264	0.0702	0.0062	-184.0449	95.1213	12/1/2011@1:51:39 PM
360-37706-A-57	16	-126.7166	30.1947	0.6807	0.0062	-0.1698	23.2182	12/1/2011@2:07:46 PM
360-37706-A-58	17	-1.5875e+3	49.5474	0.3955	-3.6682	0.0022	17.4300	12/1/2011@2:23:53 PM
360-37706-A-59	18	0.2004	51.8145	0.0939	-0.0028	0.0022	15.2068	12/1/2011@2:40:00 PM
360-37706-A-60	19	0.5579	68.8834	0.1707	0.0062	-25.5857	73.8443	12/1/2011@2:56:07 PM
360-37706-A-61	20	0.0918	68.6062	0.0354	-0.0023	0.0022	18.3432	12/1/2011@3:12:14 PM
CCV	S12	3.9915	41.4447	4.0003	3.9617	3.9445	78.2792	12/1/2011@3:28:21 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	

CCB	S11	0.0038	0.0076	0.0097	0.0049	0.0030	-0.9354	12/1/2011@3:44:28 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0038	0.1414	0.0095	0.0036	0.0022	-0.9399	12/1/2011@4:00:35 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.0164	41.3668	3.9814	3.9796	3.9664	78.5457	12/1/2011@4:16:42 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37637-D-1 @10 SO4	21	0.0028	1.5926	0.0447	0.1098	0.0022	9.6681	12/1/2011@4:32:48 PM
360-37637-D-1 @10 MS	22	1.0447	11.9198	1.0325	1.1394	0.9929	30.5172	12/1/2011@4:48:55 PM
360-37637-D-1@10 MSD	22	1.0380	11.9058	1.0226	1.1375	0.9886	30.5777	12/1/2011@5:05:02 PM
360-37706-A-62	23	0.0038	-14.1758	0.0937	-0.0057	6.0958	138.9417	12/1/2011@5:21:09 PM
360-37706-A-63	24	0.0957	60.6206	0.0681	0.0062	0.0022	8.3757	12/1/2011@5:37:16 PM
360-37526-B-7@10	25	9.298e-4	2.0607	0.0097	0.0062	1.5702	40.2539	12/1/2011@5:53:22 PM
360-37526-B-7@20	26	0.0022	1.1785	0.0080	0.0102	0.7972	19.5732	12/1/2011@6:09:28 PM
360-37706-A-15@200	27	1.5175	0.3871	0.0083	-0.0517	0.0022	-0.8947	12/1/2011@6:25:35 PM
360-37644-B-1@20 SO4	28	0.0033	0.3396	0.0086	0.0730	0.0051	35.0225	12/1/2011@6:41:40 PM
360-37644-B-2@20 SO4	29	0.0076	0.3215	0.0084	0.3172	0.3631	56.8745	12/1/2011@6:57:46 PM
CCV	S12	3.9943	41.2563	3.9530	3.9732	3.9311	78.2964	12/1/2011@7:13:54 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0035	0.0116	0.0095	0.0061	0.0022	-0.9547	12/1/2011@7:30:00 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37867-C-1	30	0.0152	5.0771	0.0522	0.0311	0.0022	1.1220	12/1/2011@7:46:06 PM
360-37867-C-1@10	31	-0.0025	0.6805	0.0094	0.0052	-6.9464e-4	-0.7025	12/1/2011@8:02:14 PM
360-37662-G-1@50 Cl	32	0.1825	52.4933	0.0157	9.3832e-4	0.0022	5.8256	12/1/2011@8:18:21 PM
360-37706-A-53	33	0.0038	-13.0674	0.1243	0.0062	7.4180	140.3114	12/1/2011@8:34:28 PM
360-37706-A-54@100	34	0.0039	0.8594	0.0073	0.0061	0.0022	-0.8724	12/1/2011@8:50:35 PM
360-37706-A-55@100	35	0.5322	0.5074	0.0112	-0.0029	0.0022	-0.7071	12/1/2011@9:06:42 PM
360-37762-B-5@10 Cl	36	0.0040	48.0907	0.0197	0.0114	0.0022	-0.9276	12/1/2011@9:22:49 PM
360-37762-B-8@10 Cl	37	0.0042	21.9213	0.0080	0.0106	0.0022	0.1977	12/1/2011@9:38:56 PM
360-37762-B-9@10 Cl	38	0.0031	7.7431	0.0094	0.1291	0.0022	-0.5492	12/1/2011@9:55:03 PM
360-37706-A-56	39	15.8399	3.6082	0.1983	0.0062	0.8415	10.1433	12/1/2011@10:11:09 PM
CCV	S12	3.8489	40.7872	3.9241	3.8653	3.8542	77.3944	12/1/2011@10:27:16 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0037	0.0115	0.0095	0.0045	0.0020	-0.9514	12/1/2011@10:43:23 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	-2.66e-4	0.0107	0.0098	0.0055	0.0019	-0.9472	12/1/2011@10:59:30 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.8290	40.7898	3.9024	3.8569	3.8406	77.5993	12/1/2011@11:15:37 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37762-B-10	40	0.0039	70.6825	0.0281	1.0313	-52.1303	3.8995	12/1/2011@11:31:43 PM
360-37762-B-10@10	41	0.0037	9.5447	0.0084	0.0946	0.0022	-0.3839	12/1/2011@11:47:50 PM
360-37762-B-10@10 MS	42	0.5382	14.9447	0.5051	0.6376	0.4888	10.1456	12/2/2011@12:03:56 AM
360-37762-B-10 @10 MSD	42	0.4602	12.5467	0.4258	0.5406	0.4151	8.5403	12/2/2011@12:20:02 AM
360-37762-B-12	43	9.1589e-4	67.4580	0.0451	0.0062	-40.7606	1.6648	12/2/2011@12:36:09 AM
360-37762-B-12@10	44	0.0036	9.8210	0.0095	0.0061	-0.0587	-0.6216	12/2/2011@12:52:15 AM
360-37762-B-13	45	0.0039	57.1816	0.0370	0.0247	0.0022	2.3362	12/2/2011@1:08:20 AM

360-37762-B-13 @10	46	0.0032	0.2180	0.0093	0.0040	0.0022	-0.9539	12/2/2011@1:24:27 AM
360-37869-B-1	65	0.0046	0.0131	0.0071	0.0049	0.0022	-0.9863	12/2/2011@1:40:35 AM
360-37869-B-1@ 10	66	0.0039	0.0124	0.0105	0.0062	0.0022	-0.9857	12/2/2011@1:56:42 AM
CCV	S12	0.0070	0.0099	0.0099	0.0072	0.0014	-0.9830	12/2/2011@2:12:49 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0034	0.0108	0.0097	0.0062	0.0015	-0.9442	12/2/2011@2:28:56 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37602-A-4-D@5	49	-5.0313e-4	0.0115	0.0103	0.0036	0.0013	-0.9819	12/2/2011@2:45:03 AM
360-37602-A-8-B@5	50	0.0039	0.0118	0.0082	0.0062	0.0022	-0.9823	12/2/2011@3:01:10 AM
360-37602-A-12-B@5	51	0.0028	0.0122	0.0074	0.0062	0.0022	-0.9865	12/2/2011@3:17:17 AM
360-37602-A-16-B@5	52	0.0076	0.0111	0.0084	0.0061	0.0023	-0.9828	12/2/2011@3:33:24 AM
360-37727-A-4-B@5	53	0.0041	0.0133	0.0099	0.0054	0.0022	-0.9815	12/2/2011@3:49:31 AM
360-37727-A-8-B @5	54	0.0041	0.0131	0.0097	0.0048	0.0022	-0.9825	12/2/2011@4:05:37 AM
360-37727-A-12-B @5	55	0.0038	0.0142	0.0093	0.0062	0.0022	-0.9860	12/2/2011@4:21:44 AM
360-37727-A-16-D@5	56	0.0038	0.0158	0.0095	0.0060	0.0022	-0.9850	12/2/2011@4:37:50 AM
360-37696-A-1-D@5	57	0.0037	0.0140	0.0098	0.0062	0.0011	-0.9827	12/2/2011@4:53:56 AM
360-37762-B-11@10*	58	-0.0100	0.0137	0.0080	0.0062	0.0022	-1.0040	12/2/2011@5:10:02 AM
CCV	S12	0.0032	0.0125	0.0098	0.0054	0.0028	-0.9836	12/2/2011@5:26:09 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0012	0.0117	0.0099	0.0085	0.0023	-0.9853	12/2/2011@5:42:16 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0043	0.0103	0.0100	0.0083	0.0015	-0.9824	12/2/2011@5:58:23 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	0.0059	0.0116	0.0085	0.0045	0.0023	-0.9840	12/2/2011@6:14:30 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37762-B-15	59	0.0017	0.0125	0.0097	0.0048	0.0017	-0.9825	12/2/2011@6:30:36 AM
360-37762-B-15@10	60	0.0040	0.0113	0.0081	0.0052	0.0015	-0.9805	12/2/2011@6:46:42 AM

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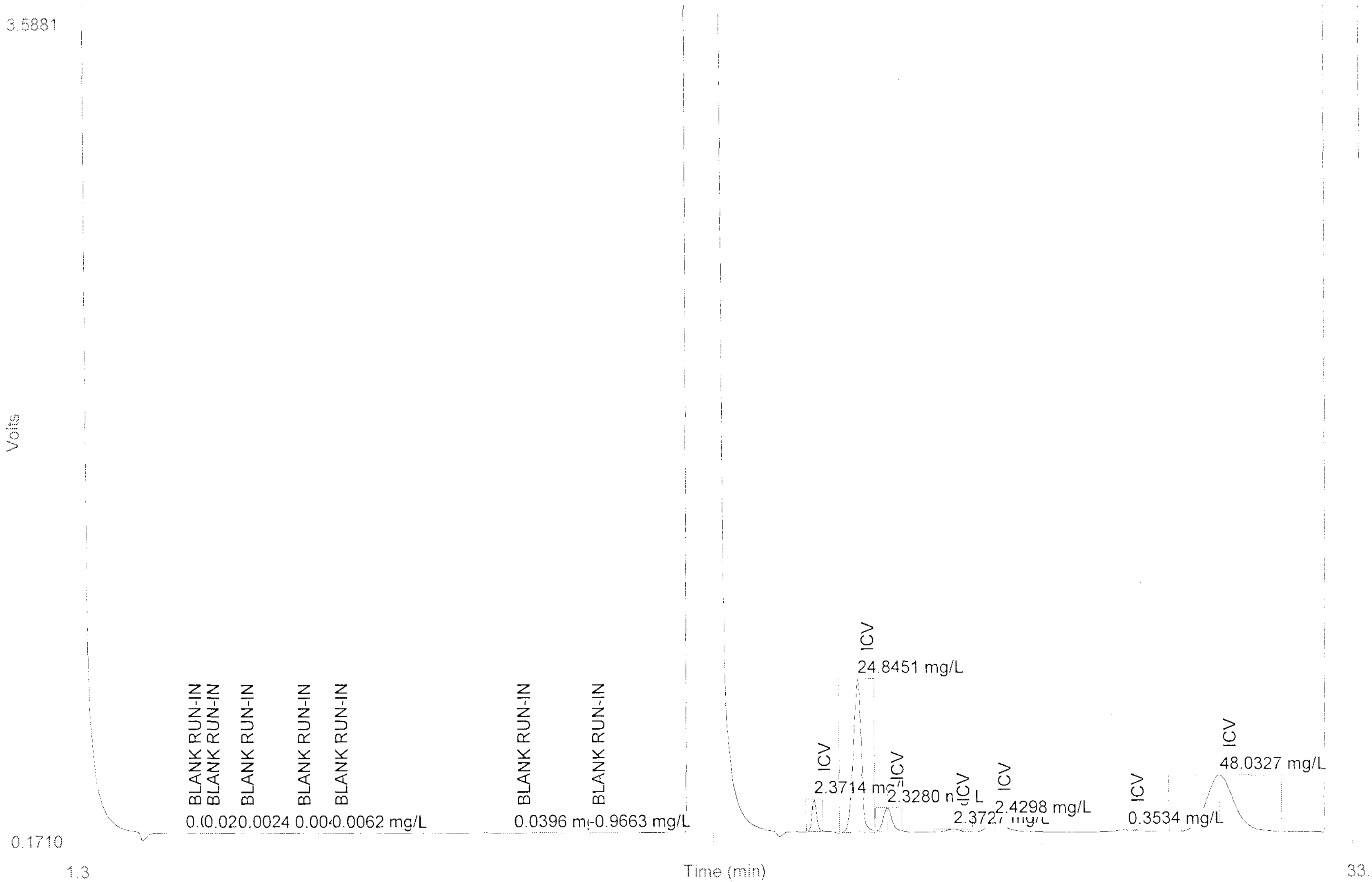
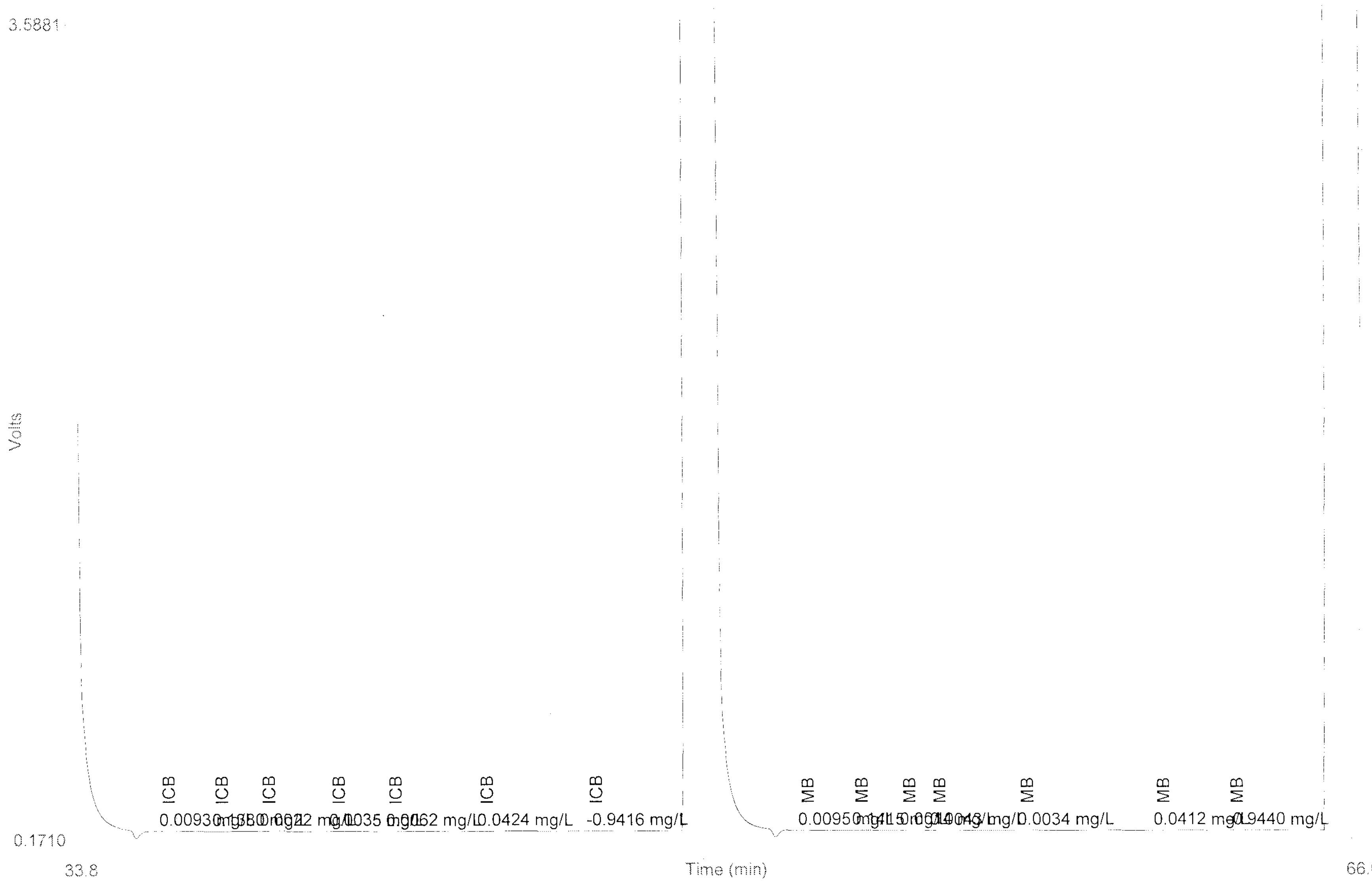
Channel 1 (Anions) : Set 1 of 43



Author: EmerichR

Date : 12/2/2011

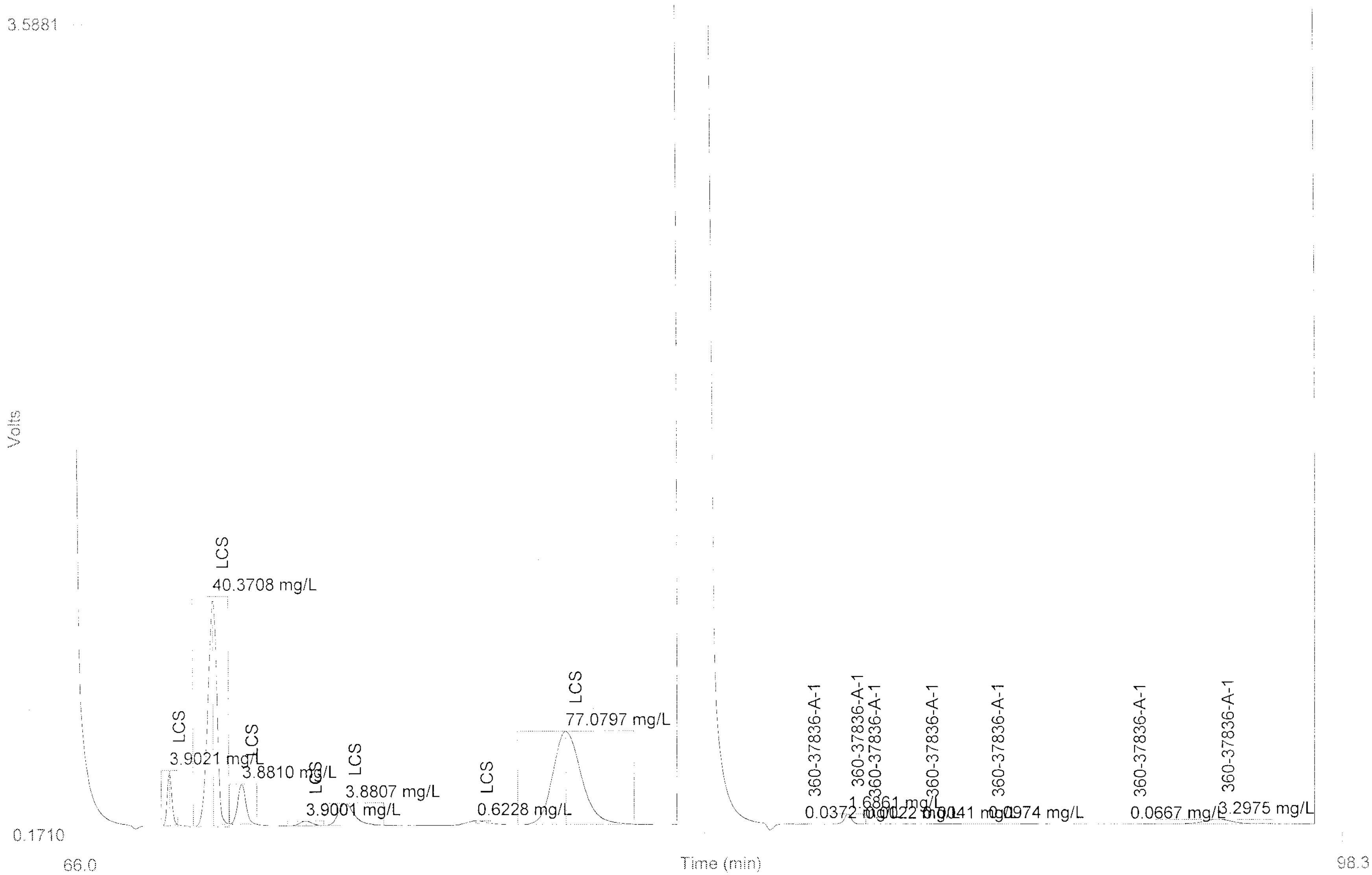
Channel 1 (Anions) : Set 2 of 43



Author: EmerichR

Date : 12/2/2011

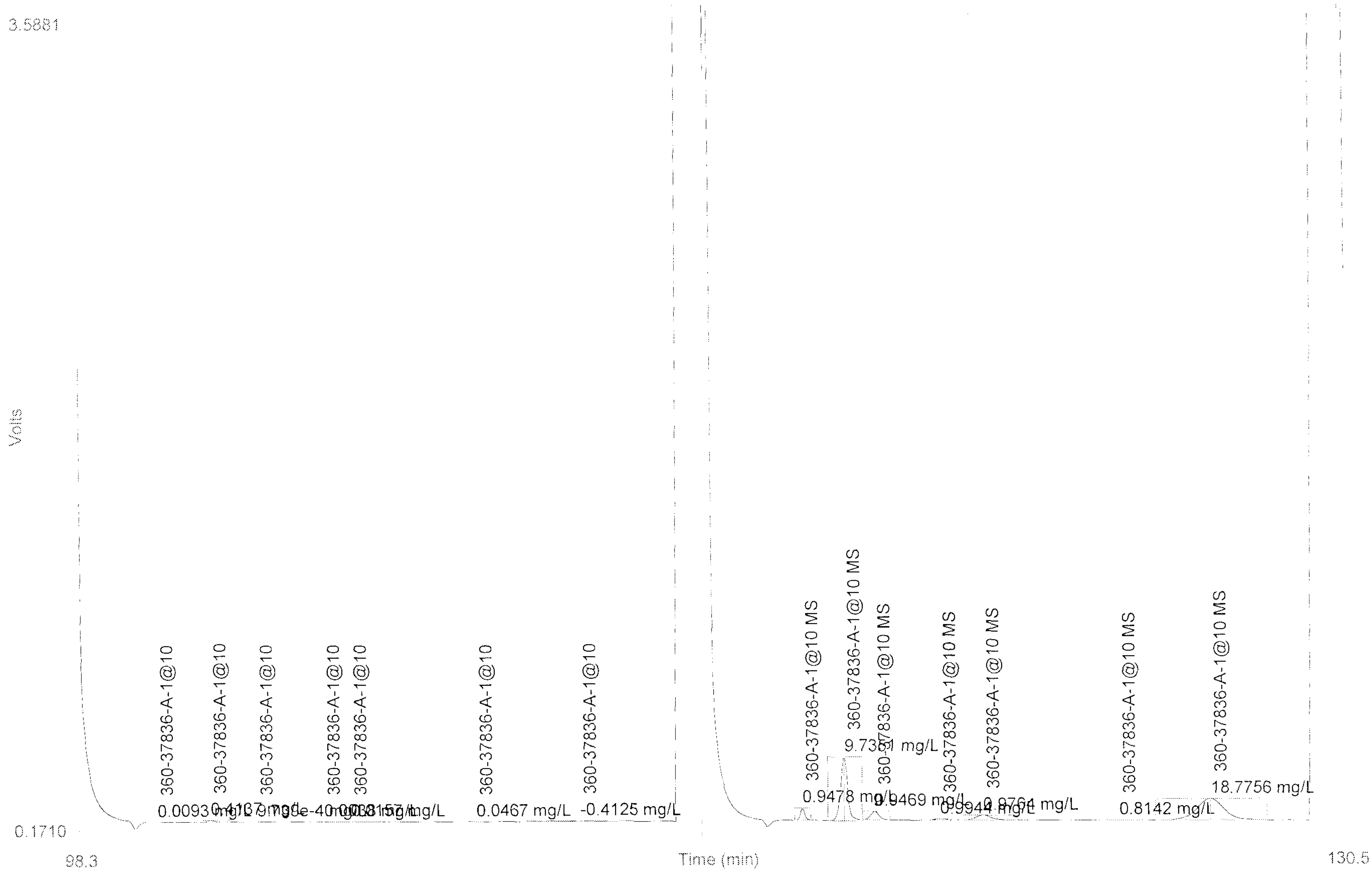
Channel 1 (Anions) : Set 3 of 43



Author: EmerichR

Date : 12/2/2011

Channel 1 (Anions) : Set 4 of 43



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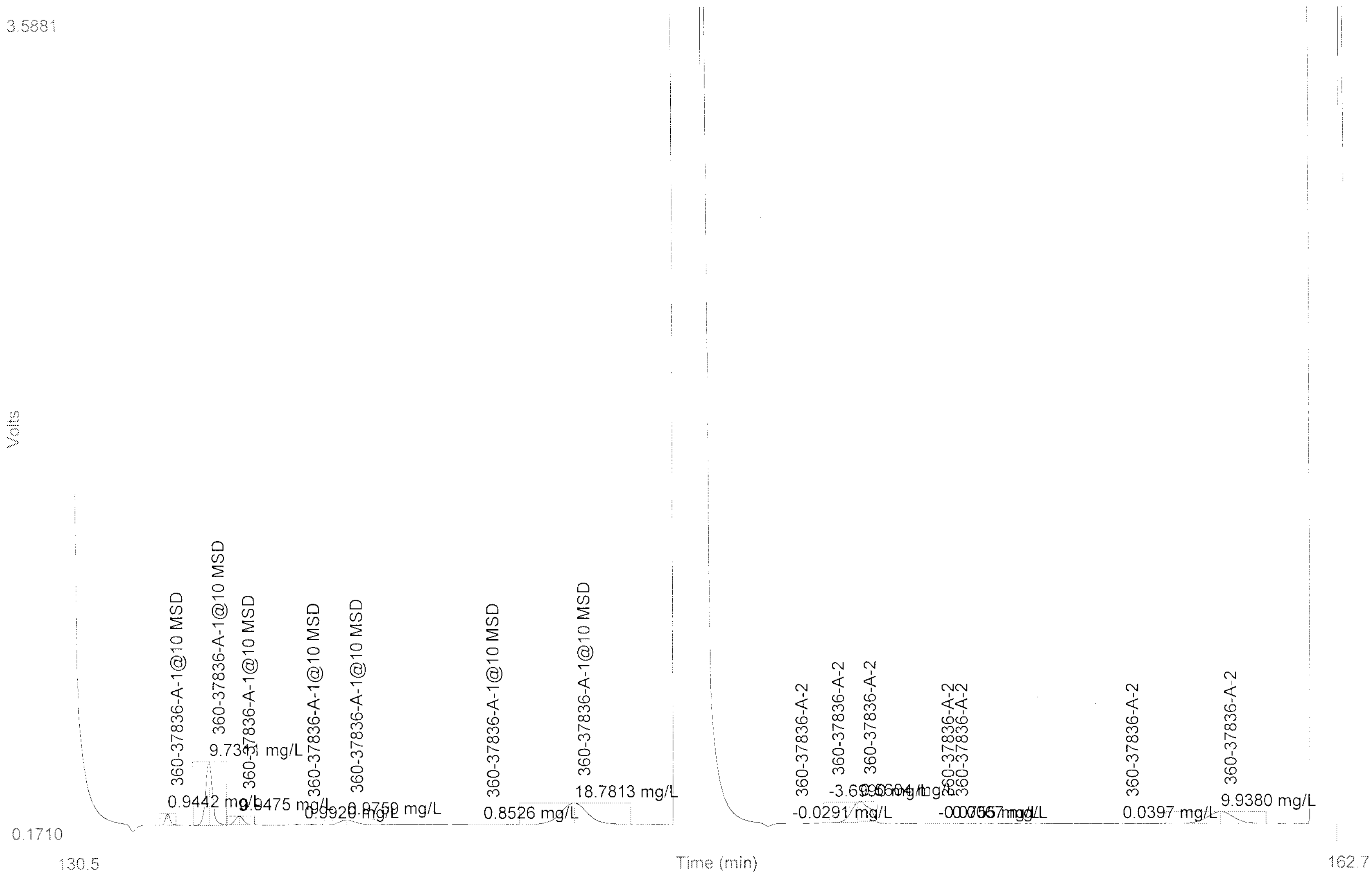
Channel 1 (Anions) : Set 5 of 43



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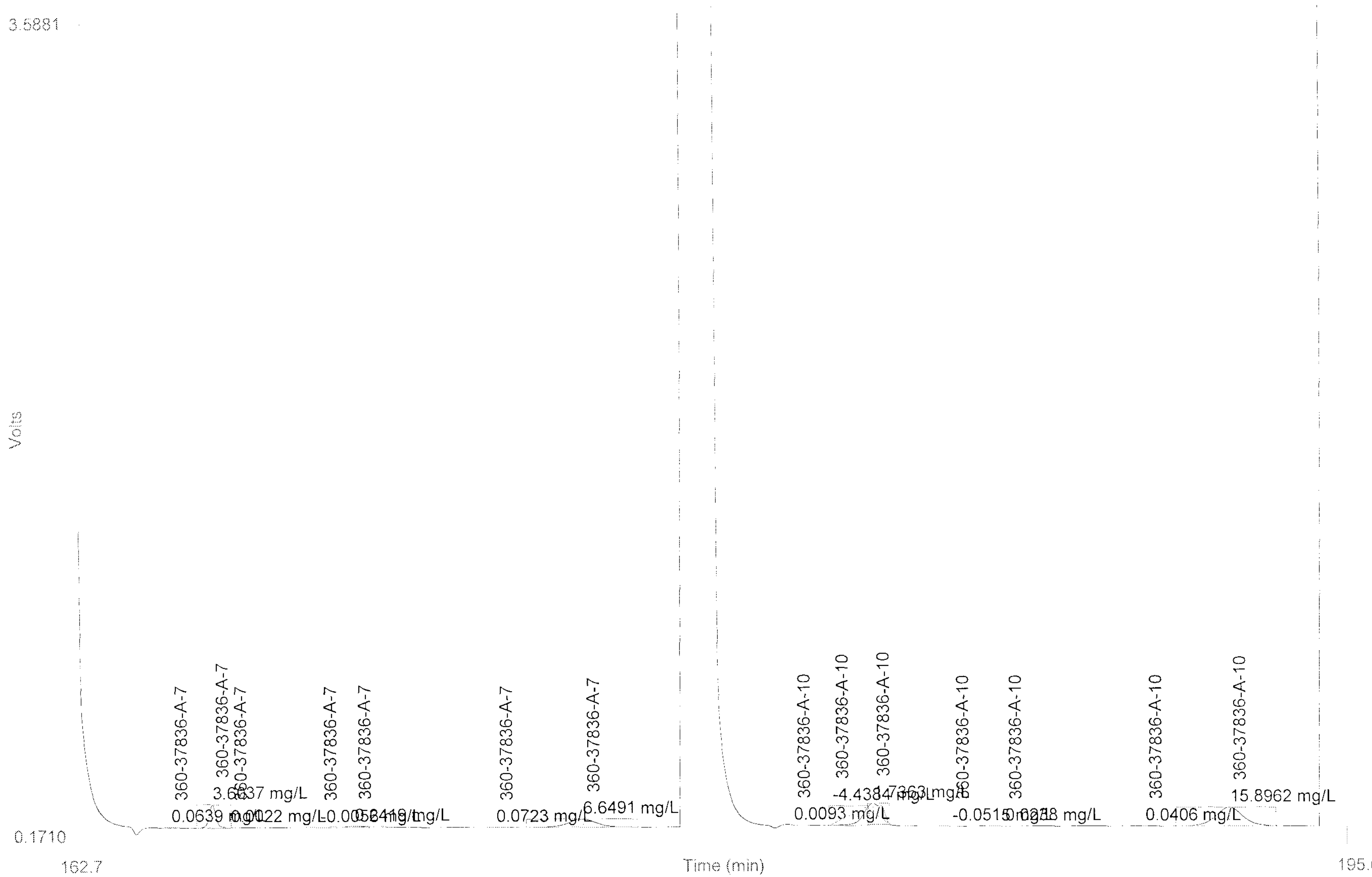
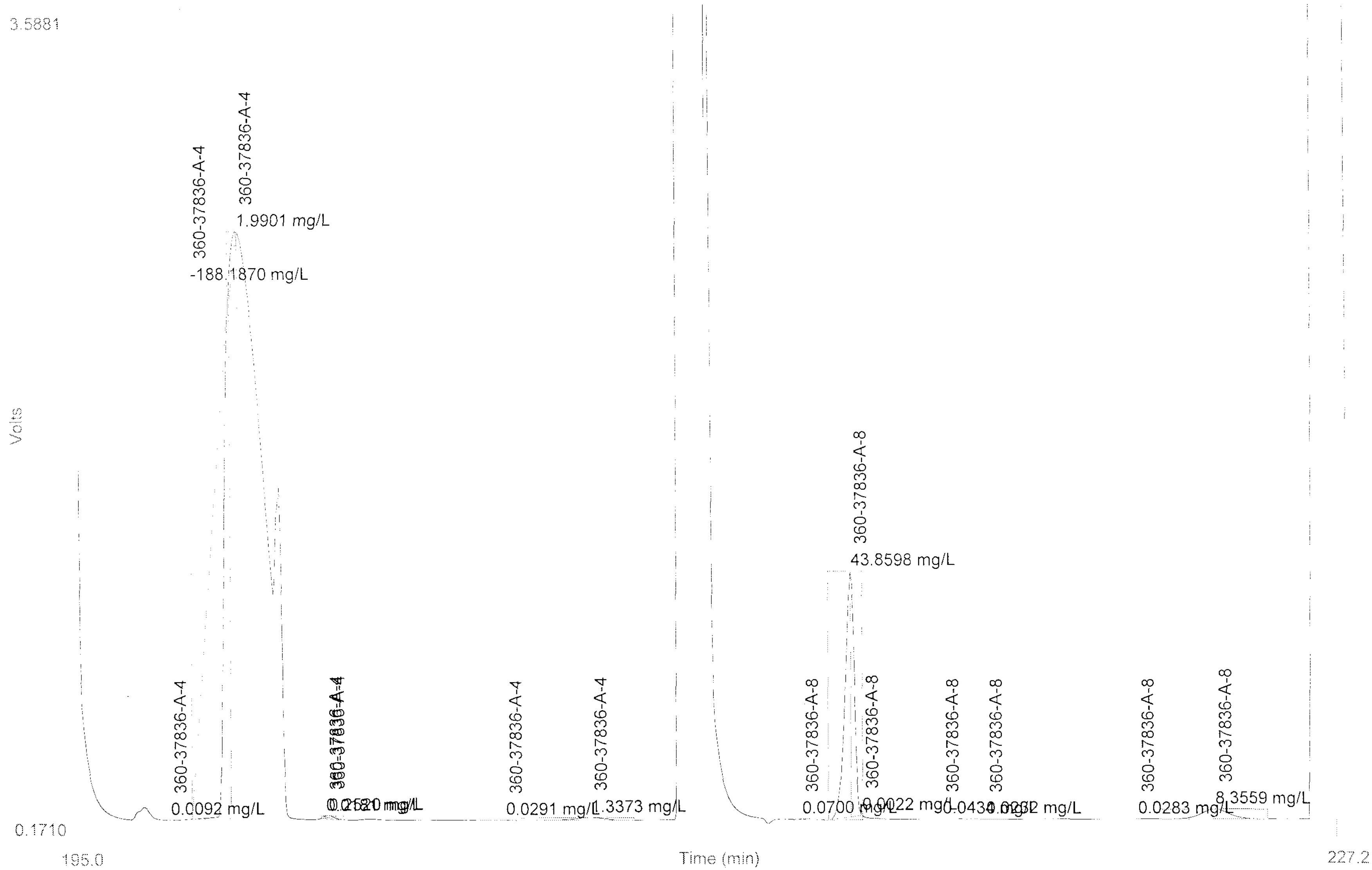
Channel 1 (Anions) : Set 6 of 43



Channel 1 (Anions) : Set 7 of 43



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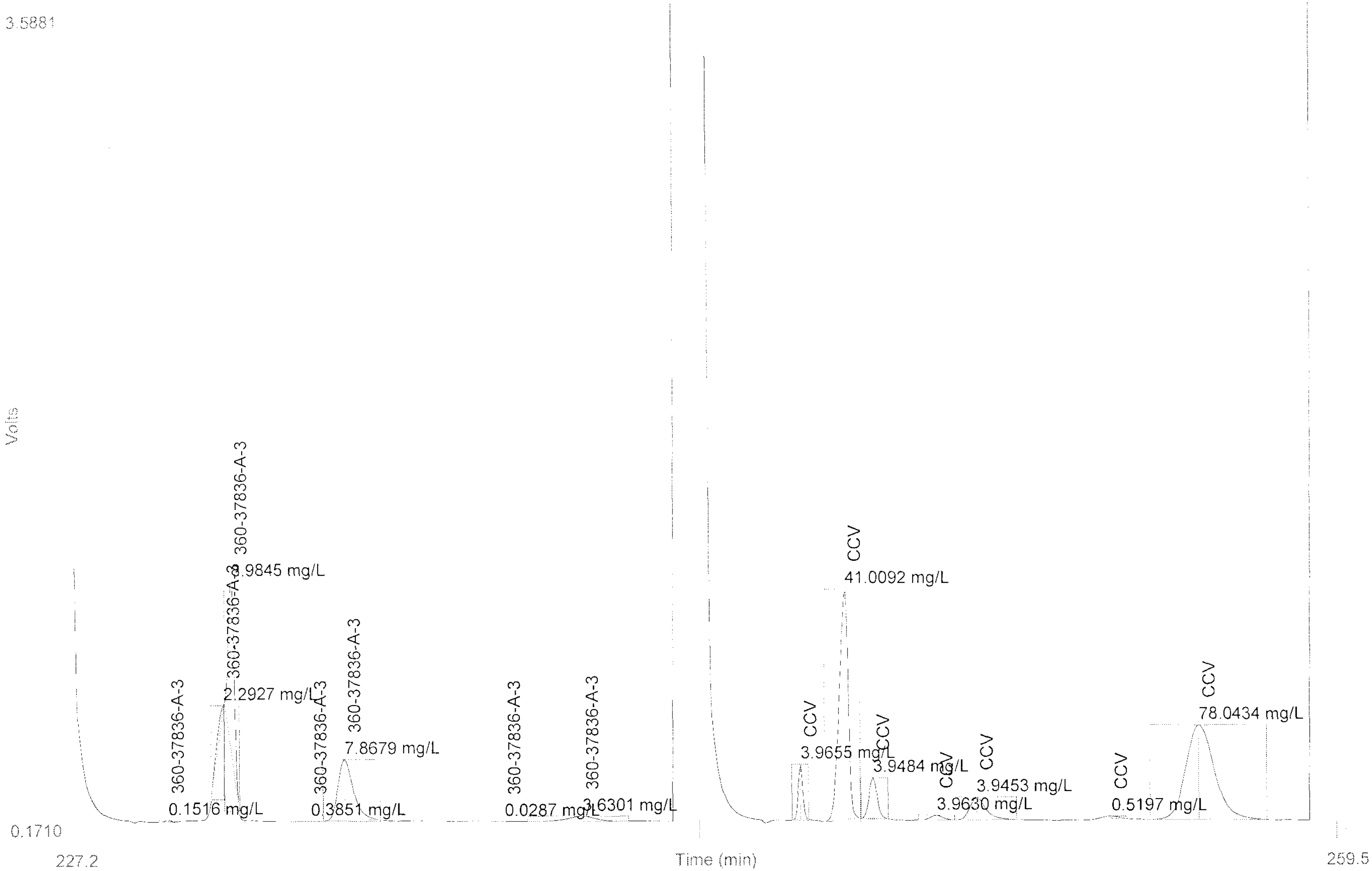
Channel 1 (Anions) : Set 8 of 43



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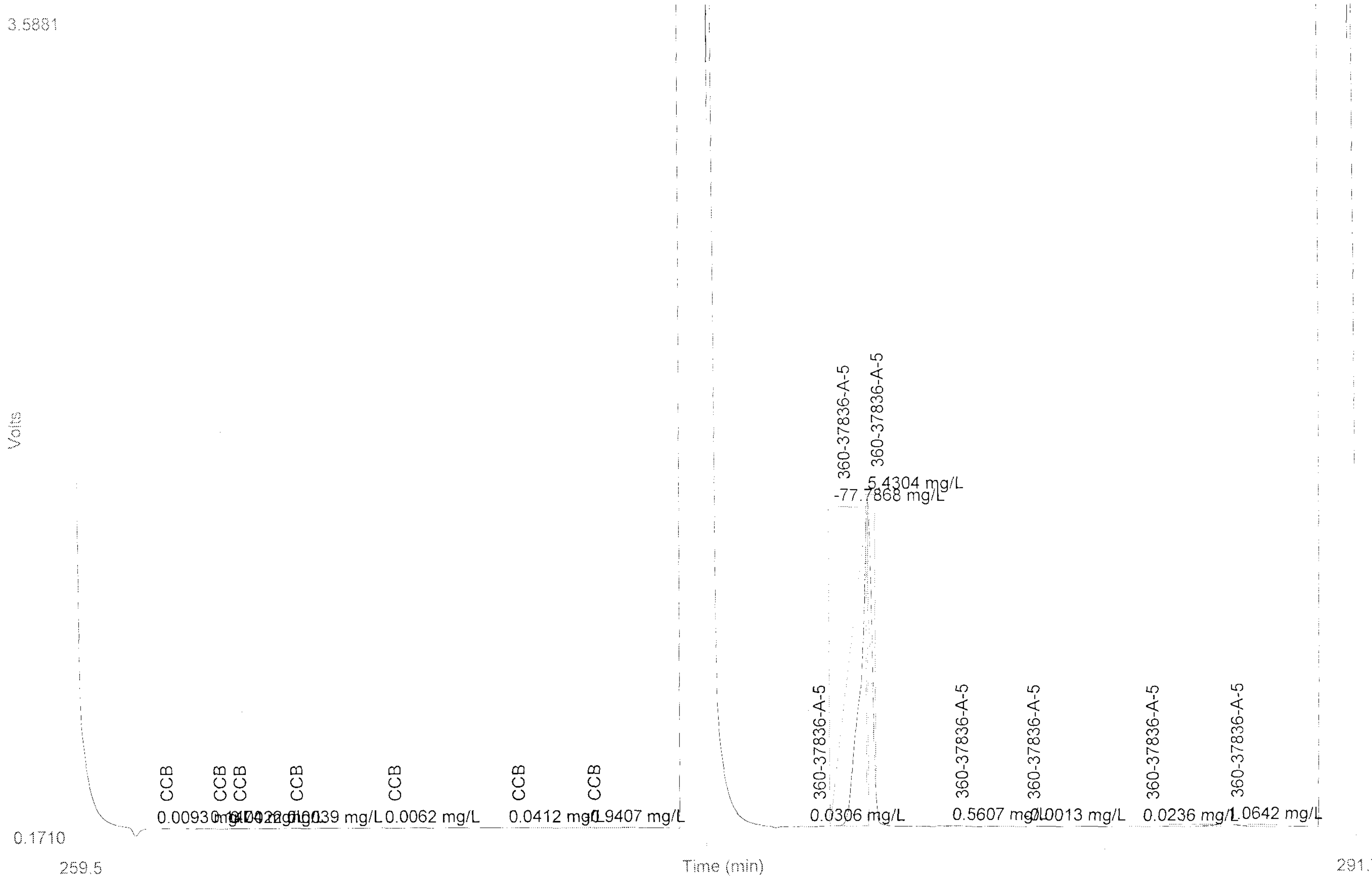
Channel 1 (Anions) : Set 9 of 43



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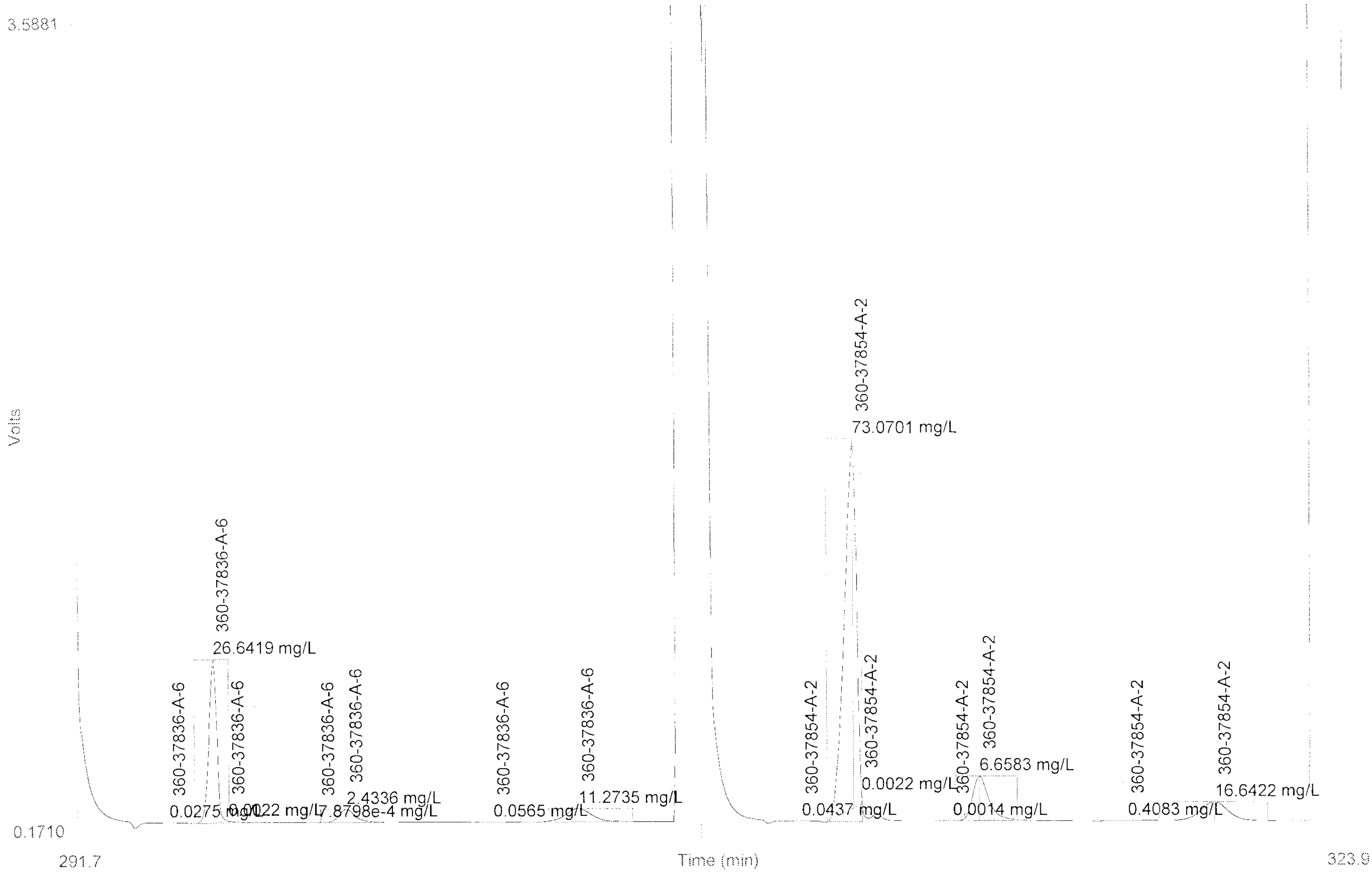
Channel 1 (Anions) : Set 10 of 43



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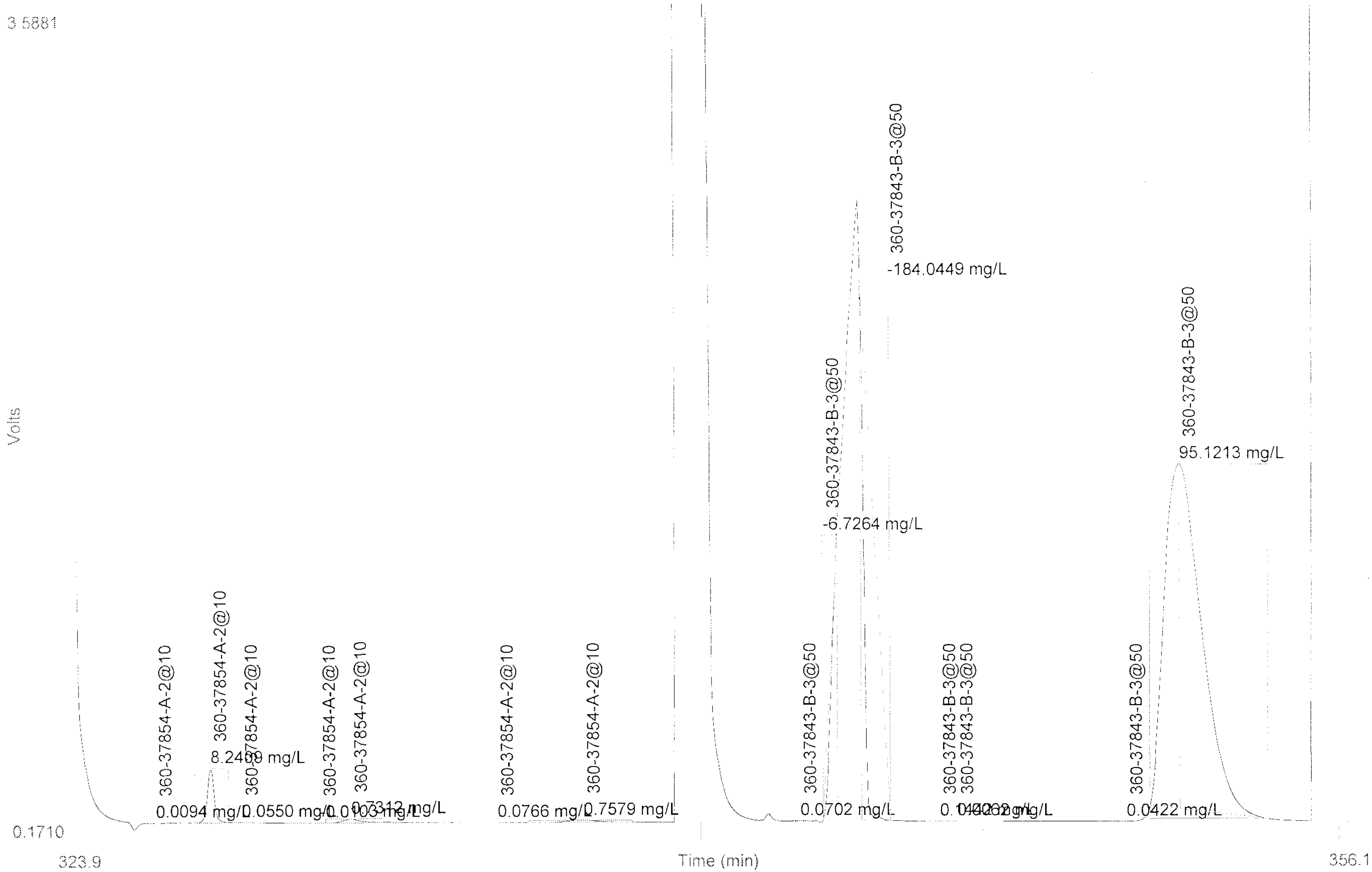
Channel 1 (Anions) : Set 11 of 43



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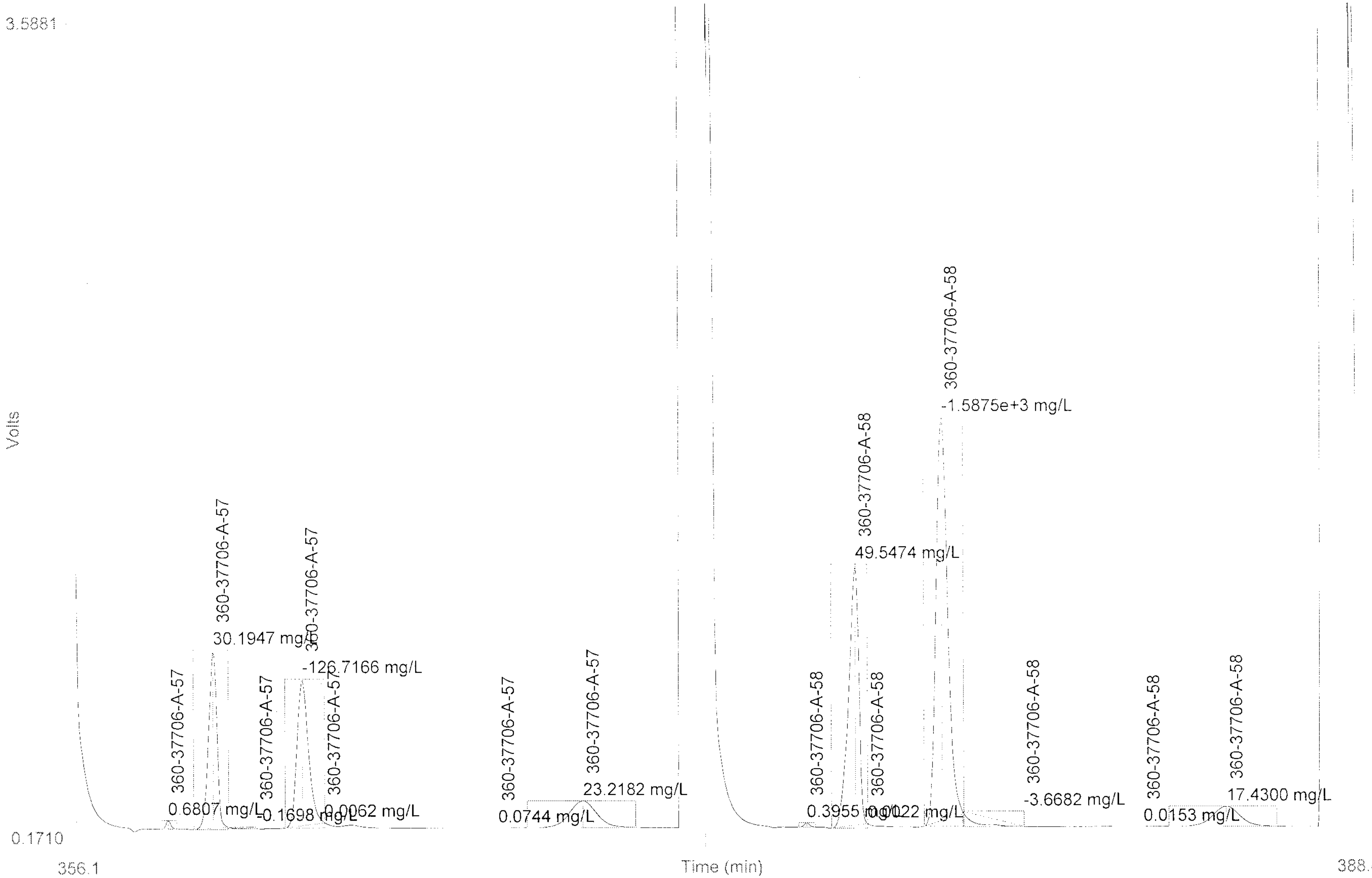
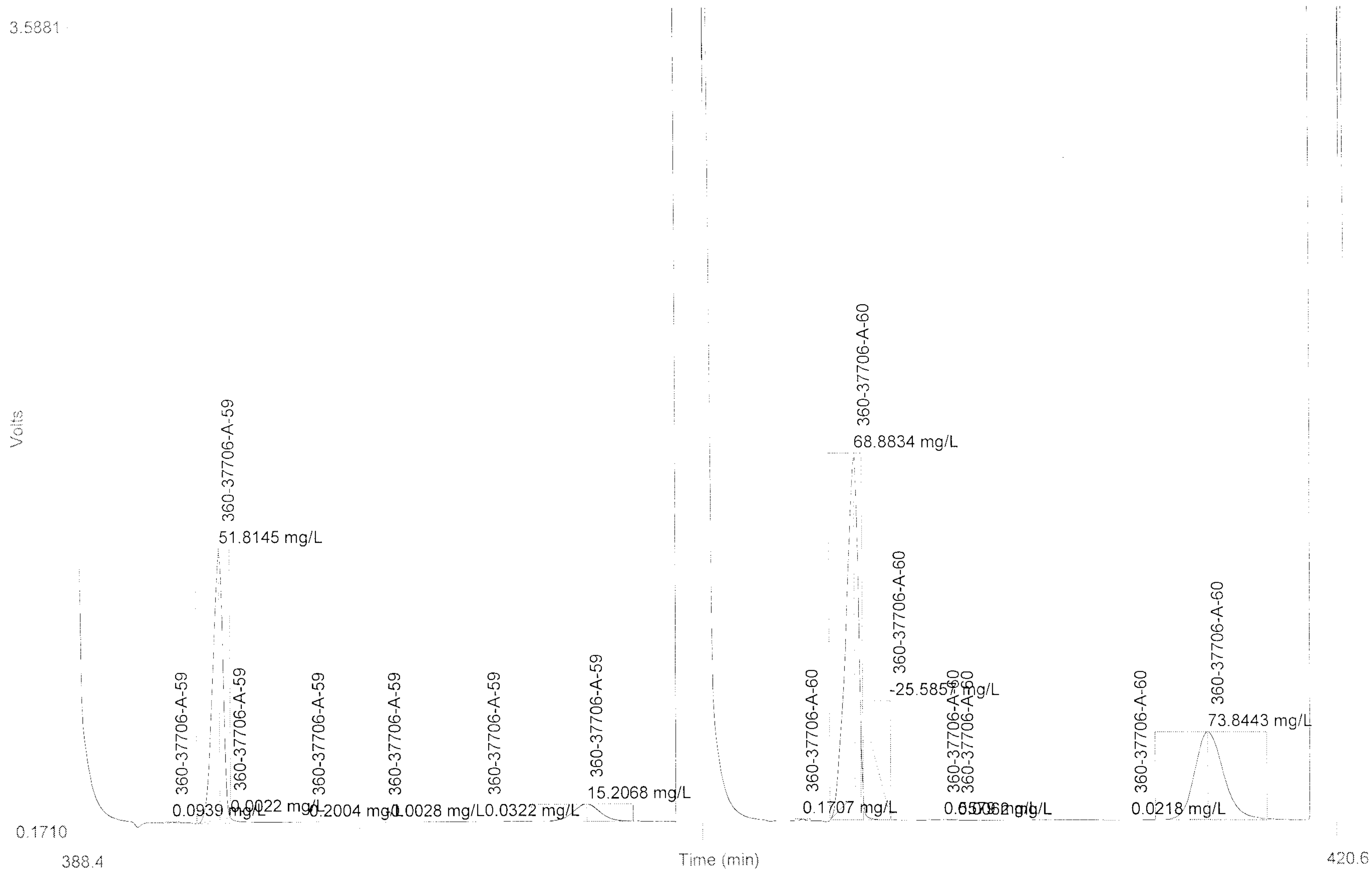
Channel 1 (Anions) : Set 12 of 43



Channel 1 (Anions) : Set 13 of 43



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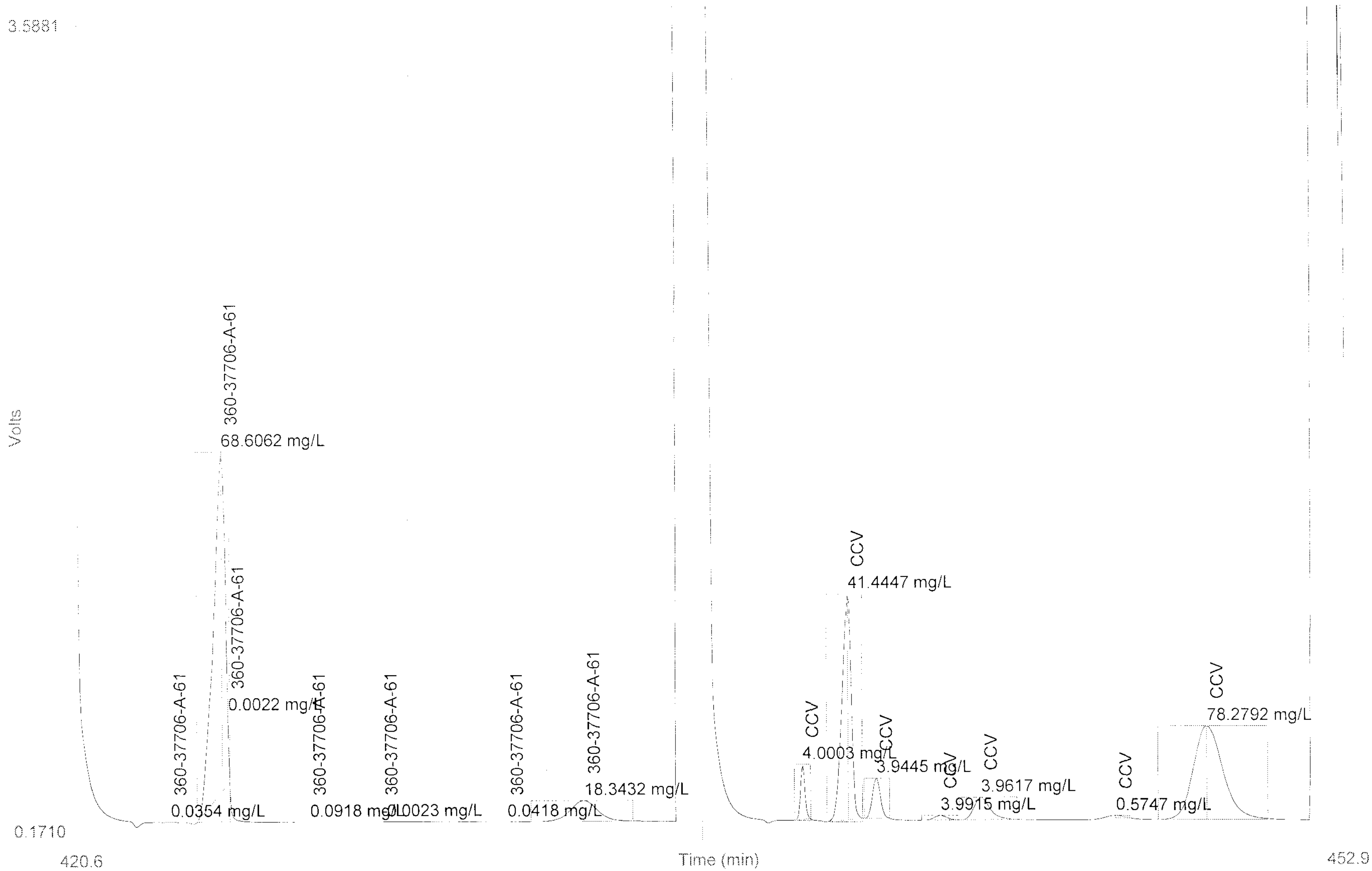
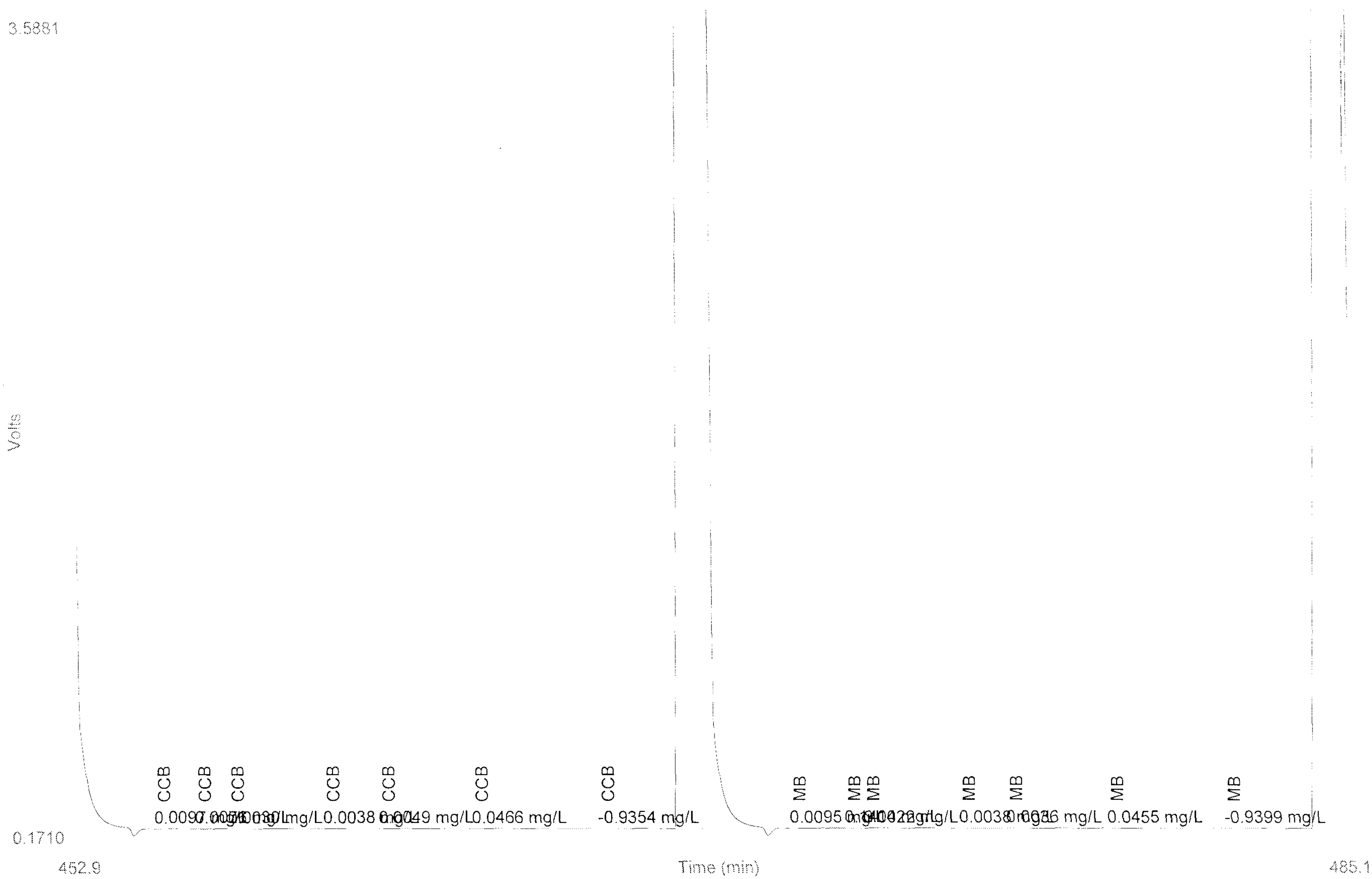
Channel 1 (Anions) : Set 14 of 43



Channel 1 (Anions) : Set 15 of 43



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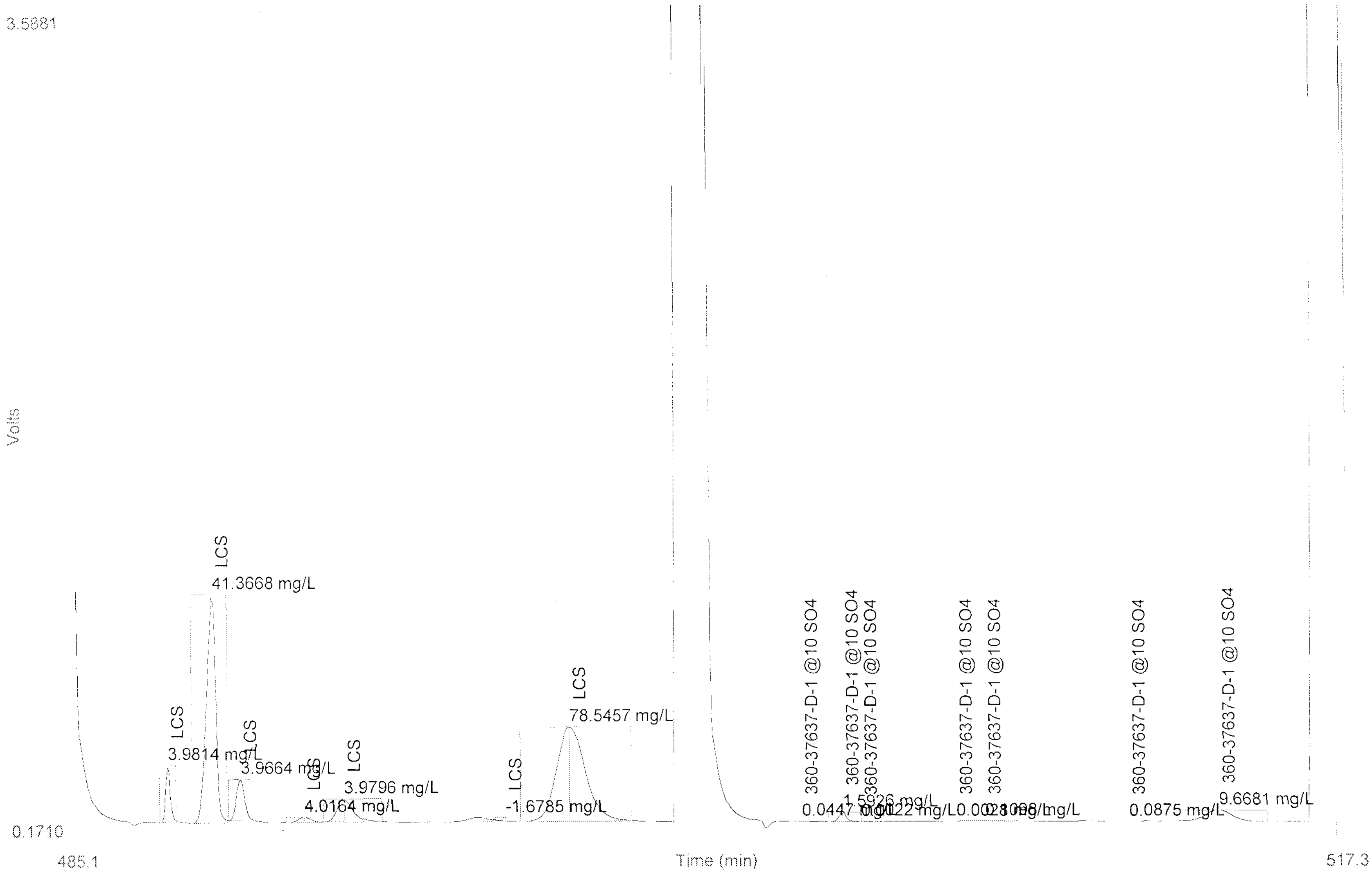
Channel 1 (Anions) : Set 16 of 43



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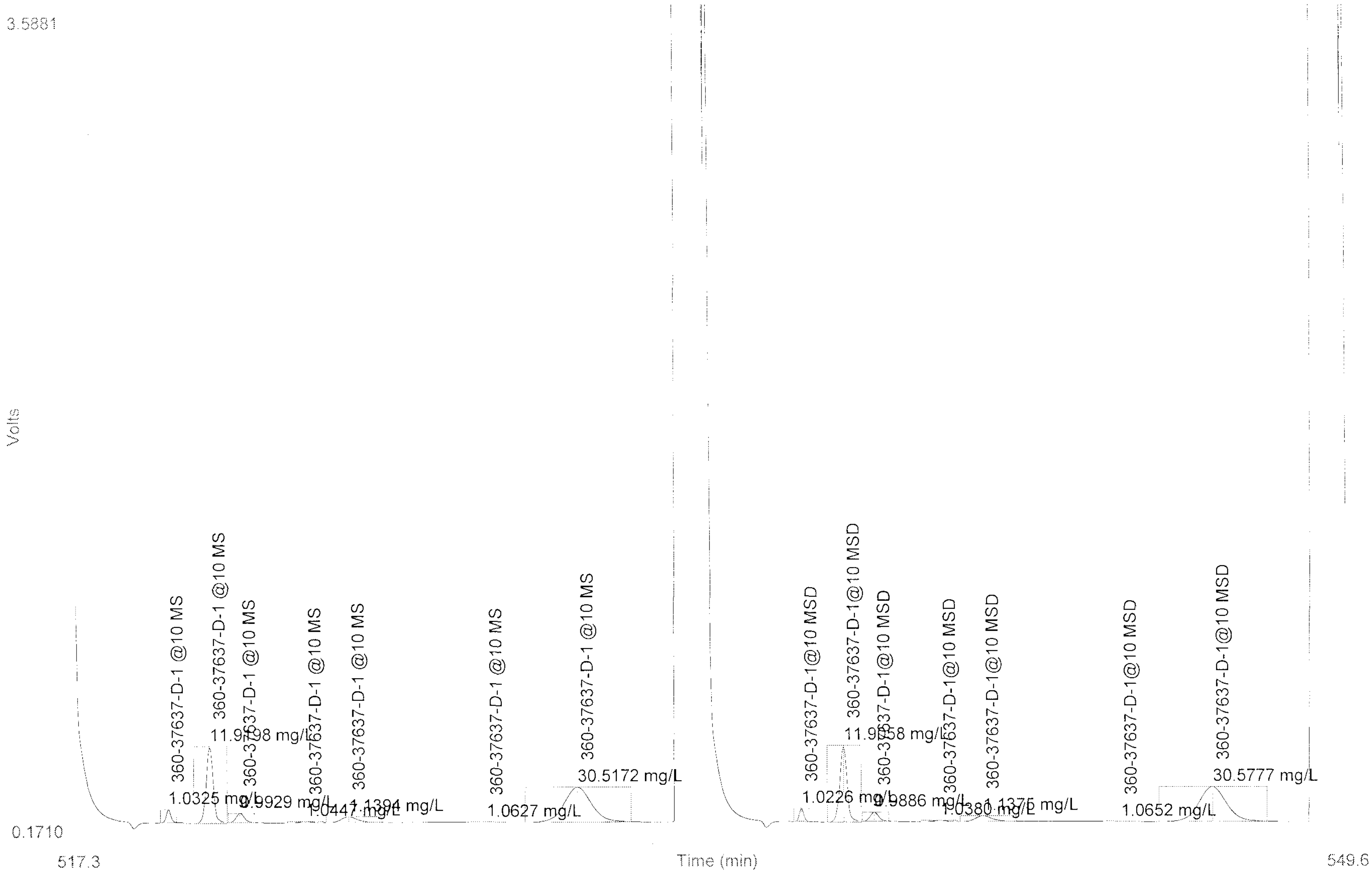
Channel 1 (Anions) : Set 17 of 43



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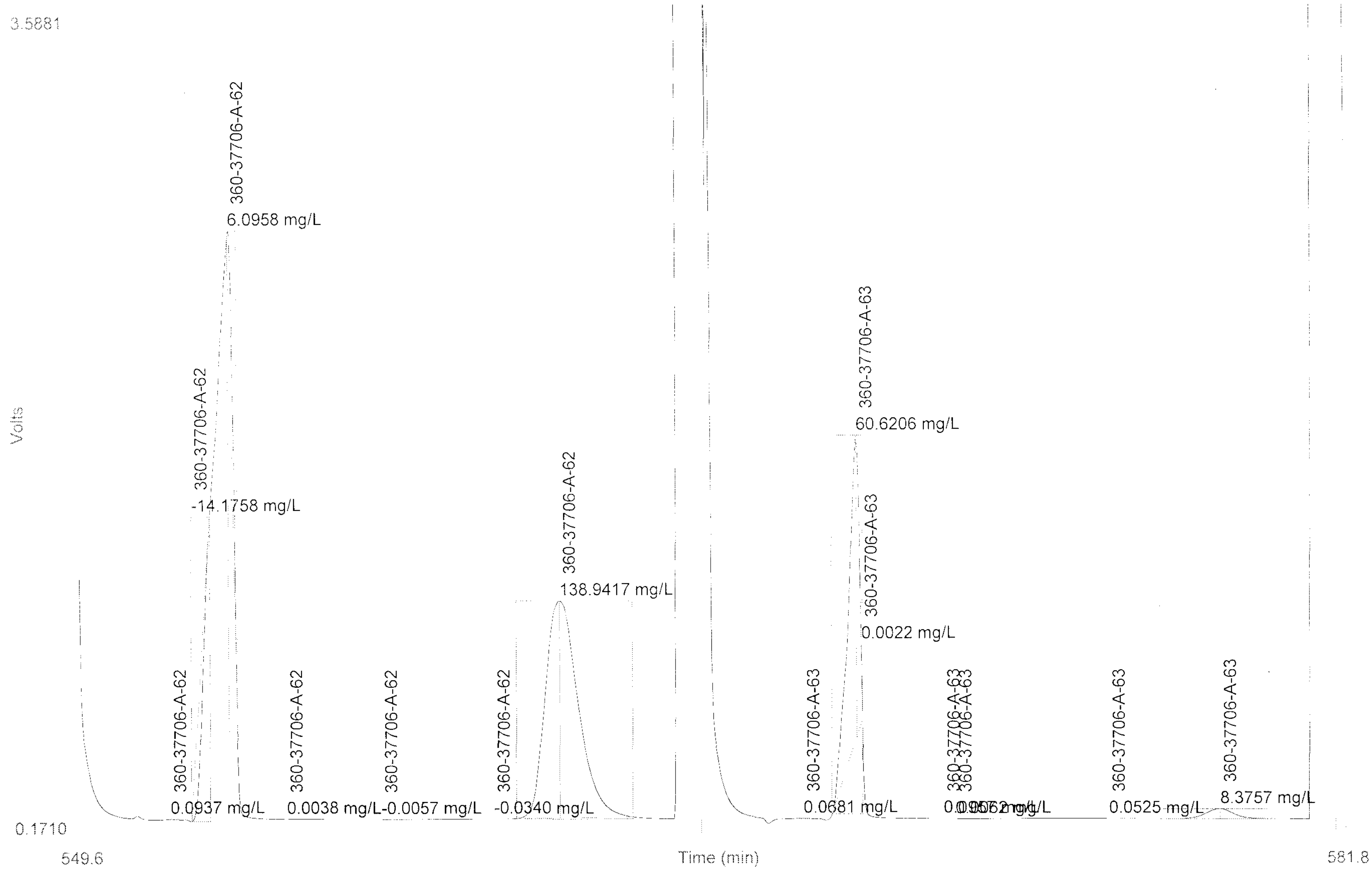
Channel 1 (Anions) : Set 18 of 43



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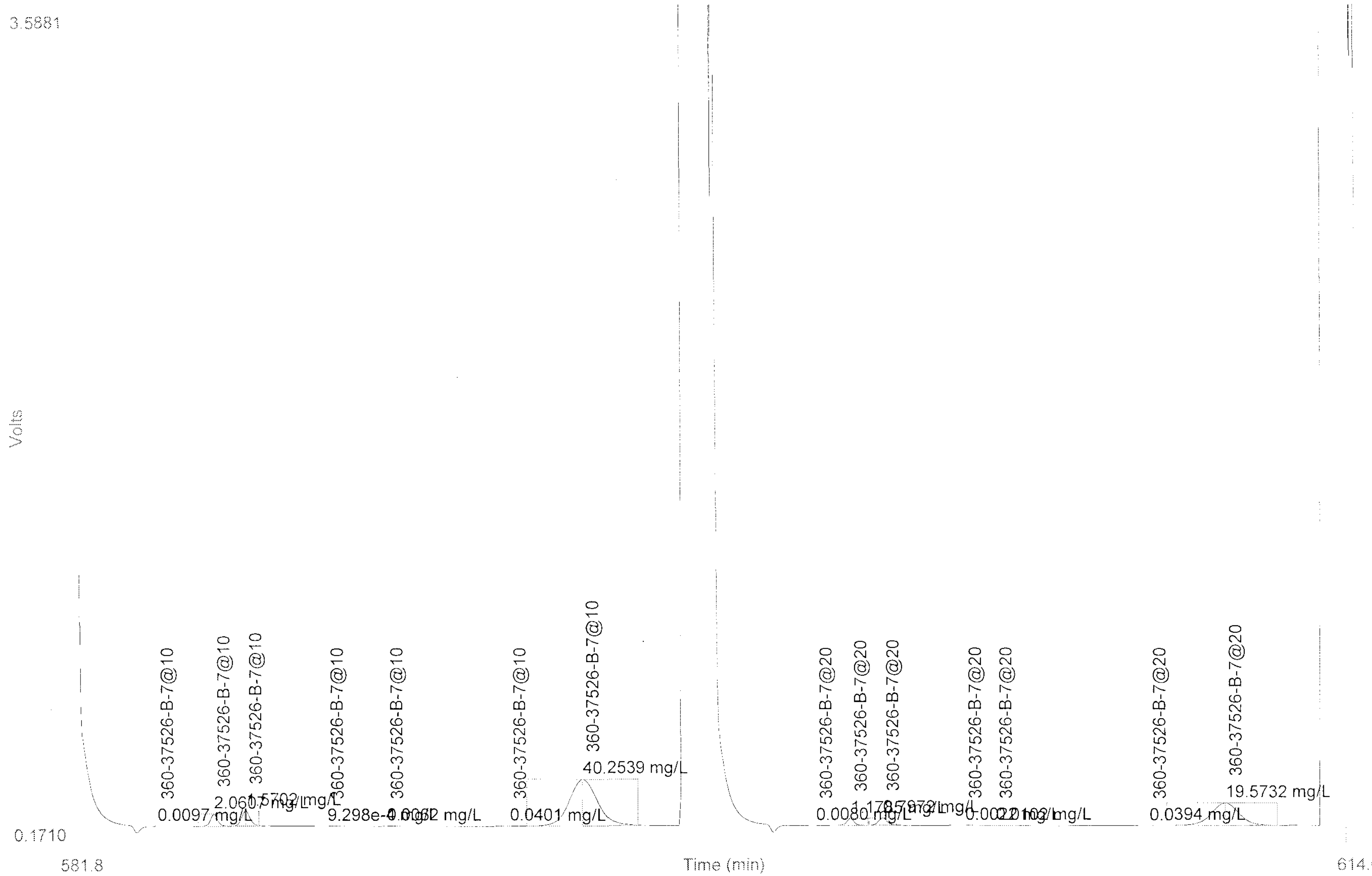
Channel 1 (Anions) : Set 19 of 43



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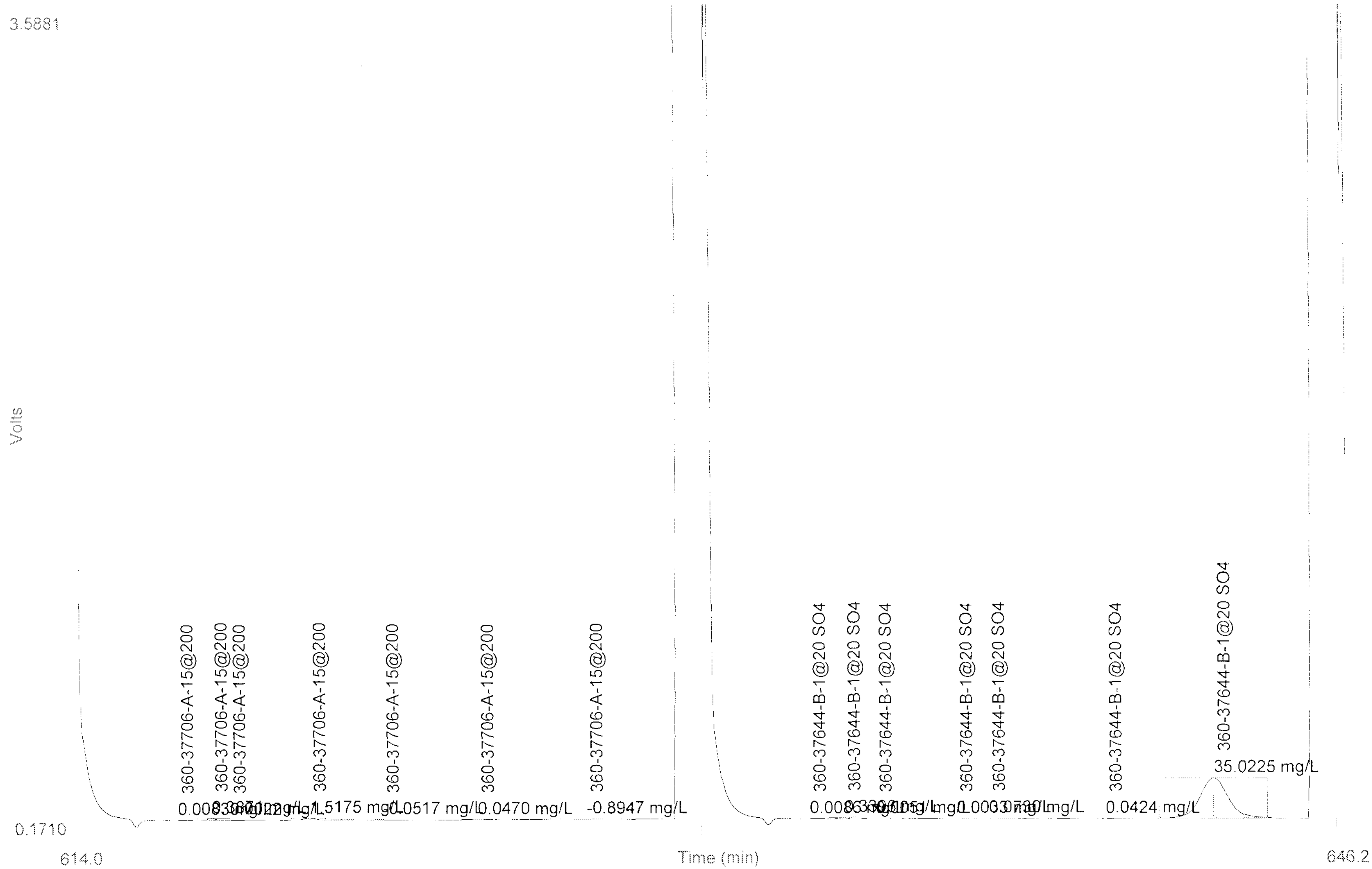
Channel 1 (Anions) : Set 20 of 43



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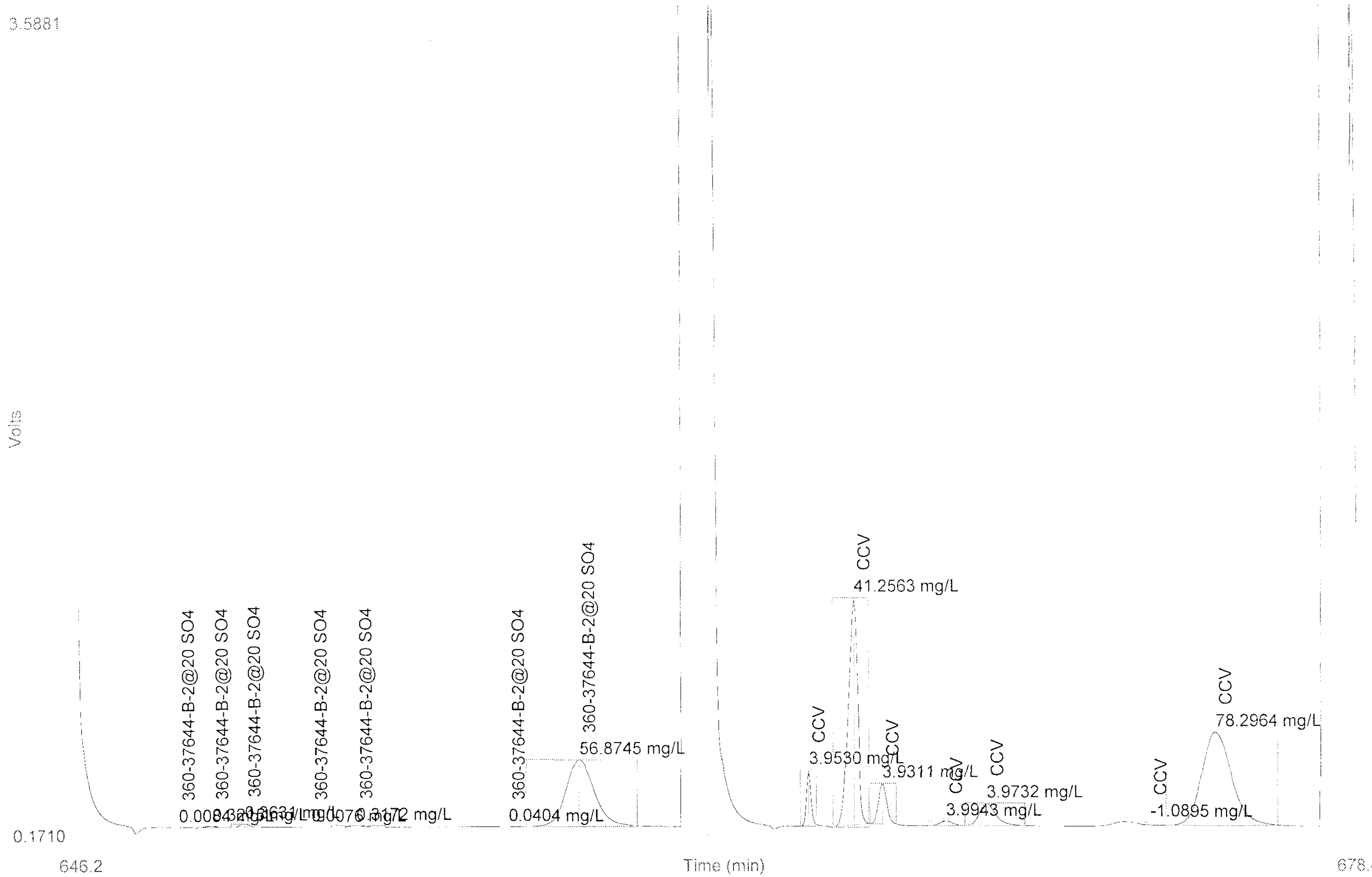
Channel 1 (Anions) : Set 21 of 43



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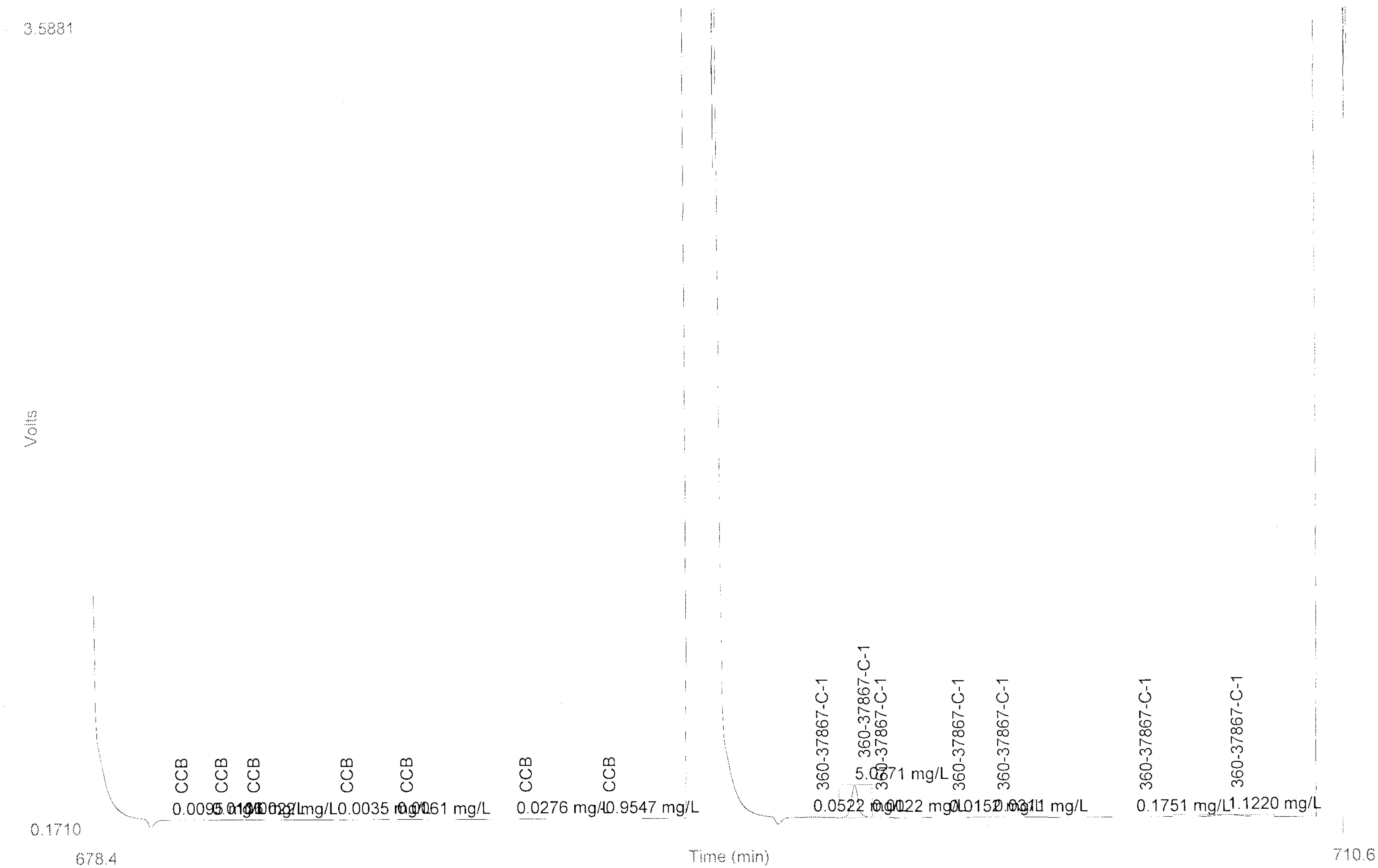
Channel 1 (Anions) : Set 22 of 43



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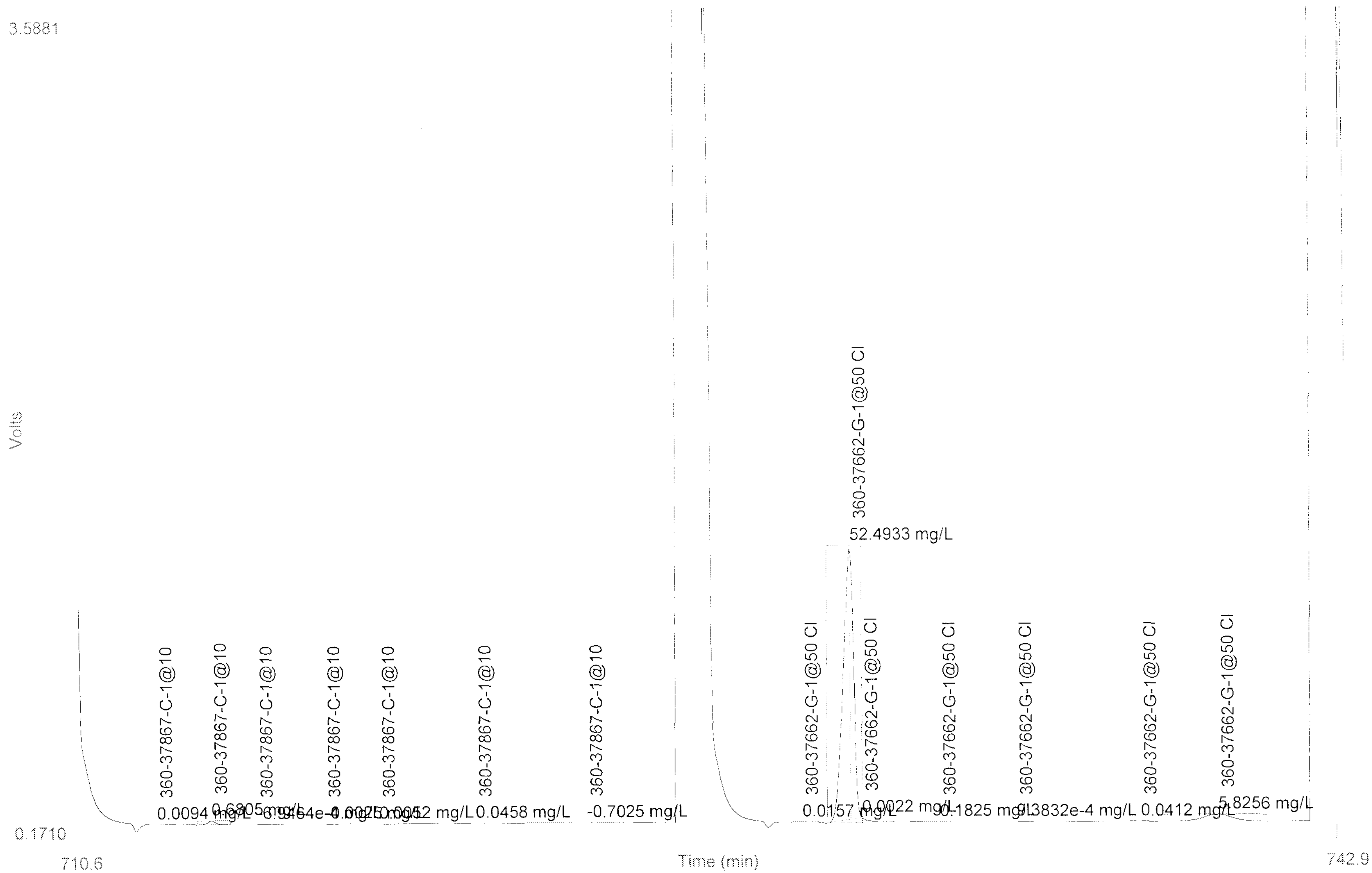
Channel 1 (Anions) : Set 23 of 43



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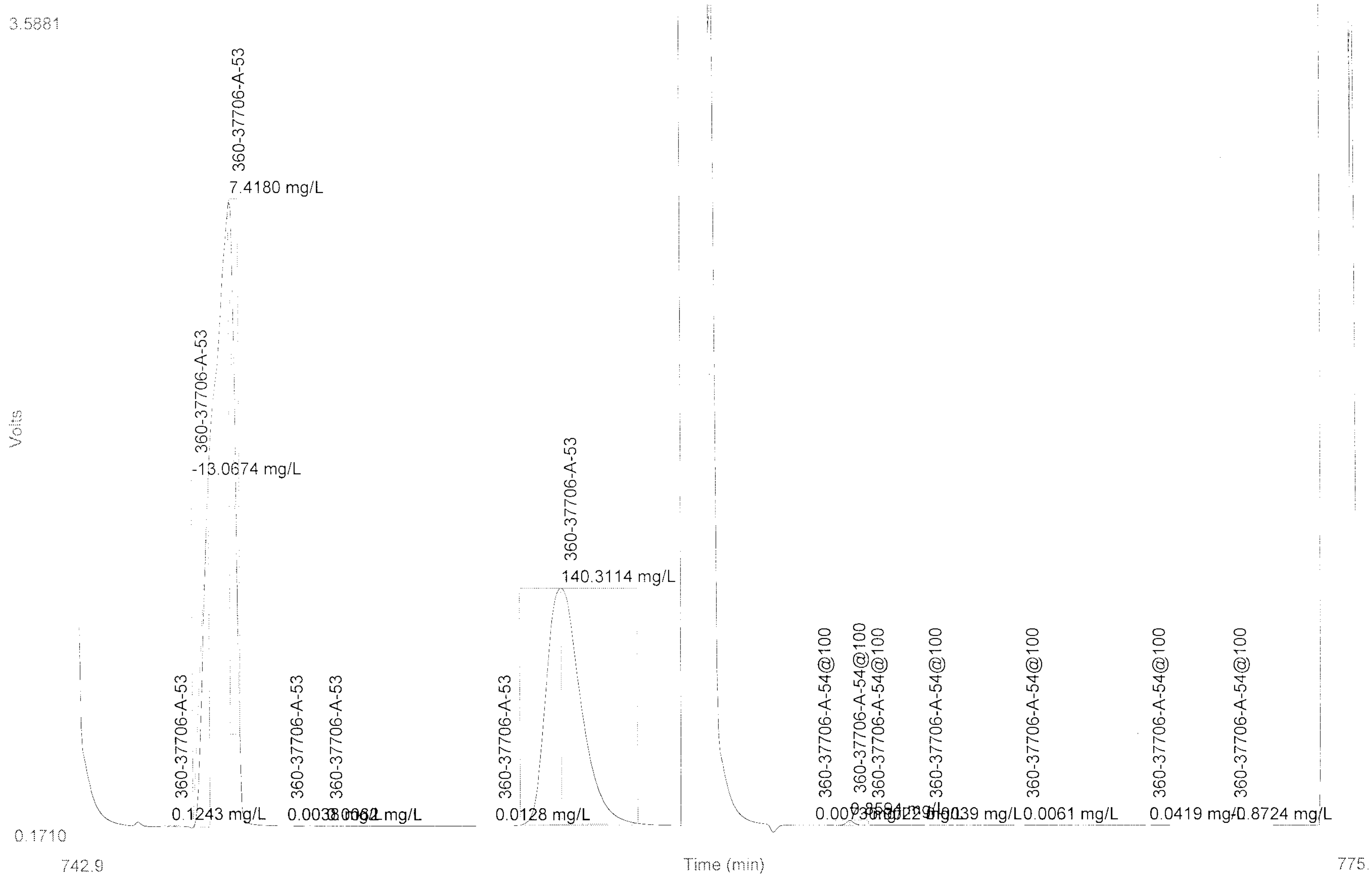
Channel 1 (Anions) : Set 24 of 43



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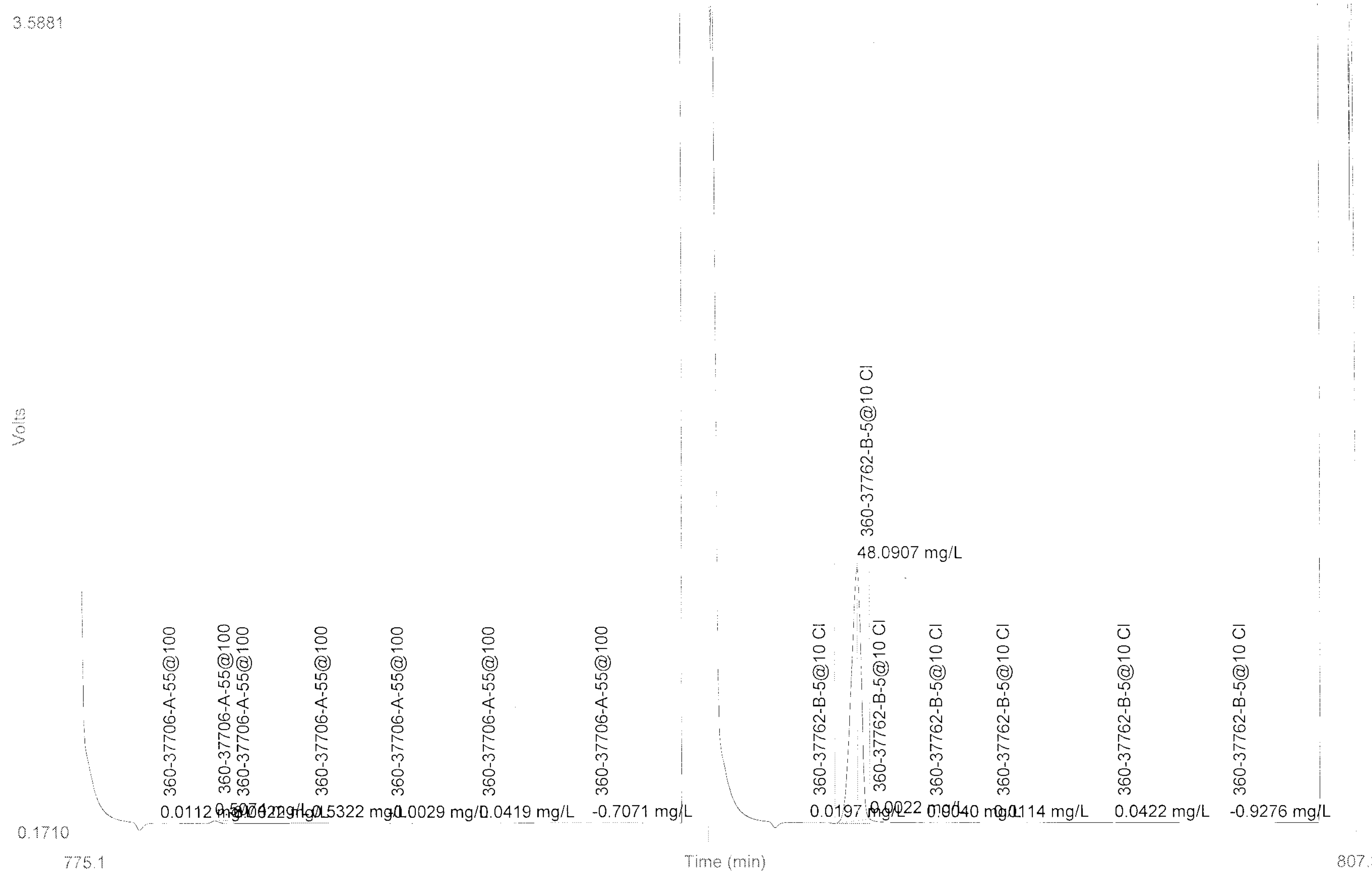
Channel 1 (Anions) : Set 25 of 43



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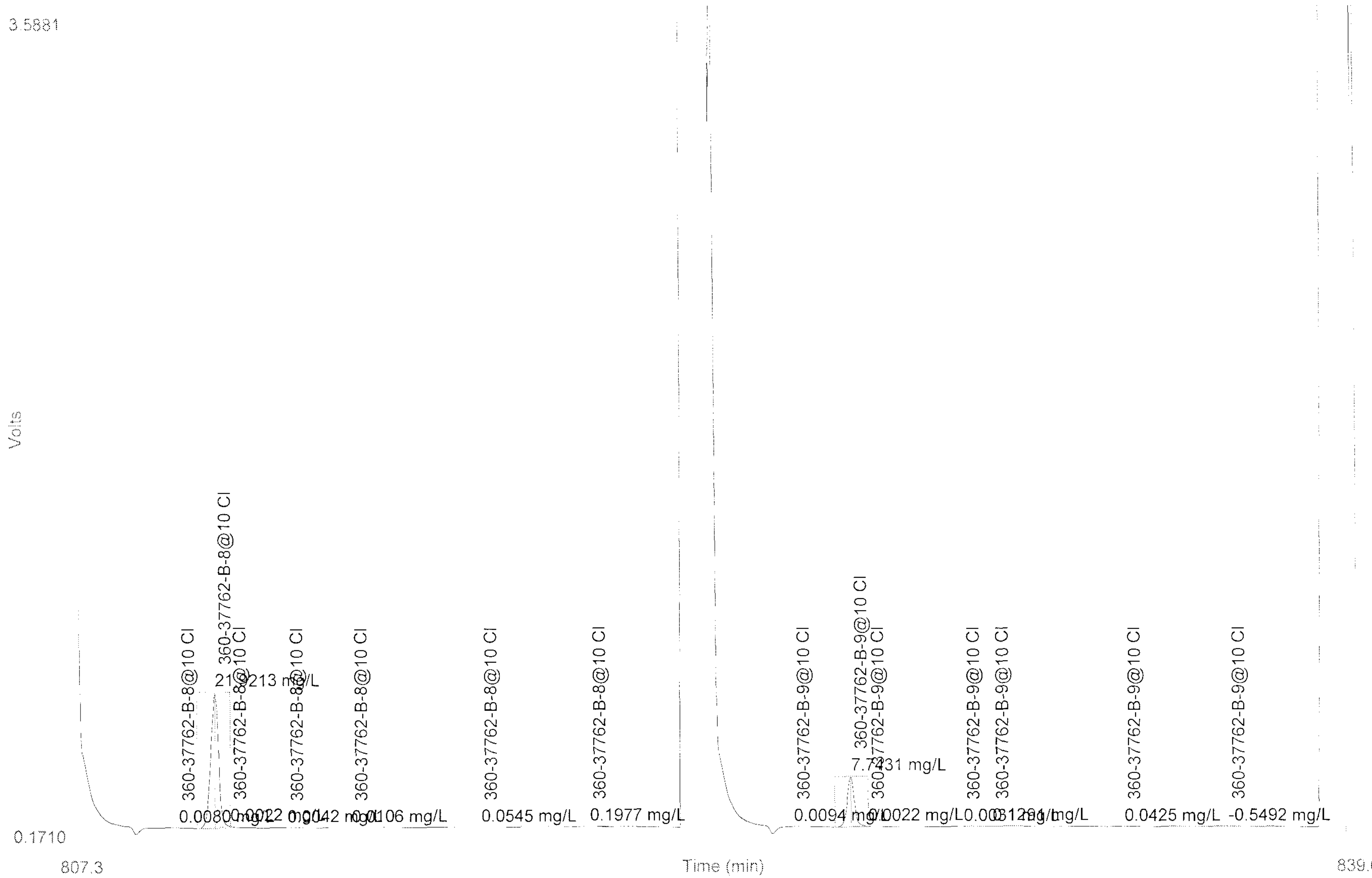
Channel 1 (Anions) : Set 26 of 43



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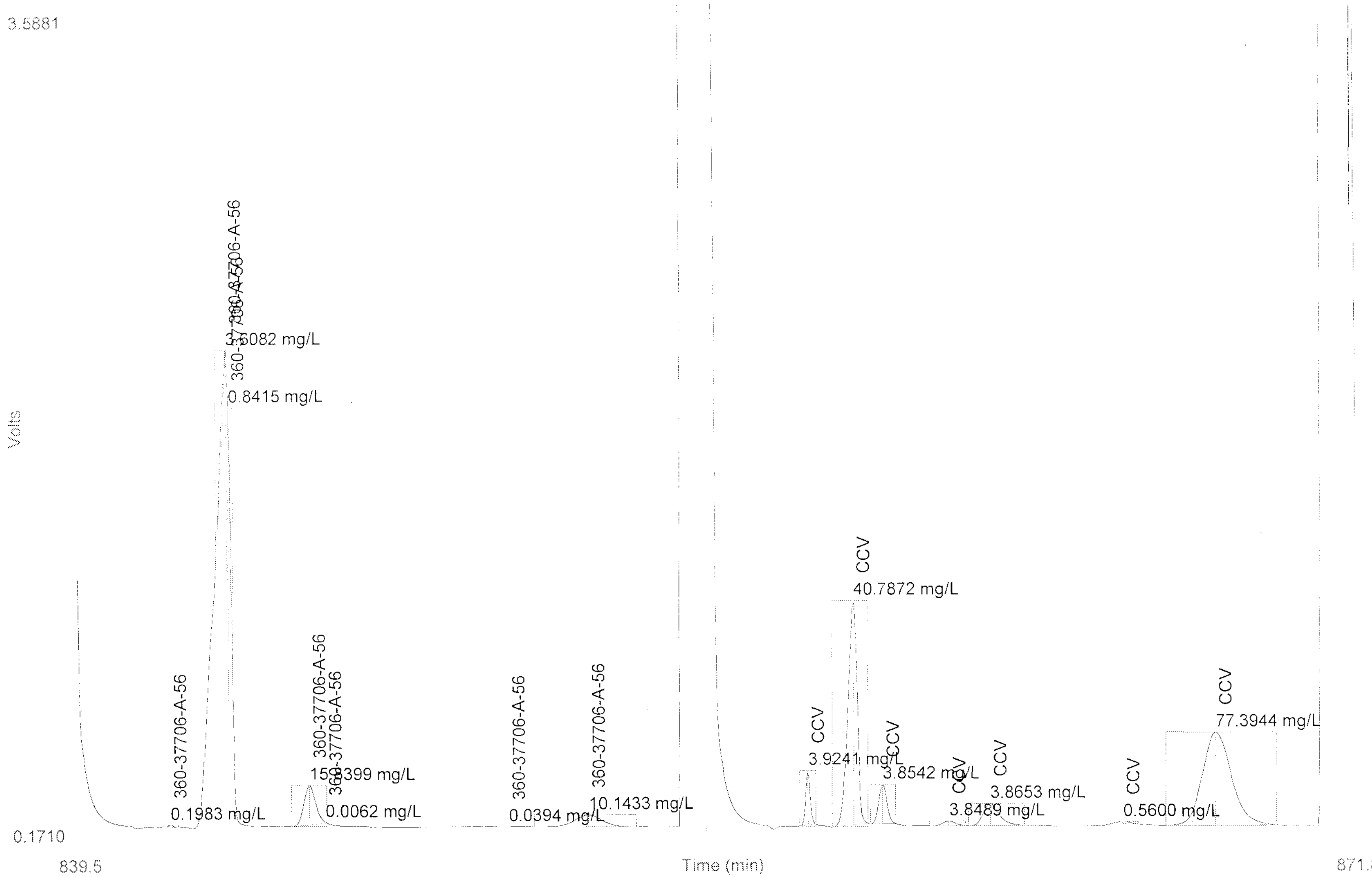

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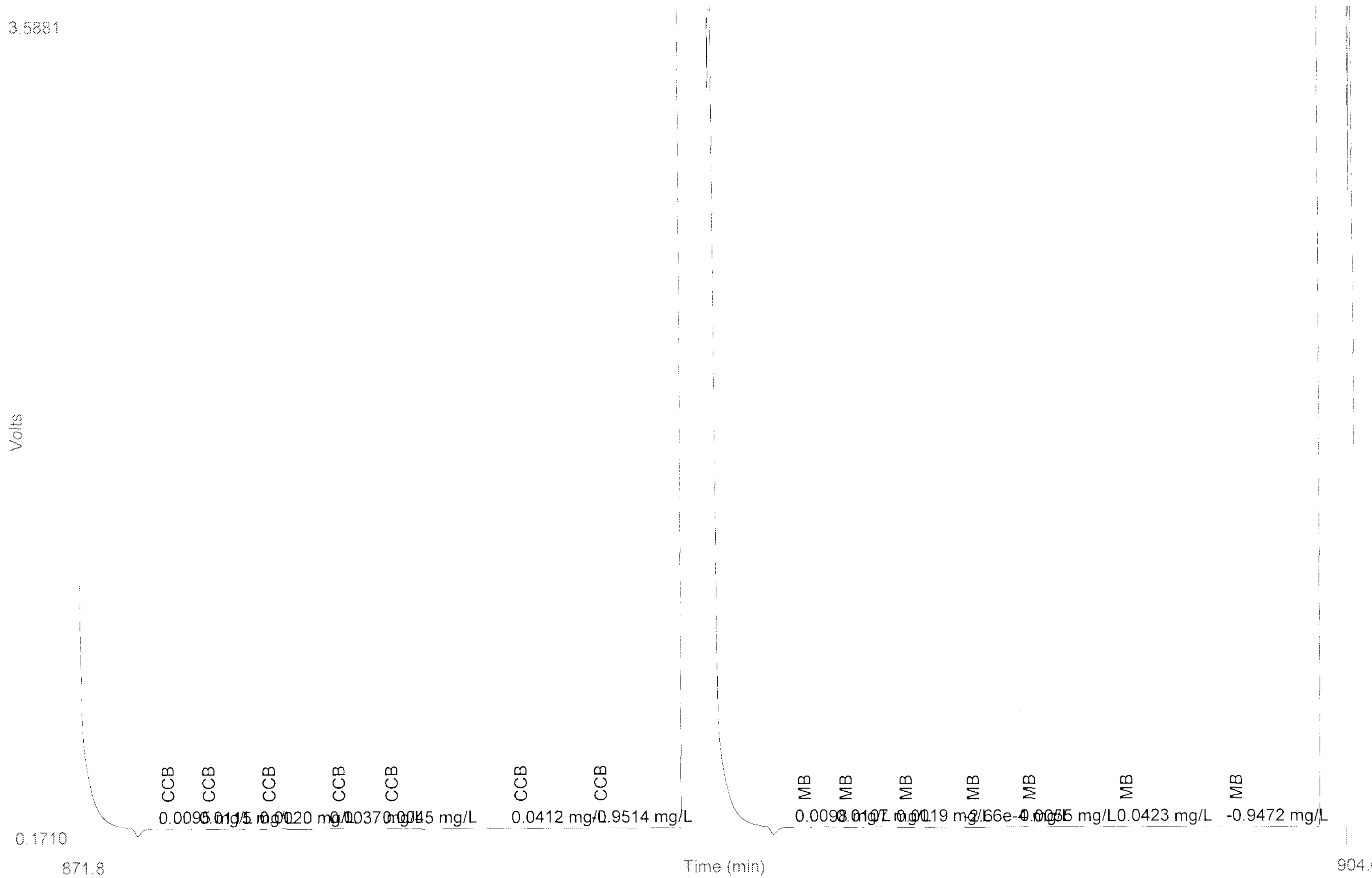
Date : 12/2/2011

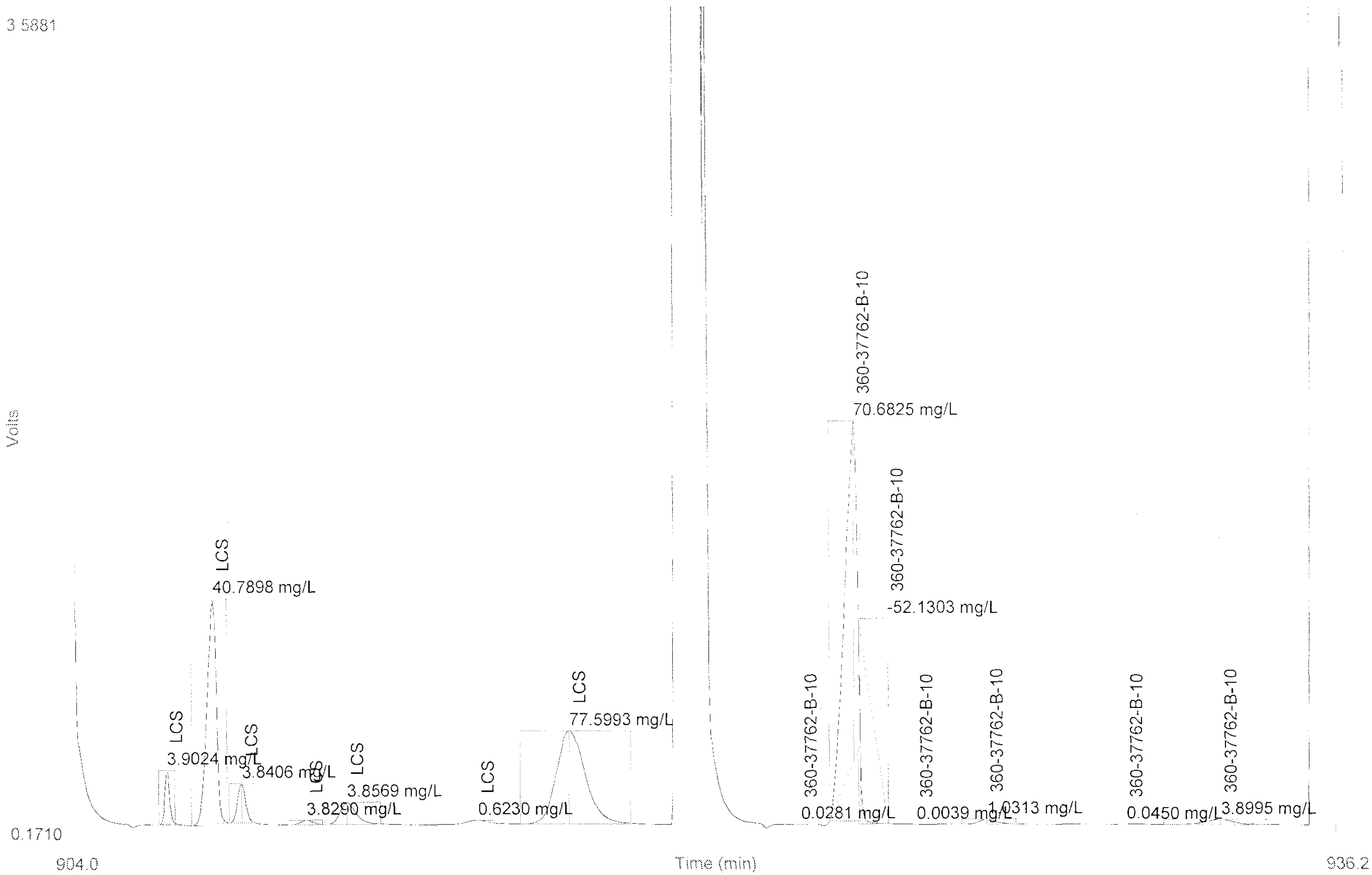
Channel 1 (Anions) : Set 28 of 43



Author: EmerichR

Date : 12/2/2011

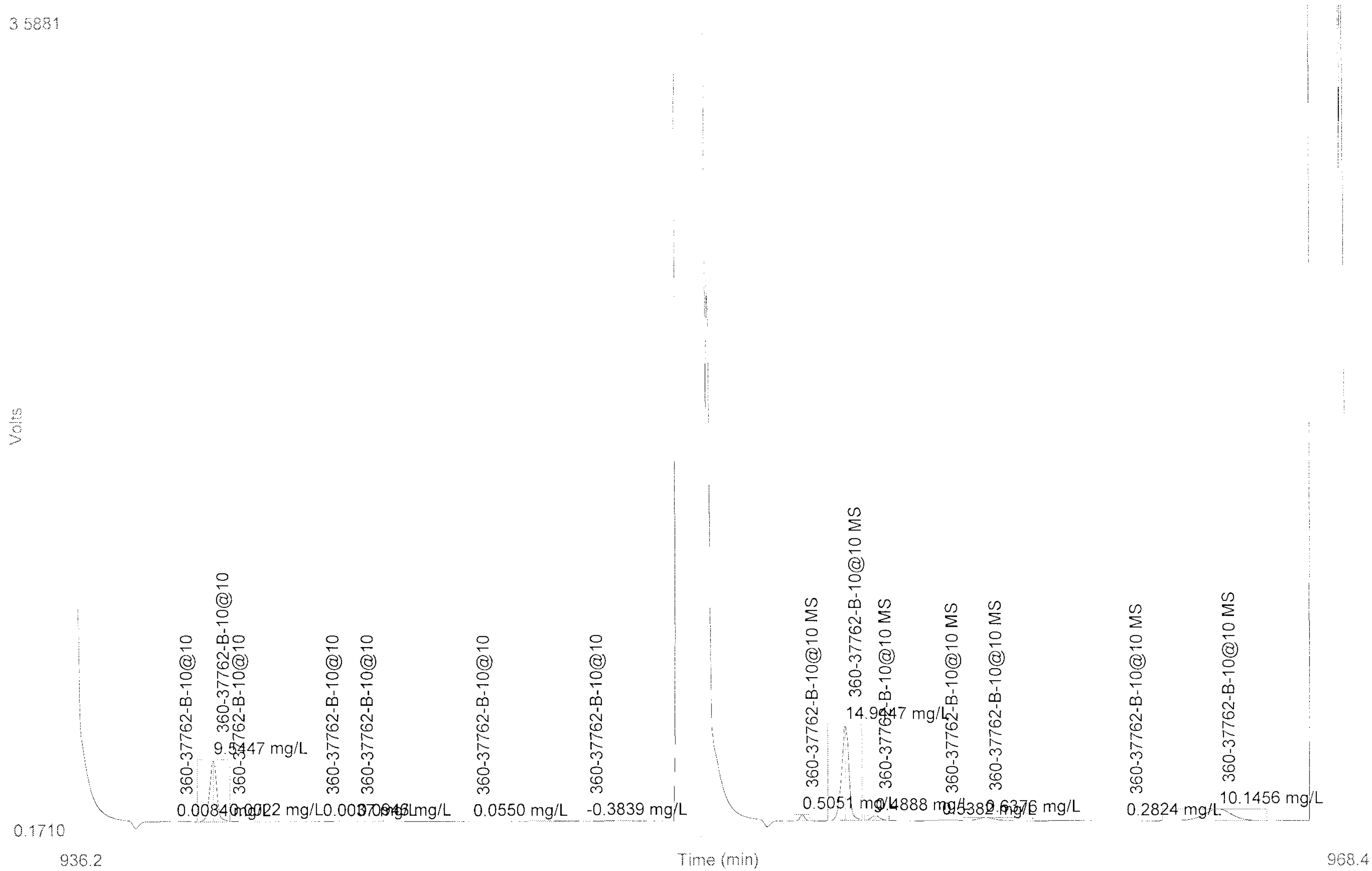
Channel 1 (Anions) : Set 29 of 43



Author: EmerichR

Date : 12/2/2011

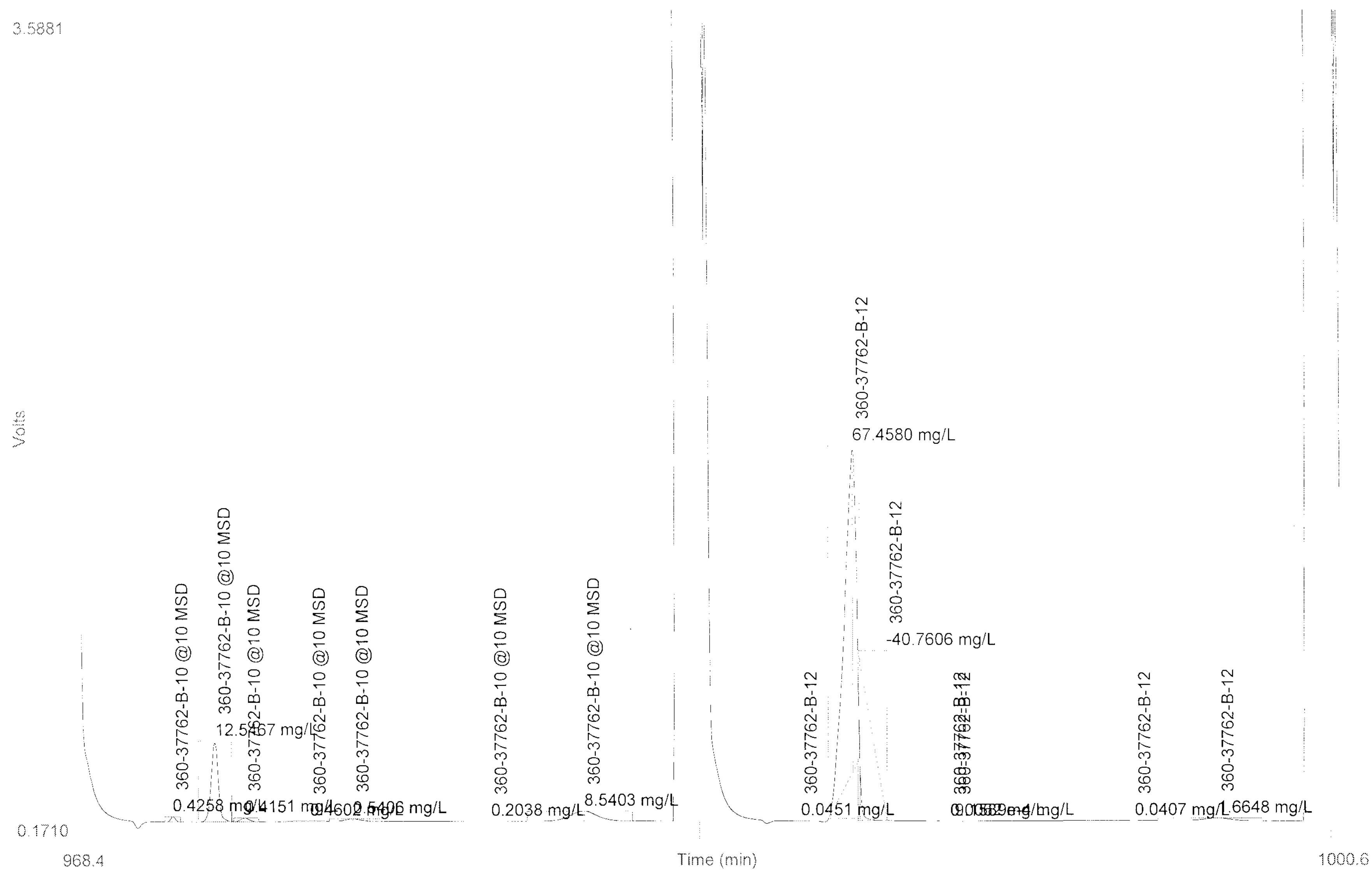
Channel 1 (Anions) : Set 30 of 43



Author: EmerichR

Date : 12/2/2011

Channel 1 (Anions) : Set 31 of 43



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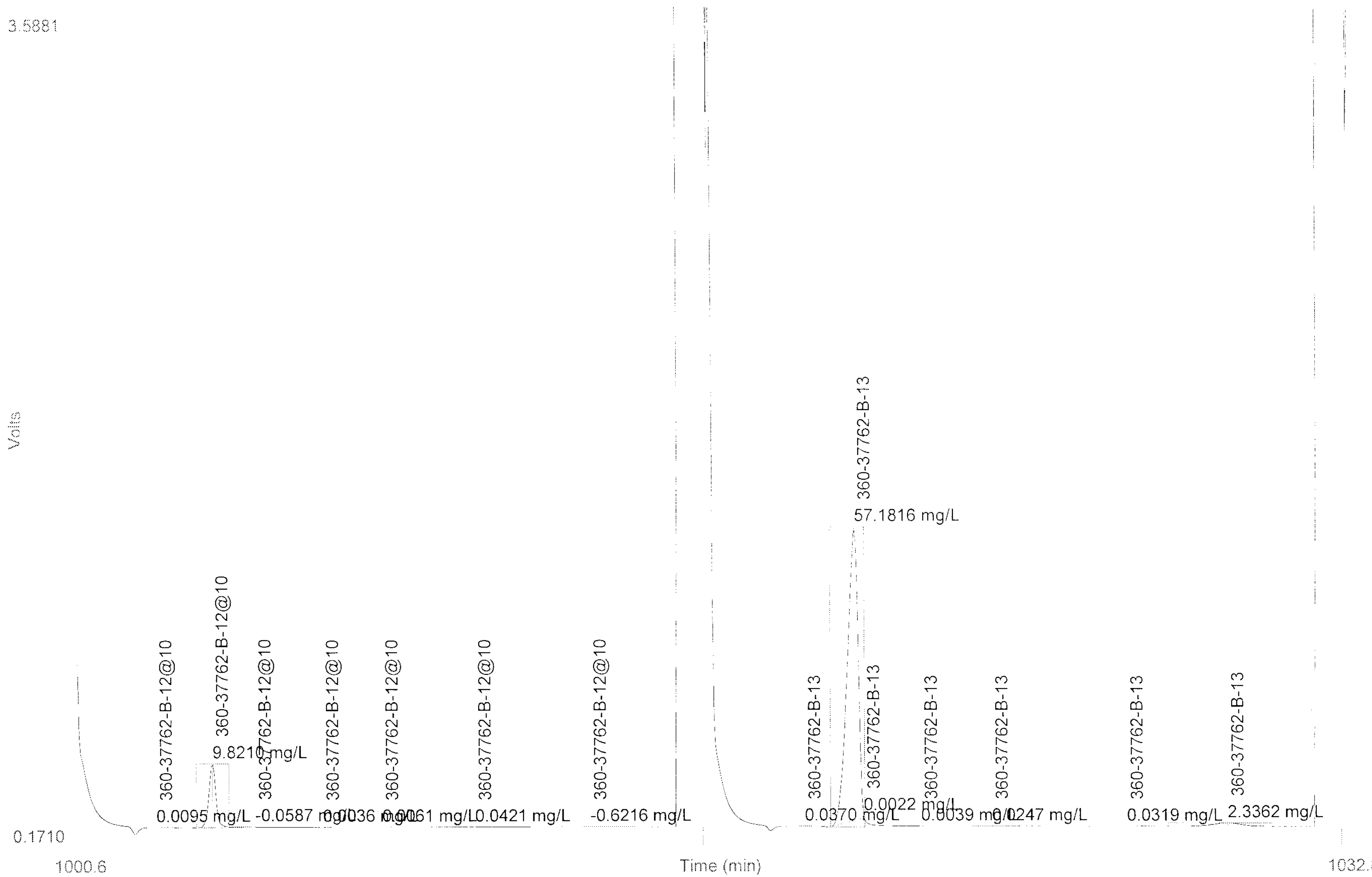
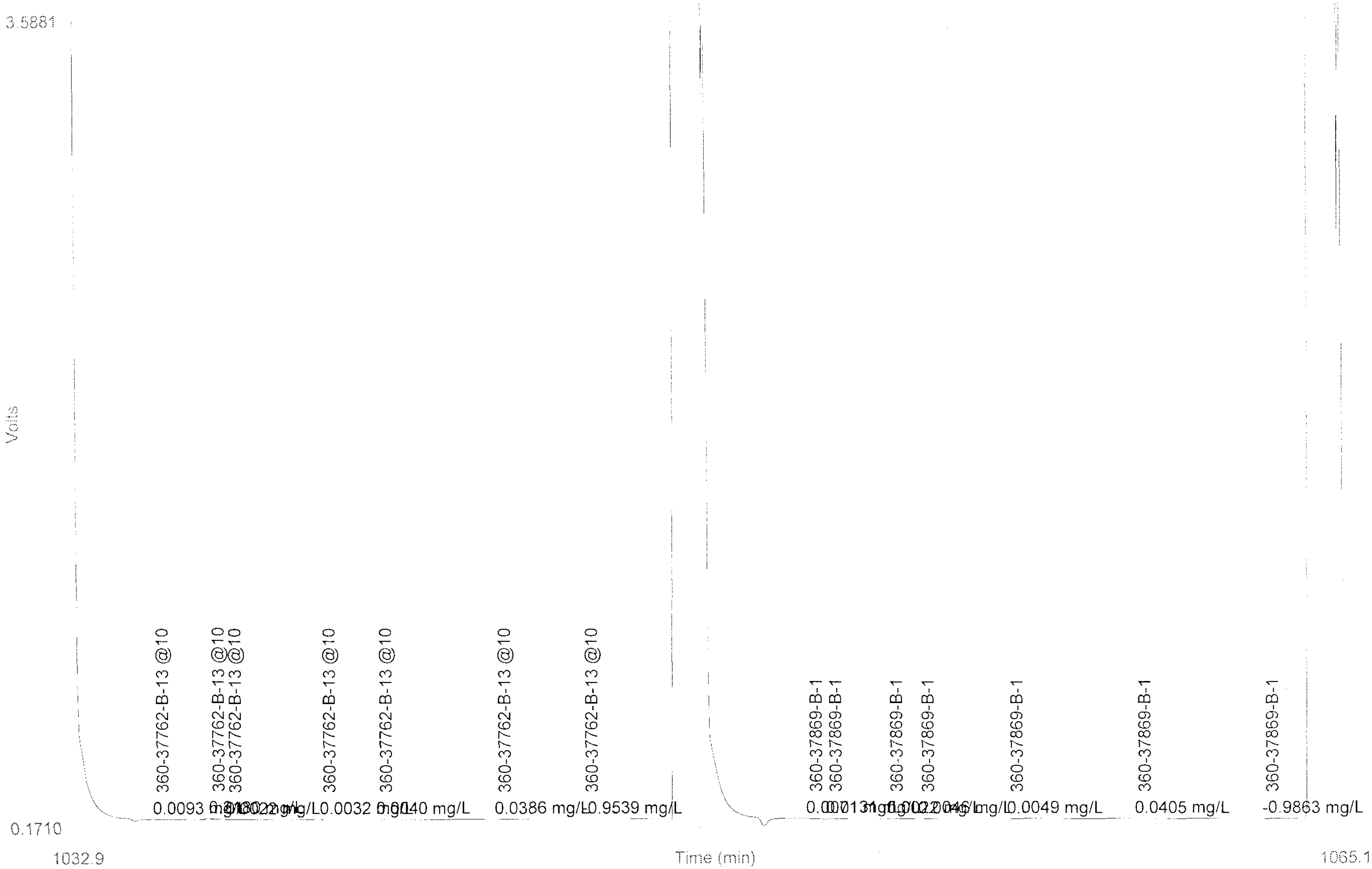
Author: EmerichR

Date : 12/2/2011

Channel 1 (Anions) : Set 32 of 43



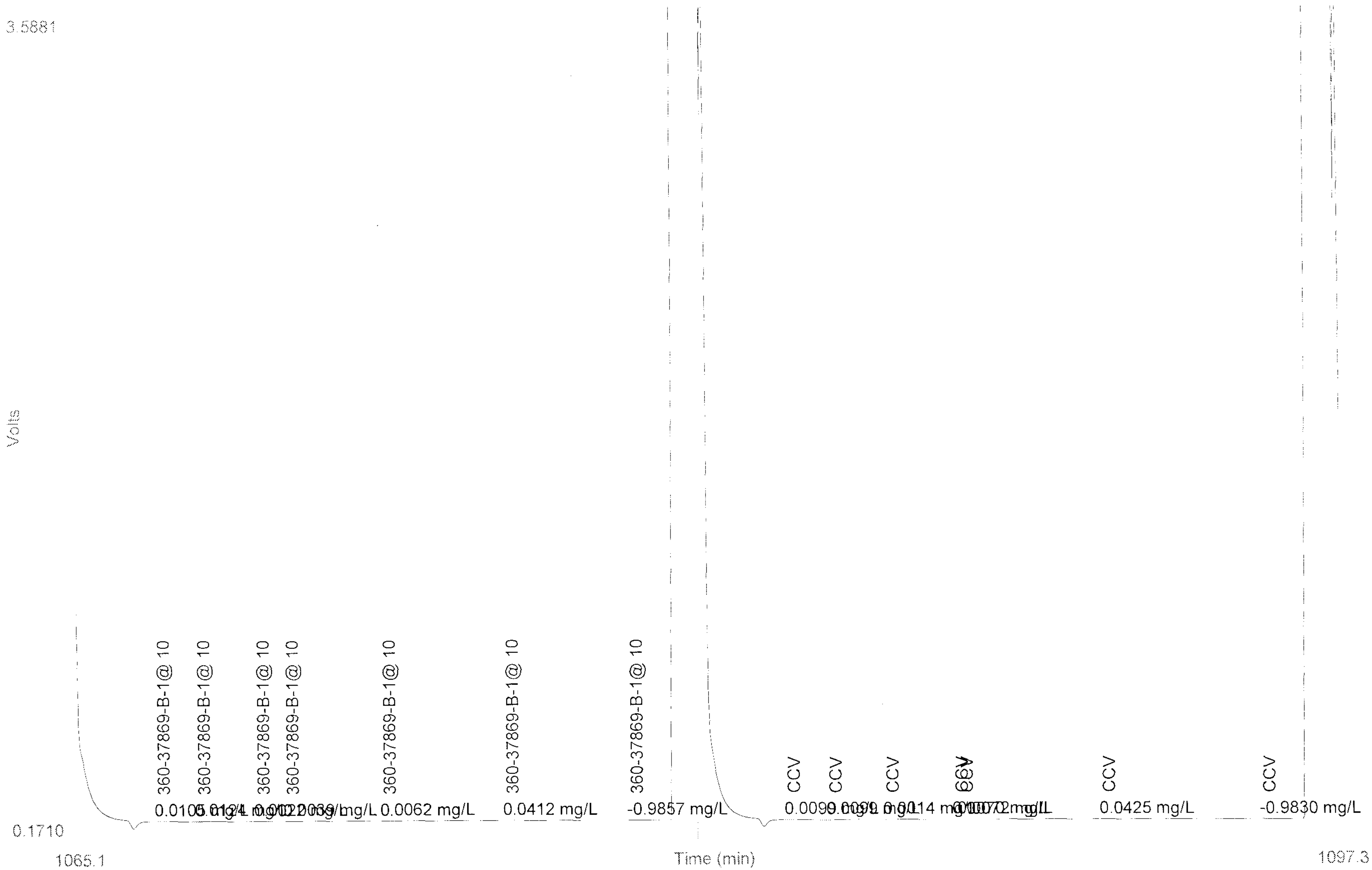
Channel 1 (Anions) : Set 33 of 43



Author: EmerichR

Date : 12/2/2011

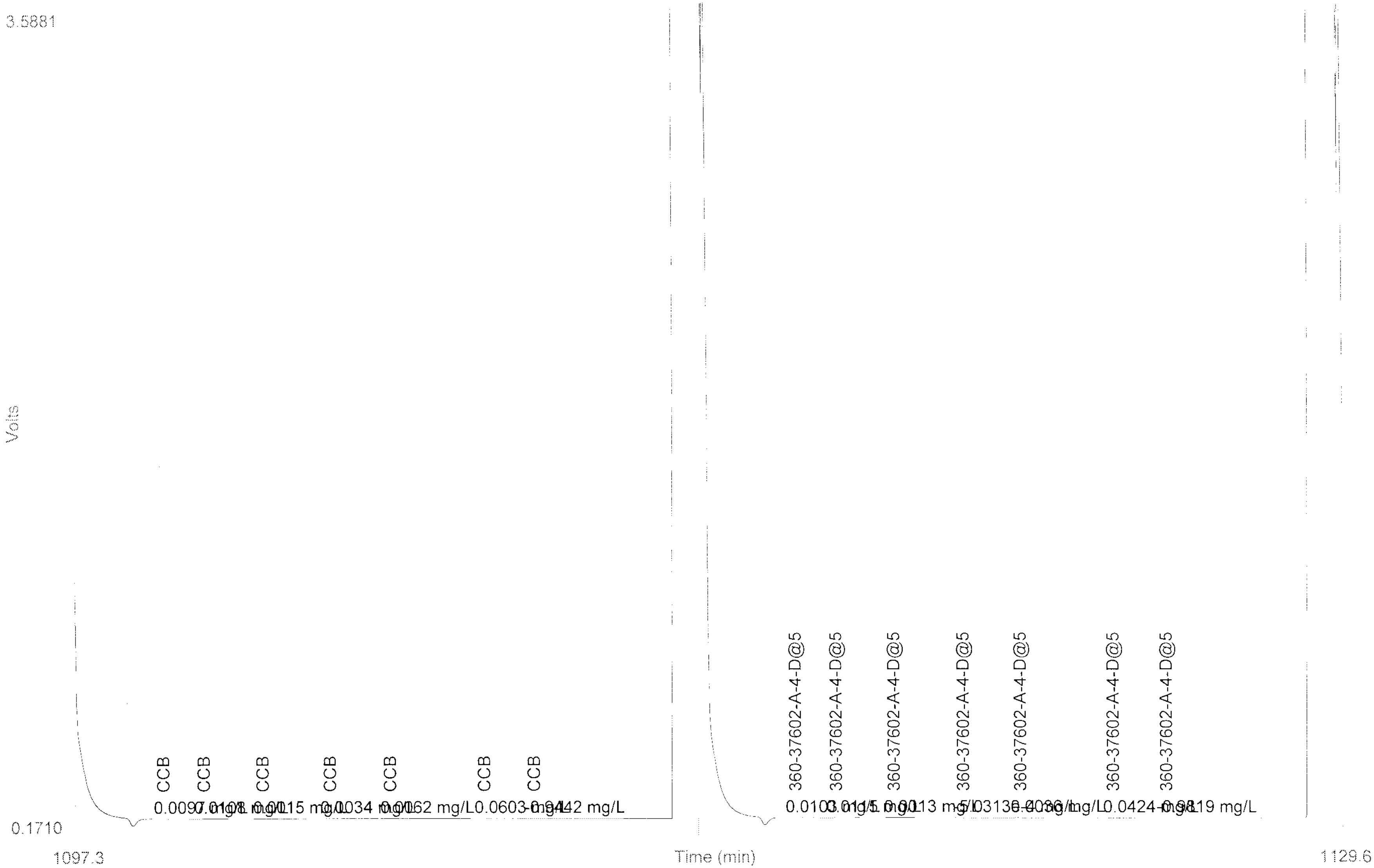
Channel 1 (Anions) : Set 34 of 43



Author: EmerichR

Date : 12/2/2011

Channel 1 (Anions) : Set 35 of 43

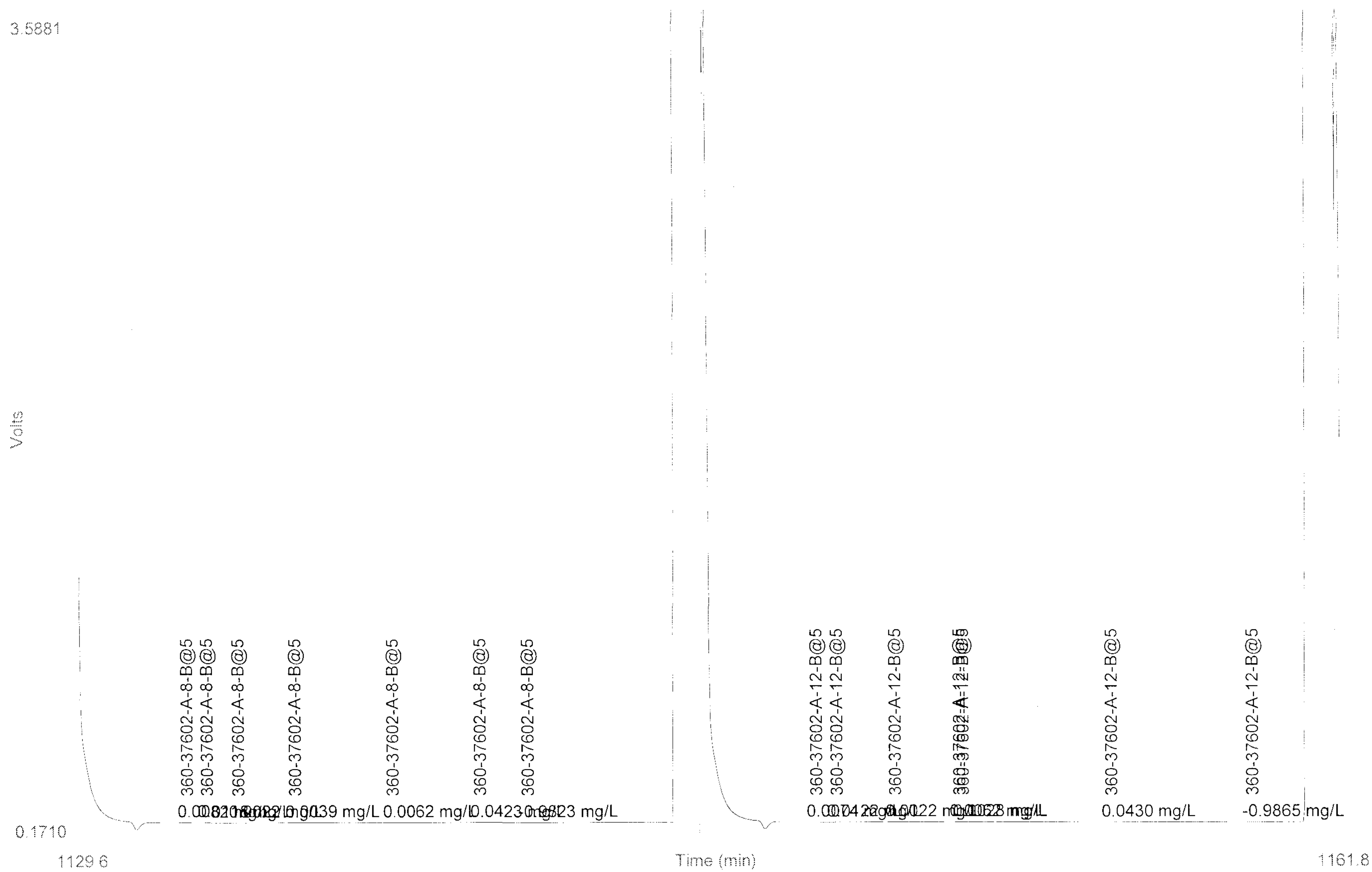


- 38 -

Author: EmerichR

Date : 12/2/2011

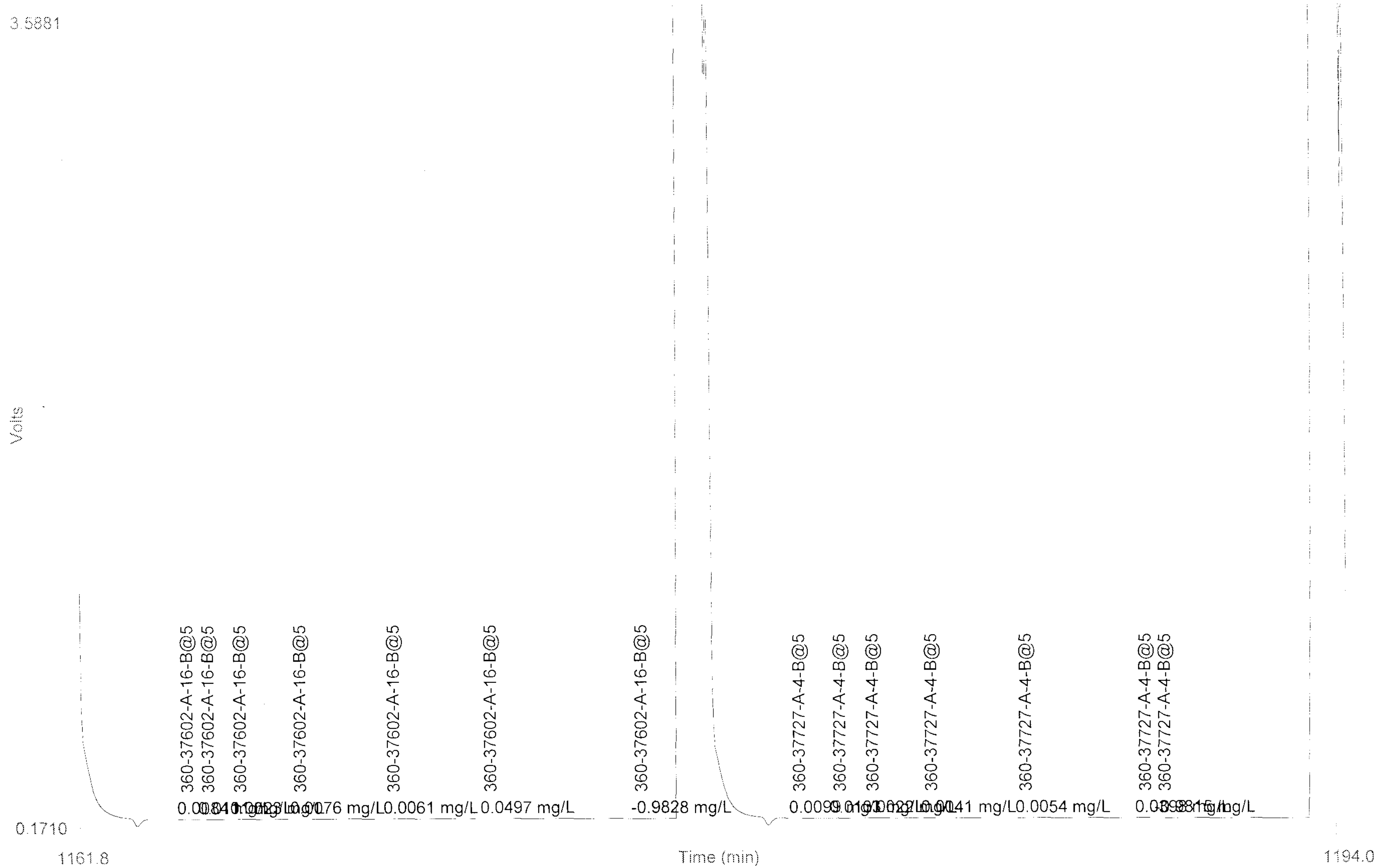
Channel 1 (Anions) : Set 36 of 43



Author: EmerichR

Date : 12/2/2011

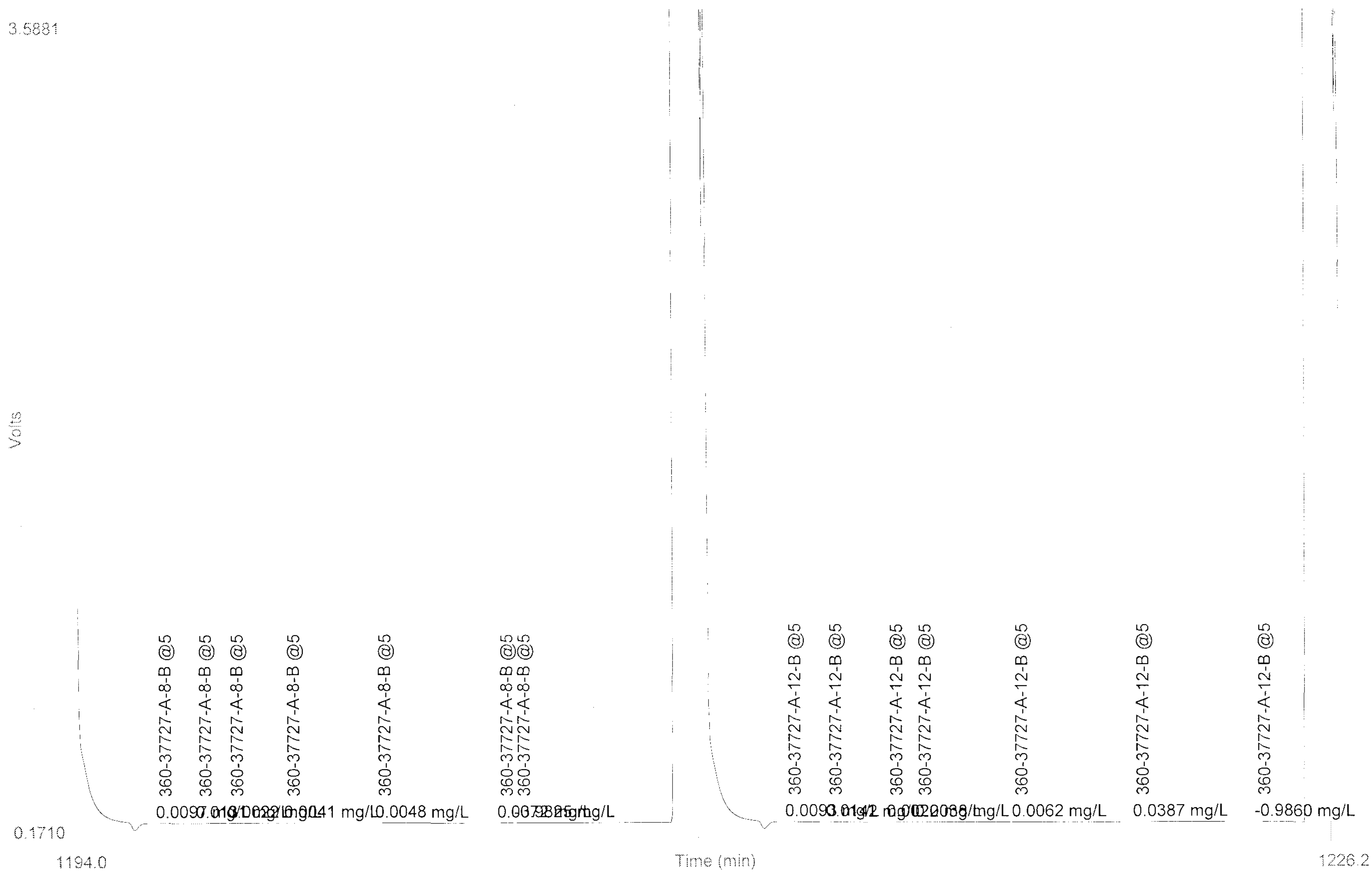
Channel 1 (Anions) : Set 37 of 43



Author: EmerichR

Date : 12/2/2011

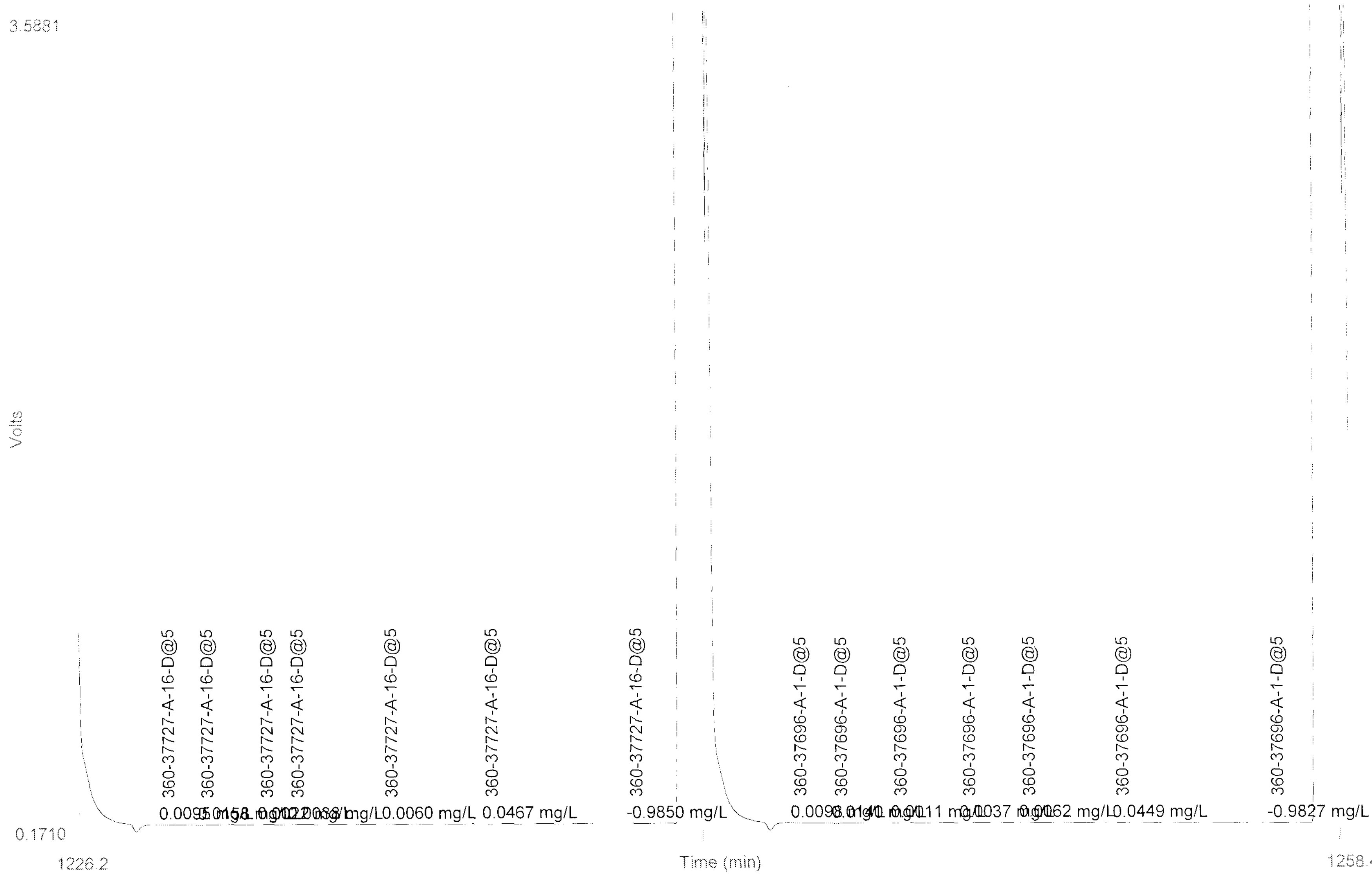
Channel 1 (Anions) : Set 38 of 43



Author: EmerichR

Date : 12/2/2011

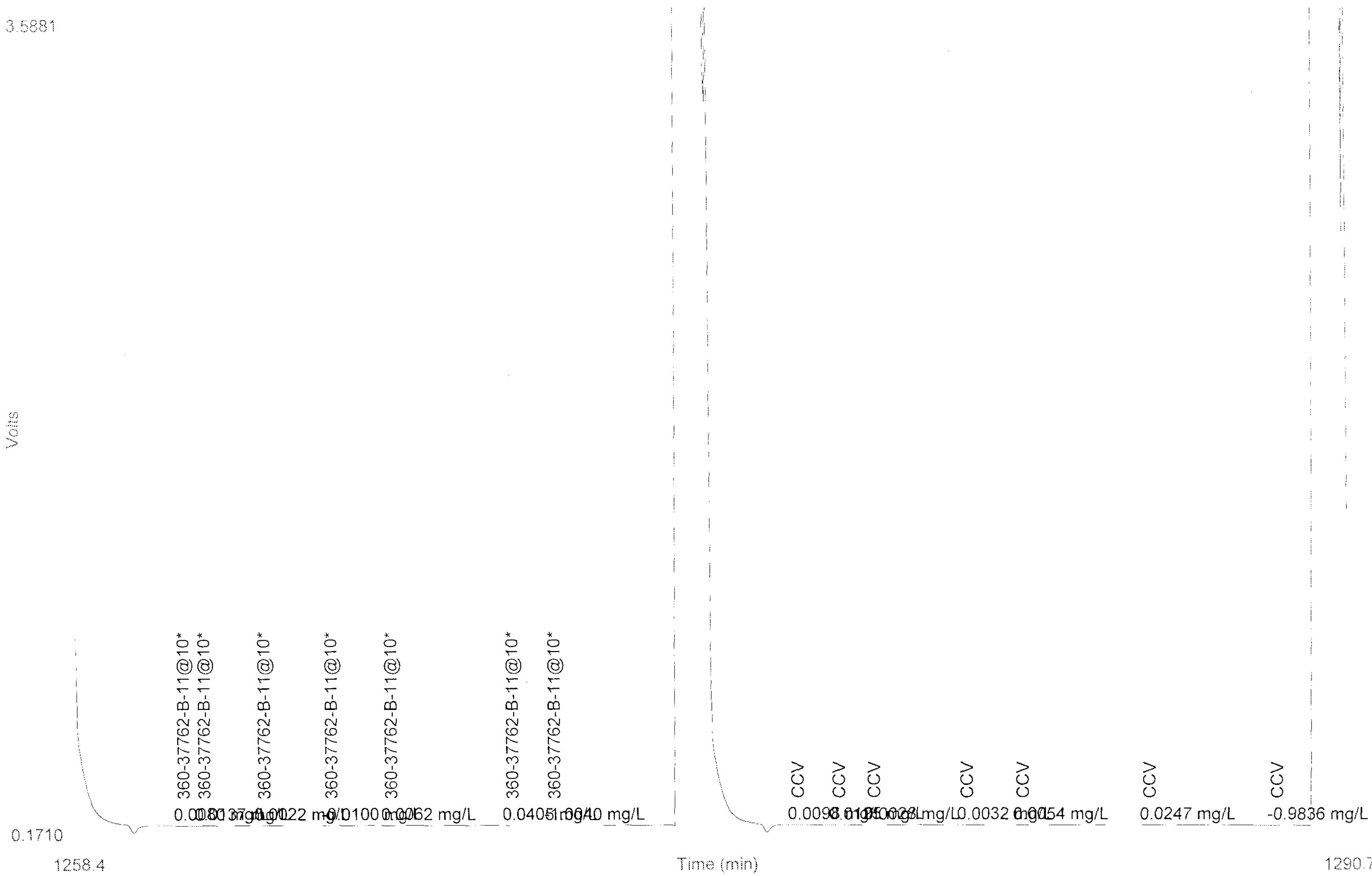
Channel 1 (Anions) : Set 39 of 43



Author: EmerichR

Date : 12/2/2011

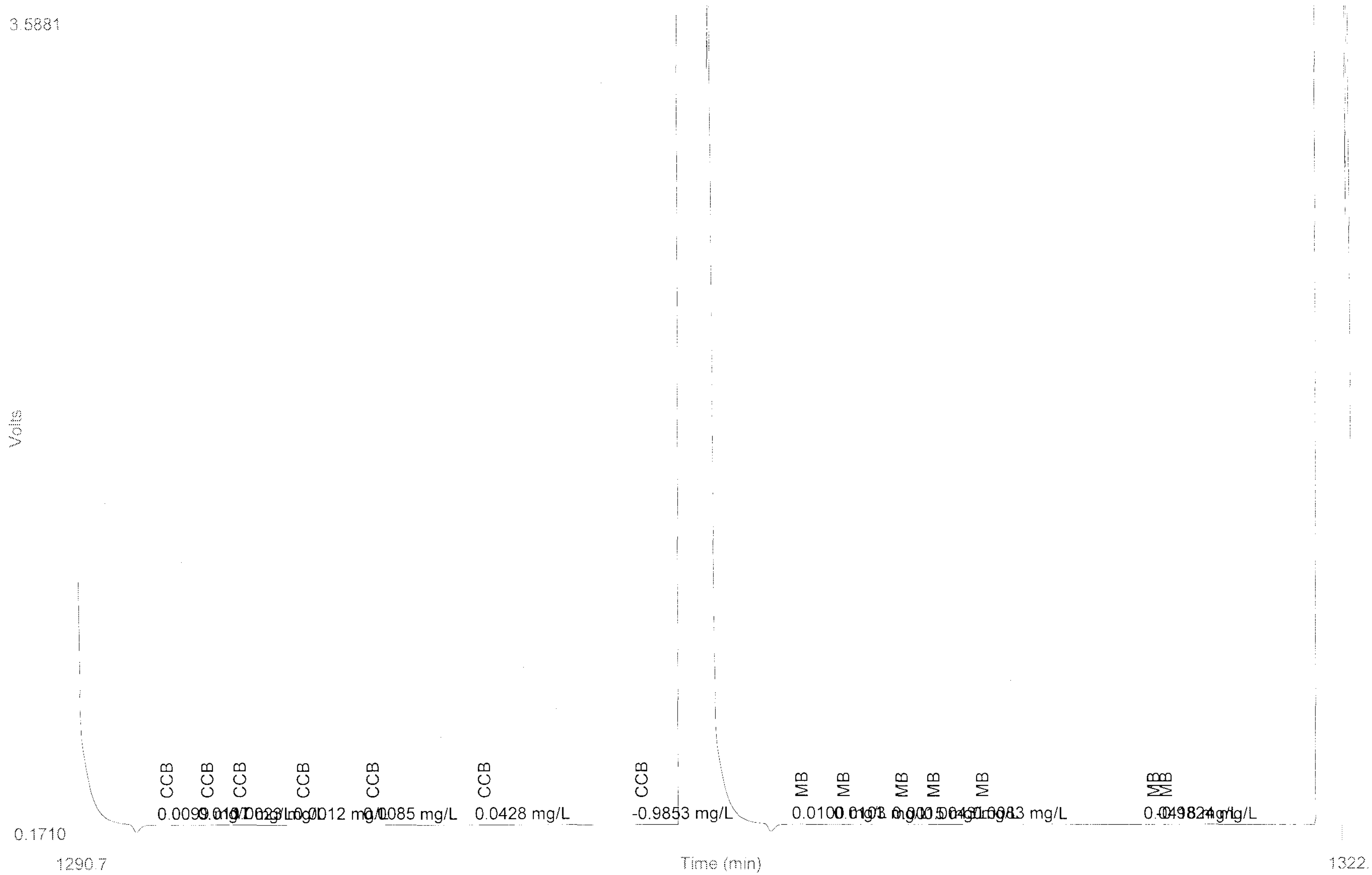
Channel 1 (Anions) : Set 40 of 43



Author: EmerichR

Date : 12/2/2011

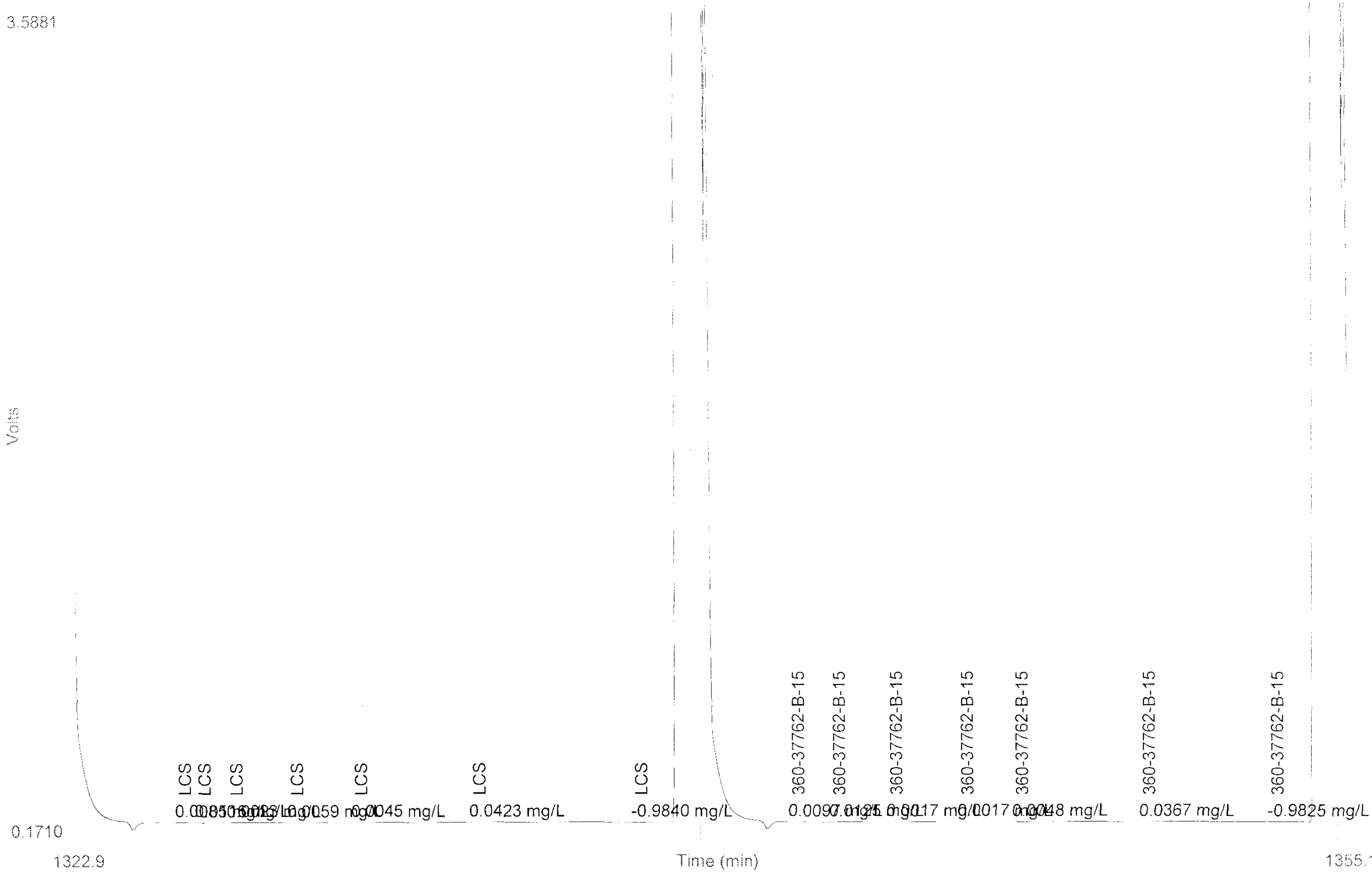
Channel 1 (Anions) : Set 41 of 43



Author: EmerichR

Date : 12/2/2011

Channel 1 (Anions) : Set 42 of 43



Author: EmerichR

Date : 12/2/2011

Channel 1 (Anions) : Set 43 of 43

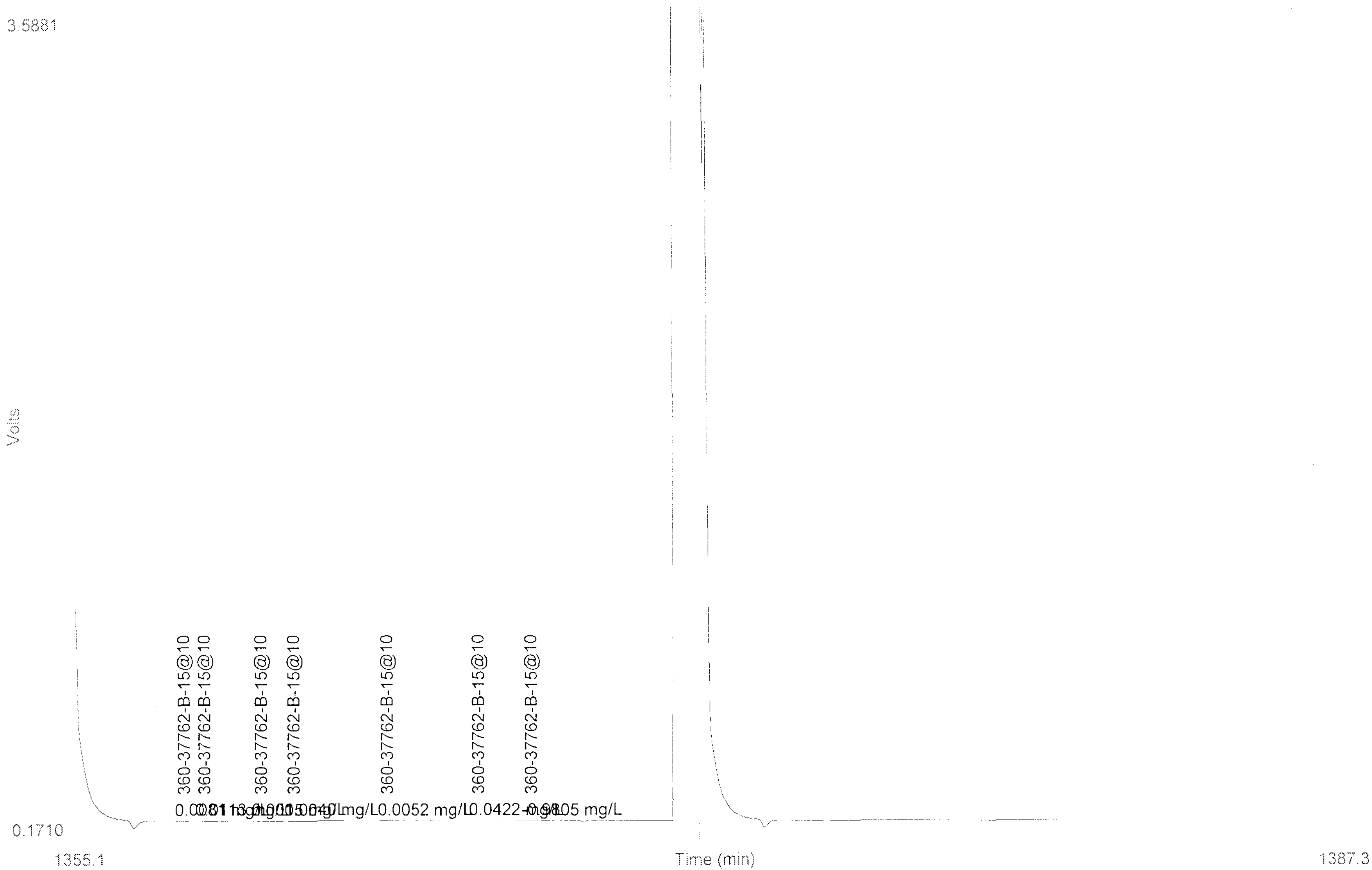
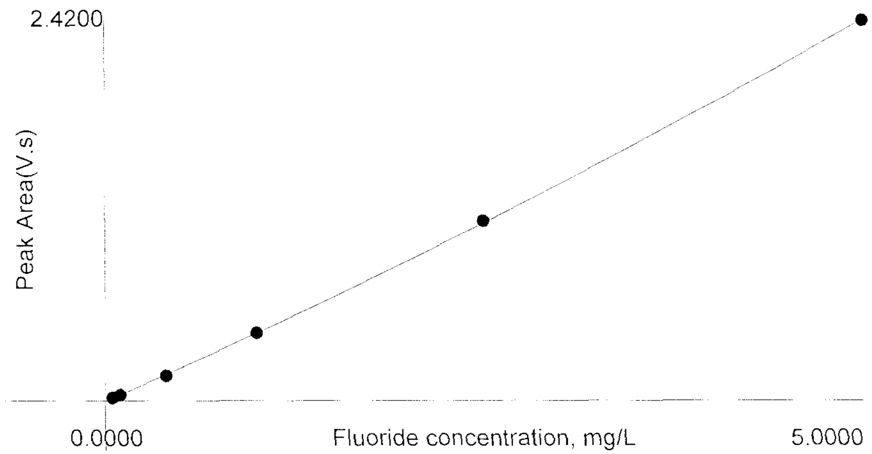


Table 1: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.4200	0.3882	0.3	11/15/2011	2:32:05 PM
2	2.5000	1	1.1432	0.1974	-1.3	11/15/2011	2:48:13 PM
3	1.0000	1	0.4295	0.0734	0.0	11/15/2011	3:04:20 PM
4	0.4000	1	0.1585	0.0271	4.9	11/15/2011	3:20:28 PM
5	0.1000	1	0.0379	0.0065	1.9	11/15/2011	3:36:35 PM
6	0.0500	1	0.0187	0.0032	-6.6	11/15/2011	3:52:42 PM

Figure 1: Fluoride



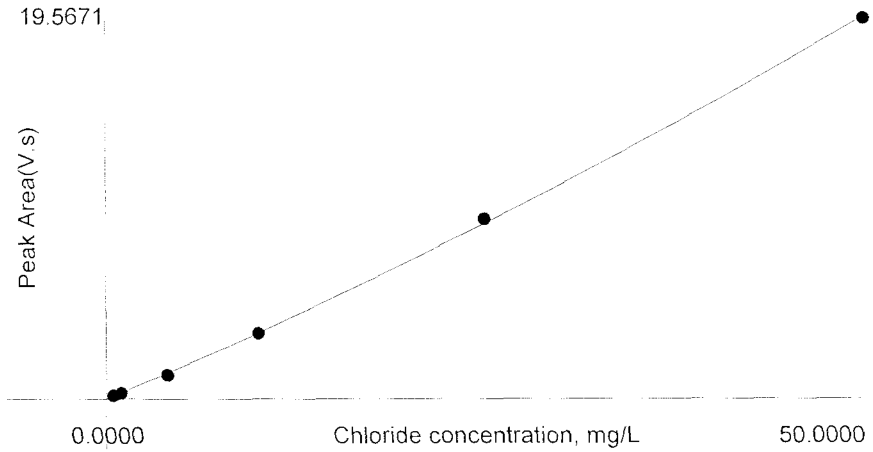
Area = 0.0132 * Conc^2 + 0.4199 * Conc - 0.0035
Conc = - 0.1211 * Area^2 + 2.3494 * Area + 0.0093
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 2: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	19.5671	1.3052	0.5	11/15/2011	2:32:05 PM
2	25.0000	1	9.2472	0.8077	-2.6	11/15/2011	2:48:13 PM
3	10.0000	1	3.3710	0.3697	1.0	11/15/2011	3:04:20 PM
4	4.0000	1	1.2235	0.1456	7.7	11/15/2011	3:20:28 PM
5	1.0000	1	0.3080	0.0351	4.1	11/15/2011	3:36:35 PM
6	0.5000	1	0.1732	0.0187	-11.1	11/15/2011	3:52:42 PM

Figure 2: Chloride



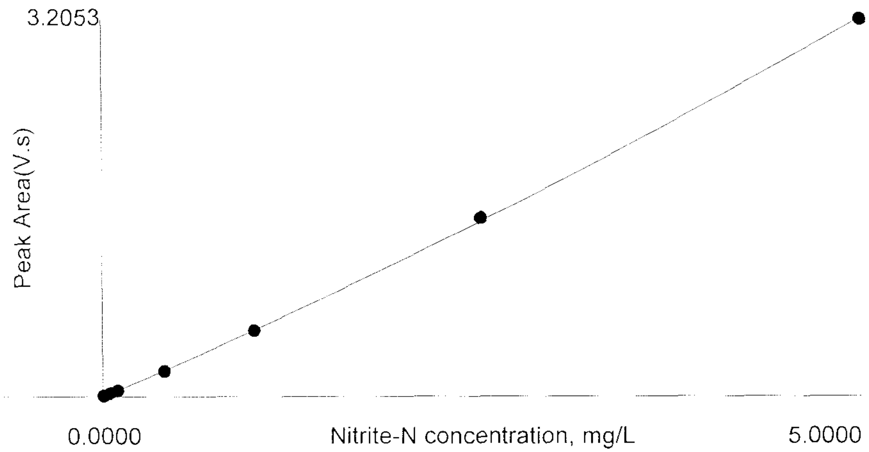
Area = 0.0013 * Conc^2 + 0.3283 * Conc - 0.0085
Conc = - 0.0226 * Area^2 + 2.9826 * Area + 0.0435
Correlation Coefficient (r) = 0.99997

1/x weighting

Table 3: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.2053	0.3249	0.4	11/15/2011	2:32:05 PM
2	2.5000	1	1.5145	0.1578	-1.9	11/15/2011	2:48:13 PM
3	1.0000	1	0.5600	0.0576	0.8	11/15/2011	3:04:20 PM
4	0.4000	1	0.2121	0.0216	3.8	11/15/2011	3:20:28 PM
5	0.1000	1	0.0502	0.0051	6.6	11/15/2011	3:36:35 PM
6	0.0500	1	0.0267	0.0026	-1.4	11/15/2011	3:52:42 PM
7	0.0100	1	0.0049	5.0658e-4	-10.2	11/15/2011	4:08:48 PM

Figure 3: Nitrite-N



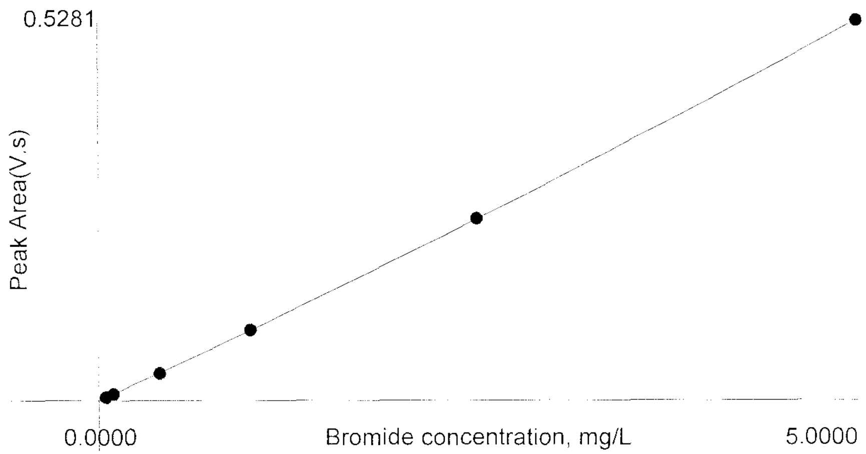
Area = 0.0195 * Conc^2 + 0.5461 * Conc - 0.0010
Conc = - 0.0787 * Area^2 + 1.8046 * Area + 0.0022
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 4: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.5281	0.0394	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	0.2527	0.0186	-0.2	11/15/2011	2:48:13 PM
3	1.0000	1	0.0981	0.0072	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.0379	0.0027	1.4	11/15/2011	3:20:28 PM
5	0.1000	1	0.0092	6.5877e-4	1.5	11/15/2011	3:36:35 PM
6	0.0500	1	0.0046	3.2836e-4	-2.5	11/15/2011	3:52:42 PM

Figure 4: Bromide



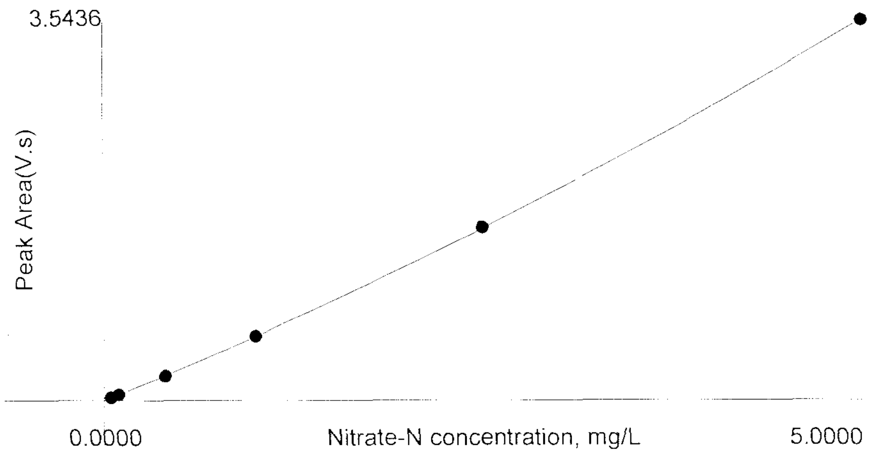
Area = 0.0019 * Conc^2 + 0.0962 * Conc - 3.2483e-4
Conc = - 1.6748 * Area^2 + 10.3373 * Area + 0.0038
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 5: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.5436	0.1988	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	1.6106	0.0905	-0.5	11/15/2011	2:48:13 PM
3	1.0000	1	0.6005	0.0330	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.2256	0.0121	2.5	11/15/2011	3:20:28 PM
5	0.1000	1	0.0531	0.0028	3.8	11/15/2011	3:36:35 PM
6	0.0500	1	0.0279	0.0014	-5.9	11/15/2011	3:52:42 PM

Figure 5: Nitrate-N



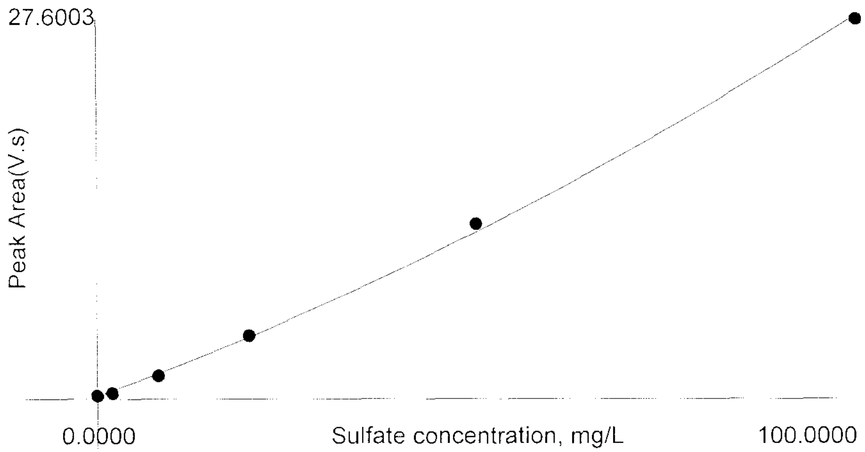
Area = 0.0273 * Conc^2 + 0.5736 * Conc - 0.0024
Conc = - 0.0824 * Area^2 + 1.6983 * Area + 0.0062
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 6: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	27.6003	0.8536	1.1	11/15/2011	2:32:05 PM
2	50.0000	1	12.7130	0.4540	-4.9	11/15/2011	2:48:13 PM
3	20.0000	1	4.5871	0.1729	-1.7	11/15/2011	3:04:20 PM
4	8.0000	1	1.6836	0.0620	9.3	11/15/2011	3:20:28 PM
5	2.0000	1	0.4027	0.0145	34.3	11/15/2011	3:36:35 PM
6	0.0500	1	0.2270	0.0081	-2.6	11/15/2011	3:52:42 PM

Figure 6: Sulfate



Area = 7.7408e-4 * Conc^2 + 0.1994 * Conc + 0.2113
Conc = - 0.0392 * Area^2 + 4.7046 * Area - 0.9825
Correlation Coefficient (r) = 0.99999

1/x weighting

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review Coversheet—Inorganics Dept

Method Name: IC Method Reference: 300.0 Date of Analytical Run: 12/1/11

Primary Reviewer's Initials & Date: AMS 12/2/11 Secondary Reviewer's Initials & Date: [illegible] 12/2/11

Batch Numbers	84207	84209			

QC Criteria—Non-MCP: ICV/CCV ±10%: LCS/LCSD ±15%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%

QC Criteria—MCP/RCP: (9012 and 7196 only)
9012 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
9012 (soil): ICV/CCV ±15%: LCS/LCSD **: MS/MSD ±25%: ICB/MB/CCB <RL: MD RPD 35%: MSD/LCSD RPD ≤30%
7196 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
7196 (soil): ICV/CCV ±15%: LCS/LCSD **: MSS/MSI ±25%: ICB/MB/CCB <RL: MD RPD ≤35%: LCSD RPD ≤30%

FAILURES OF QC FOR ANYTHING OTHER THAN MS, MSD or MD ARE GROUNDS FOR INVALIDATING THE BATCH.

Criteria for QC	Yes	No	n/a	Notes/Comments
Were the ICV and CCVs within acceptable limits for QC recovery?	✓ ✓			
Were the ICB and CCBs all <RL?	✓ ✓			
Were all MB and CCB results <RL for the analytes of interest?	✓ ✓			
Was there a CCV/CCB combination run after every 10 samples or less?	✓ ✓			
Was there an LCS run with every batch of 20 samples or less?	✓ ✓			
Was there a MD, LCSD or MSD run with every batch of 20 samples or less?	✓ ✓			
Were all LCS/LCSD results within acceptable limits for QC recovery?	✓ ✓			
Were all MS/MSD results within acceptable limits for QC recovery?	✓ ✓			
Were all MD, LCSD and/or MSD %RPDs within acceptable limits for QC recovery?	✓ ✓			
Were the raw data points for investigative samples within the working curve range, or if not, were the samples diluted to bring them within this range?	✓ ✓			
IF there were any MCP/RCP samples in this batch, did they meet all MCP/RCP requirements?	✓ ✓			
Were there any holding time violations in this batch?		✓ ✓		**NOTE!** The PM and QA Manager must be notified by email *immediately* of any holding time violations!!
Were any NCMs generated for any samples in the batch? (If so, list NCM numbers, and first-reviewer must check off any "No" answers above as applicable.)		✓ ✓		
Were any jobs in this batch Level 4? If "Yes" then scan all raw data & place in correct scan folder on the public drive before filing this paperwork.	✓ ✓			

** LCS or LCSD must produce a recovery that is within the manufacturer's specified 95% confidence limits, must be matrix matched.

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 12/1/11

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution: Sample Aliquot 2	Serial Dilution: Units	Serial Dilution: Final Volume 2	Serial Dilution: Units	Comments
AMS	12/1/11	300.0	37526~~A~~B7	10x	1	mL	10	mL					
			12/1/11 AS	20x	500	µL							
			37644B1	20x									
			B2										

entries completed by day [new page each day]

0539

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Eluent Preparation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Prepare fresh daily; makes 3L of eluent. To make: in a one-gallon plastic container, mix:

- 60.0 mL of 100*M* $NaHCO_3$;
- 78.0 mL of 100*M* Na_2CO_3; and
- 2862 mL of deionized water.

Degas with helium for 3min before use.

Date Prepared	Analyst's Initials	Lot # 100*M* $NaHCO_3$	Lot # 100*M* Na_2CO_3	Number of Portions Prepared
11-17-11	[illegible]	W11J 2GT018	W11K RGT001	1
11-18-11	RWE	W11K RGT016	W11K RGT017	2
11-21-11	RWE	↓	↓	1
11-22-11	RWE	↓	↓	1
11-23-11	RWE	↓	↓	2
11-28-11	RE	↓	↓	1
11-29-11	RE	↓	↓	1
12/1/11	AMS	↓	↓	1
12/2/11	AMS	↓	↓	1

0.25 *M* Sulfuric Acid Creation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Record the information below for creating the acid. When an entry is made do not use arrows to fill in information. All entries must be complete.

Recipe: to 2958mL of deionized water in a 1 gallon jug add 42mL of concentrated H_2SO_4 for a total volume of 3L.

Date Made	Analyst's Initials	Volume of 0.25 *M* Acid Made (L)	Source: Concentrated Sulfuric Acid (ACS grade) Manufacturer & Lot Number
11-18-11	RLE	3	Baker lot J22022
11-21-11	RLE	3	
11-22-11	RLE	3	
11-23-11	RLE	3	
11-28-11	RLE	3	
11/30/11	AMS	3	
12/1/11	AMS	3	

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Ion Chromatography QC Source Data Sheet—Inorganics Dept

Method (circle methods): IC 300_28D   IC 300_48HR   IC 9056_28D   IC 9056_48HR

Date of Analytical Run: 12/1/11   Analyst's Initials: AMS

Working Curve Standard:

Manufacturer & Lot Number for Source Standard	Working Curve Standards Prepared On
Inorganic Ventures Lot E2-MEB394034	20 October 2011

QC Standard True Values for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.50	25.0	2.50	2.50	2.50	50.0
ICB	0	0	0	0	0	0
MB	0	0	0	0	0	0
LCS/LCSD	4.00	40.0	4.00	4.00	4.00	80.0
MS/MSD	1.00	10.0	1.00	1.00	1.00	20.0

QC Standard Acceptable Recovery Ranges for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.25-2.75	22.5-27.5	2.25-2.75	2.25-2.75	2.25-2.75	45.0-55.0
ICB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
MB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
LCS/LCSD	3.40-4.60	34.0-46.0	3.40-4.60	3.40-4.60	3.40-4.60	68.0-92.0
MS/MSD	0.75-1.25	7.50-12.5	0.75-1.25	0.75-1.25	0.75-1.25	15.0-25.0

Current Method RLs (mg/L):

	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
	0.10	1.00	0.010	0.10	0.050	2.0

Original Run Filename: OM_12-1-2011_08-11-48AM.OMN created 12/1/2011 8:11:48 AM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_12-1-2011_08-11-48AM.OMN last modified 12/2/2011 7:12:01 AM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	0.0041	0.0223	0.0071	0.0062	0.0024	-0.9663	12/1/2011@8:13:09 AM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	
ICV	1	2.3727	24.8451	2.3714	2.4298	2.3280	48.0327	12/1/2011@8:29:17 AM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
ICB	S11	0.0035	0.1380	0.0093	0.0062	0.0022	-0.9416	12/1/2011@8:45:24 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0043	0.1415	0.0095	0.0034	0.0014	-0.9440	12/1/2011@9:01:31 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.9001	40.3708	3.9021	3.8807	3.8810	77.0797	12/1/2011@9:17:38 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37836-A-1	2	0.0041	1.6861	0.0372	0.0974	0.0022	3.2975	12/1/2011@9:33:45 AM
360-37836-A-1@10	3	0.0038	0.4137	0.0093	0.0157	9.739e-4	-0.4125	12/1/2011@9:49:53 AM
360-37836-A-1@10 MS	4	0.9944	9.7351	0.9478	0.9764	0.9469	18.7756	12/1/2011@10:06:00 AM
360-37836-A-1@10 MSD	4	0.9920	9.7311	0.9442	0.9759	0.9475	18.7813	12/1/2011@10:22:07 AM
360-37836-A-2	5	-0.0755	-3.6990	-0.0291	0.0067	0.5604	9.9380	12/1/2011@10:38:14 AM
360-37836-A-7	6	-0.0056	3.6037	0.0639	0.2419	0.0022	6.6491	12/1/2011@10:54:22 AM
360-37836-A-10	7	-0.0515	-4.4384	0.0093	0.0238	1.7363	15.8962	12/1/2011@11:10:29 AM
360-37836-A-4	8	0.0181	-188.1870	0.0092	0.2520	1.9901	1.3373	12/1/2011@11:26:37 AM
360-37836-A-8	9	0.0434	43.8598	0.0700	0.0232	0.0022	8.3559	12/1/2011@11:42:43 AM
360-37836-A-3	10	0.3851	2.2927	0.1516	7.8679	8.9845	3.6301	12/1/2011@11:58:50 AM
CCV	S12	3.9630	41.0092	3.9655	3.9453	3.9484	78.0434	12/1/2011@12:14:58 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0039	0.1474	0.0093	0.0062	0.0022	-0.9407	12/1/2011@12:31:05 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37836-A-5	11	0.5607	-77.7868	0.0306	-0.0013	5.4304	1.0642	12/1/2011@12:47:12 PM
360-37836-A-6	12	7.8798e-4	26.6419	0.0275	2.4336	0.0022	11.2735	12/1/2011@1:03:19 PM
360-37854-A-2	13	0.0014	73.0701	0.0437	6.6583	0.0022	16.6422	12/1/2011@1:19:26 PM
360-37854-A-2@10	14	-0.0103	8.2409	0.0094	0.7312	0.0550	0.7579	12/1/2011@1:35:32 PM
360-37843-B-3@50	15	0.1442	-6.7264	0.0702	0.0062	-184.0449	95.1213	12/1/2011@1:51:39 PM
360-37706-A-57	16	-126.7166	30.1947	0.6807	0.0062	-0.1698	23.2182	12/1/2011@2:07:46 PM
360-37706-A-58	17	-1.5875e+3	49.5474	0.3955	-3.6682	0.0022	17.4300	12/1/2011@2:23:53 PM
360-37706-A-59	18	0.2004	51.8145	0.0939	-0.0028	0.0022	15.2068	12/1/2011@2:40:00 PM
360-37706-A-60	19	0.5579	68.8834	0.1707	0.0062	-25.5857	73.8443	12/1/2011@2:56:07 PM
360-37706-A-61	20	0.0918	68.6062	0.0354	-0.0023	0.0022	18.3432	12/1/2011@3:12:14 PM
CCV	S12	3.9915	41.4447	4.0003	3.9617	3.9445	78.2792	12/1/2011@3:28:21 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	

CCB	S11	0.0038	0.0076	0.0097	0.0049	0.0030	-0.9354	12/1/2011@3:44:28 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0038	0.1414	0.0095	0.0036	0.0022	-0.9399	12/1/2011@4:00:35 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.0164	41.3668	3.9814	3.9796	3.9664	78.5457	12/1/2011@4:16:42 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37637-D-1 @10 SO4	21	0.0028	1.5926	0.0447	0.1098	0.0022	9.6681	12/1/2011@4:32:48 PM
360-37637-D-1 @10 MS	22	1.0447	11.9198	1.0325	1.1394	0.9929	30.5172	12/1/2011@4:48:55 PM
360-37637-D-1@10 MSD	22	1.0380	11.9058	1.0226	1.1375	0.9886	30.5777	12/1/2011@5:05:02 PM
360-37706-A-62	23	0.0038	-14.1758	0.0937	-0.0057	6.0958	138.9417	12/1/2011@5:21:09 PM
360-37706-A-63	24	0.0957	60.6206	0.0681	0.0062	0.0022	8.3757	12/1/2011@5:37:16 PM
360-37526-B-7@10	25	9.298e-4	2.0607	0.0097	0.0062	1.5702	40.2539	12/1/2011@5:53:22 PM
360-37526-B-7@20	26	0.0022	1.1785	0.0080	0.0102	0.7972	19.5732	12/1/2011@6:09:28 PM
360-37706-A-15@200	27	1.5175	0.3871	0.0083	-0.0517	0.0022	-0.8947	12/1/2011@6:25:35 PM
360-37644-B-1@20 SO4	28	0.0033	0.3396	0.0086	0.0730	0.0051	35.0225	12/1/2011@6:41:40 PM
360-37644-B-2@20 SO4	29	0.0076	0.3215	0.0084	0.3172	0.3631	56.8745	12/1/2011@6:57:46 PM
CCV	S12	3.9943	41.2563	3.9530	3.9732	3.9311	78.2964	12/1/2011@7:13:54 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0035	0.0116	0.0095	0.0061	0.0022	-0.9547	12/1/2011@7:30:00 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37867-C-1	30	0.0152	5.0771	0.0522	0.0311	0.0022	1.1220	12/1/2011@7:46:06 PM
360-37867-C-1@10	31	-0.0025	0.6805	0.0094	0.0052	-6.9464e-4	-0.7025	12/1/2011@8:02:14 PM
360-37662-G-1@50 Cl	32	0.1825	52.4933	0.0157	9.3832e-4	0.0022	5.8256	12/1/2011@8:18:21 PM
360-37706-A-53	33	0.0038	-13.0674	0.1243	0.0062	7.4180	140.3114	12/1/2011@8:34:28 PM
360-37706-A-54@100	34	0.0039	0.8594	0.0073	0.0061	0.0022	-0.8724	12/1/2011@8:50:35 PM
360-37706-A-55@100	35	0.5322	0.5074	0.0112	-0.0029	0.0022	-0.7071	12/1/2011@9:06:42 PM
360-37762-B-5@10 Cl	36	0.0040	48.0907	0.0197	0.0114	0.0022	-0.9276	12/1/2011@9:22:49 PM
360-37762-B-8@10 Cl	37	0.0042	21.9213	0.0080	0.0106	0.0022	0.1977	12/1/2011@9:38:56 PM
360-37762-B-9@10 Cl	38	0.0031	7.7431	0.0094	0.1291	0.0022	-0.5492	12/1/2011@9:55:03 PM
360-37706-A-56	39	15.8399	3.6082	0.1983	0.0062	0.8415	10.1433	12/1/2011@10:11:09 PM
CCV	S12	3.8489	40.7872	3.9241	3.8653	3.8542	77.3944	12/1/2011@10:27:16 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0037	0.0115	0.0095	0.0045	0.0020	-0.9514	12/1/2011@10:43:23 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	-2.66e-4	0.0107	0.0098	0.0055	0.0019	-0.9472	12/1/2011@10:59:30 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.8290	40.7898	3.9024	3.8569	3.8406	77.5993	12/1/2011@11:15:37 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37762-B-10	40	0.0039	70.6825	0.0281	1.0313	-52.1303	3.8995	12/1/2011@11:31:43 PM
360-37762-B-10@10	41	0.0037	9.5447	0.0084	0.0946	0.0022	-0.3839	12/1/2011@11:47:50 PM
360-37762-B-10@10 MS	42	0.5382	14.9447	0.5051	0.6376	0.4888	10.1456	12/2/2011@12:03:56 AM
360-37762-B-10 @10 MSD	42	0.4602	12.5467	0.4258	0.5406	0.4151	8.5403	12/2/2011@12:20:02 AM
360-37762-B-12	43	9.1589e-4	67.4580	0.0451	0.0062	-40.7606	1.6648	12/2/2011@12:36:09 AM
360-37762-B-12@10	44	0.0036	9.8210	0.0095	0.0061	-0.0587	-0.6216	12/2/2011@12:52:15 AM
360-37762-B-13	45	0.0039	57.1816	0.0370	0.0247	0.0022	2.3362	12/2/2011@1:08:20 AM

360-37762-B-13 @10	46	0.0032	0.2180	0.0093	0.0040	0.0022	-0.9539	12/2/2011@1:24:27 AM
360-37869-B-1	65	0.0046	0.0131	0.0071	0.0049	0.0022	-0.9863	12/2/2011@1:40:35 AM
360-37869-B-1@ 10	66	0.0039	0.0124	0.0105	0.0062	0.0022	-0.9857	12/2/2011@1:56:42 AM
CCV	S12	0.0070	0.0099	0.0099	0.0072	0.0014	-0.9830	12/2/2011@2:12:49 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0034	0.0108	0.0097	0.0062	0.0015	-0.9442	12/2/2011@2:28:56 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37602-A-4-D@5	49	-5.0313e-4	0.0115	0.0103	0.0036	0.0013	-0.9819	12/2/2011@2:45:03 AM
360-37602-A-8-B@5	50	0.0039	0.0118	0.0082	0.0062	0.0022	-0.9823	12/2/2011@3:01:10 AM
360-37602-A-12-B@5	51	0.0028	0.0122	0.0074	0.0062	0.0022	-0.9865	12/2/2011@3:17:17 AM
360-37602-A-16-B@5	52	0.0076	0.0111	0.0084	0.0061	0.0023	-0.9828	12/2/2011@3:33:24 AM
360-37727-A-4-B@5	53	0.0041	0.0133	0.0099	0.0054	0.0022	-0.9815	12/2/2011@3:49:31 AM
360-37727-A-8-B @5	54	0.0041	0.0131	0.0097	0.0048	0.0022	-0.9825	12/2/2011@4:05:37 AM
360-37727-A-12-B @5	55	0.0038	0.0142	0.0093	0.0062	0.0022	-0.9860	12/2/2011@4:21:44 AM
360-37727-A-16-D@5	56	0.0038	0.0158	0.0095	0.0060	0.0022	-0.9850	12/2/2011@4:37:50 AM
360-37696-A-1-D@5	57	0.0037	0.0140	0.0098	0.0062	0.0011	-0.9827	12/2/2011@4:53:56 AM
360-37762-B-11@10*	58	-0.0100	0.0137	0.0080	0.0062	0.0022	-1.0040	12/2/2011@5:10:02 AM
CCV	S12	0.0032	0.0125	0.0098	0.0054	0.0028	-0.9836	12/2/2011@5:26:09 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0012	0.0117	0.0099	0.0085	0.0023	-0.9853	12/2/2011@5:42:16 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0043	0.0103	0.0100	0.0083	0.0015	-0.9824	12/2/2011@5:58:23 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	0.0059	0.0116	0.0085	0.0045	0.0023	-0.9840	12/2/2011@6:14:30 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37762-B-15	59	0.0017	0.0125	0.0097	0.0048	0.0017	-0.9825	12/2/2011@6:30:36 AM
360-37762-B-15@10	60	0.0040	0.0113	0.0081	0.0052	0.0015	-0.9805	12/2/2011@6:46:42 AM

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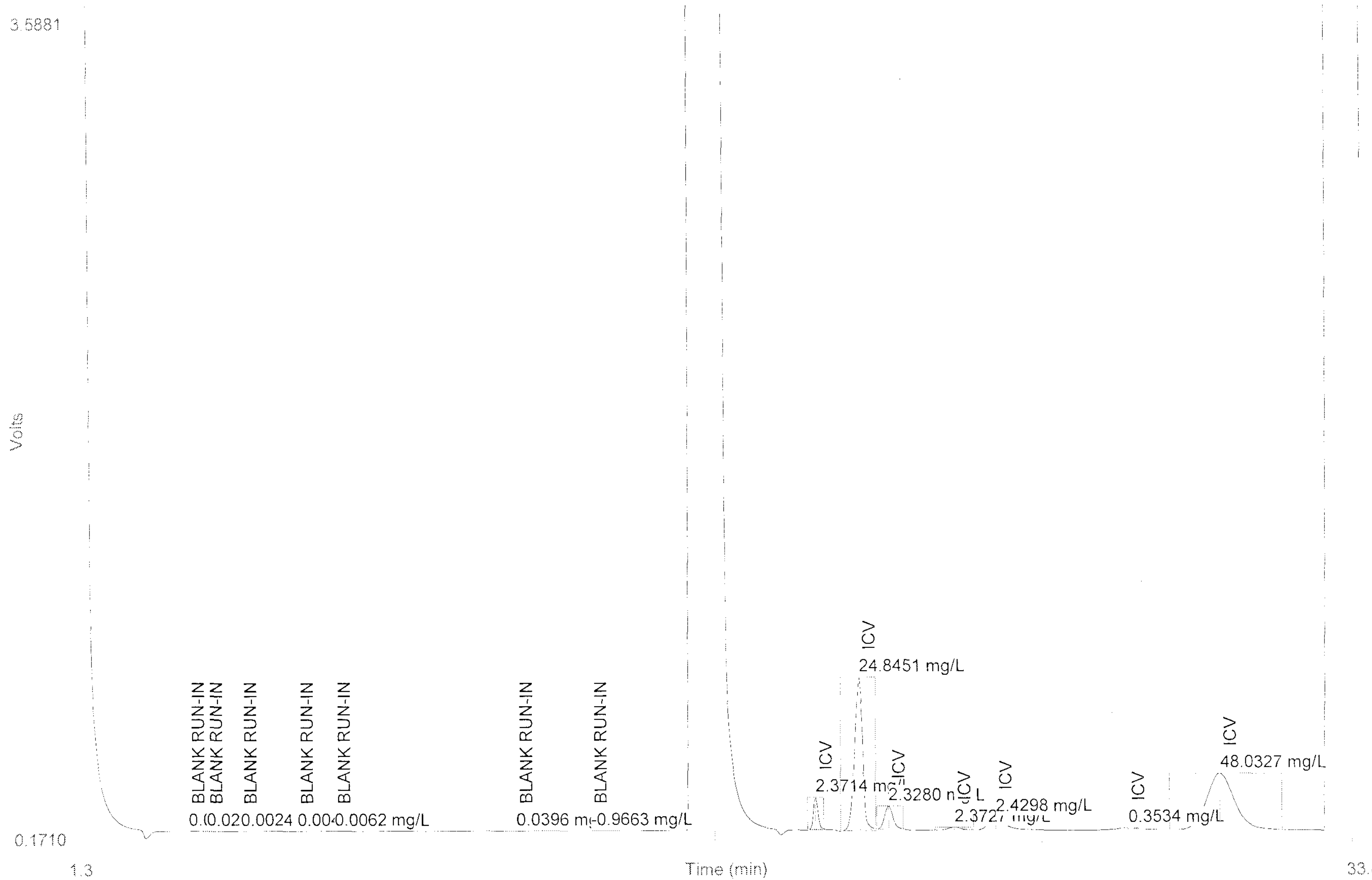
Channel 1 (Anions) : Set 1 of 43



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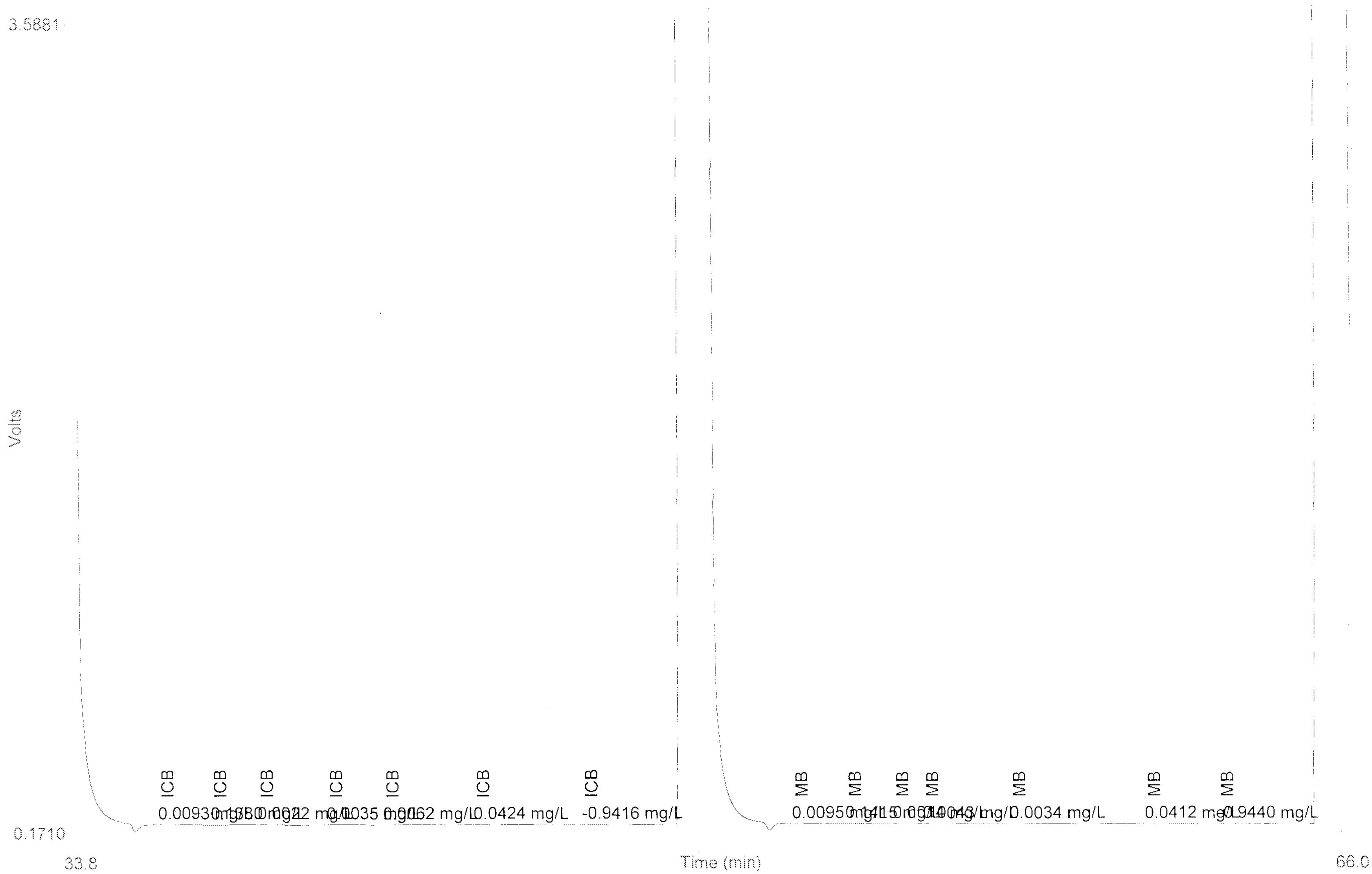
Author: EmerichR

Date : 12/2/2011

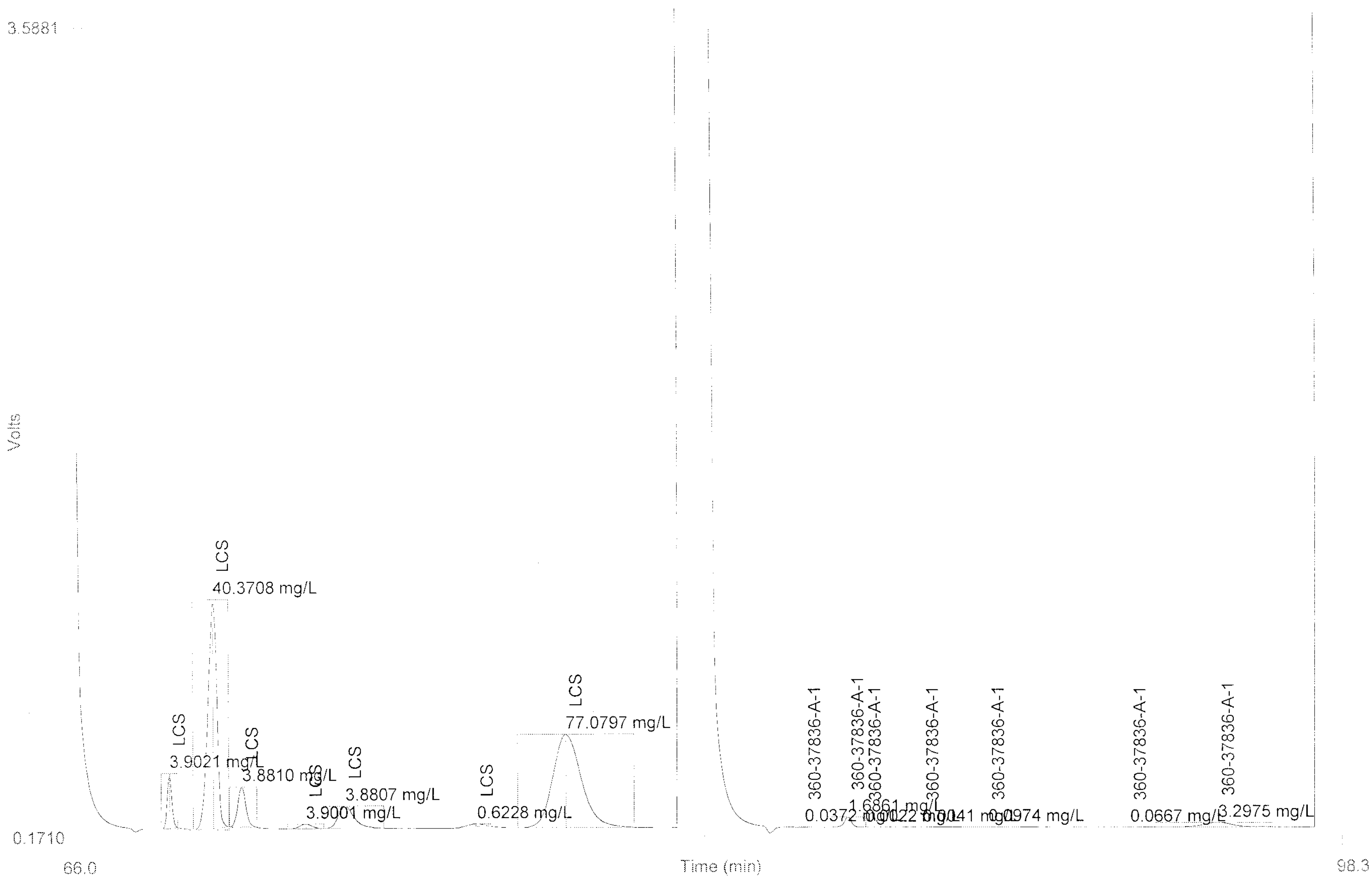
Channel 1 (Anions) : Set 2 of 43



Author: EmerichR

Date : 12/2/2011

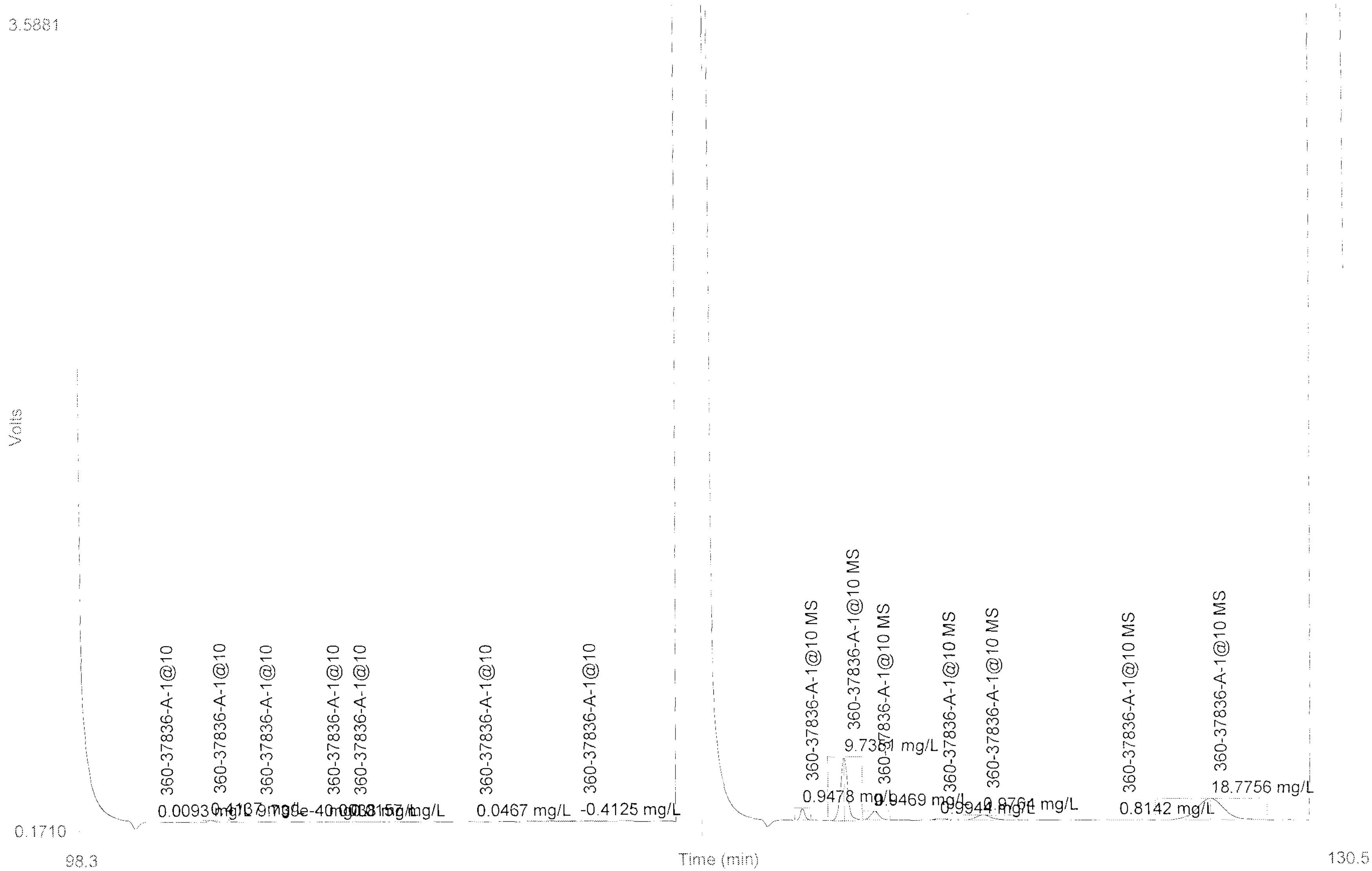
Channel 1 (Anions) : Set 3 of 43



Author: EmerichR

Date : 12/2/2011

Channel 1 (Anions) : Set 4 of 43



Author: EmerichR

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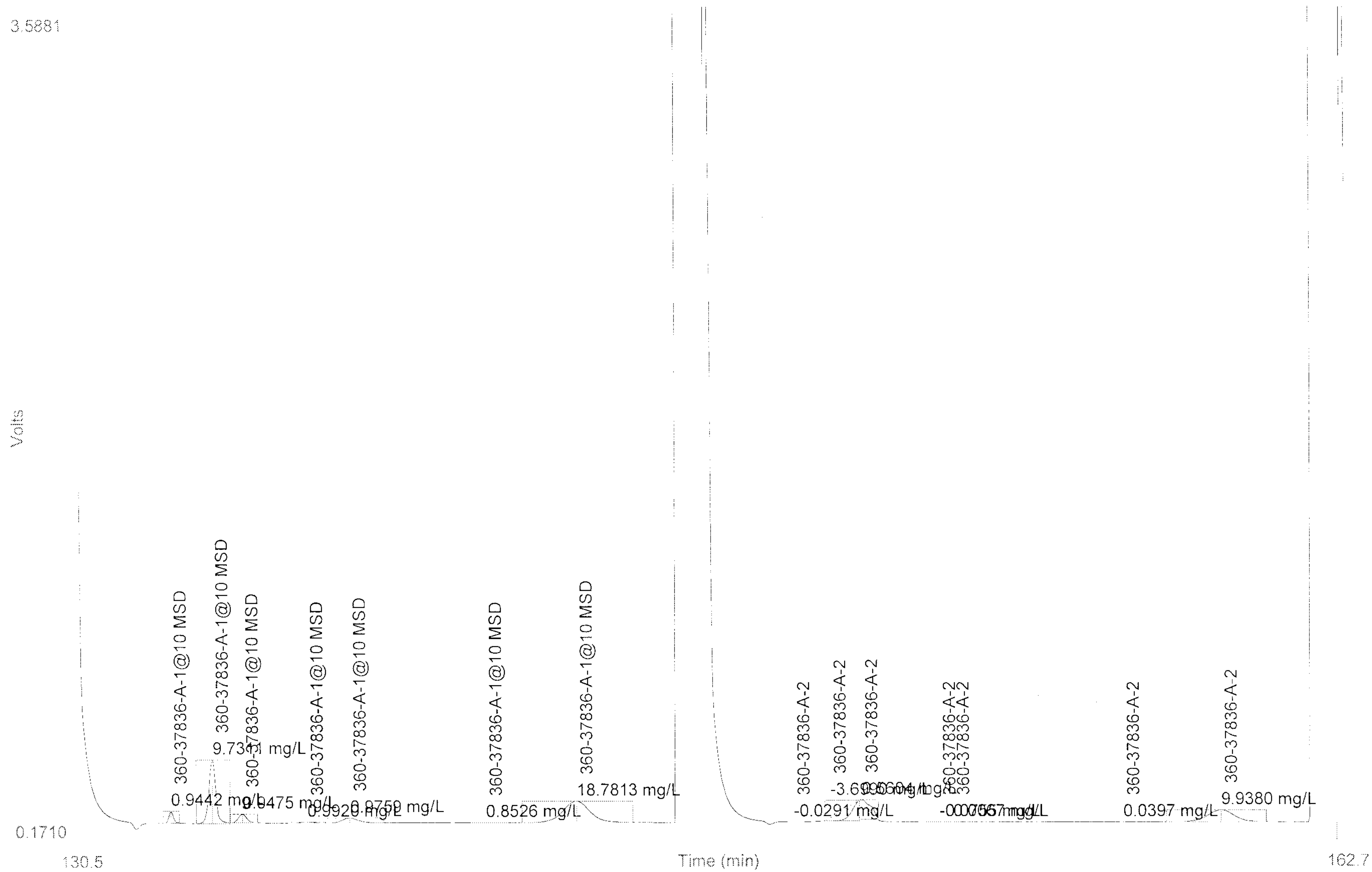
Channel 1 (Anions) : Set 5 of 43



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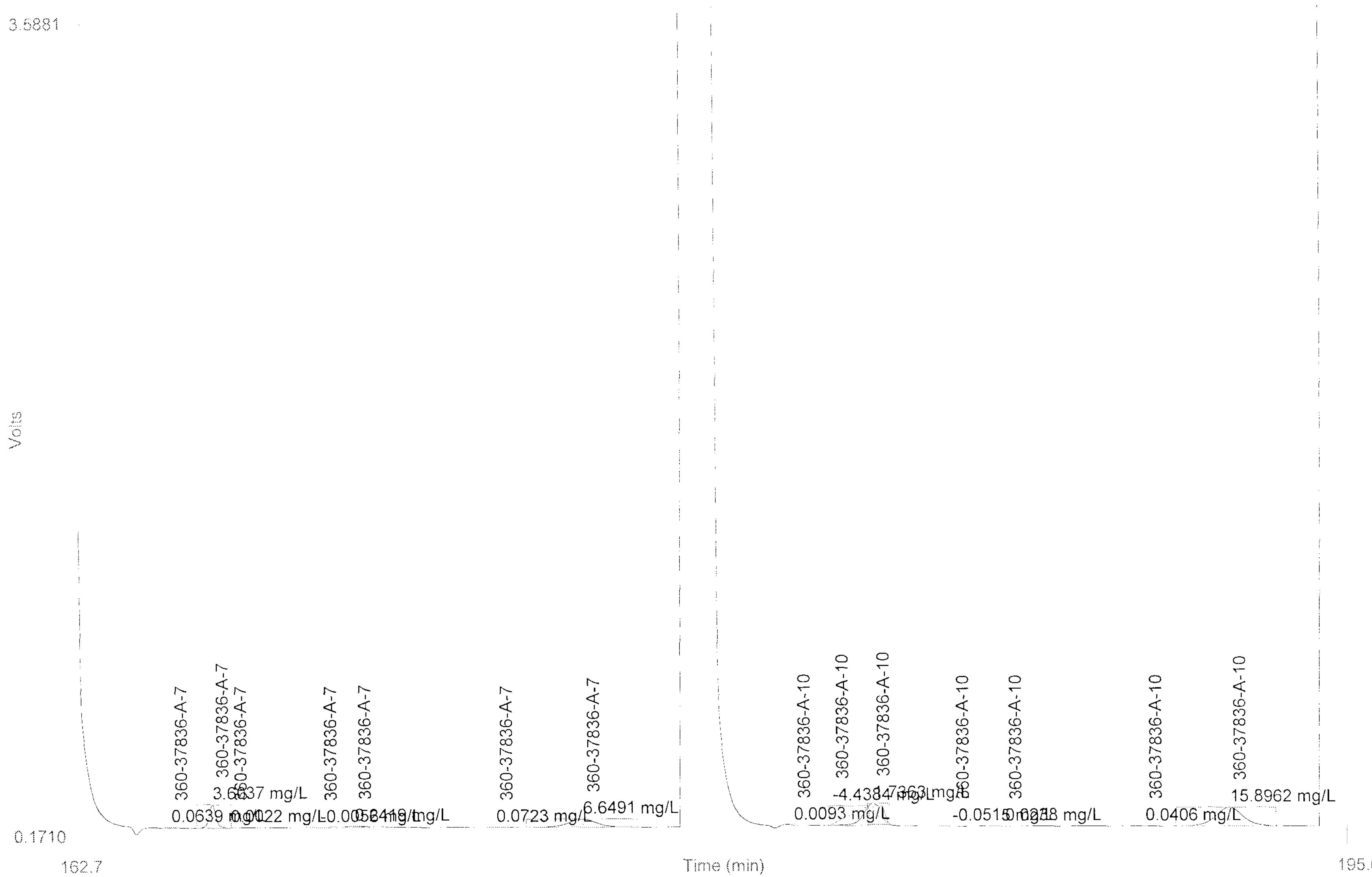
Channel 1 (Anions) : Set 6 of 43



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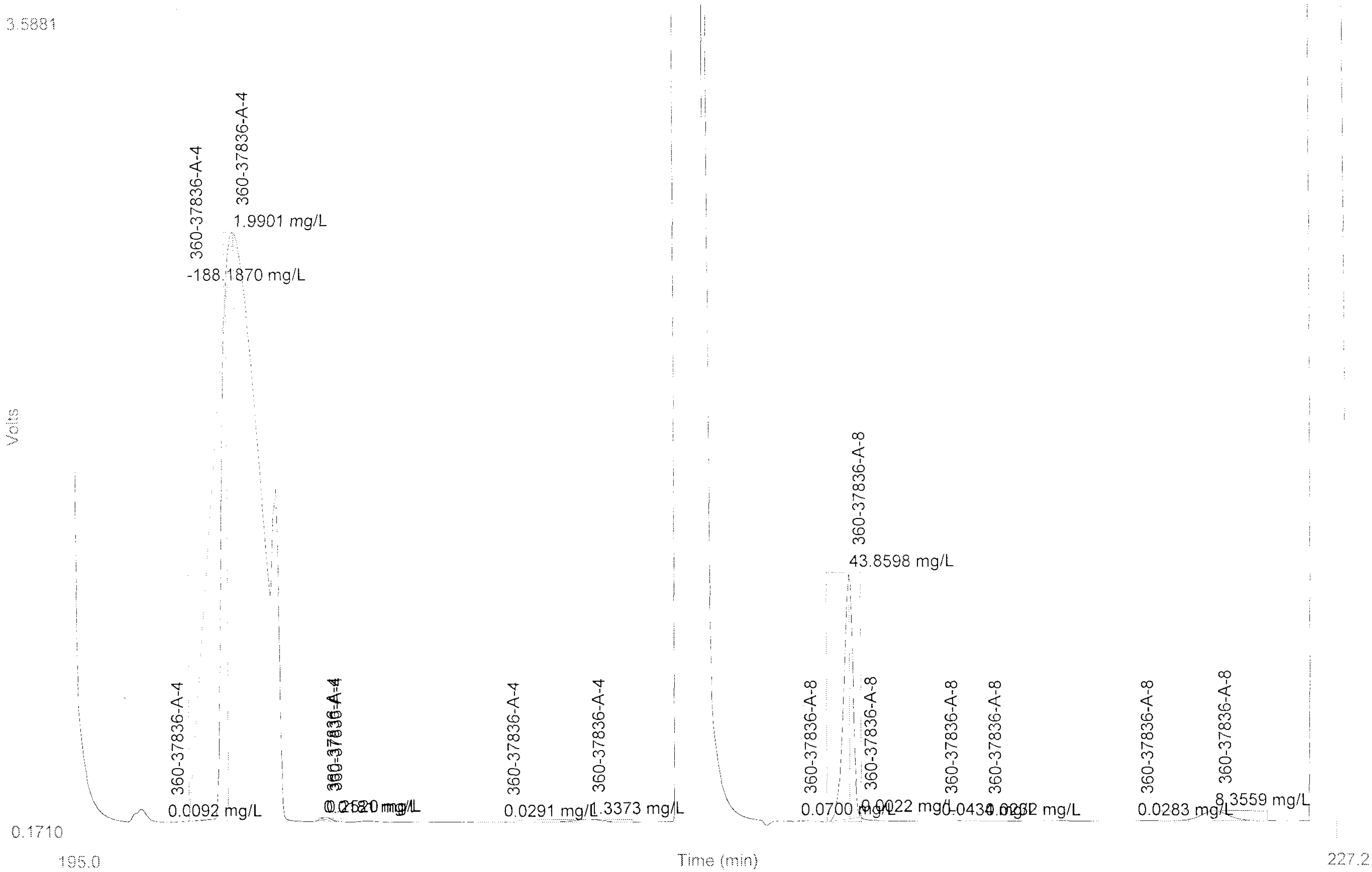
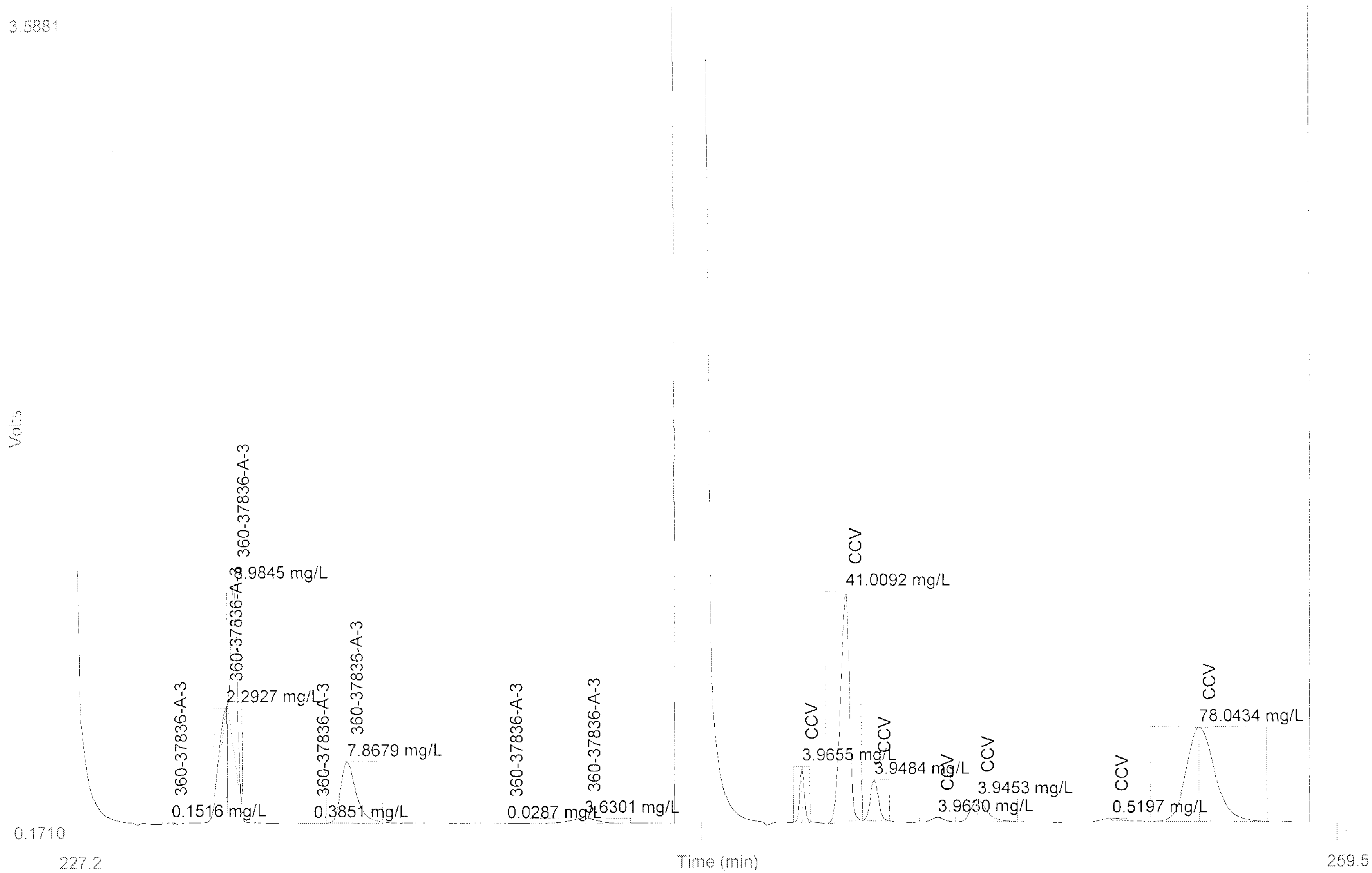
Channel 1 (Anions) : Set 7 of 43



Author: EmerichR

Date : 12/2/2011

Channel 1 (Anions) : Set 8 of 43



Author: EmerichR

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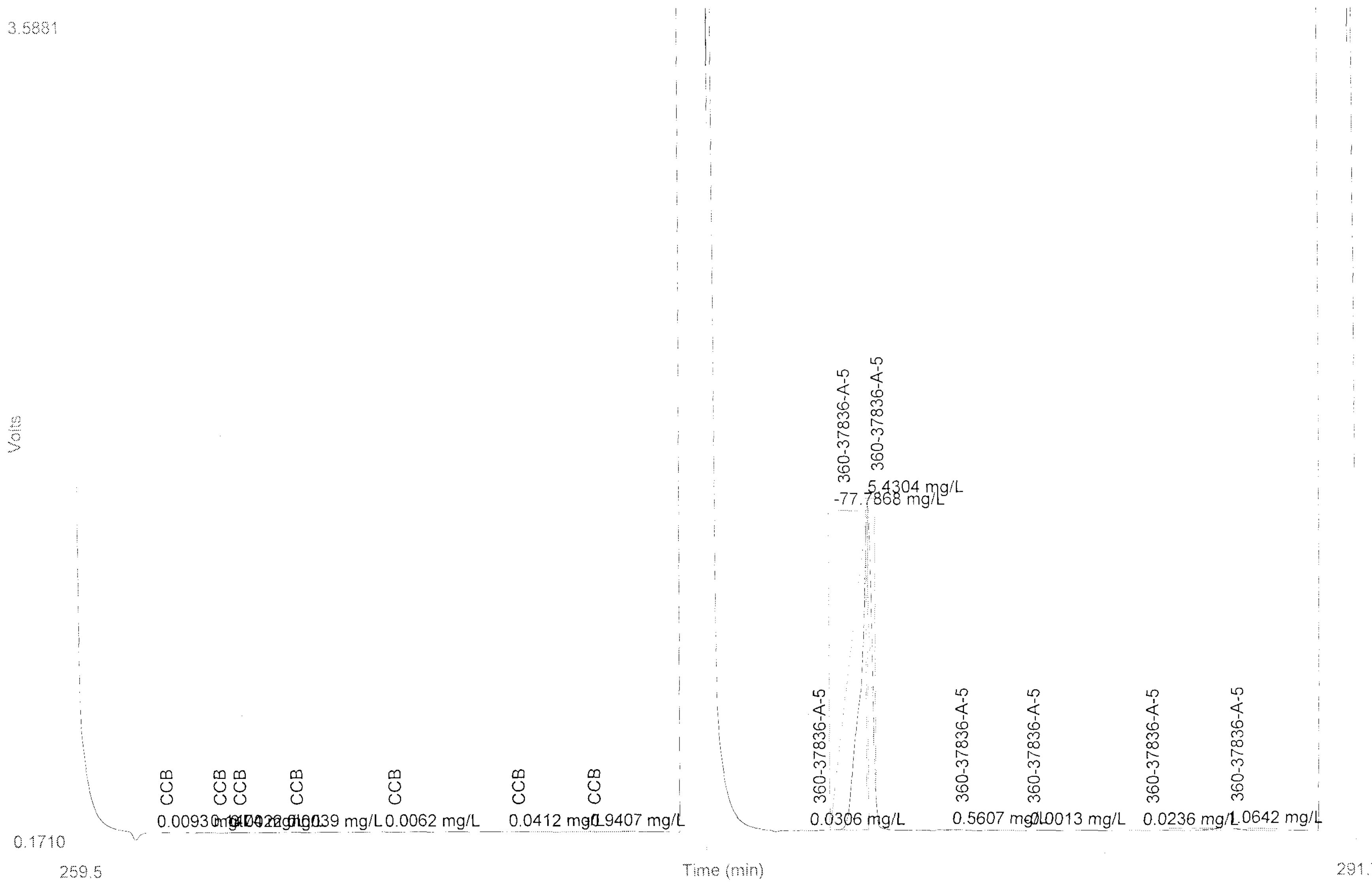
Channel 1 (Anions) : Set 9 of 43



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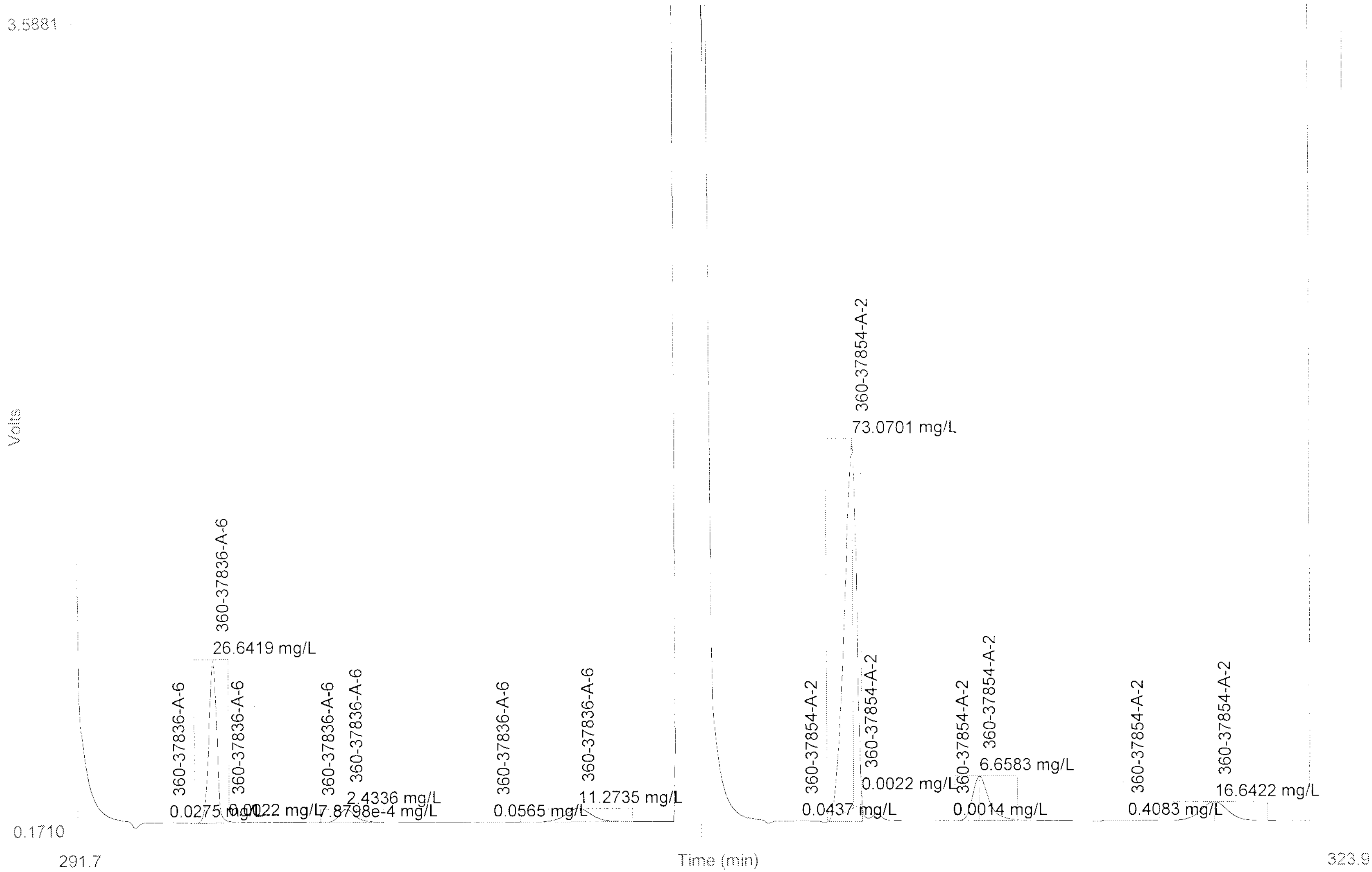
Channel 1 (Anions) : Set 10 of 43



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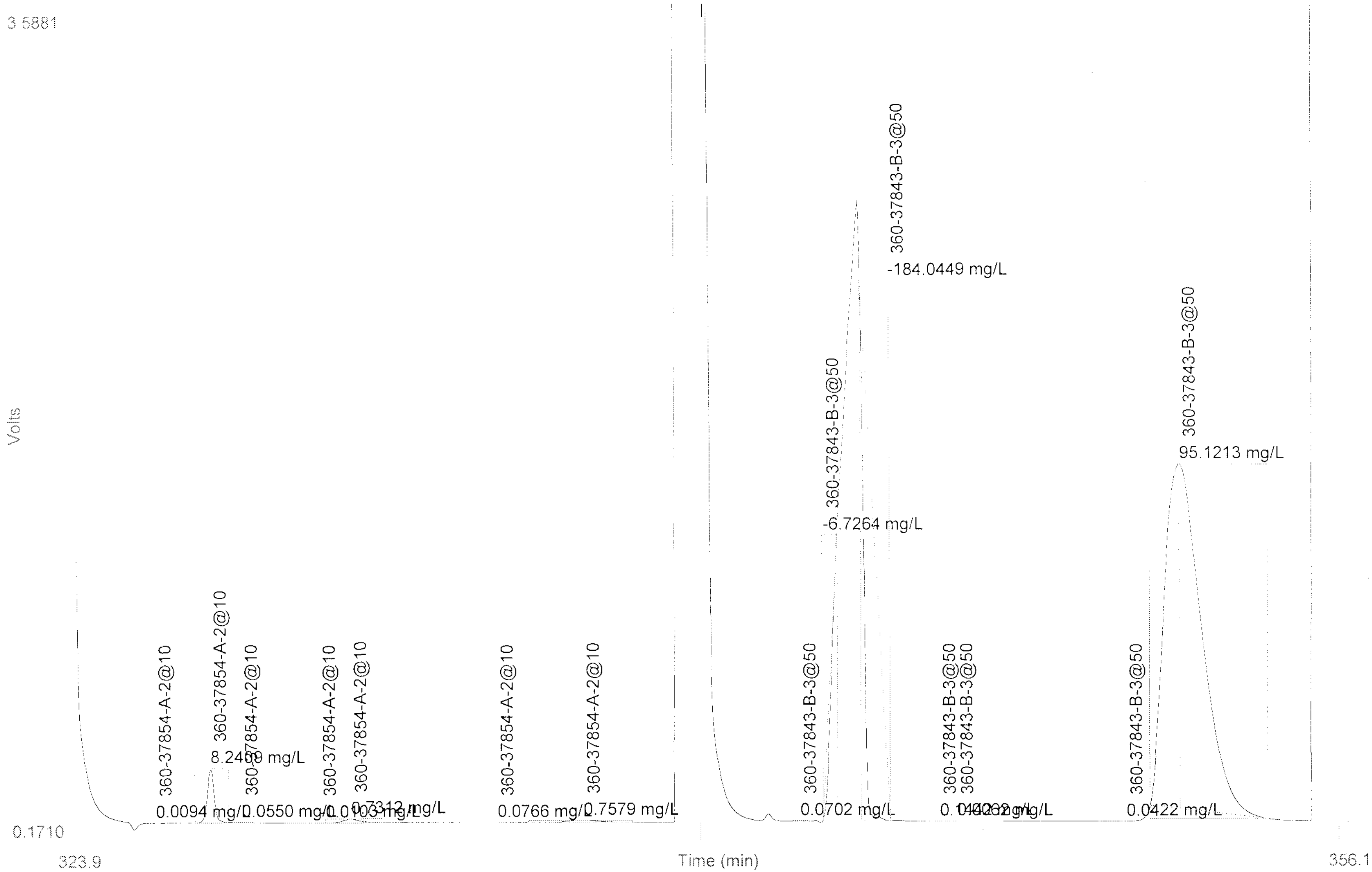
Channel 1 (Anions) : Set 11 of 43



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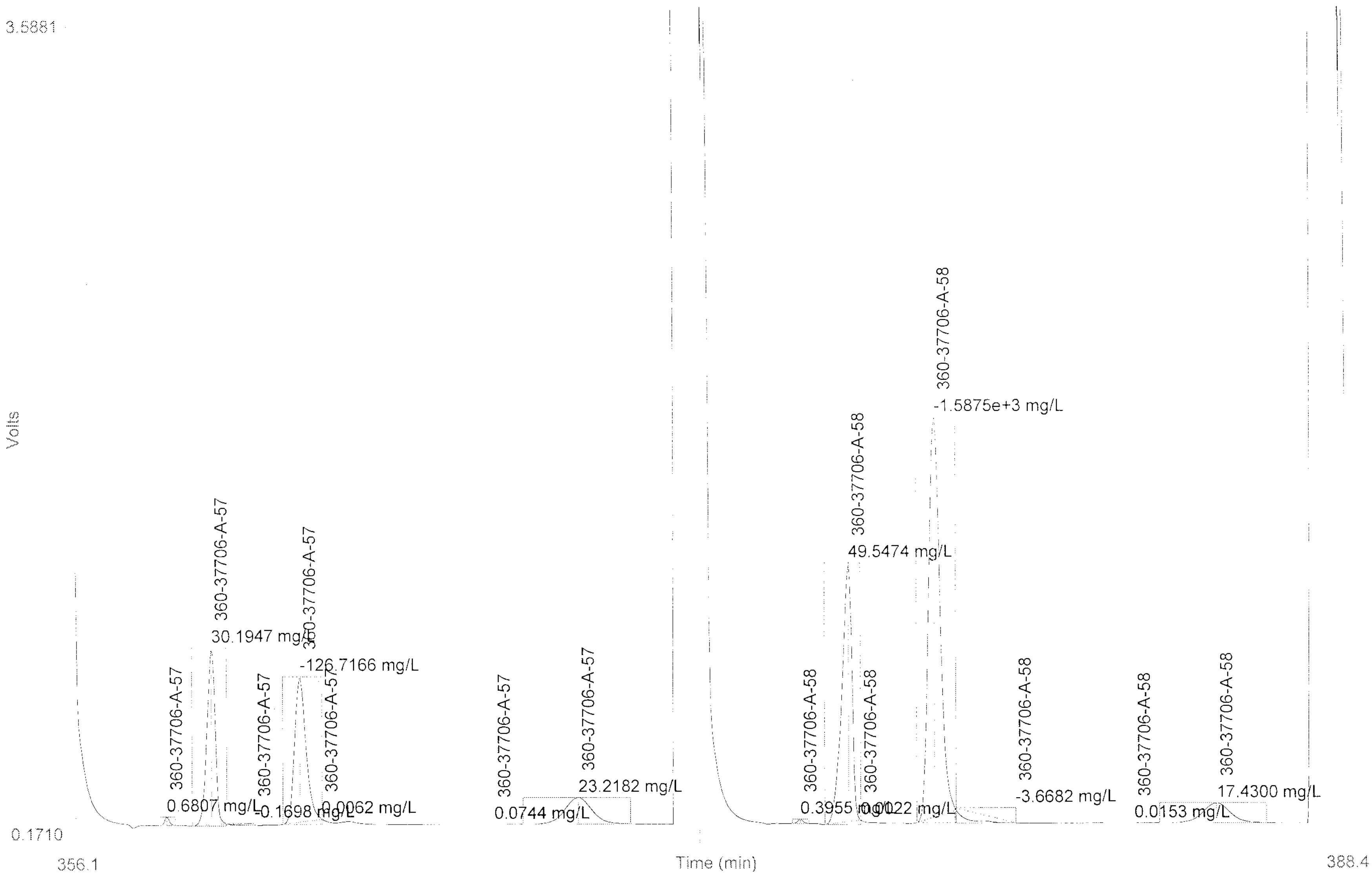
Channel 1 (Anions) : Set 12 of 43



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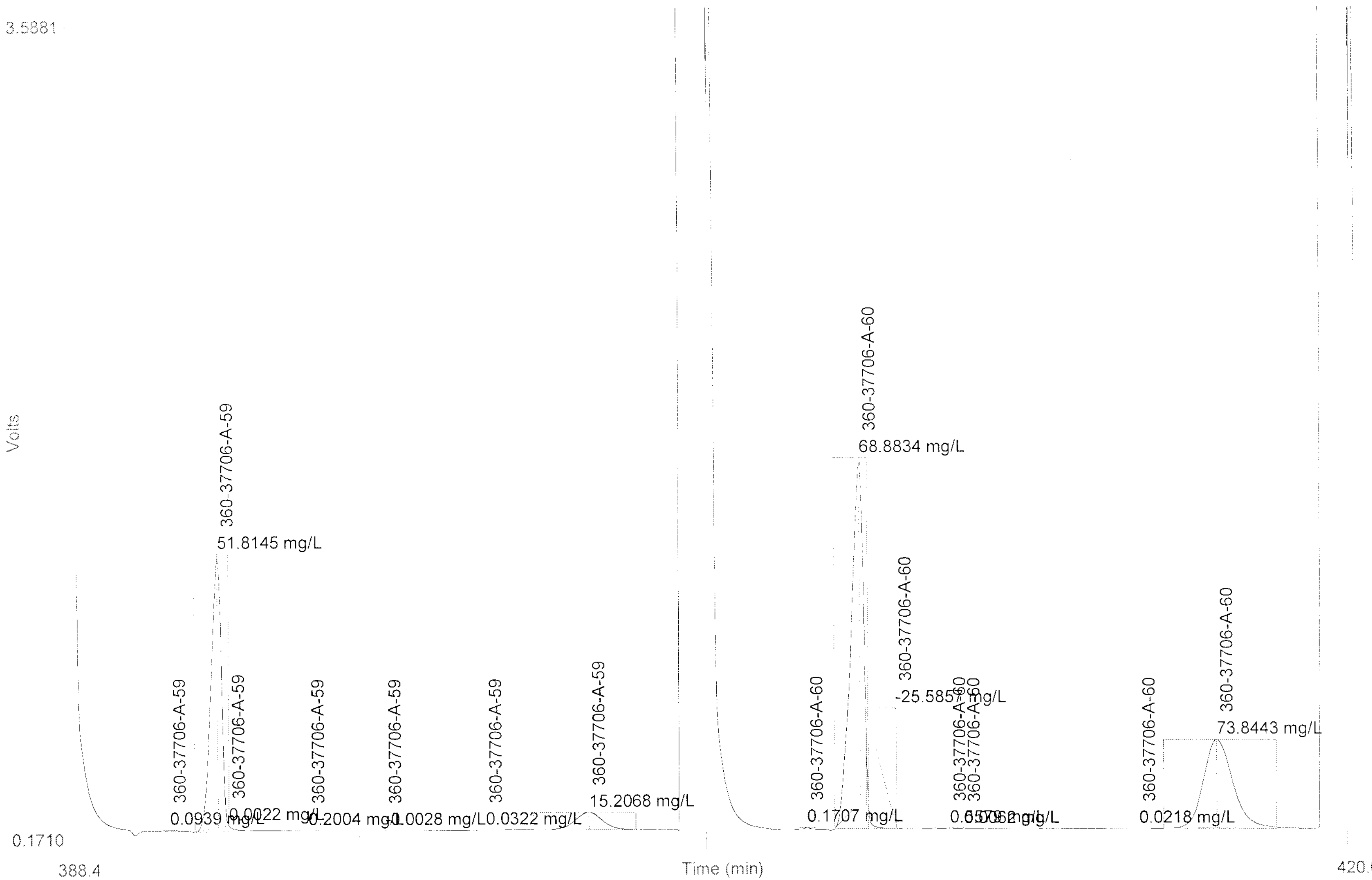
Channel 1 (Anions) : Set 13 of 43



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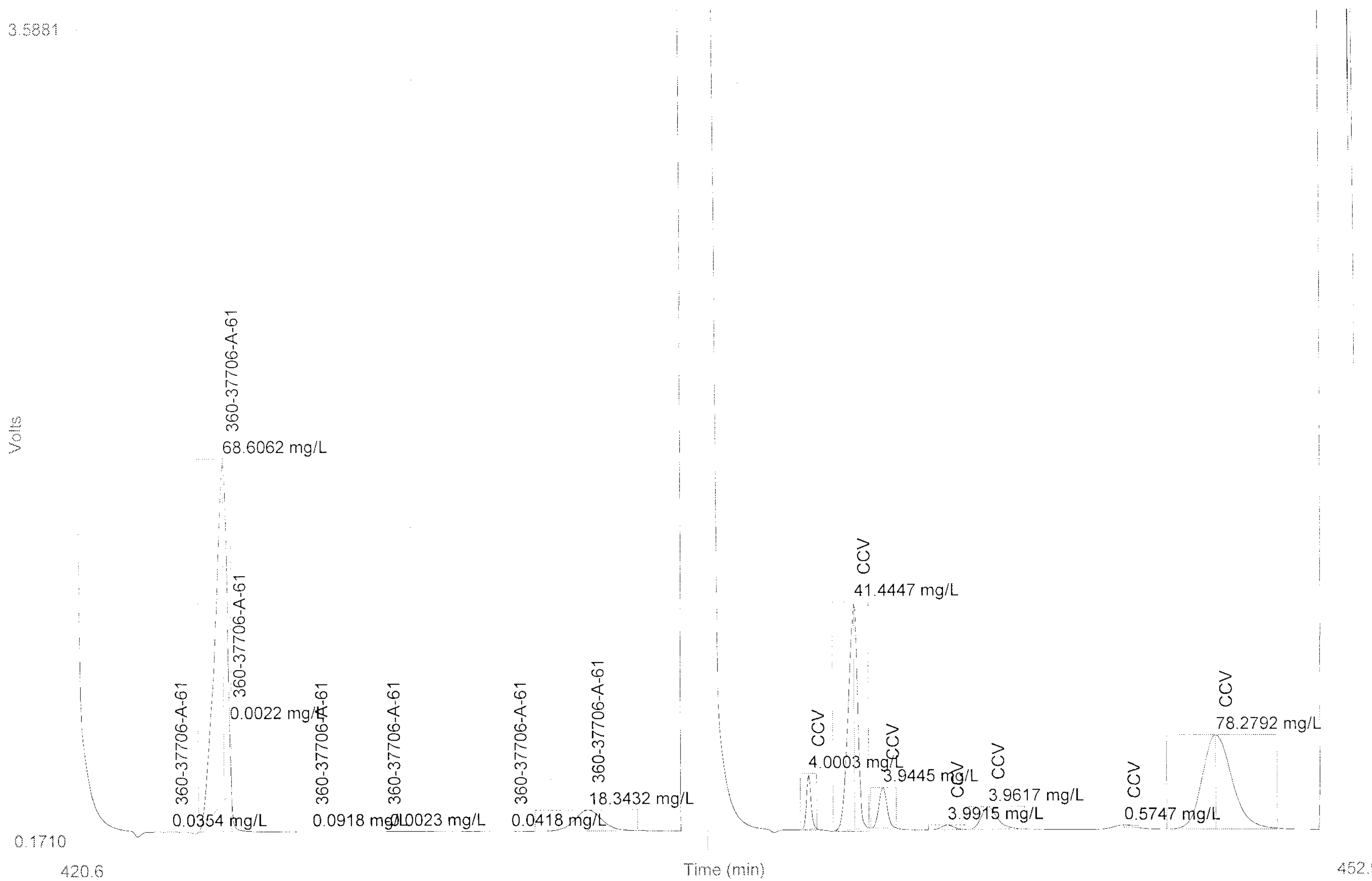
Channel 1 (Anions) : Set 14 of 43



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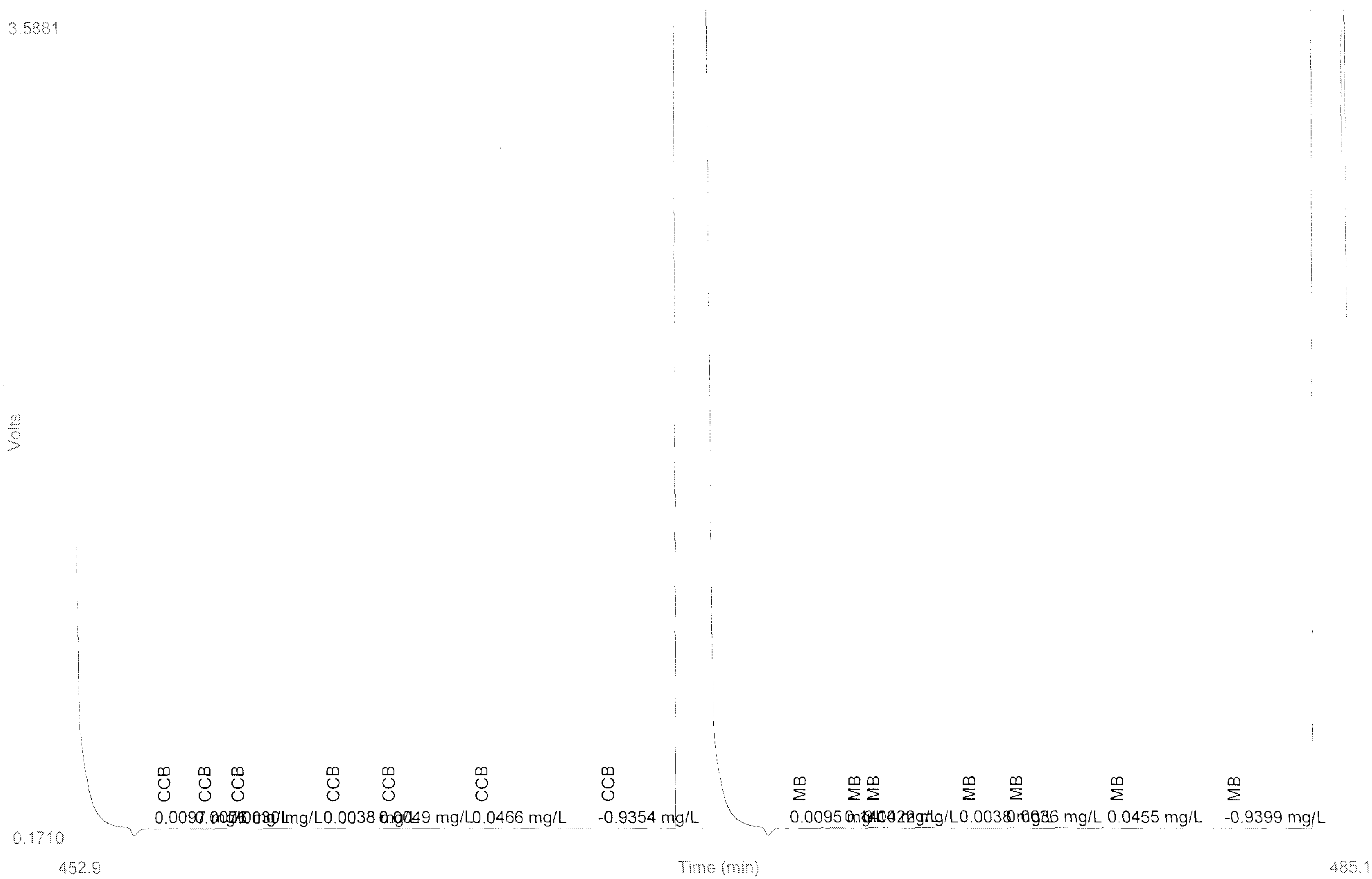
Channel 1 (Anions) : Set 15 of 43



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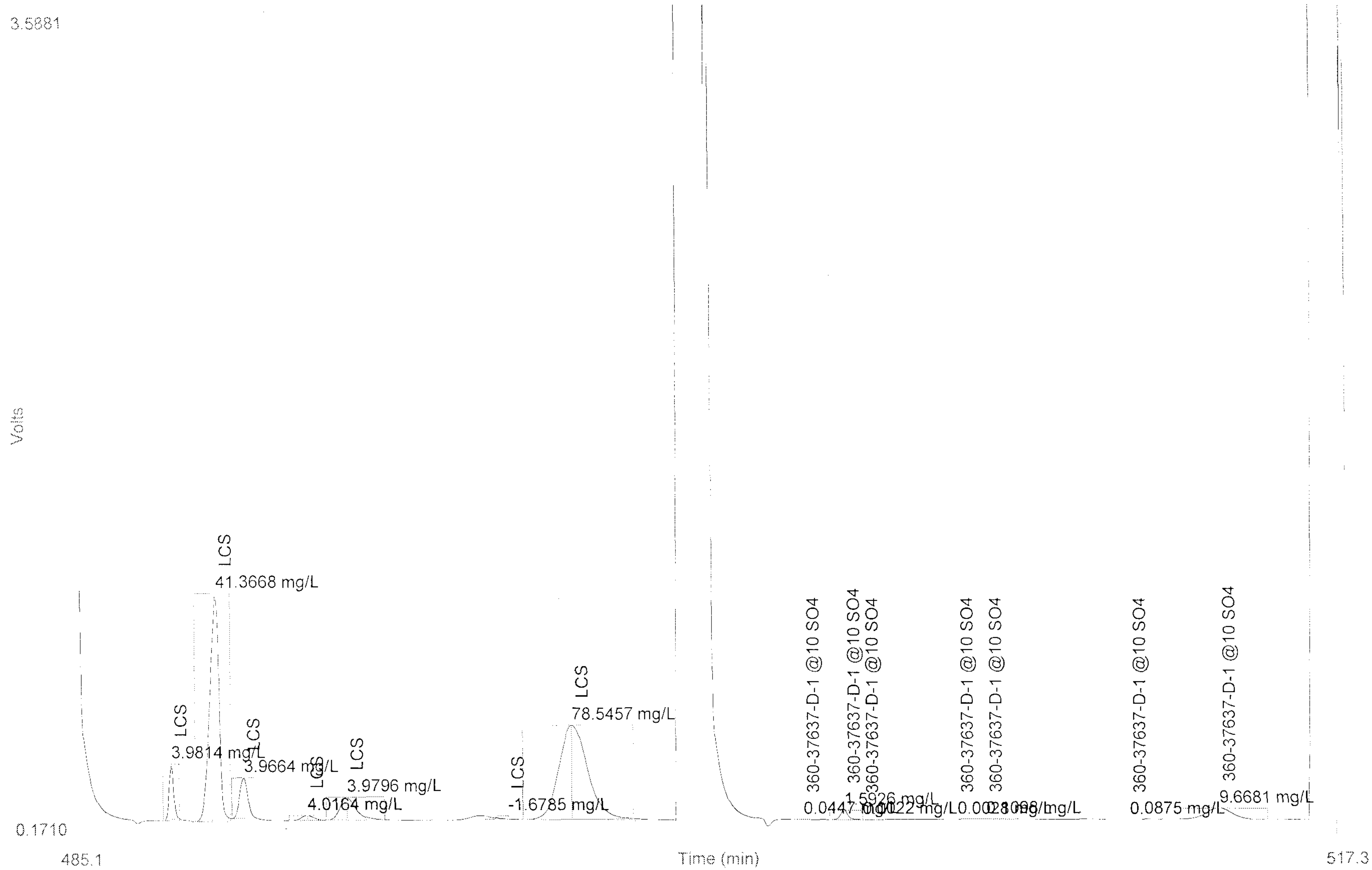
Channel 1 (Anions) : Set 16 of 43



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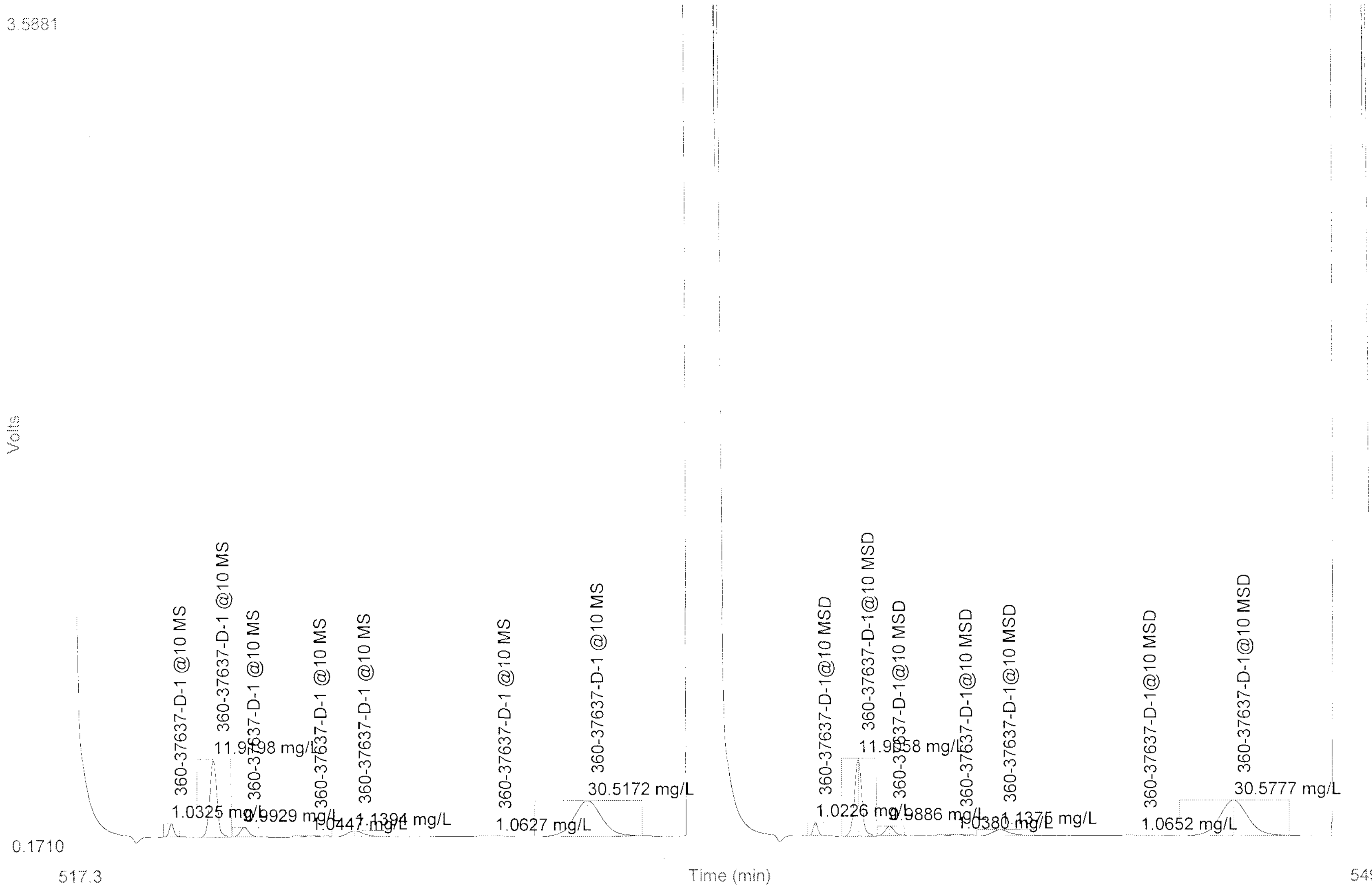
Channel 1 (Anions) : Set 17 of 43



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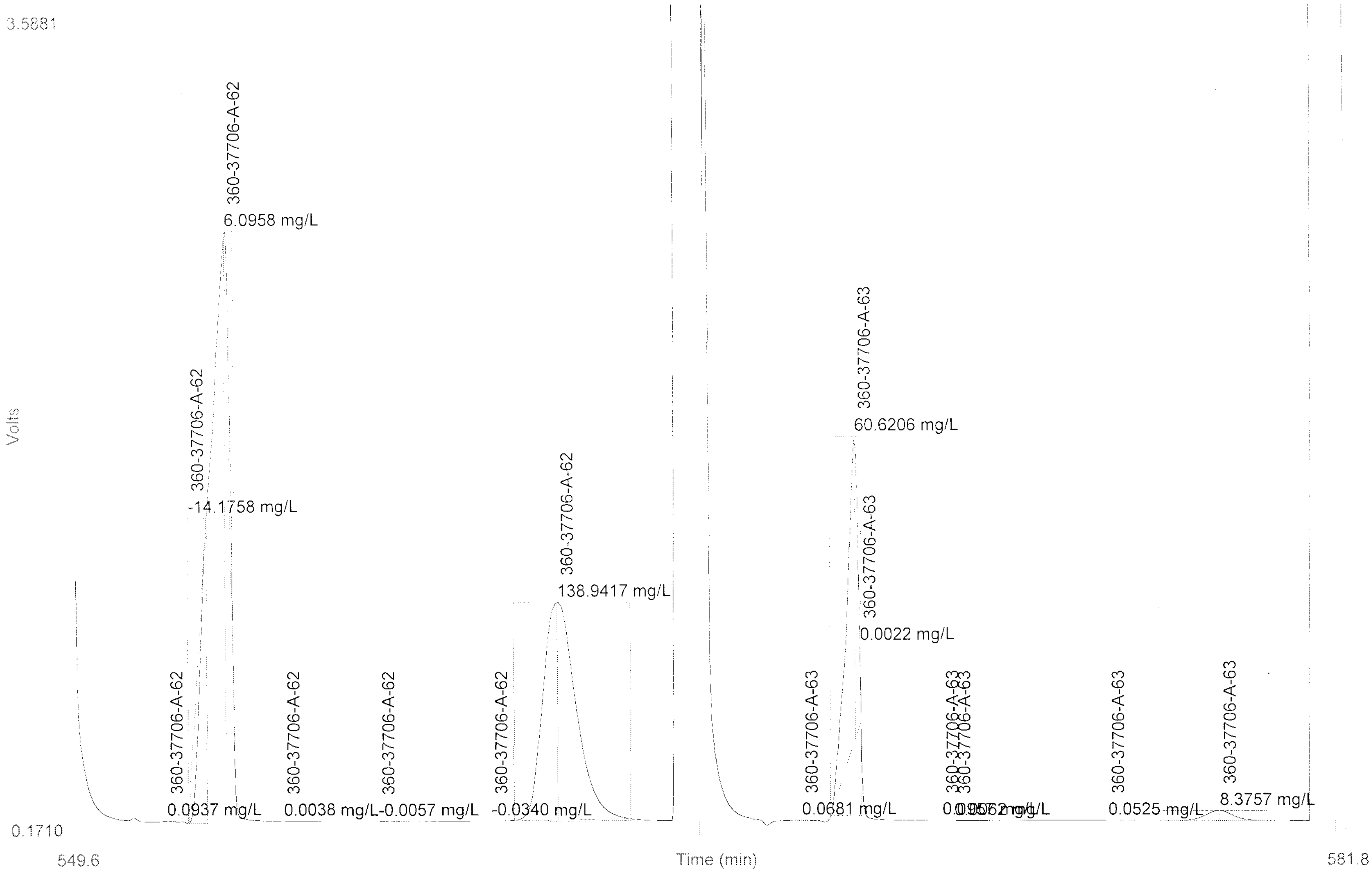
Channel 1 (Anions) : Set 18 of 43



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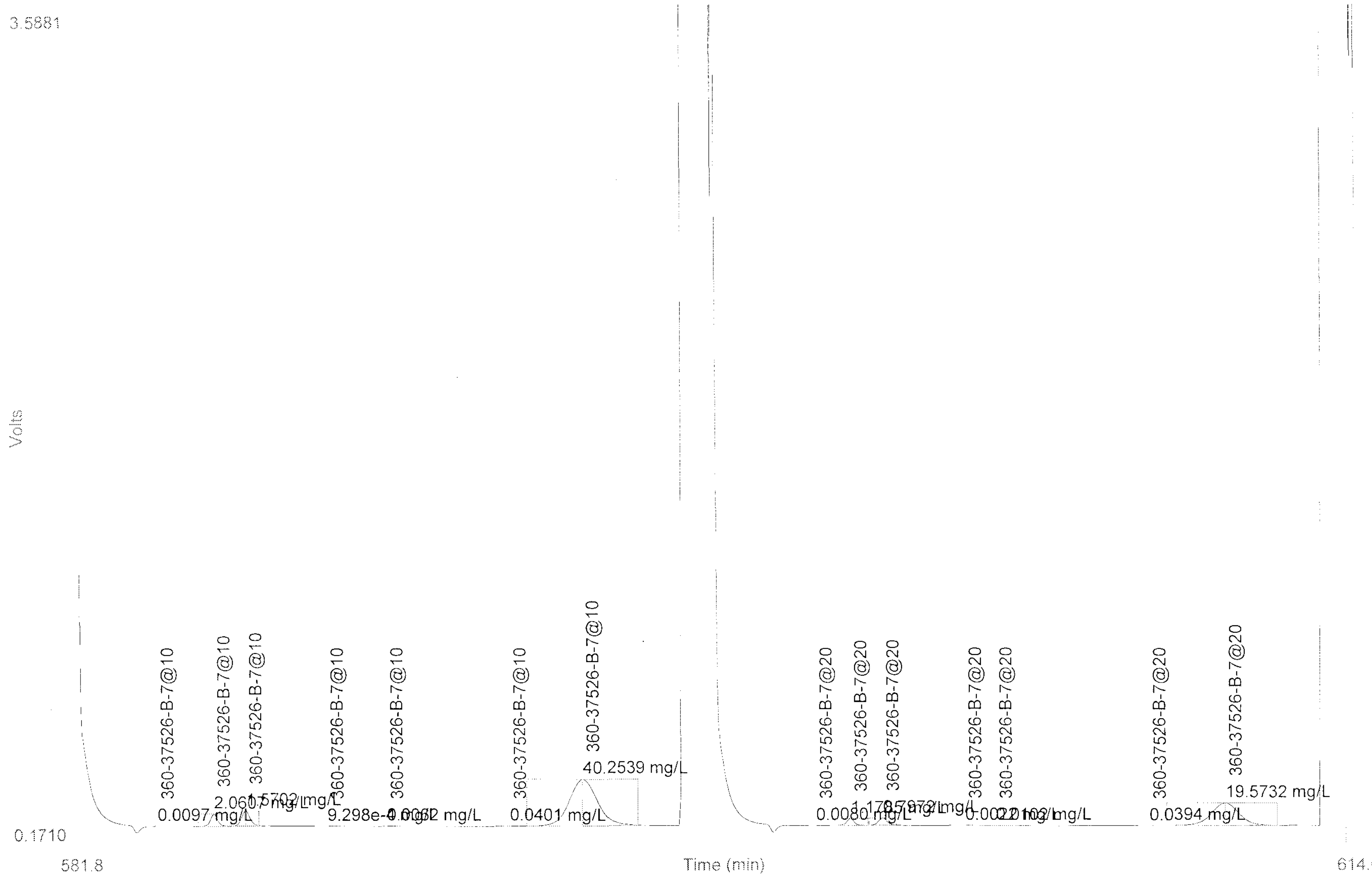
Channel 1 (Anions) : Set 19 of 43



Author: EmerichR

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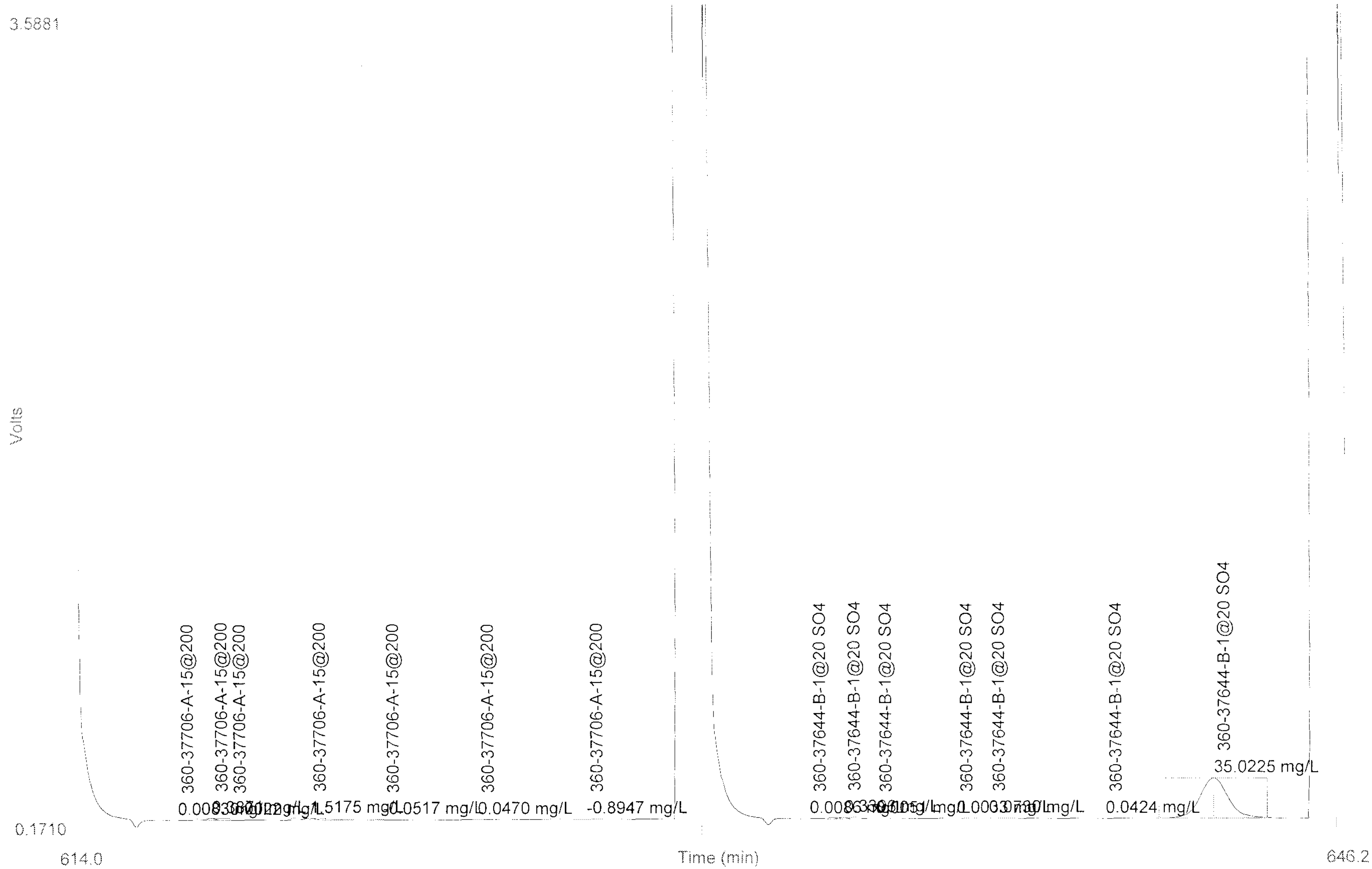
Channel 1 (Anions) : Set 20 of 43



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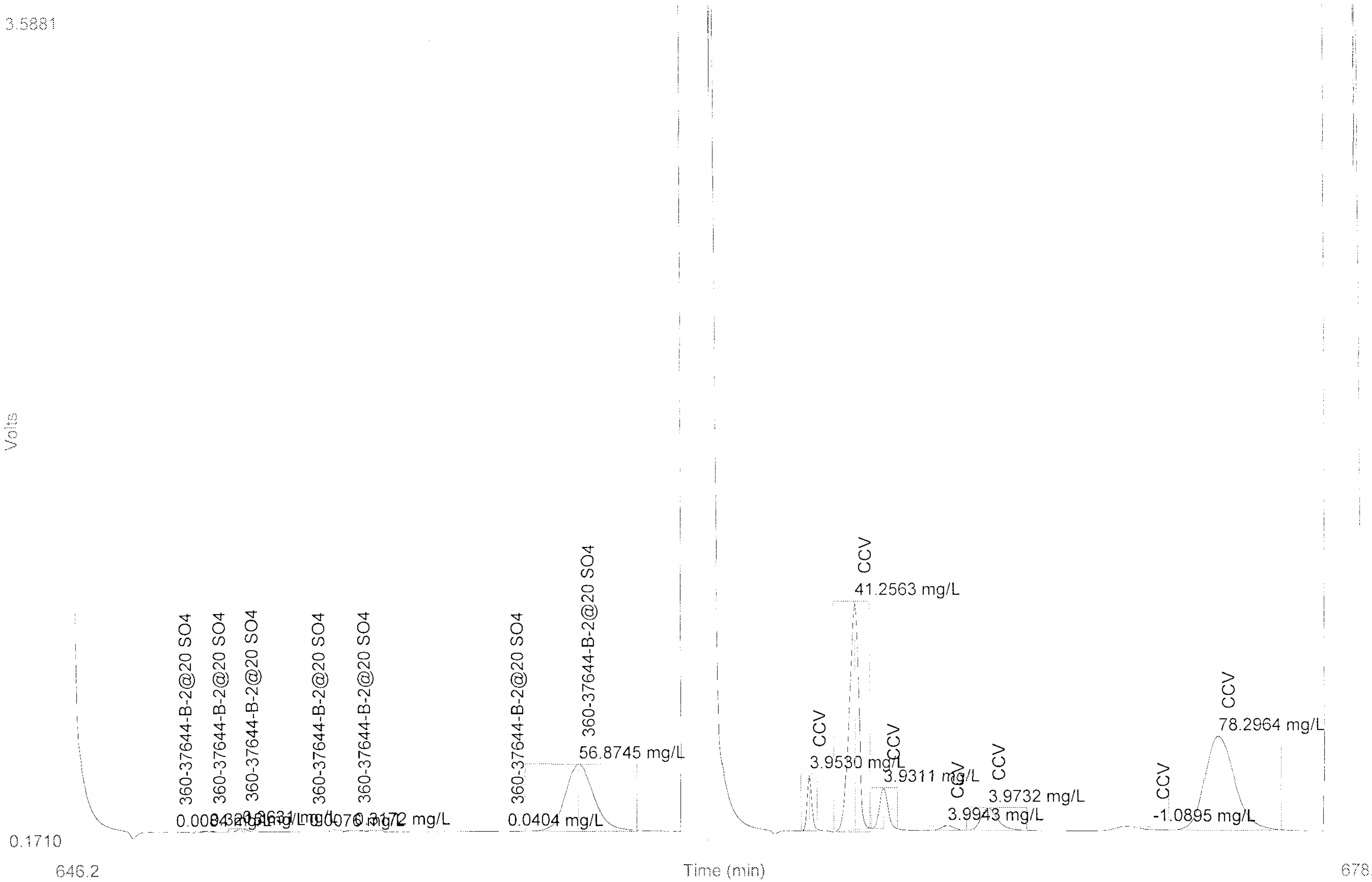
Channel 1 (Anions) : Set 21 of 43



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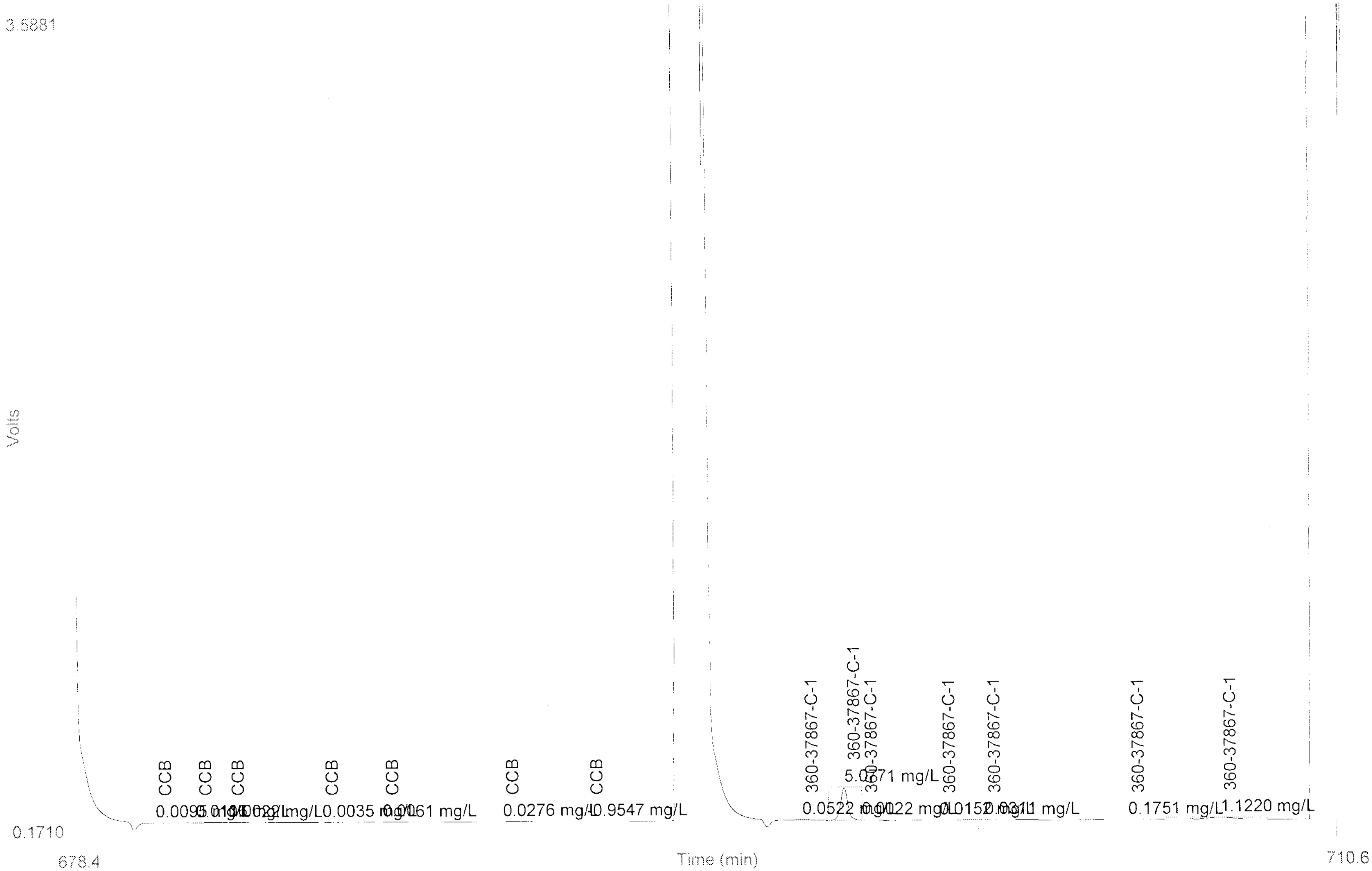
Channel 1 (Anions) : Set 22 of 43



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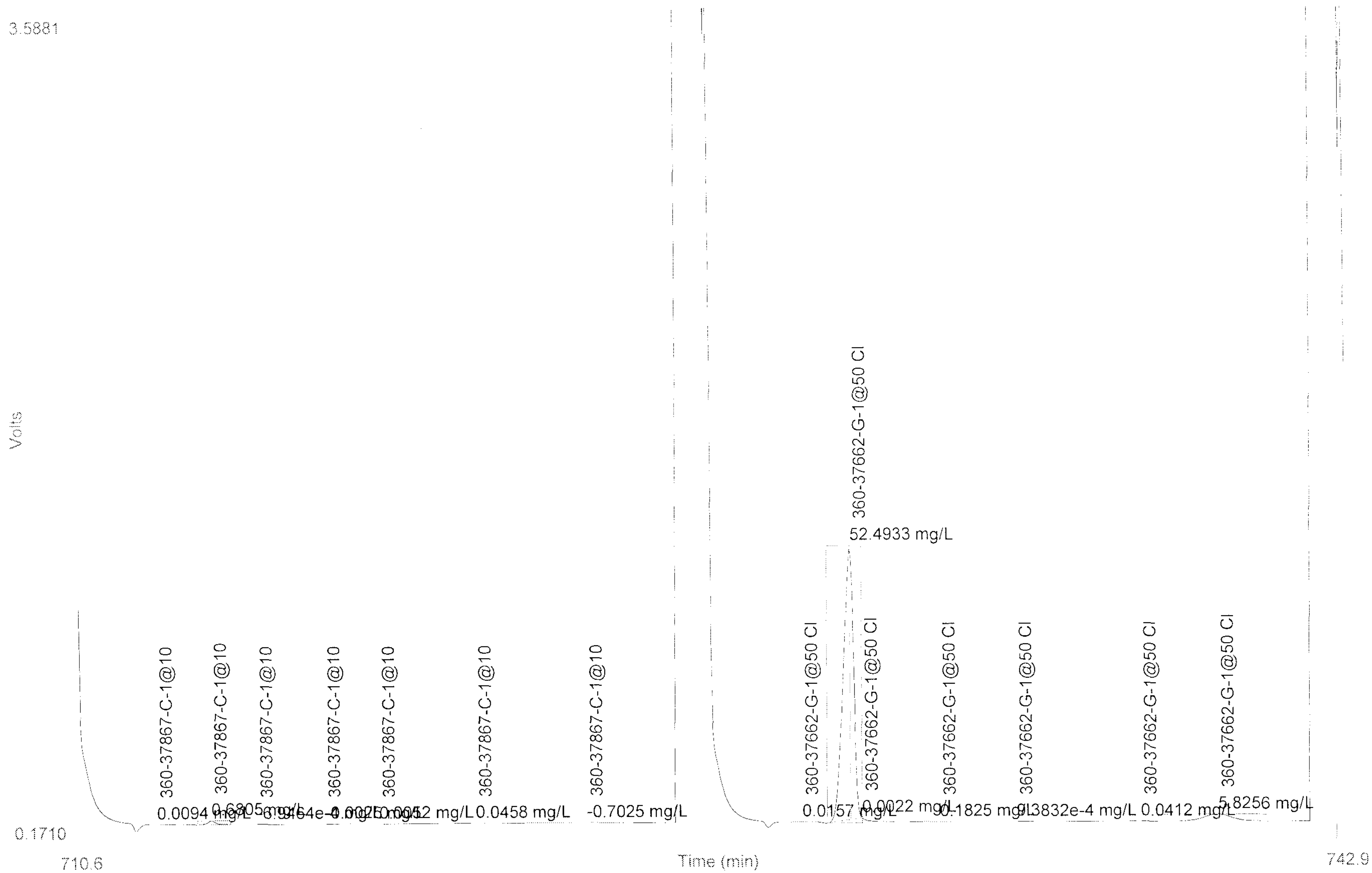
Channel 1 (Anions) : Set 23 of 43



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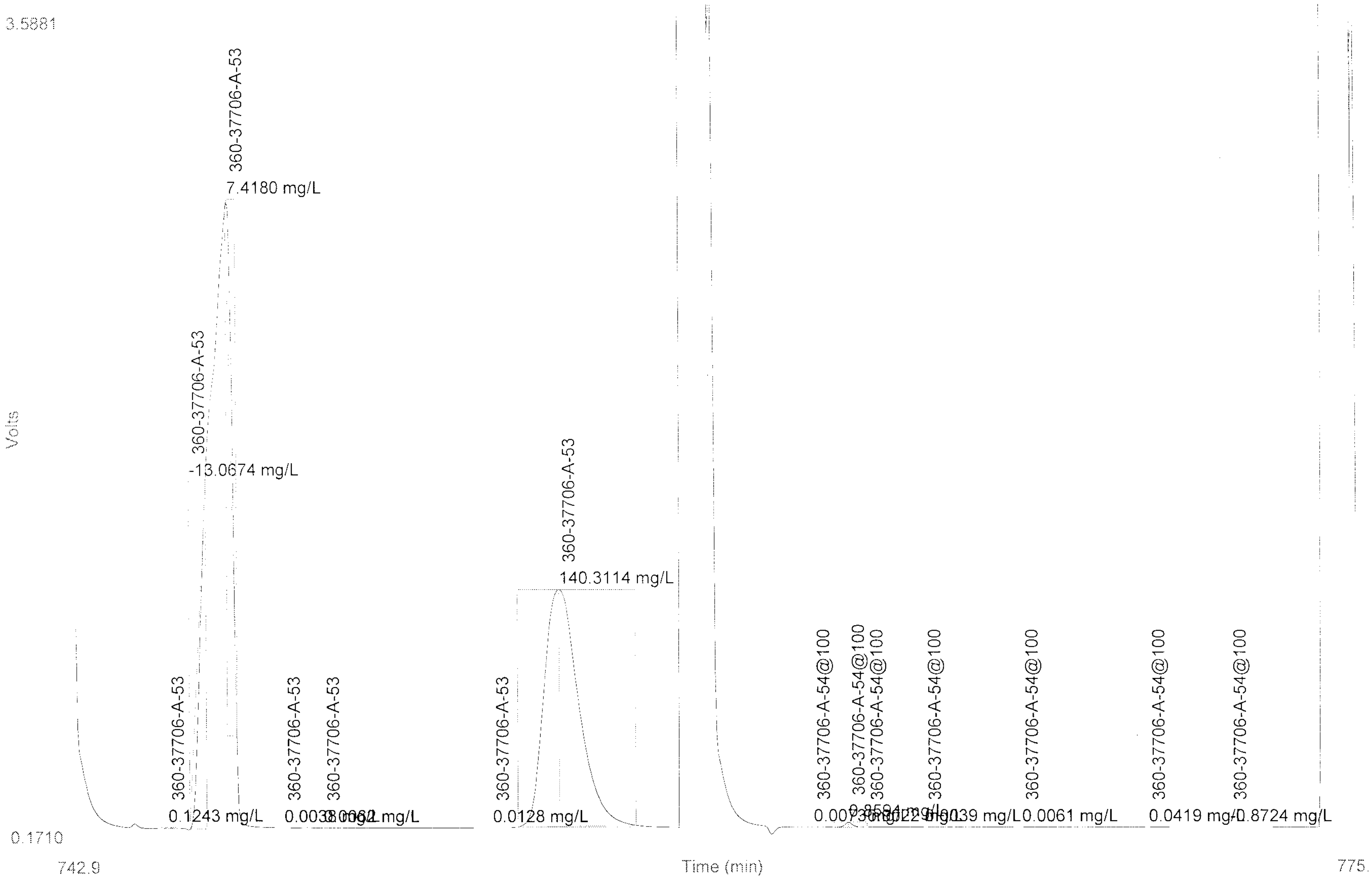
Channel 1 (Anions) : Set 24 of 43



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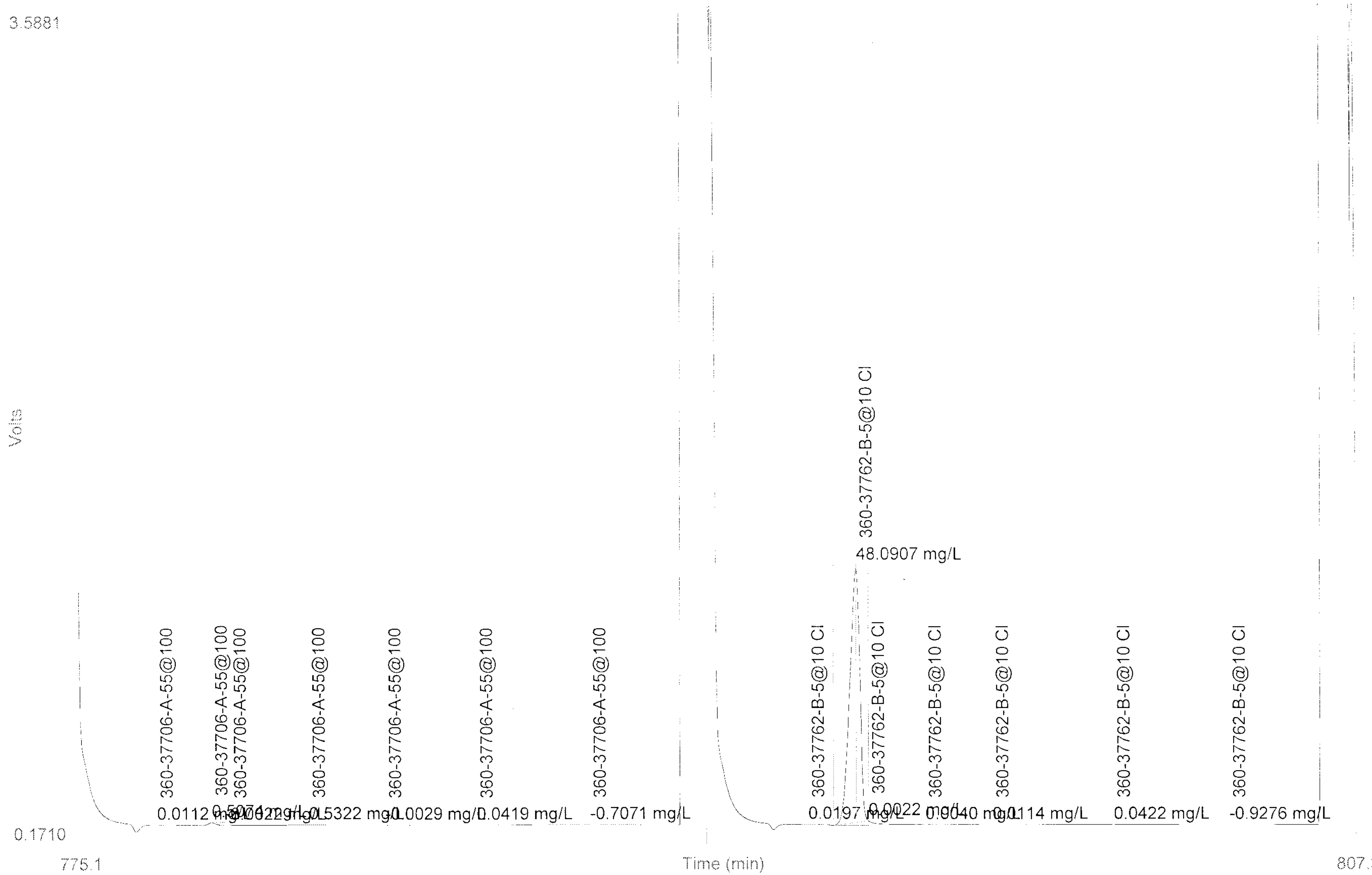
Channel 1 (Anions) : Set 25 of 43



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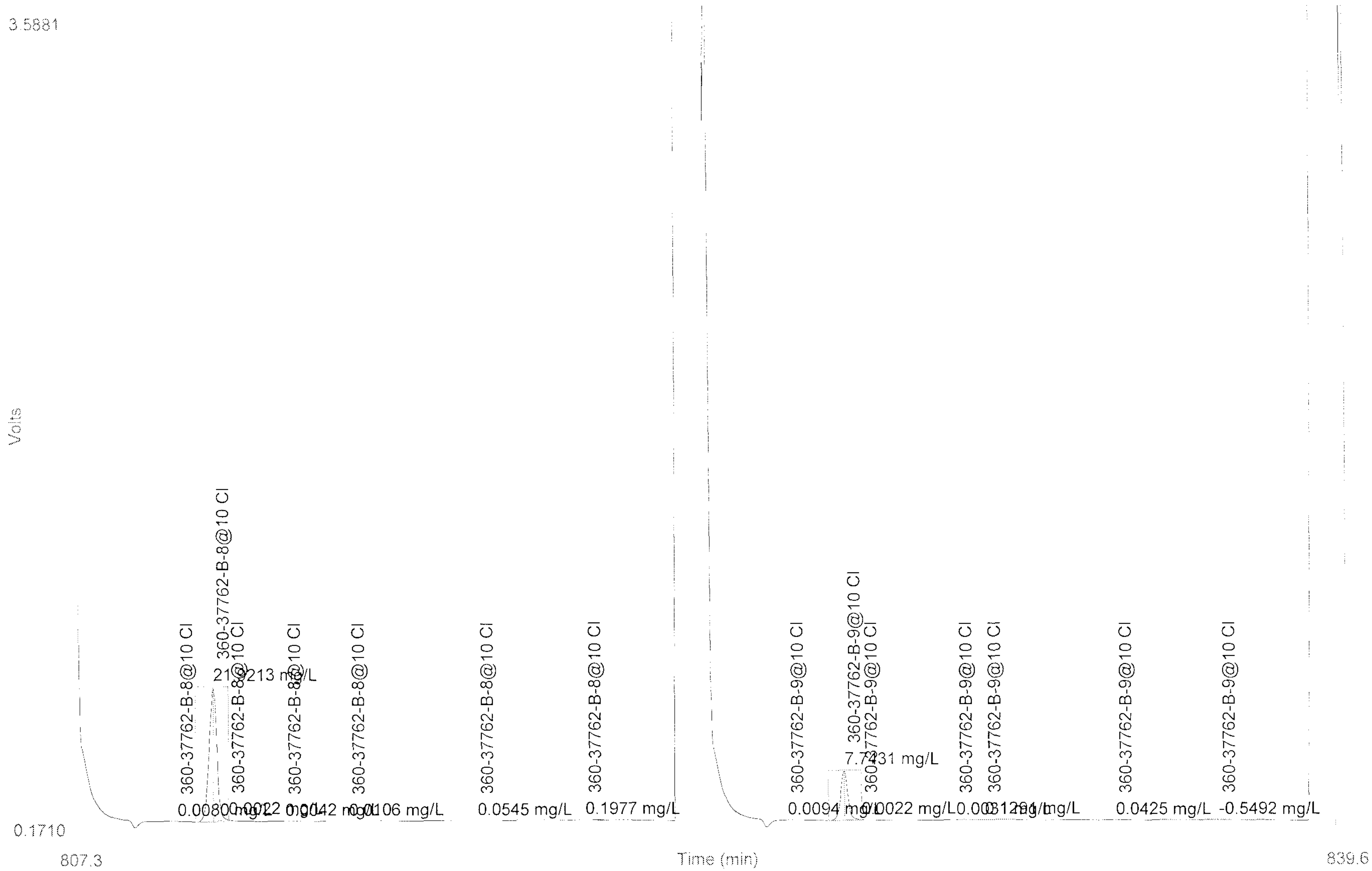
Channel 1 (Anions) : Set 26 of 43



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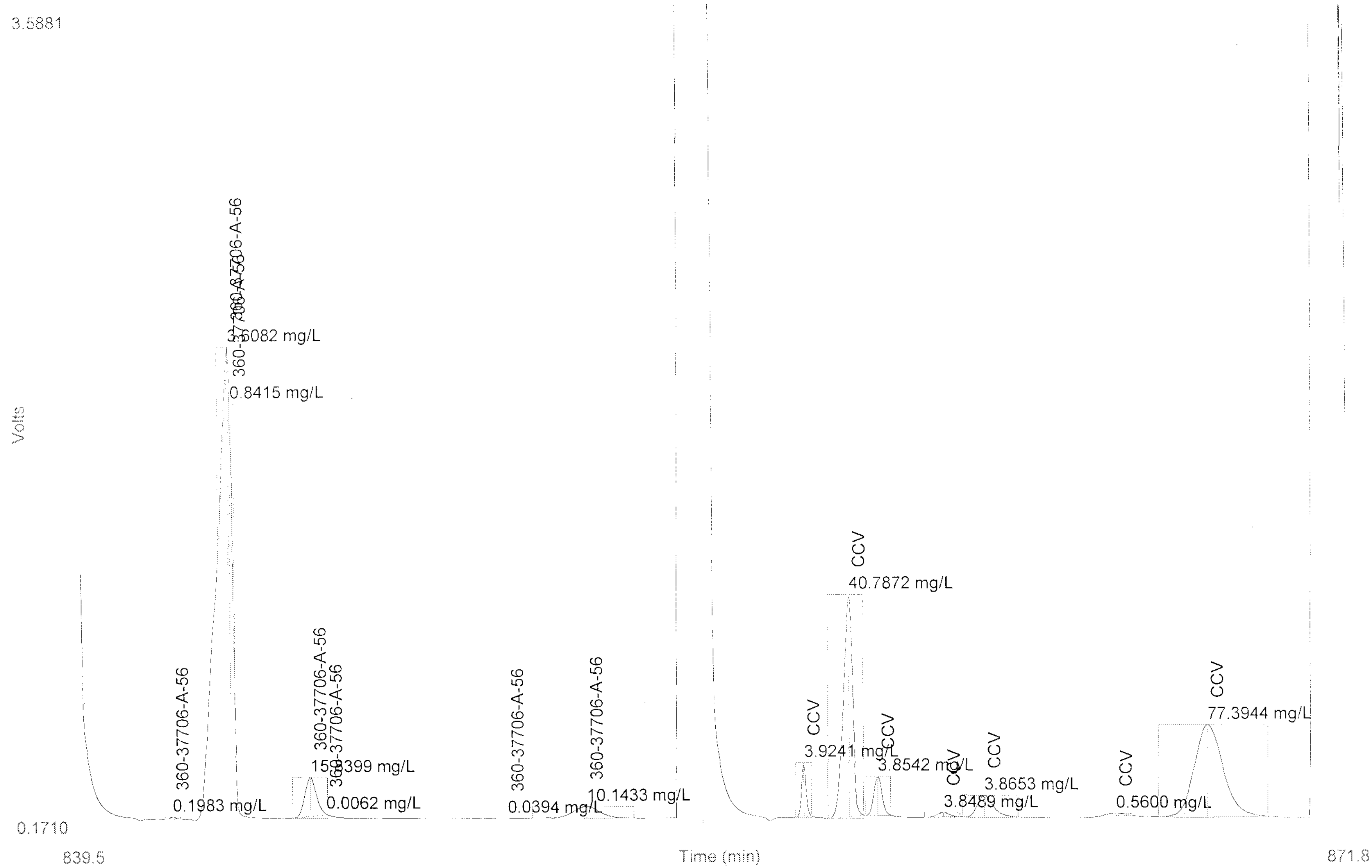
Date : 12/2/2011

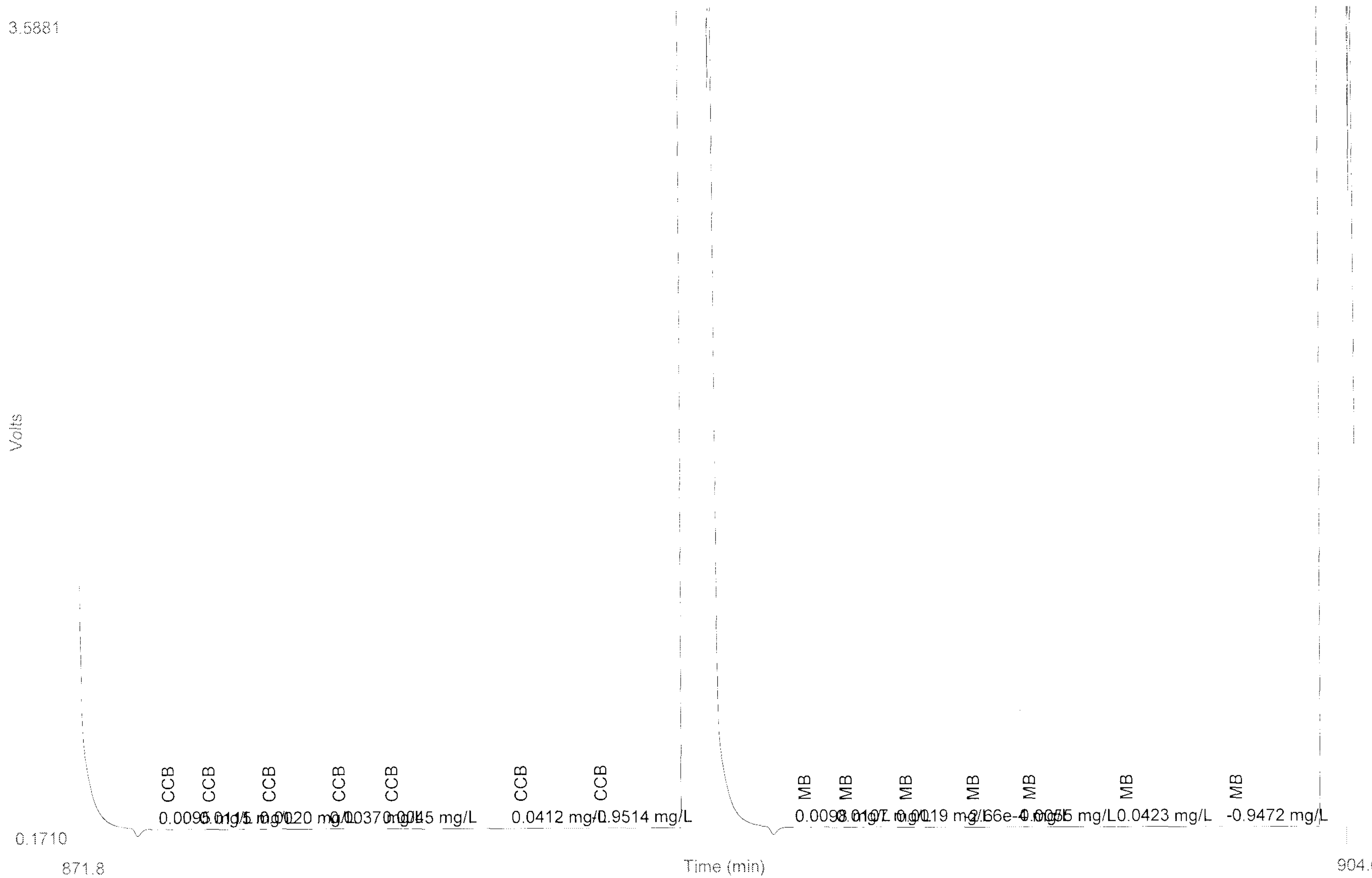
Channel 1 (Anions) : Set 27 of 43



Author: EmerichR

Date : 12/2/2011

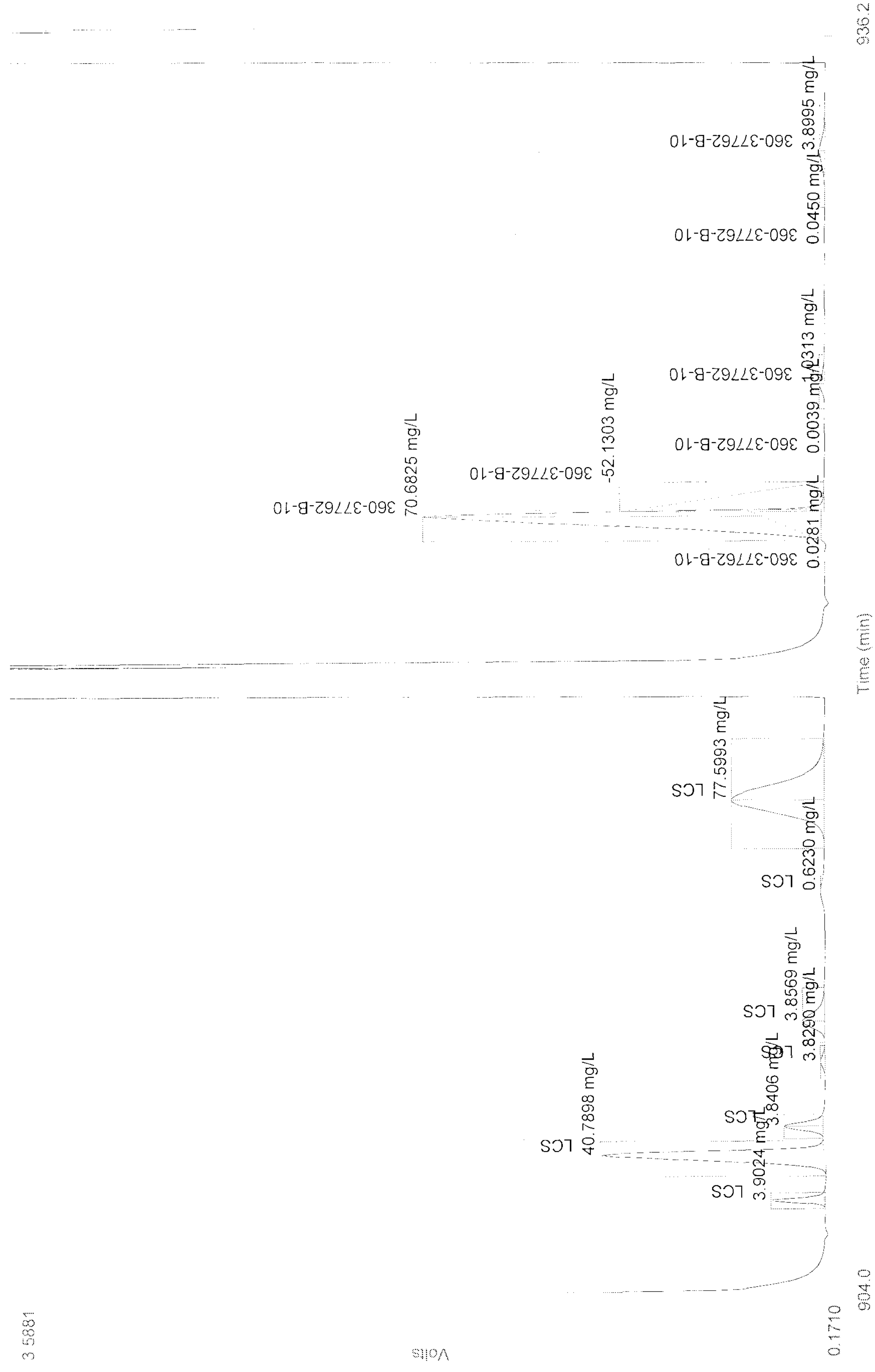
Channel 1 (Anions) : Set 28 of 43



Author: EmerichR

Channel 1 (Anions) : Set 29 of 43

Date : 12/2/2011



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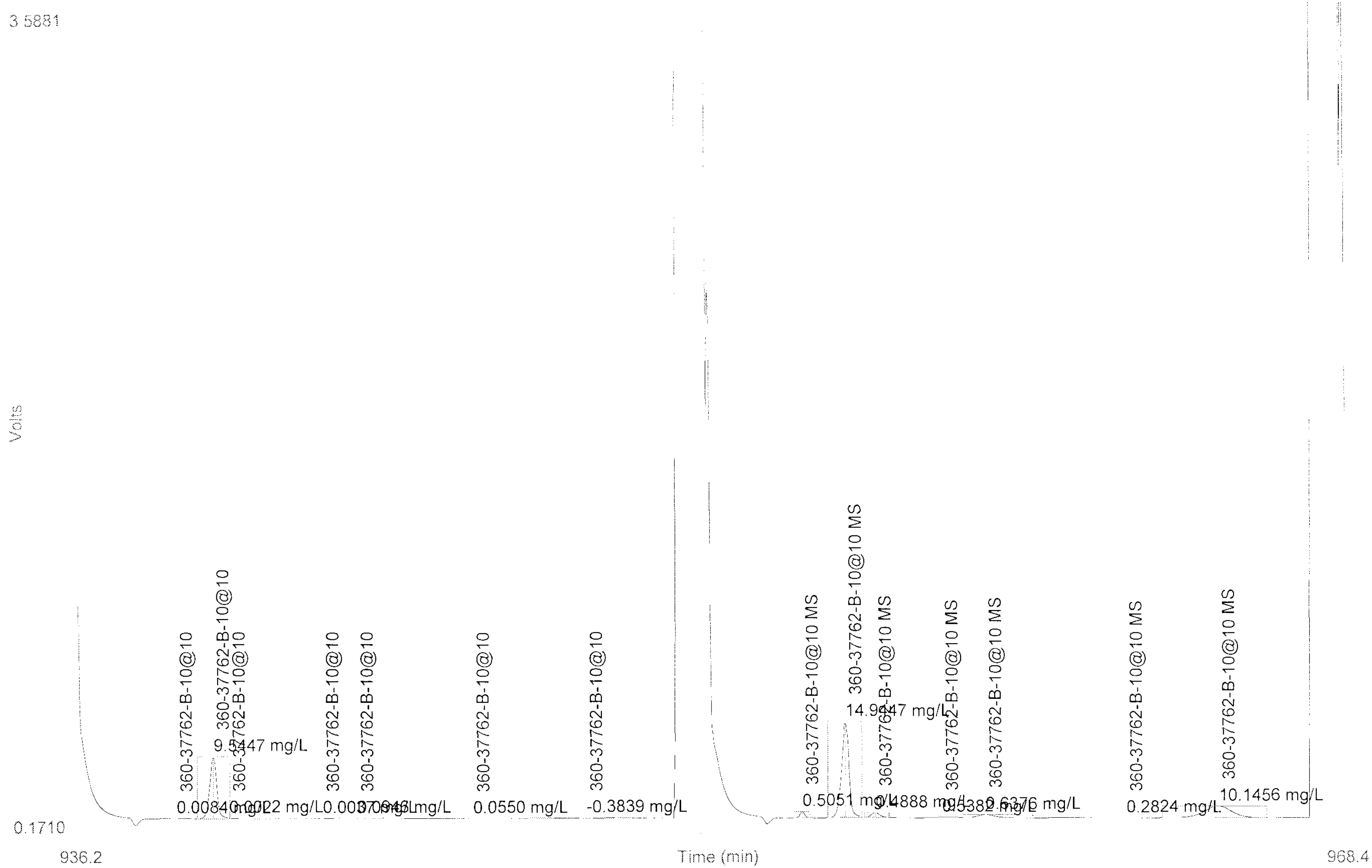
Author: EmerichR

Date : 12/2/2011

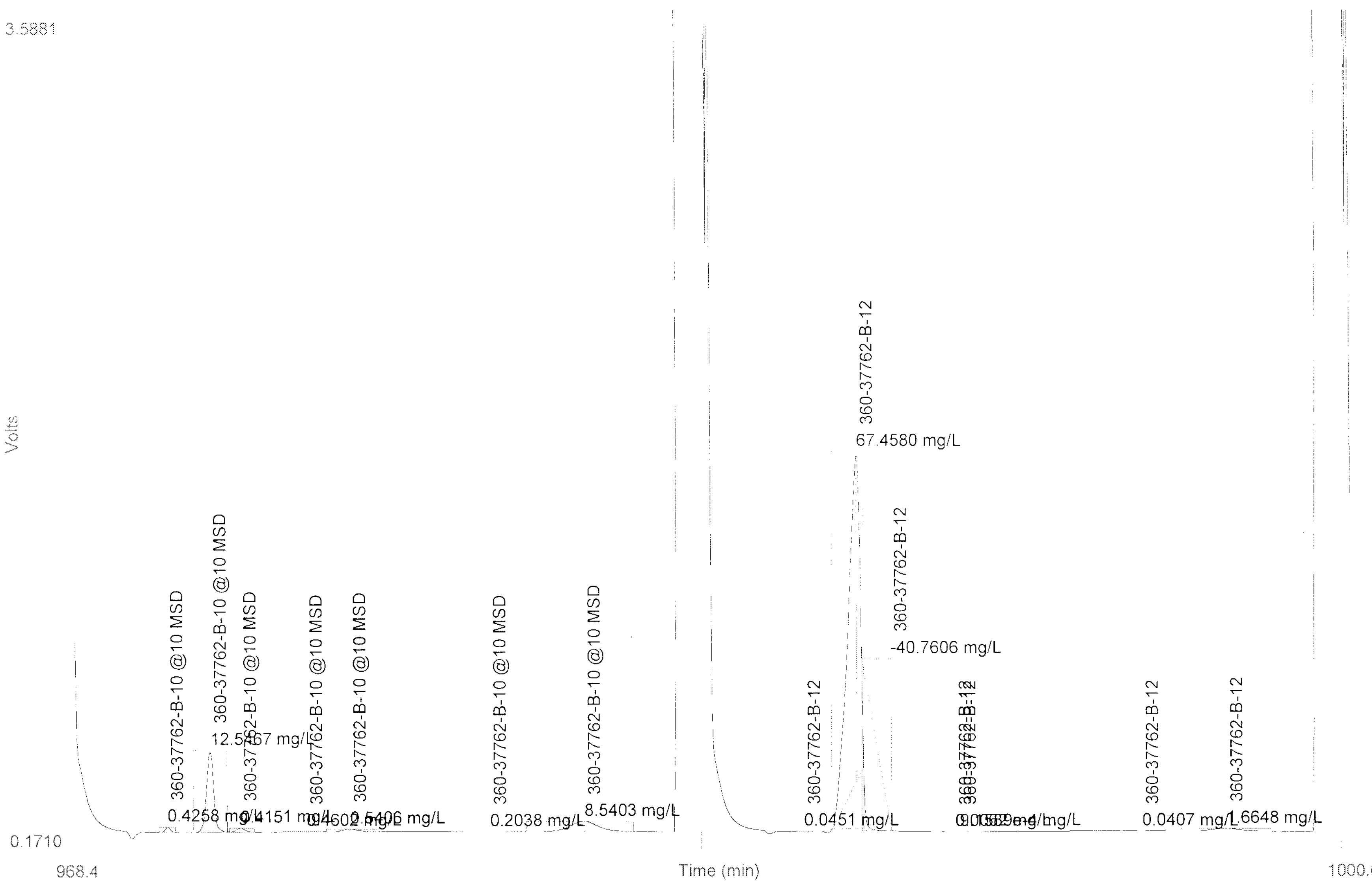
Channel 1 (Anions) : Set 30 of 43



Author: EmerichR

Date : 12/2/2011

Channel 1 (Anions) : Set 31 of 43

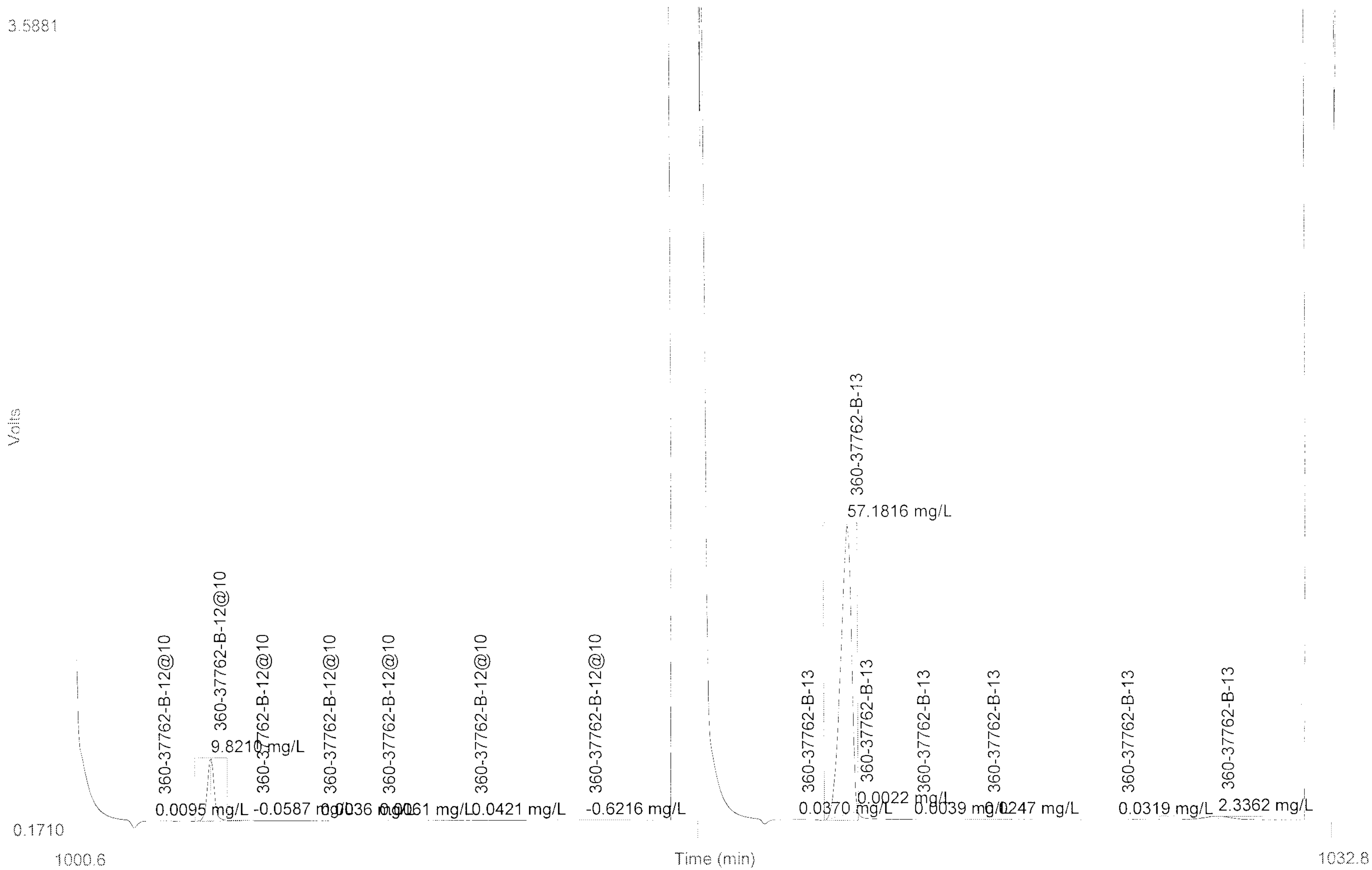


- 34 -

Author: EmerichR

Date : 12/2/2011

Channel 1 (Anions) : Set 32 of 43

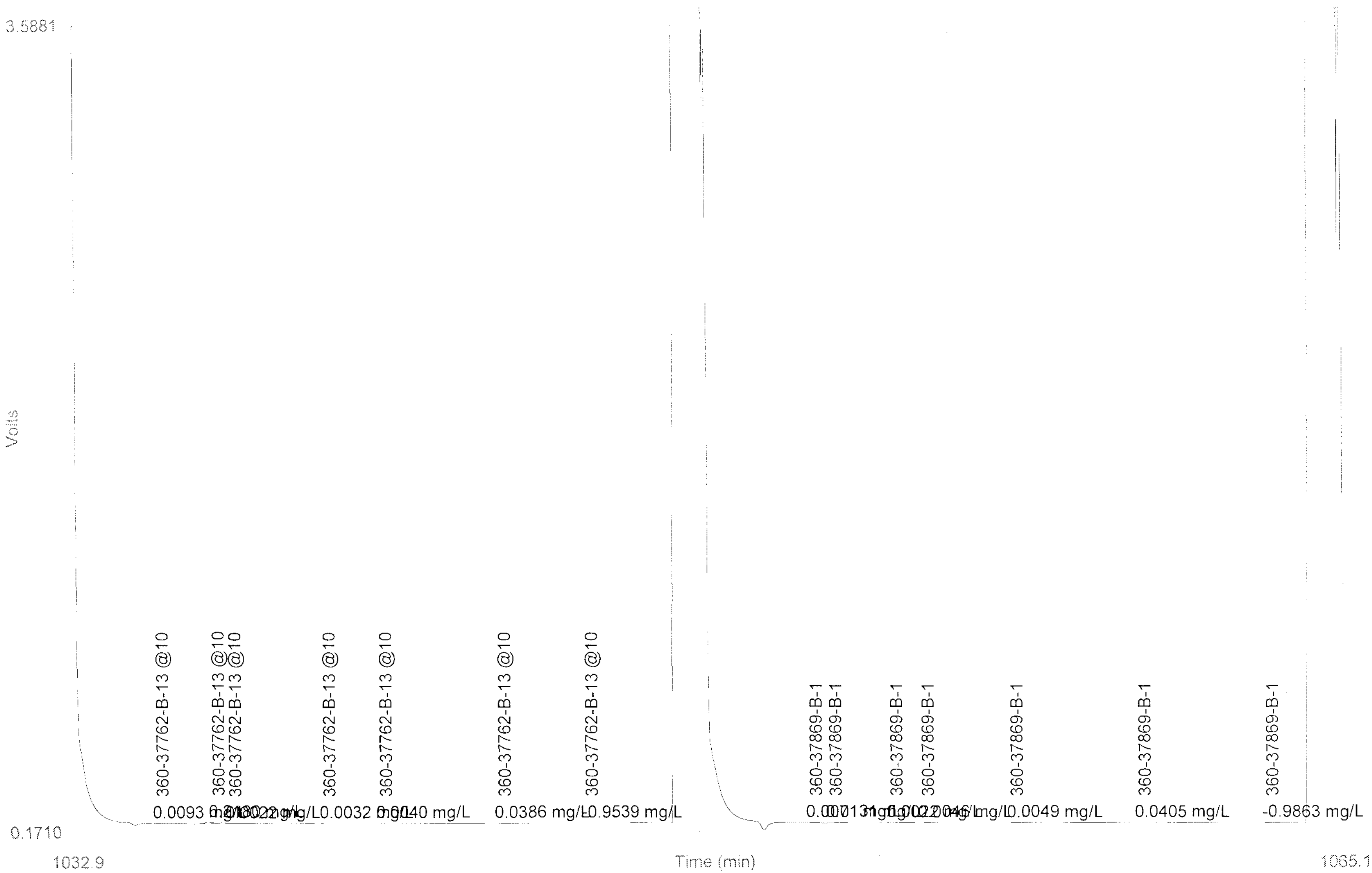


- 35 -

Author: EmerichR

Date : 12/2/2011

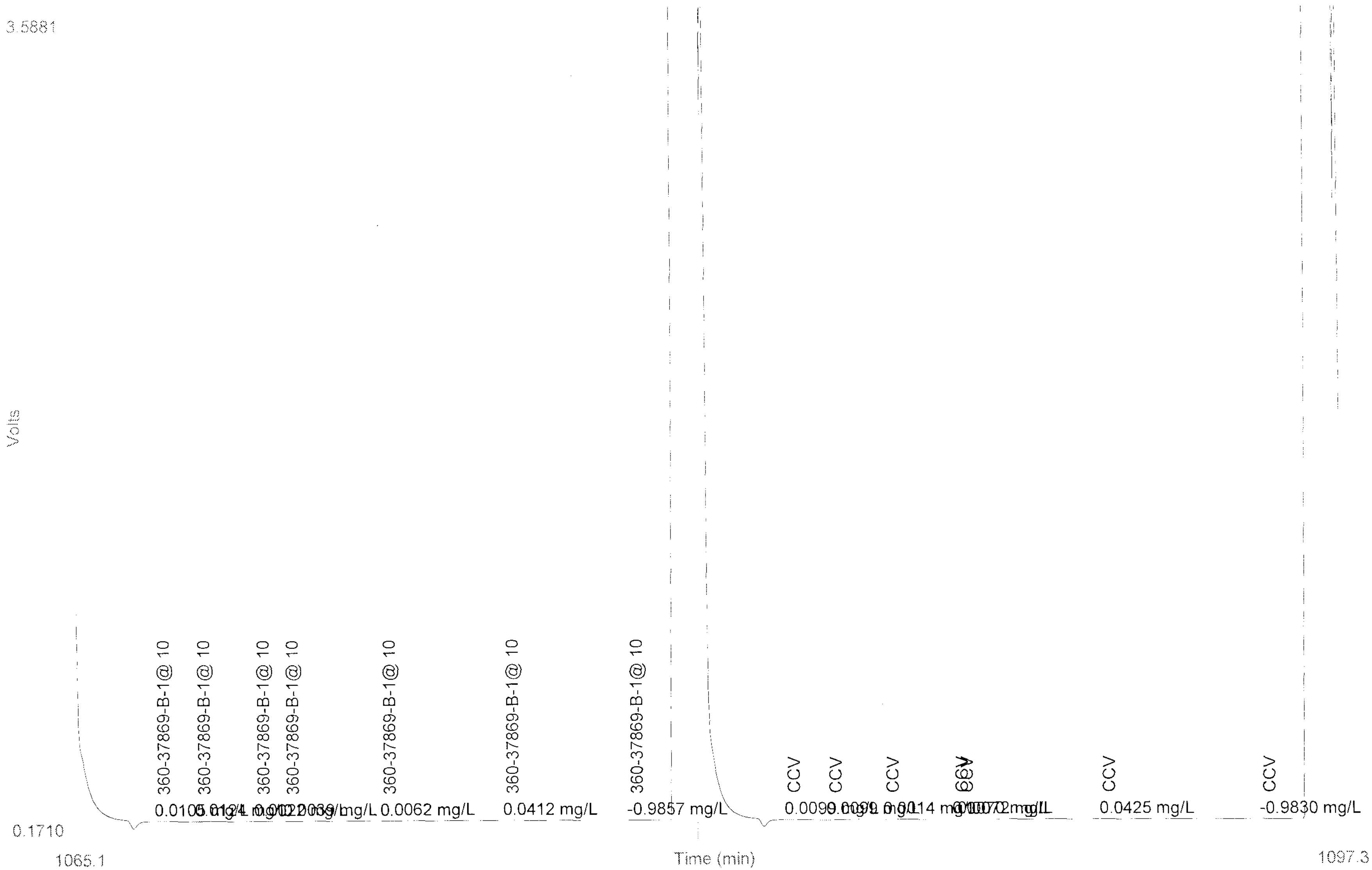
Channel 1 (Anions) : Set 33 of 43



Author: EmerichR

Date : 12/2/2011

Channel 1 (Anions) : Set 34 of 43

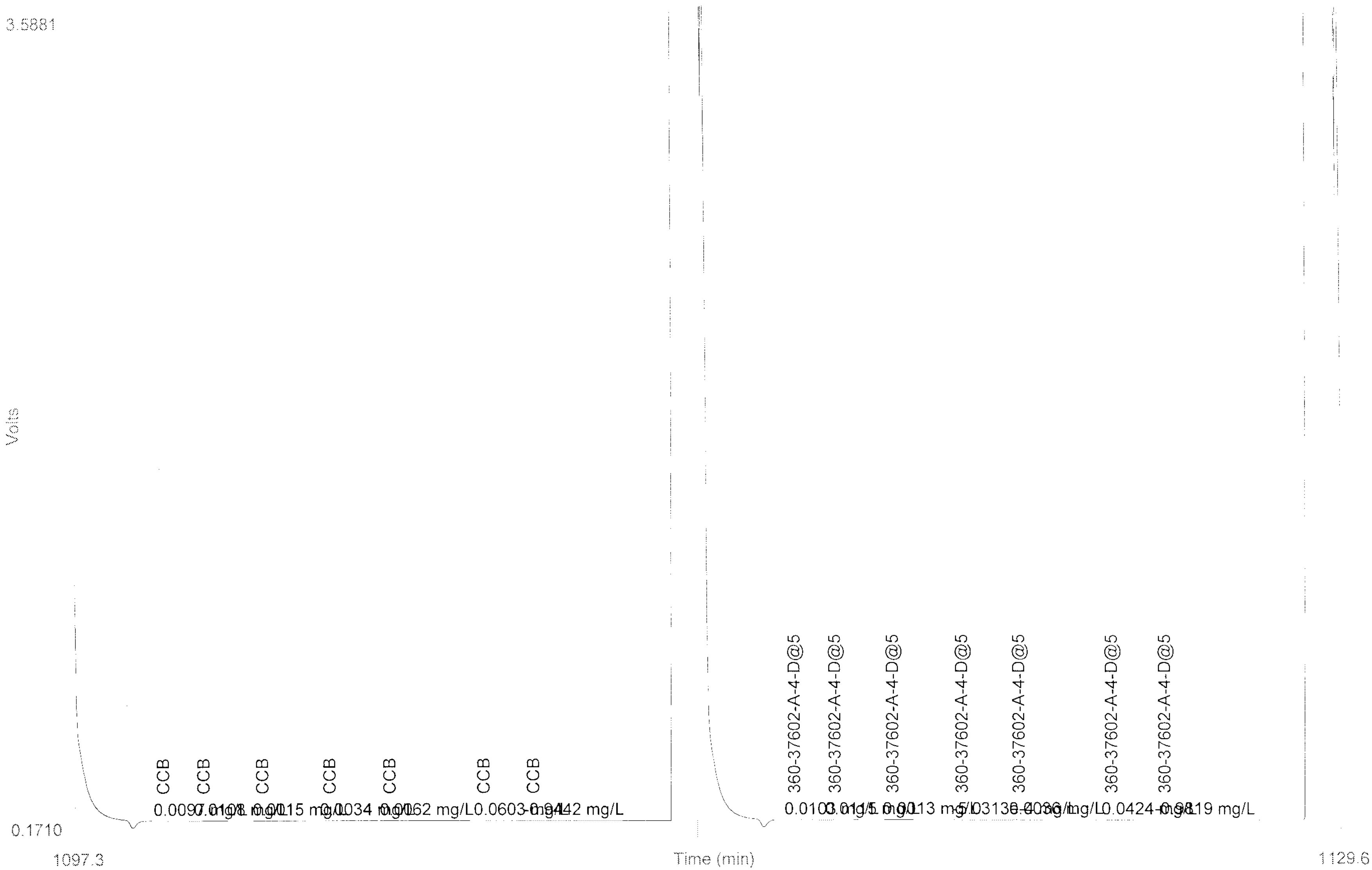


- 37 -

Author: EmerichR

Date : 12/2/2011

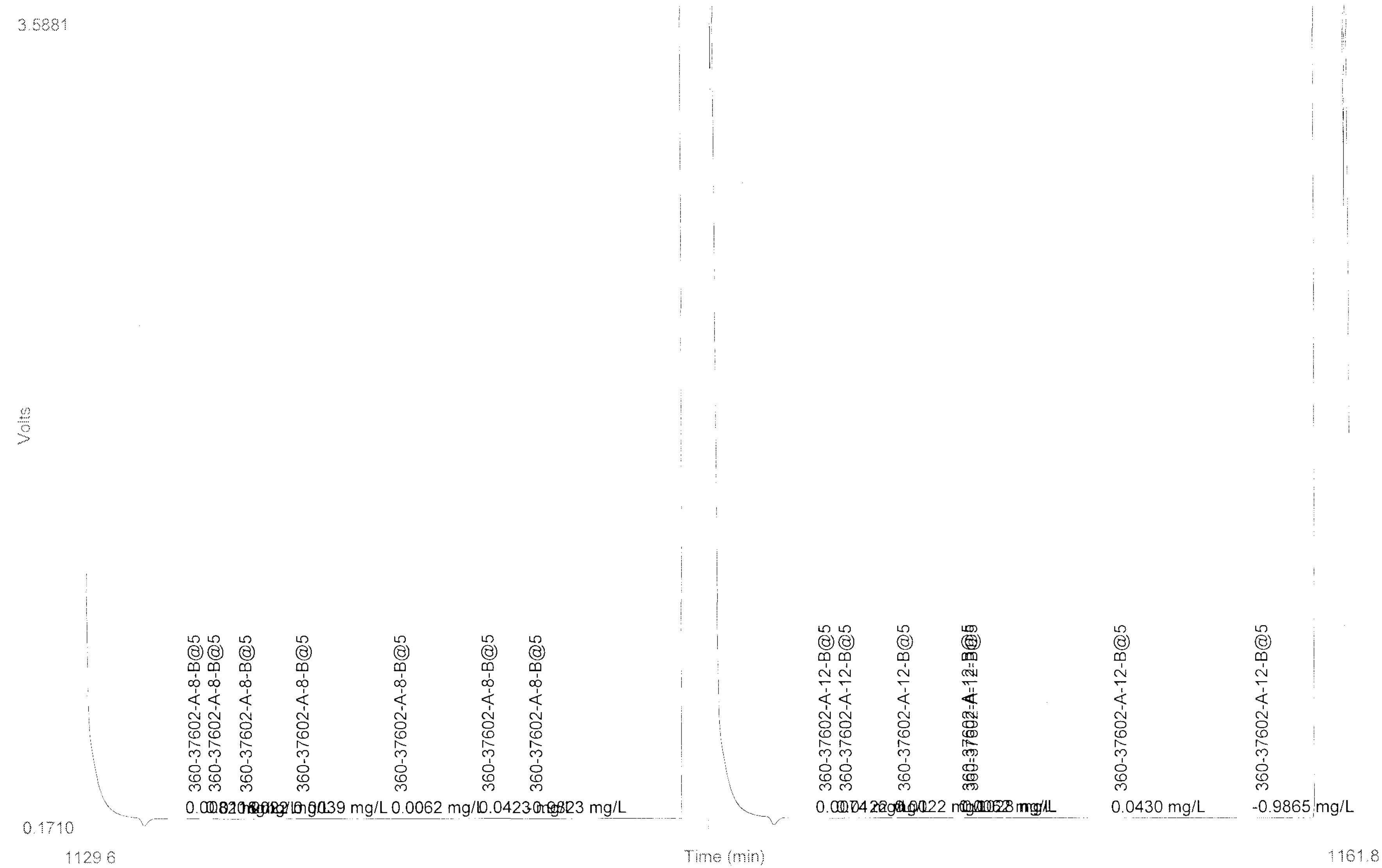
Channel 1 (Anions) : Set 35 of 43



Author: EmerichR

Date : 12/2/2011

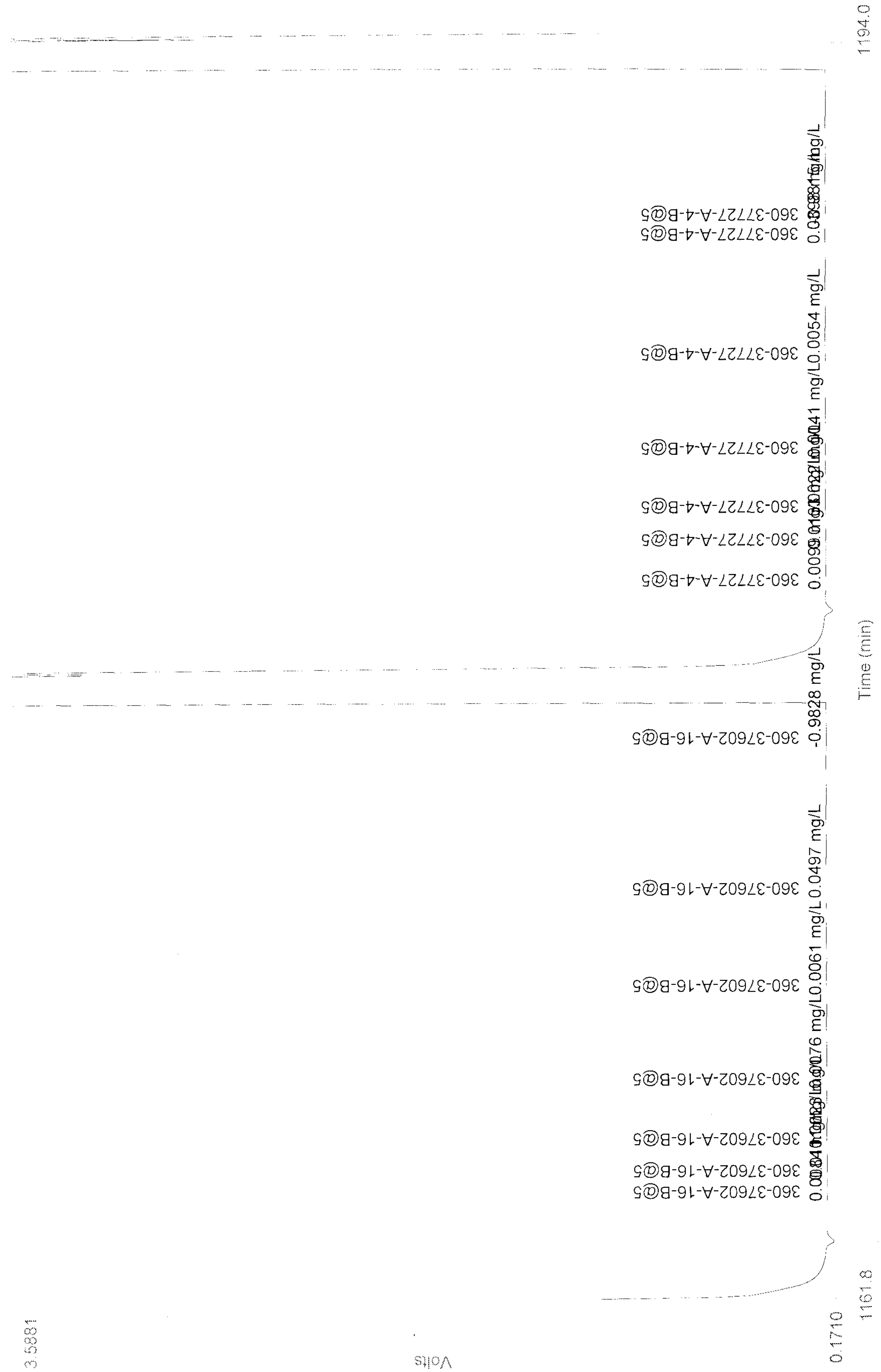
Channel 1 (Anions) : Set 36 of 43



Author: EmerichR

Channel 1 (Anions) : Set 37 of 43

Date : 12/2/2011

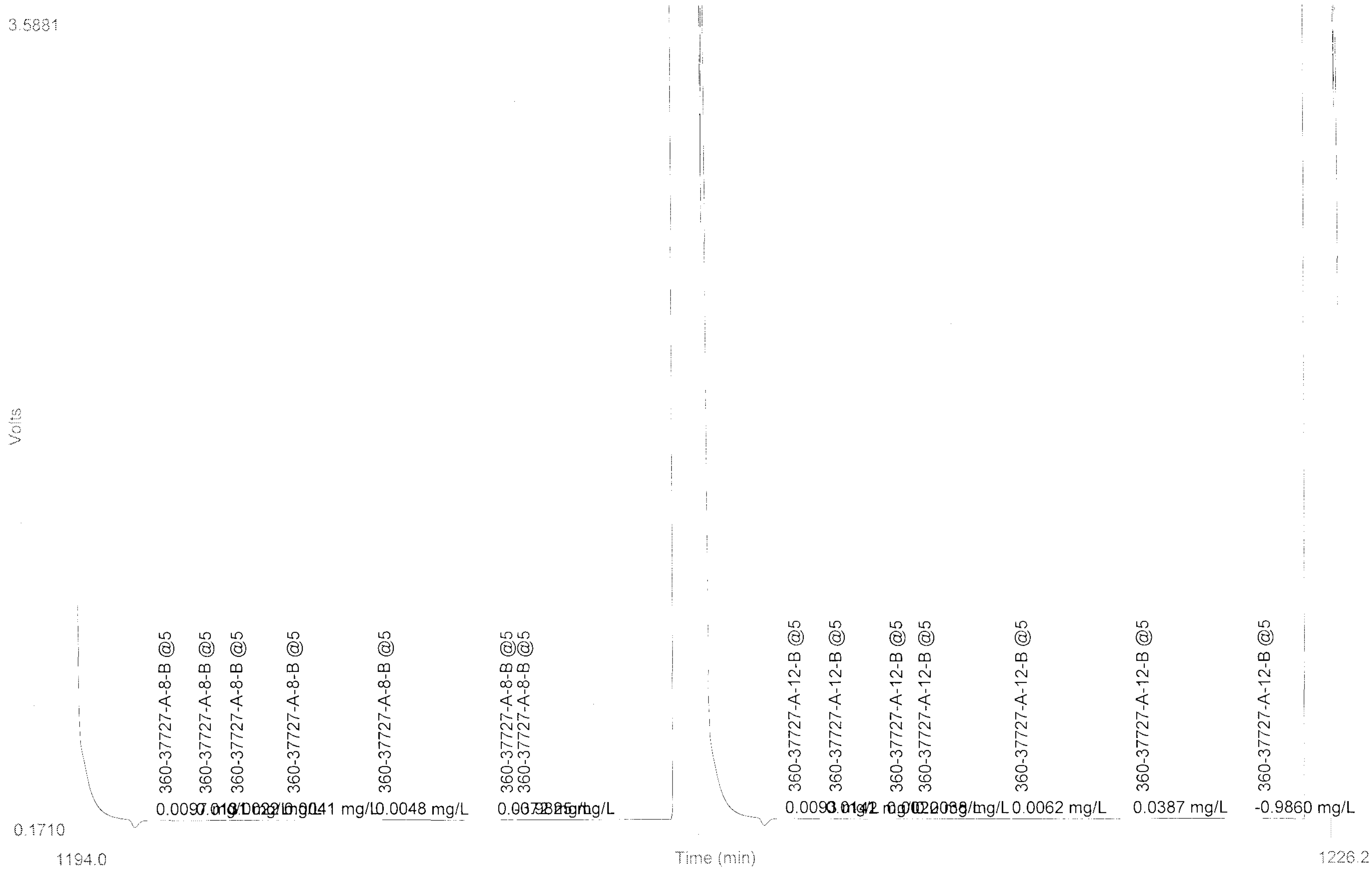


- 40 -

Author: EmerichR

Date : 12/2/2011

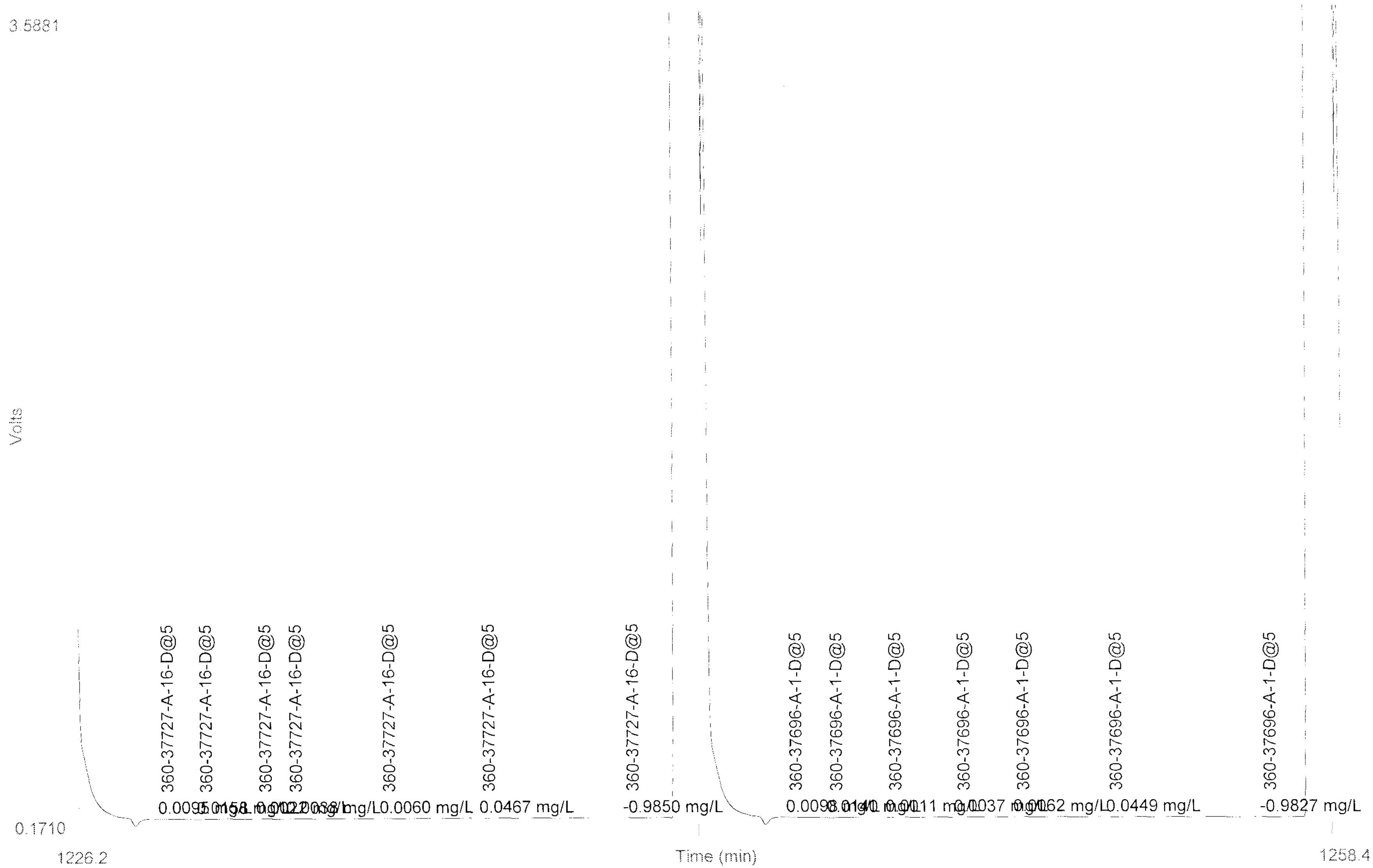
Channel 1 (Anions) : Set 38 of 43



Author: EmerichR

Date : 12/2/2011

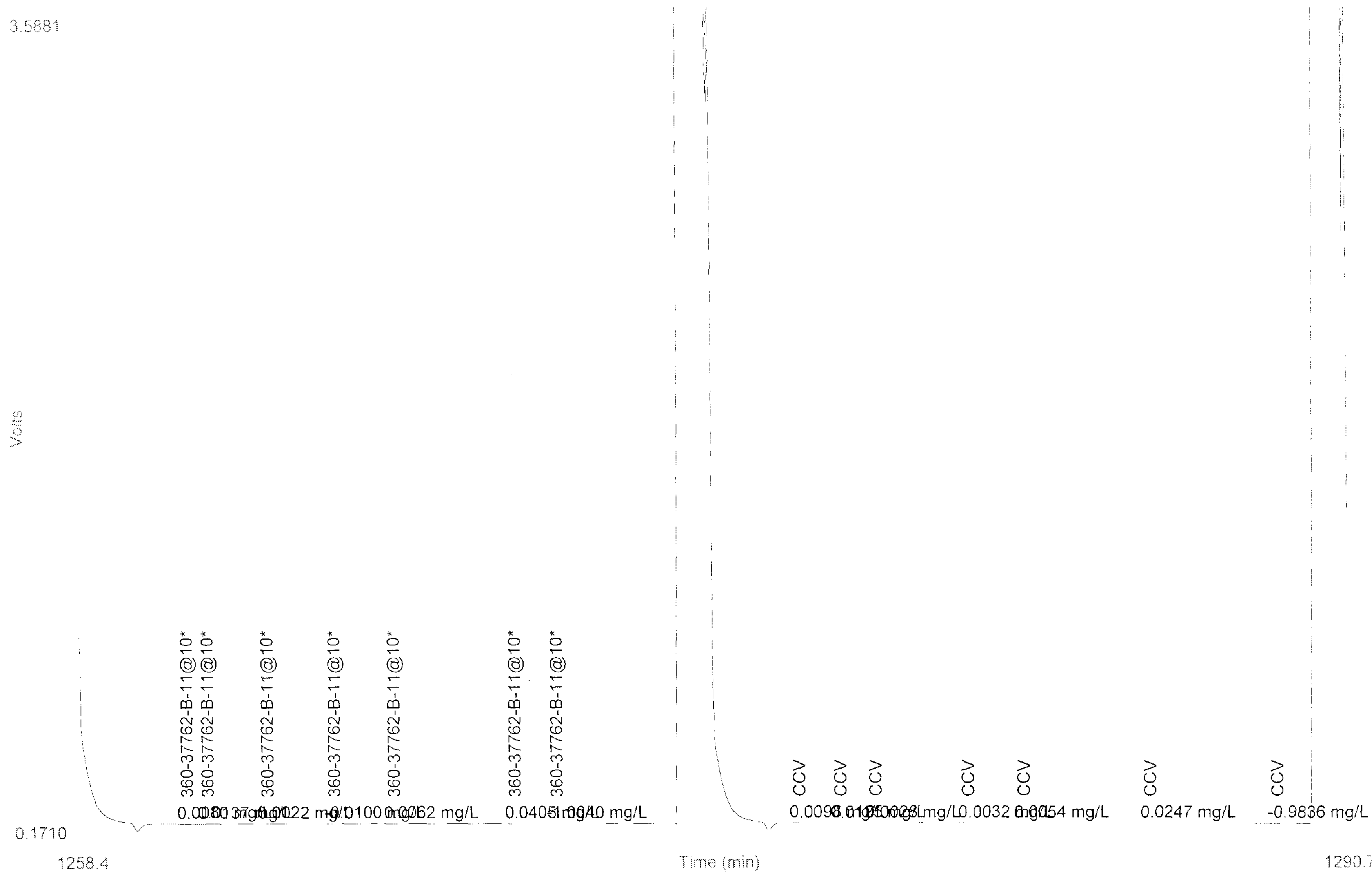
Channel 1 (Anions) : Set 39 of 43



Author: EmerichR

Date : 12/2/2011

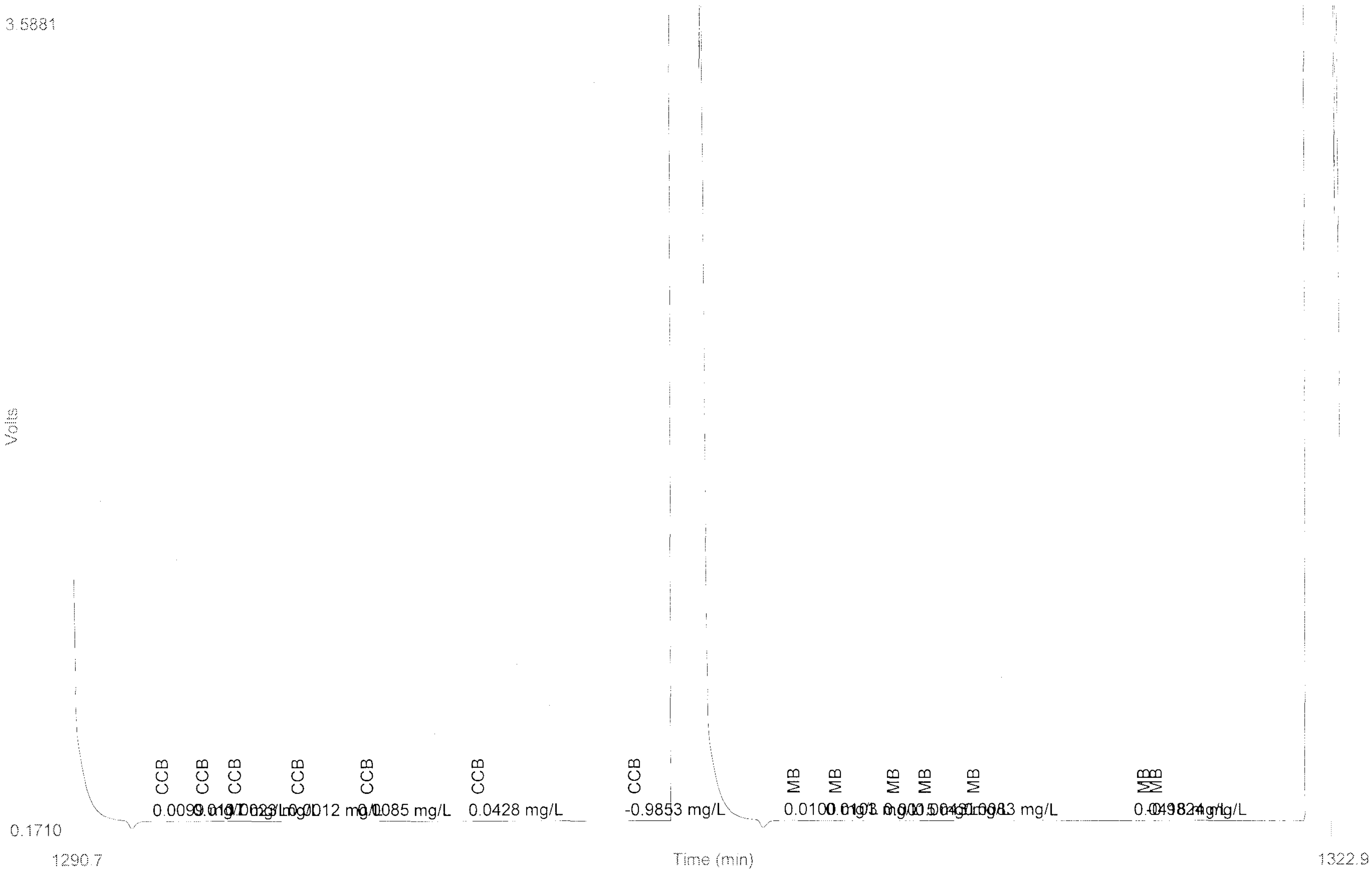
Channel 1 (Anions) : Set 40 of 43



Author: EmerichR

Date : 12/2/2011

Channel 1 (Anions) : Set 41 of 43

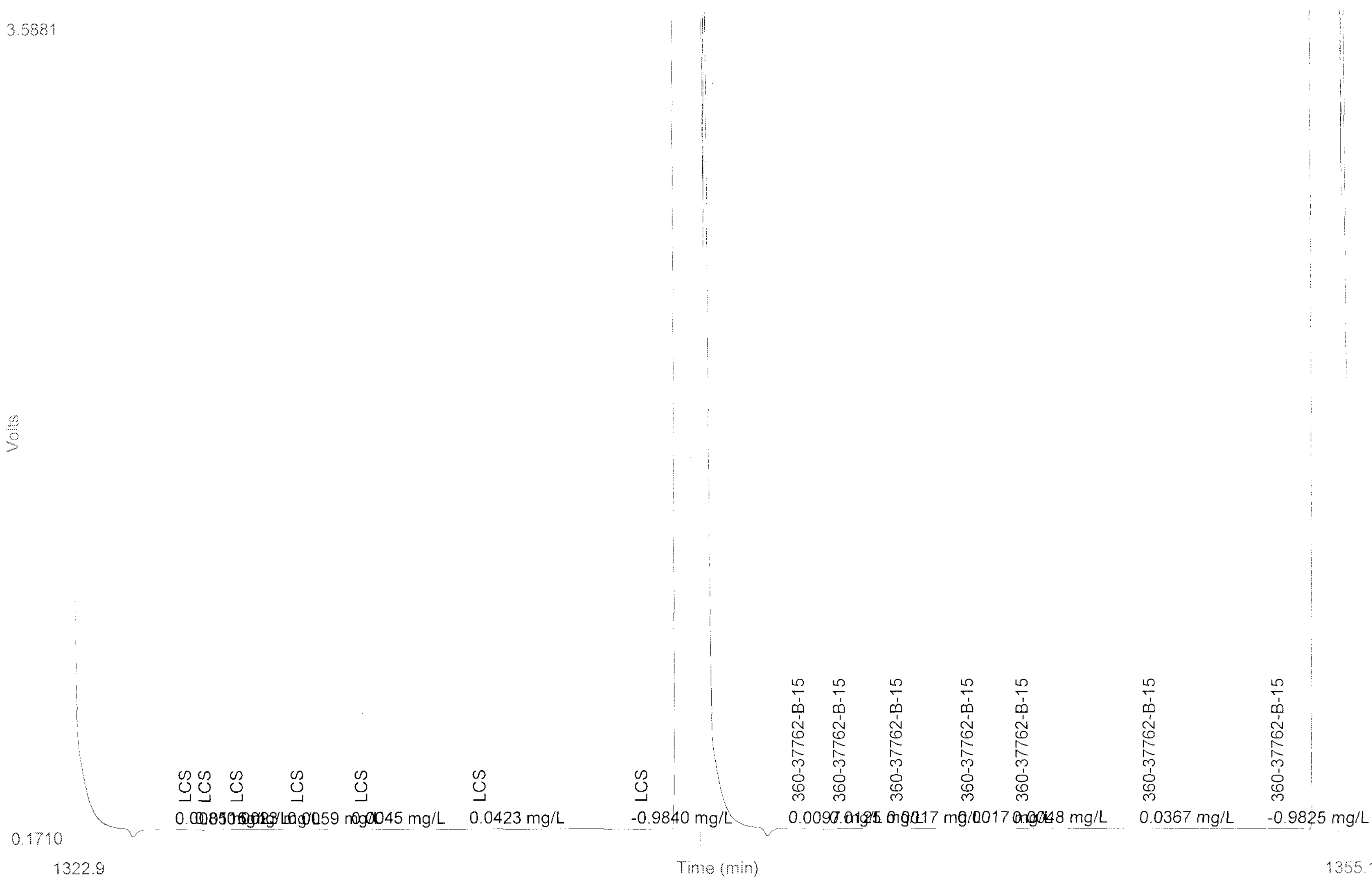


- 44 -

Author: EmerichR

Date : 12/2/2011

Channel 1 (Anions) : Set 42 of 43



Author: EmerichR

Date : 12/2/2011

Channel 1 (Anions) : Set 43 of 43

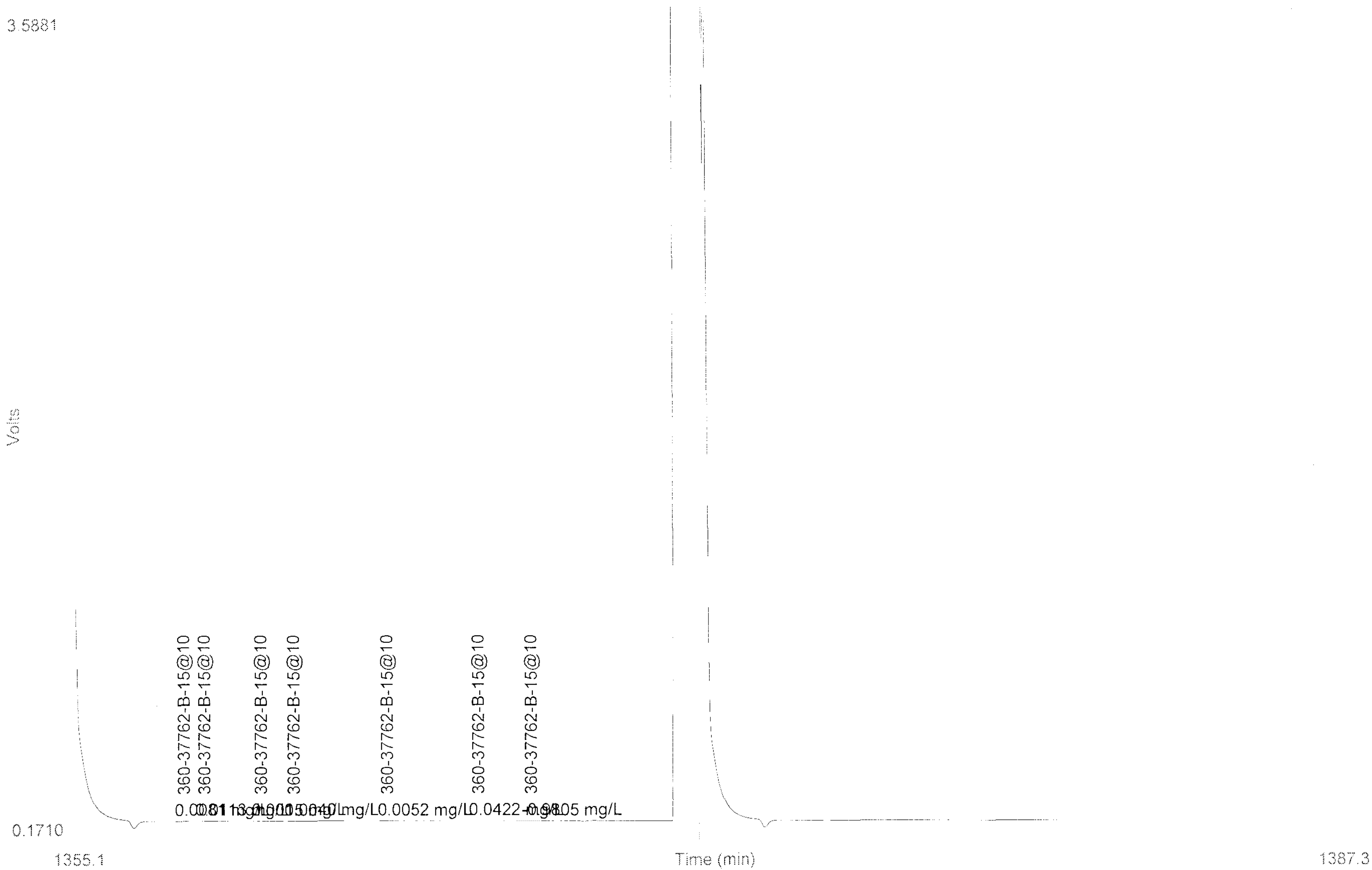
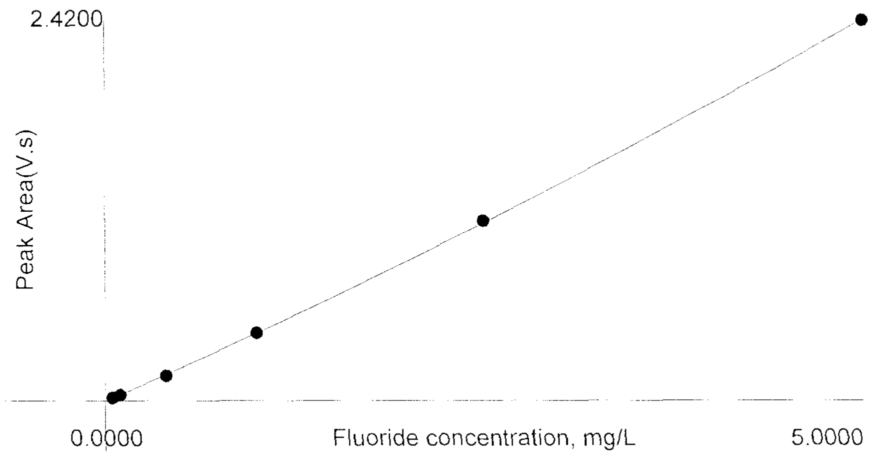


Table 1: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.4200	0.3882	0.3	11/15/2011	2:32:05 PM
2	2.5000	1	1.1432	0.1974	-1.3	11/15/2011	2:48:13 PM
3	1.0000	1	0.4295	0.0734	0.0	11/15/2011	3:04:20 PM
4	0.4000	1	0.1585	0.0271	4.9	11/15/2011	3:20:28 PM
5	0.1000	1	0.0379	0.0065	1.9	11/15/2011	3:36:35 PM
6	0.0500	1	0.0187	0.0032	-6.6	11/15/2011	3:52:42 PM

Figure 1: Fluoride



Area = 0.0132 * Conc^2 + 0.4199 * Conc - 0.0035
Conc = - 0.1211 * Area^2 + 2.3494 * Area + 0.0093
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 2: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	19.5671	1.3052	0.5	11/15/2011	2:32:05 PM
2	25.0000	1	9.2472	0.8077	-2.6	11/15/2011	2:48:13 PM
3	10.0000	1	3.3710	0.3697	1.0	11/15/2011	3:04:20 PM
4	4.0000	1	1.2235	0.1456	7.7	11/15/2011	3:20:28 PM
5	1.0000	1	0.3080	0.0351	4.1	11/15/2011	3:36:35 PM
6	0.5000	1	0.1732	0.0187	-11.1	11/15/2011	3:52:42 PM

Figure 2: Chloride

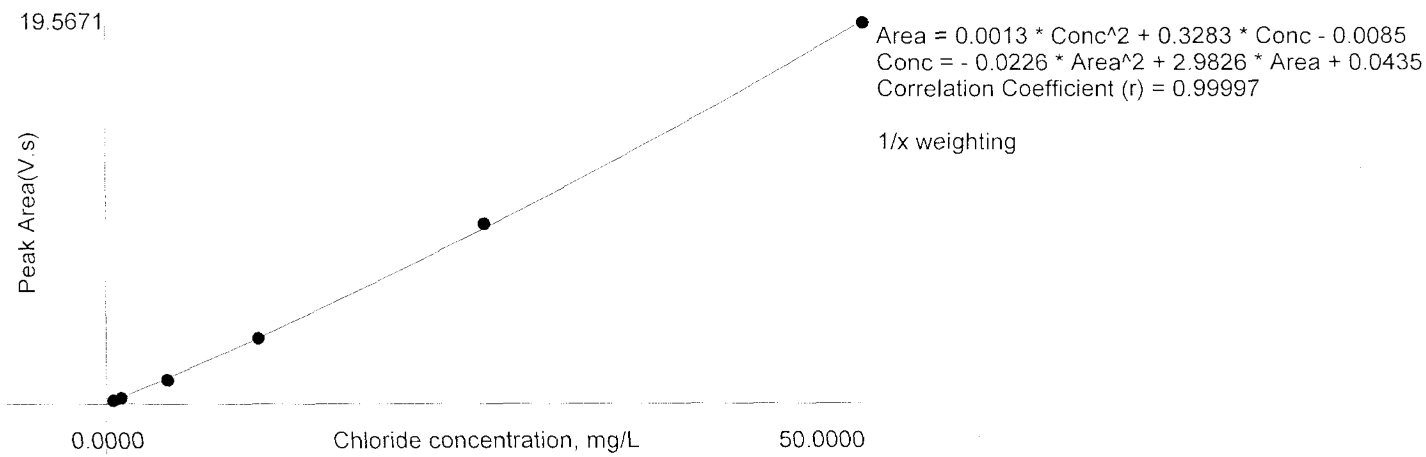
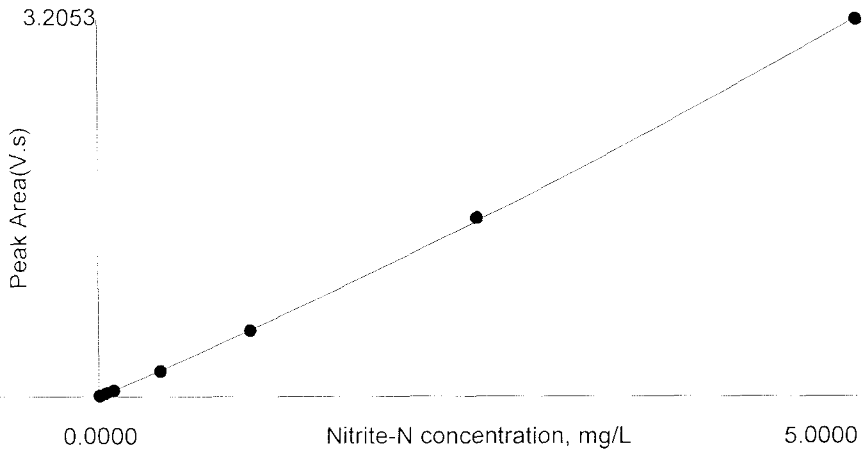


Table 3: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.2053	0.3249	0.4	11/15/2011	2:32:05 PM
2	2.5000	1	1.5145	0.1578	-1.9	11/15/2011	2:48:13 PM
3	1.0000	1	0.5600	0.0576	0.8	11/15/2011	3:04:20 PM
4	0.4000	1	0.2121	0.0216	3.8	11/15/2011	3:20:28 PM
5	0.1000	1	0.0502	0.0051	6.6	11/15/2011	3:36:35 PM
6	0.0500	1	0.0267	0.0026	-1.4	11/15/2011	3:52:42 PM
7	0.0100	1	0.0049	5.0658e-4	-10.2	11/15/2011	4:08:48 PM

Figure 3: Nitrite-N



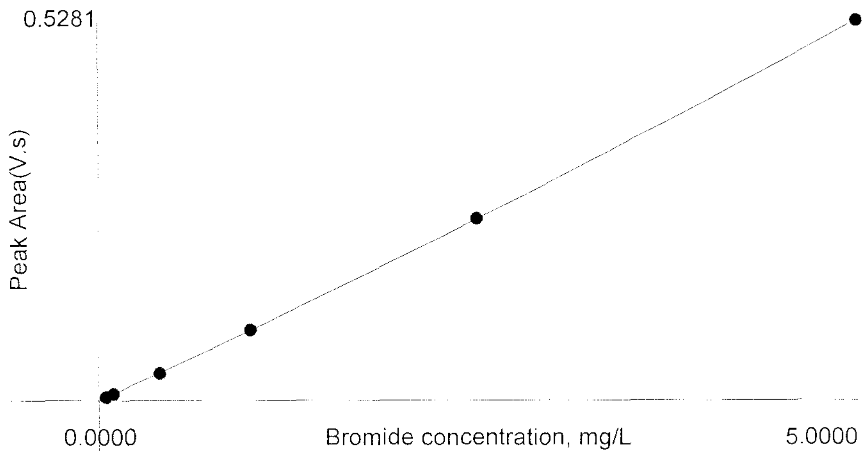
Area = 0.0195 * Conc^2 + 0.5461 * Conc - 0.0010
Conc = - 0.0787 * Area^2 + 1.8046 * Area + 0.0022
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 4: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.5281	0.0394	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	0.2527	0.0186	-0.2	11/15/2011	2:48:13 PM
3	1.0000	1	0.0981	0.0072	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.0379	0.0027	1.4	11/15/2011	3:20:28 PM
5	0.1000	1	0.0092	6.5877e-4	1.5	11/15/2011	3:36:35 PM
6	0.0500	1	0.0046	3.2836e-4	-2.5	11/15/2011	3:52:42 PM

Figure 4: Bromide



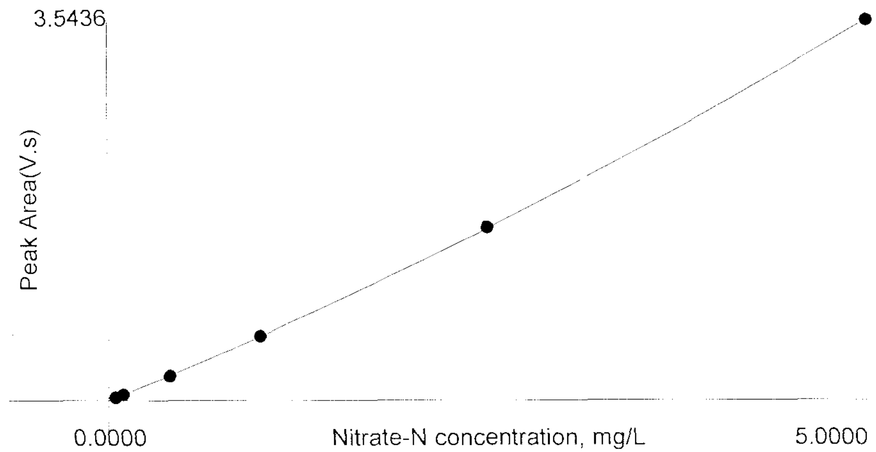
Area = 0.0019 * Conc^2 + 0.0962 * Conc - 3.2483e-4
Conc = - 1.6748 * Area^2 + 10.3373 * Area + 0.0038
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 5: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.5436	0.1988	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	1.6106	0.0905	-0.5	11/15/2011	2:48:13 PM
3	1.0000	1	0.6005	0.0330	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.2256	0.0121	2.5	11/15/2011	3:20:28 PM
5	0.1000	1	0.0531	0.0028	3.8	11/15/2011	3:36:35 PM
6	0.0500	1	0.0279	0.0014	-5.9	11/15/2011	3:52:42 PM

Figure 5: Nitrate-N



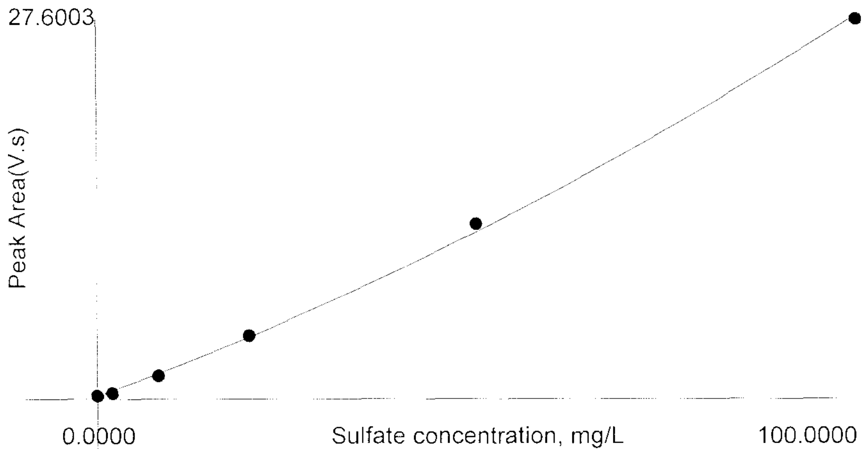
Area = 0.0273 * Conc^2 + 0.5736 * Conc - 0.0024
Conc = - 0.0824 * Area^2 + 1.6983 * Area + 0.0062
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 6: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	27.6003	0.8536	1.1	11/15/2011	2:32:05 PM
2	50.0000	1	12.7130	0.4540	-4.9	11/15/2011	2:48:13 PM
3	20.0000	1	4.5871	0.1729	-1.7	11/15/2011	3:04:20 PM
4	8.0000	1	1.6836	0.0620	9.3	11/15/2011	3:20:28 PM
5	2.0000	1	0.4027	0.0145	34.3	11/15/2011	3:36:35 PM
6	0.0500	1	0.2270	0.0081	-2.6	11/15/2011	3:52:42 PM

Figure 6: Sulfate



Area = 7.7408e-4 * Conc^2 + 0.1994 * Conc + 0.2113
Conc = - 0.0392 * Area^2 + 4.7046 * Area - 0.9825
Correlation Coefficient (r) = 0.99999

1/x weighting

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review Coversheet—Inorganics Dept

Method Name: IC   Method Reference: 300.0 28D   Date of Analytical Run: 12/3/11

Primary Reviewer's Initials & Date: AMS 12/5/11   Secondary Reviewer's Initials & Date: [illegible] 12/6/11

Batch Numbers	84269	84273	84283		

QC Criteria—Non-MCP: ICV/CCV ±10%: LCS/LCSD ±15%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%

QC Criteria—MCP/RCP: (9012 and 7196 only)
9012 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
9012 (soil): ICV/CCV ±15%: LCS/LCSD **: MS/MSD ±25%: ICB/MB/CCB <RL: MD RPD 35%: MSD/LCSD RPD ≤30%
7196 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
7196 (soil): ICV/CCV ±15%: LCS/LCSD **: MSS/MSI ±25%: ICB/MB/CCB <RL: MD RPD ≤35%: LCSD RPD ≤30%

FAILURES OF QC FOR ANYTHING OTHER THAN MS, MSD or MD ARE GROUNDS FOR INVALIDATING THE BATCH.

Criteria for QC	Yes	No	n/a	Notes/Comments
Were the ICV and CCVs within acceptable limits for QC recovery?	✓ ✓ ✓			
Were the ICB and CCBs all <RL?	✓ ✓ ✓			
Were all MB and CCB results <RL for the analytes of interest?	✓ ✓ ✓			
Was there a CCV/CCB combination run after every 10 samples or less?	✓ ✓ ✓			
Was there an LCS run with every batch of 20 samples or less?	✓ ✓ ✓			
Was there a MD, LCSD or MSD run with every batch of 20 samples or less?	✓ ✓	✓		
Were all LCS/LCSD results within acceptable limits for QC recovery?	✓ ✓ ✓			
Were all MS/MSD results within acceptable limits for QC recovery?	✓ ✓		✓	
Were all MD, LCSD and/or MSD %RPDs within acceptable limits for QC recovery?	✓ ✓		✓	
Were the raw data points for investigative samples within the working curve range, or if not, were the samples diluted to bring them within this range?	✓ ✓ ✓			
IF there were any MCP/RCP samples in this batch, did they meet all MCP/RCP requirements?	✓ ✓		✓	
Were there any holding time violations in this batch?		✓ ✓ ✓		**NOTE!** The PM and QA Manager must be notified by email *immediately* of any holding time violations!!
Were any NCMs generated for any samples in the batch? (If so, list NCM numbers, and first-reviewer must check off any "No" answers above as applicable.)		✓ ✓ ✓		
Were any jobs in this batch Level 4? If "Yes" then scan all raw data & place in correct scan folder on the public drive before filing this paperwork.	✓ ✓	✓		

** LCS or LCSD must produce a recovery that is within the manufacturer's specified 95% confidence limits, must be matrix matched.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Ion Chromatography QC Source Data Sheet—Inorganics Dept

Method (circle methods): IC 300_28D IC 300_48HR IC 9056_28D IC 9056_48HR

Date of Analytical Run: 12/3/11 Analyst's Initials: AMQ

Working Curve Standard:

Manufacturer & Lot Number for Source Standard	Working Curve Standards Prepared On
Inorganic Ventures Lot E2-MEB394034	20 October 2011

QC Standard True Values for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.50	25.0	2.50	2.50	2.50	50.0
ICB	0	0	0	0	0	0
MB	0	0	0	0	0	0
LCS/LCSD	4.00	40.0	4.00	4.00	4.00	80.0
MS/MSD	1.00	10.0	1.00	1.00	1.00	20.0

QC Standard Acceptable Recovery Ranges for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.25-2.75	22.5-27.5	2.25-2.75	2.25-2.75	2.25-2.75	45.0-55.0
ICB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
MB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
LCS/LCSD	3.40-4.60	34.0-46.0	3.40-4.60	3.40-4.60	3.40-4.60	68.0-92.0
MS/MSD	0.75-1.25	7.50-12.5	0.75-1.25	0.75-1.25	0.75-1.25	15.0-25.0

Current Method RLs (mg/L):

	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
	0.10	1.00	0.010	0.10	0.050	2.0

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 12/2/11

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution				Comments
									Sample Aliquot 2	Units	Final Volume 2	Units	
AMS	12/2/11	300.0	3764486	10	1	mL	10	mL					

entries completed by day [new page each day]

0.25 *M* Sulfuric Acid Creation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Record the information below for creating the acid. When an entry is made do not use arrows to fill in information. All entries must be complete.

Recipe: to 2958mL of deionized water in a 1 gallon jug add 42mL of concentrated H_2SO_4 for a total volume of 3L.

Date Made	Analyst's Initials	Volume of 0.25 *M* Acid Made (L)	Source: Concentrated Sulfuric Acid (ACS grade) Manufacturer & Lot Number
11-18-11	RW	3	Baker lot J22022
11-21-11	RW	3	↓
11-22-11	RW	3	↓
11-23-11	RW	3	↓
11-28-11	RW	3	↓
11/30/11	AMS	3	↓
12/1/11	AMS	3	↓
12/3/11	AMS	3	↓

BL-WET-067

13
08/25/10

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Eluent Preparation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Prepare fresh daily; makes 3L of eluent. To make: in a one-gallon plastic container, mix:

- 60.0 mL of 100*M* $NaHCO_3$;
- 78.0 mL of 100*M* Na_2CO_3; and
- 2862 mL of deionized water.

Degas with helium for 3min before use.

Date Prepared	Analyst's Initials	Lot # 100*M* $NaHCO_3$	Lot # 100*M* Na_2CO_3	Number of Portions Prepared
11-17-11	[illegible]	W11J 2GT018	W11K RGT001	1
11-18-11	RWE	W11K RGT016	W11K RGT017	2
11-21-11	RWE	↓	↓	1
11-22-11	RWE	↓	↓	1
11-23-11	RWE	↓	↓	2
11-28-11	RO	↓	↓	1
11-29-11	RO	↓	↓	1
12/1/11	AMS	↓	↓	1
12/2/11	AMS	↓	↓	1
12/3/11	AMS	↓	↓	1

Author: EmerichR

Date : 12/5/2011

Original Run Filename: OM_12-3-2011_10-15-54AM.OMN created 12/3/2011 10:15:54 AM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_12-3-2011_10-15-54AM.OMN last modified 12/4/2011 12:47:20 AM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	-0.0043	0.1034	0.0096	0.0061	-0.0013	-0.9540	12/3/2011@10:17:19 AM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	
ICV	1	2.2941	24.0859	2.4537	2.4139	2.2040	47.7800	12/3/2011@10:33:26 AM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
ICB	S11	-0.0019	0.0984	0.0089	0.0034	0.0023	-0.9630	12/3/2011@10:49:33 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0062	0.1000	0.0077	0.0076	0.0015	-0.9815	12/3/2011@11:05:40 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.6760	39.3595	4.0280	3.8545	3.6804	76.5163	12/3/2011@11:21:47 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37644-B-6@10 SO4	2	0.0101	0.7427	0.0164	0.0213	-0.0102	12.6539	12/3/2011@11:37:54 AM
360-37721-B-1@10 Cl	3	-0.0025	5.0423	0.0093	0.0937	0.0022	0.5730	12/3/2011@11:54:01 AM
360-37706-A-31	4	0.1084	66.4723	0.0374	0.0062	0.0022	20.6778	12/3/2011@12:10:08 PM
360-37706-A-32	5	0.1150	12.7205	0.0877	-0.0207	9.7023	137.8171	12/3/2011@12:26:15 PM
360-37706-A-33	6	0.0975	60.3581	0.0636	-0.0209	0.0022	8.8109	12/3/2011@12:42:22 PM
360-37706-A-33 @10	7	0.0039	8.0551	0.0139	0.0082	-0.1694	-0.0052	12/3/2011@12:58:29 PM
360-37706-A-33 @10 MS	8	1.0271	19.0816	1.0918	1.0358	0.8809	20.8690	12/3/2011@1:14:36 PM
360-37706-A-33 @10 MSD	8	1.0207	19.1067	1.0946	1.0377	0.8892	20.8806	12/3/2011@1:30:43 PM
360-37706-A-34 @ 100 BR	9	0.1986	0.1621	0.0070	7.8462e-4	0.0022	-0.9414	12/3/2011@1:46:49 PM
360-37706-A-34@ 1000 BR	10	3.4684	0.6808	0.0127	-0.0546	-0.0095	-0.7777	12/3/2011@2:02:56 PM
CCV	S12	3.7303	39.8520	4.0811	3.9078	3.7250	77.3768	12/3/2011@2:19:02 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0089	0.0996	0.0076	0.0047	0.0022	-0.9571	12/3/2011@2:35:09 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37706-A-35 @100 BR	11	3.7158	0.6492	0.0164	-0.0674	-0.0100	-0.8074	12/3/2011@2:51:16 PM
360-37706-A-58@100	12	2.2118	0.6396	0.0128	-0.2843	-0.0188	-0.7832	12/3/2011@3:07:23 PM
360-37706-A-34@100 RPT	37	3.2806	0.5862	0.0125	-0.4989	-0.0112	-0.7841	12/3/2011@3:23:30 PM
360-37706-A-34@1000 RPT	38	0.2419	0.2352	0.0076	-0.0280	-0.0031	-0.9500	12/3/2011@3:39:37 PM
360-37706-A-37	13	0.1938	50.0750	0.0888	-0.0405	0.0022	16.8455	12/3/2011@3:55:43 PM
360-37706-A-38 @100	14	2.0973	0.7354	0.0071	-0.3304	-0.0146	-0.7931	12/3/2011@4:11:49 PM
360-37706-A-39	17	9.2179	2.4080	0.2337	0.0062	9.0784	9.5957	12/3/2011@4:27:56 PM
360-37706-A-40	18	1.6796	1.8367	0.1754	0.0064	8.8298	6.0212	12/3/2011@4:44:03 PM
360-37706-A-41	19	0.0018	-11.1855	0.1628	0.5845	-15.2005	41.8482	12/3/2011@5:00:10 PM
360-37706-A-42	20	0.0622	-36.3371	0.2420	1.0122	-266.1645	57.8250	12/3/2011@5:16:17 PM
CCV	S12	3.7411	39.0876	4.0341	3.8519	3.6666	76.1597	12/3/2011@5:32:24 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	

Samples reran to confirm the cups were switched 12/5/11 AMP

CCB	S11	0.0038	0.0206	0.0093	0.0040	0.0021	-0.9445	12/3/2011@5:48:31 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0038	0.0227	0.0093	0.0063	0.0032	-0.9591	12/3/2011@6:04:38 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.6762	38.3621	3.9754	3.7791	3.6255	75.2405	12/3/2011@6:20:45 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37706-A-30	21	0.0038	29.0192	0.0512	0.0062	1.9789	127.0463	12/3/2011@6:36:52 PM
360-37706-A-43	22	0.0685	16.4750	0.3809	0.2806	0.0022	36.7497	12/3/2011@6:52:59 PM
360-37706-A-44 @10 BR	23	6.2104	5.2949	0.0219	0.0062	-0.1390	-0.0924	12/3/2011@7:09:06 PM
360-37706-A-45	24	0.0597	25.6137	0.3461	0.0772	0.0022	38.4847	12/3/2011@7:25:13 PM
360-37706-A-54	25	0.1124	2.2436	0.0593	-0.0358	-210.8123	9.6601	12/3/2011@7:41:19 PM
360-37831-A-1@10 CI	26	0.0017	6.0434	0.0205	0.2177	-0.1900	0.7839	12/3/2011@7:57:25 PM
360-37831-A-1@10 MS	27	0.8611	15.9761	1.0074	1.1906	0.8373	20.2528	12/3/2011@8:13:31 PM
360-37831-A-1@10 MSD	27	0.9058	15.6982	0.9836	1.1762	0.8312	19.5362	12/3/2011@8:29:38 PM
360-37828-B-1@10 CI	28	0.0027	9.9982	0.1416	0.0022	-0.3564	1.1908	12/3/2011@8:45:43 PM
360-37828-B-2@10 CI	29	0.0038	12.5988	0.1798	0.0114	0.0022	1.7365	12/3/2011@9:01:49 PM
CCV	S12	3.6339	39.0104	4.0462	3.8452	3.6671	76.5008	12/3/2011@9:17:56 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0016	0.0185	0.0079	0.0041	8.1441e-4	-0.9521	12/3/2011@9:34:03 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37706-A-56@100	30	0.2730	1.3400	0.0069	-0.0592	-0.0382	-0.7471	12/3/2011@9:50:09 PM
360-37706-A-57@100	31	0.8096	0.3979	0.0159	-0.2350	-0.0082	-0.6651	12/3/2011@10:06:17 PM
360-37706-A-36	32	0.5473	-36.4735	0.2273	-0.1277	1.1537	83.3658	12/3/2011@10:22:24 PM
360-37706-A-58@1000	33	0.0806	0.2307	0.0067	-0.0163	-0.0030	-0.9614	12/3/2011@10:38:31 PM
360-37690-A-1-A	34	-6.0463e-4	7.2078	1.2392	0.0441	0.0022	2.6413	12/3/2011@10:54:38 PM
360-37690-A-2-A	35	0.0023	7.1946	1.2937	0.0525	0.0022	2.5957	12/3/2011@11:10:45 PM
360-37690-A-3-A	36	0.0039	6.4670	1.0273	0.0447	-0.2069	2.3396	12/3/2011@11:26:52 PM
360-37762-B-15	15	0.0039	51.1683	0.0688	0.0590	-50.9349	10.6581	12/3/2011@11:42:58 PM
360-37762-B-14	16	0.0038	2.8480	0.0754	0.0997	3.6851	5.8310	12/3/2011@11:59:05 PM
CCV	S12	3.7564	39.5094	4.0914	3.8964	3.7033	77.2574	12/4/2011@12:15:12 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0039	0.0181	0.0093	0.0060	0.0022	-0.9608	12/4/2011@12:31:19 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-84223 | Analyst: Stewart, Alyse M | Batch Open: 12/2/2011 11:10:39AM

Method Code: 360-DI_LEACH-360 | Batch End:

Deionized Water Leaching Procedure

	Input Sample Lab ID (Analytical Method)	SDG	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~360-84223/1 N/A	N/A		10 g	100 mL	N/A	N/A	N/A		MB 360-84223/1-A
2	LCS~360-84223/2 N/A	N/A		10 g	100 mL	N/A	N/A	N/A		LCS 360-84223/2-A
3	360-37690-A-1 (300.0_28D)	N/A	Solid	10.27 g	100 mL	12/1/11	9_Days - R	1		360-37690-A-1-A
	360-37690-A-2 (300.0_28D)	N/A	Solid	10.25 g	100 mL	12/1/11	9_Days - R	1		360-37690-A-2-A
	360-37690-A-3 (300.0_28D)	N/A	Solid	10.17 g	100 mL	12/1/11	9_Days - R	1		360-37690-A-3-A

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-84223 | Analyst: Stewart, Alyse M | Batch Open: 12/2/2011 11:10:39AM

Method Code: 360-DI_LEACH-360 | Batch End:

Batch Notes

Balance ID ______

Blank Soil Lot Number ______

Batch Comment ______

Comments

Login Comments for Job 37690: assume 100% solid

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-84223 | Analyst: Stewart, Alyse M | Batch Open: 12/2/2011 11:10:39AM

Method Code: 360-DI_LEACH-360 | Batch End:

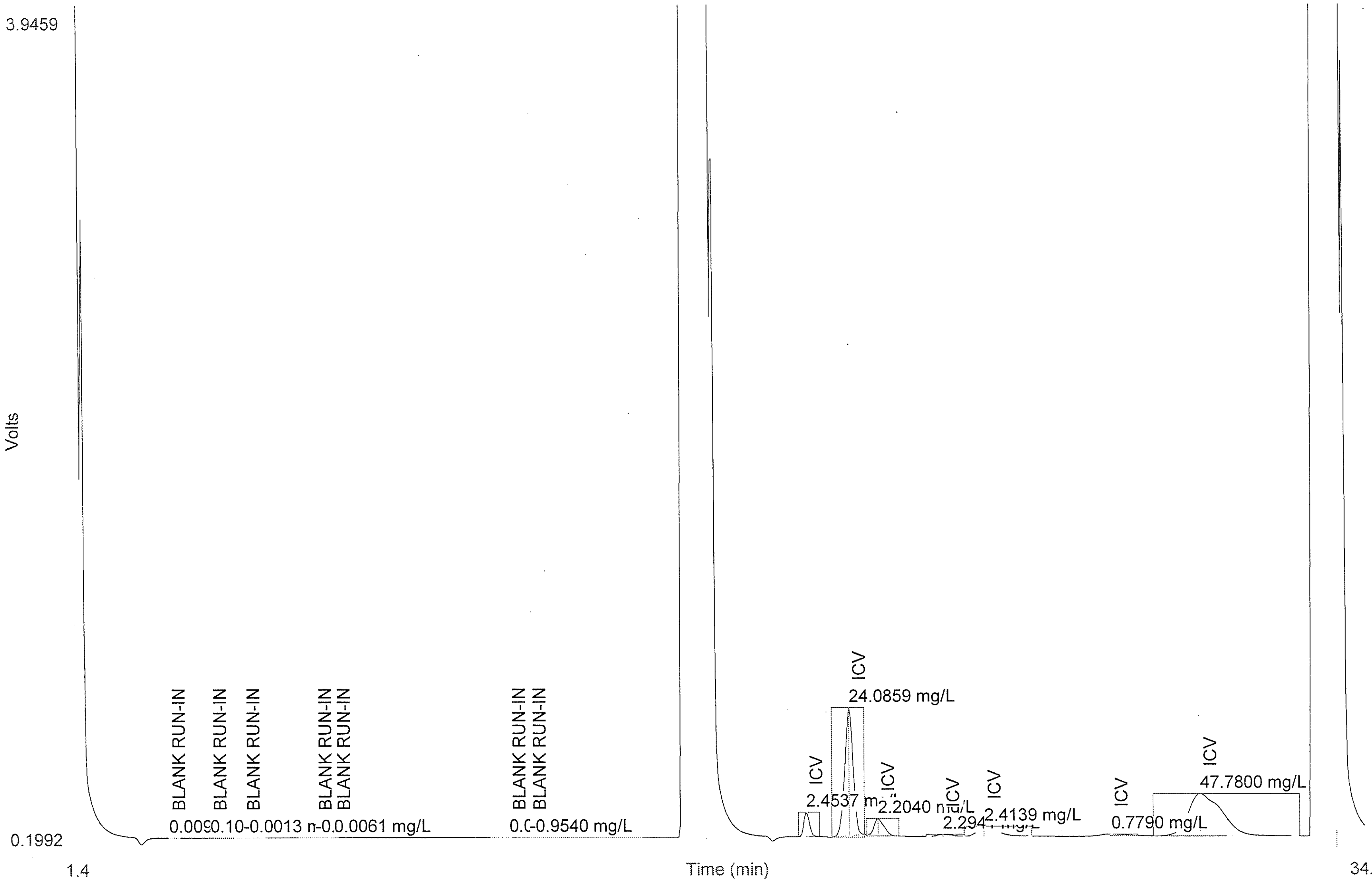
Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
LCS 360-84223/2	W11J_IC_LCS_00001	100 mL	100 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

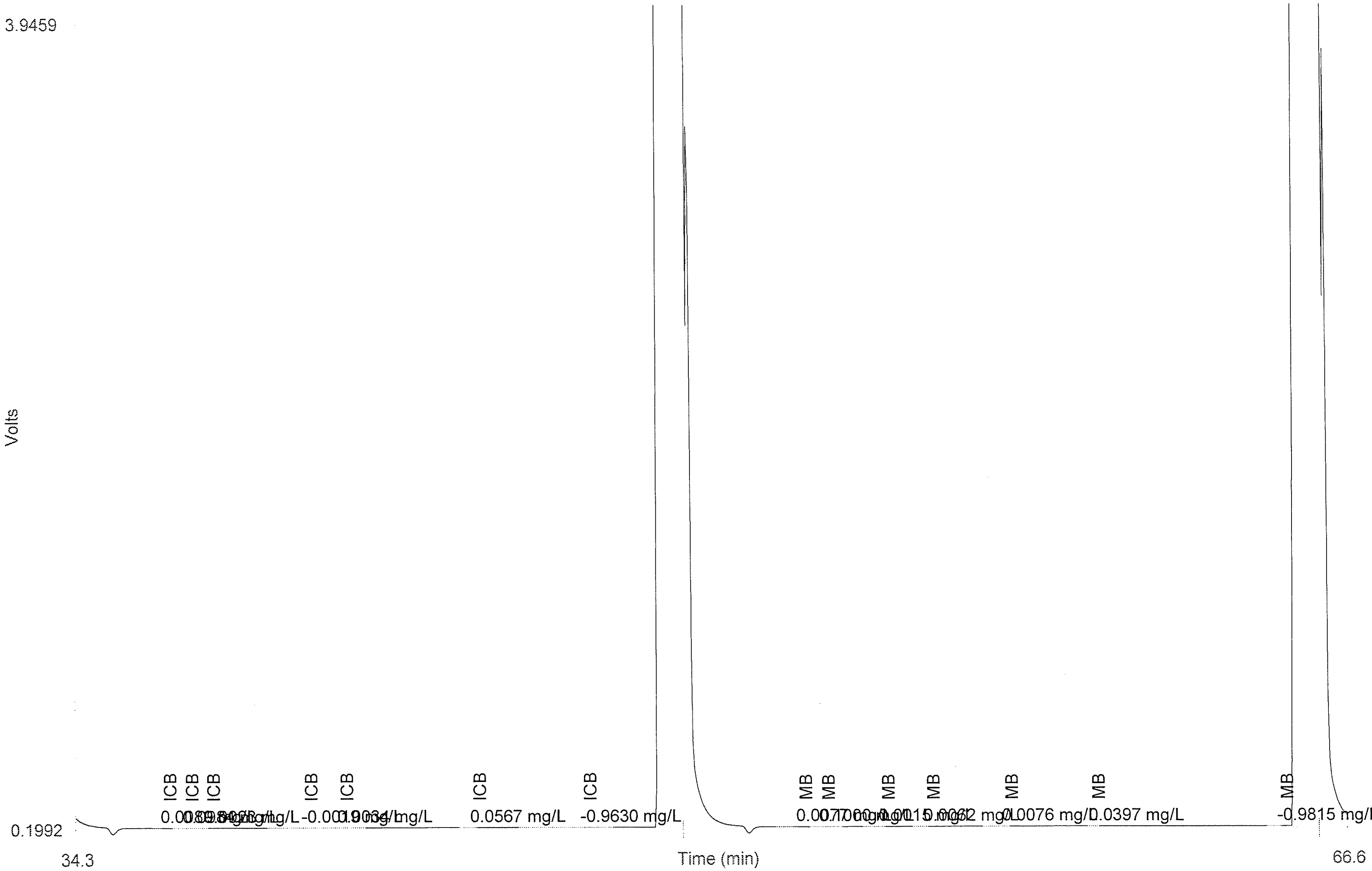
Channel 1 (Anions) : Set 1 of 27



Author: EmerichR

Date : 12/5/2011

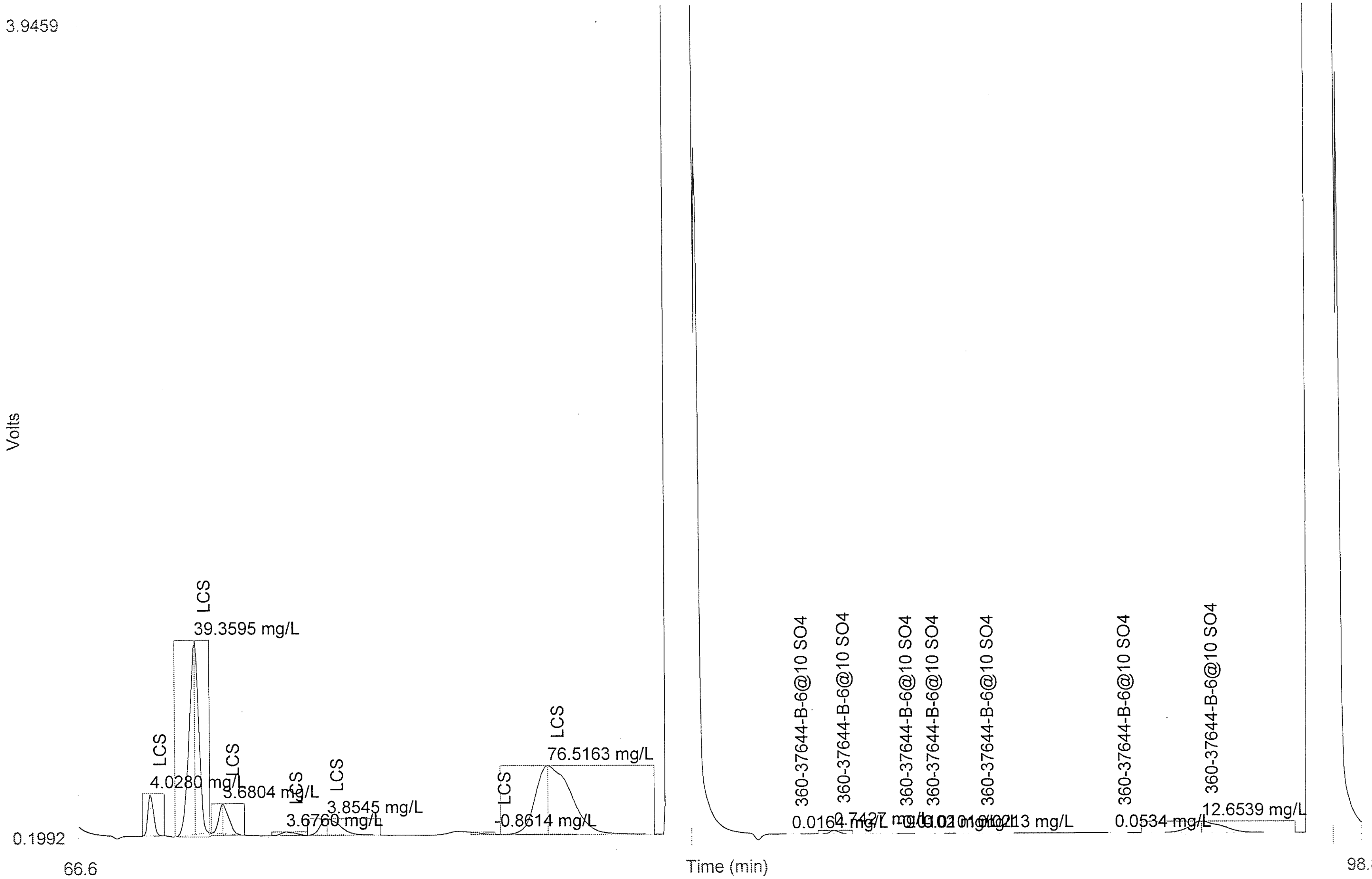
Channel 1 (Anions) : Set 2 of 27



Author: EmerichR

Date : 12/5/2011

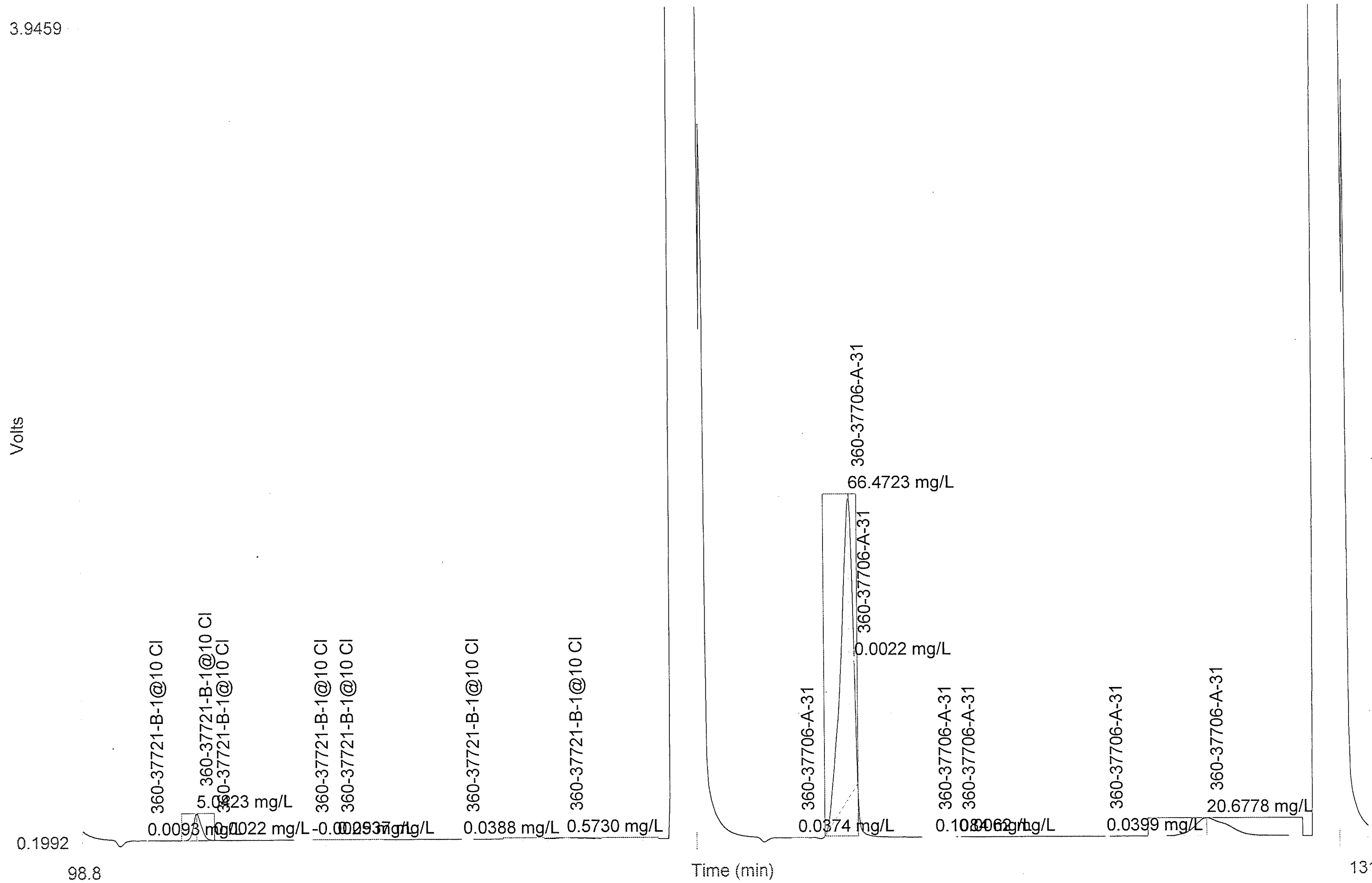
Channel 1 (Anions) : Set 3 of 27



Author: EmerichR

Date : 12/5/2011

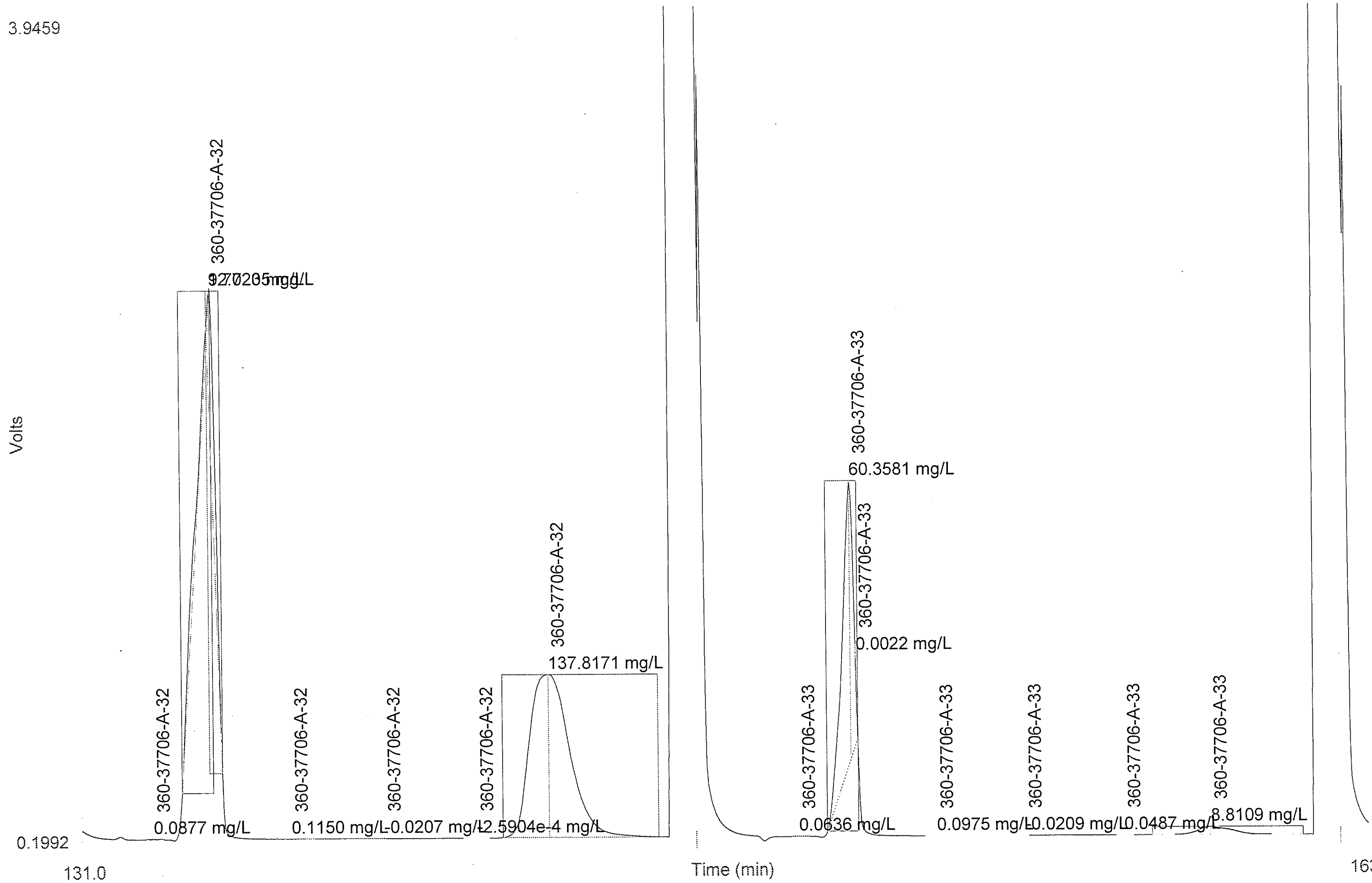
Channel 1 (Anions) : Set 4 of 27



Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 5 of 27



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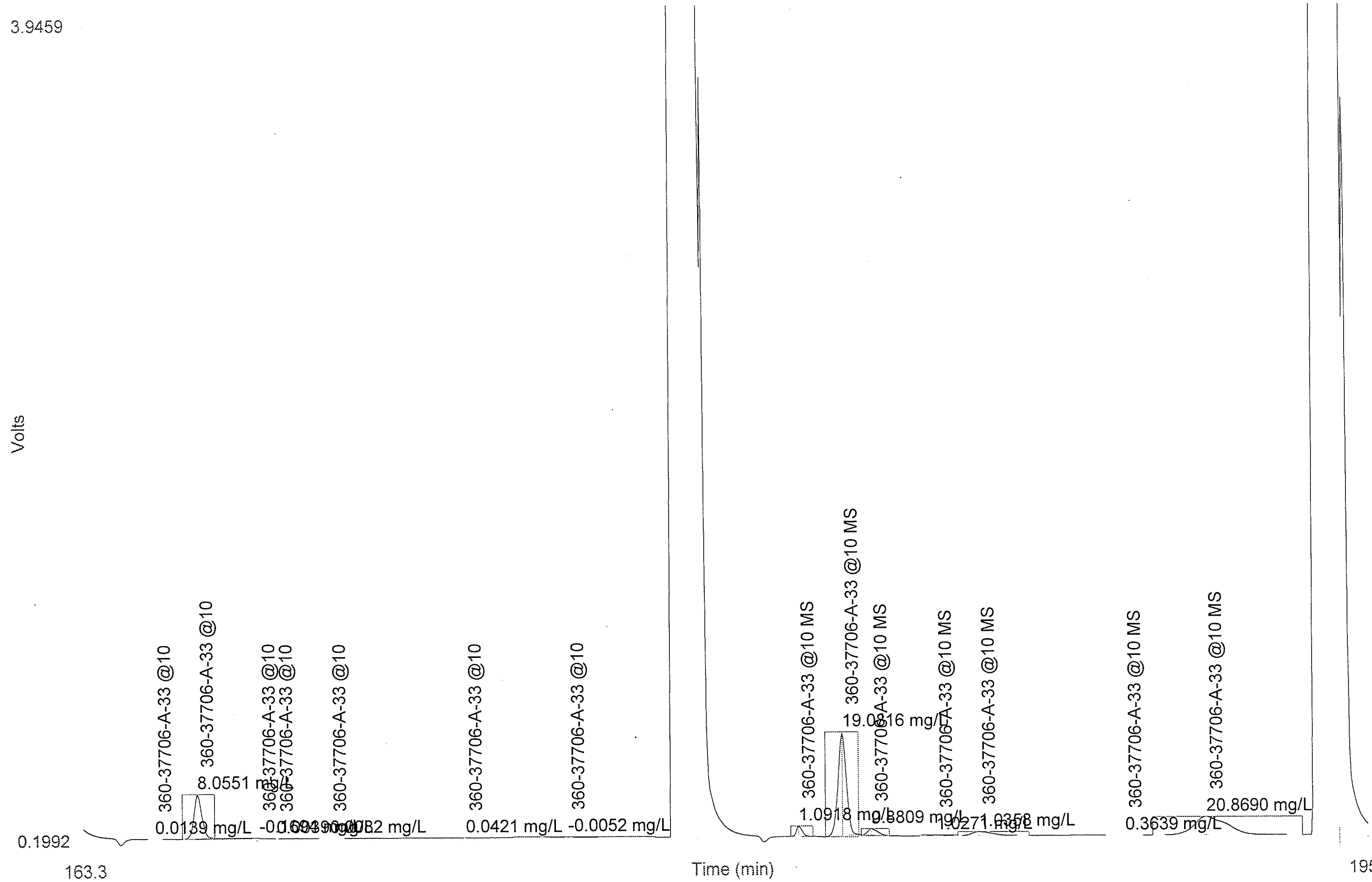
Author: EmerichR

Date : 12/5/2011

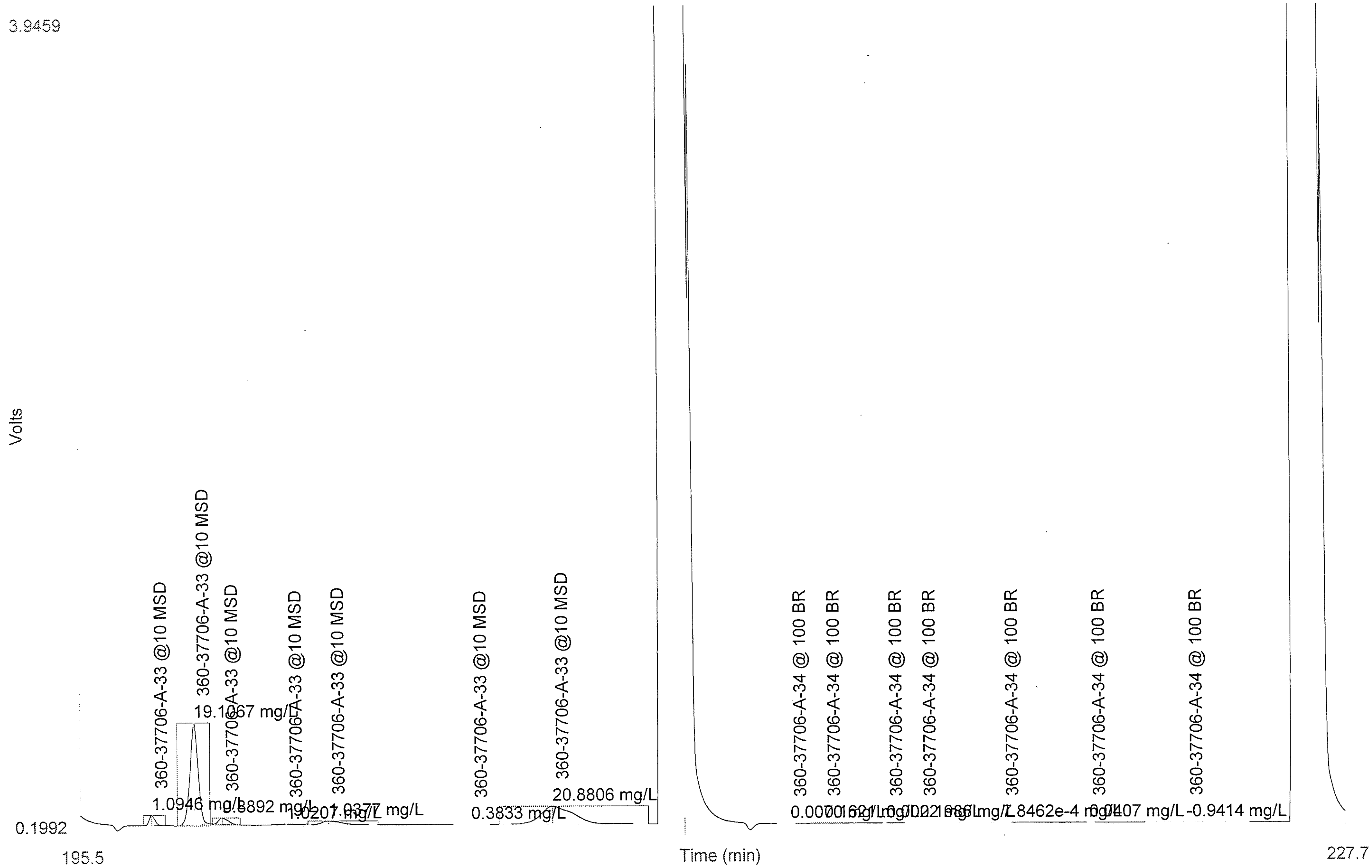
Channel 1 (Anions) : Set 6 of 27



Author: EmerichR

Date : 12/5/2011

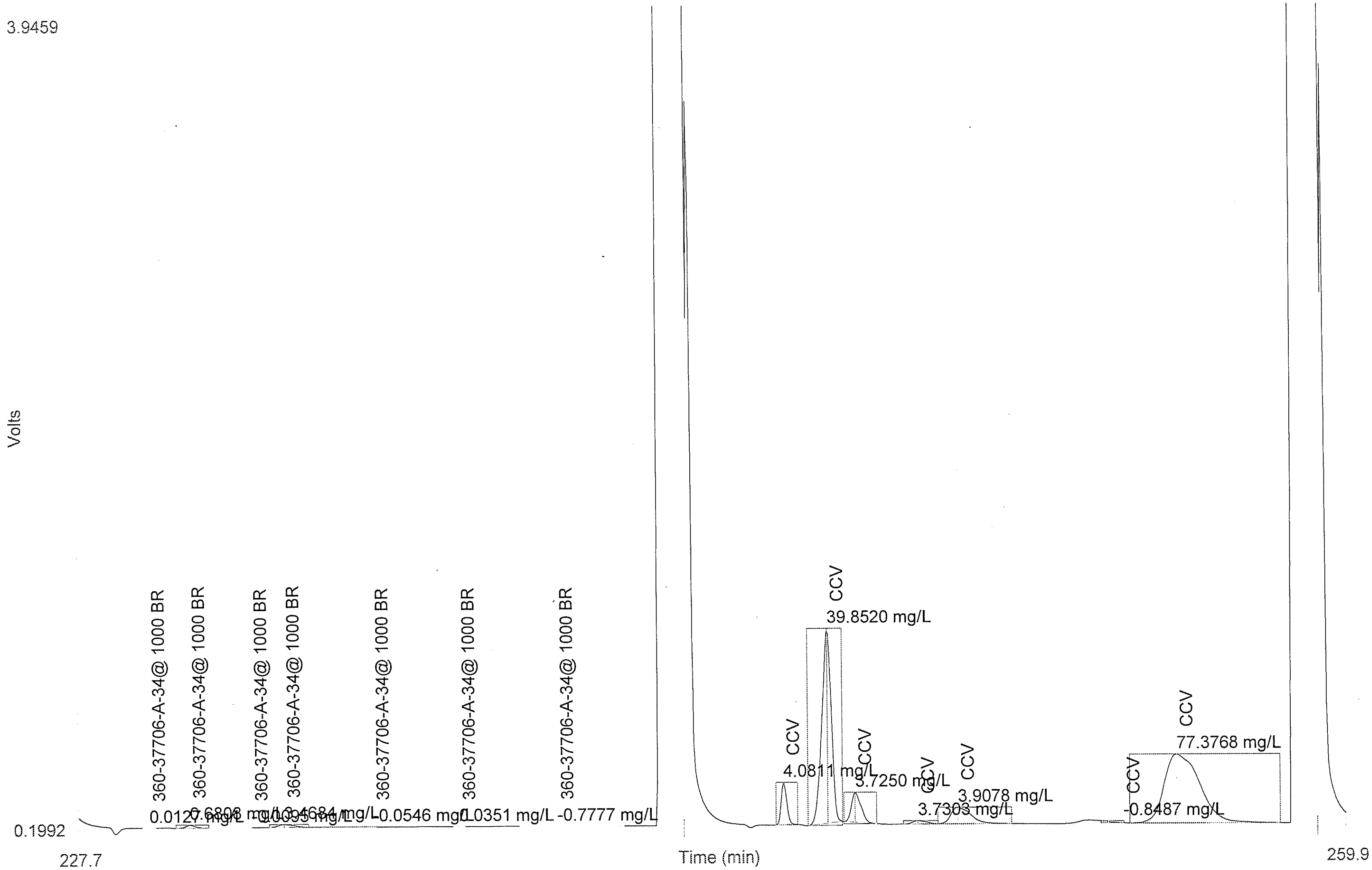
Channel 1 (Anions) : Set 7 of 27



Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 8 of 27



Author: EmerichR

Date : 12/5/2011

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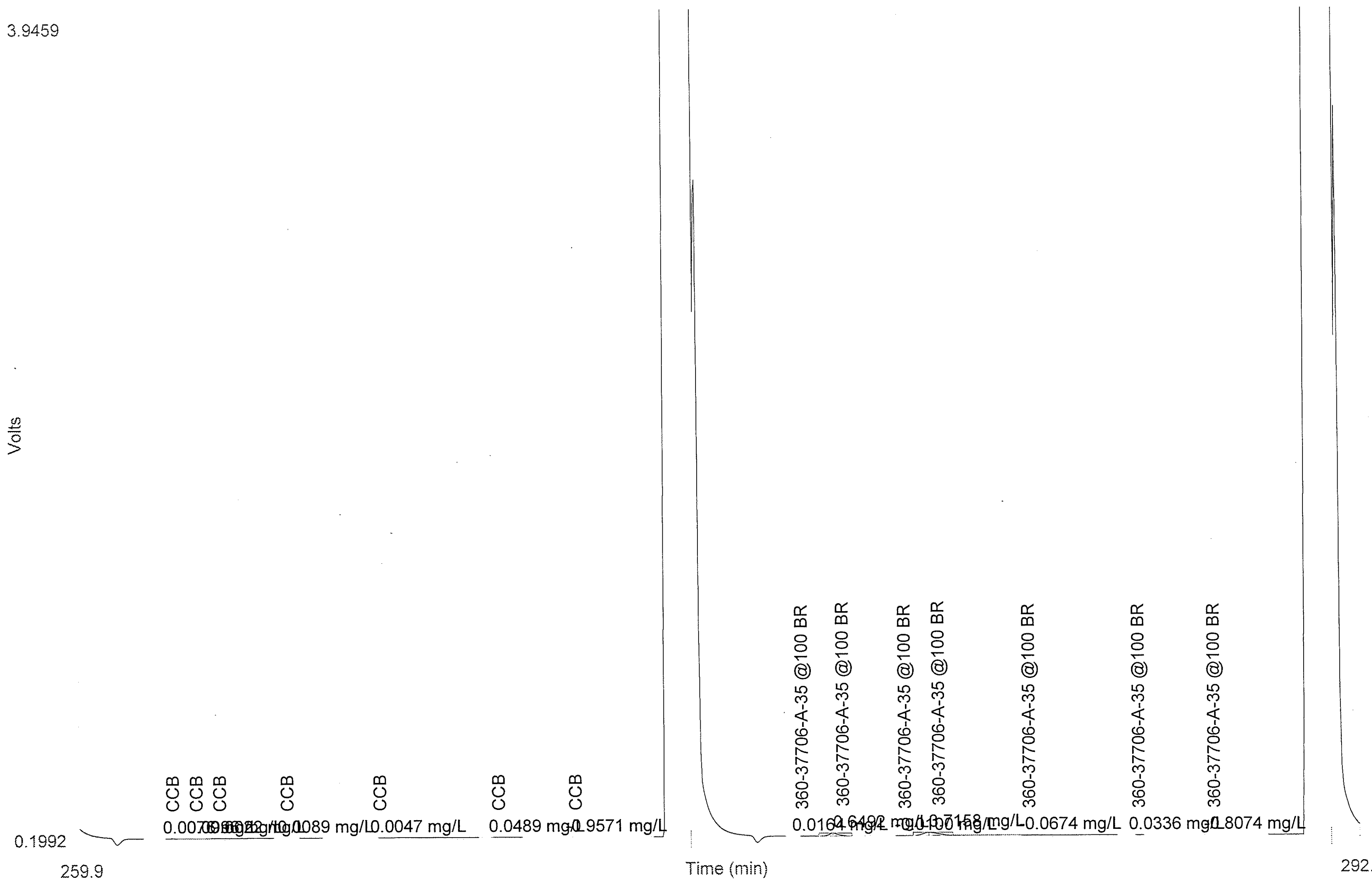
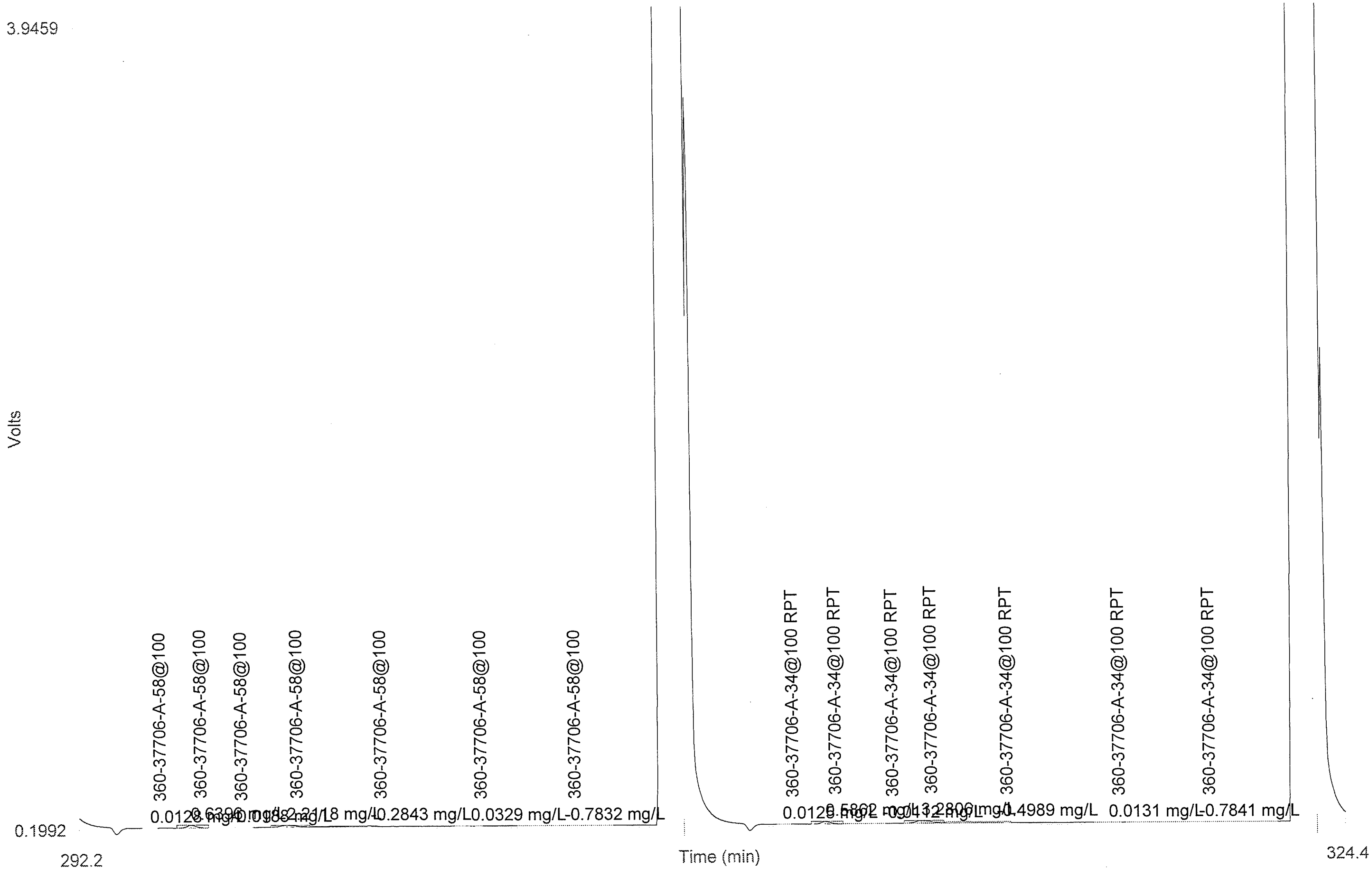


Author: EmerichR

Channel 1 (Anions) : Set 10 of 27

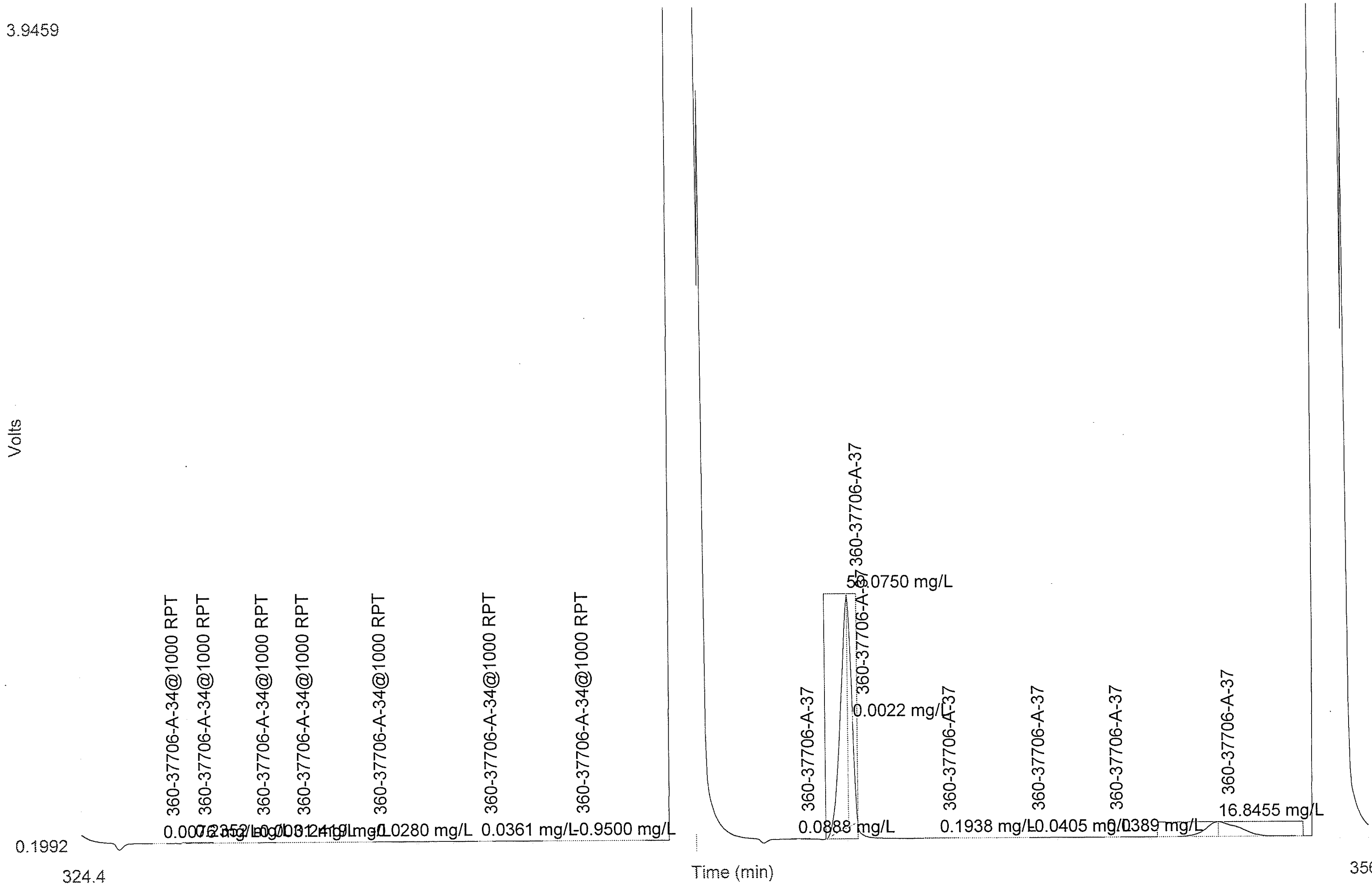
Date : 12/5/2011



Author: EmerichR

Date : 12/5/2011

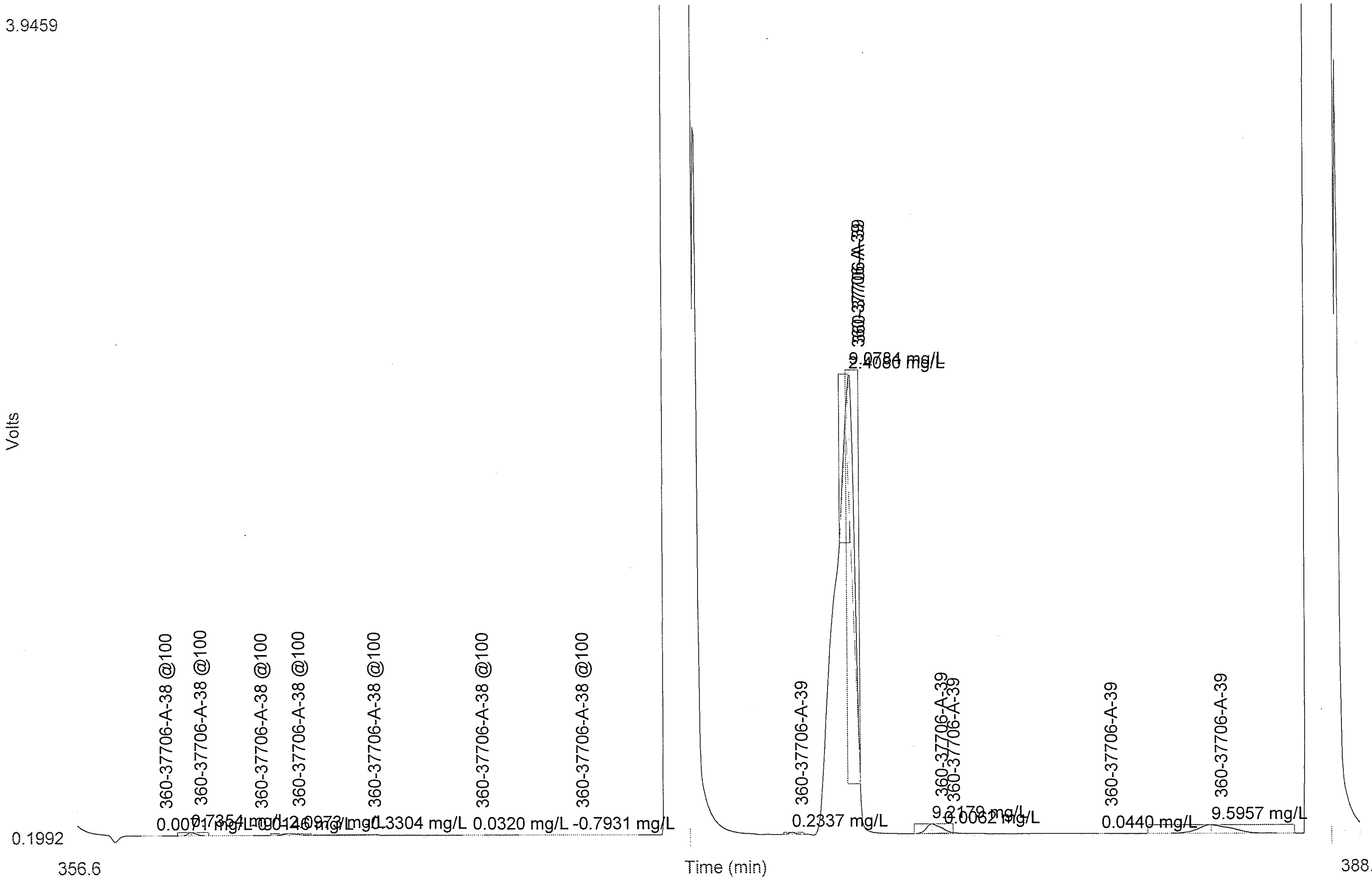
Channel 1 (Anions) : Set 11 of 27



Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 12 of 27



Author: EmerichR

Date : 12/5/2011

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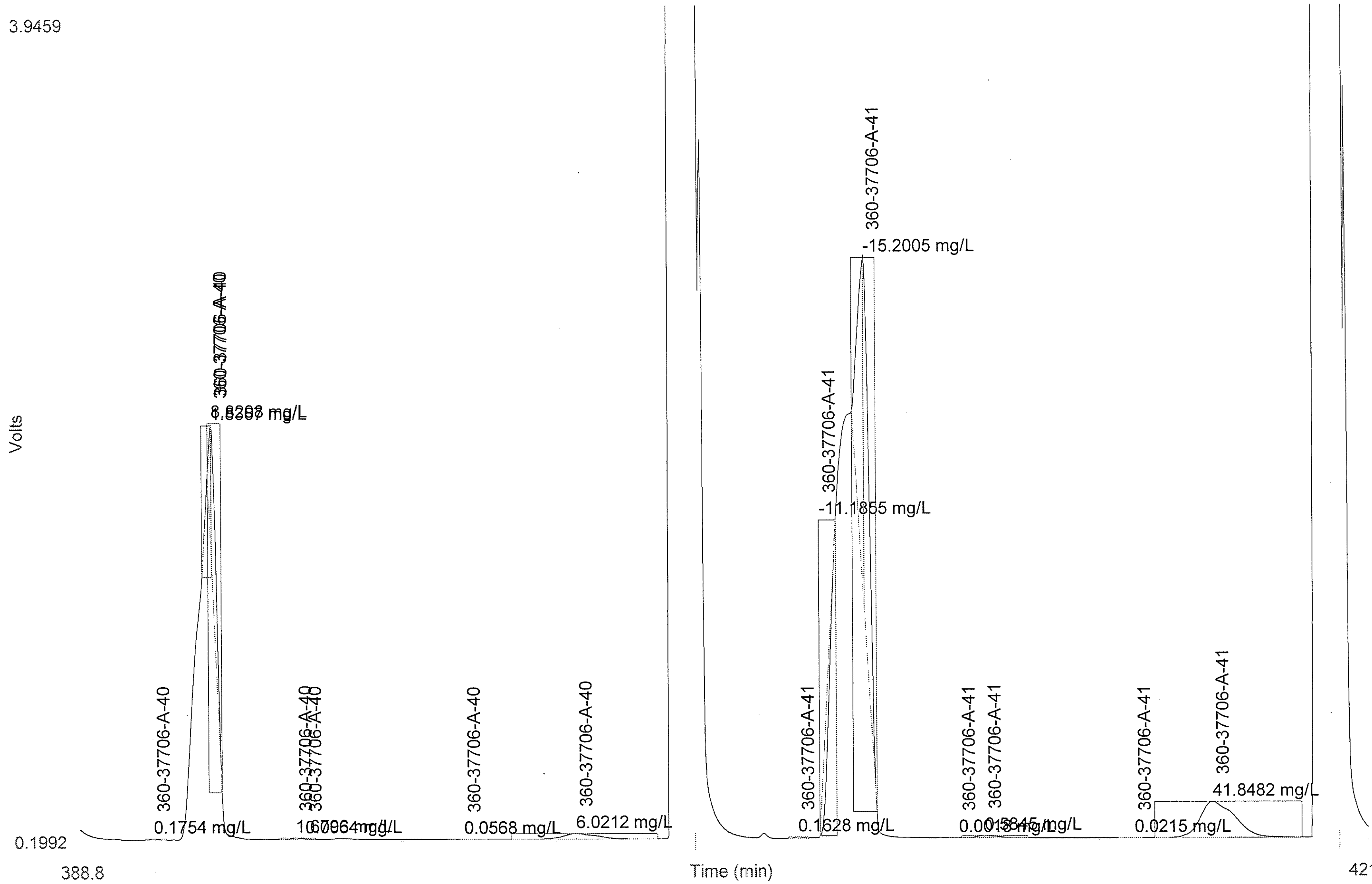

Author: EmerichR

Date : 12/5/2011

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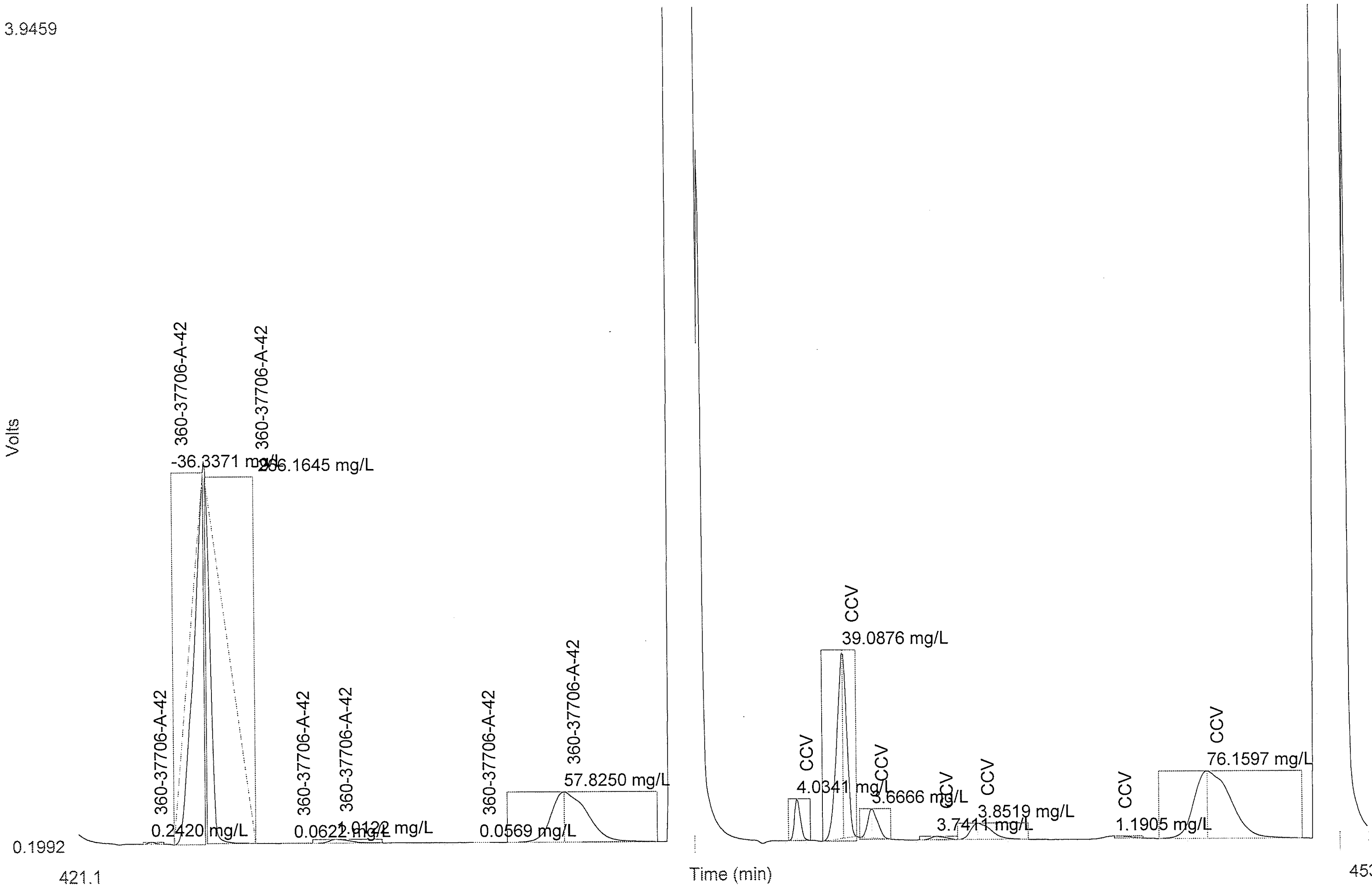

Author: EmerichR

Date : 12/5/2011

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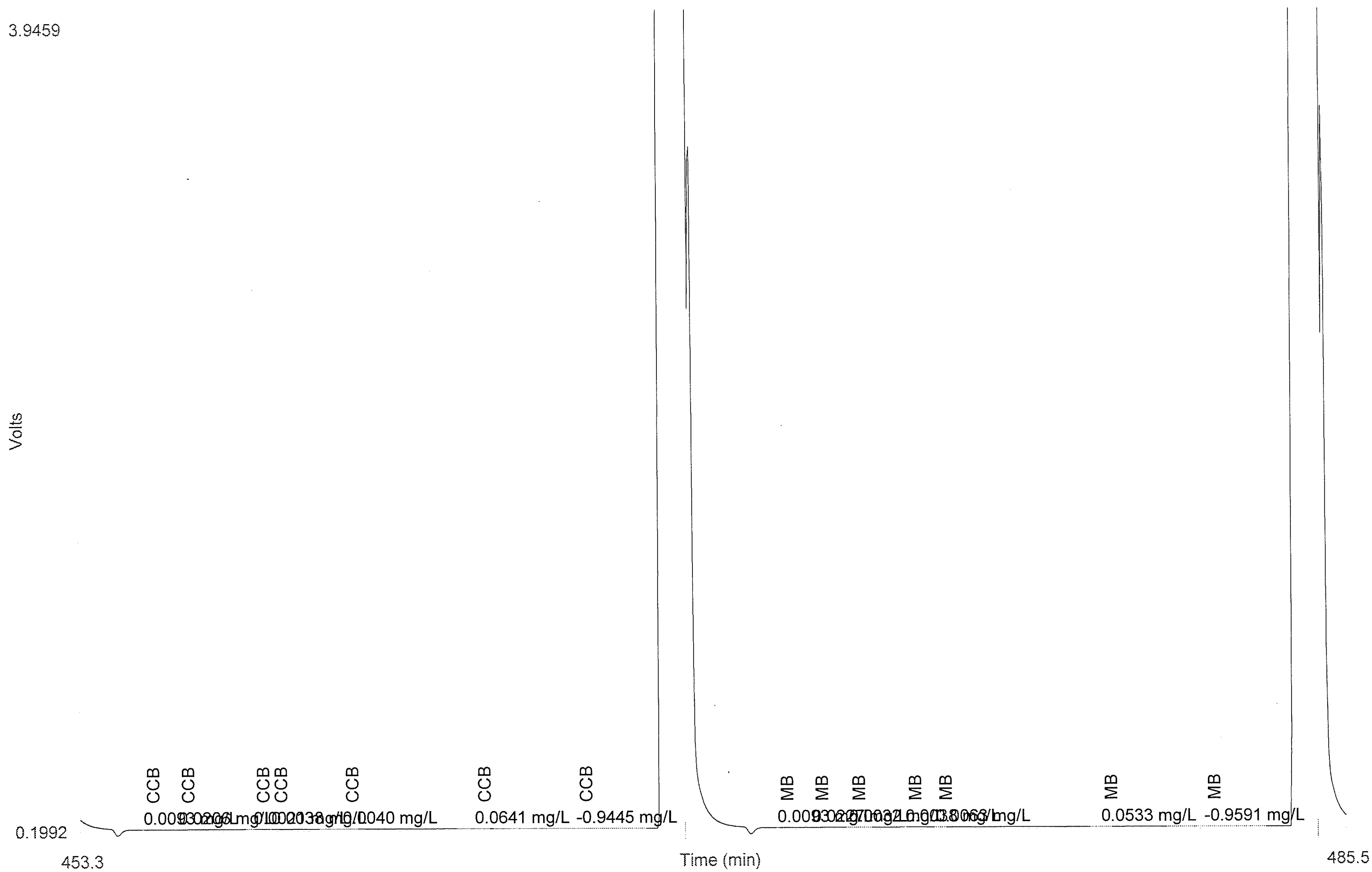

Author: EmerichR

Date : 12/5/2011

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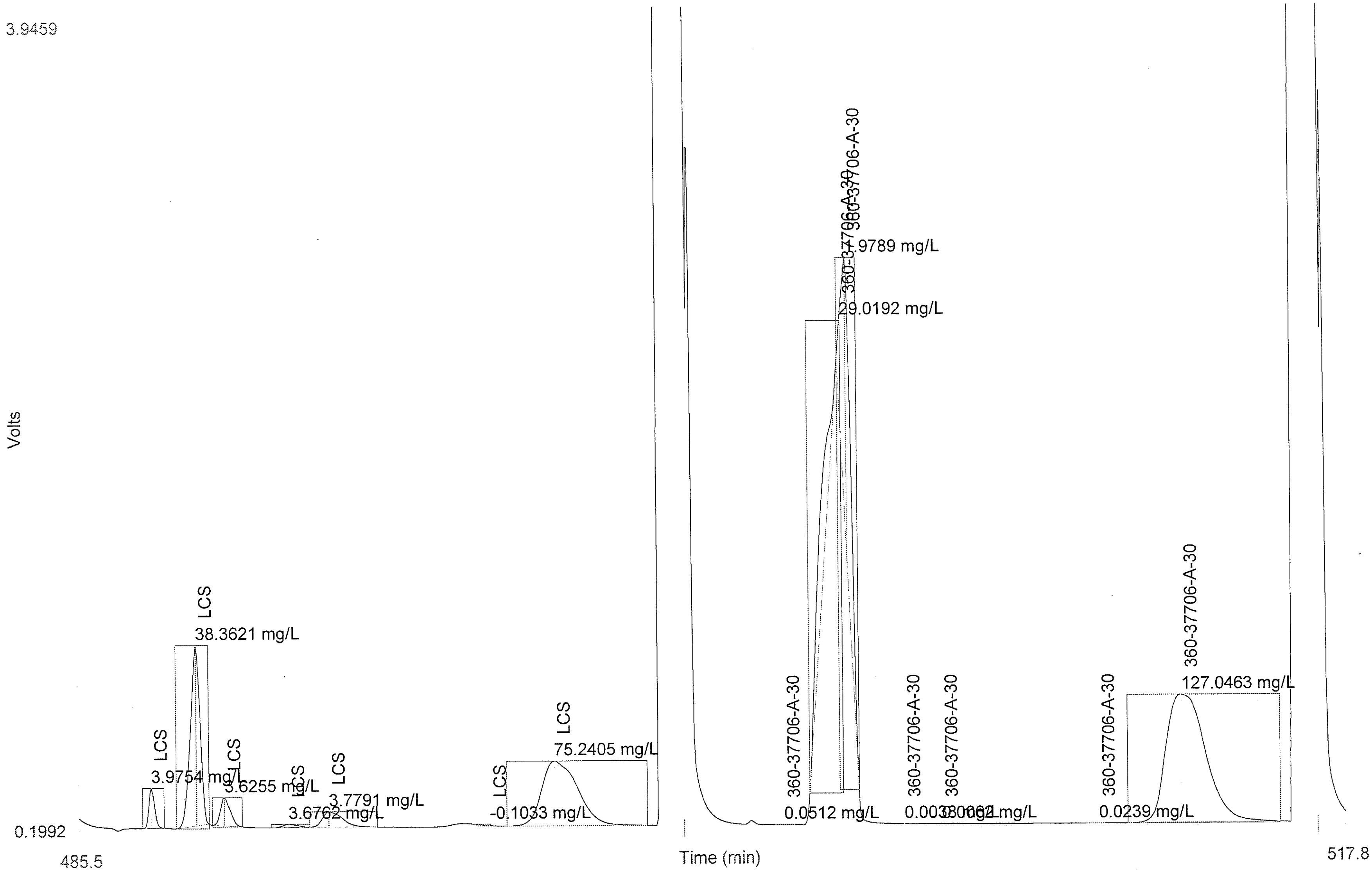

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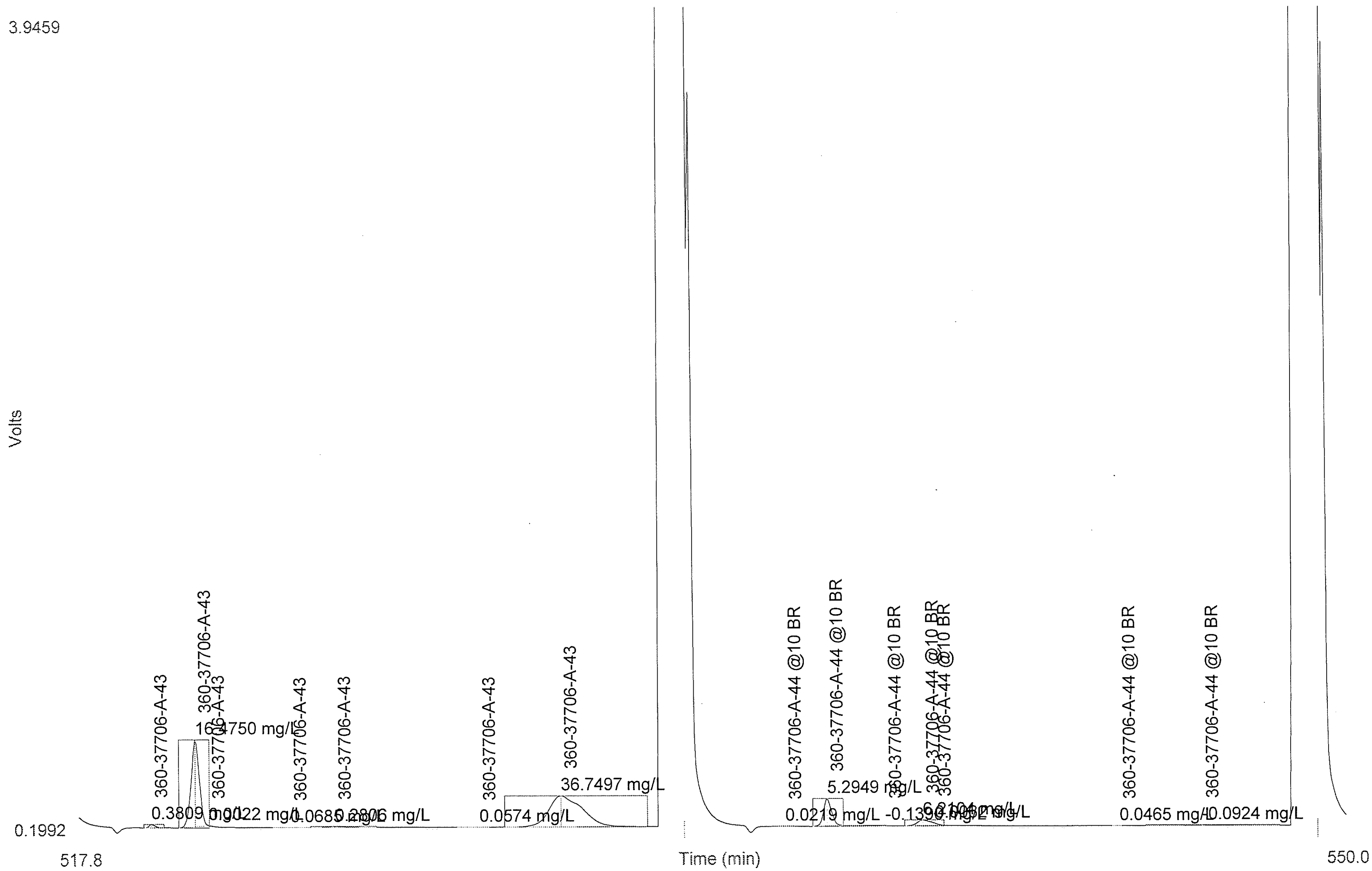
Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 17 of 27



Author: EmerichR

Date : 12/5/2011

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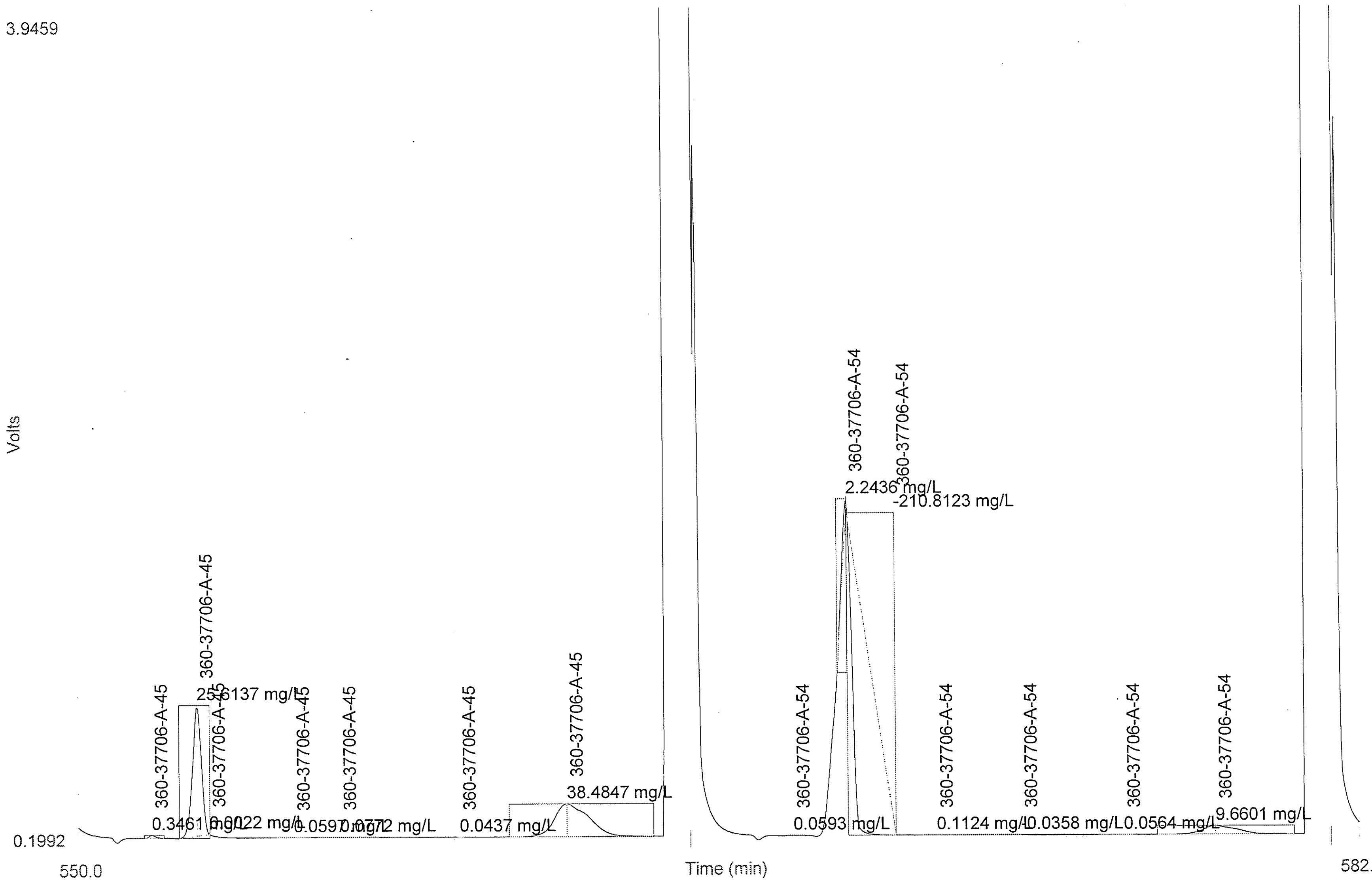
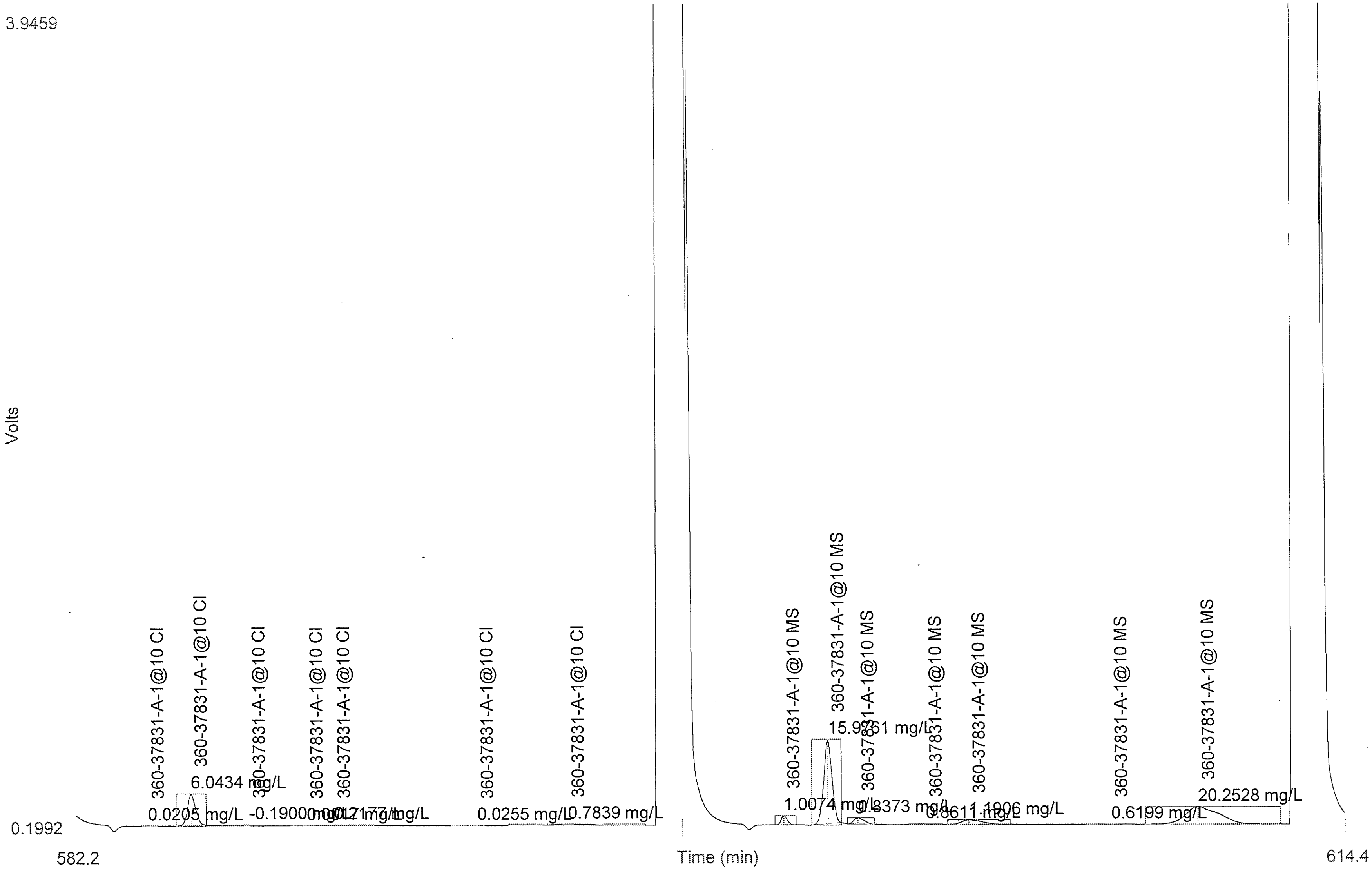


Author: EmerichR

Date : 12/5/2011

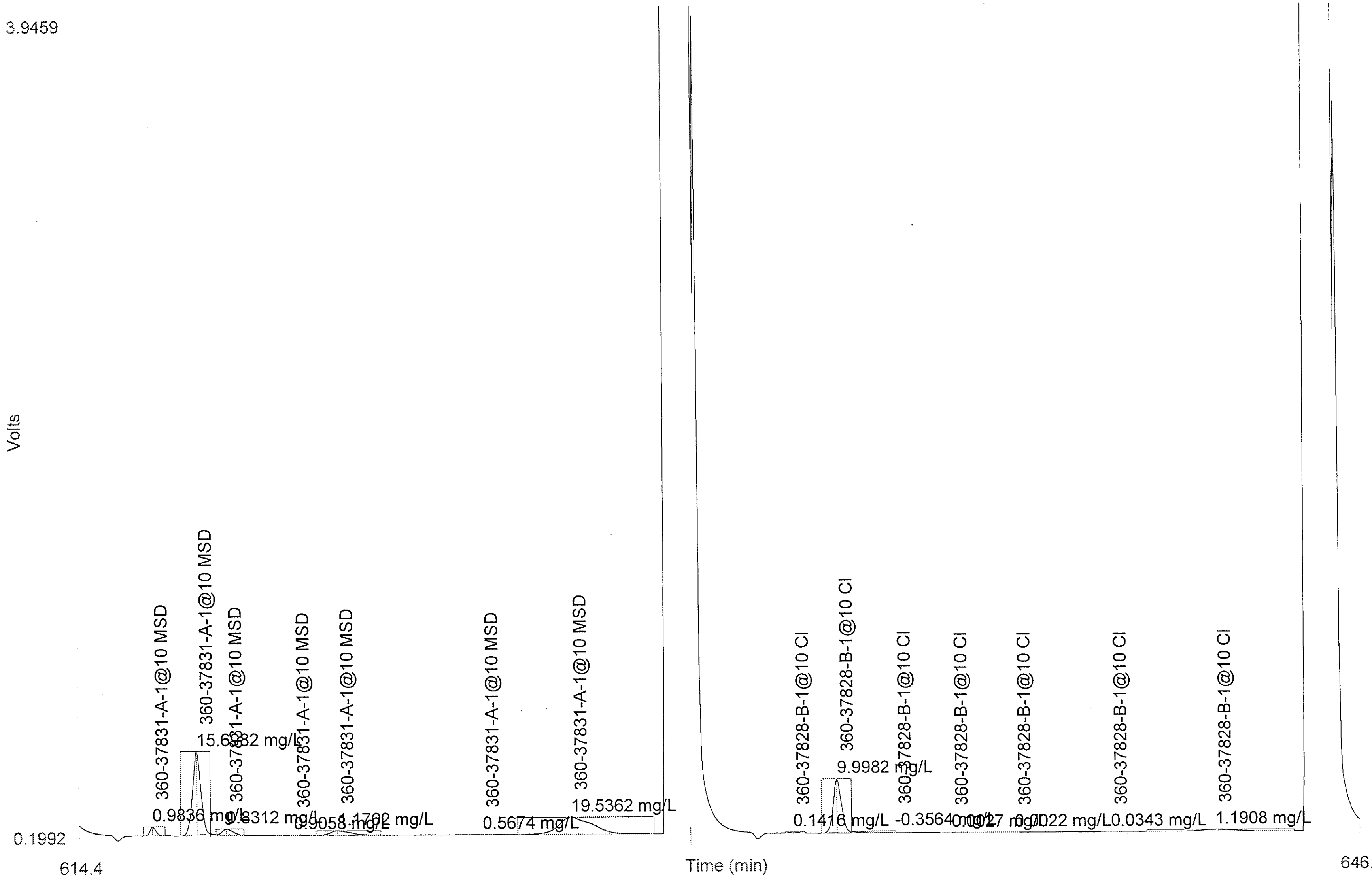
Channel 1 (Anions) : Set 19 of 27



Author: EmerichR

Date : 12/5/2011

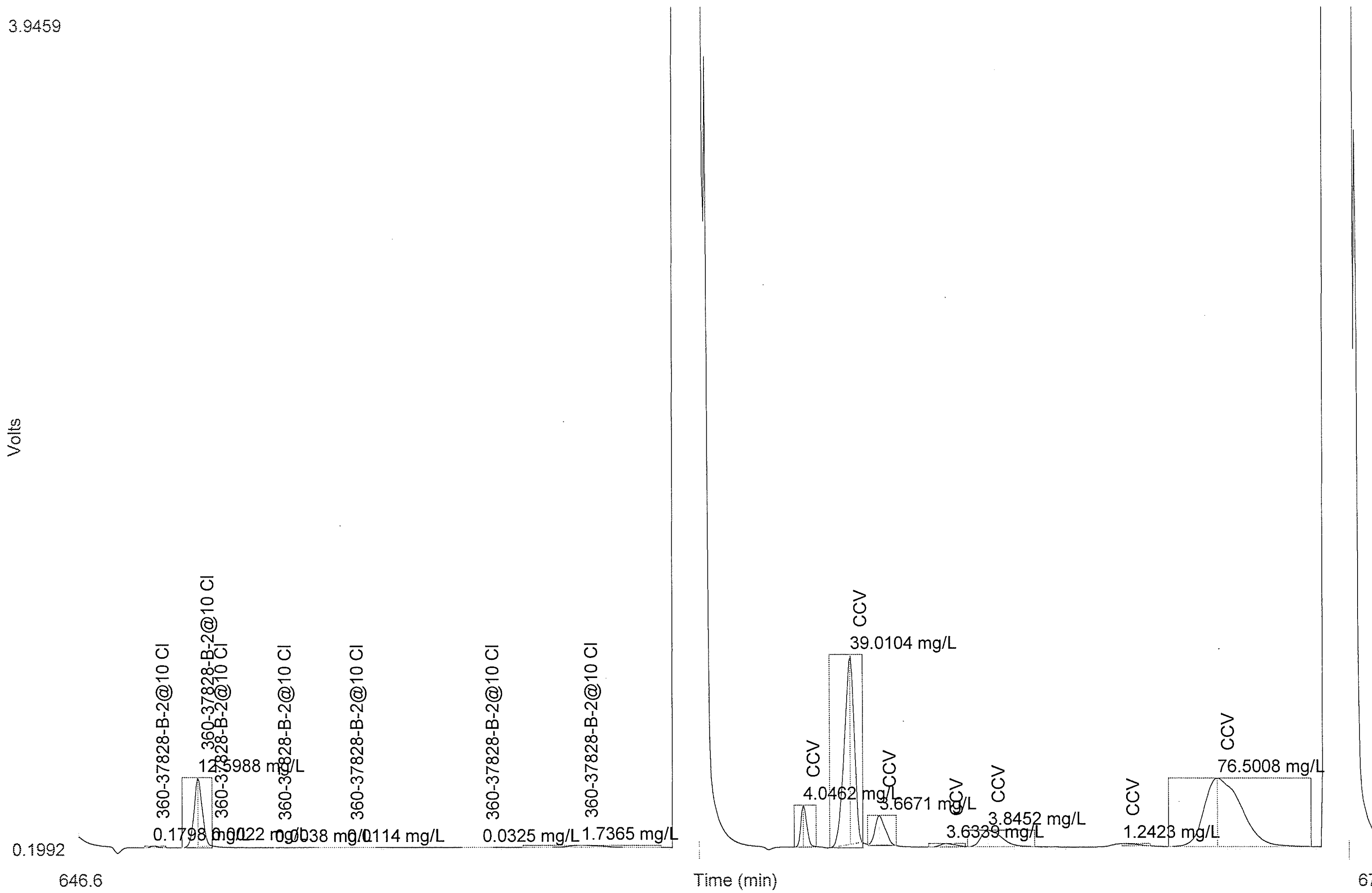
Channel 1 (Anions) : Set 20 of 27



Author: EmerichR

Date : 12/5/2011

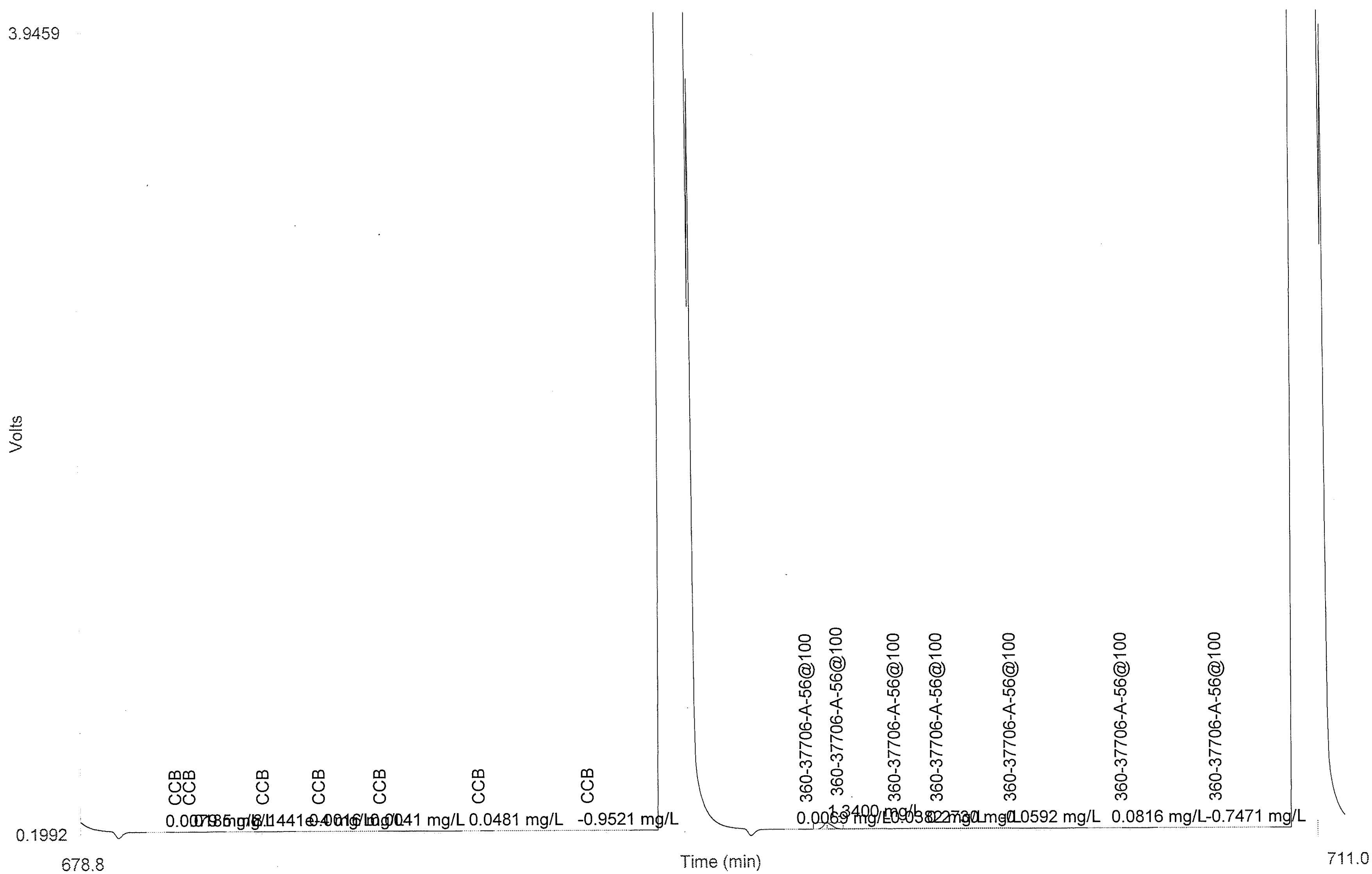
Channel 1 (Anions) : Set 21 of 27



Author: EmerichR

Date : 12/5/2011

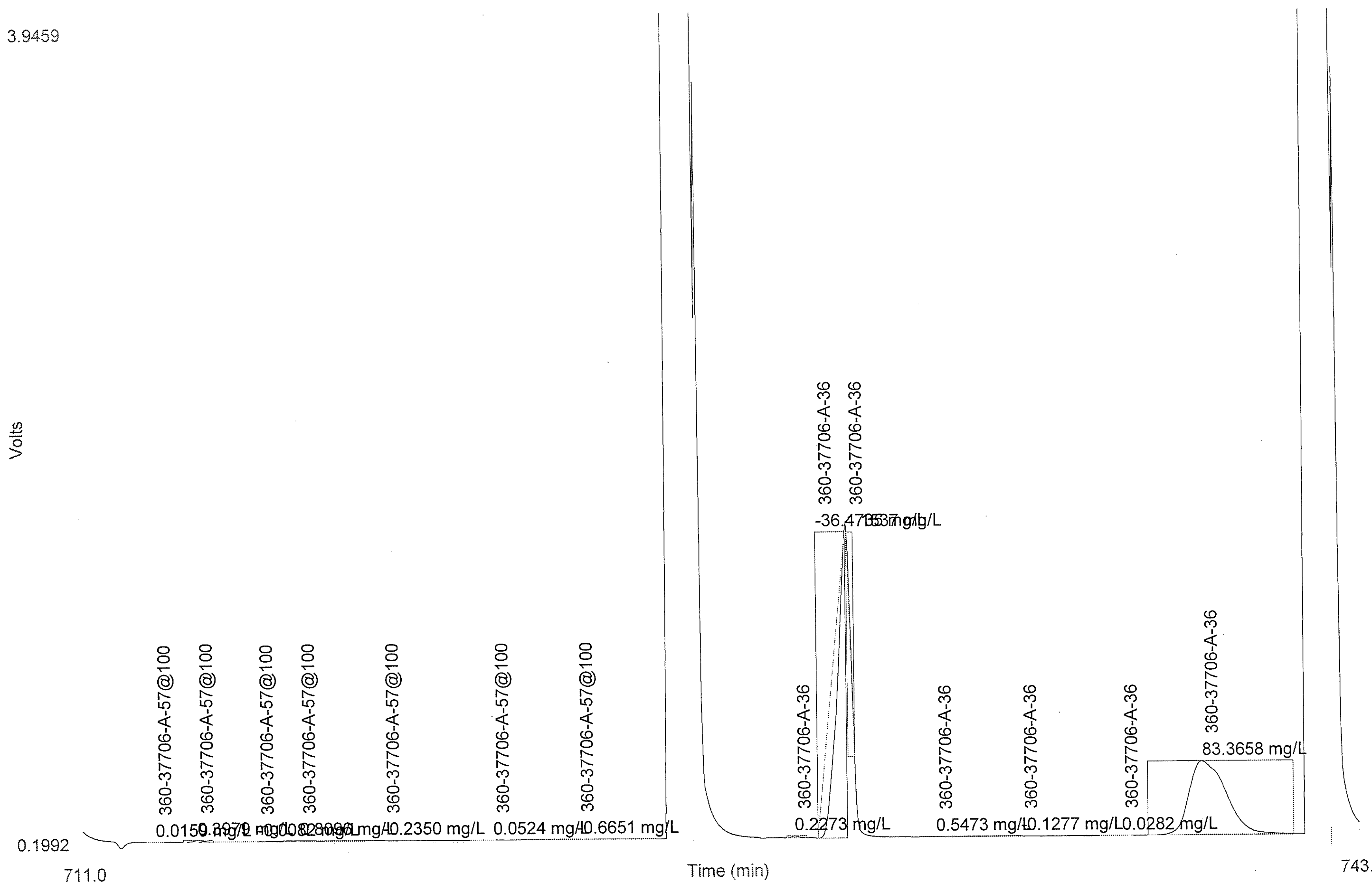
Channel 1 (Anions) : Set 22 of 27



Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 23 of 27



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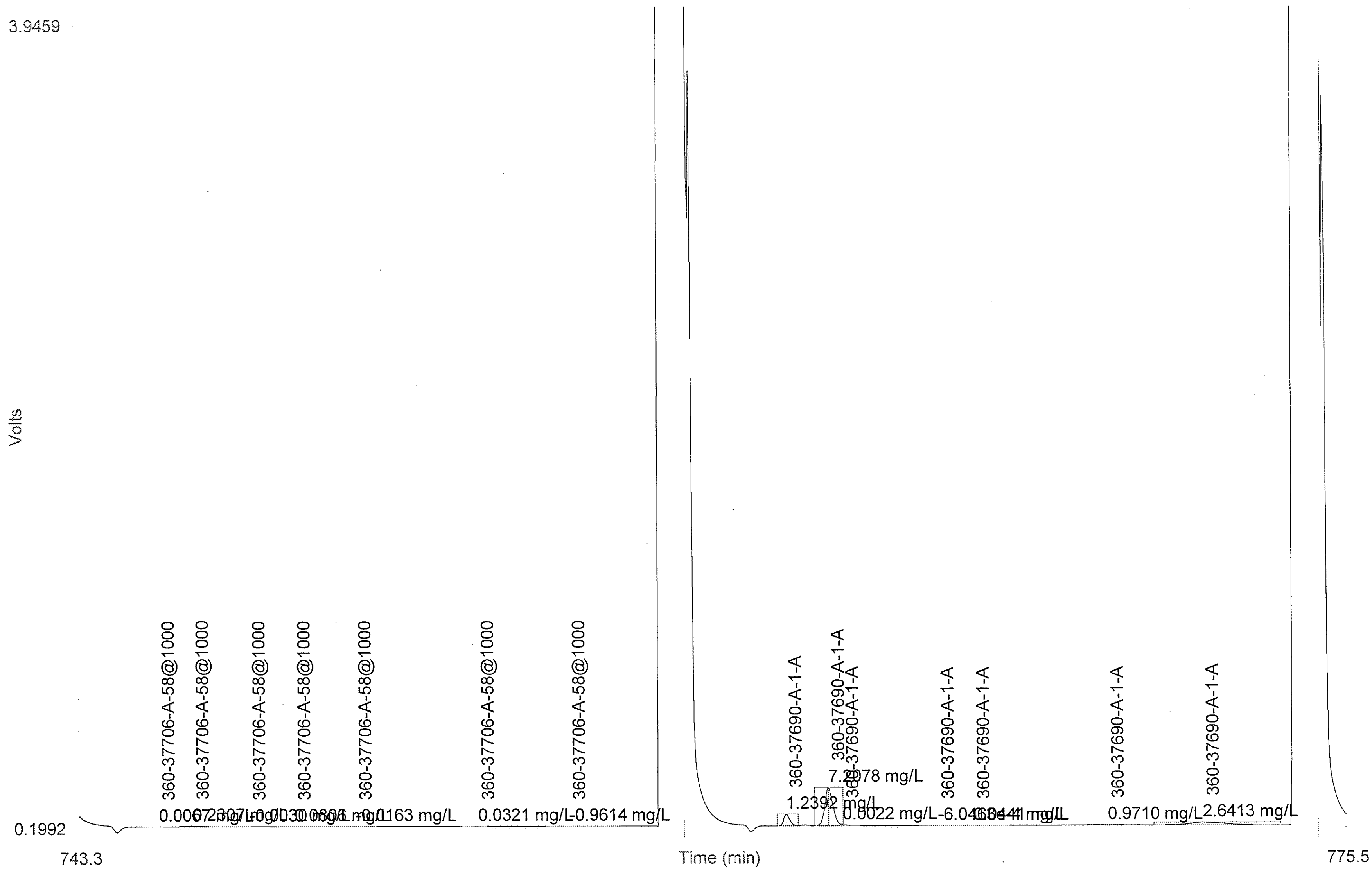
Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 24 of 27



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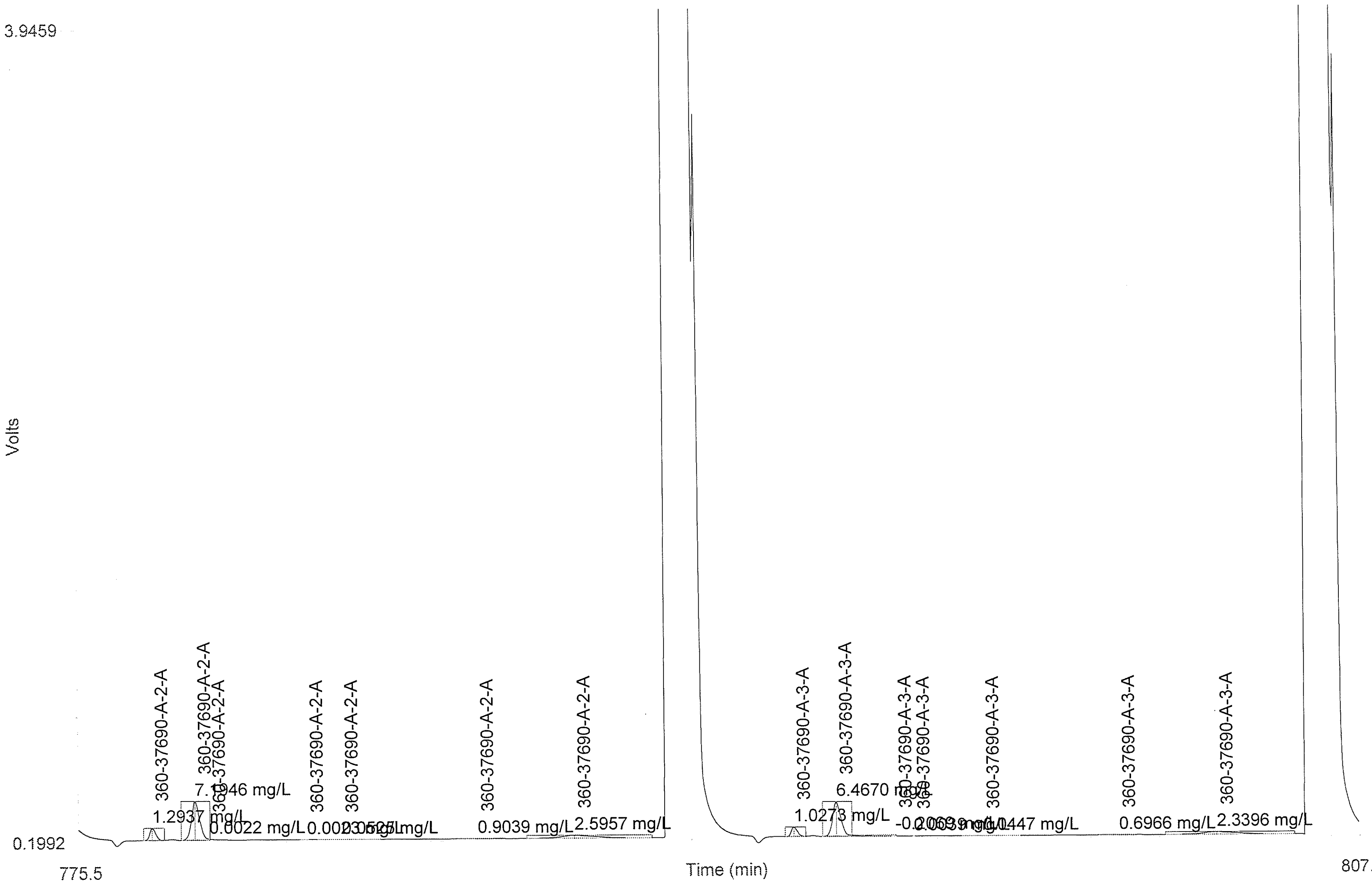
Author: EmerichR

Date : 12/5/2011

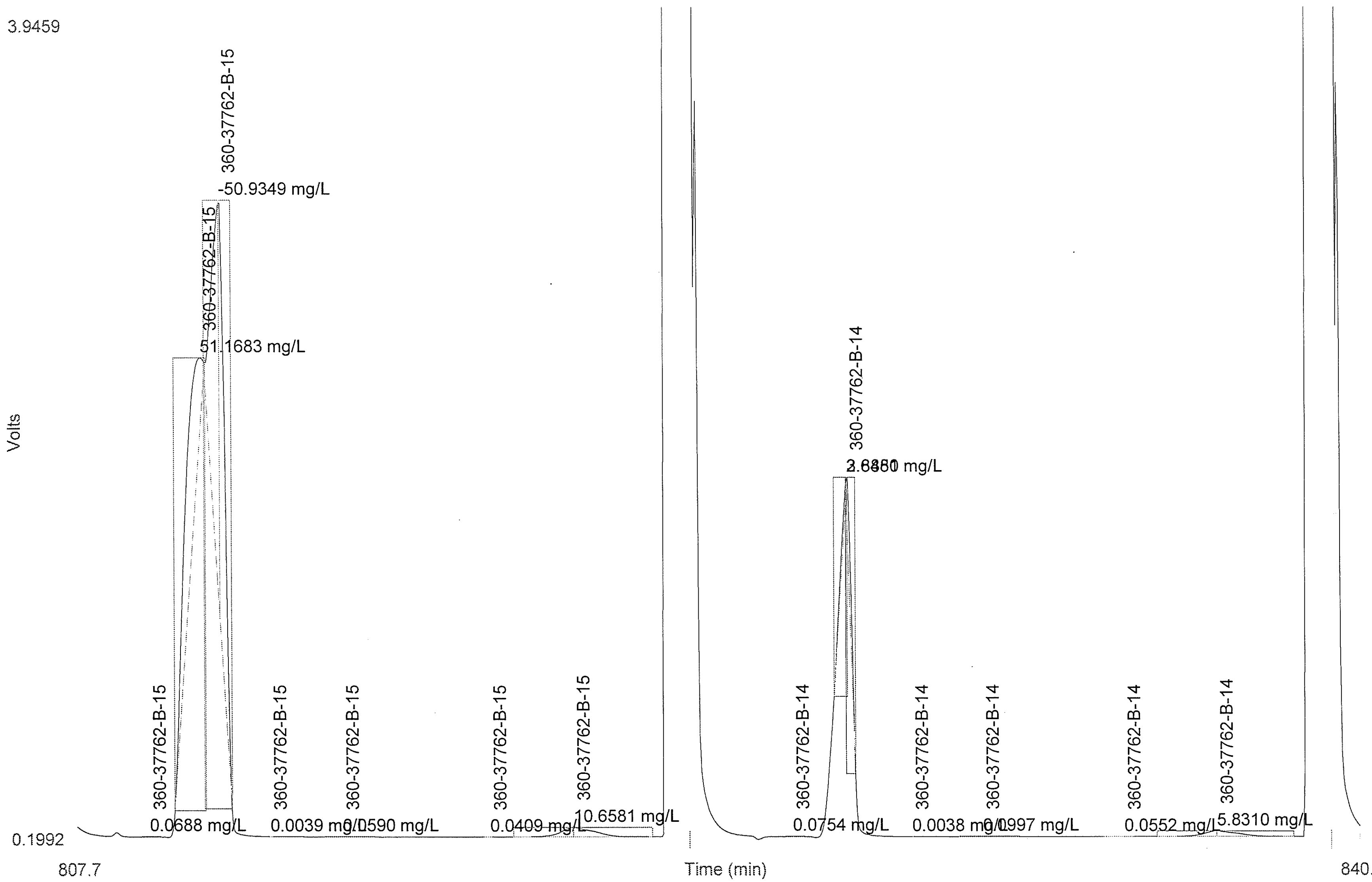
Channel 1 (Anions) : Set 25 of 27



Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 26 of 27



Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 27 of 27

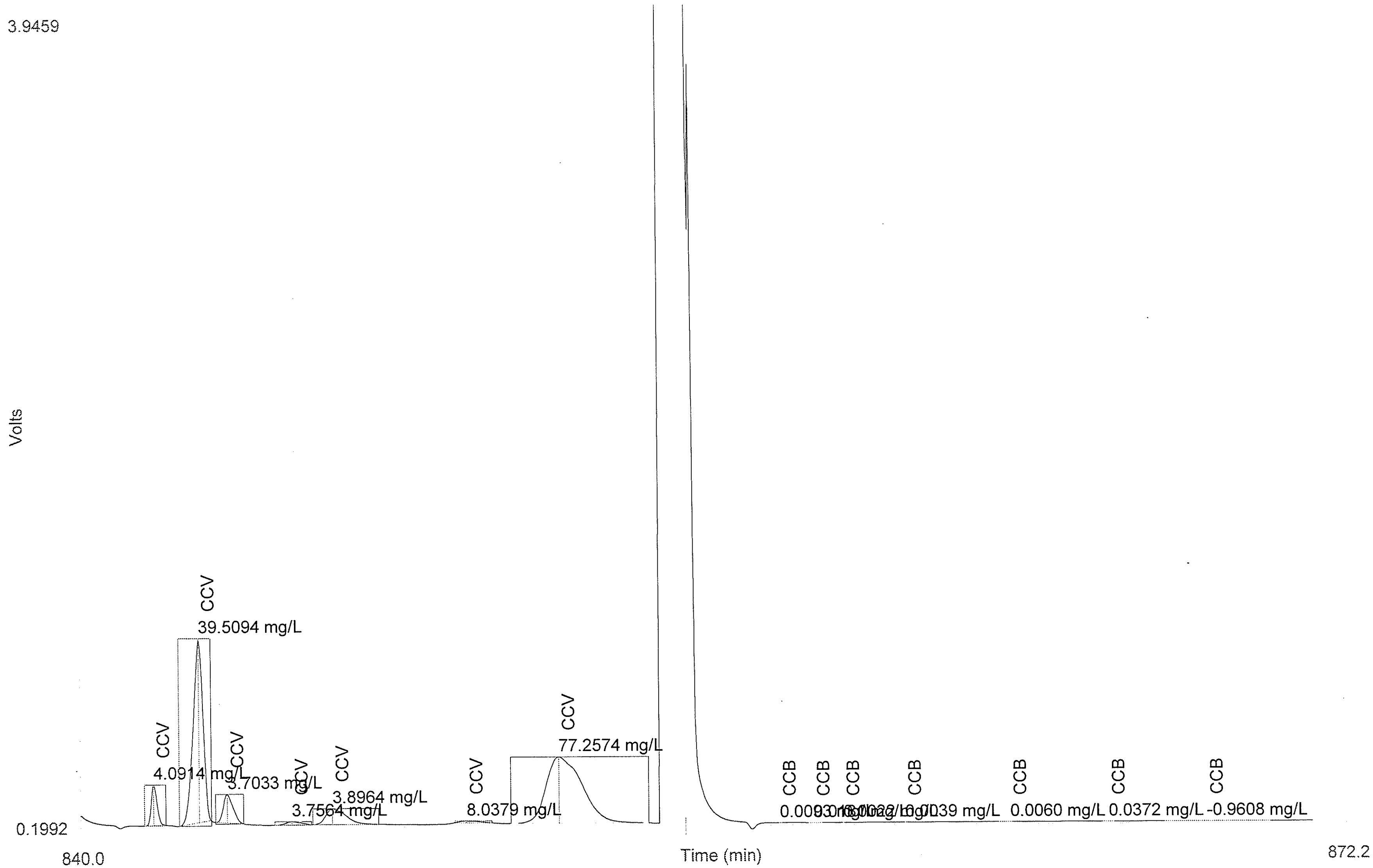
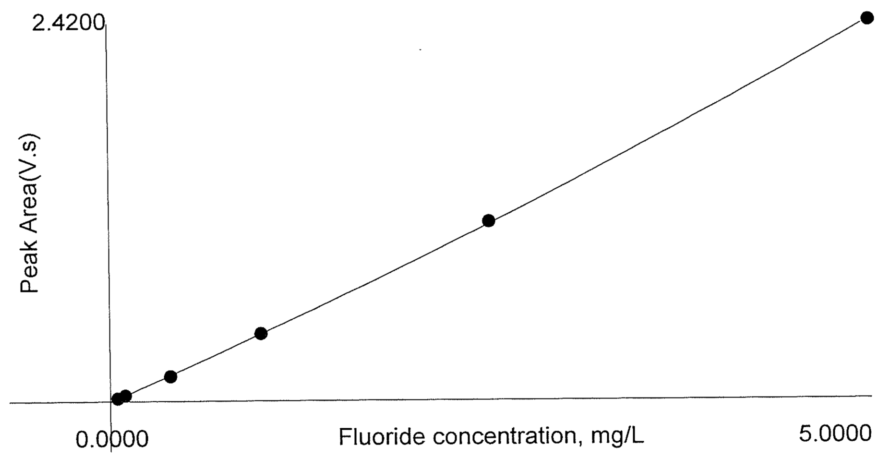


Table 1: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.4200	0.3882	0.3	11/15/2011	2:32:05 PM
2	2.5000	1	1.1432	0.1974	-1.3	11/15/2011	2:48:13 PM
3	1.0000	1	0.4295	0.0734	0.0	11/15/2011	3:04:20 PM
4	0.4000	1	0.1585	0.0271	4.9	11/15/2011	3:20:28 PM
5	0.1000	1	0.0379	0.0065	1.9	11/15/2011	3:36:35 PM
6	0.0500	1	0.0187	0.0032	-6.6	11/15/2011	3:52:42 PM

Figure 1: Fluoride



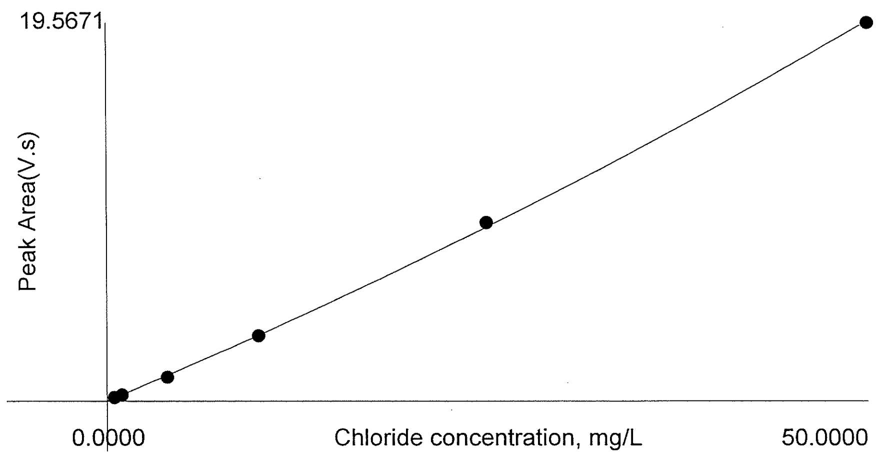
Area = 0.0132 * Conc^2 + 0.4199 * Conc - 0.0035
Conc = - 0.1211 * Area^2 + 2.3494 * Area + 0.0093
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 2: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	19.5671	1.3052	0.5	11/15/2011	2:32:05 PM
2	25.0000	1	9.2472	0.8077	-2.6	11/15/2011	2:48:13 PM
3	10.0000	1	3.3710	0.3697	1.0	11/15/2011	3:04:20 PM
4	4.0000	1	1.2235	0.1456	7.7	11/15/2011	3:20:28 PM
5	1.0000	1	0.3080	0.0351	4.1	11/15/2011	3:36:35 PM
6	0.5000	1	0.1732	0.0187	-11.1	11/15/2011	3:52:42 PM

Figure 2: Chloride



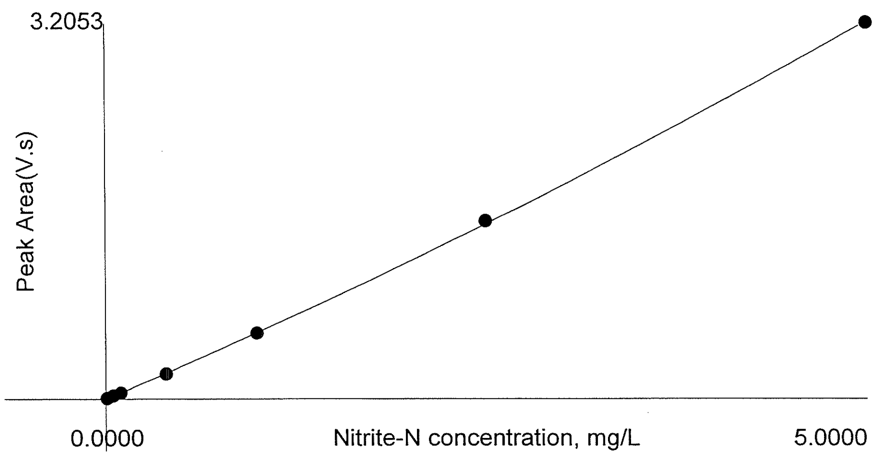
Area = 0.0013 * Conc^2 + 0.3283 * Conc - 0.0085
Conc = - 0.0226 * Area^2 + 2.9826 * Area + 0.0435
Correlation Coefficient (r) = 0.99997

1/x weighting

Table 3: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.2053	0.3249	0.4	11/15/2011	2:32:05 PM
2	2.5000	1	1.5145	0.1578	-1.9	11/15/2011	2:48:13 PM
3	1.0000	1	0.5600	0.0576	0.8	11/15/2011	3:04:20 PM
4	0.4000	1	0.2121	0.0216	3.8	11/15/2011	3:20:28 PM
5	0.1000	1	0.0502	0.0051	6.6	11/15/2011	3:36:35 PM
6	0.0500	1	0.0267	0.0026	-1.4	11/15/2011	3:52:42 PM
7	0.0100	1	0.0049	5.0658e-4	-10.2	11/15/2011	4:08:48 PM

Figure 3: Nitrite-N



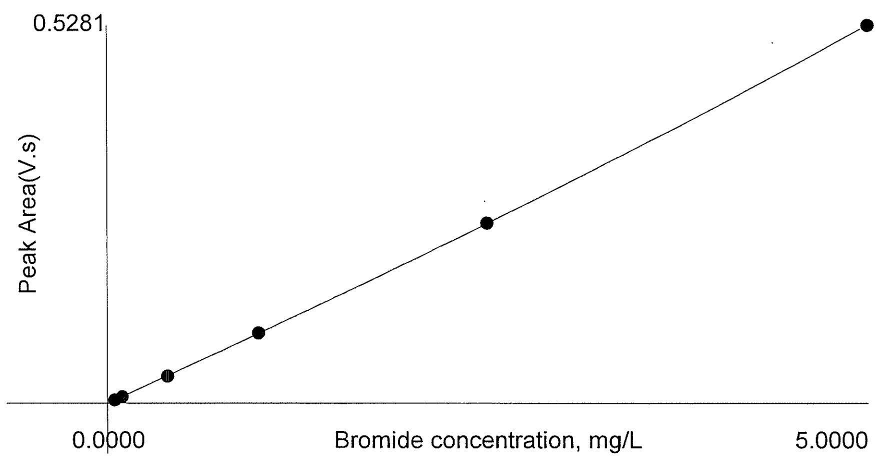
Area = 0.0195 * Conc^2 + 0.5461 * Conc - 0.0010
Conc = - 0.0787 * Area^2 + 1.8046 * Area + 0.0022
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 4: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.5281	0.0394	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	0.2527	0.0186	-0.2	11/15/2011	2:48:13 PM
3	1.0000	1	0.0981	0.0072	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.0379	0.0027	1.4	11/15/2011	3:20:28 PM
5	0.1000	1	0.0092	6.5877e-4	1.5	11/15/2011	3:36:35 PM
6	0.0500	1	0.0046	3.2836e-4	-2.5	11/15/2011	3:52:42 PM

Figure 4: Bromide



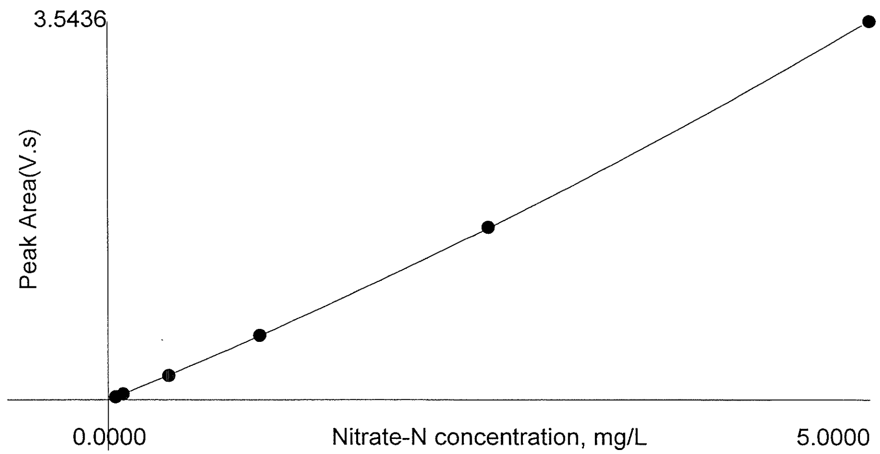
Area = 0.0019 * Conc^2 + 0.0962 * Conc - 3.2483e-4
Conc = - 1.6748 * Area^2 + 10.3373 * Area + 0.0038
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 5: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.5436	0.1988	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	1.6106	0.0905	-0.5	11/15/2011	2:48:13 PM
3	1.0000	1	0.6005	0.0330	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.2256	0.0121	2.5	11/15/2011	3:20:28 PM
5	0.1000	1	0.0531	0.0028	3.8	11/15/2011	3:36:35 PM
6	0.0500	1	0.0279	0.0014	-5.9	11/15/2011	3:52:42 PM

Figure 5: Nitrate-N



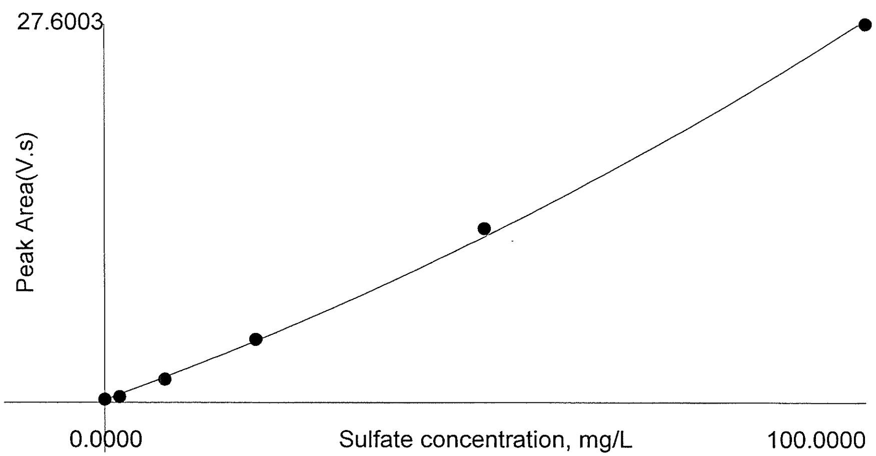
Area = 0.0273 * Conc^2 + 0.5736 * Conc - 0.0024
Conc = - 0.0824 * Area^2 + 1.6983 * Area + 0.0062
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 6: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	27.6003	0.8536	1.1	11/15/2011	2:32:05 PM
2	50.0000	1	12.7130	0.4540	-4.9	11/15/2011	2:48:13 PM
3	20.0000	1	4.5871	0.1729	-1.7	11/15/2011	3:04:20 PM
4	8.0000	1	1.6836	0.0620	9.3	11/15/2011	3:20:28 PM
5	2.0000	1	0.4027	0.0145	34.3	11/15/2011	3:36:35 PM
6	0.0500	1	0.2270	0.0081	-2.6	11/15/2011	3:52:42 PM

Figure 6: Sulfate



Area = 7.7408e-4 * Conc^2 + 0.1994 * Conc + 0.2113
Conc = - 0.0392 * Area^2 + 4.7046 * Area - 0.9825
Correlation Coefficient (r) = 0.99999

1/x weighting

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review Coversheet—Inorganics Dept

Method Name: IC Method Reference: 300.0 28D Date of Analytical Run: 12/3/11

Primary Reviewer's Initials & Date: AMS 12/5/11 Secondary Reviewer's Initials & Date: [illegible] 12/6/11

Batch Numbers	84269	84273	84283		

QC Criteria—Non-MCP: ICV/CCV ±10%: LCS/LCSD ±15%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%

QC Criteria—MCP/RCP: (9012 and 7196 only)
9012 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
9012 (soil): ICV/CCV ±15%: LCS/LCSD **: MS/MSD ±25%: ICB/MB/CCB <RL: MD RPD 35%: MSD/LCSD RPD ≤30%
7196 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
7196 (soil): ICV/CCV ±15%: LCS/LCSD **: MSS/MSI ±25%: ICB/MB/CCB <RL: MD RPD ≤35%: LCSD RPD ≤30%

FAILURES OF QC FOR ANYTHING OTHER THAN MS, MSD or MD ARE GROUNDS FOR INVALIDATING THE BATCH.

Criteria for QC	Yes	No	n/a	Notes/Comments
Were the ICV and CCVs within acceptable limits for QC recovery?	✓ ✓ ✓			
Were the ICB and CCBs all <RL?	✓ ✓ ✓			
Were all MB and CCB results <RL for the analytes of interest?	✓ ✓ ✓			
Was there a CCV/CCB combination run after every 10 samples or less?	✓ ✓ ✓			
Was there an LCS run with every batch of 20 samples or less?	✓ ✓ ✓			
Was there a MD, LCSD or MSD run with every batch of 20 samples or less?	✓ ✓	✓		
Were all LCS/LCSD results within acceptable limits for QC recovery?	✓ ✓ ✓			
Were all MS/MSD results within acceptable limits for QC recovery?	✓ ✓		✓	
Were all MD, LCSD and/or MSD %RPDs within acceptable limits for QC recovery?	✓ ✓		✓	
Were the raw data points for investigative samples within the working curve range, or if not, were the samples diluted to bring them within this range?	✓ ✓ ✓			
IF there were any MCP/RCP samples in this batch, did they meet all MCP/RCP requirements?	✓ ✓		✓	
Were there any holding time violations in this batch?		✓ ✓ ✓		**NOTE!** The PM and QA Manager must be notified by email *immediately* of any holding time violations!!
Were any NCMs generated for any samples in the batch? (If so, list NCM numbers, and first-reviewer must check off any "No" answers above as applicable.)		✓ ✓ ✓		
Were any jobs in this batch Level 4? If "Yes" then scan all raw data & place in correct scan folder on the public drive before filing this paperwork.	✓ ✓	✓		

** LCS or LCSD must produce a recovery that is within the manufacturer's specified 95% confidence limits, must be matrix matched.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Ion Chromatography QC Source Data Sheet—Inorganics Dept

Method (circle methods): IC 300_28D IC 300_48HR IC 9056_28D IC 9056_48HR

Date of Analytical Run: 12/3/11 Analyst's Initials: AMQ

Working Curve Standard:

Manufacturer & Lot Number for Source Standard	Working Curve Standards Prepared On
Inorganic Ventures Lot E2-MEB394034	20 October 2011

QC Standard True Values for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.50	25.0	2.50	2.50	2.50	50.0
ICB	0	0	0	0	0	0
MB	0	0	0	0	0	0
LCS/LCSD	4.00	40.0	4.00	4.00	4.00	80.0
MS/MSD	1.00	10.0	1.00	1.00	1.00	20.0

QC Standard Acceptable Recovery Ranges for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.25-2.75	22.5-27.5	2.25-2.75	2.25-2.75	2.25-2.75	45.0-55.0
ICB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
MB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
LCS/LCSD	3.40-4.60	34.0-46.0	3.40-4.60	3.40-4.60	3.40-4.60	68.0-92.0
MS/MSD	0.75-1.25	7.50-12.5	0.75-1.25	0.75-1.25	0.75-1.25	15.0-25.0

Current Method RLs (mg/L):

	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
	0.10	1.00	0.010	0.10	0.050	2.0

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 12/2/11

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution: Sample Aliquot 2	Units	Final Volume 2	Units	Comments
AMS	12/2/11	300.0	3764486	10	1	mL	10	mL					

entries completed by day [new page each day]

0519

0.25 *M* Sulfuric Acid Creation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Record the information below for creating the acid. When an entry is made do not use arrows to fill in information. All entries must be complete.

Recipe: to 2958mL of deionized water in a 1 gallon jug add 42mL of concentrated H_2SO_4 for a total volume of 3L.

Date Made	Analyst's Initials	Volume of 0.25 *M* Acid Made (L)	Source: Concentrated Sulfuric Acid (ACS grade) Manufacturer & Lot Number
11-18-11	RWT	3	Baker lot J22022
11-21-11	RWT	3	↓
11-22-11	RWT	3	↓
11-23-11	RWT	3	↓
11-28-11	RWT	3	↓
11/30/11	AMS	3	↓
12/1/11	AMS	3	↓
12/3/11	AMS	3	↓

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Eluent Preparation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Prepare fresh daily; makes 3L of eluent. To make: in a one-gallon plastic container, mix:

- 60.0 mL of 100*M* $NaHCO_3$;
- 78.0 mL of 100*M* Na_2CO_3; and
- 2862 mL of deionized water.

Degas with helium for 3min before use.

Date Prepared	Analyst's Initials	Lot # 100*M* $NaHCO_3$	Lot # 100*M* Na_2CO_3	Number of Portions Prepared
11-17-11	[illegible]	W11J 2GT018	W11K RGT001	1
11-18-11	RuO	W11K RGT016	W11K RGT017	2
11-21-11	RuO	↓	↓	1
11-22-11	RuO	↓	↓	1
11-23-11	RuO	↓	↓	2
11-28-11	RO	↓	↓	1
11-29-11	RO	↓	↓	1
12/1/11	AMS	↓	↓	1
12/2/11	AMS	↓	↓	1
12/3/11	AMS	↓	↓	1

Author: EmerichR

Date : 12/5/2011

Original Run Filename: OM_12-3-2011_10-15-54AM.OMN created 12/3/2011 10:15:54 AM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_12-3-2011_10-15-54AM.OMN last modified 12/4/2011 12:47:20 AM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	-0.0043	0.1034	0.0096	0.0061	-0.0013	-0.9540	12/3/2011@10:17:19 AM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	
ICV	1	2.2941	24.0859	2.4537	2.4139	2.2040	47.7800	12/3/2011@10:33:26 AM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
ICB	S11	-0.0019	0.0984	0.0089	0.0034	0.0023	-0.9630	12/3/2011@10:49:33 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0062	0.1000	0.0077	0.0076	0.0015	-0.9815	12/3/2011@11:05:40 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.6760	39.3595	4.0280	3.8545	3.6804	76.5163	12/3/2011@11:21:47 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37644-B-6@10 SO4	2	0.0101	0.7427	0.0164	0.0213	-0.0102	12.6539	12/3/2011@11:37:54 AM
360-37721-B-1@10 Cl	3	-0.0025	5.0423	0.0093	0.0937	0.0022	0.5730	12/3/2011@11:54:01 AM
360-37706-A-31	4	0.1084	66.4723	0.0374	0.0062	0.0022	20.6778	12/3/2011@12:10:08 PM
360-37706-A-32	5	0.1150	12.7205	0.0877	-0.0207	9.7023	137.8171	12/3/2011@12:26:15 PM
360-37706-A-33	6	0.0975	60.3581	0.0636	-0.0209	0.0022	8.8109	12/3/2011@12:42:22 PM
360-37706-A-33 @10	7	0.0039	8.0551	0.0139	0.0082	-0.1694	-0.0052	12/3/2011@12:58:29 PM
360-37706-A-33 @10 MS	8	1.0271	19.0816	1.0918	1.0358	0.8809	20.8690	12/3/2011@1:14:36 PM
360-37706-A-33 @10 MSD	8	1.0207	19.1067	1.0946	1.0377	0.8892	20.8806	12/3/2011@1:30:43 PM
360-37706-A-34 @ 100 BR	9	0.1986	0.1621	0.0070	7.8462e-4	0.0022	-0.9414	12/3/2011@1:46:49 PM
360-37706-A-34@ 1000 BR	10	3.4684	0.6808	0.0127	-0.0546	-0.0095	-0.7777	12/3/2011@2:02:56 PM
CCV	S12	3.7303	39.8520	4.0811	3.9078	3.7250	77.3768	12/3/2011@2:19:02 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0089	0.0996	0.0076	0.0047	0.0022	-0.9571	12/3/2011@2:35:09 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37706-A-35 @100 BR	11	3.7158	0.6492	0.0164	-0.0674	-0.0100	-0.8074	12/3/2011@2:51:16 PM
360-37706-A-58@100	12	2.2118	0.6396	0.0128	-0.2843	-0.0188	-0.7832	12/3/2011@3:07:23 PM
360-37706-A-34@100 RPT	37	3.2806	0.5862	0.0125	-0.4989	-0.0112	-0.7841	12/3/2011@3:23:30 PM
360-37706-A-34@1000 RPT	38	0.2419	0.2352	0.0076	-0.0280	-0.0031	-0.9500	12/3/2011@3:39:37 PM
360-37706-A-37	13	0.1938	50.0750	0.0888	-0.0405	0.0022	16.8455	12/3/2011@3:55:43 PM
360-37706-A-38 @100	14	2.0973	0.7354	0.0071	-0.3304	-0.0146	-0.7931	12/3/2011@4:11:49 PM
360-37706-A-39	17	9.2179	2.4080	0.2337	0.0062	9.0784	9.5957	12/3/2011@4:27:56 PM
360-37706-A-40	18	1.6796	1.8367	0.1754	0.0064	8.8298	6.0212	12/3/2011@4:44:03 PM
360-37706-A-41	19	0.0018	-11.1855	0.1628	0.5845	-15.2005	41.8482	12/3/2011@5:00:10 PM
360-37706-A-42	20	0.0622	-36.3371	0.2420	1.0122	-266.1645	57.8250	12/3/2011@5:16:17 PM
CCV	S12	3.7411	39.0876	4.0341	3.8519	3.6666	76.1597	12/3/2011@5:32:24 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	

Samples reran to confirm the cups were switched 12/5/11 AMY

CCB	S11	0.0038	0.0206	0.0093	0.0040	0.0021	-0.9445	12/3/2011@5:48:31 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0038	0.0227	0.0093	0.0063	0.0032	-0.9591	12/3/2011@6:04:38 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.6762	38.3621	3.9754	3.7791	3.6255	75.2405	12/3/2011@6:20:45 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37706-A-30	21	0.0038	29.0192	0.0512	0.0062	1.9789	127.0463	12/3/2011@6:36:52 PM
360-37706-A-43	22	0.0685	16.4750	0.3809	0.2806	0.0022	36.7497	12/3/2011@6:52:59 PM
360-37706-A-44 @10 BR	23	6.2104	5.2949	0.0219	0.0062	-0.1390	-0.0924	12/3/2011@7:09:06 PM
360-37706-A-45	24	0.0597	25.6137	0.3461	0.0772	0.0022	38.4847	12/3/2011@7:25:13 PM
360-37706-A-54	25	0.1124	2.2436	0.0593	-0.0358	-210.8123	9.6601	12/3/2011@7:41:19 PM
360-37831-A-1@10 CI	26	0.0017	6.0434	0.0205	0.2177	-0.1900	0.7839	12/3/2011@7:57:25 PM
360-37831-A-1@10 MS	27	0.8611	15.9761	1.0074	1.1906	0.8373	20.2528	12/3/2011@8:13:31 PM
360-37831-A-1@10 MSD	27	0.9058	15.6982	0.9836	1.1762	0.8312	19.5362	12/3/2011@8:29:38 PM
360-37828-B-1@10 CI	28	0.0027	9.9982	0.1416	0.0022	-0.3564	1.1908	12/3/2011@8:45:43 PM
360-37828-B-2@10 CI	29	0.0038	12.5988	0.1798	0.0114	0.0022	1.7365	12/3/2011@9:01:49 PM
CCV	S12	3.6339	39.0104	4.0462	3.8452	3.6671	76.5008	12/3/2011@9:17:56 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0016	0.0185	0.0079	0.0041	8.1441e-4	-0.9521	12/3/2011@9:34:03 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37706-A-56@100	30	0.2730	1.3400	0.0069	-0.0592	-0.0382	-0.7471	12/3/2011@9:50:09 PM
360-37706-A-57@100	31	0.8096	0.3979	0.0159	-0.2350	-0.0082	-0.6651	12/3/2011@10:06:17 PM
360-37706-A-36	32	0.5473	-36.4735	0.2273	-0.1277	1.1537	83.3658	12/3/2011@10:22:24 PM
360-37706-A-58@1000	33	0.0806	0.2307	0.0067	-0.0163	-0.0030	-0.9614	12/3/2011@10:38:31 PM
360-37690-A-1-A	34	-6.0463e-4	7.2078	1.2392	0.0441	0.0022	2.6413	12/3/2011@10:54:38 PM
360-37690-A-2-A	35	0.0023	7.1946	1.2937	0.0525	0.0022	2.5957	12/3/2011@11:10:45 PM
360-37690-A-3-A	36	0.0039	6.4670	1.0273	0.0447	-0.2069	2.3396	12/3/2011@11:26:52 PM
360-37762-B-15	15	0.0039	51.1683	0.0688	0.0590	-50.9349	10.6581	12/3/2011@11:42:58 PM
360-37762-B-14	16	0.0038	2.8480	0.0754	0.0997	3.6851	5.8310	12/3/2011@11:59:05 PM
CCV	S12	3.7564	39.5094	4.0914	3.8964	3.7033	77.2574	12/4/2011@12:15:12 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0039	0.0181	0.0093	0.0060	0.0022	-0.9608	12/4/2011@12:31:19 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-84223 | Analyst: Stewart, Alyse M | Batch Open: 12/2/2011 11:10:39AM

Method Code: 360-DI_LEACH-360 | Batch End:

Deionized Water Leaching Procedure

	Input Sample Lab ID (Analytical Method)	SDG	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~360-84223/1 N/A	N/A		10 g	100 mL	N/A	N/A	N/A		MB 360-84223/1-A
2	LCS~360-84223/2 N/A	N/A		10 g	100 mL	N/A	N/A	N/A		LCS 360-84223/2-A
3	360-37690-A-1 (300.0_28D)	N/A	Solid	10.27 g	100 mL	12/1/11	9_Days - R	1		360-37690-A-1-A
	360-37690-A-2 (300.0_28D)	N/A	Solid	10.25 g	100 mL	12/1/11	9_Days - R	1		360-37690-A-2-A
	360-37690-A-3 (300.0_28D)	N/A	Solid	10.17 g	100 mL	12/1/11	9_Days - R	1		360-37690-A-3-A

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-84223
Analyst: Stewart, Alyse M
Batch Open: 12/2/2011 11:10:39AM
Method Code: 360-DI_LEACH-360
Batch End:

Batch Notes

Balance ID ____________________

Blank Soil Lot Number ____________________

Batch Comment ____________________

Comments

Login Comments for Job 37690: assume 100% solid

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-84223
Analyst: Stewart, Alyse M
Batch Open: 12/2/2011 11:10:39AM

Method Code: 360-DI_LEACH-360
Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
LCS 360-84223/2	W11J_IC_LCS_00001	100 mL	100 mL		

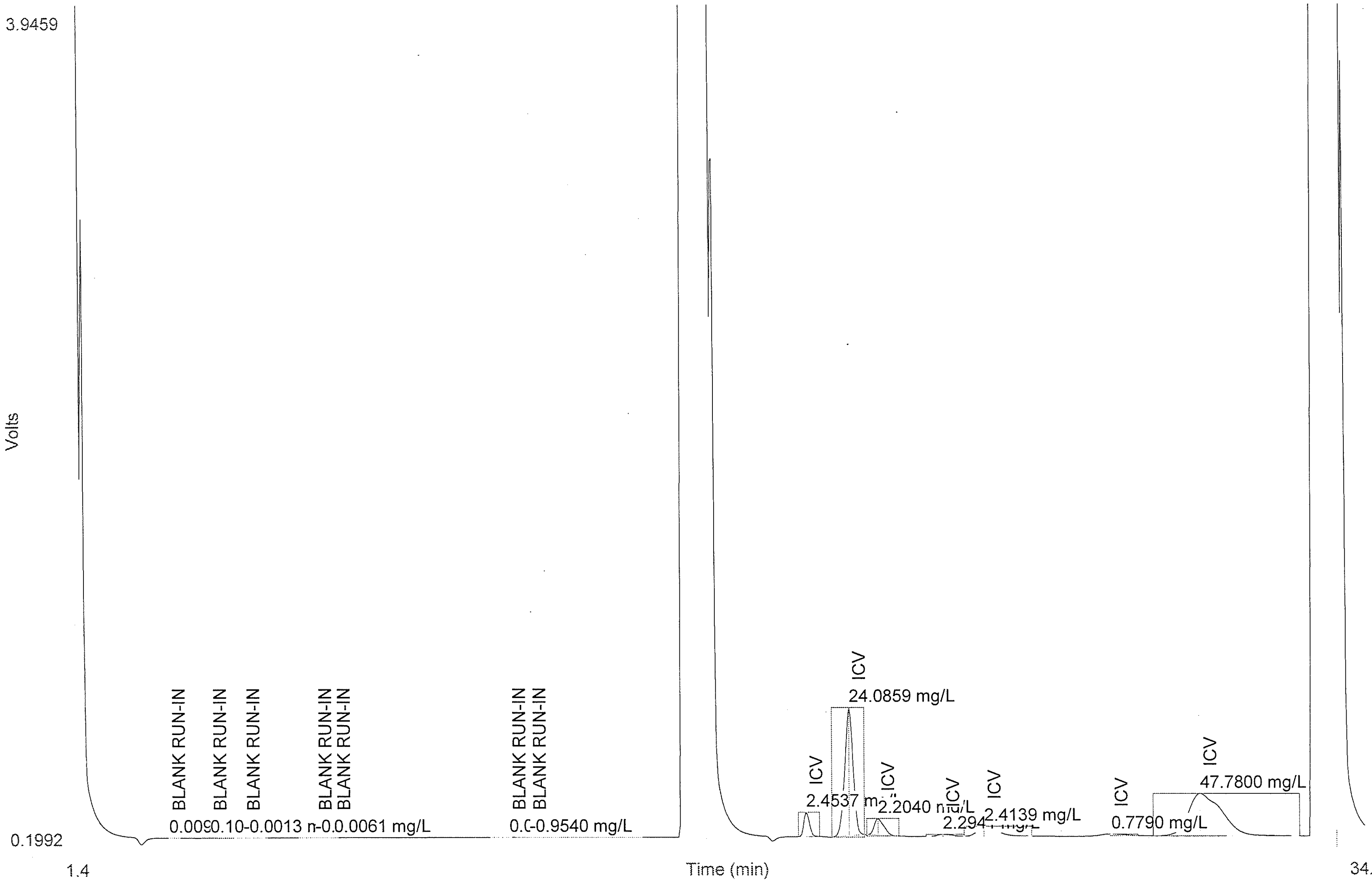
Other Reagents:

Reagent	Amount/Units	Lot#:

Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 1 of 27

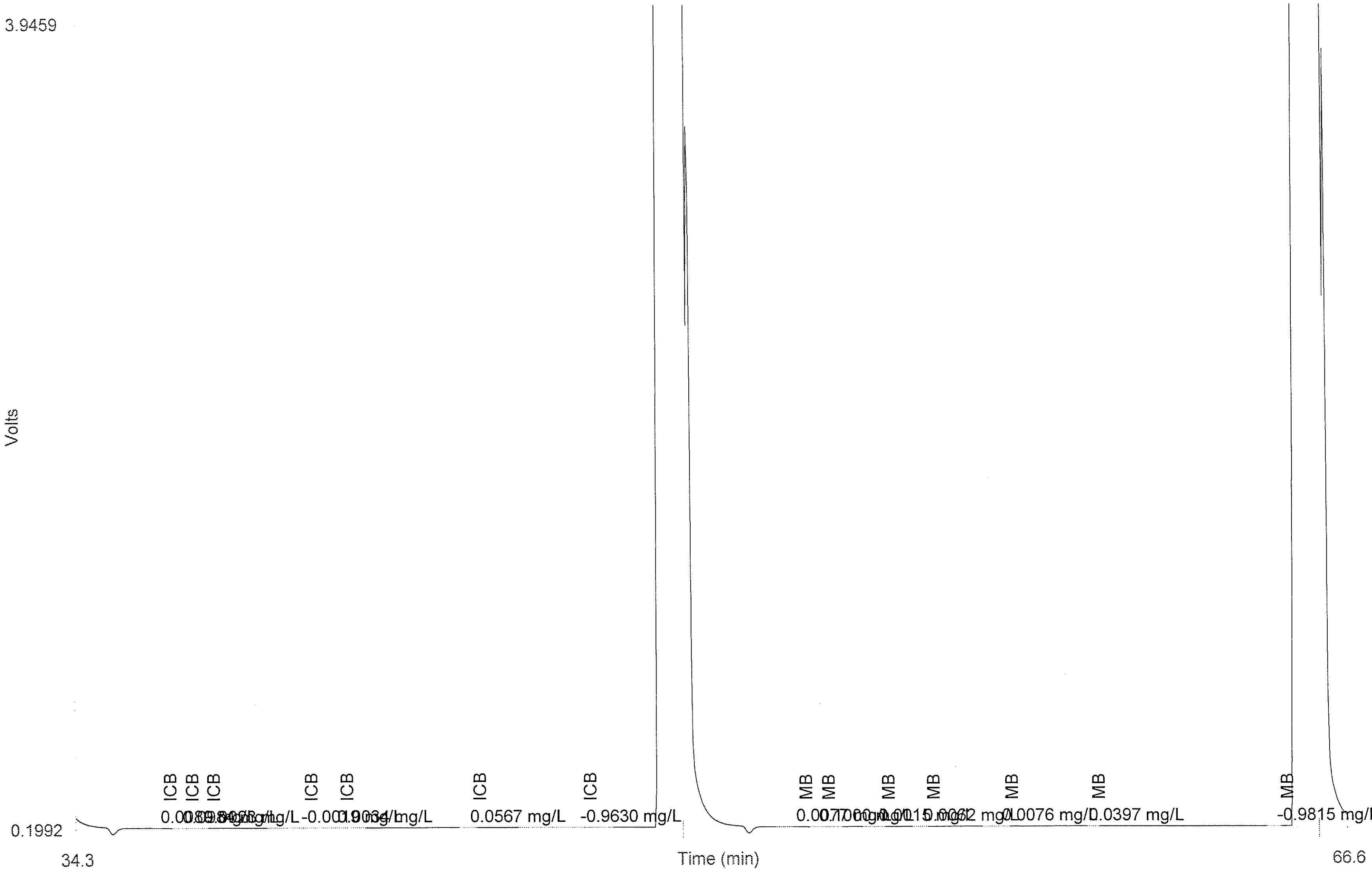


- 3 -

Author: EmerichR

Date : 12/5/2011

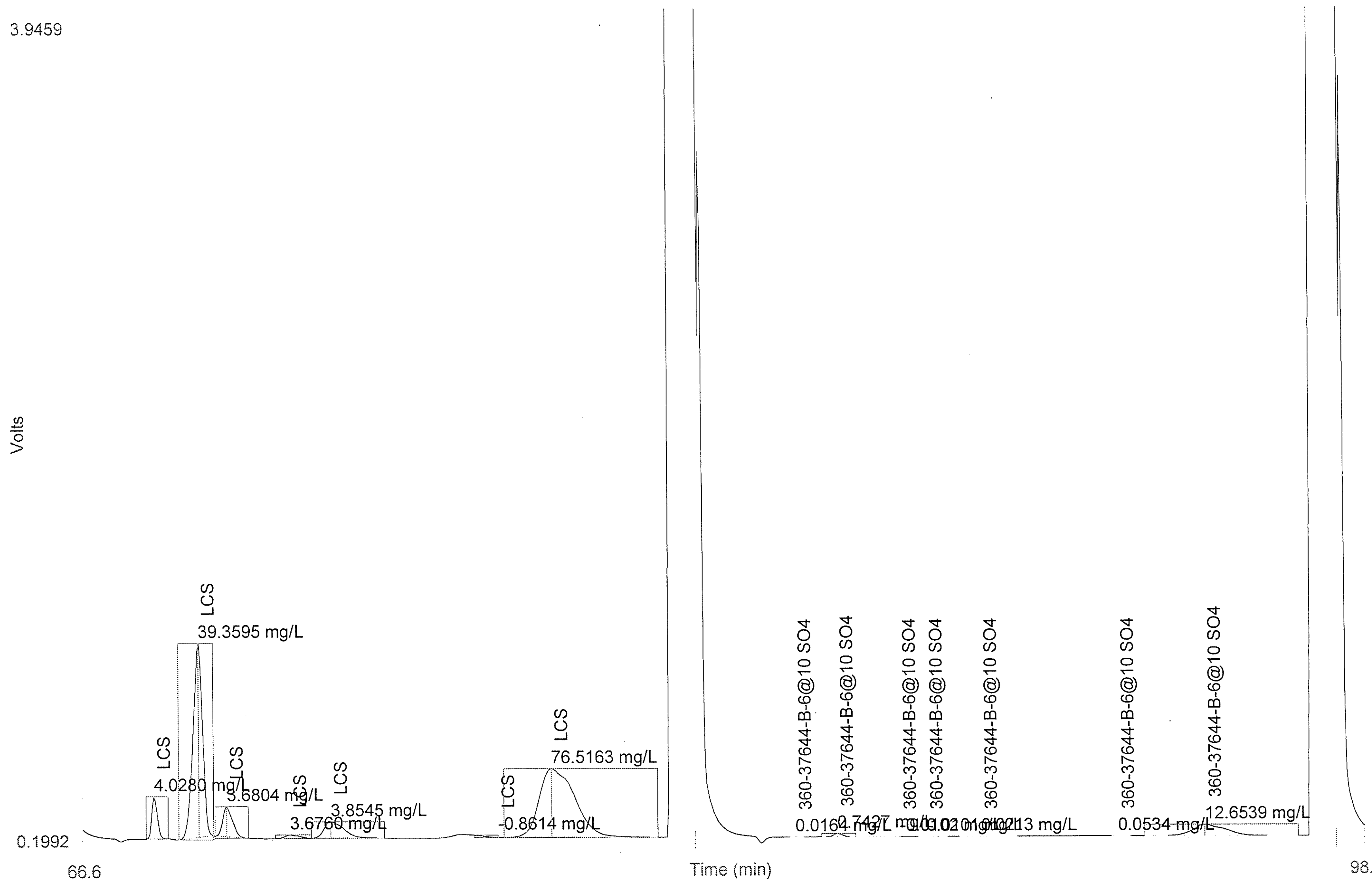
Channel 1 (Anions) : Set 2 of 27



Author: EmerichR

Date : 12/5/2011

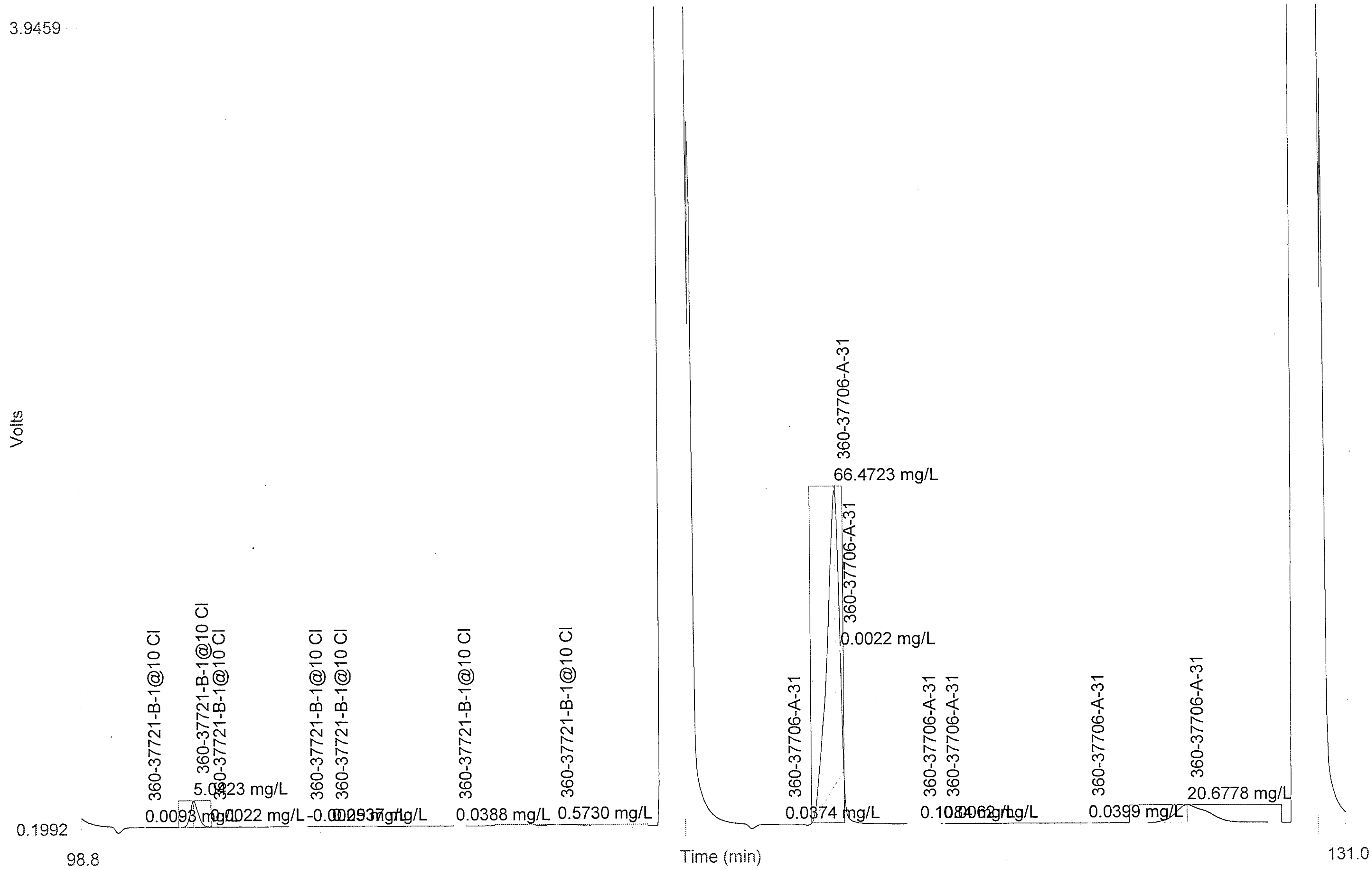
Channel 1 (Anions) : Set 3 of 27



Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 4 of 27

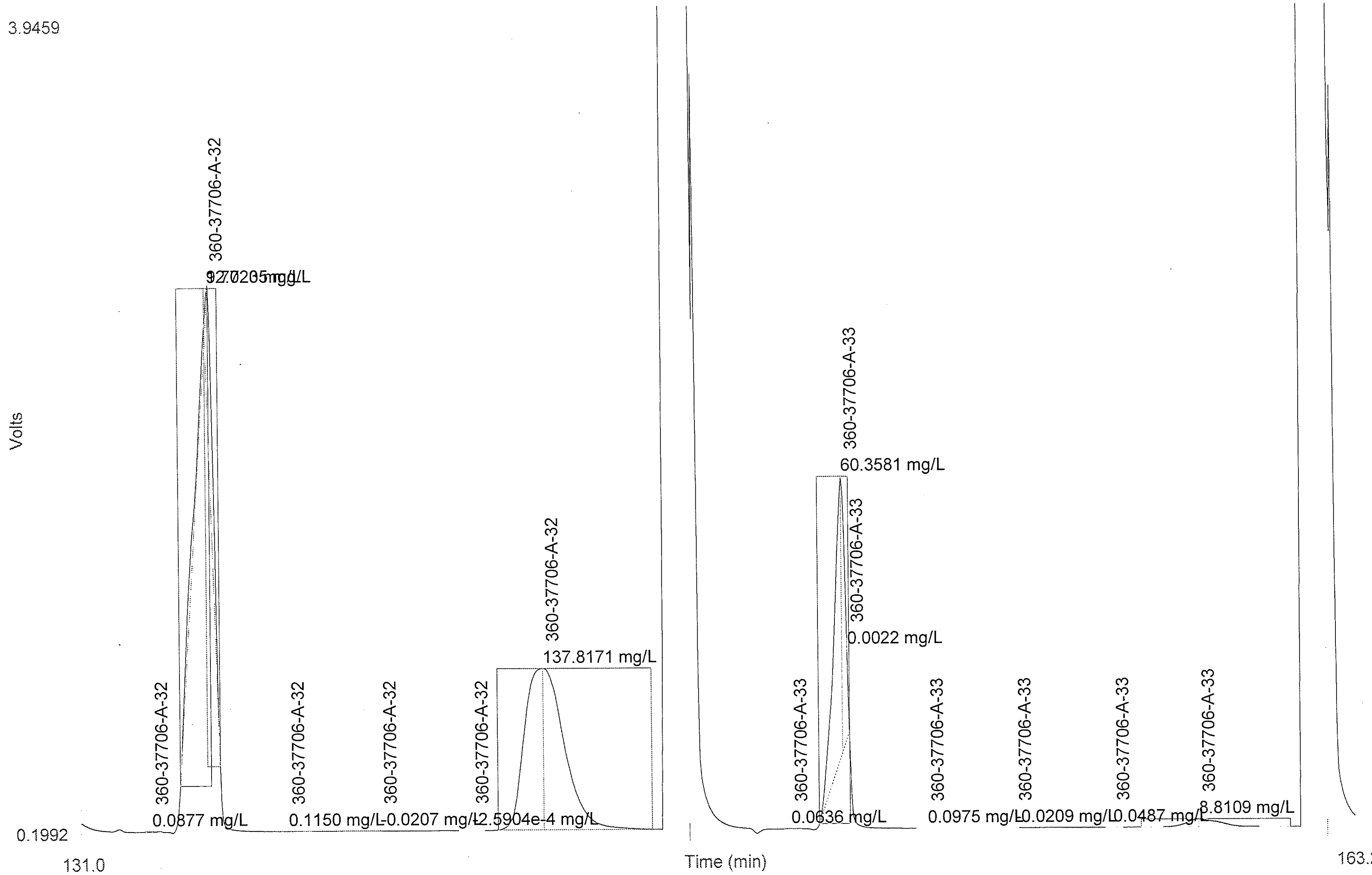


- 6 -

Author: EmerichR

Date : 12/5/2011

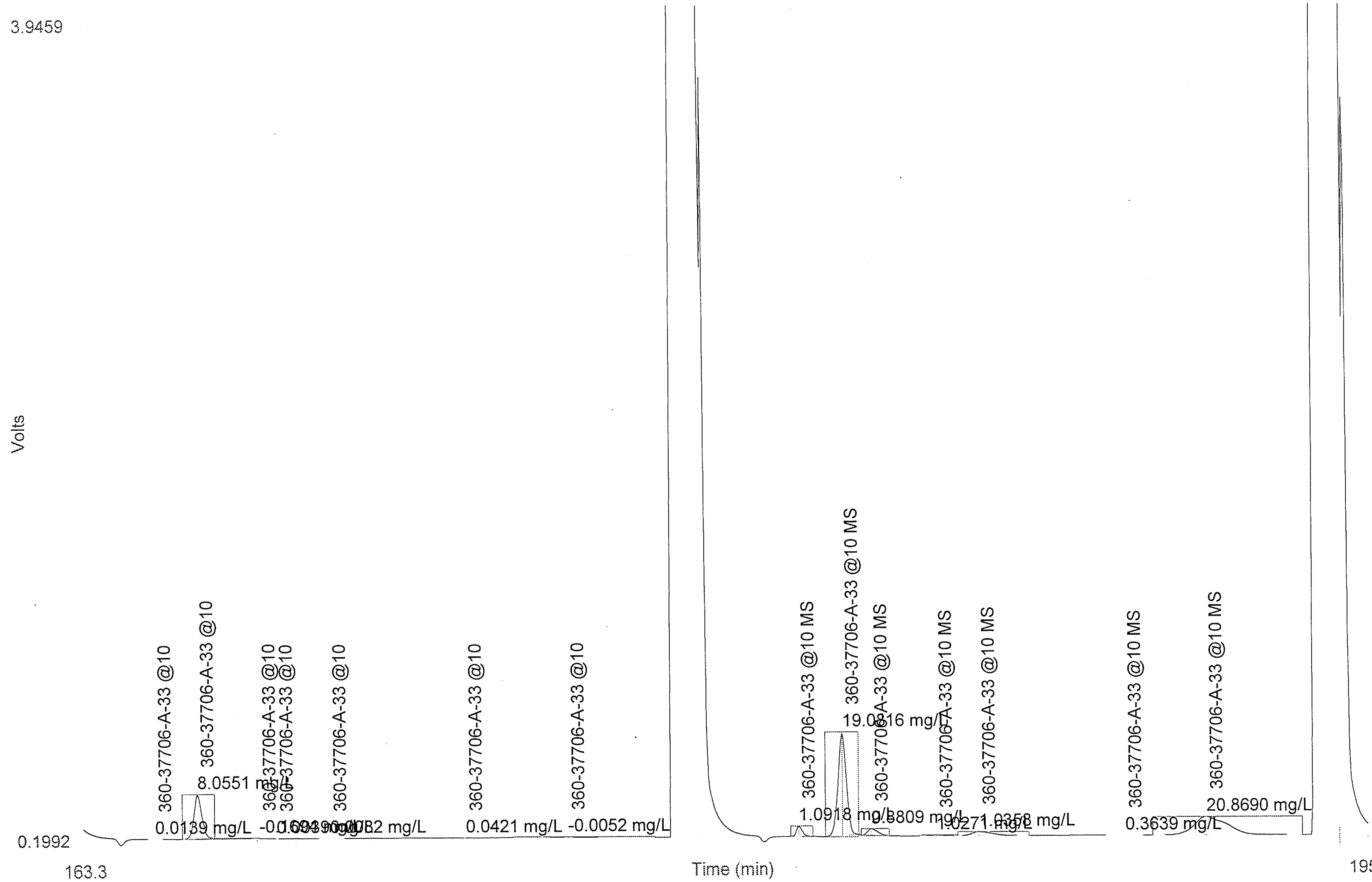
Channel 1 (Anions) : Set 5 of 27



Author: EmerichR

Date : 12/5/2011

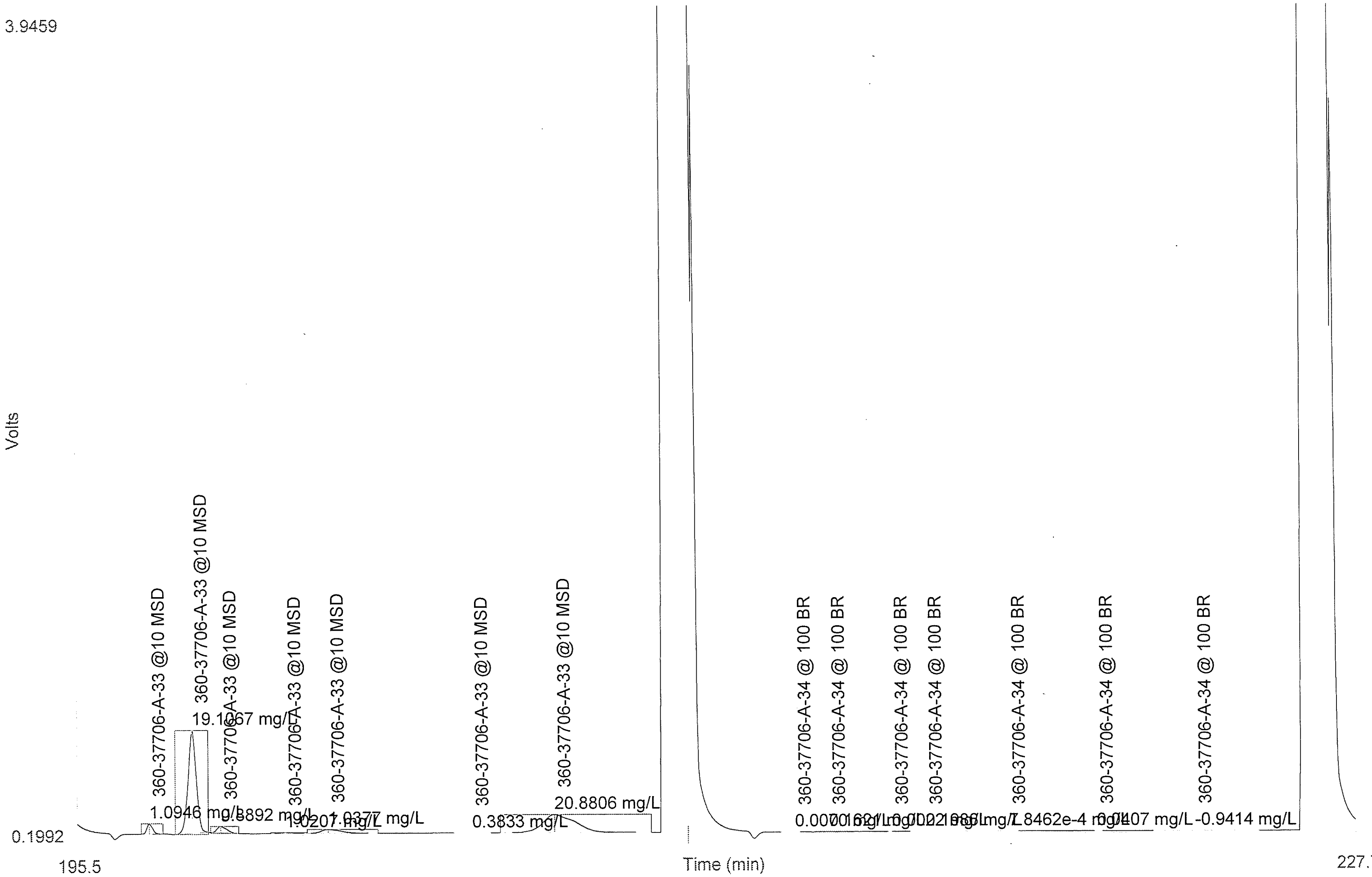
Channel 1 (Anions) : Set 6 of 27



Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 7 of 27

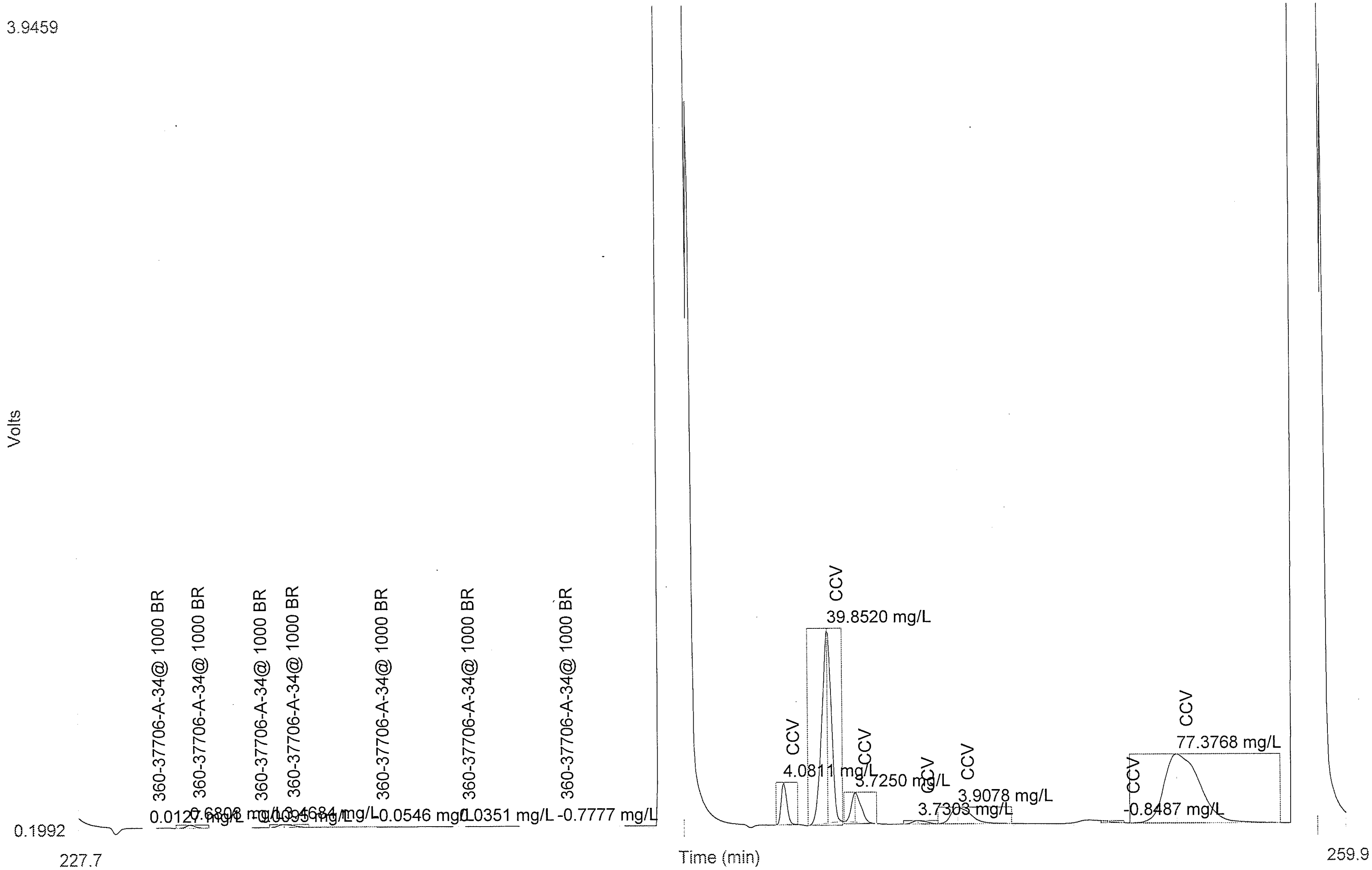


- 9 -

Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 8 of 27

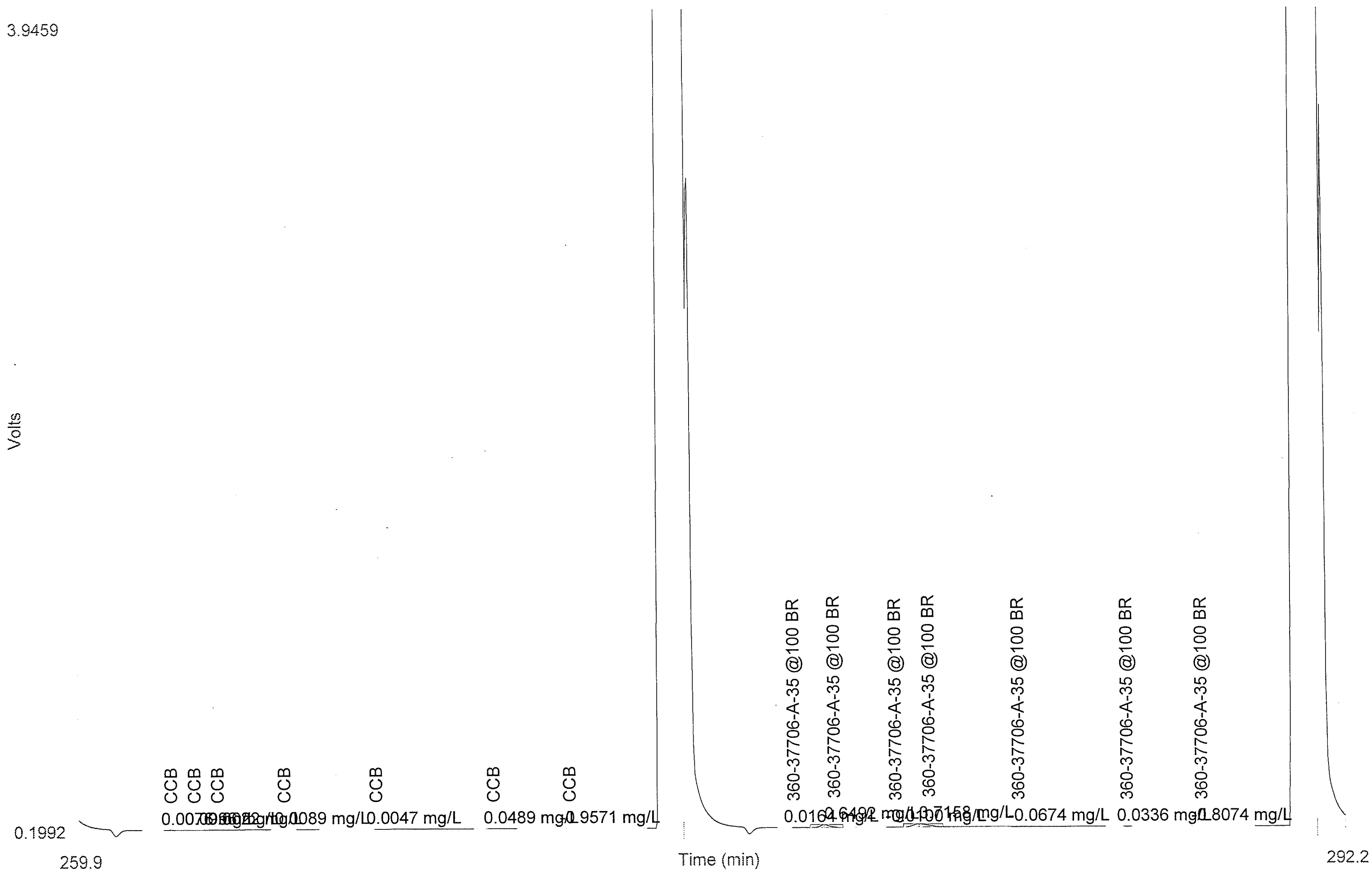


- 10 -

Author: EmerichR

Date : 12/5/2011

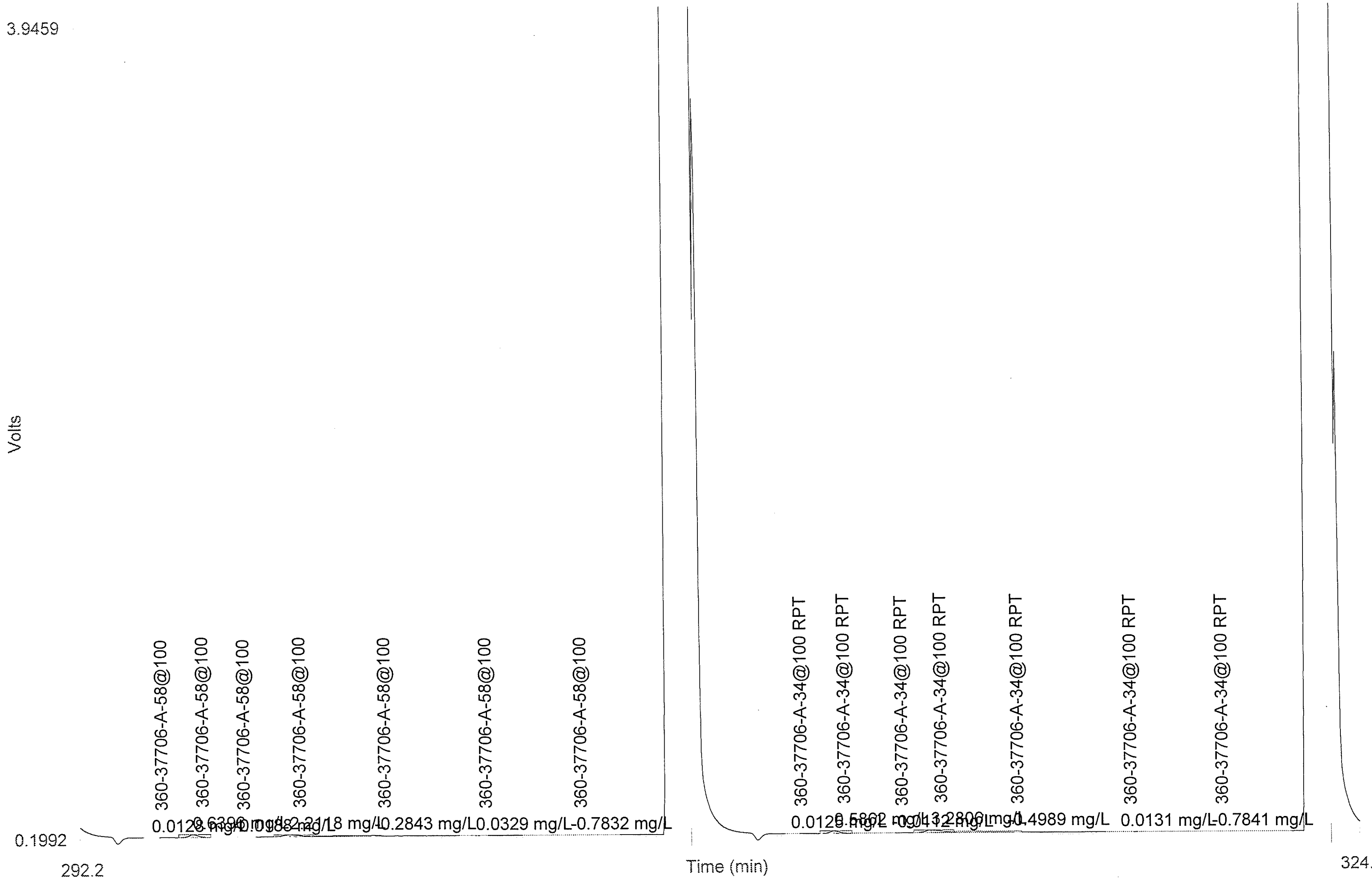
Channel 1 (Anions) : Set 9 of 27



Author: EmerichR

Date : 12/5/2011

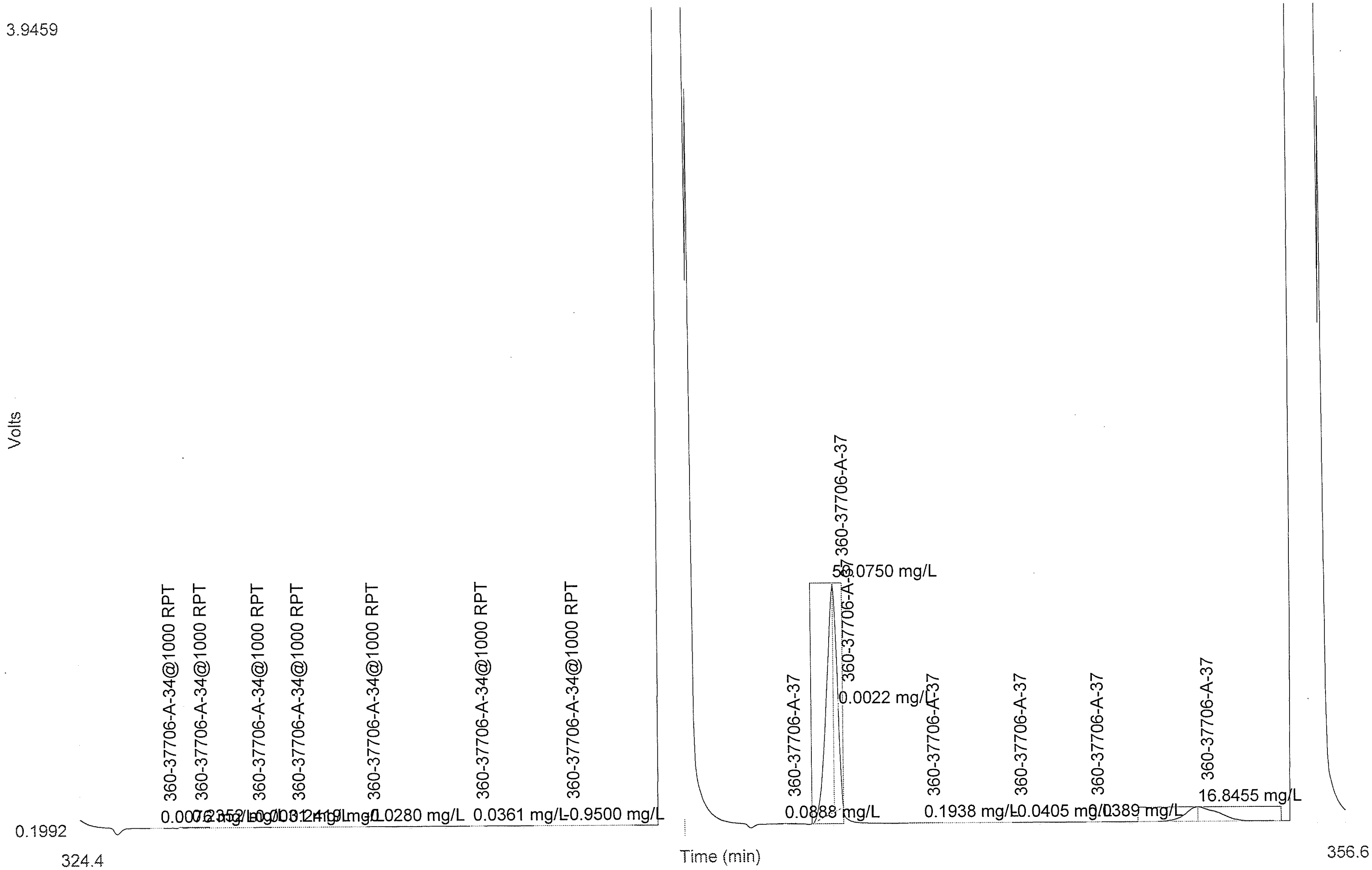
Channel 1 (Anions) : Set 10 of 27



Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 11 of 27

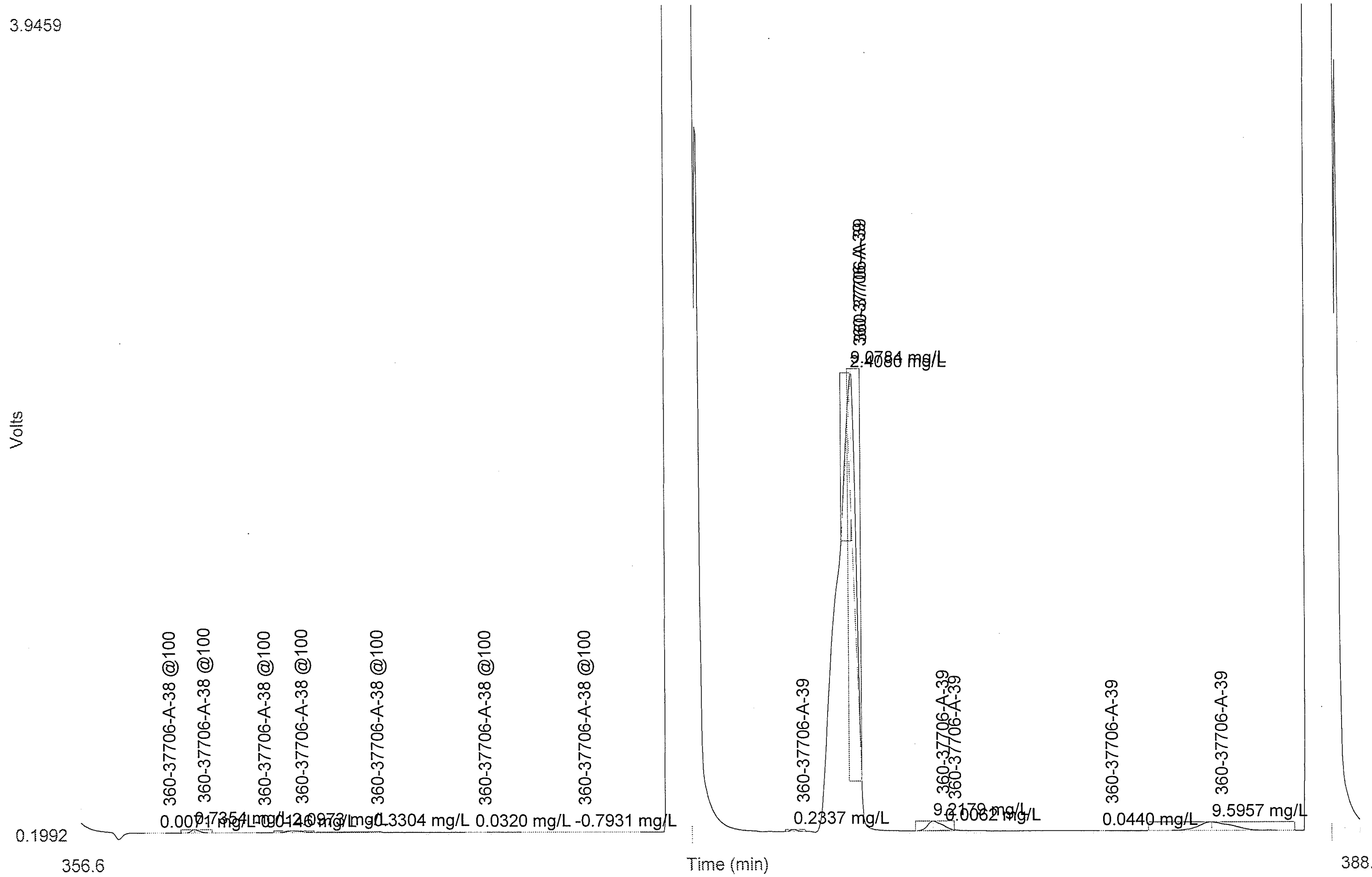


- 13 -

Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 12 of 27

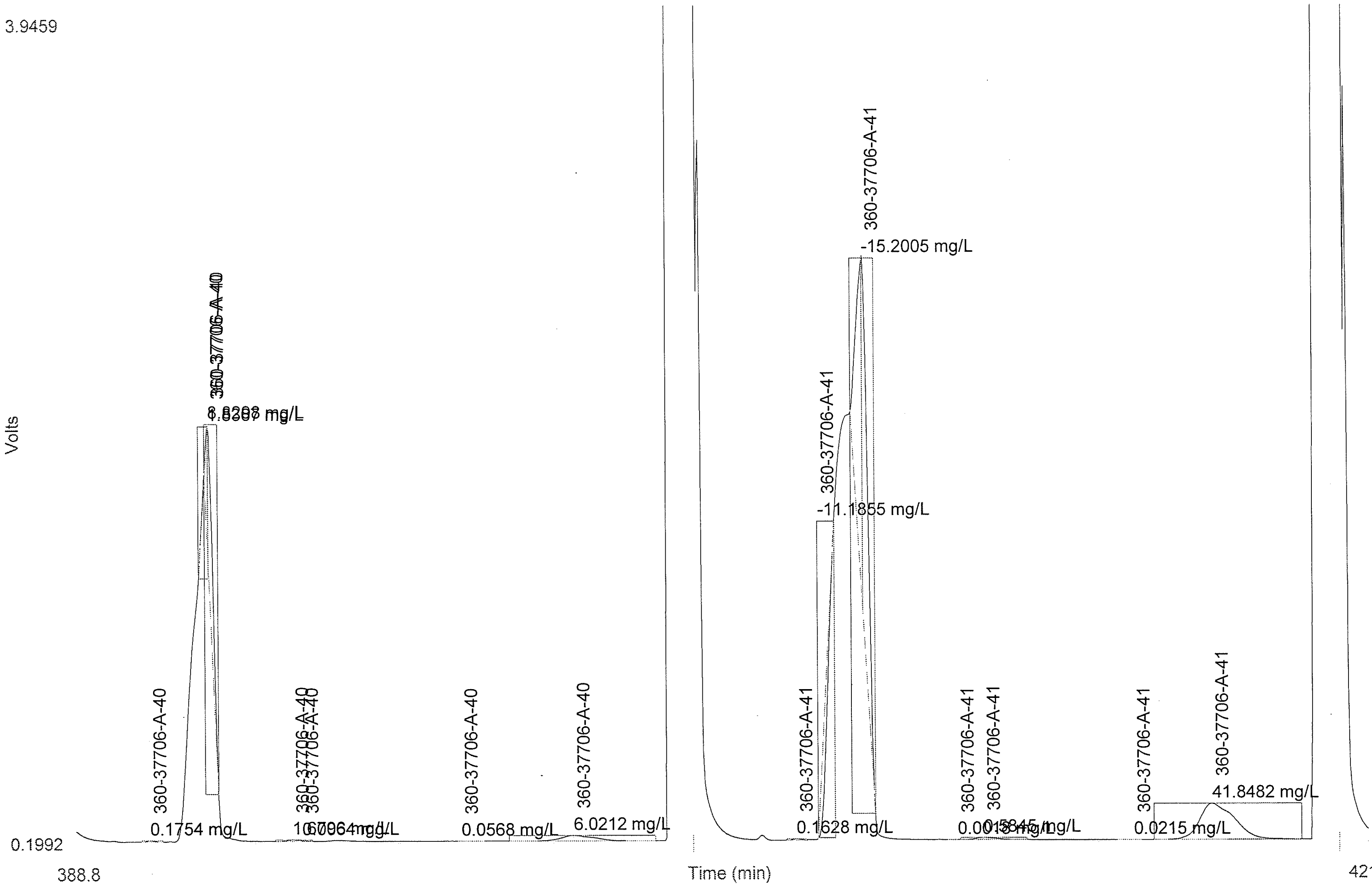


- 14 -

Author: EmerichR

Date : 12/5/2011

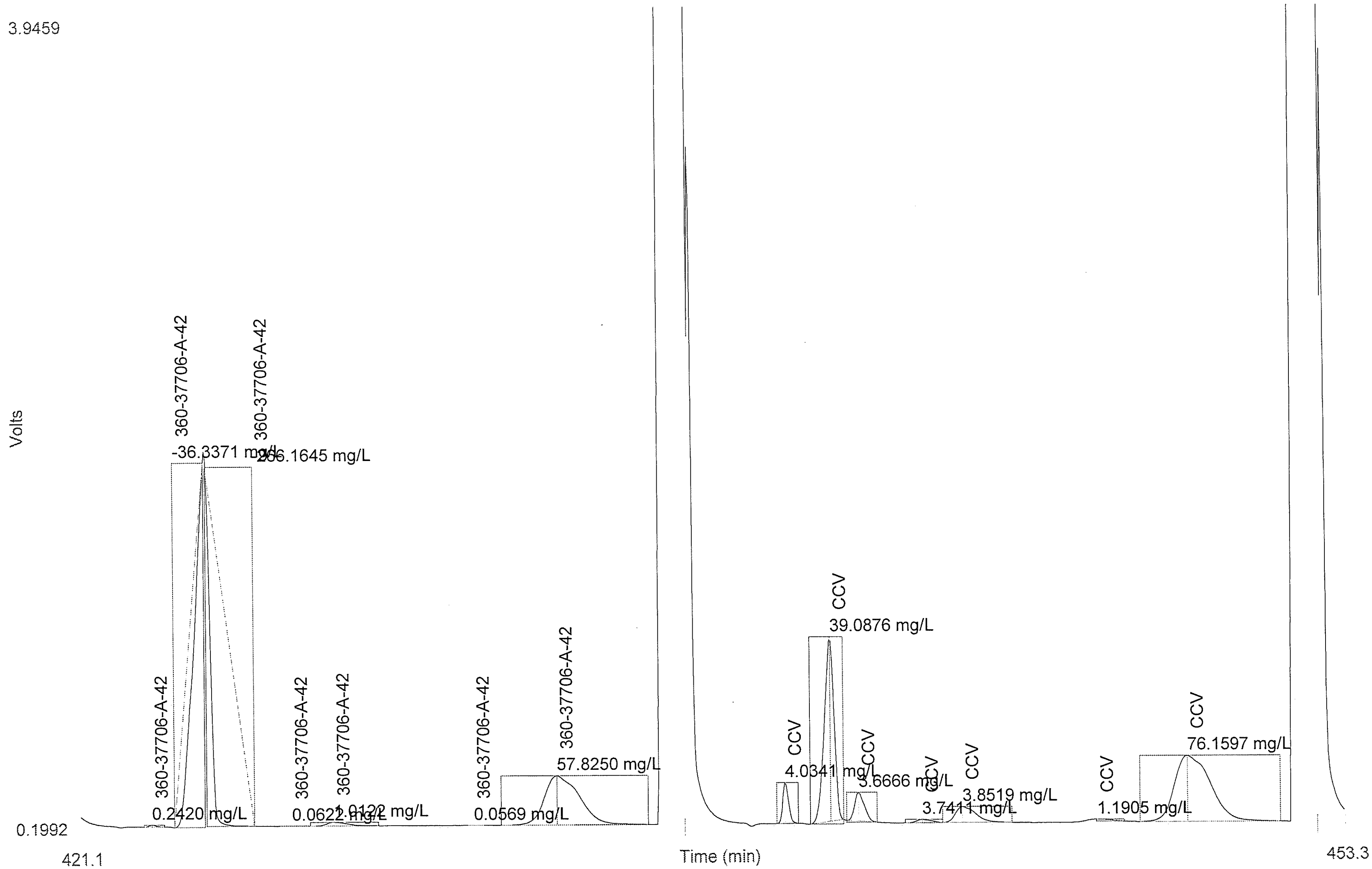
Channel 1 (Anions) : Set 13 of 27



Author: EmerichR

Date : 12/5/2011

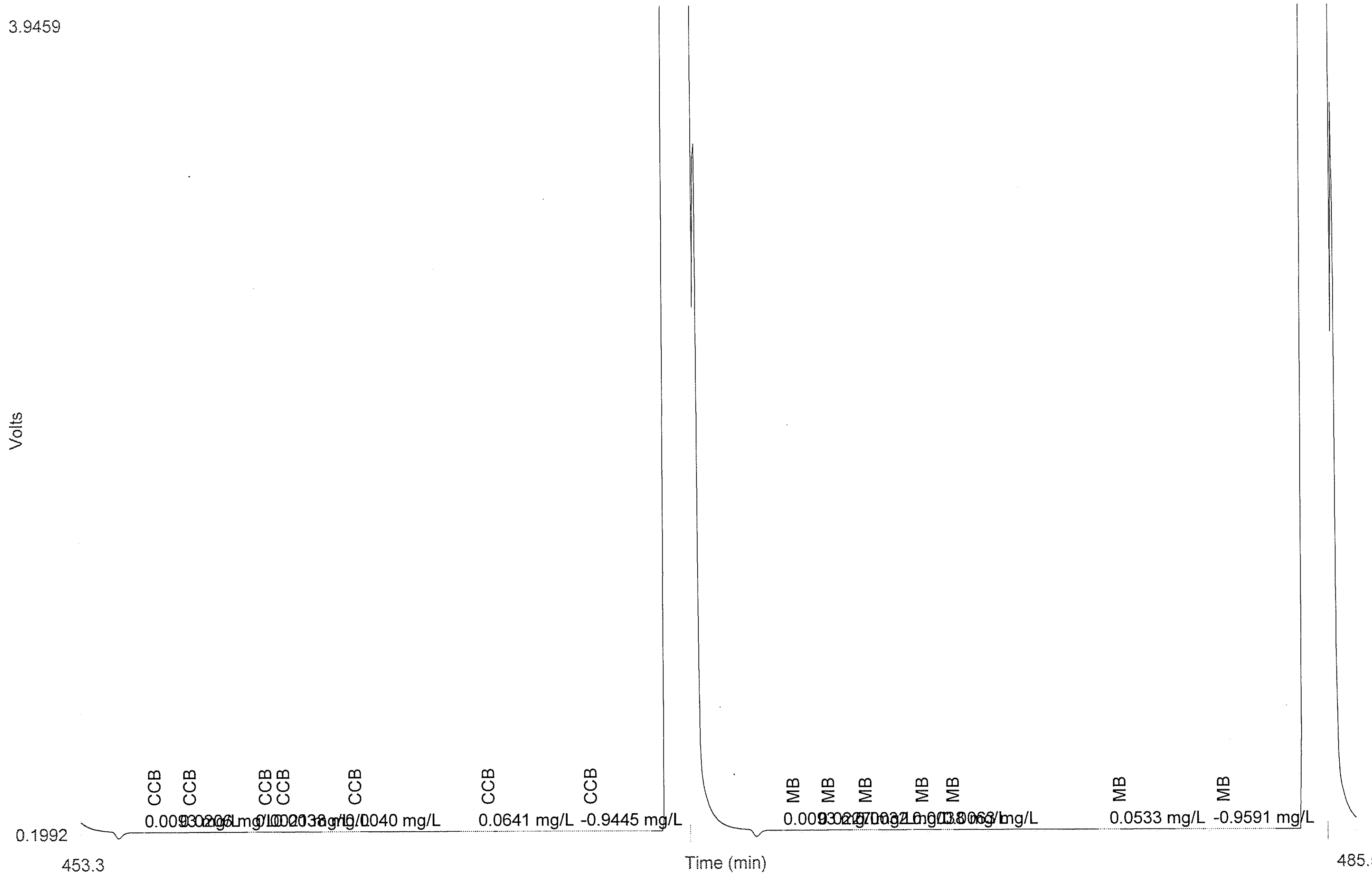
Channel 1 (Anions) : Set 14 of 27



Author: EmerichR

Date : 12/5/2011

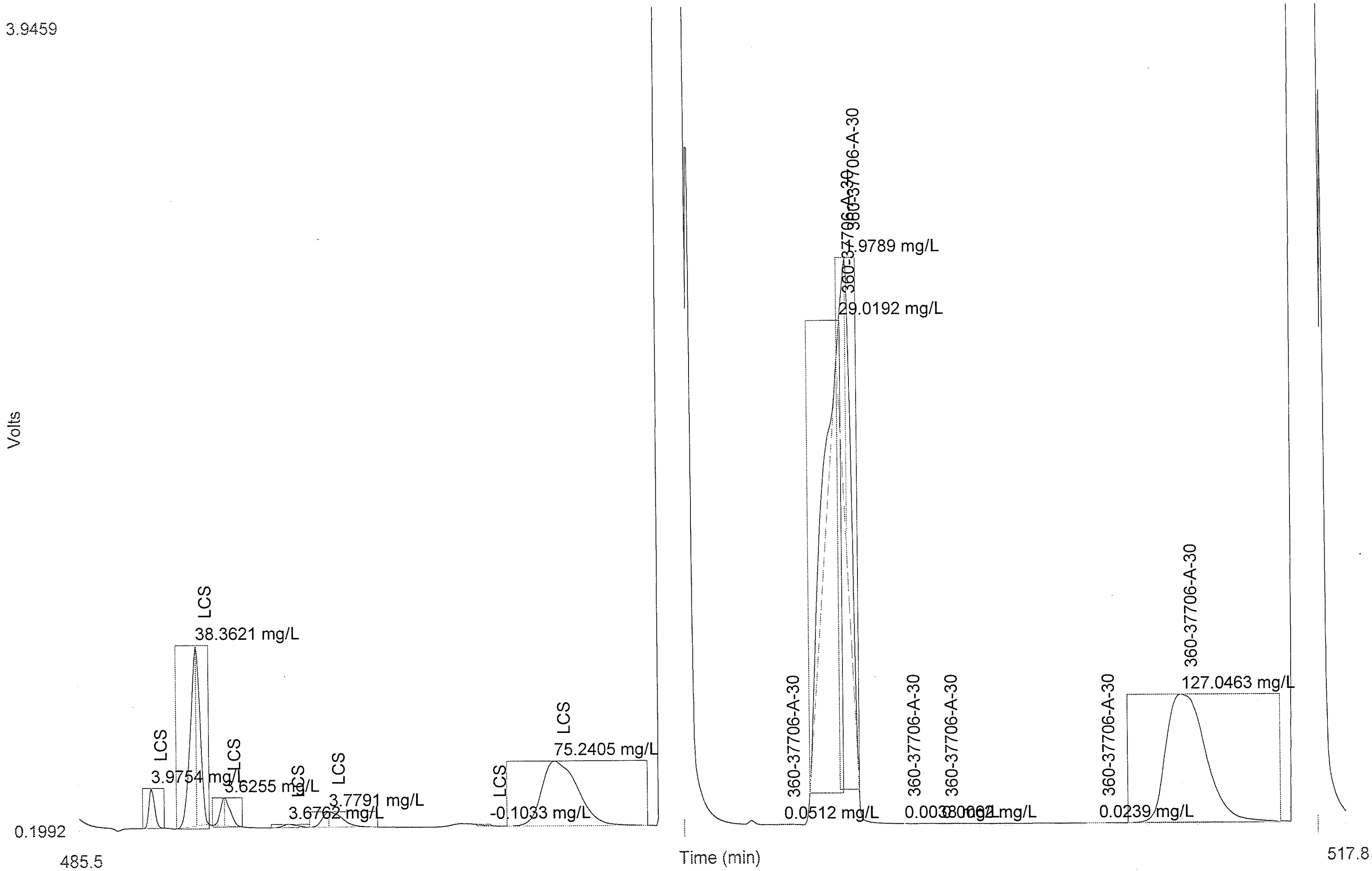
Channel 1 (Anions) : Set 15 of 27



Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 16 of 27

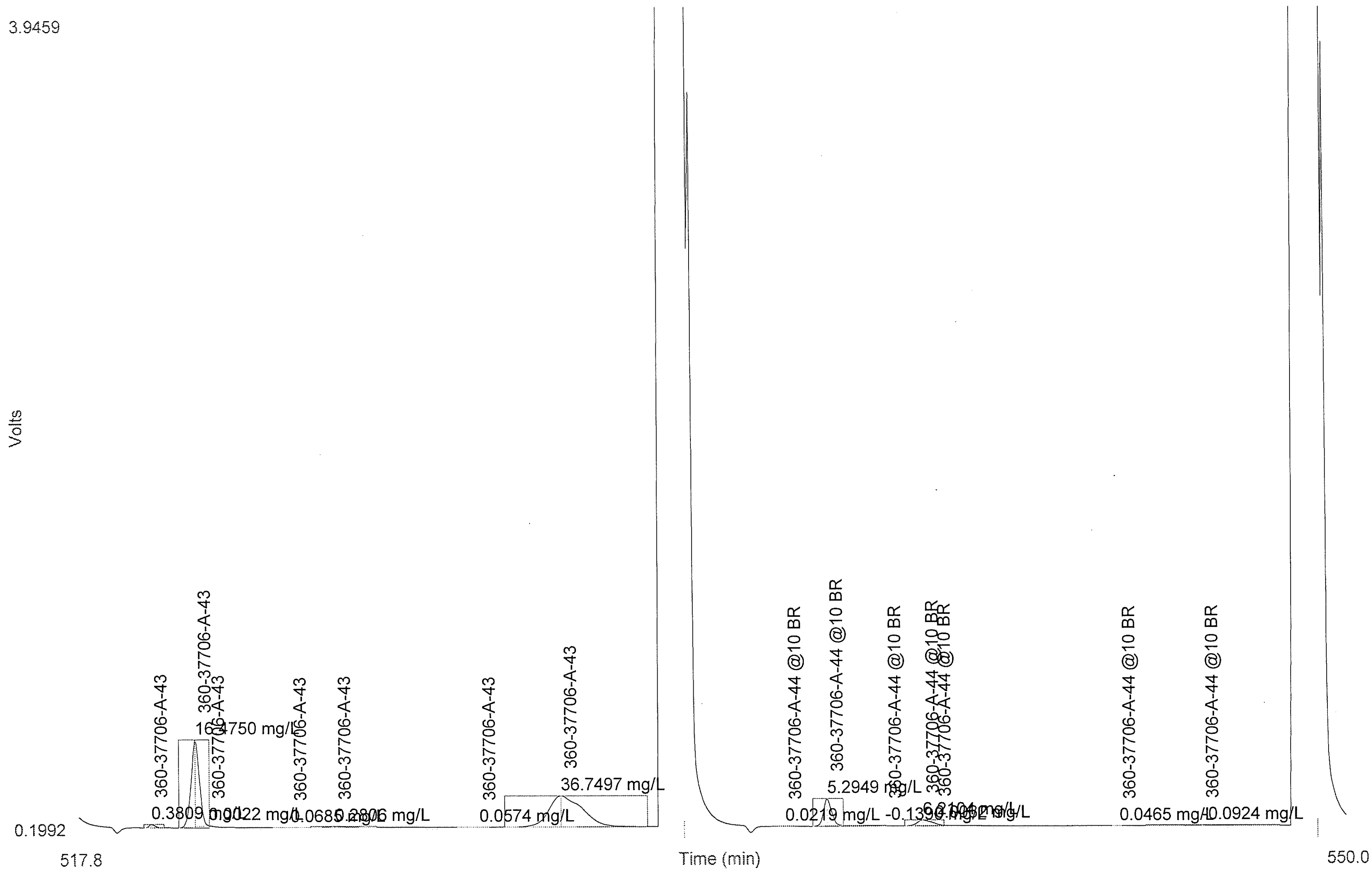


- 18 -

Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 17 of 27

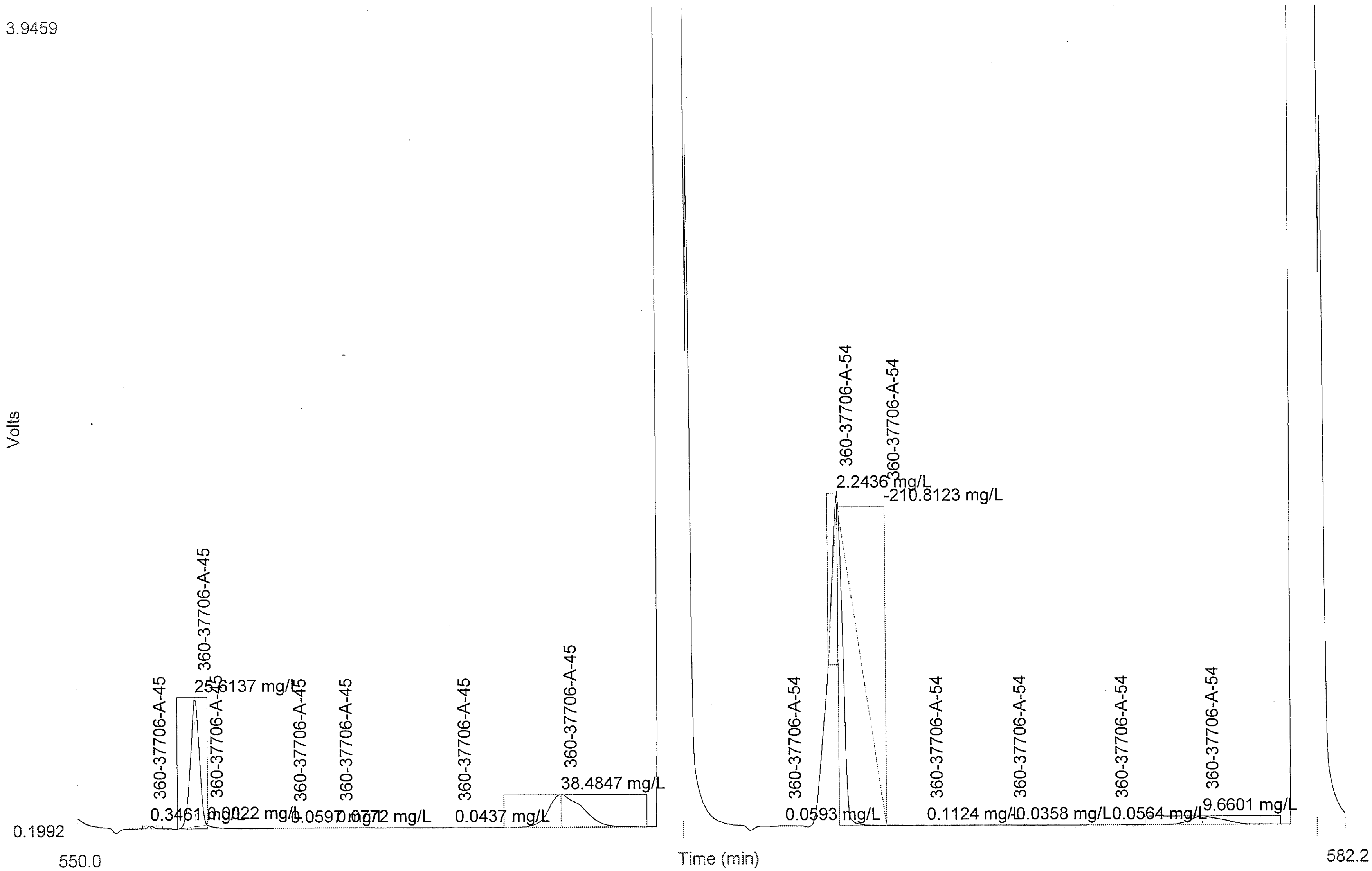


- 19 -

Author: EmerichR

Date : 12/5/2011

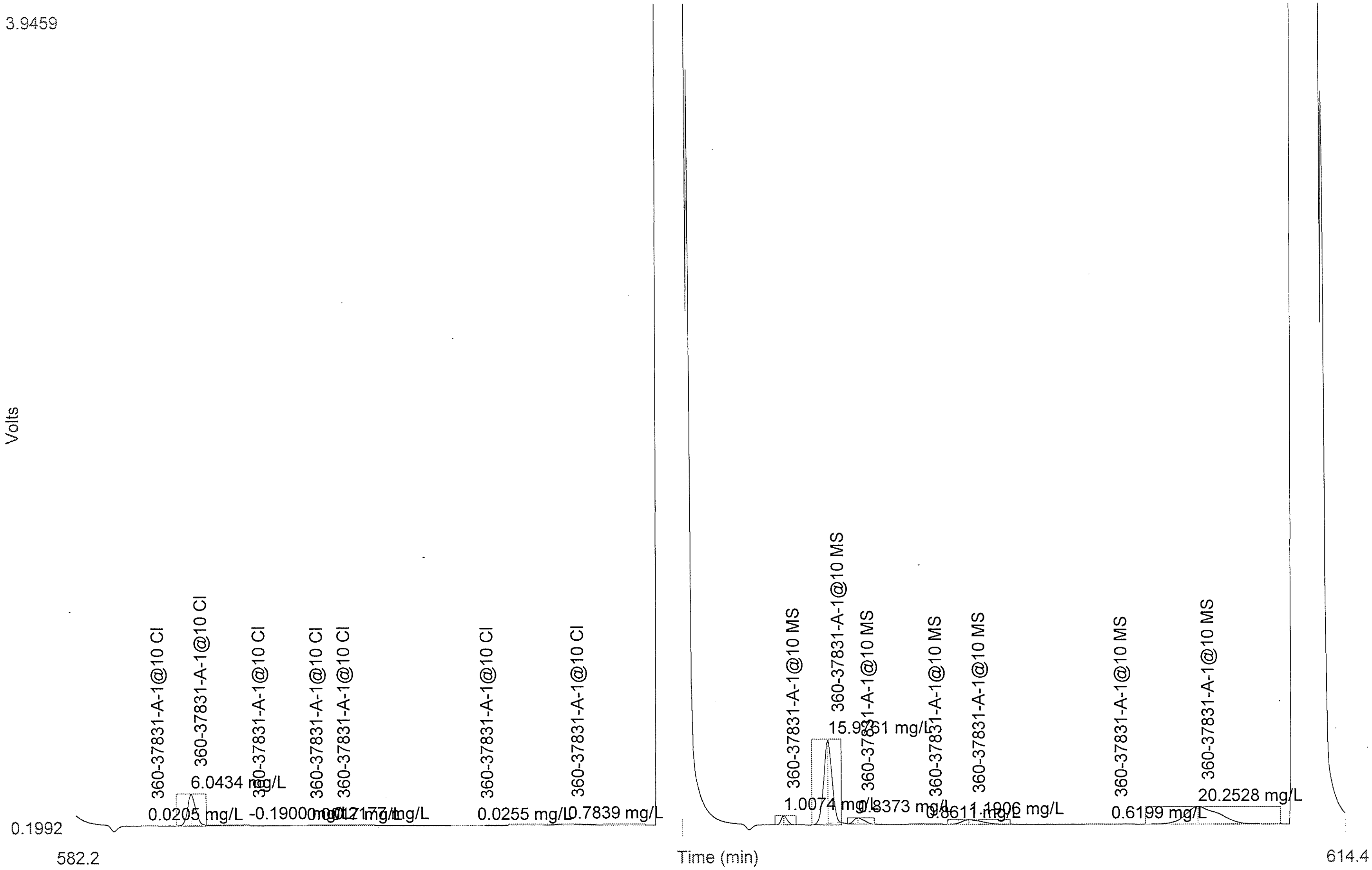
Channel 1 (Anions) : Set 18 of 27



Author: EmerichR

Date : 12/5/2011

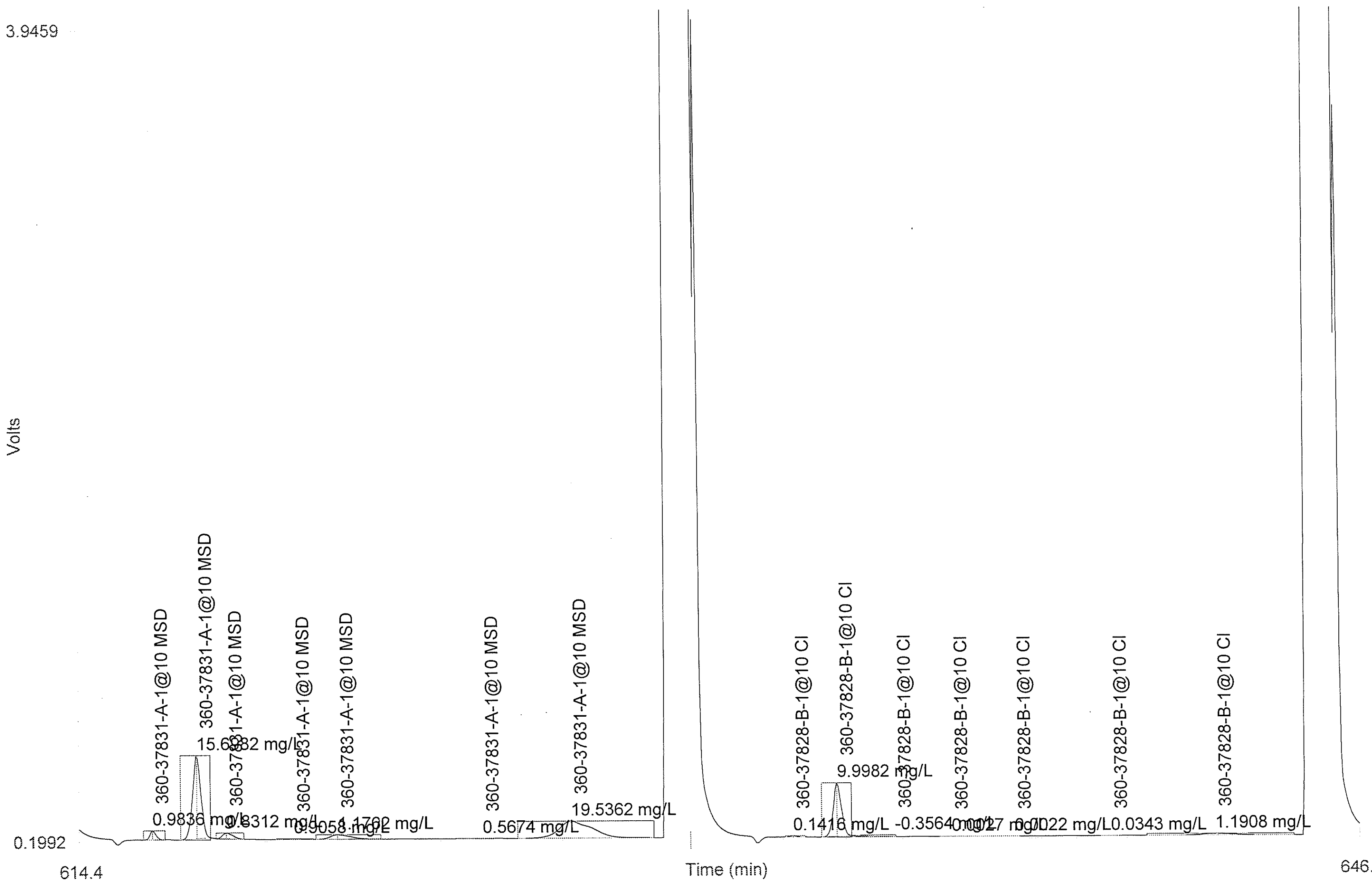
Channel 1 (Anions) : Set 19 of 27



Author: EmerichR

Date : 12/5/2011

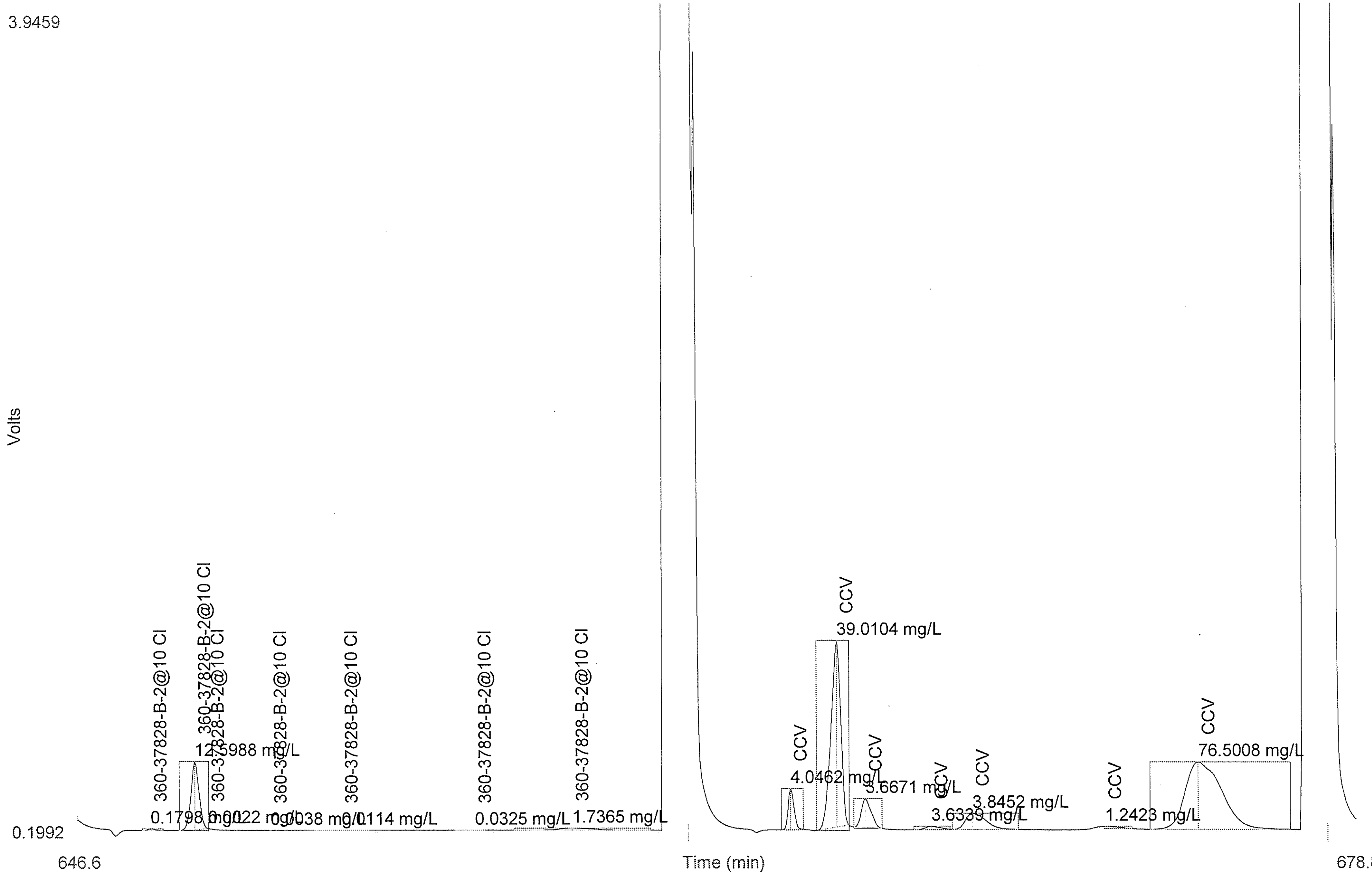
Channel 1 (Anions) : Set 20 of 27



Author: EmerichR

Date : 12/5/2011

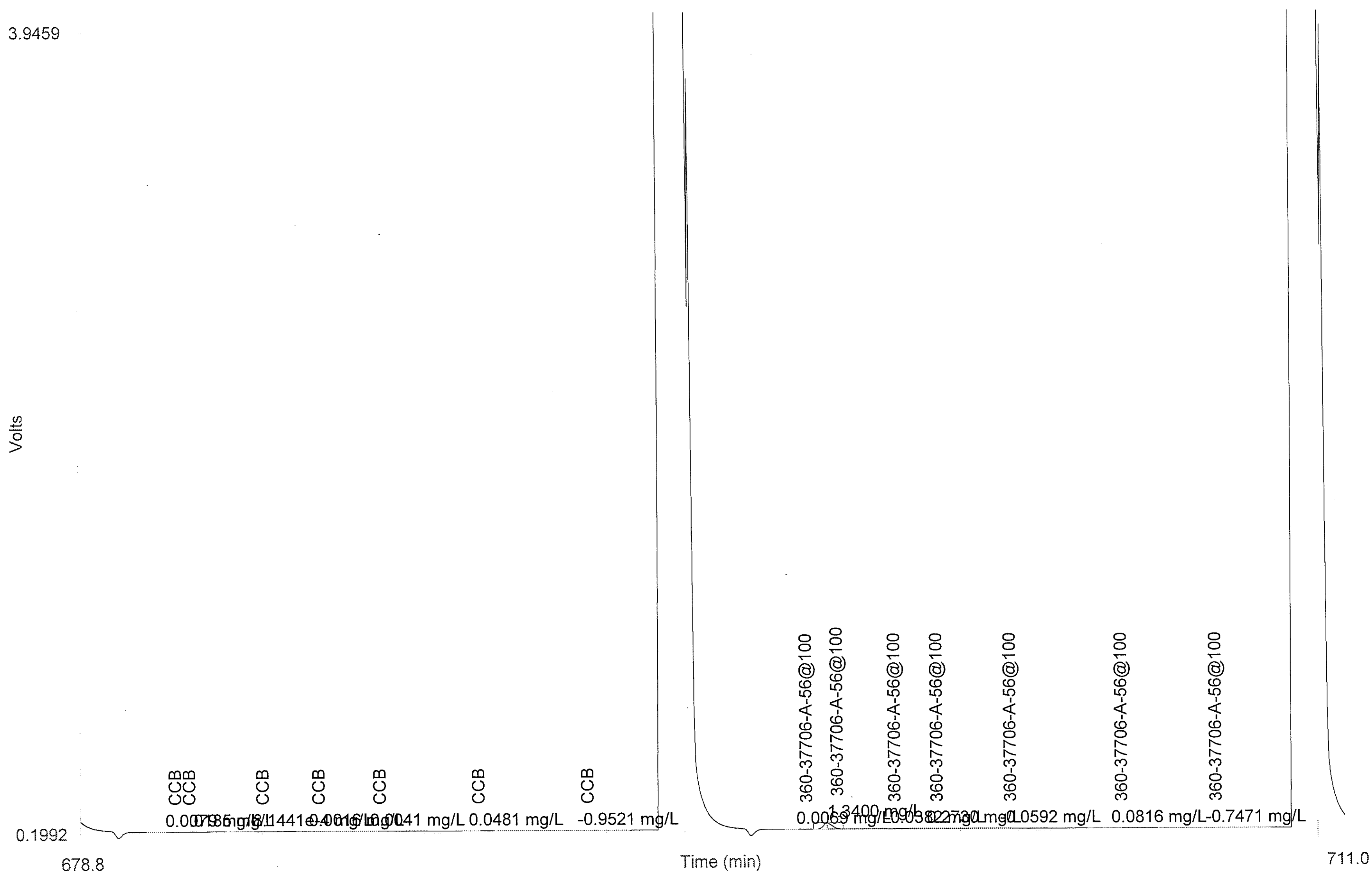
Channel 1 (Anions) : Set 21 of 27



Author: EmerichR

Date : 12/5/2011

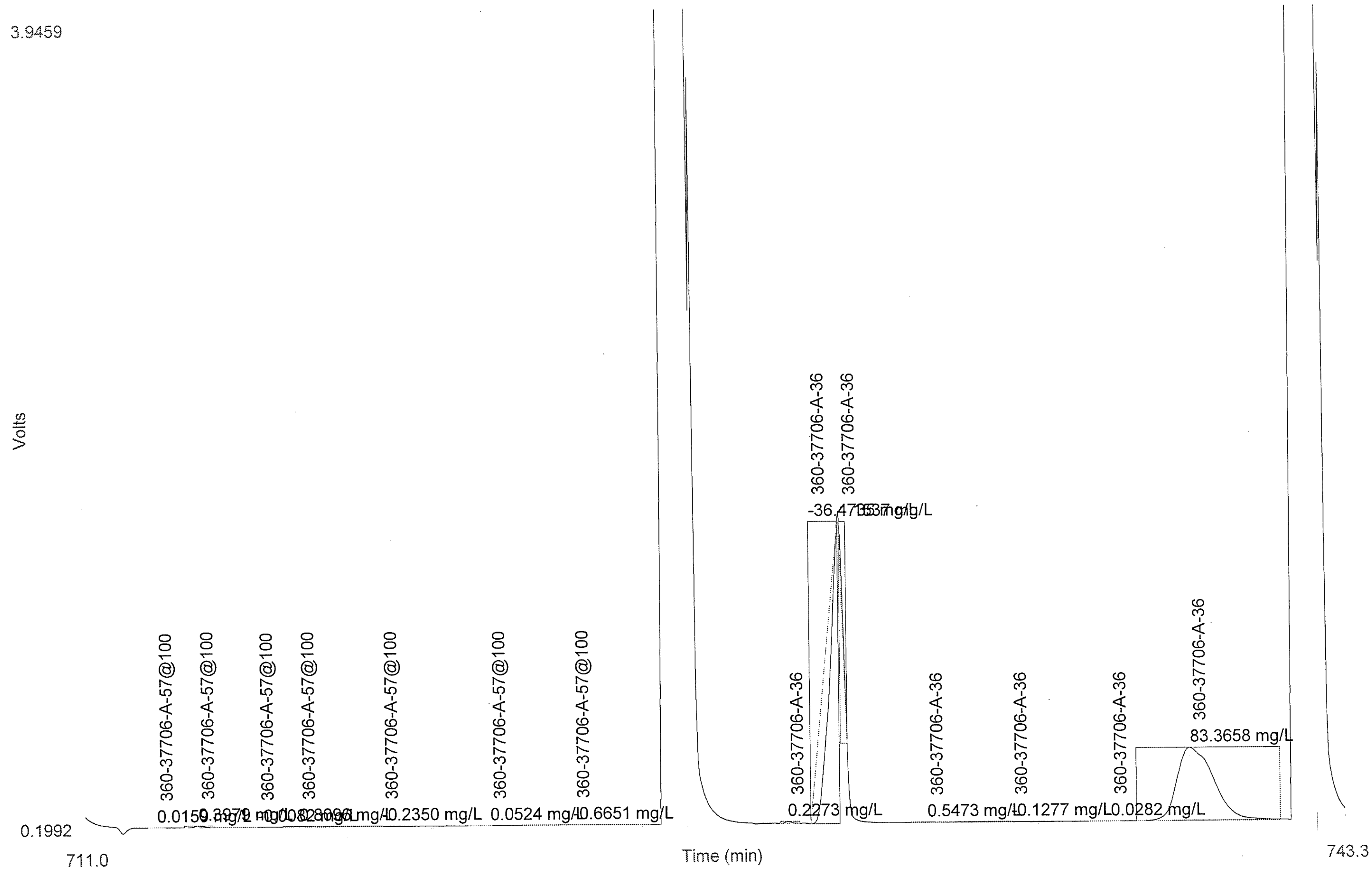
Channel 1 (Anions) : Set 22 of 27



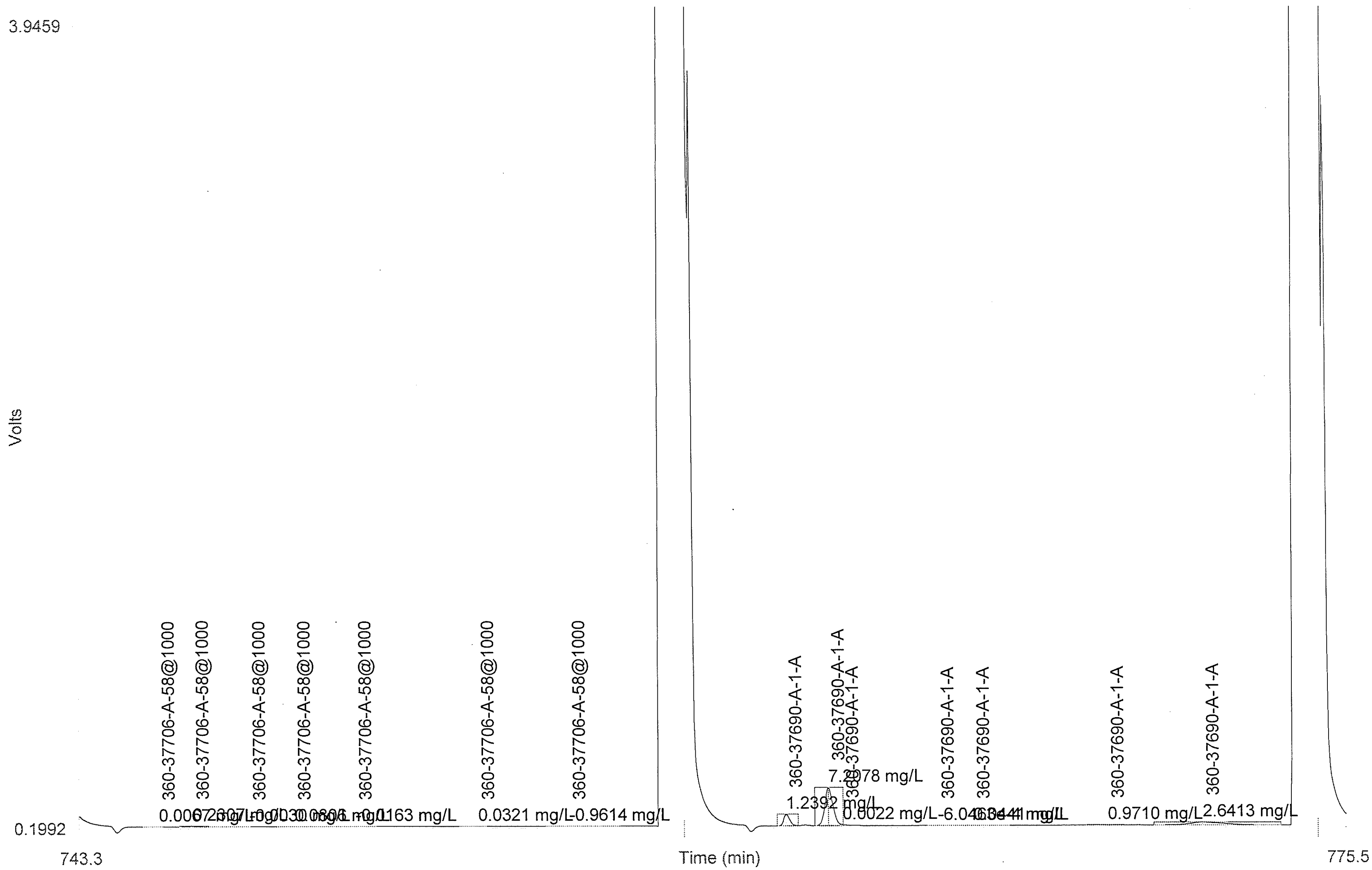
Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 23 of 27



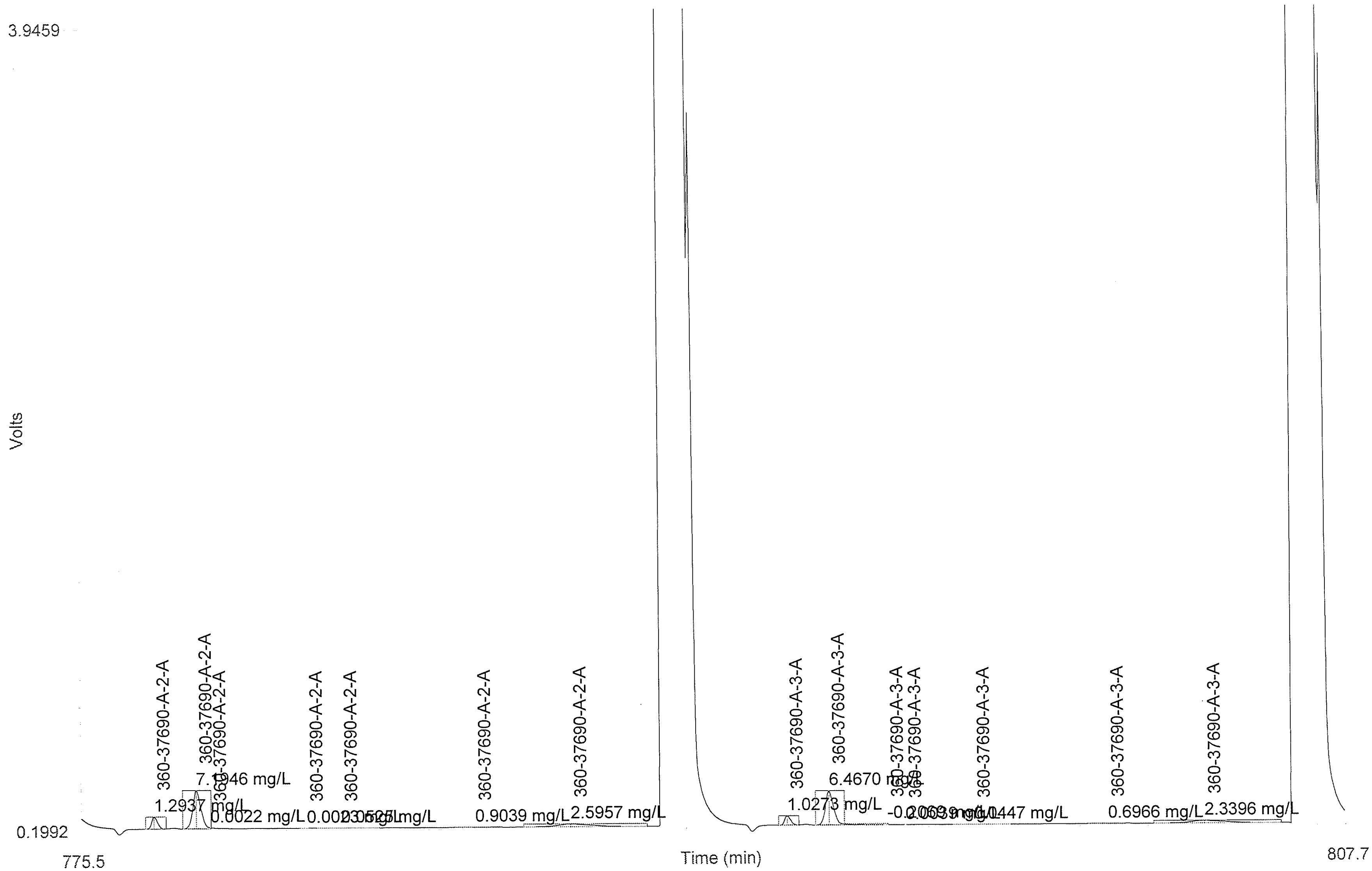
Channel 1 (Anions) : Set 24 of 27



Author: EmerichR

Date : 12/5/2011

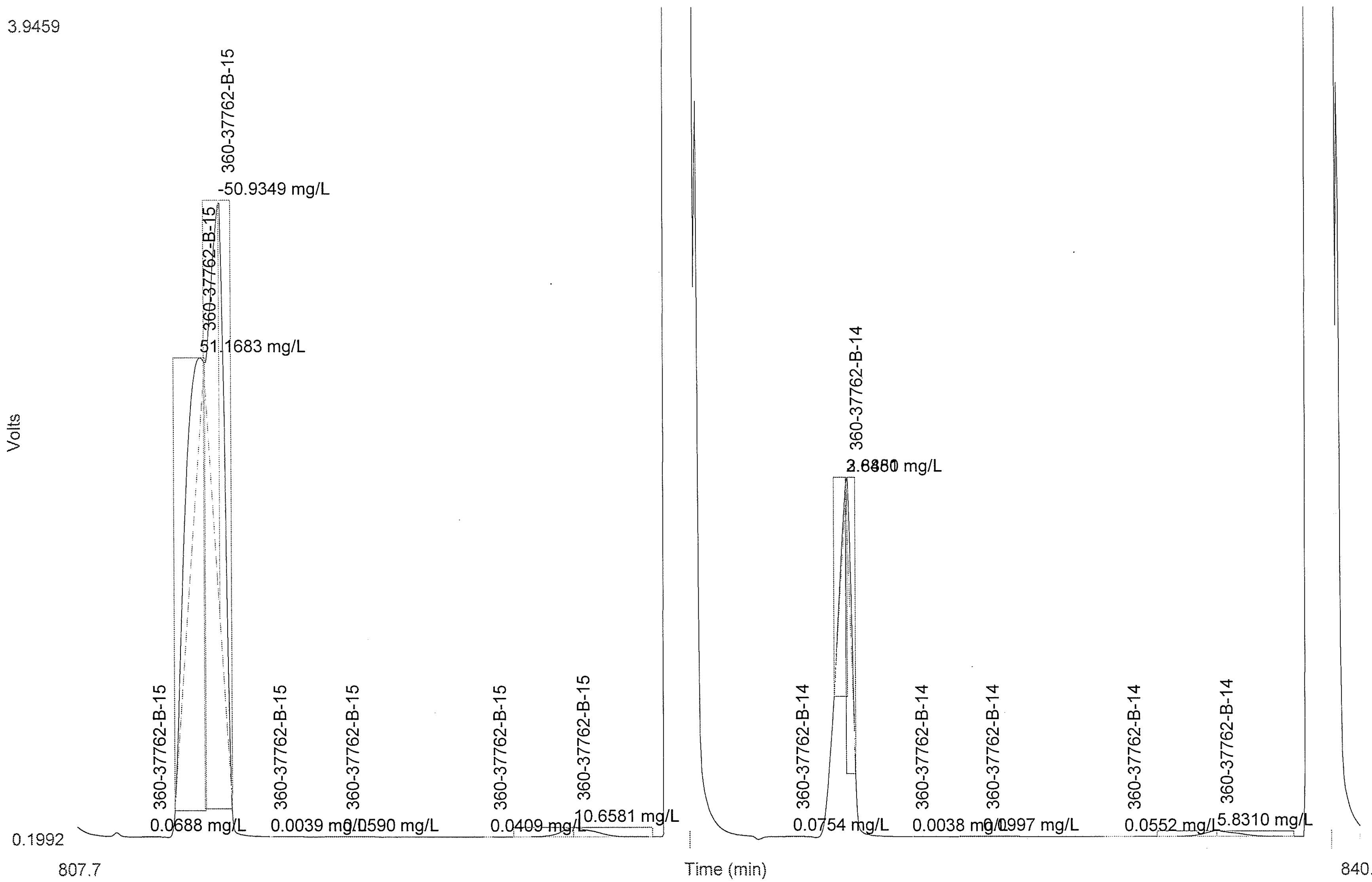
Channel 1 (Anions) : Set 25 of 27



Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 26 of 27



- 28 -

Author: EmerichR

Date : 12/5/2011

Channel 1 (Anions) : Set 27 of 27

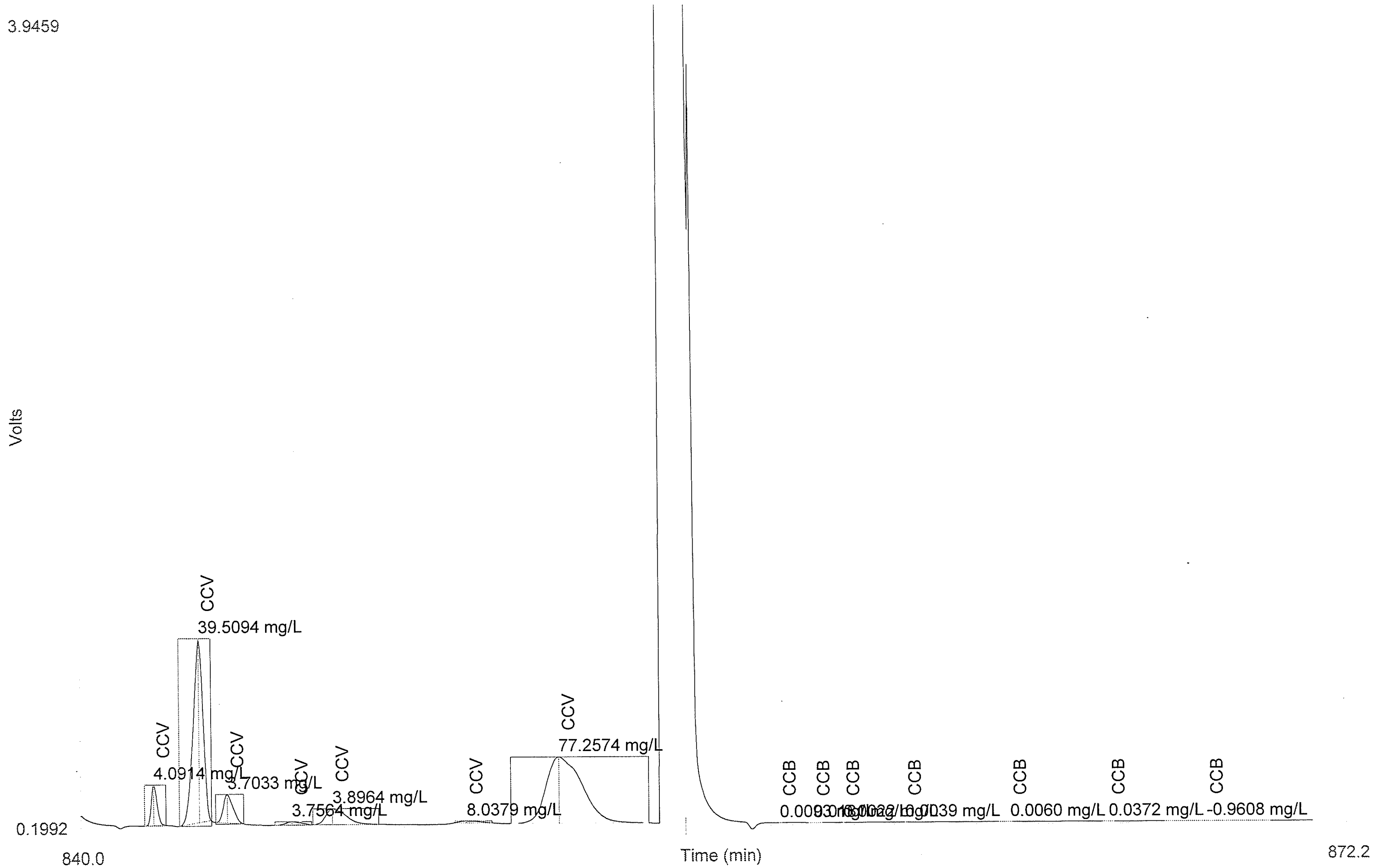
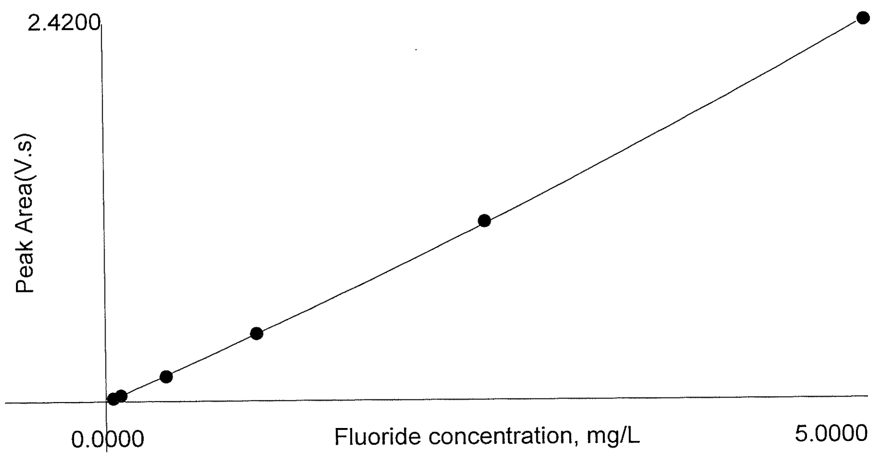


Table 1: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.4200	0.3882	0.3	11/15/2011	2:32:05 PM
2	2.5000	1	1.1432	0.1974	-1.3	11/15/2011	2:48:13 PM
3	1.0000	1	0.4295	0.0734	0.0	11/15/2011	3:04:20 PM
4	0.4000	1	0.1585	0.0271	4.9	11/15/2011	3:20:28 PM
5	0.1000	1	0.0379	0.0065	1.9	11/15/2011	3:36:35 PM
6	0.0500	1	0.0187	0.0032	-6.6	11/15/2011	3:52:42 PM

Figure 1: Fluoride



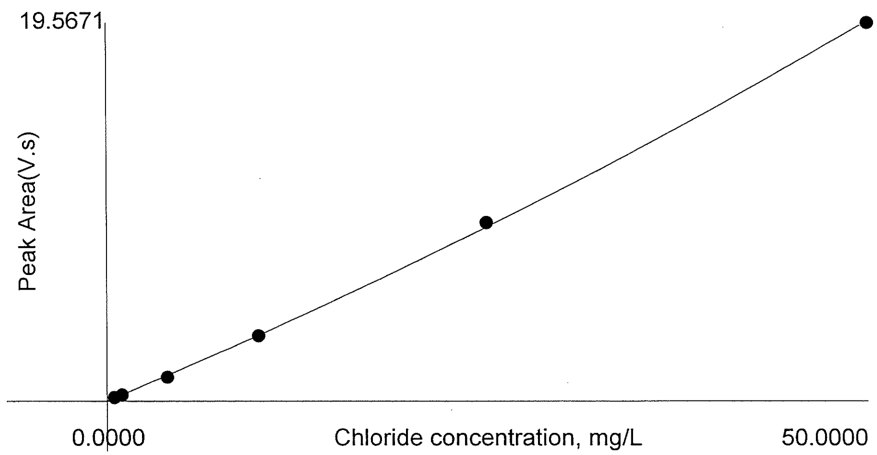
Area = 0.0132 * Conc^2 + 0.4199 * Conc - 0.0035
Conc = - 0.1211 * Area^2 + 2.3494 * Area + 0.0093
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 2: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	19.5671	1.3052	0.5	11/15/2011	2:32:05 PM
2	25.0000	1	9.2472	0.8077	-2.6	11/15/2011	2:48:13 PM
3	10.0000	1	3.3710	0.3697	1.0	11/15/2011	3:04:20 PM
4	4.0000	1	1.2235	0.1456	7.7	11/15/2011	3:20:28 PM
5	1.0000	1	0.3080	0.0351	4.1	11/15/2011	3:36:35 PM
6	0.5000	1	0.1732	0.0187	-11.1	11/15/2011	3:52:42 PM

Figure 2: Chloride



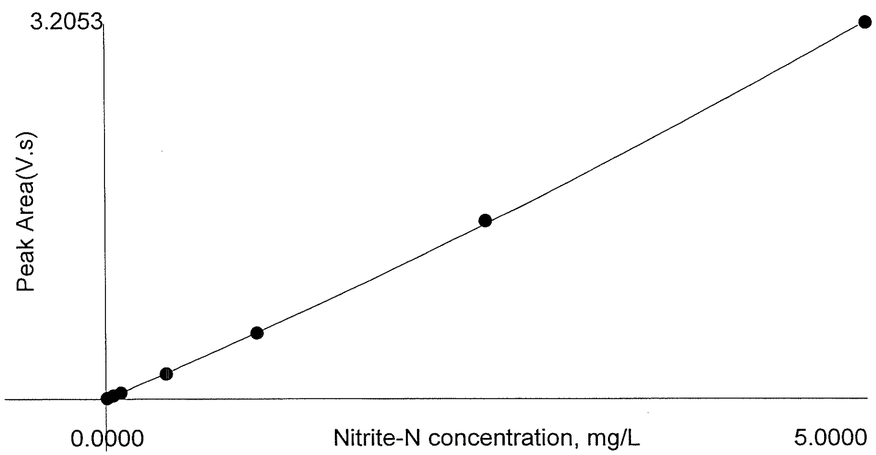
Area = 0.0013 * Conc^2 + 0.3283 * Conc - 0.0085
Conc = - 0.0226 * Area^2 + 2.9826 * Area + 0.0435
Correlation Coefficient (r) = 0.99997

1/x weighting

Table 3: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.2053	0.3249	0.4	11/15/2011	2:32:05 PM
2	2.5000	1	1.5145	0.1578	-1.9	11/15/2011	2:48:13 PM
3	1.0000	1	0.5600	0.0576	0.8	11/15/2011	3:04:20 PM
4	0.4000	1	0.2121	0.0216	3.8	11/15/2011	3:20:28 PM
5	0.1000	1	0.0502	0.0051	6.6	11/15/2011	3:36:35 PM
6	0.0500	1	0.0267	0.0026	-1.4	11/15/2011	3:52:42 PM
7	0.0100	1	0.0049	5.0658e-4	-10.2	11/15/2011	4:08:48 PM

Figure 3: Nitrite-N



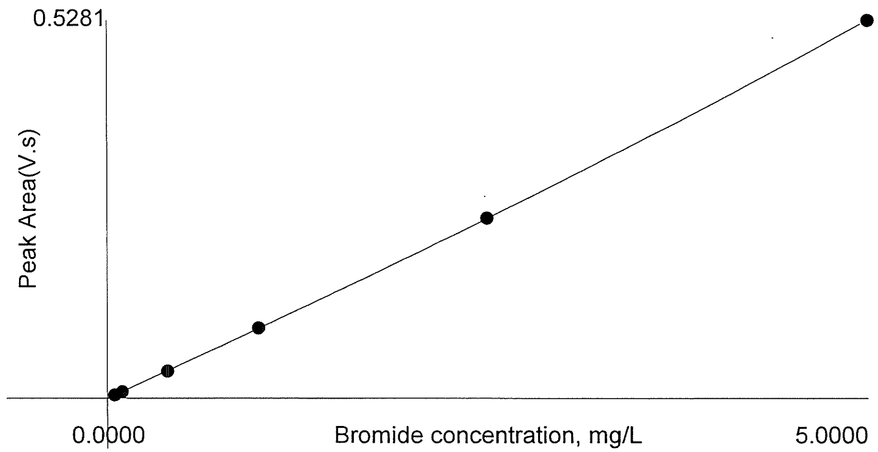
Area = 0.0195 * Conc^2 + 0.5461 * Conc - 0.0010
Conc = - 0.0787 * Area^2 + 1.8046 * Area + 0.0022
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 4: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.5281	0.0394	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	0.2527	0.0186	-0.2	11/15/2011	2:48:13 PM
3	1.0000	1	0.0981	0.0072	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.0379	0.0027	1.4	11/15/2011	3:20:28 PM
5	0.1000	1	0.0092	6.5877e-4	1.5	11/15/2011	3:36:35 PM
6	0.0500	1	0.0046	3.2836e-4	-2.5	11/15/2011	3:52:42 PM

Figure 4: Bromide



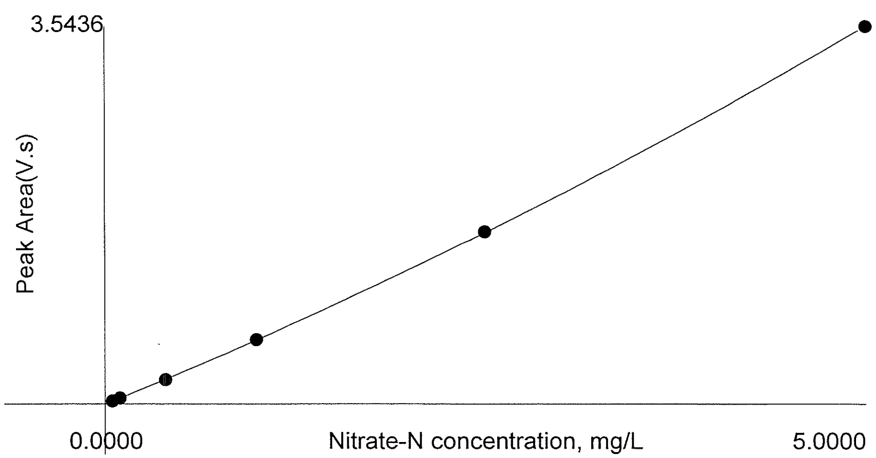
Area = 0.0019 * Conc^2 + 0.0962 * Conc - 3.2483e-4
Conc = - 1.6748 * Area^2 + 10.3373 * Area + 0.0038
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 5: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.5436	0.1988	0.1	11/15/2011	2:32:05 PM
2	2.5000	1	1.6106	0.0905	-0.5	11/15/2011	2:48:13 PM
3	1.0000	1	0.6005	0.0330	-0.3	11/15/2011	3:04:20 PM
4	0.4000	1	0.2256	0.0121	2.5	11/15/2011	3:20:28 PM
5	0.1000	1	0.0531	0.0028	3.8	11/15/2011	3:36:35 PM
6	0.0500	1	0.0279	0.0014	-5.9	11/15/2011	3:52:42 PM

Figure 5: Nitrate-N



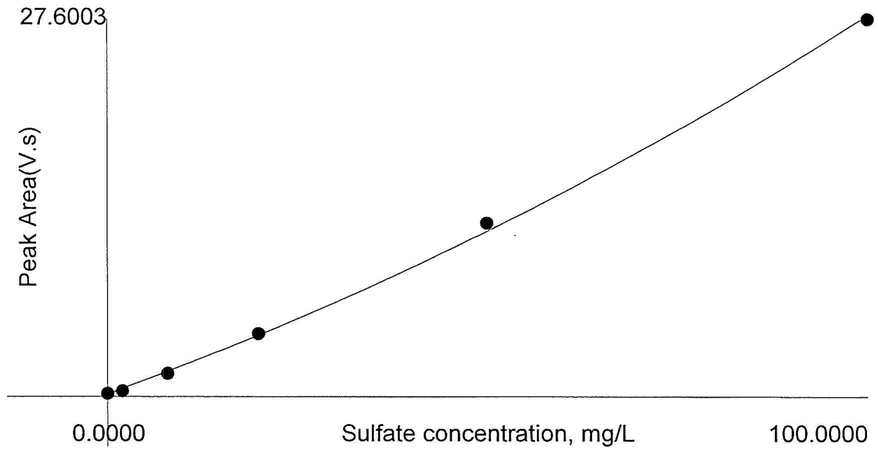
Area = 0.0273 * Conc^2 + 0.5736 * Conc - 0.0024
Conc = - 0.0824 * Area^2 + 1.6983 * Area + 0.0062
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 6: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	27.6003	0.8536	1.1	11/15/2011	2:32:05 PM
2	50.0000	1	12.7130	0.4540	-4.9	11/15/2011	2:48:13 PM
3	20.0000	1	4.5871	0.1729	-1.7	11/15/2011	3:04:20 PM
4	8.0000	1	1.6836	0.0620	9.3	11/15/2011	3:20:28 PM
5	2.0000	1	0.4027	0.0145	34.3	11/15/2011	3:36:35 PM
6	0.0500	1	0.2270	0.0081	-2.6	11/15/2011	3:52:42 PM

Figure 6: Sulfate



Area = 7.7408e-4 * Conc^2 + 0.1994 * Conc + 0.2113
Conc = - 0.0392 * Area^2 + 4.7046 * Area - 0.9825
Correlation Coefficient (r) = 0.99999

1/x weighting

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review Coversheet—Inorganics Dept

Method Name: IC Method Reference: 300.0 28D Date of Analytical Run: 12/5/11

Primary Reviewer's Initials & Date: AMS 12/6/11 Secondary Reviewer's Initials & Date: [illegible]

Batch Numbers	84353				

QC Criteria—Non-MCP: ICV/CCV ±10%: LCS/LCSD ±15%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%

QC Criteria—MCP/RCP: (9012 and 7196 only)
9012 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
9012 (soil): ICV/CCV ±15%: LCS/LCSD **: MS/MSD ±25%: ICB/MB/CCB <RL: MD RPD 35%: MSD/LCSD RPD ≤30%
7196 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
7196 (soil): ICV/CCV ±15%: LCS/LCSD **: MSS/MSI ±25%: ICB/MB/CCB <RL: MD RPD ≤35%: LCSD RPD ≤30%

FAILURES OF QC FOR ANYTHING OTHER THAN MS, MSD or MD ARE GROUNDS FOR INVALIDATING THE BATCH.

Criteria for QC	Yes	No	n/a	Notes/Comments
Were the ICV and CCVs within acceptable limits for QC recovery?	✓			
Were the ICB and CCBs all <RL?	✓			
Were all MB and CCB results <RL for the analytes of interest?	✓			
Was there a CCV/CCB combination run after every 10 samples or less?	✓			
Was there an LCS run with every batch of 20 samples or less?	✓			
Was there a MD, LCSD or MSD run with every batch of 20 samples or less?	✓			
Were all LCS/LCSD results within acceptable limits for QC recovery?	✓			
Were all MS/MSD results within acceptable limits for QC recovery?	✓			
Were all MD, LCSD and/or MSD %RPDs within acceptable limits for QC recovery?	✓			
Were the raw data points for investigative samples within the working curve range, or if not, were the samples diluted to bring them within this range?	✓			
IF there were any MCP/RCP samples in this batch, did they meet all MCP/RCP requirements?			✓	
Were there any holding time violations in this batch?		✓		**NOTE!** The PM and QA Manager must be notified by email *immediately* of any holding time violations!!
Were any NCMs generated for any samples in the batch? (If so, list NCM numbers, and first-reviewer must check off any "No" answers above as applicable.)		✓		
Were any jobs in this batch Level 4? If "Yes" then scan all raw data & place in correct scan folder on the public drive before filing this paperwork.	✓			

** LCS or LCSD must produce a recovery that is within the manufacturer's specified 95% confidence limits, must be matrix matched.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Eluent Preparation Log
TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Prepare fresh daily; makes 3L of eluent. To make: in a one-gallon plastic container, mix:
- 60.0 mL of 100*M* $NaHCO_3$;
- 78.0 mL of 100*M* Na_2CO_3; and
- 2862 mL of deionized water.

Degas with helium for 3min before use.

Date Prepared	Analyst's Initials	Lot # 100*M* $NaHCO_3$	Lot # 100*M* Na_2CO_3	Number of Portions Prepared
11-17-11	[illegible]	W11J 2GT018	W11K RGT001	1
11-18-11	RWE	W11K RGT016	W11K RGT017	2
11-21-11	RWE	↓	↓	1
11-22-11	RWE	↓	↓	1
11-23-11	RWE	↓	↓	2
11-28-11	RWE	↓	↓	1
11-29-11	RWE	↓	↓	1
12/1/11	AMS	↓	↓	1
12/2/11	AMS	↓	↓	1
12/3/11	AMS	↓	↓	1
12/5/11	AMS	↓	↓	1

0.25 *M* Sulfuric Acid Creation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Record the information below for creating the acid. When an entry is made do not use arrows to fill in information. All entries must be complete.

Recipe: to 2958mL of deionized water in a 1 gallon jug add 42mL of concentrated H_2SO_4 for a total volume of 3L.

Date Made	Analyst's Initials	Volume of 0.25 *M* Acid Made (L)	Source: Concentrated Sulfuric Acid (ACS grade) Manufacturer & Lot Number
11-18-11	RW	3	Baker lot J22022
11-21-11	RW	3	
11-22-11	RW	3	
11-23-11	RW	3	
11-28-11	RW	3	
11/30/11	AMS	3	
12/1/11	AMS	3	
12/3/11	AMS	3	
12/5/11	AMS	3	

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Ion Chromatography QC Source Data Sheet—Inorganics Dept

Method (circle methods): IC 300_28D IC 300_48HR IC 9056_28D IC 9056_48HR

Date of Analytical Run: 12/5/11 Analyst's Initials: CAMS

Working Curve Standard:

Manufacturer & Lot Number for Source Standard	Working Curve Standards Prepared On
Inorganic Ventures Lot E2-MEB394034	20 October 2011

QC Standard True Values for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.50	25.0	2.50	2.50	2.50	50.0
ICB	0	0	0	0	0	0
MB	0	0	0	0	0	0
LCS/LCSD	4.00	40.0	4.00	4.00	4.00	80.0
MS/MSD	1.00	10.0	1.00	1.00	1.00	20.0

QC Standard Acceptable Recovery Ranges for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.25-2.75	22.5-27.5	2.25-2.75	2.25-2.75	2.25-2.75	45.0-55.0
ICB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
MB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
LCS/LCSD	3.40-4.60	34.0-46.0	3.40-4.60	3.40-4.60	3.40-4.60	68.0-92.0
MS/MSD	0.75-1.25	7.50-12.5	0.75-1.25	0.75-1.25	0.75-1.25	15.0-25.0

Current Method RLs (mg/L):

	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
	0.10	1.00	0.010	0.10	0.050	2.0

Original Run Filename: OM_12-5-2011_11-45-09AM.OMN created 12/5/2011 11:45:09 AM
Original Run Author's Signature: [EmerichR]
Current Run Filename: OM_12-5-2011_11-45-09AM.OMN last modified 12/5/2011 9:26:28 PM
Current Run Author's Signature: [EmerichR]
Description: Triggered autodilution test

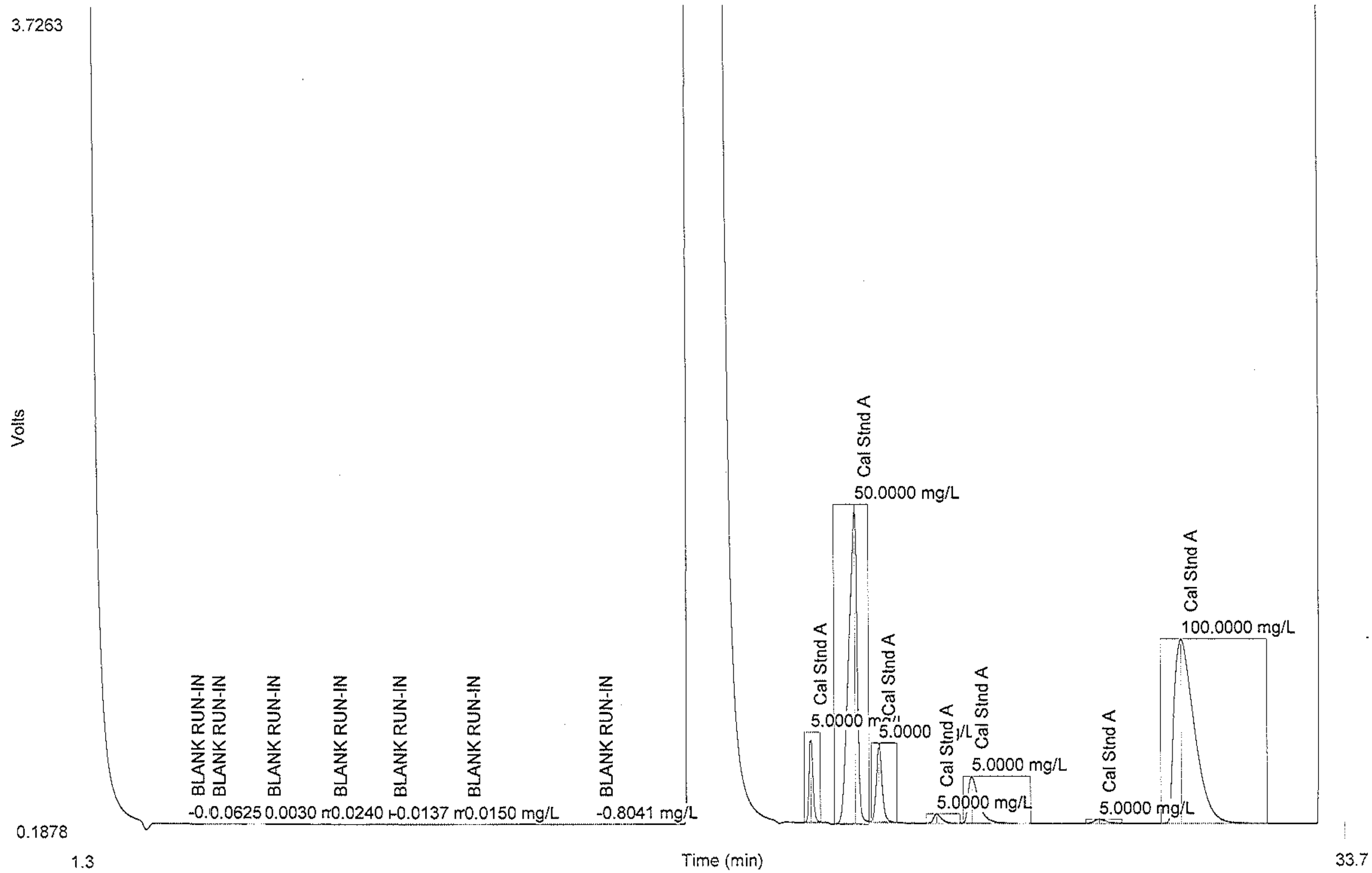
Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	0.0240	0.0625	-0.0044	-0.0137	0.0030	-0.8041	12/5/2011@11:46:28 AM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	
Cal Stnd A	76	5.0000	50.0000	5.0000	5.0000	5.0000	100.0000	12/5/2011@12:02:36 PM
Cal Stnd B	77	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	12/5/2011@12:18:43 PM
Cal Stnd C	78	1.0000	10.0000	1.0000	1.0000	1.0000	20.0000	12/5/2011@12:34:50 PM
Cal Stnd D	79	0.4000	4.0000	0.4000	0.4000	0.4000	8.0000	12/5/2011@12:50:59 PM
Cal Stnd E	80	0.1000	1.0000	0.1000	0.1000	0.1000	2.0000	12/5/2011@1:07:06 PM
Cal Stnd F	81	0.0500	0.5000	0.0500	0.0500	0.0500	0.0500	12/5/2011@1:23:13 PM
Cal Stnd G	82	0.0000	0.0000	0.0000	0.0000	0.0100	0.0000	12/5/2011@1:39:20 PM
ICV	1	2.3386	25.5062	2.4783	2.4378	2.4176	50.9853	12/5/2011@1:55:27 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
	Calibration:				Table/Fig. 7			
ICB	S11	0.0393	0.0734	0.0082	0.0012	0.0038	-0.9666	12/5/2011@2:11:35 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0392	0.0815	0.0082	0.0011	0.0038	-0.9666	12/5/2011@2:27:41 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.0109	41.4559	4.1004	4.0139	4.1466	81.6277	12/5/2011@2:43:48 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-37706-A-39@100	2	0.1301	1.7336	0.0082	0.0109	0.0056	-0.5129	12/5/2011@2:59:56 PM
360-37706-A-44@100	3	0.6733	0.7528	0.1869	0.0012	0.0016	-0.7966	12/5/2011@3:16:04 PM
360-37706-A-44@100 MS	4	1.6148	10.8865	1.0110	0.9932	0.9517	19.7509	12/5/2011@3:32:10 PM
360-37706-A-44@100 MSD	4	1.6180	10.8813	1.0092	0.9800	0.9811	19.7354	12/5/2011@3:48:17 PM
360-37944-D-1	5	0.0395	3.3520	0.0083	0.2135	-0.0024	4.3412	12/5/2011@4:04:24 PM
360-37944-D-1@10	6	0.0395	0.4699	0.0082	0.0199	0.0052	-0.4344	12/5/2011@4:20:30 PM
360-37944-C-2	7	0.0396	8.1577	0.0194	0.2687	0.0038	5.2692	12/5/2011@4:36:37 PM
360-37944-C-2@10	8	0.0395	0.7988	0.0082	0.0265	0.0038	-0.3355	12/5/2011@4:52:44 PM
360-37782-C-1@10 Cl	9	0.0398	41.3071	0.0014	0.0012	0.0038	1.3125	12/5/2011@5:08:50 PM
360-37782-C-2@10 Cl	10	0.0359	43.5189	0.0082	0.0012	0.0038	1.3204	12/5/2011@5:24:57 PM
CCV	S12	3.6505	40.7368	3.9785	3.8434	3.9321	78.5563	12/5/2011@5:41:04 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0396	0.0634	-0.0023	0.0012	0.0038	-0.9787	12/5/2011@5:57:10 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-37783-C-1	11	0.0402	18.6705	0.0521	1.8749	0.0038	30.3971	12/5/2011@6:13:16 PM
360-37783-C-2	12	0.0395	18.6373	0.0405	1.8884	-0.0409	29.9689	12/5/2011@6:29:22 PM
360-37786-B-1@20 Cl	13	0.0395	23.9560	0.0022	0.0012	0.0038	0.0255	12/5/2011@6:45:28 PM
360-37799-B-1	14	0.0395	94.0263	0.2313	0.0012	-21.3965	31.8061	12/5/2011@7:01:34 PM

360-37799-B-1@10 Cl	15	0.0395	62.8919	0.0288	0.0012	0.0038	2.1342	12/5/2011@7:17:39 PM
360-37833-B-1@20 Cl	16	0.0361	19.2165	0.0277	-0.0027	0.0038	-0.0340	12/5/2011@7:33:47 PM
360-37833-B-2 @20 Cl	17	0.0394	17.9661	-8.3786e-4	0.0011	0.0038	-0.0849	12/5/2011@7:49:54 PM
360-37776-B-1@20 NO3	18	0.2123	5.3306	0.0082	9.8038	0.0038	23.5649	12/5/2011@8:06:00 PM
360-37951-A-2	19	0.0395	69.8768	1.0748	0.4650	-0.4928	40.9573	12/5/2011@8:22:07 PM
360-37951-A-2@10	20	0.0395	7.4630	0.1070	0.0468	-0.0113	2.9599	12/5/2011@8:38:14 PM
CCV	S12	3.7440	41.3530	4.0520	3.9010	3.9999	79.5793	12/5/2011@8:54:21 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0395	0.0643	0.0082	0.0012	0.0028	-0.9740	12/5/2011@9:10:28 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Author: EmerichR

Date : 12/6/2011

Channel 1 (Anions) : Set 1 of 18



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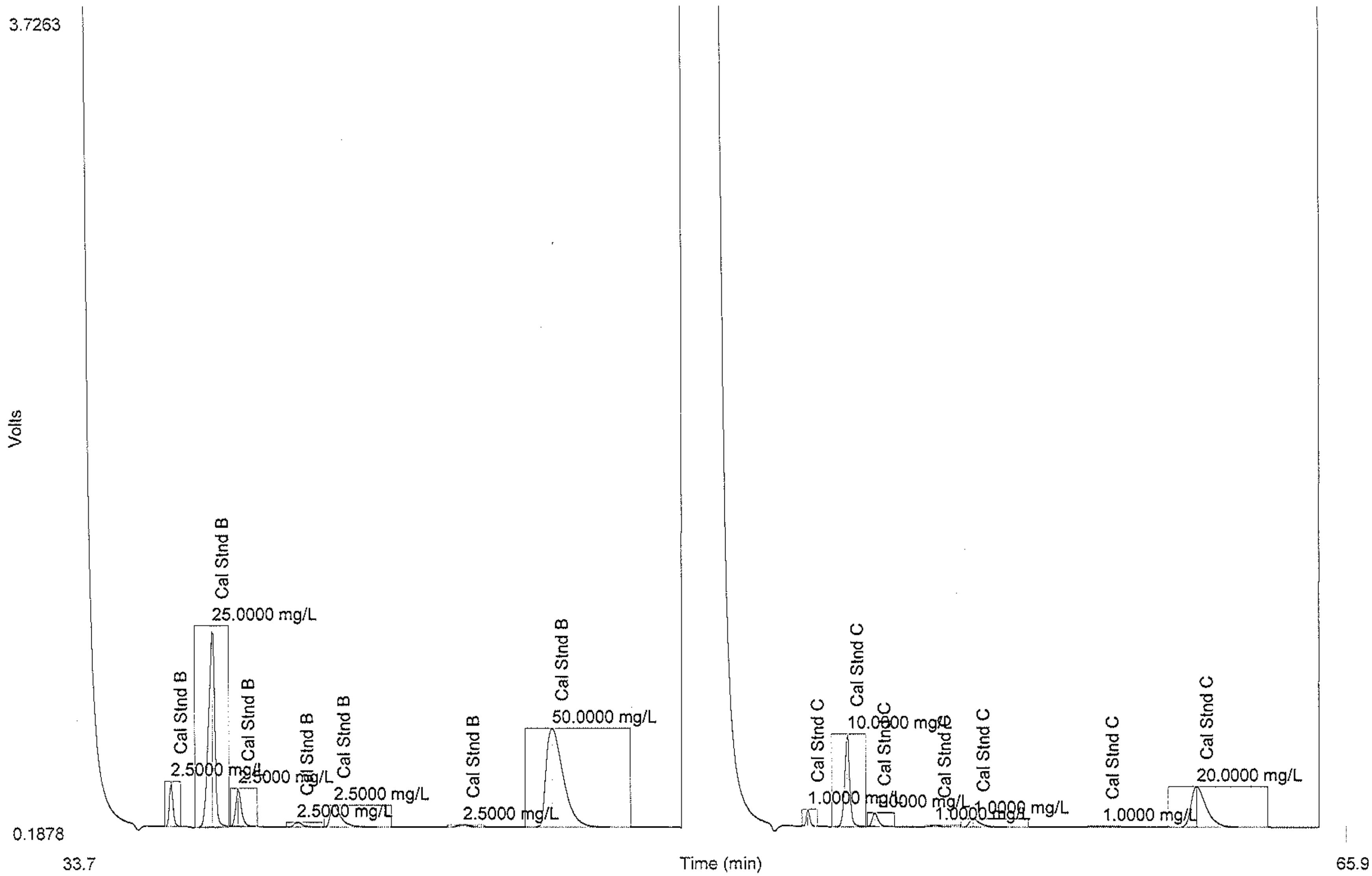
Author: EmerichR

Date : 12/6/2011

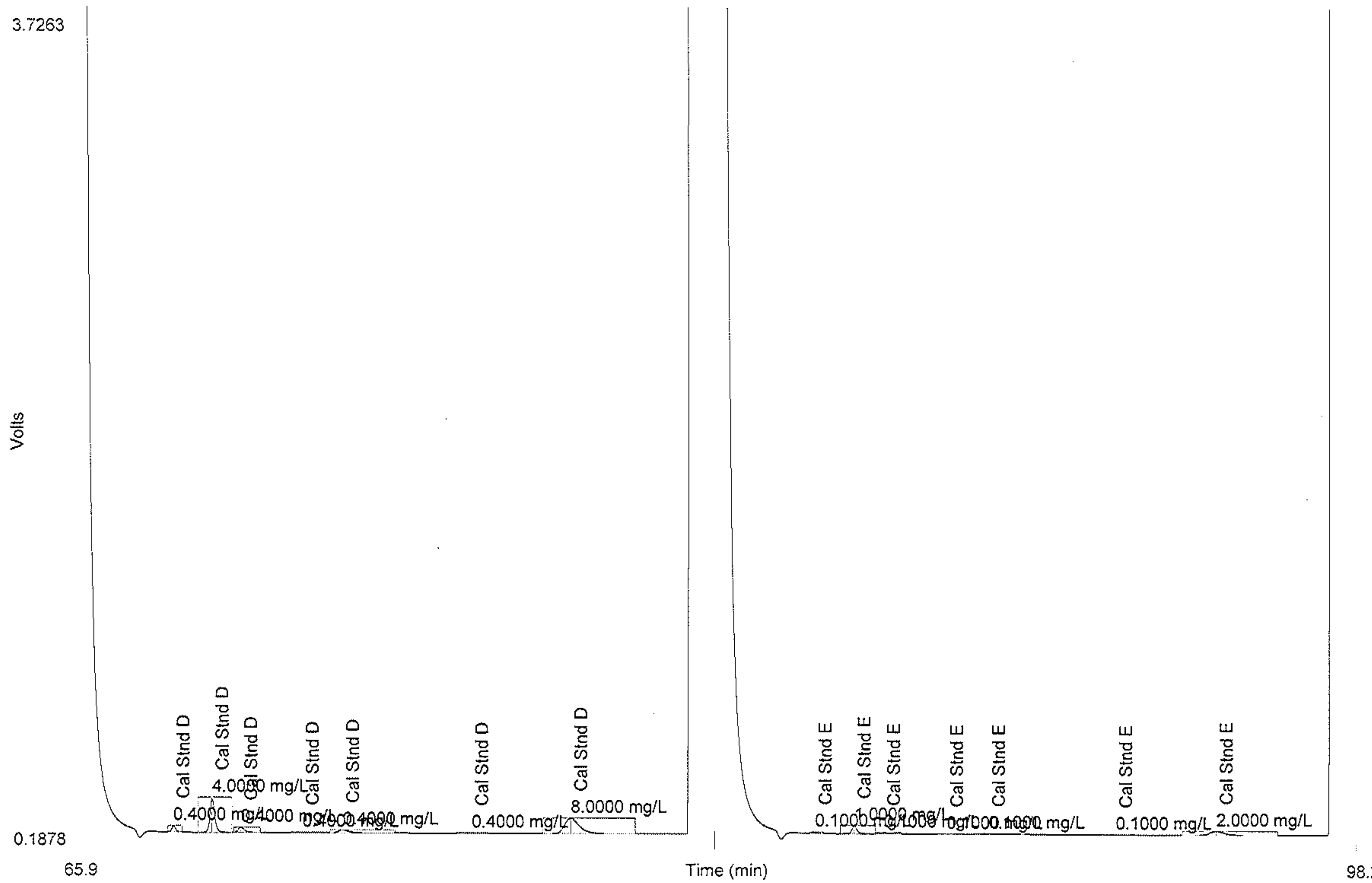
Channel 1 (Anions) : Set 2 of 18



Author: EmerichR

Date : 12/6/2011

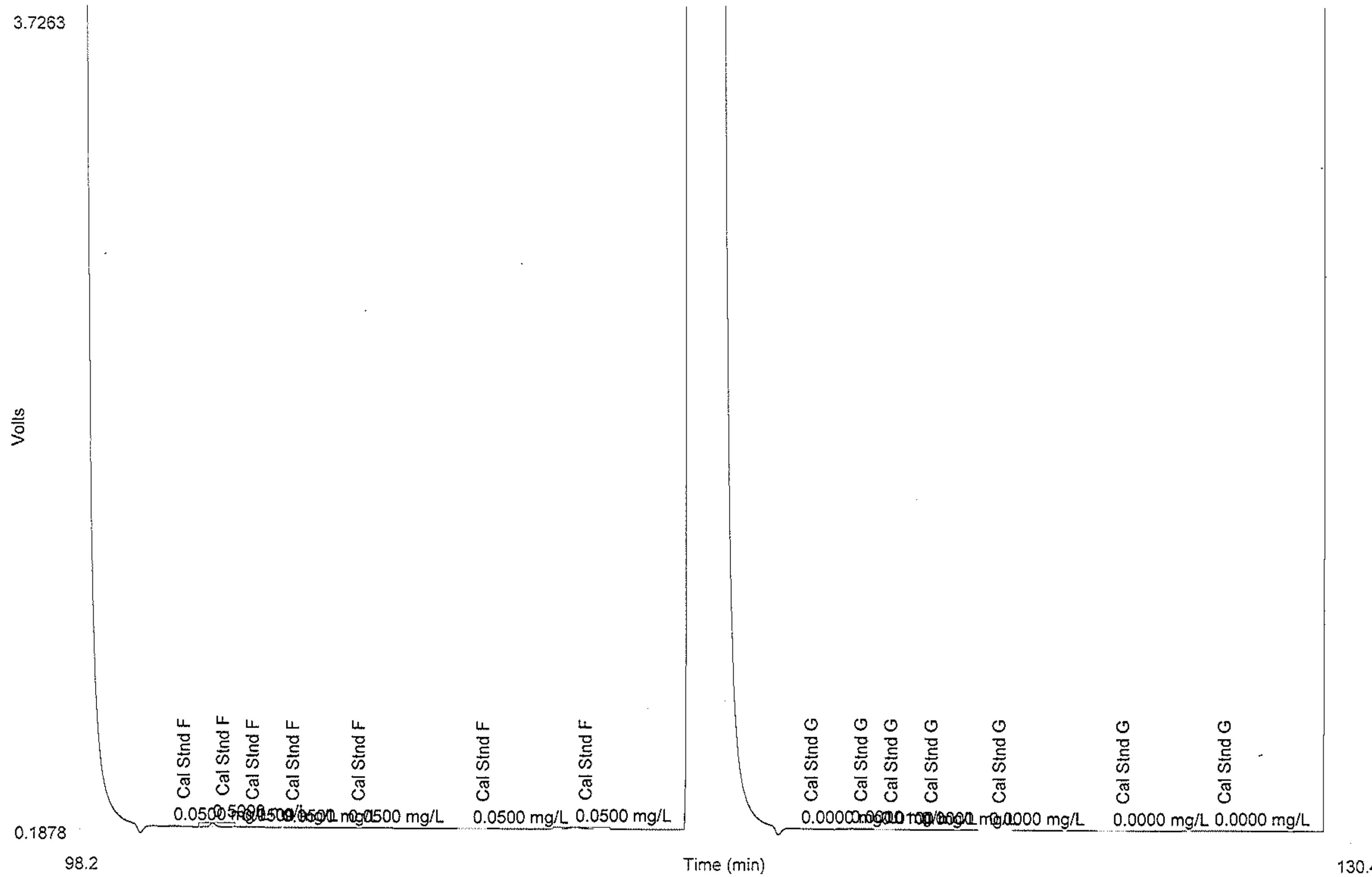
Channel 1 (Anions) : Set 3 of 18



Author: EmerichR

Date : 12/6/2011

Channel 1 (Anions) : Set 4 of 18



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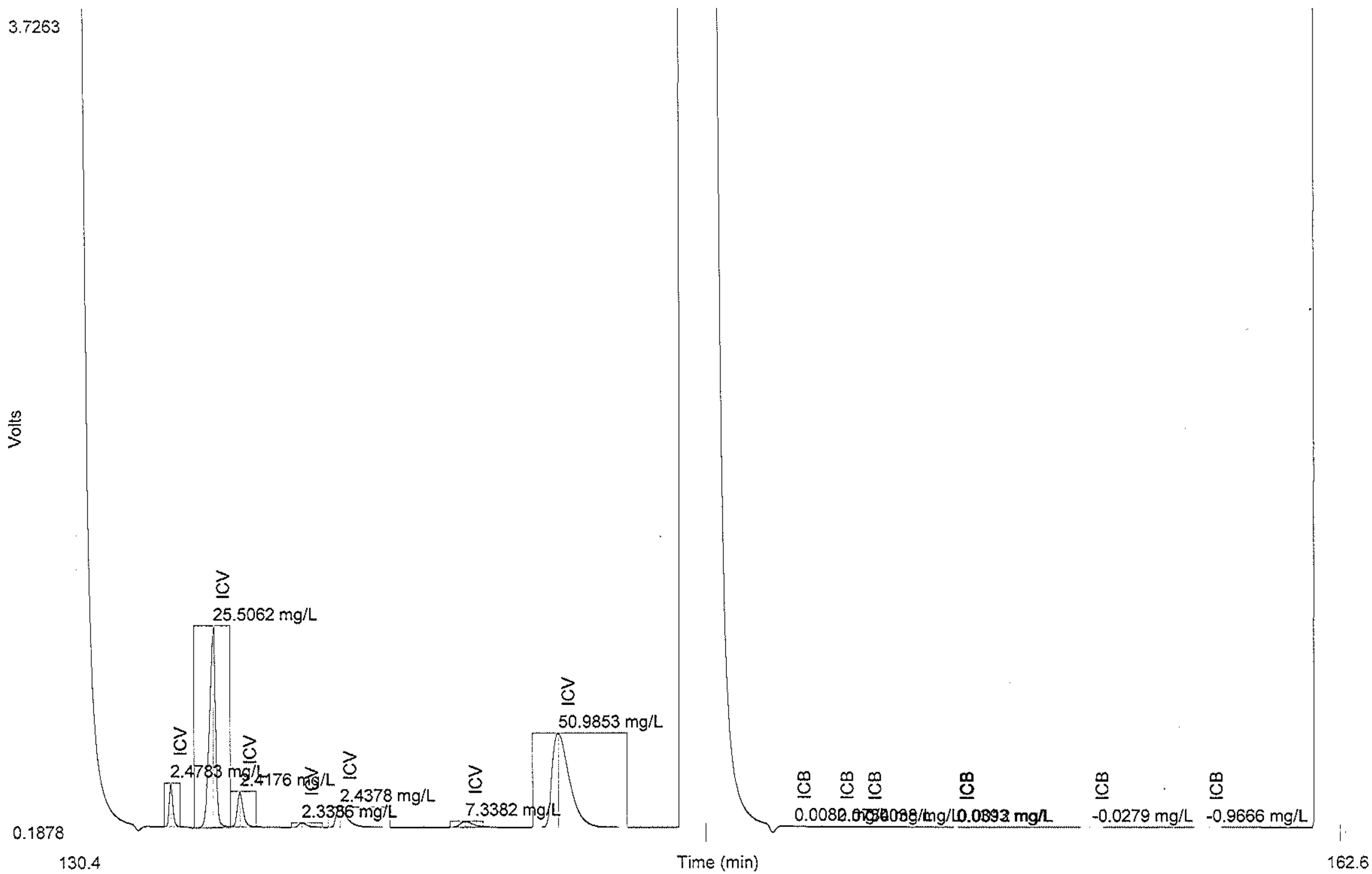
Author: EmerichR

Date : 12/6/2011

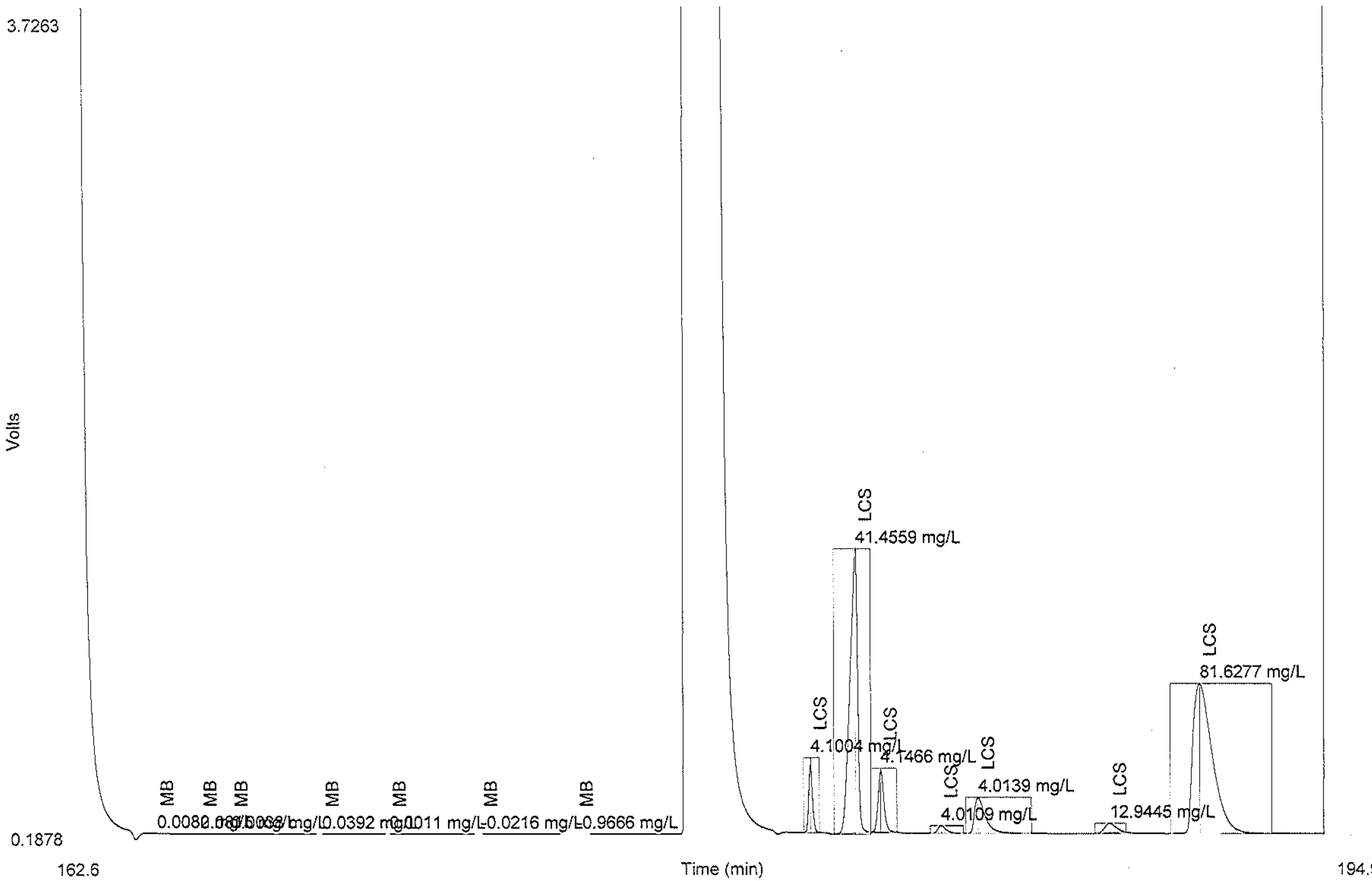
Channel 1 (Anions) : Set 5 of 18



Author: EmerichR

Date : 12/6/2011

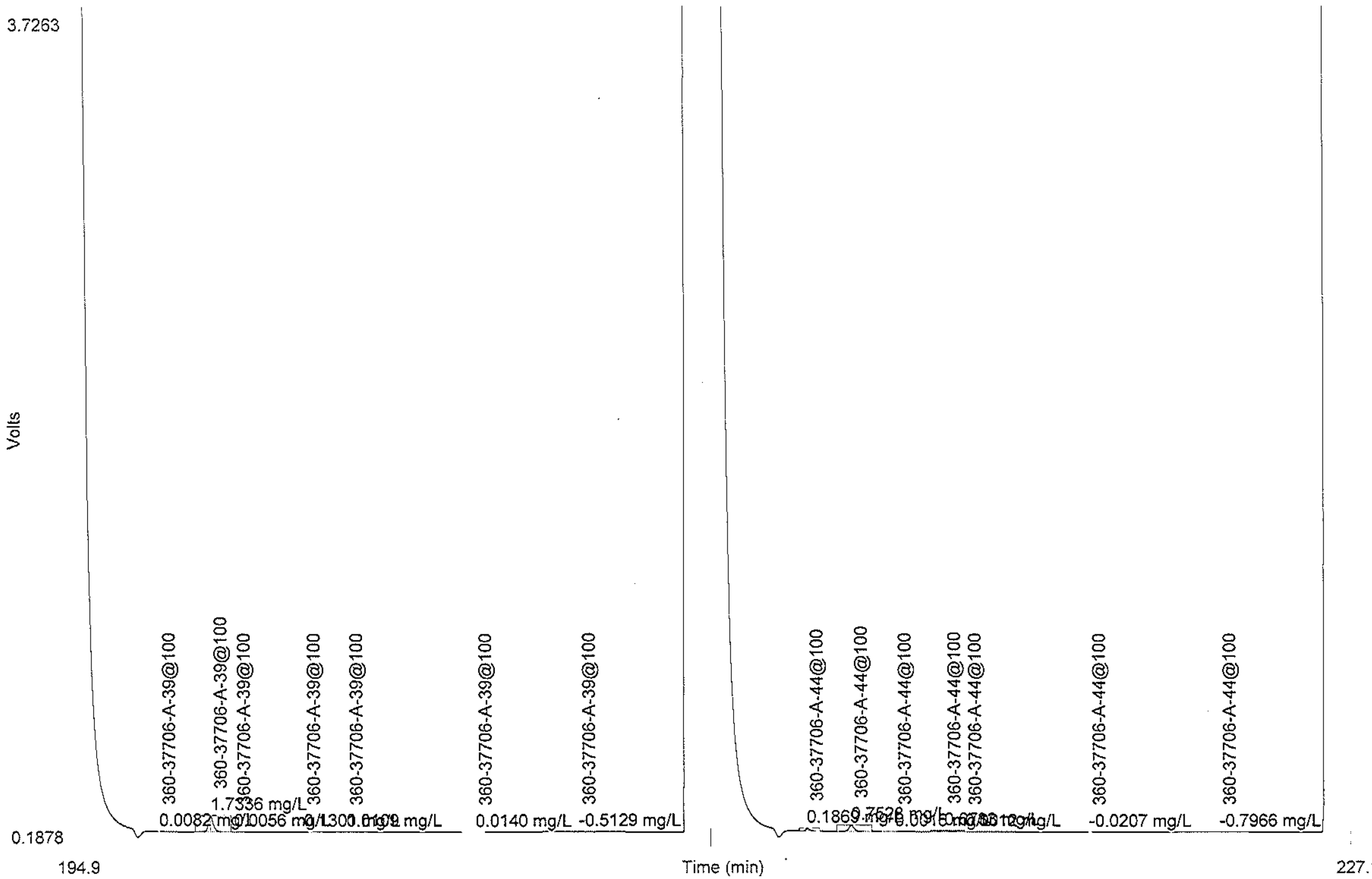
Channel 1 (Anions) : Set 6 of 18



Author: EmerichR

Date : 12/6/2011

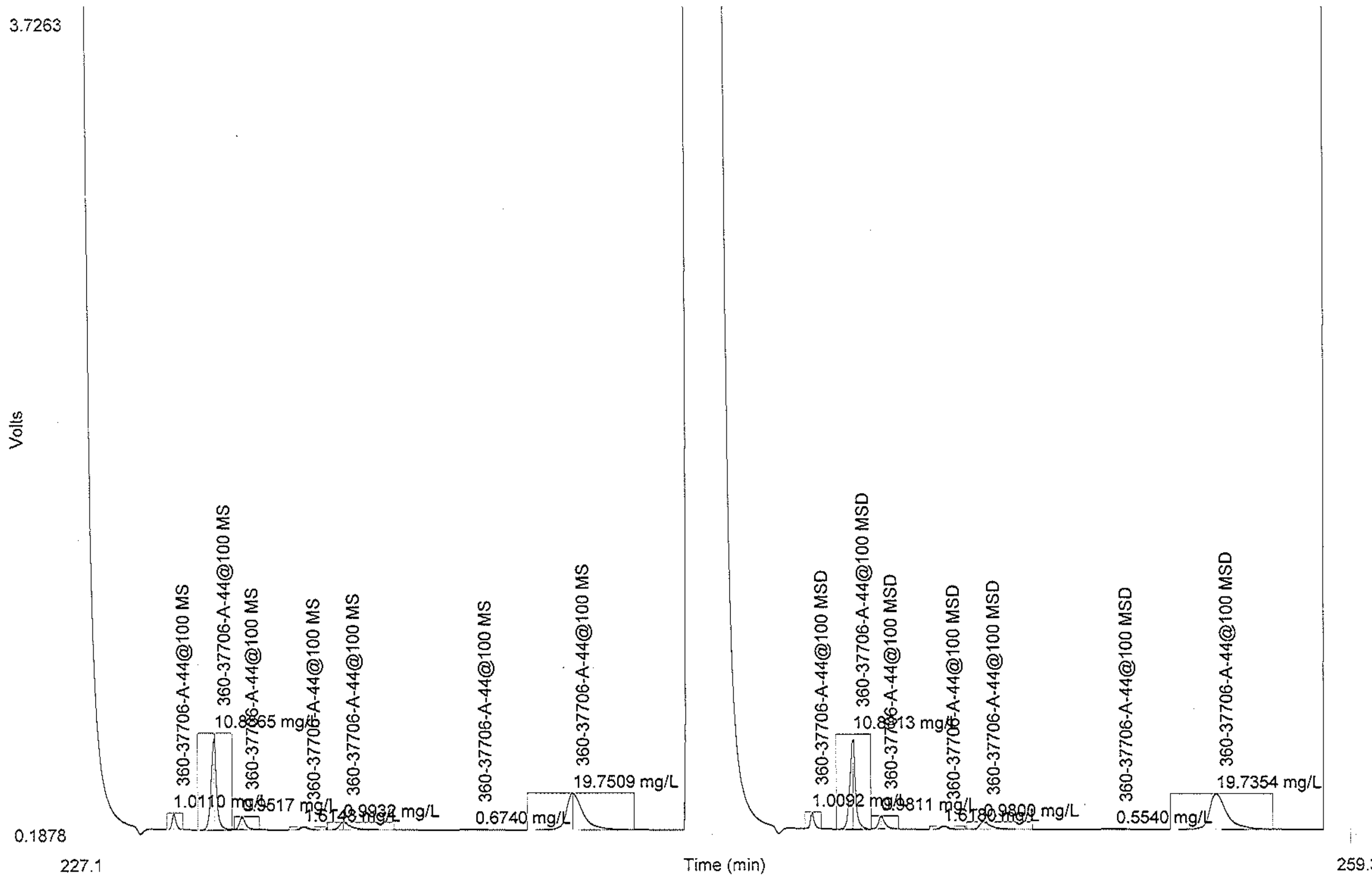
Channel 1 (Anions) : Set 7 of 18



Author: EmerichR

Date : 12/6/2011

Channel 1 (Anions) : Set 8 of 18



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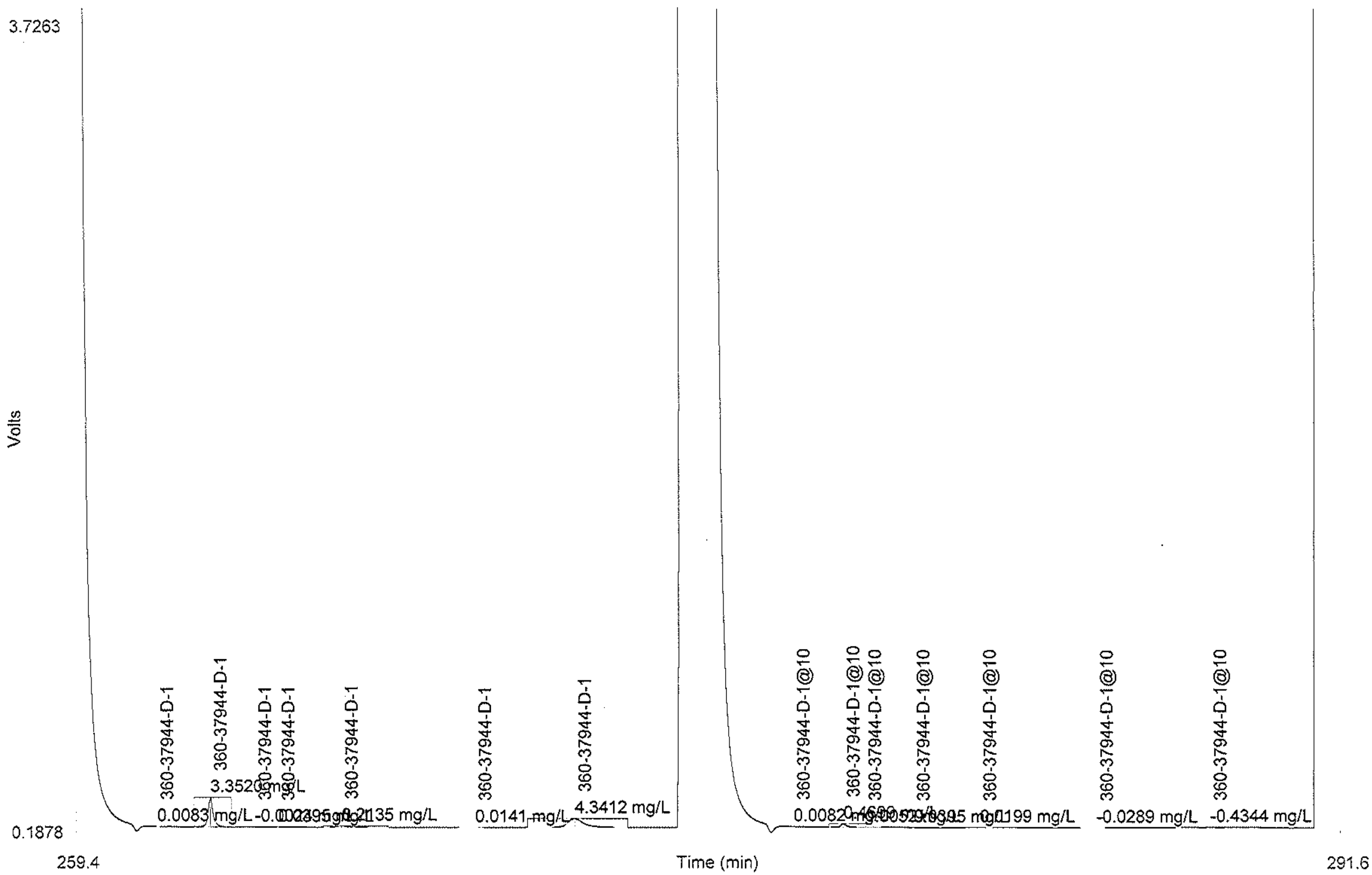
Author: EmerichR

Date : 12/6/2011

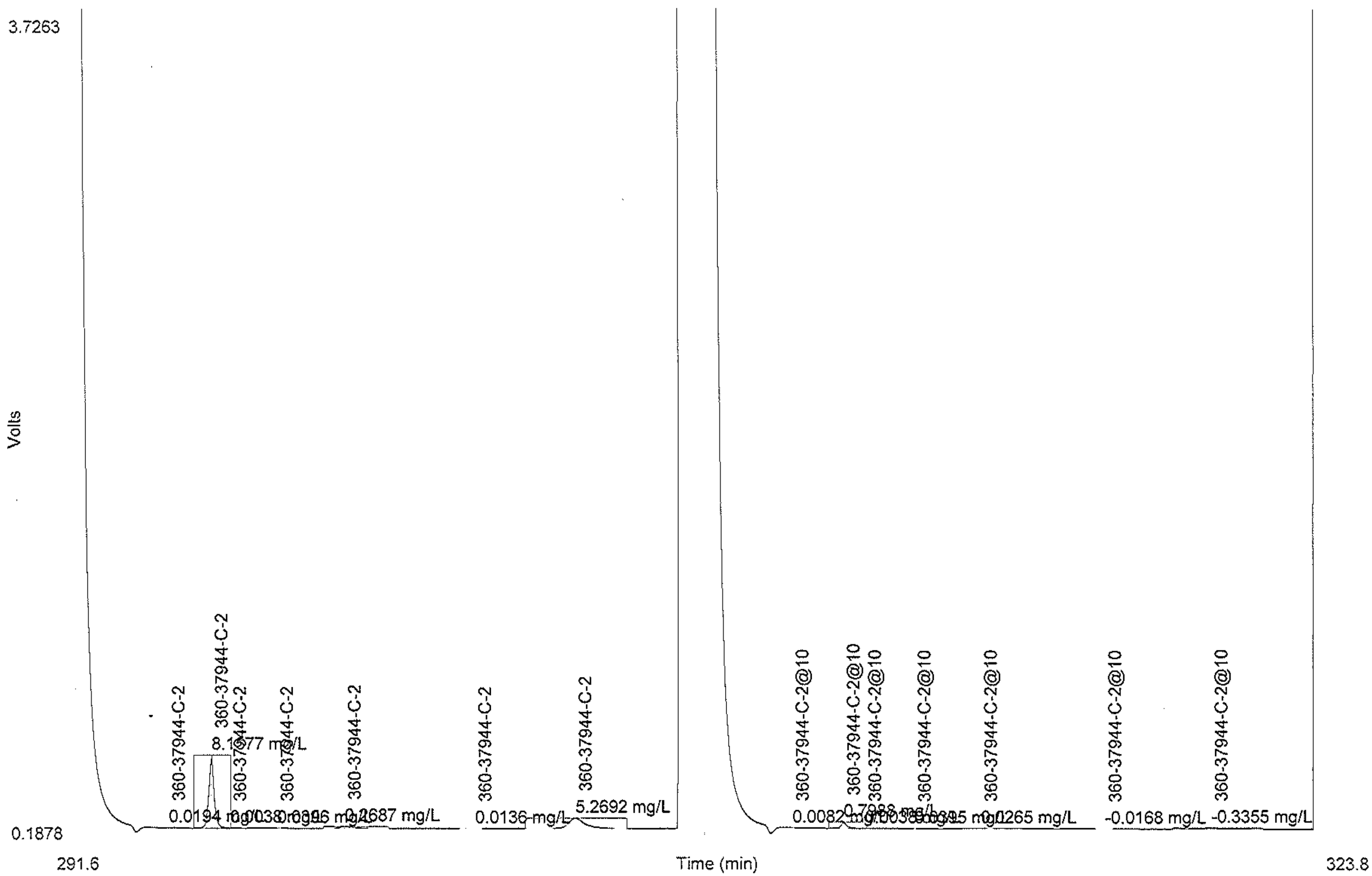
Channel 1 (Anions) : Set 9 of 18



Author: EmerichR

Date : 12/6/2011

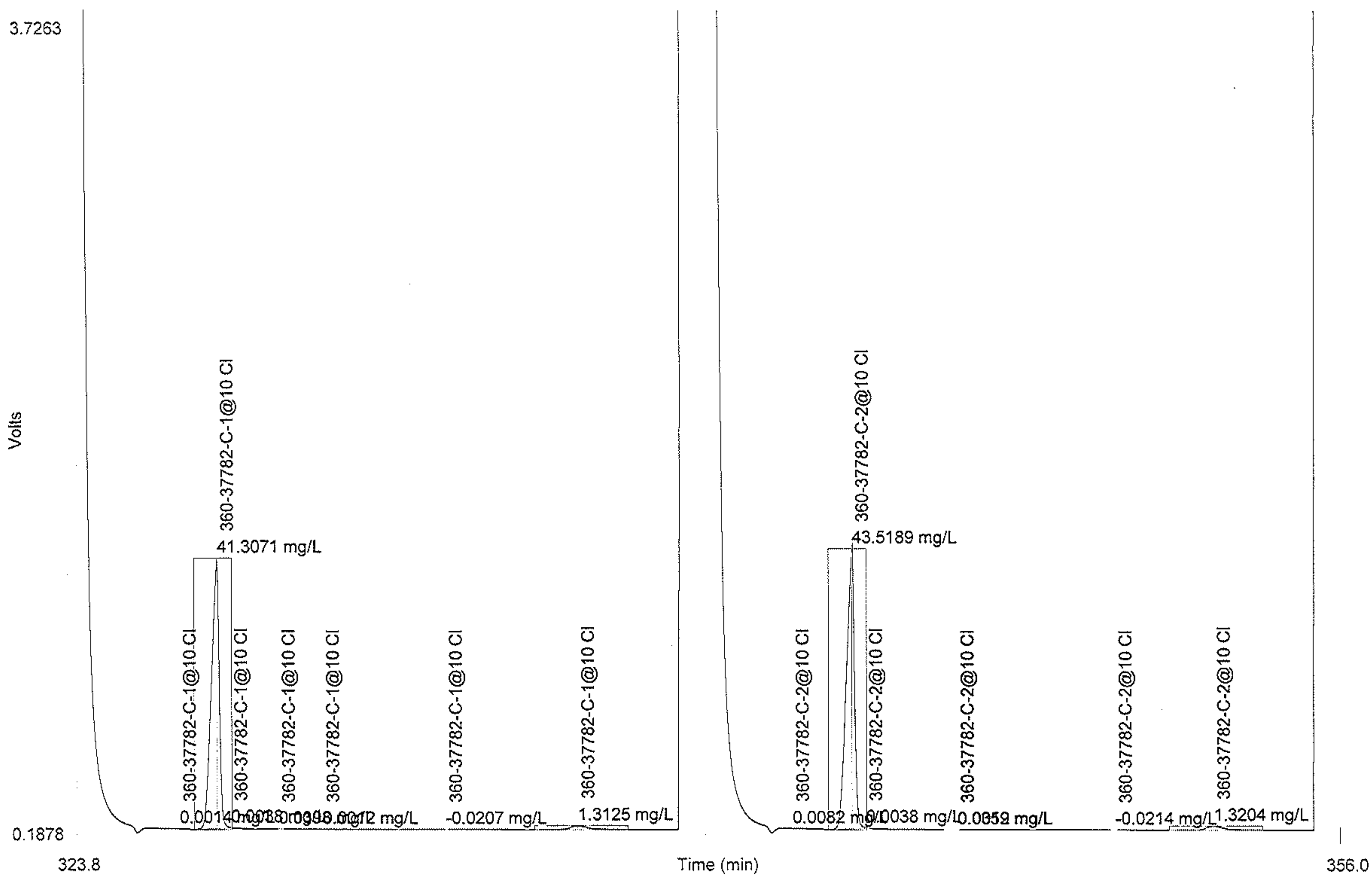
Channel 1 (Anions) : Set 10 of 18



Author: EmerichR

Date : 12/6/2011

Channel 1 (Anions) : Set 11 of 18



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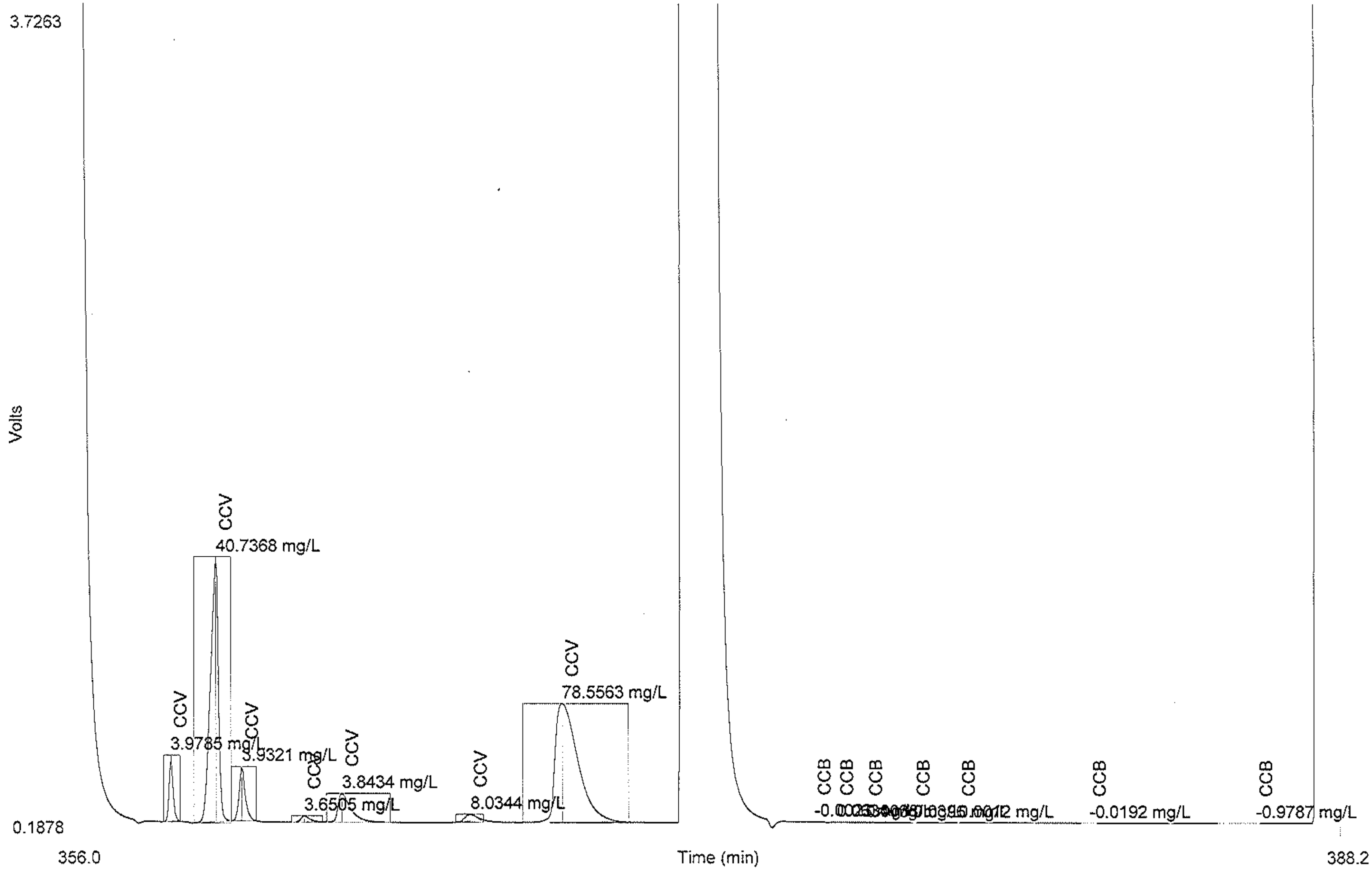
Author: EmerichR

Date : 12/6/2011

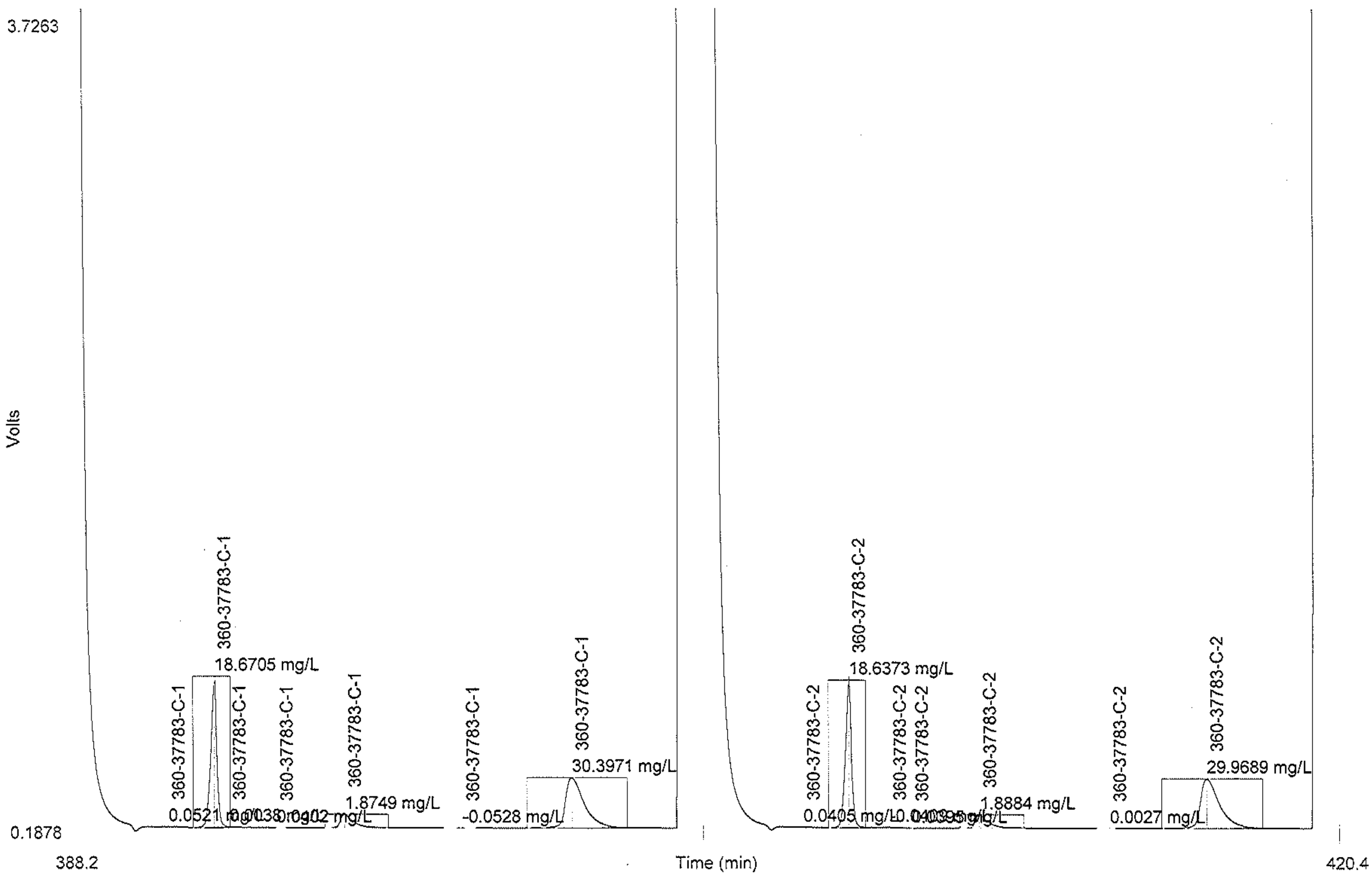
Channel 1 (Anions) : Set 12 of 18



Author: EmerichR

Date : 12/6/2011

Channel 1 (Anions) : Set 13 of 18



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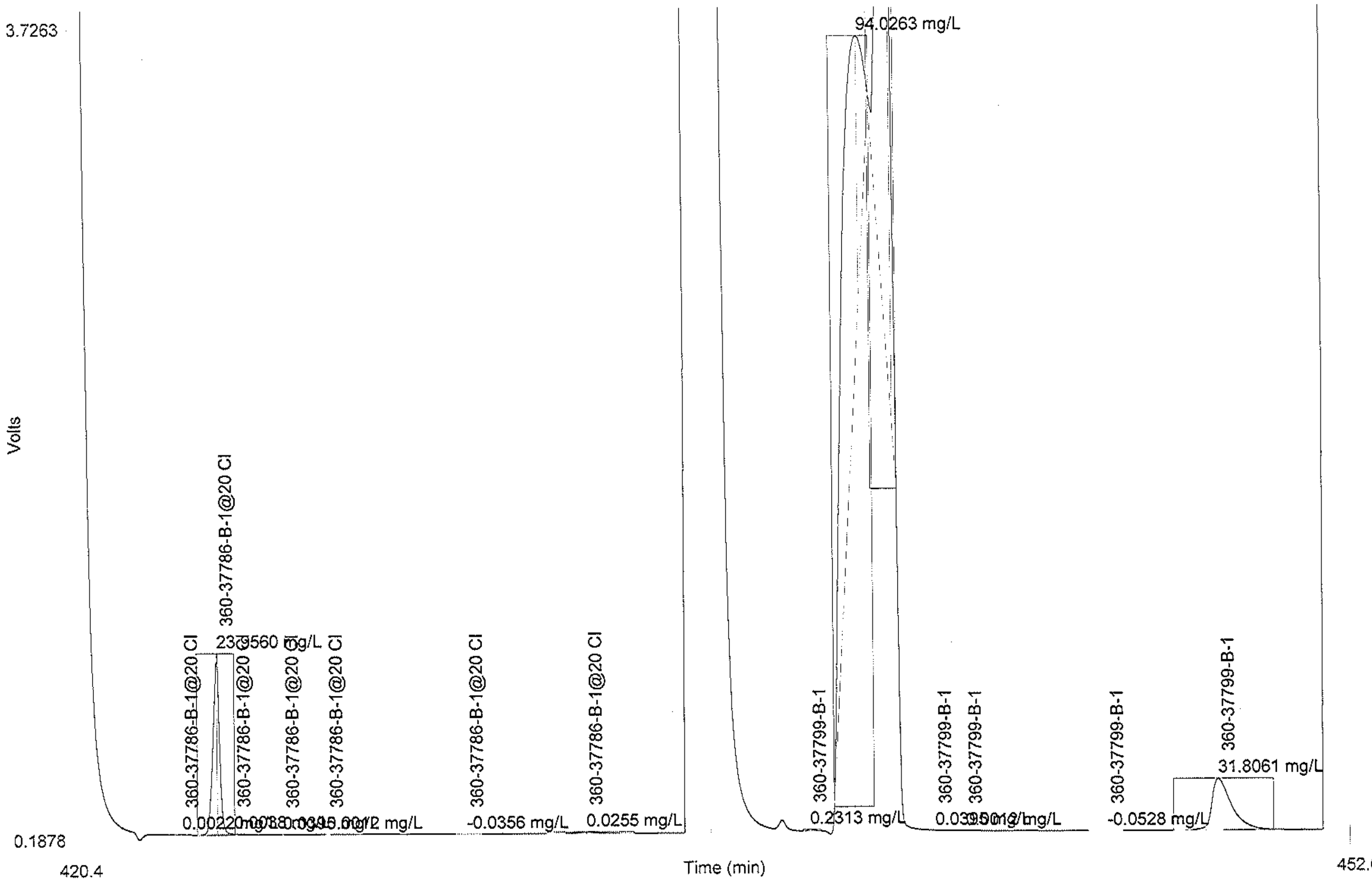
Author: EmerichR

Date : 12/6/2011

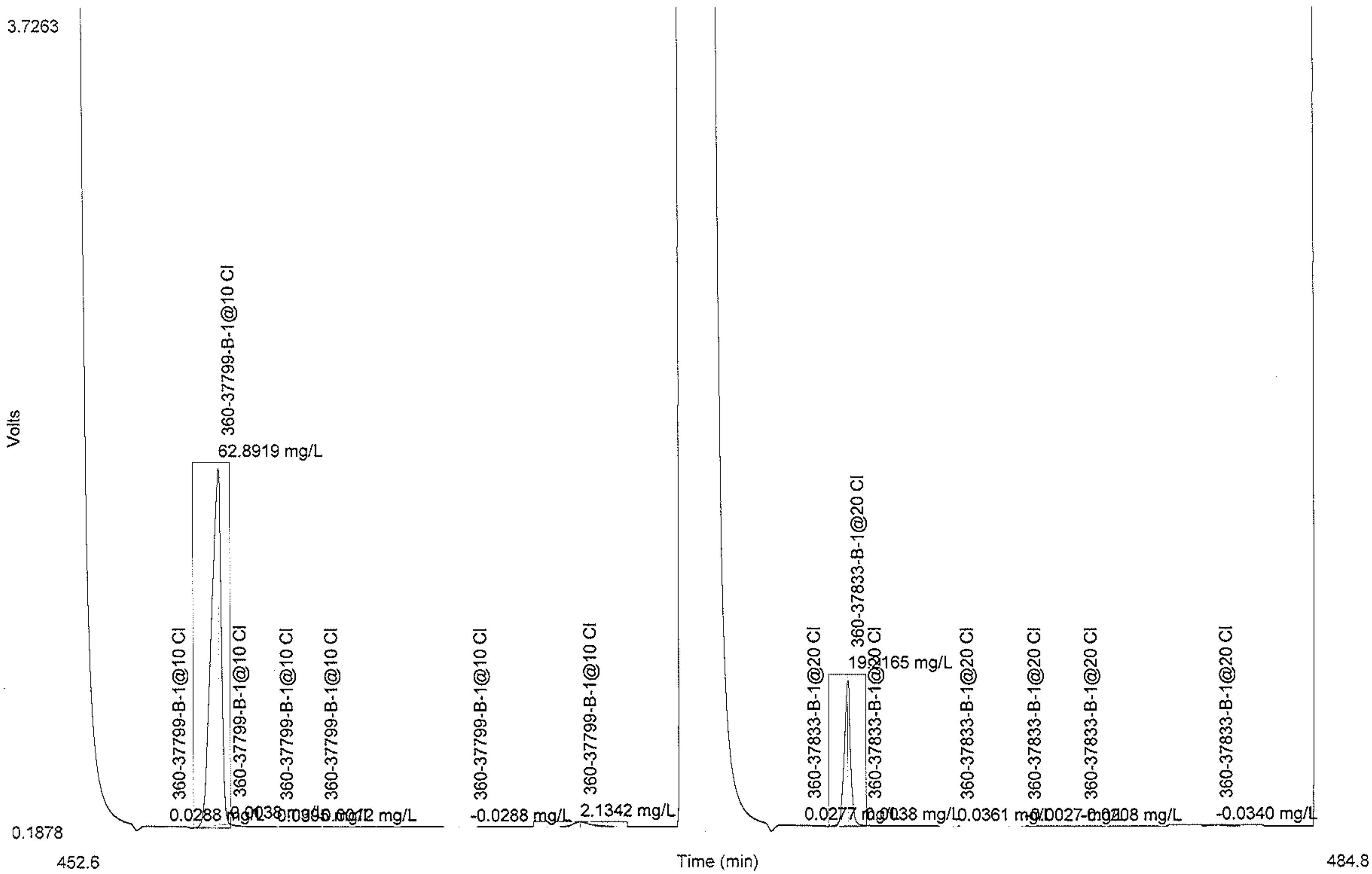
Channel 1 (Anions) : Set 14 of 18



Author: EmerichR

Date : 12/6/2011

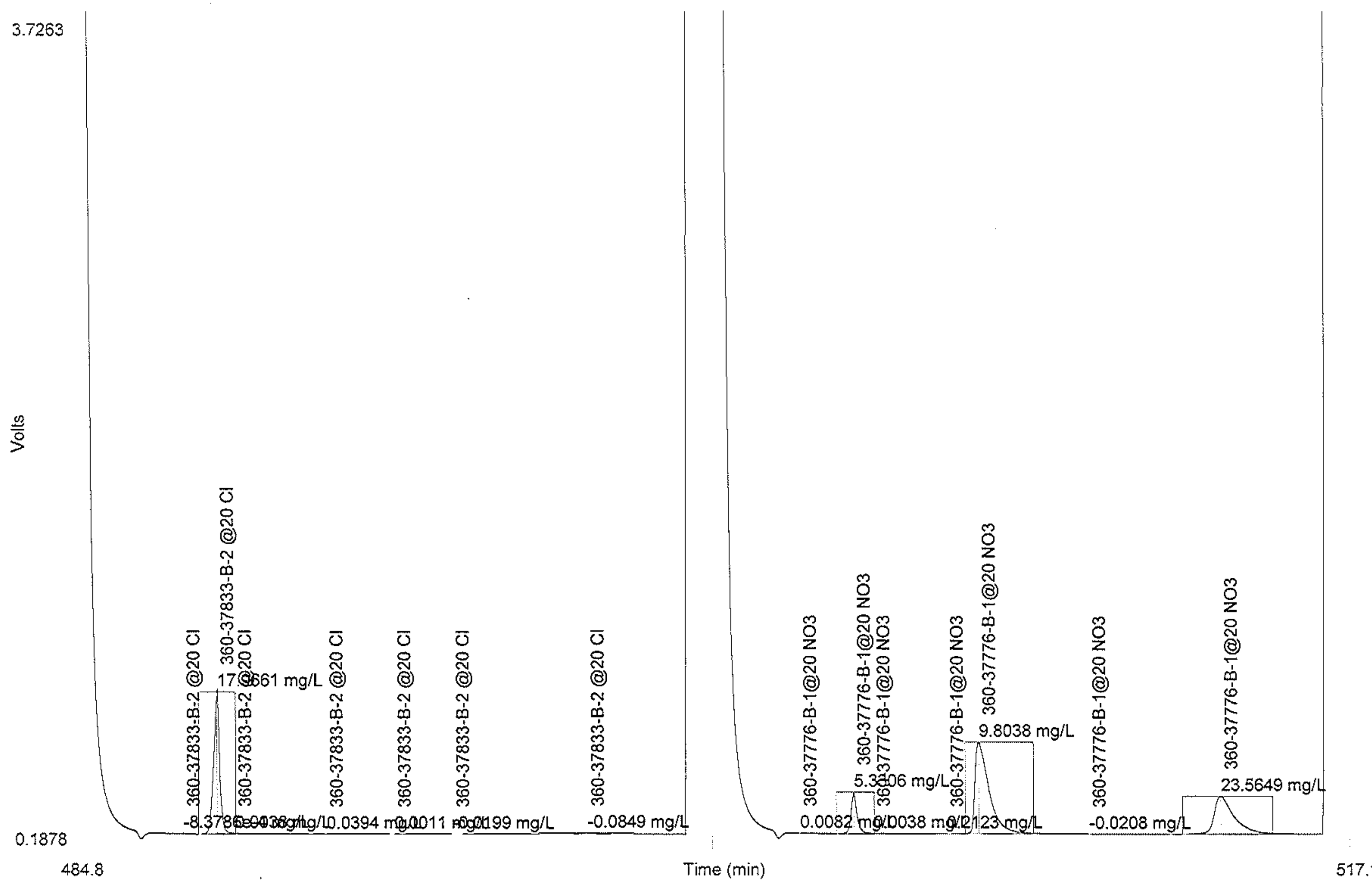
Channel 1 (Anions) : Set 15 of 18



Author: EmerichR

Date : 12/6/2011

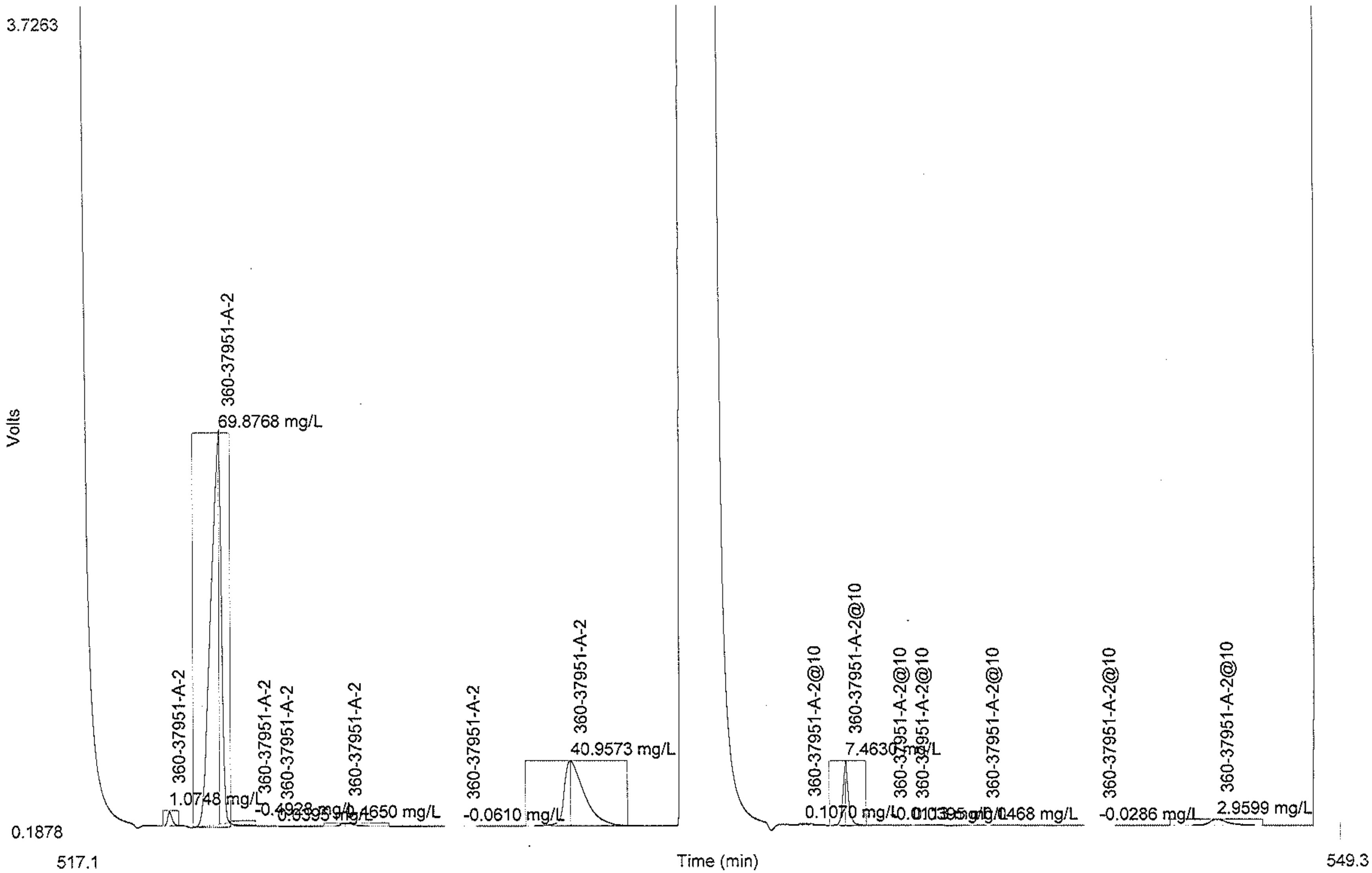
Channel 1 (Anions) : Set 16 of 18



Author: EmerichR

Date : 12/6/2011

Channel 1 (Anions) : Set 17 of 18



Author: EmerichR

Date : 12/6/2011

Channel 1 (Anions) : Set 18 of 18

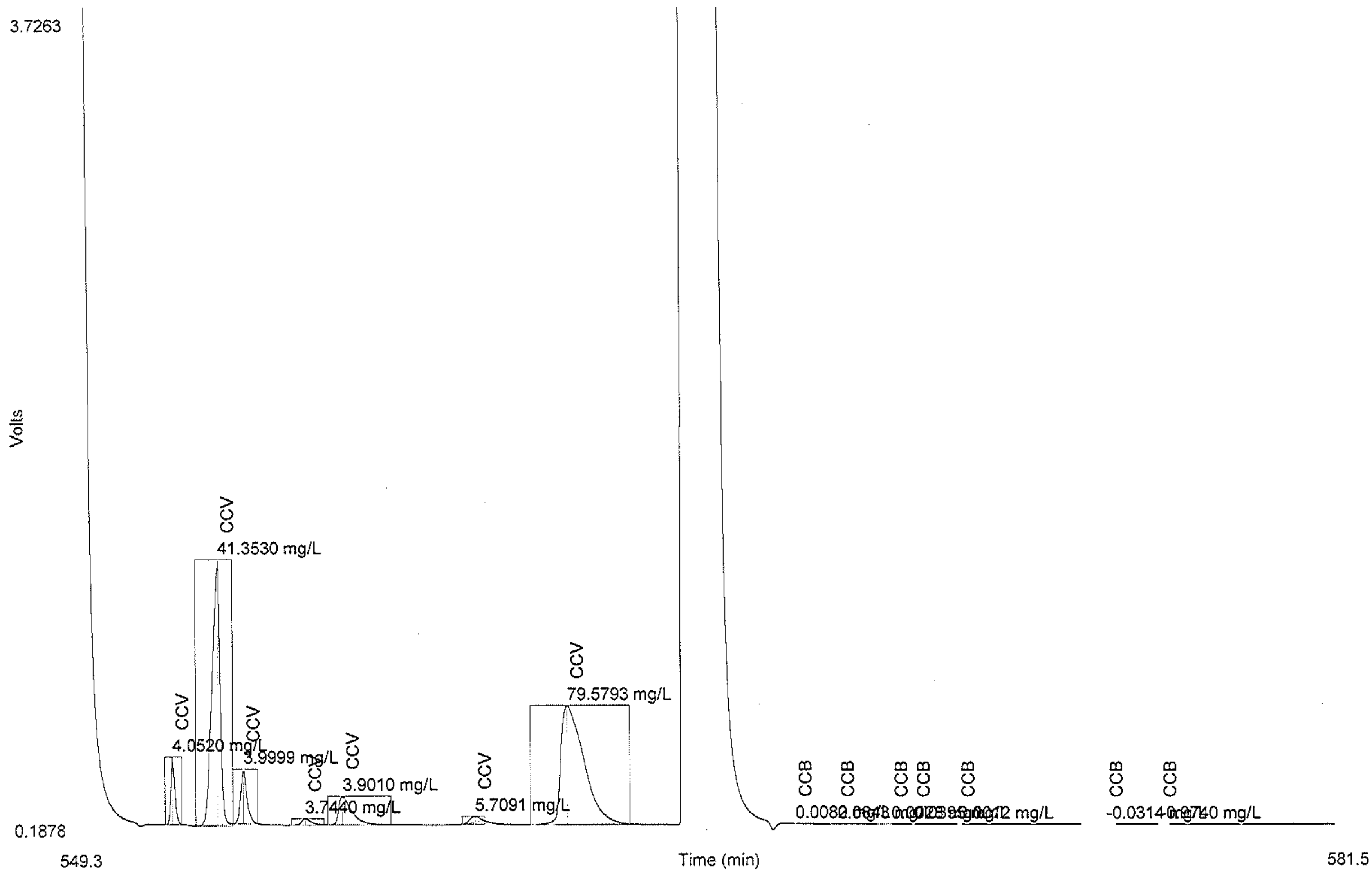
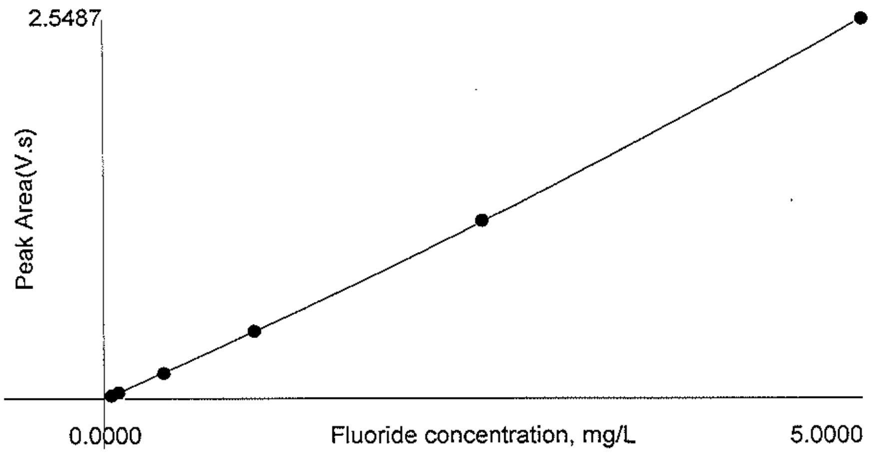


Table 1: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.5487	0.3935	0.1	12/6/2011	7:23:25 AM
2	2.5000	1	1.1961	0.1972	-0.7	12/6/2011	7:23:25 AM
3	1.0000	1	0.4535	0.0739	-0.2	12/6/2011	7:23:26 AM
4	0.4000	1	0.1702	0.0283	3.2	12/6/2011	7:23:26 AM
5	0.1000	1	0.0409	0.0068	0.6	12/6/2011	7:23:26 AM
6	0.0500	1	0.0196	0.0034	-3.5	12/6/2011	7:23:26 AM

Figure 1: Fluoride



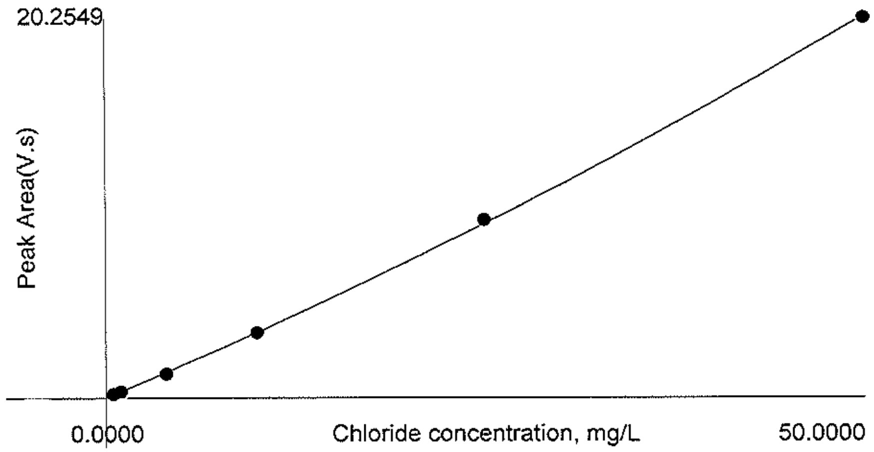
Area = 0.0138 * Conc^2 + 0.4419 * Conc - 0.0032
Conc = - 0.1093 * Area^2 + 2.2336 * Area + 0.0082
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 2: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	20.2549	1.3946	0.4	12/6/2011	7:23:25 AM
2	25.0000	1	9.5044	0.8734	-2.2	12/6/2011	7:23:25 AM
3	10.0000	1	3.4980	0.4038	0.6	12/6/2011	7:23:26 AM
4	4.0000	1	1.2906	0.1539	6.9	12/6/2011	7:23:26 AM
5	1.0000	1	0.3402	0.0363	5.0	12/6/2011	7:23:26 AM
6	0.5000	1	0.2078	0.0199	-9.9	12/6/2011	7:23:26 AM

Figure 2: Chloride



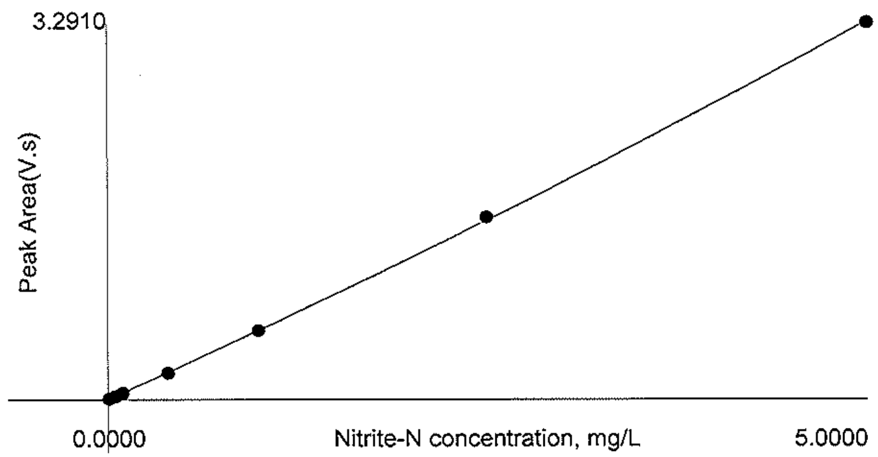
Area = 0.0014 * Conc^2 + 0.3356 * Conc + 0.0210
Conc = - 0.0224 * Area^2 + 2.9130 * Area - 0.0415
Correlation Coefficient (r) = 0.99998

1/x weighting

Table 3: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.2910	0.3418	0.4	12/6/2011	7:23:25 AM
2	2.5000	1	1.5973	0.1647	-1.8	12/6/2011	7:23:26 AM
3	1.0000	1	0.6040	0.0604	0.4	12/6/2011	7:23:26 AM
4	0.4000	1	0.2285	0.0226	4.0	12/6/2011	7:23:26 AM
5	0.1000	1	0.0555	0.0053	3.6	12/6/2011	7:23:26 AM
6	0.0500	1	0.0250	0.0024	9.6	12/6/2011	7:23:26 AM
7	0.0100	1	0.0047	4.5544e-4	-23.9	12/6/2011	7:23:26 AM

Figure 3: Nitrite-N



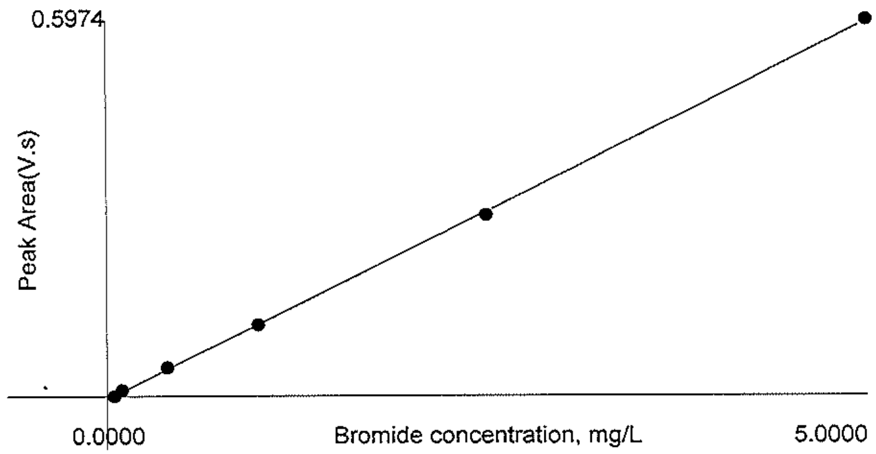
Area = 0.0132 * Conc^2 + 0.5953 * Conc - 0.0021
Conc = - 0.0476 * Area^2 + 1.6686 * Area + 0.0038
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 4: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.5974	0.0429	-0.4	12/6/2011	7:23:25 AM
2	2.5000	1	0.2883	0.0204	1.7	12/6/2011	7:23:26 AM
3	1.0000	1	0.1135	0.0079	0.6	12/6/2011	7:23:26 AM
4	0.4000	1	0.0452	0.0031	-5.5	12/6/2011	7:23:26 AM
5	0.1000	1	0.0095	7.1286e-4	-30.9	12/6/2011	7:23:26 AM
6	0.0500	1	1.7896e-6	1.1325e-6		12/6/2011	7:23:26 AM

Figure 4: Bromide



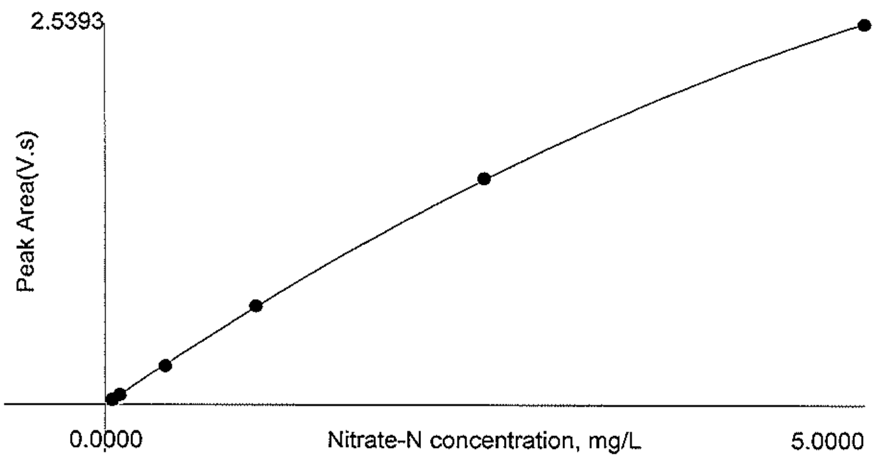
Area = 2.8013e-4 * Conc^2 + 0.1185 * Conc - 0.0046
Conc = - 0.0869 * Area^2 + 8.3929 * Area + 0.0394
Correlation Coefficient (r) = 0.99994

1/x weighting

Table 5: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.5393	0.1680	0.2	12/6/2011	7:23:25 AM
2	2.5000	1	1.5069	0.0891	-0.6	12/6/2011	7:23:26 AM
3	1.0000	1	0.6569	0.0353	-0.8	12/6/2011	7:23:26 AM
4	0.4000	1	0.2572	0.0134	3.7	12/6/2011	7:23:26 AM
5	0.1000	1	0.0641	0.0032	1.6	12/6/2011	7:23:26 AM
6	0.0500	1	0.0322	0.0016	-4.4	12/6/2011	7:23:26 AM

Figure 5: Nitrate-N



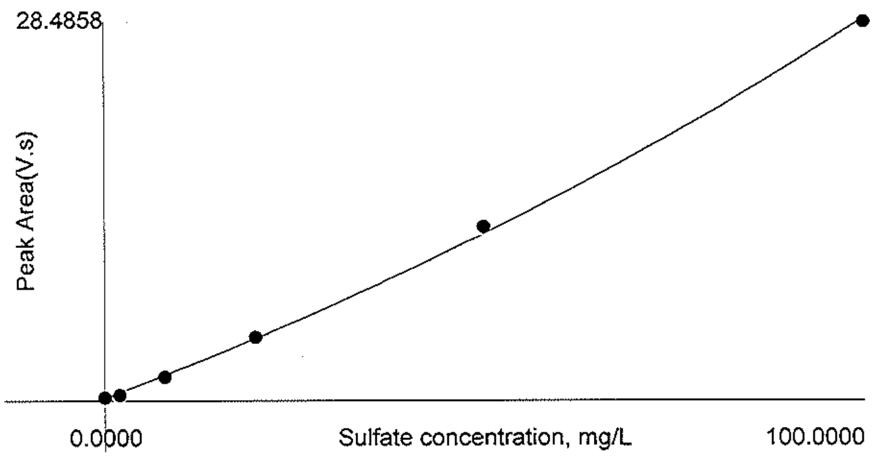
Area = - 0.0364 * Conc^2 + 0.6917 * Conc - 0.0037
Conc = 0.2383 * Area^2 + 1.3416 * Area + 0.0106
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 6: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	28.4858	0.8063	0.9	12/6/2011	7:23:25 AM
2	50.0000	1	13.0410	0.4310	-4.3	12/6/2011	7:23:26 AM
3	20.0000	1	4.7415	0.1779	-1.8	12/6/2011	7:23:26 AM
4	8.0000	1	1.7633	0.0681	8.0	12/6/2011	7:23:26 AM
5	2.0000	1	0.4287	0.0164	32.1	12/6/2011	7:23:26 AM
6	0.0500	1	0.2316	0.0090	-2.4	12/6/2011	7:23:26 AM

Figure 6: Sulfate



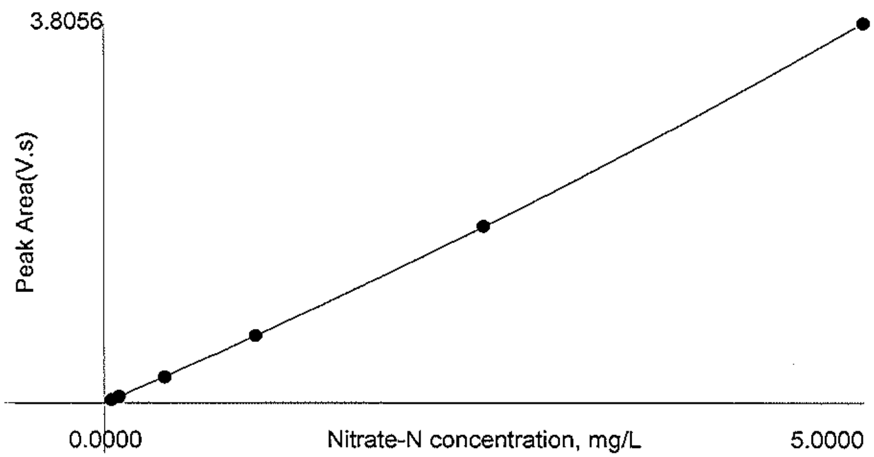
Area = 7.9121e-4 * Conc^2 + 0.2063 * Conc + 0.2159
Conc = - 0.0369 * Area^2 + 4.5645 * Area - 0.9746
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 7: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.8056	0.2057	0.1	12/6/2011	7:23:36 AM
2	2.5000	1	1.7750	0.0950	-0.3	12/6/2011	7:23:36 AM
3	1.0000	1	0.6771	0.0355	-0.2	12/6/2011	7:23:36 AM
4	0.4000	1	0.2607	0.0135	1.6	12/6/2011	7:23:36 AM
5	0.1000	1	0.0652	0.0032	0.5	12/6/2011	7:23:36 AM
6	0.0500	1	0.0333	0.0017	-1.7	12/6/2011	7:23:36 AM

Figure 7: Nitrate-N



Area = 0.0215 * Conc^2 + 0.6542 * Conc - 6.6946e-5
Conc = - 0.0515 * Area^2 + 1.5080 * Area + 0.0012
Correlation Coefficient (r) = 1.00000

1/x weighting

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG No.:

Batch Number: 83987 Batch Start Date: 11/23/11 11:30 Batch Analyst: Emerich, Rich W

Batch Method: 300.0 Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11H_IC_ICV 00001	W11J_IC_LCS 00001			
ICV 360-83987/1		300.0		10 mL	1 mL				
CCV 360-83987/3		300.0		10 mL		10 mL			
LCS 360-83987/6		300.0		10 mL		10 mL			
CCV 360-83987/16		300.0		10 mL		10 mL			
CCV 360-83987/22		300.0		10 mL		10 mL			

Batch Notes	

Basis	Basis Description

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Batch Number: 84080   Batch Start Date: 11/28/11 19:45   Batch Analyst: Emerich, Rich W

Batch Method: 300.0   Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11H_IC_ICV 00001	W11J_IC_LCS 00001			
ICV 360-84080/1		300.0		10 mL	1 mL				
LCS 360-84080/4		300.0		10 mL		10 mL			
CCV 360-84080/15		300.0		10 mL		10 mL			
CCV 360-84080/25		300.0		10 mL		10 mL			

Batch Notes	

Basis	Basis Description

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Batch Number: 84081   Batch Start Date: 11/28/11 19:45   Batch Analyst: Emerich, Rich W

Batch Method: 300.0   Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11H_IC_ICV 00001	W11J_IC_LCS 00001			
ICV 360-84081/1		300.0		10 mL	1 mL				
CCV 360-84081/3		300.0		10 mL		10 mL			
LCS 360-84081/6		300.0		10 mL		10 mL			
CCV 360-84081/11		300.0		10 mL		10 mL			
CCV 360-84081/16		300.0		10 mL		10 mL			

Batch Notes	

Basis	Basis Description

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Batch Number: 84104   Batch Start Date: 11/21/11 17:17   Batch Analyst: Emerich, Rich W

Batch Method: 300.0   Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11H_IC_ICV 00001	W11J_IC_LCS 00001			
ICV 360-84104/1		300.0		10 mL	1 mL				
LCS 360-84104/4		300.0		10 mL		10 mL			
CCV 360-84104/14		300.0		10 mL		10 mL			
CCV 360-84104/23		300.0		10 mL		10 mL			

Batch Notes	

Basis	Basis Description

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG No.:

Batch Number: 84106 Batch Start Date: 11/21/11 17:17 Batch Analyst: Emerich, Rich W

Batch Method: 300.0 Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11_IC_MS/MSD 00001	W11H_IC_ICV 00001	W11J_IC_LCS 00001		
ICV 360-84106/1		300.0		10 mL		1 mL			
CCV 360-84106/3		300.0		10 mL			10 mL		
LCS 360-84106/6		300.0		10 mL			10 mL		
360-37706-A-5 MS	MPE-3S-110911	300.0	T	10 mL	100 uL				
360-37706-A-5 MSD	MPE-3S-110911	300.0	T	10 mL	100 uL				
CCV 360-84106/15		300.0		10 mL			10 mL		
CCV 360-84106/25		300.0		10 mL			10 mL		

Batch Notes	

Basis	Basis Description
T	Total/NA

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Batch Number: 84154   Batch Start Date: 11/30/11 07:47   Batch Analyst: Stewart, Alyse M

Batch Method: 300.0   Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11H_IC_ICV 00001	W11J_IC_LCS 00001			
ICV 360-84154/1		300.0		10 mL	1 mL				
LCS 360-84154/4		300.0		10 mL		10 mL			
CCV 360-84154/14		300.0		10 mL		10 mL			
CCV 360-84154/24		300.0		10 mL		10 mL			

Batch Notes	

Basis	Basis Description

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG No.:

Batch Number: 84207 Batch Start Date: 12/01/11 08:29 Batch Analyst: Stewart, Alyse M

Batch Method: 300.0 Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11H_IC_ICV 00001	W11J_IC_LCS 00001			
ICV 360-84207/1		300.0		10 mL	1 mL				
LCS 360-84207/4		300.0		10 mL		10 mL			
CCV 360-84207/15		300.0		10 mL		10 mL			
CCV 360-84207/22		300.0		10 mL		10 mL			

Batch Notes	

Basis	Basis Description

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Batch Number: 84209   Batch Start Date: 12/01/11 08:29   Batch Analyst: Stewart, Alyse M

Batch Method: 300.0   Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11H_IC_ICV 00001	W11J_IC_LCS 00001			
ICV 360-84209/1		300.0		10 mL	1 mL				
CCV 360-84209/3		300.0		10 mL		10 mL			
LCS 360-84209/6		300.0		10 mL		10 mL			
CCV 360-84209/16		300.0		10 mL		10 mL			
CCV 360-84209/23		300.0		10 mL		10 mL			

Batch Notes	

Basis	Basis Description

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Batch Number: 84269   Batch Start Date: 12/03/11 10:33   Batch Analyst: Stewart, Alyse M

Batch Method: 300.0   Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11_IC_MS/MSD 00001	W11H_IC_ICV 00001	W11J_IC_LCS 00001		
ICV 360-84269/1		300.0		10 mL		1 mL			
LCS 360-84269/4		300.0		10 mL			10 mL		
360-37706-A-33 MS		300.0	T	10 mL	100 uL				
360-37706-A-33 MSD		300.0	T	10 mL	100 uL				
CCV 360-84269/13		300.0		10 mL			10 mL		
CCV 360-84269/23		300.0		10 mL			10 mL		

Batch Notes	

Basis	Basis Description
T	Total/NA

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield Job No.: 360-37706-1

SDG No.:

Batch Number: 84273 Batch Start Date: 12/03/11 10:33 Batch Analyst: Stewart, Alyse M

Batch Method: 300.0 Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11H_IC_ICV 00001	W11J_IC_LCS 00001			
ICV 360-84273/1		300.0		10 mL	1 mL				
CCV 360-84273/3		300.0		10 mL		10 mL			
LCS 360-84273/6		300.0		10 mL		10 mL			
CCV 360-84273/16		300.0		10 mL		10 mL			
CCV 360-84273/23		300.0		10 mL		10 mL			

Batch Notes	

Basis	Basis Description

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield   Job No.: 360-37706-1

SDG No.:

Batch Number: 84353   Batch Start Date: 12/05/11 13:55   Batch Analyst: Stewart, Alyse M

Batch Method: 300.0   Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11_IC_MS/MSD 00001	W11H_IC_ICV 00001	W11J_IC_LCS 00001		
ICV 360-84353/1		300.0		10 mL		1 mL			
LCS 360-84353/4		300.0		10 mL			10 mL		
360-37706-A-44 MS	MPE-1I-111511	300.0	T	10 mL	100 uL				
360-37706-A-44 MSD	MPE-1I-111511	300.0	T	10 mL	100 uL				
CCV 360-84353/13		300.0		10 mL			10 mL		

Batch Notes	

Basis	Basis Description
T	Total/NA

Shipping and Receiving Documents

TETRA TECH ISG
TtNUS, Information Systems Group

Completion Ticket

On 12/6/2011 at 9:38 AM the following files were submitted to Tetra Tech by joe.chimi@testamericainc.com with TAWMA:

360-37706-1A1.txt, 360-37706-1A3.txt

If you need to identify this session at a later date refer to Ticket Key:

2011126_906259_ledd_TAWMA

You may print this page by clicking on the "Print This Page" button

Thank you for using the Data Checker, to upload more files click the "Upload/Check Files" link on navigation menu.

Print this Page | Back To Upload

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Login Sample Receipt Checklist

Client: Tetra Tech NUS Inc

Job Number: 360-37706-1

Login Number: 37706

List Source: TestAmerica Westfield

List Number: 1

Creator: Beaumier, Janine E

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

LABORATORY CHRONICLE - TestAmerica WESTFIELD

CLIENT: Tetra Tech

Report No: '

Project: 360-37706

Date Sampled: 11/9/11-11/16/11

Date Received: 11/17/11

GENERAL CHEMISTRY

Sample No.	Preserv.	Relinquised by	Received by	Date/Time	Reason for change
1	NONE	JB	Rus	11-21-11 | 1650	Taken for
2					anlaysis
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Extractions:

Metals ______
Cyanide ______
Misc. ______

Analysis:

Metals: ______
Cyanide ______
Mics.

cnfr\interncoc.xls

W-SR-010

LABORATORY CHRONICLE - TestAmerica WESTFIELD

CLIENT: Tetra Tech

Report No:

Project: 360-37706

Date Sampled: ~~11/9~~ CRR 11/11/11 - 11/15/11

Date Received: 11/17/11

GENERAL CHEMISTRY

Sample No.	Preserv.	Relinquised by	Received by	Date/Time	Reason for change
21	NONE	JB	RCE	11-21-11 / 1650	Taken for
22	↓		↓	↓	Analysis
23	NONE		RCE	11-22-11 / 0830	Taken for
24					Analysis
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					

Extractions:

Metals ______
Cyanide ______
Misc. ______

Analysis:

Metals: ______
Cyanide ______
Mics.

cnfr\interncoc.xls

W-SR-010

LABORATORY CHRONICLE - TestAmerica WESTFIELD

CLIENT: Tetra Tech

Report No:

Project: 360-37706

Date Sampled: 11/9/11- ~~11/16/11~~ COR

Date Received: 11/17/11

GENERAL CHEMISTRY

Sample No.	Preserv.	Relinquised by	Received by	Date/Time	Reason for change
61	NONE	JB	AMS	12/1/11 /1800	taken for analysis
62					
63					

JB 11/17/11

Extractions:

Metals ______
Cyanide ______
Misc. ______

Analysis:

Metals: ______
Cyanide ______
Mics.

cnfr\interncoc.xls

W-SR-010

LABORATORY CHRONICLE - TestAmerica WESTFIELD

CLIENT: Tetra Tech

Report No:

Project: 360-37706

Date Sampled: 11/15/11 - 11/16/11

Date Received: 11/17/11

GENERAL CHEMISTRY

Sample No.	Preserv.	Relinquised by	Received by	Date/Time	Reason for change
41	NONE	JB	RLS	11-22-11 0830	Taken for
42					Analysis
43					
44					
45					
46	NONE		RLS	11-28-11 1805	Taken for analysis
47	NONE		RLS	11-28-11 1805	Taken for
48	NONE				analysis
49					
50					
51					
52					
53	NONE		AMG	11/30/11 0800	taken for analysis
54					
55					
56				12/1/11 0800	taken for analysis
57					
58					
59					
60					

Extractions:

Metals ______
Cyanide ______
Misc. ______

Analysis:

Metals: ______
Cyanide ______
Mics.

LABORATORY CHRONICLE - TestAmerica WESTFIELD

CLIENT: Tetra Tech

Report No:

Project: 360-37706

Date Sampled: 11/9/11-11/15/11

Date Received: 11/17/11

GENERAL CHEMISTRY

Sample No.	Preserv.	Relinquised by	Received by	Date/Time	Reason for change
A1 to A22	NONE	RWS	JB	11-22-11 / 0930	Returned to walk-in
A23 to A45	NONE	RWS	JB	11-22-11 / 1015	" " "
A8	NONE	JB	RWS	11-28-11 / 1805	Taken for analysis
A10					
A13					
A15					
A23					
A25					
A27					
A29					
A8	NONE	RWS	JB	11-30-11 / 1430	Returned to
A10					walk-in cooler
A13					
A15					
A23					
A25					
A27					
A29					
A46 to A52	NONE	RWS		11-30-11 / 1440	Returned to Walk-in
A30 to A45	NONE	V/A	AMB	12/2/11 / 0810	taken for reanalysis

Extractions:

Metals ____

Cyanide ____

Misc. ____

Analysis:

Metals: ____

Cyanide ____

Mics.

cnfr\interncoc.xls

W-SR-010

LABORATORY CHRONICLE - TestAmerica WESTFIELD

CLIENT: Tetra Tech

Report No:

Project: 360-37706

Date Sampled: 11/12/11 - 11/16/11 + 11/9/11

Date Received: 11/17/11

GENERAL CHEMISTRY

Sample No.	Preserv.	Relinquised by	Received by	Date/Time	Reason for change
A30-A45	NONE	AMS	VU	12/5/11 1300	Return to walkin
A53-A63	↓	↓	VU	↓	↓

Extractions:

Metals ______
Cyanide ______
Misc. ______

Analysis:

Metals: ______
Cyanide ______
Mics.

Chain of Custody Record 360-37706

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location:
Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact

Company Name: Tetra Tech NUS	Client Project Manager: Tony Apanavage	Site Contact: Walt Pozon	Lab Contact: Westfield MA	COC No: 009267
Address: 20251 Century Blvd	Telephone: (301) 528-3021	Telephone: 301 991-3914	Telephone:	1 of 27 COCs
City/State/Zip: Germantown, MD 20874	Email:	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: (301) 528-3021		TAT if different from below ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client ☐ Lab pickup ☐ Lab sampling ☐
Project Name: MRC-Block E Injection Wells	Method of Shipment/Carrier: Fed Ex			
Project Number: 112IC03619-02	Shipping/Tracking No:			Job/SDG No:
PO#				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Bromide	Sample Specific Notes / Special Instructions:
MPE-1S-110911	11-9-11	1200		X									X		N	G	X	
MPE-1I-110911		1223		X									X				X	
MPE-2S-110911		1250		X									X				X	
MPE-2I-110911		1320		X									X				X	
MPE-3S-110911		1350		X									X				X	
MPE-3I-110911		1351		X									X				X	
~~MPE~~ MPW-1S-110911		1600		X									X				X	
MPW-1I-110911		1603		X									X				X	
MPW-2S-110911		1605		X									X				X	
MPN-1S-110911	↓	1715		X									X				X	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return to Client ☐ Disposal By Lab ☐ Archive For ______ Months

Special Instructions/QC Requirements & Comments:

0.1 / 0.3°C w/ice

Relinquished by: [signature]	Company: TtNUS	Date/Time: 11-16-11 / 1600	Received by: [signature]	Company: TestAmerica	Date/Time: 11-16-2011 / 1600
Relinquished by: [signature]	Company: TestAmerica	Date/Time: 11-16-2011 / 1630	Received by: [signature]	Company: TA	Date/Time: 11/17/11 10:55
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Fed Ex Std. Ov. 7954 1516 0619 / 7954 1516 0527

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TAL 0018-1 (04/10)

Chain of Custody Record 360-37706

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: ______
Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other ______

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: Tetra Tech	Client Project Manager: Tony Apawavage	Site Contact: Wiett Pryor	Lab Contact: Westfield, MA	COC No: 009269
Address: 20251 Century Blvd.	Telephone: 301-528-3021	Telephone: 301-991-3914	Telephone:	2 of ~~37~~ COCs
City/State/Zip: Germantown, MD	Email:	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: (301) 528-3021		TAT if different from below ______ ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client ☐ Lab pickup ☐ Lab sampling ☐
Project Name: MRC Injection Test	Method of Shipment/Carrier: Fed Ex			Job/SDG No:
Project Number: 112IC03619-02	Shipping/Tracking No:			
PO#				

Sample Identification	Sample Date	Sample Time	Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Bromide	Sample Specific Notes / Special Instructions:
~~MPN-1N-110911~~	~~11/9/11~~			~~X~~									~~X~~		~~N~~	~~G~~	X	
MPN-2S-110911	11/09/11	1730		X									X		N	G	X	
MPN-2I-110911	11/09/11	1740		X									X				X	
OW1-B-110911	11/09/11	1745		X									X				X	
OW1-C-110911	11/09/11	1750		X									X				X	
MPN-1I-110911	11/09/11	1720		X									X				X	
E-MH10-SW-111011	11-10-11	0935		X									X				X	Block E
G-IL-X1-SW-111011		1025		X									X				X	Block G
I-XIIA-SW-111011		1110		X									X				X	Block I
				~~X~~									~~X~~				~~X~~	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal By Lab ☐ Archive For ______ Months

Special Instructions/QC Requirements & Comments:
0.1/0.3°C wice

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Tetra Tech	11-16-11 / 1600	[signature]	TestAmerica	11-16-2011/1600
[signature]	TestAmerica	11-16-2011/1630	[signature]	TA	11/17/11 10:55
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Fed Ex Std. Ov. 795415160619/795415160527

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TAL 0018-1 (04/10)

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: ______
Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other ______

TestAmerica Laboratories, Inc.

Client Contact					
Company Name: Tetra Tech NUS	Client Project Manager: Tony Apanavage	Site Contact: Walt Payon	Lab Contact: Westfield MA	COC No: 009268
Address: 20251 Century Blvd STE 200	Telephone: (302) 528-3021	Telephone: 301 991-3914	Telephone:	3 of 37 COCs
City/State/Zip: Germantown MD 20874	Email:	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: 301 528-3021		TAT if different from below ______ ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client ☐ Lab pickup ☐ Lab sampling ☐
Project Name: MAC pilot well Injections	Method of Shipment/Carrier: Fed Ex			
Project Number: 112IC03619-02	Shipping/Tracking No:			Job/SDG No:
PO#				

Sample Identification	Sample Date	Sample Time	Air	Aqueous	Sediment	Solid	Other:	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C/Grab=G	Bromide	Sample Specific Notes / Special Instructions:
E-MH10-SW-111111	11-11-11	1105		X									X		N	G	X	
G-IL-X1-SW-111111		1120		X									X				X	
I-X11A-SW-111111		1415		X									X				X	
MPE-1S-111111		1500		X									X				X	
MPE-1I-111111		1505		X									X				X	
MPE-2S-111111		1530		X									X				X	
MPE-2I-111111		1535		X									X				X	
MPE-3S-111111		1545		X									X				X	
MPE-3I-111111		1550		X									X				X	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal By Lab ☐ Archive For ______ Months

Special Instructions/QC Requirements & Comments:
0.1/0.3°C wice

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Walt Payon	Hows	11-16-11 / 1600	[signature]	TestAmerica	11-16-2011/1620
[signature]	TestAmerica	11-16-2011 / 1630	[signature]	TA	11/17/11 10:55
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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TAL 0018-1 (04/10)

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location:
Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: Tetra Tech	Client Project Manager: Tony Apanavage	Site Contact: Walter O'Neill	Lab Contact:	COC No: 009270
Address: 20251 Century Blvd	Telephone: (301) 528-3021	Telephone: 706-201-3646	Telephone:	4 of 7 COCs
City/State/Zip: Germantown, MD 20874	Email:	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: (301) 528-3021		TAT if different from below ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client ☐ Lab pickup ☐ Lab sampling ☐
Project Name: MRC Injection test	Method of Shipment/Carrier: Fed Ex			
Project Number: 112IC03619-02	Shipping/Tracking No:			Job/SDG No:
PO #				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Bromide									Sample Specific Notes / Special Instructions:
MPW-1S-111211	11/12/11	1120		X									X		N	G	X									
MPW-1I-111211		1100																								
MPW-2S-111211		1115																								
MPW-2I-111211		1200																								
MPW-3S-111211		1215																								
MPW-3I-111211		1210																								
MPN-1S-111211		1415																								
MPN-~~1S~~ 1I-111211		1405																								
MPN-~~1S~~ 2S-111211		1430																								
MPN-~~1I~~ 2I-111211		1510																								

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal By Lab ☐ Archive For ______ Months

Special Instructions/QC Requirements & Comments:
0.1/0.3°C w/ ice

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	TtNUS	11-16-11 / 1600	[signature]	TestAmerica	11-16-2011 / 1600
[signature]	TestAmerica	11-16-2011 / 1630	[signature]	TA	11/17/11 1055
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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TAL 0018- I (04/10)

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location:
Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: Tetra Tech	Client Project Manager: Tony Apanavage	Site Contact: Walter O'Neill	Lab Contact:	COC No: 009272
Address: 20251 Century Blvd.	Telephone: (301) 528-3021	Telephone:	Telephone:	5 of 7 COCs
City/State/Zip: Germantown, MD 20874	Email:	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: (301) 528-3021		TAT if different from below ____ ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client ☐ Lab pickup ☐ Lab sampling ☐
Project Name: MRC Injection Test	Method of Shipment/Carrier: Fed EX			Job/SDG No:
Project Number: 112IC03619-02	Shipping/Tracking No:			
PO#				

Sample Identification	Sample Date	Sample Time	Air	Aqueous	Sediment	Solid	Other	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y/N)	Composite=C / Grab=G	Bromide	Sample Specific Notes / Special Instructions
MPN - ~~BW~~ OW1B-111211	11/12/11	1515		X									X		N	G	X	
MPN - ~~BW~~ OW1C-111211	11/12/11	1520		X									X				X	
E-MH10-SW-111511	11-15-11	1335		X									X				X	Block E
G-IL-X1-SW-111511		1400		X									X				X	Block G
I-X11-SW-111511		1415		X									X				X	Block I
MPE-1s-111511		1515		X									X				X	
MPE-1I-111511		1520		X									X				X	
MPE-2s-111511		1525		X									X				X	
MPE-3s-111511		1550		X									X				X	
MPE 3I-111511		1555		X									X				X	

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return to Client ☐ Disposal By Lab ☐ Archive For ______ Months

Special Instructions/QC Requirements & Comments:
0.1/0.3°C w/ ice

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	TtNUS	11-16-11 / 1600	[signature]	TestAmerica	11-16-2011 / 1610
[signature]	TestAmerica	11-16-2011 / 1630	[signature]	TA	11/17/11 10:55
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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TAL 0018-1 (04/10)

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: ______

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other ______

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: Tetra Tech NUS	Client Project Manager: Tony Aparavage	Site Contact: Walt Pryor	Lab Contact: Westfield MA	COC No: 009271
Address: 20251 Century Blvd STE 200	Telephone: 301 528-7021	Telephone: 301 991-3914	Telephone:	6 of 7 COCs
City/State/Zip: Germantown MD 20874	Email:	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: 301 528-3021		TAT if different from below ______		Walk-in client ☐
Project Name: MAC-Pilot Injection Well Study Block E, G, I	Method of Shipment/Carrier: Fed EX	☐ 3 weeks ☐ 2 weeks ☐ 1 week		Lab pickup ☐ Lab sampling ☐
Project Number: 112IC03619-02	Shipping/Tracking No:	☐ 2 days ☐ 1 day		Job/SDG No:
PO#				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	Bromide	Sample Specific Notes / Special Instructions:
MPE-2I-111511	11-15-11	1600		X									X		N	G	X	
MPW-1S-111611	11-16-11	1000		X									X				X	
MPW-1I-111611		1005		X									X				X	
MPW-2S-111611		1010		X									X				X	
MPW-2I-111611		1030		X									X				X	
MPW-3S-111611		1035		X									X				X	
MPW-3I-111611		1040		X									X				X	
OW1-B-111611		1250		X									X				X	
OW1-C-111611		1255		X									X				X	
MPN-1S-111611		1300		X									X				X	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal By Lab ☐ Archive For ______ Months

Special Instructions/QC Requirements & Comments:

0.1/0.3°C w/ice

Relinquished by: Walt Pryor	Company: TtNUS	Date/Time: 11-16-11 / 1600	Received by: [signature]	Company: TestAmerica	Date/Time: 11-16-2011/1600
Relinquished by: [signature]	Company: TestAmerica	Date/Time: 11-16-2011 /1630	Received by: [signature]	Company: TA	Date/Time: 11/17/11 10:55
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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TAL 0018-1 (04/10)

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location:
Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: Tetra Tech NUS	Client Project Manager: Tony Apanavage	Site Contact: Walt Payon	Lab Contact: Westfield MA	COC No: 009274
Address: 20251 Century Blvd STE 200	Telephone: 301 528-3021	Telephone: 301 991-3914	Telephone:	7 of 7 COCs
City/State/Zip: Germantown MD 20874	Email:	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: 301 528-3021		TAT if different from below ____ ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client ☐ Lab pickup ☐ Lab sampling ☐
Project Name: MNC-Pilot Injection well Study Block E, G, I	Method of Shipment/Carrier: Fed Ex			Job/SDG No:
Project Number: 112IC03619-02	Shipping/Tracking No:			
PO#				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other	Filtered Sample (Y / N)	Composite=C / Grab=G	Bromide	Sample Specific Notes / Special Instructions
MPN-1I-111611	11-16-11	1310		X									X		N	G	X	
MPN-2I-111611	↓	1315		X									X		↓	↓	X	
MPN-2S-111611	↓	1320		X									X		↓	↓	X	
MPN-ZI-110911	11-9-11	1625		X									X		↓	↓	X	
MPW-3S-110911	↓	1631		X									X		↓	↓	X	
MPW-3I-110911	↓	1635		X									X		↓	↓	X	

OB 11/17/11

~~Possible~~ Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal By Lab ☐ Archive For ________ Months

Special Instructions/QC Requirements & Comments:
0.1/0.3°C w/ ice

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Walt Payon	TtNUS	11-16-11 / 1600	[signature]	TestAmerica	11-16-2011/1600
[signature]	TestAmerica	11-16-2011 / 1630	Jarrett Bemis	TA	11/17/11 10:55
			Received in Laboratory by:		

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TAL 0018-1 (04/10)

APPENDIX G—WASTE CHARACTERIZATION ANALYTICAL RESULTS

PHOENIX
Environmental Laboratories, Inc.

Thursday, December 22, 2011

Attn: Ms. Donna Sommer
Envirite of Pennsylvania
730 Vogelsong Road
York, PA 17404

Project ID: LOCKHEED MARTIN
Sample ID#s: BB10443 - BB10444

This laboratory is in compliance with the QA/QC procedures outlined in EPA 600/4-79-019, Handbook for Analytical Quality in Water and Waste Water, March 1979, SW846 QA/QC and NELAC requirements of procedures used.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

Phyllis Shiller

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Telephone (860) 645-1102 Fax (860) 645-0823

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Analysis Report

December 22, 2011

FOR: Attn: Ms. Donna Sommer
Envirite of Pennsylvania
730 Vogelsong Road
York, PA 17404

Sample Information		Custody Information		Date	Time
Matrix:	SOLID	Collected by:	DS	12/07/11	10:00
Location Code:	ENVIRDEL | SOIL MRC	Received by:	LB	12/13/11	10:36
Rush Request:		Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBB10443
Phoenix ID: BB10443

Project ID: LOCKHEED MARTIN

Client ID: SOIL - MRCPTS

Parameter	Result	RL	Units	Date	Time	By	Reference
TCLP Silver	< 0.10	0.10	mg/L	12/16/11		LK	SW6010
TCLP Arsenic	< 0.10	0.10	mg/L	12/16/11		LK	SW6010
TCLP Barium	0.26	0.10	mg/L	12/16/11		LK	SW6010
TCLP Cadmium	< 0.050	0.050	mg/L	12/16/11		LK	SW6010
TCLP Chromium	< 0.10	0.10	mg/L	12/16/11		LK	SW6010
TCLP Mercury	< 0.0002	0.0002	mg/L	12/14/11		RS	SW7470
TCLP Lead	< 0.10	0.10	mg/L	12/16/11		LK	SW6010
TCLP Selenium	< 0.10	0.10	mg/L	12/16/11		LK	SW6010
TCLP Metals Digestion	Completed			12/14/11			SW3005
Percent Solid	84		%	12/13/11		JL	E160.3
pH - Soil	7.88	0.10	PH	12/13/11	19:15	O/EG	4500-H B/9045
Reactivity Cyanide	< 5.9	5.9	mg/Kg	12/14/11		JL/GD	SW 846-7.3
Reactivity Sulfide	< 20	20	mg/Kg	12/14/11		JL/GD	SW846-7.3
Reactivity	Negative		Pos/Neg	12/14/11		JL/GD	SW 846-7.3
TCLP Digestion Mercury	Completed			12/14/11			E1311/7470
TCLP Extraction for Metals	Completed			12/13/11		I	EPA 1311
TCLP Extraction for Organics	Completed			12/13/11		I	1311
TCLP Semi-Volatile Extraction	Completed			12/14/11		L/L	SW3510
TCLP Extraction Volatiles	Completed			12/13/11		I	EPA 1311
TCLP Volatiles							
1,1-Dichloroethene	ND	50	ug/L	12/15/11		H/J	SW8260
1,2-Dichloroethane	ND	50	ug/L	12/15/11		H/J	SW8260
Benzene	ND	50	ug/L	12/15/11		H/J	SW8260
Carbon tetrachloride	ND	50	ug/L	12/15/11		H/J	SW8260
Chlorobenzene	ND	50	ug/L	12/15/11		H/J	SW8260
Chloroform	ND	50	ug/L	12/15/11		H/J	SW8260
Methyl ethyl ketone	ND	50	ug/L	12/15/11		H/J	SW8260

Parameter	Result	RL	Units	Date	Time	By	Reference
Tetrachloroethene	ND	50	ug/L	12/15/11		H/J	SW8260
Trichloroethene	ND	50	ug/L	12/15/11		H/J	SW8260
Vinyl chloride	ND	50	ug/L	12/15/11		H/J	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	101		%	12/15/11		H/J	70 - 130 %
% Bromofluorobenzene	87		%	12/15/11		H/J	70 - 130 %
% Dibromofluoromethane	99		%	12/15/11		H/J	70 - 130 %
% Toluene-d8	97		%	12/15/11		H/J	70 - 130 %
TCLP Acid/Base-Neutral							
1,4-Dichlorobenzene	ND	83	ug/L	12/14/11		DD	SW 8270
2,4,5-Trichlorophenol	ND	83	ug/L	12/14/11		DD	SW 8270
2,4,6-Trichlorophenol	ND	83	ug/L	12/14/11		DD	SW 8270
2,4-Dinitrotoluene	ND	83	ug/L	12/14/11		DD	SW 8270
2-Methylphenol (o-cresol)	ND	83	ug/L	12/14/11		DD	SW 8270
3&4-Methylphenol (m&p-Cresol)	ND	83	ug/L	12/14/11		DD	SW 8270
Hexachlorobenzene	ND	83	ug/L	12/14/11		DD	SW 8270
Hexachlorobutadiene	ND	83	ug/L	12/14/11		DD	SW 8270
Hexachloroethane	ND	83	ug/L	12/14/11		DD	SW 8270
Nitrobenzene	ND	83	ug/L	12/14/11		DD	SW 8270
Pentachlorophenol	ND	83	ug/L	12/14/11		DD	SW 8270
Pyridine	ND	83	ug/L	12/14/11		DD	SW 8270
QA/QC Surrogates							
% 2,4,6-Tribromophenol	117		%	12/14/11		DD	15 - 130 %
% 2-Fluorobiphenyl	71		%	12/14/11		DD	15 - 130 %
% 2-Fluorophenol	69		%	12/14/11		DD	15 - 130 %
% Nitrobenzene-d5	79		%	12/14/11		DD	15 - 130 %
% Phenol-d5	58		%	12/14/11		DD	15 - 130 %
% Terphenyl-d14	72		%	12/14/11		DD	15 - 130 %

Comments:

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide and Reactive Sulfide. This method is no longer listed in the current version of SW-846.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

ND=Not detected BDL=Below Detection Level RL=Reporting Level

This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller

Phyllis Shiller, Laboratory Director
December 22, 2011

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

Analysis Report

December 22, 2011

FOR: Attn: Ms. Donna Sommer
Envirite of Pennsylvania
730 Vogelsong Road
York, PA 17404

Sample Information		Custody Information		Date	Time
Matrix:	WATER	Collected by:	DS	12/07/11	10:00
Location Code:	ENVIRDEL | MRCPTS	Received by:	LB	12/13/11	10:36
Rush Request:		Analyzed by:	see "By" below		
P.O.#:					

Laboratory Data

SDG ID: GBB10443
Phoenix ID: BB10444

Project ID: LOCKHEED MARTIN

Client ID: WATER - MRCPTS

Parameter	Result	RL	Units	Date	Time	By	Reference
TCLP Silver	< 0.10	0.10	mg/L	12/16/11		LK	SW6010
TCLP Arsenic	< 0.10	0.10	mg/L	12/16/11		LK	SW6010
TCLP Barium	0.20	0.10	mg/L	12/16/11		LK	SW6010
TCLP Cadmium	< 0.050	0.050	mg/L	12/16/11		LK	SW6010
TCLP Chromium	< 0.10	0.10	mg/L	12/16/11		LK	SW6010
TCLP Mercury	< 0.0002	0.0002	mg/L	12/14/11		RS	SW7470
TCLP Lead	< 0.10	0.10	mg/L	12/16/11		LK	SW6010
TCLP Selenium	< 0.10	0.10	mg/L	12/16/11		LK	SW6010
TCLP Metals Digestion	Completed			12/14/11			SW3005
pH	7.16	0.10	pH	12/14/11	5:34	BS/EG	4500-H B/9040
Reactivity Cyanide	< 1.0	1.0	mg/L	12/14/11		JL/GD	SW 846-7.3
Reactivity Sulfide	< 0.4	0.4	mg/L	12/14/11		JL/GD	SW846-7.3
Reactivity	Negative		Pos/Neg	12/14/11		JL/GD	SW 846-7.3
TCLP Digestion Mercury	Completed			12/14/11			E1311/7470
TCLP Extraction for Metals	Completed			12/13/11		I	EPA 1311
TCLP Extraction for Organics	Completed			12/13/11		I	1311
TCLP Semi-Volatile Extraction	Completed			12/14/11		L/L	SW3510
TCLP Extraction Volatiles	Completed			12/13/11		I	EPA 1311
TCLP Volatiles							
1,1-Dichloroethene	ND	50	ug/L	12/15/11		H/J	SW8260
1,2-Dichloroethane	ND	50	ug/L	12/15/11		H/J	SW8260
Benzene	ND	50	ug/L	12/15/11		H/J	SW8260
Carbon tetrachloride	ND	50	ug/L	12/15/11		H/J	SW8260
Chlorobenzene	ND	50	ug/L	12/15/11		H/J	SW8260
Chloroform	ND	50	ug/L	12/15/11		H/J	SW8260
Methyl ethyl ketone	ND	50	ug/L	12/15/11		H/J	SW8260
Tetrachloroethene	ND	50	ug/L	12/15/11		H/J	SW8260

Project ID: LOCKHEED MARTIN
Client ID: WATER - MRCPTS

Phoenix I.D.: BB10444

Parameter	Result	RL	Units	Date	Time	By	Reference
Trichloroethene	210	100	ug/L	12/15/11		H/J	SW8260
Vinyl chloride	ND	50	ug/L	12/15/11		H/J	SW8260
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	100		%	12/15/11		H/J	70 - 130 %
% Bromofluorobenzene	90		%	12/15/11		H/J	70 - 130 %
% Dibromofluoromethane	118		%	12/15/11		H/J	70 - 130 %
% Toluene-d8	97		%	12/15/11		H/J	70 - 130 %
TCLP Acid/Base-Neutral							
1,4-Dichlorobenzene	ND	83	ug/L	12/14/11		DD	SW 8270
2,4,5-Trichlorophenol	ND	83	ug/L	12/14/11		DD	SW 8270
2,4,6-Trichlorophenol	ND	83	ug/L	12/14/11		DD	SW 8270
2,4-Dinitrotoluene	ND	83	ug/L	12/14/11		DD	SW 8270
2-Methylphenol (o-cresol)	ND	83	ug/L	12/14/11		DD	SW 8270
3&4-Methylphenol (m&p-Cresol)	ND	83	ug/L	12/14/11		DD	SW 8270
Hexachlorobenzene	ND	83	ug/L	12/14/11		DD	SW 8270
Hexachlorobutadiene	ND	83	ug/L	12/14/11		DD	SW 8270
Hexachloroethane	ND	83	ug/L	12/14/11		DD	SW 8270
Nitrobenzene	ND	83	ug/L	12/14/11		DD	SW 8270
Pentachlorophenol	ND	83	ug/L	12/14/11		DD	SW 8270
Pyridine	ND	83	ug/L	12/14/11		DD	SW 8270
QA/QC Surrogates							
% 2,4,6-Tribromophenol	104		%	12/14/11		DD	15 - 130 %
% 2-Fluorobiphenyl	62		%	12/14/11		DD	15 - 130 %
% 2-Fluorophenol	59		%	12/14/11		DD	15 - 130 %
% Nitrobenzene-d5	67		%	12/14/11		DD	15 - 130 %
% Phenol-d5	50		%	12/14/11		DD	15 - 130 %
% Terphenyl-d14	63		%	12/14/11		DD	15 - 130 %

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.
The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide and Reactive Sulfide. This method is no longer listed in the current version of SW-846.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

ND=Not detected BDL=Below Detection Level RL=Reporting Level

This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller

Phyllis Shiller, Laboratory Director
December 22, 2011

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

December 22, 2011

QA/QC Data

SDG I.D.: GBB10443

Parameter	Blank	Dup RPD	LCS %	LCSD %	LCS RPD	MS Rec %	MS Dup Rec %	RPD	% Rec Limits	% RPD Limits
QA/QC Batch 190567, QC Sample No: BB09961 (BB10443, BB10444)										
ICP Metals - TCLP Extraction										
Arsenic	BDL	NC	102	103	1.0	89.1	88.5	0.7	75 - 125	20
Barium	BDL	NC	110	101	8.5	104	102	1.9	75 - 125	20
Cadmium	BDL	NC	96.0	96.9	0.9	94.8	92.2	2.8	75 - 125	20
Chromium	BDL	NC	97.6	94.6	3.1	99.3	97.5	1.8	75 - 125	20
Lead	BDL	NC	97.1	97.6	0.5	96.9	94.4	2.6	75 - 125	20
Selenium	BDL	NC	112	110	1.8	92.2	90.2	2.2	75 - 125	20
Silver	BDL	NC	110	106	3.7	104	99.2	4.7	75 - 125	20
QA/QC Batch 190652, QC Sample No: BB10443 (BB10443, BB10444)										
Mercury - Water	BDL	NC	97.2	82.2	16.7	81.2	78.1	3.9	70 - 130	20

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QA/QC Report

December 22, 2011

QA/QC Data

SDG I.D.: GBB10443

Parameter	Blank	Dup RPD	LCS %	LCSD %	LCS RPD	MS Rec %	MS Dup Rec %	RPD	% Rec Limits	% RPD Limits
QA/QC Batch 190458, QC Sample No: BB09581 (BB10443, BB10444)										
Reactivity Cyanide	BDL	NC	97.1						85 - 115	30
QA/QC Batch 190660, QC Sample No: BB10695 (BB10444)										
pH		0.80	99.1						85 - 115	20
QA/QC Batch 190681, QC Sample No: BB10907 (BB10443)										
pH - Soil		0.10	98.8						85 - 115	20

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ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

QA/QC Report

December 22, 2011

QA/QC Data

SDG I.D.: GBB10443

Parameter	Blank	LCS %	LCSD %	LCS RPD	MS Rec %	MS Dup Rec %	RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 190683, QC Sample No: BB10443 (BB10443, BB10444)										
Semivolatiles - Water										
1,4-Dichlorobenzene	ND	89	89	0.0				30 - 130	20	
2,4,5-Trichlorophenol	ND	103	104	1.0				30 - 130	20	
2,4,6-Trichlorophenol	ND	110	111	0.9				30 - 130	20	
2,4-Dinitrotoluene	ND	99	100	1.0				30 - 130	20	
2-Methylphenol (o-cresol)	ND	87	86	1.2				30 - 130	20	
3&4-Methylphenol (m&p-cresol)	ND	88	91	3.4				30 - 130	20	
Hexachlorobenzene	ND	101	102	1.0				30 - 130	20	
Hexachlorobutadiene	ND	87	86	1.2				30 - 130	20	
Hexachloroethane	ND	92	93	1.1				30 - 130	20	
Nitrobenzene	ND	101	101	0.0				30 - 130	20	
Pentachlorophenol	ND	115	117	1.7				30 - 130	20	
Pyridine	ND	16	17	6.1				30 - 130	20	l
% 2,4,6-Tribromophenol	129	125	127	1.6				15 - 130	20	
% 2-Fluorobiphenyl	78	82	83	1.2				30 - 130	20	
% 2-Fluorophenol	68	72	74	2.7				15 - 130	20	
% Nitrobenzene-d5	86	87	88	1.1				30 - 130	20	
% Phenol-d5	62	61	61	0.0				15 - 130	20	
% Terphenyl-d14	75	77	78	1.3				30 - 130	20	
Comment:										
A LCS and LCS Duplicate were performed instead of a matrix spike and matrix spike duplicate.										
QA/QC Batch 190797, QC Sample No: BB11383 (BB10443, BB10444 (1,10X))										
Volatiles - Water										
1,1-Dichloroethene	ND	100	108	7.7	116	111	4.4	70 - 130	30	
1,2-Dichloroethane	ND	115	115	0.0	113	108	4.5	70 - 130	30	
Benzene	ND	123	106	14.8	104	98	5.9	70 - 130	30	
Carbon tetrachloride	ND	125	111	11.9	108	108	0.0	70 - 130	30	
Chlorobenzene	ND	114	114	0.0	111	102	8.5	70 - 130	30	
Chloroform	ND	118	116	1.7	111	118	6.1	70 - 130	30	
Methyl ethyl ketone	ND	83	73	12.8	76	81	6.4	70 - 130	30	
Tetrachloroethene	ND	113	111	1.8	108	101	6.7	70 - 130	30	
Trichloroethene	ND	113	111	1.8	106	101	4.8	70 - 130	30	
Vinyl chloride	ND	94	107	12.9	115	108	6.3	70 - 130	30	
% 1,2-dichlorobenzene-d4	101	101	99	2.0	101	101	0.0	70 - 130	30	
% Bromofluorobenzene	91	102	102	0.0	104	100	3.9	70 - 130	30	
% Dibromofluoromethane	118	109	102	6.6	100	126	23.0	70 - 130	30	
% Toluene-d8	98	101	100	1.0	102	98	4.0	70 - 130	30	

l = This parameter is outside laboratory lcs/lcsd specified recovery limits.

QA/QC Data

SDG I.D.: GBB10443

Parameter	Blank	LCS %	LCSD %	LCS RPD	MS Rec %	MS Dup Rec %	RPD	% Rec Limits	% RPD Limits

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria

Phyllis Shiller

Phyllis Shiller, Laboratory Director
December 22, 2011

Sample Criteria Exceedences Report

Requested Criteria:

GBB10443

SampNo	LocCode	Acode	Phoenix Analyte	Criteria Units	ST	State Category	Criteria Name	Result	RL	Factored Criteria	Factored RL Criteria	Analysis Units

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

PHOENIX Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Temp 8 Pg of

Data Delivery:
☐ Fax #:
☒ Email: donna.sommer@EQonline.com

Customer: EQ PA
Address: 730 Vogelsong Rd. York, PA

Project: Lockheed Martin
Report to: Donna Sommer, Eric Miller
Invoice to: Aida Sarayain

Project P.O:
Phone #: 610-345-3277
Fax #:

Client Sample - Information - Identification

Sampler's Signature: Donna M. Sommer Date: 12/7/11

Matrix Code:
DW=drinking water WW=wastewater S=soil/solid O=oil
GW=groundwater SL=sludge A=air X=other

Analysis Request: pH, reactivity, TCLP Metals, TCLP Volatiles, TCLP Semivolatiles

Containers: 3202 Jars; Soil VOA Vials [ ] Methanol [ ] Sod Bisulfate; GL Soil container ( ) oz; GL Soil container ( ) oz; 40 ml VOA Vial [ ] As is [ ] HCl; GL Amber 1000ml [ ] As is [ ] H2SO4; PL As is [ ] 250ml [ ] 500ml [ ] 1000ml; PL H2SO4 [ ] 250ml [ ] 500ml; PL HNO3 250ml; PL NaOH 250ml; Bacteria Bottle

Phoenix Sample #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	3202 Jars
10443	Soil-MRCPTS	S	12/7/11	10AM	✓
10444	Water-MRCPTS	L	12/7/11	10AM	✓

Relinquished by:	Accepted by:	Date:	Time:
Donna Sommer			
FedEx	[illegible]	12/13/11	10:36

Turnaround:
☐ 1 Day*
☐ 2 Days*
☐ 3 Days*
☒ Standard
☐ Other
* SURCHARGE APPLIES

CT/RI
☐ RCP Cert
☐ GW Protect
☐ GA Mobility
☐ GB Mobility
☐ SW Protection
☐ Res. Vol.
☐ Ind. Vol.
☐ Res. Criteria
☐ Other

MA
☐ MCP Certification
☐ GW-1
☐ GW-2
☐ GW-3
☐ S-1
☐ S-2
☐ S-3
☐ MWRA eSMART
☐ Other

Data Format
☐ Excel
☒ PDF
☐ GIS/Key
☐ EQuIS
☐ Other

Data Package
☐ ASP-A
☐ NJ Reduced Deliv. *
☐ NJ Hazsite EDD
☒ Phoenix Std Report
☐ Other

Comments, Special Requirements or Regulations:

State where samples were collected:

APPENDIX H—FOLLOW-UP BROMIDE SAMPLING ANALYTICAL RESULTS

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 360-39278-1

SDG Number: 360-39278

Job Description: Middle River Complex

For:
Tetra Tech, Inc formerly Tetra Tech NUS
Foster Plaza VII
661 Anderson Drive
Pittsburgh, PA 15220-2745

Attention: Chris Pike

Approved for release.
Joe Chimi
Report Production Representative
3/1/2012 3:58 PM

Designee for
Lisa A Worthington
Project Manager II
lisa.worthington@testamericainc.com
03/01/2012

Results relate only to the items tested and the sample(s) as received by the laboratory. The test results in this report meet all NELAC requirements for accredited parameters, exceptions are noted in this report. Pursuant to NELAC, this report may not be reproduced except in full, and with written approval from the laboratory. TestAmerica Westfield Certifications and Approvals: MADEP MA014, RIDOH57, CTDPH 0494, VT DECWSD, NELAP NH DES 2539, NELAP NY 10843, NY ELAP 10843, North Carolina 647. Field sampling is performed under SOPs WE-FLD-001 and WE-FLD-002.

TestAmerica Laboratories, Inc.
TestAmerica Westfield Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085
Tel (413) 572-4000 Fax (413) 572-3707 www.testamericainc.com

ACCREDITED IN ACCORDANCE WITH nelac

Table of Contents

Table of Contents

I Christine Furcinite-Reynolds, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (413)572-4000 if there are any questions or problems with the enclosed electronic deliverables.

Signature: CReynolds Title: QA Manager Date: 3/1/12

Revision 8
ISG
08/10/10

CASE NARRATIVE

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Project: Middle River Complex

Report Number: 360-39278-1

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

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

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

RECEIPT
The samples were received on 02/25/2012; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 3.1 C.

ANIONS (28 DAY HOLD TIME)
Samples Outfall 08-022412 (360-39278-1), IL-1-022412 (360-39278-2), IL-2-022412 (360-39278-3), IL-3-022412 (360-39278-4), Outfall 08-022412 (360-39278-5), IL-1-022412 (360-39278-6), IL-2-022412 (360-39278-7), IL-3-022412 (360-39278-8), Outfall 08-022412 (360-39278-9), IL-1-022412 (360-39278-10), IL-2-022412 (360-39278-11) and IL-3-022412 (360-39278-12) were analyzed for anions (28 day hold time) in accordance with EPA Method 300.0. The samples were analyzed on 02/27/2012, 02/28/2012 and 02/29/2012.

Samples Outfall 08-022412 (360-39278-1)[10X], IL-1-022412 (360-39278-2)[10X], IL-2-022412 (360-39278-3)[10X], IL-3-022412 (360-39278-4)[10X], Outfall 08-022412 (360-39278-5)[10X], IL-1-022412 (360-39278-6)[10X], IL-2-022412 (360-39278-7)[10X], IL-3-022412 (360-39278-8)[10X], Outfall 08-022412 (360-39278-9)[10X], IL-2-022412 (360-39278-11)[10X] and IL-3-022412 (360-39278-12)[10X] required dilution prior to analysis due to high target concentration. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

SAMPLE SUMMARY

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
Sdg Number: 360-39278

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
360-39278-1	Outfall 08-022412	Water	02/24/2012 0825	02/25/2012 1100
360-39278-2	IL-1-022412	Water	02/24/2012 0835	02/25/2012 1100
360-39278-3	IL-2-022412	Water	02/24/2012 0845	02/25/2012 1100
360-39278-4	IL-3-022412	Water	02/24/2012 0900	02/25/2012 1100
360-39278-5	Outfall 08-022412	Water	02/24/2012 1140	02/25/2012 1100
360-39278-6	IL-1-022412	Water	02/24/2012 1151	02/25/2012 1100
360-39278-7	IL-2-022412	Water	02/24/2012 1205	02/25/2012 1100
360-39278-8	IL-3-022412	Water	02/24/2012 1215	02/25/2012 1100
360-39278-9	Outfall 08-022412	Water	02/24/2012 1501	02/25/2012 1100
360-39278-10	IL-1-022412	Water	02/24/2012 1515	02/25/2012 1100
360-39278-11	IL-2-022412	Water	02/24/2012 1525	02/25/2012 1100
360-39278-12	IL-3-022412	Water	02/24/2012 1535	02/25/2012 1100

EXECUTIVE SUMMARY - Detections

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
Sdg Number: 360-39278

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
360-39278-1	**OUTFALL 08-022412**					
Bromide		0.48		0.050	mg/L	300.0
Chloride		190		10	mg/L	300.0
360-39278-2	**IL-1-022412**					
Bromide		0.10		0.050	mg/L	300.0
Chloride		94		10	mg/L	300.0
360-39278-3	**IL-2-022412**					
Bromide		0.094		0.050	mg/L	300.0
Chloride		94		10	mg/L	300.0
360-39278-4	**IL-3-022412**					
Bromide		0.094		0.050	mg/L	300.0
Chloride		98		10	mg/L	300.0
360-39278-5	**OUTFALL 08-022412**					
Bromide		0.54		0.050	mg/L	300.0
Chloride		190		10	mg/L	300.0
360-39278-6	**IL-1-022412**					
Bromide		0.10		0.050	mg/L	300.0
Chloride		100		10	mg/L	300.0
360-39278-7	**IL-2-022412**					
Bromide		0.098		0.050	mg/L	300.0
Chloride		93		10	mg/L	300.0
360-39278-8	**IL-3-022412**					
Bromide		0.078		0.050	mg/L	300.0
Chloride		97		10	mg/L	300.0
360-39278-9	**OUTFALL 08-022412**					
Bromide		0.53		0.050	mg/L	300.0
Chloride		210		10	mg/L	300.0

EXECUTIVE SUMMARY - Detections

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
Sdg Number: 360-39278

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
360-39278-10	**IL-1-022412**					
Chloride		43		1.0	mg/L	300.0
360-39278-11	**IL-2-022412**					
Chloride		52		10	mg/L	300.0
360-39278-12	**IL-3-022412**					
Bromide		0.12		0.050	mg/L	300.0
Chloride		93		10	mg/L	300.0

METHOD SUMMARY

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
Sdg Number: 360-39278

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Anions, Ion Chromatography	TAL WFD	MCAWW 300.0	

Lab References:

TAL WFD = TestAmerica Westfield

Method References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

METHOD / ANALYST SUMMARY

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
Sdg Number: 360-39278

Method	Analyst	Analyst ID
MCAWW 300.0	Stewart, Alyse M	AMS

General Chemistry

Client Sample ID: **Outfall 08-022412**

Lab Sample ID: 360-39278-1
Client Matrix: Water

Date Sampled: 02/24/2012 0825
Date Received: 02/25/2012 1100

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.48		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-87943	Analysis Date: 02/27/2012 1537					
Chloride	190		mg/L	10	10	10	300.0
	Analysis Batch: 360-87943	Analysis Date: 02/27/2012 1554					

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
Sdg Number: 360-39278

General Chemistry

Client Sample ID: **IL-1-022412**

Lab Sample ID: 360-39278-2
Client Matrix: Water

Date Sampled: 02/24/2012 0835
Date Received: 02/25/2012 1100

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.10		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-87943	Analysis Date: 02/27/2012 1611						
Chloride	94		mg/L	10	10	10	300.0
Analysis Batch: 360-87943	Analysis Date: 02/27/2012 1628						

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
Sdg Number: 360-39278

General Chemistry

Client Sample ID: **IL-2-022412**

Lab Sample ID: 360-39278-3
Client Matrix: Water

Date Sampled: 02/24/2012 0845
Date Received: 02/25/2012 1100

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.094		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-87943	Analysis Date: 02/27/2012 1646					
Chloride	94		mg/L	10	10	10	300.0
	Analysis Batch: 360-87943	Analysis Date: 02/27/2012 1703					

General Chemistry

Client Sample ID: **IL-3-022412**

Lab Sample ID: 360-39278-4
Client Matrix: Water

Date Sampled: 02/24/2012 0900
Date Received: 02/25/2012 1100

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.094		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-87943	Analysis Date: 02/27/2012 1720					
Chloride	98		mg/L	10	10	10	300.0
	Analysis Batch: 360-87966	Analysis Date: 02/27/2012 1811					

General Chemistry

Client Sample ID: **Outfall 08-022412**

Lab Sample ID: 360-39278-5
Client Matrix: Water

Date Sampled: 02/24/2012 1140
Date Received: 02/25/2012 1100

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.54		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-87966	Analysis Date: 02/27/2012 1828						
Chloride	190		mg/L	10	10	10	300.0
Analysis Batch: 360-87966	Analysis Date: 02/27/2012 1845						

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
Sdg Number: 360-39278

General Chemistry

Client Sample ID: **IL-1-022412**

Lab Sample ID: 360-39278-6
Client Matrix: Water

Date Sampled: 02/24/2012 1151
Date Received: 02/25/2012 1100

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.10		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-87966	Analysis Date: 02/27/2012 1902					
Chloride	100		mg/L	10	10	10	300.0
	Analysis Batch: 360-87966	Analysis Date: 02/27/2012 1920					

General Chemistry

Client Sample ID: **IL-2-022412**

Lab Sample ID: 360-39278-7
Client Matrix: Water

Date Sampled: 02/24/2012 1205
Date Received: 02/25/2012 1100

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.098		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-87966	Analysis Date: 02/27/2012 1937						
Chloride	93		mg/L	10	10	10	300.0
Analysis Batch: 360-87966	Analysis Date: 02/27/2012 1954						

General Chemistry

Client Sample ID: **IL-3-022412**

Lab Sample ID: 360-39278-8
Client Matrix: Water

Date Sampled: 02/24/2012 1215
Date Received: 02/25/2012 1100

Analyte		Result	Qual	Units	RL	RL	Dil	Method
Bromide		0.078		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-87966	Analysis Date: 02/27/2012 2011						
Chloride		97		mg/L	10	10	10	300.0
	Analysis Batch: 360-87966	Analysis Date: 02/27/2012 2028						

General Chemistry

Client Sample ID: **Outfall 08-022412**

Lab Sample ID: 360-39278-9
Client Matrix: Water

Date Sampled: 02/24/2012 1501
Date Received: 02/25/2012 1100

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.53		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-87952	Analysis Date: 02/29/2012 0207					
Chloride	210		mg/L	10	10	10	300.0
	Analysis Batch: 360-87944	Analysis Date: 02/27/2012 2211					

General Chemistry

Client Sample ID: **IL-1-022412**

Lab Sample ID: 360-39278-10
Client Matrix: Water

Date Sampled: 02/24/2012 1515
Date Received: 02/25/2012 1100

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	ND		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-87952	Analysis Date: 02/29/2012 0224						
Chloride	43		mg/L	1.0	1.0	1.0	300.0
Analysis Batch: 360-87944	Analysis Date: 02/27/2012 2302						

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
Sdg Number: 360-39278

General Chemistry

Client Sample ID: **IL-2-022412**

Lab Sample ID: 360-39278-11
Client Matrix: Water

Date Sampled: 02/24/2012 1525
Date Received: 02/25/2012 1100

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	ND		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-87952	Analysis Date: 02/29/2012 0241						
Chloride	52		mg/L	10	10	10	300.0
Analysis Batch: 360-87944	Analysis Date: 02/27/2012 2354						

General Chemistry

Client Sample ID: **IL-3-022412**

Lab Sample ID: 360-39278-12
Client Matrix: Water

Date Sampled: 02/24/2012 1535
Date Received: 02/25/2012 1100

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Bromide	0.12		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-87952		Analysis Date: 02/29/2012 0258					
Chloride	93		mg/L	10	10	10	300.0
Analysis Batch: 360-87944		Analysis Date: 02/28/2012 0028					

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
Sdg Number: 360-39278

Method Blank - Batch: 360-87943

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-87943/3	Analysis Batch:	360-87943	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	02/27/2012 1411	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Bromide	ND		0.050	0.050
Chloride	ND		1.0	1.0

Lab Control Sample - Batch: 360-87943

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-87943/4	Analysis Batch:	360-87943	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	02/27/2012 1429	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	4.00	4.28	107	85 - 115	
Chloride	40.0	41.0	102	85 - 115	

Quality Control Results

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
Sdg Number: 360-39278

Method Blank - Batch: 360-87944

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-87944/5	Analysis Batch:	360-87944	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	02/27/2012 2137	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Chloride	ND		1.0	1.0

Lab Control Sample - Batch: 360-87944

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-87944/6	Analysis Batch:	360-87944	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	02/27/2012 2154	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Chloride	40.0	40.5	101	85 - 115	

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-87944

Method: 300.0
Preparation: N/A

MS Lab Sample ID:	360-39278-9	Analysis Batch:	360-87944	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	10	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	02/27/2012 2228			Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

MSD Lab Sample ID:	360-39278-9	Analysis Batch:	360-87944	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	10	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	02/27/2012 2245			Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Chloride	107	106	75 - 125	0	20		

Quality Control Results

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
Sdg Number: 360-39278

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-87944

Method: 300.0
Preparation: N/A

MS Lab Sample ID:	360-39278-9	Units: mg/L	MSD Lab Sample ID:	360-39278-9
Client Matrix:	Water		Client Matrix:	Water
Dilution:	10		Dilution:	10
Analysis Date:	02/27/2012 2228		Analysis Date:	02/27/2012 2245
Prep Date:	N/A		Prep Date:	N/A
Leach Date:	N/A		Leach Date:	N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Chloride	210	100	100	312	311

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
Sdg Number: 360-39278

Method Blank - Batch: 360-87952

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-87952/5	Analysis Batch:	360-87952	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	02/29/2012 0024	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Bromide	ND		0.050	0.050
Chloride	ND		1.0	1.0

Lab Control Sample - Batch: 360-87952

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-87952/6	Analysis Batch:	360-87952	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	02/29/2012 0041	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Bromide	4.00	4.20	105	85 - 115	
Chloride	40.0	40.9	102	85 - 115	

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
Sdg Number: 360-39278

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:360-87943					
LCS 360-87943/4	Lab Control Sample	T	Water	300.0	
MB 360-87943/3	Method Blank	T	Water	300.0	
360-39278-1	Outfall 08-022412	T	Water	300.0	
360-39278-2	IL-1-022412	T	Water	300.0	
360-39278-3	IL-2-022412	T	Water	300.0	
360-39278-4	IL-3-022412	T	Water	300.0	
Analysis Batch:360-87944					
LCS 360-87944/6	Lab Control Sample	T	Water	300.0	
MB 360-87944/5	Method Blank	T	Water	300.0	
360-39278-9	Outfall 08-022412	T	Water	300.0	
360-39278-9MS	Matrix Spike	T	Water	300.0	
360-39278-9MSD	Matrix Spike Duplicate	T	Water	300.0	
360-39278-10	IL-1-022412	T	Water	300.0	
360-39278-11	IL-2-022412	T	Water	300.0	
360-39278-12	IL-3-022412	T	Water	300.0	
Analysis Batch:360-87952					
LCS 360-87952/6	Lab Control Sample	T	Water	300.0	
MB 360-87952/5	Method Blank	T	Water	300.0	
360-39278-9	Outfall 08-022412	T	Water	300.0	
360-39278-10	IL-1-022412	T	Water	300.0	
360-39278-11	IL-2-022412	T	Water	300.0	
360-39278-12	IL-3-022412	T	Water	300.0	
Analysis Batch:360-87966					
360-39278-4	IL-3-022412	T	Water	300.0	
360-39278-5	Outfall 08-022412	T	Water	300.0	
360-39278-6	IL-1-022412	T	Water	300.0	
360-39278-7	IL-2-022412	T	Water	300.0	
360-39278-8	IL-3-022412	T	Water	300.0	

Report Basis
T = Total

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
SDG: 360-39278

Laboratory Chronicle

Lab ID: **360-39278-1** **Client ID:** **Outfall 08-022412**

Sample Date/Time: 02/24/2012 08:25 Received Date/Time: 02/25/2012 11:00

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-39278-A-1		360-87943		02/27/2012 15:37	1	TAL WFD	AMS
A:300.0	360-39278-A-1		360-87943		02/27/2012 15:54	10	TAL WFD	AMS

Lab ID: **360-39278-2** **Client ID:** **IL-1-022412**

Sample Date/Time: 02/24/2012 08:35 Received Date/Time: 02/25/2012 11:00

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-39278-A-2		360-87943		02/27/2012 16:11	1	TAL WFD	AMS
A:300.0	360-39278-A-2		360-87943		02/27/2012 16:28	10	TAL WFD	AMS

Lab ID: **360-39278-3** **Client ID:** **IL-2-022412**

Sample Date/Time: 02/24/2012 08:45 Received Date/Time: 02/25/2012 11:00

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-39278-A-3		360-87943		02/27/2012 16:46	1	TAL WFD	AMS
A:300.0	360-39278-A-3		360-87943		02/27/2012 17:03	10	TAL WFD	AMS

Lab ID: **360-39278-4** **Client ID:** **IL-3-022412**

Sample Date/Time: 02/24/2012 09:00 Received Date/Time: 02/25/2012 11:00

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-39278-A-4		360-87943		02/27/2012 17:20	1	TAL WFD	AMS
A:300.0	360-39278-A-4		360-87966		02/27/2012 18:11	10	TAL WFD	AMS

Lab ID: **360-39278-5** **Client ID:** **Outfall 08-022412**

Sample Date/Time: 02/24/2012 11:40 Received Date/Time: 02/25/2012 11:00

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-39278-A-5		360-87966		02/27/2012 18:28	1	TAL WFD	AMS
A:300.0	360-39278-A-5		360-87966		02/27/2012 18:45	10	TAL WFD	AMS

Lab ID: **360-39278-6** **Client ID:** **IL-1-022412**

Sample Date/Time: 02/24/2012 11:51 Received Date/Time: 02/25/2012 11:00

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-39278-A-6		360-87966		02/27/2012 19:02	1	TAL WFD	AMS
A:300.0	360-39278-A-6		360-87966		02/27/2012 19:20	10	TAL WFD	AMS

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
SDG: 360-39278

Laboratory Chronicle

Lab ID: 360-39278-7 **Client ID: IL-2-022412**

Sample Date/Time: 02/24/2012 12:05 Received Date/Time: 02/25/2012 11:00

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-39278-A-7		360-87966		02/27/2012 19:37	1	TAL WFD	AMS
A:300.0	360-39278-A-7		360-87966		02/27/2012 19:54	10	TAL WFD	AMS

Lab ID: 360-39278-8 **Client ID: IL-3-022412**

Sample Date/Time: 02/24/2012 12:15 Received Date/Time: 02/25/2012 11:00

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-39278-A-8		360-87966		02/27/2012 20:11	1	TAL WFD	AMS
A:300.0	360-39278-A-8		360-87966		02/27/2012 20:28	10	TAL WFD	AMS

Lab ID: 360-39278-9 **Client ID: Outfall 08-022412**

Sample Date/Time: 02/24/2012 15:01 Received Date/Time: 02/25/2012 11:00

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-39278-A-9		360-87944		02/27/2012 22:11	10	TAL WFD	AMS
A:300.0	360-39278-A-9		360-87952		02/29/2012 02:07	1	TAL WFD	AMS

Lab ID: 360-39278-9 MS **Client ID: Outfall 08-022412**

Sample Date/Time: 02/24/2012 15:01 Received Date/Time: 02/25/2012 11:00

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-39278-A-9 MS		360-87944		02/27/2012 22:28	10	TAL WFD	AMS

Lab ID: 360-39278-9 MSD **Client ID: Outfall 08-022412**

Sample Date/Time: 02/24/2012 15:01 Received Date/Time: 02/25/2012 11:00

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-39278-A-9 MSD		360-87944		02/27/2012 22:45	10	TAL WFD	AMS

Lab ID: 360-39278-10 **Client ID: IL-1-022412**

Sample Date/Time: 02/24/2012 15:15 Received Date/Time: 02/25/2012 11:00

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-39278-A-10		360-87944		02/27/2012 23:02	1	TAL WFD	AMS
A:300.0	360-39278-A-10		360-87952		02/29/2012 02:24	1	TAL WFD	AMS

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
SDG: 360-39278

Laboratory Chronicle

Lab ID: **360-39278-11** **Client ID:** **IL-2-022412**

Sample Date/Time: 02/24/2012 15:25 Received Date/Time: 02/25/2012 11:00

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-39278-A-11		360-87944		02/27/2012 23:54	10	TAL WFD	AMS
A:300.0	360-39278-A-11		360-87952		02/29/2012 02:41	1	TAL WFD	AMS

Lab ID: **360-39278-12** **Client ID:** **IL-3-022412**

Sample Date/Time: 02/24/2012 15:35 Received Date/Time: 02/25/2012 11:00

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
A:300.0	360-39278-A-12		360-87944		02/28/2012 00:28	10	TAL WFD	AMS
A:300.0	360-39278-A-12		360-87952		02/29/2012 02:58	1	TAL WFD	AMS

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
A:300.0	MB 360-87943/3		360-87943		02/27/2012 14:11	1	TAL WFD	AMS
A:300.0	MB 360-87944/5		360-87944		02/27/2012 21:37	1	TAL WFD	AMS
A:300.0	MB 360-87952/5		360-87952		02/29/2012 00:24	1	TAL WFD	AMS

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
A:300.0	LCS 360-87943/4		360-87943		02/27/2012 14:29	1	TAL WFD	AMS
A:300.0	LCS 360-87944/6		360-87944		02/27/2012 21:54	1	TAL WFD	AMS
A:300.0	LCS 360-87952/6		360-87952		02/29/2012 00:41	1	TAL WFD	AMS

Lab References:
TAL WFD = TestAmerica Westfield

Certification Summary

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Westfield	Connecticut	State Program	1	PH-0494
TestAmerica Westfield	Maine	State Program	1	MA00014
TestAmerica Westfield	Massachusetts	State Program	1	M-MA014
TestAmerica Westfield	New Hampshire	NELAC	1	2539
TestAmerica Westfield	New York	NELAC	2	10843
TestAmerica Westfield	Rhode Island	State Program	1	LAO00057
TestAmerica Westfield	Vermont	State Program	1	VT-10843

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.

TETRA TECH ISG
TtNUS, Information Systems Group

Completion Ticket

On 3/1/2012 at 2:57 PM the following files were submitted to Tetra Tech by joe.chimi@testamericainc.com with TAWMA:

360-39278A1.txt, 360-39278A3.txt

If you need to identify this session at a later date refer to Ticket Key:

201231_22948_ledd_TAWMA

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State Accreditation Matrix

Method Name	Description	State where **Primary** Accreditation is Carried		
		New Hampshire (NELAC)	Mass	Conn
SM 4500 Cl F	Chlorine, Residual		NP	
SM 9215E	Heterotrophic Plate Count (SimPlate)		P	
SM 9222D	Coliforms, Fecal (Membrane Filter)		NP	
SM 9223	Coliforms, Total, and E.Coli (Colilert-P/A)		P	
SM 9223	Coliforms, Total, and E.Coli (Enumeration)		P	
1103.1	E.coli		ambient/ source	
Enterolert	Enterococcus			
200.8 Rev 5.4	Metals (ICP/MS) (list upon request)	NP/P	NP/P	
200.7 Rev 4.4	Metals (ICP)(list upon request)	NP/P	NP/P	
6010B/C	Metals (ICP)(list upon request)	NP/SW		
245.1	Mercury (CVAA)	NP/P	NP	
7470A	Mercury (CVAA)	NP		
7471A	Mercury (CVAA)	SW		
SM 2340B	Total Hardness (as CaCO3) by calculation	NP/P	NP	
3005A	Preparation, Total Recoverable or Dissolved Metals	NP/P		
3010A	Preparation, Total Metals	NP/P		
3020A	Preparation, Total Metals	NP/P/SW		
3050B	Preparation, Metals	SW		
504.1	EDB, DBCP and 1,2,3-TCP (GC)	P	P	
608	Organochlorine Pest/PCBs (list upon request)	NP	NP	
625	Semivolatile Org Comp (GC/MS)(list upon request)	NP	NP	
3546	Microwave Extraction	SW		
3510C	Liquid-Liquid Extraction (Separatory Funnel)	NP		
8081A/B	Organochlorine Pesticides (GC)(list upon request)	NP/SW		
8082/A	PCBs by Gas Chromatography(list upon request)	NP/SW		
8270C/D	Semivolatile Comp.(GC/MS)(list upon request)	NP/SW		
CT ETPH	Conn - Ext. Total petroleum Hydrocarbons (GC)	NP/SW		NP/SW
MA-EPH	Mass - Extractable Petroleum Hydrocarbons (GC)	NP/SW		
524.2	Volatile Org Comp (GC/MS)(list upon request)	P	P	
524.2	Trihalomethane compounds	P	P	
624	Volatile Org Comp (GC/MS)(list upon request)	NP	NP	
5035	Closed System Purge and Trap	SW		
5030B	Purge and Trap	NP		
8260B/C	Volatile Org Comp. (GC/MS)(list upon request)	NP/SW		
MAVPH	Mass - Volatile Petroleum Hydrocarbons (GC)			
180.1	Turbidity, Nephelometric	P	P	
300	Anions, Ion Chromatography	NP/P	NP/P	
410.4	COD	NP	NP	
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW		
10-107-06-2	Nitrogen, Total Kjeldahl	NP	NP	
7196A	Chromium, Hexavalent	NP/SW		
9012A	Cyanide, Total and/or Amenable	NP/SW		
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	NP		
9045C	pH	SW		
L107041C	Nitrogen, Nitrate	NP	P	
L107-06-1B	Nitrogen Ammonia	NP	NP	
L204001A CN	Cyanide, Total	P	NP/P	
L210-001A	Phenolics, Total Recoverable	NP	NP	
SM 2320B	Alkalinity	NP/P	NP/P	
SM 2510B	Conductivity, Specific Conductance	NP/P	NP/P	
SM 2540C	Solids, Total Dissolved (TDS)	NP/P	NP/P	
SM 2540D	Solids, Total Suspended (TSS)	NP	NP	
SM 3500 CR D	Chromium, Hexavalent	NP		
SM 4500 H+ B	pH	NP/P	NP/P	
SM 4500 NO2 B	Nitrogen, Nitrite	NP	P	
SM 4500 P E	Phosphorus, Orthophosphate	NP/P	NP	
SM 4500 P E	Phosphorus, Total	NP	NP	
SM 4500 S2 D	Sulfide, Total	NP		
SM 5210B	BOD, 5-Day	NP	NP	
SM 5310B	Organic Carbon, Total (TOC)	NP/P	NP	

Not all organic compounds are accreditied under NELAC

For methods with multiple compounds all compounds may not meet NELAC criteria, listing should be obtained from the laboratory

The lab carries additional accreditations with several states. This is the laboratories typcial listing but is subject to change based on the laboratories current certification standing.

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job Number: 360-39278-1

SDG No.: 360-39278

Project: Middle River Complex

Client Sample ID	Lab Sample ID
Outfall 08-022412	360-39278-1
IL-1-022412	360-39278-2
IL-2-022412	360-39278-3
IL-3-022412	360-39278-4
Outfall 08-022412	360-39278-5
IL-1-022412	360-39278-6
IL-2-022412	360-39278-7
IL-3-022412	360-39278-8
Outfall 08-022412	360-39278-9
IL-1-022412	360-39278-10
IL-2-022412	360-39278-11
IL-3-022412	360-39278-12

Comments:

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: Outfall 08-022412

Lab Sample ID: 360-39278-1

Lab Name: TestAmerica Westfield

Job No.: 360-39278-1

SDG ID.: 360-39278

Matrix: Water

Date Sampled: 02/24/2012 08:25

Reporting Basis: WET

Date Received: 02/25/2012 11:00

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.48	0.050		mg/L			1	300.0
16887-00-6	Chloride	190	10		mg/L			10	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: IL-1-022412

Lab Sample ID: 360-39278-2

Lab Name: TestAmerica Westfield

Job No.: 360-39278-1

SDG ID.: 360-39278

Matrix: Water

Date Sampled: 02/24/2012 08:35

Reporting Basis: WET

Date Received: 02/25/2012 11:00

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.10	0.050		mg/L			1	300.0
16887-00-6	Chloride	94	10		mg/L			10	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: IL-2-022412

Lab Sample ID: 360-39278-3

Lab Name: TestAmerica Westfield

Job No.: 360-39278-1

SDG ID.: 360-39278

Matrix: Water

Date Sampled: 02/24/2012 08:45

Reporting Basis: WET

Date Received: 02/25/2012 11:00

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.094	0.050		mg/L			1	300.0
16887-00-6	Chloride	94	10		mg/L			10	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: IL-3-022412

Lab Sample ID: 360-39278-4

Lab Name: TestAmerica Westfield

Job No.: 360-39278-1

SDG ID.: 360-39278

Matrix: Water

Date Sampled: 02/24/2012 09:00

Reporting Basis: WET

Date Received: 02/25/2012 11:00

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.094	0.050		mg/L			1	300.0
16887-00-6	Chloride	98	10		mg/L			10	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: Outfall 08-022412

Lab Sample ID: 360-39278-5

Lab Name: TestAmerica Westfield

Job No.: 360-39278-1

SDG ID.: 360-39278

Matrix: Water

Date Sampled: 02/24/2012 11:40

Reporting Basis: WET

Date Received: 02/25/2012 11:00

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.54	0.050		mg/L			1	300.0
16887-00-6	Chloride	190	10		mg/L			10	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: IL-1-022412

Lab Sample ID: 360-39278-6

Lab Name: TestAmerica Westfield

Job No.: 360-39278-1

SDG ID.: 360-39278

Matrix: Water

Date Sampled: 02/24/2012 11:51

Reporting Basis: WET

Date Received: 02/25/2012 11:00

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.10	0.050		mg/L			1	300.0
16887-00-6	Chloride	100	10		mg/L			10	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: IL-2-022412

Lab Sample ID: 360-39278-7

Lab Name: TestAmerica Westfield

Job No.: 360-39278-1

SDG ID.: 360-39278

Matrix: Water

Date Sampled: 02/24/2012 12:05

Reporting Basis: WET

Date Received: 02/25/2012 11:00

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.098	0.050		mg/L			1	300.0
16887-00-6	Chloride	93	10		mg/L			10	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: IL-3-022412

Lab Sample ID: 360-39278-8

Lab Name: TestAmerica Westfield

Job No.: 360-39278-1

SDG ID.: 360-39278

Matrix: Water

Date Sampled: 02/24/2012 12:15

Reporting Basis: WET

Date Received: 02/25/2012 11:00

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.078	0.050		mg/L			1	300.0
16887-00-6	Chloride	97	10		mg/L			10	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: Outfall 08-022412

Lab Sample ID: 360-39278-9

Lab Name: TestAmerica Westfield

Job No.: 360-39278-1

SDG ID.: 360-39278

Matrix: Water

Date Sampled: 02/24/2012 15:01

Reporting Basis: WET

Date Received: 02/25/2012 11:00

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.53	0.050		mg/L			1	300.0
16887-00-6	Chloride	210	10		mg/L			10	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: IL-1-022412

Lab Sample ID: 360-39278-10

Lab Name: TestAmerica Westfield

Job No.: 360-39278-1

SDG ID.: 360-39278

Matrix: Water

Date Sampled: 02/24/2012 15:15

Reporting Basis: WET

Date Received: 02/25/2012 11:00

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	ND	0.050		mg/L			1	300.0
16887-00-6	Chloride	43	1.0		mg/L			1	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: IL-2-022412

Lab Sample ID: 360-39278-11

Lab Name: TestAmerica Westfield

Job No.: 360-39278-1

SDG ID.: 360-39278

Matrix: Water

Date Sampled: 02/24/2012 15:25

Reporting Basis: WET

Date Received: 02/25/2012 11:00

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	ND	0.050		mg/L			1	300.0
16887-00-6	Chloride	52	10		mg/L			10	300.0

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: IL-3-022412

Lab Sample ID: 360-39278-12

Lab Name: TestAmerica Westfield

Job No.: 360-39278-1

SDG ID.: 360-39278

Matrix: Water

Date Sampled: 02/24/2012 15:35

Reporting Basis: WET

Date Received: 02/25/2012 11:00

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
24959-67-9	Bromide	0.12	0.050		mg/L			1	300.0
16887-00-6	Chloride	93	10		mg/L			10	300.0

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-39278-1

SDG No.: 360-39278

Analyst: AMS   Batch Start Date: 02/27/2012

Reporting Units: mg/L   Analytical Batch No.: 87943

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	13:37	Bromide	2.46	2.50	99	90-110		W11L_IC_ICV_00001
			Chloride	26.0	25.0	104	90-110		W11L_IC_ICV_00001
2	ICB	13:54	Bromide	ND					
			Chloride	ND					
15	CCV	17:37	Bromide	3.90	4.00	98	90-110		W11J_IC_LCS_00005
			Chloride	40.8	40.0	102	90-110		W11J_IC_LCS_00005
16	CCB	17:54	Bromide	ND					
			Chloride	ND					

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

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-39278-1

SDG No.: 360-39278

Analyst: AMS   Batch Start Date: 02/27/2012

Reporting Units: mg/L   Analytical Batch No.: 87944

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	13:37	Chloride	26.0	25.0	104	90-110		W11L_IC_ICV_00001
2	ICB	13:54	Chloride	ND					
3	CCV	21:02	Chloride	40.5	40.0	101	90-110		W11J_IC_LCS_00005
4	CCB	21:20	Chloride	ND					
14	CCV	01:02	Chloride	40.5	40.0	101	90-110		W11J_IC_LCS_00005
15	CCB	01:19	Chloride	ND					

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

FORM II-IN

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-39278-1

SDG No.: 360-39278

Analyst: AMS   Batch Start Date: 02/28/2012

Reporting Units: mg/L   Analytical Batch No.: 87952

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	16:25	Bromide	2.68	2.50	107	90-110		W11L_IC_ICV_00001
			Chloride	25.1	25.0	100	90-110		W11L_IC_ICV_00001
2	ICB	16:42	Bromide	ND					
			Chloride	ND					
3	CCV	23:50	Bromide	4.37	4.00	109	90-110		W11J_IC_LCS_00005
			Chloride	40.9	40.0	102	90-110		W11J_IC_LCS_00005
4	CCB	00:07	Bromide	ND					
			Chloride	ND					
15	CCV	03:49	Bromide	4.21	4.00	105	90-110		W11J_IC_LCS_00005
			Chloride	40.9	40.0	102	90-110		W11J_IC_LCS_00005
16	CCB	04:06	Bromide	ND					
			Chloride	ND					

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

FORM II-IN

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-39278-1

SDG No.: 360-39278

Analyst: AMS   Batch Start Date: 02/27/2012

Reporting Units: mg/L   Analytical Batch No.: 87966

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	13:37	Bromide	2.70	2.50	108	90-110		W11L_IC_ICV_00001
			Chloride	26.0	25.0	104	90-110		W11L_IC_ICV_00001
2	ICB	13:54	Bromide	ND					
			Chloride	ND					
3	CCV	17:37	Bromide	4.24	4.00	106	90-110		W11J_IC_LCS_00005
			Chloride	40.8	40.0	102	90-110		W11J_IC_LCS_00005
4	CCB	17:54	Bromide	ND					
			Chloride	ND					
15	CCV	21:02	Bromide	3.63	4.00	91	90-110		W11J_IC_LCS_00005
			Chloride	40.5	40.0	101	90-110		W11J_IC_LCS_00005
16	CCB	21:20	Bromide	ND					
			Chloride	ND					

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

FORM II-IN

3-IN
METHOD BLANK
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-39278-1

SDG No.: 360-39278

Method	Lab Sample ID	Analyte	Result	Qual	Units	RL	Dil
Batch ID: 87943		Date: 02/27/2012 14:11					
300.0	MB 360-87943/3	Bromide	ND		mg/L	0.050	1
300.0	MB 360-87943/3	Chloride	ND		mg/L	1.0	1
Batch ID: 87944		Date: 02/27/2012 21:37					
300.0	MB 360-87944/5	Chloride	ND		mg/L	1.0	1
Batch ID: 87952		Date: 02/29/2012 00:24					
300.0	MB 360-87952/5	Bromide	ND		mg/L	0.050	1
300.0	MB 360-87952/5	Chloride	ND		mg/L	1.0	1

FORM III-IN

5-IN
MATRIX SPIKE SAMPLE RECOVERY
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield Job No.: 360-39278-1

SDG No.: 360-39278

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 87944	Date: 02/27/2012 22:28										
300.0	360-39278-9	Chloride	210		mg/L						
300.0	360-39278-9 MS	Chloride	312		mg/L	100	107	75-125			

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

FORM V-IN

5-IN
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-39278-1

SDG No.: 360-39278

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 87944	Date: 02/27/2012 22:45										
300.0	360-39278-9 MSD	Chloride	311		mg/L	100	106	75-125	0	20	

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

FORM V-IN

7A-IN
LAB CONTROL SAMPLE
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield Job No.: 360-39278-1

SDG No.: 360-39278

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 87943		Date: 02/27/2012 14:29									
					LCS Source:	W11J_IC_LCS_00005					
300.0	LCS 360-87943/4	Bromide	4.28		mg/L	4.00	107	85-115			
300.0	LCS 360-87943/4	Chloride	41.0		mg/L	40.0	102	85-115			
Batch ID: 87944		Date: 02/27/2012 21:54									
					LCS Source:	W11J_IC_LCS_00005					
300.0	LCS 360-87944/6	Chloride	40.5		mg/L	40.0	101	85-115			
Batch ID: 87952		Date: 02/29/2012 00:41									
					LCS Source:	W11J_IC_LCS_00005					
300.0	LCS 360-87952/6	Bromide	4.20		mg/L	4.00	105	85-115			
300.0	LCS 360-87952/6	Chloride	40.9		mg/L	40.0	102	85-115			

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

FORM VIIA-IN

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job Number: 360-39278-1

SDG Number: 360-39278

Matrix: Water   Instrument ID: Lachat 8500

Method: 300.0   RL Date: 10/27/2011 11:55

Analyte	Wavelength/ Mass	RL (mg/L)	
Bromide		0.05	
Chloride		1	

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job Number: 360-39278-1

SDG Number: 360-39278

Matrix: Water   Instrument ID: Lachat 8500

Method: 300.0   XMDL Date: 02/13/2012 12:03

Analyte	Wavelength/ Mass	XRL (mg/L)	XMDL (mg/L)
Bromide		0.1	0.023
Chloride		1	0.2

FORM IX - IN

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-39278-1

SDG No.: 360-39278

Instrument ID: Lachat 8500   Method: 300.0

Start Date: 02/27/2012 13:37   End Date: 02/27/2012 17:54

Lab Sample ID	D/F	Type	Time	Analytes: Br	CL-
ICV 360-87943/1	1		13:37	X	X
ZZZZZZ			13:37		
ZZZZZZ			13:37		
ZZZZZZ			13:37		
ZZZZZZ			13:37		
ICB 360-87943/2	1		13:54	X	X
MB 360-87943/3	1	T	14:11	X	X
LCS 360-87943/4	1	T	14:29	X	X
ZZZZZZ			14:46		
ZZZZZZ			15:03		
ZZZZZZ			15:20		
360-39278-1	1	T	15:37	X	
360-39278-1	10	T	15:54		X
360-39278-2	1	T	16:11	X	
360-39278-2	10	T	16:28		X
360-39278-3	1	T	16:46	X	
360-39278-3	10	T	17:03		X
360-39278-4	1	T	17:20	X	
CCV 360-87943/15	1		17:37	X	X
CCB 360-87943/16	1		17:54	X	X

Prep Types
T = Total/NA

ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-39278-1

SDG No.: 360-39278

Instrument ID: Lachat 8500   Method: 300.0

Start Date: 02/27/2012 13:37   End Date: 02/28/2012 13:37

Lab Sample ID	D/F	Type	Time	Analytes: CL-
ICV 360-87944/1	1		13:37	X
ICB 360-87944/2	1		13:54	X
CCV 360-87944/3	1		21:02	X
CCB 360-87944/4	1		21:20	X
MB 360-87944/5	1	T	21:37	X
LCS 360-87944/6	1	T	21:54	X
360-39278-9	10	T	22:11	X
360-39278-9 MS	10	T	22:28	X
360-39278-9 MSD	10	T	22:45	X
360-39278-10	1	T	23:02	X
360-39278-11	10	T	23:54	X
360-39278-12	10	T	00:28	X
ZZZZZZ			00:45	
CCV 360-87944/14	1		01:02	X
CCB 360-87944/15	1		01:19	X
ZZZZZZ			01:36	
ZZZZZZ			02:11	
ZZZZZZ			02:45	
ZZZZZZ			03:02	
ZZZZZZ			03:19	
ZZZZZZ			03:36	
ZZZZZZ			03:53	
ZZZZZZ			04:11	
CCV 360-87944/24			04:28	
CCB 360-87944/25			04:45	
ZZZZZZ			13:37	
ZZZZZZ			13:37	
ZZZZZZ			13:37	
ZZZZZZ			13:37	
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ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-39278-1

SDG No.: 360-39278

Instrument ID: Lachat 8500   Method: 300.0

Start Date: 02/27/2012 13:37   End Date: 02/28/2012 13:37

Prep Types
T = Total/NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-39278-1

SDG No.: 360-39278

Instrument ID: Lachat 8500   Method: 300.0

Start Date: 02/27/2012 13:37   End Date: 02/27/2012 21:20

Lab Sample ID	D/F	Type	Time	Analytes																			
				Br	CL-																		
ICV 360-87966/1	1		13:37	X	X																		
ZZZZZZ			13:37																				
ZZZZZZ			13:37																				
ZZZZZZ			13:37																				
ZZZZZZ			13:37																				
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ZZZZZZ			13:37																				
ZZZZZZ			13:37																				
ZZZZZZ			13:37																				
ICB 360-87966/2	1		13:54	X	X																		
CCV 360-87966/3	1		17:37	X	X																		
CCB 360-87966/4	1		17:54	X	X																		
360-39278-4	10	T	18:11		X																		
360-39278-5	1	T	18:28	X																			
360-39278-5	10	T	18:45		X																		
360-39278-6	1	T	19:02	X																			
360-39278-6	10	T	19:20		X																		
360-39278-7	1	T	19:37	X																			
360-39278-7	10	T	19:54		X																		
360-39278-8	1	T	20:11	X																			
360-39278-8	10	T	20:28		X																		
ZZZZZZ			20:45																				
CCV 360-87966/15	1		21:02	X	X																		
CCB 360-87966/16	1		21:20	X	X																		

ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name:	TestAmerica Westfield	Job No.:	360-39278-1
SDG No.:	360-39278		
Instrument ID:	Lachat 8500	Method:	300.0
Start Date:	02/27/2012 13:37	End Date:	02/27/2012 21:20

Prep Types
T = Total/NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield   Job No.: 360-39278-1

SDG No.: 360-39278

Instrument ID: Lachat 8500   Method: 300.0

Start Date: 02/28/2012 16:25   End Date: 02/29/2012 16:25

Lab Sample ID	D/F	Type	Time	Analytes																			
				Br	CL-																		
ICV 360-87952/1	1		16:25	X	X																		
ICB 360-87952/2	1		16:42	X	X																		
CCV 360-87952/3	1		23:50	X	X																		
CCB 360-87952/4	1		00:07	X	X																		
MB 360-87952/5	1	T	00:24	X	X																		
LCS 360-87952/6	1	T	00:41	X	X																		
ZZZZZZ			00:58																				
ZZZZZZ			01:15																				
ZZZZZZ			01:50																				
360-39278-9	1	T	02:07	X																			
360-39278-10	1	T	02:24	X																			
360-39278-11	1	T	02:41	X																			
360-39278-12	1	T	02:58	X																			
ZZZZZZ			03:15																				
CCV 360-87952/15	1		03:49	X	X																		
CCB 360-87952/16	1		04:06	X	X																		
ZZZZZZ			04:24																				
ZZZZZZ			04:41																				
ZZZZZZ			04:58																				
ZZZZZZ			05:15																				
ZZZZZZ			05:32																				
ZZZZZZ			05:49																				
ZZZZZZ			06:06																				
CCV 360-87952/24			06:40																				
CCB 360-87952/25			06:58																				
ZZZZZZ			16:25																				
ZZZZZZ			16:25																				
ZZZZZZ			16:25																				
ZZZZZZ			16:25																				
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13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Westfield Job No.: 360-39278-1

SDG No.: 360-39278

Instrument ID: Lachat 8500 Method: 300.0

Start Date: 02/28/2012 16:25 End Date: 02/29/2012 16:25

Prep Types
T = Total/NA

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review Coversheet—Inorganics Dept

Method Name: IC Method Reference: 300.0 48Hr/28D Date of Analytical Run: 2/27/12

Primary Reviewer's Initials & Date: AMS 3/1/12 Secondary Reviewer's Initials & Date: [illegible] 3-1-12

Batch Numbers	87943	87966	87944	87946	

QC Criteria—Non-MCP: ICV/CCV ±10%: LCS/LCSD ±15%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%

QC Criteria—MCP/RCP: (9012 and 7196 only)
9012 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
9012 (soil): ICV/CCV ±15%: LCS/LCSD **: MS/MSD ±25%: ICB/MB/CCB <RL: MD RPD 35%: MSD/LCSD RPD ≤30%
7196 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
7196 (soil): ICV/CCV ±15%: LCS/LCSD **: MSS/MSI ±25%: ICB/MB/CCB <RL: MD RPD ≤35%: LCSD RPD ≤30%

FAILURES OF QC FOR ANYTHING OTHER THAN MS, MSD or MD ARE GROUNDS FOR INVALIDATING THE BATCH.

Criteria for QC	Yes	No	n/a	Notes/Comments
Were the ICV and/or CCVs within acceptable limits for QC recovery?	✓			
Were the ICB and/or CCBs all <RL?	✓			
Were all MB and/or CCB results <RL for the analytes of interest?	✓			
Was there a CCV/CCB combination run after every 10 samples or less?	✓			
Was there an LCS run with every batch of 20 samples or less?	✓			
Was there a MD, LCSD and/or MSD run with every batch of 20 samples or less?	✓			
Were all LCS/LCSD results within acceptable limits for QC recovery?	✓			
Were all MS/MSD results within acceptable limits for QC recovery?	✓			
Were all MD, LCSD and/or MSD %RPDs within acceptable limits for QC recovery?	✓			
Were the raw data points for investigative samples within the working curve range, or if not, were the samples diluted to bring them within this range?	✓			
IF there were any MCP/RCP samples in this batch, did they meet all MCP/RCP requirements?			✓	
Were there any holding time violations in this batch?		✓		**NOTE!** The PM and QA Manager must be notified by email *immediately* of any holding time violations!!
Were any NCMs generated for any samples in the batch? (If so, list NCM numbers, and first-reviewer must check off any "No" answers above as applicable.)	✓			46882
Were any jobs in this batch Level 4? If "Yes" then scan all raw data & place in correct scan folder on the public drive before filing this paperwork.	✓			

** LCS or LCSD must produce a recovery that is within the manufacturer's specified 95% confidence limits, must be matrix matched.

LABORATORY CHRONICLE - TestAmerica WESTFIELD

CLIENT: Tetra Tech

Report No: 360-39278

Project:

Date Sampled: 2/24

Date Received: 2/25

GENERAL CHEMISTRY

Sample No.	Preserv.	Relinquised by	Received by	Date/Time	Reason for change
1	none	ua	ams	2/27/12 0900	taken for analysis
2	none	ua	ams		
3	none	ua	AMS		
4	none	ua	AMS		
5	none	ua	AMS		
6	none	ua	AMS		
7	none	ua	AMS		
8	none	ua	AMS		
9	none	ua	AMS		
10	none	ua	AMS		
11	none	ua	AMS		
12	none	ua	AMS		
1-12	none	AMS	UA	2/27/12 1430	returned to walkin
9-12	none	ua	AMS	2/28/12 1600	taken for re-analysis
9-12	none	AMS	ua	2/28/12 1630	returned to walkin

Extractions:

Metals ____

Cyanide ____

Misc. ____

Analysis:

Metals: ____

Cyanide ____

Mics.

cnfr\interncoc.xls

W-SR-010

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Eluent Preparation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Prepare fresh daily; makes 3L of eluent. To make: in a one-gallon plastic container, mix:

- 60.0 mL of 100*M* $NaHCO_3$;
- 78.0 mL of 100*M* Na_2CO_3; and
- 2862 mL of deionized water.

Degas with helium for 3min before use.

Date Prepared	Analyst's Initials	Lot # 100*M* $NaHCO_3$	Lot # 100*M* Na_2CO_3	Number of Portions Prepared
1-25-12	AMS	W12A RGT010	W12A RGT003	1
1-27-12	AMS	↓	↓	1
2-1-12	AMS	↓	↓	1
2/2/12	AMS	↓	↓	1
2/4/12	AMS	↓	↓	1
2-9-12	AMS	↓	W12BRGT003	1
2-14-12	AMS	↓	↓	1
2/15/12	AMS	↓	↓	1
2/17/12	AMS	↓	↓	1
2/21/12	AMS	↓	↓	1
2/22/12	AMS	↓	↓	2
2/24/12	AMS	W12BRGT 010	W12BRGT 009	1
2/27/12	AMS	↓	↓	1
2/28/12	AMS	↓	↓	1

✓ [illegible] 2-13-12

0.25 *M* Sulfuric Acid Creation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Record the information below for creating the acid. When an entry is made do not use arrows to fill in information. All entries must be complete.

Recipe: to 2958mL of deionized water in a 1 gallon jug add 42mL of concentrated H_2SO_4 for a total volume of 3L.

Date Made	Analyst's Initials	Volume of 0.25 *M* Acid Made (L)	Source: Concentrated Sulfuric Acid (ACS grade) Manufacturer & Lot Number
1/25/12	AMS	3	Baker E49039
1/27/12	AMS	3	
2/1/12	AMS	3	
2/2/12	AMS	3	
2/4/12	AMS	3	
2/9/12	AMS	3	
2/15/12	AMS	3	
2/17/12	AMS	3	
2/21/12	AMS	3	
2/22/12	AMS	3	
2/23/12	AMS	3	
2/24/12	AMS	3	
2/27/12	AMS	3	

✓ 2-13-12

15

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Ion Chromatography QC Source Data Sheet—Inorganics Dept

Method (circle methods): IC 300_28D IC 300_48HR IC 9056_28D IC 9056_48HR

Date of Analytical Run: 2/27/12 Analyst's Initials: AMS

Working Curve Standard:

Manufacturer & Lot Number for Source Standard	Working Curve Standards Prepared On
Inorganic Ventures Lot E2-MEB394034	15 February 2012

QC Standard True Values for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.50	25.0	2.50	2.50	2.50	50.0
ICB	0	0	0	0	0	0
MB	0	0	0	0	0	0
LCS/LCSD	4.00	40.0	4.00	4.00	4.00	80.0
MS/MSD	1.00	10.0	1.00	1.00	1.00	20.0

QC Standard Acceptable Recovery Ranges for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.25-2.75	22.5-27.5	2.25-2.75	2.25-2.75	2.25-2.75	45.0-55.0
ICB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
MB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
LCS/LCSD	3.40-4.60	34.0-46.0	3.40-4.60	3.40-4.60	3.40-4.60	68.0-92.0
MS/MSD	0.75-1.25	7.50-12.5	0.75-1.25	0.75-1.25	0.75-1.25	15.0-25.0

Current Method RLs (mg/L):

	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
	0.10	1.00	0.010	0.10	0.050	2.0

Author: stewarta

Date : 2/28/2012

Original Run Filename: OM_2-27-2012_01-19-08PM.OMN created 2/27/2012 1:19:08 PM
Original Run Author's Signature: [stewarta]
Current Run Filename: OM_2-27-2012_01-19-08PM.OMN last modified 2/28/2012 5:02:22 AM
Current Run Author's Signature: [stewarta]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	-0.0033	-0.0224	0.0082	0.0094	0.0016	0.1931	2/27/2012@1:20:33 PM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	
ICV	1	2.4637	26.0248	2.5300	2.5238	2.5633	51.5378	2/27/2012@1:37:41 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
ICB	S11	6.0954e-4	-0.0179	0.0083	0.0035	0.0019	0.1772	2/27/2012@1:54:49 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	-0.0056	-0.0168	0.0082	0.0045	0.0024	0.1755	2/27/2012@2:11:56 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.2766	40.9896	4.0491	4.0677	4.1213	81.6681	2/27/2012@2:29:04 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-39242-B-1@20 CI	2	0.0023	41.0521	0.0082	0.0043	-0.3378	1.0713	2/27/2012@2:46:11 PM
360-39242-B-1@20 MS	3	1.0691	50.1274	1.0213	1.0403	0.9899	21.5371	2/27/2012@3:03:18 PM
360-39242-B-1@20 MSD	3	1.0516	50.1176	1.0260	1.0351	0.9904	21.6081	2/27/2012@3:20:25 PM
360-39278-A-1	4	0.4844	7.5344	0.0868	0.4187	7.0302	47.7392	2/27/2012@3:37:32 PM
360-39278-A-1@10	5	0.0464	19.4043	0.0156	0.0500	0.0016	4.4219	2/27/2012@3:54:39 PM
360-39278-A-2	6	0.0999	63.4727	0.1484	0.0677	0.0023	7.8854	2/27/2012@4:11:46 PM
360-39278-A-2@10	7	0.0027	9.4078	0.0210	0.0103	0.0016	0.9232	2/27/2012@4:28:53 PM
360-39278-A-3	8	0.0944	58.4798	0.1460	0.0576	0.0041	7.2018	2/27/2012@4:46:00 PM
360-39278-A-3@10	9	0.0023	9.3688	0.0211	0.0097	0.0016	0.9104	2/27/2012@5:03:07 PM
360-39278-A-4	10	0.0935	-103.1718	0.1467	0.0421	0.7495	7.4495	2/27/2012@5:20:14 PM
CCV	S12	3.9036	40.8455	4.0511	4.0238	4.1176	80.6662	2/27/2012@5:37:22 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	-8.7179e-4	-0.0205	0.0082	3.8614e-4	0.0016	0.1865	2/27/2012@5:54:29 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-39278-A-4@10	11	0.0155	9.7611	0.0209	0.0082	0.0016	0.9243	2/27/2012@6:11:36 PM
360-39278-A-5	12	0.4436	-76.7474	0.0862	0.4455	8.4718	46.3991	2/27/2012@6:28:44 PM
360-39278-A-5@10	13	0.0470	19.1841	0.0162	0.0457	0.0016	4.2242	2/27/2012@6:45:51 PM
360-39278-A-6	14	0.0728	5.1369	0.1515	0.0719	-260.7572	8.3003	2/27/2012@7:02:57 PM
360-39278-A-6@10	15	0.0024	9.9941	0.0209	0.0136	-0.0640	1.0105	2/27/2012@7:20:04 PM
360-39278-A-7	16	0.0591	-103.9550	0.1432	0.0627	0.0636	7.3375	2/27/2012@7:37:12 PM
360-39278-A-7@10	17	-0.0032	9.3109	0.0207	0.0102	-0.0659	0.9068	2/27/2012@7:54:21 PM
360-39278-A-8	18	-0.1214	-111.2491	0.1433	0.0423	2.4840	7.5287	2/27/2012@8:11:28 PM
360-39278-A-8@10	19	-0.0099	9.6680	0.0205	0.0095	0.0016	0.9351	2/27/2012@8:28:36 PM
360-39278-A-9	20	-0.5431	-89.5230	0.0941	0.3927	10.4923	45.9266	2/27/2012@8:45:44 PM
CCV	S12	2.4729	40.5214	4.0468	3.9414	4.0834	80.8414	2/27/2012@9:02:53 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	

*

* due to a baseline shift the sample groups were integrated seperately ANS 2/28/12

CCB	S11	0.0016	-0.0228	0.0081	0.0047	0.0016	0.1901	2/27/2012@9:20:00 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	-0.0024	-0.0236	0.0081	0.0020	0.0017	0.1947	2/27/2012@9:37:08 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	1.9188	40.4501	4.0479	3.9041	4.0744	80.5700	2/27/2012@9:54:16 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-39278-A-9@10	21	0.0353	20.5476	0.0161	0.0425	0.0016	4.4345	2/27/2012@10:11:24 PM
360-39278-A-9@10 MS	22	0.8028	31.2167	1.0506	1.0733	1.0489	25.4573	2/27/2012@10:28:32 PM
360-39278-A-9@10 MSD	22	0.8421	31.1206	1.0486	1.0815	1.0416	25.2546	2/27/2012@10:45:40 PM
360-39278-A-10	23	0.0020	43.4708	0.7051	1.3386	0.0016	17.0455	2/27/2012@11:02:48 PM
360-39278-A-10@10	24	0.0022	4.0606	0.0761	0.1306	0.0016	1.7464	2/27/2012@11:19:55 PM
360-39278-A-11	25	0.0220	52.0125	0.5188	1.1703	0.0016	15.2096	2/27/2012@11:37:02 PM
360-39278-A-11@10	26	0.0024	5.2020	0.0582	0.1154	0.0016	1.6307	2/27/2012@11:54:09 PM
360-39278-A-12	27	0.0493	-107.6324	0.1460	0.0371	1.4343	7.1559	2/28/2012@12:11:17 AM
360-39278-A-12@10	28	0.0039	9.3248	0.0204	0.0043	0.0016	0.8880	2/28/2012@12:28:24 AM
360-39240-C-2	29	0.0064	8.7900	0.0082	2.7076	0.0016	0.2493	2/28/2012@12:45:31 AM
CCV	S12	1.9545	40.4526	4.0424	3.9307	4.0806	80.5562	2/28/2012@1:02:38 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	-0.0028	-0.0235	0.0081	0.0042	0.0016	0.1922	2/28/2012@1:19:46 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-39243-B-1@20 Cl	30	-0.0250	37.9723	0.0198	0.0036	-0.9641	1.3004	2/28/2012@1:36:53 AM
360-39245-B-1	31	-0.0222	54.5596	0.0548	2.0993	-16.2037	11.4176	2/28/2012@1:54:01 AM
360-39245-B-1@10	32	0.0123	5.7337	0.0061	0.2038	-0.0446	1.2727	2/28/2012@2:11:10 AM
360-39262-A-1	33	0.6413	57.5361	0.3995	-0.0317	-8.0835	0.1794	2/28/2012@2:28:18 AM
360-39262-A-1@10	34	0.0533	27.9473	0.0904	0.0040	-0.4231	150.1432	2/28/2012@2:45:26 AM
360-39262-A-3	35	0.2225	46.2853	0.1028	0.0043	0.0016	119.6826	2/28/2012@3:02:33 AM
360-39262-A-3@10	36	0.0229	4.5423	0.0051	0.0043	-0.0336	34.5926	2/28/2012@3:19:41 AM
360-39262-A-4	37	0.2418	19.3016	0.0829	0.0140	0.0016	-6.2526	2/28/2012@3:36:49 AM
360-39262-A-4@10	38	-0.0362	1.7937	0.0066	0.0043	0.0016	46.4784	2/28/2012@3:53:57 AM
360-39286-F-1@10	39	-0.0062	27.4786	0.5724	0.0041	0.0016	1.5247	2/28/2012@4:11:04 AM
CCV	S12	1.5862	40.4503	4.0381	3.9259	4.0800	80.0507	2/28/2012@4:28:12 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	6.4249e-4	-0.0230	0.0082	0.0066	0.0016	0.1905	2/28/2012@4:45:20 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

* due to a baseline shift for the bromide retention times these samples were attempted to intgrate seperately but did not provide a passing ICV. The samples in question were repeated for bromide AMS 2-28-12.

Author: stewarta

Date : 2/29/2012

Original Run Filename:	OM_2-27-2012_01-19-08PM.OMN created 2/27/2012 1:19:08 PM
Original Run Author's Signature:	[stewarta]
Current Run Filename:	OM_2-27-2012_01-19-08PM.OMN last modified 2/28/2012 5:02:22 AM
Current Run Author's Signature:	[stewarta]
Description:	Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	-0.0021	-0.0224	0.0082	0.0094	0.0016	0.1931	2/27/2012@1:20:33 PM
ICV	1	2.6976	26.0248	2.5300	2.5238	2.5633	51.5378	2/27/2012@1:37:41 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
ICB	S11	0.0030	-0.0179	0.0083	0.0035	0.0019	0.1772	2/27/2012@1:54:49 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0049	-0.0168	0.0082	0.0045	0.0024	0.1755	2/27/2012@2:11:56 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.0413	40.9896	4.0491	4.0677	4.1213	81.6681	2/27/2012@2:29:04 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-39242-B-1@20 CI	2	-0.0010	41.0521	0.0082	0.0043	-0.3378	1.0713	2/27/2012@2:46:11 PM
360-39242-B-1@20 MS	3	1.1348	50.1274	1.0213	1.0403	0.9899	21.5371	2/27/2012@3:03:18 PM
360-39242-B-1@20 MSD	3	1.1422	50.1176	1.0260	1.0351	0.9904	21.6081	2/27/2012@3:20:25 PM
360-39278-A-1	4	0.5687	7.5344	0.0868	0.4187	7.0302	47.7392	2/27/2012@3:37:32 PM
360-39278-A-1@10	5	0.0561	19.4043	0.0156	0.0500	0.0016	4.4219	2/27/2012@3:54:39 PM
360-39278-A-2	6	0.1163	63.4727	0.1484	0.0677	0.0023	7.8854	2/27/2012@4:11:46 PM
360-39278-A-2@10	7	0.0126	9.4078	0.0210	0.0103	0.0016	0.9232	2/27/2012@4:28:53 PM
360-39278-A-3	8	0.1168	58.4798	0.1460	0.0576	0.0041	7.2018	2/27/2012@4:46:00 PM
360-39278-A-3@10	9	0.0127	9.3688	0.0211	0.0097	0.0016	0.9104	2/27/2012@5:03:07 PM
360-39278-A-4	10	0.1193	-103.1718	0.1467	0.0421	0.7495	7.4495	2/27/2012@5:20:14 PM
CCV	S12	4.2375	40.8455	4.0511	4.0238	4.1176	80.6662	2/27/2012@5:37:22 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	-0.0019	-0.0205	0.0082	3.8614e-4	0.0016	0.1865	2/27/2012@5:54:29 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-39278-A-4@10	11	0.0177	9.7611	0.0209	0.0082	0.0016	0.9243	2/27/2012@6:11:36 PM
360-39278-A-5	12	0.5423	-76.7474	0.0862	0.4455	8.4718	46.3991	2/27/2012@6:28:44 PM
360-39278-A-5@10	13	0.0573	19.1841	0.0162	0.0457	0.0016	4.2242	2/27/2012@6:45:51 PM
360-39278-A-6	14	0.1021	5.1369	0.1515	0.0719	-260.7572	8.3003	2/27/2012@7:02:57 PM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	
360-39278-A-6@10	15	0.0133	9.9941	0.0209	0.0136	-0.0640	1.0105	2/27/2012@7:20:04 PM
360-39278-A-7	16	0.0981	-103.9550	0.1432	0.0627	0.0636	7.3375	2/27/2012@7:37:12 PM
360-39278-A-7@10	17	0.0131	9.3109	0.0207	0.0102	-0.0659	0.9068	2/27/2012@7:54:21 PM
360-39278-A-8	18	0.0776	-111.2491	0.1433	0.0423	2.4840	7.5287	2/27/2012@8:11:28 PM
360-39278-A-8@10	19	0.0135	9.6680	0.0205	0.0095	0.0016	0.9351	2/27/2012@8:28:36 PM
360-39278-A-9	20	0.3777	-89.5230	0.0941	0.3927	10.4923	45.9266	2/27/2012@8:45:44 PM
CCV	S12	3.6259	40.5214	4.0468	3.9414	4.0834	80.8414	2/27/2012@9:02:53 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	

* due to a baseline shift the sample groups were integrated seperately 2/29/12 JMB

CCB	S11	0.0023	-0.0228	0.0081	0.0047	0.0016	0.1901	2/27/2012@9:20:00 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0024	-0.0236	0.0081	0.0020	0.0017	0.1947	2/27/2012@9:37:08 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.3446	40.4501	4.0479	3.9041	4.0744	80.5700	2/27/2012@9:54:16 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-39278-A-9@10	21	0.0617	20.5476	0.0161	0.0425	0.0016	4.4345	2/27/2012@10:11:24 PM
360-39278-A-9@10 MS	22	1.0824	31.2167	1.0506	1.0733	1.0489	25.4573	2/27/2012@10:28:32 PM
360-39278-A-9@10 MSD	22	1.0819	31.1206	1.0486	1.0815	1.0416	25.2546	2/27/2012@10:45:40 PM
360-39278-A-10	23	0.0112	43.4708	0.7051	1.3386	0.0016	17.0455	2/27/2012@11:02:48 PM
360-39278-A-10@10	24	0.0024	4.0606	0.0761	0.1306	0.0016	1.7464	2/27/2012@11:19:55 PM
360-39278-A-11	25	0.0303	52.0125	0.5188	1.1703	0.0016	15.2096	2/27/2012@11:37:02 PM
360-39278-A-11@10	26	0.0025	5.2020	0.0582	0.1154	0.0016	1.6307	2/27/2012@11:54:09 PM
360-39278-A-12	27	0.0961	-107.6324	0.1460	0.0371	1.4343	7.1559	2/28/2012@12:11:17 AM
360-39278-A-12@10	28	0.0110	9.3248	0.0204	0.0043	0.0016	0.8880	2/28/2012@12:28:24 AM
360-39240-C-2	29	0.0031	8.7900	0.0082	2.7076	0.0016	0.2493	2/28/2012@12:45:31 AM
CCV	S12	3.3745	40.4526	4.0424	3.9307	4.0806	80.5562	2/28/2012@1:02:38 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11 *	-0.0026	-0.0235	0.0081	0.0042	0.0016	0.1922	2/28/2012@1:19:46 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-39243-B-1@20 CI	30	-0.0153	37.9723	0.0198	0.0036	-0.9641	1.3004	2/28/2012@1:36:53 AM
360-39245-B-1	31	-0.0068	54.5596	0.0548	2.0993	-16.2037	11.4176	2/28/2012@1:54:01 AM
360-39245-B-1@10	32	-0.0049	5.7337	0.0061	0.2038	-0.0446	1.2727	2/28/2012@2:11:10 AM
360-39262-A-1	33	0.8677	57.5361	0.3995	-0.0317	-8.0835	0.1794	2/28/2012@2:28:18 AM
360-39262-A-1@10	34	0.0842	27.9473	0.0904	0.0040	-0.4231	150.1432	2/28/2012@2:45:26 AM
360-39262-A-3	35	0.2912	46.2853	0.1028	0.0043	0.0016	119.6826	2/28/2012@3:02:33 AM
360-39262-A-3@10	36	0.0316	4.5423	0.0051	0.0043	-0.0336	34.5926	2/28/2012@3:19:41 AM
360-39262-A-4	37	0.3517	19.3016	0.0829	0.0140	0.0016	-6.2526	2/28/2012@3:36:49 AM
360-39262-A-4@10	38	0.0249	1.7937	0.0066	0.0043	0.0016	46.4784	2/28/2012@3:53:57 AM
360-39286-F-1@10	39	0.0018	27.4786	0.5724	0.0041	0.0016	1.5247	2/28/2012@4:11:04 AM
CCV	S12	3.1727	40.4503	4.0381	3.9259	4.0800	80.0507	2/28/2012@4:28:12 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0022	-0.0230	0.0082	0.0066	0.0016	0.1905	2/28/2012@4:45:20 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

* due to a baseline shift for the bromide retention times these samples were attempted to be integrated seperately but did not provide a passing ICV. The samples in question were repeated for bromide AMG 2/29/12

-2-

Author: stewarta

Date : 2/29/2012

Original Run Filename: OM_2-27-2012_01-19-08PM.OMN created 2/27/2012 1:19:08 PM
Original Run Author's Signature: [stewarta]
Current Run Filename: OM_2-27-2012_01-19-08PM.OMN last modified 2/28/2012 5:02:22 AM
Current Run Author's Signature: [stewarta]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	-0.0021	-0.0224	0.0082	0.0094	0.0016	0.1931	2/27/2012@1:20:33 PM
ICV	1	2.6976	26.0248	2.5300	2.5238	2.5633	51.5378	2/27/2012@1:37:41 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
ICB	S11	0.0030	-0.0179	0.0083	0.0035	0.0019	0.1772	2/27/2012@1:54:49 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0049	-0.0168	0.0082	0.0045	0.0024	0.1755	2/27/2012@2:11:56 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	3.0413	40.9896	4.0491	4.0677	4.1213	81.6681	2/27/2012@2:29:04 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-39242-B-1@20 CI	2	-0.0010	41.0521	0.0082	0.0043	-0.3378	1.0713	2/27/2012@2:46:11 PM
360-39242-B-1@20 MS	3	1.1348	50.1274	1.0213	1.0403	0.9899	21.5371	2/27/2012@3:03:18 PM
360-39242-B-1@20 MSD	3	1.1422	50.1176	1.0260	1.0351	0.9904	21.6081	2/27/2012@3:20:25 PM
360-39278-A-1	4	0.5687	7.5344	0.0868	0.4187	7.0302	47.7392	2/27/2012@3:37:32 PM
360-39278-A-1@10	5	0.0561	19.4043	0.0156	0.0500	0.0016	4.4219	2/27/2012@3:54:39 PM
360-39278-A-2	6	0.1163	63.4727	0.1484	0.0677	0.0023	7.8854	2/27/2012@4:11:46 PM
360-39278-A-2@10	7	0.0126	9.4078	0.0210	0.0103	0.0016	0.9232	2/27/2012@4:28:53 PM
360-39278-A-3	8	0.1168	58.4798	0.1460	0.0576	0.0041	7.2018	2/27/2012@4:46:00 PM
360-39278-A-3@10	9	0.0127	9.3688	0.0211	0.0097	0.0016	0.9104	2/27/2012@5:03:07 PM
360-39278-A-4	10	0.1193	-103.1718	0.1467	0.0421	0.7495	7.4495	2/27/2012@5:20:14 PM
CCV	S12	4.2375	40.8455	4.0511	4.0238	4.1176	80.6662	2/27/2012@5:37:22 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	-0.0019	-0.0205	0.0082	3.8614e-4	0.0016	0.1865	2/27/2012@5:54:29 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-39278-A-4@10	11	0.0177	9.7611	0.0209	0.0082	0.0016	0.9243	2/27/2012@6:11:36 PM
360-39278-A-5	12	0.5423	-76.7474	0.0862	0.4455	8.4718	46.3991	2/27/2012@6:28:44 PM
360-39278-A-5@10	13	0.0573	19.1841	0.0162	0.0457	0.0016	4.2242	2/27/2012@6:45:51 PM
360-39278-A-6	14	0.1021	5.1369	0.1515	0.0719	-260.7572	8.3003	2/27/2012@7:02:57 PM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	
360-39278-A-6@10	15	0.0133	9.9941	0.0209	0.0136	-0.0640	1.0105	2/27/2012@7:20:04 PM
360-39278-A-7	16	0.0981	-103.9550	0.1432	0.0627	0.0636	7.3375	2/27/2012@7:37:12 PM
360-39278-A-7@10	17	0.0131	9.3109	0.0207	0.0102	-0.0659	0.9068	2/27/2012@7:54:21 PM
360-39278-A-8	18	0.0776	-111.2491	0.1433	0.0423	2.4840	7.5287	2/27/2012@8:11:28 PM
360-39278-A-8@10	19	0.0135	9.6680	0.0205	0.0095	0.0016	0.9351	2/27/2012@8:28:36 PM
360-39278-A-9	20	0.3777	-89.5230	0.0941	0.3927	10.4923	45.9266	2/27/2012@8:45:44 PM
CCV	S12	3.6259	40.5214	4.0468	3.9414	4.0834	80.8414	2/27/2012@9:02:53 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	

* due to a baseline shift the sample groups were integrated seperately 2/29/12 JMS

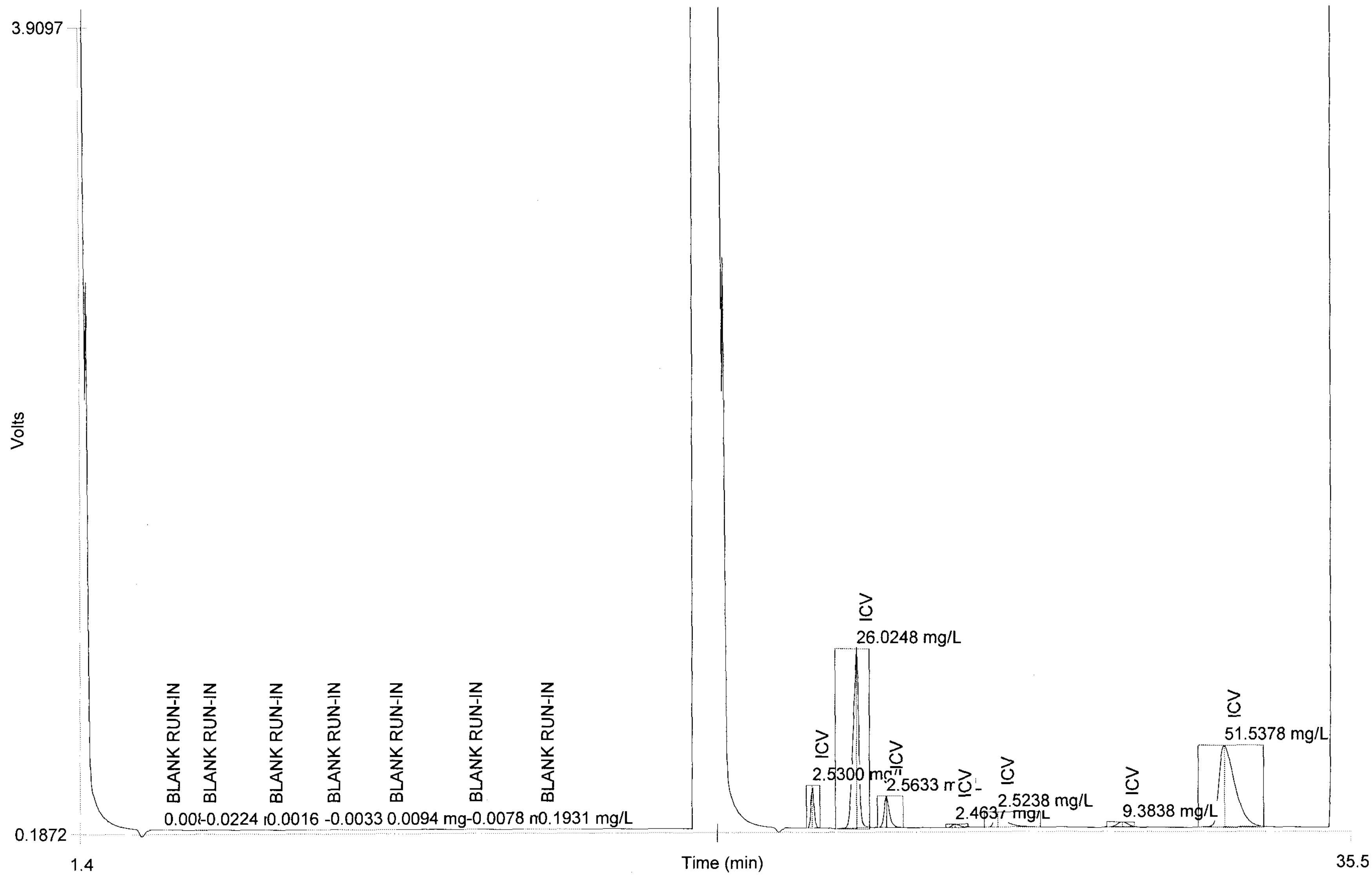
CCB	S11	0.0016	-0.0228	0.0081	0.0047	0.0016	0.1901	2/27/2012@9:20:00 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	-0.0024	-0.0236	0.0081	0.0020	0.0017	0.1947	2/27/2012@9:37:08 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	1.9188	40.4501	4.0479	3.9041	4.0744	80.5700	2/27/2012@9:54:16 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-39278-A-9@10	21	0.0353	20.5476	0.0161	0.0425	0.0016	4.4345	2/27/2012@10:11:24 PM
360-39278-A-9@10 MS	22	0.8028	31.2167	1.0506	1.0733	1.0489	25.4573	2/27/2012@10:28:32 PM
360-39278-A-9@10 MSD	22	0.8421	31.1206	1.0486	1.0815	1.0416	25.2546	2/27/2012@10:45:40 PM
360-39278-A-10	23	0.0020	43.4708	0.7051	1.3386	0.0016	17.0455	2/27/2012@11:02:48 PM
360-39278-A-10@10	24	0.0022	4.0606	0.0761	0.1306	0.0016	1.7464	2/27/2012@11:19:55 PM
360-39278-A-11	25	0.0220	52.0125	0.5188	1.1703	0.0016	15.2096	2/27/2012@11:37:02 PM
360-39278-A-11@10	26	0.0024	5.2020	0.0582	0.1154	0.0016	1.6307	2/27/2012@11:54:09 PM
360-39278-A-12	27	0.0493	-107.6324	0.1460	0.0371	1.4343	7.1559	2/28/2012@12:11:17 AM
360-39278-A-12@10	28	0.0039	9.3248	0.0204	0.0043	0.0016	0.8880	2/28/2012@12:28:24 AM
360-39240-C-2	29	0.0064	8.7900	0.0082	2.7076	0.0016	0.2493	2/28/2012@12:45:31 AM
CCV	S12	1.9545	40.4526	4.0424	3.9307	4.0806	80.5562	2/28/2012@1:02:38 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	-0.0028	-0.0235	0.0081	0.0042	0.0016	0.1922	2/28/2012@1:19:46 AM
	Known Conc: *	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-39243-B-1@20 CI	30	-0.0250	37.9723	0.0198	0.0036	-0.9641	1.3004	2/28/2012@1:36:53 AM
360-39245-B-1	31	-0.0222	54.5596	0.0548	2.0993	-16.2037	11.4176	2/28/2012@1:54:01 AM
360-39245-B-1@10	32	0.0123	5.7337	0.0061	0.2038	-0.0446	1.2727	2/28/2012@2:11:10 AM
360-39262-A-1	33	0.6413	57.5361	0.3995	-0.0317	-8.0835	0.1794	2/28/2012@2:28:18 AM
360-39262-A-1@10	34	0.0533	27.9473	0.0904	0.0040	-0.4231	150.1432	2/28/2012@2:45:26 AM
360-39262-A-3	35	0.2225	46.2853	0.1028	0.0043	0.0016	119.6826	2/28/2012@3:02:33 AM
360-39262-A-3@10	36	0.0229	4.5423	0.0051	0.0043	-0.0336	34.5926	2/28/2012@3:19:41 AM
360-39262-A-4	37	0.2418	19.3016	0.0829	0.0140	0.0016	-6.2526	2/28/2012@3:36:49 AM
360-39262-A-4@10	38	-0.0362	1.7937	0.0066	0.0043	0.0016	46.4784	2/28/2012@3:53:57 AM
360-39286-F-1@10	39	-0.0062	27.4786	0.5724	0.0041	0.0016	1.5247	2/28/2012@4:11:04 AM
CCV	S12	1.5862	40.4503	4.0381	3.9259	4.0800	80.0507	2/28/2012@4:28:12 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	6.4249e-4	-0.0230	0.0082	0.0066	0.0016	0.1905	2/28/2012@4:45:20 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

* due to a baseline shift for the bromide retention times these samples were attempted to intgrate seperately but did not provide a passing ICV. The samples in question were repeated for bromide AMS 2-28-12.

Author: stewarta

Date : 2/28/2012

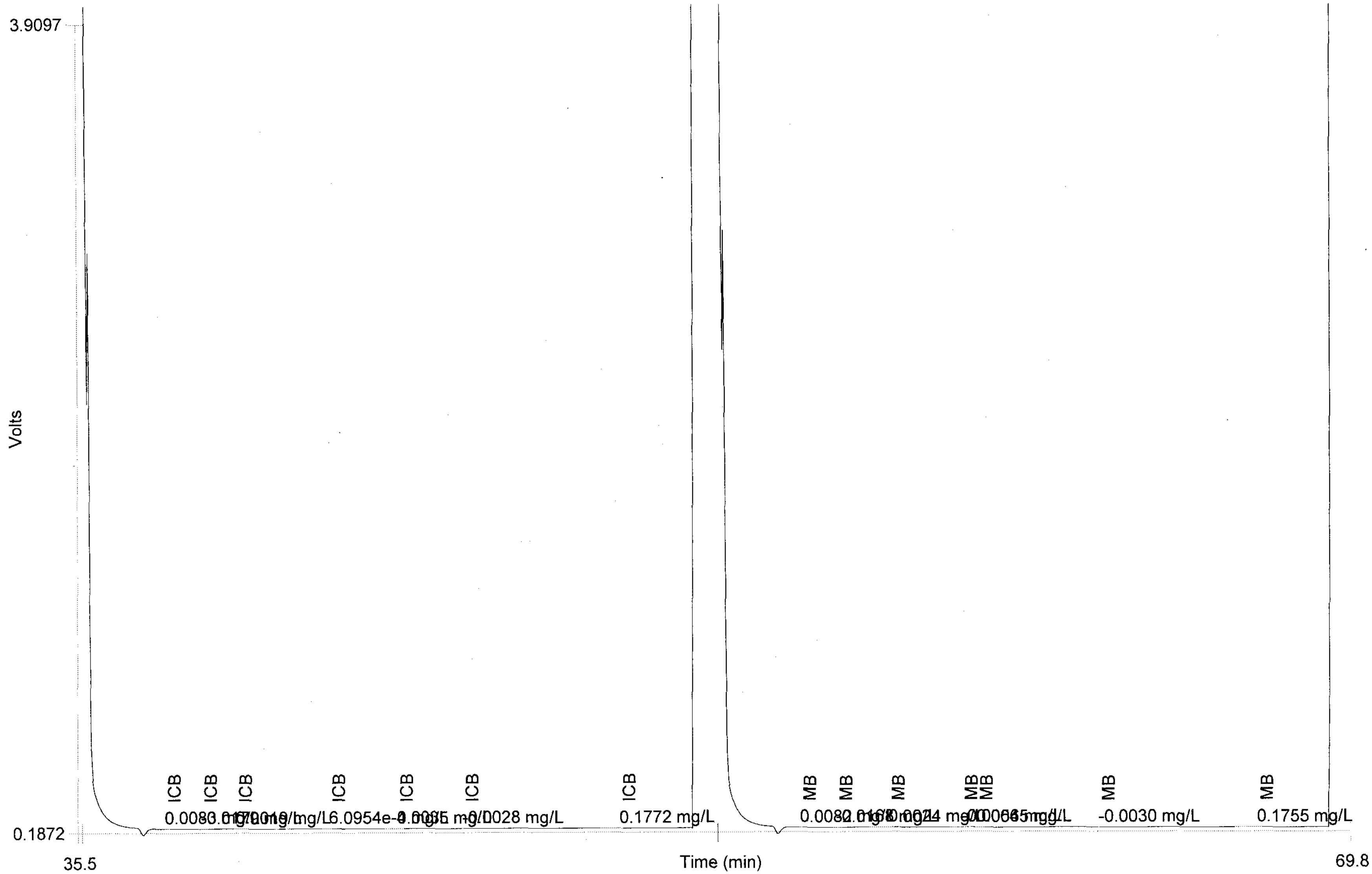
Channel 1 (Anions) : Set 1 of 28



Author: stewarta

Date : 2/28/2012

Channel 1 (Anions) : Set 2 of 28



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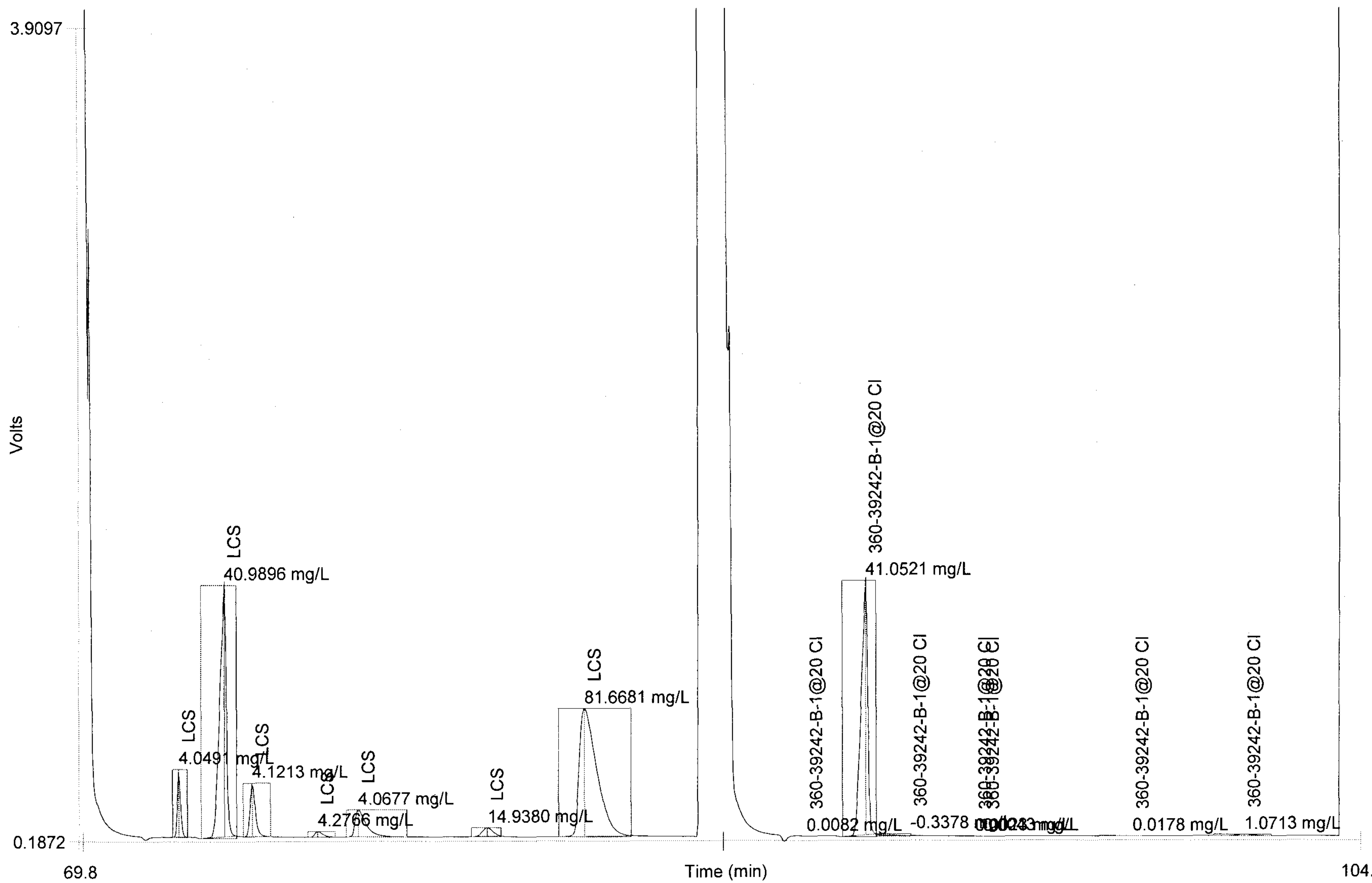
Author: stewarta

Date : 2/28/2012

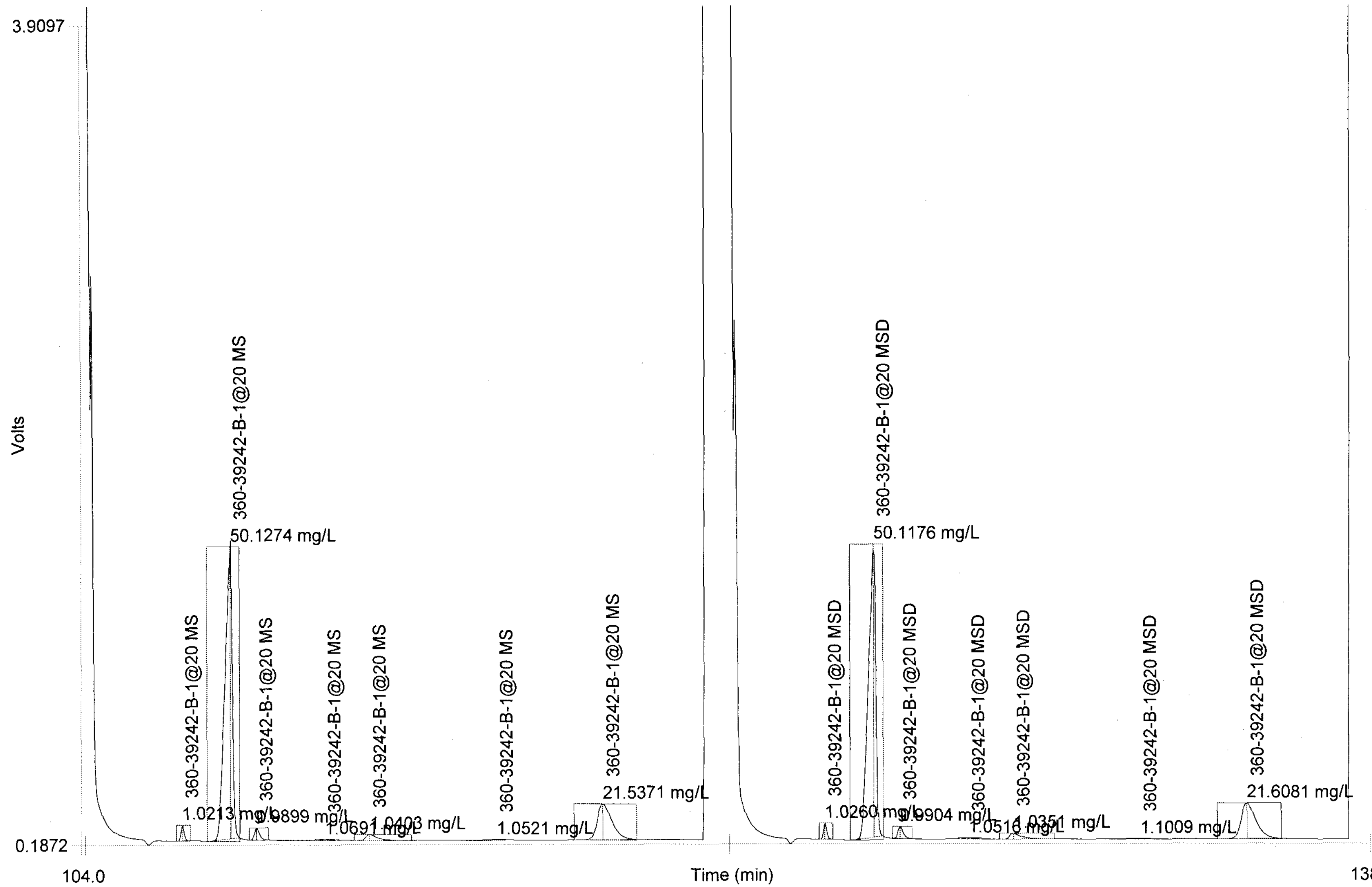
Channel 1 (Anions) : Set 3 of 28



Author: stewarta

Date : 2/28/2012

Channel 1 (Anions) : Set 4 of 28



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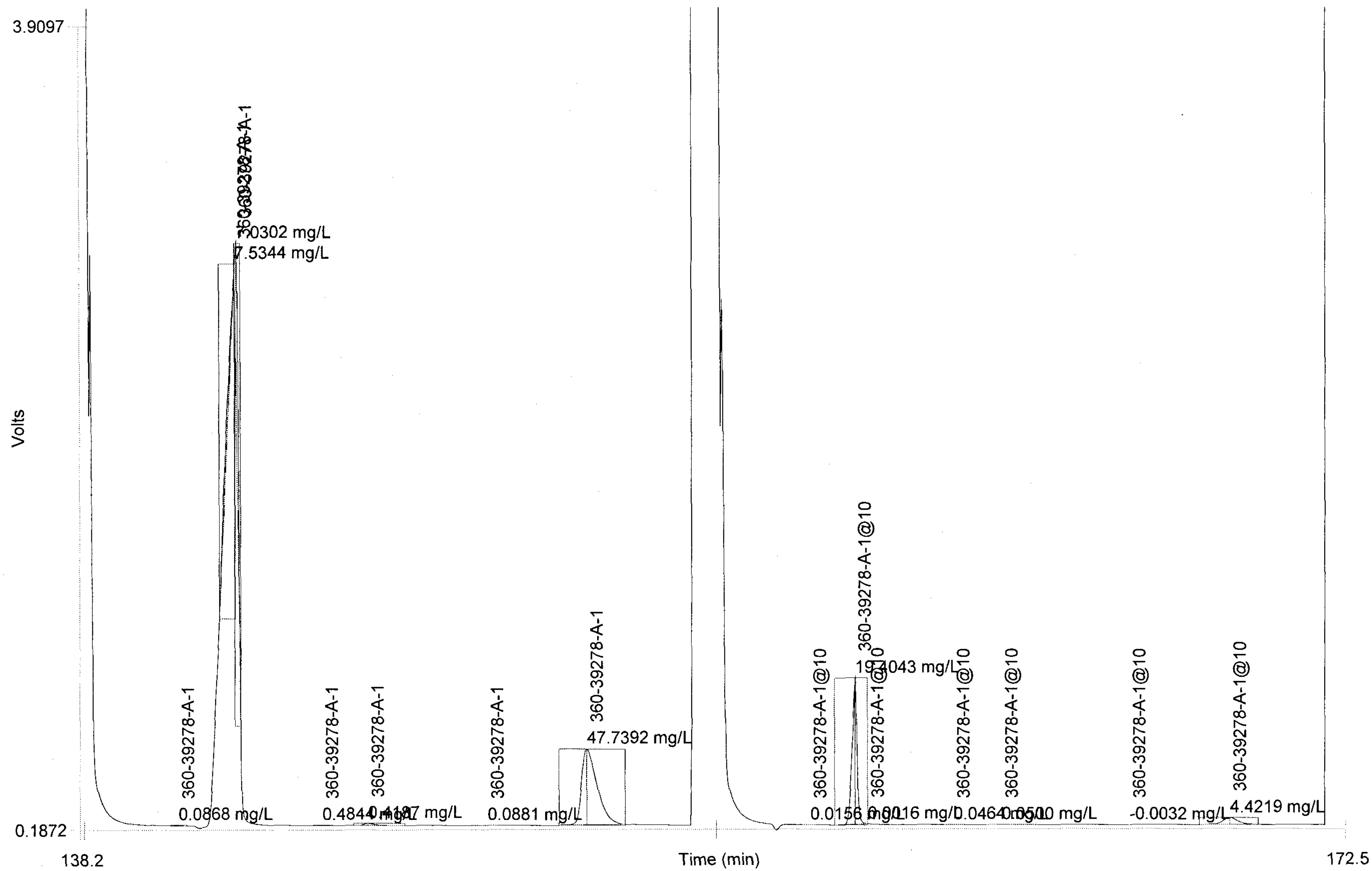
Author: stewarta

Date : 2/28/2012

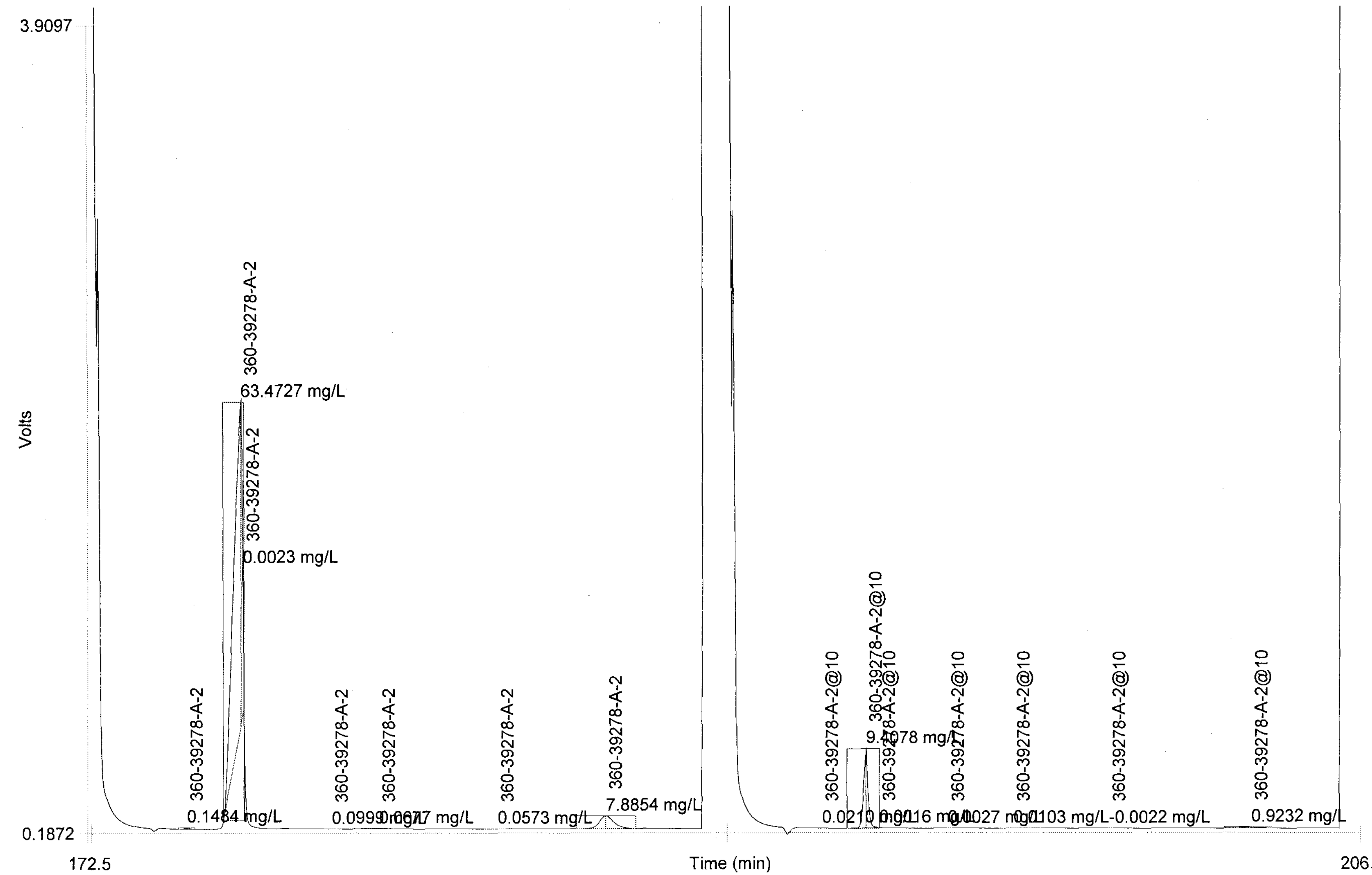
Channel 1 (Anions) : Set 5 of 28



Author: stewarta

Date : 2/28/2012

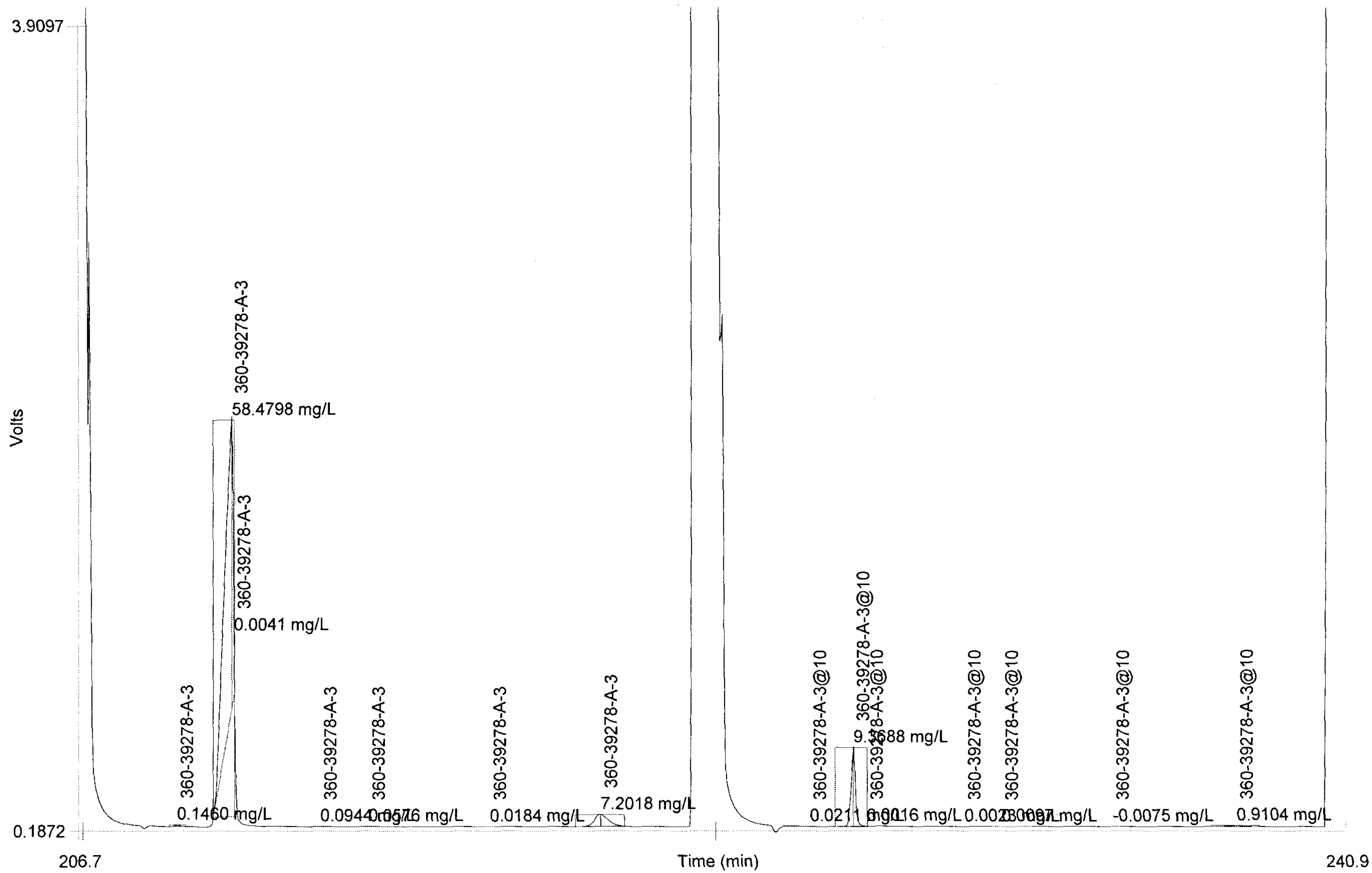
Channel 1 (Anions) : Set 6 of 28



Author: stewarta

Date : 2/28/2012

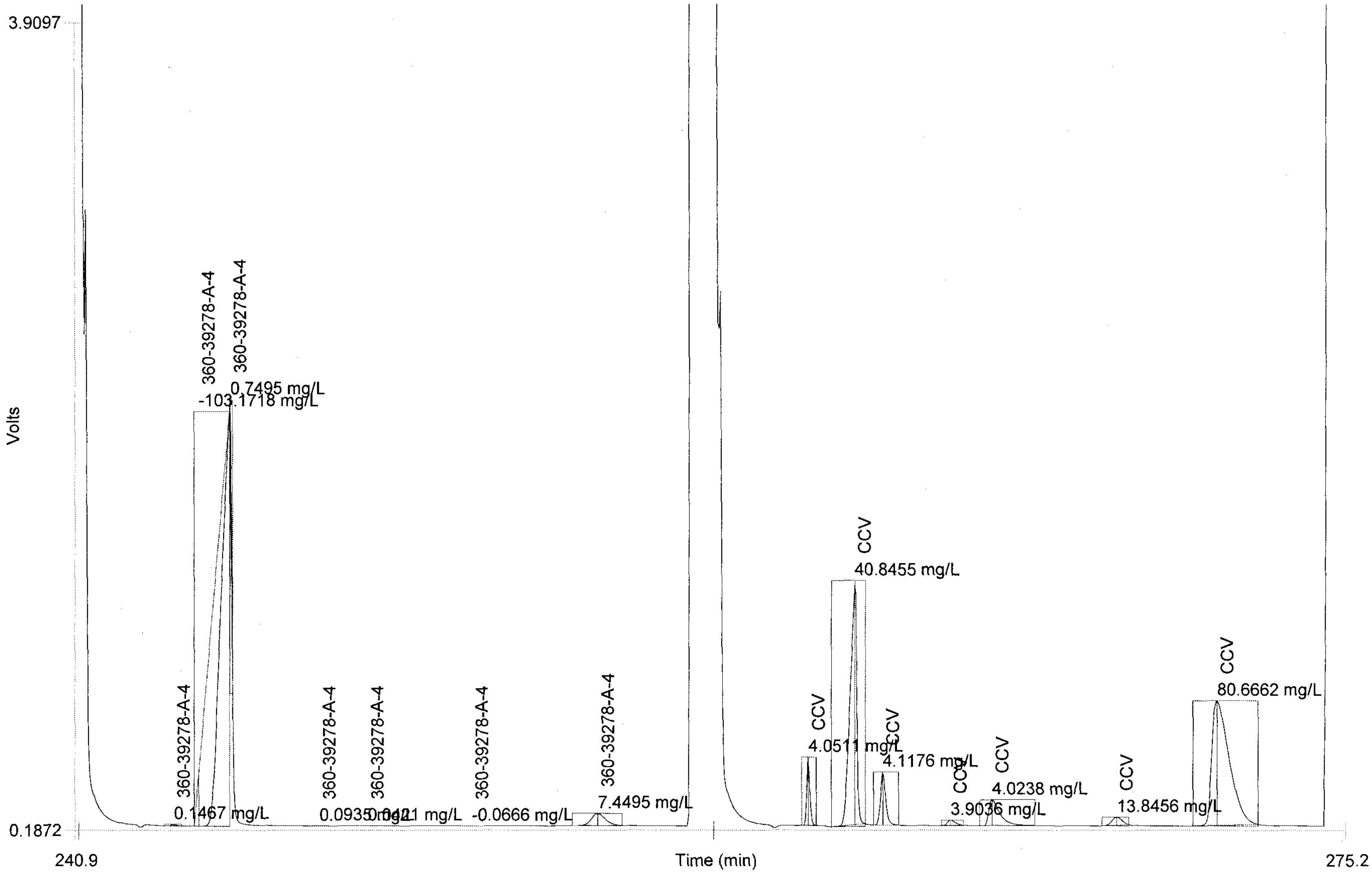
Channel 1 (Anions) : Set 7 of 28



Author: stewarta

Date : 2/28/2012

Channel 1 (Anions) : Set 8 of 28



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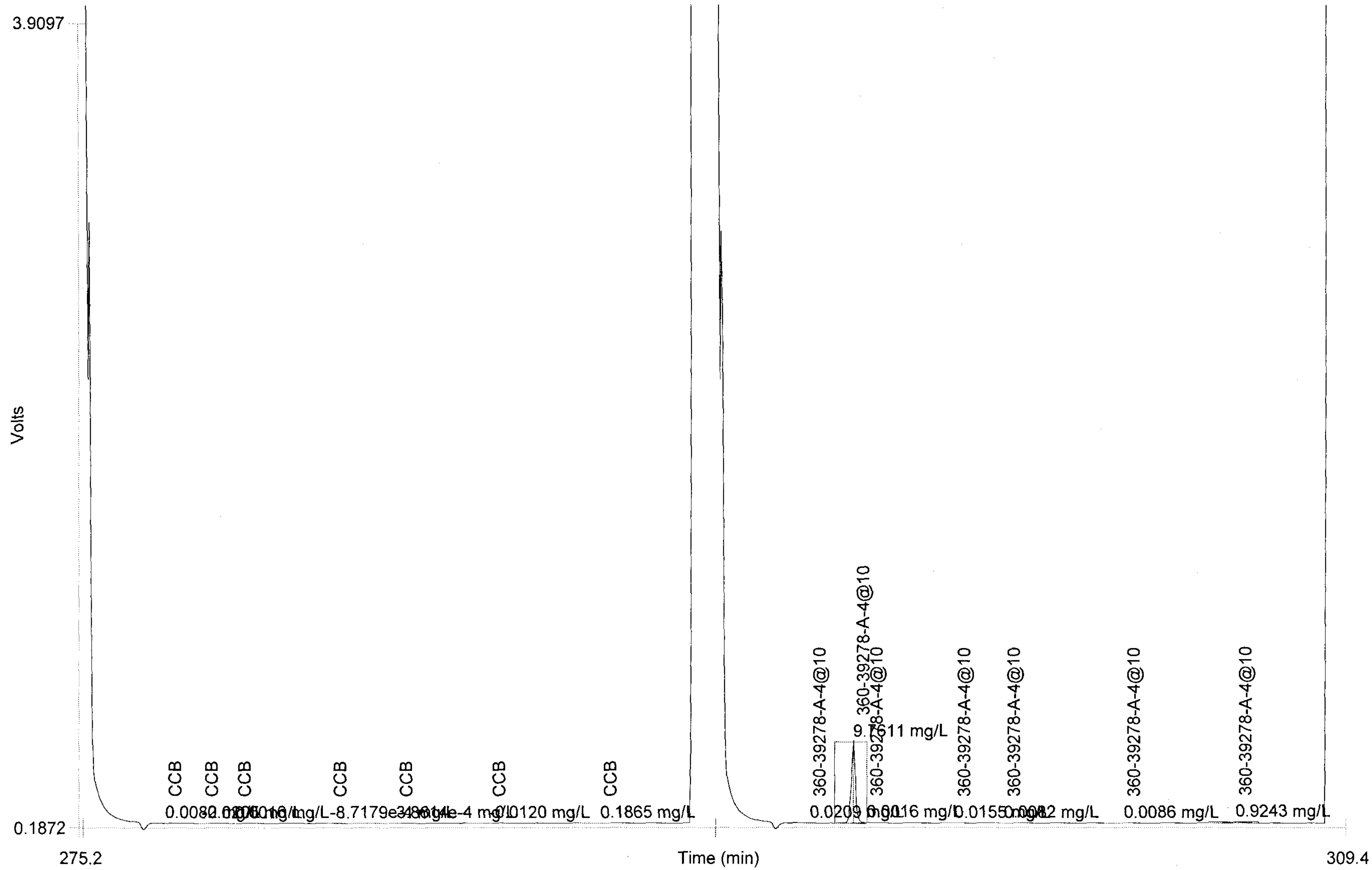
Author: stewarta

Date : 2/28/2012

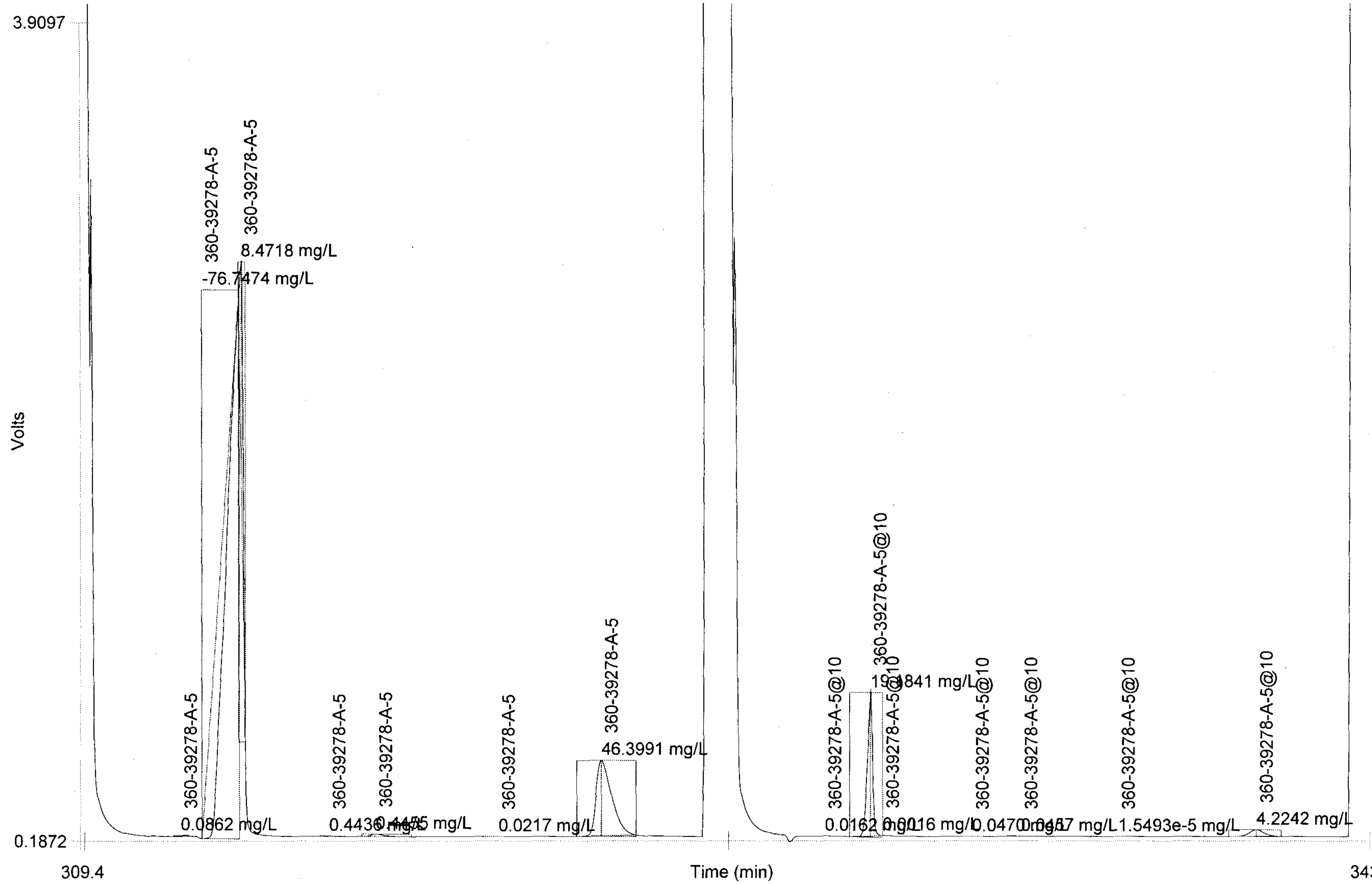
Channel 1 (Anions) : Set 9 of 28



Author: stewarta

Date : 2/28/2012

Channel 1 (Anions) : Set 10 of 28



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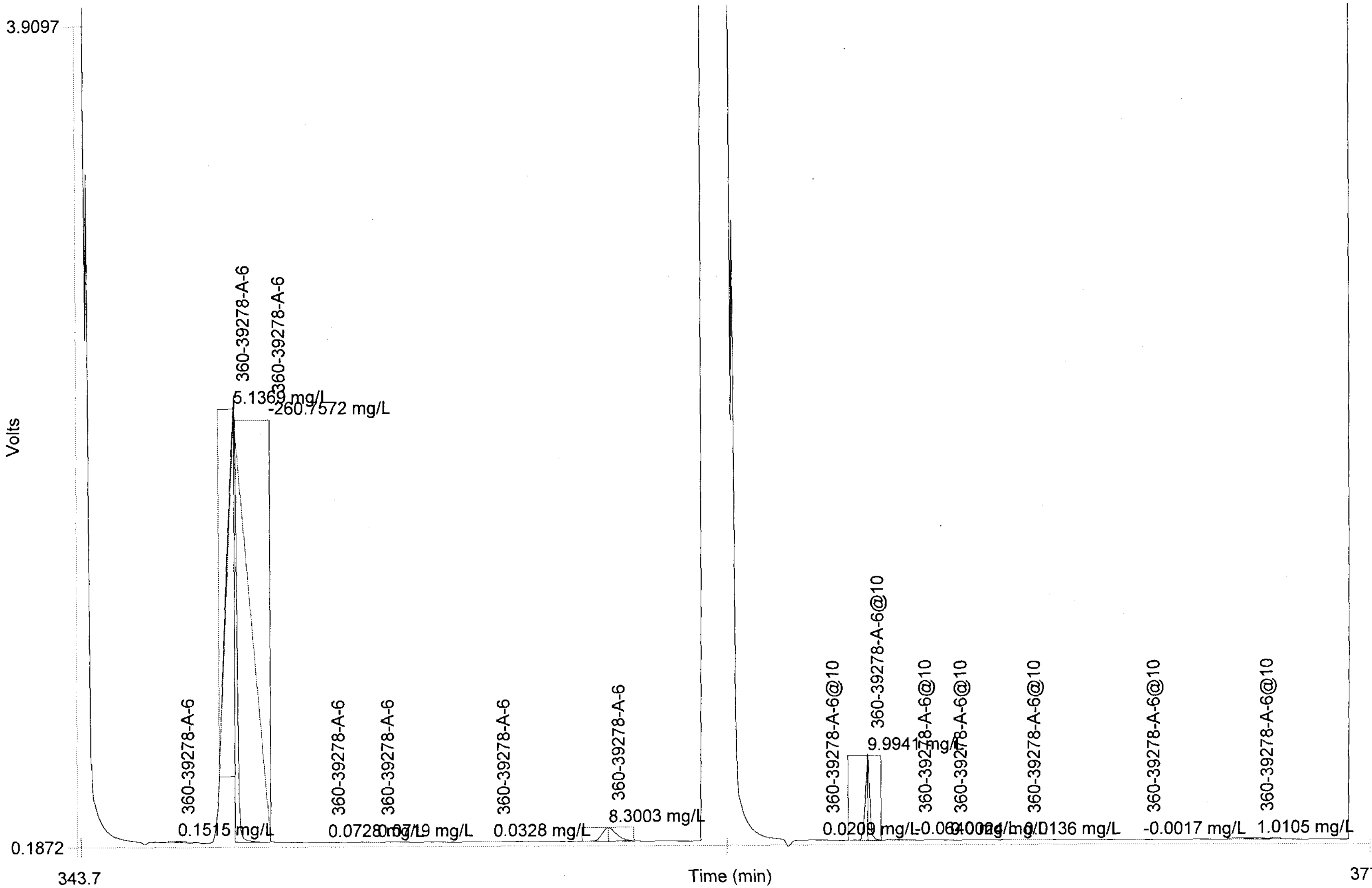
Author: stewarta

Date : 2/28/2012

Channel 1 (Anions) : Set 11 of 28



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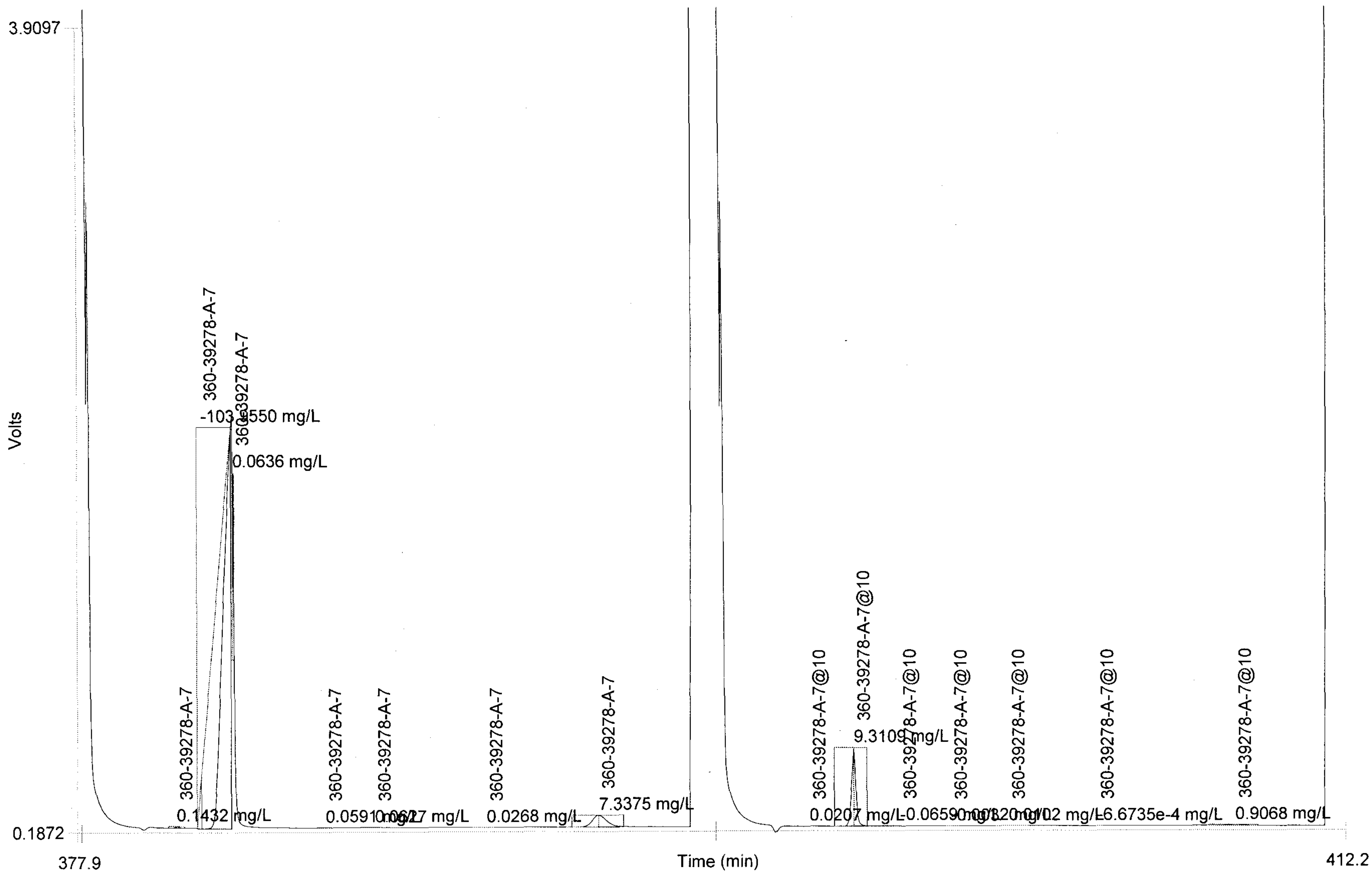
Author: stewarta

Date : 2/28/2012

Channel 1 (Anions) : Set 12 of 28



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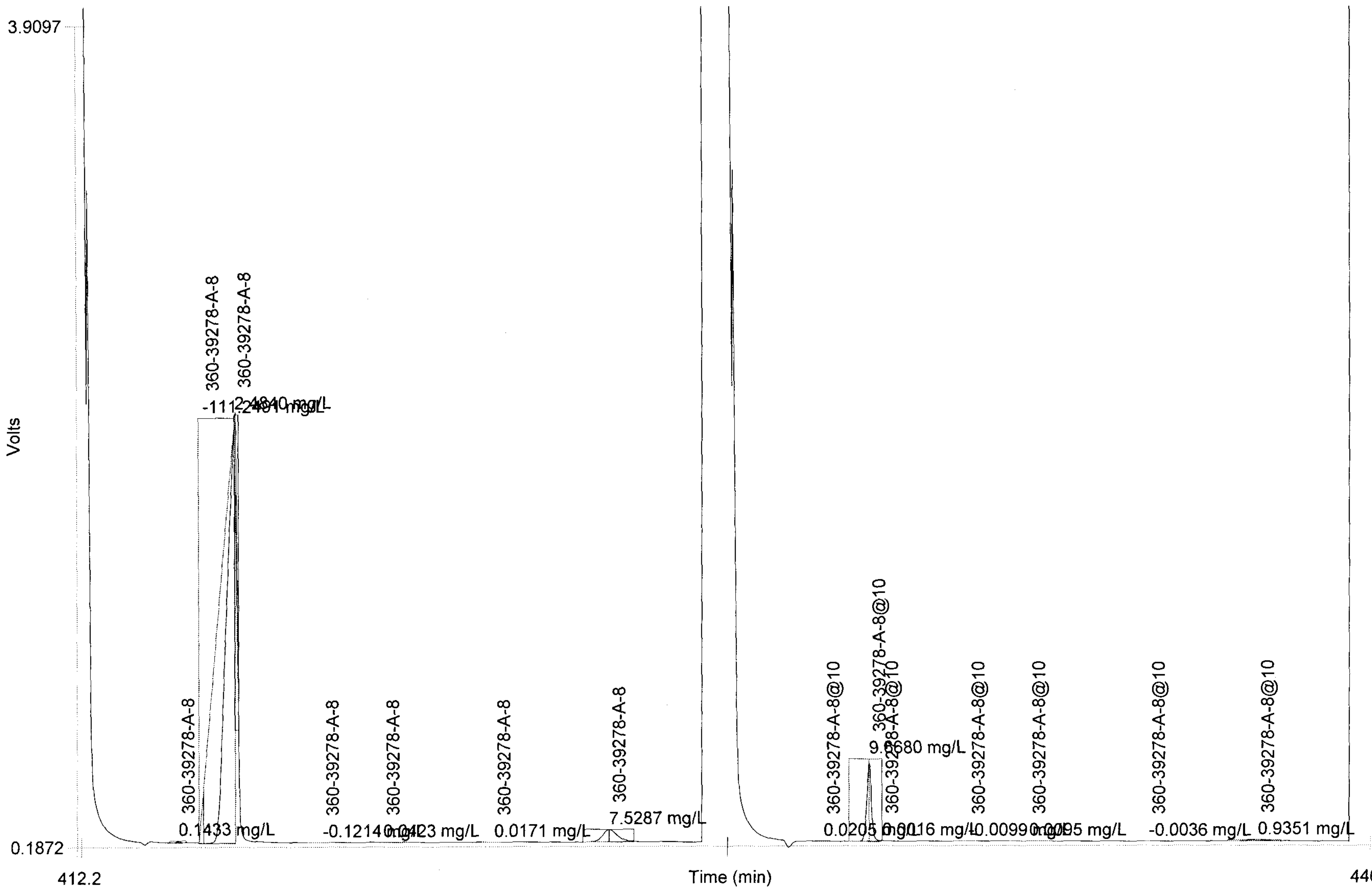
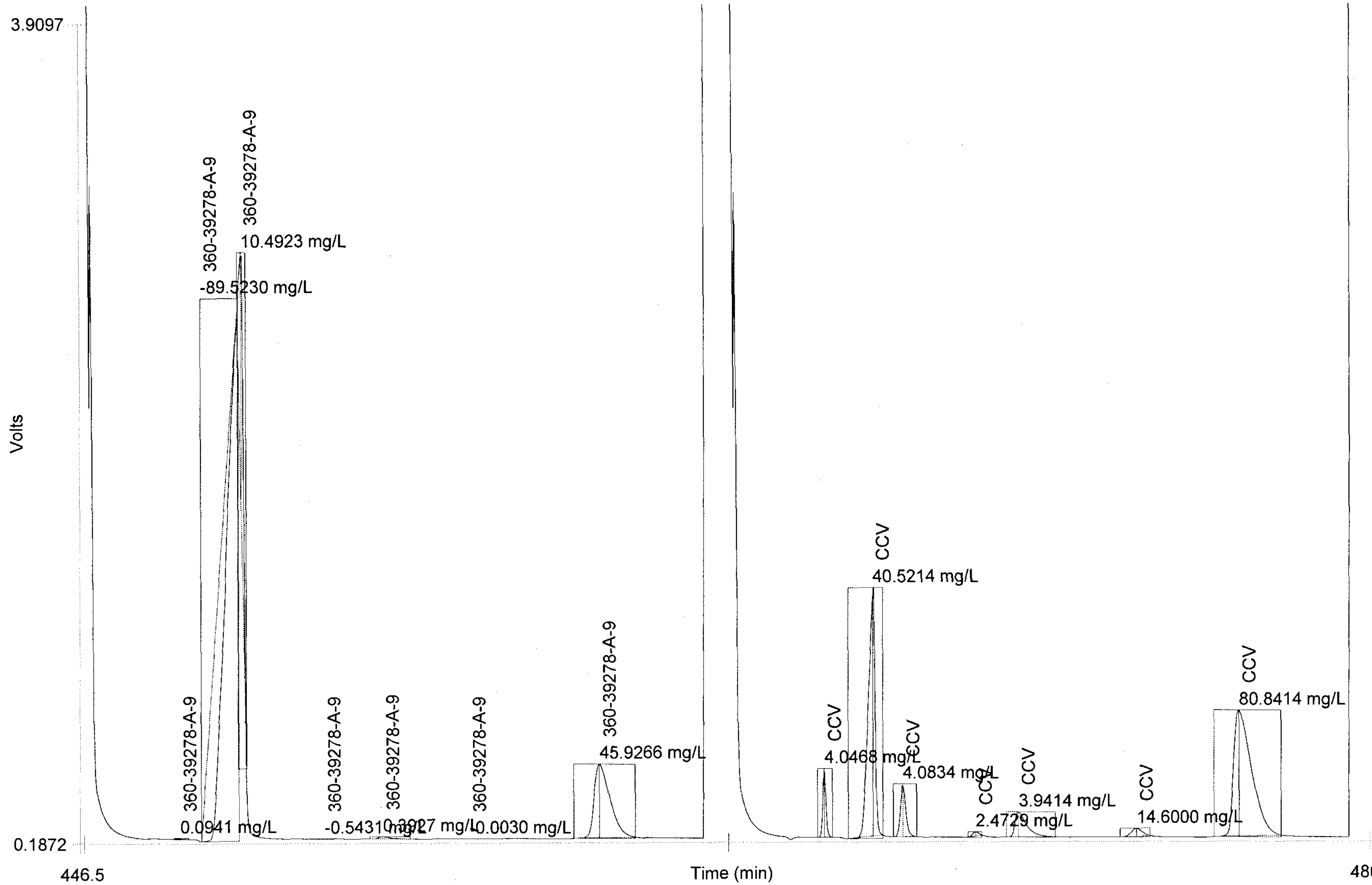
Author: stewarta

Date : 2/28/2012

Channel 1 (Anions) : Set 13 of 28



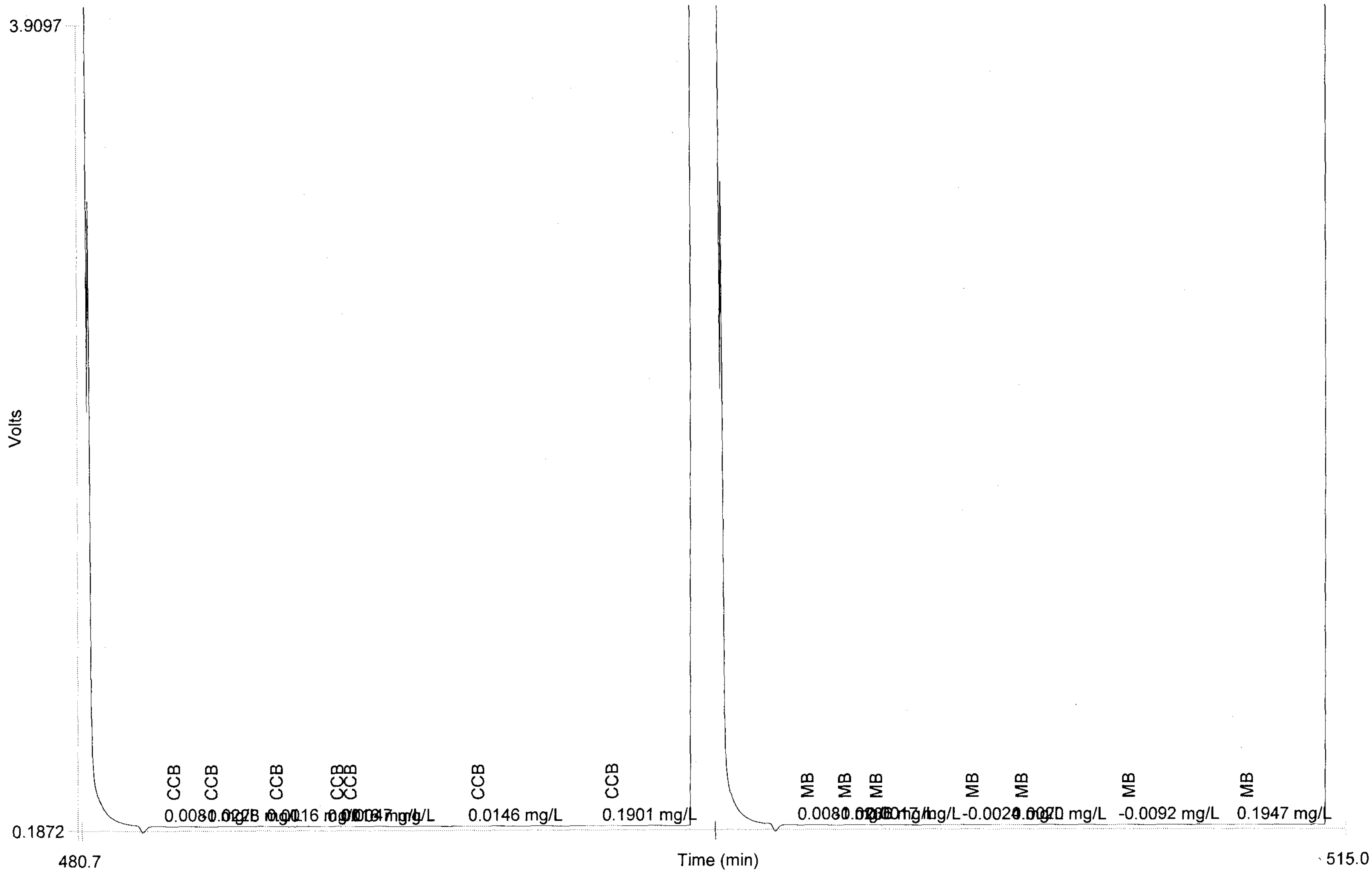
Channel 1 (Anions) : Set 14 of 28



Author: stewarta

Date : 2/28/2012

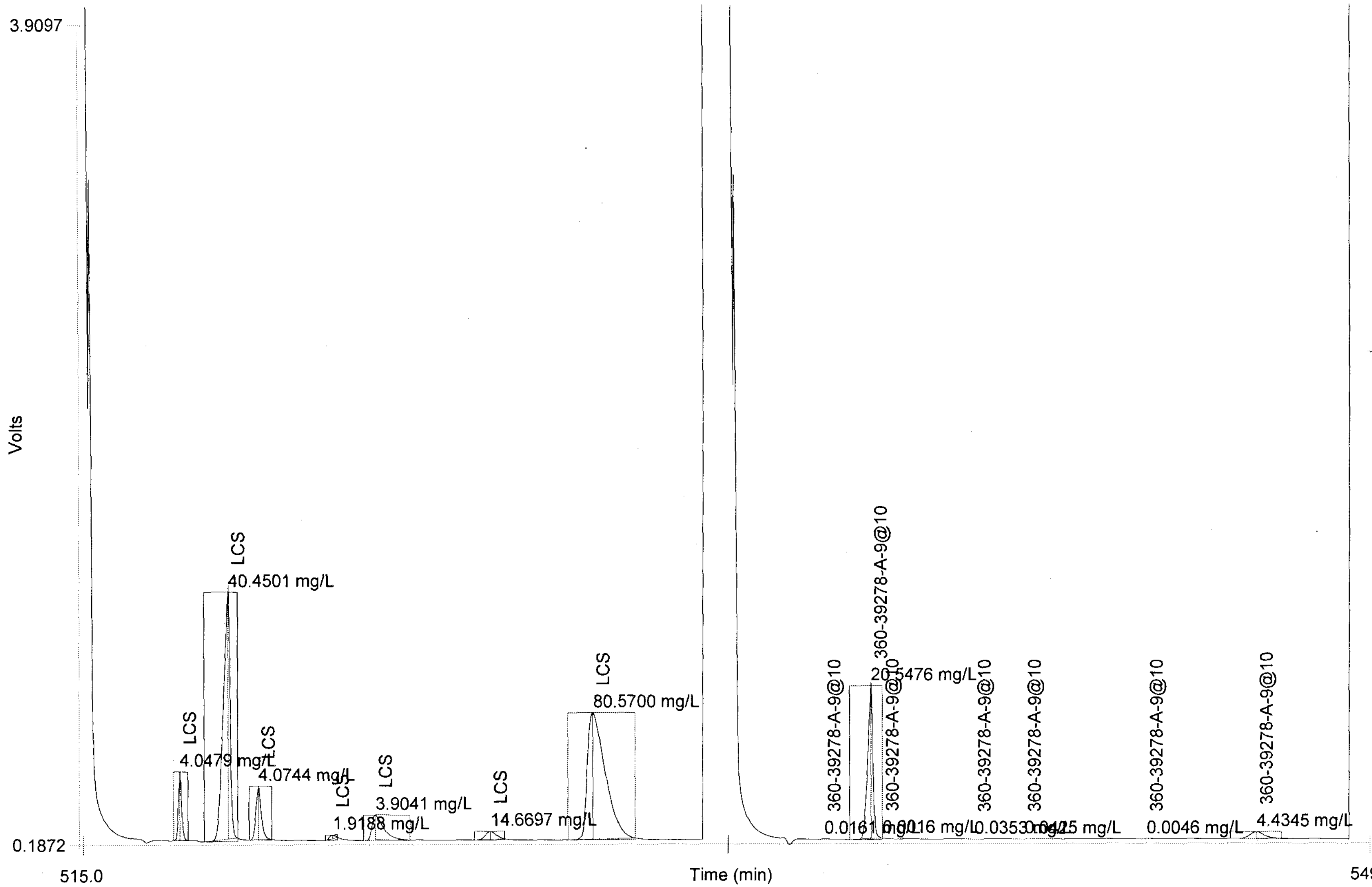
Channel 1 (Anions) : Set 15 of 28



Author: stewarta

Date : 2/28/2012

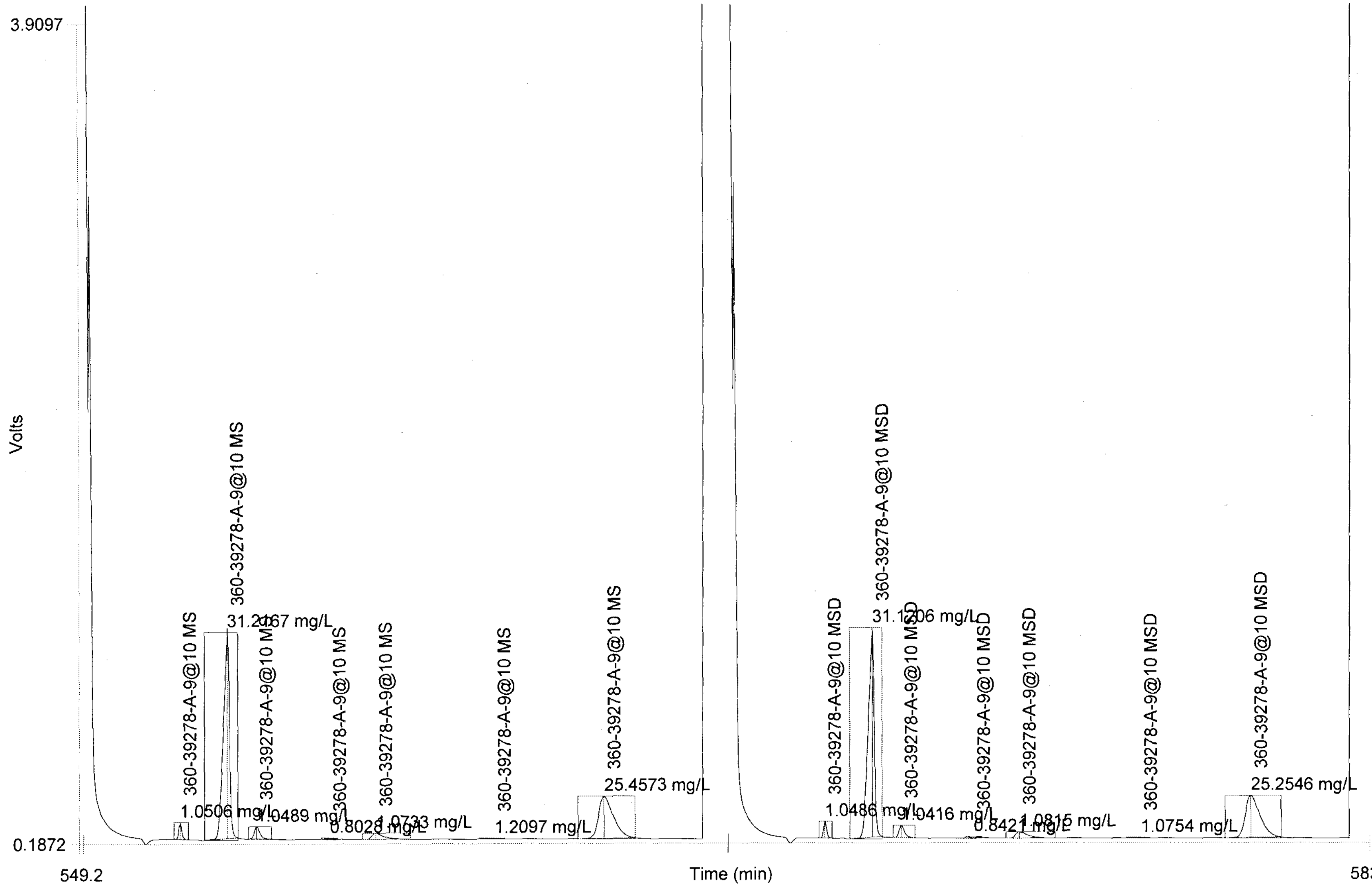
Channel 1 (Anions) : Set 16 of 28



Author: stewarta

Date : 2/28/2012

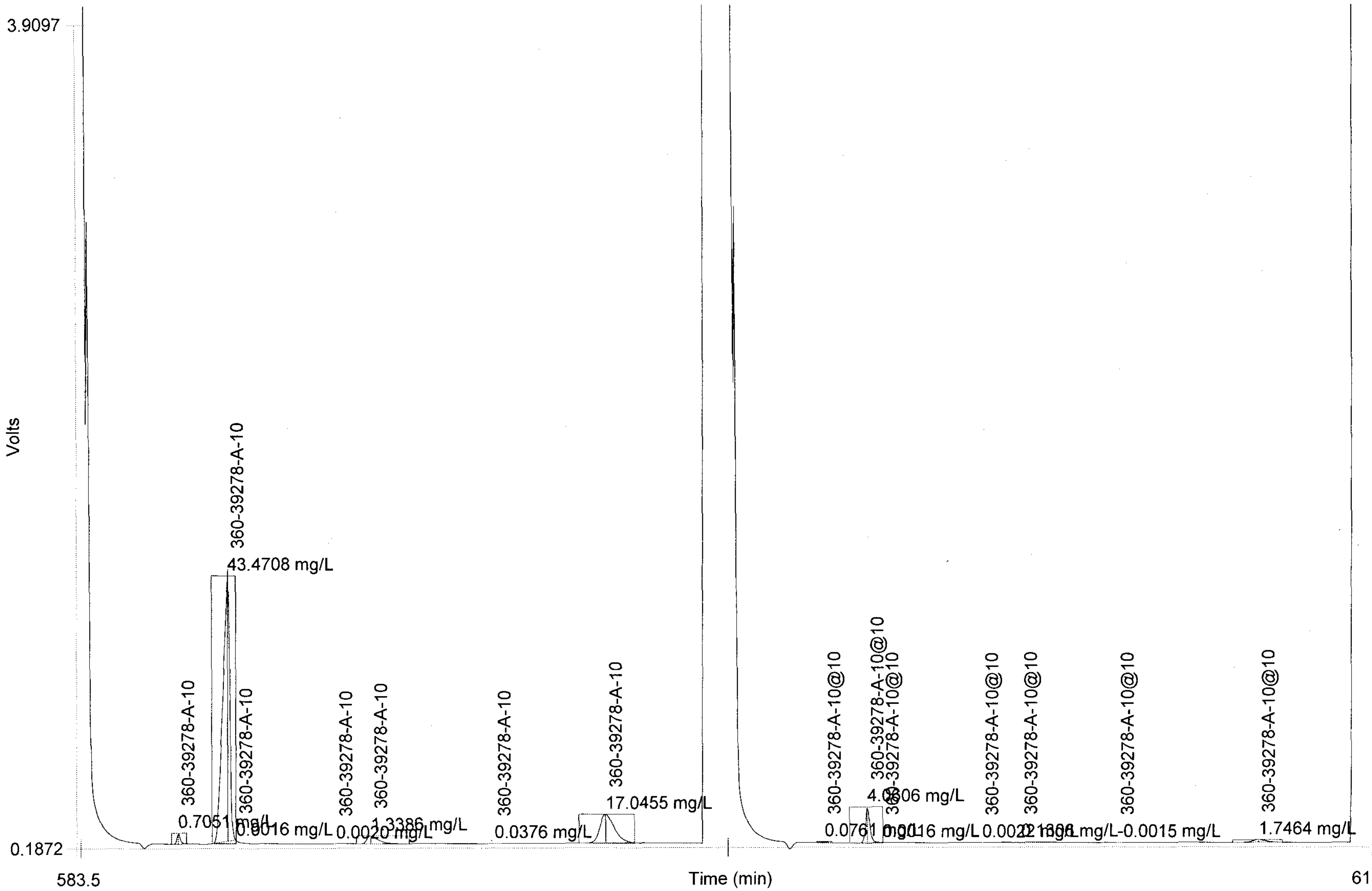
Channel 1 (Anions) : Set 17 of 28



Author: stewarta

Date : 2/28/2012

Channel 1 (Anions) : Set 18 of 28



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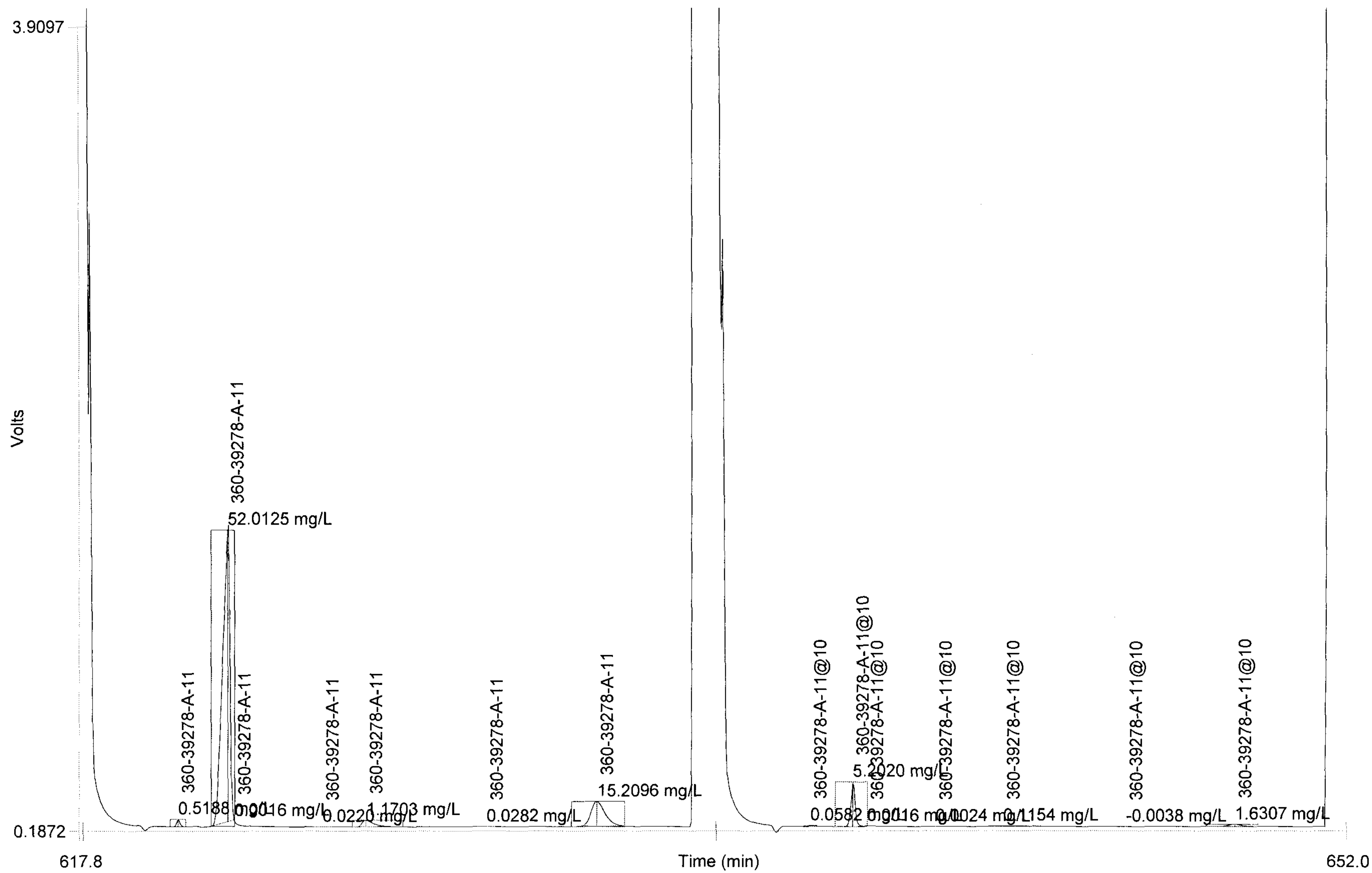
Author: stewarta

Date : 2/28/2012

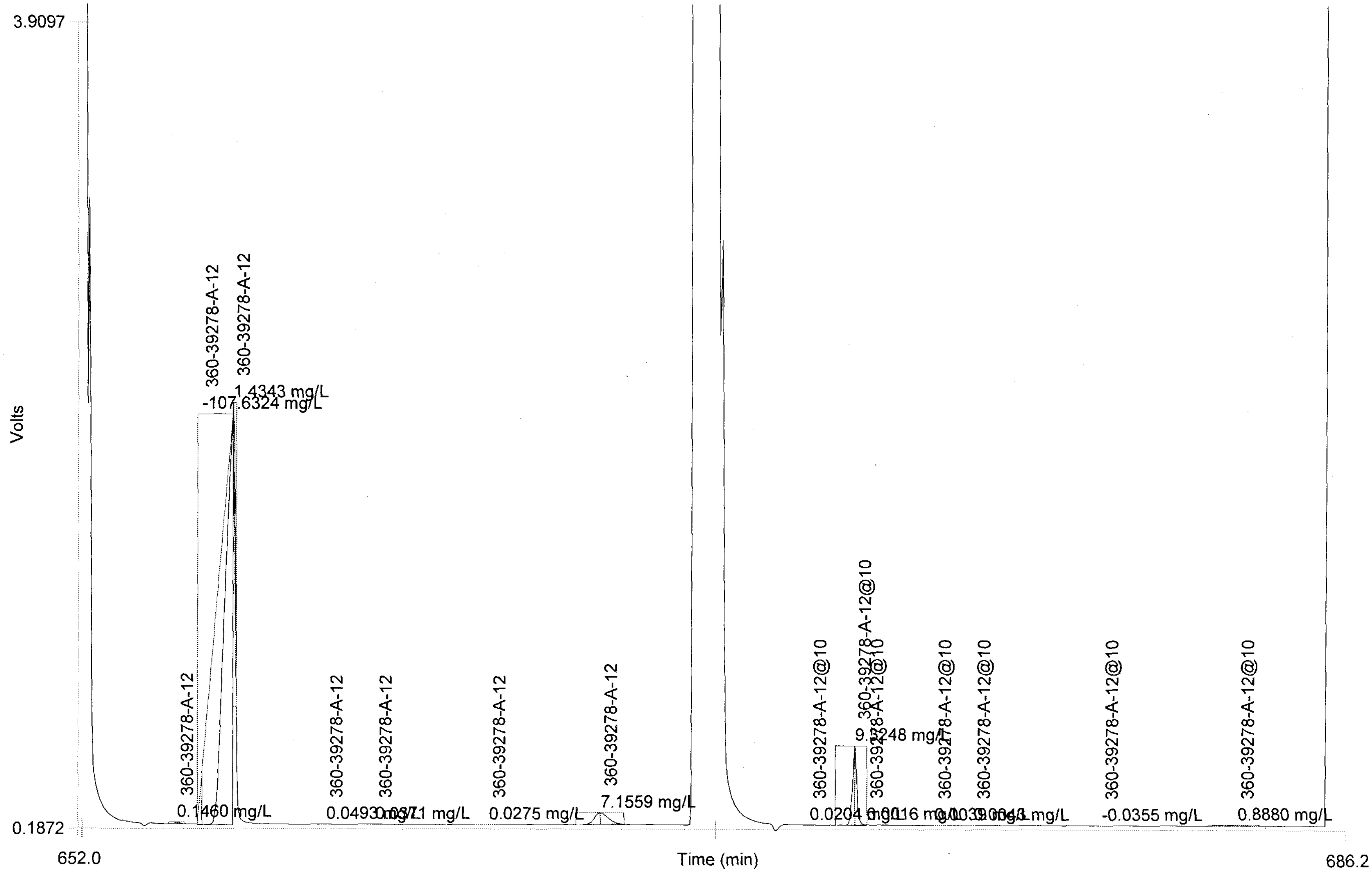
Channel 1 (Anions) : Set 19 of 28



Author: stewarta

Date : 2/28/2012

Channel 1 (Anions) : Set 20 of 28



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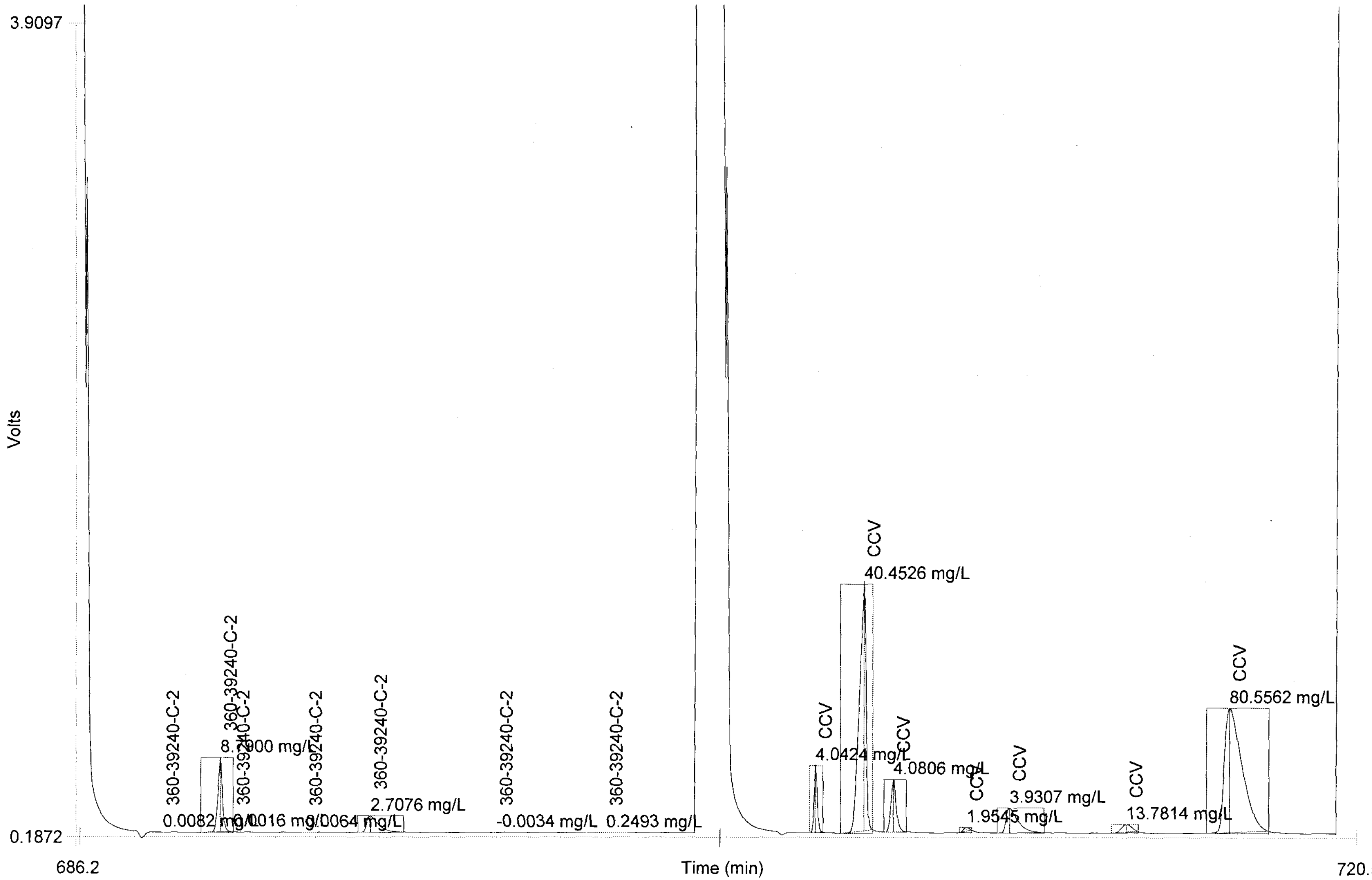
Author: stewarta

Date : 2/28/2012

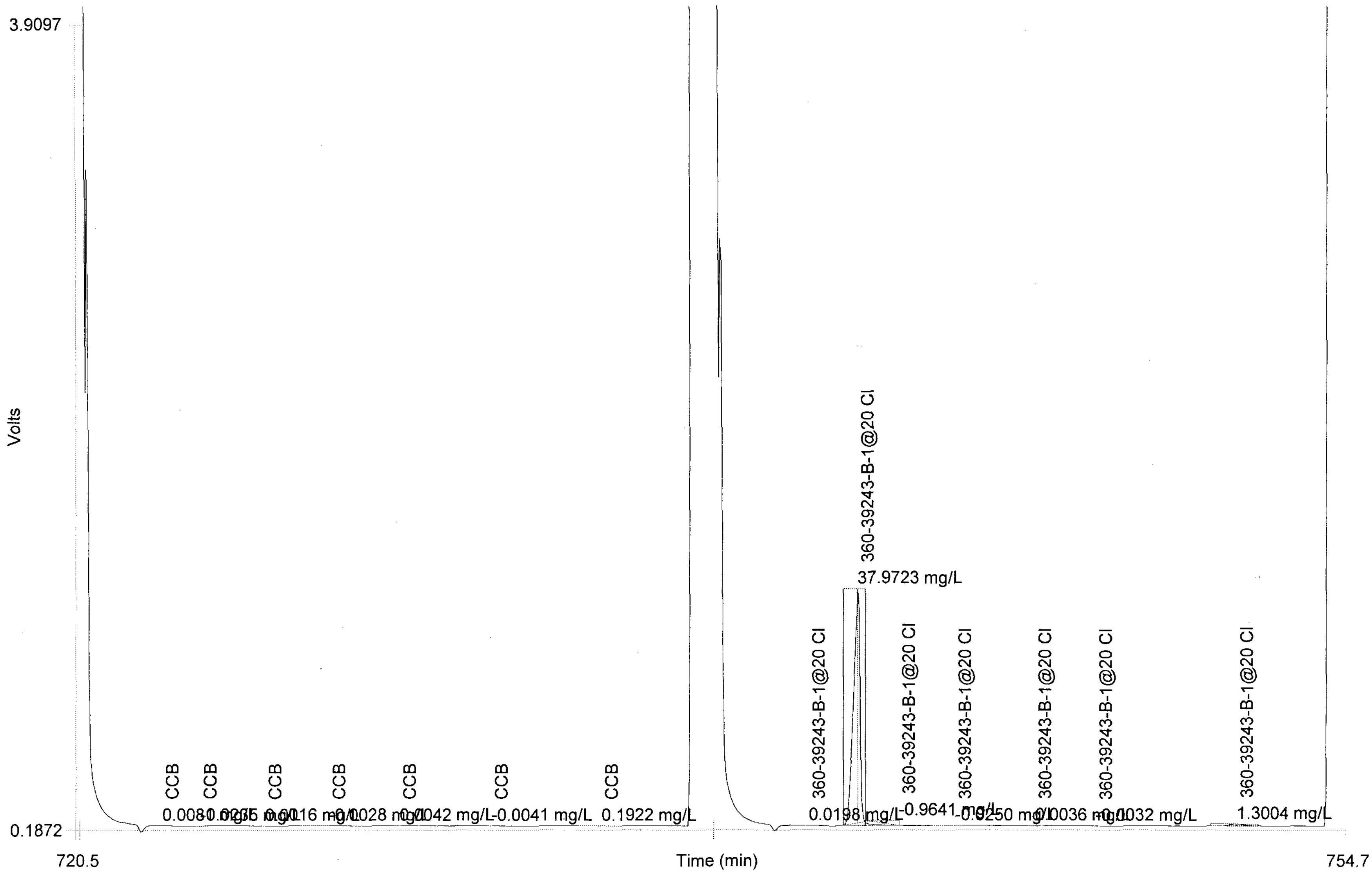
Channel 1 (Anions) : Set 21 of 28



Author: stewarta

Date : 2/28/2012

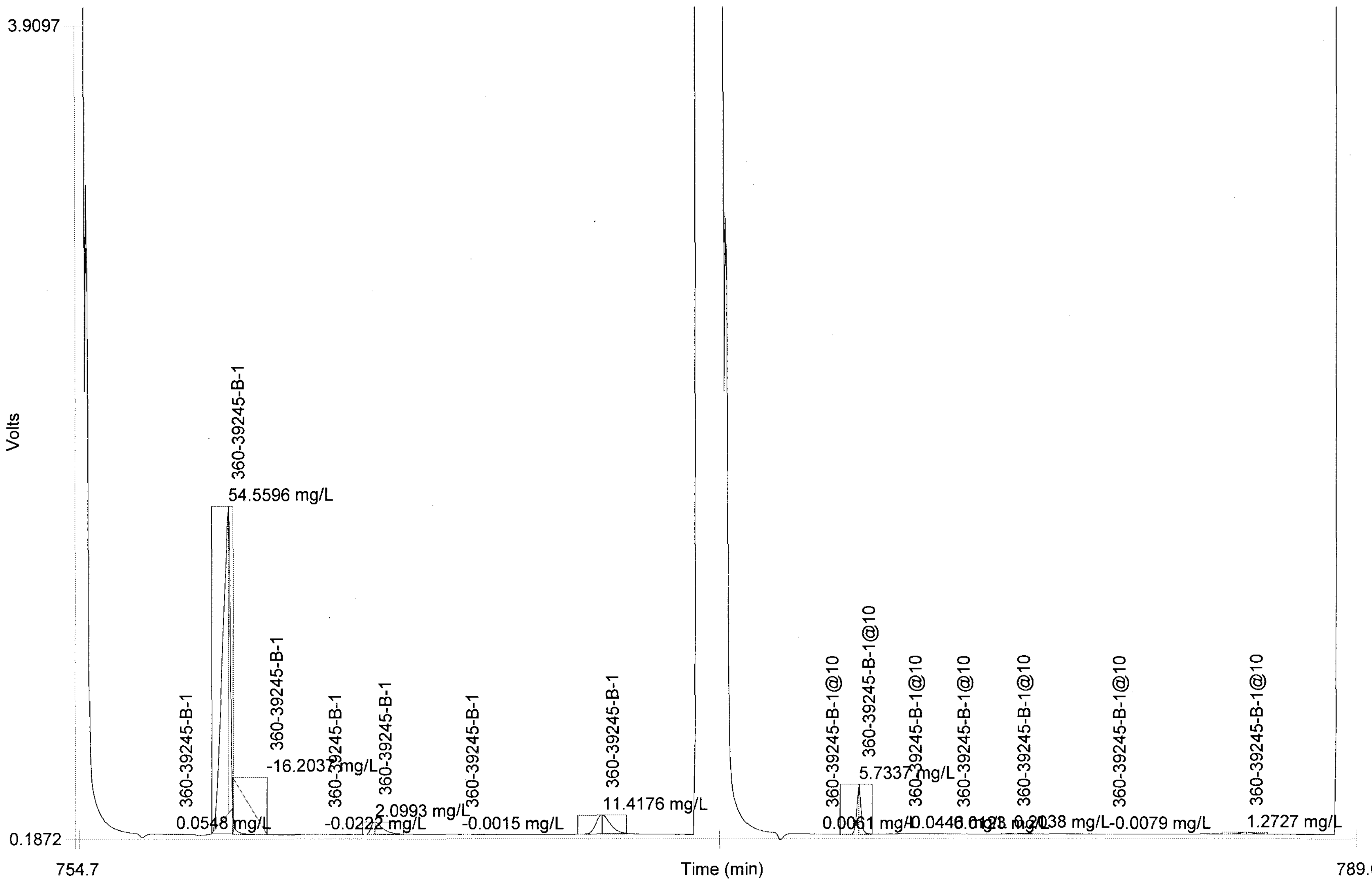
Channel 1 (Anions) : Set 22 of 28



Author: stewarta

Date : 2/28/2012

Channel 1 (Anions) : Set 23 of 28



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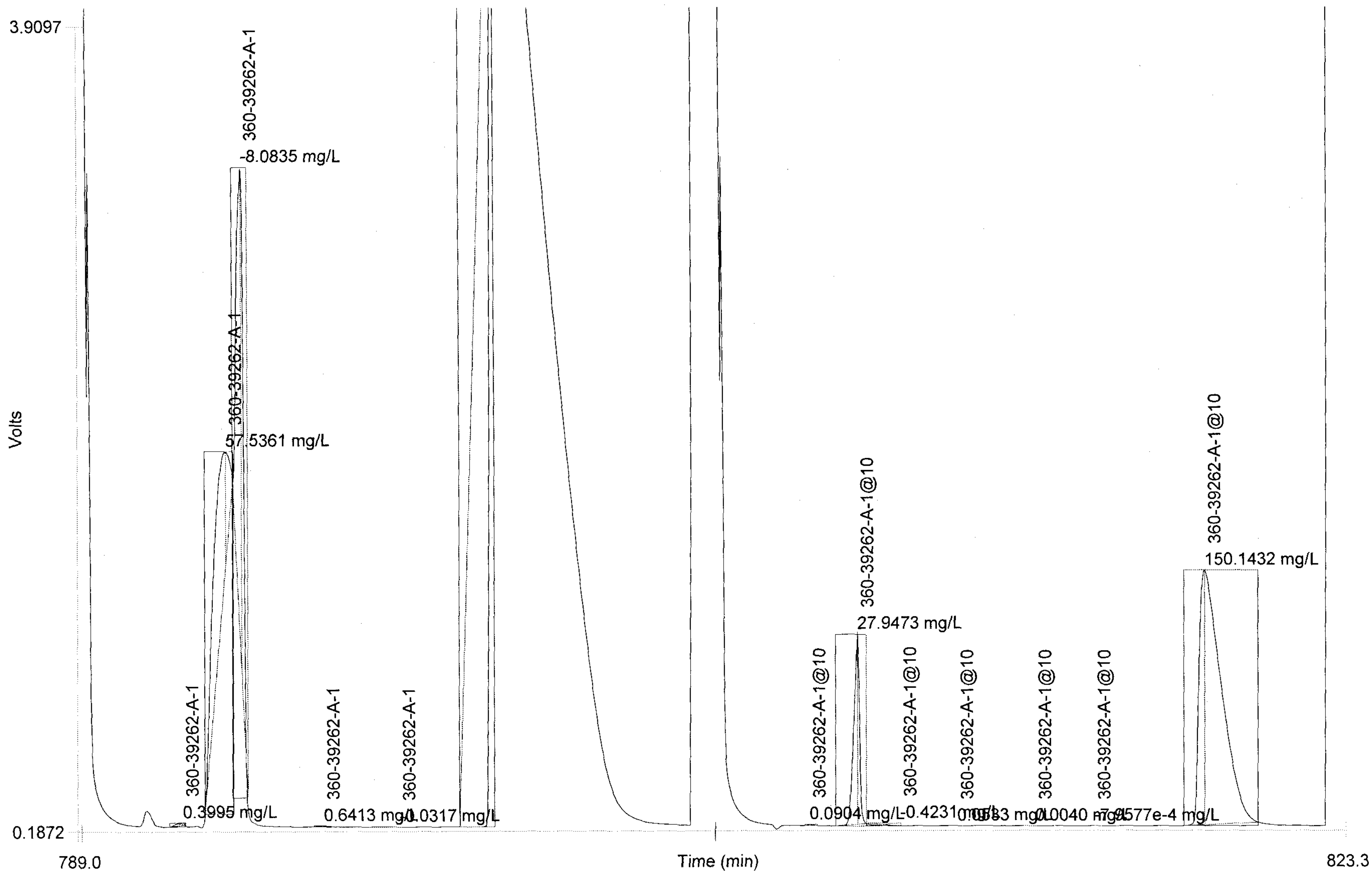
Author: stewarta

Date : 2/28/2012

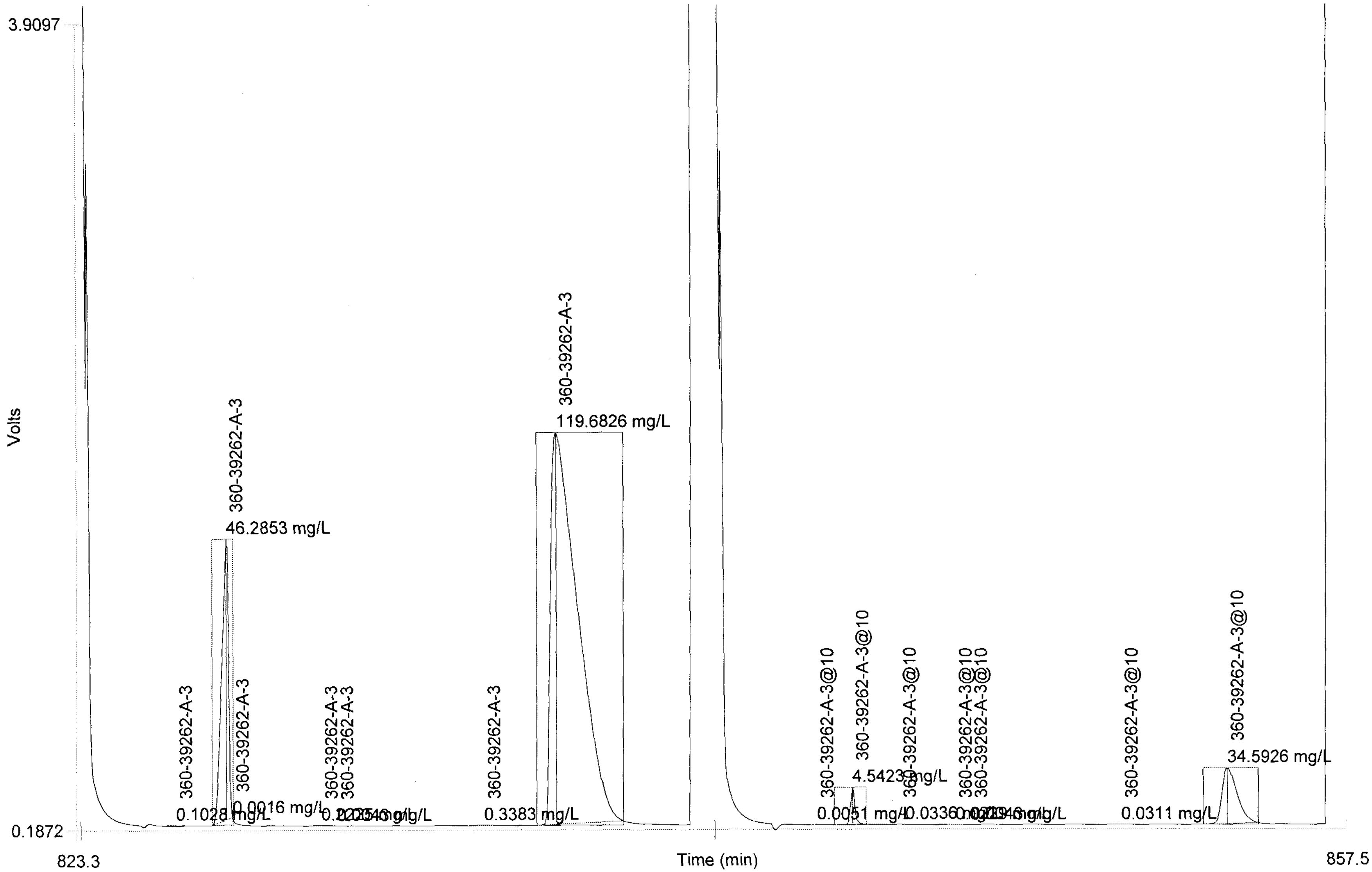
Channel 1 (Anions) : Set 24 of 28



Author: stewarta

Date : 2/28/2012

Channel 1 (Anions) : Set 25 of 28



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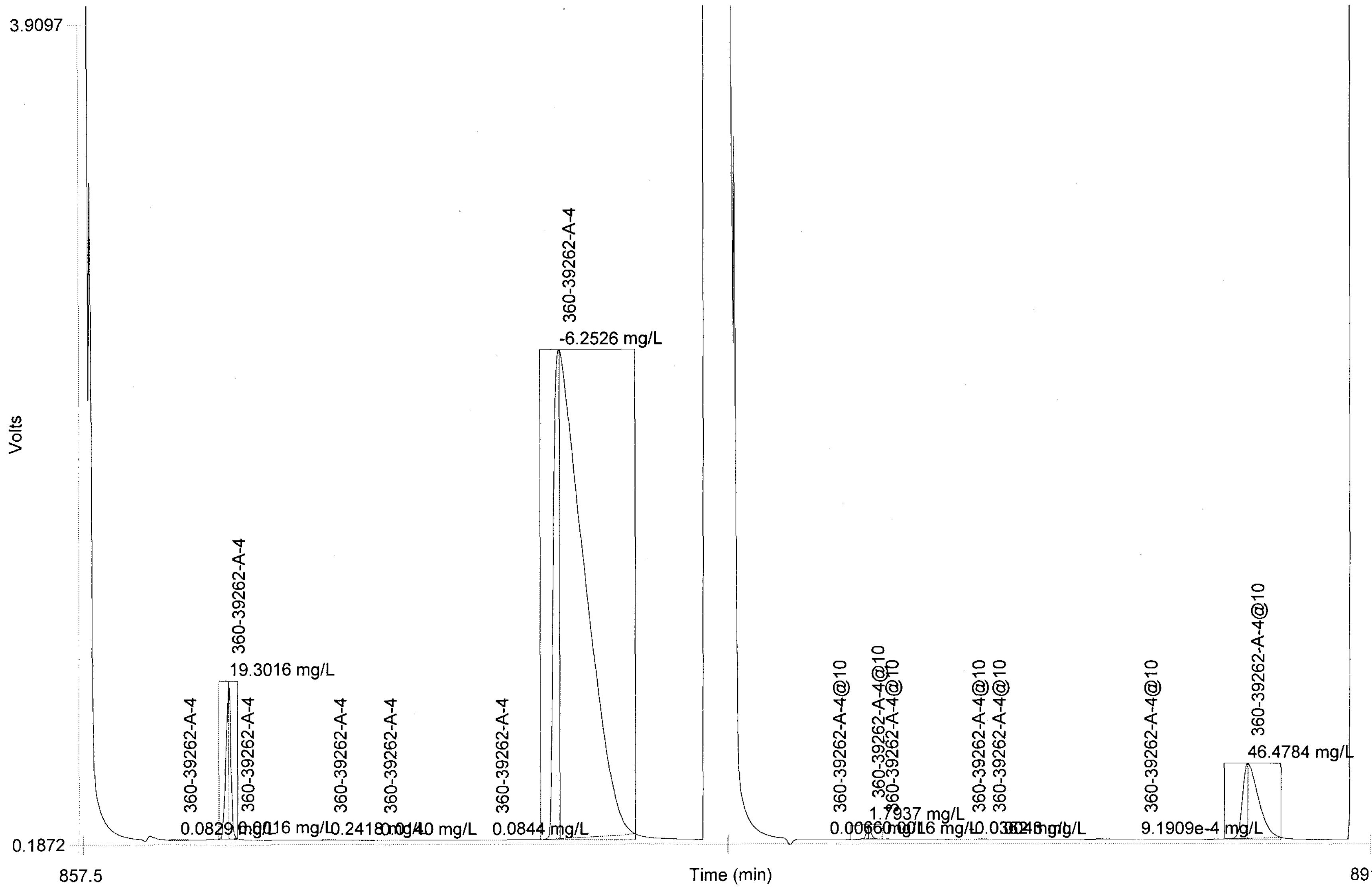
Author: stewarta

Date : 2/28/2012

Channel 1 (Anions) : Set 26 of 28



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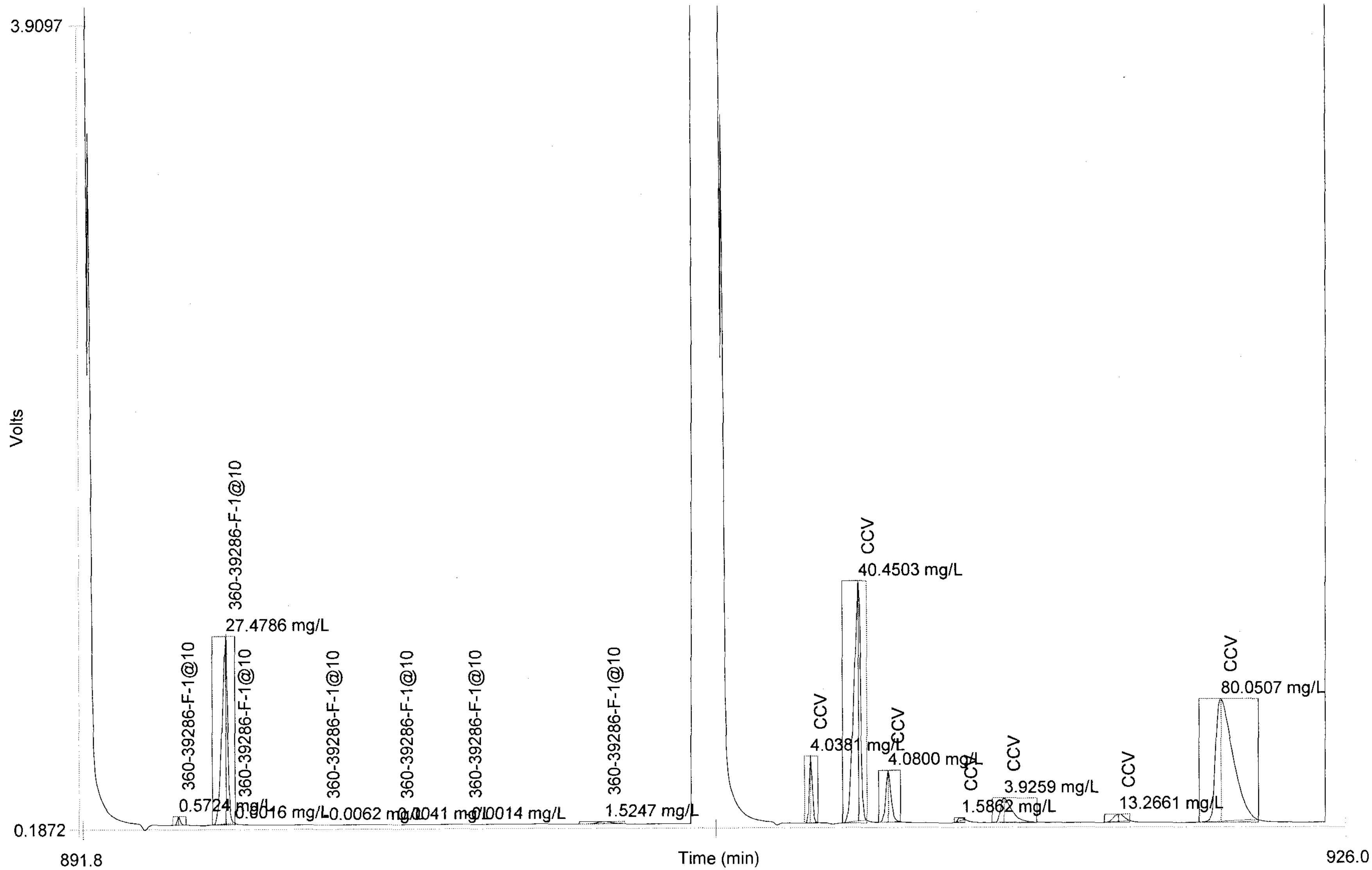
Author: stewarta

Date : 2/28/2012

Channel 1 (Anions) : Set 27 of 28



Author: stewarta

Date : 2/28/2012

Channel 1 (Anions) : Set 28 of 28

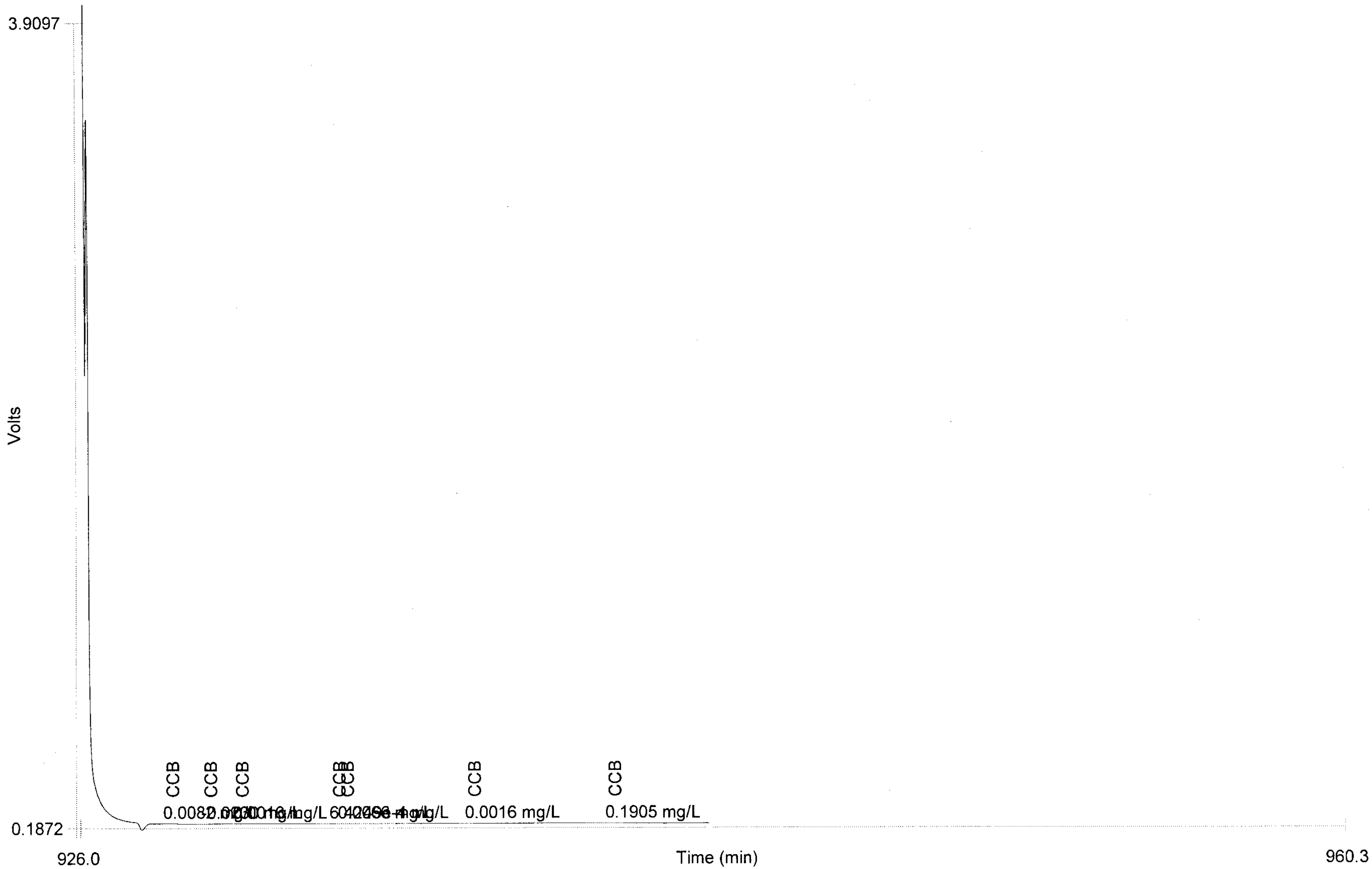
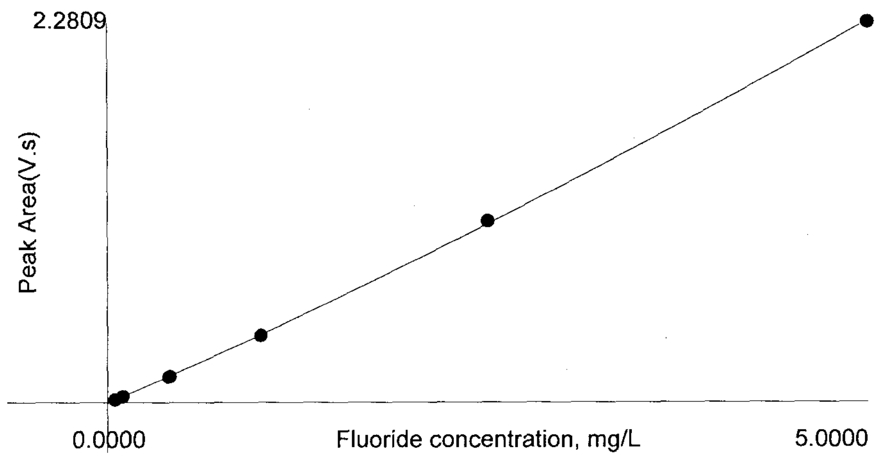


Table 1: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.2809	0.3818	0.3	2/27/2012	7:16:08 AM
2	2.5000	1	1.0874	0.1954	-1.5	2/27/2012	7:16:08 AM
3	1.0000	1	0.4047	0.0731	1.2	2/27/2012	7:16:08 AM
4	0.4000	1	0.1547	0.0275	3.0	2/27/2012	7:16:08 AM
5	0.1000	1	0.0368	0.0065	1.5	2/27/2012	7:16:08 AM
6	0.0500	1	0.0180	0.0033	-5.0	2/27/2012	7:16:08 AM

Figure 1: Fluoride



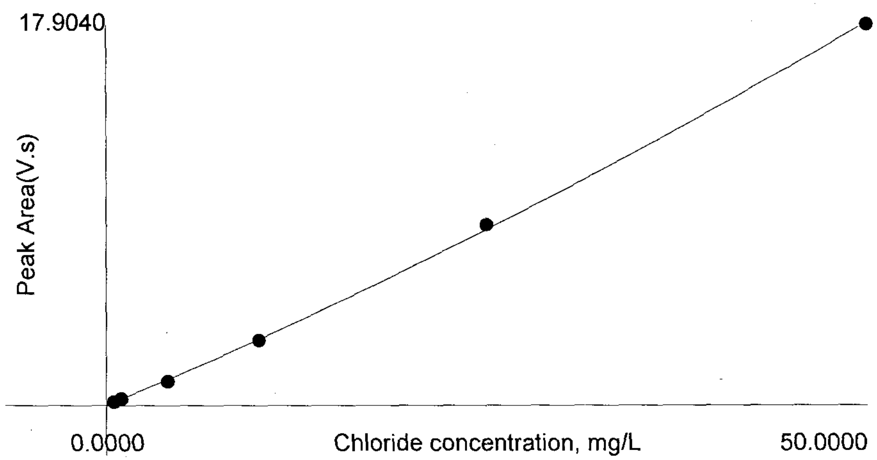
Area = 0.0114 * Conc^2 + 0.4013 * Conc - 0.0029
Conc = - 0.1241 * Area^2 + 2.4647 * Area + 0.0081
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 2: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	17.9040	1.3209	0.5	2/27/2012	7:16:08 AM
2	25.0000	1	8.4863	0.8353	-2.6	2/27/2012	7:16:08 AM
3	10.0000	1	3.0791	0.3756	1.8	2/27/2012	7:16:08 AM
4	4.0000	1	1.1387	0.1460	7.4	2/27/2012	7:16:08 AM
5	1.0000	1	0.3242	0.0393	-5.1	2/27/2012	7:16:08 AM
6	0.5000	1	0.1597	0.0182	-1.8	2/27/2012	7:16:08 AM

Figure 2: Chloride



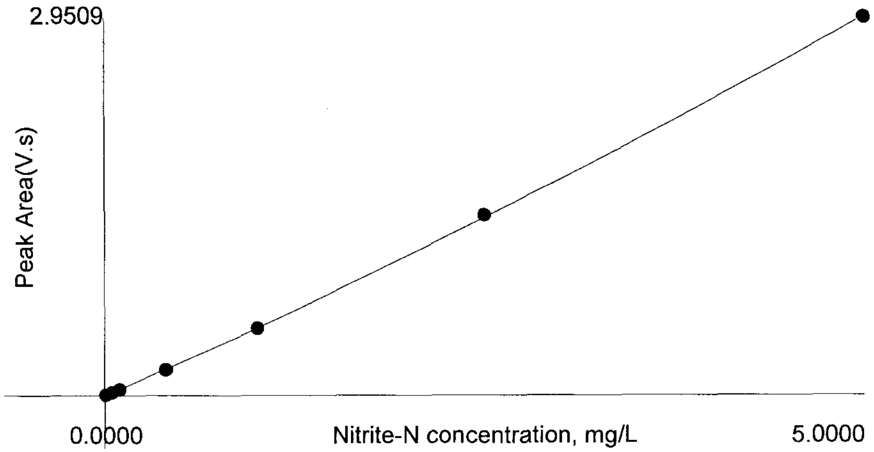
Area = 0.0012 * Conc^2 + 0.3011 * Conc + 0.0061
Conc = - 0.0267 * Area^2 + 3.2558 * Area - 0.0029
Correlation Coefficient (r) = 0.99997

1/x weighting

Table 3: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.9509	0.3044	0.3	2/27/2012	7:16:08 AM
2	2.5000	1	1.3998	0.1432	-1.4	2/27/2012	7:16:08 AM
3	1.0000	1	0.5256	0.0519	0.4	2/27/2012	7:16:08 AM
4	0.4000	1	0.2015	0.0191	2.6	2/27/2012	7:16:08 AM
5	0.1000	1	0.0479	0.0044	5.6	2/27/2012	7:16:08 AM
6	0.0500	1	0.0238	0.0022	4.8	2/27/2012	7:16:08 AM
7	0.0100	1	0.0050	4.2331e-4	-13.9	2/27/2012	7:16:08 AM

Figure 3: Nitrite-N



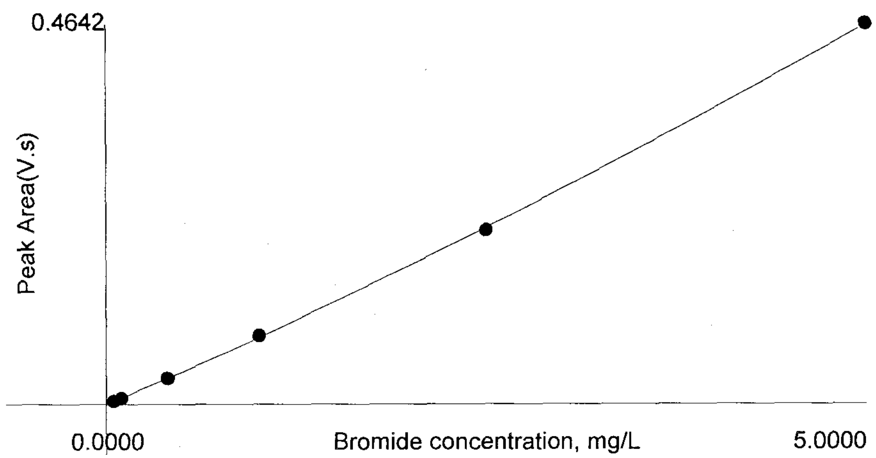
Area = 0.0159 * Conc^2 + 0.5124 * Conc - 6.9196e-4
Conc = - 0.0818 * Area^2 + 1.9295 * Area + 0.0016
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 4: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.4642	0.0318	-0.2	2/27/2012	7:16:08 AM
2	2.5000	1	0.2121	0.0148	1.3	2/27/2012	7:16:08 AM
3	1.0000	1	0.0840	0.0056	-2.6	2/27/2012	7:16:08 AM
4	0.4000	1	0.0320	0.0021	0.2	2/27/2012	7:16:08 AM
5	0.1000	1	0.0076	4.8059e-4	3.5	2/27/2012	7:16:08 AM
6	0.0500	1	0.0040	2.6055e-4	-2.3	2/27/2012	7:16:08 AM

Figure 4: Bromide



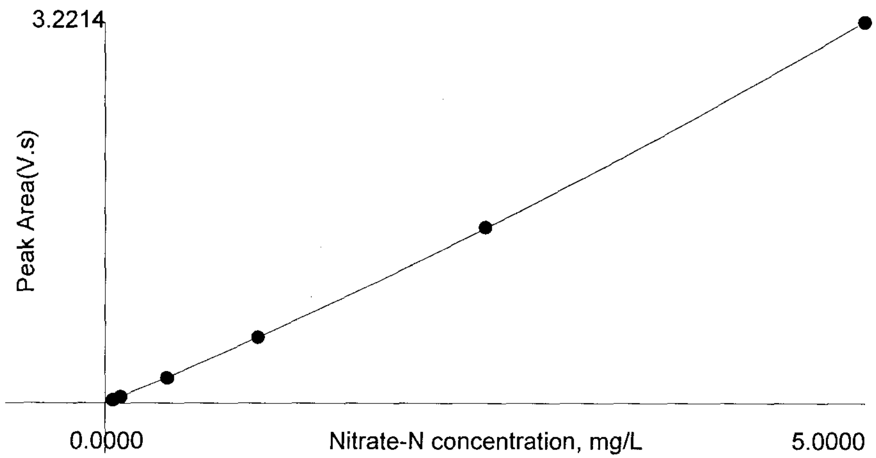
Area = 0.0027 * Conc^2 + 0.0794 * Conc - 9.5517e-5
Conc = - 3.5344 * Area^2 + 12.4199 * Area + 0.0023
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 5: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.2214	0.1533	0.1	2/27/2012	7:16:08 AM
2	2.5000	1	1.4833	0.0705	-0.6	2/27/2012	7:16:08 AM
3	1.0000	1	0.5554	0.0257	0.1	2/27/2012	7:16:08 AM
4	0.4000	1	0.2111	0.0093	2.3	2/27/2012	7:16:08 AM
5	0.1000	1	0.0519	0.0022	0.7	2/27/2012	7:16:08 AM
6	0.0500	1	0.0260	0.0011	-2.7	2/27/2012	7:16:08 AM

Figure 5: Nitrate-N



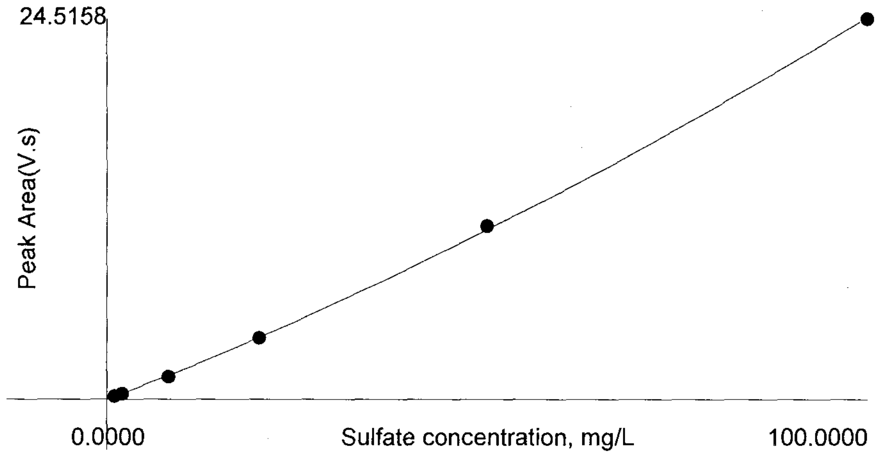
Area = 0.0220 * Conc^2 + 0.5352 * Conc - 0.0015
Conc = - 0.0879 * Area^2 + 1.8310 * Area + 0.0043
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 6: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	24.5158	0.7063	0.4	2/27/2012	7:16:08 AM
2	50.0000	1	11.1278	0.3749	-2.1	2/27/2012	7:16:08 AM
3	20.0000	1	3.9605	0.1469	1.3	2/27/2012	7:16:08 AM
4	8.0000	1	1.4545	0.0548	5.4	2/27/2012	7:16:08 AM
5	2.0000	1	0.3485	0.0132	3.2	2/27/2012	7:16:08 AM
6	1.0000	1	0.1831	0.0069	-9.0	2/27/2012	7:16:08 AM

Figure 6: Sulfate



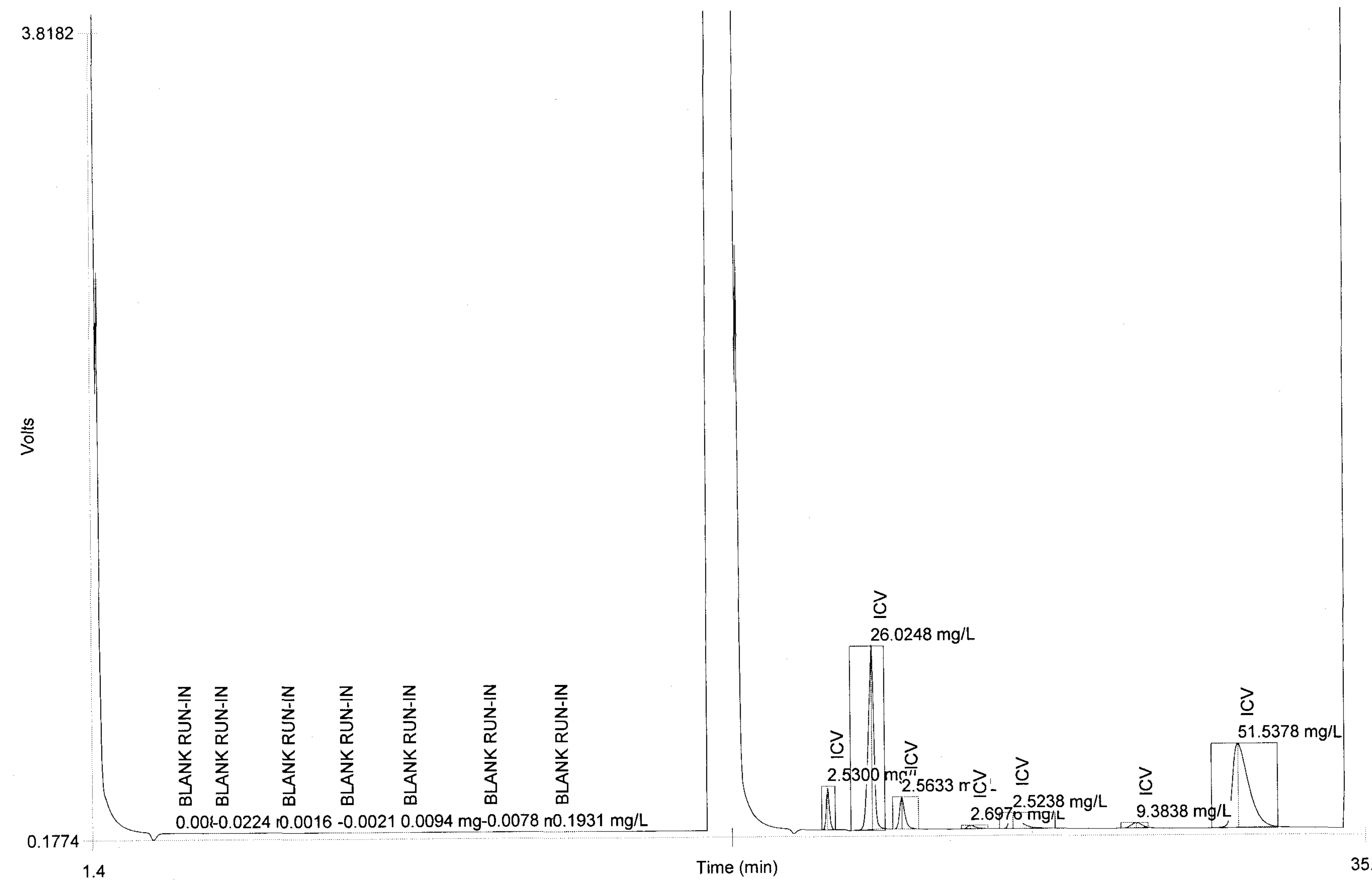
Area = 5.5759e-4 * Conc^2 + 0.1906 * Conc - 0.0232
Conc = - 0.0407 * Area^2 + 5.0514 * Area + 0.1794
Correlation Coefficient (r) = 0.99998

1/x weighting

Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 1 of 28



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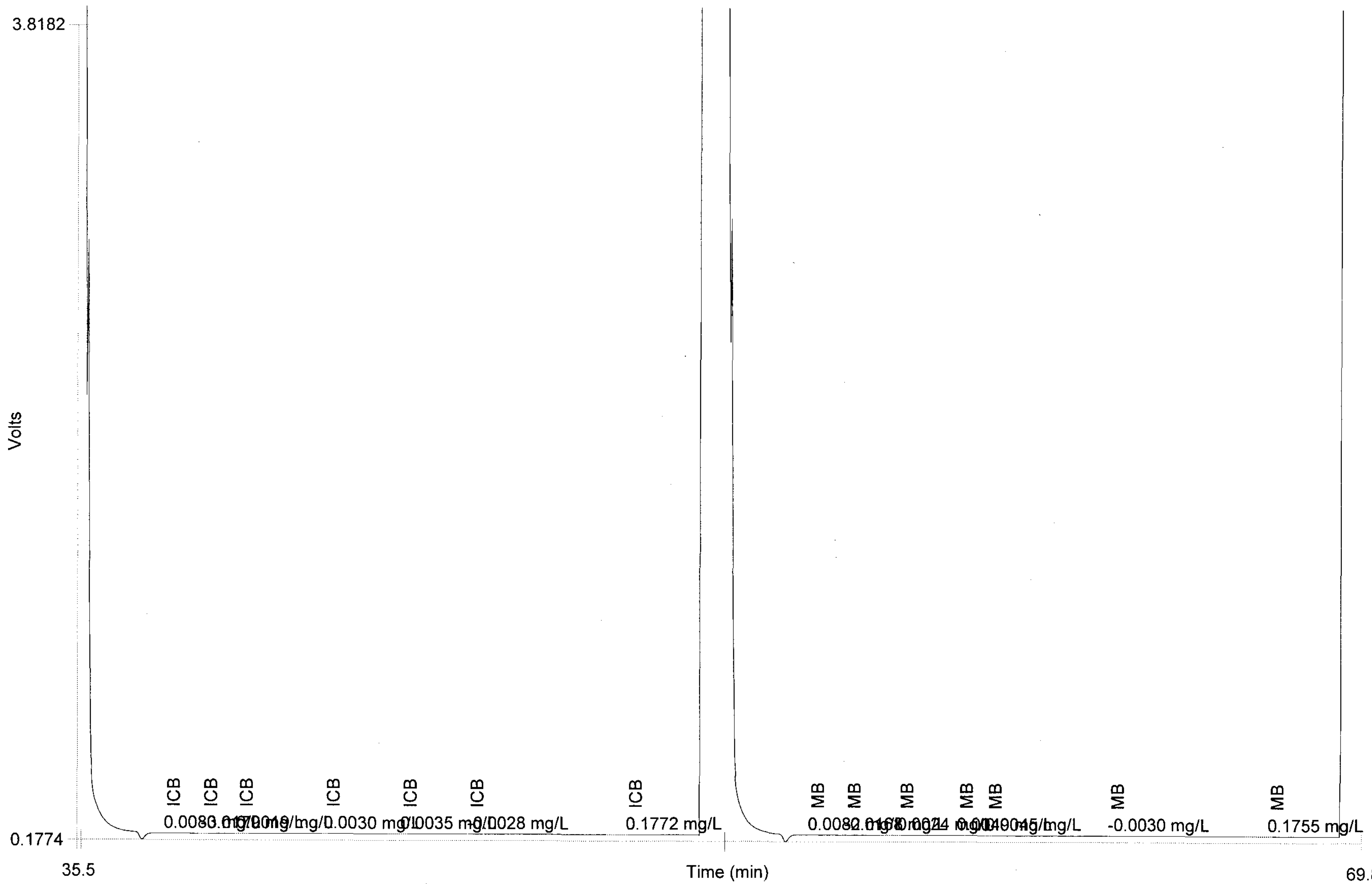
Author: stewarta

Date : 2/29/2012

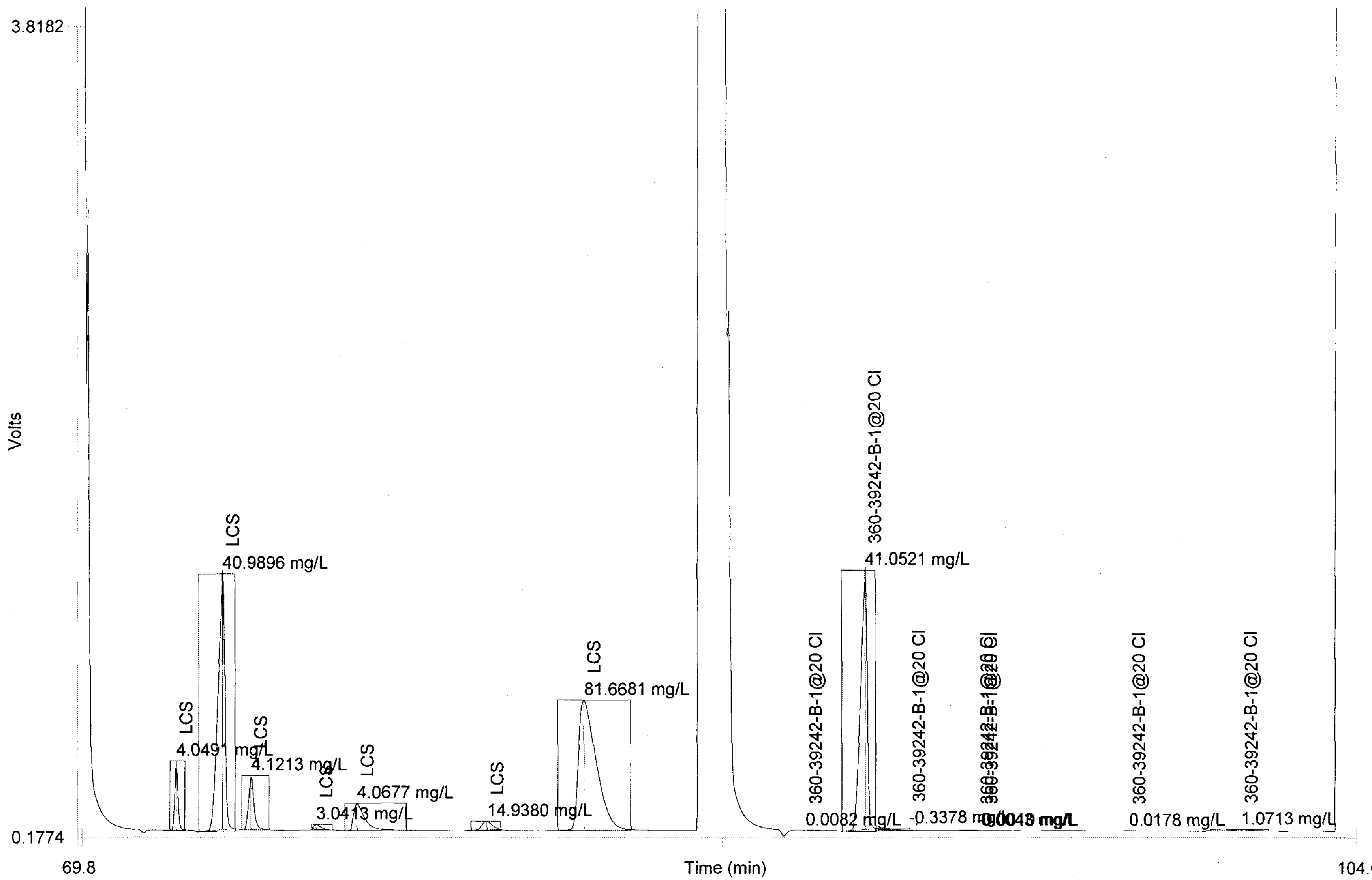
Channel 1 (Anions) : Set 2 of 28



Author: stewarta

Date : 2/29/2012

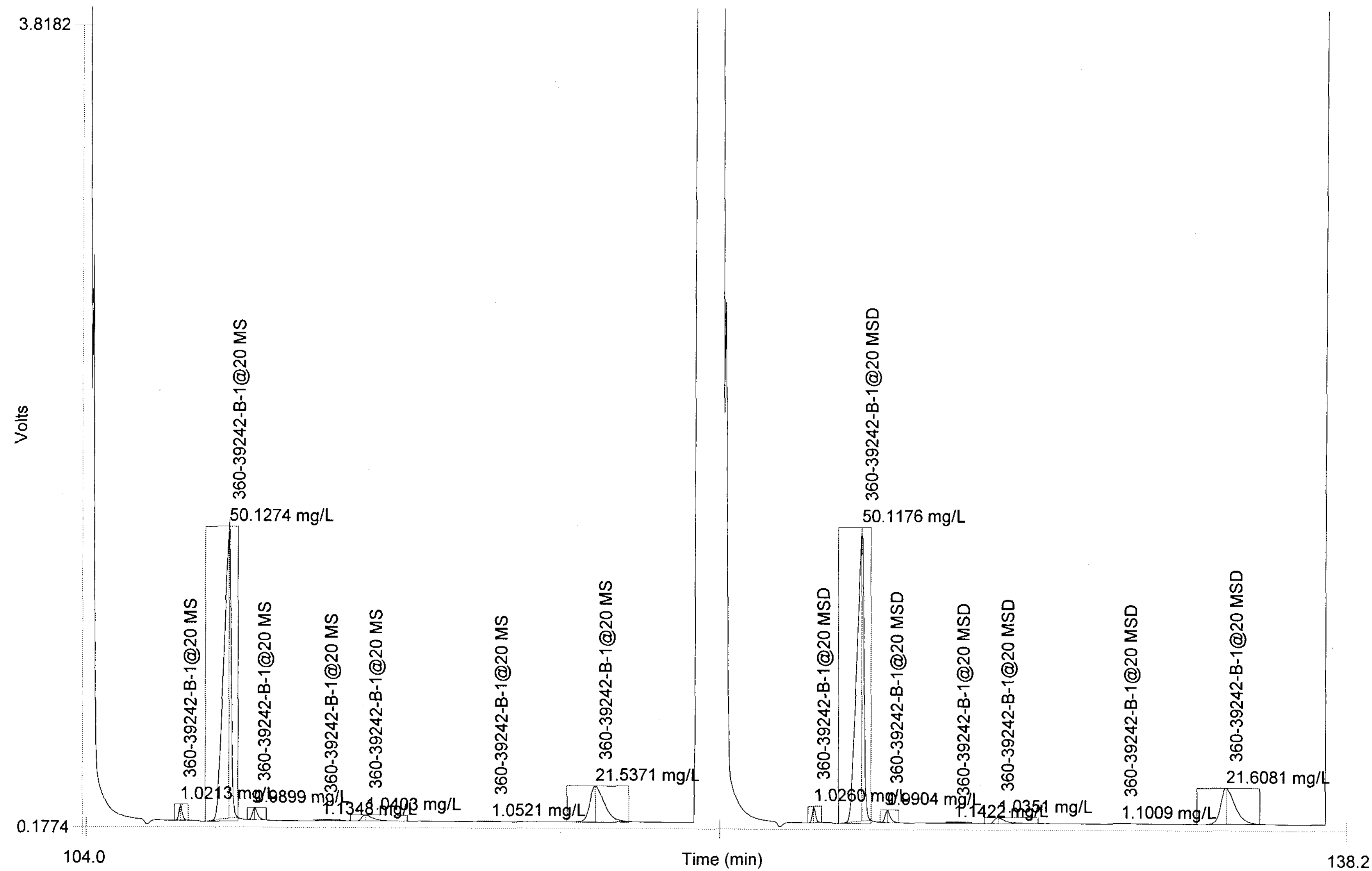
Channel 1 (Anions) : Set 3 of 28

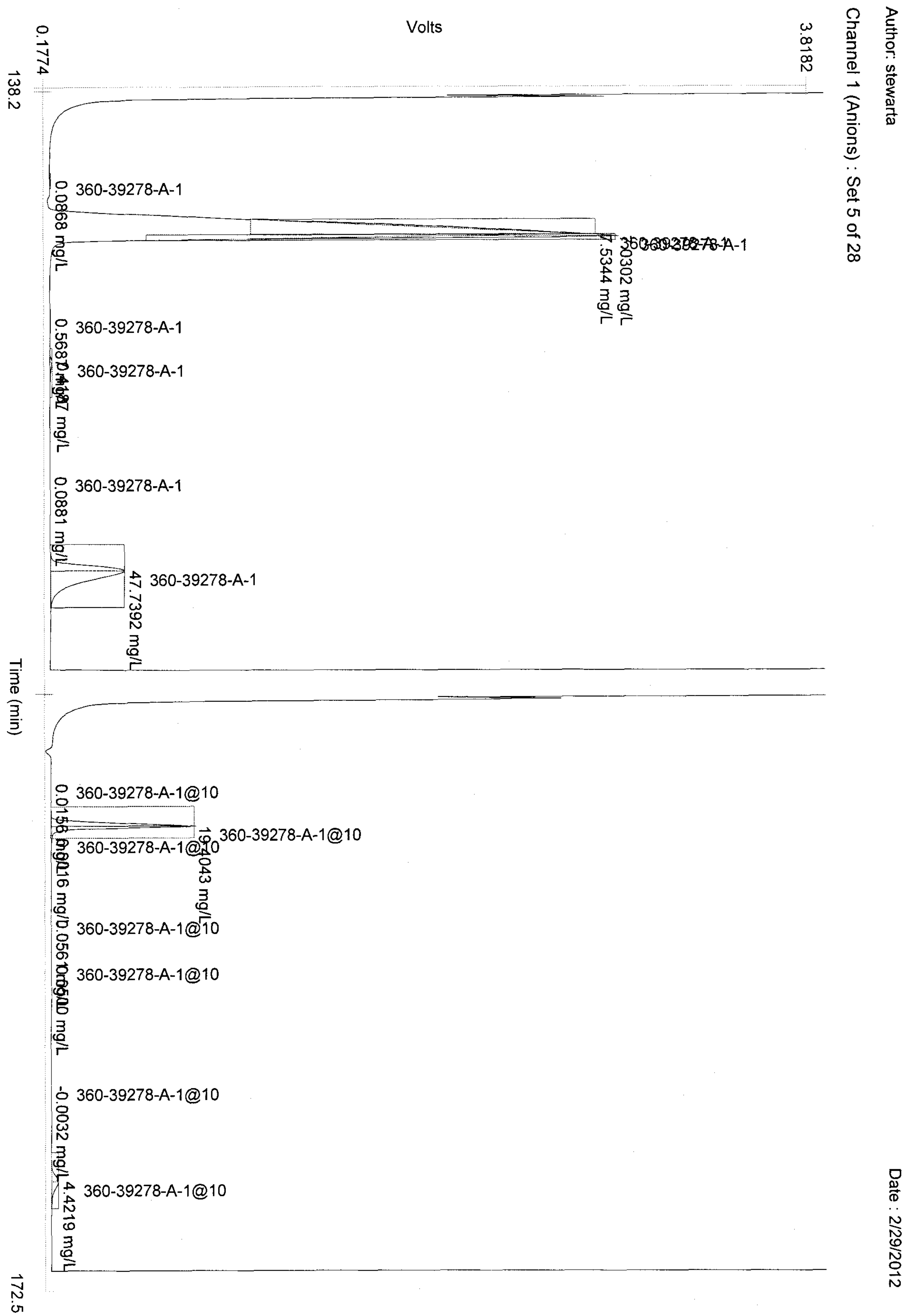


Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 4 of 28




Author: stewarta
Channel 1 (Anions) : Set 5 of 28
Date : 2/29/2012
Volts
0.1774
3.8182
138.2
172.5
Time (min)
360-39278-A-1
0.0868 mg/L
7.5344 mg/L
0.0302 mg/L
360-39278-A-1
360-39278-A-1
360-39278-A-1
0.0881 mg/L
360-39278-A-1
47.7392 mg/L
360-39278-A-1@10
360-39278-A-1@10
360-39278-A-1@10
360-39278-A-1@10
360-39278-A-1@10
360-39278-A-1@10
-0.0032 mg/L
360-39278-A-1@10
4.4219 mg/L

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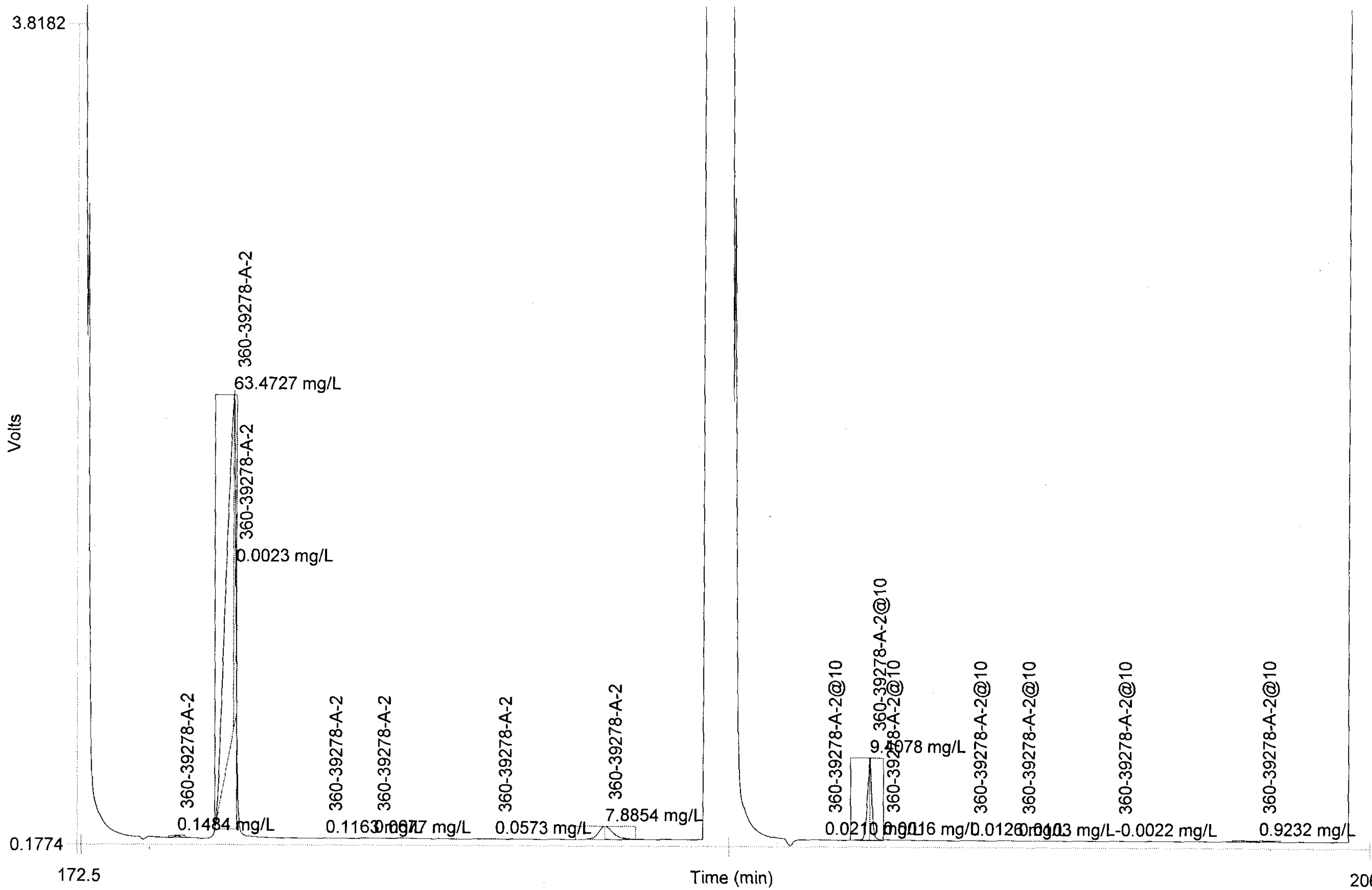
Author: stewarta

Date : 2/29/2012

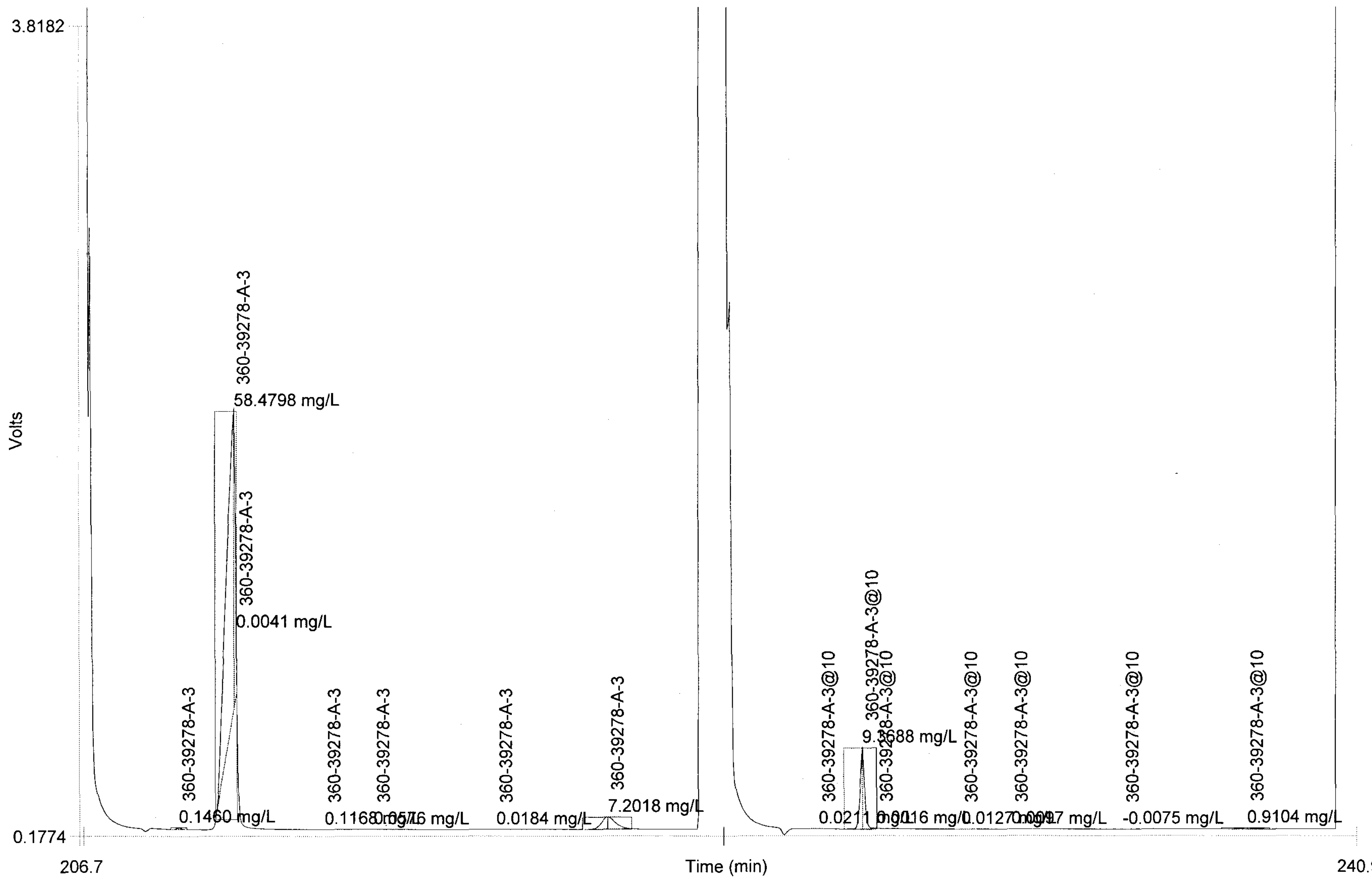
Channel 1 (Anions) : Set 6 of 28



Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 7 of 28



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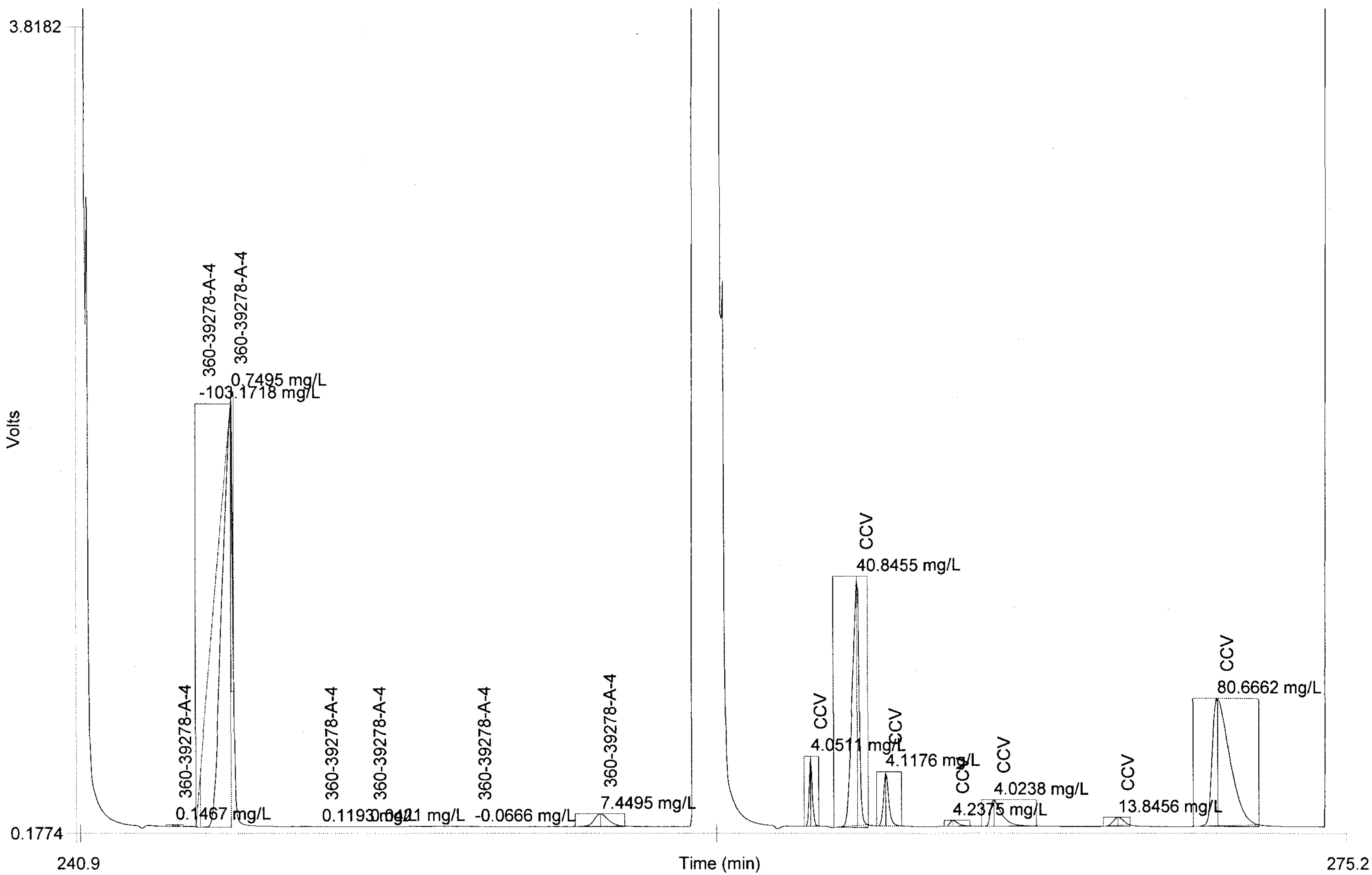
Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 8 of 28



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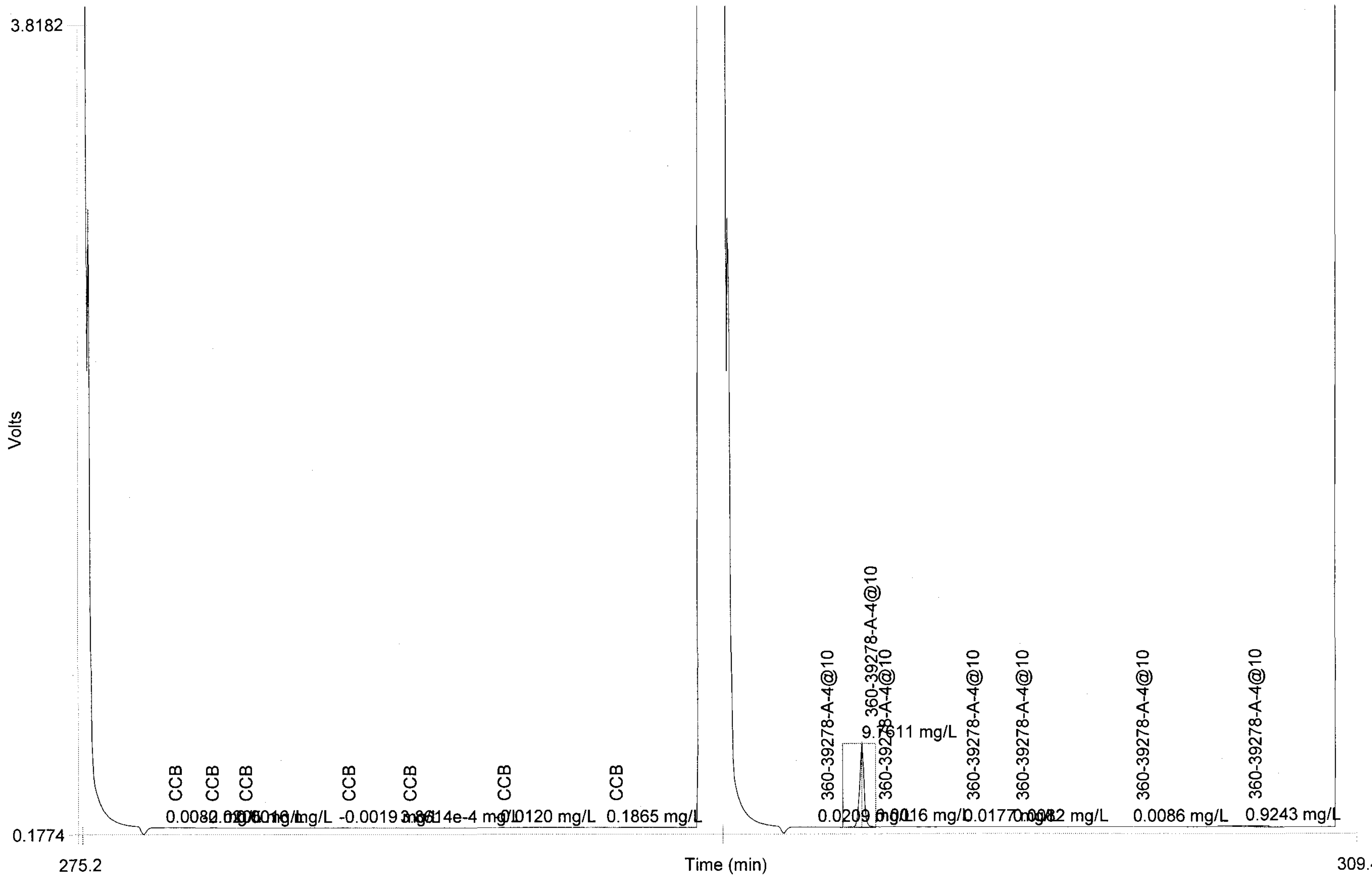
Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 9 of 28



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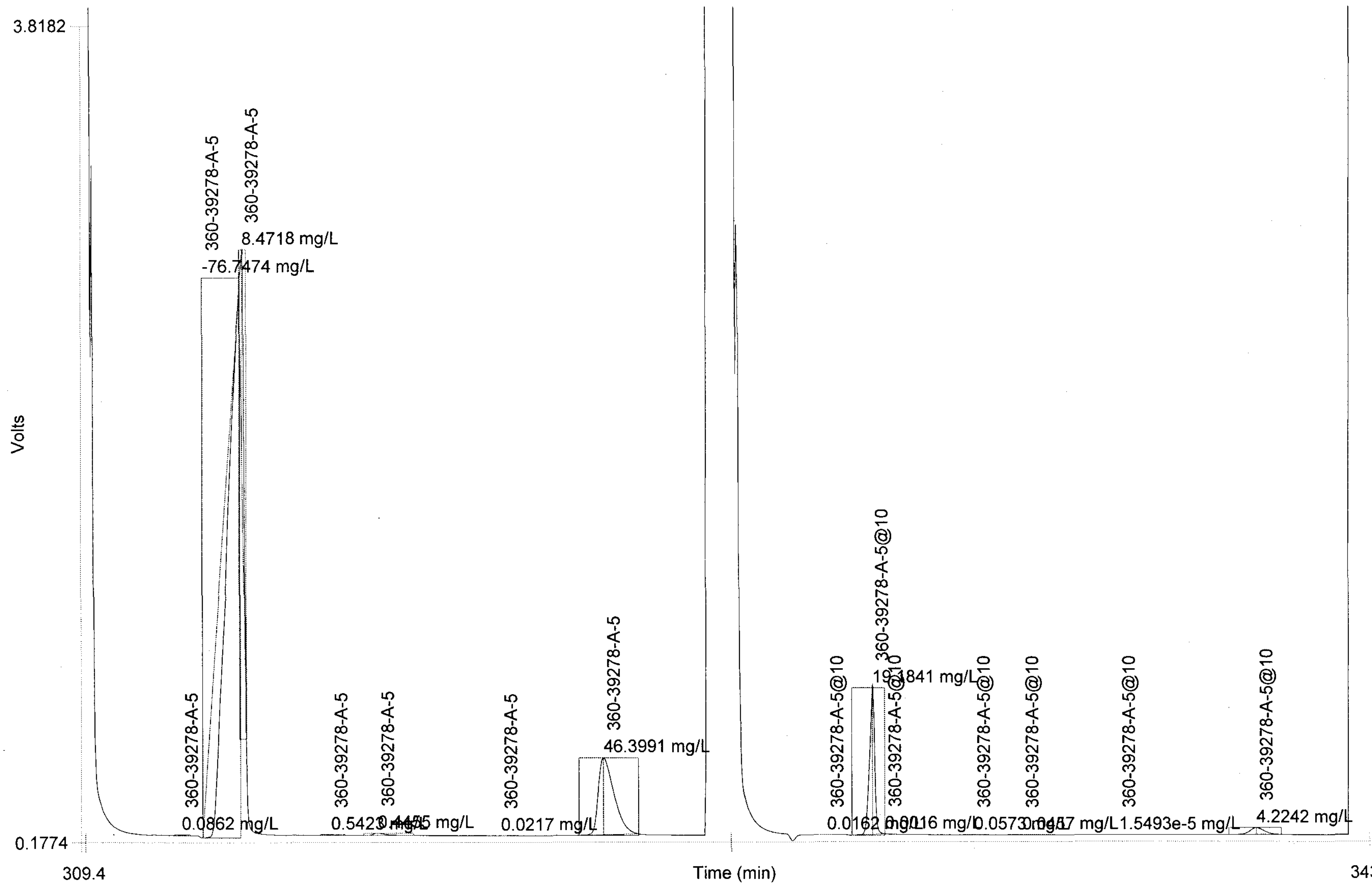
Author: stewarta

Date : 2/29/2012

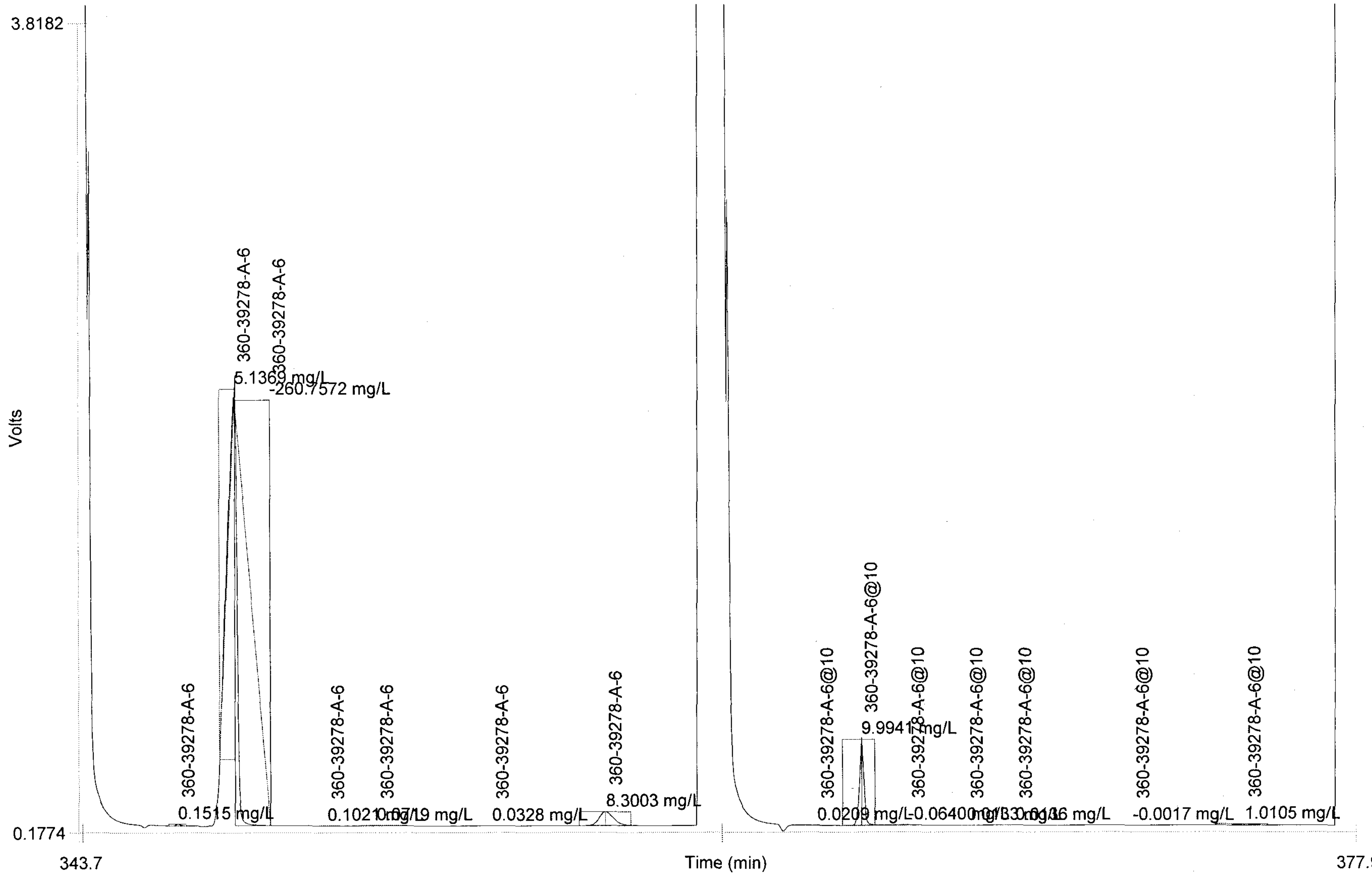
Channel 1 (Anions) : Set 10 of 28



Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 11 of 28



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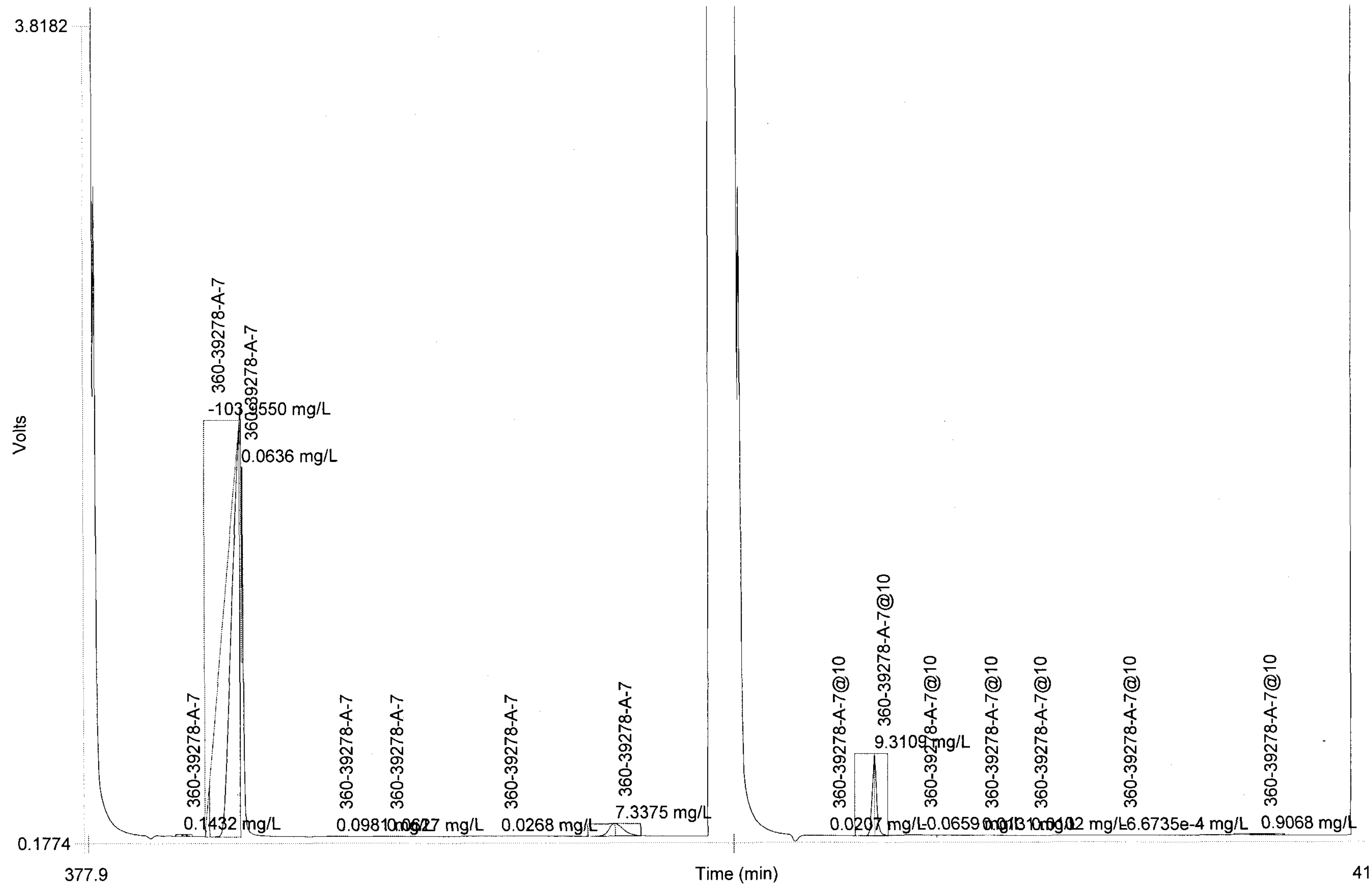
Author: stewarta

Date : 2/29/2012

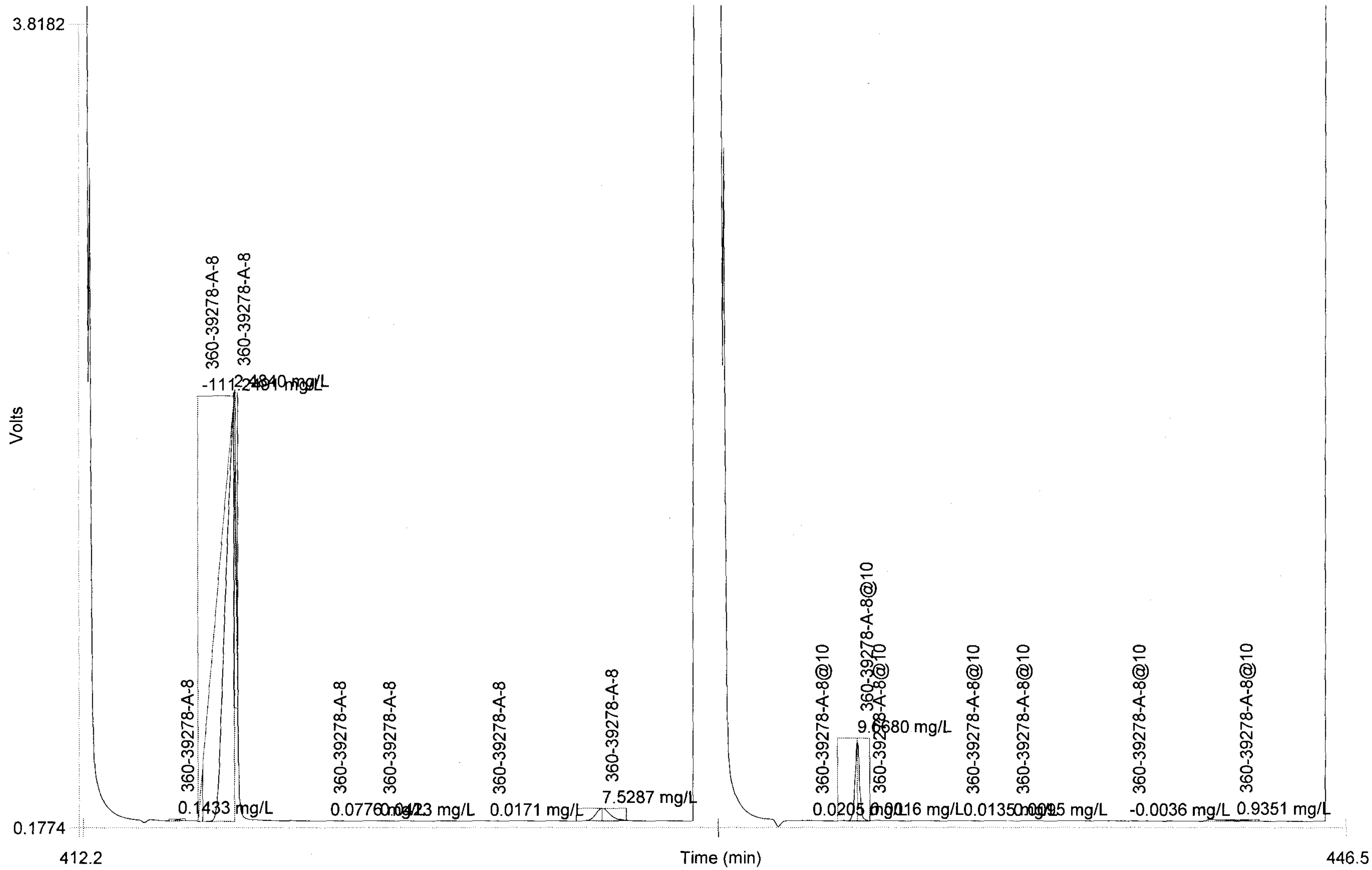
Channel 1 (Anions) : Set 12 of 28



Author: stewarta

Date : 2/29/2012

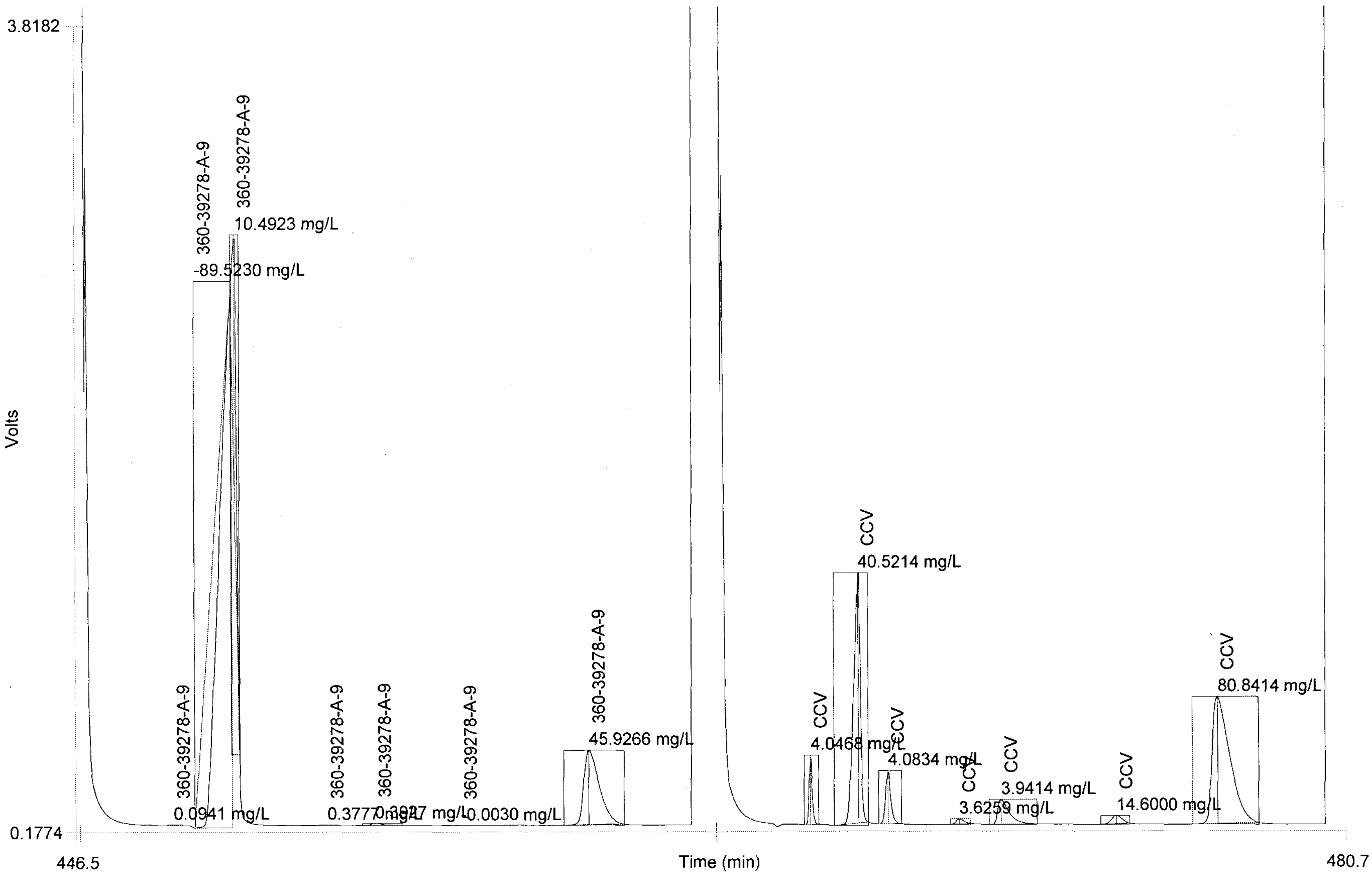
Channel 1 (Anions) : Set 13 of 28



Author: stewarta

Date : 2/29/2012

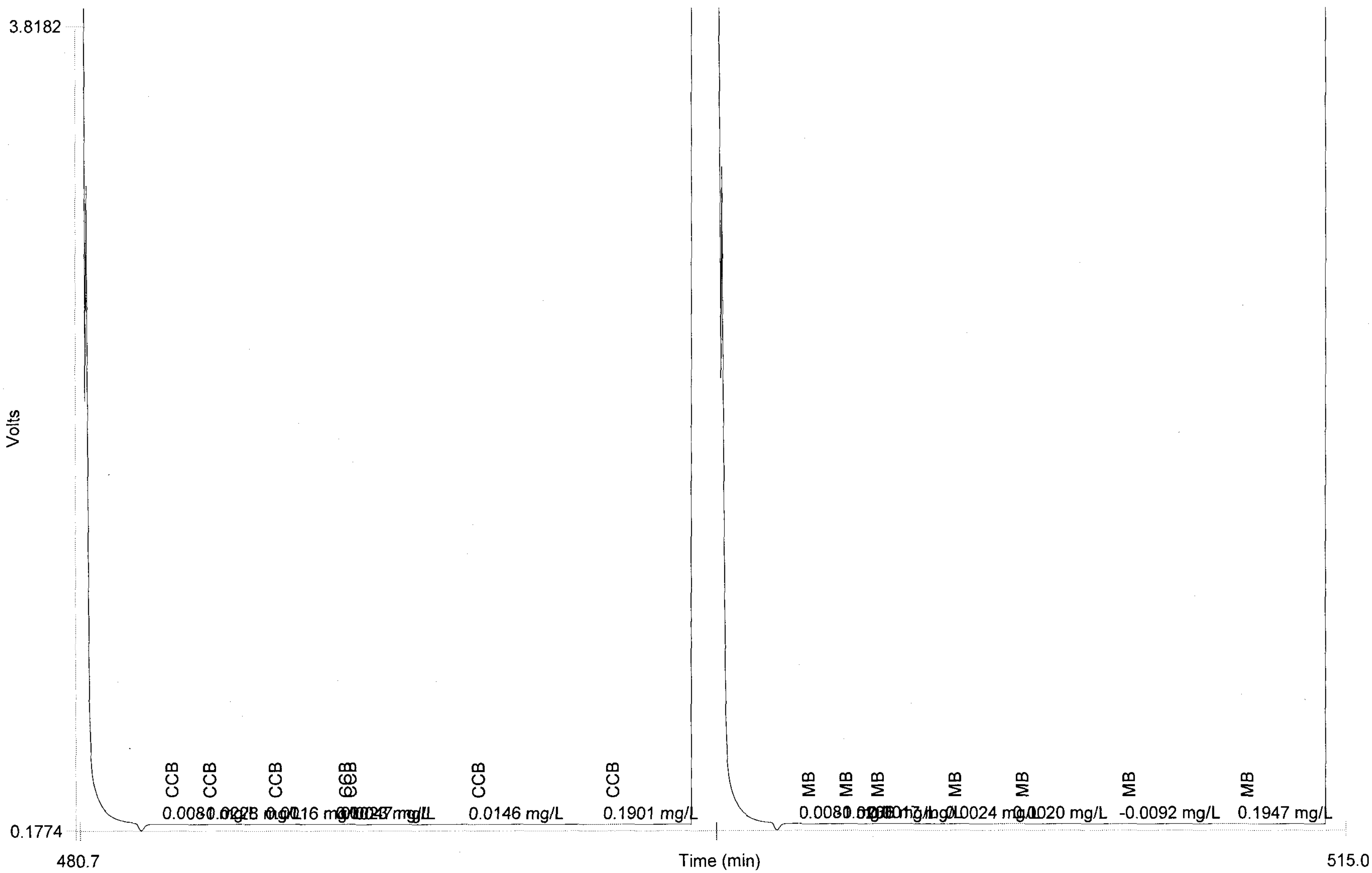
Channel 1 (Anions) : Set 14 of 28



Author: stewarta

Date : 2/29/2012

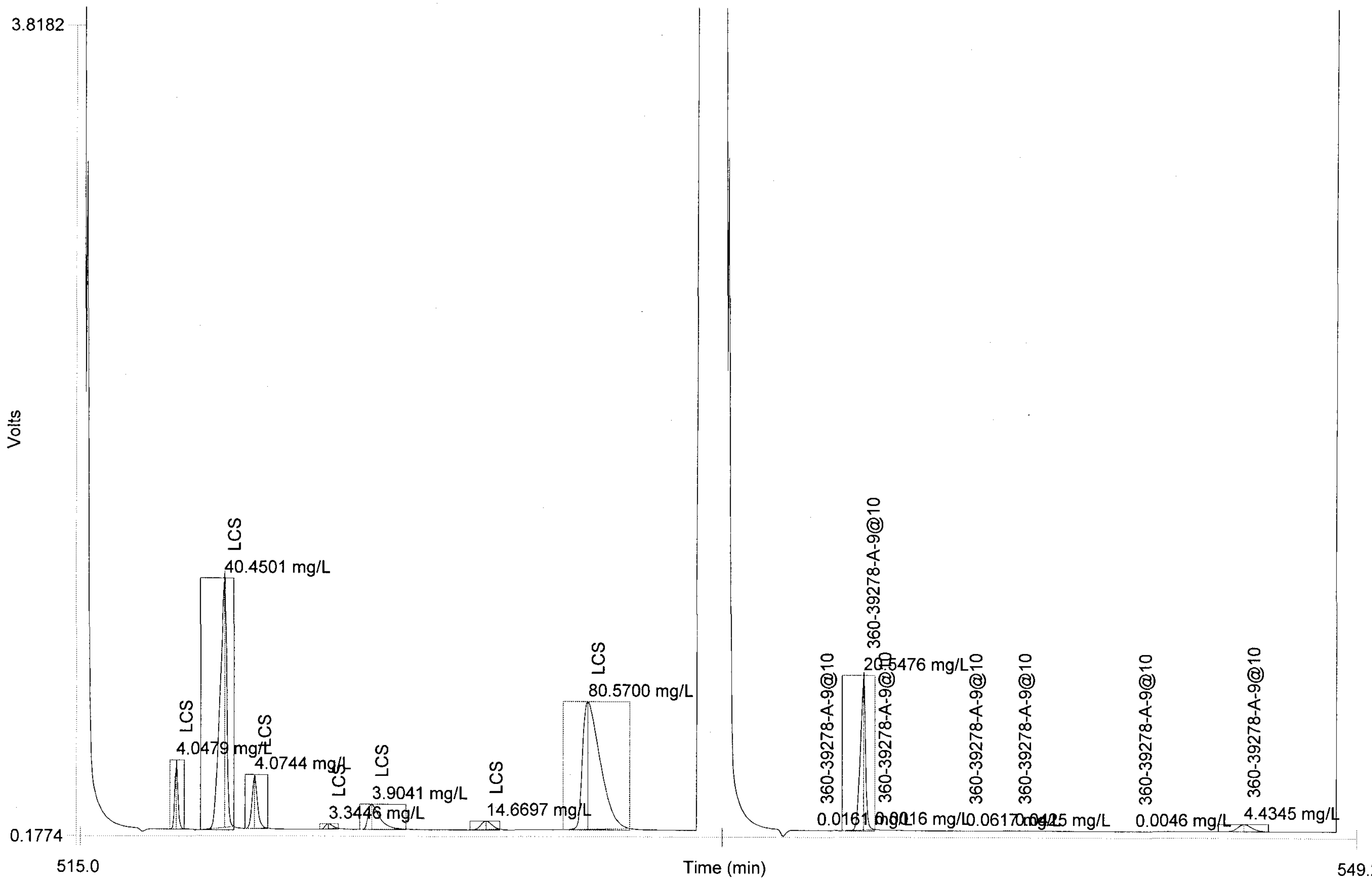
Channel 1 (Anions) : Set 15 of 28



Author: stewarta

Channel 1 (Anions) : Set 16 of 28

Date : 2/29/2012



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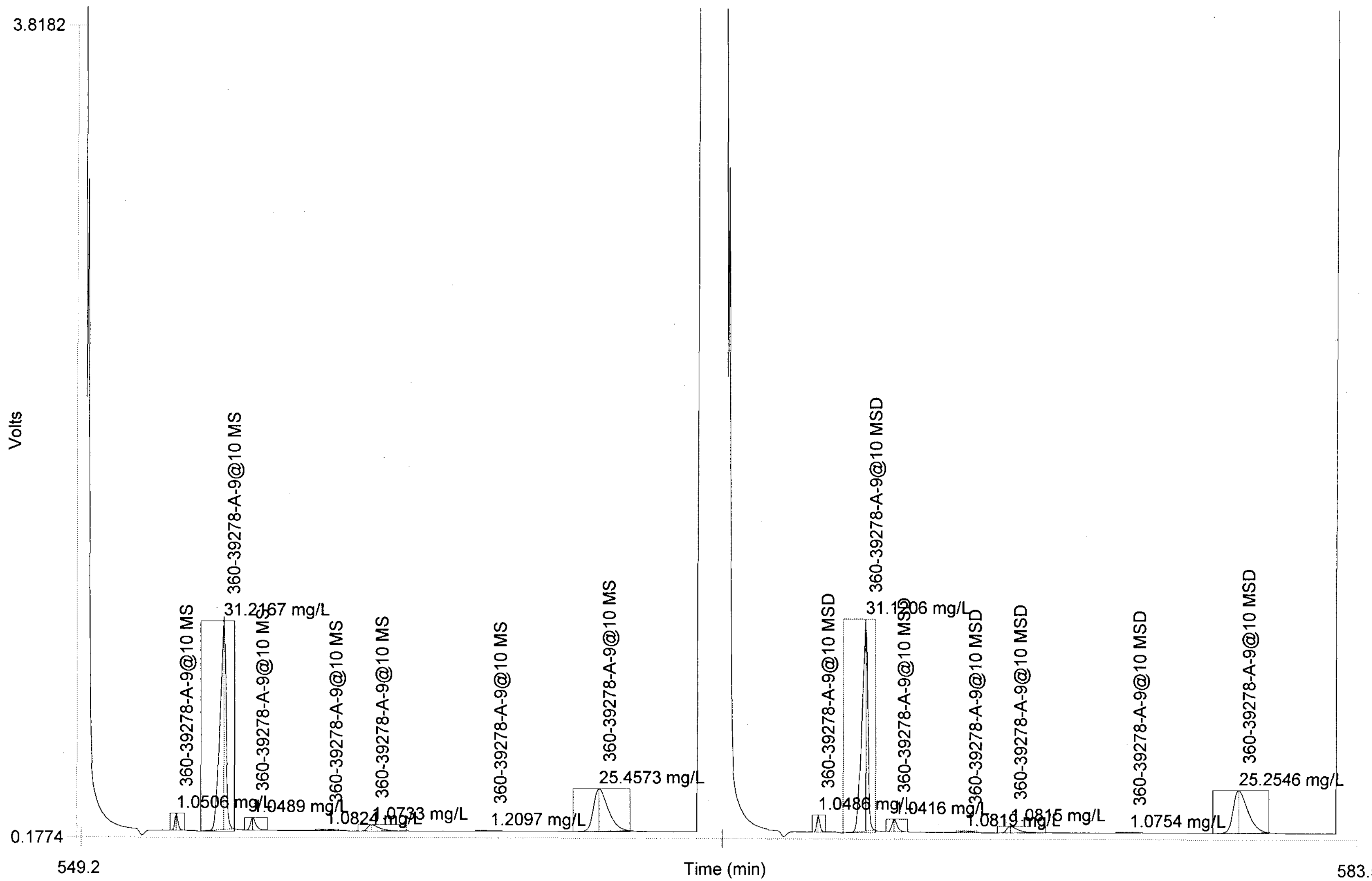
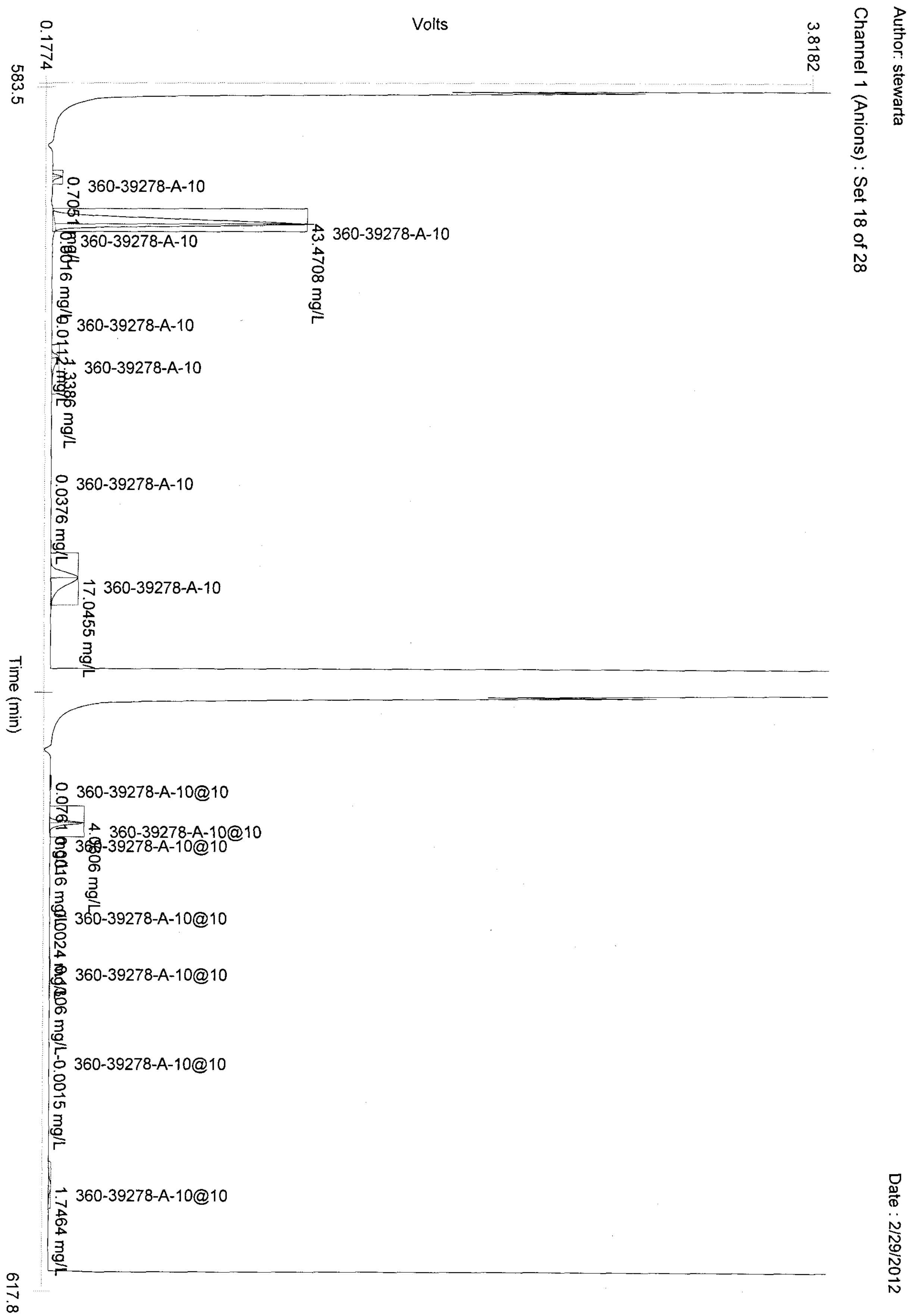
Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 17 of 28



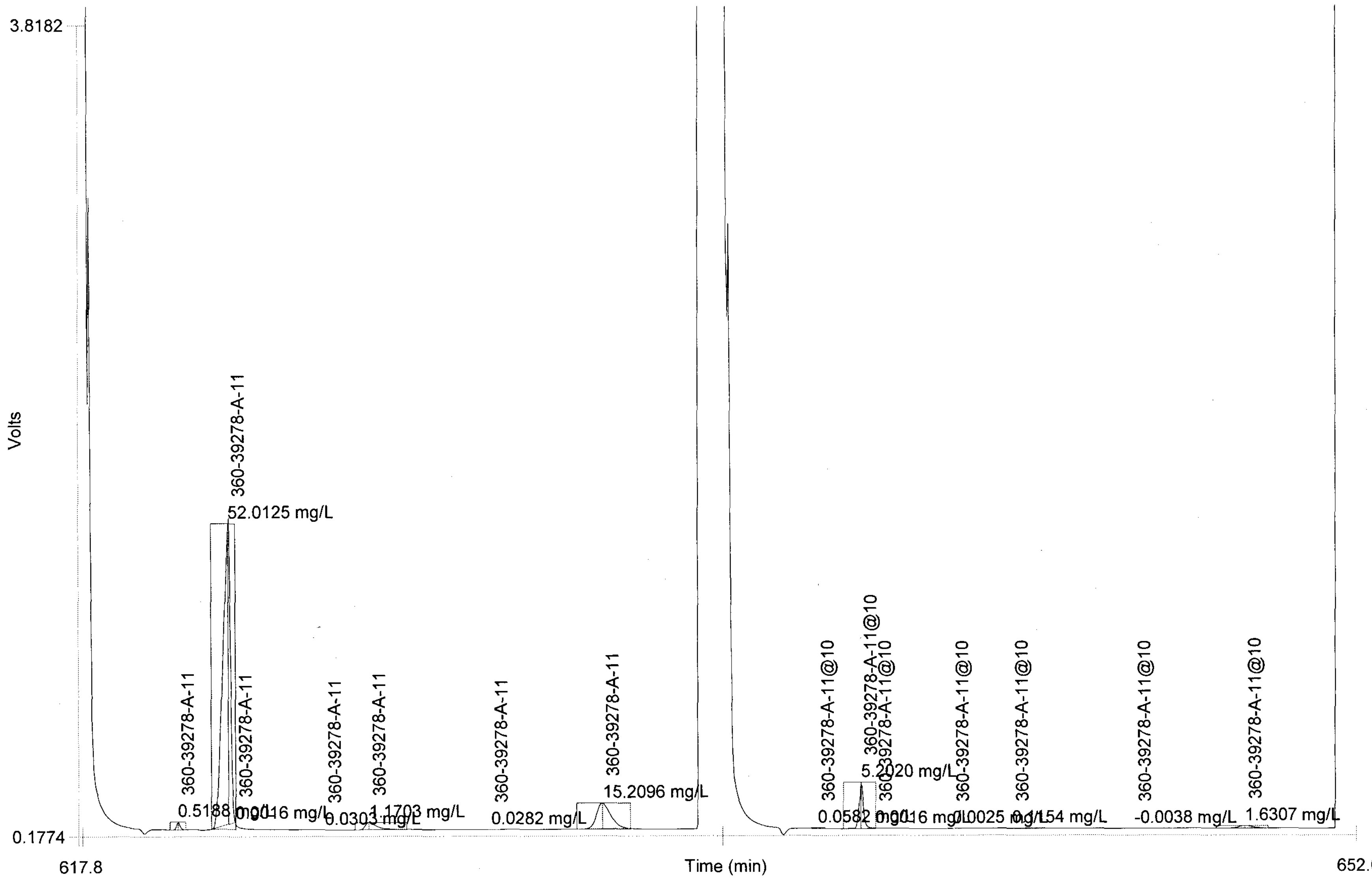

Author: stewarta
Channel 1 (Anions) : Set 18 of 28
Date : 2/29/2012
Volts
0.1774
3.8182
583.5
617.8
Time (min)
360-39278-A-10
43.4708 mg/L
17.0455 mg/L
0.0376 mg/L
360-39278-A-10@10
1.7464 mg/L

- 20 -

Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 19 of 28



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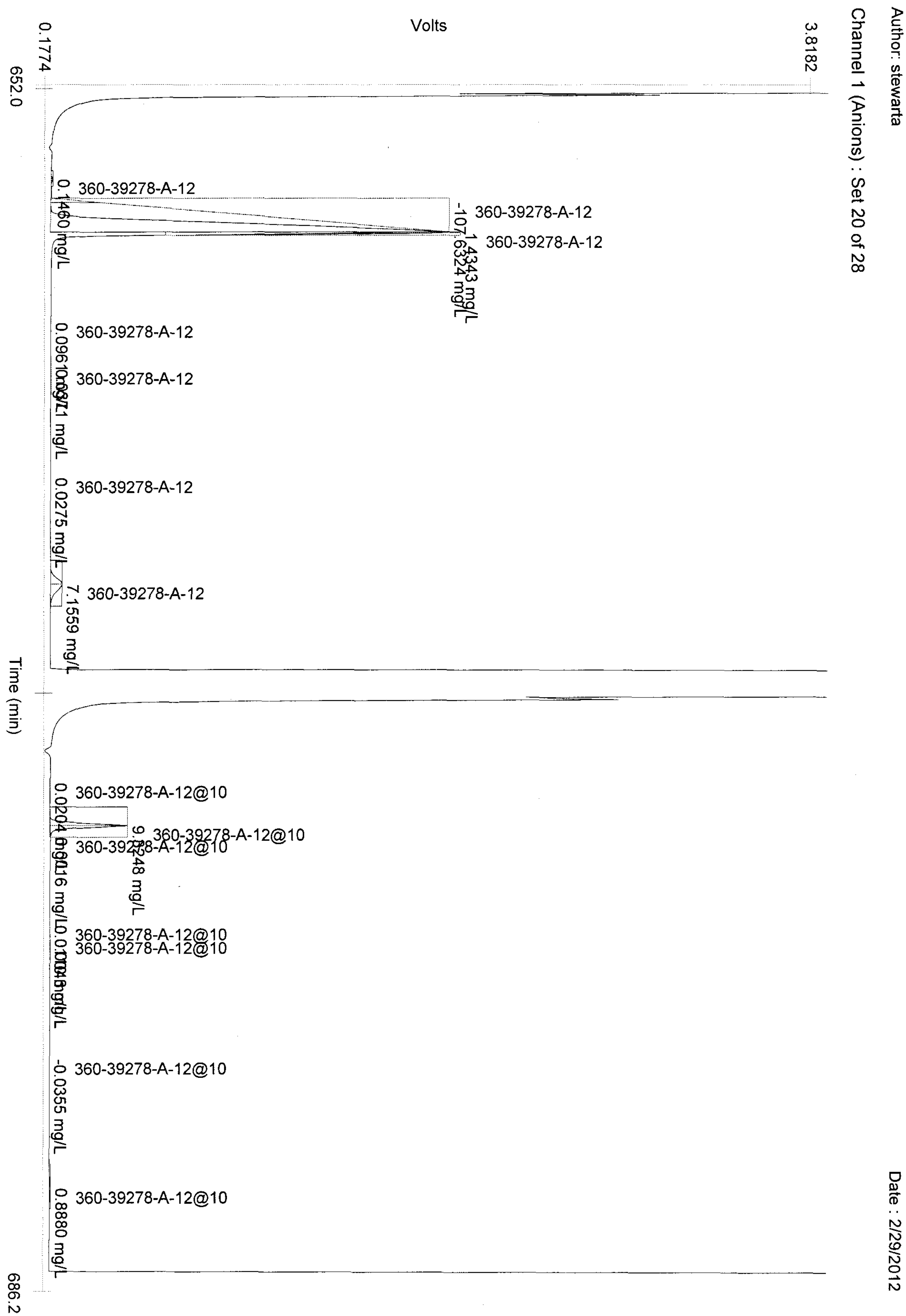

Author: stewarta
Channel 1 (Anions) : Set 20 of 28
Date : 2/29/2012
Volts
0.1774
3.8182
652.0
686.2
Time (min)
360-39278-A-12
0.1460 mg/L
360-39278-A-12
1.4343 mg/L
360-39278-A-12
-107.6324 mg/L
360-39278-A-12
360-39278-A-12
360-39278-A-12
0.0275 mg/L
360-39278-A-12
7.1559 mg/L
360-39278-A-12@10
360-39278-A-12@10
9.8248 mg/L
360-39278-A-12@10
360-39278-A-12@10
360-39278-A-12@10
360-39278-A-12@10
-0.0355 mg/L
360-39278-A-12@10
0.8880 mg/L

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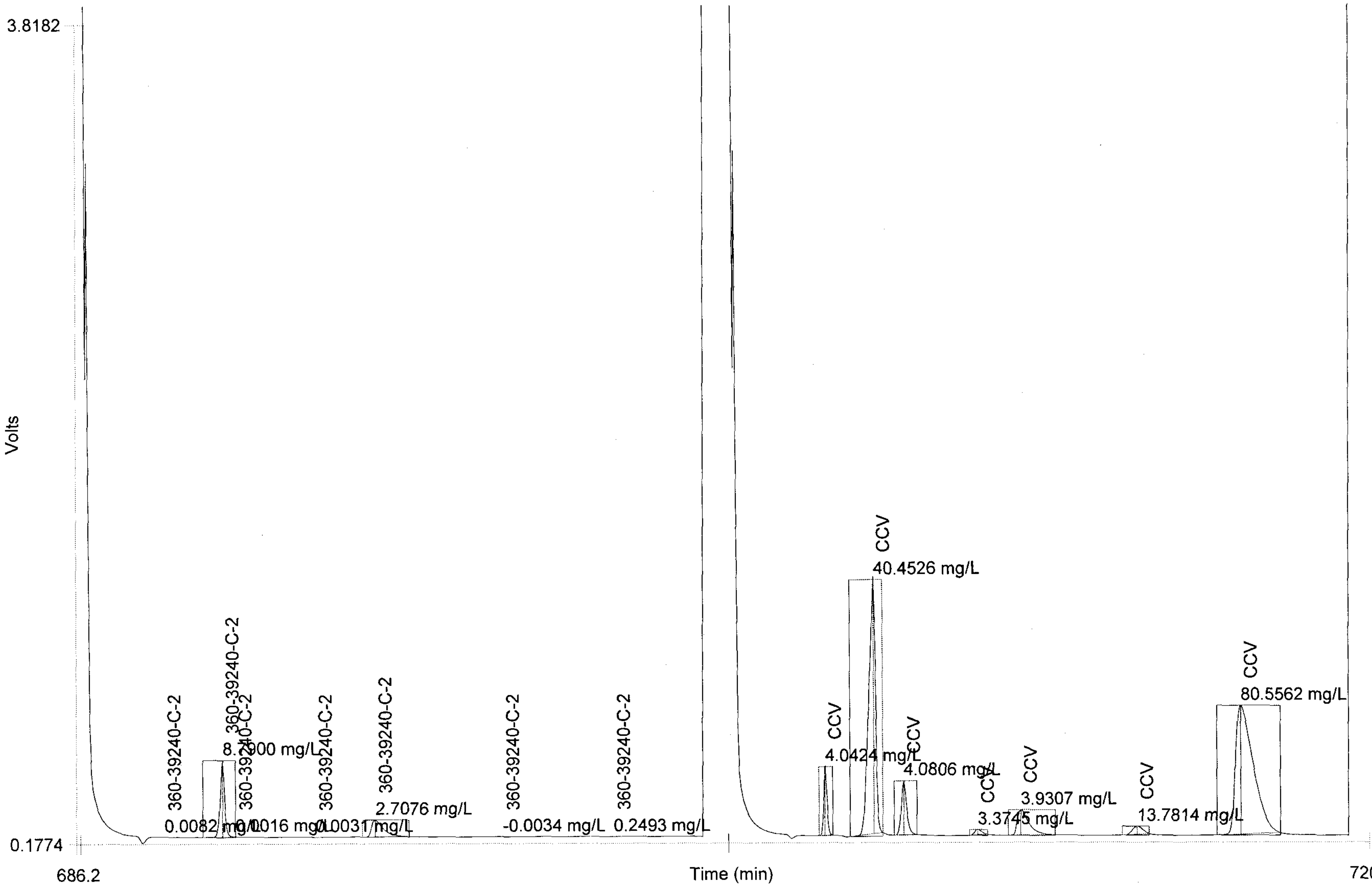
Author: stewarta

Date : 2/29/2012

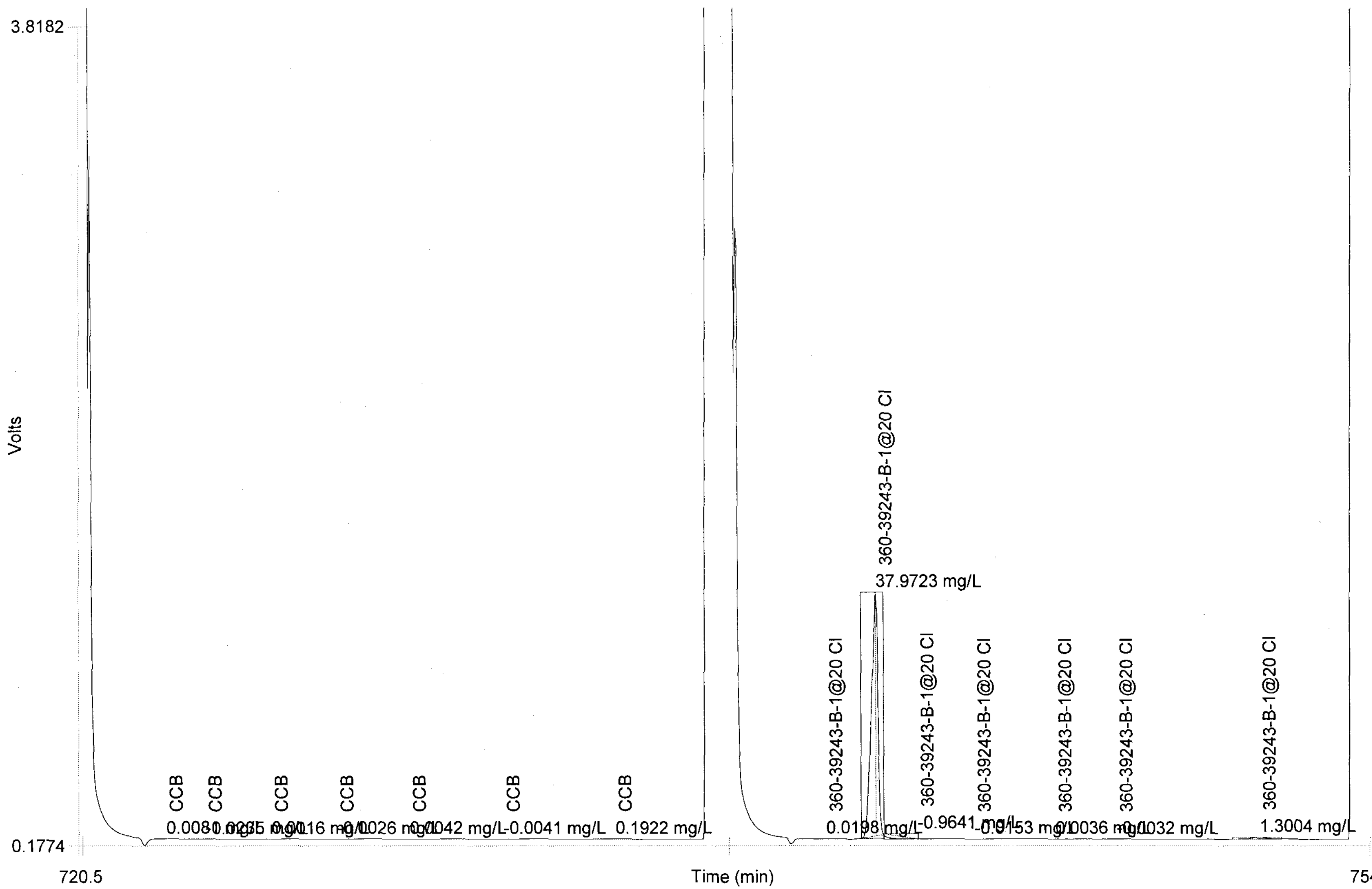
Channel 1 (Anions) : Set 21 of 28



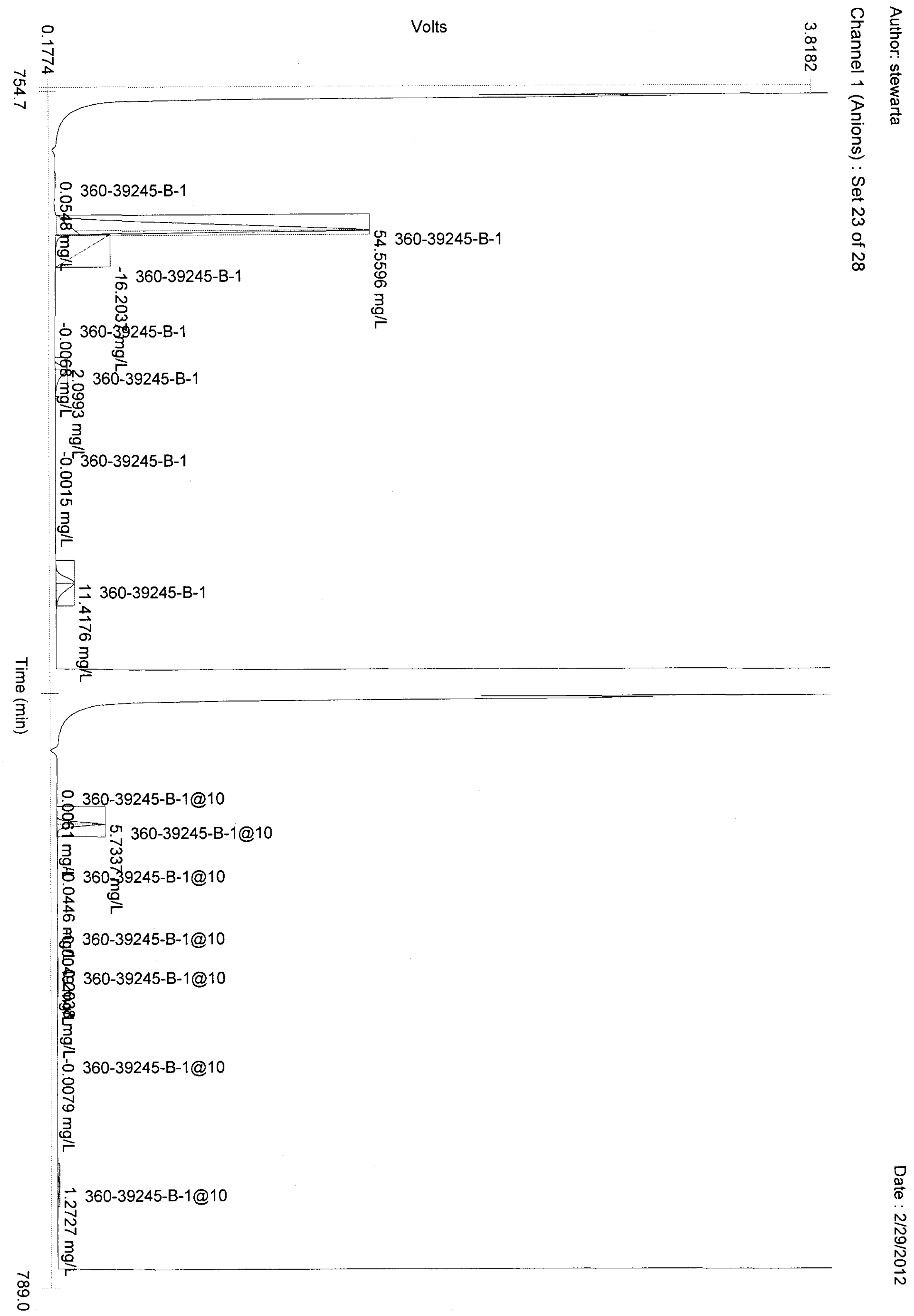
Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 22 of 28



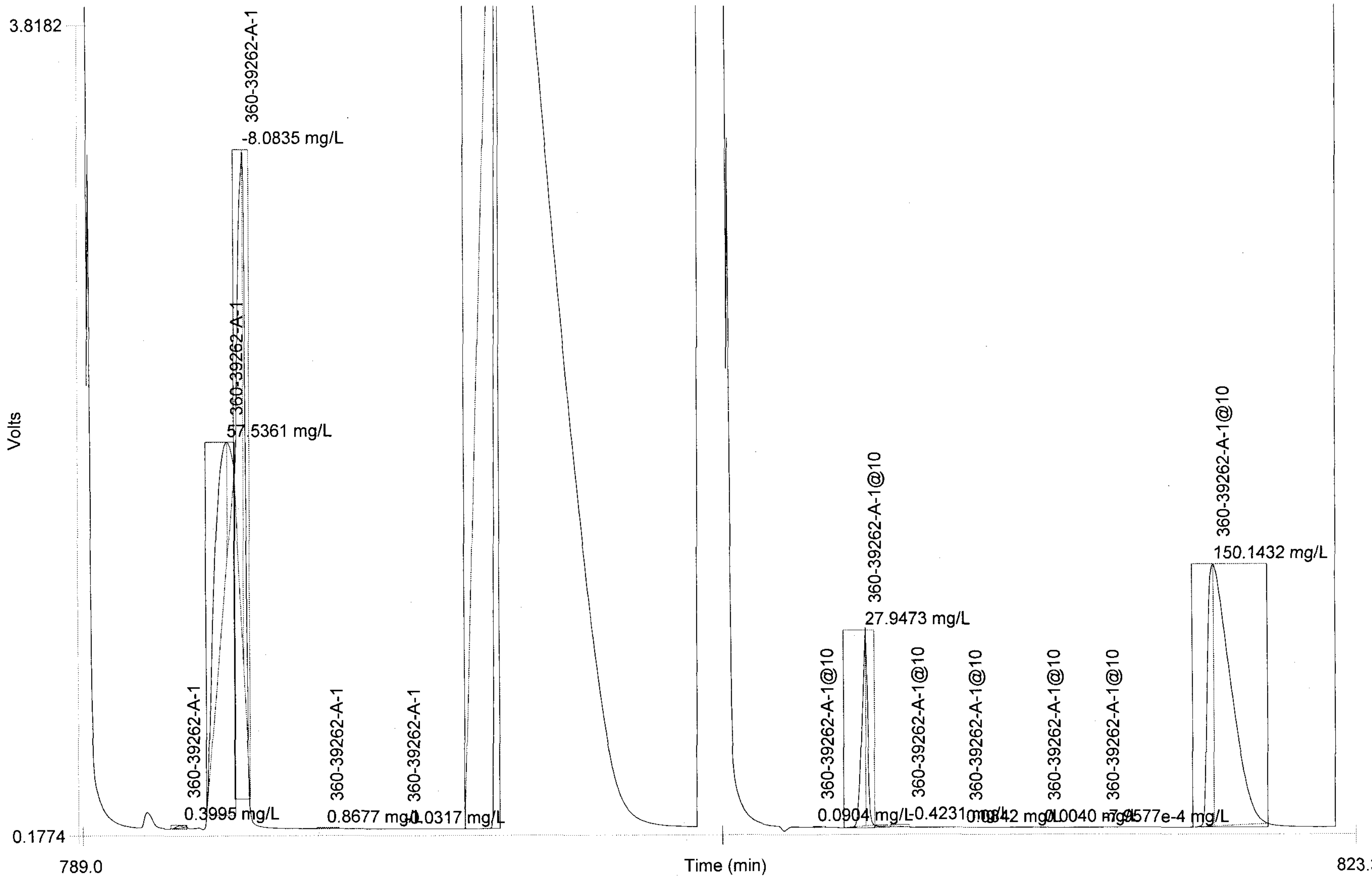
- 24 -


Author: stewarta
Channel 1 (Anions) : Set 23 of 28
Date : 2/29/2012
Volts
0.1774
3.8182
754.7
789.0
Time (min)
360-39245-B-1
0.0548 mg/L
360-39245-B-1
54.5596 mg/L
360-39245-B-1
-16.2031 mg/L
360-39245-B-1
-0.0068 mg/L
360-39245-B-1
2.0993 mg/L
360-39245-B-1
-0.0015 mg/L
360-39245-B-1
11.4176 mg/L
360-39245-B-1@10
0.0061 mg/L
360-39245-B-1@10
5.7337 mg/L
360-39245-B-1@10
0.0446 mg/L
360-39245-B-1@10
360-39245-B-1@10
360-39245-B-1@10
-0.0079 mg/L
360-39245-B-1@10
1.2727 mg/L

Author: stewarta

Date : 2/29/2012

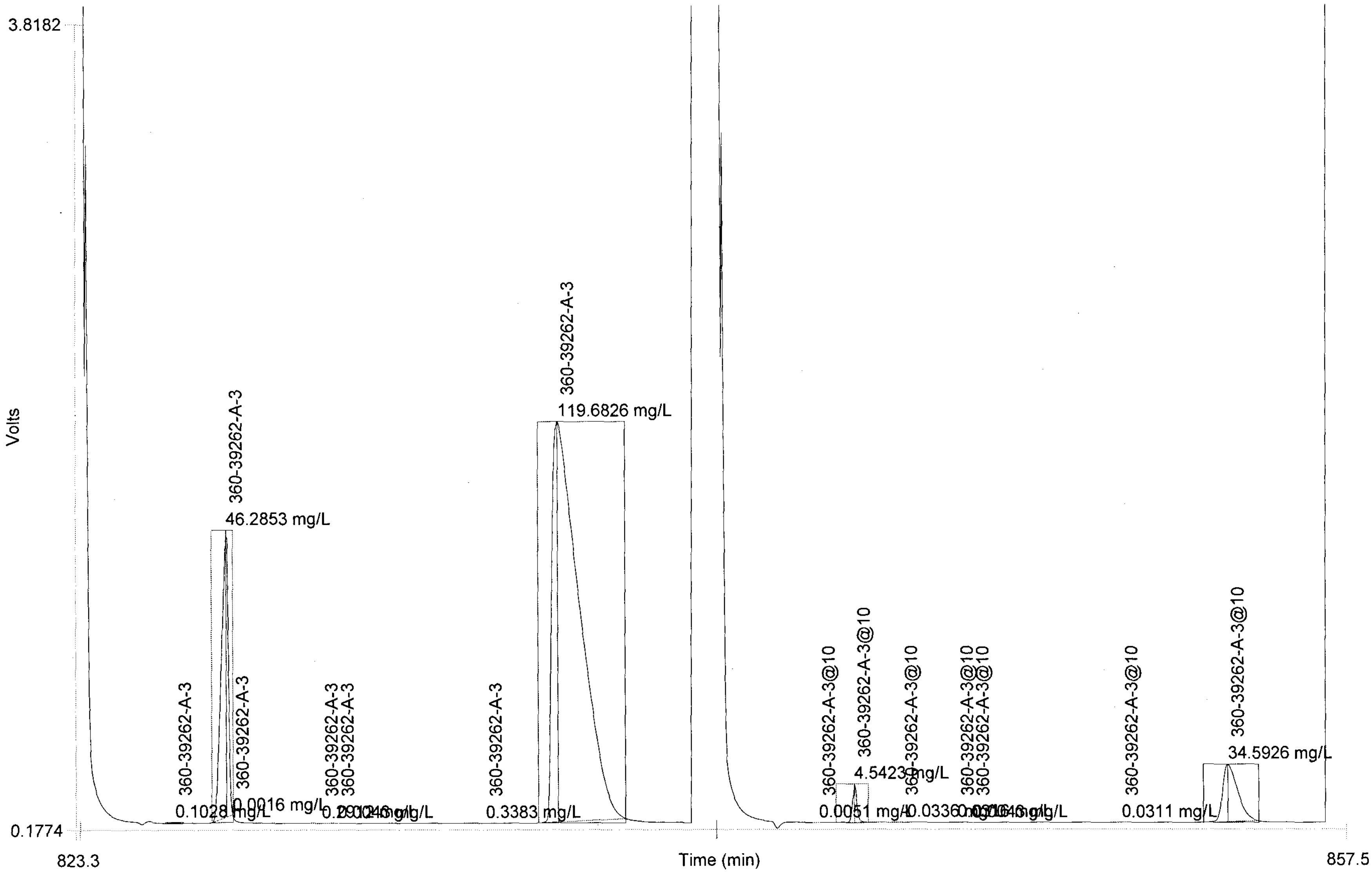
Channel 1 (Anions) : Set 24 of 28



Author: stewarta

Date : 2/29/2012

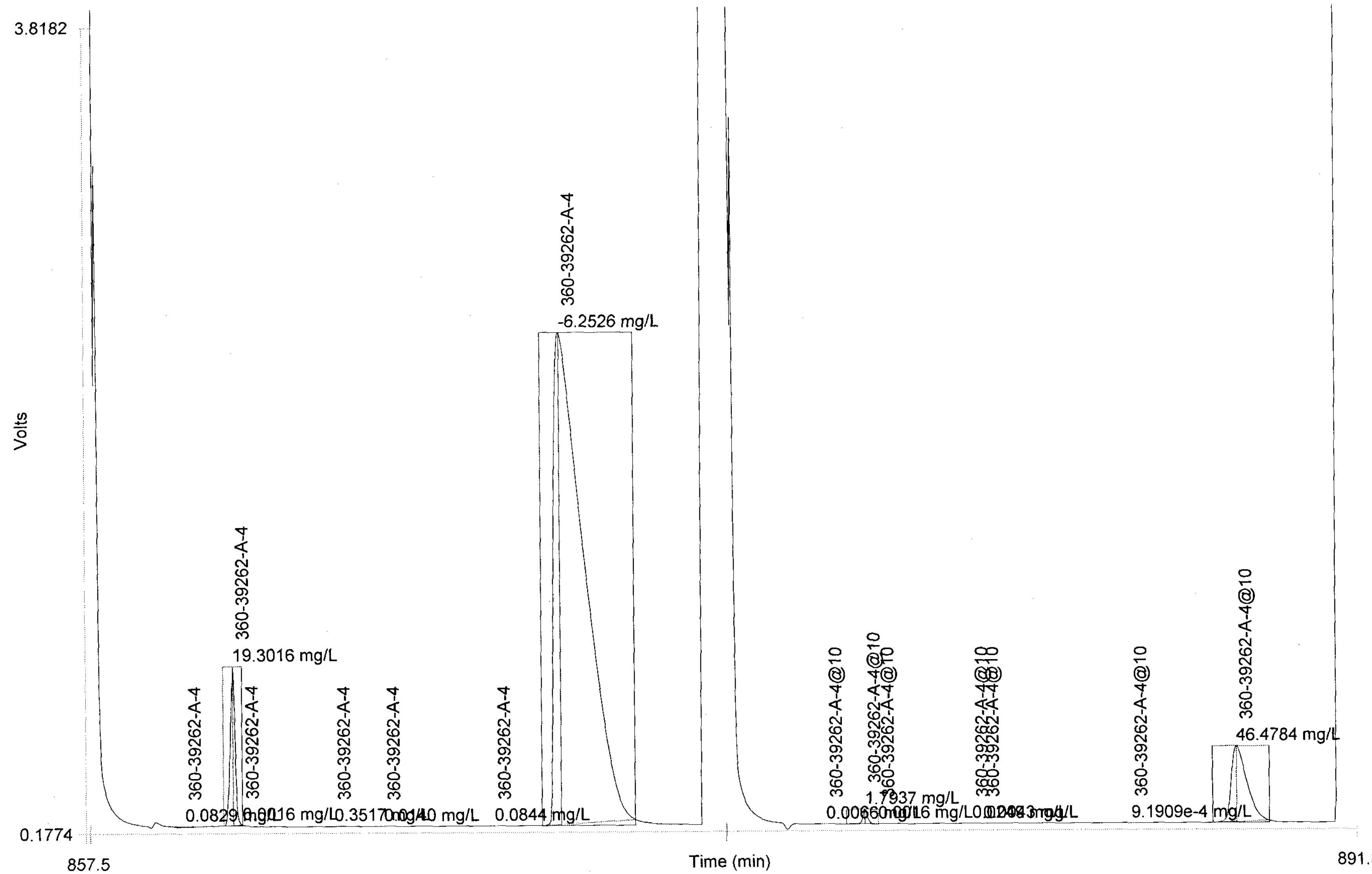
Channel 1 (Anions) : Set 25 of 28



Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 26 of 28

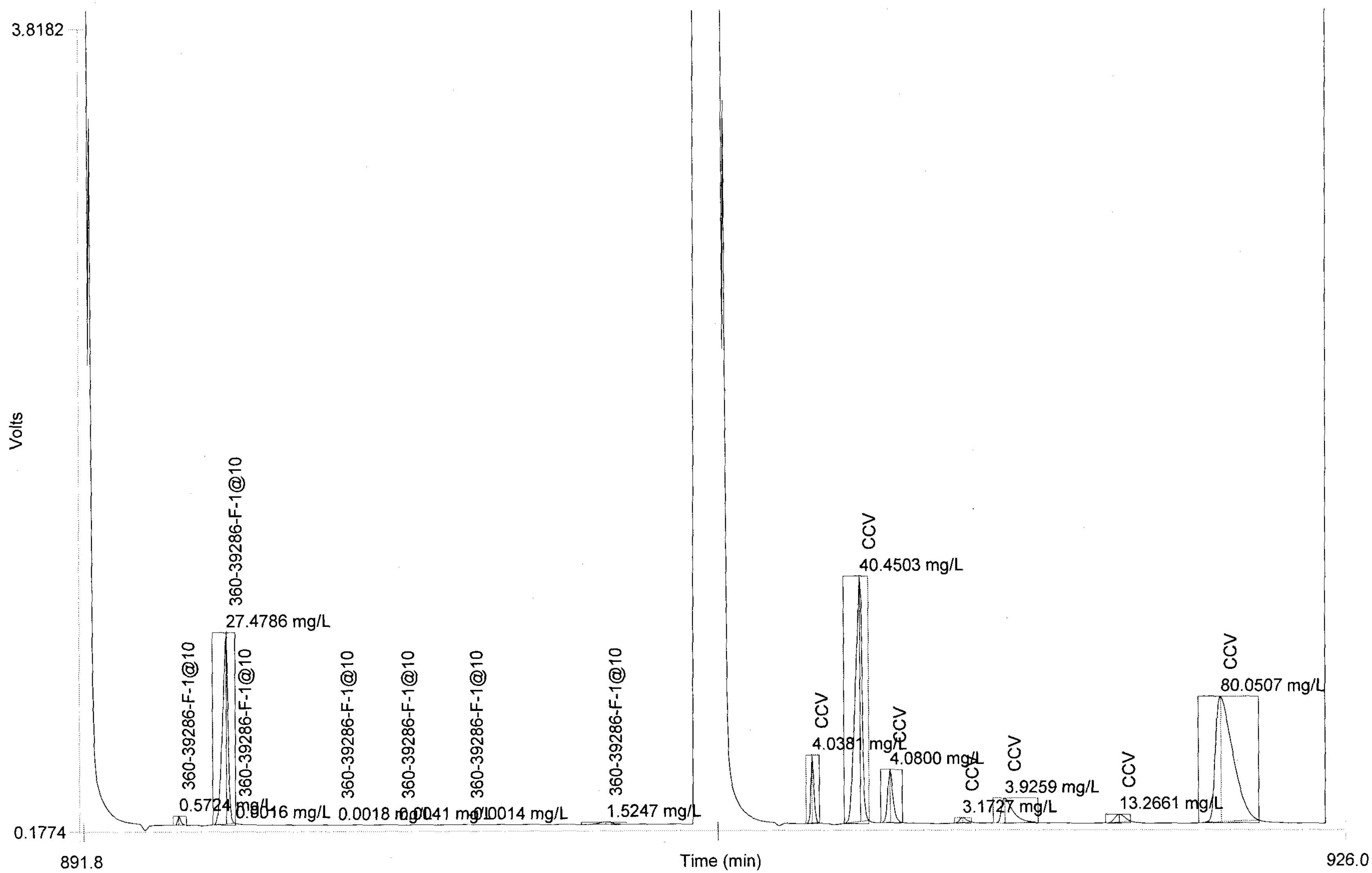


- 28 -

Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 27 of 28



Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 28 of 28

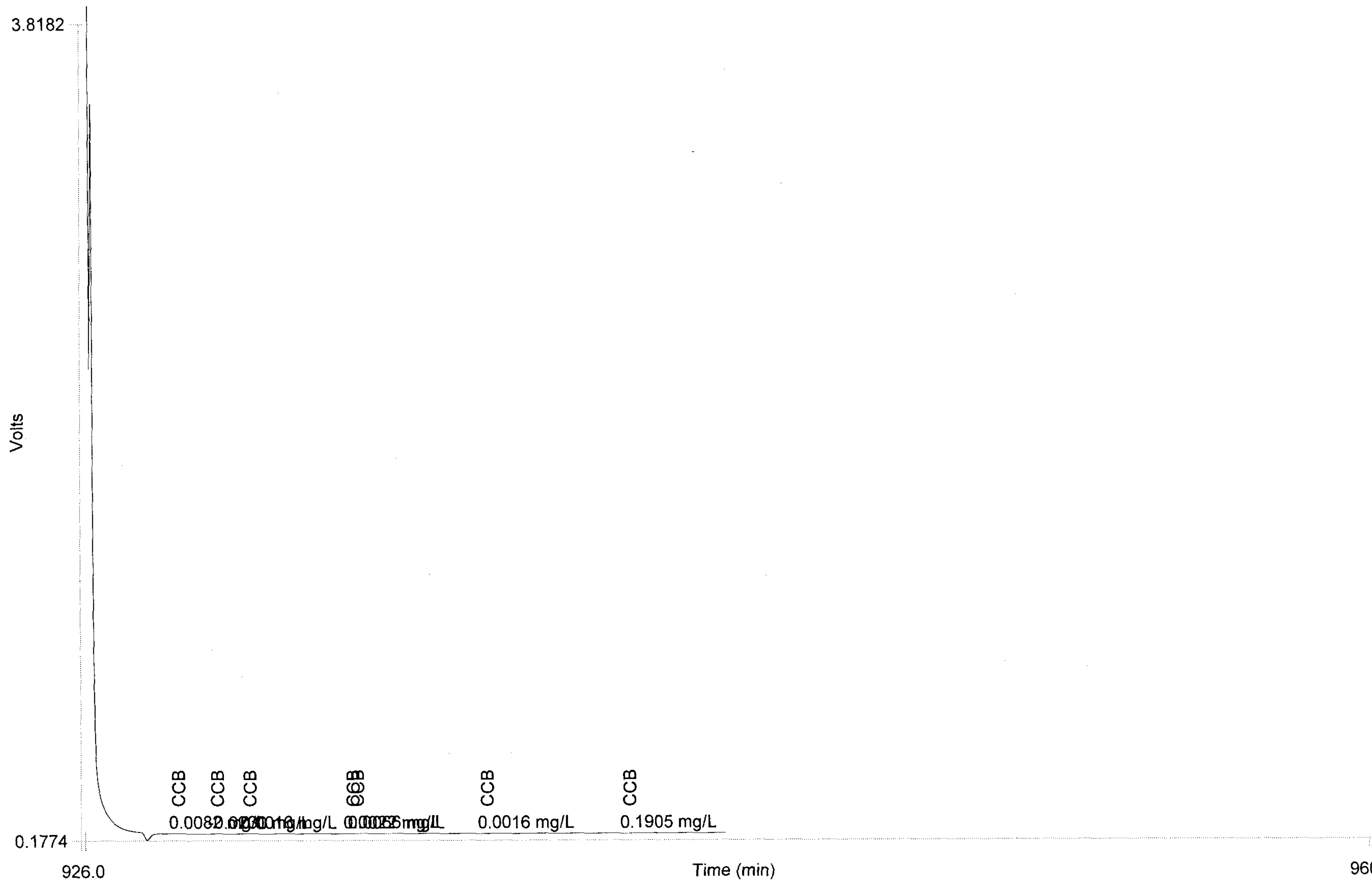
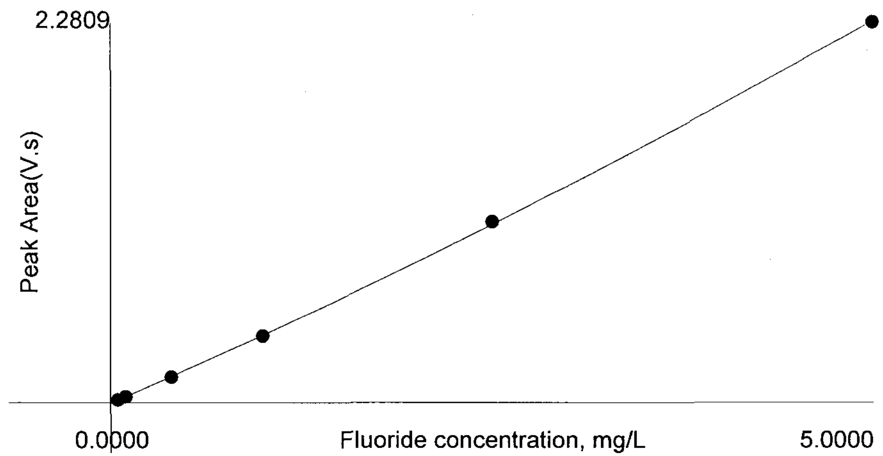


Table 1: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.2809	0.3818	0.3	2/27/2012	7:16:08 AM
2	2.5000	1	1.0874	0.1954	-1.5	2/27/2012	7:16:08 AM
3	1.0000	1	0.4047	0.0731	1.2	2/27/2012	7:16:08 AM
4	0.4000	1	0.1547	0.0275	3.0	2/27/2012	7:16:08 AM
5	0.1000	1	0.0368	0.0065	1.5	2/27/2012	7:16:08 AM
6	0.0500	1	0.0180	0.0033	-5.0	2/27/2012	7:16:08 AM

Figure 1: Fluoride



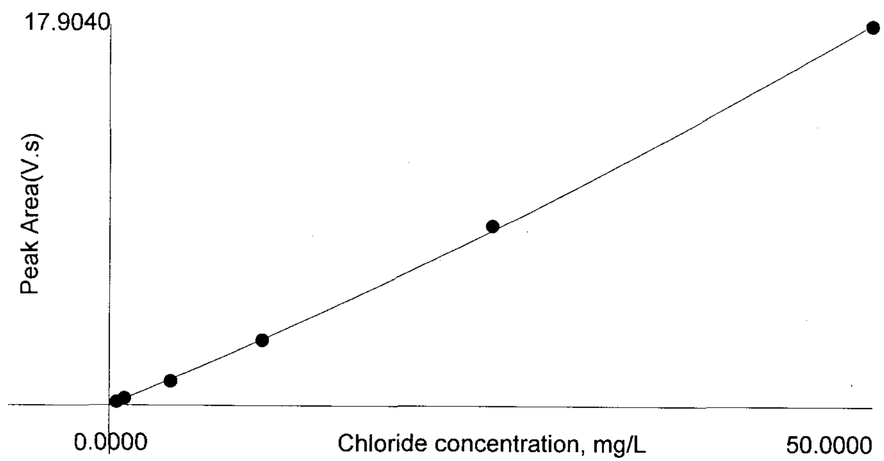
Area = 0.0114 * Conc^2 + 0.4013 * Conc - 0.0029
Conc = - 0.1241 * Area^2 + 2.4647 * Area + 0.0081
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 2: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	17.9040	1.3209	0.5	2/27/2012	7:16:08 AM
2	25.0000	1	8.4863	0.8353	-2.6	2/27/2012	7:16:08 AM
3	10.0000	1	3.0791	0.3756	1.8	2/27/2012	7:16:08 AM
4	4.0000	1	1.1387	0.1460	7.4	2/27/2012	7:16:08 AM
5	1.0000	1	0.3242	0.0393	-5.1	2/27/2012	7:16:08 AM
6	0.5000	1	0.1597	0.0182	-1.8	2/27/2012	7:16:08 AM

Figure 2: Chloride



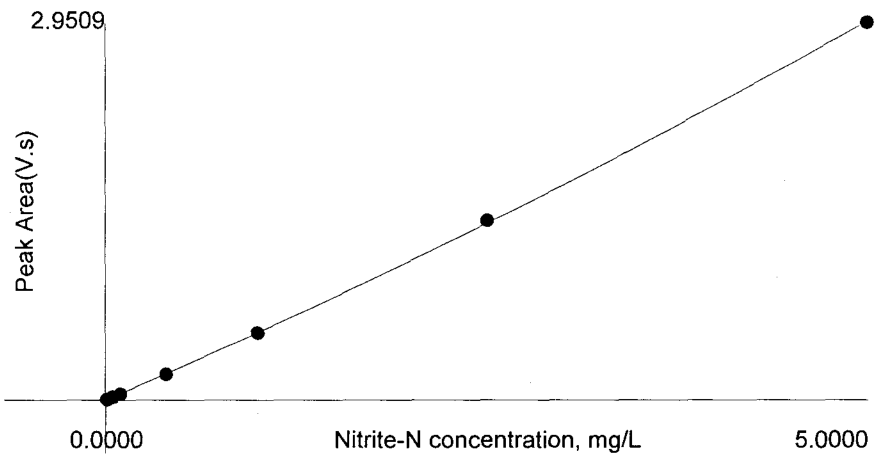
Area = 0.0012 * Conc^2 + 0.3011 * Conc + 0.0061
Conc = - 0.0267 * Area^2 + 3.2558 * Area - 0.0029
Correlation Coefficient (r) = 0.99997

1/x weighting

Table 3: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.9509	0.3044	0.3	2/27/2012	7:16:08 AM
2	2.5000	1	1.3998	0.1432	-1.4	2/27/2012	7:16:08 AM
3	1.0000	1	0.5256	0.0519	0.4	2/27/2012	7:16:08 AM
4	0.4000	1	0.2015	0.0191	2.6	2/27/2012	7:16:08 AM
5	0.1000	1	0.0479	0.0044	5.6	2/27/2012	7:16:08 AM
6	0.0500	1	0.0238	0.0022	4.8	2/27/2012	7:16:08 AM
7	0.0100	1	0.0050	4.2331e-4	-13.9	2/27/2012	7:16:08 AM

Figure 3: Nitrite-N



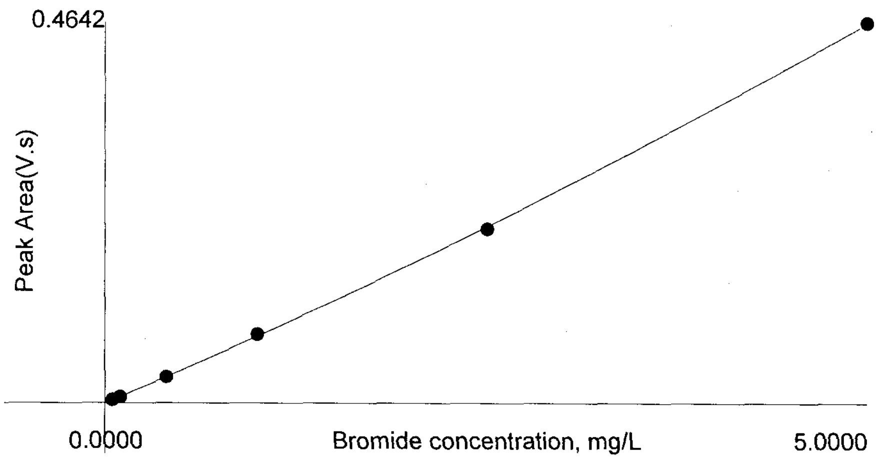
Area = 0.0159 * Conc^2 + 0.5124 * Conc - 6.9196e-4
Conc = - 0.0818 * Area^2 + 1.9295 * Area + 0.0016
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 4: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.4642	0.0318	-0.2	2/27/2012	7:16:08 AM
2	2.5000	1	0.2121	0.0148	1.3	2/27/2012	7:16:08 AM
3	1.0000	1	0.0840	0.0056	-2.6	2/27/2012	7:16:08 AM
4	0.4000	1	0.0320	0.0021	0.2	2/27/2012	7:16:08 AM
5	0.1000	1	0.0076	4.8059e-4	3.5	2/27/2012	7:16:08 AM
6	0.0500	1	0.0040	2.6055e-4	-2.3	2/27/2012	7:16:08 AM

Figure 4: Bromide



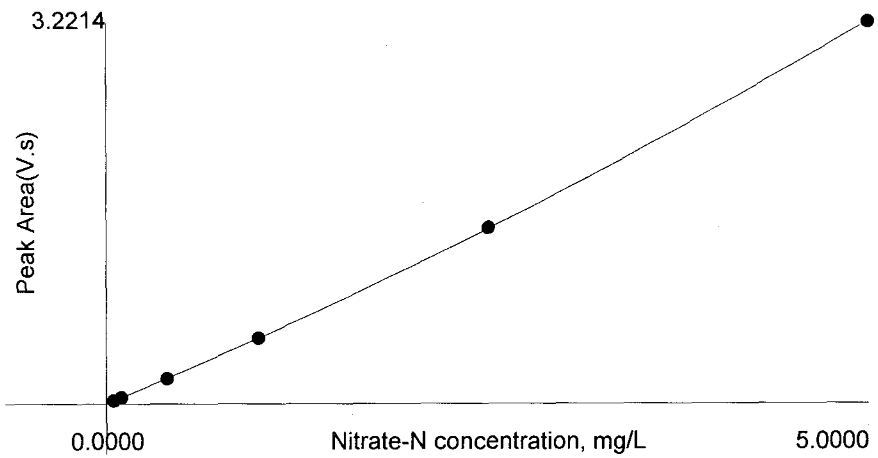
Area = 0.0027 * Conc^2 + 0.0794 * Conc - 9.5517e-5
Conc = - 3.5344 * Area^2 + 12.4199 * Area + 0.0023
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 5: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.2214	0.1533	0.1	2/27/2012	7:16:08 AM
2	2.5000	1	1.4833	0.0705	-0.6	2/27/2012	7:16:08 AM
3	1.0000	1	0.5554	0.0257	0.1	2/27/2012	7:16:08 AM
4	0.4000	1	0.2111	0.0093	2.3	2/27/2012	7:16:08 AM
5	0.1000	1	0.0519	0.0022	0.7	2/27/2012	7:16:08 AM
6	0.0500	1	0.0260	0.0011	-2.7	2/27/2012	7:16:08 AM

Figure 5: Nitrate-N



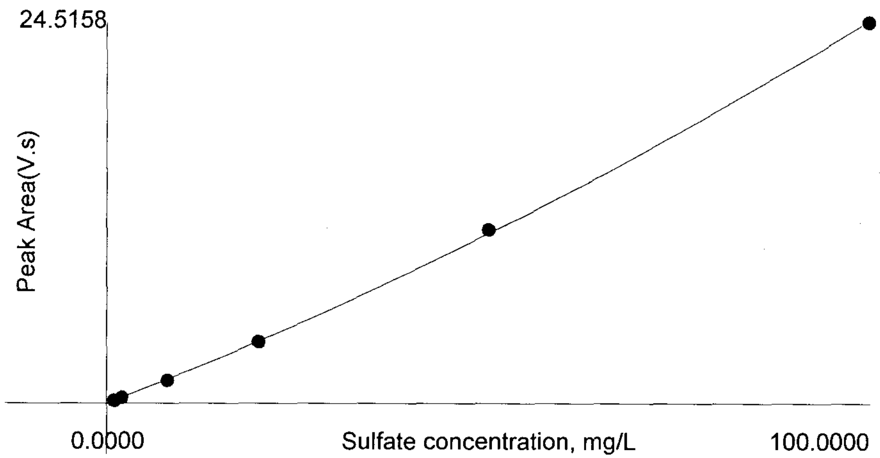
Area = 0.0220 * Conc^2 + 0.5352 * Conc - 0.0015
Conc = - 0.0879 * Area^2 + 1.8310 * Area + 0.0043
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 6: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	24.5158	0.7063	0.4	2/27/2012	7:16:08 AM
2	50.0000	1	11.1278	0.3749	-2.1	2/27/2012	7:16:08 AM
3	20.0000	1	3.9605	0.1469	1.3	2/27/2012	7:16:08 AM
4	8.0000	1	1.4545	0.0548	5.4	2/27/2012	7:16:08 AM
5	2.0000	1	0.3485	0.0132	3.2	2/27/2012	7:16:08 AM
6	1.0000	1	0.1831	0.0069	-9.0	2/27/2012	7:16:08 AM

Figure 6: Sulfate



Area = 5.5759e-4 * Conc^2 + 0.1906 * Conc - 0.0232
Conc = - 0.0407 * Area^2 + 5.0514 * Area + 0.1794
Correlation Coefficient (r) = 0.99998

1/x weighting

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 2/27/12

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution: Sample Aliquot 2	Units	Final Volume 2	Units	Comments
AMS	2/27/12	300.0	39262A1	10x	1	mL	10	mL					
			3										
			4										

entries completed by day [new page each day]

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 2/28/12

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution: Sample Aliquot 2	Units	Final Volume 2	Units	Comments
MM8	2/28/12	300.0	39262 A2	10	1	mL	10	mL					
			MS										
			MSD										
			A5										
			39228 D1	10	1	mL	10	mL					
			D2										

entries completed by day [new page each day]

0699

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 2/27/12

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution: Sample Aliquot 2	Units	Final Volume 2	Units	Comments
AMS	2/27/12	300.0	39262A1	10x	1	mL	10	mL					
			3										
			4										

entries completed by day [new page each day]

0689

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 2/28/12

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution: Sample Aliquot 2	Units	Final Volume 2	Units	Comments
MM8	2/28/12	300.0	39262A2	10	1	mL	10	mL					
			MS										
			MSD										
			A5										
			39228D1	10	1	mL	10	mL					
			D2										

entries completed by day [new page each day]

0699

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Coversheet—Inorganics Dept

Method Name: IC Method Reference: 300.0 48Hr 28D Date of Analytical Run: 2/28/12

Primary Reviewer's Initials & Date: AMS ~~2/29~~ 3/1/12 Secondary Reviewer's Initials & Date: RCO 3-1-12

Batch Numbers	87947	87952	87949	~~87960~~	

QC Criteria—Non-MCP: ICV/CCV ±10%: LCS/LCSD ±15%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%

QC Criteria—MCP/RCP: (9012 and 7196 only)
9012 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
9012 (soil): ICV/CCV ±15%: LCS/LCSD **: MS/MSD ±25%: ICB/MB/CCB <RL: MD RPD 35%: MSD/LCSD RPD ≤30%
7196 (water): ICV/CCV ±15%: LCS/LCSD ±20%: MS/MSD ±25%: ICB/MB/CCB <RL: MD/MSD/LCSD RPD ≤20%
7196 (soil): ICV/CCV ±15%: LCS/LCSD **: MSS/MSI ±25%: ICB/MB/CCB <RL: MD RPD ≤35%: LCSD RPD ≤30%

FAILURES OF QC FOR ANYTHING OTHER THAN MS, MSD or MD ARE GROUNDS FOR INVALIDATING THE BATCH.

Criteria for QC	Yes	No	n/a	Notes/Comments
Were the ICV and/or CCVs within acceptable limits for QC recovery?	✓			
Were the ICB and/or CCBs all <RL?	✓			
Were all MB and/or CCB results <RL for the analytes of interest?	✓			
Was there a CCV/CCB combination run after every 10 samples or less?	✓			
Was there an LCS run with every batch of 20 samples or less?	✓			
Was there a MD, LCSD and/or MSD run with every batch of 20 samples or less?	✓			
Were all LCS/LCSD results within acceptable limits for QC recovery?	✓			
Were all MS/MSD results within acceptable limits for QC recovery?	✓			
Were all MD, LCSD and/or MSD %RPDs within acceptable limits for QC recovery?	✓			
Were the raw data points for investigative samples within the working curve range, or if not, were the samples diluted to bring them within this range?	✓			
IF there were any MCP/RCP samples in this batch, did they meet all MCP/RCP requirements?			✓	
Were there any holding time violations in this batch?		✓		**NOTE!** The PM and QA Manager must be notified by email *immediately* of any holding time violations!!
Were any NCMs generated for any samples in the batch? (If so, list NCM numbers, and first-reviewer must check off any "No" answers above as applicable.)	✓			46888
Were any jobs in this batch Level 4? If "Yes" then scan all raw data & place in correct scan folder on the public drive before filing this paperwork.	✓			39278

** LCS or LCSD must produce a recovery that is within the manufacturer's specified 95% confidence limits, must be matrix matched.

Author: stewarta

Date : 2/29/2012

Original Run Filename: OM_2-28-2012_04-06-57PM.OMN created 2/28/2012 4:06:57 PM
Original Run Author's Signature: [stewarta]
Current Run Filename: OM_2-28-2012_04-06-57PM.OMN last modified 2/29/2012 7:15:06 AM
Current Run Author's Signature: [stewarta]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	-0.0427	-0.2097	-0.3952	0.0043	0.0016	0.1456	2/28/2012@4:08:17 PM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	
ICV	1	2.6848	25.0579	2.4496	2.4349	2.4901	50.2864	2/28/2012@4:25:24 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
ICB	S11	-3.953e-4	0.0613	0.0082	0.0018	0.0014	0.1858	2/28/2012@4:42:31 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0021	0.0637	0.0082	0.0012	0.0017	0.1854	2/28/2012@4:59:37 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.3638	40.7943	4.0347	4.0176	4.1201	81.6061	2/28/2012@5:16:45 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-39262-A-2	2	0.3247	46.6176	0.1041	0.0016	0.0016	123.0562	2/28/2012@5:33:52 PM
360-39262-A-2@10	3	0.0309	4.3706	0.0140	0.0042	0.0016	34.2456	2/28/2012@5:50:59 PM
360-39262-A-2@10 MS	3	0.0362	4.3862	0.0032	-6.3509e-5	-0.0185	34.2864	2/28/2012@6:08:06 PM
360-39262-A-2@10 MSD	4	1.2045	15.6545	1.0478	1.0499	1.0601	57.3956	2/28/2012@6:25:13 PM
360-39262-A-5	5	1.0203	25.6442	0.0265	-0.0069	-0.2919	-772.4042	2/28/2012@6:42:19 PM
360-39262-A-5@10	6	0.0988	2.2548	0.0123	0.0043	0.0016	72.0476	2/28/2012@6:59:26 PM
360-39188-A-1-A	7	0.0085	4.0541	0.9465	0.5123	0.0160	5.7392	2/28/2012@7:16:33 PM
360-39188-A-2-A	8	0.0026	4.3375	0.8535	1.3705	-0.0066	8.9008	2/28/2012@7:33:40 PM
360-39188-A-3-A	9	0.0104	1.8978	0.9208	0.5254	0.0296	5.9431	2/28/2012@7:50:46 PM
360-39188-A-4-A	10	0.0180	6.8507	0.8899	0.6165	0.0016	7.6297	2/28/2012@8:07:52 PM
CCV	S12	4.2236	40.8441	4.0436	3.9995	4.1282	81.6758	2/28/2012@8:24:59 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0023	0.0639	0.0081	0.0044	0.0016	0.1793	2/28/2012@8:42:06 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-39188-A-5-A	11	-0.0094	1.4734	0.8948	0.4639	0.0225	6.5126	2/28/2012@8:59:12 PM
360-39188-A-6-A	12	-0.0015	4.1433	0.9028	0.4981	0.0159	5.5280	2/28/2012@9:16:18 PM
360-39188-A-7-A	13	6.7119e-4	3.7389	0.9253	1.2985	-0.0049	8.2219	2/28/2012@9:33:24 PM
360-39188-A-8-A	14	0.0088	1.9032	0.9179	0.5052	0.0279	5.5264	2/28/2012@9:50:30 PM
360-39188-A-9-A	15	0.0047	6.5251	0.9658	0.5865	0.0016	7.9112	2/28/2012@10:07:35 PM
360-39188-A-10-A	16	0.0023	1.5288	0.9135	0.4572	0.0189	6.6160	2/28/2012@10:24:43 PM
360-39188-A-11-A	17	0.0024	0.3674	0.9458	0.0112	0.0149	0.3502	2/28/2012@10:41:50 PM
360-39298-A-3@100 matrix	18	0.1121	84.7718	0.0165	0.0042	0.0016	94.6535	2/28/2012@10:58:57 PM
360-39274-D-1	19	0.5462	57.3480	0.2404	5.4210	-130.8102	52.1749	2/28/2012@11:16:04 PM
360-39274-D-1@10	20	0.0608	50.4651	0.0370	0.5873	0.0016	5.3515	2/28/2012@11:33:11 PM
CCV	S12	4.3685	40.9312	4.0645	4.0428	4.1446	82.0804	2/28/2012@11:50:18 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	

*

* wrong cup number was ad. no MSD ran. Sample repeated AMS 2/29/12

CCB	S11	0.0023	0.0635	0.0081	0.0019	0.0012	0.1694	2/29/2012@12:07:25 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0024	0.0615	0.0082	0.0044	0.0014	0.1794	2/29/2012@12:24:31 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.2013	40.8858	4.0511	4.0019	4.1464	81.8197	2/29/2012@12:41:39 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-39274-D-2	21	0.1098	-93.0155	0.2995	1.2795	6.4420	21.1656	2/29/2012@12:58:45 AM
360-39274-D-2@10	22	0.0155	15.7381	0.0357	0.1222	0.0016	2.1778	2/29/2012@1:15:52 AM
360-39274-D-2@10 MS	22	0.0023	15.7583	0.0359	0.1238	0.0016	2.1778	2/29/2012@1:32:59 AM
* 360-39274-D-2@10 ~~MSD~~ MS	23	1.0258	26.6187	1.0444	1.1357	1.0278	22.9944	2/29/2012@1:50:06 AM
360-39278-A-9	24	0.5329	-79.4644	0.0951	0.4296	6.8598	48.2282	2/29/2012@2:07:13 AM
360-39278-A-10	25	0.0025	44.5208	0.7193	1.3597	0.0016	17.9146	2/29/2012@2:24:19 AM
360-39278-A-11	26	0.0288	53.3499	0.5257	1.1887	0.0016	16.0335	2/29/2012@2:41:25 AM
360-39278-A-12	27	0.1246	73.6275	0.1476	0.0413	-83.1260	7.7865	2/29/2012@2:58:31 AM
360-39274-D-3	28	2.7444e-4	5.1979	0.0962	1.6380	-0.0246	3.8539	2/29/2012@3:15:37 AM
360-39274-D-3@10	29	0.0022	0.6042	0.0160	0.1576	5.9765e-4	0.5775	2/29/2012@3:32:42 AM
CCV	S12	4.2128	40.9399	4.0606	4.0139	4.1384	82.0720	2/29/2012@3:49:49 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0030	0.0640	0.0081	0.0043	0.0018	0.1809	2/29/2012@4:06:56 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-39304-C-1@20 CI	30	0.0023	11.7076	0.0081	0.1690	0.0016	0.9918	2/29/2012@4:24:02 AM
360-39305-B-1@20 CI	31	0.0012	6.3592	0.0081	0.1040	-0.0340	1.3250	2/29/2012@4:41:09 AM
360-39306-B-1@20 CI	32	0.0020	11.3510	0.0056	0.0157	0.0016	1.1002	2/29/2012@4:58:16 AM
360-39306-B-2@20 CI	33	0.0026	11.7105	0.0081	0.0159	0.0016	1.1146	2/29/2012@5:15:23 AM
360-39228-D-1@10 CI	34	0.0175	18.0892	0.0037	0.0732	0.0016	4.0107	2/29/2012@5:32:30 AM
360-39228-D-2@10 CI	35	0.0026	19.2514	0.0082	0.6815	0.0016	4.8642	2/29/2012@5:49:37 AM
360-39303-C-1	36	0.0026	10.9333	0.1525	0.0368	0.0016	9.7056	2/29/2012@6:06:44 AM
360-39303-C-1@10	37	0.0025	1.0045	0.0211	0.0087	0.0016	1.1402	2/29/2012@6:23:51 AM
CCV	S12	4.2730	41.0296	4.0547	4.0355	4.1527	82.2014	2/29/2012@6:40:57 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0032	-0.0153	0.0082	0.0042	0.0017	0.1893	2/29/2012@6:58:04 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

* wrong cup was addressed for 39274 D2 MS. Cup 23 MSD is used as the MS. 2/29/12 ATKP.

Original Run Filename: OM_2-28-2012_04-06-57PM.OMN created 2/28/2012 4:06:57 PM
Original Run Author's Signature: [stewarta]
Current Run Filename: OM_2-28-2012_04-06-57PM.OMN last modified 2/29/2012 7:15:06 AM
Current Run Author's Signature: [stewarta]
Description: Triggered autodilution test

Sample	Cup No.	Channel 1 Bromide (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Sulfate (mg/L)	Detection Time
BLANK RUN-IN	S11	-0.0427	-0.2097	-0.3952	0.0043	0.0016	0.1456	2/28/2012@4:08:17 PM
	Calibration:	Table/Fig. 4	Table/Fig. 2	Table/Fig. 1	Table/Fig. 5	Table/Fig. 3	Table/Fig. 6	
ICV	1	2.6848	25.0579	2.4496	2.4349	2.4901	50.2864	2/28/2012@4:25:24 PM
	Known Conc:	2.5000	25.0000	2.5000	2.5000	2.5000	50.0000	
ICB	S11	-3.953e-4	0.0613	0.0082	0.0018	0.0014	0.1858	2/28/2012@4:42:31 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0021	0.0637	0.0082	0.0012	0.0017	0.1854	2/28/2012@4:59:37 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.3638	40.7943	4.0347	4.0176	4.1201	81.6061	2/28/2012@5:16:45 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-39262-A-2	2	0.3247	46.6176	0.1041	0.0016	0.0016	123.0562	2/28/2012@5:33:52 PM
360-39262-A-2@10	3	0.0309	4.3706	0.0140	0.0042	0.0016	34.2456	2/28/2012@5:50:59 PM
360-39262-A-2@10 MS	3	0.0362	4.3862	0.0032	-6.3509e-5	-0.0185	34.2864	2/28/2012@6:08:06 PM
360-39262-A-2@10 MSD	4	1.2045	15.6545	1.0478	1.0499	1.0601	57.3956	2/28/2012@6:25:13 PM
360-39262-A-5	5	1.0203	25.6442	0.0265	-0.0069	-0.2919	-772.4042	2/28/2012@6:42:19 PM
360-39262-A-5@10	6	0.0988	2.2548	0.0123	0.0043	0.0016	72.0476	2/28/2012@6:59:26 PM
360-39188-A-1-A	7	0.0085	4.0541	0.9465	0.5123	0.0160	5.7392	2/28/2012@7:16:33 PM
360-39188-A-2-A	8	0.0026	4.3375	0.8535	1.3705	-0.0066	8.9008	2/28/2012@7:33:40 PM
360-39188-A-3-A	9	0.0104	1.8978	0.9208	0.5254	0.0296	5.9431	2/28/2012@7:50:46 PM
360-39188-A-4-A	10	0.0180	6.8507	0.8899	0.6165	0.0016	7.6297	2/28/2012@8:07:52 PM
CCV	S12	4.2236	40.8441	4.0436	3.9995	4.1282	81.6758	2/28/2012@8:24:59 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0023	0.0639	0.0081	0.0044	0.0016	0.1793	2/28/2012@8:42:06 PM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-39188-A-5-A	11	-0.0094	1.4734	0.8948	0.4639	0.0225	6.5126	2/28/2012@8:59:12 PM
360-39188-A-6-A	12	-0.0015	4.1433	0.9028	0.4981	0.0159	5.5280	2/28/2012@9:16:18 PM
360-39188-A-7-A	13	6.7119e-4	3.7389	0.9253	1.2985	-0.0049	8.2219	2/28/2012@9:33:24 PM
360-39188-A-8-A	14	0.0088	1.9032	0.9179	0.5052	0.0279	5.5264	2/28/2012@9:50:30 PM
360-39188-A-9-A	15	0.0047	6.5251	0.9658	0.5865	0.0016	7.9112	2/28/2012@10:07:35 PM
360-39188-A-10-A	16	0.0023	1.5288	0.9135	0.4572	0.0189	6.6160	2/28/2012@10:24:43 PM
360-39188-A-11-A	17	0.0024	0.3674	0.9458	0.0112	0.0149	0.3502	2/28/2012@10:41:50 PM
360-39298-A-3@100 matrix	18	0.1121	84.7718	0.0165	0.0042	0.0016	94.6535	2/28/2012@10:58:57 PM
360-39274-D-1	19	0.5462	57.3480	0.2404	5.4210	-130.8102	52.1749	2/28/2012@11:16:04 PM
360-39274-D-1@10	20	0.0608	50.4651	0.0370	0.5873	0.0016	5.3515	2/28/2012@11:33:11 PM
CCV	S12	4.3685	40.9312	4.0645	4.0428	4.1446	82.0804	2/28/2012@11:50:18 PM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	

CCB	S11	0.0023	0.0635	0.0081	0.0019	0.0012	0.1694	2/29/2012@12:07:25 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MB	S11	0.0024	0.0615	0.0082	0.0044	0.0014	0.1794	2/29/2012@12:24:31 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LCS	S12	4.2013	40.8858	4.0511	4.0019	4.1464	81.8197	2/29/2012@12:41:39 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
360-39274-D-2	21	0.1098	-93.0155	0.2995	1.2795	6.4420	21.1656	2/29/2012@12:58:45 AM
360-39274-D-2@10	22	0.0155	15.7381	0.0357	0.1222	0.0016	2.1778	2/29/2012@1:15:52 AM
360-39274-D-2@10 MS	22	0.0023	15.7583	0.0359	0.1238	0.0016	2.1778	2/29/2012@1:32:59 AM
360-39274-D-2@10 MSD	23	1.0258	26.6187	1.0444	1.1357	1.0278	22.9944	2/29/2012@1:50:06 AM
360-39278-A-9	24	0.5329	-79.4644	0.0951	0.4296	6.8598	48.2282	2/29/2012@2:07:13 AM
360-39278-A-10	25	0.0025	44.5208	0.7193	1.3597	0.0016	17.9146	2/29/2012@2:24:19 AM
360-39278-A-11	26	0.0288	53.3499	0.5257	1.1887	0.0016	16.0335	2/29/2012@2:41:25 AM
360-39278-A-12	27	0.1246	73.6275	0.1476	0.0413	-83.1260	7.7865	2/29/2012@2:58:31 AM
360-39274-D-3	28	2.7444e-4	5.1979	0.0962	1.6380	-0.0246	3.8539	2/29/2012@3:15:37 AM
360-39274-D-3@10	29	0.0022	0.6042	0.0160	0.1576	5.9765e-4	0.5775	2/29/2012@3:32:42 AM
CCV	S12	4.2128	40.9399	4.0606	4.0139	4.1384	82.0720	2/29/2012@3:49:49 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0030	0.0640	0.0081	0.0043	0.0018	0.1809	2/29/2012@4:06:56 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
360-39304-C-1@20 Cl	30	0.0023	11.7076	0.0081	0.1690	0.0016	0.9918	2/29/2012@4:24:02 AM
360-39305-B-1@20 Cl	31	0.0012	6.3592	0.0081	0.1040	-0.0340	1.3250	2/29/2012@4:41:09 AM
360-39306-B-1@20 Cl	32	0.0020	11.3510	0.0056	0.0157	0.0016	1.1002	2/29/2012@4:58:16 AM
360-39306-B-2@20 Cl	33	0.0026	11.7105	0.0081	0.0159	0.0016	1.1146	2/29/2012@5:15:23 AM
360-39228-D-1@10 Cl	34	0.0175	18.0892	0.0037	0.0732	0.0016	4.0107	2/29/2012@5:32:30 AM
360-39228-D-2@10 Cl	35	0.0026	19.2514	0.0082	0.6815	0.0016	4.8642	2/29/2012@5:49:37 AM
360-39303-C-1	36	0.0026	10.9333	0.1525	0.0368	0.0016	9.7056	2/29/2012@6:06:44 AM
360-39303-C-1@10	37	0.0025	1.0045	0.0211	0.0087	0.0016	1.1402	2/29/2012@6:23:51 AM
CCV	S12	4.2730	41.0296	4.0547	4.0355	4.1527	82.2014	2/29/2012@6:40:57 AM
	Known Conc:	4.0000	40.0000	4.0000	4.0000	4.0000	80.0000	
CCB	S11	0.0032	-0.0153	0.0082	0.0042	0.0017	0.1893	2/29/2012@6:58:04 AM
	Known Conc:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

LABORATORY CHRONICLE - TestAmerica WESTFIELD

CLIENT: Tetra Tech

Report No: 360-39278

Project:

Date Sampled: 2/24

Date Received: 2/25

GENERAL CHEMISTRY

Sample No.	Preserv.	Relinquised by	Received by	Date/Time	Reason for change
1	none	UA	ams	2/27/12 0900	taken for analysis
2	none	UA	ams		
3	none	UA	AMS		
4	none	UA	AMS		
5	none	UA	AMS		
6	none	UA	AMS		
7	none	UA	AMS		
8	none	UA	AMS		
9	none	UA	AMS		
10	none	UA	AMS		
11	none	UA	AMS		
12	none	UA	AMS		
1-12	none	AMS	UA	2/27/12 1430	returned to walkin
9-12	none	Ua	AMS	2/28/12 1600	taken for re-analysis
9-12	none	AMS	Ua	2/28/12 1630	returned to walkin

Extractions:

Metals ______

Cyanide ______

Misc. ______

Analysis:

Metals: ______

Cyanide ______

Mics.

cnfr\interncoc.xls

W-SR-010

0.25 *M* Sulfuric Acid Creation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Record the information below for creating the acid. When an entry is made do not use arrows to fill in information. All entries must be complete.

Recipe: to 2958mL of deionized water in a 1 gallon jug add 42mL of concentrated H_2SO_4 for a total volume of 3L.

Date Made	Analyst's Initials	Volume of 0.25 *M* Acid Made (L)	Source: Concentrated Sulfuric Acid (ACS grade) Manufacturer & Lot Number
2/28/12	AMG	3	Baker E49039

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Eluent Preparation Log

TestAmerica ~ 53 Southampton Rd ~ Westfield MA 01085

Prepare fresh daily; makes 3L of eluent. To make: in a one-gallon plastic container, mix:

- 60.0 mL of 100*M* $NaHCO_3$;
- 78.0 mL of 100*M* Na_2CO_3; and
- 2862 mL of deionized water.

Degas with helium for 3min before use.

Date Prepared	Analyst's Initials	Lot # 100*M* $NaHCO_3$	Lot # 100*M* Na_2CO_3	Number of Portions Prepared
1-25-12	AMS	W12A RGT010	W12A RGT003	1
1-27-12	AMS	↓	↓	1
2-1-12	AMS	↓	↓	1
2/2/12	AMS	↓	↓	1
2/4/12	AMS	↓	↓	1
2-9-12	AMS	↓	W12BRGT003	1
2-14-12	AMS	↓	↓	1
2/15/12	AMS	↓	↓	1
2/17/12	AMS	↓	↓	1
2/21/12	AMS	↓	↓	1
2/22/12	AMS	↓	↓	2
2/24/12	AMS	W12BRGT 010	W12BRGT 009	1
2/27/12	AMS	↓	↓	1
2/28/12	AMS	↓	↓	1

✓ fw 2-13-12

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Ion Chromatography QC Source Data Sheet—Inorganics Dept

Method (circle methods): IC 300_28D   IC 300_48HR   IC 9056_28D   IC 9056_48HR

Date of Analytical Run: 2/28/12   Analyst's Initials: AMS

Working Curve Standard:

Manufacturer & Lot Number for Source Standard	Working Curve Standards Prepared On
Inorganic Ventures Lot E2-MEB394034	15 February 2012

QC Standard True Values for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.50	25.0	2.50	2.50	2.50	50.0
ICB	0	0	0	0	0	0
MB	0	0	0	0	0	0
LCS/LCSD	4.00	40.0	4.00	4.00	4.00	80.0
MS/MSD	1.00	10.0	1.00	1.00	1.00	20.0

QC Standard Acceptable Recovery Ranges for IC (mg/L):

QC Type	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
ICV	2.25-2.75	22.5-27.5	2.25-2.75	2.25-2.75	2.25-2.75	45.0-55.0
ICB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
MB	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL	Must be <RL
LCS/LCSD	3.40-4.60	34.0-46.0	3.40-4.60	3.40-4.60	3.40-4.60	68.0-92.0
MS/MSD	0.75-1.25	7.50-12.5	0.75-1.25	0.75-1.25	0.75-1.25	15.0-25.0

Current Method RLs (mg/L):

	Fluoride	Chloride	Nitrite	Bromide	Nitrate	Sulfate
	0.10	1.00	0.010	0.10	0.050	2.0

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-87603 | Analyst: Stewart, Alyse M | Batch Open: 2/20/2012 12:36:58PM

Method Code: 360-DI_LEACH-360 | Batch End:

2nd level rev
TZ 2012

Deionized Water Leaching Procedure

	Input Sample Lab ID (Analytical Method)	SDG	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~360-87603/1 N/A	N/A		250 g	250 mL	N/A	N/A	N/A		MB 360-87603/1-A
2	LCS~360-87603/2 N/A	N/A		250 g	250 mL	N/A	N/A	N/A		LCS 360-87603/2-A
3	360-39188-A-1 (300.0_28D)	N/A	Filter	250 g	250 mL	3/1/12	9_Days - R	1		360-39188-A-1-A
4	360-39188-A-2 (300.0_28D)	N/A	Filter	250 g	250 mL	3/1/12	9_Days - R	1		360-39188-A-2-A
5	360-39188-A-3 (300.0_28D)	N/A	Filter	250 g	250 mL	3/1/12	9_Days - R	1		360-39188-A-3-A
6	360-39188-A-4 (300.0_28D)	N/A	Filter	250 g	250 mL	3/1/12	9_Days - R	1		360-39188-A-4-A
7	360-39188-A-5 (300.0_28D)	N/A	Filter	250 g	250 mL	3/1/12	9_Days - R	1		360-39188-A-5-A
8	360-39188-A-6 (300.0_28D)	N/A	Filter	250 g	250 mL	3/1/12	9_Days - R	1		360-39188-A-6-A
9	360-39188-A-7 (300.0_28D)	N/A	Filter	250 g	250 mL	3/1/12	9_Days - R	1		360-39188-A-7-A
10	360-39188-A-8 (300.0_28D)	N/A	Filter	250 g	250 mL	3/1/12	9_Days - R	1		360-39188-A-8-A
11	360-39188-A-9 (300.0_28D)	N/A	Filter	250 g	250 mL	3/1/12	9_Days - R	1		360-39188-A-9-A
12	360-39188-A-10 (300.0_28D)	N/A	Filter	250 g	250 mL	3/1/12	9_Days - R	1		360-39188-A-10-A
13	360-39188-A-11 (300.0_28D)	N/A	Filter	250 g	250 mL	3/1/12	9_Days - R	1		360-39188-A-11-A

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-87603
Analyst: Stewart, Alyse M
Batch Open: 2/20/2012 12:36:58PM

Method Code: 360-DI_LEACH-360
Batch End:

Batch Notes

Balance ID ______

Blank Soil Lot Number ______

Batch Comment ______

Comments

Metals/Inorganics Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 360-87603 | Analyst: Stewart, Alyse M | Batch Open: 2/20/2012 12:36:58PM

Method Code: 360-DI_LEACH-360 | Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
LCS 360-87603/2	W11J_IC_LCS_00004	250 mL	250 mL		

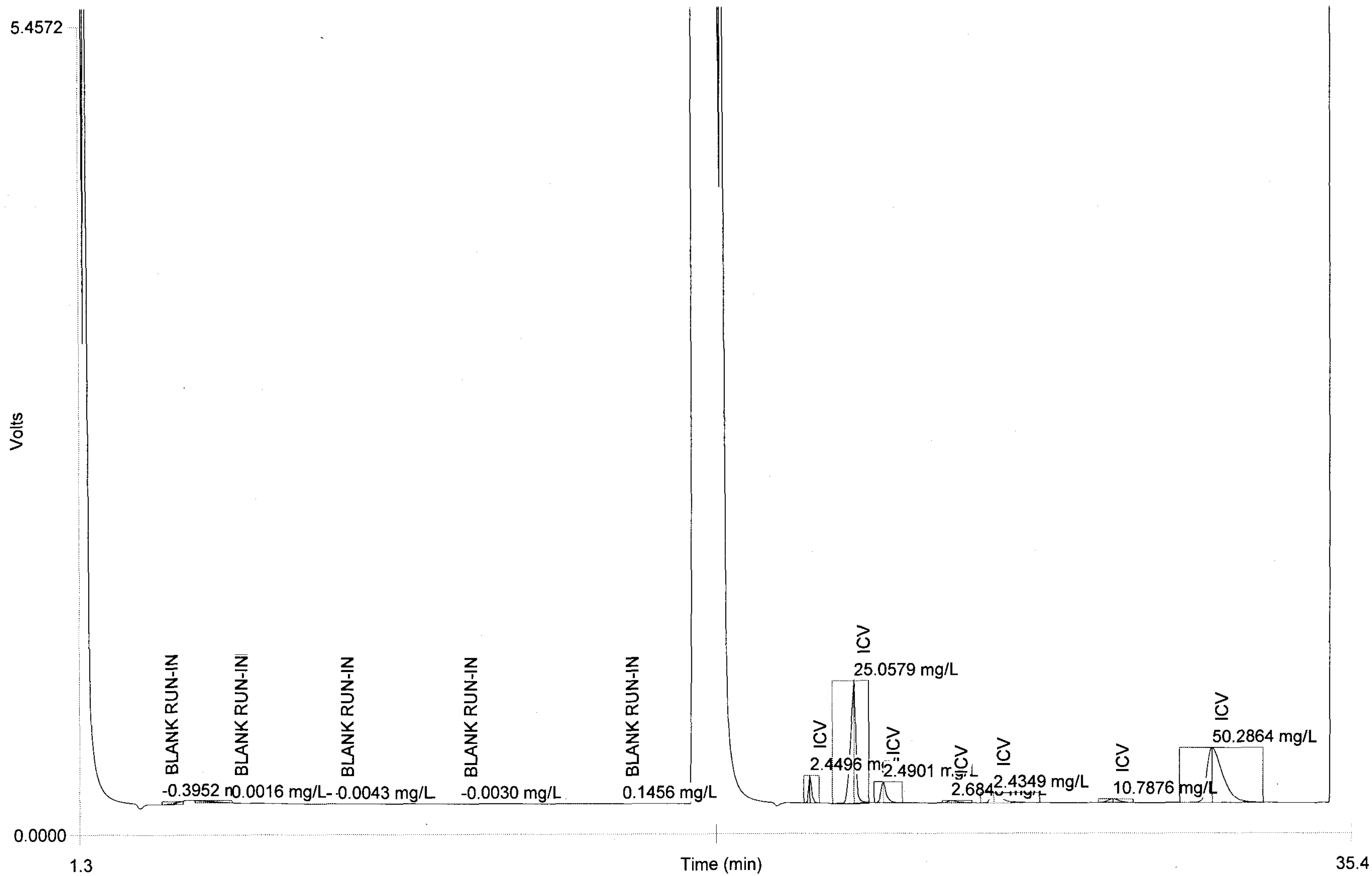
Other Reagents:

Reagent	Amount/Units	Lot#:

Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 1 of 27

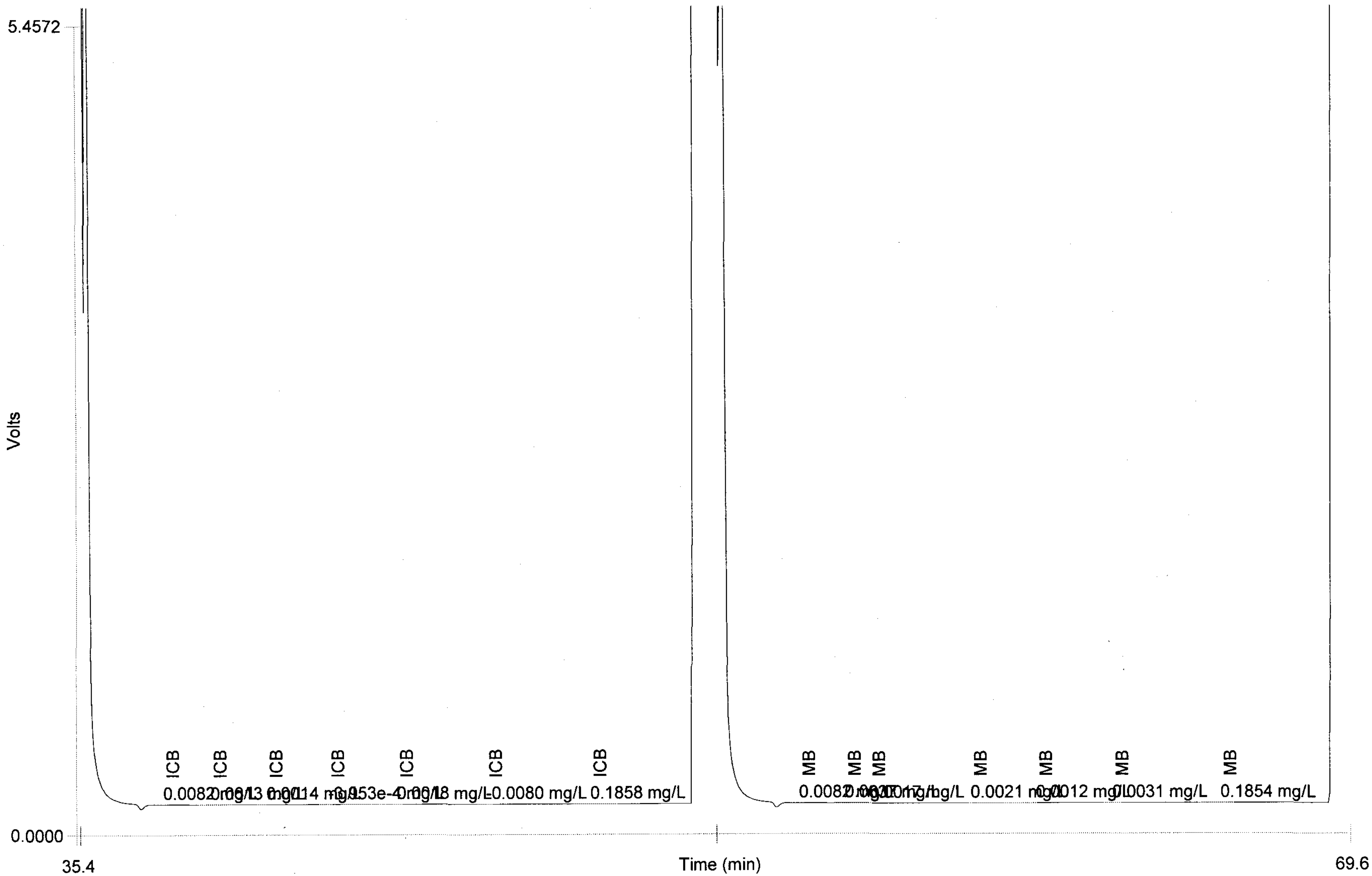


- 3 -

Author: stewarta

Date : 2/29/2012

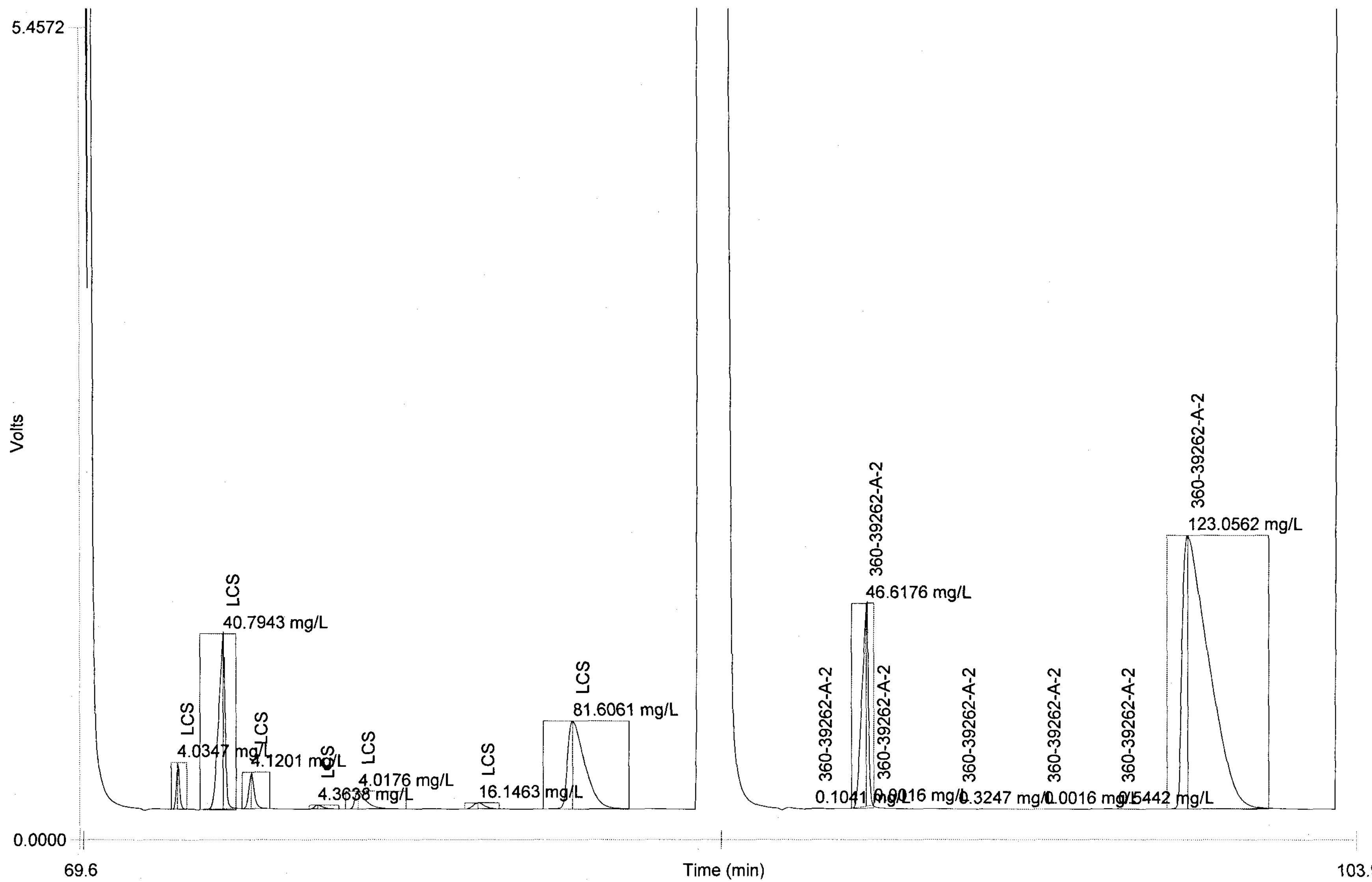
Channel 1 (Anions) : Set 2 of 27



Author: stewarta

Date : 2/29/2012

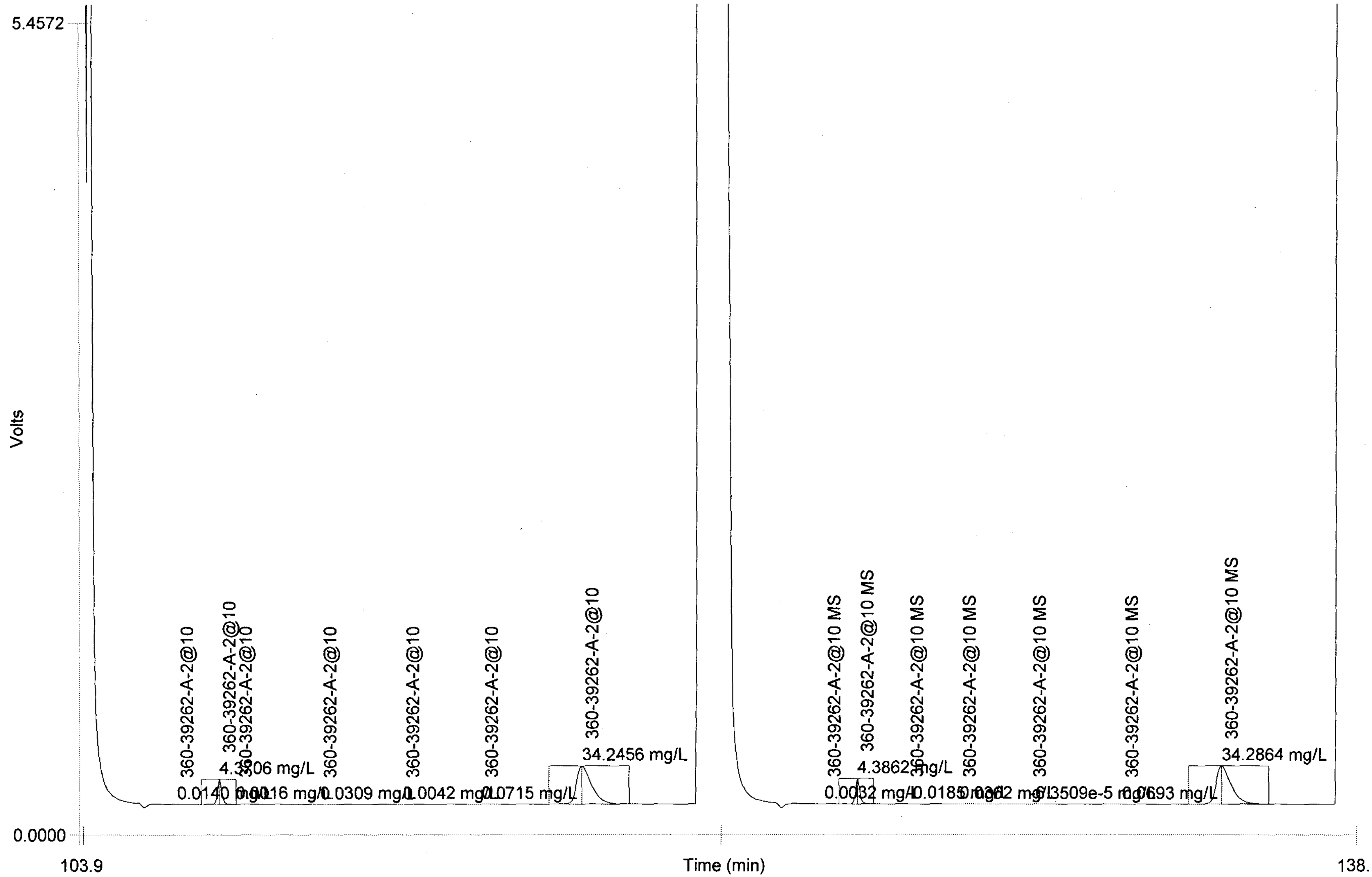
Channel 1 (Anions) : Set 3 of 27



Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 4 of 27

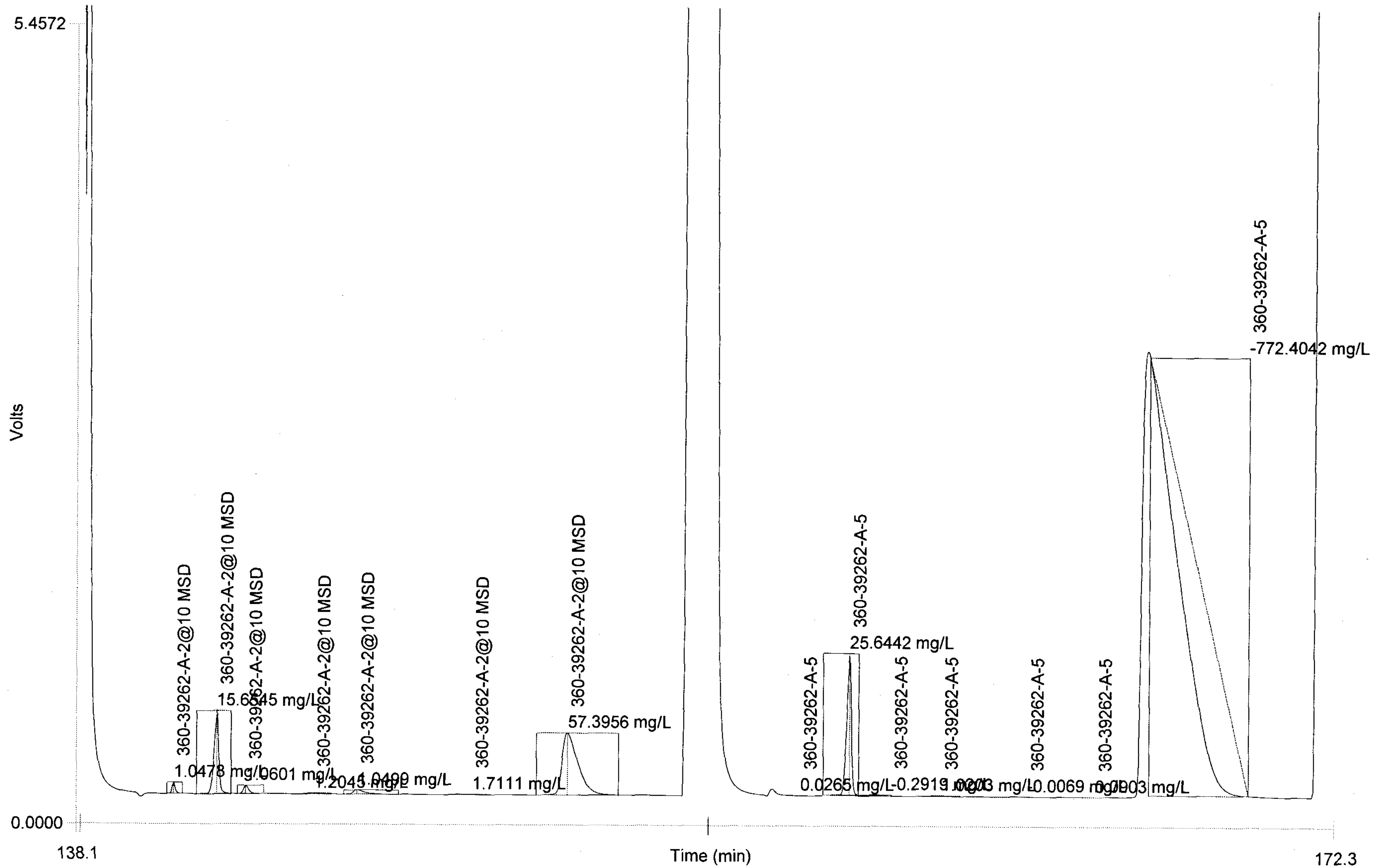


- 6 -

Author: stewarta

Date : 2/29/2012

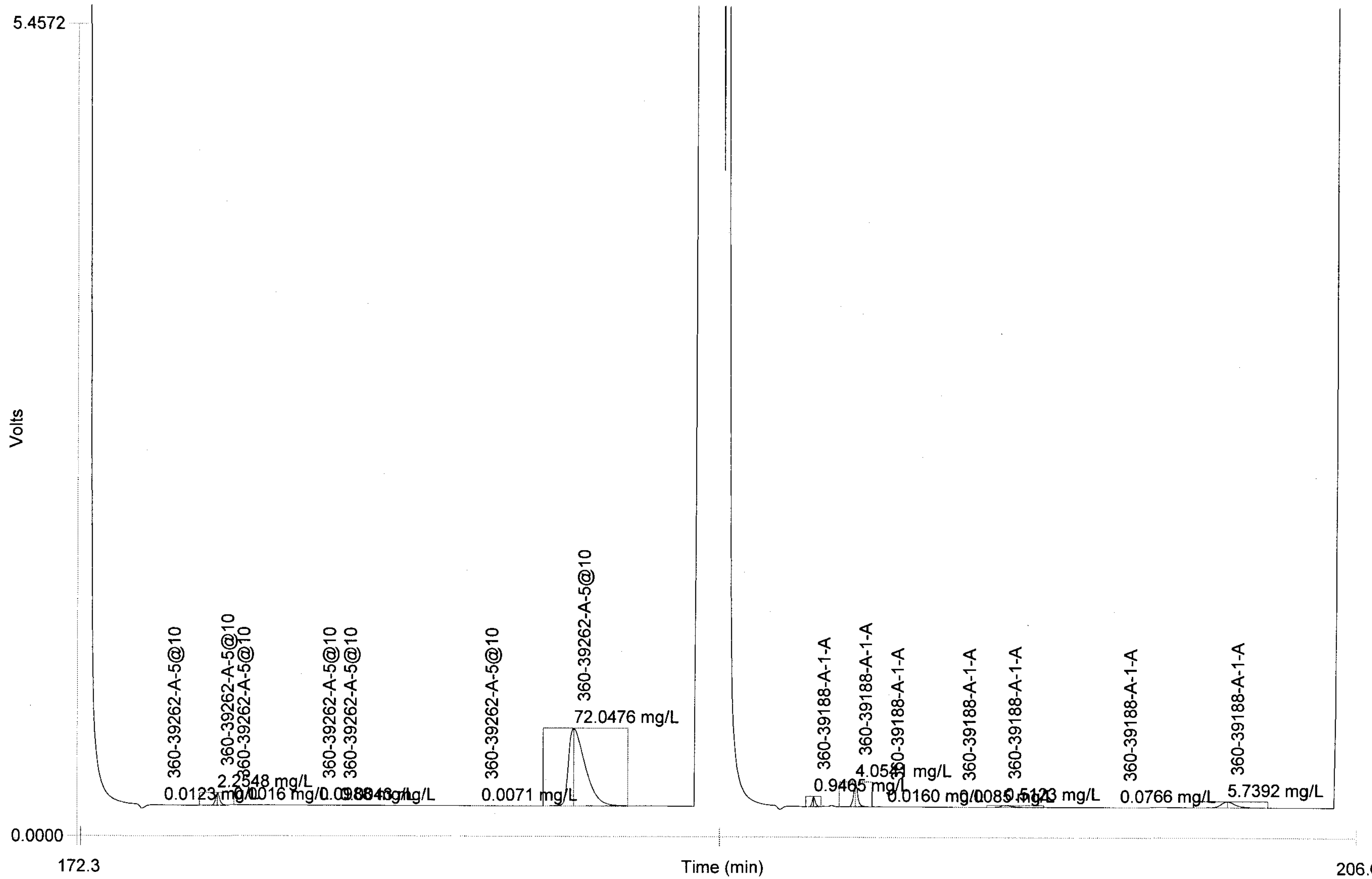
Channel 1 (Anions) : Set 5 of 27



Author: stewarta

Date : 2/29/2012

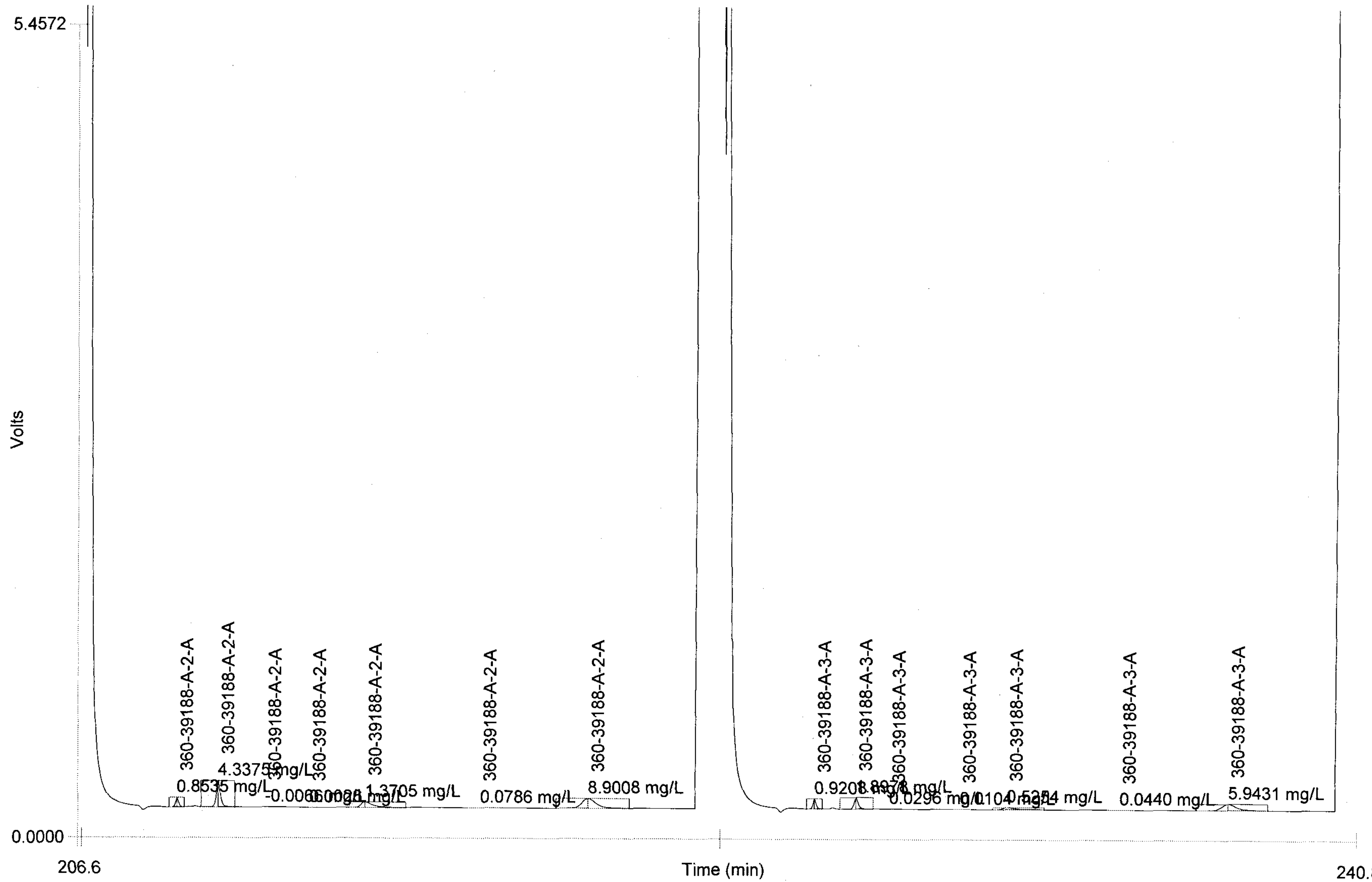
Channel 1 (Anions) : Set 6 of 27



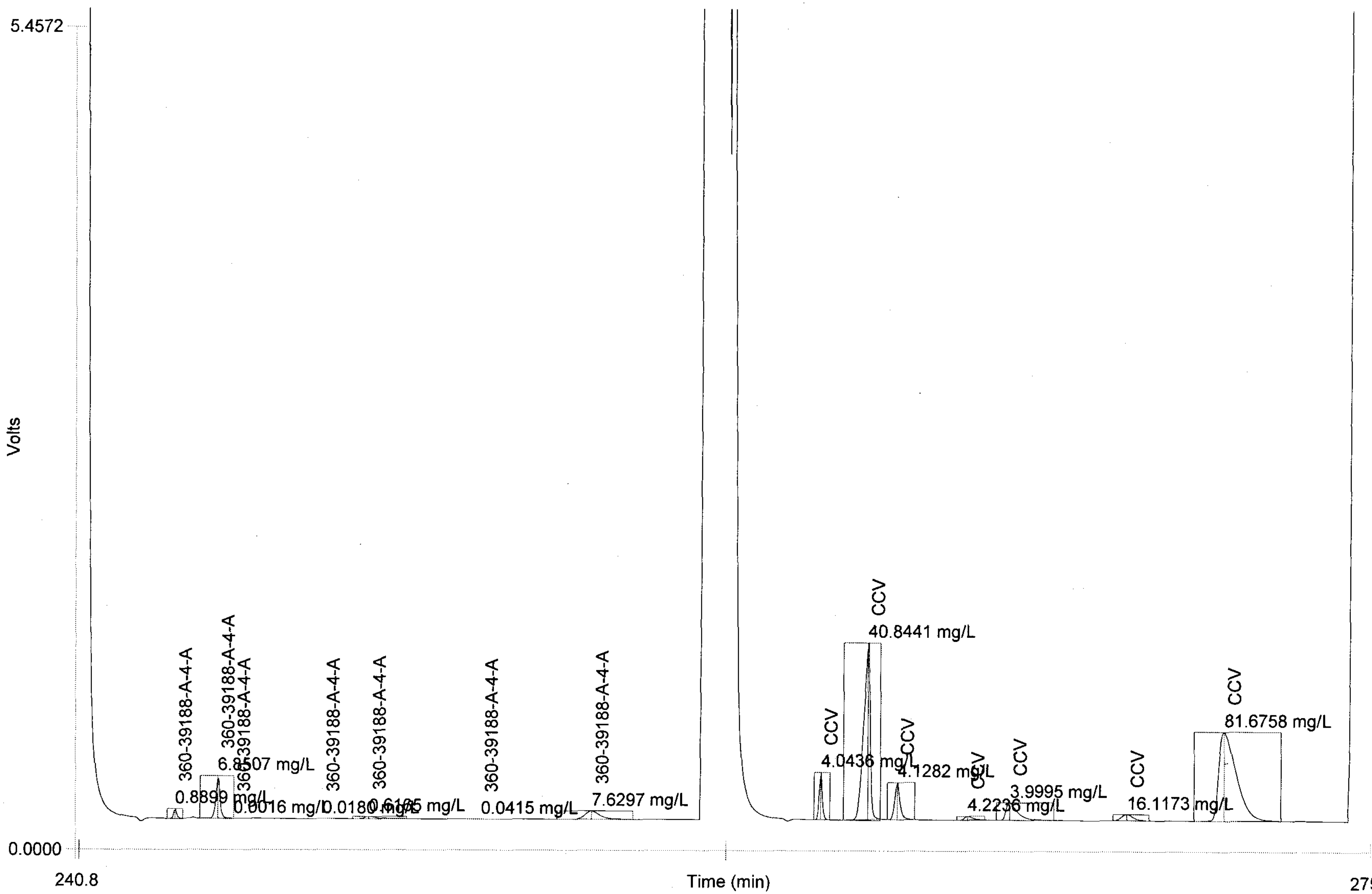
Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 7 of 27



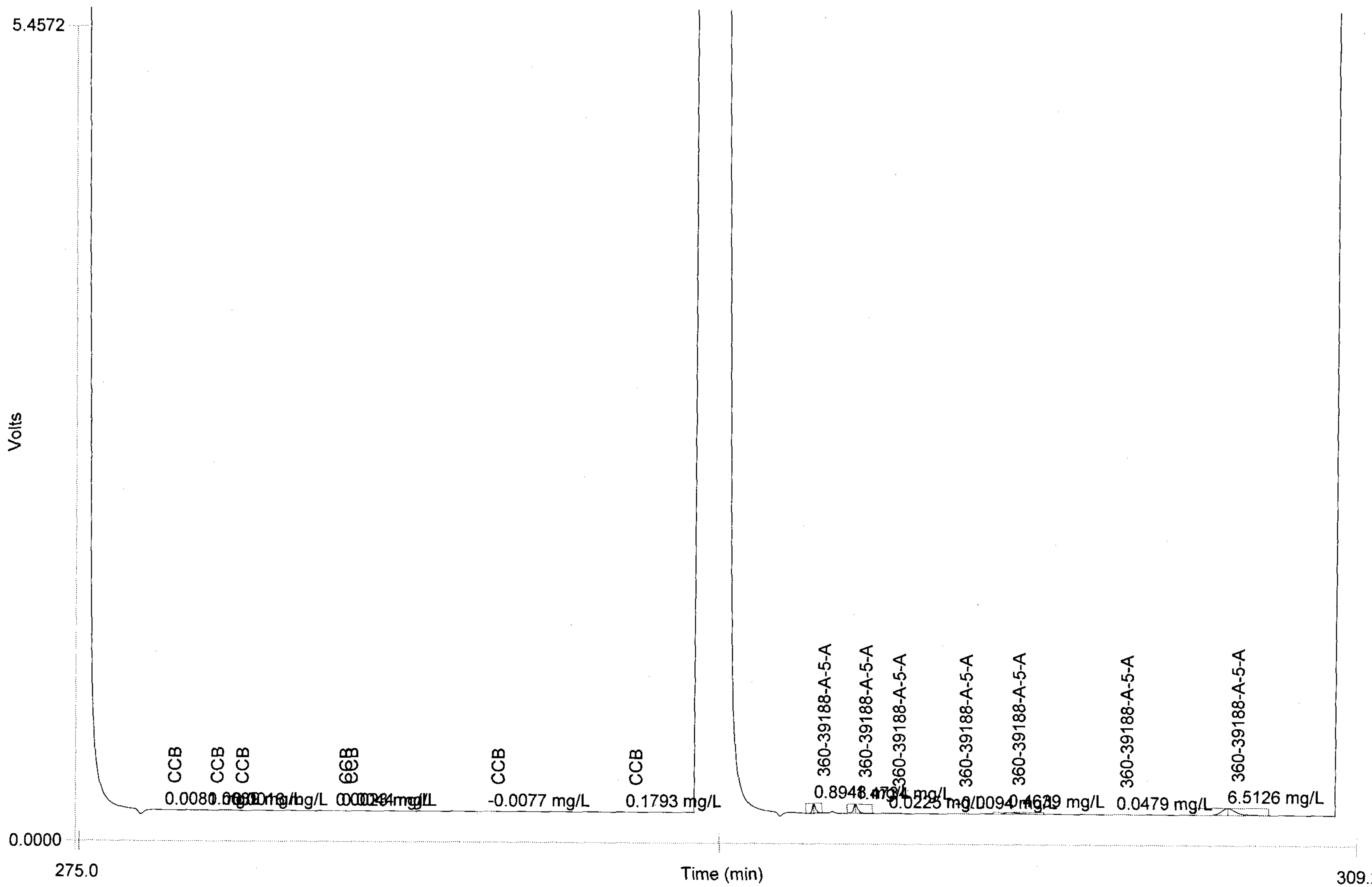
Channel 1 (Anions) : Set 8 of 27



Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 9 of 27

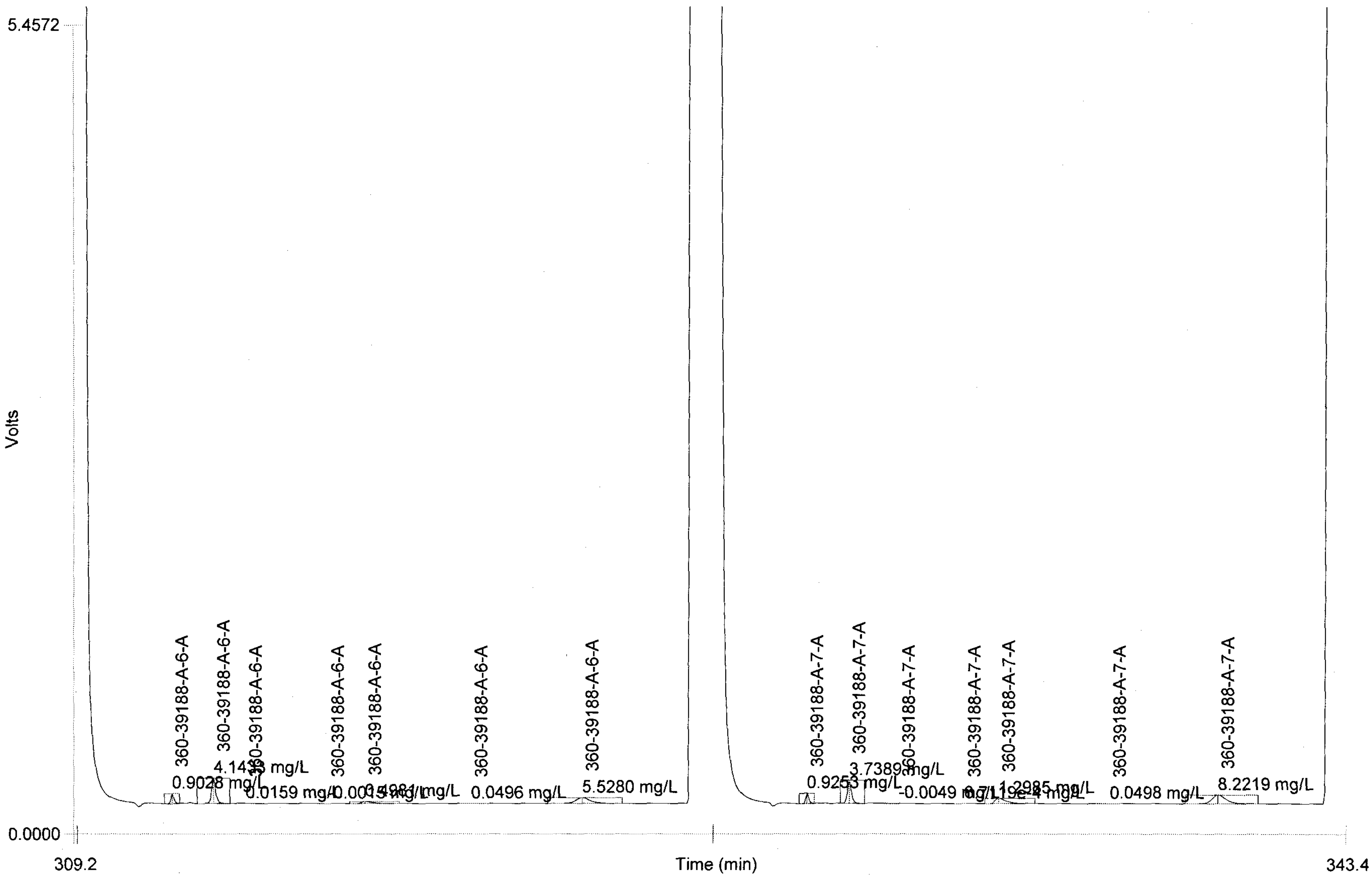


- 11 -

Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 10 of 27

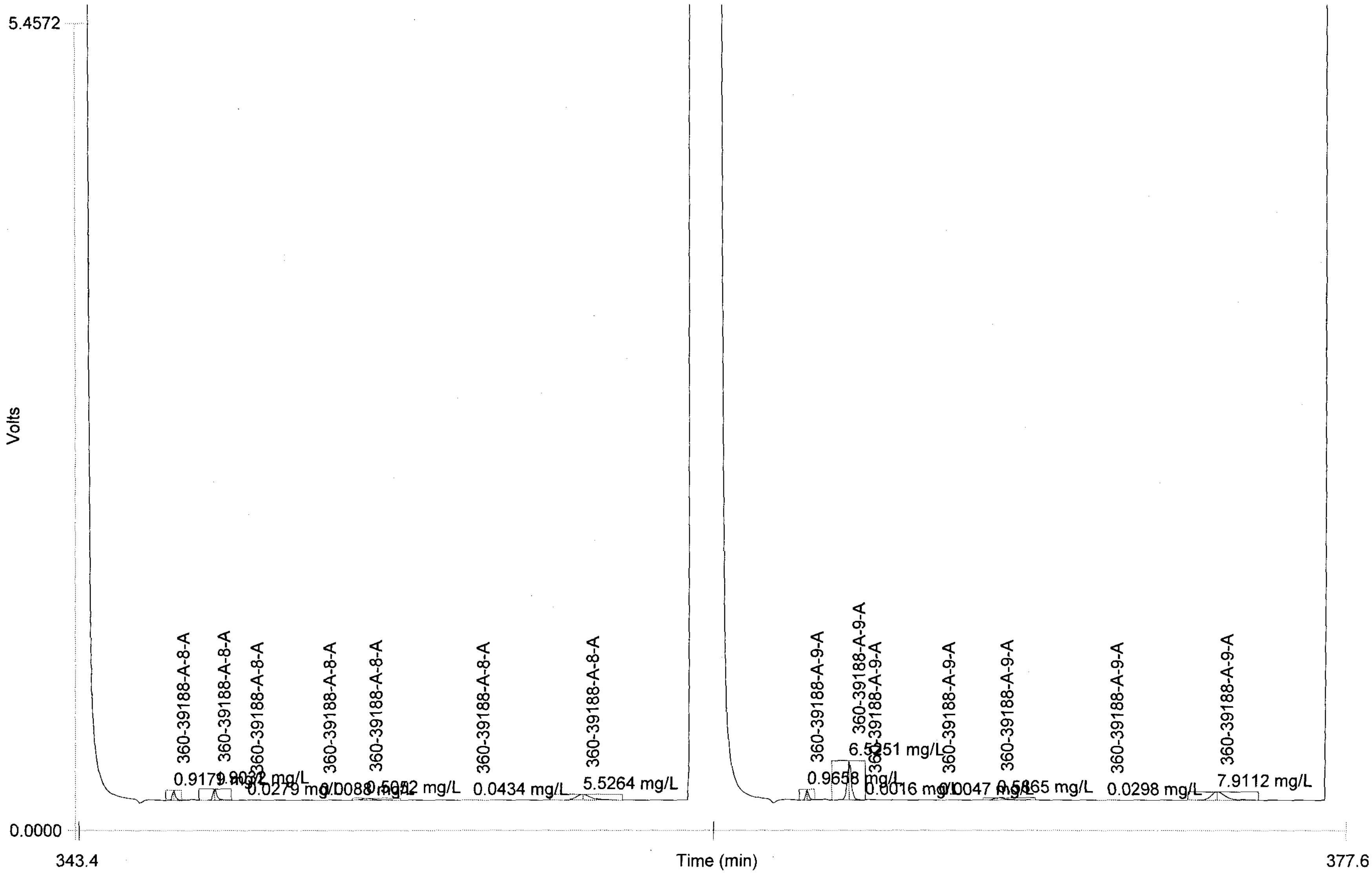


- 12 -

Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 11 of 27

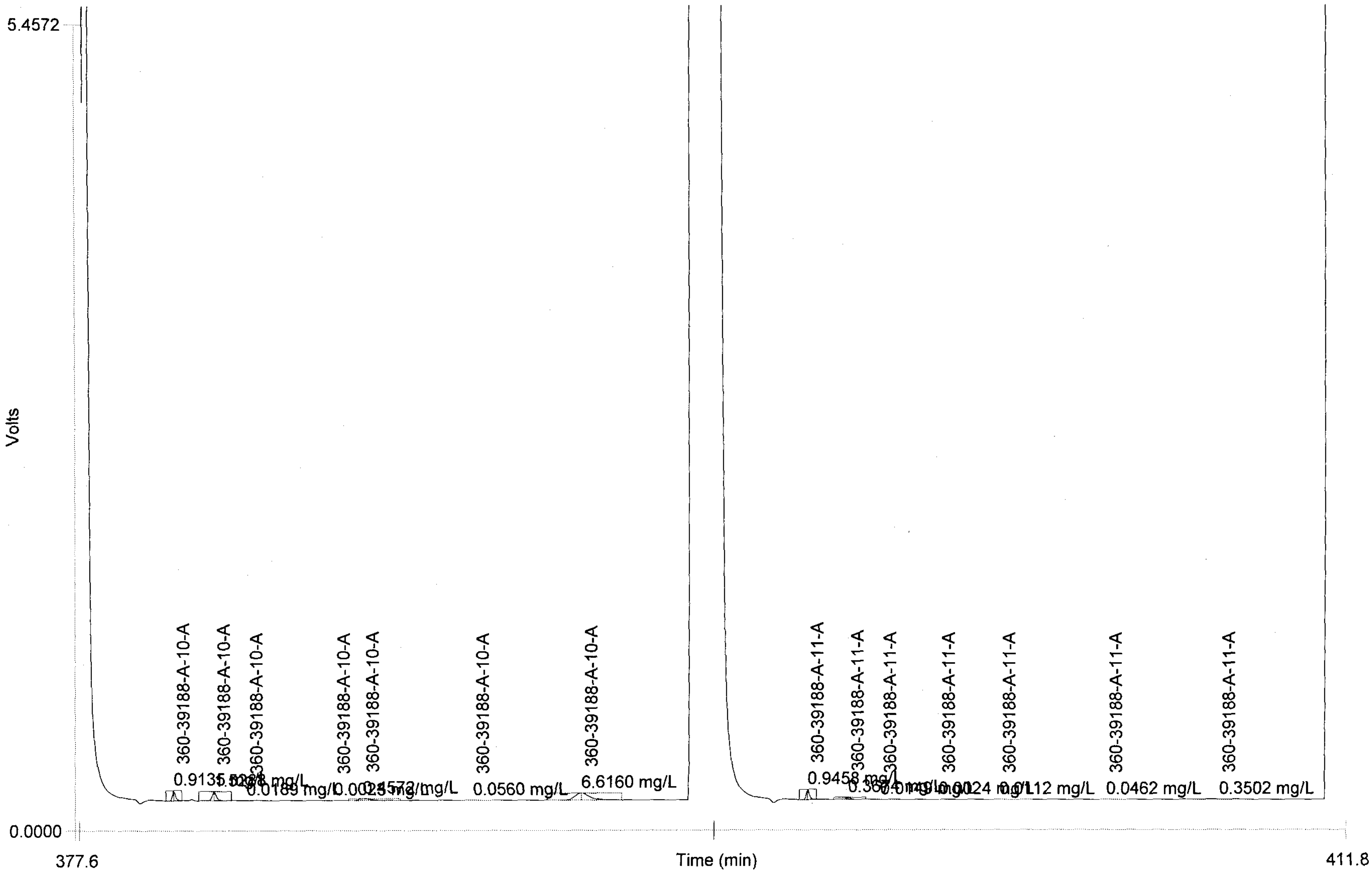


- 13 -

Author: stewarta

Date : 2/29/2012

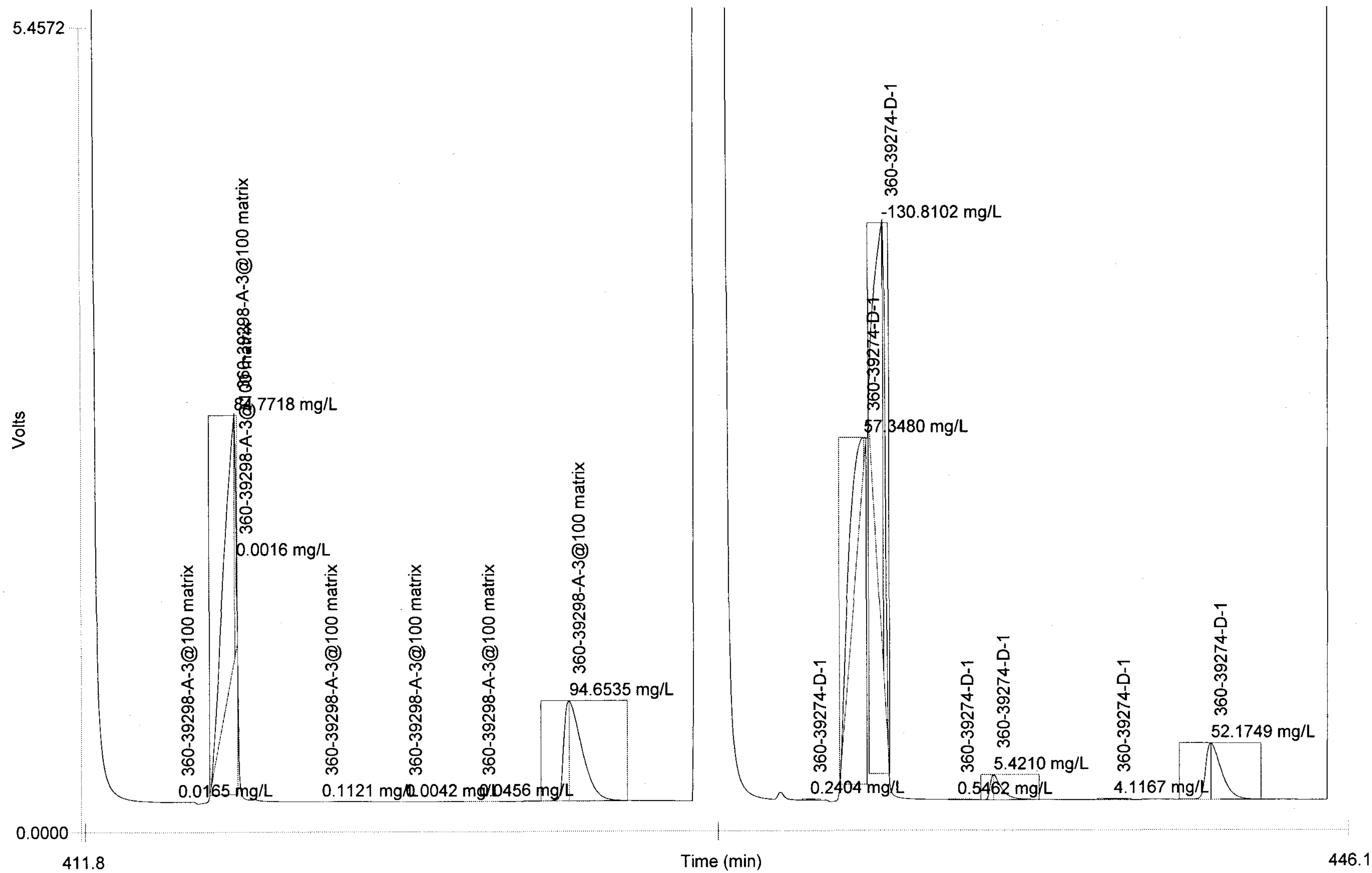
Channel 1 (Anions) : Set 12 of 27



Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 13 of 27

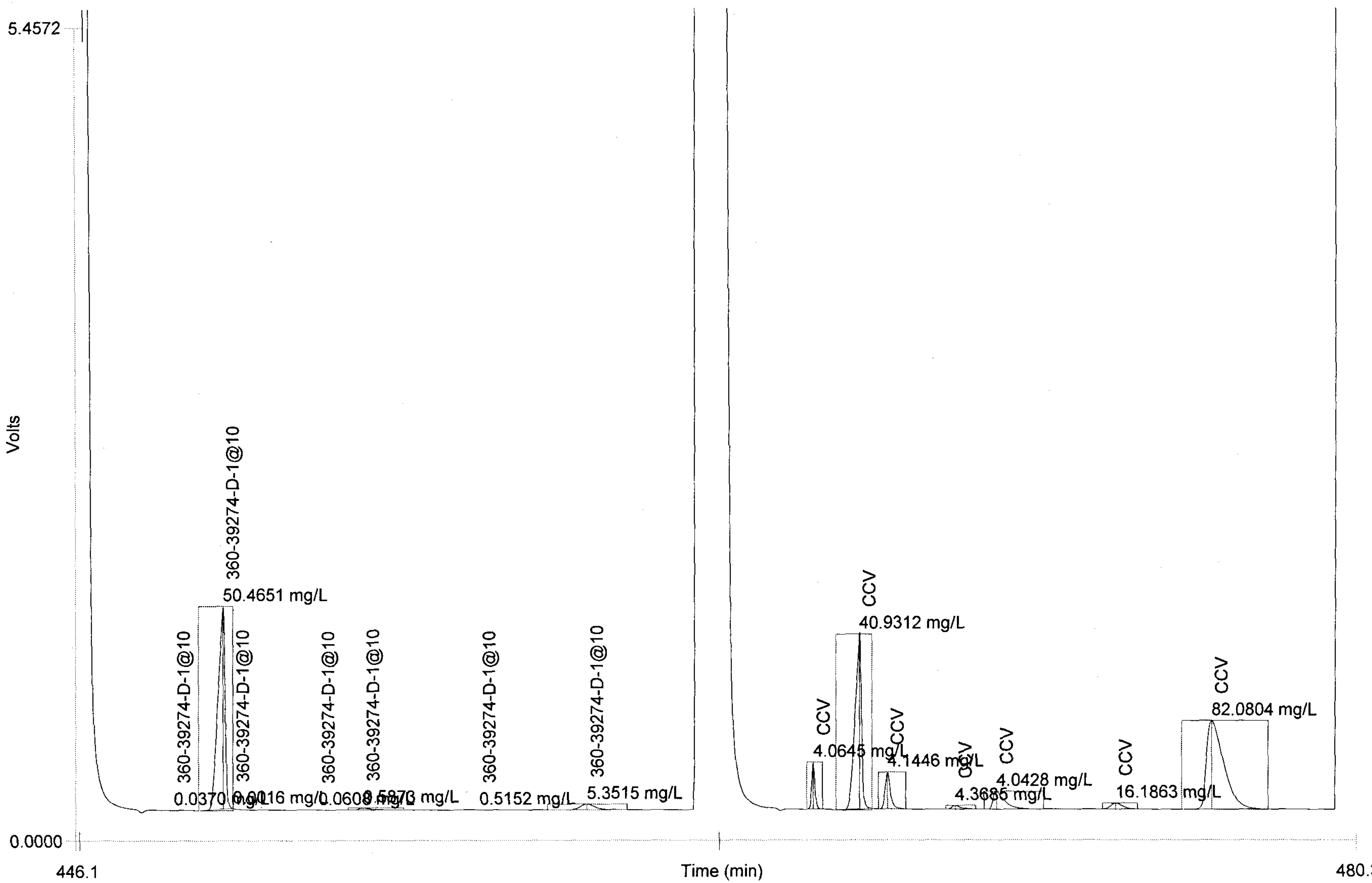


- 15 -

Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 14 of 27

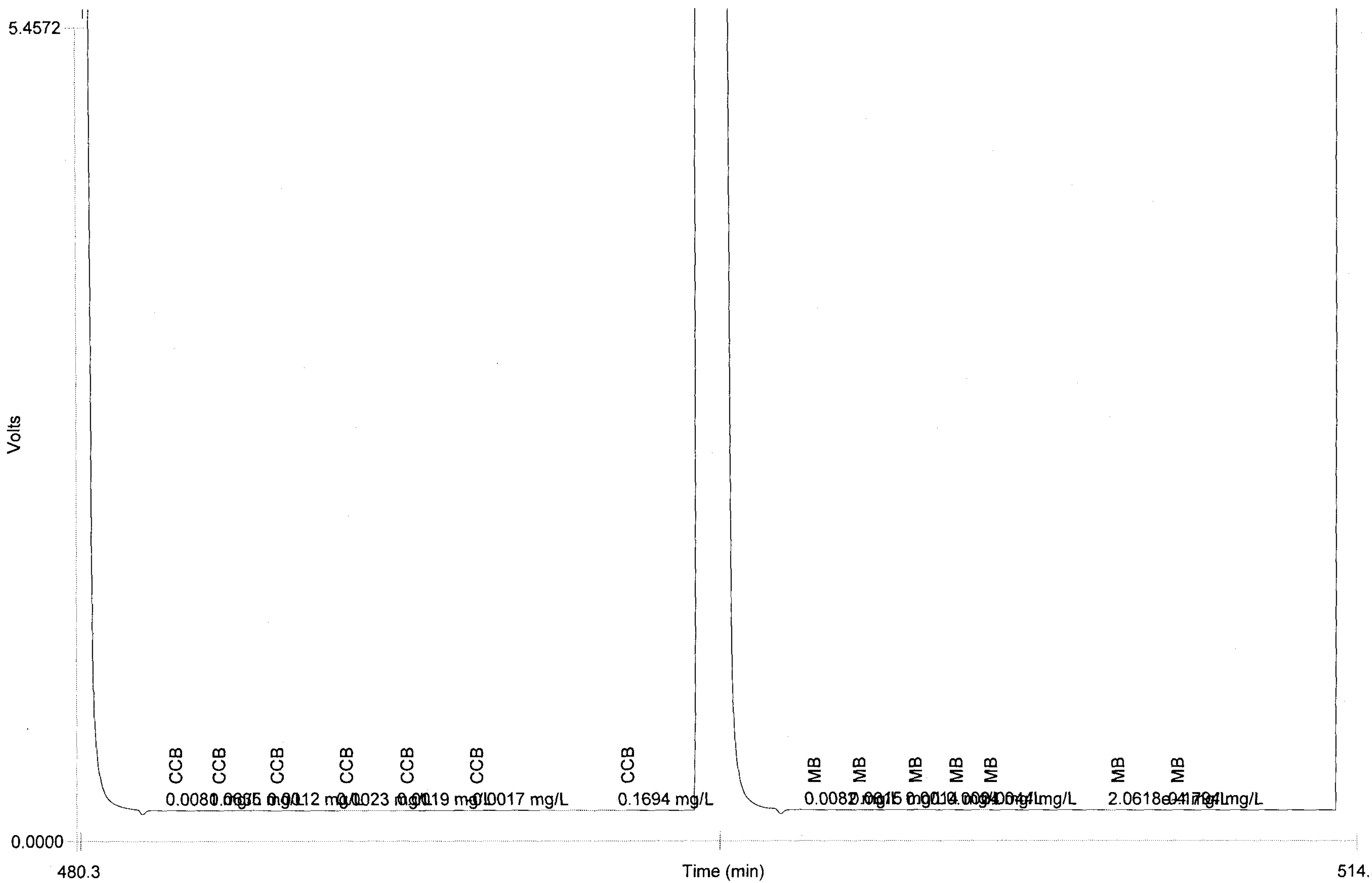


- 16 -

Author: stewarta

Date : 2/29/2012

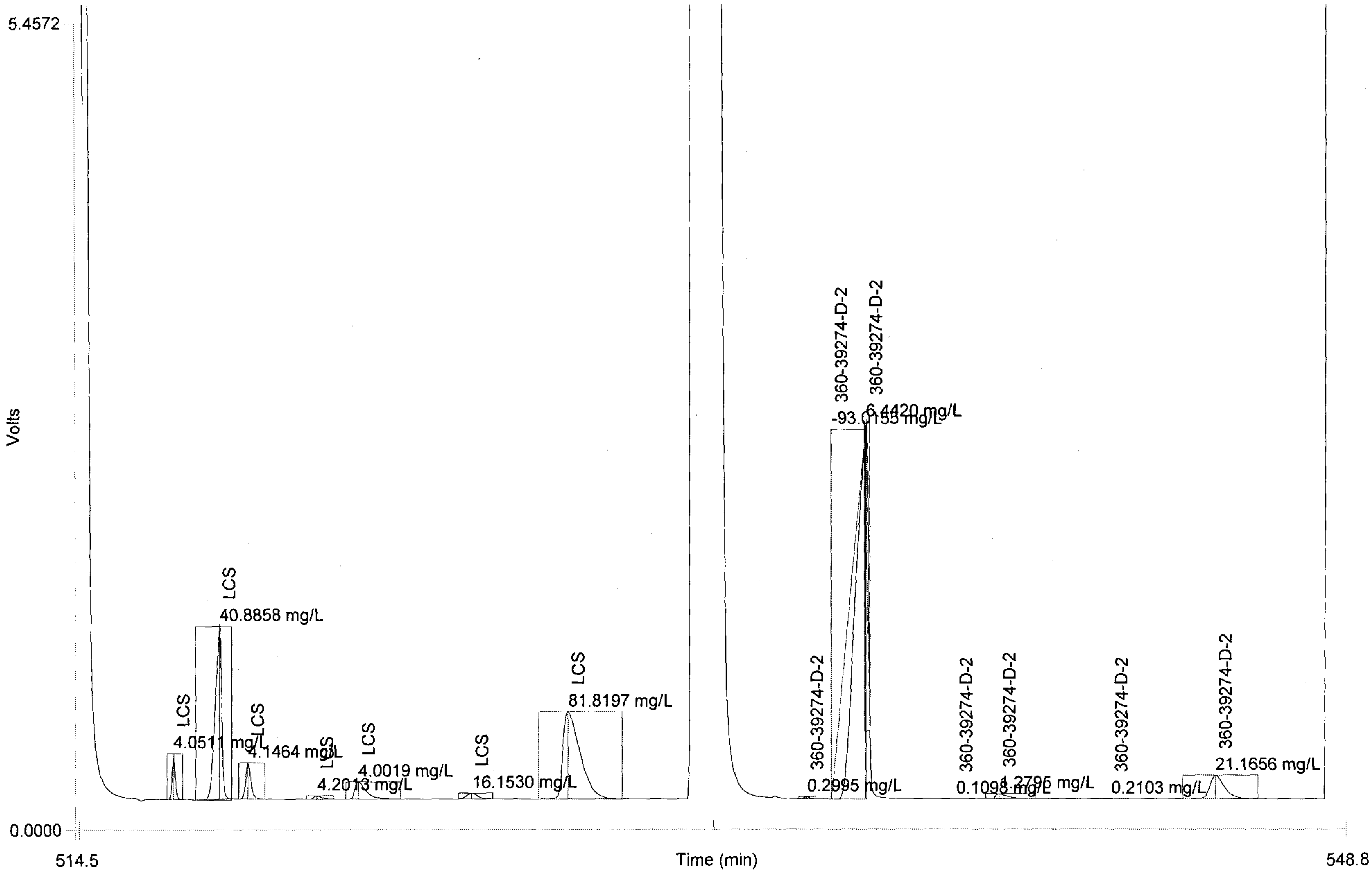
Channel 1 (Anions) : Set 15 of 27



Author: stewarta

Date : 2/29/2012

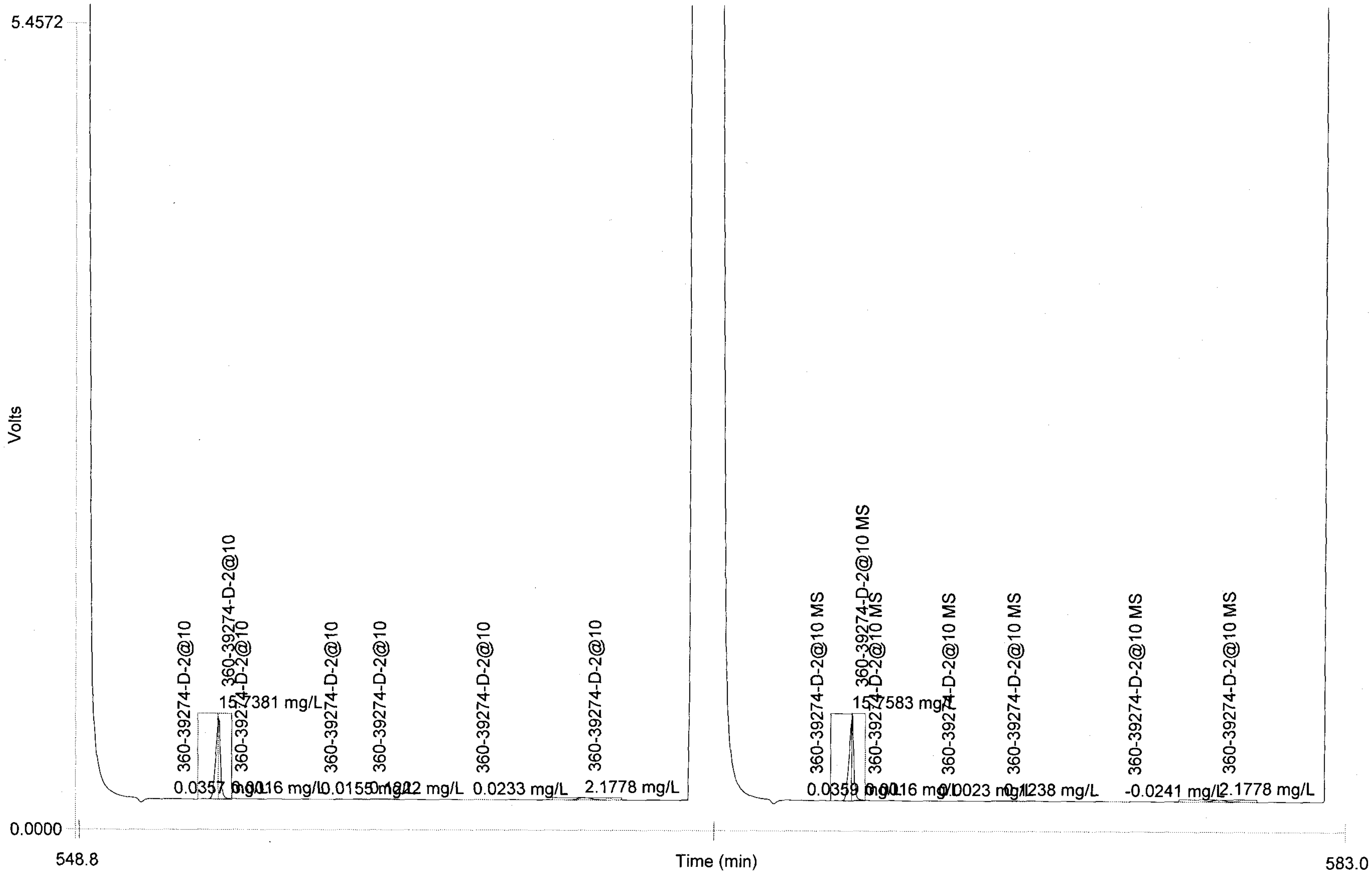
Channel 1 (Anions) : Set 16 of 27



Author: stewarta

Date : 2/29/2012

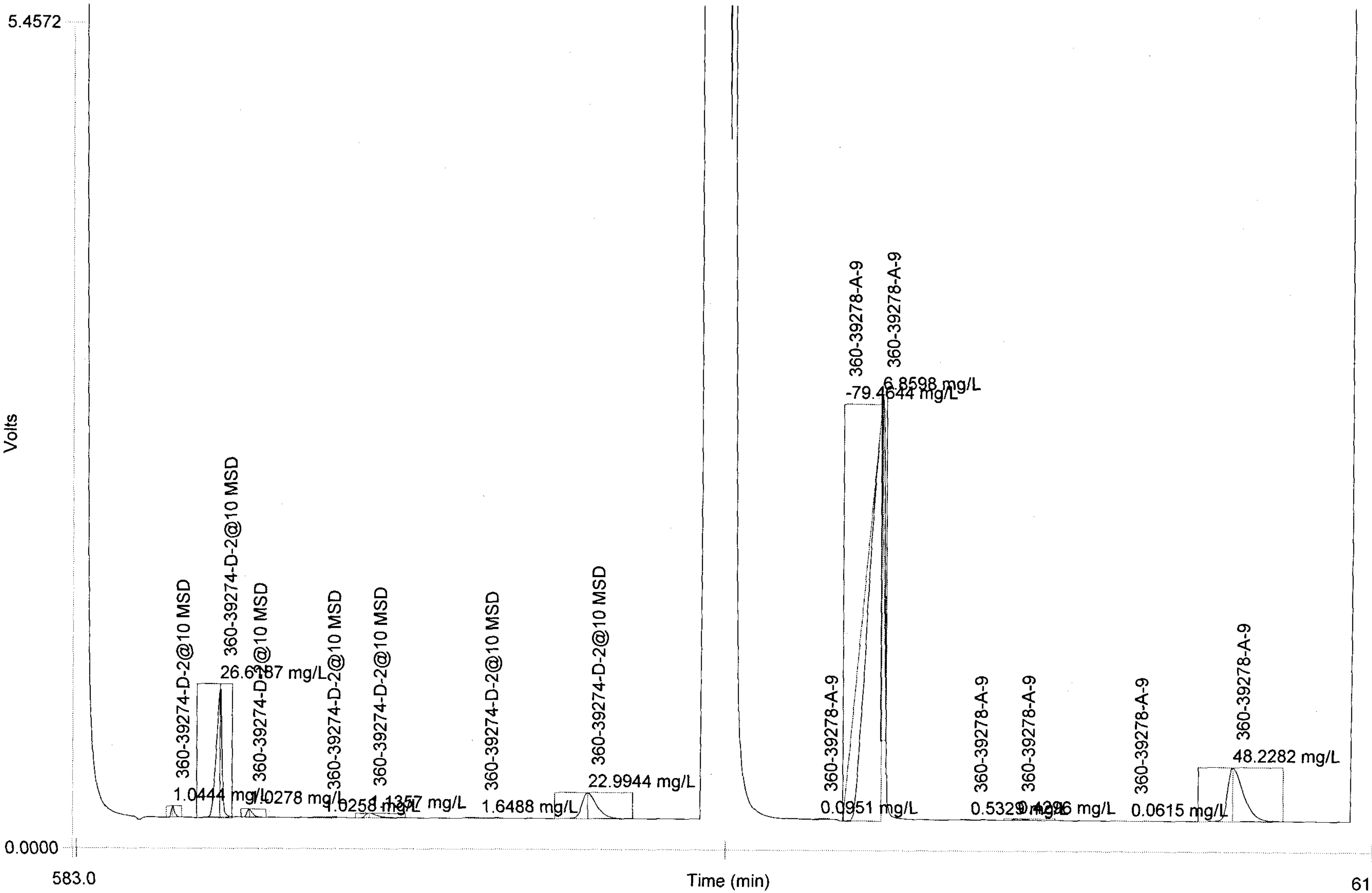
Channel 1 (Anions) : Set 17 of 27



Author: stewarta

Date : 2/29/2012

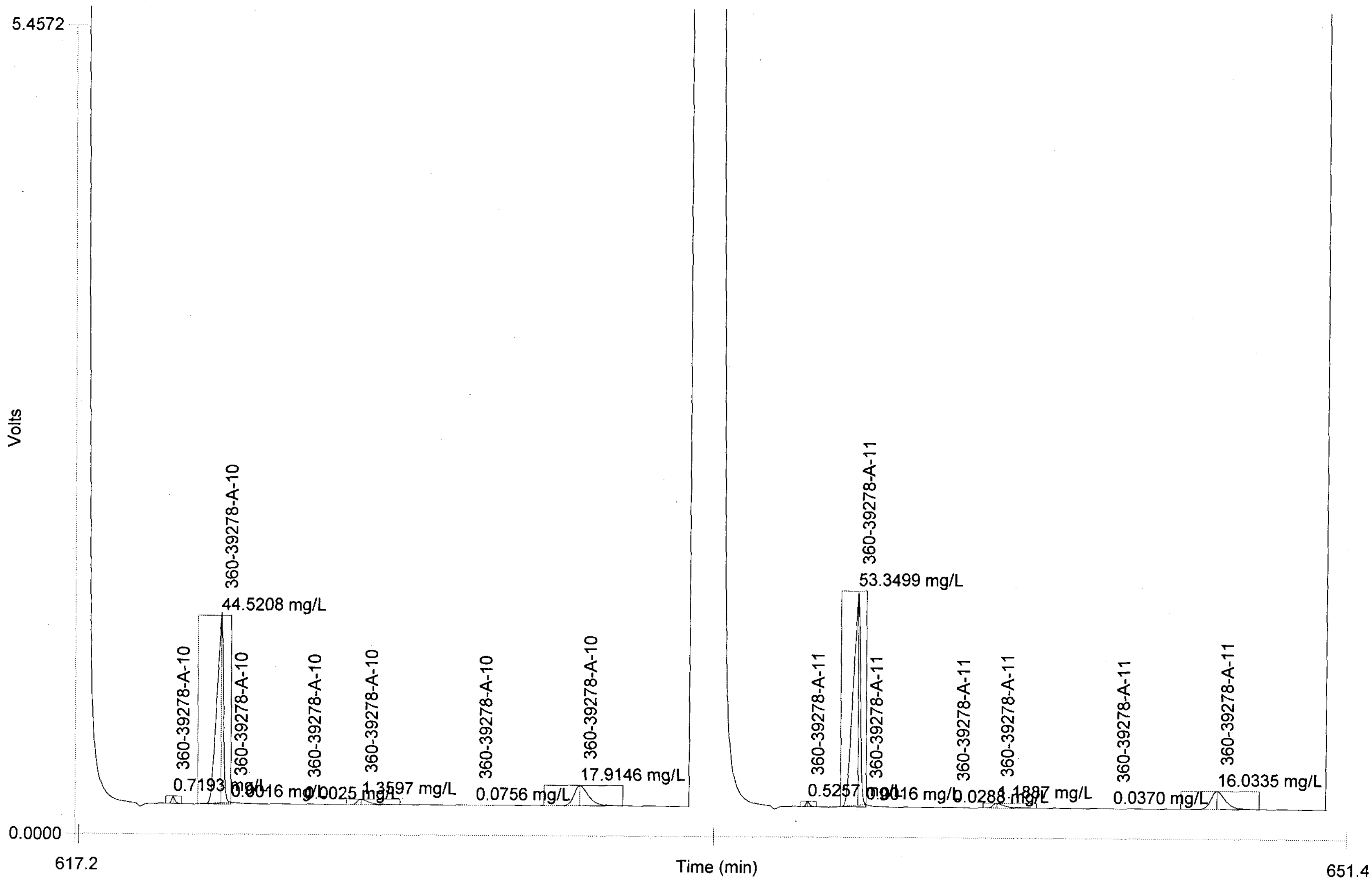
Channel 1 (Anions) : Set 18 of 27



Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 19 of 27

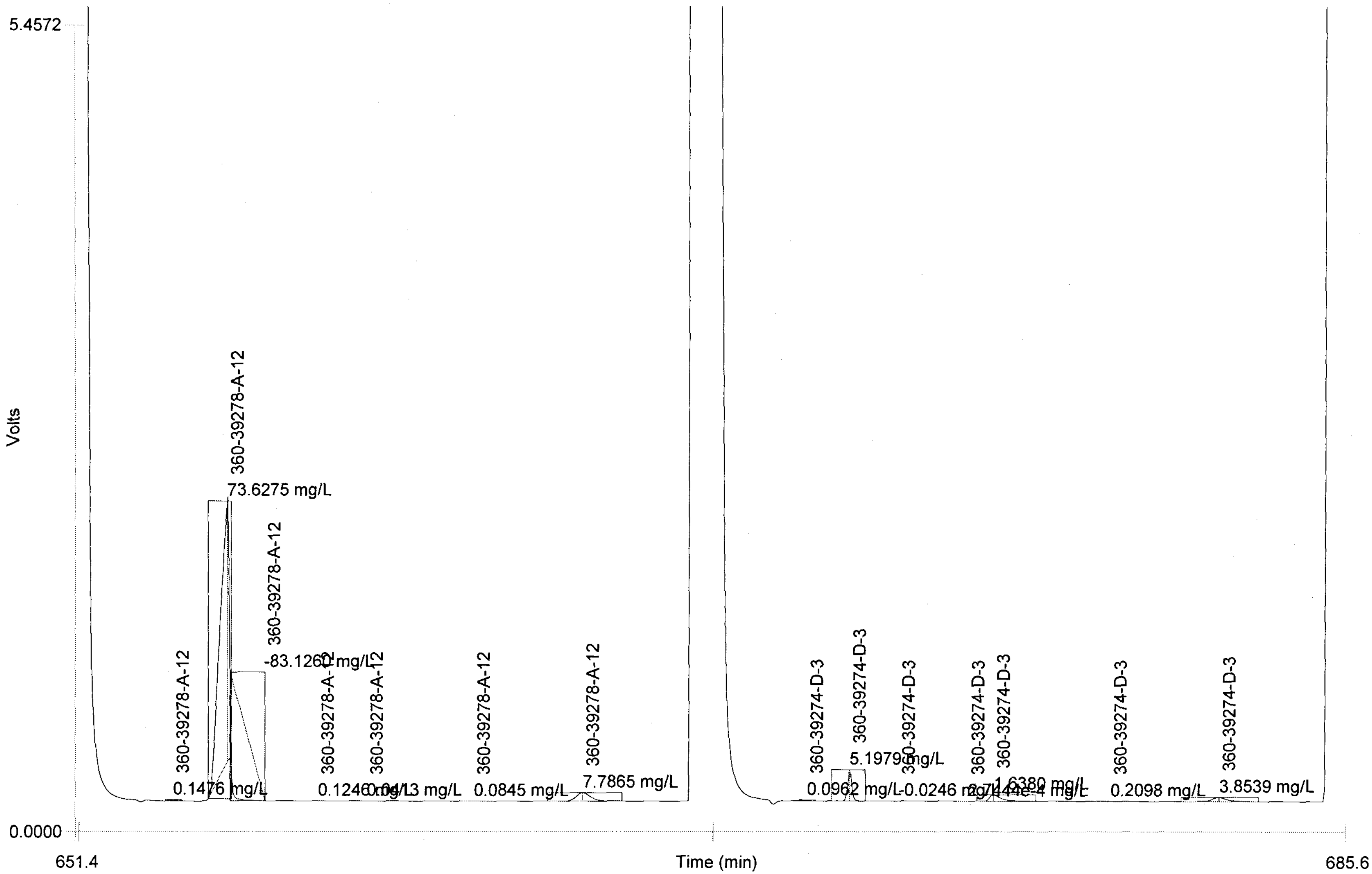


- 21 -

Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 20 of 27

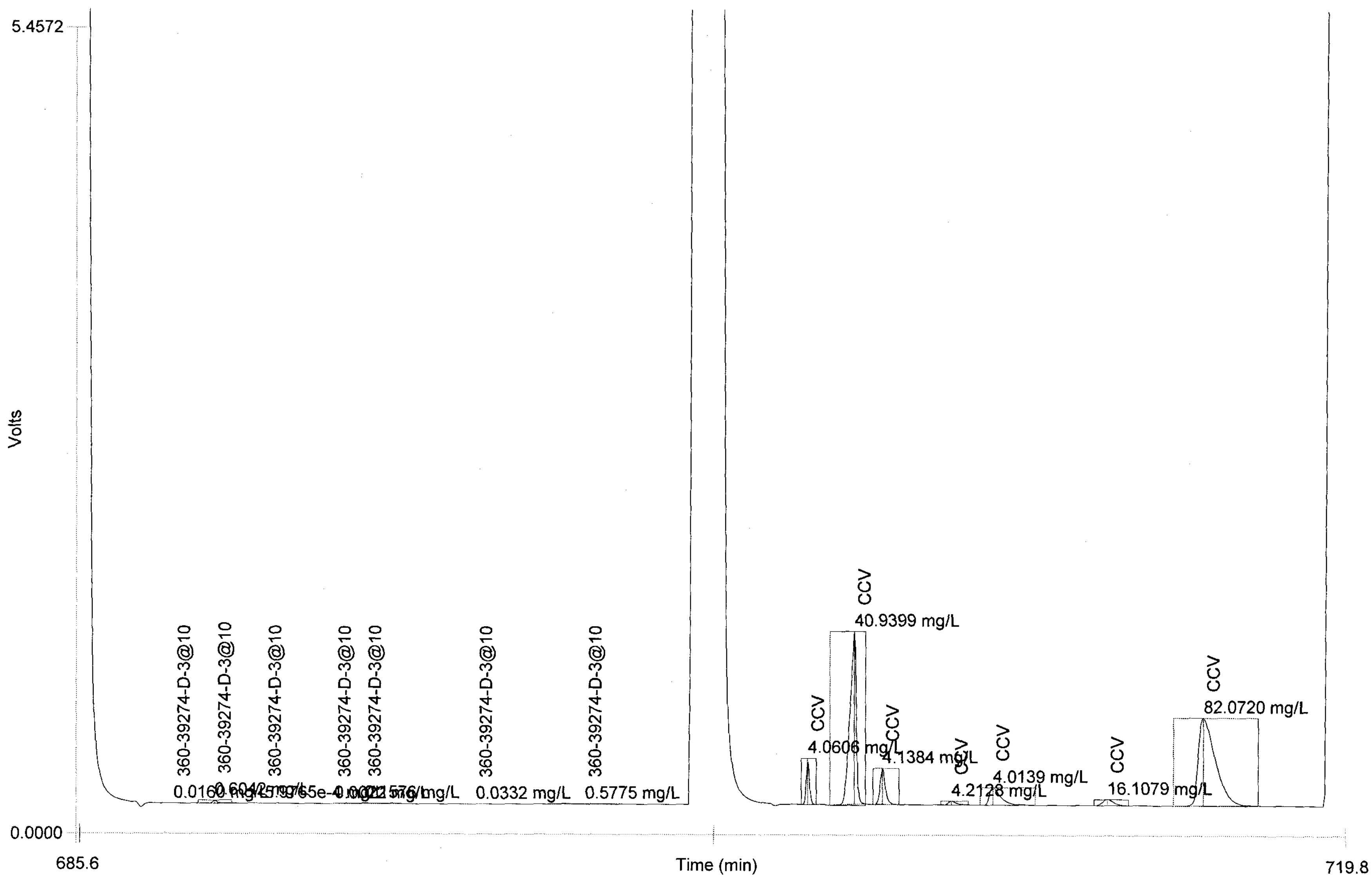


- 22 -

Author: stewarta

Date : 2/29/2012

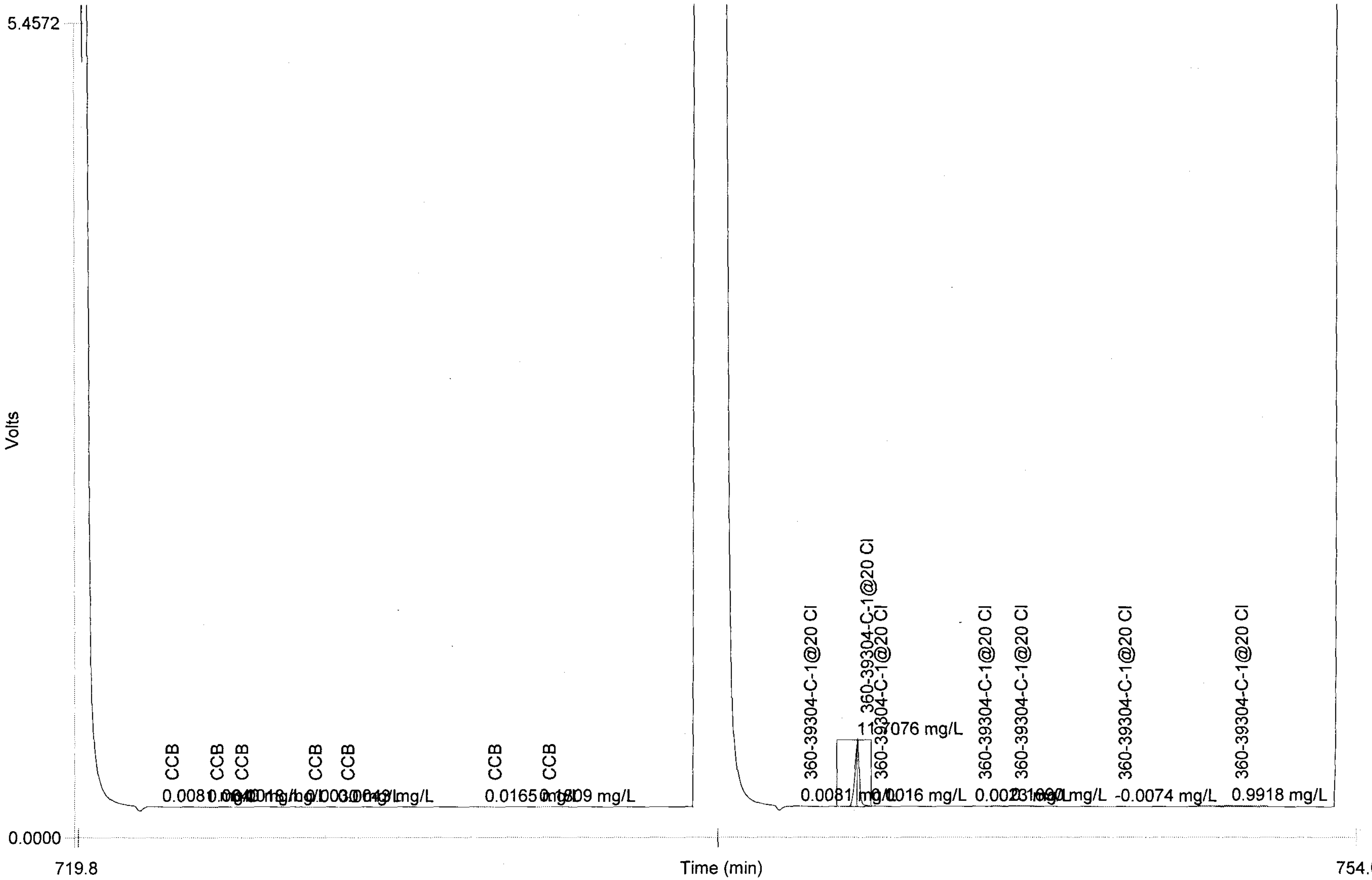
Channel 1 (Anions) : Set 21 of 27



Author: stewarta

Date : 2/29/2012

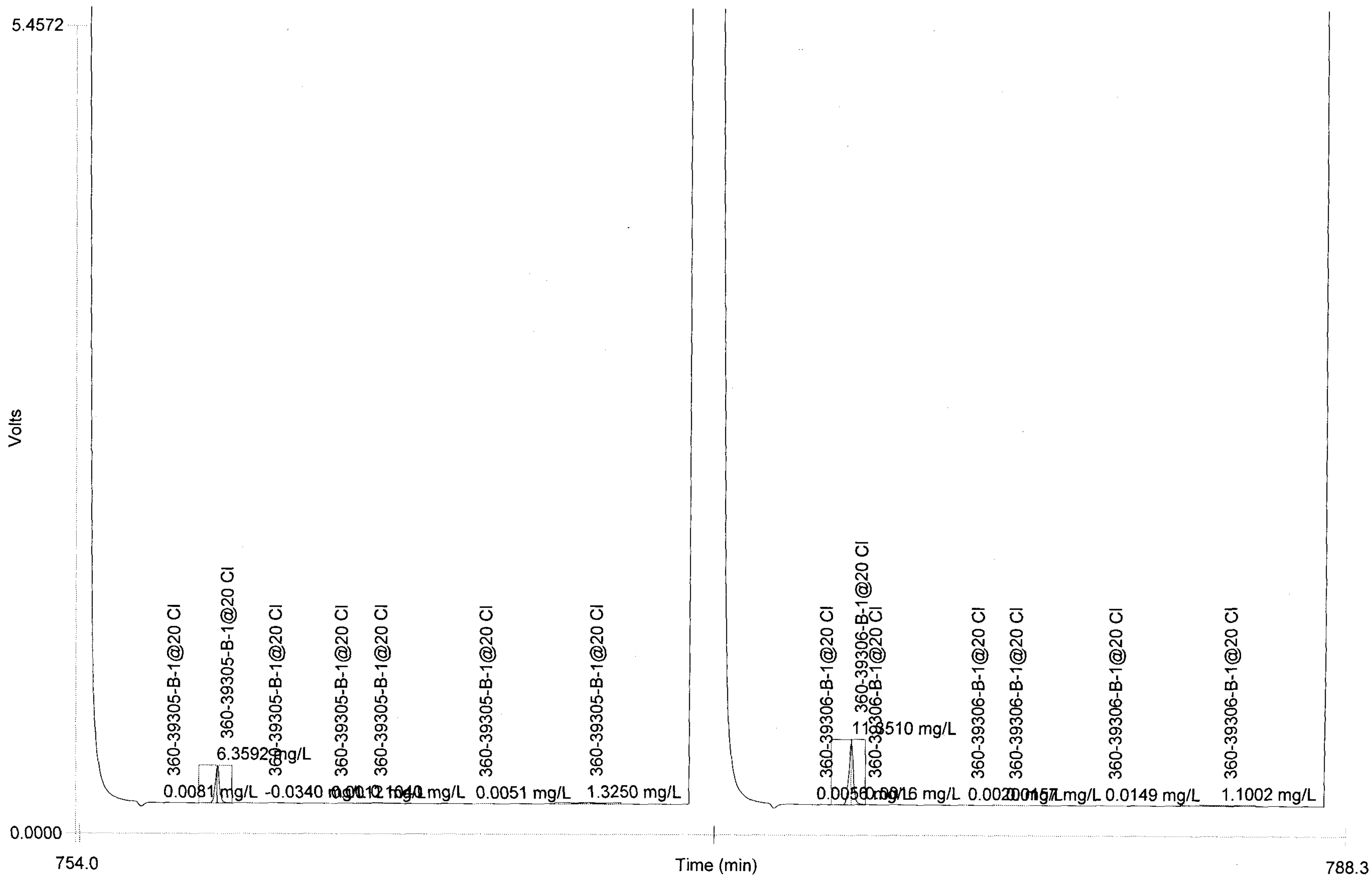
Channel 1 (Anions) : Set 22 of 27



Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 23 of 27

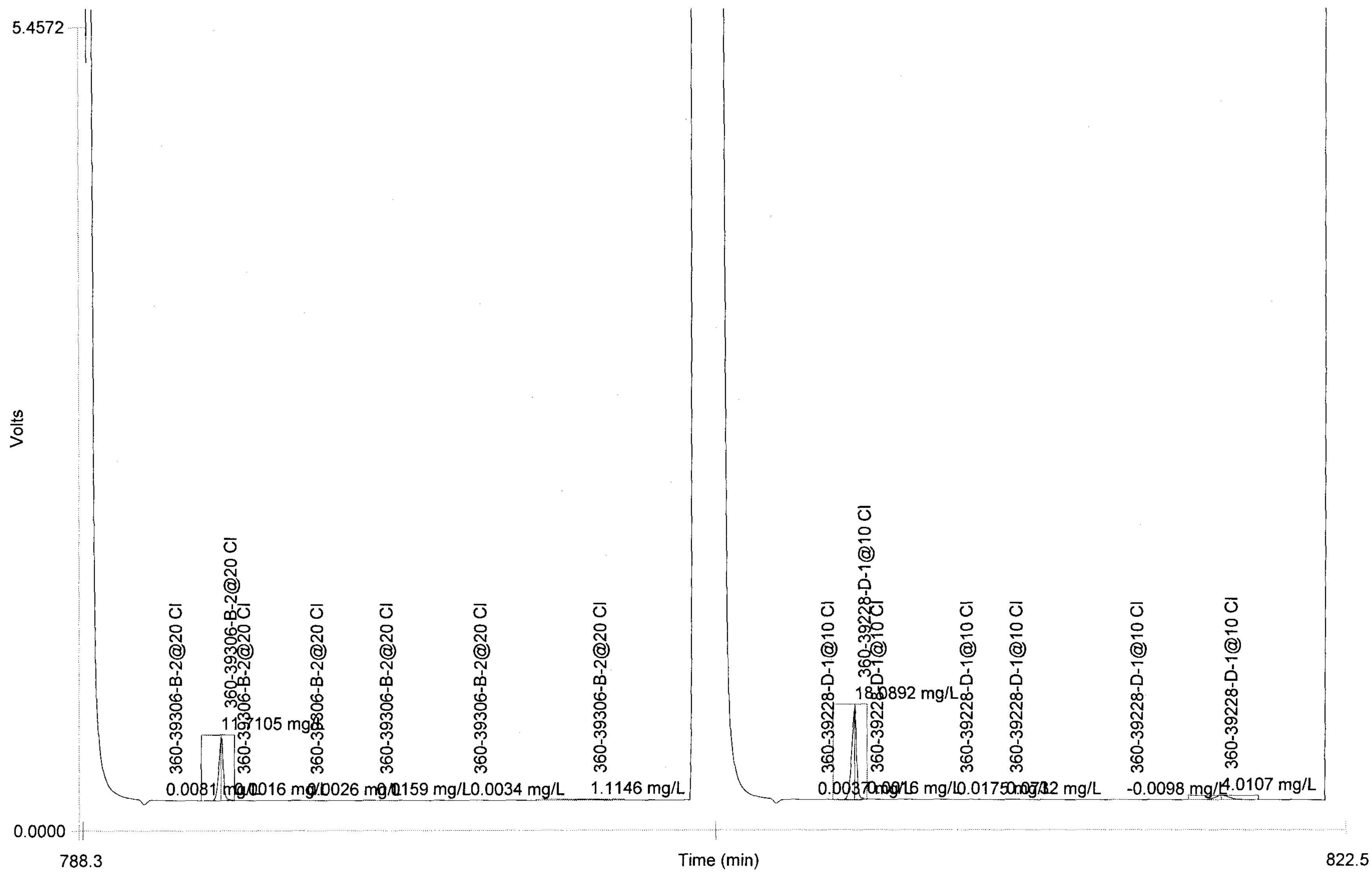


- 25 -

Author: stewarta

Date : 2/29/2012

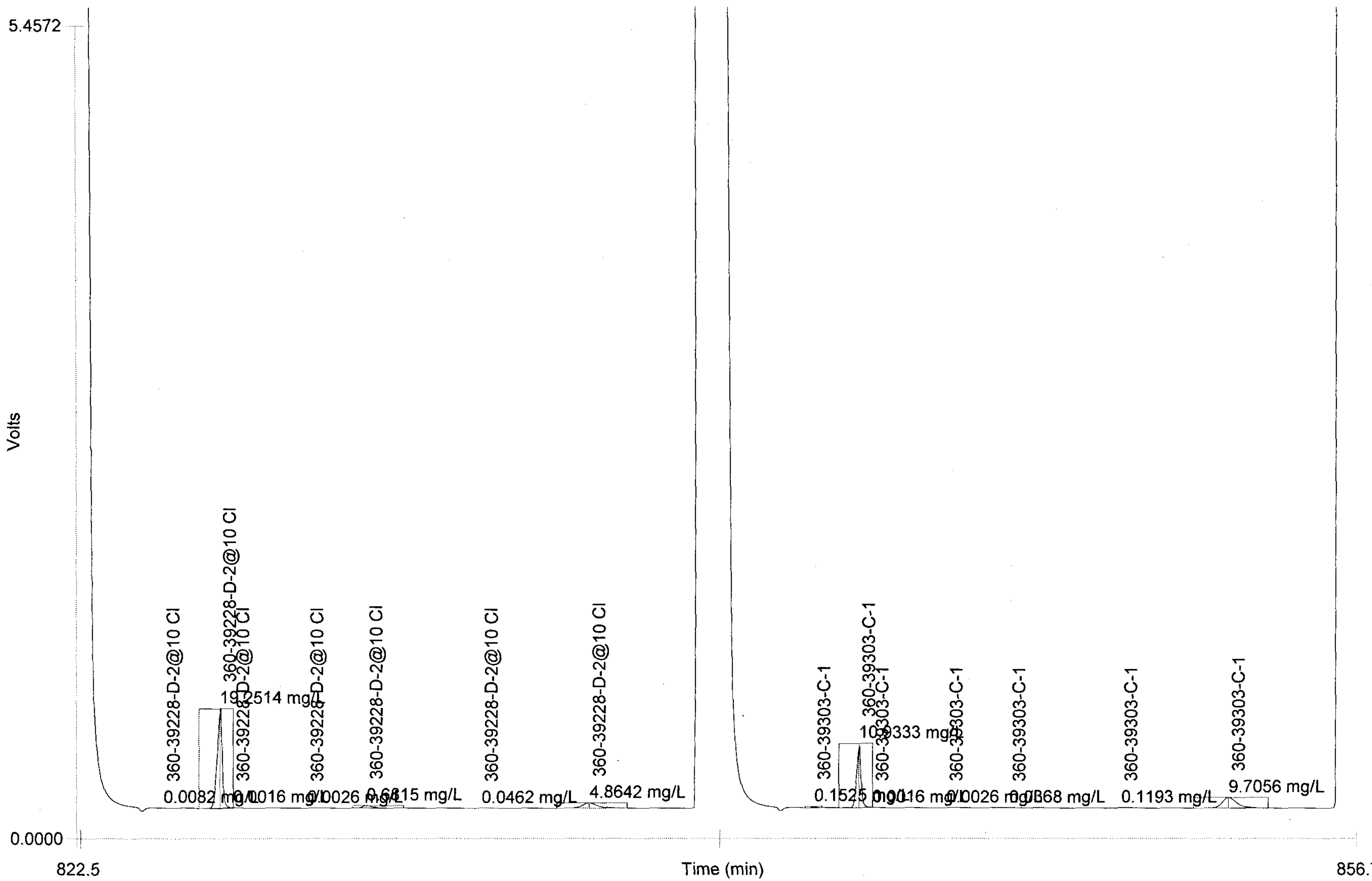
Channel 1 (Anions) : Set 24 of 27



Author: stewarta

Date : 2/29/2012

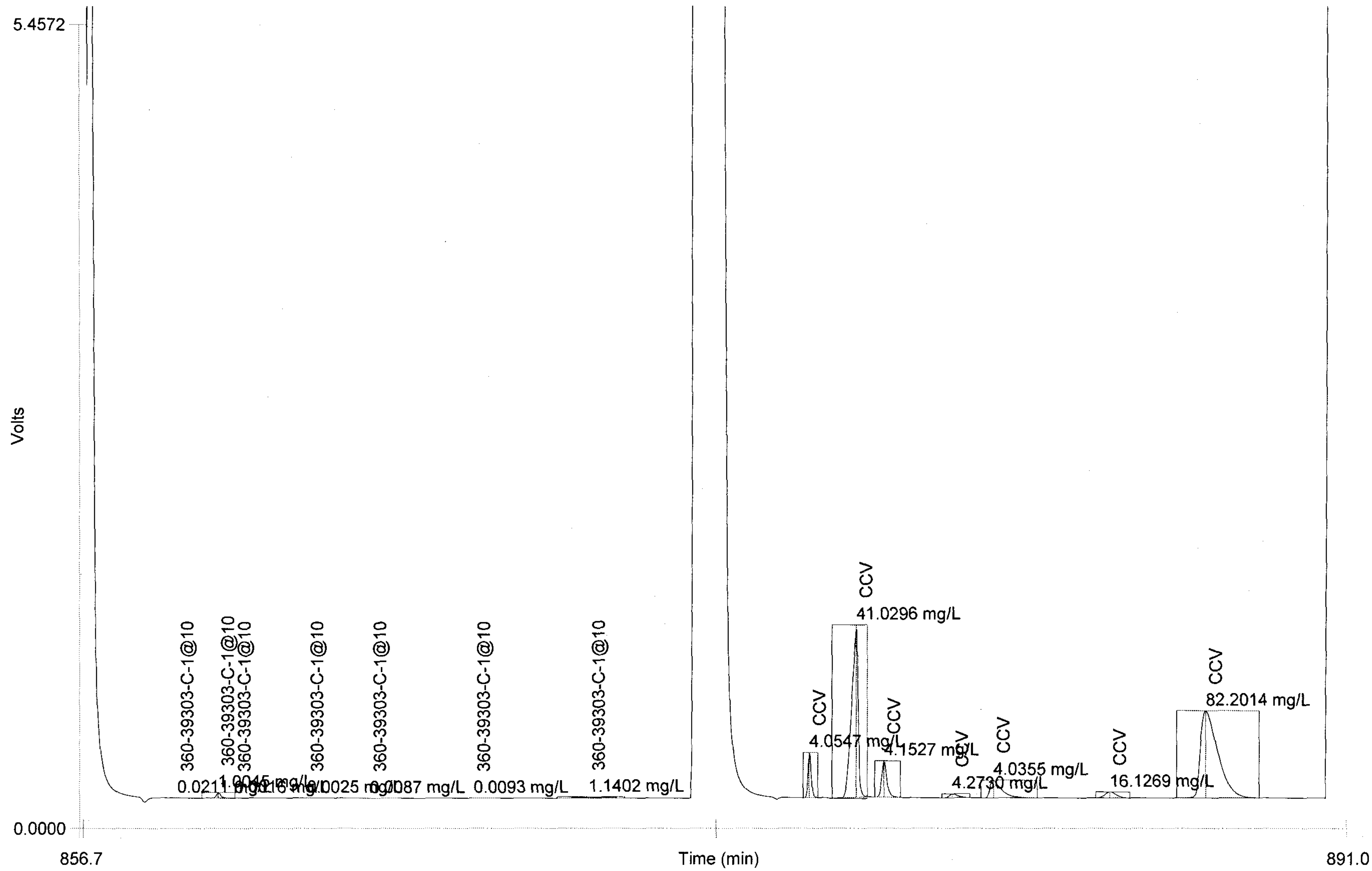
Channel 1 (Anions) : Set 25 of 27



Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 26 of 27



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Author: stewarta

Date : 2/29/2012

Channel 1 (Anions) : Set 27 of 27

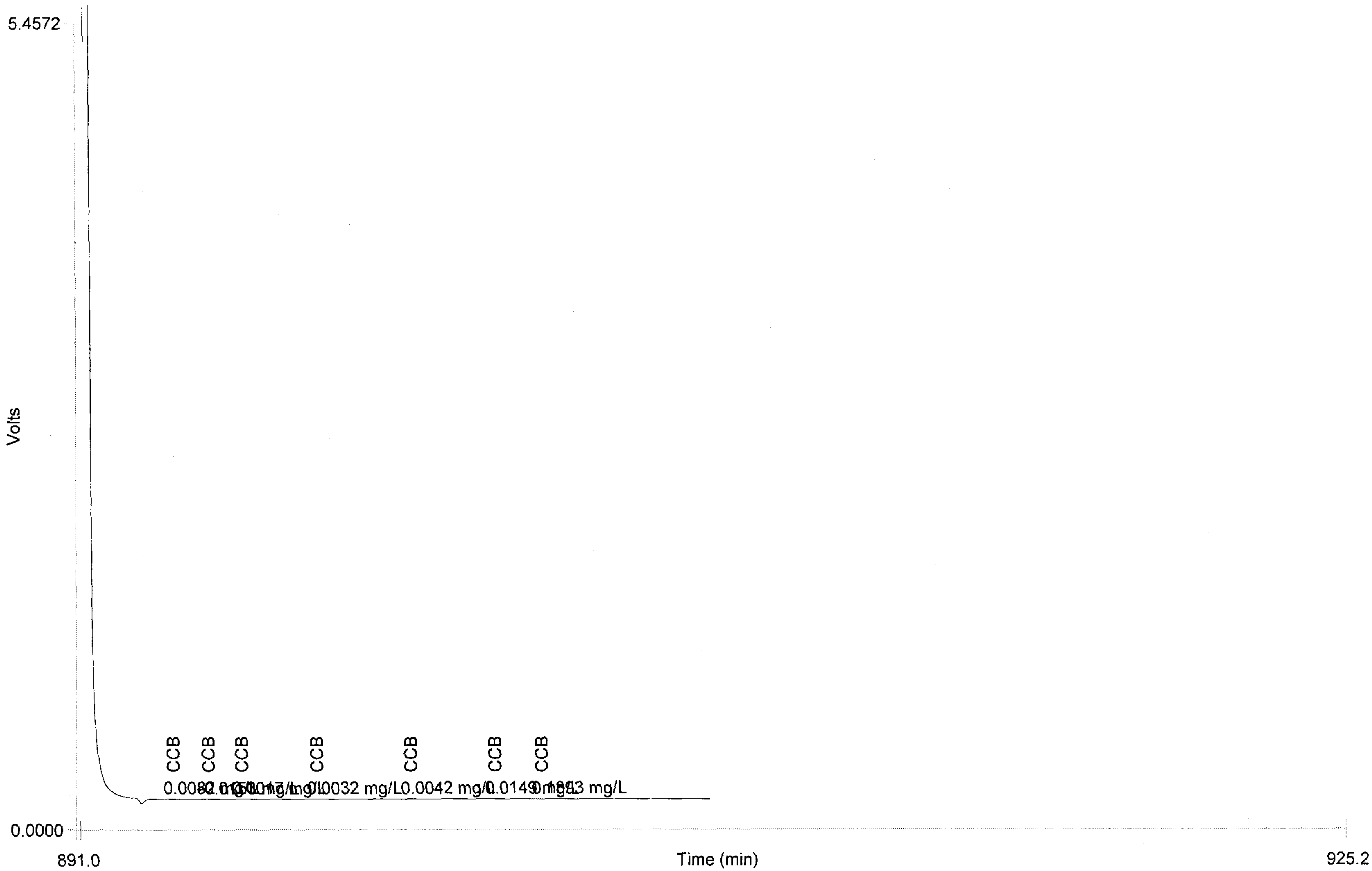
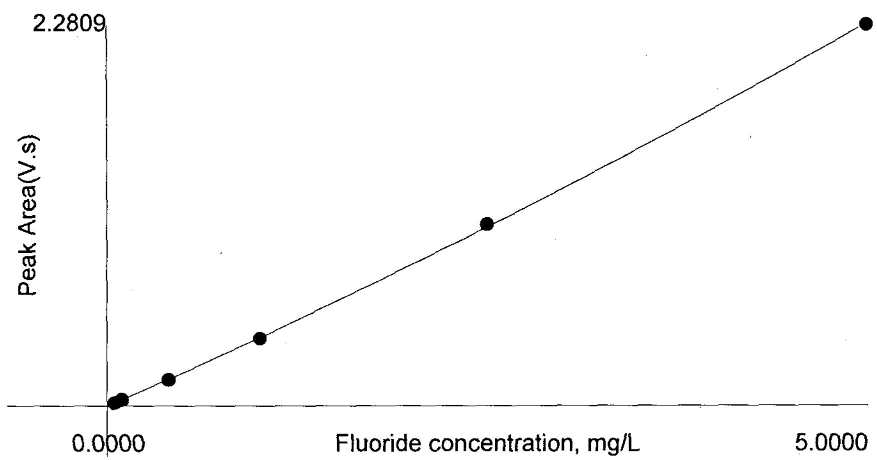


Table 1: Fluoride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.2809	0.3818	0.3	2/27/2012	7:16:08 AM
2	2.5000	1	1.0874	0.1954	-1.5	2/27/2012	7:16:08 AM
3	1.0000	1	0.4047	0.0731	1.2	2/27/2012	7:16:08 AM
4	0.4000	1	0.1547	0.0275	3.0	2/27/2012	7:16:08 AM
5	0.1000	1	0.0368	0.0065	1.5	2/27/2012	7:16:08 AM
6	0.0500	1	0.0180	0.0033	-5.0	2/27/2012	7:16:08 AM

Figure 1: Fluoride



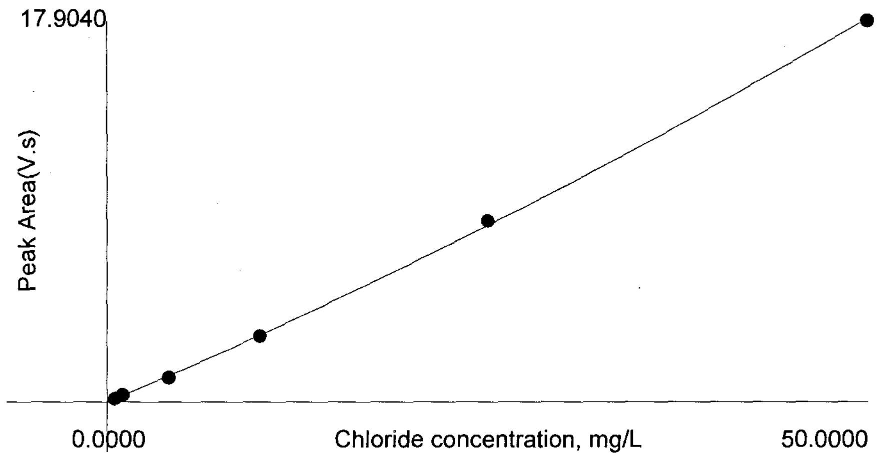
Area = 0.0114 * Conc^2 + 0.4013 * Conc - 0.0029
Conc = - 0.1241 * Area^2 + 2.4647 * Area + 0.0081
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 2: Chloride

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	50.0000	1	17.9040	1.3209	0.5	2/27/2012	7:16:08 AM
2	25.0000	1	8.4863	0.8353	-2.6	2/27/2012	7:16:08 AM
3	10.0000	1	3.0791	0.3756	1.8	2/27/2012	7:16:08 AM
4	4.0000	1	1.1387	0.1460	7.4	2/27/2012	7:16:08 AM
5	1.0000	1	0.3242	0.0393	-5.1	2/27/2012	7:16:08 AM
6	0.5000	1	0.1597	0.0182	-1.8	2/27/2012	7:16:08 AM

Figure 2: Chloride



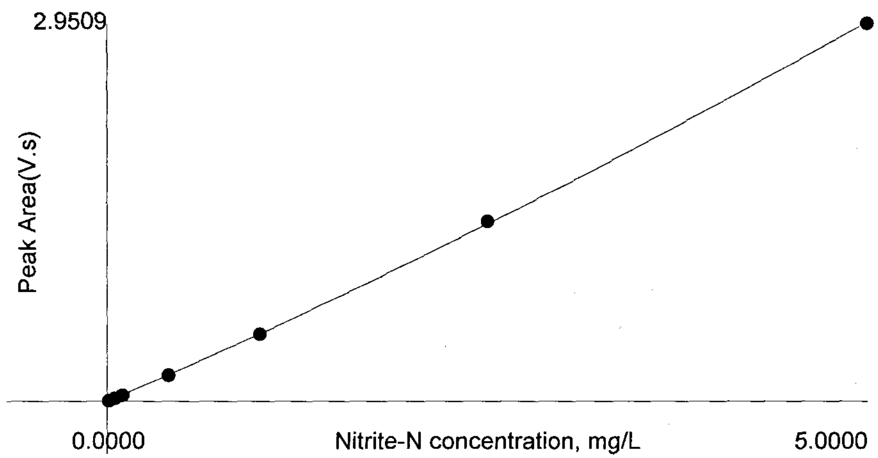
Area = 0.0012 * Conc^2 + 0.3011 * Conc + 0.0061
Conc = - 0.0267 * Area^2 + 3.2558 * Area - 0.0029
Correlation Coefficient (r) = 0.99997

1/x weighting

Table 3: Nitrite-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	2.9509	0.3044	0.3	2/27/2012	7:16:08 AM
2	2.5000	1	1.3998	0.1432	-1.4	2/27/2012	7:16:08 AM
3	1.0000	1	0.5256	0.0519	0.4	2/27/2012	7:16:08 AM
4	0.4000	1	0.2015	0.0191	2.6	2/27/2012	7:16:08 AM
5	0.1000	1	0.0479	0.0044	5.6	2/27/2012	7:16:08 AM
6	0.0500	1	0.0238	0.0022	4.8	2/27/2012	7:16:08 AM
7	0.0100	1	0.0050	4.2331e-4	-13.9	2/27/2012	7:16:08 AM

Figure 3: Nitrite-N



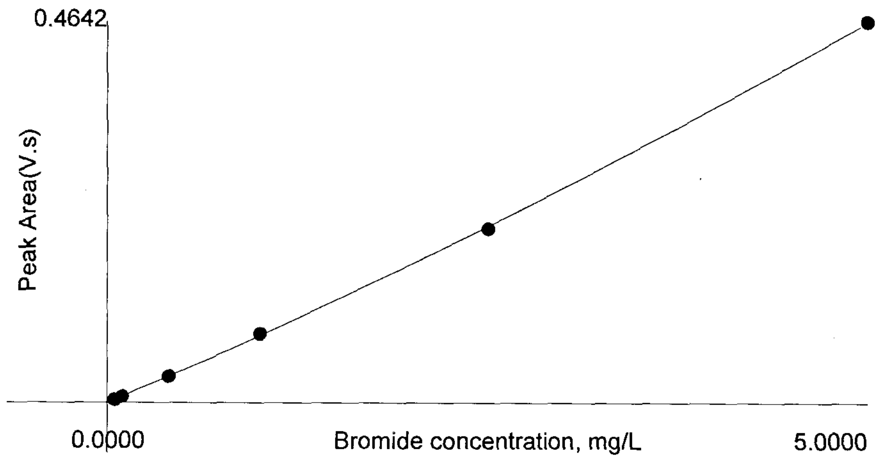
Area = 0.0159 * Conc^2 + 0.5124 * Conc - 6.9196e-4
Conc = - 0.0818 * Area^2 + 1.9295 * Area + 0.0016
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 4: Bromide

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	0.4642	0.0318	-0.2	2/27/2012	7:16:08 AM
2	2.5000	1	0.2121	0.0148	1.3	2/27/2012	7:16:08 AM
3	1.0000	1	0.0840	0.0056	-2.6	2/27/2012	7:16:08 AM
4	0.4000	1	0.0320	0.0021	0.2	2/27/2012	7:16:08 AM
5	0.1000	1	0.0076	4.8059e-4	3.5	2/27/2012	7:16:08 AM
6	0.0500	1	0.0040	2.6055e-4	-2.3	2/27/2012	7:16:08 AM

Figure 4: Bromide



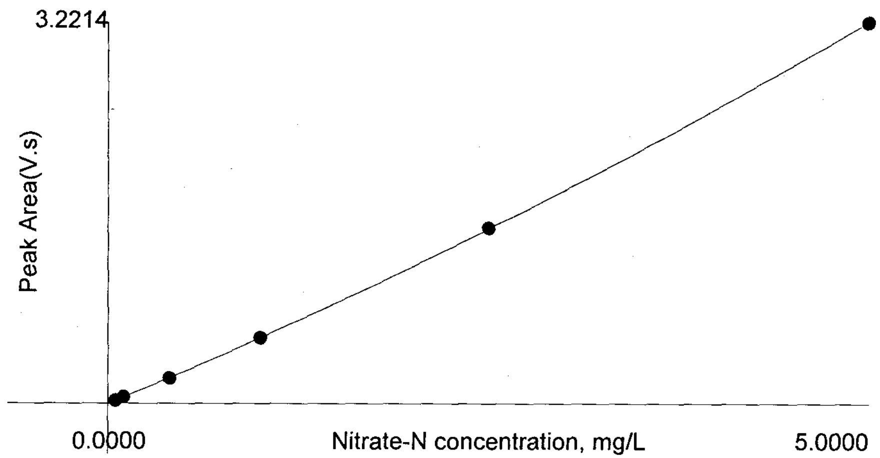
Area = 0.0027 * Conc^2 + 0.0794 * Conc - 9.5517e-5
Conc = - 3.5344 * Area^2 + 12.4199 * Area + 0.0023
Correlation Coefficient (r) = 0.99999

1/x weighting

Table 5: Nitrate-N

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	3.2214	0.1533	0.1	2/27/2012	7:16:08 AM
2	2.5000	1	1.4833	0.0705	-0.6	2/27/2012	7:16:08 AM
3	1.0000	1	0.5554	0.0257	0.1	2/27/2012	7:16:08 AM
4	0.4000	1	0.2111	0.0093	2.3	2/27/2012	7:16:08 AM
5	0.1000	1	0.0519	0.0022	0.7	2/27/2012	7:16:08 AM
6	0.0500	1	0.0260	0.0011	-2.7	2/27/2012	7:16:08 AM

Figure 5: Nitrate-N



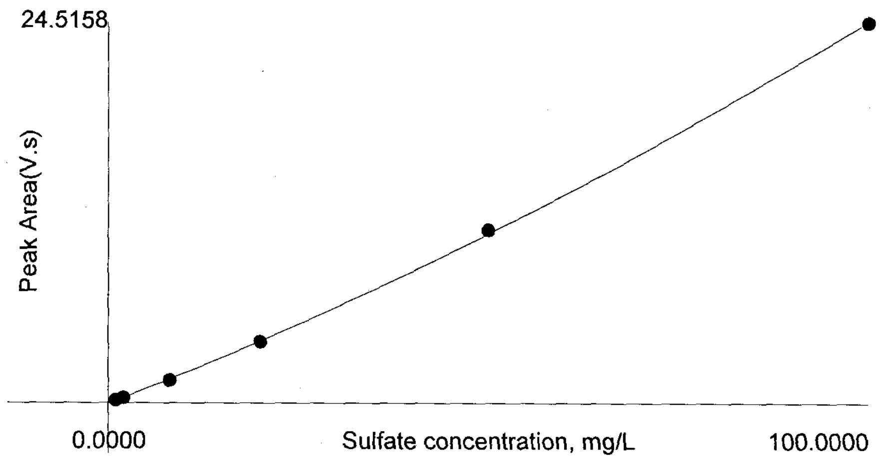
Area = 0.0220 * Conc^2 + 0.5352 * Conc - 0.0015
Conc = - 0.0879 * Area^2 + 1.8310 * Area + 0.0043
Correlation Coefficient (r) = 1.00000

1/x weighting

Table 6: Sulfate

	Conc. (mg/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	100.0000	1	24.5158	0.7063	0.4	2/27/2012	7:16:08 AM
2	50.0000	1	11.1278	0.3749	-2.1	2/27/2012	7:16:08 AM
3	20.0000	1	3.9605	0.1469	1.3	2/27/2012	7:16:08 AM
4	8.0000	1	1.4545	0.0548	5.4	2/27/2012	7:16:08 AM
5	2.0000	1	0.3485	0.0132	3.2	2/27/2012	7:16:08 AM
6	1.0000	1	0.1831	0.0069	-9.0	2/27/2012	7:16:08 AM

Figure 6: Sulfate



Area = 5.5759e-4 * Conc^2 + 0.1906 * Conc - 0.0232
Conc = - 0.0407 * Area^2 + 5.0514 * Area + 0.1794
Correlation Coefficient (r) = 0.99998

1/x weighting

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield   Job No.: 360-39278-1

SDG No.: 360-39278

Batch Number: 87943   Batch Start Date: 02/27/12 13:37   Batch Analyst: Stewart, Alyse M

Batch Method: 300.0   Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11J_IC_LCS 00005	W11L_IC_ICV 00001			
ICV 360-87943/1		300.0		10 mL		1 mL			
LCS 360-87943/4		300.0		10 mL	10 mL				
CCV 360-87943/15		300.0		10 mL	10 mL				

Batch Notes	

Basis	Basis Description

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield Job No.: 360-39278-1

SDG No.: 360-39278

Batch Number: 87944 Batch Start Date: 02/27/12 13:37 Batch Analyst: Stewart, Alyse M

Batch Method: 300.0 Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11_IC_MS/MSD 00001	W11J_IC_LCS 00005	W11L_IC_ICV 00001		
ICV 360-87944/1		300.0		10 mL			1 mL		
CCV 360-87944/3		300.0		10 mL		10 mL			
LCS 360-87944/6		300.0		10 mL		10 mL			
360-39278-A-9 MS	Outfall 08-022412	300.0	T	10 mL	100 uL				
360-39278-A-9 MSD	Outfall 08-022412	300.0	T	10 mL	100 uL				
CCV 360-87944/14		300.0		10 mL		10 mL			

Batch Notes	

Basis	Basis Description
T	Total/NA

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield   Job No.: 360-39278-1

SDG No.: 360-39278

Batch Number: 87952   Batch Start Date: 02/28/12 16:25   Batch Analyst: Stewart, Alyse M

Batch Method: 300.0   Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11J_IC_LCS 00005	W11L_IC_ICV 00001			
ICV 360-87952/1		300.0		10 mL		1 mL			
CCV 360-87952/3		300.0		10 mL	10 mL				
LCS 360-87952/6		300.0		10 mL	10 mL				
CCV 360-87952/15		300.0		10 mL	10 mL				

Batch Notes	

Basis	Basis Description

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Westfield Job No.: 360-39278-1

SDG No.: 360-39278

Batch Number: 87966 Batch Start Date: 02/27/12 13:37 Batch Analyst: Stewart, Alyse M

Batch Method: 300.0 Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	W11J_IC_LCS 00005	W11L_IC_ICV 00001			
ICV 360-87966/1		300.0		10 mL		1 mL			
CCV 360-87966/3		300.0		10 mL	10 mL				
CCV 360-87966/15		300.0		10 mL	10 mL				

Batch Notes	

Basis	Basis Description

Shipping and Receiving Documents

Login Sample Receipt Checklist

Client: Tetra Tech, Inc formerly Tetra Tech NUS

Job Number: 360-39278-1
SDG Number: 360-39278

Login Number: 39278
List Source: TestAmerica Westfield
List Number: 1
Creator: Marshall, Adam

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Baltimore/Washington Service Center
5710 Executive Drive Suite 106
Baltimore, MD 21228
Phone (410) 869-0085 Fax (410) 869-0086

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Walter E. Pryon	Lab PM:	Carrier Tracking No(s): 8986-9683-7356	COC No: 360-14243-5504.1
Client Contact: Samantha Brenner	Phone: 301 991-3914	E-Mail:		Page: Page 1 of 1
Company: Tetra Tech, Inc formerly Tetra Tech NUS				Job #: 360-39278
Address: 20251 Century Blvd Suite 200	Due Date Requested:			
City: Germantown	TAT Requested (days): 3 TAT			
State, Zip: MD, 20874				
Phone: 301 528-3056	PO #:			
Email: samantha.brenner@tetratech.com	WO #:			
Project Name: MRC	Project #: 112IC03619			
Site: Middle River Center	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Bromide / Chloride	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
Outfall 08-022412	2-24-12	0825	G	Water			X	1	
IL-1-022412	↓	0835	↓	Water			X	1	3 day
IL-2-022412	↓	0845	↓	Water			X	1	
IL-3-022412	↓	0900	↓	Water			X	1	TAT
Outfall 08-022412	↓	1140	↓	Water			X	1	
IL-1-022412	↓	1151	↓	Water			X	1	
IL-2-022412	↓	1205	↓	Water			X	1	
IL-3-022412	↓	1215	↓	Water			X	1	
Outfall 08-022412	↓	1501	↓	Water			X	1	
IL-1-022412	↓	1515	↓	Water			X	1	
IL-2-022412	↓	1525	↓	Water			X	1	
IL-3-022412	↓	1535	↓	Water			X	1	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Walt Pr	2-24-12 / 1600	TtNUS	[signature]	2/25/12 1100	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ✓ Yes Δ No	Custody Seal No.: FedEx	Cooler Temperature(s) °C and Other Remarks: 3.1°C / On Ice

All Appendices are on CD only.

APPENDIX A—BORING LOGS

APPENDIX B—WELL-DEVELOPMENT RECORDS

APPENDIX C—WASTE DISPOSAL DOCUMENTATION

APPENDIX D—SODIUM BROMIDE TRACER MSDS

APPENDIX E—EQUIPMENT MANUFACTURERS' INFORMATION

APPENDIX F—BROMIDE ANALYTICAL RESULTS

APPENDIX G—WASTE CHARACTERIZATION ANALYTICAL RESULTS

APPENDIX H—FOLLOW-UP BROMIDE SAMPLING ANALYTICAL RESULTS