Appendix C Phase 3 Assessment

PHASE 3 ENVIRONMENTAL SITE ASSESSMENT AND SOIL BIOTREATABILITY STUDY FORMERWINDY CAMP, HOPE BAY PROJECT, NU, EBA 2012

HOPE BAY MINING LIMITED

PHASE 3 ENVIRONMENTAL SITE ASSESSMENT AND SOIL BIOTREATABILITY STUDY

FORMER WINDY CAMP, HOPE BAY PROJECT, NU

REPORT

FEBRUARY 2012
ISSUED FOR REVIEW
EBA FILE: Y22101187.001

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EXECUTIVE SUMMARY

EBA Engineering Consultants Ltd. operating as EBA, A Tetra Tech Company, (EBA) conducted the Phase 3 Environmental Site Assessment (ESA) and soil biotreatability study at the former Windy Camp located within the Hope Bay project area in 2011. The site is approximately 68 km southeast of Umingmaktok and 160 km southwest of Cambridge Bay, Nunavut. The Phase 3 ESA report is a part of the submissions related to the Final Abandonment and Restoration Plan for the site, as per Licence No. 2BE-HOP0712 Type "B" issued to Hope Bay Mining Ltd. (HBML). by the Nunavut Water Board (NWB).

A Phase 2 ESA at the former Windy Camp (old Windy Camp) was conducted in 2009. The report indicated that the chemicals of potential concern included the petroleum hydrocarbon (PHC) fraction F2 (diesel fuel). The Phase 2 ESA estimated soils volume requiring remediation was 2,000 m^3. Most of the hydrocarbon impacts were associated with the former generators, the former tankfarm, and the former land farm.

The objectives of the Phase 3 ESA for the old Windy Camp were to:

- Delineate the identified constituents of concern (petroleum hydrocarbons) in soil and groundwater.
- Refine the estimated volumes of hydrocarbon-impacted soil.
- Investigate pathways of movement or migration of contaminants through soil and groundwater to refine the site conceptual model as well as the fate and transport and risk assessment models.
- The objectives of the bench-scale biotreament testing of petroleum hydrocarbon affected soils for the old Windy Camp are as follows:
- Evaluate enhanced aerobic and anaerobic biodegradation processes for the F2 hydrocarbon fraction by conducting a bench-scale bioremediation study, and evaluate the feasibility of conducting field trials.

The results and recommendations of the biotreatment study, scheduled to terminate at the end of February 2012, will be provided under separate cover.

Based on the known history of the site, previous Phase 2 ESA, and a walk-through of the site upon arrival, The Windy Lake site was divided into eight areas of potential environmental concern. The areas are as follows:

Areas of Potential Environmental Concern at Windy Lake Old Camp

Area	Description
W1	Seacans and areas downgradient of 2004 spill
W2	Former landfarm
W3	Former AST near generators
W4	Former generators
W5	Tents
W6	Soils within tankfarm (no ASTs present, only soils)
W7	Soils inside shop tent

Areas of Potential Environmental Concern at Windy Lake Old Camp

Area	Description
W8	Former incinerator near beach

Test pitting, soil sampling, and surface water sampling were completed on August 6, 9 and 10, 2011. Testpits were dug by hand, and soils were logged and bagged for field soils screening (hydrocarbon vapours) at approximate intervals of 10 to 30 cm.

A total of 86 logged test pits were advanced by test pitting. Numerous other shallower pits in various locations (and especially in the vicinity of the tests) were dug to check for visual indications of petroleum hydrocarbon impacts. Test pit depths were to the free water surface or to rock refusal. The maximum test pit depth of was 1.3 m below surface, which was in the sandy fill deposited for the former generators. No permafrost was encountered in the testpits.

A summary of the Phase 3 ESA results with areas and estimated in-situ volumes of soils having concentrations of petroleum hydrocarbon concentrations higher than the CCME guidelines is provided below:

Windy Lake Petroleum Hydrocarbon Soils Exceeding CCME Industrial Soli Criteria (coarse grained)

APEC	Hydrocarbon Fraction	Maximum Concentration(s) mg/kg	Area	Estimated Depth	Estimated In-Situ Volume
W1	F2	380	85	0.5	43
W2	F2	1,600	124	2	248
W3	F2	1,700	23	1	23
W4	F1, F2	820; 13,000	44	2.5	132
W5B	F2	2,900	1	0.5	1
W5D	F2	2,100	2	2	4
W5E	Xylenes, F1, F2, F3	X = 24; F1 = 960; F2, F3 = 10,000; 1,800	9	2	18
W5G	F2	3,500	4	2	7
W5H	BTEX, F1, F2	BTEX= 0.14; 4.6; 4.4; 68; F1, F2 = 1,700; 10,000	20	2	39
W8	F2	490	61	1	61
Total			364	16	575*
Does not include presumed residual soil impacts below the liner of the tank farm					

All three (3) groundwater wells installed in 2009 by WESA were dry at the time of the site investigation. Instead, four surface water samples were collected for the Phase 3 ESA to substitute for the lack of groundwater data. The results were:

- The marshy area downgradient of the 2004 diesel spill (W1). Total metal concentrations exceeded the Canadian Water Quality (CWQG) guidelines for aluminum (20 mg/L), copper (0.11 mg/L), iron (47 mg/L), lead (0.011 mg/L), nickel (0.041 mg/L) and zinc (0.08 mg/L).
- The tank farm (W6). Surface water sample 11W6-1 (also HOP-6) exceeded the CWQG for aluminum (2.4 mg/L), copper (0.028 mg/L), iron (7.9 mg/L), lead (0.0017 mg/L) and zinc (0.012 mg/L). At the time of sampling, the water quality did not meet the Water Licence criterion for lead. The water is also contained higher concentrations of chlorides (770 mg/L) than specified in the new freshwater aquatic guidelines.
- Two locations in the grassy marsh where the former incinerator was located (W8). Surface water sample W8-1 exceeded the CWQG for aluminum (13 mg/L), copper (0.087 mg/L), Iron (38 mg/L), lead (0.016 mg/L), nickel (0.029 mg/L) and zinc (0.09 mg/L). Surface water sample W8-2 exceeded the applicable guidelines for aluminum (0.072 mg/L), copper (0.0021 mg/L) and iron (1.7 mg/L).

Based on the outcome of the Phase 3 ESA and the SiREM soil biotreatability study, EBA recommends the following for Windy Lake site:

- Empty the remaining ASTs of fuel in order to prevent any possible further hydrocarbon soil impacts.
- Update the proposed remedial options based on the final results of the SiREM study, due by the end of March 2012.
- Consider excavating the hydrocarbon-impacted sediments and soils in W8 due to the potential to cause poor water quality in the shallow areas used as feeding areas by birds and other animals. Soils can be transferred to Quatrex bags and stored on site until the landfarm has been constructed or can be disposed of off-site.
- Collect and remove for disposal the approximately 200 m^3 soils in the tank farm. Contact water in the facility does not meet Water Licence criteria and should be collected for disposal. Consider decommissioning the former tank farm to avoid the collection of water in the lined berm.

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1.0 INTRODUCTION

1.1 General

EBA Engineering Consultants Ltd., operating as EBA, A Tetra Tech Company, (EBA) is pleased to provide this report to Hope Bay Mining Ltd. (HBML) on the Phase 3 Environmental Site Assessment (ESA) and soil biotreatability study conducted at the old Windy Camp located within the Hope Bay project area. The site is approximately 68 km southeast of Umingmaktok and 160 km southwest of Cambridge Bay, Nunavut (Figure 1). The Phase 3 ESA report is a part of the submissions related to the Final Abandonment and Restoration Plan for the site, as per Licence No. 2BE-HOP0712 Type "B" issued to HBML by the Nunavut Water Board (NWB).

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The objectives of the bench-scale biotreament testing of petroleum hydrocarbon affected soils for the old Windy Camp were to evaluate enhanced aerobic and anaerobic biodegradation processes for the F2 hydrocarbon fraction and evaluate the feasibility of conducting field trials.

The results and recommendations of the biotreatment study, scheduled to terminate at the end of February 2012, will be provided under separate cover.

1.2 Authorization

Mr. WRC Langley, Commercial Manager at HBML authorized EBA to proceed with the work on May 11, 2011. The Professional Services Agreement number is PSA-HB-10-KE-001 and the Work Order Number is CR-0053.

1.3 Scope of Work

EBA developed the work plan based on a Phase II ESA completed in 2009 by WESA Group Inc. The scope of work for the Phase III ESA, as outlined in proposal EBA File: PY22101172 letter dated August 15, 2011 and adjusted during the work, was as follows:

- Prepare a health and safety plan for the field program using EBA's in house Safe Work Form (SWF). A safety meeting including a field level risk assessment was conducted on site prior to the start of the field program. All workers on site agreed to the conditions of the SWF before work commenced. In addition, EBA staff completed HMBL's in-house site orientation and site-specific training.
- Conduct a Phase 3 ESA to delineate petroleum hydrocarbon impacts, with a sufficient data density to estimate weighted-average soil volume estimates for the F1 to F4 petroleum hydrocarbon soil

fractions and to evaluate areas where the soils are affected by diesel, waste oil, other types of hydrocarbons, or combinations of spills.

- Obtain soil samples at regular intervals from all testpits. Examine soil samples for staining and obvious odour. Measure the photoionization potential on samples using a photoionization detector (PID). Log soil stratigraphy correspondingly for each test pit.
- Submit 60 soil samples to Maxxam Analytics Inc. of Edmonton for the analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX), and PHC fractions F1 through F4. Submit select samples for sieve analysis, salinity, and CCME regulated metals. Submit four surface water samples for the analysis of BTEX, PHC fraction F1, and dissolved metals.
- Collect soil samples for site-specific information relevant to a bioremediation option (landfarming and biopile), including soil pH, type/texture, grain size analysis, soil moisture content and field capacity, and soil organic/inorganic carbon.
- Collect a composite soil sample of hydrocarbon-affected soils to evaluate enhanced aerobic and anaerobic biodegradation processes for the F2 fraction by conducting a bench-scale biotreatment study at SiREM laboratories in Guelph, Ontario. Details of SiREM's study were included in the August 15, 2011 proposal. Aerobic treatments include simulated tilling with a proprietary oxygen releasing compound and nutrients. Anaerobic treatments include undisturbed applications of nitrate and sulphate. Originally, using treated sewage sludge as a potential electron donor for anaerobic biodegradation was proposed; however, because of the site logistics this type of treatment would have been inconvenient in practice during the remedial stage. Sulphate treatment was substituted in the trial.
- Prepare a Phase III ESA report discussing field observations and analytical results

2.0 BACKGROUND INFORMATION

2.1 Site Details

The former Windy Camp was a remote exploration camp operated by Miramar Hope Bay Ltd. (Miramar) that was wholly acquired by Newmont Mining Corporation (Newmont) affiliated with HBML in 2008. The site is on leased Inuit-owned land within the West Kitikmeot region of Nunavut located at approximately 68°4'24"N, 106°35'25"W. The site will be accessible by an all-weather road in 2012.

The former camp footprint spans approximately 600 m along the shoreline of Windy Lake, and the width of the camp activities measured from a distance perpendicular to the shore ranges from approximately 20 m to 120 m. The site is currently uninhabited and is under care and maintenance with regular inspections conducted by Hope Bay Project personnel. As per the terms of the NWB Licence No. 2BE-HOP0712, HBML is currently preparing a Final Abandonment and Restoration Plan for the site, prepared in accordance with the Mine Site Reclamation Guidelines for the Northwest Territories, 2006 and the INAC Mine Site Reclamation Policy for Nunavut, 2002.

The primary chemicals of concern include petroleum hydrocarbons (PHC) which originated from historic spills and storage of fuel when Miramar owned the site. The largest spill occurred on June 16, 2004, when

approximately 19,000 L of diesel fuel from a 50,000-litre above ground storage tank (Spill Number 04-388). The approximate location of the former spill is shown in Figure 2. As part of the emergency response, containment trenches were excavated to redirect natural surface runoff away from the impacted area, or in the case of impacted runoff, into the containment area on the frozen lake surface.

Hydrocarbon-absorbent booms were installed on the surface of the lake ice and around meltwater pools containing diesel at locations where possible containment breaches could occur. Free diesel fuel was recovered using absorbent pads placed on the surface of the frozen lake. Other fuel was recovered manually and placed into 205-litre barrels for disposal. In accordance with acceptable practices at the time, the residual free diesel fuel present on the lake ice was combusted. A lined landfarm was constructed approximately 600 m^2 in size. Approximately 100 m^3 of hydrocarbon-impacted soil was contained in the area. The total surface area affected by the spill on both land and water, was estimated to be in the order of 3,500 m^2. Remediation efforts following the spill are documented in the *Windy Camp Nunavut, Diesel Fuel Spill Assessment and Remediation Report* by EBA (June 2004, draft).

After HMBL purchased the Hope Bay properties in late 2007, potential risks to the nearby Windy Lake receptor (approximately 30 m from the former landfarm) were mitigated in 2008 by off-site removal of the impacted soil and decommissioning of the landfarm facility. The re-contoured area was covered with coconut matting to stabilize the residual soils. Testing of the quality of these residual former landfarm soils was included in the current site assessment.

A Phase 2 ESA at Windy Camp was conducted in 2009. The Phase 2 ESA Report (WESA 2009) indicated that the chemicals of potential concern included the petroleum hydrocarbon (PHC) fraction F2 (diesel fuel). The Phase 2 ESA estimated soils volume requiring remediation was 2,000 m^3. Most of the hydrocarbon impacts were associated with the former generators, the former tankfarm, and the former landfarm.

2.2 Location, Ownership and Current Land Use

The Hope Bay Project is on Inuit-owned land administered by the Kitikmeot Inuit Association (KIA), with minerals development authority vested within Nunavut Tunngavik Inc. (NTI). Depending on the location of land within the Hope Bay project area, three entities administer surface and subsurface mine leases on behalf of the Inuit; the KIA (surface rights), the NTI (subsurface rights), and Aboriginal Affairs and Northern Development Canada (both surface and subsurface rights).

HBML has secured access and mineral rights to the Hope Bay Project through land use and commercial land leases negotiated with these stakeholders.

During exploration and operation of the Hope Bay Mine, use is classified as Industrial. There is no current or future anticipated groundwater use at the site.

2.3 Site History and General Description of Site

Windy Camp was established in 1993, with the original Water Licence NWB2HOP0002 issued to Cambiex Exploration Inc. by the NWB on March 15, 2000. The camp operated until 2009 and supported the exploration of the Doris and Madrid deposit. The camp housed approximately 40 people. Other facilities included generators, bulk fuel storage, offices, and core shacks, a shop tent, helipads, and laydown areas

containing scrap metal, barrels, and equipment. Drill core was stored at various locations around the camp. Refer to Figure 2 for a diagram of former and current site facilities and features.

Septic and greywater was treated by an RBC rotodisk water treatment plant, and effluent was conveyed to an intermediate staged holding tank. Final discharge of water was at a location uphill of the camp approximately 122 m from the shore of Windy Lake. Sewage sludges were collected in 45 gallon drums and transported to the Boston Camp for disposal.

Newmont Mining Corporation acquired the Hope Bay Project in March 2008. Later that year, the airstrip for the new Windy Camp was constructed. The environmental assessment and rehabilitation of Windy Camp commenced in 2009.

Other recent work in the area includes the construction of an all-weather road between Doris Camp and the old Windy Camp, the expansion of the capacity and facilities of the main Doris Camp, and the construction of a new Windy Camp/Quarry D approximately 1 km north of the old Windy Camp location.

2.4 Climate

Based on meteorological data from weather stations at Cambridge Bay approximately 170 km northeast of the site and Contwoyto Lake approximately 280 km southwest of the site, the mean annual temperature is -15°C for the former and -12°C for the latter. Based on 68 complete months of data at the Hope Bay project, the mean monthly air temperatures for Doris station (30 masl) ranged from -33.2°C in February 2008 to 13.2°C in July 2007. The annual average temperatures for 2002 to 2009, using only complete years of available data, were -11.7°C and -11.1°C at Boston and Doris stations, respectively (Rescan, 2009).

Total annual rainfall from 2002 to 2009 (based on available complete years) averaged 30 mm and 85 mm at Boston and Doris stations, respectively (Rescan, 2009). The 1971 to 2000 climate normal annual precipitation at Cambridge Bay regional station is 139 mm, comprised of 70 mm of rainfall and 69 mm of snow water equivalent (SWE).

2.5 Site Topography and Vegetation

The Hope Bay Project generally has a low to moderate surface relief, and the old Windy Camp site has approximately 70 m of differential elevation between the low point (shore of Windy Lake) and the high point (adjacent rock outcrop). The surficial deposits that overlie the bedrock consist of glacial till, marine sediments, glaciofluvial deposits, lacustrine deposits, and alluvial deposits.

The areas north of the abandoned camp buildings consist of steep rocky outcrops of bedrock. To the east is a valley cut in the bedrock that rises gently for approximately 500 m before descending to Patch Lake.

Areas of felsenmeer are common and swampy areas are also present. Tundra and moss cover the ground even at higher elevations. Vegetation consists primarily of lichen, moss, dwarf willows, and birches.

2.6 Regional Quaternary Geology

The region was subjected to multiple glaciations during the Quaternary period. During each glaciation, the area was overridden by the northwestern sector of the Laurentide Ice Sheet. Evidence of only the most

recent (Late Wisconsin) glaciation is preserved in the present-day landscape. Striations, orientation of eskers, grooves, and drumlins indicate that the predominate glacial ice movement was north-northwest.

The project area became ice-free about 8,800 years ago as the southwest to northeast trending ice sheet melted back toward the southeast (Dyke and Prest, 1986) leaving a blanket of basal till as the ice retreated. Immediately following deglaciations, the sea level was about 200 m higher than at present (Dyke and Dredge, 1989). The entire project area was submerged and the edge of the ice sheet abutted the open sea. Meltwater streams from the ice carried fine grained sediments toward the sea, resulting in the accumulation of marine sediments on top of the till with the greatest accumulated thickness in the deeper water zones, which now form the valley bottoms.

Following glaciation, isostatic rebound caused a relative decline in sea level. During emergence, the land surface was washed by waves. Easily erodible surfaces such as marine sediments, till, and glaciofluvial sands and gravels were reworked and redistributed by waves, currents, and sea ice. Some present-day rock outcrops were exposed as the thin soil washed off the uplands and accumulated in the valley bottoms. Current outcrop cover varies from 35% to 80% in the region. Outcrops tend to form relatively continuous, north-northwest trending ridges throughout the area with broad tundra-covered flat valleys. Lakes are also elongated in a north-northwest direction. Since emergence, natural slope processes, frost action, and permafrost have contributed to the present day landscape.

2.7 Regional Bedrock Geology

Regional bedrock geology consists of sedimentary and volcanic rocks of the Arctic Platform (NRCAN, 1957). The Hope Bay project region is underlain by the late Archean Hope Bay Greenstone Belt, which is approximately 42 km and consists of mostly mafic volcanic rocks.

2.7.1 Regional and Local Surficial Soils

The Geological Survey of Canada (Sharpe, 1993) indicates that glacial till deposits are predominant. Pleistocene deposits are buried beneath marine sediments consisting of clay, silt, and sand. Marine sediments represent the dominant surficial material and the material may be saline. The overburden soil pore water can also have high salinity concentrations, often exceeding that of seawater (HBML, 2011). Soils developed on marine sediments are generally fine textured with textures ranging from clay to silty clay with traces of sand (EBA, 1996). The overburden soils are normally consolidated, typically have low structural integrity, and are subject to compaction when wet.

According to HBML Phase 2 Project Proposal (HBML, 2011), marine silts and clays in the area can contain significant (up to 50% by volume) ground ice, while the till contains low to moderate ice contents (5 to 25%). Solifluction and other slope movement features related to the thawing of poorly-drained and weak saturated soils on slopes can result in thaw flow slides known as earthflows and mudflows.

The bedrock contact zone generally consists of a small rubble zone ranging from a few centimeters to up to 2 m in thickness.

Most of the soils encountered were fine- to medium-grained sands with some silt. Where vegetation was present in undisturbed areas, the organic layer ranged from 10 to 30 cm. The nearby beach to the west is sandy with a small amount of rounded cobble.

2.7.2 Hydrogeology

The project area is coastal lowland with numerous lakes and ponds separated by glacial landforms and parallel geological intrusions including diabase dykes and sills. The drainage basins are generally long and narrow and predominantly oriented along the north-south axis. The predominant drainage in the area is north into Hope Bay.

Continuous permafrost extends to -560 m. (Heginbottom et. al., 1995). Ground temperature measurements in the project area indicate an active zone thickness ranging between 1.5 to 2.6 m and the depth of zero annual amplitude varying between 11 and 17 m (EBA 1996).

Groundwater in the continuous permafrost zone is confined to this shallow active layer. Based on the regional geology and the presence of permafrost, the groundwater flow is likely complex and controlled by topography, surface water bodies, and bedrock structure. Vertical groundwater flow is limited by the shallow permafrost. The period of groundwater flow is highly influenced by climatic conditions and flow is also likely limited to the short summer season when the active layer thaws, thus allowing water to flow in this horizon. It is expected that the surface water bodies are expressions of the water table.

Water flow in the active layer is expected to follow surface topography, which is from the high bedrock ridge to the west, into Windy Lake.

3.0 ENVIRONMENTAL CRITERIA

3.1 Regulatory Guidelines

The following subsections outline the rationale for the selection of applicable generic risk management guidelines for soil and surface water. The guideline documents relevant to the site consist of the following:

3.2 Land Use Assessment

CCME land use criteria and government of Nunavut land use criteria currently recognizes four different types of land use:

- Agricultural land use: lands used for growing crops or producing livestock, and that are agricultural in nature. These also include lands that provide habitat for resident and transitory wildlife and native flora.
- Residential/Parkland land use: lands where the primary activity is occupation for residency and recreational purposes. These include lands used as buffer zones between areas of residence, but do not include wildlands, such as national and provincial parks, other than campground areas.
- Commercial land use: lands where the primary activity is related to commercial operations, such as the provision of goods and services (e.g., shopping mall) and occupancy is not for residential or manufacturing purposes. These do not include operations where the growing of food is the primary activity (i.e. agricultural).
- Industrial land use: lands where the primary activity involved the production, manufacture, construction, and/or assembly of goods.

Canadian soil quality guidelines are derived for the protection of receptors under these four different land uses. The site use is currently classified as industrial. This land use will be applicable during exploration phases and through the life of mine until closure, after which the land use will revert to agricultural use. On industrial lands, the primary land use activities are not directly dependent on the need to sustain a high level of ecological processes. However, the same key ecological receptors are considered as for the agricultural and residential/parkland uses.

3.3 Particle Size Designation

A coarse-grained soil is defined as having a median grain size (D_{50}) of 75 µm or greater, whereas a fine-grained soil has a D_{50} of less than 75 µm. A review of the particles size analyses results for the Phase 3 ESA and the previous Phase 2 ESA study indicates that the soils are predominantly coarse-grained. These results corroborate soil textural observations in the field.

3.4 Applicable Exposure Pathways

3.4.1 Human Pathways

The site is covered with sand, gravel, boulders, grassy areas, and sub-arctic tundra vegetation. The majority of the site consists of short grass with sparse vegetation. Soil and water direct contact (dermal contact and ingestion) pathways are considered applicable at the site during remedial activities.

Soil and water direct contact (dermal contact and ingestion) pathways are considered applicable pathways. There are no buildings in use, and given the future anticipated use of the site, the vapour inhalation pathway can be excluded.

3.4.2 Ecological Pathways

Under this current land use, the eco-soil contact pathway is applicable. Given the proximity of the Windy Lake, the protection of groundwater for aquatic life (freshwater) should be given consideration; however, drinking water pathways can be excluded due to the absence of potential surface waterbodies for drinking water use within the immediate area.

3.5 Summary of Applicable Guidelines

Various regulatory guideline documents were consulted and are summarized below. These documents provide a generic set of guidelines against which the analytical results are compared to provide a general site condition.

Canadian Soil Quality Guidelines consider both human health and ecological receptors, and are intended as general guidance for the protection, maintenance, and improvement of specific uses of land and water. Based on the existing site usage and surrounding land use, the CCME industrial guidelines are applicable.

SOIL CRITERIA

General Soil Criteria and Metals

- Canadian Council of Ministers of the Environment (CCME), Soil Quality Guideline for the Protection of Environmental and Human Health –Industrial Land Use (coarse-grained soils);
- Canadian Council of Ministers of the Environment (CCME) Canada-Wide Standard for Petroleum Hydrocarbons (PHC) in Soil; and
- Environmental Protection Division, Department of Environment, Government of Nunavut, Environmental Guideline for Contaminated site Remediation (March 2009 Revised) – Industrial Land Use (coarse-grained soils).

Metal concentrations in surficial soils are dependent upon variations of metal content in naturally-occurring media (i.e. bedrock, soil). Soils and stream sediments developed from metal-rich parent materials and bedrock may also be naturally enriched in regulated metals, and contribute to the cycling of metals in the environment including in water and vegetation. As observed during the Phase 3 ESA and has based on background sampling, many small ponds and wet areas in undisturbed terrain contain reddish sediment, suggestive of natural iron oxides in the environment. The biogeochemistry of metals in natural systems is complex; however an understanding of local and regional geochemical processes is necessary to evaluate the effects of metals on the surrounding environment. Natural background soil and sediment metals concentrations impose technical constraints on generic environmental soil criteria for regulated metals, such as the Canadian Council for Ministers of the Environment (CCME) criteria. However, for the current assessment, CCME-regulated metals were compared to CCME Soil Quality Guidelines for the Protection of Environmental and Human Health Industrial Criteria).

Petroleum Hydrocarbons

The Canada-Wide Standard for Petroleum Hydrocarbons in Soil (CWS PHC) is a specialized case of Canadian (CCME) Soil Quality Guidelines (CCME, 2008). Hydrocarbons are subdivided into four broad physico-chemical fractions as defined by the US Total Petroleum Hydrocarbons Criteria Working Group. The fractions are defined in equivalent carbon numbers as follows:

- F1: C6 to C10
- F2: >C10 to C16
- F3: >C16 to C34
- F4: C34+

Aliphatic and aromatic sub-fractions are considered separately in a human health assessment.

Whereas the primary focus in PHC CWS standard development is prevention of toxic effects from F1-F4 on the receptors in certain situations these pathways may be of little immediate concern and PHC management is governed by other factors including:

- ignition hazard
- odour and appearance

- effects on buried infrastructure
- formation of non-aqueous phase liquids (NAPL)
- socio-economics and technological capabilities

Soil Quality Guidelines can be used as benchmarks to evaluate the need for further investigation or remediation with respect to a specified land use. Guidelines are applied to identify and classify sites, to assess the general degree of contamination at a site and to determine the need for further action, and as a basis for remediation objectives.

In the present study, soil petroleum hydrocarbon analyses were compared to the Government of Nunavut Tier 1 Environmental Guideline for Contaminated Site Remediation for Nunavut (industrial land use and coarse-grained soils). These criteria are:

Tier 1 Environmental Guidelines for Contaminated Site Remediation for Nunavut (industrial land use and coarse grained soils)

Parameter	mg/kg
F1	240
F2	260
F3	1,700
F4	3,300

Water Licence

As per Water Licence No. 2BE-HOP0712, the following industrial soil criteria apply to petroleum-affected remediated soils at Windy Camp:

Water Licence Soil Remediation Criteria for Petroleum Affected Soils at Windy

Parameter	mg/kg
Total Petroleum Hydrocarbons (TPH)	2,500
Benzene	0.5
Toluene	0.8
Ethylbenzene	20
Lead	400

The TPH criterion is no longer considered the best standard to evaluate the risk associated with hydrocarbons in soil, and reflects earlier CCME 1991 Interim Criteria that were in effect at the time the subject water licence was issued. The criteria are provided for reference. Government of Nunavut Tier 1 PCH criteria for industrial land use and coarse-grained soils were used for comparison in this assessment.

WATER CRITERIA

General Criteria

- Canadian Council of Ministers of the Environment (CCME), Canadian Water Quality Guidelines for Protection of Fresh/ Marine Water Aquatic Life.

As in the case of soils, the geochemical cycling of CCME-regulated metals naturally present in the environment may cause ambient water quality to exceed the Tier 1 environmental guideline for certain specific parameters in unfrozen water. Nevertheless, water quality results as reflected during the August 2011 surface water quality sampling event were compared to generic Tier 1 criteria for the purpose of the present assessment. Mining activities that cause site disturbance and changes in pH and soil salinity are factors that may contribute to resulting above-background metals concentrations in water, even if natural waters contain CCME-regulated metals in concentrations higher than the Tier 1 criteria. The Canadian Council of Ministers of the Environment (CCME) does not have established water quality guidelines for the protection of aquatic life for total dissolved solids TDS or calcium (CCME, 2007).

Chlorides

For the purpose of this assessment, chloride concentrations were compared to:

- CCME (Canadian Council of Ministers of the Environment). 2011. Canadian water quality guidelines for the protection of aquatic life: Chloride. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg.

In 2011 the CCME released a guideline for chloride, including a long-term exposure guideline of 128 mg/L chloride and a short-term benchmark concentration of 586 mg/L chloride. The long-term exposure guideline is intended to protect all forms of aquatic life for an indefinite exposure period, whereas the short-term benchmark concentration is a concentration at which severe effects are likely to be observed (CCME, 2011).

Water Licence

As per Water Licence No. 2BE-HOP0712, the following water criteria apply to the still-active water monitoring program stations.

Water Licence Water Discharge Requirements for Station HOP-5 (Tank Farm)

Parameter	Maximum Average Concentration (mg/L)
Oil and Grease	15
Benzene	0.370
Toluene	0.002
Ethylbenzene	0.090
Lead	0.001

4.0 PHASE 3 SITE WORK AND RESULTS

4.1 Site Safety

In accordance with HBML's policies, EBA staff including Ms. Daniela Felske and Mr. Michel Hebert, participated in a one-day site orientation and safety training, in addition to a bear awareness course and hands-on training for the use of bear deterrents. EBA completed its in-house Safe Work Form, which was updated and signed daily. Contents of the EBA Safe Work Form were explained to and accepted by the student field assistants assigned to EBA for the day. Pre-job hazard assessments were completed prior to going in the field, and were updated with a field-level assessment once on site. EBA participated in the staff safety meetings each morning, and prepared a trip planner each field day prior to going to site.

4.2 Test Pitting and Soil Sampling Program

Based on the known history of the site, previous Phase 2 ESA, and a walk-through of the site upon arrival, the Windy Lake site was divided into eight areas of potential environmental concern. A summary key of the areas is provided on Figure 2, and detailed features of the areas are provided on Figures 3A to 3H. The areas are as follows:

Areas of Potential Environmental Concern at Windy Lake Former Camp

Area	Description
W1	Seacans and areas downgradient of 2004 spill
W2	Former landfarm
W3	Former AST near generators
W4	Former generators
W5	Tents
W6	Soils within tankfarm (no ASTs present, only soils)
W7	Soils inside shop tent
W8	Former incinerator near beach

Test-pitting, soil sampling, and surface water sampling were completed on August 6, 9, and 10, 2011. Testpits were dug by hand, and soils were visually logged and bagged for field soils screening (hydrocarbon vapours) at approximate intervals of 10 to 30 cm.

A total of 86 logged test pits were dug. Numerous other shallower pits in various locations (and especially in the vicinity of the tests) were dug to check for visual indications of petroleum hydrocarbon impacts. Test pit depths were to the free water surface or to rock refusal. The total maximum test pit depth was 1.3 m below surface, which was in the sandy fill deposited for the former generators. No permafrost was encountered in the testpits.

The organic layer in the vegetated areas ranged from 10 cm to 30 cm. Soils in nearly all locations consisted of brown sand or brown silty sand to about 0.4 m below grade, underlain with fine to medium grained sand that was more yellowish in color. Some gravel was encountered mixed with the sand in a few locations,

and large boulders and cobble, or bedrock, was encountered in some areas and in the tent areas in particular. Soils were moist to dry, although saturated soils were encountered in the following areas:

- W1 – seacans and areas downgradient of former spill. Sampling also included a gully, soils near a rivulet from the bedrock areas to Windy Lake, and small marshy area. Refer to photos on Figure 3A.
- W2 - former landfarm. Areas near windy Lake were saturated approximately 20 cm below surface. Refer to photo on Figure 3B.
- W6 - tankfarm. Some areas of the tankfarm had standing water. Refer to Figure 3F for photos.
- W8 – former incinerator near beach. This entire area is in a grassy marsh. Refer to photo on Figure 3H.

Soil samples were field screened using the ambient temperature headspace method, where soil samples were placed in plastic bags, allowed to adjust to outdoor air temperature, and the airspace within the bag analyzed for combustible gases using a photo-ionization detector (PID) MiniRae instrument calibrated to isobutylene. Select PID screening results and depths of screened samples are shown next to the sample location on Figures 3A to 3H.

Soil samples were also collected directly from the test pit and packed with zero headspace in laboratory supplied jars, and stored in an insulated cooler with ice for transport to Maxxam Analytics International Corporation in Edmonton, Alberta. Surface water samples were collected in designated laboratory-provided bottles, and preserved and/or field filtered as required. Field protocols and QA/QC procedures during sampling were in accordance with standard industry protocols. Holding times for all water and soil samples were within acceptable limits. All coolers still had ice present upon receipt at the laboratory, and the temperature range within the various coolers ranged between 4°C and 13°C. No samples were broken or lost during transport.

Sixty three (63) samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX), petroleum hydrocarbon fractions F1 to F4, six (6) samples were analyzed for metals and ten (10) samples were analyzed for particle size analysis (PSA).

4.3 Surface Water Sampling

All three (3) groundwater wells installed in 2009 by WESA were dry at the time of the site investigation, including MW-1 near the water's edge. The pipe above grade at well MW-1 was broken, but the well was still intact below grade to a depth of approximately 1 m. There was no cap on this well. Well MW-2 was installed to a depth of 0.83 m below grade, and well MW-3 was installed to a depth of about 0.57 m below grade.

Four surface water samples were collected for the Phase 3 ESA to substitute for the lack of groundwater data:

- The marshy area downgradient of the 2004 diesel spill (W1),
- The tank farm (W6 and also monitoring point HOP-5 on the Water Licence), and
- Two locations in the grassy marsh where the former incinerator was located (W8).

Surface water sample W1-1 was collected southeast of the historic 2004 spill, W6-1 was collected within the fuel farm, and W8-1 and W8-2 were collected downgradient of the incinerator. One sample was collected from Windy Lake for the analysis of field parameters, however, this sample was not sent for laboratory analysis.

The pH, conductivity (EC), temperature, dissolved oxygen, and ORP were measured at the sampling locations on August 10, 2011, as summarized below:

Surface Water Field Parameters

Surface Water Sample	pH	EC (uS/cm)	Temperature (°C)	Dissolved Oxygen (mg/L)	ORP (mV)
Windy Lake	5.1	402	7.9	9.18	102.6
W-1	9.6	381	6.9	1.50	-134.6
W6-1	3.4	3,700	6.8	4.62	191.1
W8-1	8.0	512	5.7	1.15	-60.3
W8-2	7.3	390	5.0	0.44	-23.4

Electrical conductivity was consistent between field and laboratory parameters.

Chemically reducing conditions with low dissolved oxygen were encountered at the wetland areas including W1 and W8. The pH varied across the site, with the water in the tank farm highly acidic, the water at W1-1 highly alkaline, and the water in the marshland near the incinerator near neutral. The lake was slightly acidic at the time of sampling.

Surface water sample locations are shown on Figure 4, along with analytical results.

4.4 Soils and Surface Waters Results

Results of petroleum hydrocarbon sampling are shown on Figures 3A to 3H. Full analytical results are provided in the Tables section of the report, and complete laboratory reports are provided in Appendix A. A summary of the Phase 3 results with areas and estimated in-situ volumes of soils having concentrations of petroleum hydrocarbon concentrations higher than the CCME guidelines is provided below, followed by a summary of observations for each of the eight (8) areas.

Windy Lake Petroleum Hydrocarbon Soils Exceeding CCME Industrial Soil Criteria (coarse grained)

APEC	Hydrocarbon Fraction	Maximum Concentration(s) mg/kg	Area	Estimated Depth	Estimated In-Situ Volume
W1	F2	380	85	0.5	43
W2	F2	1,600	124	2	248

Windy Lake Petroleum Hydrocarbon Soils Exceeding CCME Industrial Soil Criteria (coarse grained)

APEC	Hydrocarbon Fraction	Maximum Concentration(s) mg/kg	Area	Estimated Depth	Estimated In-Situ Volume
W3	F2	1,700	23	1	23
W4	F1, F2	820; 13,000	44	2.5	132
W5B	F2	2,900	1	0.5	1
W5D	F2	2,100	2	2	4
W5E	Xylenes, F1, F2, F3	X = 24; F1 = 960; F2, F3 = 10,000; 1,800	9	2	18
W5G	F2	3,500	4	2	7
W5H	BTEX, F1, F2	BTEX= 0.14; 4.6; 4.4; 68; F1, F2 = 1,700; 10,000	20	2	39
W8	F2	490	61	1	61
Total			364	16	575*

- Does not include presumed residual soil impacts below the liner of the tank farm

W1 – Seacans and Downgradient Area of the 2004 Diesel Spill

Referring to Figure 3A, the PID screening and analytical results show a distinct path suggestive of how the diesel spill in 2004 flowed towards Windy Lake. Soil screening and visual cues suggest that soil impacts were confined to the uppermost 0.5 m of soil. For location W1-1, vertical closure was obtained at 0.15 m below grade.

Areas under the tank farm could not be assessed because the facility has not yet been decommissioned. It is likely that some residual hydrocarbon may be present below this area. The 2004 EBA report indicates that the area topographically downgradient of the former AST was the primary location of diesel soil impacts. The report also indicates that in order to maintain the stability of the AST, some diesel-affected soils near and beneath the former tank were left in place. Only soils within the land farm were analyzed for hydrocarbons in 2004, so it is not known what the un-excavated soils quality was at the time.

The estimated volume of hydrocarbon-affected soils was calculated to be 43 m^3.

Surface water sample W1-1 was taken at the corresponding soils sample location. The area was situated in a wet area of ponded water that had sparse vegetation and a distinct layer of reddish iron oxided on the surface. A photo of the sampling location is provided on Figure 3A. Total metal concentrations exceeded

the Canadian Water Quality (CWQG) guidelines for aluminum (20 mg/L), copper (0.11 mg/L), iron (47 mg/L), lead (0.011 mg/L), nickel (0.041 mg/L) and zinc (0.08 mg/L). Although the soils at W1 would meet the Water Licence soil criteria for TPH as well as CCME soil criteria, the proximity of the lake and adjacent rivulet are factors to consider when evaluating whether to leave or remove the soils. The poor water quality in the affected area is potentially related to the local chemical conditions associated with PHC impacts. The soils thereby may present a risk to the aquatic receptor not because of hydrocarbons, but because of the partitioning of metals into the surrounding porewater and eventual transport to Windy Lake. Water parameters of concern that were higher than the CCME criteria included total arsenic, copper, and lead. The total metals results may reflect natural surface water concentrations in that environment; however, a water sample within the marshy area, but outside of the hydrocarbon impacted areas, was not collected for comparison.

Summary water results are provided in Figure 4, and the full results are provided in Table 9 in the Tables section.

W2 – Former Landfarm

The landfarm was decommissioned by HBML in 2009. In order to complete the assessment, a small area of protective coconut matting had to be cut away in order to reach the underlying soils. All soils within the footprint of the former landfarm met the industrial CCME guidelines for hydrocarbons (and met agricultural/wildland hydrocarbon criteria as well). Based on field observations and laboratory analysis, the areas with the highest residual hydrocarbon impacts are soils to the northwest of the former facility, in the vicinity of W2-8.

Soils north of the former landfarm facility, on the west side of the south berm of the tank farm facility did not meet petroleum hydrocarbon guidelines, as shown on Figure 3B. Berm soils were well-compacted and contained a significant proportion of boulders. For this reason the area could not be assessed to depths lower than 0.5 m even with pickaxe. Depth of impact was assumed to be 2 m in this area for the purpose of volume calculation, even though closure was obtained at 0.5 m below grade for location W2-18.

W3 – Former AST Near Generators

Expanding on the Phase 2 findings in this area, ten testpits were dug in the vicinity of a former AST near the shop tent and generators. A surficial soil sample taken from this area in 2009 during the Phase 2 ESA had F2 concentrations of 1,970 mg/kg (WLF09-SS-33). This previous result corresponds to the most highly-impacted soils encountered during the Phase 3 ESA, which were soils at W3_01 taken at 0.20 m below grade (1,700 mg/kg). As confirmed by analytical testing in conjunction with PID readings, hydrocarbon impacts not meeting regulatory guidelines were confined to an area of approximately 23 m^2. The soils in W3 consisted of sandy silt and also gravelly fill, and were highly compacted. For this reason, it was not possible to hand excavate soils below 0.5 m. The volume of soils higher than the CCME criteria was estimated to be 23 m^3. Refer to Figure 3C for PHC data and a photo of the area. Complete soil analytical results for PHC and metals are provided on Table 3.

A staff member at the Doris Camp who was formerly employed by Miramar recollected that one time a colleague left the AST unattended while filling it with diesel fuel, causing the AST to overfill. He could not

recall the year of the spill or how large it was, and was unaware of it being reported to regulatory authorities.

Soils met the other CCME criteria for hydrocarbons, including benzene, toluene, ethylbenzene, and xylenes (BTEX), and all regulated metals. Although the Water Licence only specifically refers to soils remediated in the landfarm, based on the current results, all of the soils in this area would meet the Water Licence criteria for PHC and lead.

W4 – Former Generators

EBA attempted to locate the Phase 2 surface sample location WLF09-SS-092 next to the shop that had F2 concentrations of 1,280 mg/kg, but hydrocarbon impacts in this were minimal (see sample W4-8). However, significant hydrocarbon impacts were found in the vicinity of the former generator shown on Figure 3D. Most impacts occurred within a rectangular mound of fill approximately 1 m high that supported the generator. This area did not appear to be sampled in 2009.

The most highly-impacted soils were found at location W4-1, at a depth of 0.5 m below grade (F1 concentrations were 820 mg/kg and F2 concentrations were 13,000 mg/kg). Soils at a depth of 0.75 m met the F1 criterion, and F2 concentrations were decreased to 7,000 mg/kg. Vertical delineation was not achieved at this location, although it is anticipated that the total depth of impacted soils not meeting F2 criterion is 1.5 m below grade (2 m was assumed for the volume calculation). Refer to Figure 3D for PHC data and a photo of the area. Complete soil analytical results for PHC are provided on Table 4.

Owing to the coarse texture of the sandy soils and the likelihood that spills associated with this generator were small drips occurring over many years, the lateral extent of contaminated soils is likely to be limited, as was verified by PID soil screening and soil analyses. The downgradient sample W4-9 had virtually no PHC concentrations. To build in conservative assumptions in the volume estimation a large area was selected, resulting in a volume of approximately 105 m^3 PHC-affected soil in this location.

Soils at W4 would not meet the Water Licence soil criteria for TPH.

W5 – Tents

Tents were supplied by a network of 1,240 L above ground storage tanks and lengths of pipe along each row of tents. Individual tents were supplied with fuel by T-joints. As some of the infrastructure has been removed, the soils at areas where joints would have been located in the past were visually inspected and testpitted to detect possible past leakage. Soils around the tanks were not sampled during the Phase 2 ESA in 2009.

Other joints that potentially could have leaked were the joints connecting the tanks and the length of pipe, as was the case for area W5-B shown on Figure 3Ei.

Seven tents were initially identified as having PHC soil impacts. Of these seven tents, five had hydrocarbon impacts higher than regulatory criteria as confirmed by laboratory-analysis. These tents included the AST to pipe joint at Tent 38 (W5B), the AST at the Driller's Dry (W5E), and the former T-joints at Tent 41 (W5D), Tent 18 (W5G), and Tent 12 (W5H). All the areas are shown on Figure 3Ei to 3Eiii. Complete soil analytical results for PHC are provided on Table 5.

It was noted at the time of the assessment that some ASTs still contained fuel. Spills at The Driller's Dry had xylenes concentrations that were higher than the Canadian Soils Quality Guidelines (CSQG), and Tent 12 had BTEX concentrations that were higher than the CSQGs as well. These exceedances suggest more recent diesel fuel spills.

The total volume of impacted soils was approximately 80 m^3, with the largest spills occurring at the Driller's Dry and Tent 41. The soils in the five areas would neither meet the Water Licence TPH criterion nor the BTEX criteria.

W6 - Tank Farm

Refer to Figure 3F for PHC data and photos of the facility. Complete soil analytical results for PHC, metals and salinity parameters are provided on Table 6. Soils within the tank farm (W6) met CCME hydrocarbon criteria for industrial land use. The soils contained with the tank farm may not meet industrial criteria for soluble conductivity based on one analysis of salinity parameters (refer to Table 6 in the Tables section). Salinity remediation criteria are not specified in HBML's current Water Licence. Soils met CCME and Water Licence criteria for metals, including lead.

The average depth of soils in the facility was approximately 25 cm. Based on a facility size of 40 by 20 m, the approximate volume of soils is 200 m^3. Industrial criteria for salinity parameters were not included in the Water Licence; however the material would likely not be suitable as reclamation material because the sodium content could limit or inhibit vegetation growth, and the chlorides are readily leached out of the soils, and therefore should not be situated in a location that would potentially create a risk to freshwater aquatic receptors.

Surface water sample 11W6-1 (also HOP-6) exceeded Canadian Water Quality Guidelines (CWQG) for aluminum (2.4 mg/L), copper (0.028 mg/L), iron (7.9 mg/L), lead (0.0017 mg/L) and zinc (0.012 mg/L). At the time of sampling, the water quality did not meet the Water Licence criterion for lead. The water also contained higher concentrations of chlorides (770 mg/L) than the new freshwater aquatic guidelines.). In comparison, the lakes in the area have been found to have concentrations of some total metals (aluminum, iron, copper, cadmium, chromium, lead, and manganese) that exceed Canadian Water Quality Guidelines (CWQG) on a seasonal basis in some lakes (Miramar, 2003 and Rescan 2010). Water in the lakes in this area is neutral to slightly alkaline.

Summary water results are provided in Figure 4, and the full results are provided in Table 9 in the Tables section.

Soils in the tank farm were not sampled during the Phase 2 ESA in 2009.

W7 – Soils Inside Shop Tent

During the Phase 3 ESA, it was noted that areas of soils in the tent were stained by past minor spills of fuels and lubricating oils. Soils were screened and two samples were submitted for laboratory analysis. No exceedances of the industrial guidelines for PHC in soils were found. Refer to Figure 3G for PHC data and a photo of the shop tent area. Completed soil analytical results are provided on Table 7. Soils at W7 would meet the Water Licence soil criteria for TPH.

Soils in the shop tent were not sampled during the Phase 2 ESA in 2009.

W8 – Former Incinerator

Black staining was noted in a marshy area about 10 m from Windy Lake. The area is downgradient of the former incinerator. Analytical results indicated that the soils did not meet the industrial guidelines for PHC-impacted soils. Refer to Figure 3H for PHC data and a photo of the area. Complete soil analytical results are provided on Table 8.

Because of the high water table and vigorous vegetation growth and associated microorganisms, as well as visual observations of the sands below the organic layer, it is anticipated that the depth of hydrocarbon impacts is shallow and probably only extends to 0.25 m below grade. Because of the sensitivity of the nearby receptor, the limited number of soil samples, and the potential for hydrocarbons to have been transported to adjacent marshland areas not identified during the Phase 3 study, a potential remediation depth of 1 m was assigned to this area, for a total in-situ volume of 61 m^3.

Two surface water samples were taken at W8, at two of the four soil sample locations. Summary water results are provided in Figure 4, and the full results are provided in Table 9 in the Tables section. Surface water sample W8-1 exceeded the applicable guidelines for aluminum (13 mg/L), copper (0.087 mg/L), iron (38 mg/L), lead (0.016 mg/L), nickel (0.029 mg/L), and zinc (0.09 mg/L). Surface water sample W8-2 exceeded the applicable guidelines for aluminum (0.072 mg/L), copper (0.0021 mg/L), and iron (1.7 mg/L). In comparison, the lakes in the area have been found to have concentrations of some total metals (aluminum, iron, copper, cadmium, chromium, lead, and manganese) that exceed Canadian Water Quality Guidelines (CWQG) on a seasonal basis in some lakes (Miramar, 2003 and Rescan 2010). Water in the lakes in this area is neutral to slightly alkaline.

Soils at W8 did not meet CCME soil criteria for the F2 hydrocarbon fraction, but would meet the Water Licence soil criteria for TPH. Marshland grasses were observed to be growing well in the PHC-affected area. Water parameters of concern that were higher than the CCME criteria included total arsenic, copper, and lead. The proximity of the lake is a factor to consider when evaluating whether to leave or remove the soils. The poor water quality in the affected area is potentially related to the local geochemical conditions associated with PHC impacts. The soils may be a risk to the aquatic receptor because of the partitioning of metals into the surrounding porewater and eventual transport to Windy Lake, as opposed to the hydrocarbons being a risk. The total metals results may reflect natural surface water concentrations in that environment; however, a water sample within the marshy area, but outside of the hydrocarbon impacted areas, was not collected for comparison.

Many wetland species of vegetation can tolerate relatively high concentrations of dissolved metals, and bioaccumulate these metals in the roots and aerial parts. The microclimate at Old Windy Camp that attracts numerous species of birds and mammals which feed at the beach area, as was observed during the Phase 3 assessment.

Soils near the incinerator were not sampled during the Phase 2 ESA in 2009.

5.0 BIOTREATABILITY RESULTS

To support bioremediation of soils by the activity of intrinsic soil microorganisms as a remedial option at the old Windy Camp site, EBA collected a composite soils sample comprised of approximately equal

amounts of soils form W2-20, W4-10, and W2-8. Soils were collected for the purpose of bench-scale biotreatability trials, started in October 2011 at SiREM laboratories in Guelph, Ontario. Details of the study are included in SiREM's proposal dated March 11, 2011 (Si-1274-030111) and are included in Appendix B. The objectives of the bench-scale testing were to:

- Evaluate enhanced aerobic and anaerobic biodegradation processes for the F2 fraction. Aerobic treatments included an oxygen releasing compound with nutrients.
- Evaluate anaerobic (undisturbed) treatment, including nitrate and sulfates addition as electron acceptors. The purpose of the anaerobic treatments study was to attempt to demonstrate that natural biodegradation could be a successful remediation approach while maintaining undisturbed, anaerobic conditions with only the application of sources of electron acceptors.

The dates for the SiREM biotreatability sampling were:

- October 5, 2011 (baseline)
- November 2, 2011 (Sample Event #1)
- December 7, 2011 (Sample Event #2)
- January 18, 2012 (Sample Event #3)
- February 29, 2012 (Sample Event #4 and conclusion of study).

The average F2 concentration at the start of the study was 2,800 mg/kg and the average F3 fraction was 480 mg/kg. Water content of the soil was adjusted to be optimal for the type of soil (50-70% of field capacity), and treatments were applied as described in the proposal. The soils were maintained at a temperature of 10°C throughout the study.

Graphs of the F2 and F3 concentrations measured for the baseline (t=0), and Sample Events #1 (t = 28 days), #2 (t = 63 days) and #3 (t = 105 days) are shown in the graphs provided in Appendix C. The graphs show the nutrient status of the soils on the right-hand axis, and the F2 and F3 hydrocarbon concentrations on the left-hand axis, both plotted against time. Results of Sampling Event #4 will be provided under separate cover.

A summary of results is as follows:

- Graph 1 presents the control. Samples were irrigated to maintain optimal moisture condition, but were not stirred;
- Graph 2 is the aerobic treatment, which consisted of the application of a proprietary oxygen-releasing compound supplemented with nutrients and periodic stirring;
- Graph 3 is one anaerobic treatment using nitrates as an electron acceptor with no stirring; and
- Graph 4 is the second anaerobic treatment using sulphates as an electron acceptor with no stirring.

For the control, the F2 concentrations decreased to less than 1,500 mg/kg by t = 105 days, and the F3 concentrations remained unchanged.

For the soils treated with the proprietary oxygen release compound, the F2 concentrations at t = 105 days had decreased to about 800 mg/kg. F3 concentrations did not change. Both anaerobic treatments were no different from the control in the first 105 days of the study. A detailed summary of analytical results is provided in the tables in Appendix C.

The study suggests that undisturbed, anaerobic treatment of F2 and F3 impacted soils would not be effective for the soils at Windy Camp. A remedial option involving the aeration of soils or addition of oxygen (such as by adding an oxygen releasing compound) would be effective.

An estimated weighted average of F1 and F2 hydrocarbon fraction for the 500 m^3 of PHC-impacted soil on the site is between 5,000 and 6,000 mg/kg. Based on the results of the biotreatability study for the F2 fraction (a removal rate of 70% after 3 months of treatment) and assuming weekly tilling with optimal nutrient and moisture conditions, the projected F2 concentrations after one season of landfarming treatment would be between 1,500 to 2,000 mg/kg. Because of the limited data it is difficult to project how much more time would be required to remediate the soils at the old Windy Camp to concentrations less than the CCME industrial guidelines; however, based on the current study, it is anticipated that this would take two to three treatment seasons.

6.0 REMEDIAL OPTIONS

Based on the results of the Phase 2 ESA by WESA (and completed prior to the Phase 3 ESA), EBA prepared a cold climate bioremediation literature review in 2010 and ranked potential remediation options for the old Windy Camp (EBA, 2010).

Established soil treatment options that were evaluated for this report, from most rapid to the most protracted, included physical treatments, such as excavation and landfilling (encapsulation), incineration, thermal desorption, and biological/chemical treatments, such as bioaugmentation/biostimulation during composting, landfarming, or biopile remediation, surfactant addition, soil washing, and monitored natural attenuation.

A summary of remediation options with Arctic/Antarctic case studies was provided along with a listing of the advantages and disadvantages of each. Proposed remedial options for the two sites were ranked using an approach based on the life cycle framework assessment for remediation options developed by Diamond et al. (1999). According to previous reports, permafrost degradation in some areas has caused the potential for solifluction at the old Windy Camp. Based on the outcome of the analysis including this consideration, the preferred remedial approach for Windy Camp was in-situ bioremediation, with ex-situ landfarming as the remedial alternative.

The SiREM study suggests that the bioremediation of F2 impacted soils by anaerobic techniques would be protracted. Conventional landfarming with nutrient addition or the application of oxygen-releasing compounds would be more appropriate remedial techniques.

Approximately 500 m^3 of soils with F2 concentrations ranging from about 300 to 13,000 mg/kg were identified. Only a very small quantity of soils is affected by F3-range hydrocarbons, and the concentrations are only marginally higher than the industrial PHC criteria. The probable range of remedial cost for the excavation and landfarming of these soils was estimated to range between $150,000 and $200,000, with a

remedial timeframe of two to three seasons. This estimate was developed based on the completion of the road to old Windy Camp, and does not include permitting costs, engineering costs related to the design of the facility, and periodic engineering effort to monitor and sample the water and soils at the facility. The estimated size of the required facility to treat all the F2 and F3 affected soils is 40 x 40 m.

Alternatively, landfarming with the application of an oxygen release compound could be considered to enhance biodegradation processes, but material costs of the remediation project would be increased by an estimated $30,000 to $50,000 versus conventional landfarming. The study did not ascertain whether a better end result could be achieved using the oxygen release compound versus conventional landfarming, in terms of either meeting remedial objectives faster, or meeting them at all. A comparison of remedial effectiveness versus cost could be determined by a field trial of the two technologies.

7.0 RECOMMENDATIONS

Based on the outcome of the Phase 3 ESA and the SiREM soil biotreatability study, EBA recommends the following for the Windy Lake site:

- Empty the remaining ASTs of fuel in order to prevent any possible further hydrocarbon soil impacts.
- Update the proposed remedial options based on the final results of the SiREM study, due by the end of March 2012.
- Consider excavating the hydrocarbon-impacted sediments and soils in W8 due to the potential to cause poor water quality in the shallow areas used as feeding areas by birds and other animals. Soils can be transferred to Quatrex bags and stored on site until the landfarm has been constructed or can be disposed of off-site.
- Collect and remove for disposal the approximately 200 m^3 soils in the tank farm. Contact water in the facility does not meet Water Licence criteria and should be collected for disposal. Consider decommissioning the former tank farm to avoid the collection of water in the lined berm.

8.0 CLOSURE

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Sincerely,
EBA Engineering Consultants Ltd.

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TABLES

Table 1: Soil Analytical Results for Hydrocarbons and Regulated Metals at W1 (Seacans South of Former Tankfarm)

Test Parameter	Unit	Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grain)[1]	11W1_01 0 - 0.05 m	11W1_01 0.15 m	11W1_01 0 - 0.15 m	11W1_05 0.25 m	11W1_09 0.20 m	11W1_24 0.20 m
BTEX and Hydrocarbon Fractions F1 to F4								
Benzene	mg/kg	0.03	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050
Toluene	mg/kg	0.37	0.033	<0.020	-	0.033	<0.020	<0.020
Ethylbenzene	mg/kg	0.082	<0.010	<0.010	-	<0.010	<0.010	<0.010
Xylenes	mg/kg	11	0.26	<0.040	-	<0.040	<0.040	<0.040
F1 (C6 - C10)	mg/kg	240	29	<12	-	<12	<12	<12
F2 (>C10 - C16)	mg/kg	260	**340**	<10	-	**380**	<10	14
F3 (>C16 - C34)	mg/kg	1,700	320	11	-	290	19	19
F4 (>C34 - C50)	mg/kg	3,300	<10	<10	-	24	12	<10
Metals								
Boron (B)	mg/kg	-	-	-	0	-	-	-
Hex. Chromium Cr 6+	mg/kg	1.4	-	-	<0.15	-	-	-
Antimony (Sb)	mg/kg	40	-	-	<1	-	-	-
Arsenic (As)	mg/kg	12.0	-	-	1	-	-	-
Barium (Ba)	mg/kg	2,000	-	-	24	-	-	-
Beryllium (Be)	mg/kg	8	-	-	<0.4	-	-	-
Cadmium (Cd)	mg/kg	22	-	-	<0.1	-	-	-
Chromium (Cr), total	mg/kg	87	-	-	22	-	-	-
Cobalt (Co)	mg/kg	300	-	-	5	-	-	-
Copper (Cu)	mg/kg	91	-	-	18	-	-	-
Lead (Pb)	mg/kg	600	-	-	2	-	-	-
Mercury (inorganic)	mg/kg	50	-	-	<0.05	-	-	-
Molybdenum (Mo)	mg/kg	40	-	-	<0.4	-	-	-
Nickel (Ni)	mg/kg	50	-	-	14	-	-	-
Selenium (Se)	mg/kg	2.9	-	-	<0.5	-	-	-
Silver (Ag)	mg/kg	40	-	-	<1	-	-	-
Thallium (Tl)	mg/kg	1	-	-	<0.3	-	-	-
Tin (Sn)	mg/kg	300	-	-	<1	-	-	-
Uranium (U)	mg/kg	300	-	-	<1	-	-	-
Vanadium (V)	mg/kg	130	-	-	32	-	-	-
Zinc (Zn)	mg/kg	360	-	-	26	-	-	-
Calculated Parameters - Salinity								
Anion Sum	meq/L	-	-	-	7.1	-	-	-
Calculated Boron	mg/kg	-	-	-	0.08	-	-	-
Cation Sum	meq/L	-	-	-	7.2	-	-	-
Cation/ED Ratio	-	-	-	-	11	-	-	-
Ion Balance	-	-	-	-	1.0	-	-	-
Calculated Calcium (Ca)	mg/kg	-	-	-	17	-	-	-
Calculated Magnesium (Mg)	mg/kg	-	-	-	9.7	-	-	-
Calculated Sodium (Na)	mg/kg	-	-	-	18	-	-	-
Calculated Potassium (K)	mg/kg	-	-	-	1.7	-	-	-
Calculated Chloride (Cl)	mg/kg	-	-	-	26	-	-	-
Calculated Sulphate (SO_4)	mg/kg	-	-	-	81	-	-	-
Soluble Parameters - Salinity								
Soluble Calcium (Ca)	mg/L	-	-	-	48	-	-	-
Soluble Magnesium (Mg)	mg/L	-	-	-	28	-	-	-
Soluble Potassium (K)	mg/L	-	-	-	4.9	-	-	-
Soluble Sodium (Na)	mg/L	-	-	-	53	-	-	-
Soluble Chloride (Cl)	mg/L	-	-	-	76	-	-	-
Sodium Absorption Ratio (SAR)	-	12	-	-	1.5	-	-	-
Soluble Sulfur (as SO_4)	mg/L	-	-	-	240	-	-	-
% Saturation	%	-	-	-	34	-	-	-
Soluble Conductivity	dS/m	4	-	-	0.63	-	-	-
Theoretical Gypsum Requirement	tonnes/ha	-	-	-	<0.1	-	-	-
Soluble ($CaCl_2$) pH	-	6 to 8	-	-	5.38	-	-	-
Soil Texture								
Grain Size (%>75 µm)	%	-	-	-	81	-	93	-
Soil Type	-	-	-	-	COARSE	-	COARSE	-

Notes:

[1] Environmental Guidelines for Contaminated Site Remediation, Nunavut, for Industrial, coarse-grained soil

[2] All soil samples were collected on August 10, 2011

- = Not detected/not analyzed/no unit/no guidelines

Bold = Greater than the referenced guideline

Table 2: Soil Analytical Results for Hydrocarbons at W2 (Landfarm)

Test Parameter	Unit	Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grain)[1]	11W2_2 0.20 m	11W2_4 0.25 m	11W2_7 0.20 m	11W2_8 0.20 m	11W2_10 0.25 m	11W2_13 0.25 m	11W2_17 0.20 m	11W2_18 0.25 m	11W2_18 0.50 m	11W02_18 COMPOSITE	11W2_19 0.20 m	11W2_20 0.25 m	11W2_21 0.25 m	11W2_23 0.30 m
BTEX and Hydrocarbon Fractions F1 to F4																
Benzene	mg/kg	0.03	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050
Toluene	mg/kg	0.37	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	0.028	<0.020
Ethylbenzene	mg/kg	0.082	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010
Xylenes	mg/kg	11	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	-	<0.040	<0.040	<0.040	<0.040
F1 (C6 - C10)	mg/kg	240	<12	<12	<12	14	<12	<12	<12	32	<12	-	<12	<12	<12	<12
F2 (>C10 - C16)	mg/kg	260	95	32	<10	170	<10	13	<10	**1,600**	110	-	<10	**550**	93	33
F3 (>C16 - C34)	mg/kg	1,700	160	100	39	140	130	44	74	320	45	-	23	**570**	220	55
F4 (>C34 - C50)	mg/kg	3,300	20	17	<10	20	18	<10	11	<10	<10	-	<10	51	39	<10
Metals																
Boron (B)	mg/kg	-	-	-	-	-	-	-	-	-	-	1.0	-	-	-	-
Hex. Chromium Cr 6+	mg/kg	1.4	-	-	-	-	-	-	-	-	-	<0.15	-	-	-	-
Antimony (Sb)	mg/kg	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-
Arsenic (As)	mg/kg	12.0	-	-	-	-	-	-	-	-	-	2	-	-	-	-
Barium (Ba)	mg/kg	2000	-	-	-	-	-	-	-	-	-	31	-	-	-	-
Beryllium (Be)	mg/kg	-	-	-	-	-	-	-	-	-	-	<0.4	-	-	-	-
Cadmium (Cd)	mg/kg	22	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-
Chromium (Cr), total	mg/kg	87	-	-	-	-	-	-	-	-	-	27	-	-	-	-
Cobalt (Co)	mg/kg	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-
Copper (Cu)	mg/kg	91	-	-	-	-	-	-	-	-	-	14	-	-	-	-
Lead (Pb)	mg/kg	600	-	-	-	-	-	-	-	-	-	3	-	-	-	-
Mercury (inorganic)	mg/kg	50	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-
Molybdenum (Mo)	mg/kg	-	-	-	-	-	-	-	-	-	-	1.0	-	-	-	-
Nickel (Ni)	mg/kg	50	-	-	-	-	-	-	-	-	-	17	-	-	-	-
Selenium (Se)	mg/kg	2.9	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-
Silver (Ag)	mg/kg	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-
Thallium (Tl)	mg/kg	1	-	-	-	-	-	-	-	-	-	<0.3	-	-	-	-
Tin (Sn)	mg/kg	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-
Uranium (U)	mg/kg	300	-	-	-	-	-	-	-	-	-	<1	-	-	-	-
Vanadium (V)	mg/kg	130	-	-	-	-	-	-	-	-	-	34	-	-	-	-
Zinc (Zn)	mg/kg	360	-	-	-	-	-	-	-	-	-	29	-	-	-	-
Nutrients																
Available (KCl) Nitrate plus Nitrite (N)	mg/kg	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-
Available (KCl) Nitrite (N)	mg/kg	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-
Available (Mod Kel) Phosphorus (P)	mg/kg	-	-	-	-	-	-	-	-	-	-	<4	-	-	-	-
Available (Mod Kel) Potassium (P)	mg/kg	-	-	-	-	-	-	-	-	-	-	26	-	-	-	-
Available ($CaCl_2$) Sulphur (S)	mg/kg	-	-	-	-	-	-	-	-	-	-	122	-	-	-	-
Calculated Parameters																
Available (KCl) Nitrate (N)	mg/kg	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-
Calculated Parameters - Salinity																
Anion Sum	meq/L	-	-	-	-	-	-	-	-	-	-	47	-	-	-	-
Calculated Boron	mg/kg	-	-	-	-	-	-	-	-	-	-	0.31	-	-	-	-
Cation Sum	meq/L	-	-	-	-	-	-	-	-	-	-	48	-	-	-	-
Cation/ED Ratio	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-
Ion Balance	-	-	-	-	-	-	-	-	-	-	-	1.0	-	-	-	-
Calculated Calcium (Ca)	mg/kg	-	-	-	-	-	-	-	-	-	-	120	-	-	-	-
Calculated Magnesium (Mg)	mg/kg	-	-	-	-	-	-	-	-	-	-	56	-	-	-	-
Calculated Sodium (Na)	mg/kg	-	-	-	-	-	-	-	-	-	-	140	-	-	-	-
Calculated Potassium (K)	mg/kg	-	-	-	-	-	-	-	-	-	-	3.3	-	-	-	-
Calculated Chloride (Cl)	mg/kg	-	-	-	-	-	-	-	-	-	-	200	-	-	-	-
Calculated Sulphate (SO_4)	mg/kg	-	-	-	-	-	-	-	-	-	-	520	-	-	-	-
Soluble Parameters - Salinity																
Soluble Calcium (Ca)	mg/L	-	-	-	-	-	-	-	-	-	-	340	-	-	-	-
Soluble Magnesium (Mg)	mg/L	-	-	-	-	-	-	-	-	-	-	160	-	-	-	-
Soluble Potassium (K)	mg/L	-	-	-	-	-	-	-	-	-	-	9.3	-	-	-	-
Soluble Sodium (Na)	mg/L	-	-	-	-	-	-	-	-	-	-	410	-	-	-	-
Soluble Chloride (Cl)	mg/L	-	-	-	-	-	-	-	-	-	-	580	-	-	-	-
Sodium Absorption Ratio (SAR)	-	12	-	-	-	-	-	-	-	-	-	4.6	-	-	-	-
Soluble Sulfur (as SO_4)	mg/L	-	-	-	-	-	-	-	-	-	-	1,500	-	-	-	-
% Saturation	%	-	-	-	-	-	-	-	-	-	-	35	-	-	-	-
Soluble Conductivity	dS/m	4	-	-	-	-	-	-	-	-	-	3.8	-	-	-	-
Theoretical Gypsum Requirement	tonnes/ha	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-
Soluble ($CaCl_2$) pH	-	6 to 8	-	-	-	-	-	-	-	-	-	6.09	-	-	-	-
Soil Texture																
Grain Size (%>75 µm)	%	-	60	-	71	-	-	-	-	-	-	39	-	-	-	-
Soil Type	-	-	COARSE	-	COARSE	-	-	-	-	-	-	FINE	-	-	-	-

Notes:

[1] Environmental Guidelines for Contaminated Site Remediation, Nunavut, for Industrial, coarse-grained soil

[2] All soil samples were collected on August 10, 2011

- = Not detected/not analyzed/no unit/no guidelines

Bold = Greater than the referenced guideline

Table 3: Soil Analytical Results For Hydrocarbons and Metals at W3 (Former AST Near Generator)

Test Parameter	Unit	Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grain)[1]	11W3_01 0.20 m	11W3_02 0.10 m	11W3_04 0.25 m	11W3_10 0.50 m
BTEX and Hydrocarbon Fractions F1 to F4						
Benzene	mg/kg	0.03	<0.0050	<0.0050	<0.0050	<0.0050
Toluene	mg/kg	0.37	<0.020	<0.020	0.028	<0.020
Ethylbenzene	mg/kg	0.082	<0.010	<0.010	0.018	<0.010
Xylenes	mg/kg	11	<0.040	<0.040	<0.040	<0.040
F1 (C6 - C10)	mg/kg	240	13	20	<12	<12
F2 (>C10 - C16)	mg/kg	260	**1,700**	**460**	91	210
F3 (>C16 - C34)	mg/kg	1,700	290	61	120	110
F4 (>C34 - C50)	mg/kg	3,300	16	<10	<10	36
Metals						
Boron (B)	mg/kg	-	-	0.4	-	-
Hex. Chromium Cr 6+	mg/kg	1.4	-	<0.15	-	-
Antimony (Sb)	mg/kg	40	-	<1	-	-
Arsenic (As)	mg/kg	12	-	4	-	-
Barium (Ba)	mg/kg	2,000	-	74	-	-
Beryllium (Be)	mg/kg	8	-	0	-	-
Cadmium (Cd)	mg/kg	22	-	<0.1	-	-
Chromium (Cr), total	mg/kg	87	-	45	-	-
Cobalt (Co)	mg/kg	300	-	9	-	-
Copper (Cu)	mg/kg	91	-	21	-	-
Lead (Pb)	mg/kg	600	-	6	-	-
Mercury (inorganic)	mg/kg	50	-	<0.05	-	-
Molybdenum (Mo)	mg/kg	40	-	1	-	-
Nickel (Ni)	mg/kg	50	-	24	-	-
Selenium (Se)	mg/kg	2.9	-	<0.5	-	-
Silver (Ag)	mg/kg	40	-	<1	-	-
Thallium (Tl)	mg/kg	1	-	<0.3	-	-
Tin (Sn)	mg/kg	300	-	<1	-	-
Uranium (U)	mg/kg	300	-	1	-	-
Vanadium (V)	mg/kg	130	-	47	-	-
Zinc (Zn)	mg/kg	360	-	41	-	-
Soil Texture						
Grain Size (%>75 µm)	%	-	-	-	84	-
Soil Type	-	-	-	-	COARSE	-

Notes:

[1] Environmental Guidelines for Contaminated Site Remediation, Nunavut, for Industrial, coarse-grained soil

[2] All samples were collected on August 9, 2011

- = Not detected/not analyzed/no unit/no guidelines

Bold = Greater than the referenced guideline

Table 4: Soil Analytical Results For Hydrocarbons at W4 (Generator)

Sample Number	Sample Depth (m)	BTEX and Hydrocarbon Fractions F1 to F4 (mg/kg)								Soil Texture
		Benzene	Toluene	Ethylbenzene	Xylene	F1 (C6-C10)	F2 (>C10-C16)	F3 (>C16-C34)	F4 (>C34-C50)	Grain Size (% 75 µm)
11W4_01	0.25	<0.0050	<0.020	<0.010	<0.040	220	**6,400**	940	<10	89
11W4_01	0.75	<0.0050	<0.020	<0.010	<0.040	200	**7,000**	770	<10	-
11W4_02	0.30	<0.0050	<0.020	<0.010	<0.040	<12	**1,000**	380	<10	-
11W4_07	0.25	<0.0050	<0.020	<0.010	<0.040	<12	16	67	<10	-
11W4_08	0.20	<0.0050	<0.020	<0.010	<0.040	<12	15	41	<10	-
11W4_09	0.25	<0.0050	<0.020	<0.010	<0.040	<12	11	<10	<10	-
11W4_10	0.50	<0.0050	<0.020	<0.010	<0.040	**820**	**13,000**	1500	13	-
Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grain)[1]	**-**	**0.03**	**0.37**	**0.082**	**11**	**240**	**260**	**1,700**	**3,300**	**-**

Notes:

[1] Environmental Guidelines for Contaminated Site Remediation, Nunavut, for Industrial, coarse-grained soil

[2] All soil samples were collected on August 9, 2011

- = Not detected/not analyzed/no unit/no guidelines

Bold = Greater than the referenced guideline

Table 5: Soil Analytical Results for Hydrocarbons at W5 (Tents W5A to W5G)

Test Parameter	Unit	Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grain)[1]	11W5A_01 0.20 m	11W5B_01 0.10 m	11W5C_01 0.10 m	11W5D_01 0.10 m	11W5D_01 0.30 m	11W5E_01 0.15 m	11W5E_01 0.50 m	11W5E_01 0.85 m	11W5E_02 0.20 m	11W5E_04 0.20 m	11W5F_02 0.10 m	11W5G_01 0.10 m	11W5G_01 0.30 m	11W5G_04 0.10 m	11W5H_01 0.50 m	11W5H_02 0.20 m	11W5H_04 0.20 m
BTEX and Hydrocarbon Fractions F1 to F4																			
Benzene	mg/kg	0.03	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.14**	<0.0050	<0.0050
Toluene	mg/kg	0.37	0.035	0.024	<0.020	0.037	<0.020	<0.020	0.032	0.035	0.029	<0.020	<0.020	<0.020	<0.020	<0.020	**4.6**	<0.020	0.18
Ethylbenzene	mg/kg	0.082	<0.010	<0.010	<0.010	<0.010	<0.010	0.054	<3.7 (1)	0.027	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**4.4**	<0.010	**0.085**
Xylenes	mg/kg	11	<0.040	<0.040	<0.040	0.056	<0.040	6.9	**14**	**24**	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	**68**	<0.040	4.9
F1 (C6 - C10)	mg/kg	240	<12	<12	<12	<12	<12	430	**460**	**960**	<12	<12	<12	110	73	<12	**1,700**	<12	**260**
F2 (>C10 - C16)	mg/kg	260	<10	**2,900**	<10	**2,100**	180	**10,000**	**6,400**	**5,900**	11	<10	10	**3,300**	**3,500**	<10	**10,000**	49	**3800**
F3 (>C16 - C34)	mg/kg	1,700	49	900	60	83	23	1800	1200	920	69	11	<10	420	440	10	1600	33	500
F4 (>C34 - C50)	mg/kg	3,300	14	13	22	<10	<10	<10	<10	<10	16	<10	<10	<10	<10	<10	<10	<10	<10
Soil Texture																			
Grain Size (%>75 µm)	%	-	-	96	-	-	-	-	-	89	-	67	-	-	-	-	-	-	-
Soil Type	-	-	-	COARSE	-	-	-	-	-	COARSE	-	COARSE	-	-	-	-	-	-	-

Notes:

[1] Environmental Guidelines for Contaminated Site Remediation, Nunavut, for Industrial, coarse-grained soil

[2] All soil samples were collected on August 9, 2011

- = Not detected/not analyzed/no unit/no guidelines

(1) Detection Limit raised due to qualifying ion outside of acceptance criteria. Results are potentially biased high due to possible interferent

Bold = Greater than the referenced guideline

Table 6: Soil Analytical Results For Hydrocarbons and Salinity at W6 (Tankfarm)

Test Parameter	Unit	Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grain)[1]	11W6_01 0 - 0.05 m	11W6_01 0.30 m	11W6_02 0.20 m	11W6_03 0.25 m	11W6_04 0.15 m	11W6_05 0.25 m	11W06_1 COMPOSITE 0.25 m
BTEX and Hydrocarbon Fractions F1 to F4									
Benzene	mg/kg	0.03	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Toluene	mg/kg	0.37	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	mg/kg	0.082	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Xylenes	mg/kg	11	<0.040	0.75	<0.040	<0.040	<0.040	<0.040	<0.040
F1 (C6 - C10)	mg/kg	240	21	88	<12	<12	<12	<12	<12
F2 (>C10 - C16)	mg/kg	260	220	240	13	<10	<10	18	120
F3 (>C16 - C34)	mg/kg	1,700	100	73	25	13	13	13	660
F4 (>C34 - C50)	mg/kg	3,300	<10	<10	<10	<10	<10	<10	48
Metals									
Boron (B)	mg/kg	-	1	-	-	-	1	-	-
Hex. Chromium Cr 6+	mg/kg	1.4	<0.15	-	-	-	<0.15	-	-
Antimony (Sb)	mg/kg	-	<1	-	-	-	<1	-	-
Arsenic (As)	mg/kg	12.0	2	-	-	-	2	-	-
Barium (Ba)	mg/kg	2,000	19	-	-	-	26	-	-
Beryllium (Be)	mg/kg	-	<0.4	-	-	-	<0.4	-	-
Cadmium (Cd)	mg/kg	22	<0.1	-	-	-	<0.1	-	-
Chromium (Cr), total	mg/kg	87	20	-	-	-	25	-	-
Cobalt (Co)	mg/kg	-	5	-	-	-	8	-	-
Copper (Cu)	mg/kg	91	12	-	-	-	21	-	-
Lead (Pb)	mg/kg	600	2	-	-	-	2	-	-
Mercury (inorganic)	mg/kg	50	<0.05	-	-	-	<0.05	-	-
Molybdenum (Mo)	mg/kg	-	<0.4	-	-	-	<0.4	-	-
Nickel (Ni)	mg/kg	50	12	-	-	-	19	-	-
Selenium (Se)	mg/kg	2.9	<0.5	-	-	-	<0.5	-	-
Silver (Ag)	mg/kg	-	<1	-	-	-	<1	-	-
Thallium (Tl)	mg/kg	1	<0.3	-	-	-	<0.3	-	-
Tin (Sn)	mg/kg	-	<1	-	-	-	<1	-	-
Uranium (U)	mg/kg	300	<1	-	-	-	<1	-	-
Vanadium (V)	mg/kg	130	24	-	-	-	54	-	-
Zinc (Zn)	mg/kg	360	23	-	-	-	34	-	-
Calculated Parameters Salinity									
Anion Sum	meq/L	-	-	140	-	-	-	-	-
Calculated Boron	mg/kg	-	-	0.05	-	-	-	-	-
Cation Sum	meq/L	-	-	130	-	-	-	-	-
Cation/ED Ratio	-	-	-	11	-	-	-	-	-
Ion Balance	-	-	-	0.95	-	-	-	-	-
Calculated Calcium (Ca)	mg/kg	-	-	250	-	-	-	-	-
Calculated Magnesium (Mg)	mg/kg	-	-	130	-	-	-	-	-
Calculated Sodium (Na)	mg/kg	-	-	470	-	-	-	-	-
Calculated Potassium (K)	mg/kg	-	-	4.7	-	-	-	-	-
Calculated Chloride (Cl)	mg/kg	-	-	1200.0	-	-	-	-	-
Calculated Sulphate (SO_4)	mg/kg	-	-	580	-	-	-	-	-
Soluble Parameters - Salinity									
Soluble Calcium (Ca)	mg/L	-	-	740	-	-	-	-	-
Soluble Magnesium (Mg)	mg/L	-	-	390	-	-	-	-	-
Soluble Potassium (K)	mg/L	-	-	14	-	-	-	-	-
Soluble Sodium (Na)	mg/L	-	-	1,400	-	-	-	-	-
Soluble Chloride (Cl)	mg/L	-	-	3,600 (1)	-	-	-	-	-
Sodium Absorption Ratio (SAR)	-	12	-	11	-	-	-	-	-
Soluble Sulfur (as SO_4)	mg/L	-	-	1,800	-	-	-	-	-
% Saturation	%	-	-	33	-	-	-	-	-
Soluble Conductivity	dS/m	4	-	**12.0**	-	-	-	-	-
Theoretical Gypsum Requirement	tonnes/ha	-	-	<0.1	-	-	-	-	-
Soluble ($CaCl_2$) pH	-	6 to 8	-	6.47	-	-	-	-	-
Soil Texture									
Grain Size (%>75 µm)	%	-	-	-	-	91	-	-	-
Soil Type	-	-	-	-	-	COARSE	-	-	-

Notes:

[1] Environmental Guidelines for Contaminated Site Remediation, Nunavut, for Industrial, coarse-grained soil

[2] All soil samples were collected on August 10, 2011

- = Not detected/not analyzed/no unit/no guidelines

(1) Detection Limit raised due to dilution to bring analyte within the calibrated range

Bold = Greater than the referenced guideline

Table 7: Soil Analytical Results for Hydrocarbons at W7 (Inside Shop Tent)

Sample Number	Sample Depth (m)	BTEX and Hydrocarbon Fractions F1 to F4 (mg/kg)							
		Benzene	Toluene	Ethylbenzene	Xylene	F1 (C6-C10)	F2 (>C10-C16)	F3 (>C16-C34)	F4 (>C34-C50)
11W7_02	0.10	<0.0050	<0.020	<0.010	<0.040	<12	49	58	<10
11W7_03	0.10	<0.0050	<0.020	<0.010	<0.040	<12	29	730	68
Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grain)[1]	**-**	**0.03**	**0.37**	**0.082**	**11**	**240**	**260**	**1,700**	**3,300**

Notes:

[1] Environmental Guidelines for Contaminated Site Remediation, Nunavut, for Industrial, coarse-grained soil

[2] All soil samples were collected on August 9, 2011

- = Not detected/not analyzed/no unit/no guidelines

Bold = Greater than the referenced guideline

Table 8:Soil Analytical Results For Hydrocarbons at W8 (Incinerator Near Beach)

Sample Number	Sample Depth (m)	BTEX and Hydrocarbon Fractions F1 to F4 (mg/kg)								Soil Texture
		Benzene	Toluene	Ethylbenzene	Xylene	F1 (C6-C10)	F2 (>C10-C16)	F3 (>C16-C34)	F4 (>C34-C50)	Grain Size (% 75 µm)
11W8_01	0.10	<0.0050	**0.47**	<0.010	<0.040	<12	**290**	1,400	210	-
11W8_02	0.10	<0.0050	<0.020	<0.010	<0.040	<12	**420**	71	<10	-
11W8_03	0.15	<0.0050	<0.020	<0.010	<0.040	15	180	71	<10	85
11W8_04	0.10	<0.0050	<0.020	<0.010	<0.040	<12	<10	<10	**<10**	-
11W8_05	0.10	<0.0050	<0.020	<0.010	<0.040	<12	56	13	<10	-
Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grain)[1]	**-**	**0.03**	**0.37**	**0.082**	**11**	**240**	**260**	**1,700**	**3,300**	**-**

Notes:

[1] Environmental Guidelines for Contaminated Site Remediation, Nunavut, for Industrial, coarse-grained soil

[2] All soil samples were collected on August 9, 2011

- = Not detected/not analyzed/no unit/no guidelines

Bold = Greater than the referenced guideline

Table 9: Surface Water Analytical Results for Hydrocarbons, Routine Water and Regulated Metals at Old Windy Camp

Test Parameter	Unit	CCME[1]	Licence No. 2BE-HOP0712	11W1-1	11W6-1	11W8-1	11W8-2
BTEX and Hydrocarbon Fractions F1 to F2							
Benzene	mg/L	0.370	0.370	<0.0004	<0.0004	<0.0004	<0.0004
Toluene	mg/L	0.002	0.002	<0.0004	<0.0004	<0.0004	<0.0004
Ethylbenzene	mg/L	0.090	0.090	<0.0004	<0.0004	<0.0004	<0.0004
Xylenes	mg/L	-	-	<0.0008	<0.0008	<0.0008	<0.0008
F1 (C6 - C10)	mg/L	-	-	<0.1	<0.1	<0.1	<0.1
F2 (>C10 - C16)	mg/L	-	-	<0.1	<0.1	3.3	<0.1
Routine Water and Diss. Regulated Metals Misc. Inorganics							
Conductivity	uS/cm	-		410	3,900	570	420
pH	-	6.5 to 9		7.28	7.97	7.1	7.7
Routine Water and Diss. Regulated Metals Calculated Parameters							
Anion Sum	meq/L	-		3.9	37	5.7	4.4
Cation Sum	meq/L	-		4.3	32	5.9	4.4
Hardness ($CaCO_3$)	mg/L	-		170	710	200	170
Ion Balance	-	-		1.1	0.87	1	0.99
Dissolved Nitrate (N)	mg/L	-		0.2	0.45	<0.003	0.008
Dissolved Nitrate (NO_3)	mg/L	13		0.89	2	<0.01	0.04
Nitrate plus Nitrite (N)	mg/L	-		0.2	0.45	<0.003	0.008
Dissolved Nitrite (N)	mg/L	-		<0.003	<0.003	<0.003	<0.003
Dissolved Nitrite (NO_2)	mg/L	0.06		<0.01	<0.01	<0.01	<0.01
Total Dissolved Solids	mg/L	-		210	2000	290	230
Routine Water and Diss. Regulated Metals Anions							
Alkalinity (PP as $CaCO_3$)	mg/L	-		<0.5	<0.5	<0.5	<0.5
Alkalinity (Total as $CaCO_3$)	mg/L	-		110	430	250	170
Bicarbonate (HCO_3)	mg/L	-		140	530	310	210
Carbonate (CO_3)	mg/L	-		<0.5	<0.5	<0.5	<0.5
Hydroxide (OH)	mg/L	-		<0.5	<0.5	<0.5	<0.5
Dissolved Sulphate (SO_4)	mg/L	-		7	320	18	19
Dissolved Chloride (Cl)	mg/L	120		53	**770**	10	23
Routine Water and Diss. Regulated Metals Elements							
Dissolved Aluminum (Al)	mg/L	0.1		**0.22**	0.037	0.075	0.009
Dissolved Antimony (Sb)	mg/L	-		<0.0006	0.0008	0.001	<0.0006
Dissolved Arsenic (As)	mg/L	0.005		0.0031	0.0042	0.0033	0.0009
Dissolved Barium (Ba)	mg/L	-		0.03	0.08	0.04	<0.01
Dissolved Beryllium (Be)	mg/L	-		<0.001	<0.001	<0.001	<0.001
Dissolved Boron (B)	mg/L	-		0.04	0.09	0.14	0.15
Dissolved Cadmium (Cd)	mg/L	0.06*		0.00012	0.00005	0.000012	0.000009
Dissolved Calcium (Ca)	mg/L	-		51	140	52	44
Dissolved Chromium (Cr), Trivalent	mg/L	0.0089		0.001	0.002	<0.001	<0.001
Dissolved Cobalt (Co)	mg/L	-		0.004	0.0034	0.0018	0.0005
Dissolved Copper (Cu)	mg/L	0.00428*		**0.0053**	**0.014**	0.0033	0.0019
Dissolved Iron (Fe)	mg/L	0.3		**4.8**	**0.87**	**6.6**	**0.59**
Dissolved Lead (Pb)	mg/L	0.00769*	0.001	0.0006	<0.0002	<0.0002	<0.0002
Dissolved Lithium (Li)	mg/L	-		<0.02	<0.02	<0.02	<0.02
Dissolved Magnesium (Mg)	mg/L	-		11	88	17	14
Dissolved Manganese (Mn)	mg/L	-		0.78	3.2	0.39	0.11
Dissolved Molybdenum (Mo)	mg/L	-		0.0006	0.0071	0.0007	<0.0002
Dissolved Nickel (Ni)	mg/L	0.162*		0.0044	0.0081	0.0032	0.0018
Dissolved Phosphorus (P)	mg/L	-		0.2	0.1	0.2	<0.1
Dissolved Potassium (K)	mg/L	-		3.7	14	3.6	2.4
Dissolved Selenium (Se)	mg/L	0.001		<0.0002	0.0009	<0.0002	<0.0002
Dissolved Silicon (Si)	mg/L	-		7.7	7.6	6.6	3.8
Dissolved Silver (Ag)	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001
Dissolved Sodium (Na)	mg/L	-		11	410	35	22
Dissolved Strontium (Sr)	mg/L	-		0.17	0.38	0.11	0.09
Dissolved Sulphur (S)	mg/L	-		3.1	110	5.4	6.3
Dissolved Thallium (Tl)	mg/L	0.0008		<0.0002	<0.0002	<0.0002	<0.0002
Dissolved Tin (Sn)	mg/L	-		<0.001	<0.001	<0.001	<0.001
Dissolved Titanium (Ti)	mg/L	-		0.005	0.003	0.001	<0.001
Dissolved Uranium (U)	mg/L	0.015		0.0004	0.0058	0.0004	0.0002
Dissolved Vanadium (V)	mg/L	-		0.004	0.008	0.002	<0.001
Dissolved Zinc (Zn)	mg/L	0.03		0.012	0.009	0.013	0.008
Total Regulated Metals Elements							
Total Aluminum (Al)	mg/L	0.1		20	2.4	13	0.072
Total Antimony (Sb)	mg/L	-		<0.006	<0.0006	<0.006	0.0008
Total Arsenic (As)	mg/L	0.005		**0.011**	**0.0091**	**0.013**	0.0015
Total Barium (Ba)	mg/L	-		0.19	0.12	0.16	<0.01
Total Beryllium (Be)	mg/L	-		<0.01	<0.001	<0.01	<0.001
Total Boron (B)	mg/L	-		0.03	0.08	0.12	0.14
Total Cadmium (Cd)	mg/L	0.06*		0.00021	0.00011	0.00035	0.00001
Total Calcium (Ca)	mg/L	-		61	150	63	49
Total Chromium (Cr), Trivalent	mg/L	0.0089		**0.06**	**0.009**	**0.04**	<0.001
Total Cobalt (Co)	mg/L	-		0.018	0.0063	0.013	0.0008
Total Copper (Cu)	mg/L	0.00428*		**0.11**	**0.028**	**0.087**	**0.0021**
Total Iron (Fe)	mg/L	0.3		**47**	**7.9**	**38**	**1.7**
Total Lead (Pb)	mg/L	0.00769*	0.001	**0.011**	**0.0017**	**0.016**	<0.0002
Total Lithium (Li)	mg/L	-		0.05	<0.02	0.03	<0.02
Total Magnesium (Mg)	mg/L	-		25	96	26	15
Total Manganese (Mn)	mg/L	-		1.2	3.6	0.69	0.12
Total Molybdenum (Mo)	mg/L	-		<0.002	0.0074	<0.002	<0.0002
Total Nickel (Ni)	mg/L	0.162*		0.041	0.013	0.029	0.0022
Total Phosphorus (P)	mg/L	-		0.6	0.2	0.8	<0.1
Total Potassium (K)	mg/L	-		9	15	8	2.1
Total Selenium (Se)	mg/L	0.001		<0.002	0.0012	<0.002	<0.0002
Total Silicon (Si)	mg/L	-		37	14	27	4.2
Total Silver (Ag)	mg/L	0.0001		<0.001	<0.0001	<0.001	<0.0001
Total Sodium (Na)	mg/L	-		11	430	33	18
Total Strontium (Sr)	mg/L	-		0.21	0.41	0.14	0.09
Total Sulphur (S)	mg/L	-		3.5	110	5.6	4.5
Total Thallium (Tl)	mg/L	0.0008		<0.002	<0.0002	<0.002	<0.0002
Total Tin (Sn)	mg/L	-		<0.01	<0.001	<0.01	<0.001
Total Titanium (Ti)	mg/L	-		1.2	0.17	0.7	0.004
Total Uranium (U)	mg/L	0.015		0.002	0.0062	0.002	0.0002
Total Vanadium (V)	mg/L	-		0.1	0.023	0.06	0.002
Total Zinc (Zn)	mg/L	0.03		**0.08**	0.012	**0.09**	<0.003

Notes:

[1] Canadian Water Quality Guidelines for Protection of Aquatic Life - Freshwater

-' = Not detected/not analyzed/no unit/no guidelines

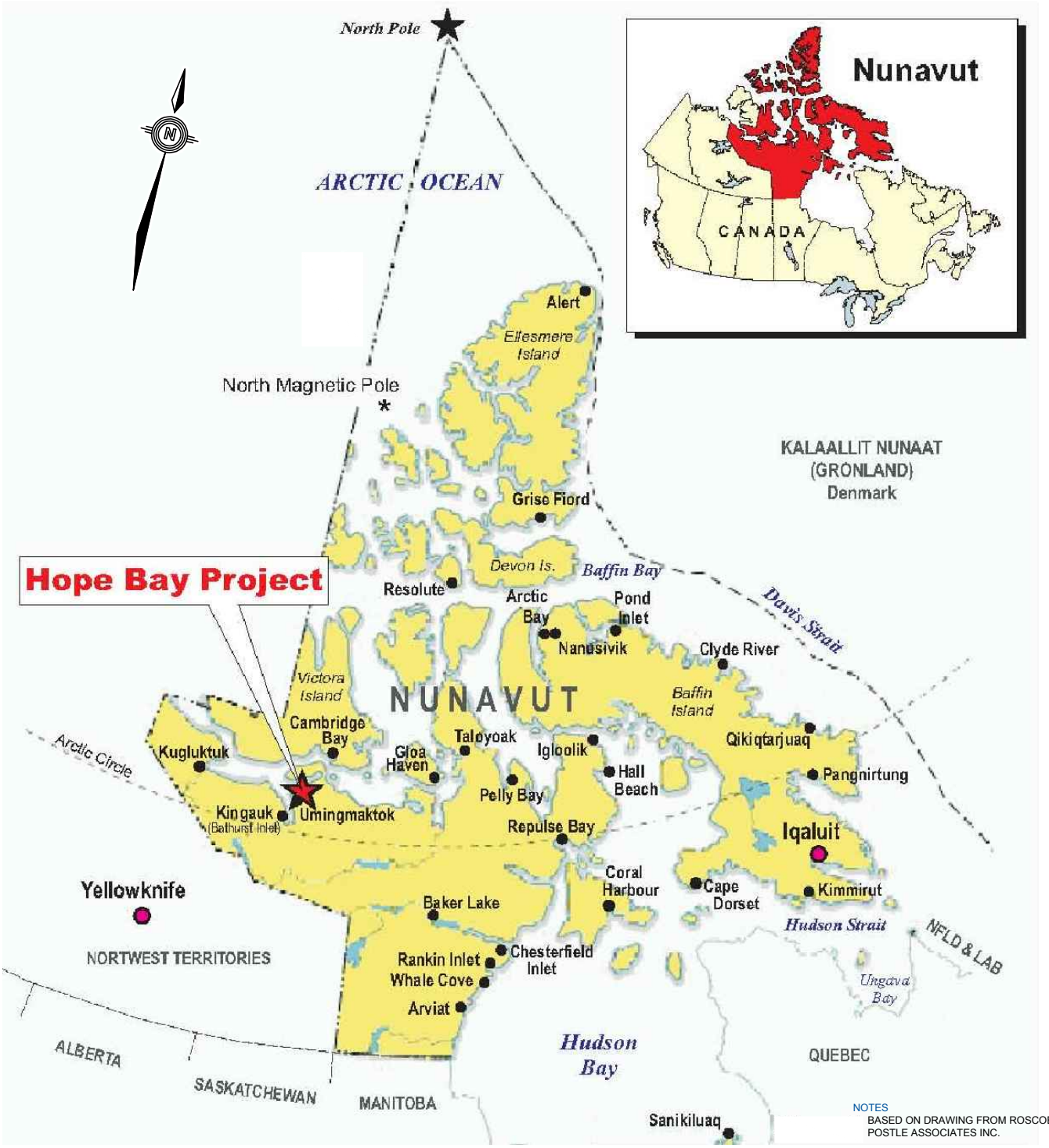
* Based on hardness of 200 mg/L

(1) Detection Limit raised based on sample volume used for analysis/ due to dilution to bring analyte within calibrated range

(2) Detection Limits raised due to matrix interference

Bold = Greater than the referenced guideline

FIGURES



NOTES
BASED ON DRAWING FROM ROSCOE POSTLE ASSOCIATES INC.

STATUS
ISSUED FOR REVIEW

0 1 000 m
Scale: 1: 20 000

CLIENT
NEWMONT

eba
A TETRA TECH COMPANY

PHASE III ENVIRONMENTAL SITE ASSESSMENT
AT FORMER WINDY LAKE CAMP
HOPE BAY GOLD PROJECT, NUNAVUT

HOPE BAY PROJECT LOCATION

PROJECT NO.	DWN	CKD	REV
Y22101187.001	EL	DF	0

OFFICE	DATE
EDM	October 7, 2011

Figure 1

0 100 m

Scale: 1: 2 000

CLIENT

NEWMONT

PHASE III ENVIRONMENTAL SITE ASSESSMENT
AT FORMER WINDY LAKE CAMP
HOPE BAY GOLD PROJECT, NUNAVUT

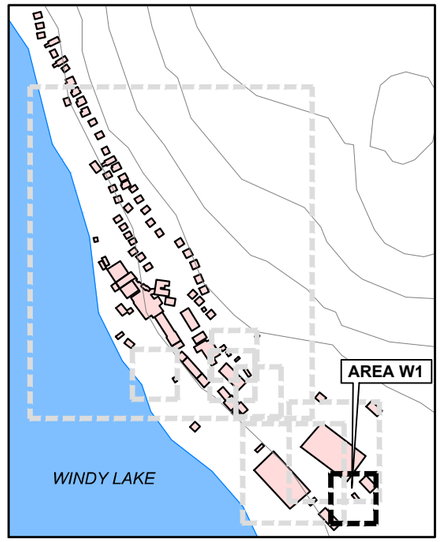
WINDY CAMP LAYOUT

eba
A TETRA TECH COMPANY

PROJECT NO.	DWN	CKD	REV
Y22101187.001	EL	DF	0

OFFICE	DATE
EDM	February 1, 2012

Figure 2



KEY PLAN
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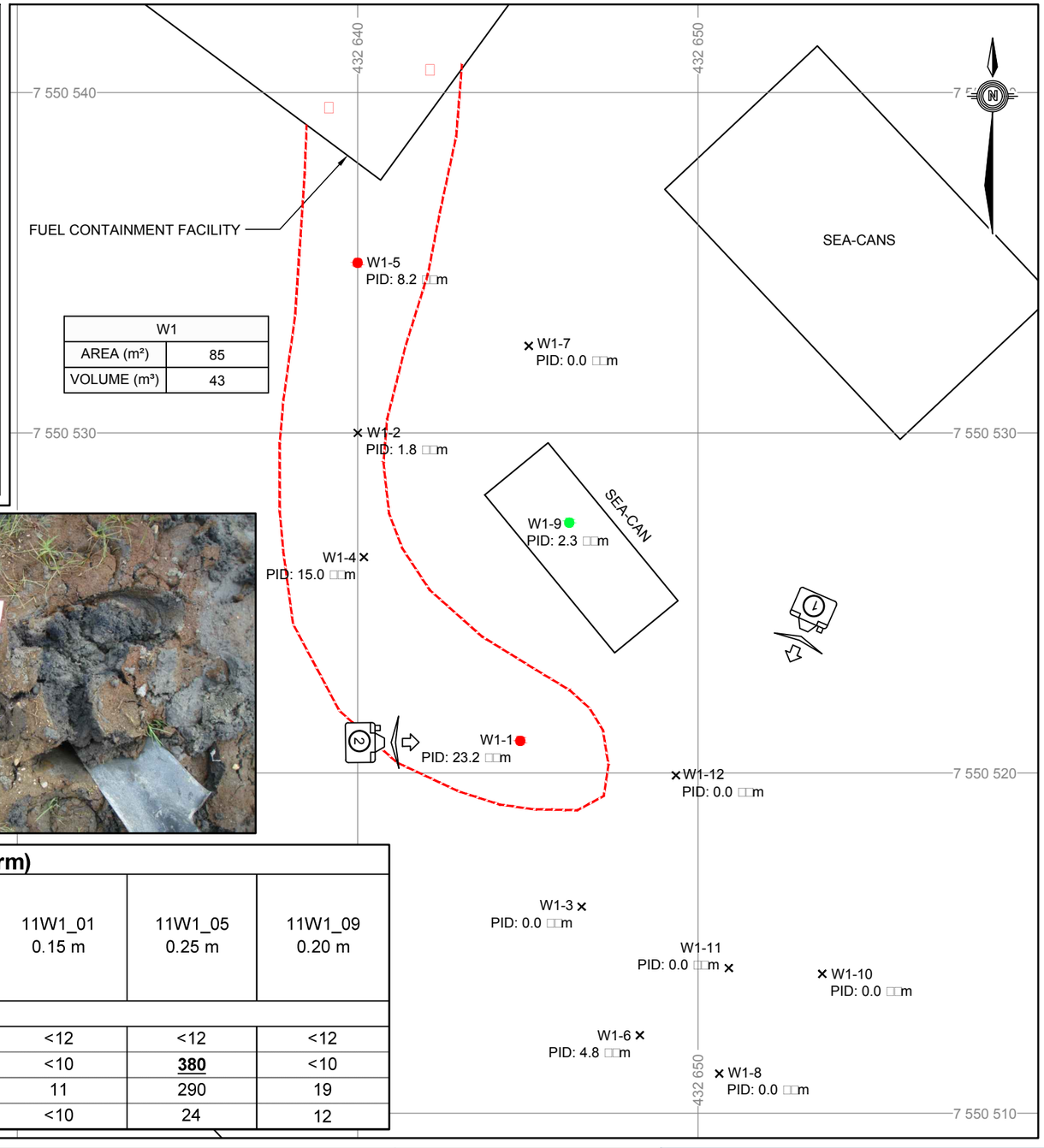
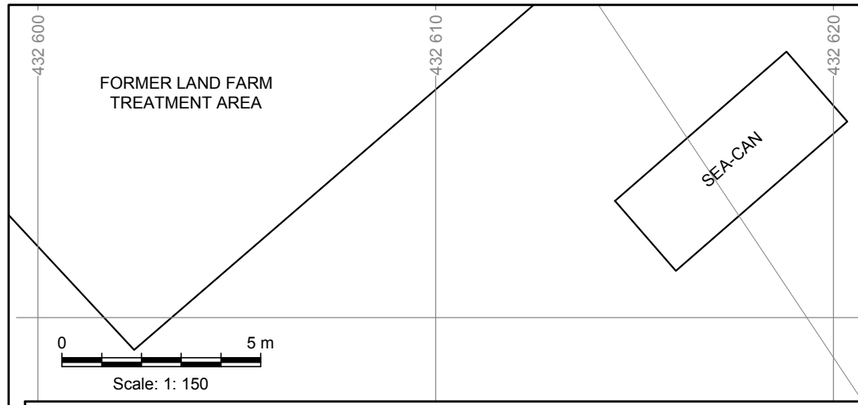


W1	
AREA (m²)	85
VOLUME (m³)	43



Confirmatory Soil Analytical Results for Hydrocarbons at W1 (Seacans South of Former Tankfarm)

Test Parameter	Unit	Tier 1 Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grained Soil)		11W1_01 0 - 0.05 m	11W1_01 0.15 m	11W1_05 0.25 m	11W1_09 0.20 m
		Industrial	Wildland				
Hydrocarbon Fractions F1 to F4							
F1 (C6 - C10)	mg/kg	240	30	29	<12	<12	<12
F2 (>C10 - C 16)	mg/kg	260	150	**340**	<10	**380**	<10
F3 (>C16 - C34)	mg/kg	1,700	300	320	11	290	19
F4 (>C34 - C50)	mg/kg	3,300	2,800	<10	<10	24	12

LEGEND
- ✕ - SOIL SCREENING POINT
- ● - SAMPLE BELOW TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION
- ● - SAMPLE ABOVE TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION
- - - - AREA GREATER THAN INDUSTRIAL GUIDELINE

NOTES
- GPS POINTS WERE COLLECTED IN UTM WITH NAD83 DATUM, ZONE 13, METER; CENTRAL MERIDIAN 105d W.
- **BOLD AND UNDERLINED**; VALUE GREATER THAN THE INDUSTRIAL GUIDELINE
- DEPTH SHOWN IS IN METRES BELOW BELOW GRADE

STATUS
ISSUED FOR REVIEW

CLIENT
NEWMONT

PHASE III ENVIRONMENTAL SITE ASSESSMENT
AT FORMER WINDY LAKE CAMP
HOPE BAY GOLD PROJECT, NUNAVUT

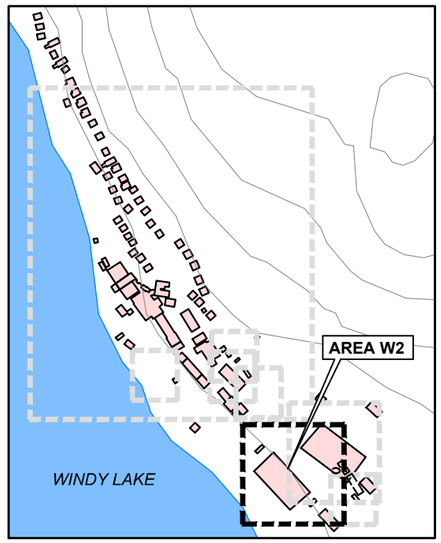
W1 - SEACANS SOUTH OF FORMER TANK FARM

eba A TETRA TECH COMPANY

PROJECT NO.	DWN	CKD	REV
Y22101187.001	EL	DF	0

OFFICE: EDM
DATE: February 1, 2012

Figure 3A



KEY PLAN
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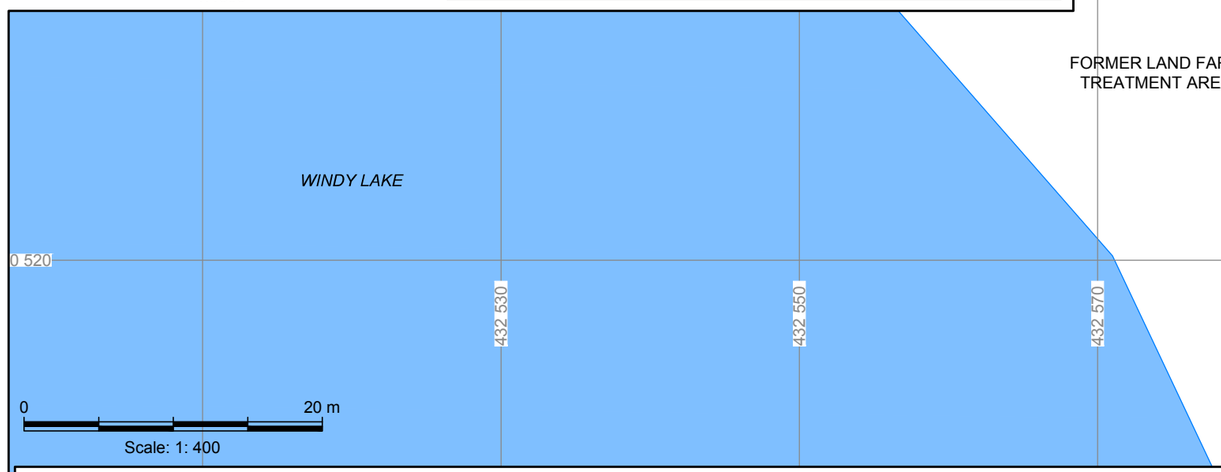
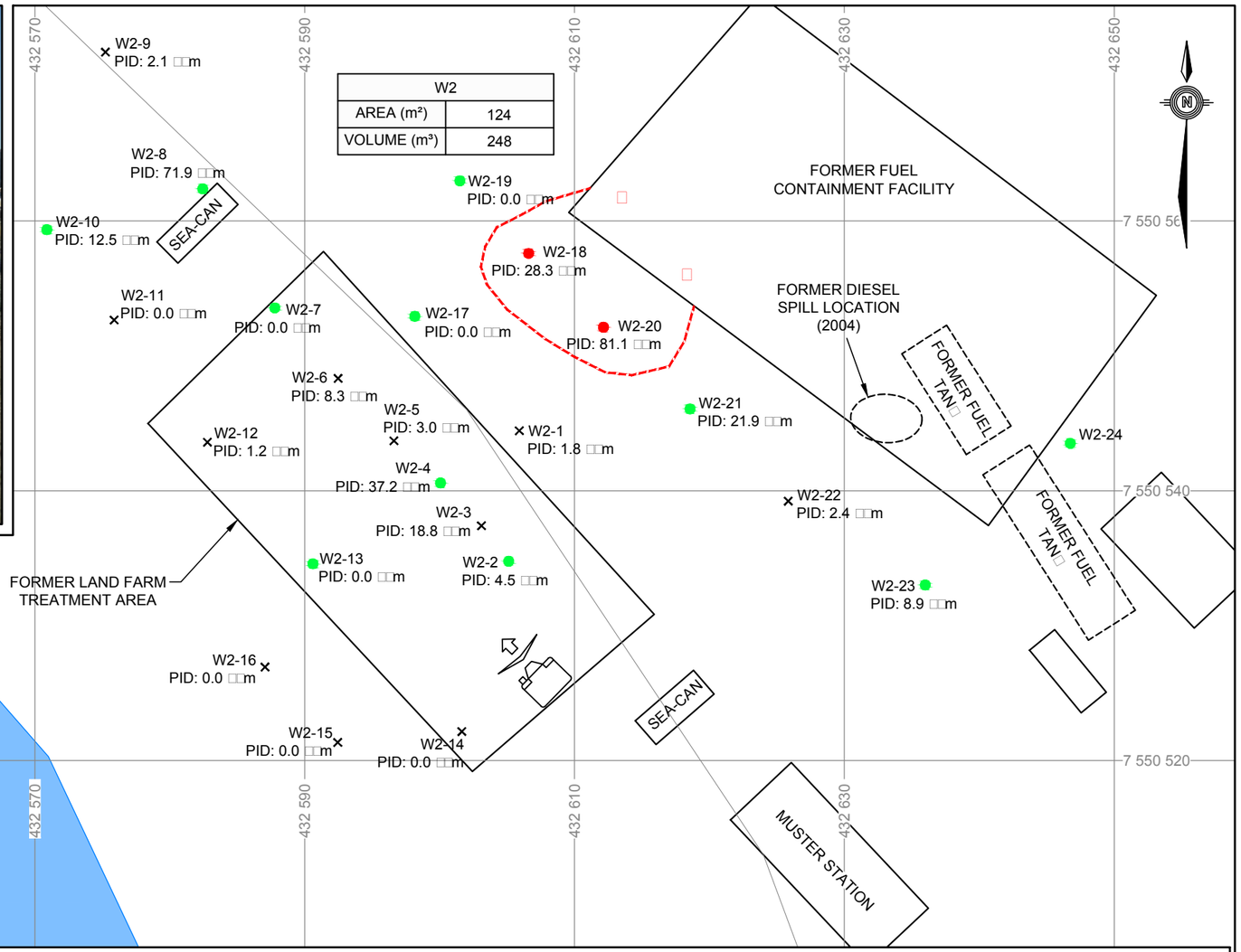




Confirmatory Soil Analytical Results for Hydrocarbons at W2 (Landfarm)

Test Parameter	Unit	Tier 1 Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grained Soil)		11W2_2 0.20 m	11W2_4 0.25 m	11W2_7 0.20 m	11W2_8 0.20 m	11W2_10 0.25 m	11W2_13 0.25 m	11W2_17 0.20 m	11W2_18 0.25 m	11W2_18 0.50 m	11W2_19 0.20 m	11W2_20 0.25 m	11W2_21 0.25 m	11W2_23 0.30 m	11W1_24 0.20 m
		Industrial	Wildland														
Hydrocarbon Fractions F1 to F4																	
F1 (C6 - C10)	mg/kg	240	30	<12	<12	<12	14	<12	<12	<12	32	<12	<12	<12	<12	<12	<12
F2 (>C10 - C 16)	mg/kg	260	150	95	32	<10	170	<10	13	<10	**1,600**	110	<10	**550**	93	33	14
F3 (>C16 - C34)	mg/kg	1,700	300	160	100	39	140	130	44	74	320	45	23	570	220	55	19
F4 (>C34 - C50)	mg/kg	3,300	2,800	20	17	<10	20	18	<10	11	<10	<10	<10	51	39	<10	<10

LEGEND
- ✕ - SOIL SCREENING POINT
- ● - SAMPLE BELOW TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION
- ● - SAMPLE ABOVE TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION
- – – – – - FORMER FACILITY LOCATION
- – – – – - AREA GREATER THAN INDUSTRIAL GUIDELINE

NOTES
- GPS POINTS WERE COLLECTED IN UTM WITH NAD83 DATUM, ZONE 13, METER; CENTRAL MERIDIAN 105d W.
- **BOLD AND UNDERLINED**: VALUE GREATER THAN THE INDUSTRIAL GUIDELINE
- DEPTH SHOWN IS IN METRES BELOW BELOW GRADE

STATUS
ISSUED FOR REVIEW

CLIENT
NEWMONT

PHASE III ENVIRONMENTAL SITE ASSESSMENT
AT FORMER WINDY LAKE CAMP
HOPE BAY GOLD PROJECT, NUNAVUT

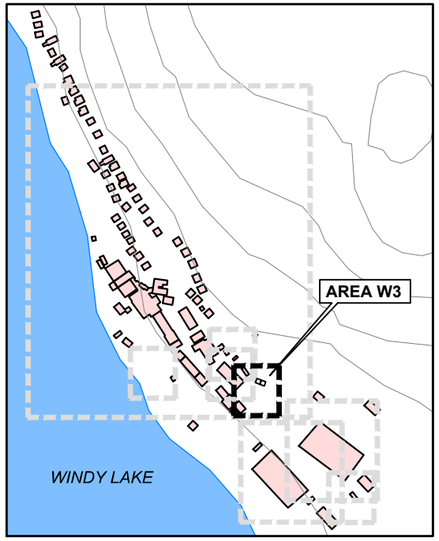
W2 - LANDFARM

eba A TETRA TECH COMPANY

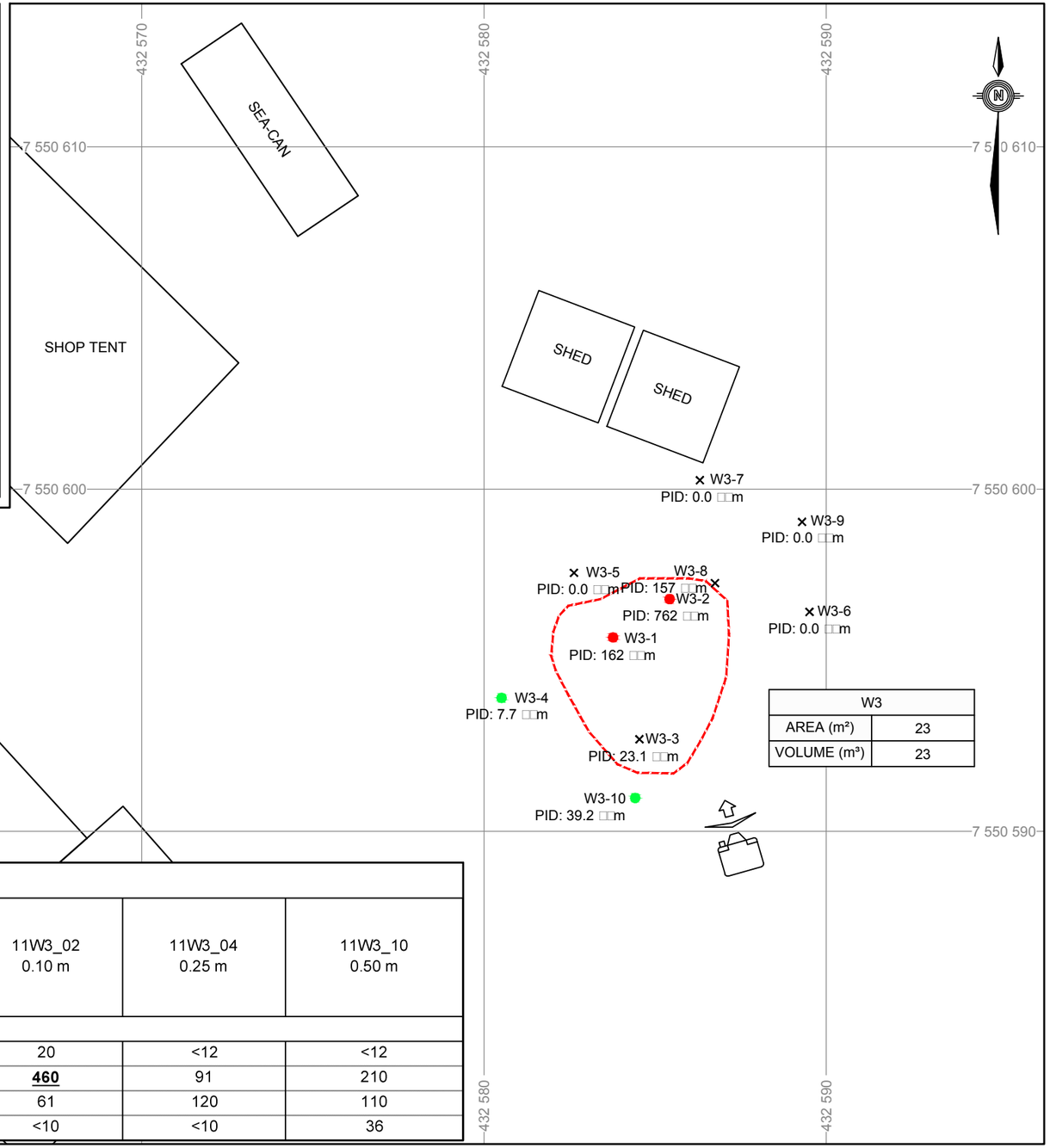
PROJECT NO.	DWN	CKD	REV
Y22101187.001	EL	DF	0
OFFICE: EDM	DATE: February 1, 2012		

Figure 3B

Q:\Edmonton\Drafting\DIVISIONS2007\Other Offices\Y221\Y22101187\0001\AutoCAD\Windy\Y22101187.001-Windy_FIG 3B_R0.dwg [FIGURE 3B] February 07, 2012 - 9:27:15 am (BY: LEE, ELVIN)



KEY PLAN
1:4000



W3	
AREA (m²)	23
VOLUME (m³)	23

Confirmatory Soil Analytical Results For Hydrocarbons at W3 (Former AST Near Generator)

Test Parameter	Unit	Tier 1 Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grained Soil)		11W3_01 0.20 m	11W3_02 0.10 m	11W3_04 0.25 m	11W3_10 0.50 m
		Industrial	Wildland				
Hydrocarbon Fractions F1 to F4							
F1 (C6 - C10)	mg/kg	240	30	13	20	<12	<12
F2 (>C10 - C 16)	mg/kg	260	150	**1,700**	**460**	91	210
F3 (>C16 - C34)	mg/kg	1,700	300	290	61	120	110
F4 (>C34 - C50)	mg/kg	3,300	2,800	16	<10	<10	36

LEGEND
- ✕ - SOIL SCREENING POINT
- ● - SAMPLE BELOW TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION
- ● - SAMPLE ABOVE TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION
- - - - - - AREA GREATER THAN INDUSTRIAL GUIDELINE

NOTES
- GPS POINTS WERE COLLECTED IN UTM WITH NAD83 DATUM, ZONE 13, METER; CENTRAL MERIDIAN 105d W.
- **BOLD AND UNDERLINED**: VALUE GREATER THAN THE INDUSTRIAL GUIDELINE
- DEPTH SHOWN IS IN METRES BELOW BELOW GRADE

STATUS
ISSUED FOR REVIEW

CLIENT
NEWMONT

PHASE III ENVIRONMENTAL SITE ASSESSMENT
AT FORMER WINDY LAKE CAMP
HOPE BAY GOLD PROJECT, NUNAVUT

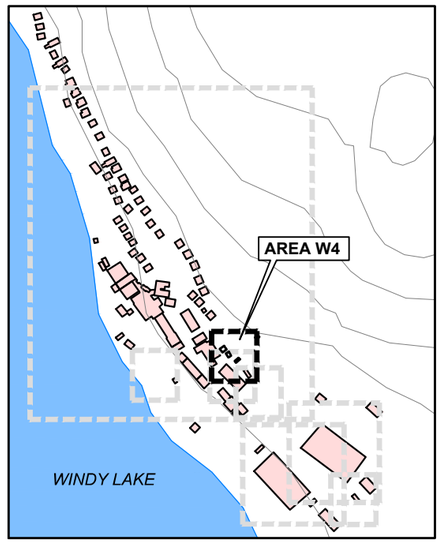
W3 - FORMER AST NEAR GENERATORS

eba A TETRA TECH COMPANY

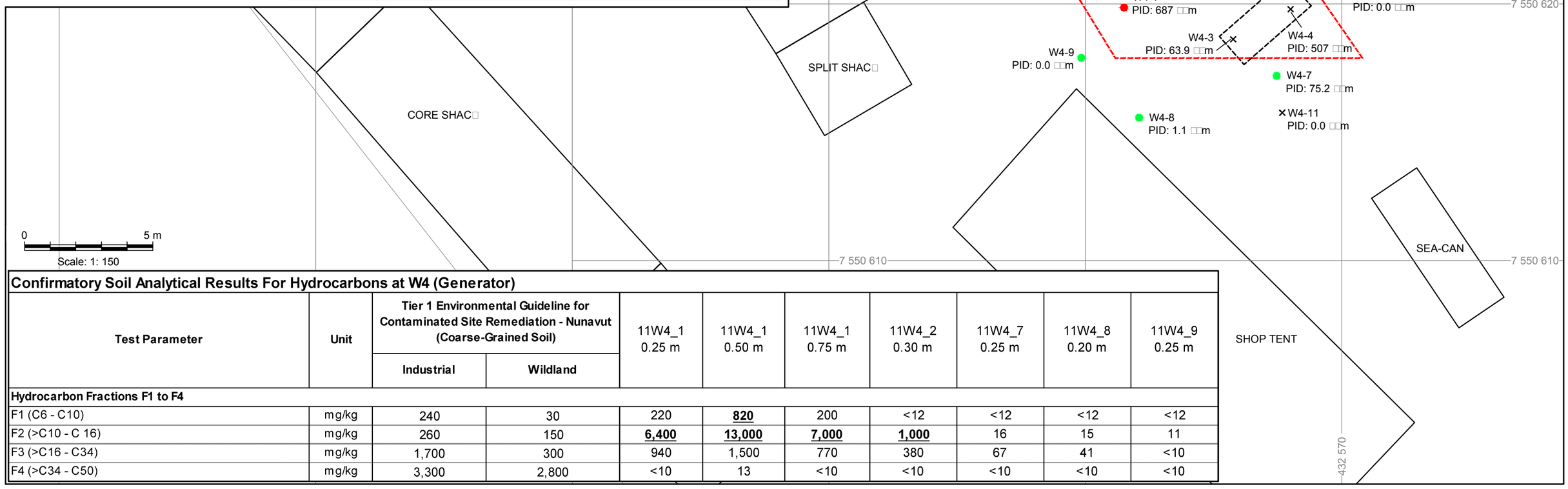
PROJECT NO.	DWN	CKD	REV
Y22101187.001	EL	DF	0

OFFICE: EDM
DATE: February 1, 2012

Figure 3C



KEY PLAN
1:4000



Confirmatory Soil Analytical Results For Hydrocarbons at W4 (Generator)

Test Parameter	Unit	Tier 1 Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grained Soil)		11W4_1 0.25 m	11W4_1 0.50 m	11W4_1 0.75 m	11W4_2 0.30 m	11W4_7 0.25 m	11W4_8 0.20 m	11W4_9 0.25 m
		Industrial	Wildland							
Hydrocarbon Fractions F1 to F4										
F1 (C6 - C10)	mg/kg	240	30	220	**820**	200	<12	<12	<12	<12
F2 (>C10 - C 16)	mg/kg	260	150	**6,400**	**13,000**	**7,000**	**1,000**	16	15	11
F3 (>C16 - C34)	mg/kg	1,700	300	940	1,500	770	380	67	41	<10
F4 (>C34 - C50)	mg/kg	3,300	2,800	<10	13	<10	<10	<10	<10	<10

LEGEND
- ✕ - SOIL SCREENING POINT
- ● - SAMPLE BELOW TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION
- ● - SAMPLE ABOVE TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION
- ▬ ▬ ▬ - AREA GREATER THAN INDUSTRIAL GUIDELINE

NOTES
- GPS POINTS WERE COLLECTED IN UTM WITH NAD83 DATUM, ZONE 13, METER; CENTRAL MERIDIAN 105d W.
- **BOLD AND UNDERLINED**; VALUE GREATER THAN THE INDUSTRIAL GUIDELINE
- DEPTH SHOWN IS IN METRES BELOW BELOW GRADE

STATUS
ISSUED FOR REVIEW

CLIENT
NEWMONT

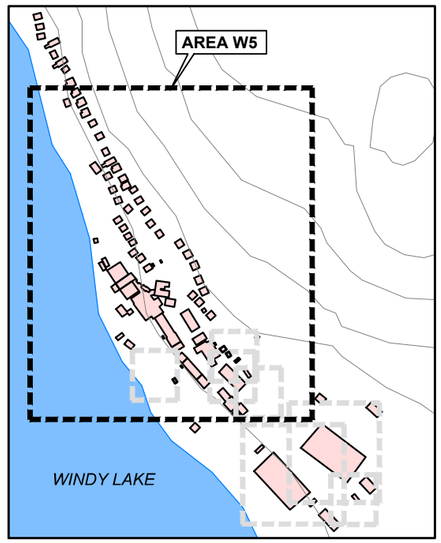
PHASE III ENVIRONMENTAL SITE ASSESSMENT
AT FORMER WINDY LAKE CAMP
HOPE BAY GOLD PROJECT, NUNAVUT

W4 - GENERATOR

eba A TETRA TECH COMPANY

PROJECT NO.	DWN	CKD	REV
Y22101187.001	EL	DF	0
OFFICE: EDM	DATE: February 1, 2012		

Figure 3D



KEY PLAN
1:4000

0 20 m
Scale: 1: 400

W5E	
AREA (m²)	9
VOLUME (m³)	18

W5D	
AREA (m²)	2
VOLUME (m³)	4

W5D-2
PID: 0.0 □□m
W5D-1
PID: 109 □□m □ 10 cm
0 □□m □ 30 cm
W5D-4
PID: 0.0 □□m
TENT 41
W5D-3
PID: 0.0 □□m

W5E-3
PID: 639 □□m □ 15 cm
W5E-5
W5E-1
PID: 704 □□m □ 50 cm
W5E-2
PID: 0.0 □□m
W5E-4
PID: 0.0 □□m
DRILLERS□DRY

CORE SHAC□
W5A-1
PID: 0.0 □□m
W5A-2
PID: 0.0 □□m
FORMER GENERATOR
CORE SHAC□

W5F-2
PID: 0.0 □□m
W5F-1
PID: 92.6 □□m
REGIONAL ANNE□
FORMER INCINERATOR

755
2 500
432 550
755
20

Confirmatory Soil Analytical Results for Hydrocarbons at W5 (Tents W5A, W5D, W5E and W5F)

Test Parameter	Unit	Tier 1 Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grained Soil)		Core Shack	Drillers Dry					Tent 41		Core Shack
		Industrial	Wildland	11W5A_01 0.20	11W5E_01 0.15	11W5E_01 0.50	11W5E_01 0.85	11W5E_02 0.20	11W5E_04 0.20	11W5D_01 0.10	11W5D_01 0.30	11W5F_02 0.10
Hydrocarbon Fractions F1 to F4												
F1 (C6 - C10)	mg/kg	240	30	<12	**430**	**460**	**960**	<12	<12	<12	<12	<12
F2 (>C10 - C 16)	mg/kg	260	150	<10	**10,000**	**6,400**	**5,900**	11	<10	**2,100**	180	10
F3 (>C16 - C34)	mg/kg	1,700	300	49	**1,800**	**1,200**	**920**	69	11	83	23	<10
F4 (>C34 - C50)	mg/kg	3,300	2,800	14	<10	<10	<10	16	<10	<10	<10	<10

LEGEND
- ✕ - SOIL SCREENING POINT
- ● - SAMPLE BELOW TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION
- ● - SAMPLE ABOVE TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION
- ▭ - HEATING FUEL TAN□ LOCATION
- ▭ - FORMER HEATING FUEL TAN□ LOCATION
- ▬ ▬ - AREA GREATER THAN INDUSTRIAL GUIDELINE

NOTES
- GPS POINTS WERE COLLECTED IN UTM WITH NAD83 DATUM, ZONE 13, METER; CENTRAL MERIDIAN 105d W.
- EBA's HAND HELD GPS UNIT HAS AN ACCURACY OF ±2-3 m
- **BOLD AND UNDERLINED**: VALUE GREATER THAN THE INDUSTRIAL GUIDELINE
- DEPTH SHOWN IS IN METRES BELOW BELOW GRADE

STATUS
ISSUED FOR REVIEW

CLIENT
NEWMONT

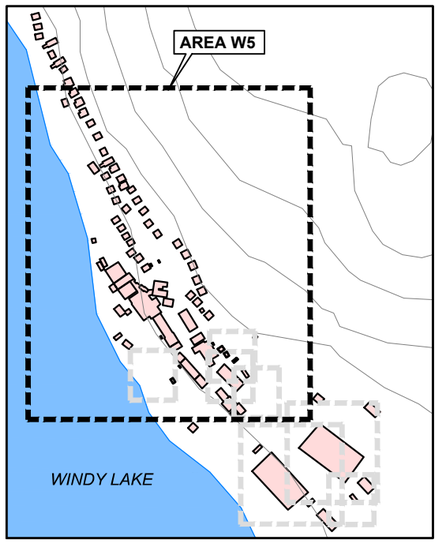
eba A TETRA TECH COMPANY

PHASE III ENVIRONMENTAL SITE ASSESSMENT AT FORMER WINDY LAKE CAMP HOPE BAY GOLD PROJECT, NUNAVUT

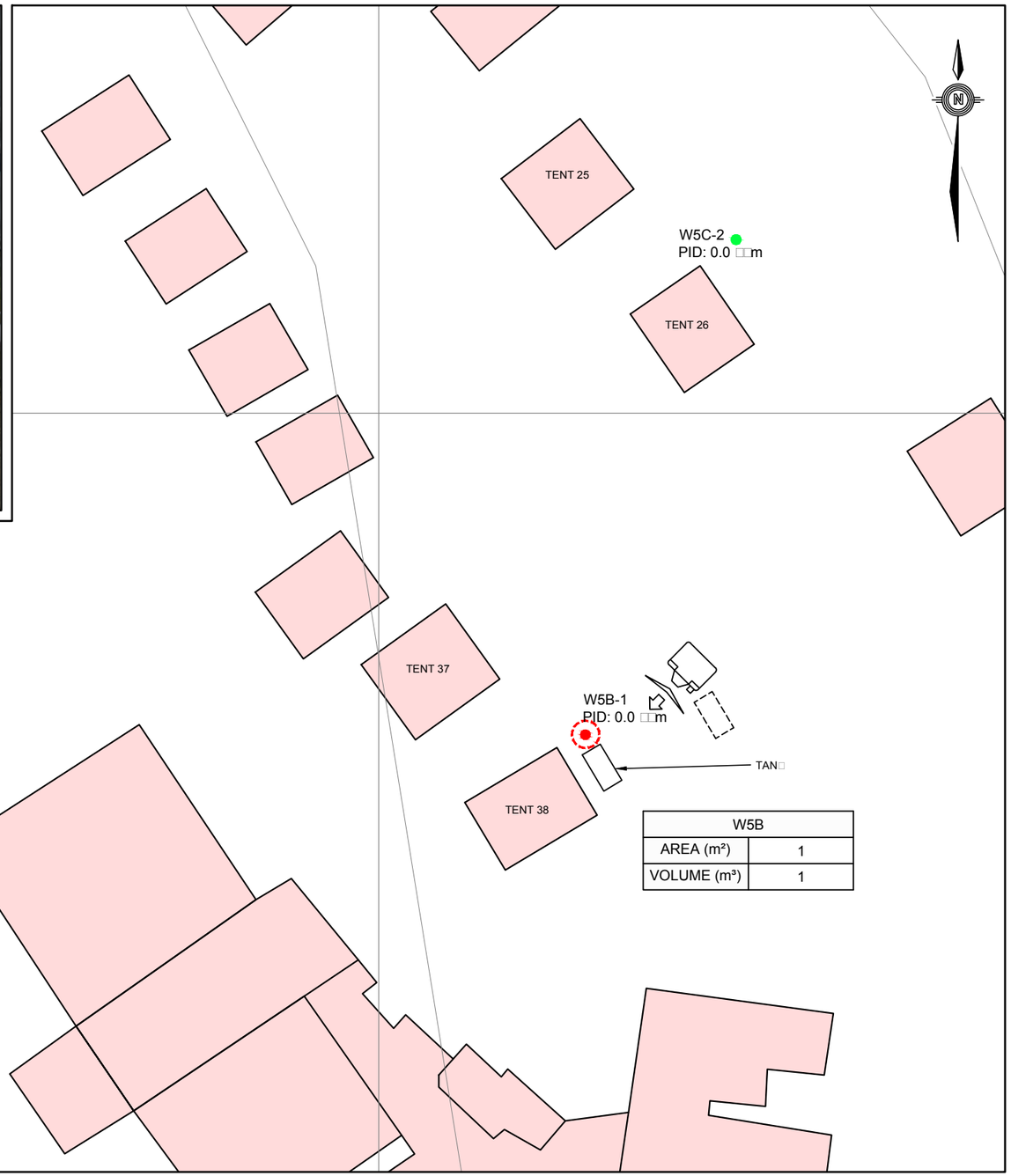
W5 - TENTS (W5A - W5G)

PROJECT NO.	DWN	CKD	REV
Y22101187.001	EL	DF	0
OFFICE: EDM	DATE: February 1, 2012		

Figure 3Ei



KEY PLAN
1:4000



W5B	
AREA (m²)	1
VOLUME (m³)	1

Confirmatory Soil Analytical Results for Hydrocarbons at W5 (Tents W5B and W5C)

Test Parameter	Unit	Tier 1 Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grained Soil)		Tent 38	Tent 26
		Industrial	Wildland	11W5B_01 0.10	11W5C_01 0.10
Hydrocarbon Fractions F1 to F4					
F1 (C6 - C10)	mg/kg	240	30	<12	<12
F2 (>C10 - C 16)	mg/kg	260	150	**2,900**	<10
F3 (>C16 - C34)	mg/kg	1,700	300	900	60
F4 (>C34 - C50)	mg/kg	3,300	2,800	13	22

LEGEND
- ✕ - SOIL SCREENING POINT
- ● - SAMPLE BELOW TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION
- ● - SAMPLE ABOVE TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION
- ▭ - HEATING FUEL TAN□ LOCATION
- ▭ - FORMER HEATING FUEL TAN□ LOCATION
- ▬▬ - AREA GREATER THAN INDUSTRIAL GUIDELINE

NOTES
- GPS POINTS WERE COLLECTED IN UTM WITH NAD83 DATUM, ZONE 13, METER; CENTRAL MERIDIAN 105d W.
- EBA's HAND HELD GPS UNIT HAS AN ACCURACY OF ±2-3 m
- **BOLD AND UNDERLINED**: VALUE GREATER THAN THE INDUSTRIAL GUIDELINE
- DEPTH SHOWN IS IN METRES BELOW BELOW GRADE

STATUS
ISSUED FOR REVIEW

CLIENT
NEWMONT

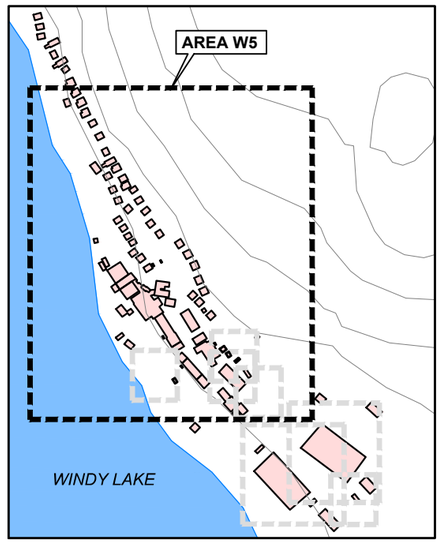
PHASE III ENVIRONMENTAL SITE ASSESSMENT
AT FORMER WINDY LAKE CAMP
HOPE BAY GOLD PROJECT, NUNAVUT

W5 - TENTS (W5A - W5G)

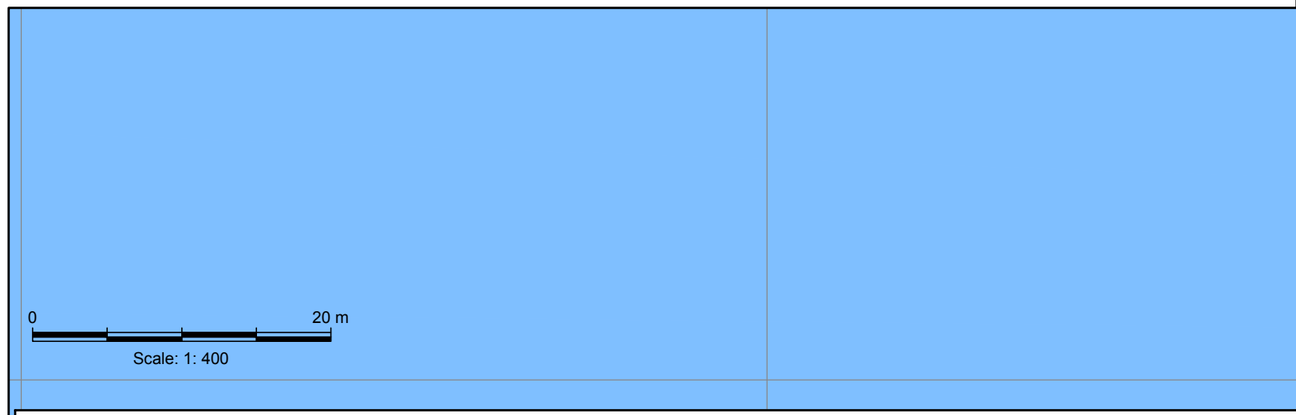
eba A TETRA TECH COMPANY

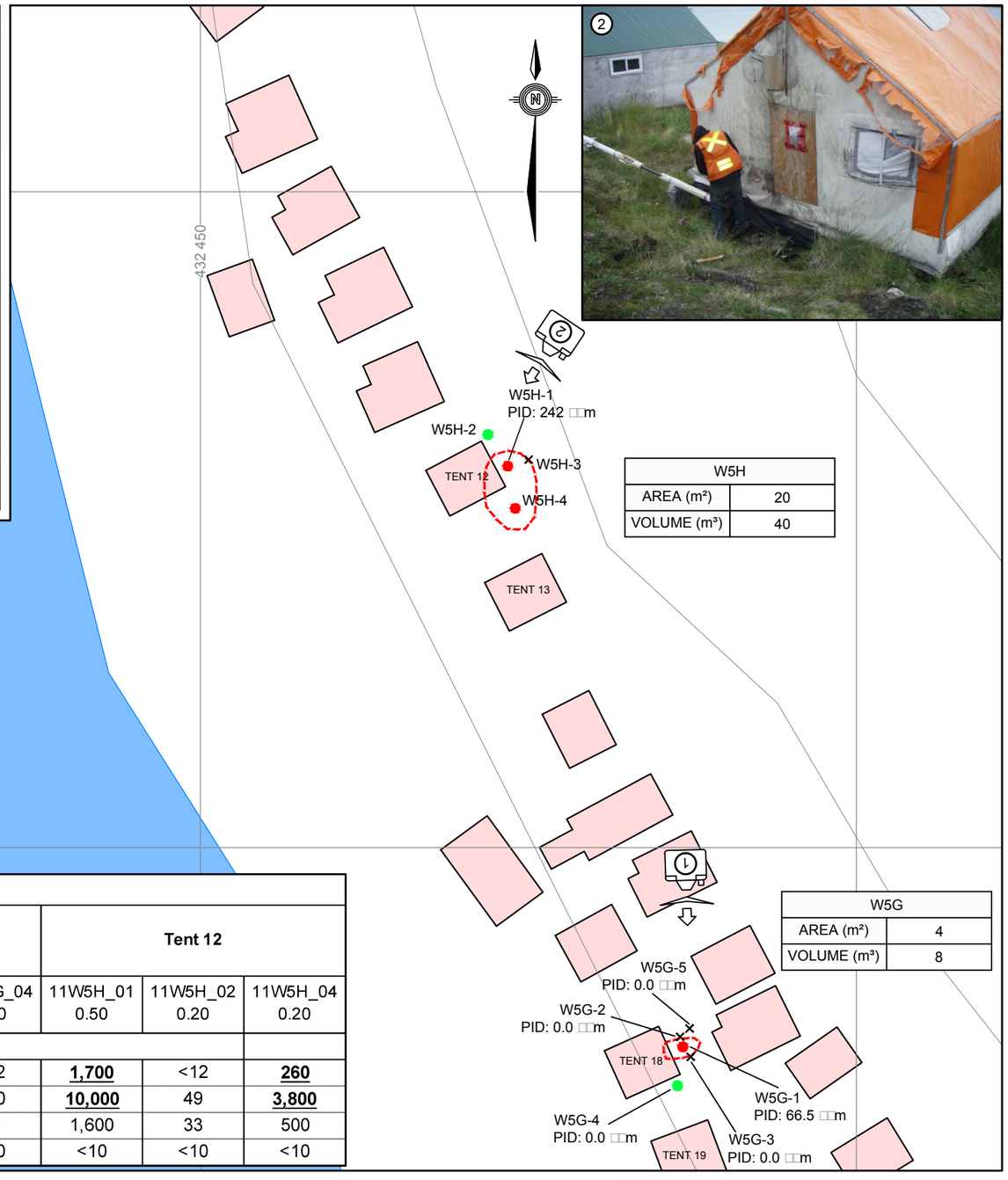
PROJECT NO.	DWN	CKD	REV
Y22101187.001	EL	DF	0
OFFICE: EDM	DATE: February 1, 2012		

Figure 3Eii



KEY PLAN
1:4000





Confirmatory Soil Analytical Results for Hydrocarbons at W5 (Tents W5G - W5H)

Test Parameter	Unit	Tier 1 Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grained Soil)		Tent 18			Tent 12		
		Industrial	Wildland	11W5G_01 0.10	11W5G_01 0.30	11W5G_04 0.10	11W5H_01 0.50	11W5H_02 0.20	11W5H_04 0.20
Hydrocarbon Fractions F1 to F4									
F1 (C6 - C10)	mg/kg	240	30	110	73	<12	**1,700**	<12	**260**
F2 (>C10 - C 16)	mg/kg	260	150	**3,300**	**3,500**	<10	**10,000**	49	**3,800**
F3 (>C16 - C34)	mg/kg	1,700	300	420	440	10	1,600	33	500
F4 (>C34 - C50)	mg/kg	3,300	2,800	<10	<10	<10	<10	<10	<10

LEGEND
- ✕ - SOIL SCREENING POINT
- ● - SAMPLE BELOW TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION
- ● - SAMPLE ABOVE TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION
- - - - - - AREA GREATER THAN INDUSTRIAL GUIDELINE

NOTES
- GPS POINTS WERE COLLECTED IN UTM WITH NAD83 DATUM, ZONE 13, METER; CENTRAL MERIDIAN 105d W.
- **BOLD AND UNDERLINED**: VALUE GREATER THAN THE INDUSTRIAL GUIDELINE
- DEPTH SHOWN IS IN METRES BELOW BELOW GRADE

STATUS
ISSUED FOR REVIEW

CLIENT
NEWMONT

A TETRA TECH COMPANY

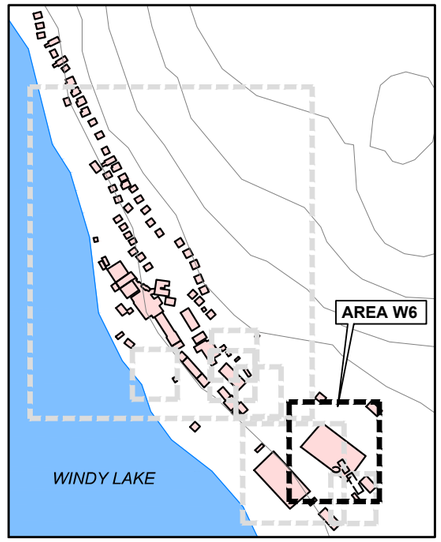
PHASE III ENVIRONMENTAL SITE ASSESSMENT AT FORMER WINDY LAKE CAMP HOPE BAY GOLD PROJECT, NUNAVUT

W5 - TENTS (W5G - W5H)

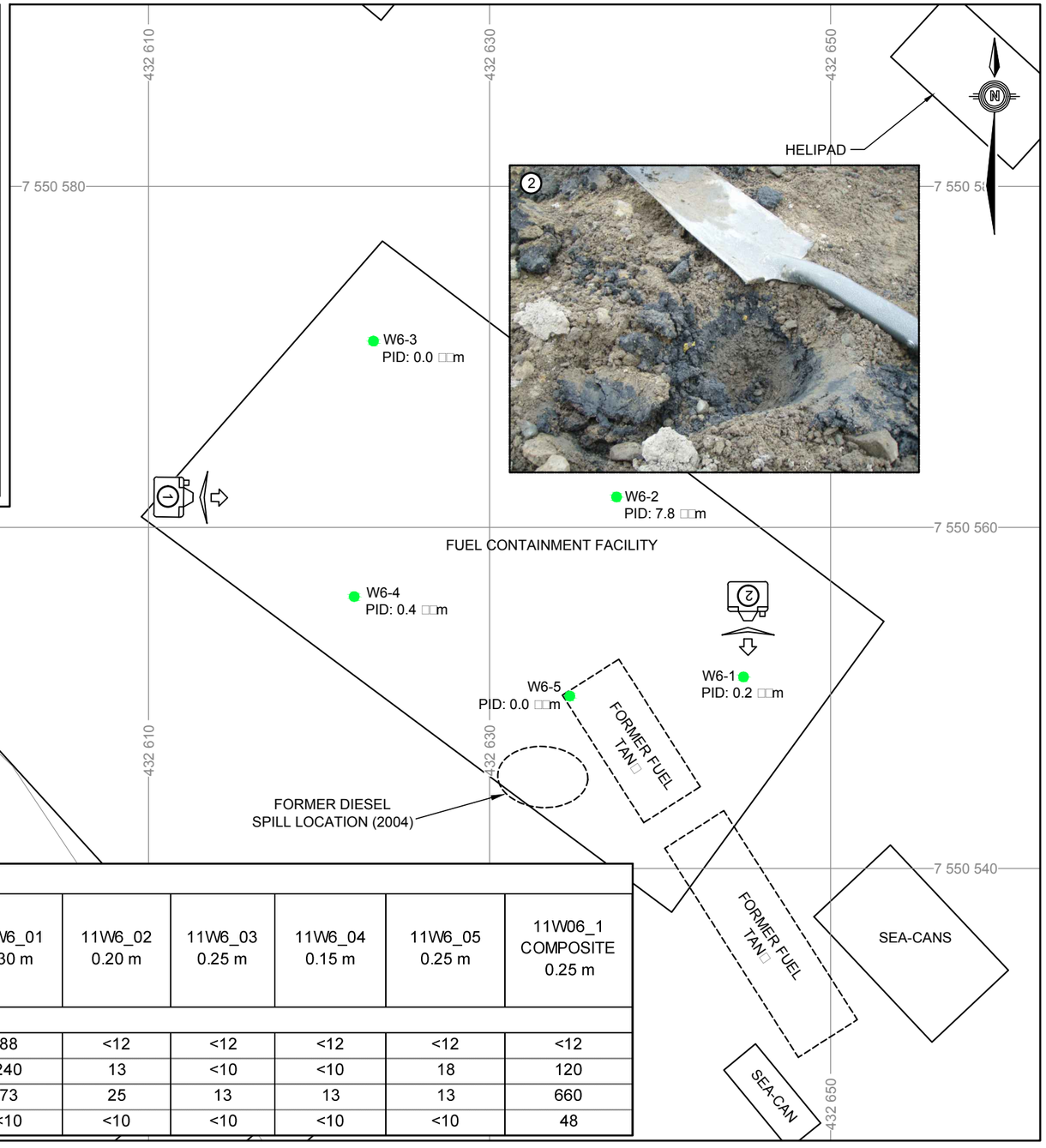
PROJECT NO.	DWN	CKD	REV
Y22101187.001	EL	DF	0
OFFICE: EDM	DATE: February 1, 2012		

Figure 3Eiii

Q:\Edmonton\Drafting\DIVISIONS2007\Other Offices\Y22\1\Y22101187\001\AutoCAD\Windy\Y22101187.001-Windy_FIG 3E_R0.dwg [FIGURE 3Eiii] February 07, 2012 - 9:45:53 am (BY: LEE, ELVIN)



KEY PLAN
1:4000



Confirmatory Soil Analytical Results For Hydrocarbons at W6 (Tankfarm)

Test Parameter	Unit	Tier 1 Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grained Soil)		11W6_01 0 - 0.05 m	11W6_01 0.30 m	11W6_02 0.20 m	11W6_03 0.25 m	11W6_04 0.15 m	11W6_05 0.25 m	11W06_1 COMPOSITE 0.25 m
		Industrial	Wildland							
Hydrocarbon Fractions F1 to F4										
F1 (C6 - C10)	mg/kg	240	30	21	88	<12	<12	<12	<12	<12
F2 (>C10 - C 16)	mg/kg	260	150	220	240	13	<10	<10	18	120
F3 (>C16 - C34)	mg/kg	1,700	300	100	73	25	13	13	13	660
F4 (>C34 - C50)	mg/kg	3,300	2,800	<10	<10	<10	<10	<10	<10	48

LEGEND

- SAMPLE BELOW TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION
- - - - FORMER FACILITY LOCATION

NOTES

- GPS POINTS WERE COLLECTED IN UTM WITH NAD83 DATUM, ZONE 13, METER; CENTRAL MERIDIAN 105d W.
- **BOLD AND UNDERLINED**: VALUE GREATER THAN THE INDUSTRIAL GUIDELINE
- DEPTH SHOWN IS IN METRES BELOW BELOW GRADE

STATUS
ISSUED FOR REVIEW

CLIENT
NEWMONT

PHASE III ENVIRONMENTAL SITE ASSESSMENT
AT FORMER WINDY LAKE CAMP
HOPE BAY GOLD PROJECT, NUNAVUT

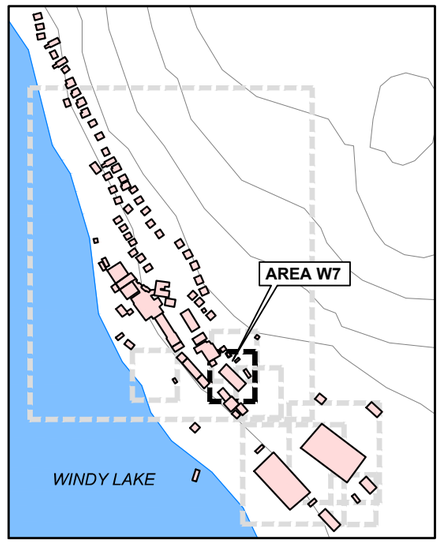
W6 - TANKFARM

PROJECT NO.	DWN	CKD	REV
Y22101187.001	EL	DF	0

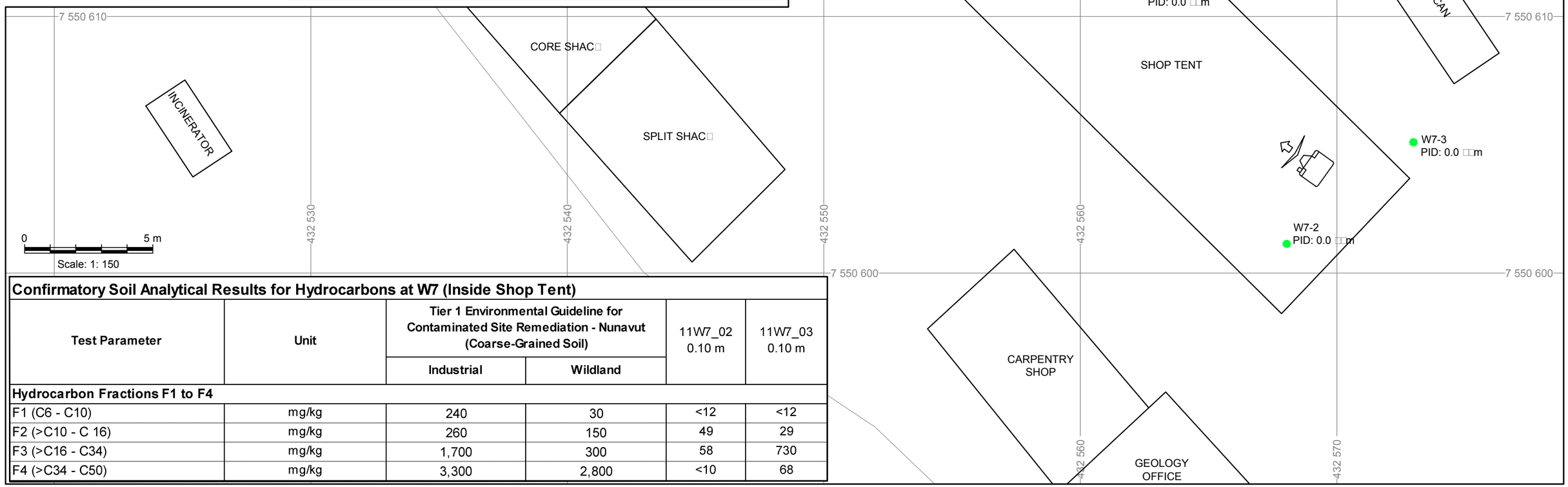
OFFICE	DATE
EDM	February 1, 2012

Figure 3F

eba A TETRA TECH COMPANY



KEY PLAN
1:4000



Confirmatory Soil Analytical Results for Hydrocarbons at W7 (Inside Shop Tent)

Test Parameter	Unit	Tier 1 Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grained Soil)		11W7_02 0.10 m	11W7_03 0.10 m
		Industrial	Wildland		
Hydrocarbon Fractions F1 to F4					
F1 (C6 - C10)	mg/kg	240	30	<12	<12
F2 (>C10 - C 16)	mg/kg	260	150	49	29
F3 (>C16 - C34)	mg/kg	1,700	300	58	730
F4 (>C34 - C50)	mg/kg	3,300	2,800	<10	68

LEGEND
- X - SOIL SCREENING POINT
- ● - SAMPLE BELOW TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION
- ● - SAMPLE ABOVE TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION

NOTES
- GPS POINTS WERE COLLECTED IN UTM WITH NAD83 DATUM, ZONE 13, METER; CENTRAL MERIDIAN 105d W.
- **BOLD AND UNDERLINED**: VALUE GREATER THAN THE INDUSTRIAL GUIDELINE
- DEPTH SHOWN IS IN METRES BELOW BELOW GRADE

STATUS
ISSUED FOR REVIEW

CLIENT
NEWMONT

PHASE III ENVIRONMENTAL SITE ASSESSMENT
AT FORMER WINDY LAKE CAMP
HOPE BAY GOLD PROJECT, NUNAVUT

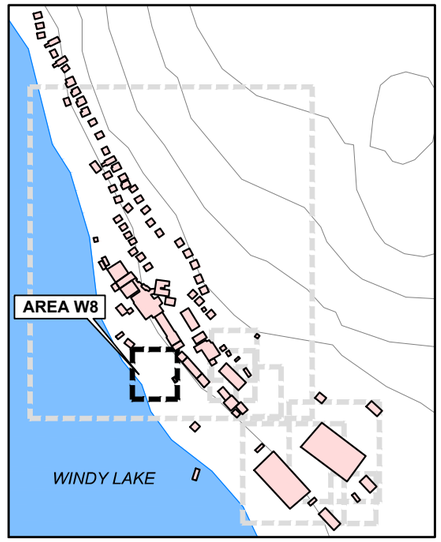
W7 - INSIDE SHOP TENT

eba A TETRA TECH COMPANY

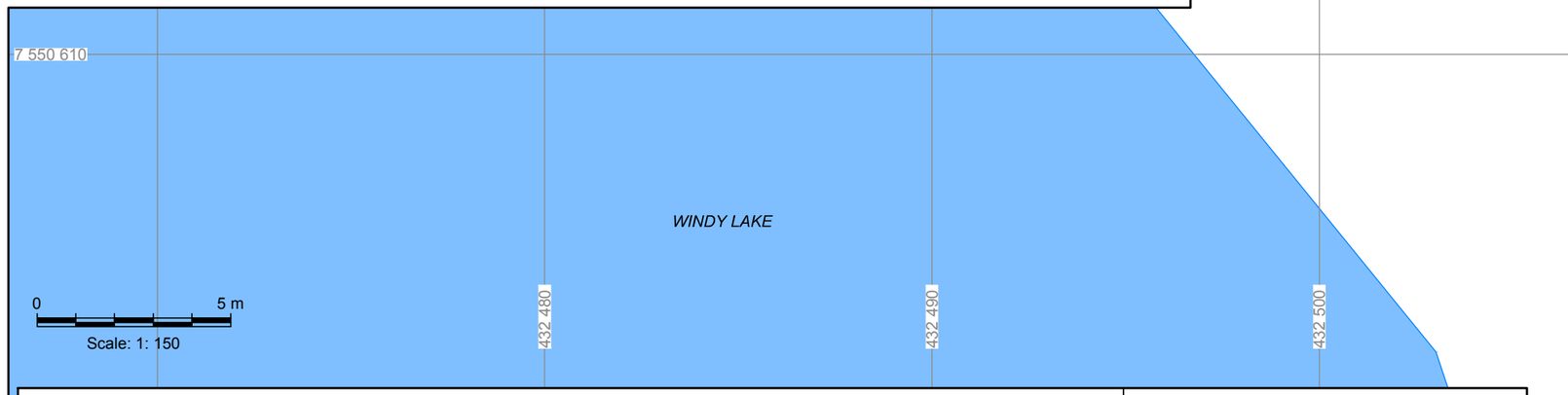
PROJECT NO.	DWN	CKD	REV
Y22101187.001	EL	DF	0

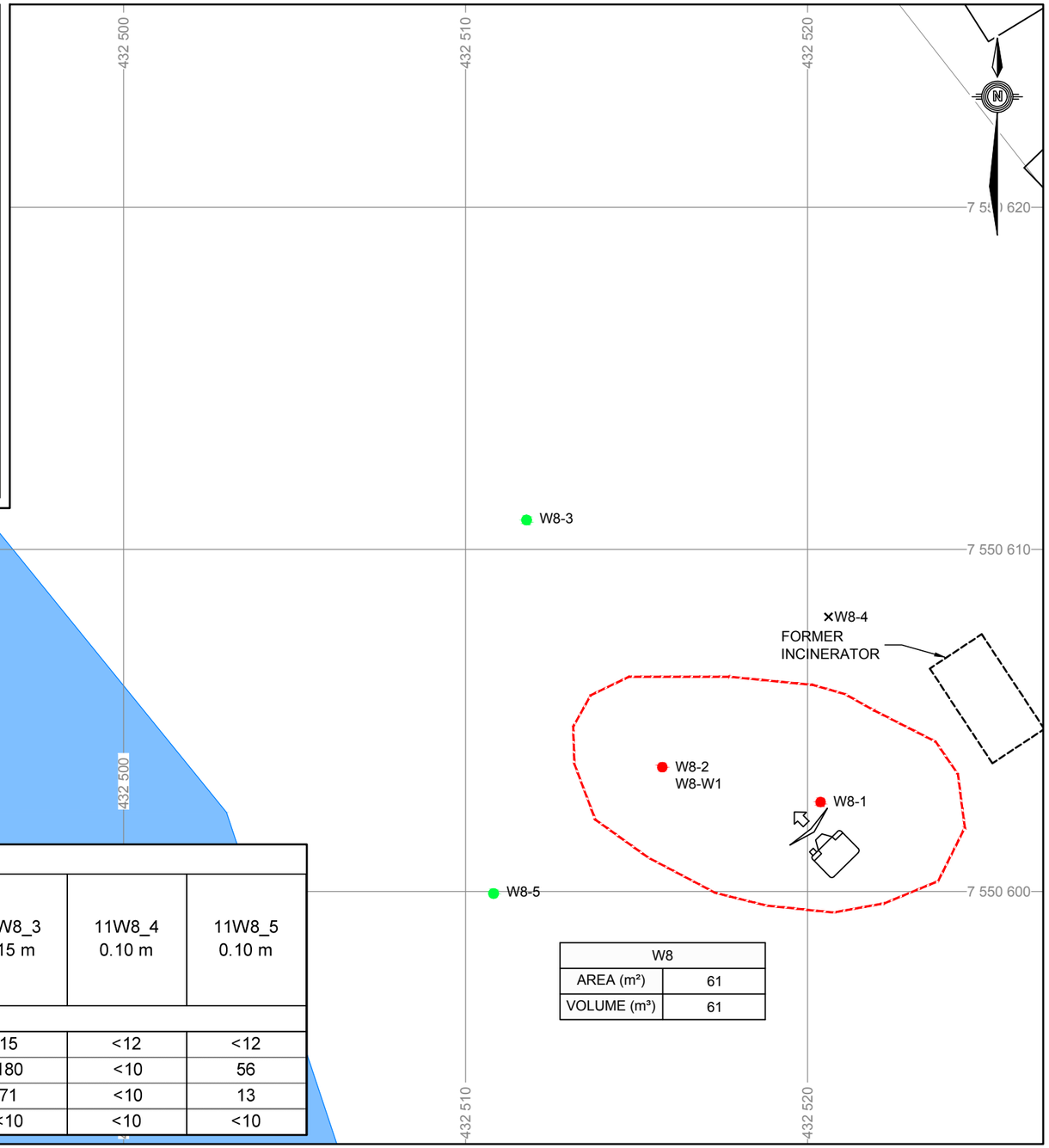
OFFICE: EDM
DATE: February 1, 2012

Figure 3G



KEY PLAN
1:4000





Confirmatory Soil Analytical Results For Hydrocarbons at W8 (Incinerator Near Beach)

Test Parameter	Unit	Tier 1 Environmental Guideline for Contaminated Site Remediation - Nunavut (Coarse-Grained Soil)		11W8_1 0.10 m	11W8_2 0.10 m	11W8_3 0.15 m	11W8_4 0.10 m	11W8_5 0.10 m
		Industrial	Wildland					
Hydrocarbon Fractions F1 to F4								
F1 (C6 - C10)	mg/kg	240	30	<12	<12	15	<12	<12
F2 (>C10 - C 16)	mg/kg	260	150	**290**	**420**	180	<10	56
F3 (>C16 - C34)	mg/kg	1,700	300	1,400	71	71	<10	13
F4 (>C34 - C50)	mg/kg	3,300	2,800	210	<10	<10	<10	<10

LEGEND
- ✕ - SOIL SCREENING POINT
- ● - SAMPLE BELOW TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION (INDUSTRIAL)
- ● - SAMPLE ABOVE TIER 1 ENVIRONMENTAL GUIDELINE FOR CONTAMINATED SITE REMEDIATION (INDUSTRIAL)
- - - - AREA GREATER THAN INDUSTRIAL GUIDELINE

NOTES
- GPS POINTS WERE COLLECTED IN UTM WITH NAD83 DATUM, ZONE 13, METER; CENTRAL MERIDIAN 105d W.
- **BOLD AND UNDERLINED**: VALUE GREATER THAN THE INDUSTRIAL GUIDELINE
- DEPTH SHOWN IS IN METRES BELOW BELOW GRADE

STATUS
ISSUED FOR REVIEW

CLIENT
NEWMONT

A TETRA TECH COMPANY

PHASE III ENVIRONMENTAL SITE ASSESSMENT AT FORMER WINDY LAKE CAMP HOPE BAY GOLD PROJECT, NUNAVUT

W8 - INCINERATOR NEAR BEACH

PROJECT NO.	DWN	CKD	REV
Y22101187.001	EL	DF	0
OFFICE: EDM	DATE: February 1, 2012		

Figure 3H

Water Analytical Results for Hydrocarbons, Routine Water and Regulated Metals at Windy Camp

Test Parameter	Unit	CCME[1]	Licence No. 2BE-HOP0712	11W1-1	11W6-1 (HOP-5)	11W8-1	11W8-2
BTEX and Hydrocarbon Fractions F1 to F2							
Benzene	mg/L	0.370	0.370	<0.0004	<0.0004	<0.0004	<0.0004
Toluene	mg/L	0.002	0.002	<0.0004	<0.0004	<0.0004	<0.0004
Ethylbenzene	mg/L	0.090	0.090	<0.0004	<0.0004	<0.0004	<0.0004
Xylenes	mg/L	-	-	<0.0008	<0.0008	<0.0008	<0.0008
F1 (C6 - C10)	mg/L	-	-	<0.1	<0.1	<0.1	<0.1
F2 (>C10 - C16)	mg/L	-	-	<0.1	<0.1	3.3	<0.1
Routine Water and Diss. Regulated Metals Misc. Inorganics							
Conductivity	uS/cm	-	-	410	3,900	570	420
pH	-	6.5 to 9		7.28	7.97	7.1	7.7
Routine Water and Diss. Regulated Metals Calculated Parameters							
Anion Sum	meq/L	-	-	3.9	37	5.7	4.4
Cation Sum	meq/L	-	-	4.3	32	5.9	4.4
Hardness ($CaCO_3$)	mg/L	-	-	170	710	200	170
Ion Balance	-	-	-	1.1	0.87	1	0.99
Dissolved Nitrate (N)	mg/L	13	-	0.2	0.45	<0.003	0.008
Dissolved Nitrate (NO_3)	mg/L	-	-	0.89	2	<0.01	0.04
Nitrate plus Nitrite (N)	mg/L	-	-	0.2	0.45	<0.003	0.008
Dissolved Nitrite (N)	mg/L	0.06	-	<0.003	<0.003	<0.003	<0.003
Dissolved Nitrite (NO_2)	mg/L	-	-	<0.01	<0.01	<0.01	<0.01
Total Dissolved Solids	mg/L	-	-	210	2000	290	230
Routine Water and Diss. Regulated Metals Anions							
Alkalinity (PP as $CaCO_3$)	mg/L	-	-	<0.5	<0.5	<0.5	<0.5
Alkalinity (Total as $CaCO_3$)	mg/L	-	-	110	430	250	170
Bicarbonate (HCO_3)	mg/L	-	-	140	530	310	210
Carbonate (CO_3)	mg/L	-	-	<0.5	<0.5	<0.5	<0.5
Hydroxide (OH)	mg/L	-	-	<0.5	<0.5	<0.5	<0.5
Dissolved Sulphate (SO_4)	mg/L	-	-	7	320	18	19
Dissolved Chloride (Cl)	mg/L	128	-	53	**770**	10	23
Total Regulated Metals Elements							
Total Aluminum (Al)	mg/L	0.1		20	2.4	13	0.072
Total Arsenic (As)	mg/L	0.005		**0.011**	**0.0091**	**0.013**	0.0015
Total Cadmium (Cd)	mg/L	0.06*		0.00021	0.00011	0.00035	0.00001
Total Chromium (Cr), Trivalent	mg/L	0.0089		**0.06**	**0.009**	**0.04**	<0.001
Total Copper (Cu)	mg/L	0.00428*		**0.11**	**0.028**	**0.087**	**0.0021**
Total Iron (Fe)	mg/L	0.3		**47**	**7.9**	**38**	**1.7**
Total Lead (Pb)	mg/L	0.00769*	0.001	**0.011**	**0.0017**	**0.016**	<0.0002
Total Nickel (Ni)	mg/L	0.162*		0.041	0.013	0.029	0.0022
Total Selenium (Se)	mg/L	0.001		<0.002	0.0012	<0.002	<0.0002
Total Silver (Ag)	mg/L	0.0001		<0.001	<0.0001	<0.001	<0.0001
Total Thallium (Tl)	mg/L	0.0008		<0.002	<0.0002	<0.002	<0.0002
Total Uranium (U)	mg/L	0.015		0.002	0.0062	0.002	0.0002
Total Zinc (Zn)	mg/L	0.03		**0.08**	0.012	**0.09**	<0.003

Notes:

[1] Canadian Water Quality Guidelines for Protection of Aquatic Life - freshwater, long-term exposure

* Based on hardness of 200 mg/L

'-' = Not detected/not analyzed/no unit/no guidelines

Bold = Greater than the referenced guideline

LEGEND
- SOIL F2 HYDROCARBONS GREATER THAN REMEDIAL OB ECTIVES
- MONITORING WELL LOCATION (DRY) (INSTALLED IN 2009 BY WESA)
- SURFACE WATER SAMPLING LOCATION

0 100 m

Scale: 1: 2 000

NOTES
- GPS POINTS WERE COLLECTED IN UTM WITH NAD83 DATUM, ZONE 13, METER; CENTRAL MERIDIAN 105d W.

STATUS
ISSUED FOR REVIEW

CLIENT
NEWMONT

PHASE III ENVIRONMENTAL SITE ASSESSMENT
AT FORMER WINDY LAKE CAMP
HOPE BAY GOLD PROJECT, NUNAVUT

SURFACE SAMPLING WATER LOCATIONS

eba A TETRA TECH COMPANY

PROJECT NO.	DWN	CKD	REV
Y22101187.001	EL	DF	0
OFFICE: EDM	DATE: February 1, 2012		

Figure 4

Q:\Edmonton\Drafting\DIVISIONS2007\Other Offices\Y221\Y22101187001\AutoCAD\Windy\Y22101187.001-Windy_FIG 4_R0.dwg [FIGURE 4] February 13, 2012 - 12:34:48 pm (BY: HEBERT, RICHARD)

APPENDIX A
LABORATORY ANALYTICAL RESULTS

Maxxam

Your P.O. #: Y22101187.001
Your C.O.C. #: A050092, A050093, A050094, A050095, A050096, A050097

Attention: DANIELA FELSKE
EBA ENGINEERING CONSULTANTS LTD.
EDMONTON - Rebate
14940-123 AVENUE
EDMONTON, AB
CANADA T5V 1B4

Report Date: 2011/08/30

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B177775
Received: 2011/08/22, 11:57

Sample Matrix: Soil
Samples Received: 63

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Boron (Hot Water Soluble)	5	2011/08/27	2011/08/27	AB SOP-00042	EPA 200.7
BTEX/F1 by HS GC/MS (MeOH extract)	1	2011/08/23	2011/08/26	EENVSOP-00012 EENVSOP-00002 EENVSOP-00005	CCME CWS, EPA 8260C
BTEX/F1 by HS GC/MS (MeOH extract)	25	2011/08/23	2011/08/27	EENVSOP-00012 EENVSOP-00002 EENVSOP-00005	CCME CWS, EPA 8260C
BTEX/F1 by HS GC/MS (MeOH extract)	20	2011/08/23	2011/08/28	EENVSOP-00012 EENVSOP-00002 EENVSOP-00005	CCME CWS, EPA 8260C
BTEX/F1 by HS GC/MS (MeOH extract)	15	2011/08/23	2011/08/29	EENVSOP-00012 EENVSOP-00002 EENVSOP-00005	CCME CWS, EPA 8260C
Cation/EC Ratio	4	N/A	2011/08/29		CALCULATION
Chloride (Soluble)	1	2011/08/25	2011/08/27	AB SOP-00026	SM 4110-B
Chloride (Soluble)	3	2011/08/25	2011/08/28	AB SOP-00026	SM 4110-B
Hexavalent Chromium	1	2011/08/23	2011/08/24	EENVSOP-00131	SM 3500-Cr B
Hexavalent Chromium	2	2011/08/24	2011/08/29	EENVSOP-00131	SM 3500-Cr B
Hexavalent Chromium	2	2011/08/25	2011/08/24	EENVSOP-00131	SM 3500-Cr B
Conductivity @25C (Soluble)	4	2011/08/25	2011/08/26	AB SOP-00004	SSMA 15.3
CCME Hydrocarbons (F2-F4 in soil)	40	2011/08/23	2011/08/26	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
CCME Hydrocarbons (F2-F4 in soil)	20	2011/08/23	2011/08/27	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
CCME Hydrocarbons (F2-F4 in soil)	1	2011/08/24	2011/08/28	AB SOP-00040 AB SOP-00036	CCME PHC-CWS
Elements by ICPMS - Soils	5	2011/08/26	2011/08/26	AB SOP-00043	EPA 200.8
Ion Balance	4	N/A	2011/08/29	AB WI-00065	SM 1030E
Sum of Cations, Anions	4	N/A	2011/08/29	AB WI-00065	SM 1030E
Moisture	62	N/A	2011/08/24	EENVSOP-00139	Carter SSMA 51.2
NO2 + NO3 Available (10:1 Wet)	1	2011/08/23	2011/08/29	EENVSOP-00063 EENVSOP-00055	MMCAWW 2359/ 4110 B
Nitrite Available (10:1 Wet)	1	2011/08/24	2011/08/27	AB SOP-00023	SM 4110 B
Nitrogen - Nitrate (as N)	1	N/A	2011/08/29	EENVSOP-00055	SM 4110 B
Nitrate Available (10:1 Wet)	1	2011/08/24	2011/08/27	AB SOP-00023	MMCW 2359
pH @25C (1:2 Calcium Chloride Extract)	2	2011/08/25	2011/08/25	AB SOP-00006	SSMA 16.3
pH @25C (1:2 Calcium Chloride Extract)	2	2011/08/26	2011/08/26	AB SOP-00006	SSMA 16.3
Phosphorous, Potassium - Available	1	2011/08/26	2011/08/26	AB SOP-00042	EPA 200.7

../2

Maxxam

Your P.O. #: Y22101187.001
Your C.O.C. #: A050092, A050093, A050094, A050095, A050096, A050097

Attention: DANIELA FELSKE
EBA ENGINEERING CONSULTANTS LTD.
EDMONTON - Rebate
14940-123 AVENUE
EDMONTON, AB
CANADA T5V 1B4

Report Date: 2011/08/30

CERTIFICATE OF ANALYSIS

Sample Matrix: Soil
Samples Received: 63

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Particle Size by Sieve (75 micron)	11	N/A	2011/08/24	AB SOP-00022	SSMA 55.4
Particle Size by Sieve (75 micron)	2	N/A	2011/08/25	AB SOP-00022	SSMA 55.4
Sodium Adsorption Ratio	4	N/A	2011/08/29	AB WI-00065	SSMA 15.4.4
Ca,Mg,Na,K,SO4 (Soluble)	4	2011/08/27	2011/08/29	AB SOP-00042	EPA 200.7
Sulphur (Available)	1	2011/08/26	2011/08/26	AB SOP-00042	EPA 200.7
Soluble Paste	4	2011/08/25	2011/08/25	AB SOP-00033	SSMA 15.2
Soluble Ions Calculation	4	N/A	2011/08/25		CALCULATION
Theoretical Gypsum Requirement (1)	4	N/A	2011/08/29	CAL WI-00087	CJSS 79:449-455

(1) Units for TGR have changed from tons/acre to tonnes/ha

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Jeremy Wakaruk, B.Sc., Senior Project Manager
Email: JWakaruk@maxxam.ca
Phone# (780) 577-7105 Ext:7105

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

Maxxam

Maxxam Job #: B177775
Report Date: 2011/08/30

EBA ENGINEERING CONSULTANTS LTD.

Your P.O. #: Y22101187.001

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		BI0038	BI0039	BI0040	BI0041	BI0042		
Sampling Date		2011/08/09	2011/08/09	2011/08/09	2011/08/09	2011/08/09		
COC Number		A050092	A050092	A050092	A050092	A050092		
	Units	**11W5G-01 (30CM)**	**11W5H-01 (50CM)**	**11W5G-04 (10CM)**	**11W5H-02 (20CM)**	**11W5G-01 (10CM)**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	6.4	22	11	23	8.7	0.3	5118200
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	3500	10000	<10	49	3300	10	5117241
F3 (C16-C34 Hydrocarbons)	mg/kg	440	1600	10	33	420	10	5117241
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	<10	<10	10	5117241
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	5117241
Volatiles								
Benzene	mg/kg	<0.0050	0.14	<0.0050	<0.0050	<0.0050	0.0050	5117716
Toluene	mg/kg	<0.020	4.6	<0.020	<0.020	<0.020	0.020	5117716
Ethylbenzene	mg/kg	<0.010	4.4	<0.010	<0.010	<0.010	0.010	5117716
Xylenes (Total)	mg/kg	<0.040	68	<0.040	<0.040	<0.040	0.040	5117716
m & p-Xylene	mg/kg	<0.040	43	<0.040	<0.040	<0.040	0.040	5117716
o-Xylene	mg/kg	<0.020	25	<0.020	<0.020	<0.020	0.020	5117716
F1 (C6-C10) - BTEX	mg/kg	73	1700	<12	<12	110	12	5117716
(C6-C10)	mg/kg	73	1800	<12	<12	110	12	5117716
Surrogate Recovery (%)								
4-BROMOFLUOROBENZENE (sur.)	%	98	109	97	99	99	N/A	5117716
D10-ETHYLBENZENE (sur.)	%	107	106	115	110	109	N/A	5117716
D4-1,2-DICHLOROETHANE (sur.)	%	99	104	94	101	97	N/A	5117716
D8-TOLUENE (sur.)	%	102	106	106	103	102	N/A	5117716
O-TERPHENYL (sur.)	%	113	101	97	100	109	N/A	5117241

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B177775
Report Date: 2011/08/30

EBA ENGINEERING CONSULTANTS LTD.

Your P.O. #: Y22101187.001

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		BI0043	BI0044	BI0045	BI0046	BI0047		
Sampling Date		2011/08/09	2011/08/09	2011/08/09	2011/08/09	2011/08/09		
COC Number		A050092	A050092	A050092	A050092	A050092		
	Units	**11W8-05 (10CM)**	**11W8-03 (15CM)**	**11W8-04 (10CM)**	**11W8-02 (10CM)**	**11W8-01 (10CM)**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	23	26	19	20	41	0.3	5118200
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	56	180	<10	420	290	10	5117241
F3 (C16-C34 Hydrocarbons)	mg/kg	13	71	<10	71	1400	10	5117241
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	<10	210	10	5117241
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	5117241
Volatiles								
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117716
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.47	0.020	5117716
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5117716
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	5117716
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	5117716
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	5117716
F1 (C6-C10) - BTEX	mg/kg	<12	15	<12	<12	<12	12	5117716
(C6-C10)	mg/kg	<12	15	<12	<12	<12	12	5117716
Surrogate Recovery (%)								
4-BROMOFLUOROBENZENE (sur.)	%	97	98	97	99	97	N/A	5117716
D10-ETHYLBENZENE (sur.)	%	110	110	112	110	119	N/A	5117716
D4-1,2-DICHLOROETHANE (sur.)	%	98	98	100	95	96	N/A	5117716
D8-TOLUENE (sur.)	%	104	103	106	104	107	N/A	5117716
O-TERPHENYL (sur.)	%	97	99	92	97	109	N/A	5117241

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B177775
Report Date: 2011/08/30

EBA ENGINEERING CONSULTANTS LTD.

Your P.O. #: Y22101187.001

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		BI0048	BI0049	BI0050	BI0056	BI0057		
Sampling Date		2011/08/09	2011/08/09	2011/08/10	2011/08/10	2011/08/10		
COC Number		A050092	A050092	A050093	A050093	A050093		
	Units	**11W7-03 (10CM)**	**11W5E-01 (85CM)**	**11W6-03 (25CM)**	**11W6-04 (15CM)**	**11W6-05 (25CM)**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	16	8.3	9.8	14	13	0.3	5118200
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	29	5900	<10	<10	18	10	5117241
F3 (C16-C34 Hydrocarbons)	mg/kg	730	920	13	15	13	10	5117241
F4 (C34-C50 Hydrocarbons)	mg/kg	68	<10	<10	<10	<10	10	5117241
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	5117241
Volatiles								
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117716
Toluene	mg/kg	<0.020	0.035	<0.020	<0.020	<0.020	0.020	5117716
Ethylbenzene	mg/kg	<0.010	0.027	<0.010	<0.010	<0.010	0.010	5117716
Xylenes (Total)	mg/kg	<0.040	24	<0.040	<0.040	<0.040	0.040	5117716
m & p-Xylene	mg/kg	<0.040	11	<0.040	<0.040	<0.040	0.040	5117716
o-Xylene	mg/kg	<0.020	13	<0.020	<0.020	<0.020	0.020	5117716
F1 (C6-C10) - BTEX	mg/kg	<12	960	<12	<12	<12	12	5117716
(C6-C10)	mg/kg	<12	990	<12	<12	<12	12	5117716
Surrogate Recovery (%)								
4-BROMOFLUOROBENZENE (sur.)	%	94	119	96	97	95	N/A	5117716
D10-ETHYLBENZENE (sur.)	%	114	113	111	107	112	N/A	5117716
D4-1,2-DICHLOROETHANE (sur.)	%	97	100	96	102	94	N/A	5117716
D8-TOLUENE (sur.)	%	105	108	102	102	106	N/A	5117716
O-TERPHENYL (sur.)	%	97	129	100	102	101	N/A	5117241

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B177775
Report Date: 2011/08/30

EBA ENGINEERING CONSULTANTS LTD.

Your P.O. #: Y22101187.001

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		BI0058	BI0059	BI0060	BI0061	BI0062		
Sampling Date		2011/08/10	2011/08/10	2011/08/10	2011/08/10	2011/08/10		
COC Number		A050093	A050093	A050093	A050093	A050093		
	Units	**11W6-02 (20CM)**	**11W6-01 (30CM)**	**11W6-01 (0-5CM)**	**11W1-01 (0-5CM)**	**11W2-23 (30CM)**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	10	13	17	29	22	0.3	5118200
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	13	240	220	340	33	10	5117241
F3 (C16-C34 Hydrocarbons)	mg/kg	25	73	100	320	55	10	5117241
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	<10	<10	10	5117241
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	5117241
Volatiles								
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117716
Toluene	mg/kg	<0.020	<0.020	<0.020	0.033	<0.020	0.020	5117716
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5117716
Xylenes (Total)	mg/kg	<0.040	0.75	<0.040	0.26	<0.040	0.040	5117716
m & p-Xylene	mg/kg	<0.040	0.23	<0.040	0.18	<0.040	0.040	5117716
o-Xylene	mg/kg	<0.020	0.52	0.036	0.084	<0.020	0.020	5117716
F1 (C6-C10) - BTEX	mg/kg	<12	88	21	29	<12	12	5117716
(C6-C10)	mg/kg	<12	89	21	29	<12	12	5117716
Surrogate Recovery (%)								
4-BROMOFLUOROBENZENE (sur.)	%	95	93	100	94	100	N/A	5117716
D10-ETHYLBENZENE (sur.)	%	112	108	112	113	112	N/A	5117716
D4-1,2-DICHLOROETHANE (sur.)	%	97	99	99	101	99	N/A	5117716
D8-TOLUENE (sur.)	%	105	105	108	104	103	N/A	5117716
O-TERPHENYL (sur.)	%	108	105	107	109	99	N/A	5117241

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam

Maxxam Job #: B177775
Report Date: 2011/08/30

EBA ENGINEERING CONSULTANTS LTD.

Your P.O. #: Y22101187.001

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		BI0063	BI0064	BI0065	BI0066	BI0067		
Sampling Date		2011/08/10	2011/08/10	2011/08/10	2011/08/10	2011/08/10		
COC Number		A050093	A050093	A050093	A050093	A050094		
	Units	**11W1-01 (15CM)**	**11W1-05 (25CM)**	**11W1-09 (20CM)**	**11W1-24 (20CM)**	**11W2-21 (25CM)**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	12	21	13	12	19	0.3	5118254
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	380	<10	14	93	10	5117233
F3 (C16-C34 Hydrocarbons)	mg/kg	11	290	19	19	220	10	5117233
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	24	12	<10	39	10	5117233
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	5117233
Volatiles								
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117793
Toluene	mg/kg	<0.020	0.033	<0.020	<0.020	0.028	0.020	5117793
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5117793
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	5117793
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	5117793
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	5117793
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	<12	12	5117793
(C6-C10)	mg/kg	<12	<12	<12	<12	<12	12	5117793
Surrogate Recovery (%)								
4-BROMOFLUOROBENZENE (sur.)	%	98	95	96	96	97	N/A	5117793
D10-ETHYLBENZENE (sur.)	%	105	106	113	103	113	N/A	5117793
D4-1,2-DICHLOROETHANE (sur.)	%	104	99	97	98	95	N/A	5117793
D8-TOLUENE (sur.)	%	101	103	101	104	107	N/A	5117793
O-TERPHENYL (sur.)	%	94	101	99	99	104	N/A	5117233

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam

Maxxam Job #: B177775
Report Date: 2011/08/30

EBA ENGINEERING CONSULTANTS LTD.

Your P.O. #: Y22101187.001

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		BI0080	BI0081	BI0082	BI0083	BI0084		
Sampling Date		2011/08/10	2011/08/10	2011/08/10	2011/08/10	2011/08/10		
COC Number		A050094	A050094	A050094	A050094	A050094		
	Units	**11W2-18 (25CM)**	**11W2-18 (50CM)**	**11W2-19 (20CM)**	**11W2-8 (20CM)**	**11W2-20 (25CM)**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	7.3	9.9	3.0	11	9.3	0.3	5118254
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	1600	110	<10	170	550	10	5117233
F3 (C16-C34 Hydrocarbons)	mg/kg	320	45	23	140	570	10	5117233
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	20	51	10	5117233
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	5117233
Volatiles								
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117793
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	5117793
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5117793
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	5117793
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	5117793
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	5117793
F1 (C6-C10) - BTEX	mg/kg	32	<12	<12	14	<12	12	5117793
(C6-C10)	mg/kg	32	<12	<12	14	<12	12	5117793
Surrogate Recovery (%)								
4-BROMOFLUOROBENZENE (sur.)	%	95	98	100	98	97	N/A	5117793
D10-ETHYLBENZENE (sur.)	%	125	111	105	112	107	N/A	5117793
D4-1,2-DICHLOROETHANE (sur.)	%	100	98	106	97	99	N/A	5117793
D8-TOLUENE (sur.)	%	102	104	98	104	104	N/A	5117793
O-TERPHENYL (sur.)	%	100	101	102	101	100	N/A	5117233

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam

Maxxam Job #: B177775
Report Date: 2011/08/30

EBA ENGINEERING CONSULTANTS LTD.

Your P.O. #: Y22101187.001

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		BI0085	BI0086	BI0087	BI0088	BI0089		
Sampling Date		2011/08/10	2011/08/10	2011/08/10	2011/08/10	2011/08/10		
COC Number		A050094	A050094	A050094	A050094	A050094		
	Units	**11W2-7 (20CM)**	**11W2-4 (25CM)**	**11W2-10 (25CM)**	**11W2-13 (25CM)**	**11W2-2 (20CM)**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	9.8	17	15	11	15	0.3	5118254
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	95	<10	13	32	10	5117233
F3 (C16-C34 Hydrocarbons)	mg/kg	39	160	130	44	100	10	5117233
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	20	18	<10	17	10	5117233
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	5117233
Volatiles								
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117793
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	5117793
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5117793
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	5117793
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	5117793
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	5117793
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	<12	12	5117793
(C6-C10)	mg/kg	<12	<12	<12	<12	<12	12	5117793
Surrogate Recovery (%)								
4-BROMOFLUOROBENZENE (sur.)	%	95	96	96	106	94	N/A	5117793
D10-ETHYLBENZENE (sur.)	%	110	111	110	104	107	N/A	5117793
D4-1,2-DICHLOROETHANE (sur.)	%	94	96	97	118	92	N/A	5117793
D8-TOLUENE (sur.)	%	103	106	106	92	104	N/A	5117793
O-TERPHENYL (sur.)	%	103	103	103	99	113	N/A	5117233

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B177775
Report Date: 2011/08/30

EBA ENGINEERING CONSULTANTS LTD.

Your P.O. #: Y22101187.001

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		BI0090	BI0091	BI0162	BI0163	BI0164		
Sampling Date		2011/08/10	2011/08/09	2011/08/09	2011/08/09	2011/08/09		
COC Number		A050094	A050095	A050095	A050095	A050095		
	Units	**11W2-17 (20CM)**	**11W4-01 (25CM)**	**11W3-02 (10CM)**	**11W4-10 (50CM)**	**11W3-01 (20CM)**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	13	17	15	18	13	0.3	5118254
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	6400	460	13000	1700	10	5117233
F3 (C16-C34 Hydrocarbons)	mg/kg	74	940	61	1500	290	10	5117233
F4 (C34-C50 Hydrocarbons)	mg/kg	11	<10	<10	13	16	10	5117233
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	5117233
Volatiles								
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117793
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	5117793
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5117793
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	5117793
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	5117793
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	5117793
F1 (C6-C10) - BTEX	mg/kg	<12	220	20	820	13	12	5117793
(C6-C10)	mg/kg	<12	220	20	820	13	12	5117793
Surrogate Recovery (%)								
4-BROMOFLUOROBENZENE (sur.)	%	96	106	91	113	99	N/A	5117793
D10-ETHYLBENZENE (sur.)	%	106	95	113	107	109	N/A	5117793
D4-1,2-DICHLOROETHANE (sur.)	%	99	120	93	108	94	N/A	5117793
D8-TOLUENE (sur.)	%	103	92	106	101	104	N/A	5117793
O-TERPHENYL (sur.)	%	100	104	104	104	104	N/A	5117233

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B177775
Report Date: 2011/08/30

EBA ENGINEERING CONSULTANTS LTD.

Your P.O. #: Y22101187.001

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		BI0165	BI0166	BI0167	BI0168	BI0169		
Sampling Date		2011/08/09	2011/08/09	2011/08/09	2011/08/09	2011/08/09		
COC Number		A050095	A050095	A050095	A050095	A050095		
	Units	**11W7-02 (10CM)**	**11W3-10 (20CM)**	**11W4-01 (75CM)**	**11W3-04 (25CM)**	**11W4-08 (20CM)**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	5.8	13	4.3	9.5	29	0.3	5119601
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	49	210	7000	91	15	10	5117229
F3 (C16-C34 Hydrocarbons)	mg/kg	58	110	770	120	41	10	5117229
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	36	<10	<10	<10	10	5117229
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	5117229
Volatiles								
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117417
Toluene	mg/kg	<0.020	<0.020	<0.020	0.028	<0.020	0.020	5117417
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	0.018	<0.010	0.010	5117417
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	5117417
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	5117417
o-Xylene	mg/kg	<0.020	<0.020	<0.020	0.033	<0.020	0.020	5117417
F1 (C6-C10) - BTEX	mg/kg	<12	<12	200	<12	<12	12	5117417
(C6-C10)	mg/kg	<12	<12	200	<12	<12	12	5117417
Surrogate Recovery (%)								
4-BROMOFLUOROBENZENE (sur.)	%	104	102	86	103	102	N/A	5117417
D10-ETHYLBENZENE (sur.)	%	114	121	112	107	119	N/A	5117417
D4-1,2-DICHLOROETHANE (sur.)	%	101	104	118	109	98	N/A	5117417
D8-TOLUENE (sur.)	%	103	104	114	99	103	N/A	5117417
O-TERPHENYL (sur.)	%	99	104	108	103	102	N/A	5117229

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B177775
Report Date: 2011/08/30

EBA ENGINEERING CONSULTANTS LTD.

Your P.O. #: Y22101187.001

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		BI0170	BI0171	BI0175	BI0176		BI0182		
Sampling Date		2011/08/09	2011/08/09	2011/08/09	2011/08/09		2011/08/09		
COC Number		A050095	A050095	A050095	A050096		A050096		
	Units	**11W4-02 (30CM)**	**11W4-09 (25CM)**	**11W4-07 (25CM)**	**11W06-1 (CS) (25CM)**	**RDL**	**11W5E-01 (50CM)**	**RDL**	**QC Batch**
Physical Properties									
Moisture	%	18	5.3	12	13	0.3	7.8	0.3	5119601
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	1000	11	16	120	10	6400	10	5117229
F3 (C16-C34 Hydrocarbons)	mg/kg	380	<10	67	660	10	1200	10	5117229
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	48	10	<10	10	5117229
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	N/A	Yes	N/A	5117229
Volatiles									
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.0050	0.0050	5117417
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	0.032	0.020	5117417
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	<3.7 (1)	3.7	5117417
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	14	0.040	5117417
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	4.6	0.040	5117417
o-Xylene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	9.8	0.020	5117417
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	12	460	12	5117417
(C6-C10)	mg/kg	<12	<12	<12	<12	12	470	12	5117417
Surrogate Recovery (%)									
4-BROMOFLUOROBENZENE (sur.)	%	96	102	103	101	N/A	83	N/A	5117417
D10-ETHYLBENZENE (sur.)	%	108	111	115	112	N/A	105	N/A	5117417
D4-1,2-DICHLOROETHANE (sur.)	%	98	100	105	97	N/A	119	N/A	5117417
D8-TOLUENE (sur.)	%	105	104	100	103	N/A	116	N/A	5117417
O-TERPHENYL (sur.)	%	103	108	103	104	N/A	106	N/A	5117229

N/A = Not Applicable
RDL = Reportable Detection Limit
(1) Detection limit raised due to qualifying ion outside of acceptance criteria. Results are potentially biased high due to possible interferent.

Maxxam Job #: B177775
Report Date: 2011/08/30

EBA ENGINEERING CONSULTANTS LTD.

Your P.O. #: Y22101187.001

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		BI0183	BI0184	BI0185	BI0186	BI0187		
Sampling Date		2011/08/09	2011/08/09	2011/08/09	2011/08/09	2011/08/09		
COC Number		A050096	A050096	A050096	A050096	A050096		
	Units	**BULK FUEL STORAGE (10CM)**	**11W5E-04 (20CM)**	**11W5F-02 (10CM)**	**11W5E-01 (15CM)**	**11W5D-01 (15CM)**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	25	9.2	10	15	6.5	0.3	5119601
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	14	<10	10	10000	2100	10	5117229
F3 (C16-C34 Hydrocarbons)	mg/kg	57	11	<10	1800	83	10	5117229
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	<10	<10	<10	<10	10	5117229
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	5117229
Volatiles								
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117417
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.037	0.020	5117417
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	0.054	<0.010	0.010	5117417
Xylenes (Total)	mg/kg	0.39	<0.040	<0.040	6.9	0.056	0.040	5117417
m & p-Xylene	mg/kg	0.19	<0.040	<0.040	1.2	0.056	0.040	5117417
o-Xylene	mg/kg	0.20	<0.020	<0.020	5.7	<0.020	0.020	5117417
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	430	<12	12	5117417
(C6-C10)	mg/kg	<12	<12	<12	440	<12	12	5117417
Surrogate Recovery (%)								
4-BROMOFLUOROBENZENE (sur.)	%	92	96	97	89	93	N/A	5117417
D10-ETHYLBENZENE (sur.)	%	111	127	112	114	113	N/A	5117417
D4-1,2-DICHLOROETHANE (sur.)	%	115	111	103	118	101	N/A	5117417
D8-TOLUENE (sur.)	%	106	102	104	118	110	N/A	5117417
O-TERPHENYL (sur.)	%	104	97	104	108	112	N/A	5117229

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B177775
Report Date: 2011/08/30

EBA ENGINEERING CONSULTANTS LTD.

Your P.O. #: Y22101187.001

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		BI0188	BI0189	BI0190	BI0191	BI0192		
Sampling Date		2011/08/09	2011/08/09	2011/08/09	2011/08/09	2011/08/09		
COC Number		A050096	A050096	A050096	A050096	A050096		
	Units	**11W5B-01 (10CM)**	**11W5E-02 (20CM)**	**11W5C-01 (10CM)**	**11W5D-01 (30CM)**	**11W5A-01 (20CM)**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	5.7	14	15	4.0	23	0.3	5119601
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/kg	2900	11	<10	180	<10	10	5117229
F3 (C16-C34 Hydrocarbons)	mg/kg	900	69	60	23	49	10	5117229
F4 (C34-C50 Hydrocarbons)	mg/kg	13	16	22	<10	14	10	5117229
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	Yes	N/A	5117229
Volatiles								
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	5117417
Toluene	mg/kg	0.024	0.029	<0.020	<0.020	0.035	0.020	5117417
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	5117417
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	5117417
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	5117417
o-Xylene	mg/kg	0.032	<0.020	<0.020	<0.020	<0.020	0.020	5117417
F1 (C6-C10) - BTEX	mg/kg	<12	<12	<12	<12	<12	12	5117417
(C6-C10)	mg/kg	<12	<12	<12	<12	<12	12	5117417
Surrogate Recovery (%)								
4-BROMOFLUOROBENZENE (sur.)	%	94	102	102	94	102	N/A	5117417
D10-ETHYLBENZENE (sur.)	%	111	114	114	130	112	N/A	5117417
D4-1,2-DICHLOROETHANE (sur.)	%	99	95	96	118	96	N/A	5117417
D8-TOLUENE (sur.)	%	108	104	105	99	104	N/A	5117417
O-TERPHENYL (sur.)	%	113	114	116	109	108	N/A	5117229

N/A = Not Applicable
RDL = Reportable Detection Limit

AT1 BTEX AND F1-F4 IN SOIL (SOIL)

Maxxam ID		BI0196		
Sampling Date		2011/08/10		
COC Number		A050097		
	Units	**11W5H-04 (20CM)**	**RDL**	**QC Batch**
Physical Properties				
Moisture	%	20	0.3	5117834
Ext. Pet. Hydrocarbon				
F2 (C10-C16 Hydrocarbons)	mg/kg	3800	10	5130099
F3 (C16-C34 Hydrocarbons)	mg/kg	500	10	5130099
F4 (C34-C50 Hydrocarbons)	mg/kg	<10	10	5130099
Reached Baseline at C50	mg/kg	Yes	N/A	5130099
Volatiles				
Benzene	mg/kg	<0.0050	0.0050	5118195
Toluene	mg/kg	0.18	0.020	5118195
Ethylbenzene	mg/kg	0.085	0.010	5118195
Xylenes (Total)	mg/kg	4.9	0.040	5118195
m & p-Xylene	mg/kg	2.3	0.040	5118195
o-Xylene	mg/kg	2.6	0.020	5118195
F1 (C6-C10) - BTEX	mg/kg	260	12	5118195
(C6-C10)	mg/kg	260	12	5118195
Surrogate Recovery (%)				
4-BROMOFLUOROBENZENE (sur.)	%	101	N/A	5118195
D10-ETHYLBENZENE (sur.)	%	114	N/A	5118195
D4-1,2-DICHLOROETHANE (sur.)	%	111	N/A	5118195
D8-TOLUENE (sur.)	%	113	N/A	5118195
O-TERPHENYL (sur.)	%	101	N/A	5130099

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B177775
Report Date: 2011/08/30

EBA ENGINEERING CONSULTANTS LTD.

Your P.O. #: Y22101187.001

NUTRIENT PACKAGE 2 (SOIL)

Maxxam ID		BI0195		
Sampling Date		2011/08/10		
COC Number		A050097		
	Units	**11W02-18 COMPOSITE**	**RDL**	**QC Batch**
Calculated Parameters				
Available (KCl) Nitrate (N)	mg/kg	<1	1	5114965
Nutrients				
Available (KCl) Nitrate plus Nitrite (N)	mg/kg	<1	1	5114964
Available (KCl) Nitrite (N)	mg/kg	<0.5	0.5	5129767
Available (Mod Kel) Phosphorus (P)	mg/kg	<4	4	5128879
Available (Mod Kel) Potassium (K)	mg/kg	26	4	5128879
Available (CaCl2) Sulphur (S)	mg/kg	122	2	5128759
Physical Properties				
Moisture	%	11	0.3	5122169

RDL = Reportable Detection Limit

REGULATED METALS (CCME/AT1) - SOILS

Maxxam ID		BI0056	BI0060	BI0162		BI0193	BI0195		
Sampling Date		2011/08/10	2011/08/10	2011/08/09		2011/08/07	2011/08/10		
COC Number		A050093	A050093	A050095		A050097	A050097		
	Units	**11W6-04 (15CM)**	**11W6-01 (0-5CM)**	**11W3-02 (10CM)**	**QC Batch**	**11W01-01 (0-15CM)**	**11W02-18 COMPOSITE**	**RDL**	**QC Batch**
Elements									
Soluble (Hot water) Boron (B)	mg/kg	0.6	1.4	0.4	5129816	0.3	1.0	0.1	5129816
Hex. Chromium (Cr 6+)	mg/kg	<0.15	<0.15	<0.15	5118797	<0.15	<0.15	0.15	5132476
Total Antimony (Sb)	mg/kg	<1	<1	<1	5129196	<1	<1	1	5129196
Total Arsenic (As)	mg/kg	2	2	4	5129196	1	2	1	5129196
Total Barium (Ba)	mg/kg	26	19	74	5129196	24	31	10	5129196
Total Beryllium (Be)	mg/kg	<0.4	<0.4	0.4	5129196	<0.4	<0.4	0.4	5129196
Total Cadmium (Cd)	mg/kg	<0.1	<0.1	<0.1	5129196	<0.1	<0.1	0.1	5129196
Total Chromium (Cr)	mg/kg	25	20	45	5129196	22	27	1	5129196
Total Cobalt (Co)	mg/kg	8	5	9	5129196	5	7	1	5129196
Total Copper (Cu)	mg/kg	21	12	21	5129196	18	14	5	5129196
Total Lead (Pb)	mg/kg	2	2	6	5129196	2	3	1	5129196
Total Mercury (Hg)	mg/kg	<0.05	<0.05	<0.05	5129196	<0.05	<0.05	0.05	5129196
Total Molybdenum (Mo)	mg/kg	<0.4	<0.4	0.6	5129196	<0.4	1.0	0.4	5129196
Total Nickel (Ni)	mg/kg	19	12	24	5129196	14	17	1	5129196
Total Selenium (Se)	mg/kg	<0.5	<0.5	<0.5	5129196	<0.5	<0.5	0.5	5129196
Total Silver (Ag)	mg/kg	<1	<1	<1	5129196	<1	<1	1	5129196
Total Thallium (Tl)	mg/kg	<0.3	<0.3	<0.3	5129196	<0.3	<0.3	0.3	5129196
Total Tin (Sn)	mg/kg	<1	<1	<1	5129196	<1	<1	1	5129196
Total Uranium (U)	mg/kg	<1	<1	1	5129196	<1	<1	1	5129196
Total Vanadium (V)	mg/kg	54	24	47	5129196	32	34	1	5129196
Total Zinc (Zn)	mg/kg	34	23	41	5129196	26	29	10	5129196

RDL = Reportable Detection Limit

Maxxam Job #: B177775
Report Date: 2011/08/30

EBA ENGINEERING CONSULTANTS LTD.

Your P.O. #: Y22101187.001

SOIL SALINITY 4 (SOIL)

Maxxam ID		BI0059		BI0183			BI0193		
Sampling Date		2011/08/10		2011/08/09			2011/08/07		
COC Number		A050093		A050096			A050097		
	Units	**11W6-01 (30CM)**	**RDL**	**BULK FUEL STORAGE (10CM)**	**RDL**	**QC Batch**	**11W01-01 (0-15CM)**	**RDL**	**QC Batch**
Calculated Parameters									
Anion Sum	meq/L	140	N/A	110	N/A	5114409	7.1	N/A	5114409
Calculated Boron (B)	mg/kg	0.05	0.03	0.36	0.07	5114411	0.08	0.03	5114411
Cation Sum	meq/L	130	N/A	110	N/A	5114409	7.2	N/A	5114409
Cation/EC Ratio	N/A	11	0.1	10	0.1	5114124	11	0.1	5114124
Ion Balance	N/A	0.95	0.01	1.0	0.01	5114408	1.0	0.01	5114408
Calculated Calcium (Ca)	mg/kg	250	0.5	1300	1	5114411	17	0.5	5114411
Calculated Magnesium (Mg)	mg/kg	130	0.3	96	0.7	5114411	9.7	0.3	5114411
Calculated Sodium (Na)	mg/kg	470	0.8	97	2	5114411	18	0.9	5114411
Calculated Potassium (K)	mg/kg	4.7	0.4	8.1	0.9	5114411	1.7	0.4	5114411
Calculated Chloride (Cl)	mg/kg	1200	8	2700	20	5114411	26	2	5114411
Calculated Sulphate (SO4)	mg/kg	580	2	6	3	5114411	81	2	5114411
Soluble Parameters									
Soluble Chloride (Cl)	mg/L	3600 (1)	30	3900 (1)	30	5129753	76	5	5129753
Soluble Conductivity	dS/m	12	0.02	11	0.02	5124263	0.63	0.02	5124263
Soluble (CaCl2) pH	N/A	6.47	N/A	5.06	N/A	5121860	5.38	N/A	5125327
Sodium Adsorption Ratio	N/A	11	0.1	0.9	0.1	5114410	1.5	0.1	5114410
Soluble Calcium (Ca)	mg/L	740	1.5	1900	1.5	5127239	48	1.5	5127239
Soluble Magnesium (Mg)	mg/L	390	1.0	140	1.0	5127239	28	1.0	5127239
Soluble Sodium (Na)	mg/L	1400	2.5	140	2.5	5127239	53	2.5	5127239
Soluble Potassium (K)	mg/L	14	1.3	12	1.3	5127239	4.9	1.3	5127239
Saturation %	%	33	N/A	69	N/A	5124190	34	N/A	5124190
Soluble Sulphate (SO4)	mg/L	1800	5.0	9.2	5.0	5127239	240	5.0	5127239
Theoretical Gypsum Requirement	tonnes/ha	<0.1	0.1	<0.1	0.1	5114413	<0.1	0.1	5114413

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

SOIL SALINITY 4 (SOIL)

Maxxam ID		BI0195		
Sampling Date		2011/08/10		
COC Number		A050097		
	Units	**11W02-18 COMPOSITE**	**RDL**	**QC Batch**
Calculated Parameters				
Anion Sum	meq/L	47	N/A	5114409
Calculated Boron (B)	mg/kg	0.31	0.03	5114411
Cation Sum	meq/L	48	N/A	5114409
Cation/EC Ratio	N/A	12	0.1	5114124
Ion Balance	N/A	1.0	0.01	5114408
Calculated Calcium (Ca)	mg/kg	120	0.5	5114411
Calculated Magnesium (Mg)	mg/kg	56	0.4	5114411
Calculated Sodium (Na)	mg/kg	140	0.9	5114411
Calculated Potassium (K)	mg/kg	3.3	0.4	5114411
Calculated Chloride (Cl)	mg/kg	200	2	5114411
Calculated Sulphate (SO4)	mg/kg	520	2	5114411
Soluble Parameters				
Soluble Chloride (Cl)	mg/L	580	5	5129753
Soluble Conductivity	dS/m	3.8	0.02	5124263
Soluble (CaCl2) pH	N/A	6.09	N/A	5125327
Sodium Adsorption Ratio	N/A	4.6	0.1	5114410
Soluble Calcium (Ca)	mg/L	340	1.5	5127239
Soluble Magnesium (Mg)	mg/L	160	1.0	5127239
Soluble Sodium (Na)	mg/L	410	2.5	5127239
Soluble Potassium (K)	mg/L	9.3	1.3	5127239
Saturation %	%	35	N/A	5124190
Soluble Sulphate (SO4)	mg/L	1500	5.0	5127239
Theoretical Gypsum Requirement	tonnes/ha	<0.1	0.1	5114413

RDL = Reportable Detection Limit

Maxxam Job #: B177775
Report Date: 2011/08/30

EBA ENGINEERING CONSULTANTS LTD.

Your P.O. #: Y22101187.001

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		BI0044	BI0049	BI0050	BI0065	BI0084	BI0085		
Sampling Date		2011/08/09	2011/08/09	2011/08/10	2011/08/10	2011/08/10	2011/08/10		
COC Number		A050092	A050092	A050093	A050093	A050094	A050094		
	Units	**11W8-03 (15CM)**	**11W5E-01 (85CM)**	**11W6-03 (25CM)**	**11W1-09 (20CM)**	**11W2-20 (25CM)**	**11W2-7 (20CM)**	**RDL**	**QC Batch**
Physical Properties									
Sieve - Pan	%	15	11	8.8	6.8	18	29	0.2	5117333
Sieve - #200 (>0.075mm)	%	85	89	91	93	82	71	0.2	5117333
Grain Size	%	COARSE	COARSE	COARSE	COARSE	COARSE	COARSE	0.2	5117333

RDL = Reportable Detection Limit

Maxxam ID		BI0089	BI0091	BI0168	BI0184	BI0188		
Sampling Date		2011/08/10	2011/08/09	2011/08/09	2011/08/09	2011/08/09		
COC Number		A050094	A050095	A050095	A050096	A050096		
	Units	**11W2-2 (20CM)**	**11W4-01 (25CM)**	**11W3-04 (25CM)**	**11W5E-04 (20CM)**	**11W5B-01 (10CM)**	**RDL**	**QC Batch**
Physical Properties								
Sieve - Pan	%	40	11	16	33	3.9	0.2	5117333
Sieve - #200 (>0.075mm)	%	60	89	84	67	96	0.2	5117333
Grain Size	%	COARSE	COARSE	COARSE	COARSE	COARSE	0.2	5117333

RDL = Reportable Detection Limit

Maxxam ID		BI0193	BI0195		
Sampling Date		2011/08/07	2011/08/10		
COC Number		A050097	A050097		
	Units	**11W01-01 (0-15CM)**	**11W02-18 COMPOSITE**	**RDL**	**QC Batch**
Nutrients					
Available (KCl) Nitrate (N)	mg/kg	N/A	<0.5	0.5	5129768
Physical Properties					
Sieve - Pan	%	19	61	0.2	5122024
Sieve - #200 (>0.075mm)	%	81	39	0.2	5122024
Grain Size	%	COARSE	FINE	0.2	5122024

N/A = Not Applicable
RDL = Reportable Detection Limit

General Comments

Results relate only to the items tested.

EBA ENGINEERING CONSULTANTS LTD.
Attention: DANIELA FELSKE
Client Project #:
P.O. #: Y22101187.001
Site Location:

Quality Assurance Report

Maxxam Job Number: EB177775

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5117229	PK4	Matrix Spike						
		[BI0166-01]	O-TERPHENYL (sur.)	2011/08/27		102	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2011/08/27		100	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2011/08/27		92	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2011/08/27		93	%	50 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2011/08/27		100	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2011/08/27		106	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2011/08/27		104	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2011/08/27		99	%	70 - 130
		Method Blank	O-TERPHENYL (sur.)	2011/08/27		104	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2011/08/27	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2011/08/27	<10		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2011/08/27	<10		mg/kg	
		RPD [BI0165-01]	F2 (C10-C16 Hydrocarbons)	2011/08/27	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2011/08/27	15.3		%	50
			F4 (C34-C50 Hydrocarbons)	2011/08/27	NC		%	50
5117233	PK4	Matrix Spike						
		[BI0064-01]	O-TERPHENYL (sur.)	2011/08/26		95	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2011/08/26		NC	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2011/08/26		88	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2011/08/26		92	%	50 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2011/08/26		97	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2011/08/26		101	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2011/08/26		101	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2011/08/26		99	%	70 - 130
		Method Blank	O-TERPHENYL (sur.)	2011/08/26		114	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2011/08/26	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2011/08/26	<10		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2011/08/26	<10		mg/kg	
		RPD [BI0063-01]	F2 (C10-C16 Hydrocarbons)	2011/08/26	NC		%	50
			F3 (C16-C34 Hydrocarbons)	2011/08/26	NC		%	50
			F4 (C34-C50 Hydrocarbons)	2011/08/26	NC		%	50
5117241	AN4	Matrix Spike						
		[BI0039-01]	O-TERPHENYL (sur.)	2011/08/26		115	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2011/08/26		NC	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2011/08/26		NC	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2011/08/26		103	%	50 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2011/08/26		101	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2011/08/26		96	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2011/08/26		96	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2011/08/26		93	%	70 - 130
		Method Blank	O-TERPHENYL (sur.)	2011/08/26		106	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2011/08/26	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2011/08/26	<10		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2011/08/26	<10		mg/kg	
		RPD [BI0038-01]	F2 (C10-C16 Hydrocarbons)	2011/08/26	1.4		%	50
			F3 (C16-C34 Hydrocarbons)	2011/08/26	13.1		%	50
			F4 (C34-C50 Hydrocarbons)	2011/08/26	NC		%	50
5117333	JB9	Method Blank	Sieve - Pan	2011/08/24	<0.2		%	
			Sieve - #200 (>0.075mm)	2011/08/24	<0.2		%	
		RPD	Sieve - Pan	2011/08/24	10.4		%	35
			Sieve - #200 (>0.075mm)	2011/08/24	21.6		%	35
5117417	YT	Matrix Spike						
		[BI0166-01]	4-BROMOFLUOROBENZENE (sur.)	2011/08/27		103	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2011/08/27		106	%	60 - 130

EBA ENGINEERING CONSULTANTS LTD.
Attention: DANIELA FELSKE
Client Project #:
P.O. #: Y22101187.001
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: EB177775

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5117417	YT	Matrix Spike						
		[BI0166-01]	D4-1,2-DICHLOROETHANE (sur.)	2011/08/27		109	%	60 - 140
			D8-TOLUENE (sur.)	2011/08/27		102	%	60 - 140
			Benzene	2011/08/27		108	%	60 - 140
			Toluene	2011/08/27		102	%	60 - 140
			Ethylbenzene	2011/08/27		111	%	60 - 140
			m & p-Xylene	2011/08/27		108	%	60 - 140
			o-Xylene	2011/08/27		109	%	60 - 140
			(C6-C10)	2011/08/27		80	%	60 - 140
		Spiked Blank	4-BROMOFLUOROBENZENE (sur.)	2011/08/27		104	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2011/08/27		128	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2011/08/27		104	%	60 - 140
			D8-TOLUENE (sur.)	2011/08/27		103	%	60 - 140
			Benzene	2011/08/27		116	%	60 - 140
			Toluene	2011/08/27		113	%	60 - 140
			Ethylbenzene	2011/08/27		123	%	60 - 140
			m & p-Xylene	2011/08/27		122	%	60 - 140
			o-Xylene	2011/08/27		122	%	60 - 140
			(C6-C10)	2011/08/27		81	%	60 - 140
		Method Blank	4-BROMOFLUOROBENZENE (sur.)	2011/08/27		103	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2011/08/27		110	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2011/08/27		99	%	60 - 140
			D8-TOLUENE (sur.)	2011/08/27		106	%	60 - 140
			Benzene	2011/08/27	<0.0050		mg/kg	
			Toluene	2011/08/27	<0.020		mg/kg	
			Ethylbenzene	2011/08/27	<0.010		mg/kg	
			Xylenes (Total)	2011/08/27	<0.040		mg/kg	
			m & p-Xylene	2011/08/27	<0.040		mg/kg	
			o-Xylene	2011/08/27	<0.020		mg/kg	
			F1 (C6-C10) - BTEX	2011/08/27	<12		mg/kg	
			(C6-C10)	2011/08/27	<12		mg/kg	
		RPD [BI0165-01]	Benzene	2011/08/27	NC		%	50
			Toluene	2011/08/27	NC		%	50
			Ethylbenzene	2011/08/27	NC		%	50
			Xylenes (Total)	2011/08/27	NC		%	50
			m & p-Xylene	2011/08/27	NC		%	50
			o-Xylene	2011/08/27	NC		%	50
			F1 (C6-C10) - BTEX	2011/08/27	NC		%	50
			(C6-C10)	2011/08/27	NC		%	50
5117716	PS7	Matrix Spike						
		[BI0039-01]	4-BROMOFLUOROBENZENE (sur.)	2011/08/28		117	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2011/08/28		102	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2011/08/28		116	%	60 - 140
			D8-TOLUENE (sur.)	2011/08/28		99	%	60 - 140
			Benzene	2011/08/28		111	%	60 - 140
			Toluene	2011/08/28		NC	%	60 - 140
			Ethylbenzene	2011/08/28		NC	%	60 - 140
			m & p-Xylene	2011/08/28		NC	%	60 - 140
			o-Xylene	2011/08/28		NC	%	60 - 140
			(C6-C10)	2011/08/28		NC	%	60 - 140
		Spiked Blank	4-BROMOFLUOROBENZENE (sur.)	2011/08/28		106	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2011/08/28		110	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2011/08/28		104	%	60 - 140
			D8-TOLUENE (sur.)	2011/08/28		102	%	60 - 140
			Benzene	2011/08/28		103	%	60 - 140

EBA ENGINEERING CONSULTANTS LTD.
Attention: DANIELA FELSKE
Client Project #:
P.O. #: Y22101187.001
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: EB177775

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5117716	PS7	Spiked Blank	Toluene	2011/08/28		94	%	60 - 140
			Ethylbenzene	2011/08/28		99	%	60 - 140
			m & p-Xylene	2011/08/28		100	%	60 - 140
			o-Xylene	2011/08/28		100	%	60 - 140
			(C6-C10)	2011/08/28		102	%	60 - 140
		Method Blank	4-BROMOFLUOROBENZENE (sur.)	2011/08/28		96	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2011/08/28		108	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2011/08/28		96	%	60 - 140
			D8-TOLUENE (sur.)	2011/08/28		105	%	60 - 140
			Benzene	2011/08/28	<0.0050		mg/kg	
			Toluene	2011/08/28	<0.020		mg/kg	
			Ethylbenzene	2011/08/28	<0.010		mg/kg	
			Xylenes (Total)	2011/08/28	<0.040		mg/kg	
			m & p-Xylene	2011/08/28	<0.040		mg/kg	
			o-Xylene	2011/08/28	<0.020		mg/kg	
			F1 (C6-C10) - BTEX	2011/08/28	<12		mg/kg	
			(C6-C10)	2011/08/28	<12		mg/kg	
		RPD [BI0038-01]	Benzene	2011/08/29	NC		%	50
			Toluene	2011/08/29	NC		%	50
			Ethylbenzene	2011/08/29	NC		%	50
			Xylenes (Total)	2011/08/29	NC		%	50
			m & p-Xylene	2011/08/29	NC		%	50
			o-Xylene	2011/08/29	NC		%	50
			F1 (C6-C10) - BTEX	2011/08/29	20.4		%	50
			(C6-C10)	2011/08/29	20.4		%	50
5117793	PS7	Matrix Spike [BI0064-01]	4-BROMOFLUOROBENZENE (sur.)	2011/08/27		96	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2011/08/27		104	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2011/08/27		97	%	60 - 140
			D8-TOLUENE (sur.)	2011/08/27		105	%	60 - 140
			Benzene	2011/08/27		101	%	60 - 140
			Toluene	2011/08/27		90	%	60 - 140
			Ethylbenzene	2011/08/27		98	%	60 - 140
			m & p-Xylene	2011/08/27		95	%	60 - 140
			o-Xylene	2011/08/27		92	%	60 - 140
			(C6-C10)	2011/08/27		89	%	60 - 140
		Spiked Blank	4-BROMOFLUOROBENZENE (sur.)	2011/08/27		109	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2011/08/27		112	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2011/08/27		100	%	60 - 140
			D8-TOLUENE (sur.)	2011/08/27		108	%	60 - 140
			Benzene	2011/08/27		100	%	60 - 140
			Toluene	2011/08/27		90	%	60 - 140
			Ethylbenzene	2011/08/27		95	%	60 - 140
			m & p-Xylene	2011/08/27		95	%	60 - 140
			o-Xylene	2011/08/27		93	%	60 - 140
			(C6-C10)	2011/08/27		99	%	60 - 140
		Method Blank	4-BROMOFLUOROBENZENE (sur.)	2011/08/27		97	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2011/08/27		102	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2011/08/27		109	%	60 - 140
			D8-TOLUENE (sur.)	2011/08/27		100	%	60 - 140
			Benzene	2011/08/27	<0.0050		mg/kg	
			Toluene	2011/08/27	<0.020		mg/kg	
			Ethylbenzene	2011/08/27	<0.010		mg/kg	
			Xylenes (Total)	2011/08/27	<0.040		mg/kg	
			m & p-Xylene	2011/08/27	<0.040		mg/kg	

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QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5117793	PS7	Method Blank	o-Xylene	2011/08/27	<0.020		mg/kg	
			F1 (C6-C10) - BTEX	2011/08/27	<12		mg/kg	
			(C6-C10)	2011/08/27	<12		mg/kg	
		RPD [BI0063-01]	Benzene	2011/08/27	NC		%	50
			Toluene	2011/08/27	NC		%	50
			Ethylbenzene	2011/08/27	NC		%	50
			Xylenes (Total)	2011/08/27	NC		%	50
			m & p-Xylene	2011/08/27	NC		%	50
			o-Xylene	2011/08/27	NC		%	50
			F1 (C6-C10) - BTEX	2011/08/27	NC		%	50
			(C6-C10)	2011/08/27	NC		%	50
5117834	APA	Method Blank	Moisture	2011/08/24	<0.3		%	
		RPD	Moisture	2011/08/24	7.1		%	20
5118195	PS7	Matrix Spike	4-BROMOFLUOROBENZENE (sur.)	2011/08/26		103	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2011/08/26		107	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2011/08/26		101	%	60 - 140
			D8-TOLUENE (sur.)	2011/08/26		105	%	60 - 140
			Benzene	2011/08/26		122	%	60 - 140
			Toluene	2011/08/26		116	%	60 - 140
			Ethylbenzene	2011/08/26		131	%	60 - 140
			m & p-Xylene	2011/08/26		129	%	60 - 140
			o-Xylene	2011/08/26		129	%	60 - 140
			(C6-C10)	2011/08/26		119	%	60 - 140
		Spiked Blank	4-BROMOFLUOROBENZENE (sur.)	2011/08/26		102	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2011/08/26		93	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2011/08/26		103	%	60 - 140
			D8-TOLUENE (sur.)	2011/08/26		106	%	60 - 140
			Benzene	2011/08/26		115	%	60 - 140
			Toluene	2011/08/26		110	%	60 - 140
			Ethylbenzene	2011/08/26		122	%	60 - 140
			m & p-Xylene	2011/08/26		121	%	60 - 140
			o-Xylene	2011/08/26		119	%	60 - 140
			(C6-C10)	2011/08/26		99	%	60 - 140
		Method Blank	4-BROMOFLUOROBENZENE (sur.)	2011/08/26		103	%	60 - 140
			D10-ETHYLBENZENE (sur.)	2011/08/26		114	%	60 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2011/08/26		98	%	60 - 140
			D8-TOLUENE (sur.)	2011/08/26		105	%	60 - 140
			Benzene	2011/08/26	<0.0050		mg/kg	
			Toluene	2011/08/26	<0.020		mg/kg	
			Ethylbenzene	2011/08/26	<0.010		mg/kg	
			Xylenes (Total)	2011/08/26	<0.040		mg/kg	
			m & p-Xylene	2011/08/26	<0.040		mg/kg	
			o-Xylene	2011/08/26	<0.020		mg/kg	
			F1 (C6-C10) - BTEX	2011/08/26	<12		mg/kg	
			(C6-C10)	2011/08/26	<12		mg/kg	
		RPD	Benzene	2011/08/26	NC		%	50
			Toluene	2011/08/26	NC		%	50
			Ethylbenzene	2011/08/26	NC		%	50
			Xylenes (Total)	2011/08/26	NC		%	50
			m & p-Xylene	2011/08/26	NC		%	50
			o-Xylene	2011/08/26	NC		%	50
			F1 (C6-C10) - BTEX	2011/08/26	NC		%	50
			(C6-C10)	2011/08/26	NC		%	50
5118200	APA	Method Blank	Moisture	2011/08/24	<0.3		%	
		RPD [BI0040-01]	Moisture	2011/08/24	10.6		%	20

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5118254	APA	Method Blank	Moisture	2011/08/24	<0.3		%	
		RPD [BI0091-01]	Moisture	2011/08/24	3.7		%	20
5118797	BA3	Spiked Blank	Hex. Chromium (Cr 6+)	2011/08/24		109	%	90 - 110
		Method Blank	Hex. Chromium (Cr 6+)	2011/08/24	<0.15		mg/kg	
		RPD	Hex. Chromium (Cr 6+)	2011/08/24	NC		%	35
5119601	APA	Method Blank	Moisture	2011/08/24	<0.3		%	
		RPD [BI0167-01]	Moisture	2011/08/24	13.0		%	20
5121860	LCA	QC Standard	Soluble (CaCl2) pH	2011/08/25		99	%	97 - 103
		Spiked Blank	Soluble (CaCl2) pH	2011/08/25		100	%	97 - 103
		RPD	Soluble (CaCl2) pH	2011/08/25	0.3		%	5
5122024	JB9	Method Blank	Sieve - Pan	2011/08/25	<0.2		%	
			Sieve - #200 (>0.075mm)	2011/08/25	<0.2		%	
		RPD	Sieve - Pan	2011/08/25	9.9		%	35
			Sieve - #200 (>0.075mm)	2011/08/25	2.3		%	35
5122169	APA	Method Blank	Moisture	2011/08/25	<0.3		%	
		RPD	Moisture	2011/08/25	12.1		%	20
5124190	CCI	QC Standard	Saturation %	2011/08/25		103	%	88 - 112
		RPD	Saturation %	2011/08/25	0.06		%	12
5124263	SY5	QC Standard	Soluble Conductivity	2011/08/26		105	%	75 - 125
		Spiked Blank	Soluble Conductivity	2011/08/26		97	%	90 - 110
		Method Blank	Soluble Conductivity	2011/08/26	<0.02		dS/m	
		RPD	Soluble Conductivity	2011/08/26	7.3		%	35
5125327	LCA	QC Standard	Soluble (CaCl2) pH	2011/08/26		99	%	97 - 103
		Spiked Blank	Soluble (CaCl2) pH	2011/08/26		100	%	97 - 103
		RPD	Soluble (CaCl2) pH	2011/08/26	0		%	5
5127239	AD3	Matrix Spike	Soluble Calcium (Ca)	2011/08/27		108	%	80 - 120
			Soluble Magnesium (Mg)	2011/08/27		107	%	80 - 120
			Soluble Sodium (Na)	2011/08/27		108	%	80 - 120
			Soluble Potassium (K)	2011/08/27		108	%	80 - 120
		QC Standard	Soluble Calcium (Ca)	2011/08/29		121	%	75 - 125
			Soluble Magnesium (Mg)	2011/08/29		116	%	75 - 125
			Soluble Sodium (Na)	2011/08/29		107	%	75 - 125
			Soluble Potassium (K)	2011/08/29		89	%	75 - 125
			Soluble Sulphate (SO4)	2011/08/29		121	%	75 - 125
		Spiked Blank	Soluble Calcium (Ca)	2011/08/27		106	%	80 - 120
			Soluble Magnesium (Mg)	2011/08/27		108	%	80 - 120
			Soluble Sodium (Na)	2011/08/27		103	%	80 - 120
			Soluble Potassium (K)	2011/08/27		109	%	80 - 120
		Method Blank	Soluble Calcium (Ca)	2011/08/27	<1.5		mg/L	
			Soluble Magnesium (Mg)	2011/08/27	<1.0		mg/L	
			Soluble Sodium (Na)	2011/08/27	<2.5		mg/L	
			Soluble Potassium (K)	2011/08/27	<1.3		mg/L	
			Soluble Sulphate (SO4)	2011/08/27	<5.0		mg/L	
		RPD	Soluble Calcium (Ca)	2011/08/29	10.3		%	35
			Soluble Magnesium (Mg)	2011/08/29	9.6		%	35
			Soluble Sodium (Na)	2011/08/29	10.4		%	35
			Soluble Potassium (K)	2011/08/29	NC		%	35
			Soluble Sulphate (SO4)	2011/08/29	14.1		%	35
5128759	NC3	Spiked Blank	Available (CaCl2) Sulphur (S)	2011/08/26		99	%	80 - 120
		Method Blank	Available (CaCl2) Sulphur (S)	2011/08/26	<2		mg/kg	
		RPD	Available (CaCl2) Sulphur (S)	2011/08/26	NC		%	35
5128879	NC3	Spiked Blank	Available (Mod Kel) Phosphorus (P)	2011/08/26		99	%	75 - 125
			Available (Mod Kel) Potassium (K)	2011/08/26		94	%	75 - 125
		Method Blank	Available (Mod Kel) Phosphorus (P)	2011/08/26	<4		mg/kg	
			Available (Mod Kel) Potassium (K)	2011/08/26	<4		mg/kg	

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5128879	NC3	RPD	Available (Mod Kel) Phosphorus (P)	2011/08/26	NC		%	35
			Available (Mod Kel) Potassium (K)	2011/08/26	NC		%	35
5129196	RG4	Matrix Spike						
		[BI0056-01]	Total Antimony (Sb)	2011/08/26		98	%	75 - 125
			Total Arsenic (As)	2011/08/26		97	%	75 - 125
			Total Barium (Ba)	2011/08/26		NC	%	75 - 125
			Total Beryllium (Be)	2011/08/26		106	%	75 - 125
			Total Cadmium (Cd)	2011/08/26		100	%	75 - 125
			Total Chromium (Cr)	2011/08/26		NC	%	75 - 125
			Total Cobalt (Co)	2011/08/26		93	%	75 - 125
			Total Copper (Cu)	2011/08/26		94	%	75 - 125
			Total Lead (Pb)	2011/08/26		97	%	75 - 125
			Total Mercury (Hg)	2011/08/26		99	%	75 - 125
			Total Molybdenum (Mo)	2011/08/26		108	%	75 - 125
			Total Nickel (Ni)	2011/08/26		94	%	75 - 125
			Total Selenium (Se)	2011/08/26		100	%	75 - 125
			Total Silver (Ag)	2011/08/26		104	%	75 - 125
			Total Thallium (Tl)	2011/08/26		80	%	75 - 125
			Total Tin (Sn)	2011/08/26		118	%	75 - 125
			Total Uranium (U)	2011/08/26		96	%	75 - 125
			Total Vanadium (V)	2011/08/26		NC	%	75 - 125
			Total Zinc (Zn)	2011/08/26		NC	%	75 - 125
		QC Standard	Total Arsenic (As)	2011/08/26		106	%	50 - 150
			Total Barium (Ba)	2011/08/26		112	%	69 - 131
			Total Chromium (Cr)	2011/08/26		98	%	41 - 159
			Total Cobalt (Co)	2011/08/26		98	%	75 - 125
			Total Copper (Cu)	2011/08/26		94	%	72 - 127
			Total Lead (Pb)	2011/08/26		96	%	54 - 146
			Total Nickel (Ni)	2011/08/26		104	%	61 - 139
			Total Vanadium (V)	2011/08/26		115	%	50 - 150
			Total Zinc (Zn)	2011/08/26		95	%	72 - 128
		Spiked Blank	Total Antimony (Sb)	2011/08/26		98	%	75 - 125
			Total Arsenic (As)	2011/08/26		97	%	75 - 125
			Total Barium (Ba)	2011/08/26		111	%	75 - 125
			Total Beryllium (Be)	2011/08/26		100	%	75 - 125
			Total Cadmium (Cd)	2011/08/26		99	%	75 - 125
			Total Chromium (Cr)	2011/08/26		100	%	75 - 125
			Total Cobalt (Co)	2011/08/26		95	%	75 - 125
			Total Copper (Cu)	2011/08/26		102	%	75 - 125
			Total Lead (Pb)	2011/08/26		98	%	75 - 125
			Total Mercury (Hg)	2011/08/26		92	%	75 - 125
			Total Molybdenum (Mo)	2011/08/26		103	%	75 - 125
			Total Nickel (Ni)	2011/08/26		102	%	75 - 125
			Total Selenium (Se)	2011/08/26		99	%	75 - 125
			Total Silver (Ag)	2011/08/26		102	%	75 - 125
			Total Thallium (Tl)	2011/08/26		80	%	75 - 125
			Total Tin (Sn)	2011/08/26		114	%	75 - 125
			Total Uranium (U)	2011/08/26		101	%	75 - 125
			Total Vanadium (V)	2011/08/26		99	%	75 - 125
			Total Zinc (Zn)	2011/08/26		103	%	75 - 125
		Method Blank	Total Antimony (Sb)	2011/08/26	<1		mg/kg	
			Total Arsenic (As)	2011/08/26	<1		mg/kg	
			Total Barium (Ba)	2011/08/26	<10		mg/kg	
			Total Beryllium (Be)	2011/08/26	<0.4		mg/kg	
			Total Cadmium (Cd)	2011/08/26	<0.1		mg/kg	

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5129196	RG4	Method Blank	Total Chromium (Cr)	2011/08/26	<1		mg/kg	
			Total Cobalt (Co)	2011/08/26	<1		mg/kg	
			Total Copper (Cu)	2011/08/26	<5		mg/kg	
			Total Lead (Pb)	2011/08/26	<1		mg/kg	
			Total Mercury (Hg)	2011/08/26	<0.05		mg/kg	
			Total Molybdenum (Mo)	2011/08/26	<0.4		mg/kg	
			Total Nickel (Ni)	2011/08/26	<1		mg/kg	
			Total Selenium (Se)	2011/08/26	<0.5		mg/kg	
			Total Silver (Ag)	2011/08/26	<1		mg/kg	
			Total Thallium (Tl)	2011/08/26	<0.3		mg/kg	
			Total Tin (Sn)	2011/08/26	<1		mg/kg	
			Total Uranium (U)	2011/08/26	<1		mg/kg	
			Total Vanadium (V)	2011/08/26	<1		mg/kg	
			Total Zinc (Zn)	2011/08/26	<10		mg/kg	
		RPD [BI0056-01]	Total Antimony (Sb)	2011/08/26	NC		%	35
			Total Arsenic (As)	2011/08/26	NC		%	35
			Total Barium (Ba)	2011/08/26	NC		%	35
			Total Beryllium (Be)	2011/08/26	NC		%	35
			Total Cadmium (Cd)	2011/08/26	NC		%	35
			Total Chromium (Cr)	2011/08/26	20.8		%	35
			Total Cobalt (Co)	2011/08/26	21.8		%	35
			Total Copper (Cu)	2011/08/26	NC		%	35
			Total Lead (Pb)	2011/08/26	NC		%	35
			Total Mercury (Hg)	2011/08/26	NC		%	35
			Total Molybdenum (Mo)	2011/08/26	NC		%	35
			Total Nickel (Ni)	2011/08/26	24.8		%	35
			Total Selenium (Se)	2011/08/26	NC		%	35
			Total Silver (Ag)	2011/08/26	NC		%	35
			Total Thallium (Tl)	2011/08/26	NC		%	35
			Total Tin (Sn)	2011/08/26	NC		%	35
			Total Uranium (U)	2011/08/26	NC		%	35
			Total Vanadium (V)	2011/08/26	17.9		%	35
			Total Zinc (Zn)	2011/08/26	NC		%	35
5129753	KN3	Matrix Spike	Soluble Chloride (Cl)	2011/08/27		106	%	75 - 125
		QC Standard	Soluble Chloride (Cl)	2011/08/27		109	%	75 - 125
		Spiked Blank	Soluble Chloride (Cl)	2011/08/27		105	%	80 - 120
		Method Blank	Soluble Chloride (Cl)	2011/08/27	<5		mg/L	
		RPD	Soluble Chloride (Cl)	2011/08/27	NC		%	35
5129767	KN3	Matrix Spike	Available (KCl) Nitrite (N)	2011/08/29		108	%	75 - 125
		Spiked Blank	Available (KCl) Nitrite (N)	2011/08/27		111	%	75 - 125
		Method Blank	Available (KCl) Nitrite (N)	2011/08/27	0.6, RDL=0.5		mg/kg	
		RPD	Available (KCl) Nitrite (N)	2011/08/27	NC		%	35
5129768	KN3	Matrix Spike	Available (KCl) Nitrate (N)	2011/08/29		97	%	75 - 125
		Spiked Blank	Available (KCl) Nitrate (N)	2011/08/27		93	%	75 - 125
		Method Blank	Available (KCl) Nitrate (N)	2011/08/27	0.8, RDL=0.5		mg/kg	
		RPD	Available (KCl) Nitrate (N)	2011/08/27	NC		%	25
5129816	SV1	Matrix Spike	Soluble (Hot water) Boron (B)	2011/08/27		101	%	75 - 125
		Spiked Blank	Soluble (Hot water) Boron (B)	2011/08/27		103	%	80 - 120
		Method Blank	Soluble (Hot water) Boron (B)	2011/08/27	<0.1		mg/kg	
		RPD	Soluble (Hot water) Boron (B)	2011/08/27	4.0		%	35
5130099	PK4	Matrix Spike	O-TERPHENYL (sur.)	2011/08/28		105	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2011/08/28		130	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2011/08/28		130	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2011/08/28		129	%	50 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2011/08/28		97	%	50 - 130

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5130099	PK4	Spiked Blank	F2 (C10-C16 Hydrocarbons)	2011/08/28		87	%	70 - 130
			F3 (C16-C34 Hydrocarbons)	2011/08/28		88	%	70 - 130
			F4 (C34-C50 Hydrocarbons)	2011/08/28		92	%	70 - 130
		Method Blank	O-TERPHENYL (sur.)	2011/08/28		101	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2011/08/28	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2011/08/28	<10		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2011/08/28	<10		mg/kg	
		RPD	F2 (C10-C16 Hydrocarbons)	2011/08/28	49.9		%	50
			F3 (C16-C34 Hydrocarbons)	2011/08/28	49.9		%	50
			F4 (C34-C50 Hydrocarbons)	2011/08/28	46.8		%	50
5132476	BA3	Matrix Spike	Hex. Chromium (Cr 6+)	2011/08/29		103	%	N/A
		Spiked Blank	Hex. Chromium (Cr 6+)	2011/08/29		103	%	75 - 125
		Method Blank	Hex. Chromium (Cr 6+)	2011/08/29	<0.15		mg/kg	
		RPD	Hex. Chromium (Cr 6+)	2011/08/29	NC		%	35

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Maxxam

Calgary: 4000 19st St. NE, T2E 6P8, Ph: (403) 291-3077, Fax: (403) 735-2240, Toll free: (800) 386-7247
Edmonton: 9331 - 48 Street, T6B 2R4, Ph: (780) 577-7100, Fax: (780) 450-4187, Toll free: (877) 465-8889
www.maxxamanalytics.com

08/963(3) **Chain of Custody** A050092

Page: 1 of 6

	Invoice To:	C/O Report Address ☐
Company:	EBA ENGINEERING	
Contact:	DANIELA FELSKE	
Address:	14940-123 AVE	
	Prov: EDM, AB	PC:
Contact #s:	Ph: 780-451-2121	Cell:

Report To: *	Same as Invoice ☒
☒	
Prov:	PC:
Ph:	Cell:

Report Distribution (E-Mail):
dfelske@eba.ca
mhebert@eba.ca
bhorne@eba.ca

REGULATORY GUIDELINES:
☐ AT1
☒ CCME
☐ Regulated Drinking Water
☐ Other:

All samples are held for 60 calendar days after sample receipt, unless specified otherwise.

PO #:	Y22101187.001
Project # / Name:	
Site Location:	
Quote #:	
Sampled By:	

SERVICE REQUESTED: ☐ RUSH (Contact lab to reserve) Date Required: ____ ☒ REGULAR (5 to 7 Days)

See reverse for package specifics

	Sample ID	Depth (unit)	Matrix GW / SW Soil	Date/Time Sampled YY/MM/DD 24:00	SOIL: BTEX F1-F4	SOIL: Sieve (75 micron)	SOIL: Regulated Metals (CCME / AT1)	SOIL: Salinity 4	SOIL: Assessment ICP Metals	SOIL: Basic Class II Landfill	WATER: ☐VOCs ☐BTEX F1	WATER: ☐BTEX F1-F2 ☐BTEX F1-F4	WATER: ☐ Routine Water ☐ Turb ☐ F	WATER: ☐ TOC ☐ DOC	WATER: Regulated Metals (CCME / AT1) Total	WATER: Regulated Metals (CCME / AT1) Dissolved	WATER: Mercury ☐ Total ☐ Dissolved	Other Analysis	HOLD - Do not Analyze	# of Containers Submitted
1	11W5G-01	30cm	S	Aug 9/11	X															
2	11W5H-01	50cm	S		X															
3	11W5G-04	10cm			X															
4	11W5H-02	20cm			X															
5	11W5G-01	10cm			X															
6	11W8-05	10cm			X															
7	11W8-03	15cm			X	X														
8	11W8-04	10cm			X															
9	11W8-02	10cm			X															
10	11W8-01	10cm			X															
11	~~11W8-02~~ 11W7-03	10cm			X															
12	11W5E-01	85cm			X															

Please indicate Filtered, Preserved or Both (F, P, F/P)

Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):
D. FELSKE	AUG 22, 2011	9:00
Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):

Special Instructions:

# of Jars Used & Not Submitted

LAB USE ONLY

Received By:	Date:	Time:
VERONICA AKADLISA	2011/08/22	11:57

Lab Comments:

Maxxam Job #: B177775

Custody Seal	Temperature	Ice
ABSENT	5, 6, 5	PRESENT
ABSENT	6, 5, 5	PRESENT
ABSENT	22, 22, 22	ABSENT

LAST COOLER FOR DISPOSAL

Maxxam

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Edmonton: 9331 - 48 Street, T6B 2R4. Ph: (780) 577-7100, Fax: (780) 450-4187, Toll free: (877) 485-8889
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Chain of Custody

A050093

Page: 2 of 6

	Invoice To:	C/O Report Address ☐	Report To:	Same as Invoice ☐
Company:				
Contact:				
Address:				
	Prov:	PC:	Prov:	PC:
Contact #s:	Ph:	Cell:	Ph:	Cell:

Report Distribution (E-Mail):

REGULATORY GUIDELINES:
- ☐ AT1
- ☐ CCME
- ☐ Regulated Drinking Water
- ☐ Other:

All samples are held for 60 calendar days after sample receipt, unless specified otherwise.

PO #:	
Project # / Name:	
Site Location:	
Quote #:	
Sampled By:	

SERVICE REQUESTED: ☐ **RUSH** (Contact lab to reserve) **Date Required:** ☐ REGULAR (5 to 7 Days)

Same

See reverse for package specifics

	Sample ID	Depth (unit)	Matrix GW / SW Soil	Date/Time Sampled YY/MM/DD 24:00	SOIL: BTEX F1-F4	SOIL: Sieve (75 micron)	SOIL: Regulated Metals (CCME / AT1)	SOIL: Salinity 4	SOIL: Assessment ICP Metals	SOIL: Basic Class II Landfill	WATER: ☐BTEX F1 ☐VOCs	WATER: ☐BTEX F1-F2 ☐BTEX F1-F4	WATER: ☐ Routine Water ☐ Turb ☐ F	WATER: ☐ TOC ☐ DOC	WATER: Regulated Metals (CCME / AT1) Total	WATER: Regulated Metals (CCME / AT1) Dissolved	WATER: Mercury ☐ Total ☐ Dissolved	Other Analysis	HOLD - Do not Analyze	# of Containers Submitted
1	11W6-03	25cm	S	Aug 10	X	X														
2	11W6-04	15cm			X		X													
3	11W6-05	25cm			X															
4	11W6-02	20cm			X															
5	11W6-07	30cm			X		X													
6	11W6-01	0-5cm			X		X													
7	11W1-01	0-5cm			X															
8	11W2-23	30			X															
9	11W1-01	15			X															
10	11W1-05	25			X															
11	11W1-09	20			X	X														
12	11W1-24	20			X															

Please indicate Filtered, Preserved or Both (F, P, F/P)

VM / MH B

Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):
D FESKE	Aug 22, 2011	9:00 am
Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):

Special Instructions:

# of Jars Used & Not Submitted

LAB USE ONLY

Received By:	Date:	Time:
VERONICA AKAOHSA	2011/08/22	11:57

Lab Comments:

Maxxam Job #: B177775

Custody Seal	Temperature	Ice
ABSENT	5, 6, 5	PRESENT
ABSENT	6, 6, 5	PRESENT
ABSENT	22, 22, 22	ABSENT

Maxxam

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Edmonton: 9331 - 48 Street, T6B 2R4. Ph: (780) 577-7100, Fax: (780) 450-4187, Toll free: (877) 465-8889
www.maxxamanalytics.com

Chain of Custody

A050094

Page: 3 of 6

	Invoice To:	C/O Report Address ☐	Report To:	Same as Invoice ☐	Report Distribution (E-Mail):
Company:					
Contact:					
Address:					
	Prov:	PC:	Prov:	PC:	
Contact #s:	Ph:	Cell:	Ph:	Cell:	

REGULATORY GUIDELINES:
- ☐ AT1
- ☐ CCME
- ☐ Regulated Drinking Water
- ☐ Other:

All samples are held for 60 calendar days after sample receipt unless specified otherwise.

PO #:	
Project # / Name:	
Site Location:	
Quote #:	
Sampled By:	

SERVICE REQUESTED:
- ☐ **RUSH** (Contact lab to reserve) Date Required:
- ☒ REGULAR (5 to 7 Days)

See reverse for package specifics

	Sample ID	Depth (unit)	Matrix GW / SW Soil	Date/Time Sampled YY/MM/DD 24:00	SOIL: BTEX F1-F4	SOIL: Sieve (75 micron)	SOIL: Regulated Metals (CCME / AT1)	SOIL: Salinity 4	SOIL: Assessment ICP Metals	SOIL: Basic Class II Landfill	WATER: ☐BTEX F1 ☐VOCs	WATER: ☐BTEX F1-F2 ☐BTEX F1-F4	WATER: ☐ Routine Water ☐ Turb ☐ F	WATER: ☐ TOC ☐ DOC	WATER: Regulated Metals (CCME / AT1) Total	WATER: Regulated Metals (CCME / AT1) Dissolved	WATER: Mercury ☐ Total ☐ Dissolved	Other Analysis	HOLD - Do not Analyze	# of Containers Submitted
1	11W2-21	25cm	S	Aug 10	X															
2	11W2-18	25cm			X															
3	11W2-18	50cm			X															
4	11W2-19	20cm			X															
5	11W2-8	20cm			X															
6	11W2-~~8~~20	25			X	X														
7	11W2-7	20			X	X														
8	11W24	25			X															
9	11W2-10	25			X															
10	11W2-13	25			X															
11	11W2-2	20			X	X														
12	11W2-17	20			X															

MPH AHS F/P

Please indicate Filtered, Preserved or Both (F, P, F/P)

Relinquished By (Signature/Print): D FELSKE	Date (YY/MM/DD): AUG 22, 2011	Time (24:00): 9 am
Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):

Special Instructions:

# of Jars Used & Not Submitted

LAB USE ONLY

Received By: VERONICA AKAOHSA	Date: 2011/08/22	Time: 11:57	Maxxam Job #: B177775

Custody Seal	Temperature	Ice
ABSENT	5, 6, 5	PRESENT
	6, 5, 5	PRESENT
	22, 22, 22	ABSENT

Lab Comments:

Maxxam

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Edmonton: 9331 - 48 Street, T6B 2R4. Ph: (780) 577-7100, Fax: (780) 450-4187, Toll free: (877) 465-8889
www.maxxamanalytics.com

Chain of Custody

A050095

	Invoice To:	C/O Report Address ☐
Company:		
Contact:		
Address:		
	Prov:	PC:
Contact #s:	Ph:	Cell:

same

	Report To: *	Same as Invoice ☐
	Prov:	PC:
	Ph:	Cell:

see pg 1

Report Distribution (E-Mail):

REGULATORY GUIDELINES:
- ☐ AT1
- ☒ CCME
- ☐ Regulated Drinking Water
- ☐ Other:

All samples are held for 60 calendar days after sample receipt, unless specified otherwise.

PO #:	
Project # / Name:	
Site Location:	
Quote #:	
Sampled By:	

SERVICE REQUESTED: ☐ **RUSH** (Contact lab to reserve) **Date Required:** ☒ REGULAR (5 to 7 Days)

See reverse for package specifics

	Sample ID	Depth (unit)	Matrix GW / SW Soil	Date/Time Sampled YY/MM/DD 24:00	SOIL: BTEX F1-F4	SOIL: Sieve (75 micron)	SOIL: Regulated Metals (CCME / AT1)	SOIL: Salinity 4	SOIL: Assessment ICP Metals	SOIL: Basic Class II Landfill	WATER: ☐BTEX F1 ☐VOCs	WATER: ☐BTEX F1-F2 ☐BTEX F1-F4	WATER: ☐ Routine Water ☐ Turb ☐ F	WATER: ☐ TOC ☐ DOC	WATER: Regulated Metals (CCME / AT1) Total	WATER: Regulated Metals (CCME / AT1) Dissolved	WATER: Mercury ☐ Total ☐ Dissolved	Other Analysis	HOLD - Do not Analyze	# of Containers Submitted
1	11W4-01	25cm	S	AUG 9	X	X														
2	11W3-02	10cm			X		X													
3	11W4-10	50cm			X															
4	11W3-01	20cm			X															
5	11W7-02	10cm			X															
6	11W3-10	20cm			X															
7	11W4-01	35cm			X															
8	11W3-04	25cm			XX															
9	11W4-08	20cm			X															
10	11W4-02	30cm			X															
11	11W4-09	25cm			X															
12	11W4-07	25cm			X															

Please indicate Filtered, Preserved or Both (F, P, F/P)

Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):
D. FELSKE	AUG 22, 2011	9:00 am
Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):

Special Instructions:

# of Jars Used & Not Submitted

LAB USE ONLY

Received By:	Date:	Time:
VERONICA AKAOLISA	2011/08/22	11:57

Lab Comments:

Maxxam Job #: B177775

Custody Seal	Temperature	Ice
ABSENT	5,6,5 6,5,5 22,22,22	

Maxxam

Calgary: 4000 19st St. NE, T2E 6P8. Ph: (403) 291-3077, Fax: (403) 735-2240, Toll free: (800) 386-7247
Edmonton: 9331 - 48 Street, T6B 2R4. Ph: (780) 577-7100, Fax: (780) 450-4187, Toll free: (877) 485-8889
www.maxxamanalytics.com

Chain of Custody

A050096

	Invoice To:	C/O Report Address ☐	Report To:	Same as Invoice ☐
Company:				
Contact:				
Address:				
	Prov:	PC:	Prov:	PC:
Contact #s:	Ph:	Cell:	Ph:	Cell:

Report Distribution (E-Mail):

REGULATORY GUIDELINES:
- ☐ AT1
- ☐ CCME
- ☐ Regulated Drinking Water
- ☐ Other:

All samples are held for 60 calendar days after sample receipt, unless specified otherwise.

PO #:	
Project # / Name:	
Site Location:	
Quote #:	
Sampled By:	

SERVICE REQUESTED:
- ☐ **RUSH** (Contact lab to reserve) Date Required:
- ☒ REGULAR (5 to 7 Days)

See reverse for package specifics

	Sample ID	Depth (unit)	Matrix GW / SW Soil	Date/Time Sampled YY/MM/DD 24:00	SOIL: BTEX F1-F4	SOIL: Sieve (75 micron)	SOIL: Regulated Metals (CCME / AT1)	SOIL: Salinity 4	SOIL: Assessment ICP Metals	SOIL: Basic Class II Landfill	WATER: ☐BTEX F1 ☐VOCs	WATER: ☐BTEX F1-F2 ☐BTEX F1-F4	WATER: ☐ Routine Water ☐ Turb ☐ F	WATER: ☐ TOC ☐ DOC	WATER: Regulated Metals (CCME / AT1) Total	WATER: Regulated Metals (CCME / AT1) Dissolved	WATER: Mercury ☐ Total ☐ Dissolved	Other Analysis	HOLD - Do not Analyze	# of Containers Submitted
1	11W06_1(CS)	~~Bag~~ 25cm	S	Aug 9,201	X															
2	11W5E-01	50cm			X															
3	BULK FUEL STORAGE	10cm			X			X												
4	11W5E-04	20cm			X	X														
5	11W5F-02	10cm			X															
6	11W5E-01	15cm			X															
7	11W5D-01	15cm			X															
8	11W5B-01	10cm			X	X														
9	11W5E-02	20cm			X															
10	11W5C-01	10cm			X															
11	11W5D-01	30cm			X															
12	11W5A-01	20cm			X															

Please indicate Filtered, Preserved or Both (F, P, F/P)

MATH AHS F/P

Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):
D. FELSKE	AUG 22 2011	9:00am
Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):

Special Instructions:

# of Jars Used & Not Submitted

LAB USE ONLY

Received By:	Date:	Time:	Maxxam Job #: B177775
VERONICA AKAOLISA	2011/08/22	11:57	

Lab Comments:	Custody Seal	Temperature	Ice
	ABSENT	5, 6, 5 PRESENT 6, 5, 5 PRESENT 22, 22, 22 ABSENT	

Maxxam

Calgary: 4000 19st St. NE. T2E 6P8. Ph: (403) 291-3077, Fax: (403) 735-2240, Toll free: (800) 386-7247
Edmonton: 9331 - 48 Street, T6B 2R4. Ph: (780) 577-7100, Fax: (780) 450-4187, Toll free: (877) 465-8889
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Chain of Custody

A050097

	Invoice To:	C/O Report Address ☐
Company:		
Contact:		
Address:		
	Prov:	PC:
Contact #s:	Ph:	Cell:

	Report To:	Same as Invoice ☐
	Prov:	PC:
	Ph:	Cell:

Report Distribution (E-Mail):

REGULATORY GUIDELINES:
- ☐ AT1
- ☐ CCME
- ☐ Regulated Drinking Water
- ☐ Other:

All samples are held for 60 calendar days after sample receipt, unless specified otherwise.

PO #:	
Project # / Name:	
Site Location:	
Quote #:	
Sampled By:	

SERVICE REQUESTED:
- ☐ **RUSH** (Contact lab to reserve) Date Required:
- ☒ REGULAR (5 to 7 Days)

See pg 1

See reverse for package specifics

	Sample ID	Depth (unit)	Matrix GW / SW Soil	Date/Time Sampled YY/MM/DD 24:00	SOIL: BTEX F1-F4	Sieve (75micron)	Regulated Metals (CCME / AT1)	Salinity 4	Assessment ICP Metals	Basic Class II Landfill	NUTRIENTS	PH	WATER: ☐BTEX F1 ☐VOCs	☐BTEX F1-F2 ☐BTEX F1-F4	☐ Routine Water ☐ Turb ☐ F	☐ TOC ☐ DOC	Regulated Metals (CCME / AT1) Total	Dissolved	Mercury ☐ Total ☐ Dissolved	Other Analysis	HOLD - Do not Analyze	# of Containers Submitted
1	11W01-01	0-15 ~~25~~	S	AUG 22		X	X	X														
2	11W02-18 composite		S	AUG 10		X	X	X			X	X										
3	11W5H-04	20cm	S		X																	
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

Please indicate Filtered, Preserved or Both (F, P, F/P) → F P

VM / AHB

Relinquished By (Signature/Print): D. FELSKE	Date (YY/MM/DD): AUG 22 2011	Time (24:00): 9:00am
Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):

Special Instructions:

# of Jars Used & Not Submitted

LAB USE ONLY

Received By:	Date:	Time:	Maxxam Job #:
VERONICA AKAOLISA	2011/08/22	11:57	B177775

Lab Comments:

Custody Seal	Temperature	Ice
ABSENT	5, 6, 5 PRESENT 6, 5, 5 PRESENT 22, 22, 22 ABSENT	

Success Through Science®

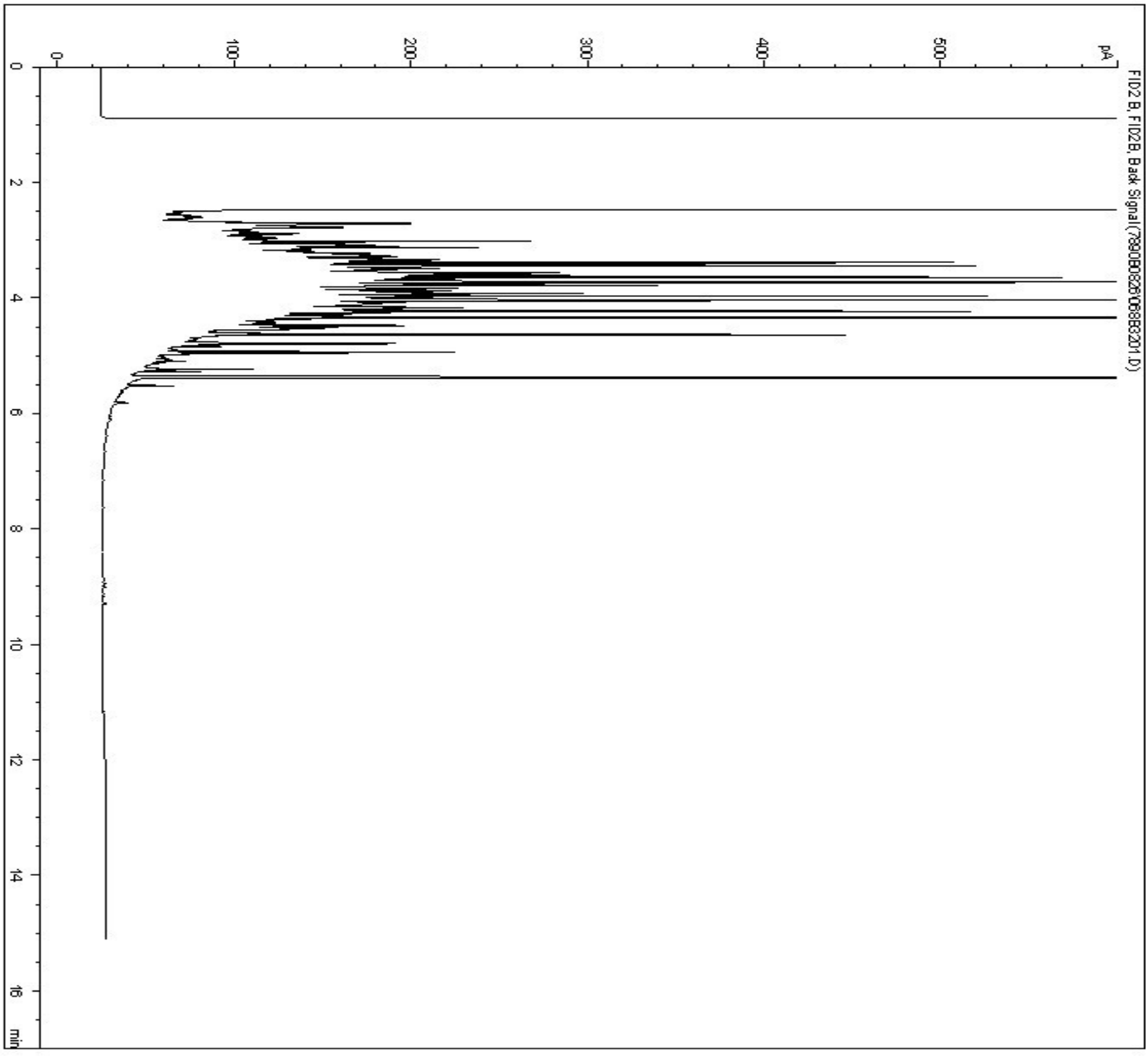
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0038

Client ID: 11W5G-01 (30CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\068B3201.D
Sample Name: BI0038



*** End of Report ***

Instrument 1 2011/08/29 10:03:25 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Success Through Science®

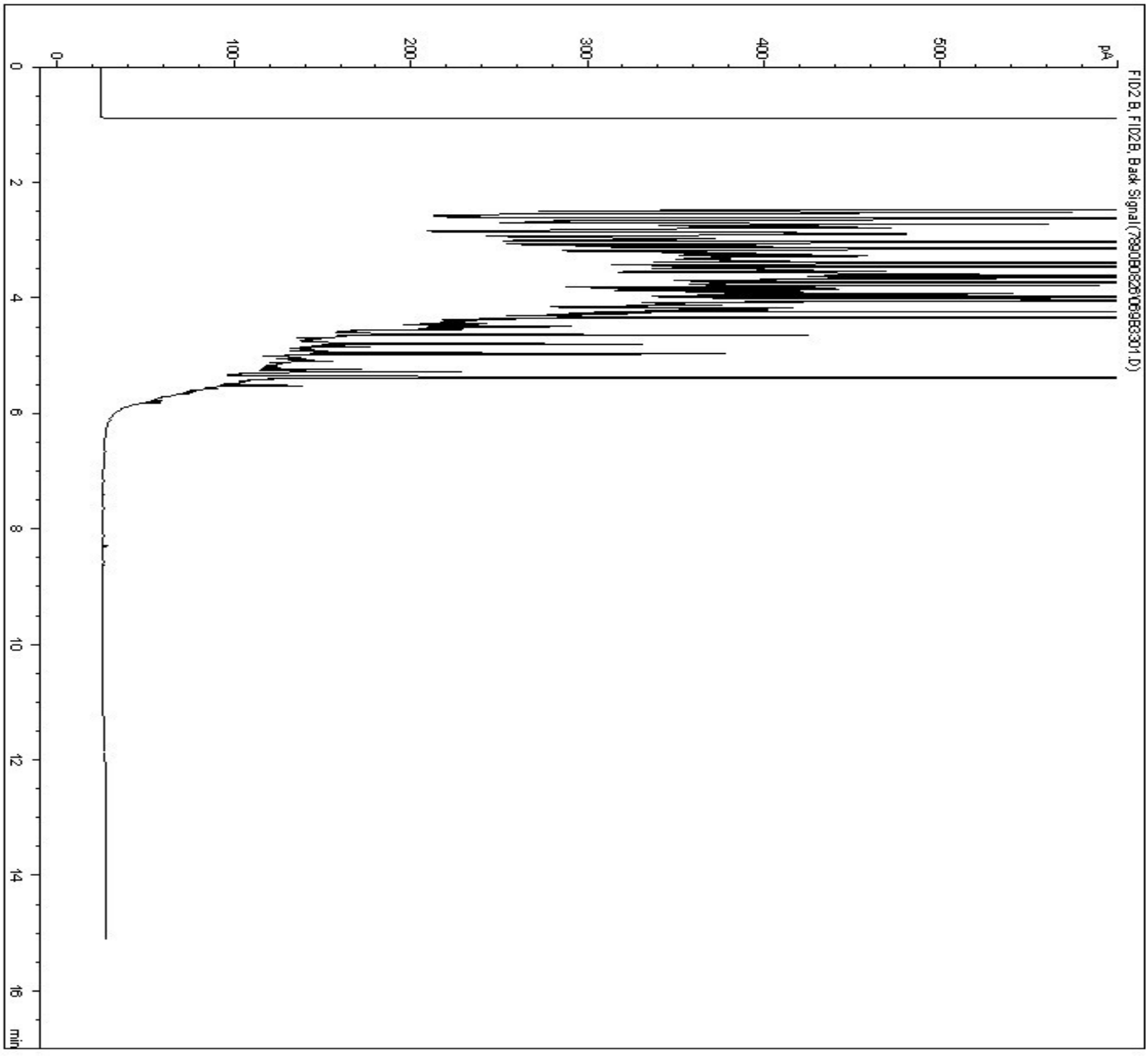
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0039

Client ID: 11W5H-01 (50CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\069B3301.D
Sample Name: BI0039



*** End of Report ***

Instrument 1 2011/08/29 10:03:28 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Success Through Science®

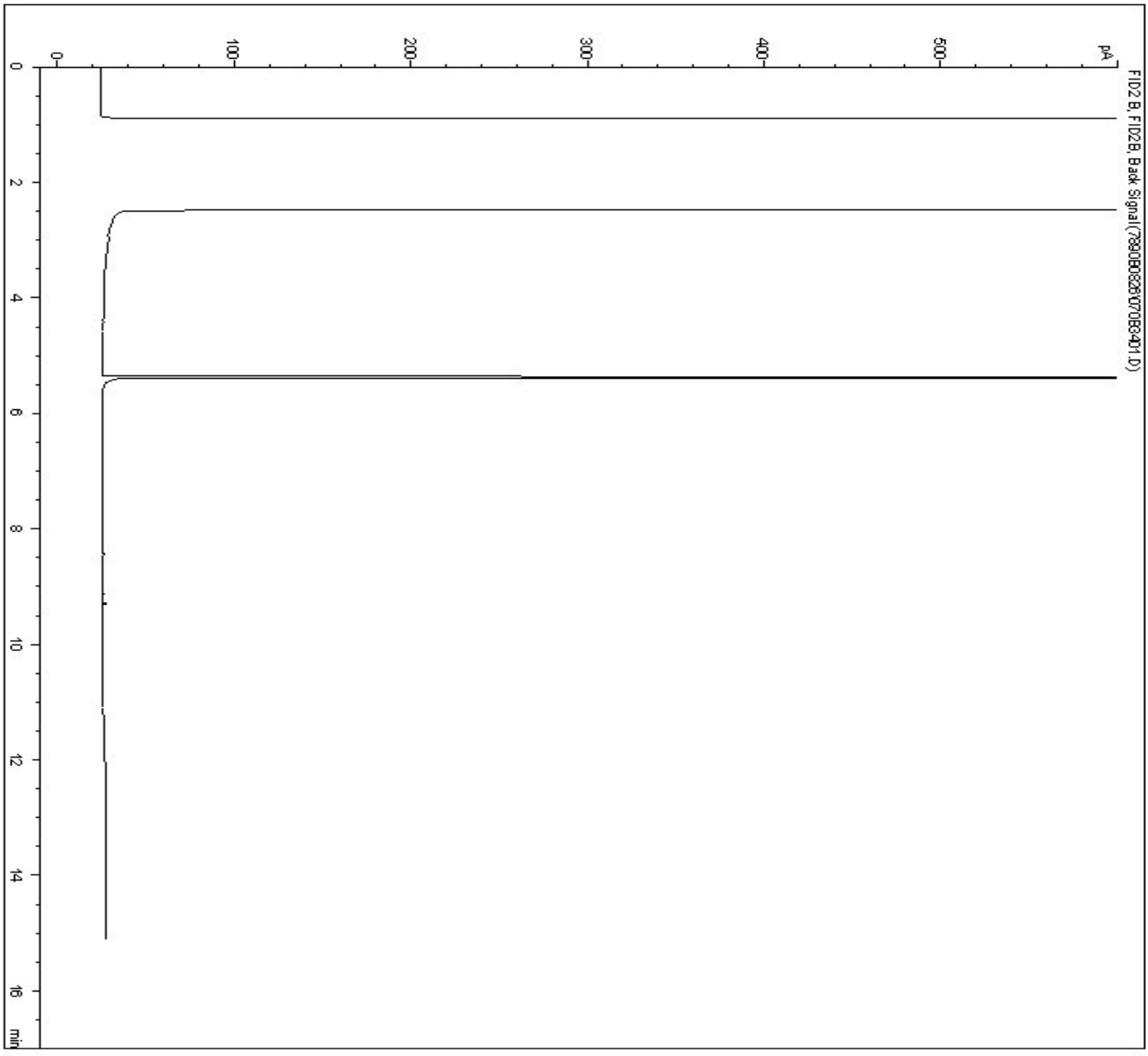
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0040

Client ID: 11W5G-04 (10CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\070B3401.D
Sample Name: BI0040



*** End of Report ***

Instrument 1 2011/08/29 10:03:31 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Success Through Science®

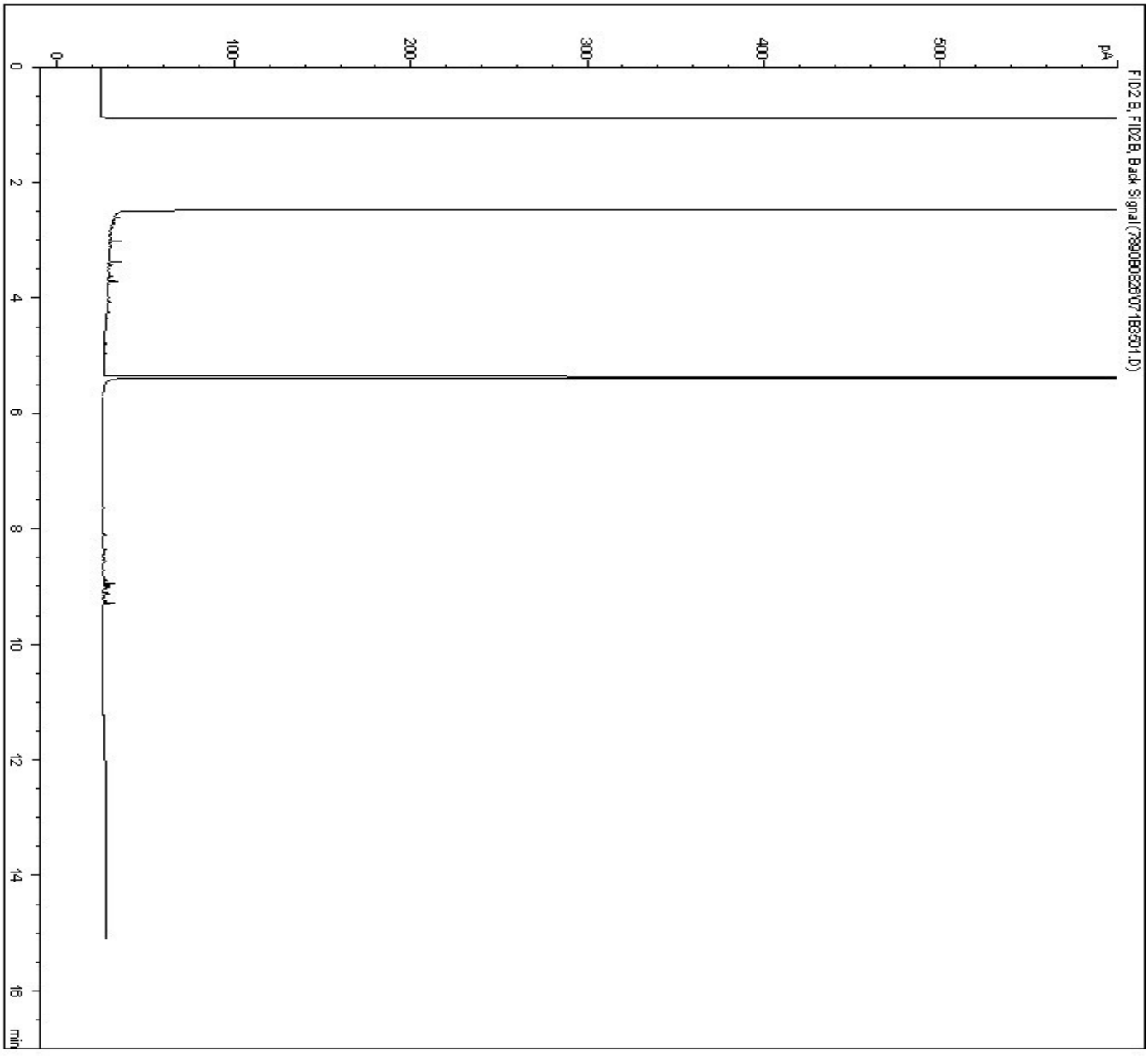
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0041

Client ID: 11W5H-02 (20CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\071B3501.D
Sample Name: BI0041



*** End of Report ***

Instrument 1 2011/08/29 10:03:34 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Success Through Science®

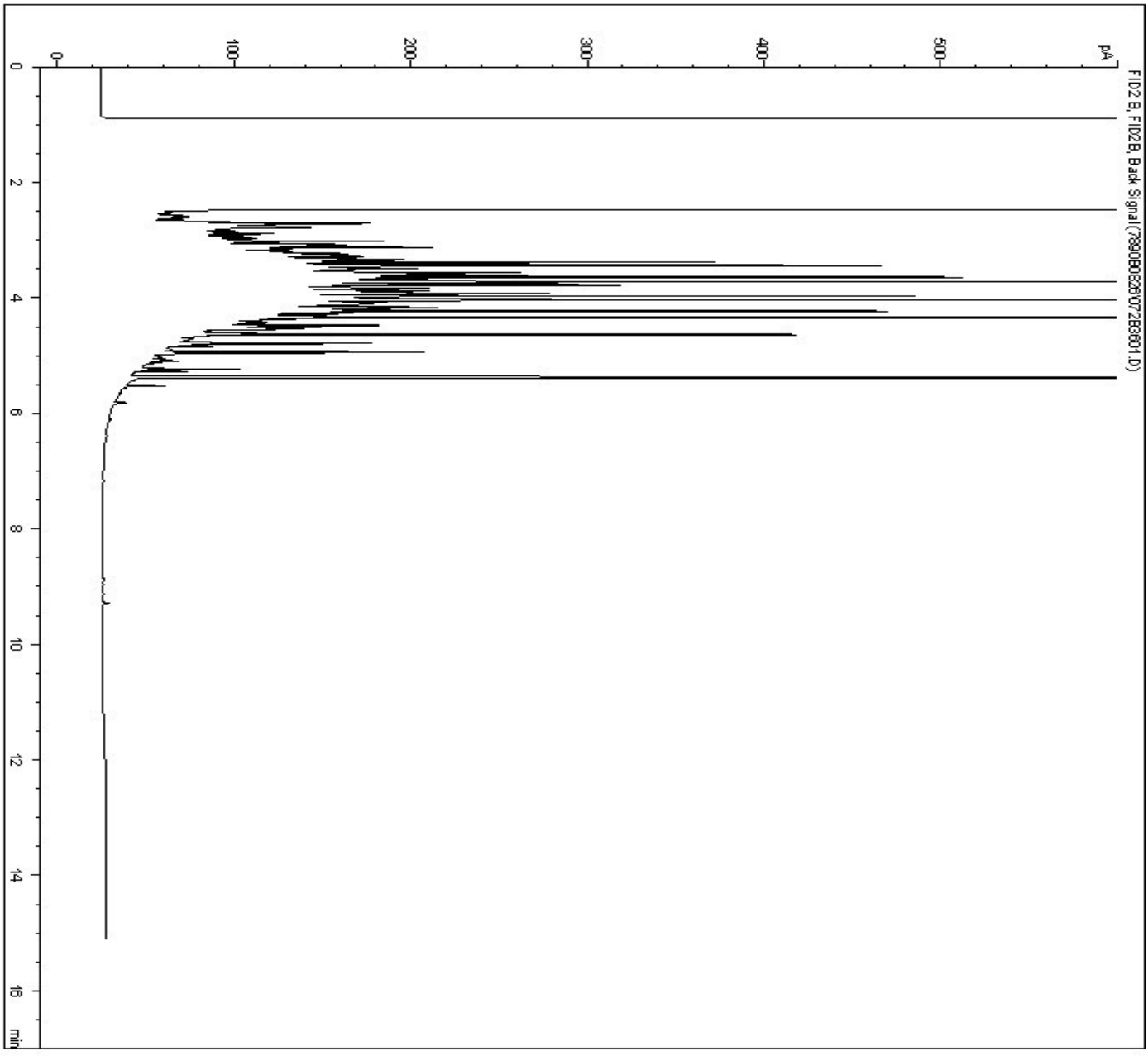
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0042

Client ID: 11W5G-01 (10CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\072B3601.D
Sample Name: BI0042



*** End of Report ***

Instrument 1 2011/08/29 10:03:36 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Success Through Science®

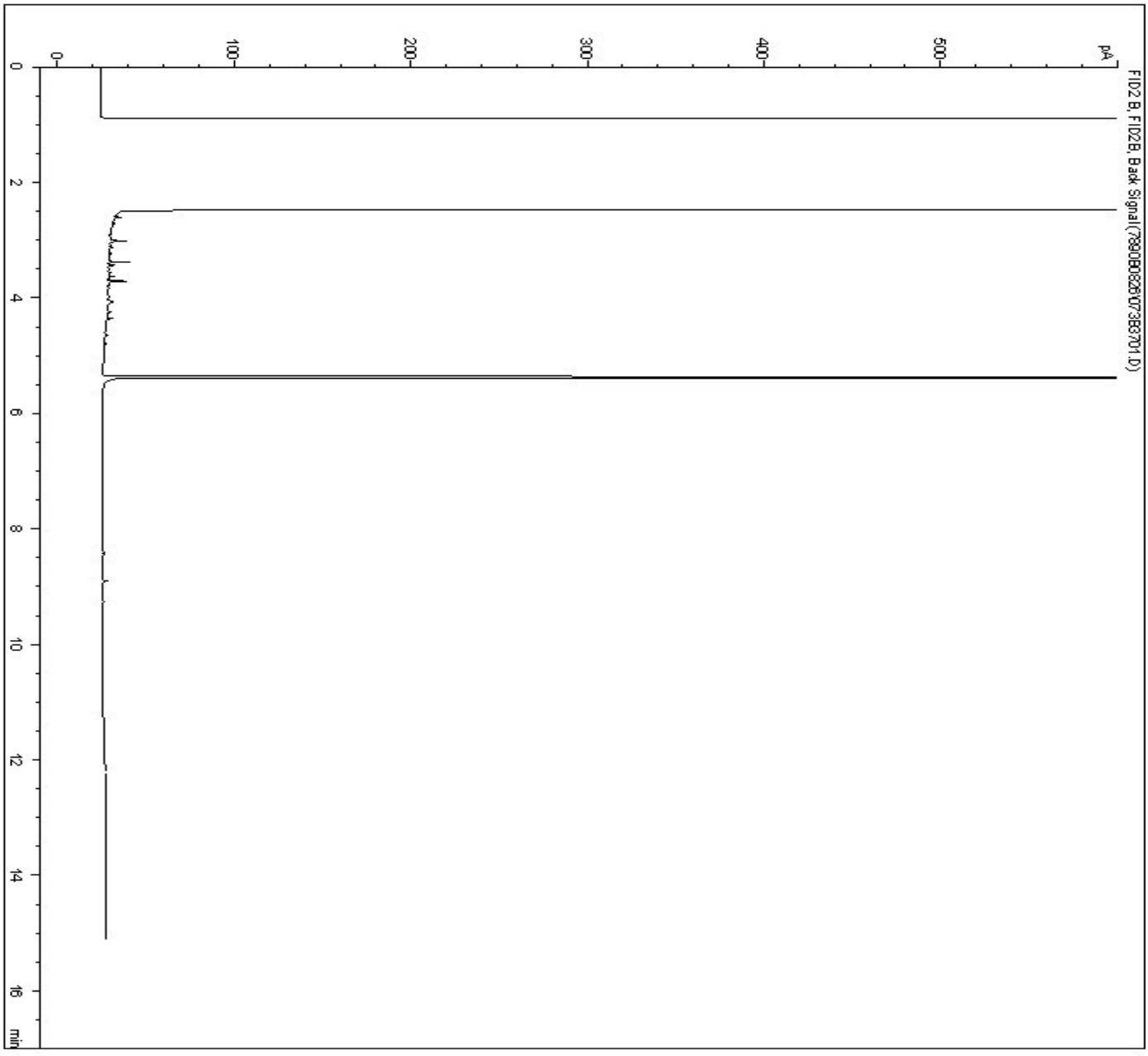
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0043

Client ID: 11W8-05 (10CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\073B3701.D
Sample Name: BI0043



*** End of Report ***

Instrument 1 2011/08/29 10:03:39 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Success Through Science®

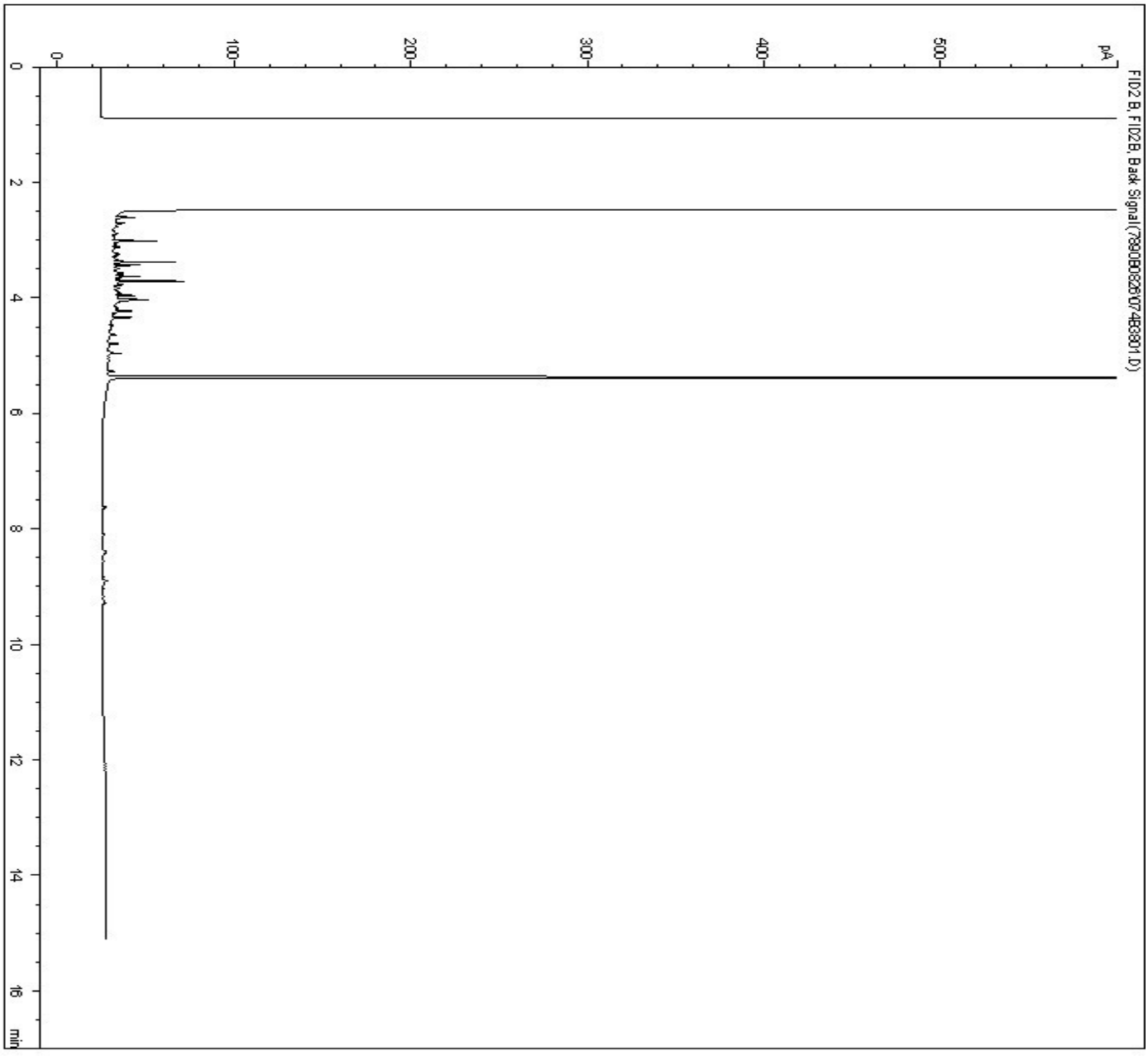
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0044

Client ID: 11W8-03 (15CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\074B3801.D
Sample Name: BI0044



*** End of Report ***

Instrument 1 2011/08/29 10:03:42 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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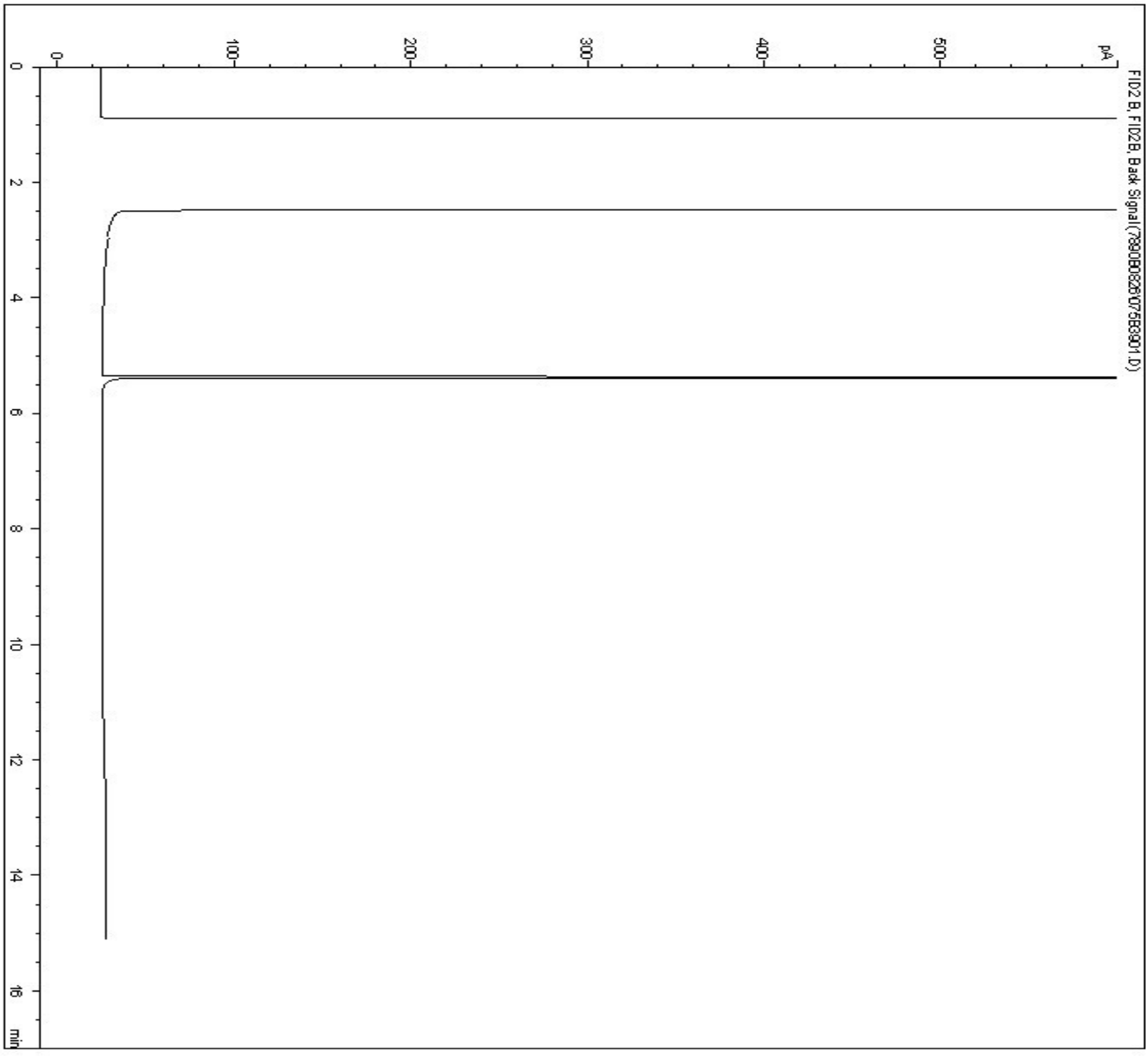
Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0045

Client ID: 11W8-04 (10CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\075B3901.D
Sample Name: BI0045



*** End of Report ***

Instrument 1 2011/08/29 10:03:45 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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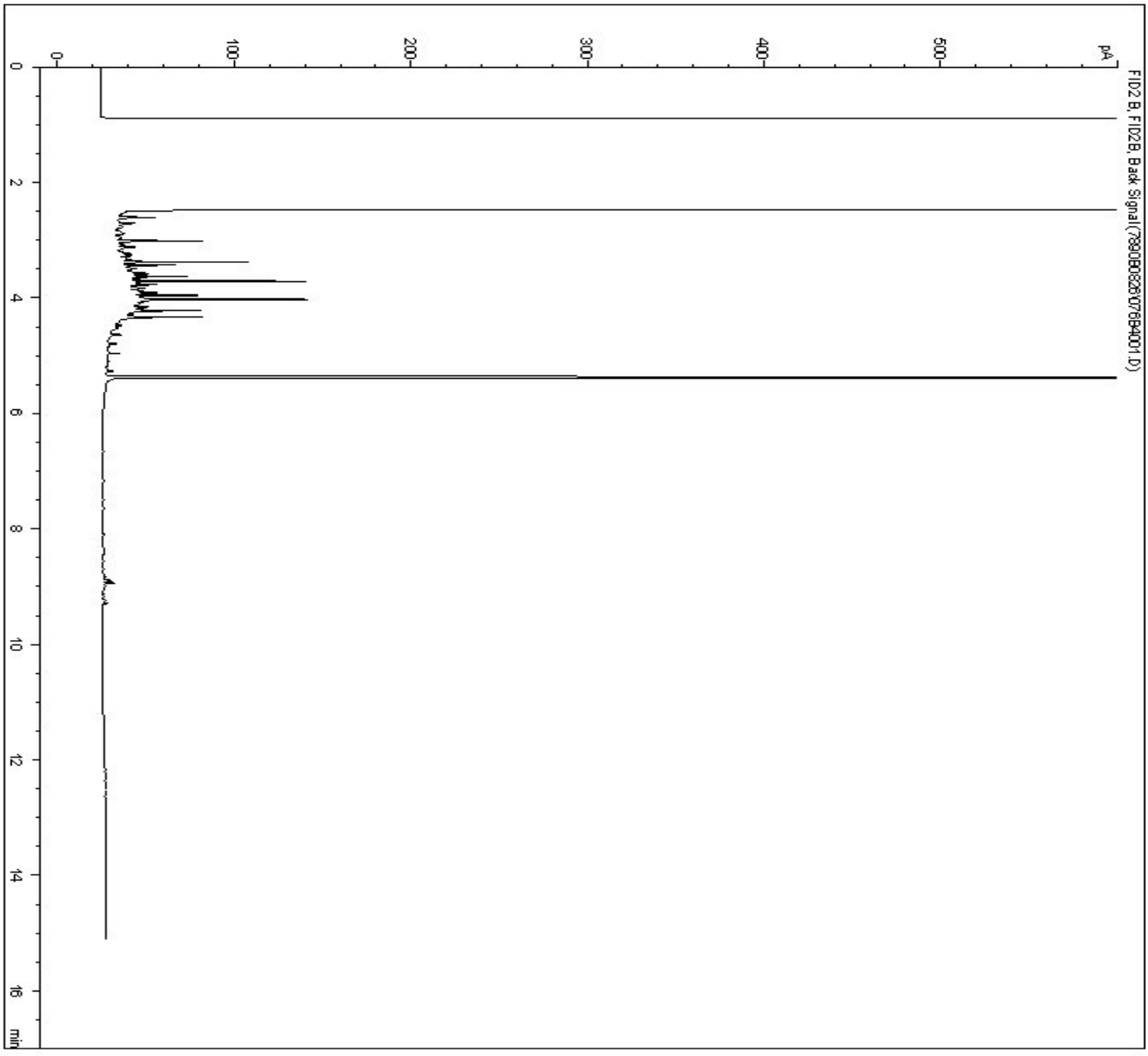
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0046

Client ID: 11W8-02 (10CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\076B4001.D
Sample Name: BI0046



*** End of Report ***

Instrument 1 2011/08/29 10:03:48 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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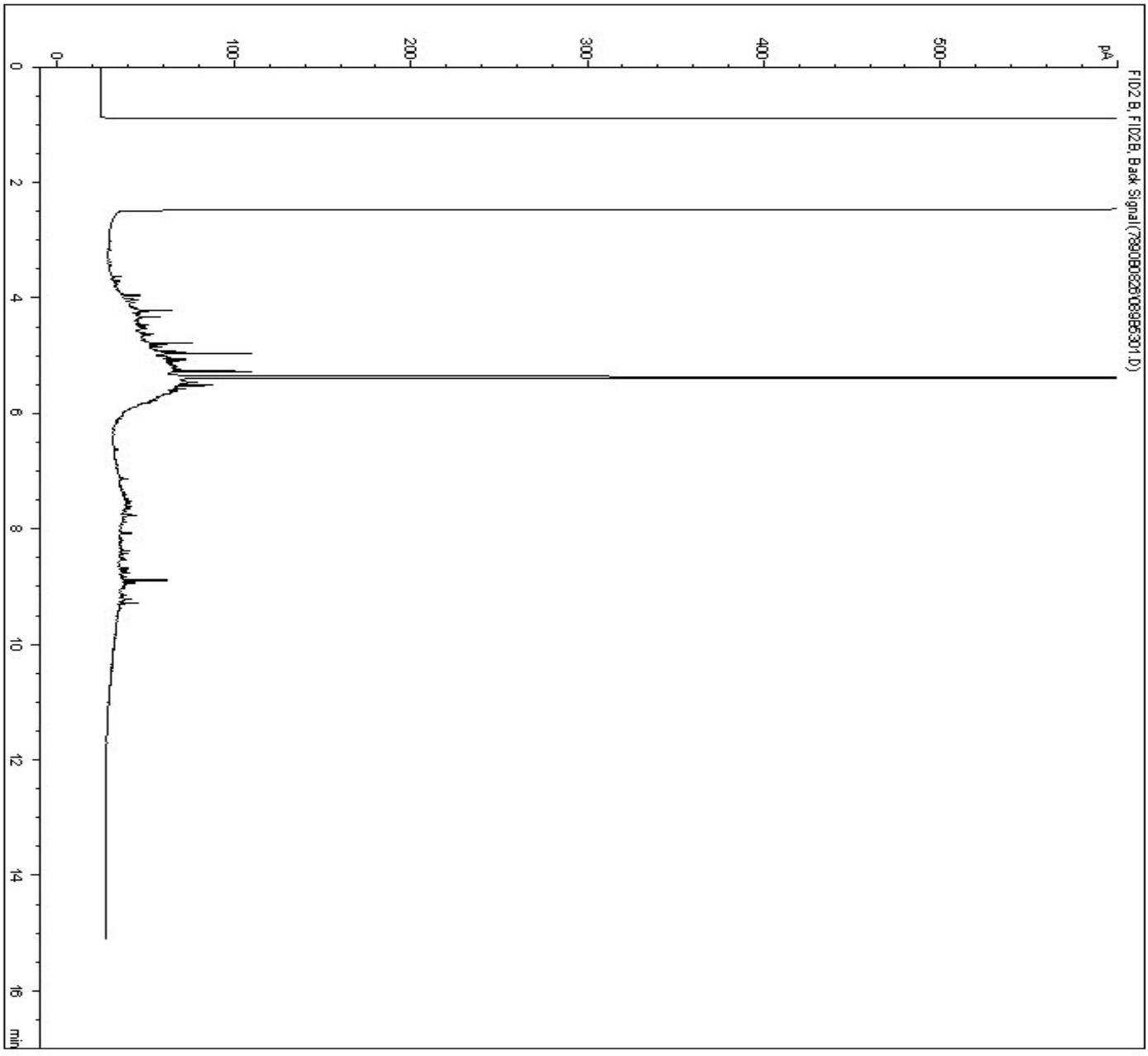
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0047

Client ID: 11W8-01 (10CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\089B5301.D
Sample Name: BI0047



*** End of Report ***

Instrument 1 2011/08/29 10:04:27 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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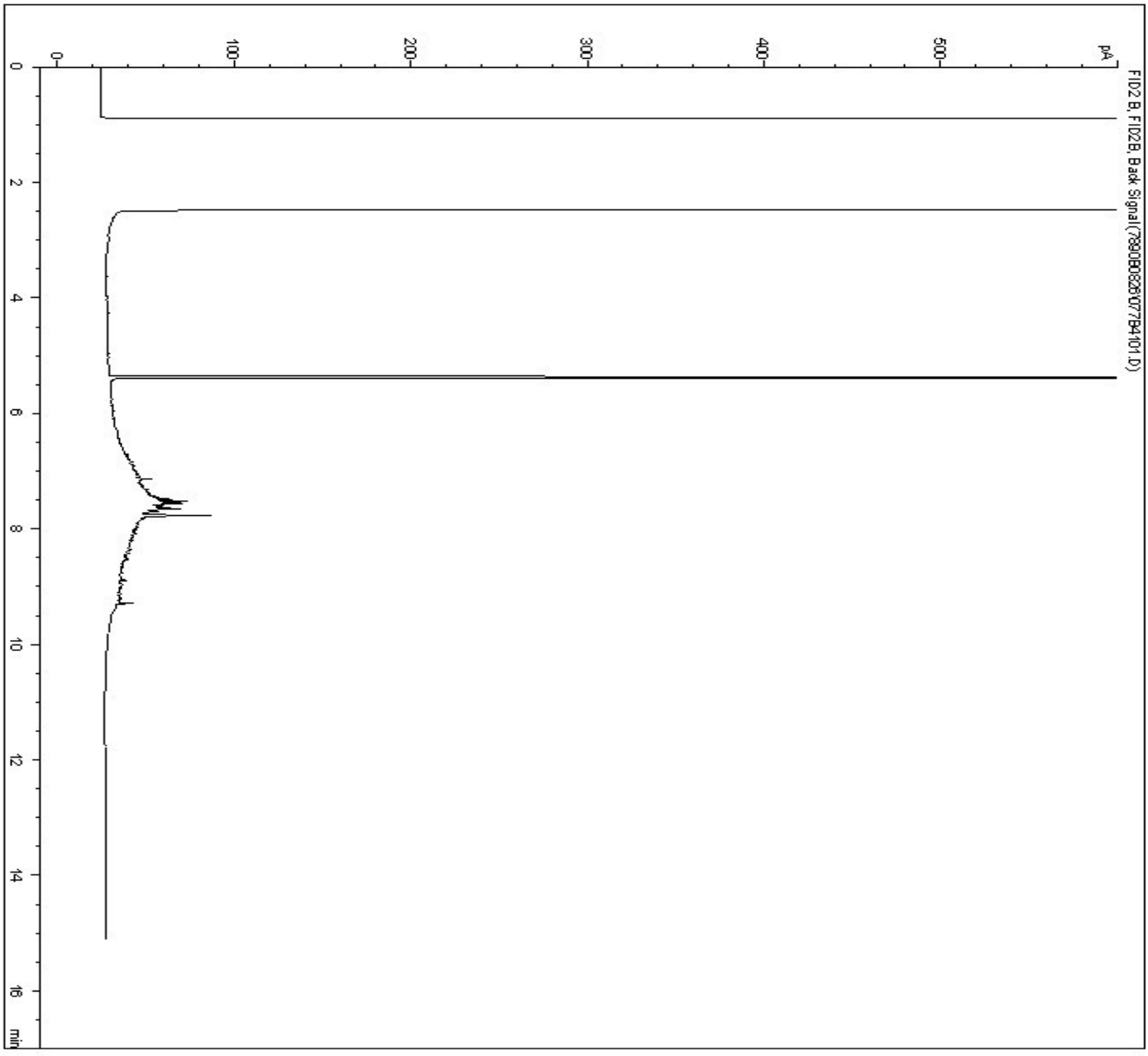
Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0048

Client ID: 11W7-03 (10CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\077B4101.D
Sample Name: BI0048



*** End of Report ***

Instrument 1 2011/08/29 10:03:51 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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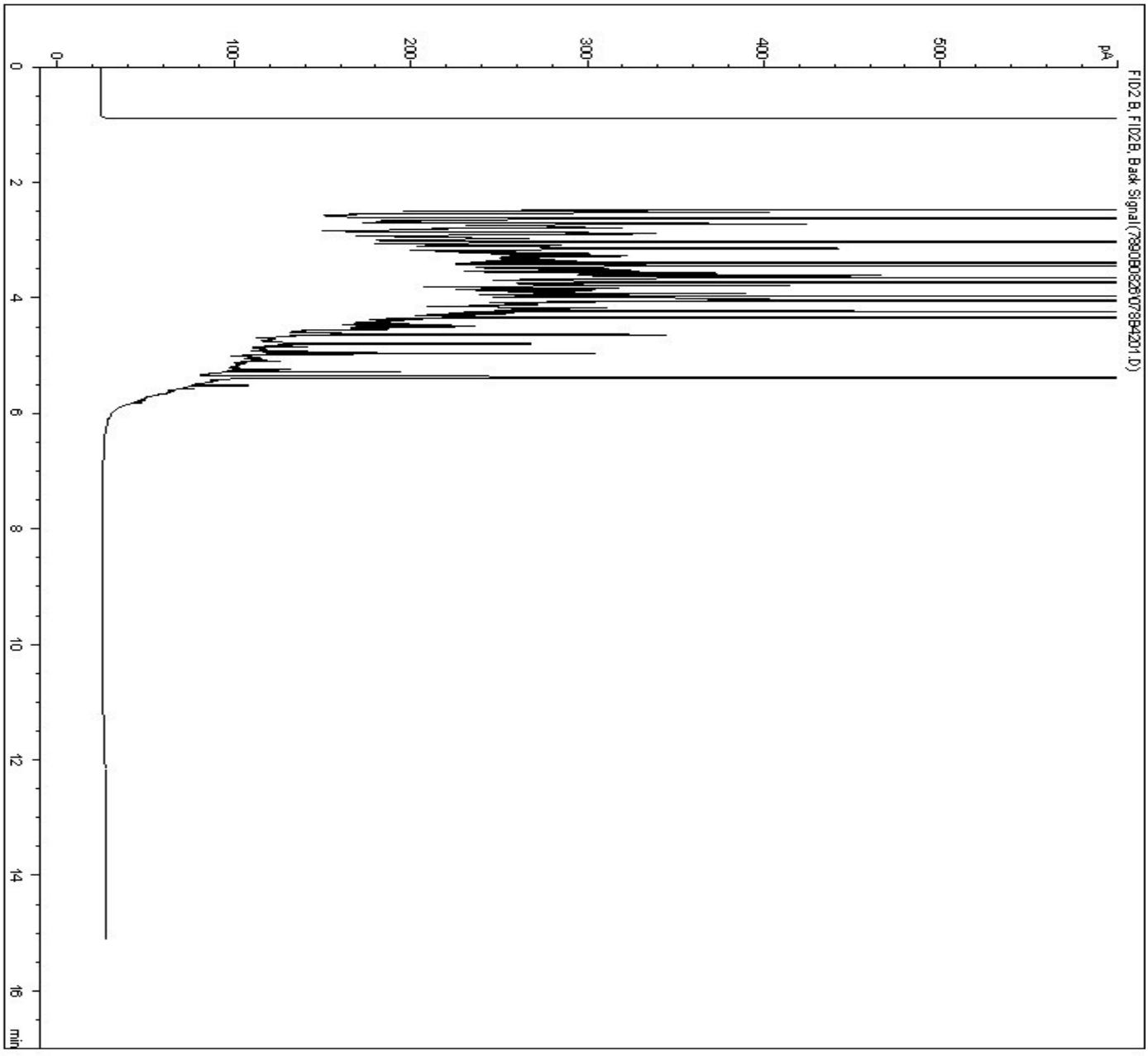
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0049

Client ID: 11W5E-01 (85CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\078B4201.D
Sample Name: BI0049



*** End of Report ***

Instrument 1 2011/08/29 10:03:54 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam

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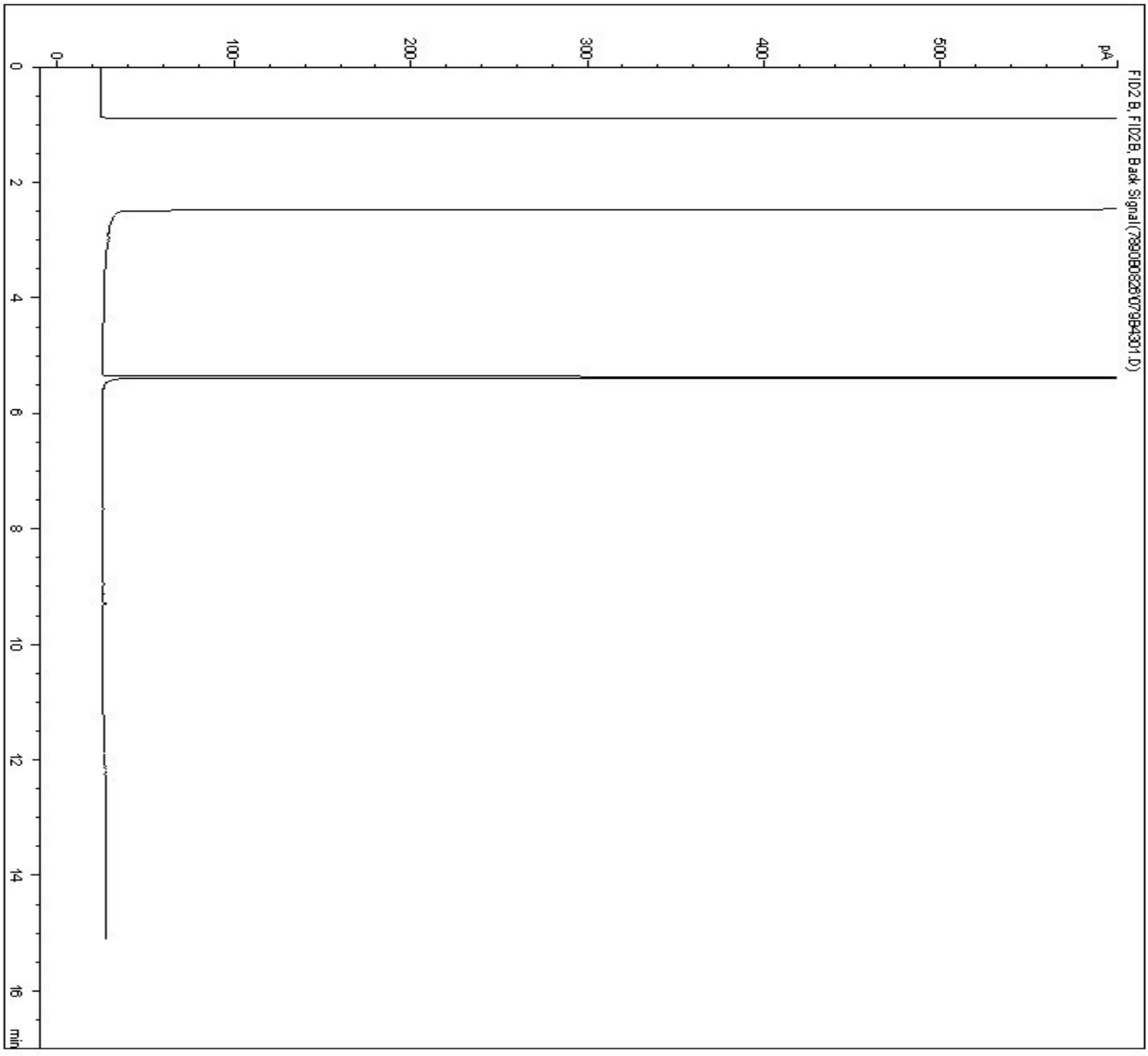
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0050

Client ID: 11W6-03 (25CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\079B4301.D
Sample Name: BI0050



*** End of Report ***

Instrument 1 2011/08/29 10:03:57 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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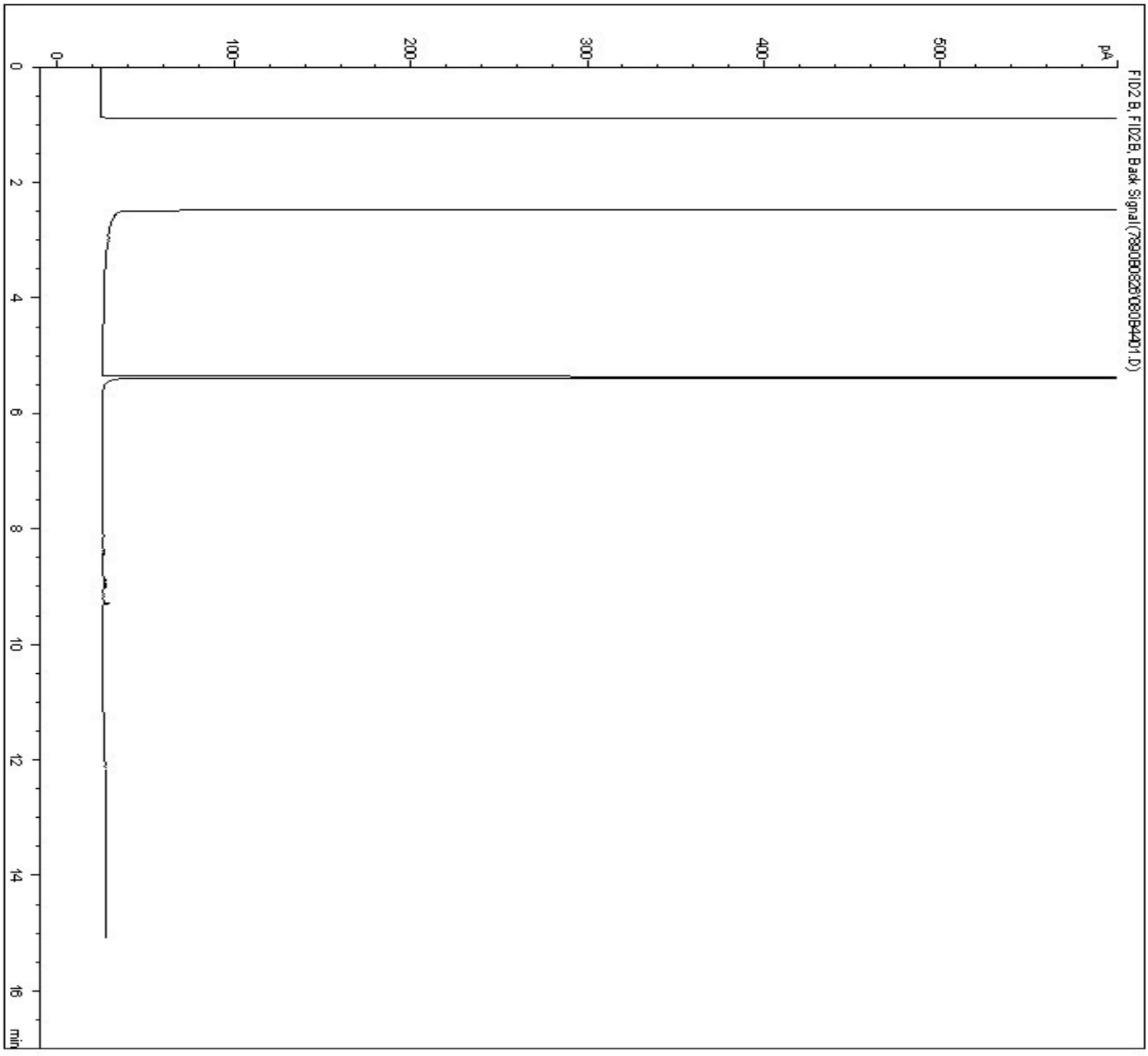
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0056

Client ID: 11W6-04 (15CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\080B4401.D
Sample Name: BI0056



*** End of Report ***

Instrument 1 2011/08/29 10:04:00 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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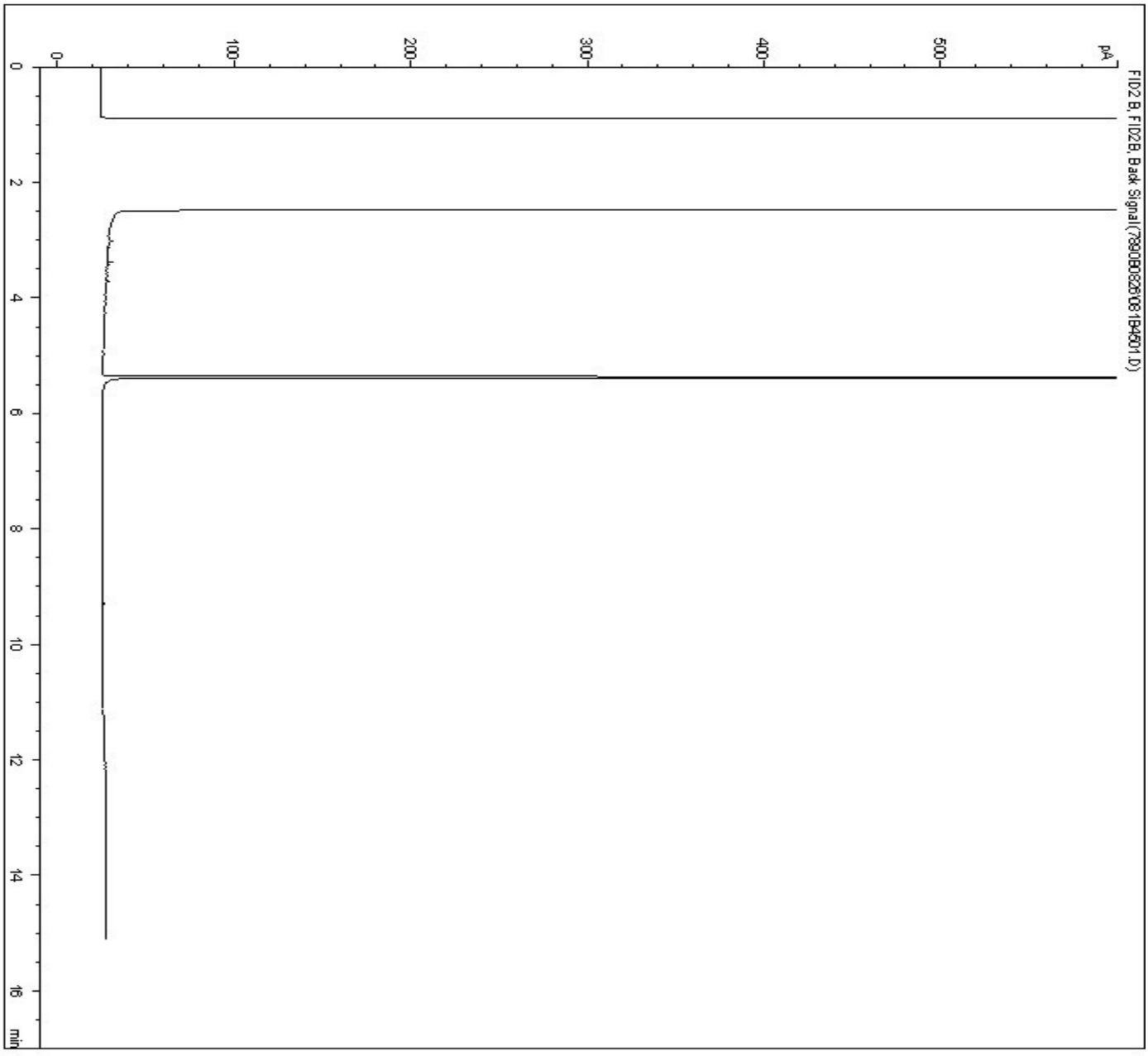
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0057

Client ID: 11W6-05 (25CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\081B4501.D
Sample Name: BI0057



*** End of Report ***

Instrument 1 2011/08/29 10:04:03 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam

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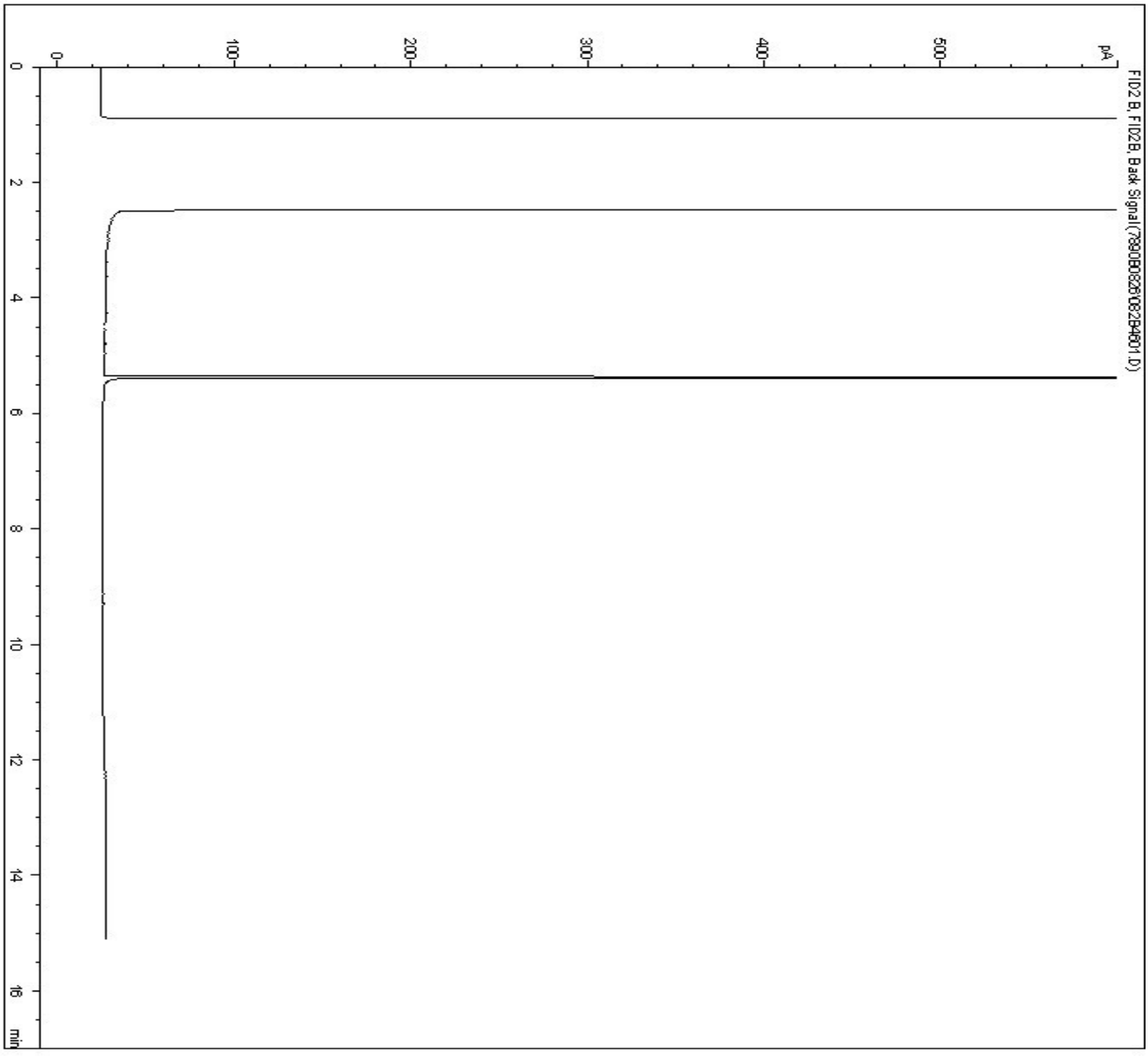
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0058

Client ID: 11W6-02 (20CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\082B4601.D
Sample Name: BI0058



*** End of Report ***

Instrument 1 2011/08/29 10:04:06 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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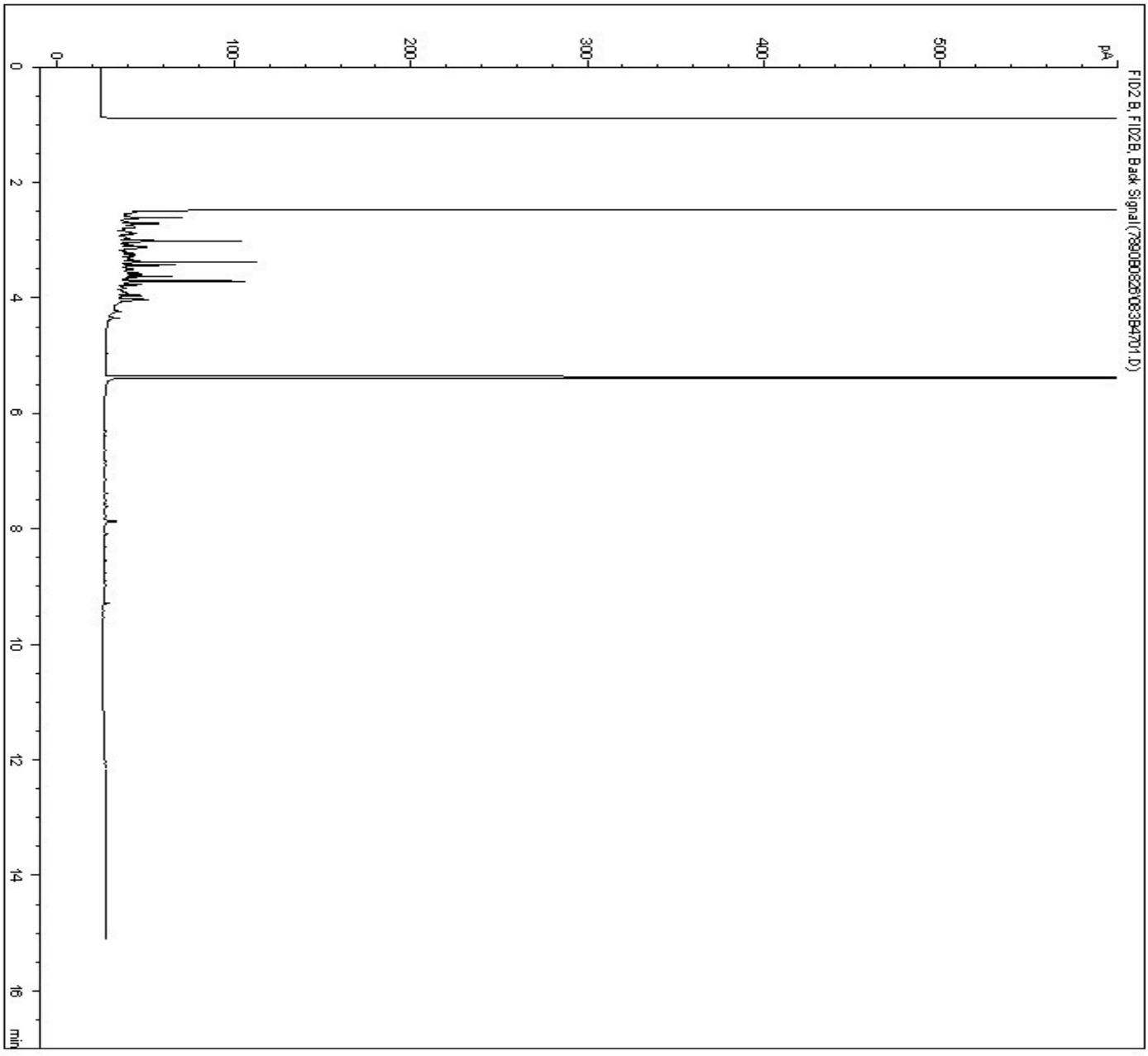
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0059

Client ID: 11W6-01 (30CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\083B4701.D
Sample Name: BI0059



*** End of Report ***

Instrument 1 2011/08/29 10:04:09 AM RC6

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Maxxam

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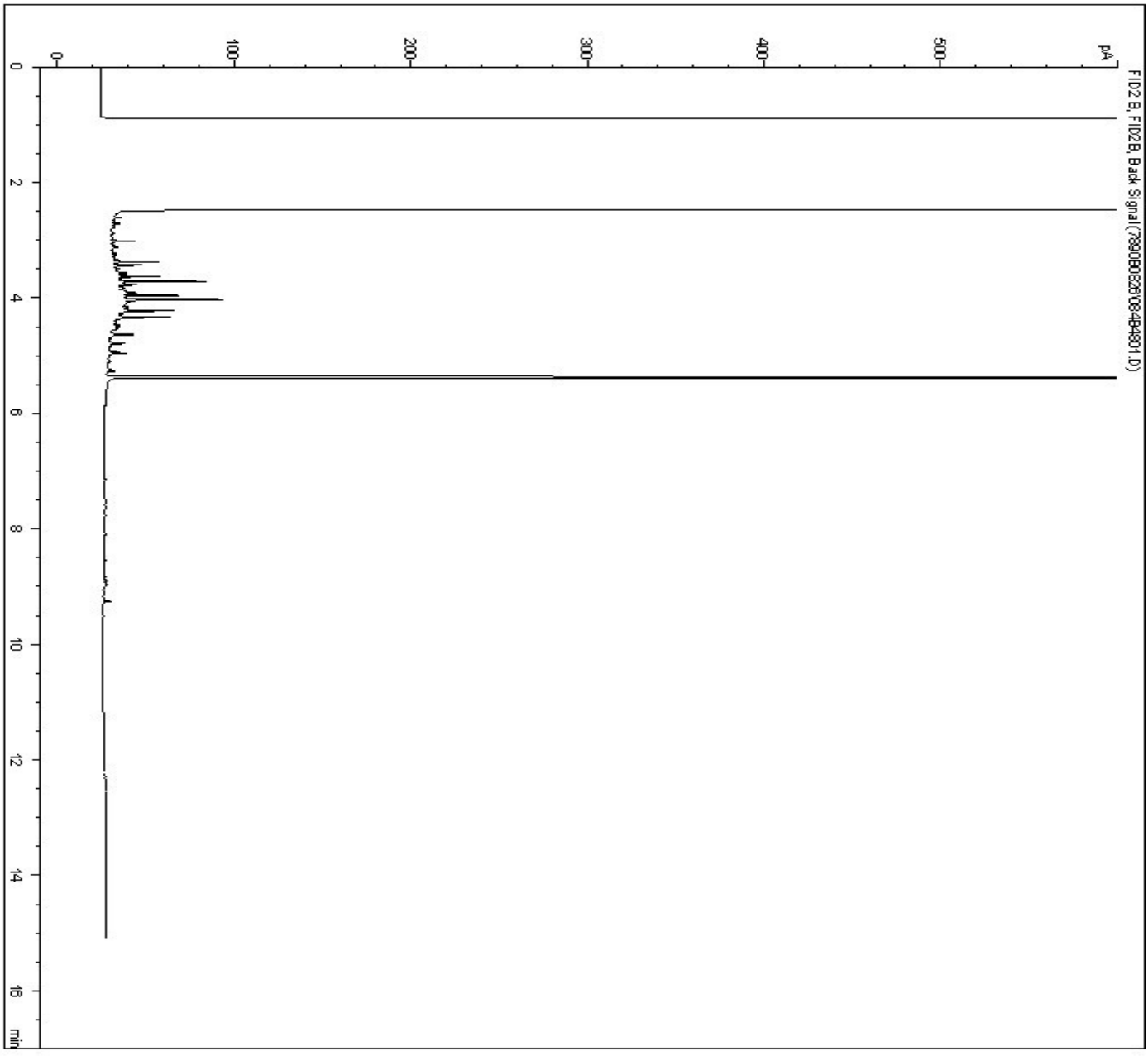
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0060

Client ID: 11W6-01 (0-5CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\084B4801.D
Sample Name: BI0060



*** End of Report ***

Instrument 1 2011/08/29 10:04:12 AM RC6

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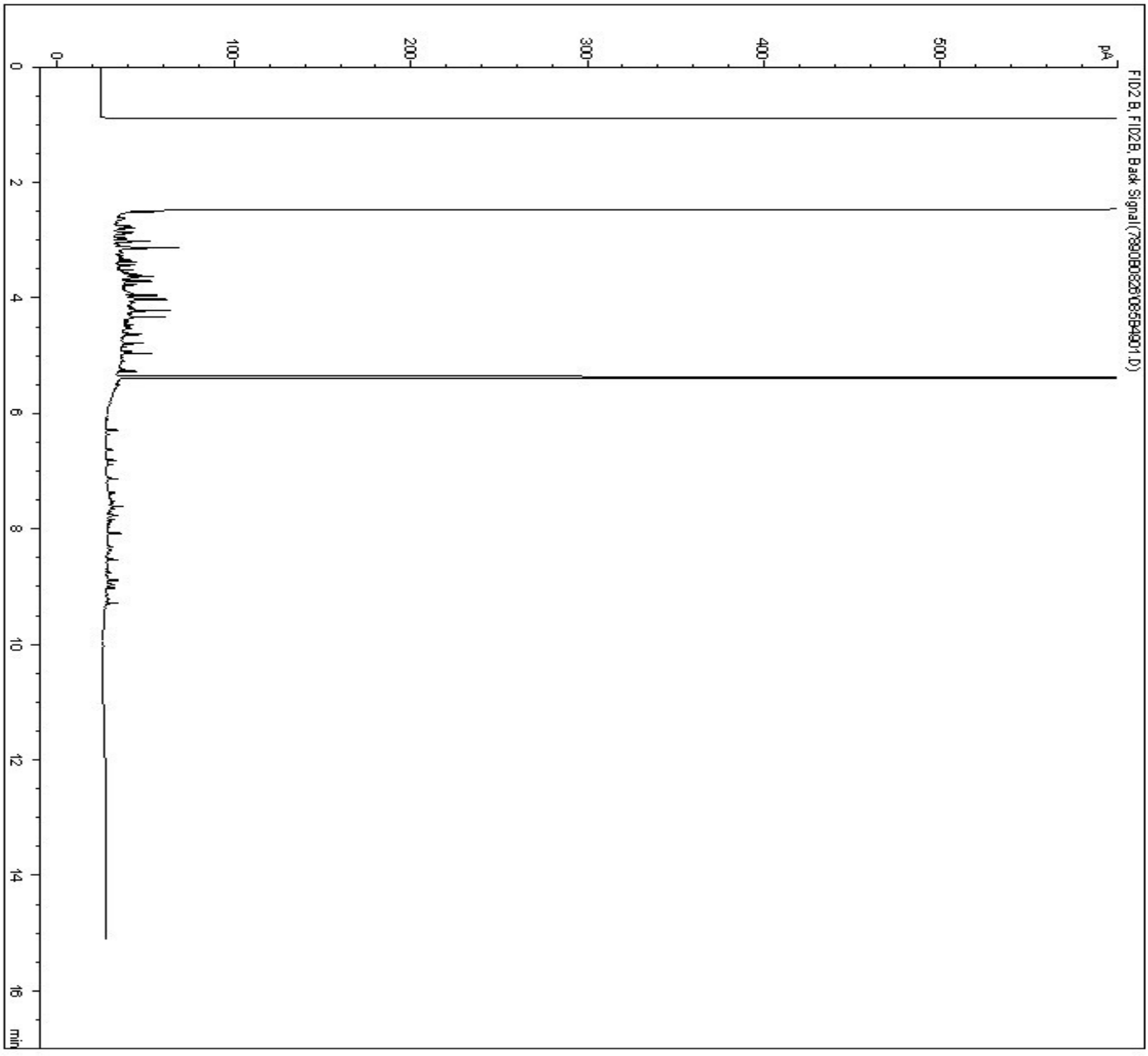
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0061

Client ID: 11W1-01 (0-5CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\085B4901.D
Sample Name: BI0061



*** End of Report ***

Instrument 1 2011/08/29 10:04:15 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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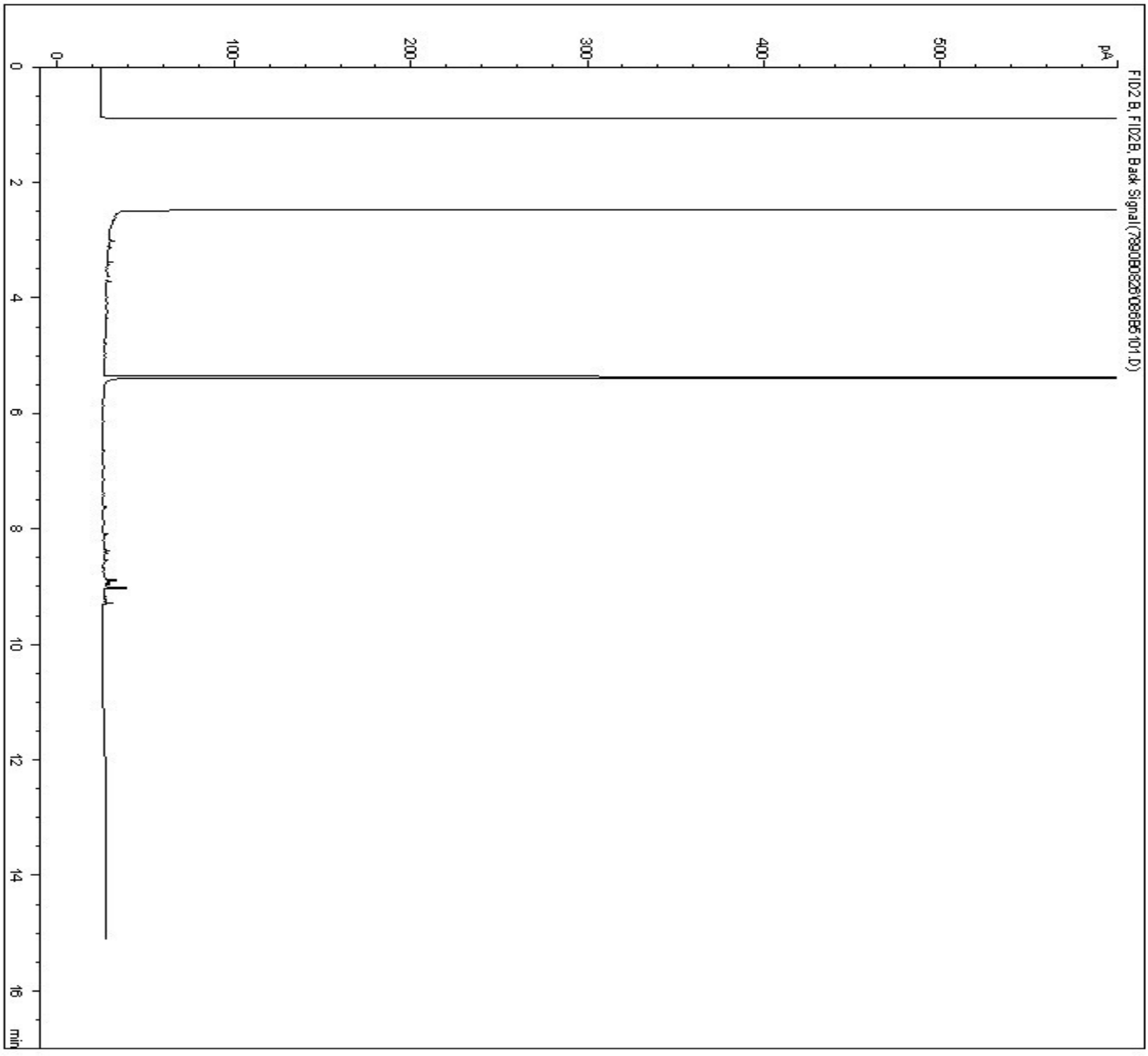
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0062

Client ID: 11W2-23 (30CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0826\086B5101.D
Sample Name: BI0062



*** End of Report ***

Instrument 1 2011/08/29 10:04:21 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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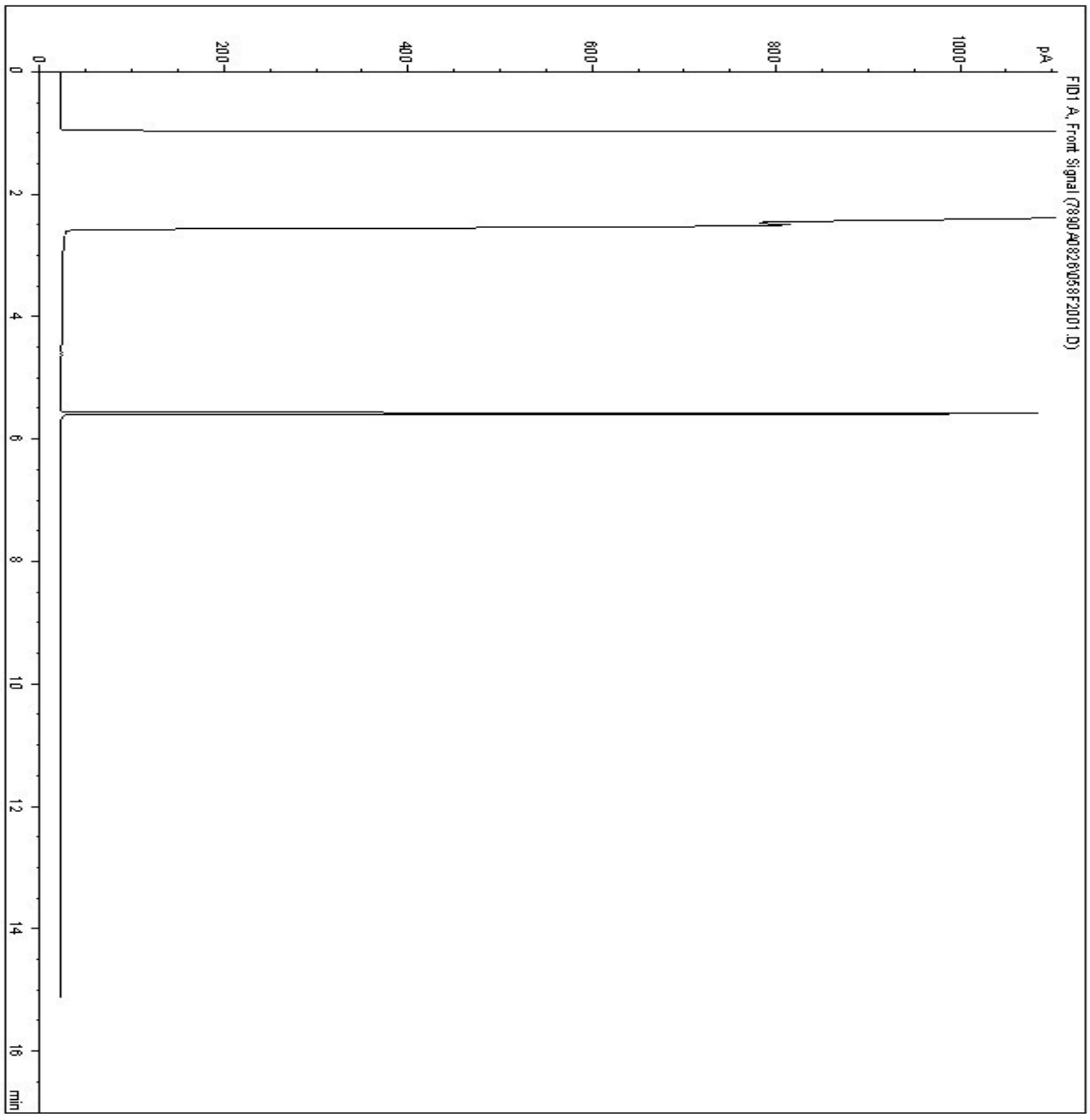
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0063

Client ID: 11W1-01 (15CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\058F2001.D
Sample Name: BI0063



*** End of Report ***

7890A GC 2011/08/28 9:56:32 AM AK8

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Maxxam

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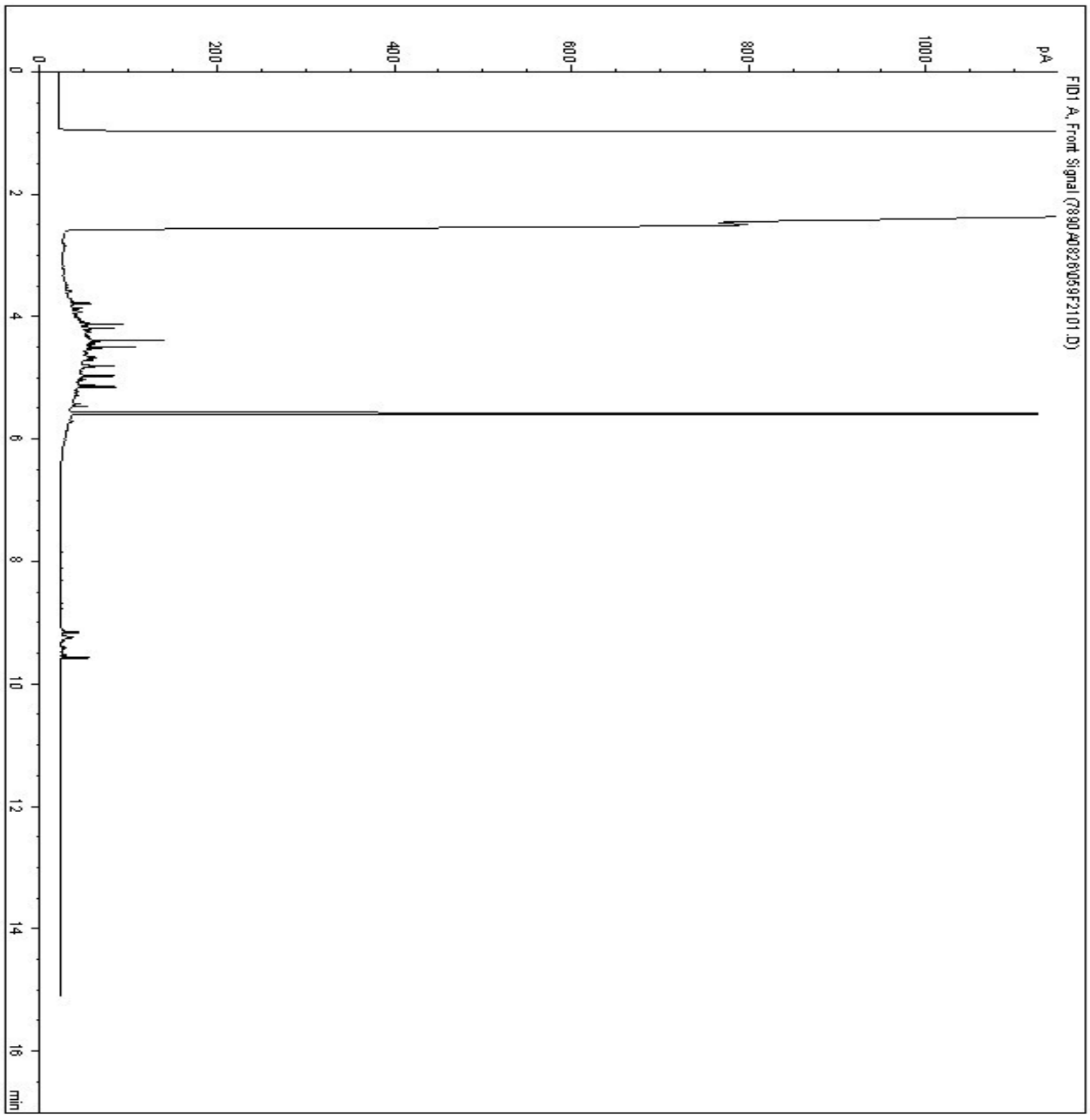
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0064

Client ID: 11W1-05 (25CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\059F2101.D
Sample Name: BI0064



*** End of Report ***

7890A GC 2011/08/28 9:56:35 AM AK8

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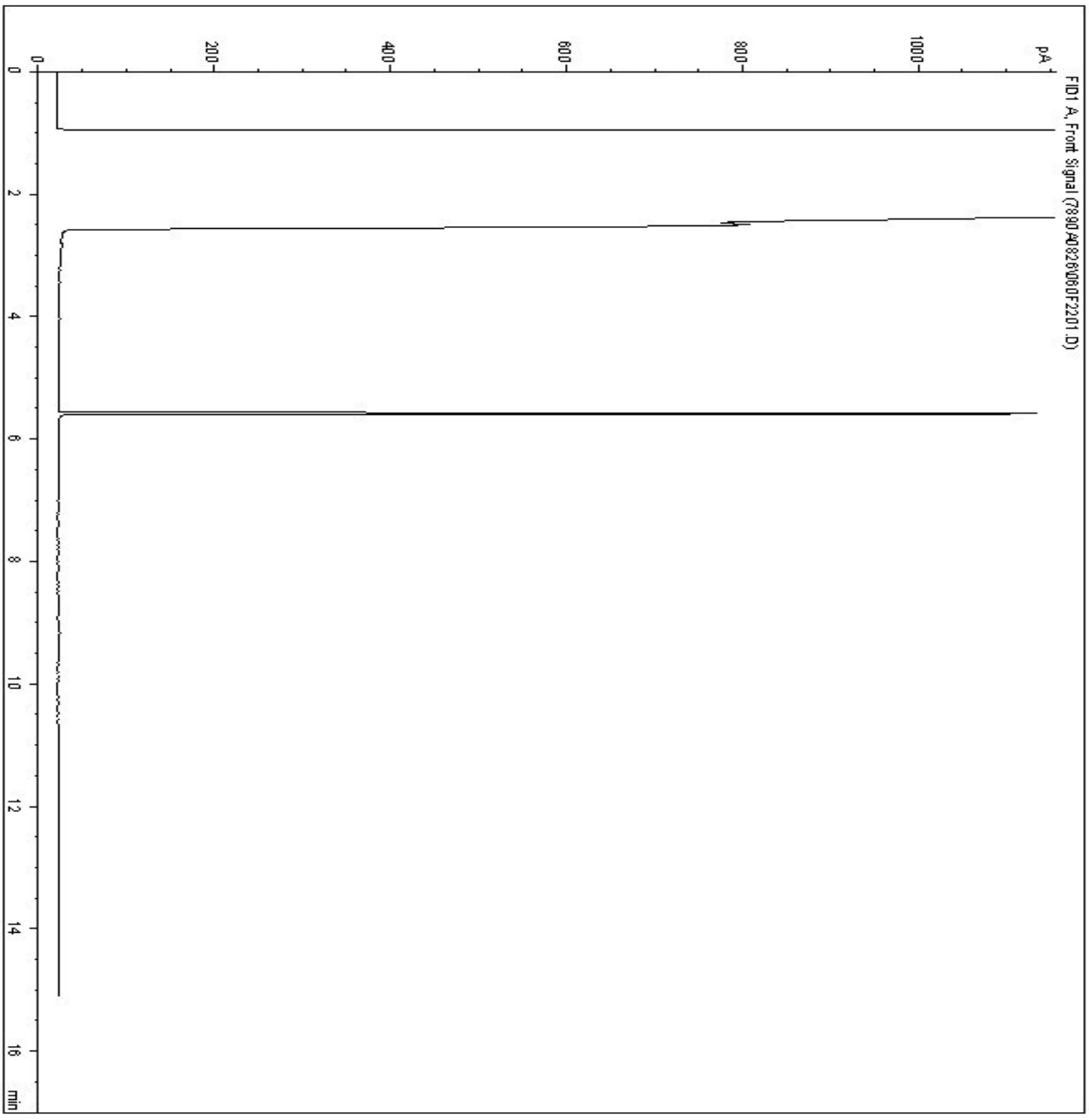
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0065

Client ID: 11W1-09 (20CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\060F2201.D
Sample Name: BI0065



*** End of Report ***

7890A GC 2011/08/28 9:56:38 AM AK8

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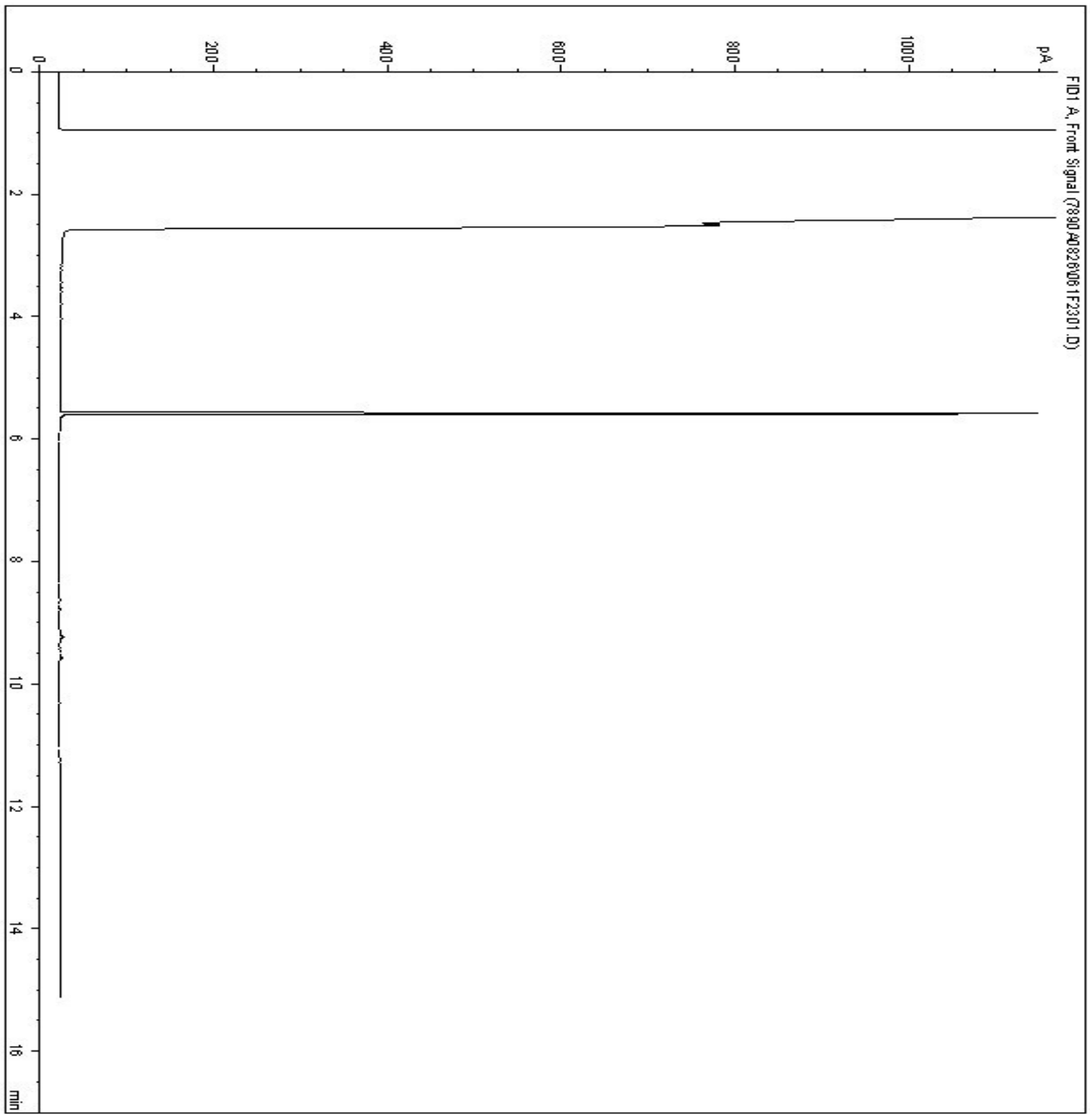
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0066

Client ID: 11W1-24 (20CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\061F2301.D
Sample Name: BI0066



*** End of Report ***

7890A GC 2011/08/28 9:56:41 AM AK8

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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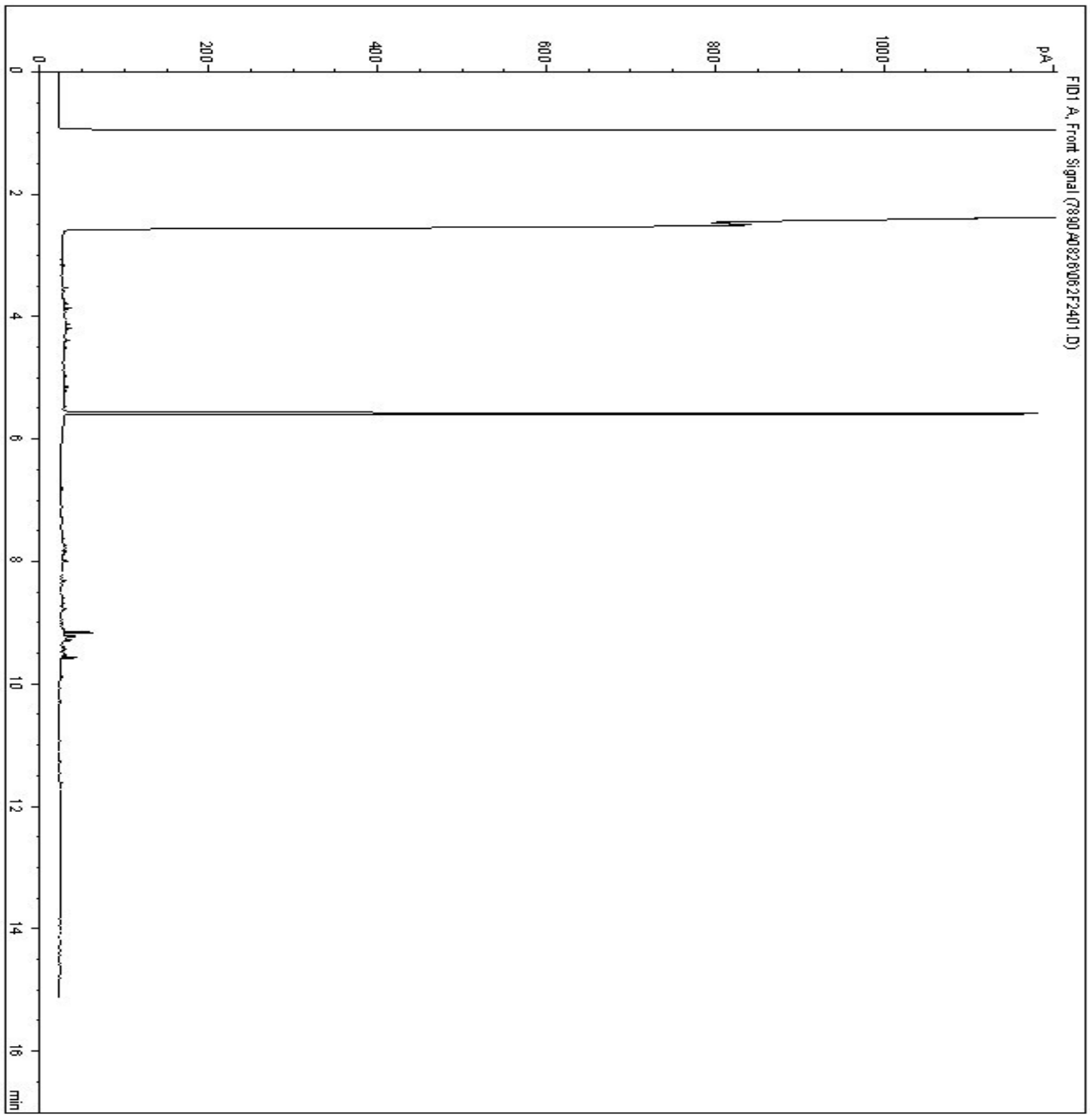
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0067

Client ID: 11W2-21 (25CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\062F2401.D
Sample Name: BI0067



*** End of Report ***

7890A GC 2011/08/28 9:56:44 AM AK8

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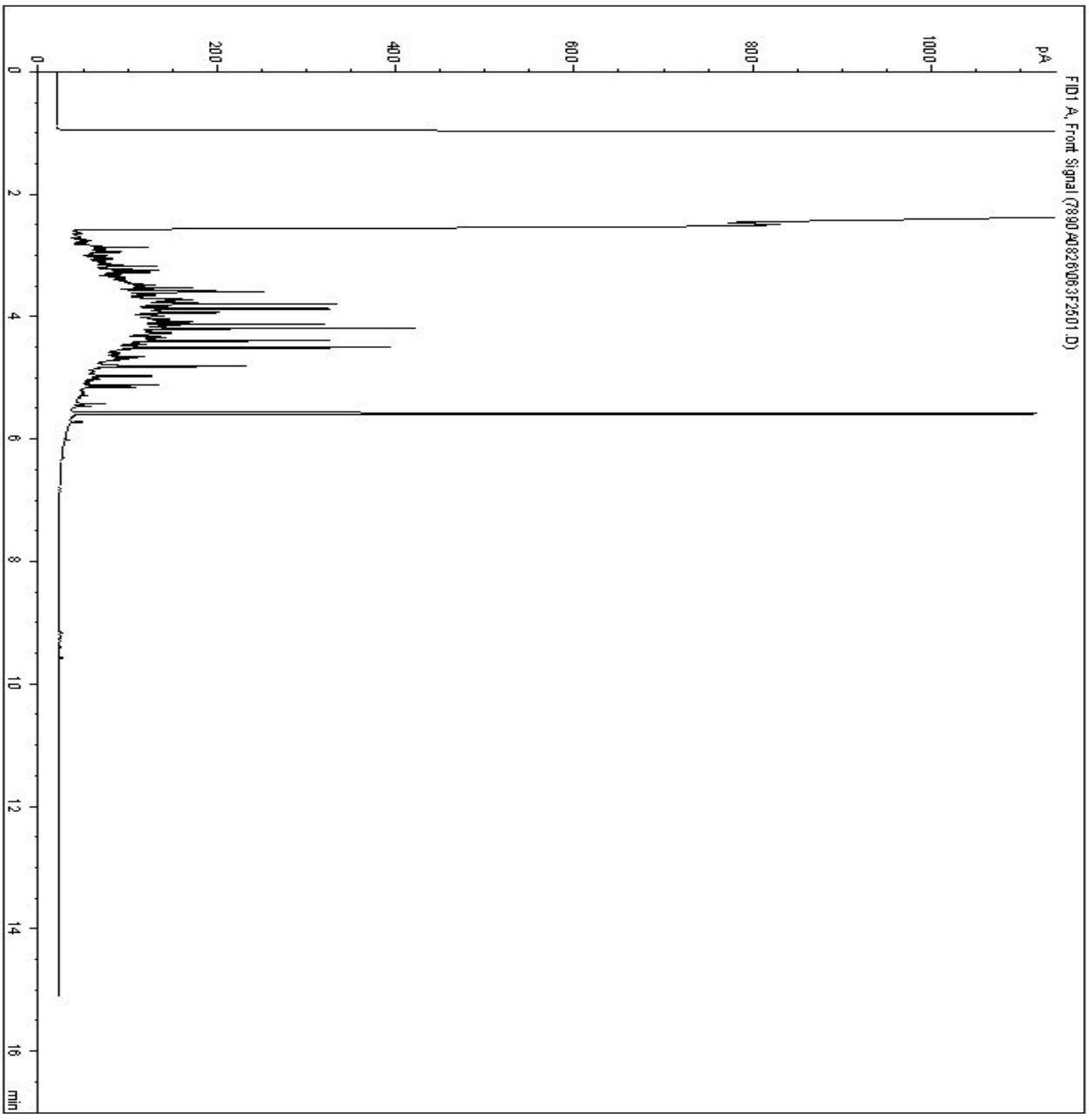
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0080

Client ID: 11W2-18 (25CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\063F2501.D
Sample Name: BI0080



*** End of Report ***

7890A GC 2011/08/28 9:56:47 AM AK8

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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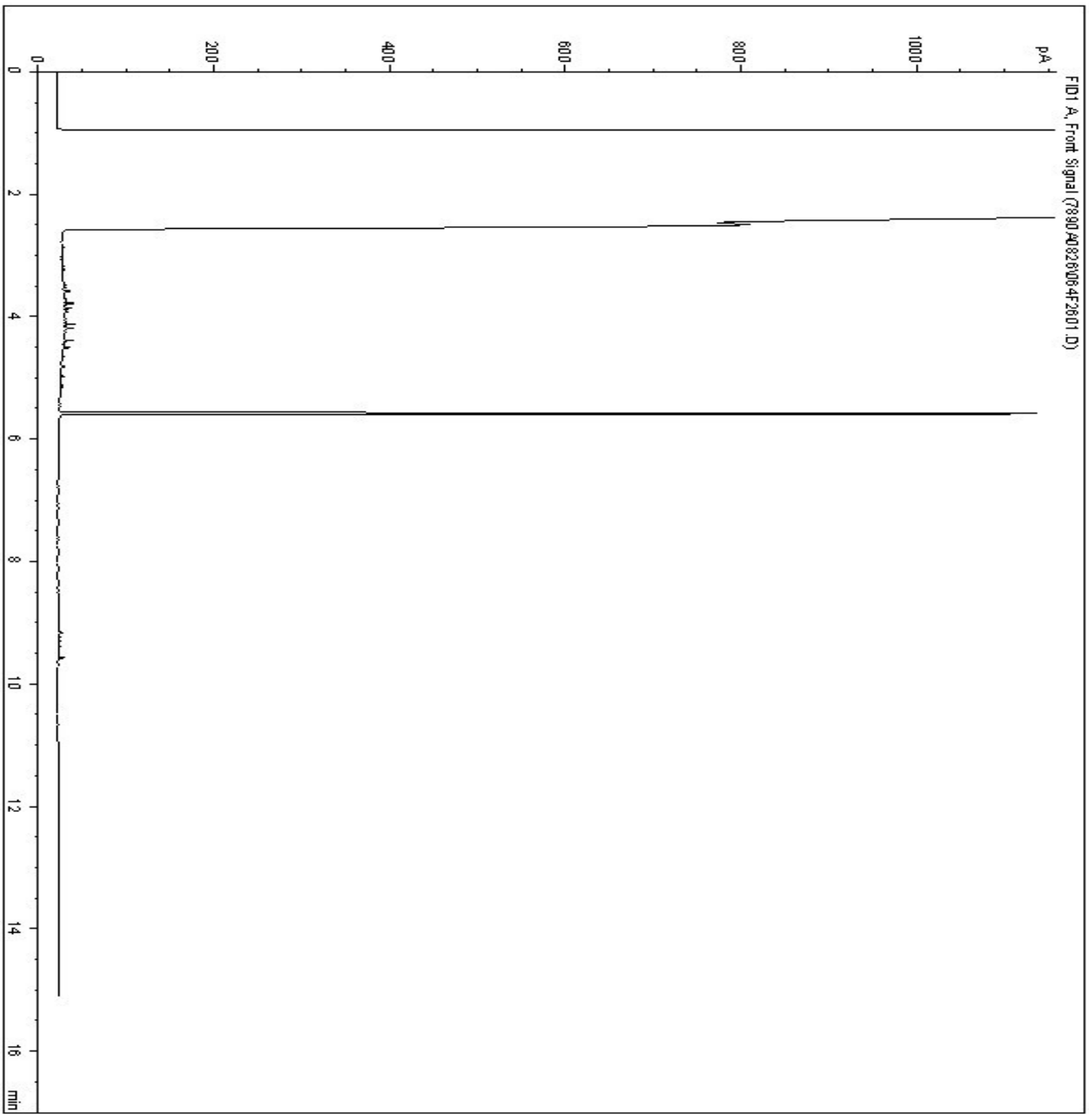
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0081

Client ID: 11W2-18 (50CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\064F2601.D
Sample Name: BI0081



*** End of Report ***

7890A GC 2011/08/28 9:56:50 AM AK8

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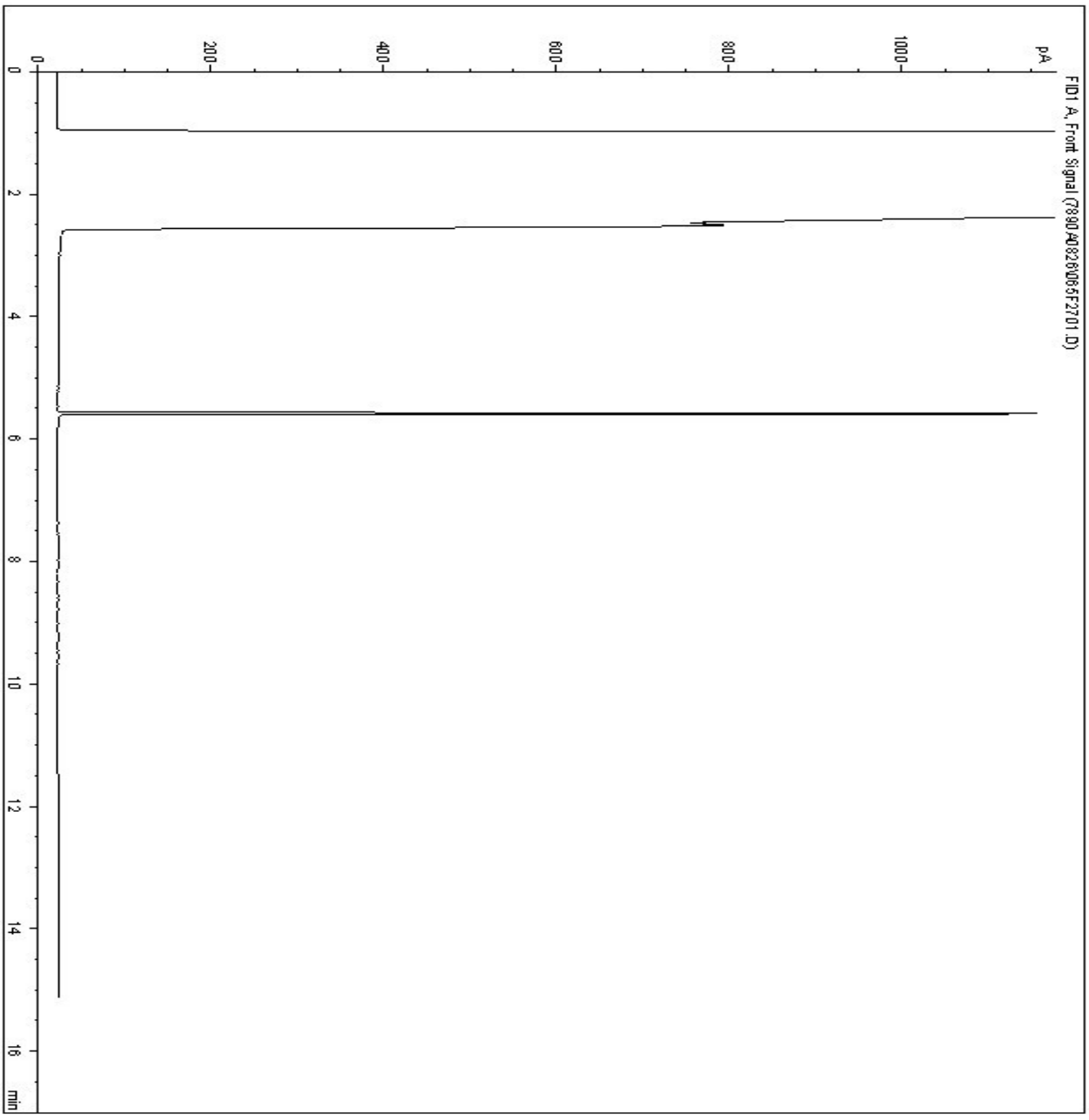
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0082

Client ID: 11W2-19 (20CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\065F2701.D
Sample Name: BI0082



*** End of Report ***

7890A GC 2011/08/28 9:56:53 AM AK8

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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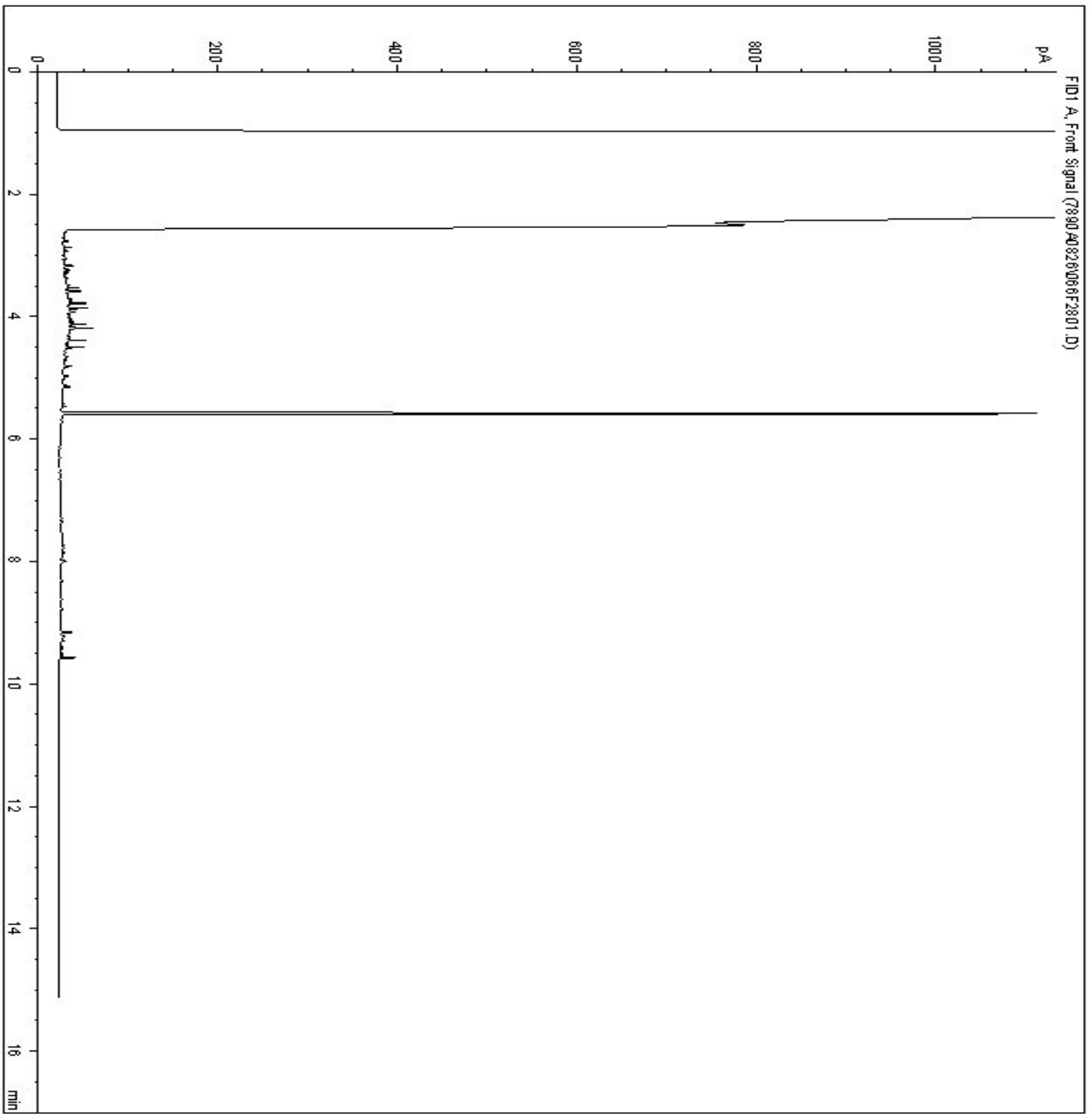
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0083

Client ID: 11W2-8 (20CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\066F2801.D
Sample Name: BI0083



*** End of Report ***

7890A GC 2011/08/28 9:56:56 AM AK8

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam

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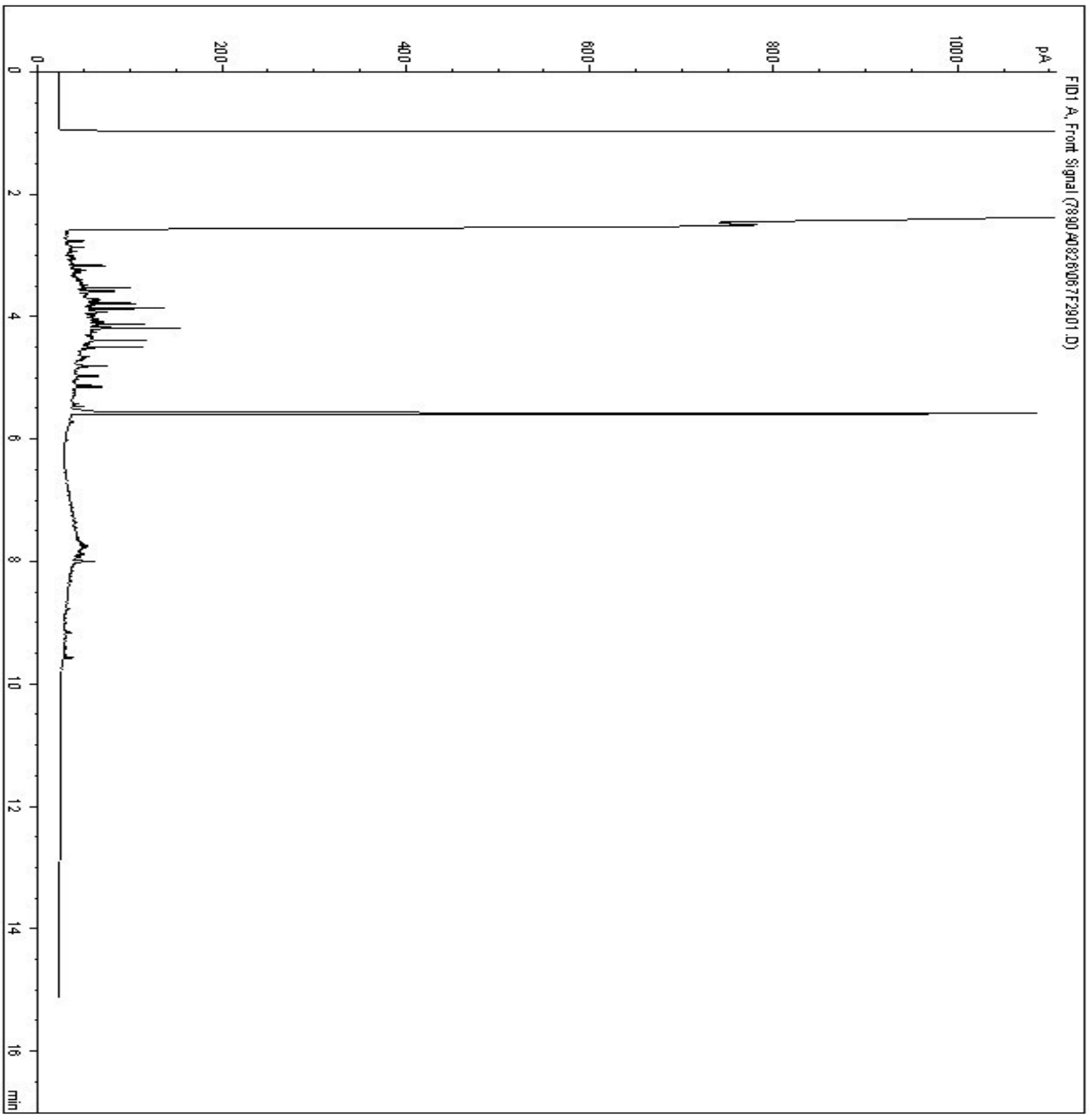
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0084

Client ID: 11W2-20 (25CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\067F2901.D
Sample Name: BI0084



*** End of Report ***

7890A GC 2011/08/28 9:56:58 AM AK8

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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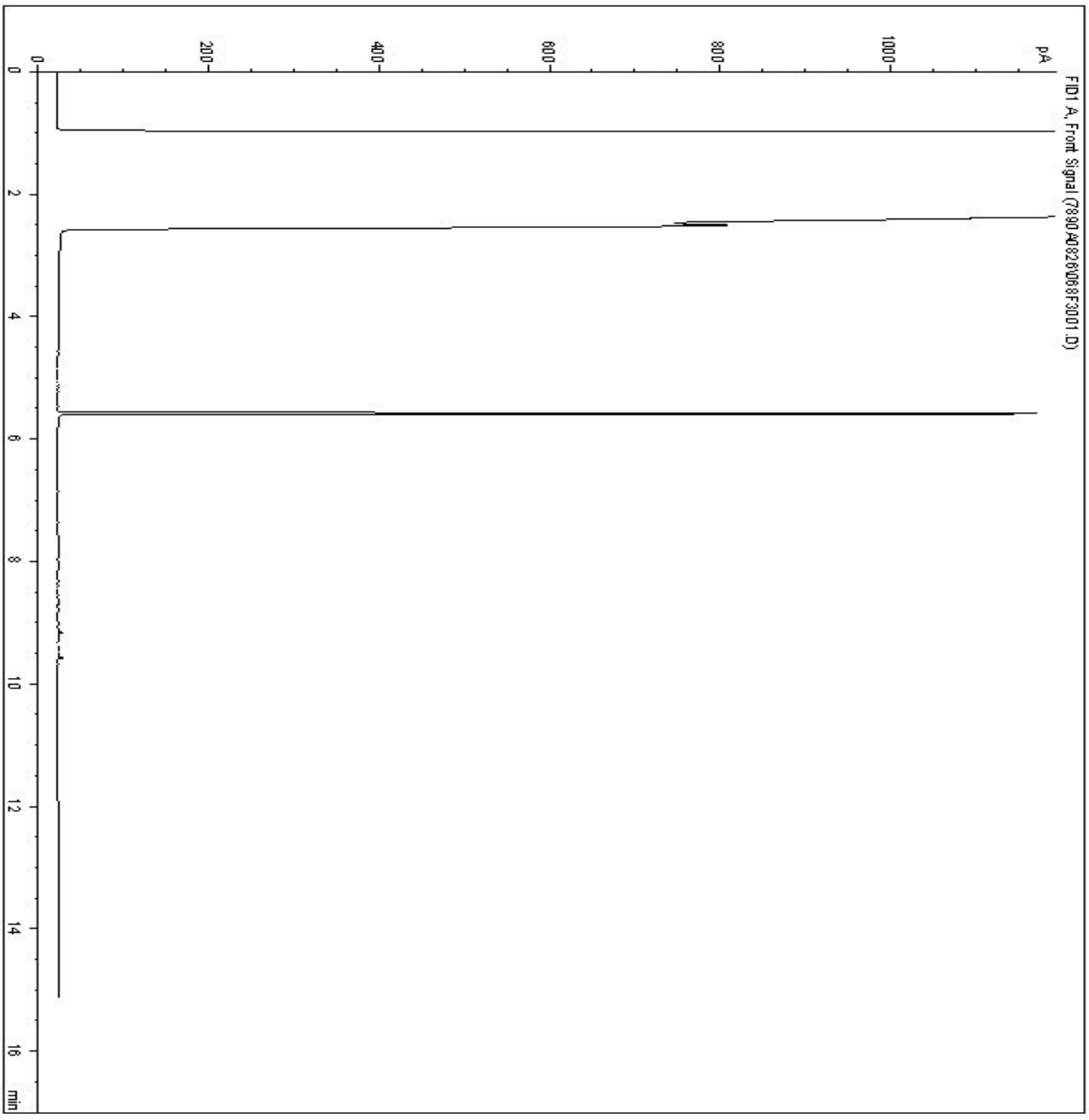
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0085

Client ID: 11W2-7 (20CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\068F3001.D
Sample Name: BI0085



*** End of Report ***

7890A GC 2011/08/28 9:57:01 AM AK8

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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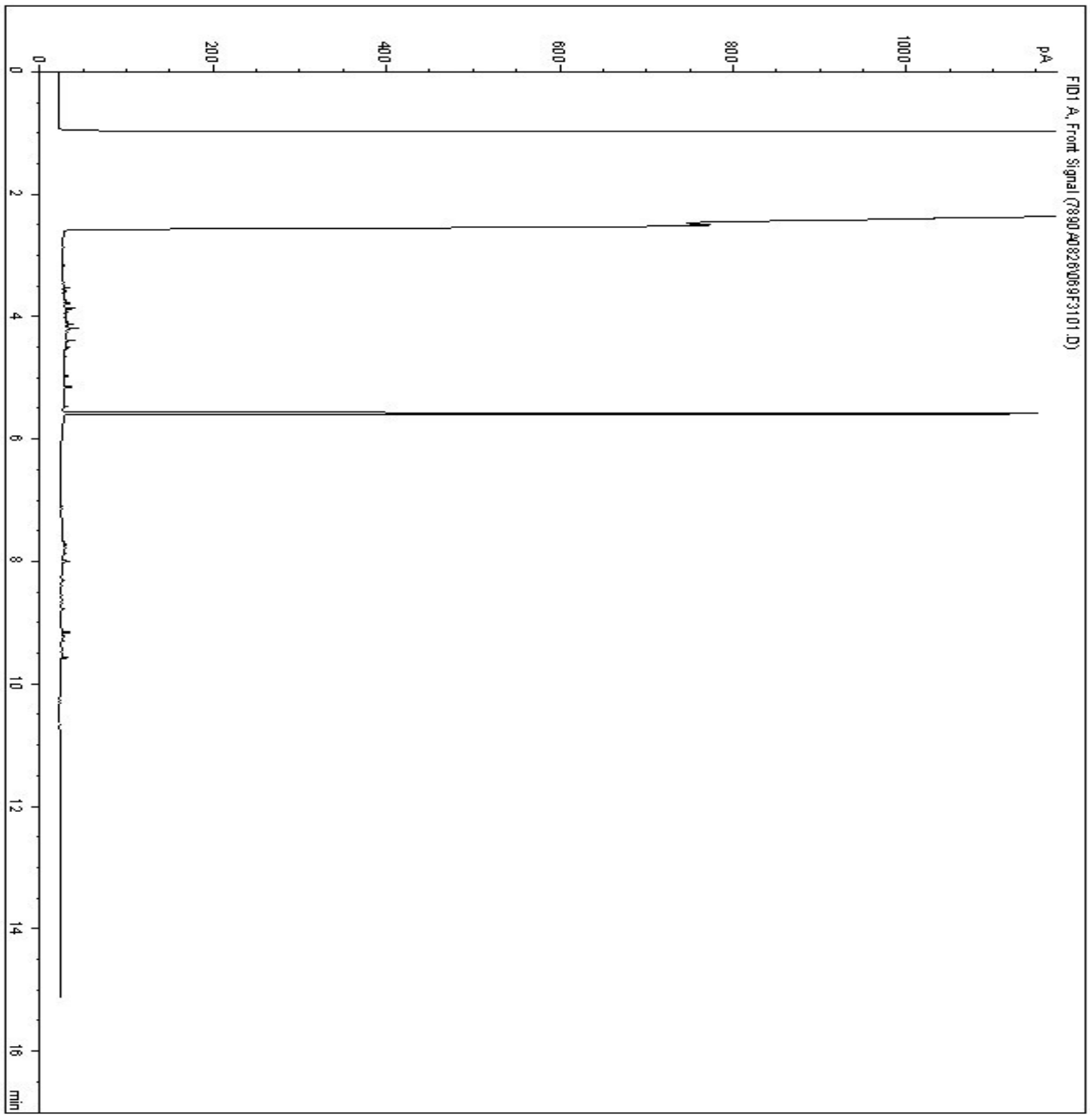
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0086

Client ID: 11W2-4 (25CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\069F3101.D
Sample Name: BI0086



*** End of Report ***

7890A GC 2011/08/28 9:57:04 AM AK8

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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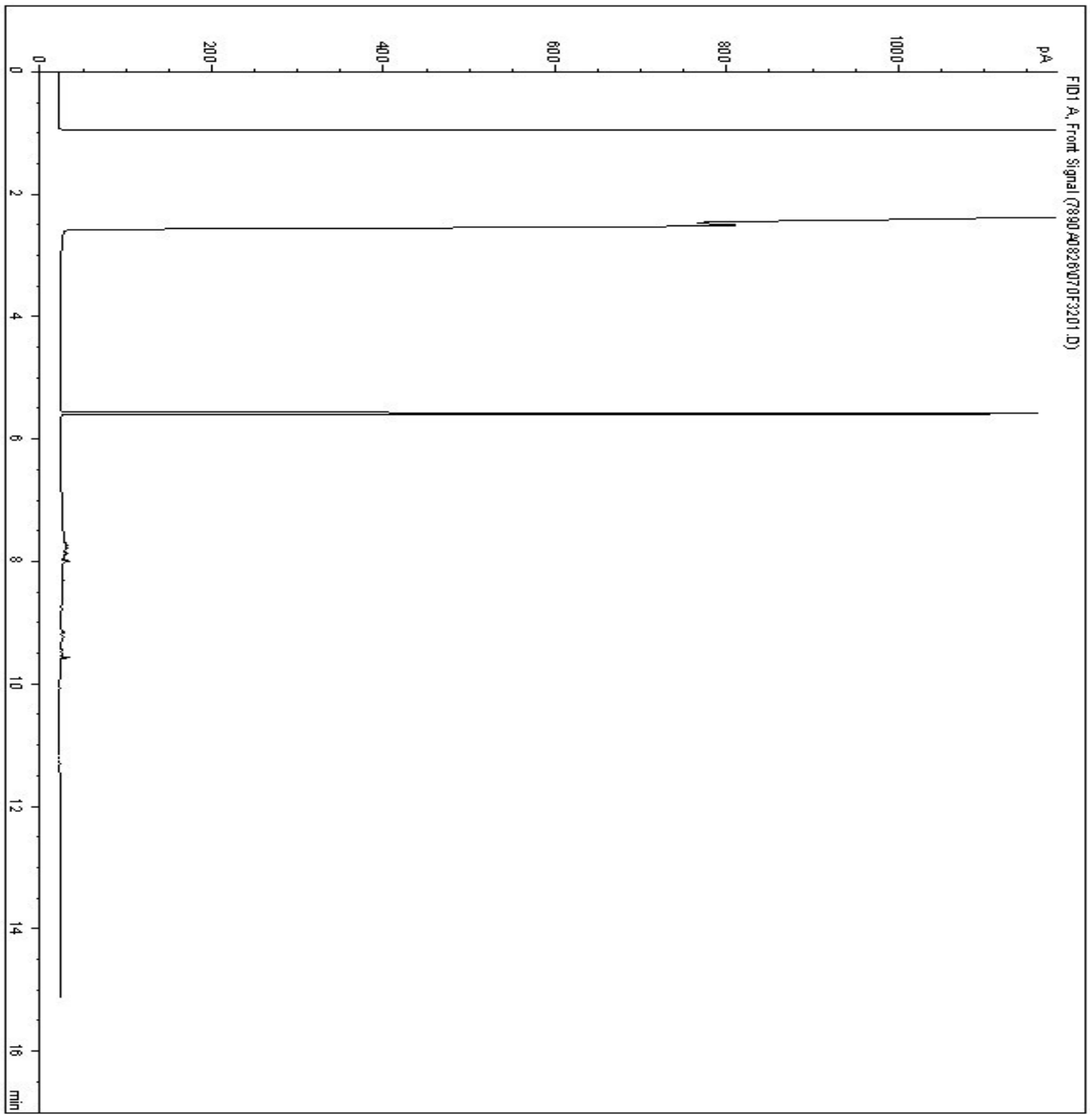
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0087

Client ID: 11W2-10 (25CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\070F3201.D
Sample Name: BI0087



*** End of Report ***

7890A GC 2011/08/28 9:57:07 AM AK8

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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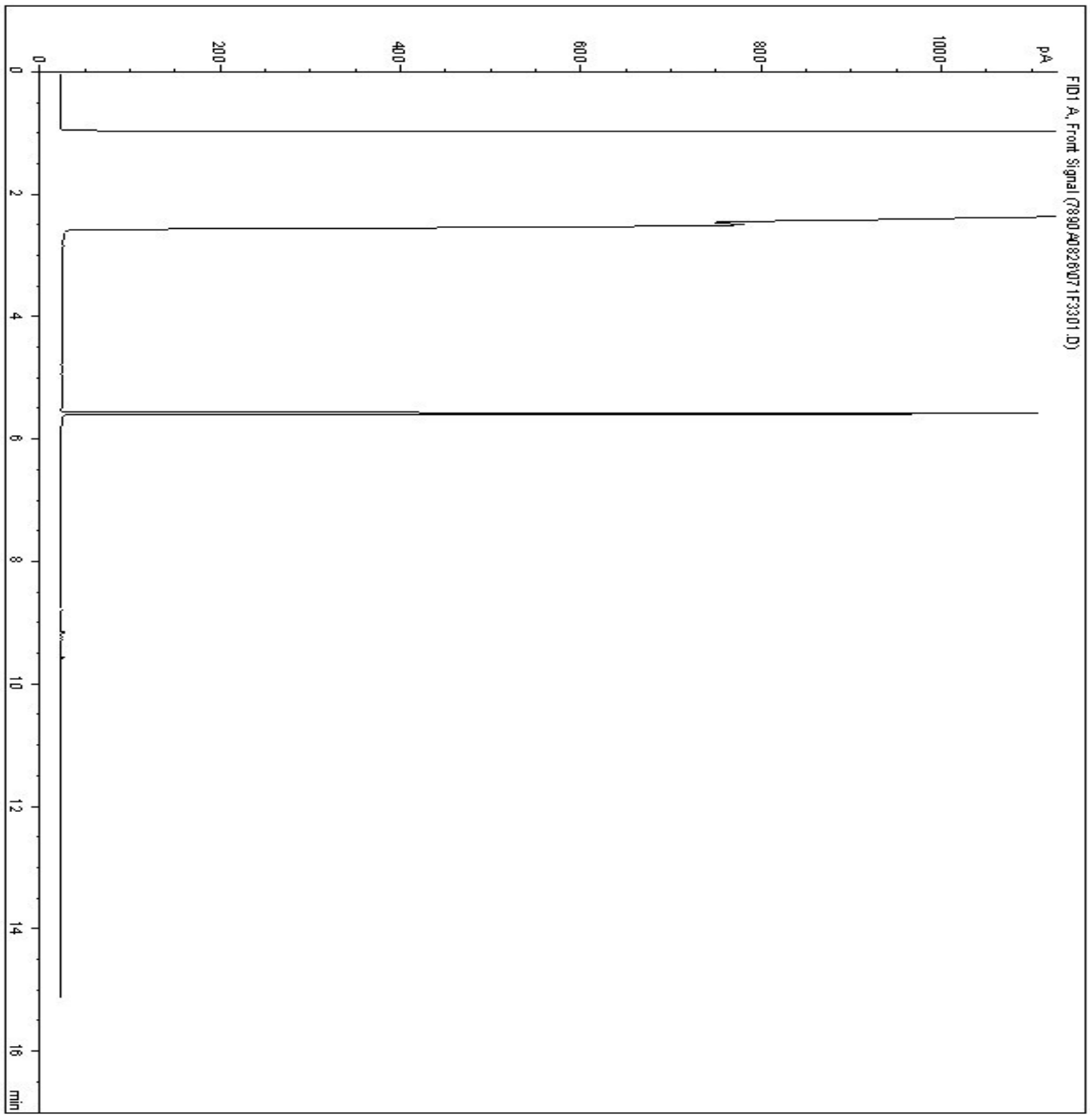
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0088

Client ID: 11W2-13 (25CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\071F3301.D
Sample Name: BI0088



*** End of Report ***

7890A GC 2011/08/28 9:57:10 AM AK8

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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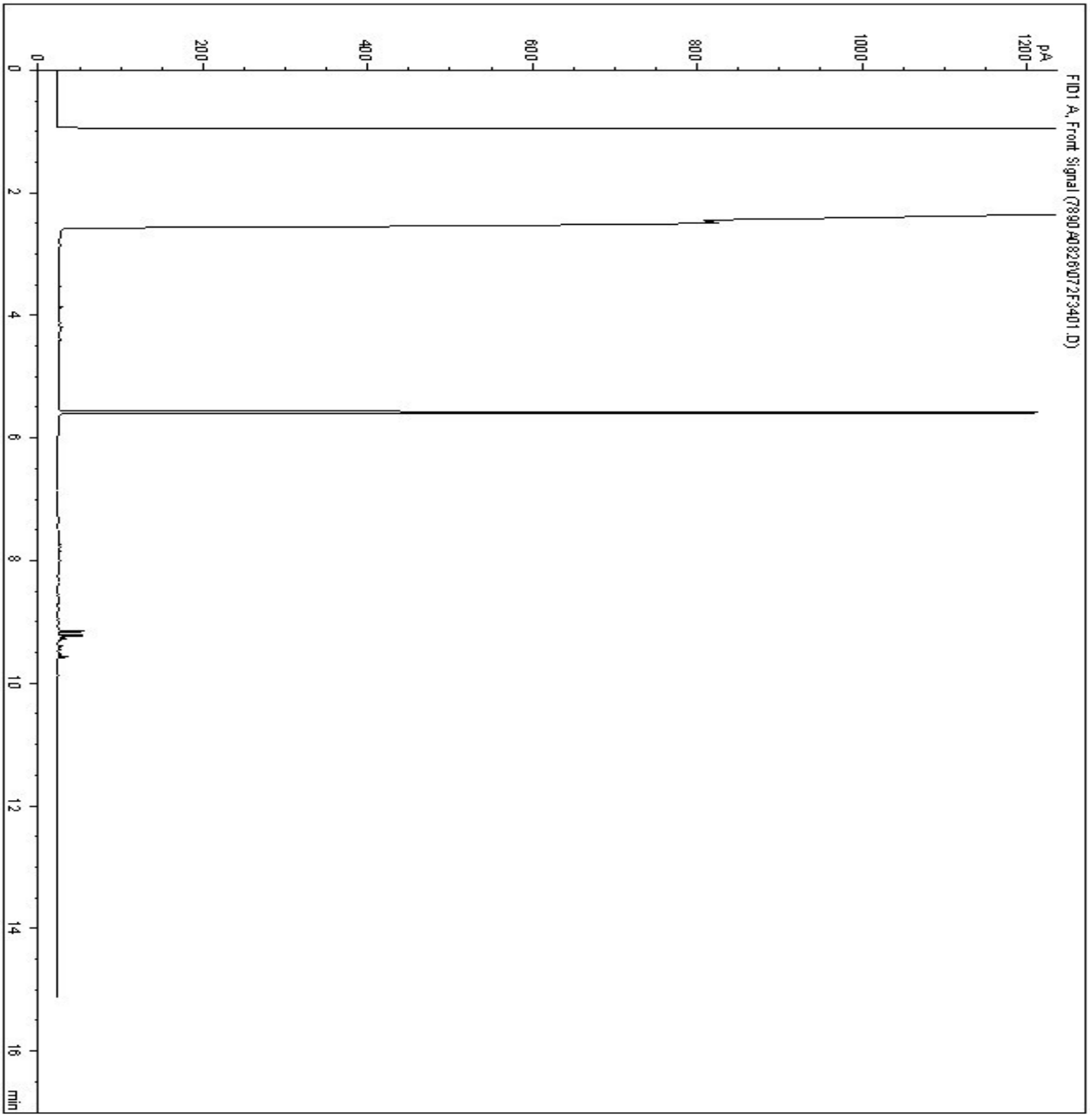
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0089

Client ID: 11W2-2 (20CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\072F3401.D
Sample Name: BI0089



*** End of Report ***

7890A GC 2011/08/28 9:57:13 AM AK8

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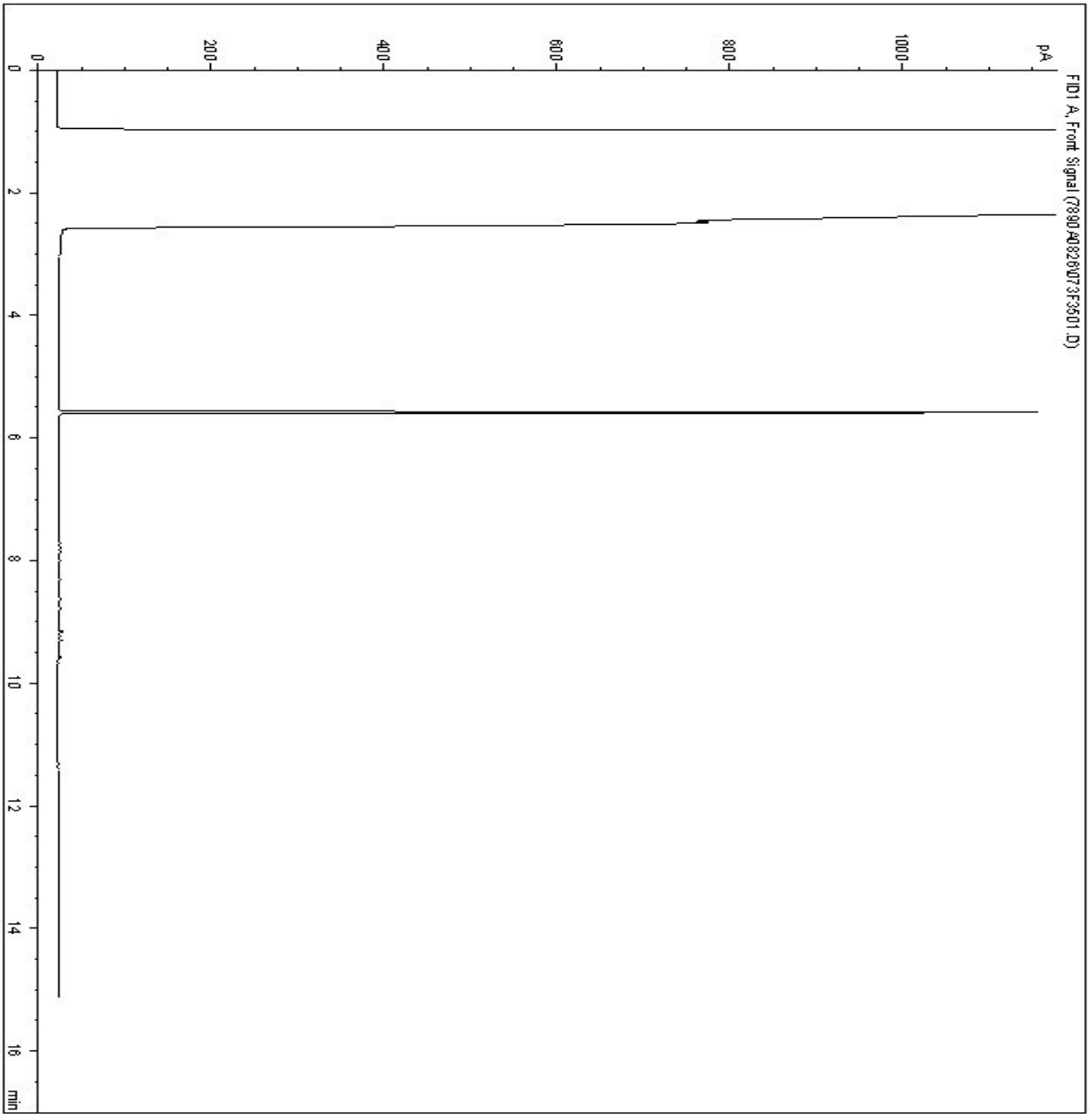
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0090

Client ID: 11W2-17 (20CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\073F3501.D
Sample Name: BI0090



*** End of Report ***

7890A GC 2011/08/28 9:57:15 AM AK8

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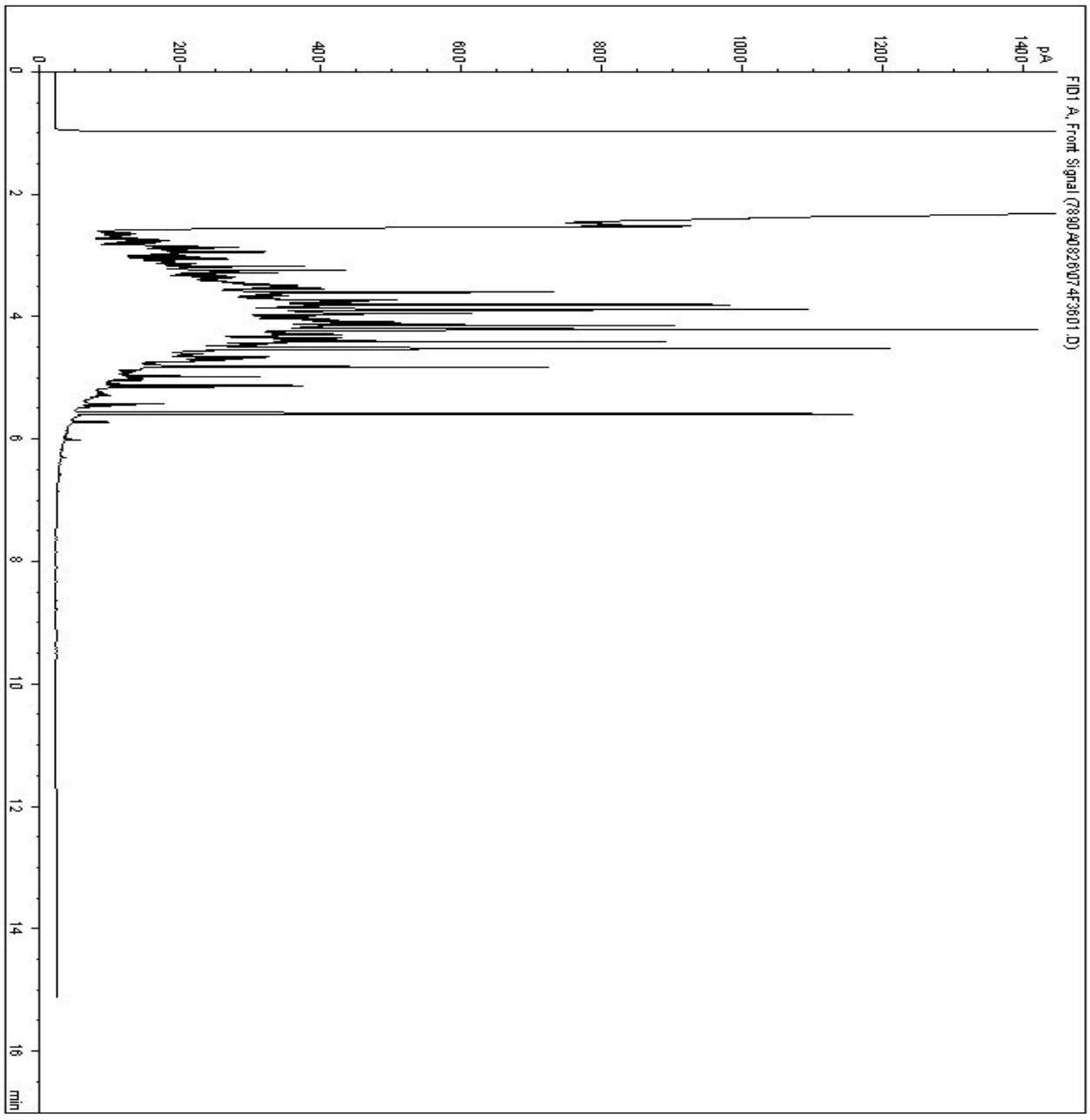
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0091

Client ID: 11W4-01 (25CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\074F3601.D
Sample Name: BI0091



*** End of Report ***

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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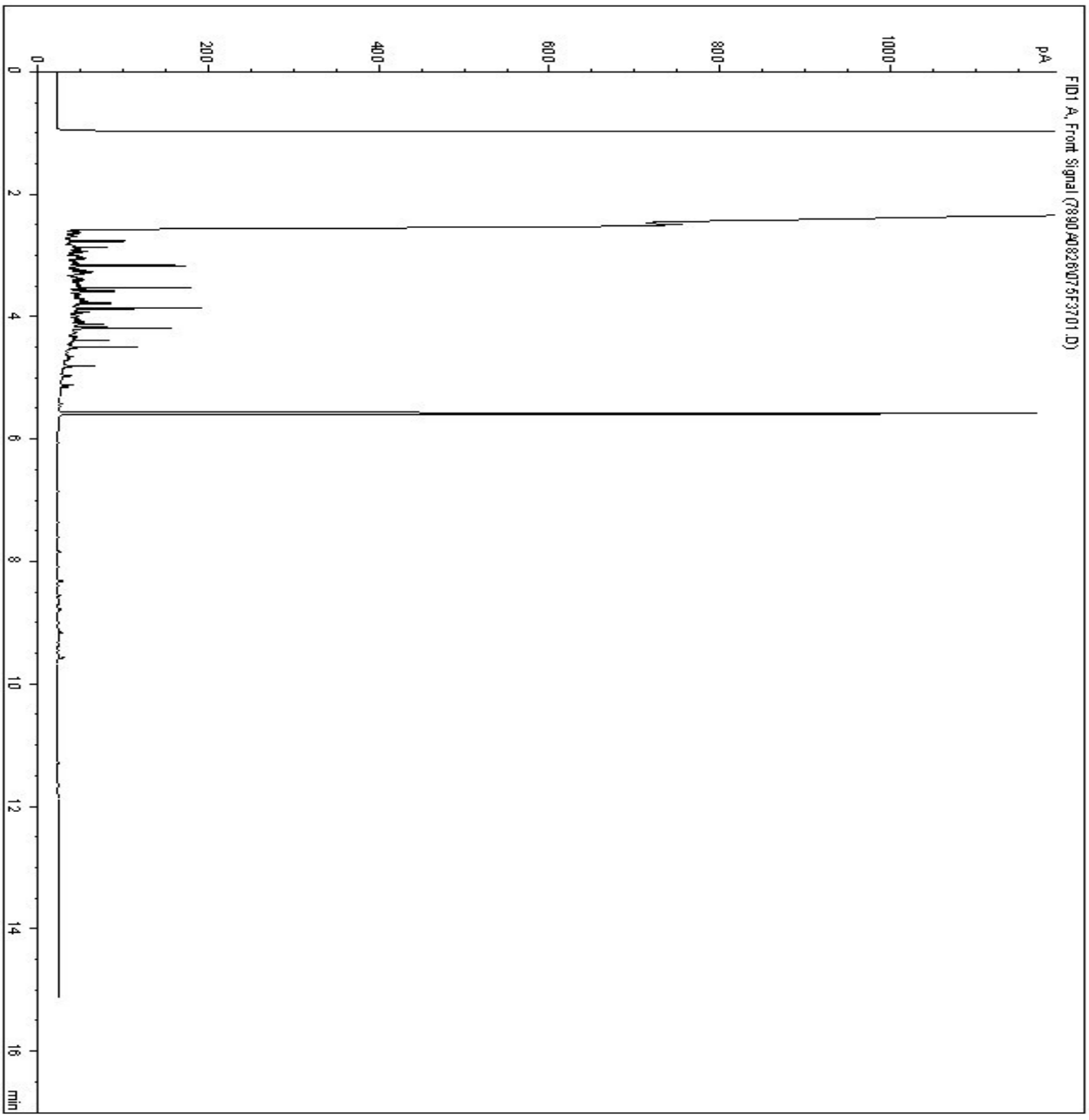
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0162

Client ID: 11W3-02 (10CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\075F3701.D
Sample Name: BI0162



*** End of Report ***

7890A GC 2011/08/28 9:57:21 AM AK8

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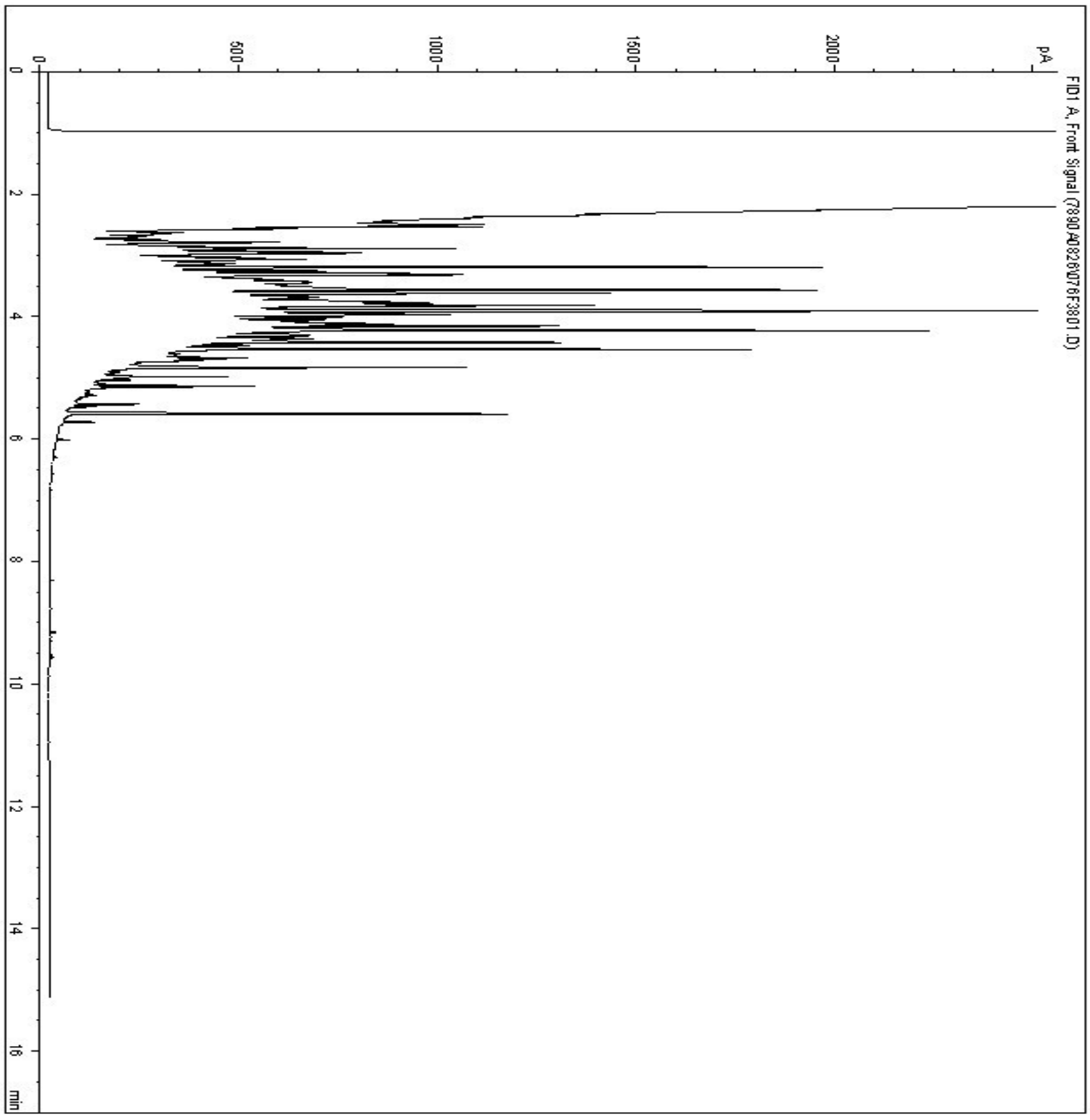
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0163

Client ID: 11W4-10 (50CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\076F3801.D
Sample Name: BI0163



*** End of Report ***

7890A GC 2011/08/28 9:57:24 AM AK8

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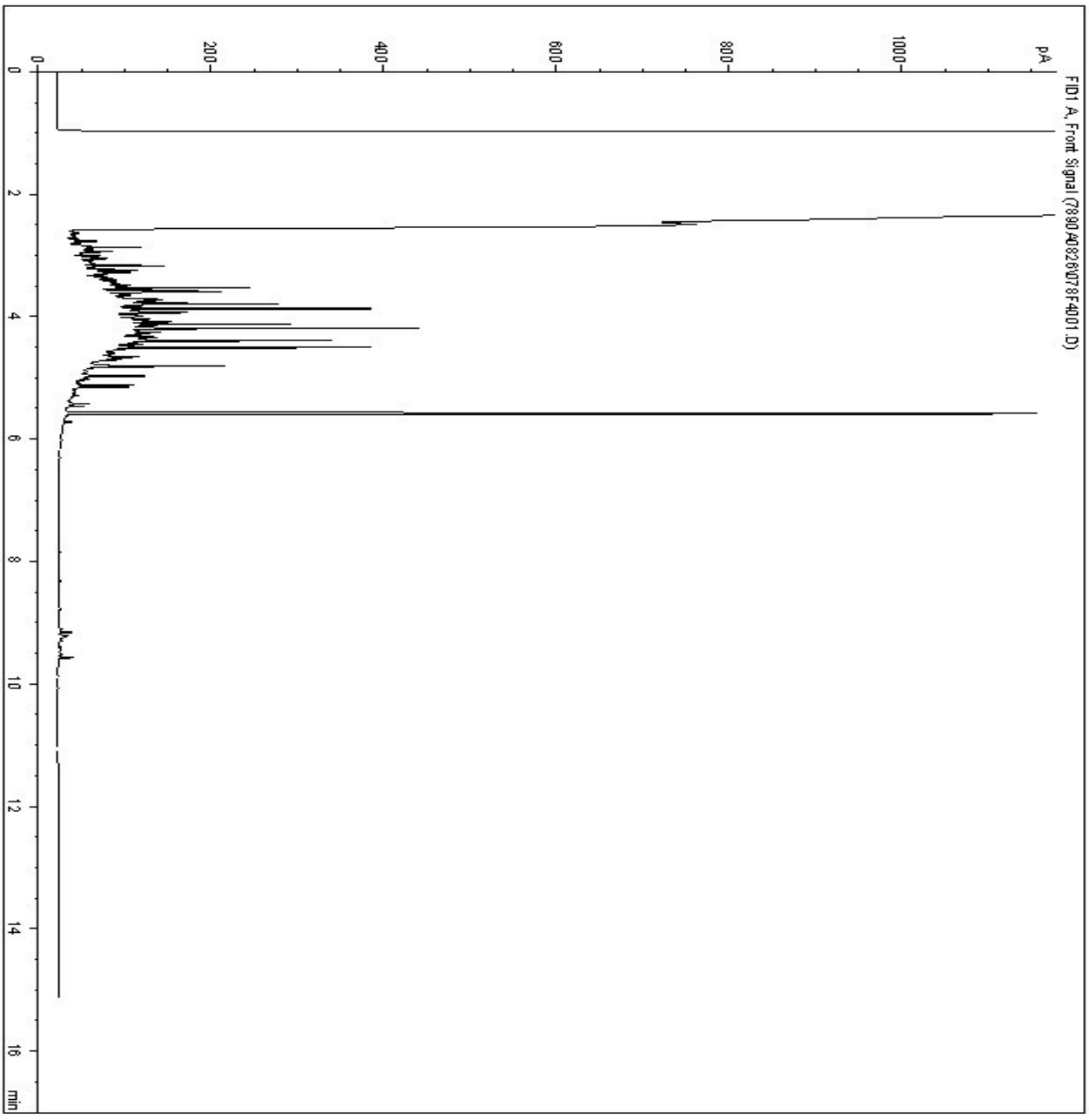
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0164

Client ID: 11W3-01 (20CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0826\078F4001.D
Sample Name: BI0164



*** End of Report ***

7890A GC 2011/08/28 9:57:30 AM AK8

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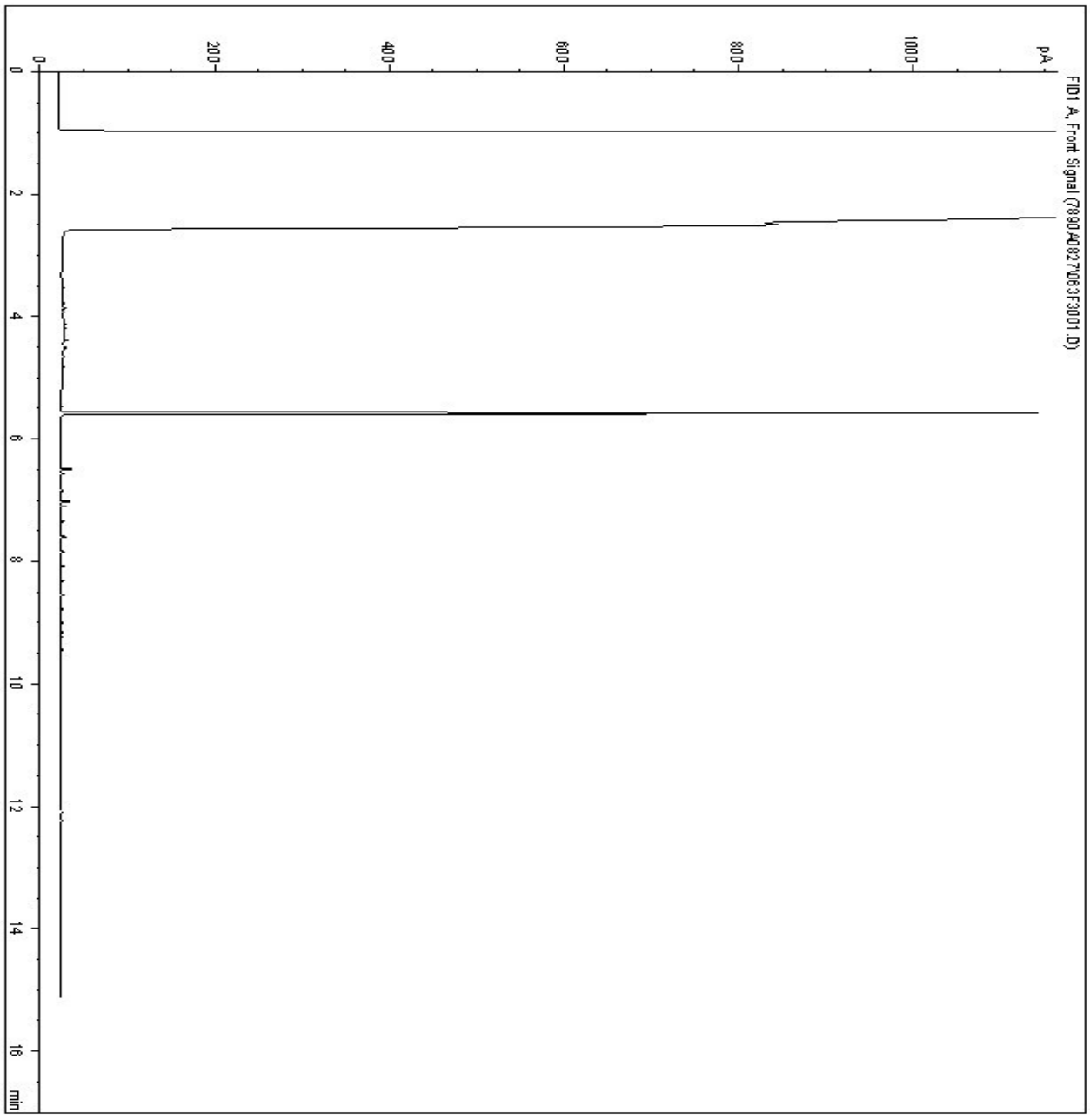
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0165

Client ID: 11W7-02 (10CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\063F3001.D
Sample Name: BI0165



*** End of Report ***

7890A GC 2011/08/28 9:43:51 AM AK8

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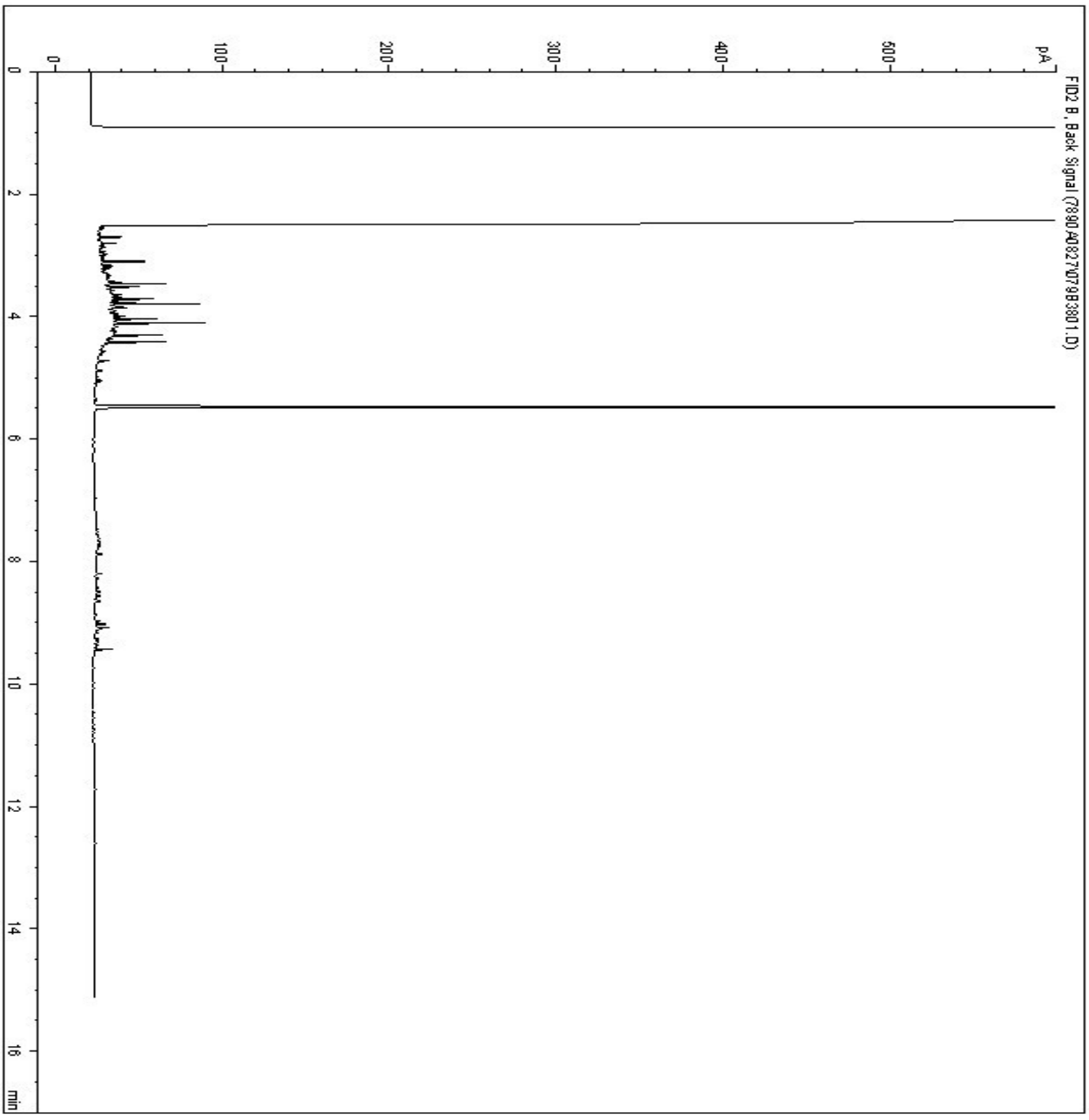
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0166

Client ID: 11W3-10 (20CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\079B3801.D
Sample Name: BI0166



*** End of Report ***

7890A GC 2011/08/28 9:44:14 AM AK8

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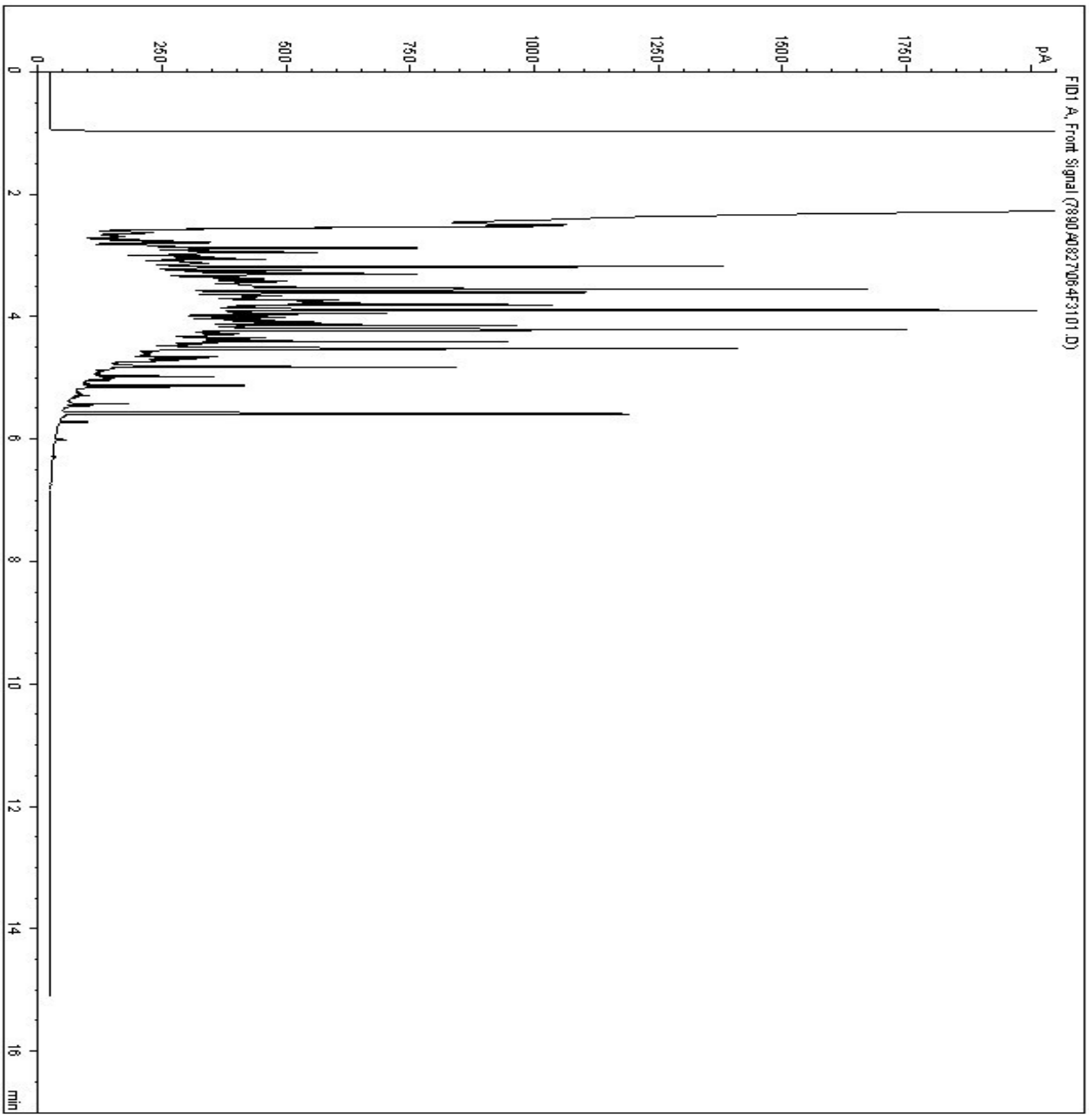
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0167

Client ID: 11W4-01 (75CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\064F3101.D
Sample Name: BI0167



*** End of Report ***

7890A GC 2011/08/28 9:43:54 AM AK8

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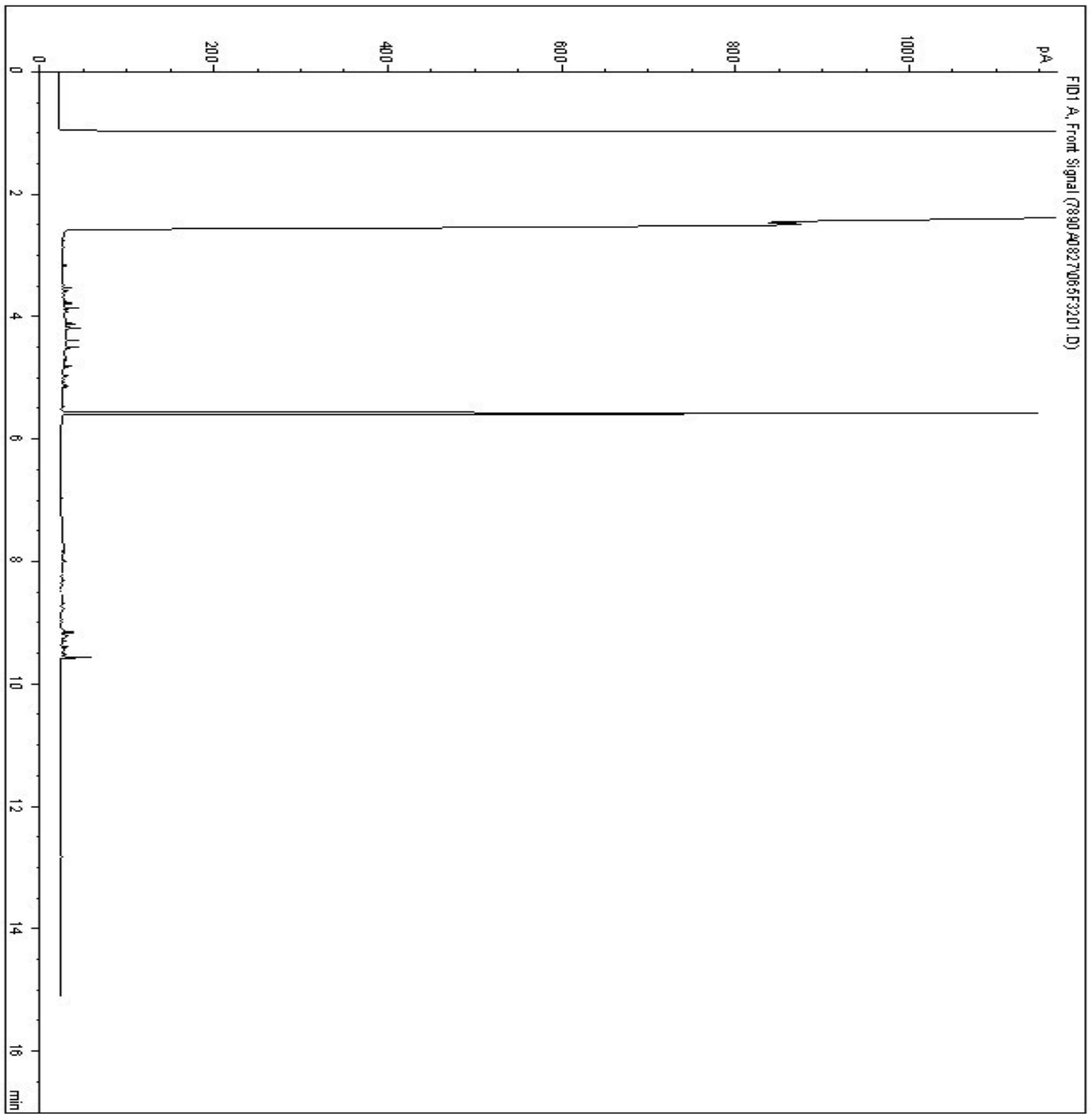
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0168

Client ID: 11W3-04 (25CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\065F3201.D
Sample Name: BI0168



*** End of Report ***

7890A GC 2011/08/28 9:43:57 AM AK8

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Maxxam

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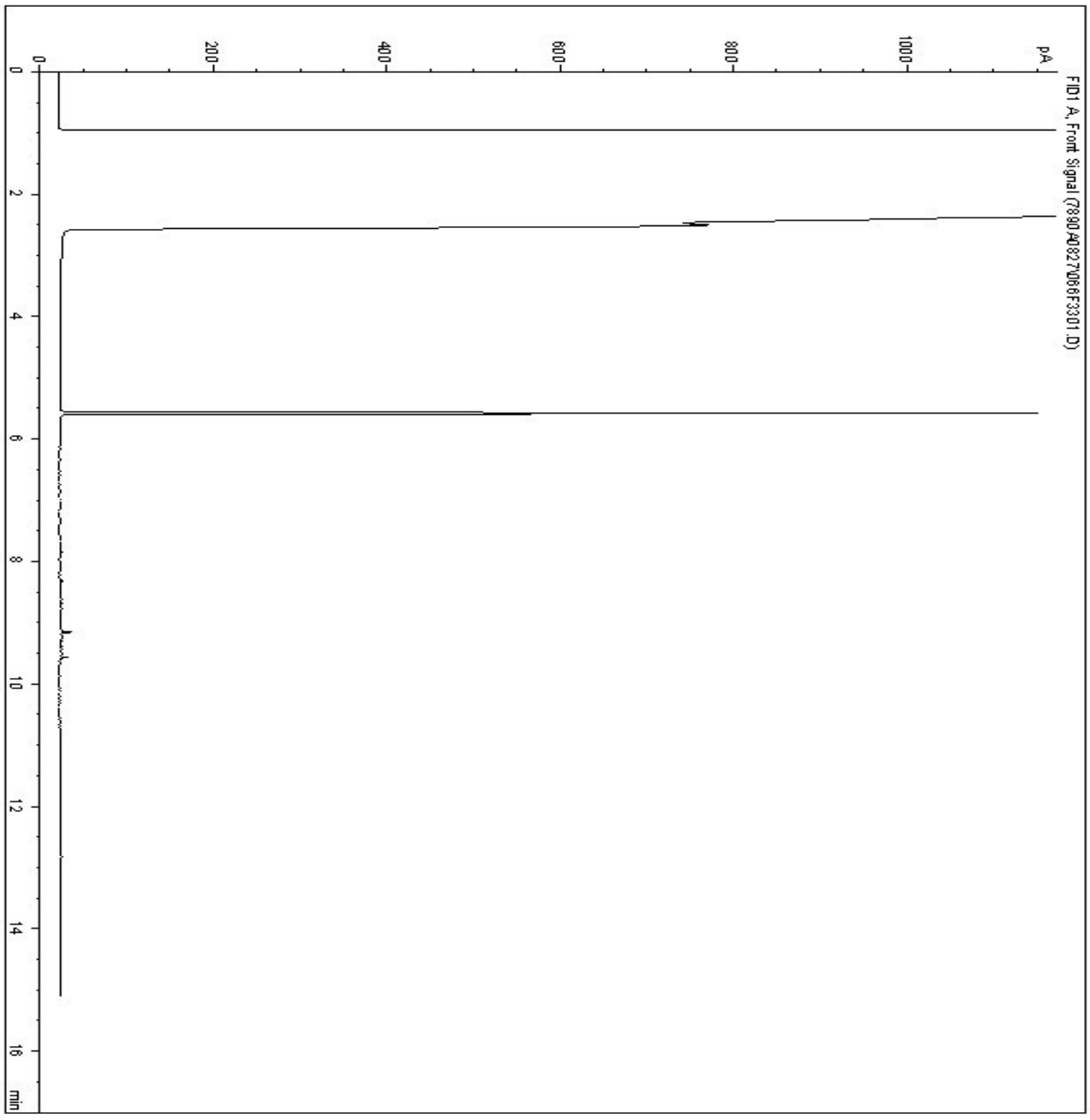
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0169

Client ID: 11W4-08 (20CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\066F3301.D
Sample Name: BI0169



*** End of Report ***

7890A GC 2011/08/28 9:44:00 AM AK8

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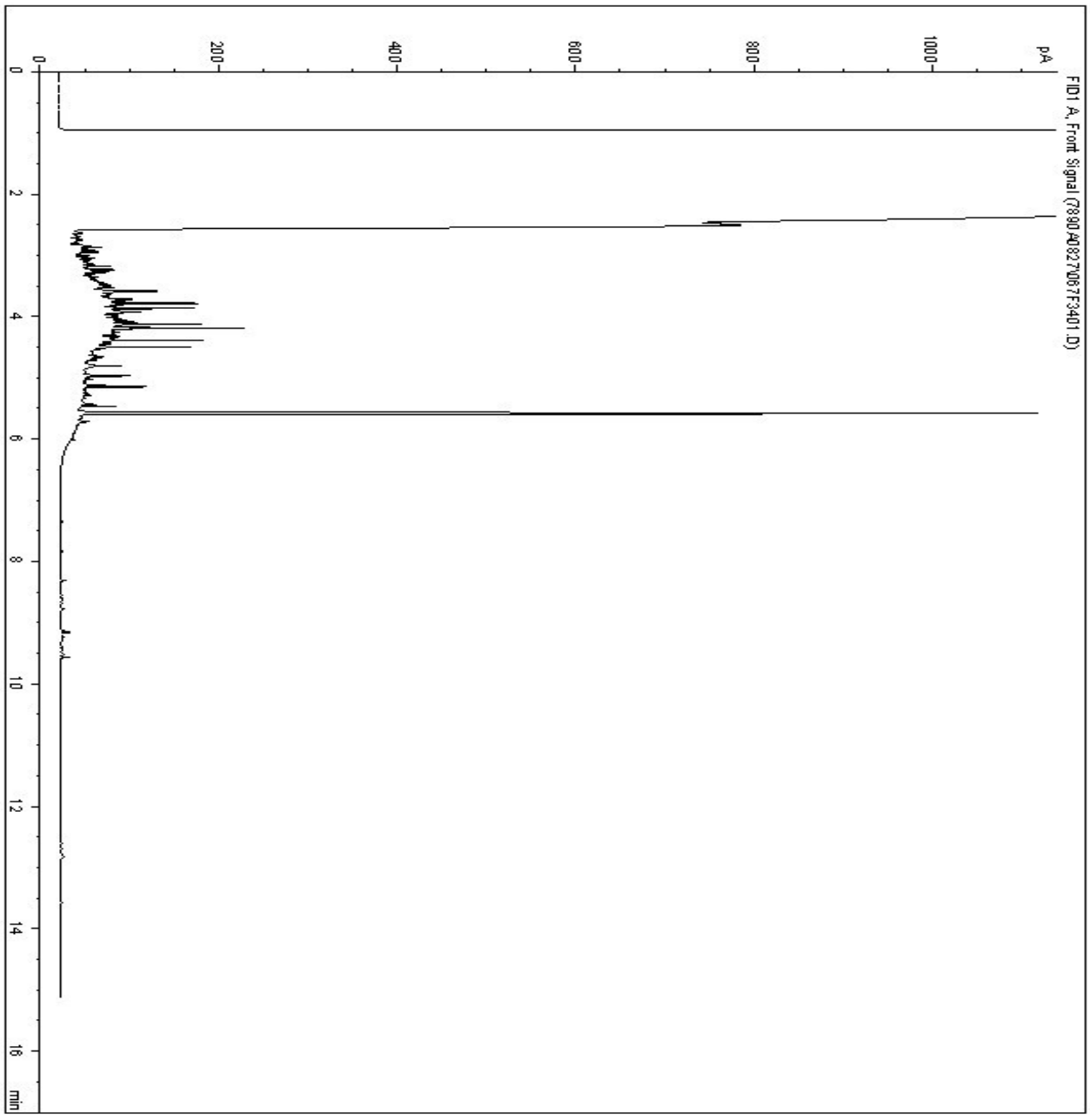
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0170

Client ID: 11W4-02 (30CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\067F3401.D
Sample Name: BI0170



*** End of Report ***

7890A GC 2011/08/28 9:44:02 AM AK8

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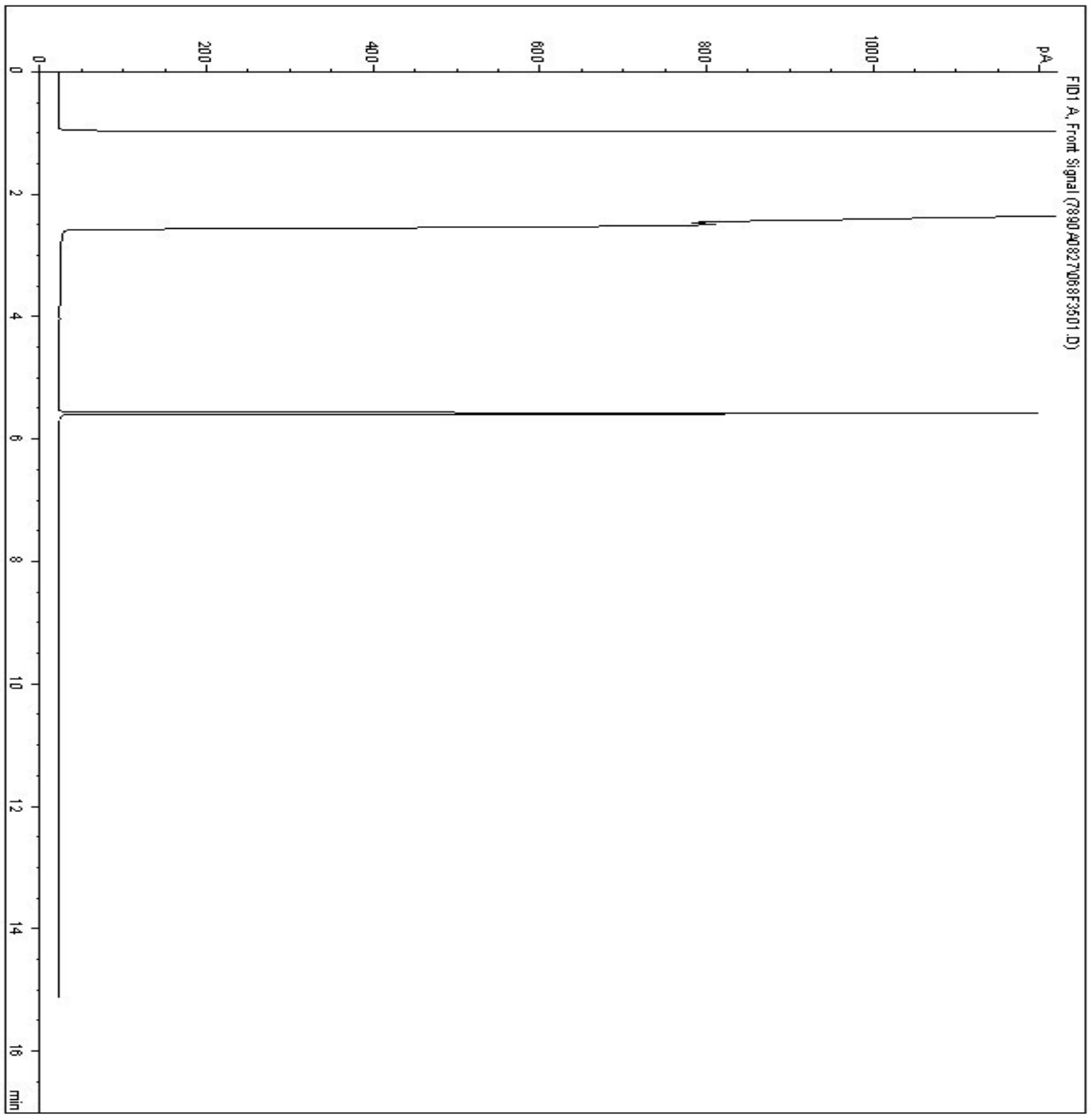
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0171

Client ID: 11W4-09 (25CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\068F3501.D
Sample Name: BI0171



*** End of Report ***

7890A GC 2011/08/28 9:44:05 AM AK8

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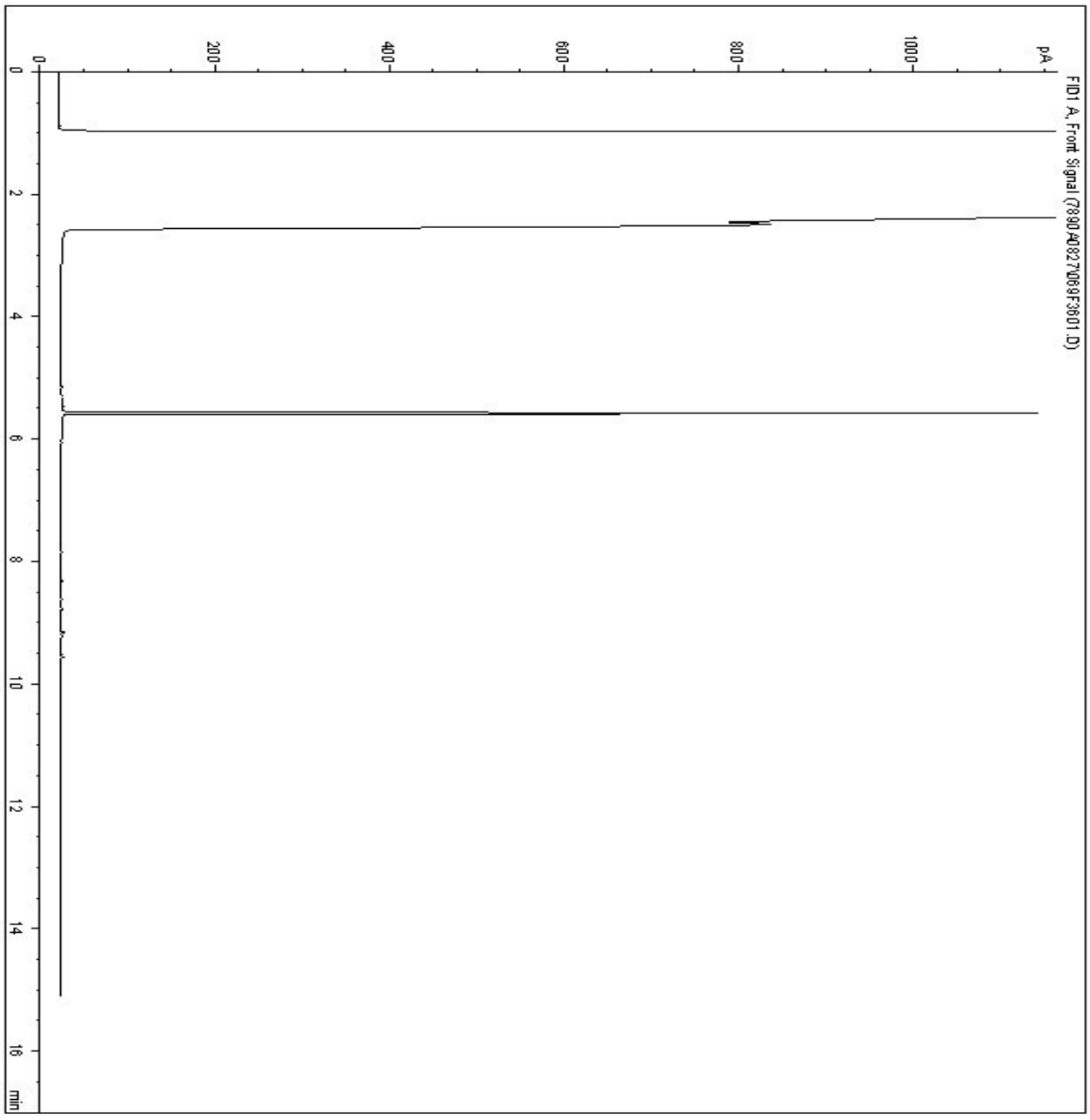
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0175

Client ID: 11W4-07 (25CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\069F3601.D
Sample Name: BI0175



*** End of Report ***

7890A GC 2011/08/28 9:44:08 AM AK8

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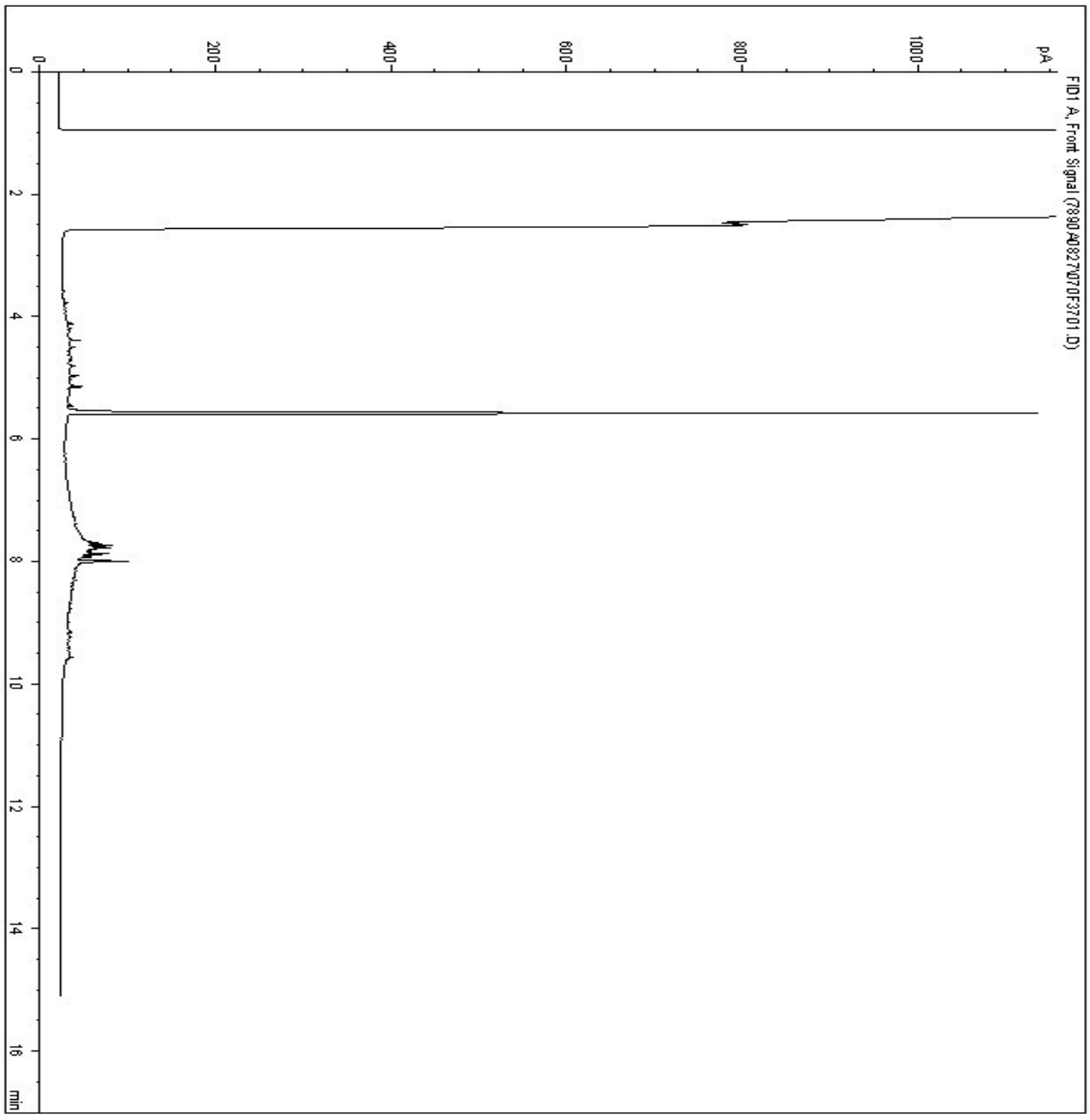
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0176

Client ID: 11W06-1 (CS) (25CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\070F3701.D
Sample Name: BI0176



*** End of Report ***

7890A GC 2011/08/28 9:44:11 AM AK8

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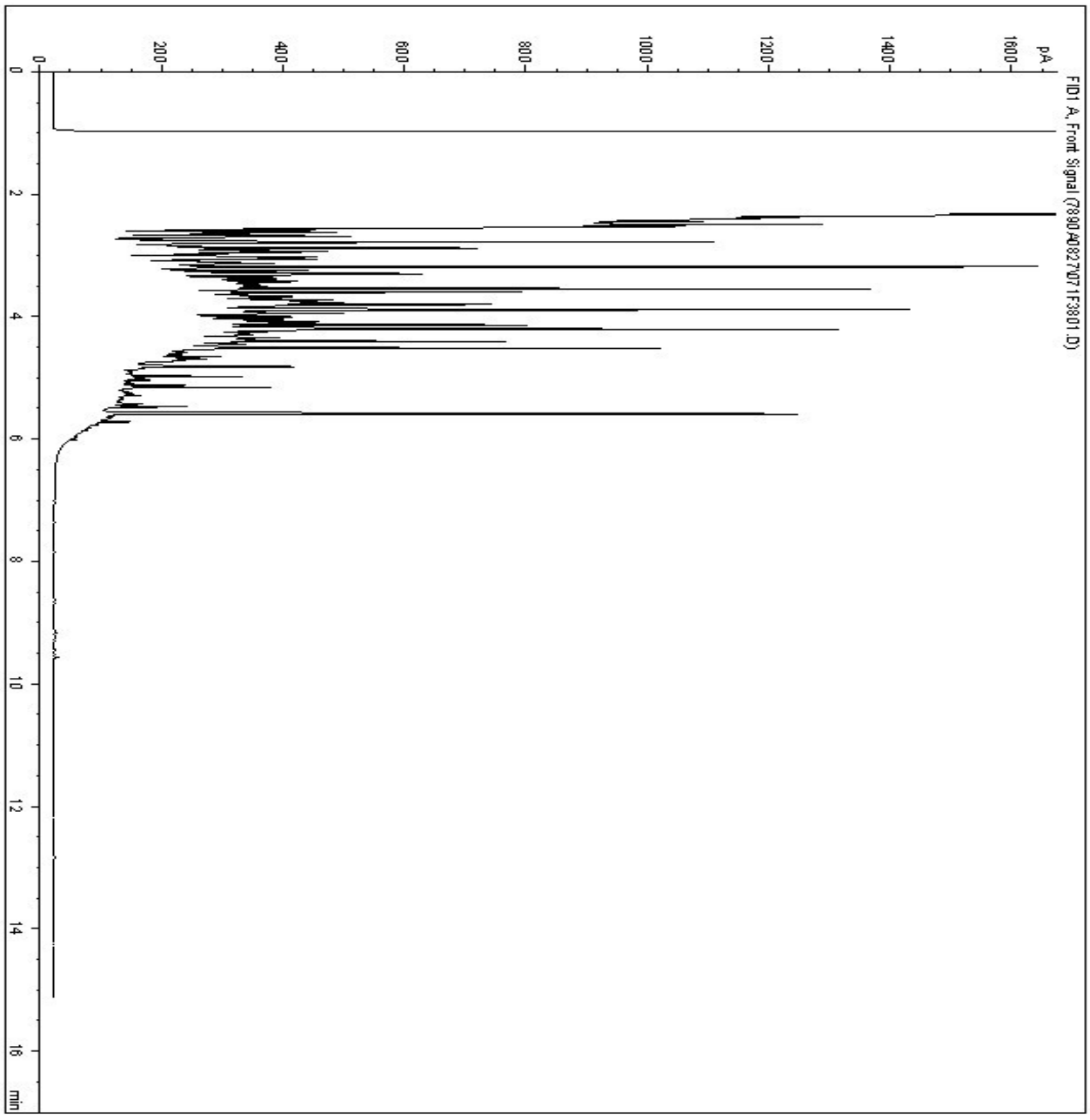
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0182

Client ID: 11W5E-01 (50CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\071F3801.D
Sample Name: BI0182



*** End of Report ***

7890A GC 2011/08/28 9:44:14 AM AK8

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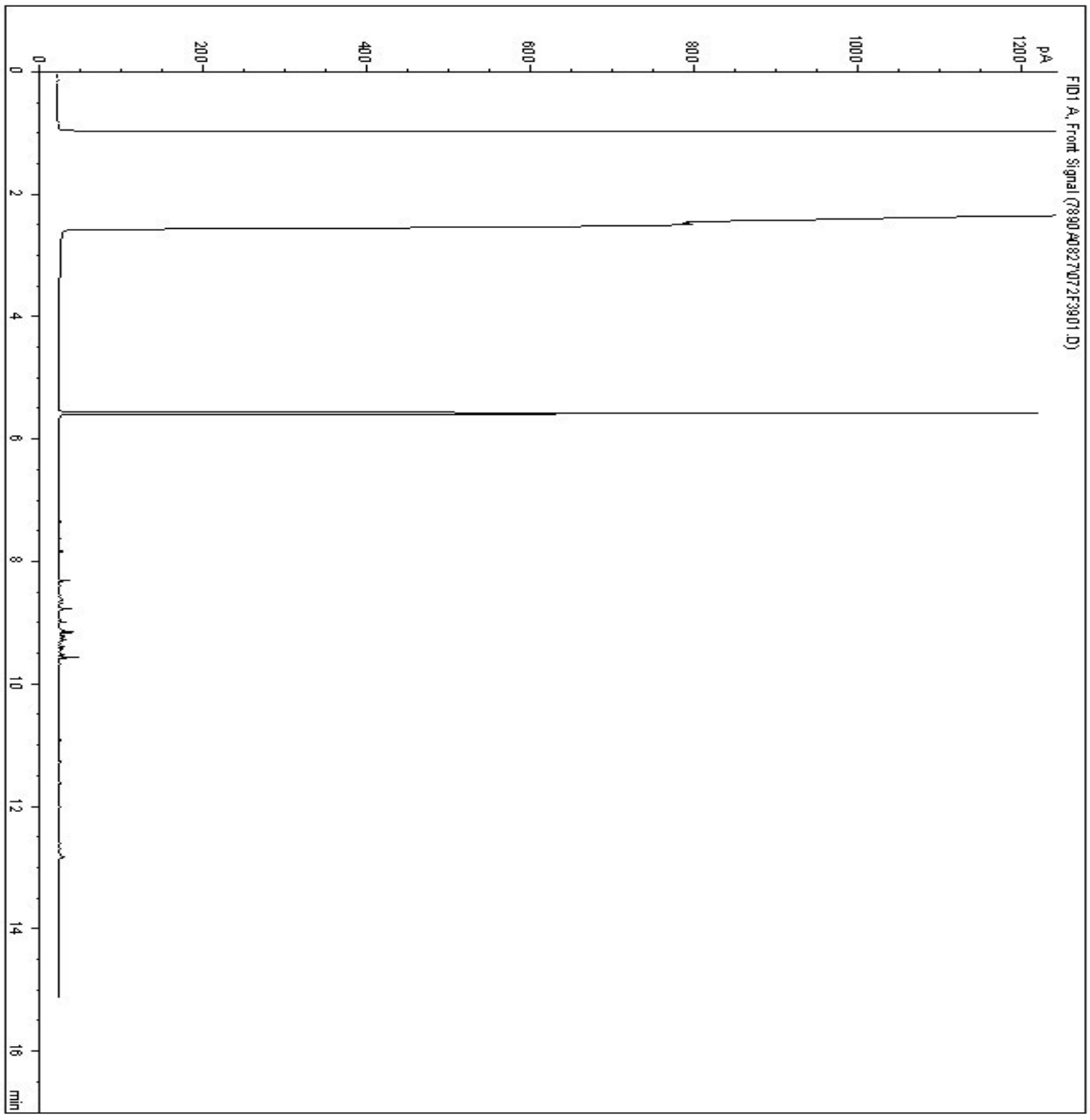
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0183

Client ID: BULK FUEL STORAGE (10CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\072F3901.D
Sample Name: BI0183



*** End of Report ***

7890A GC 2011/08/28 9:44:17 AM AK8

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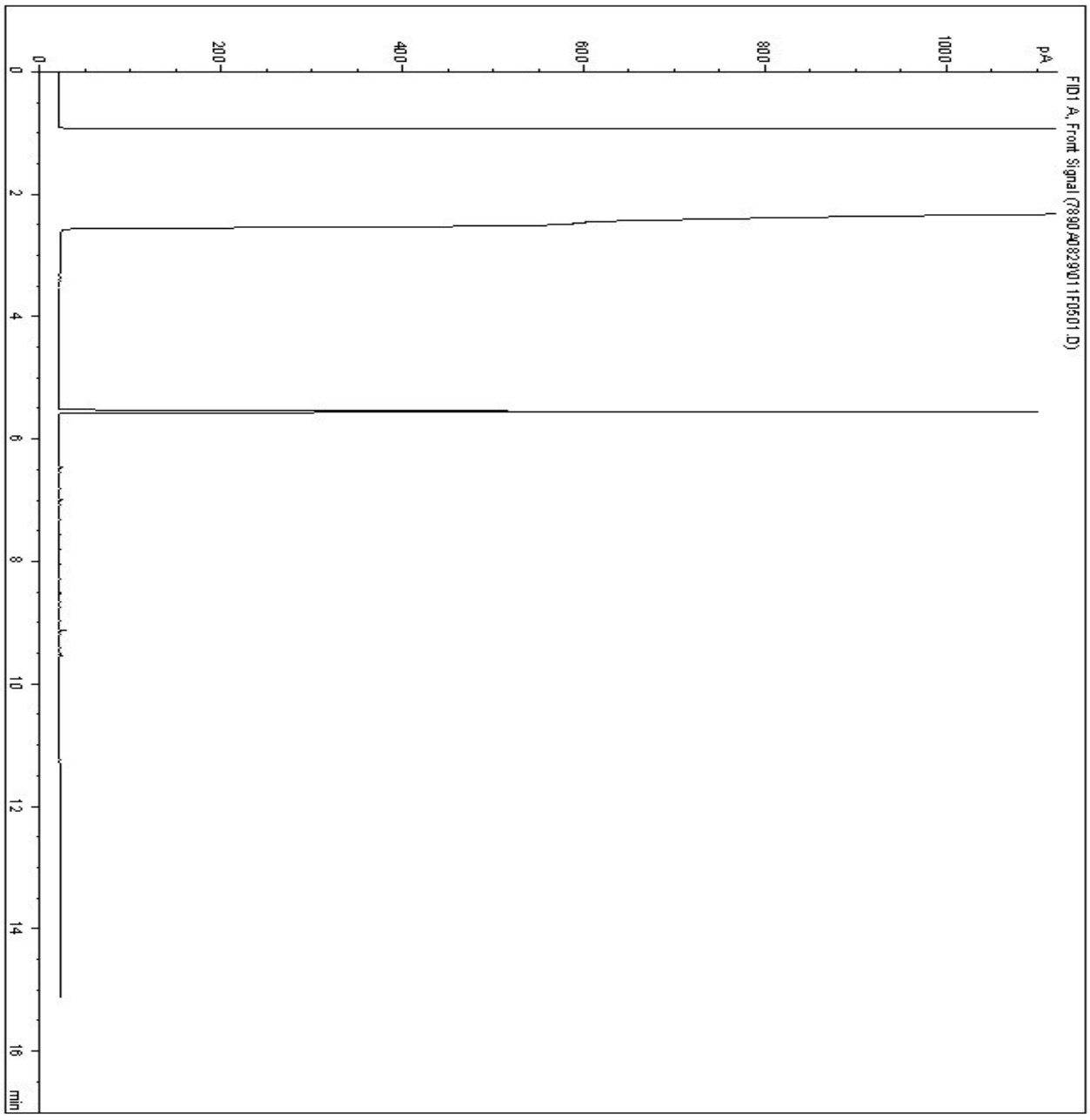
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0184

Client ID: 11W5E-04 (20CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0829\011F0501.D
Sample Name: BI0184RR



*** End of Report ***

7890A GC 2011/08/29 10:25:47 AM AK8

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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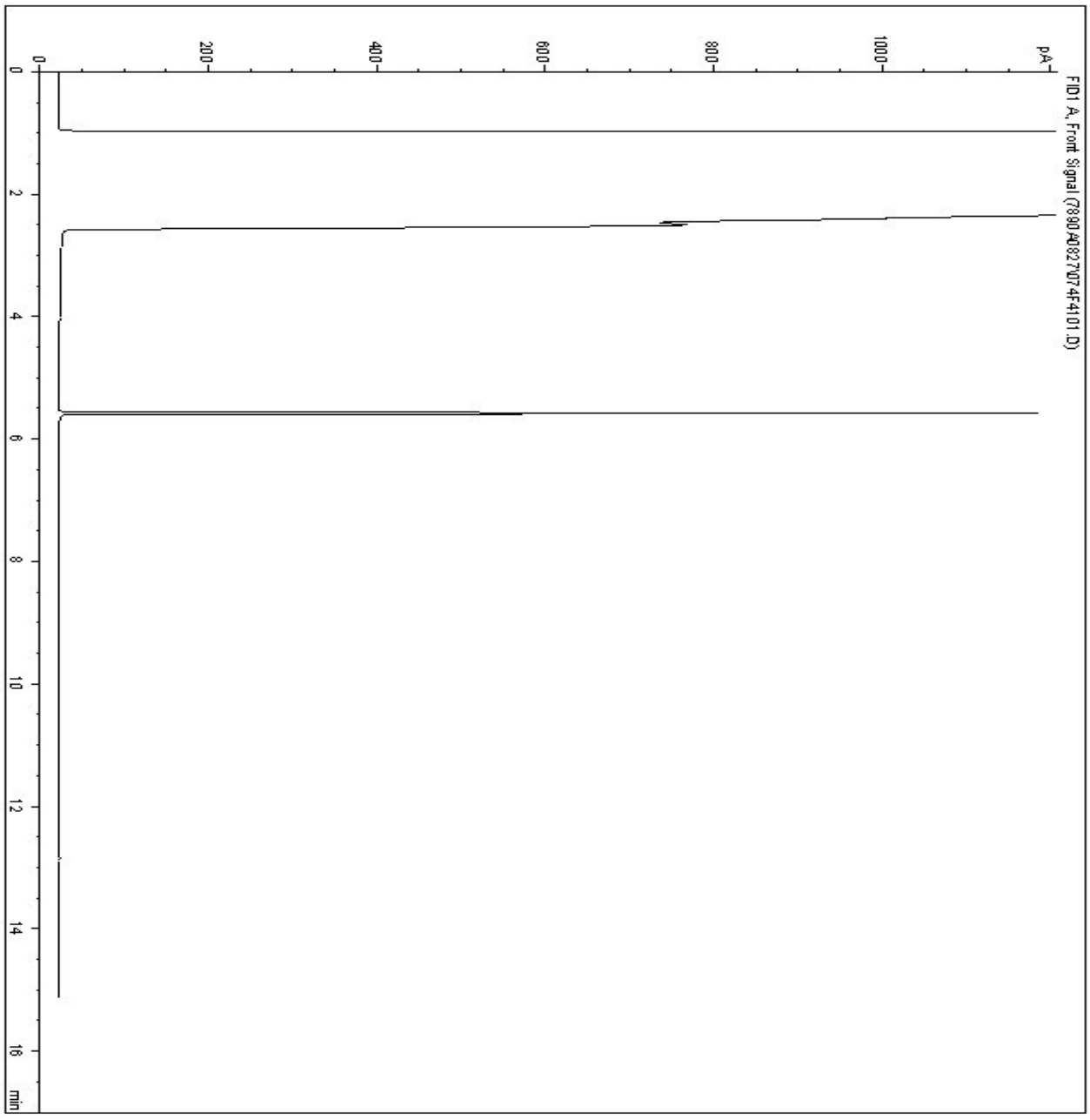
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0185

Client ID: 11W5F-02 (10CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\074F4101.D
Sample Name: BI0185



*** End of Report ***

7890A GC 2011/08/28 9:44:23 AM AK8

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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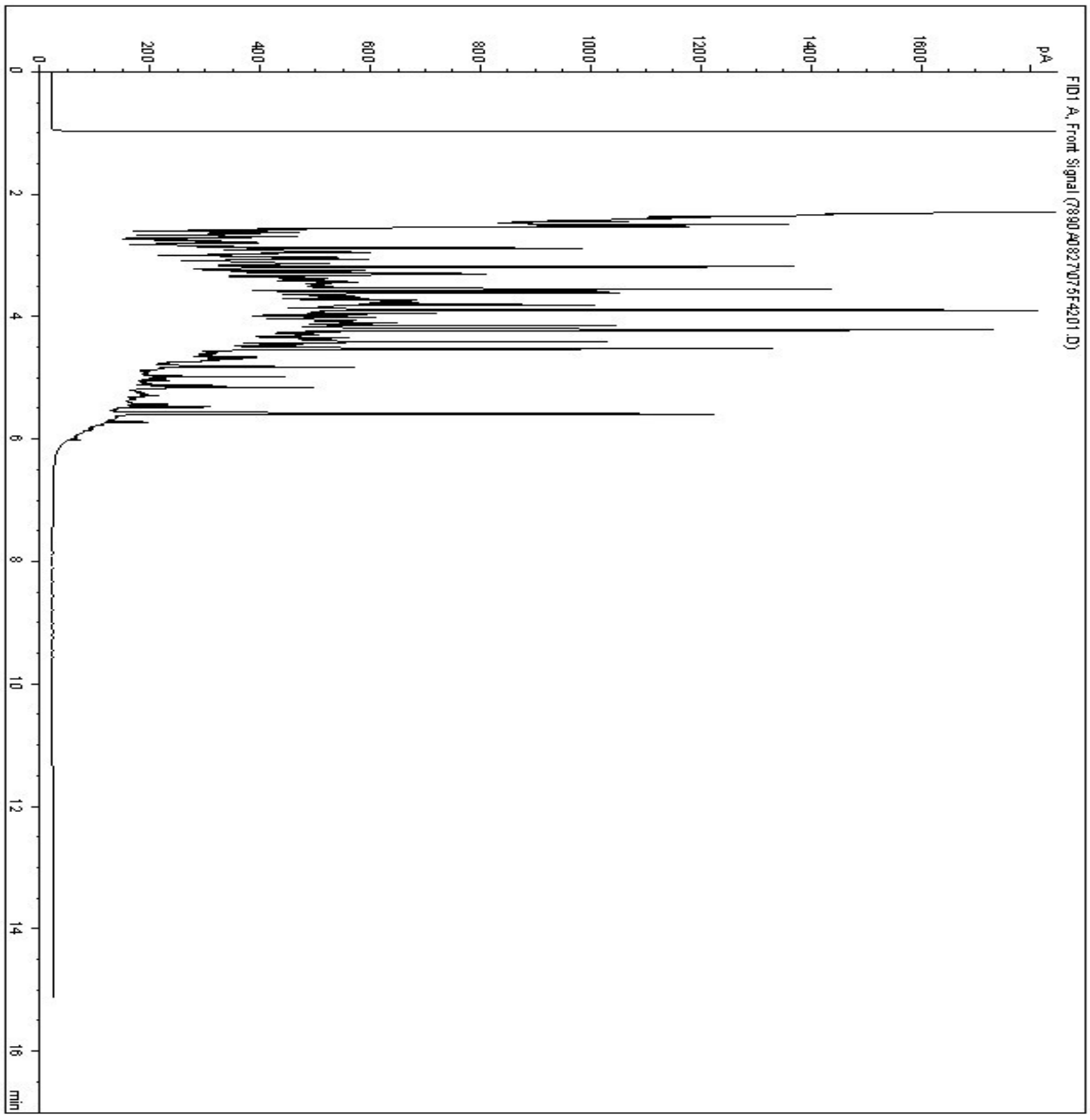
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0186

Client ID: 11W5E-01 (15CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\075F4201.D
Sample Name: BI0186



*** End of Report ***

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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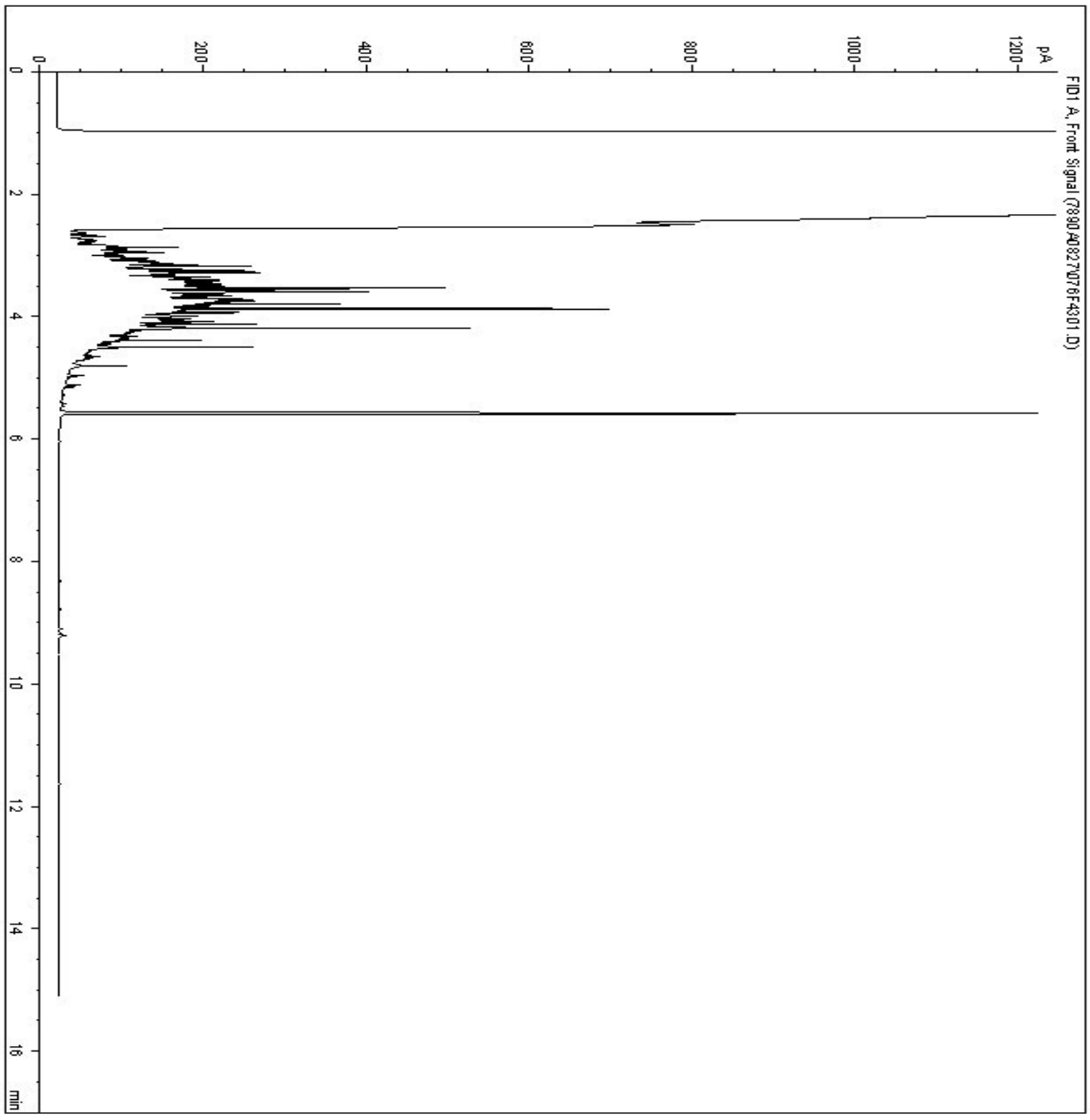
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0187

Client ID: 11W5D-01 (15CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\076F4301.D
Sample Name: BI0187



*** End of Report ***

7890A GC 2011/08/28 9:44:28 AM AK8

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Maxxam

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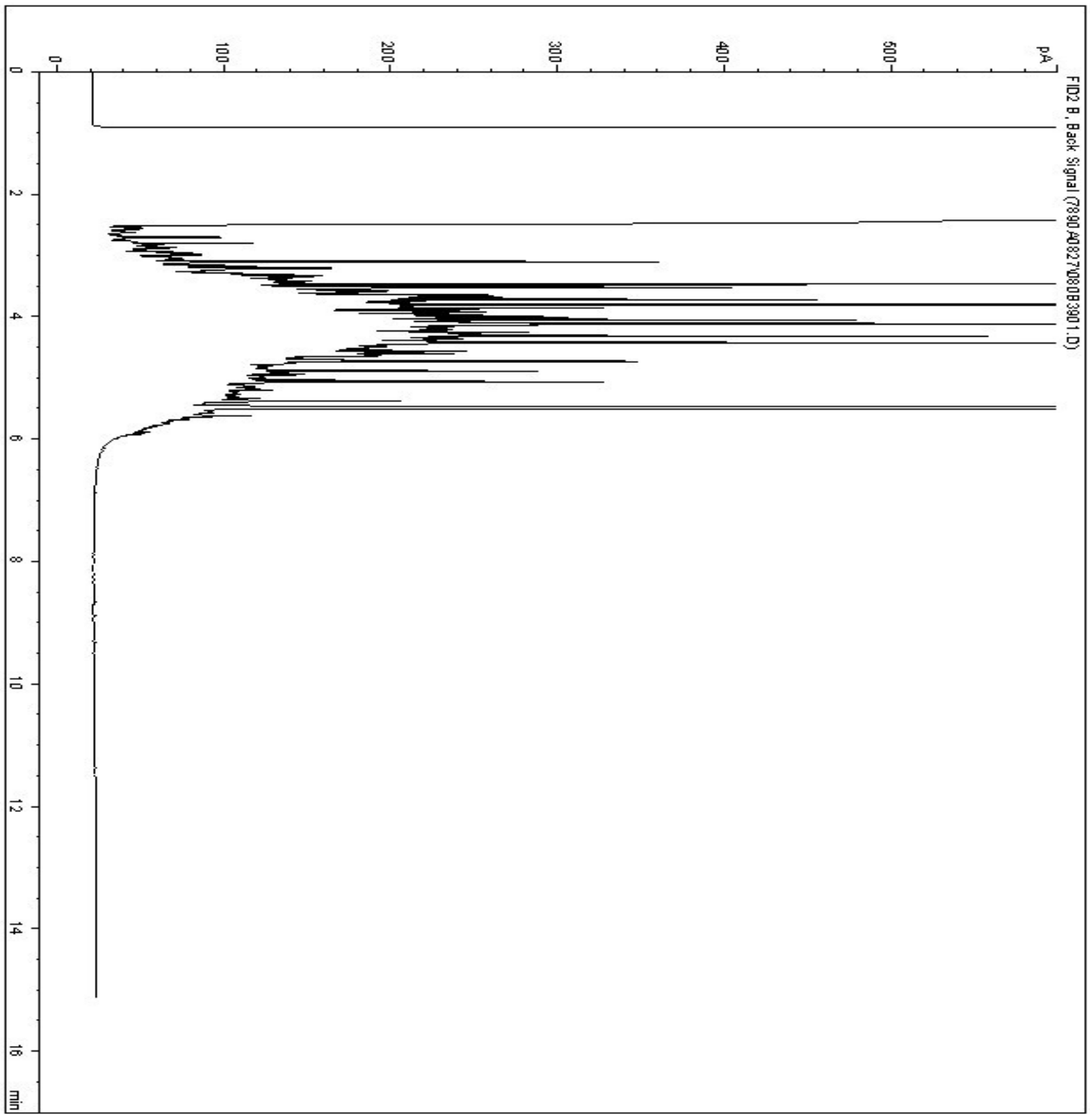
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0188

Client ID: 11W5B-01 (10CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\080B3901.D
Sample Name: BI0188



*** End of Report ***

7890A GC 2011/08/28 9:44:17 AM AK8

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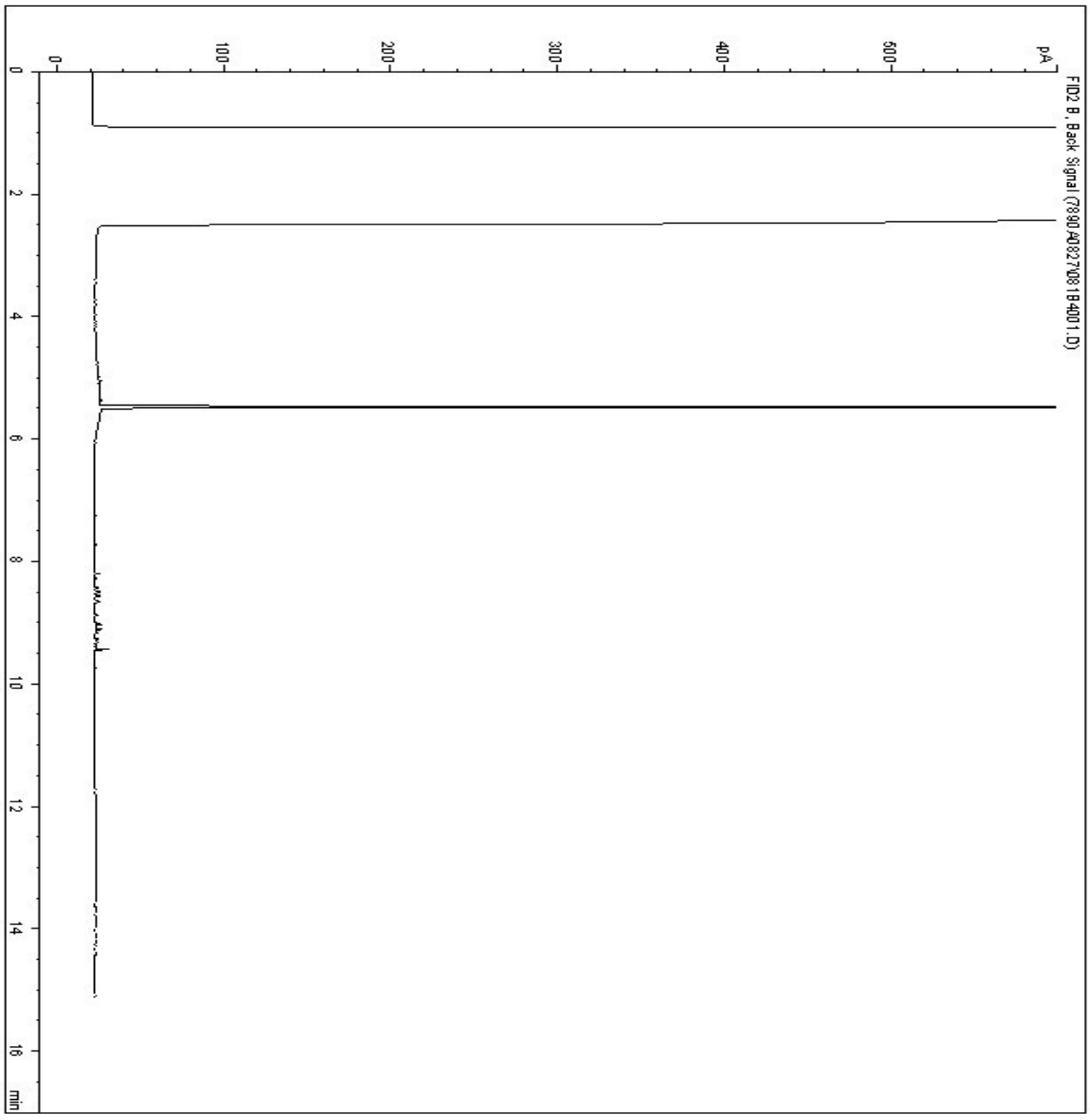
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0189

Client ID: 11W5E-02 (20CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\081B4001.D
Sample Name: BI0189



*** End of Report ***

7890A GC 2011/08/28 9:44:20 AM AK8

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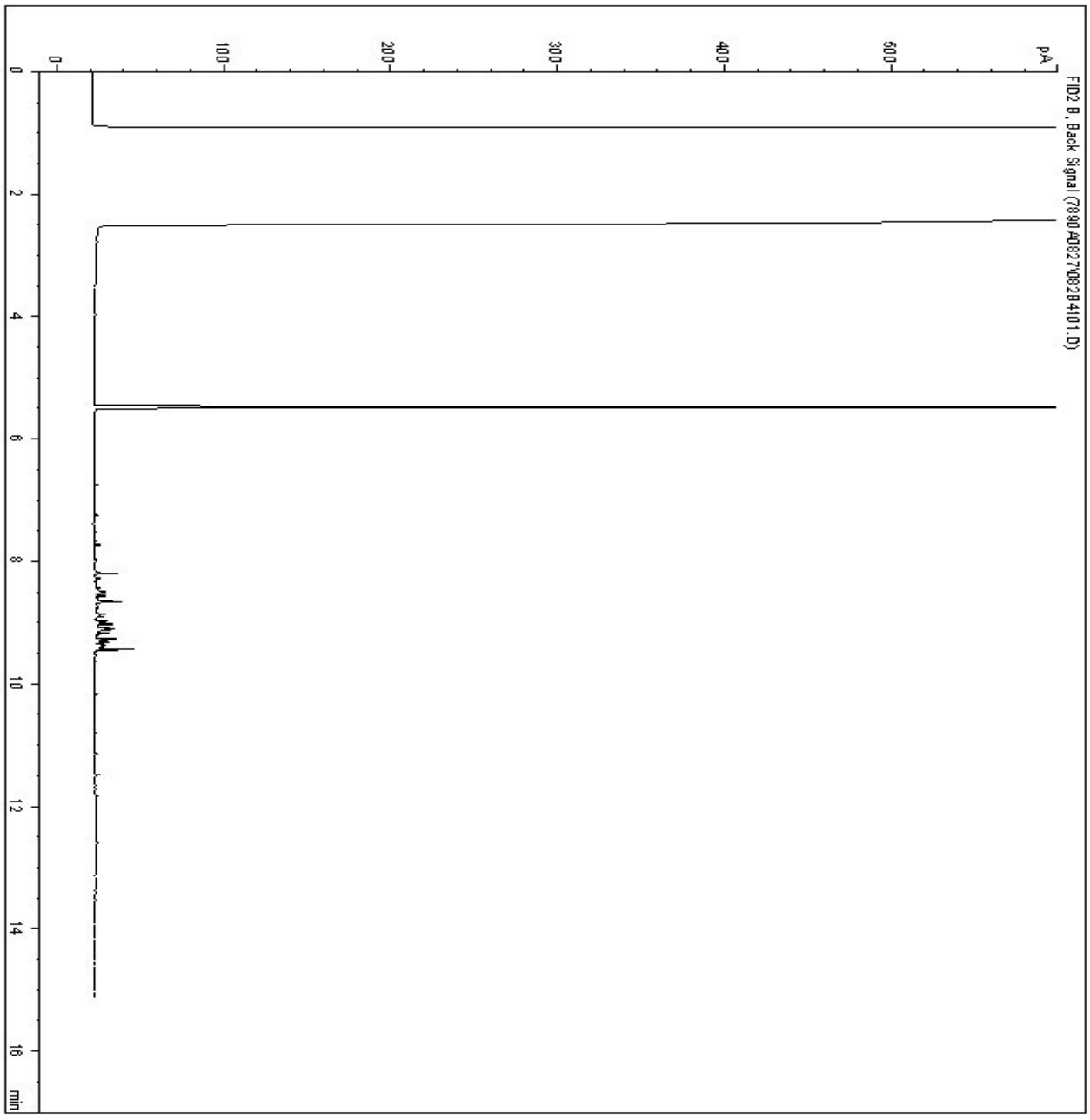
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0190

Client ID: 11W5C-01 (10CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\082B4101.D
Sample Name: BI0190



*** End of Report ***

7890A GC 2011/08/28 9:44:23 AM AK8

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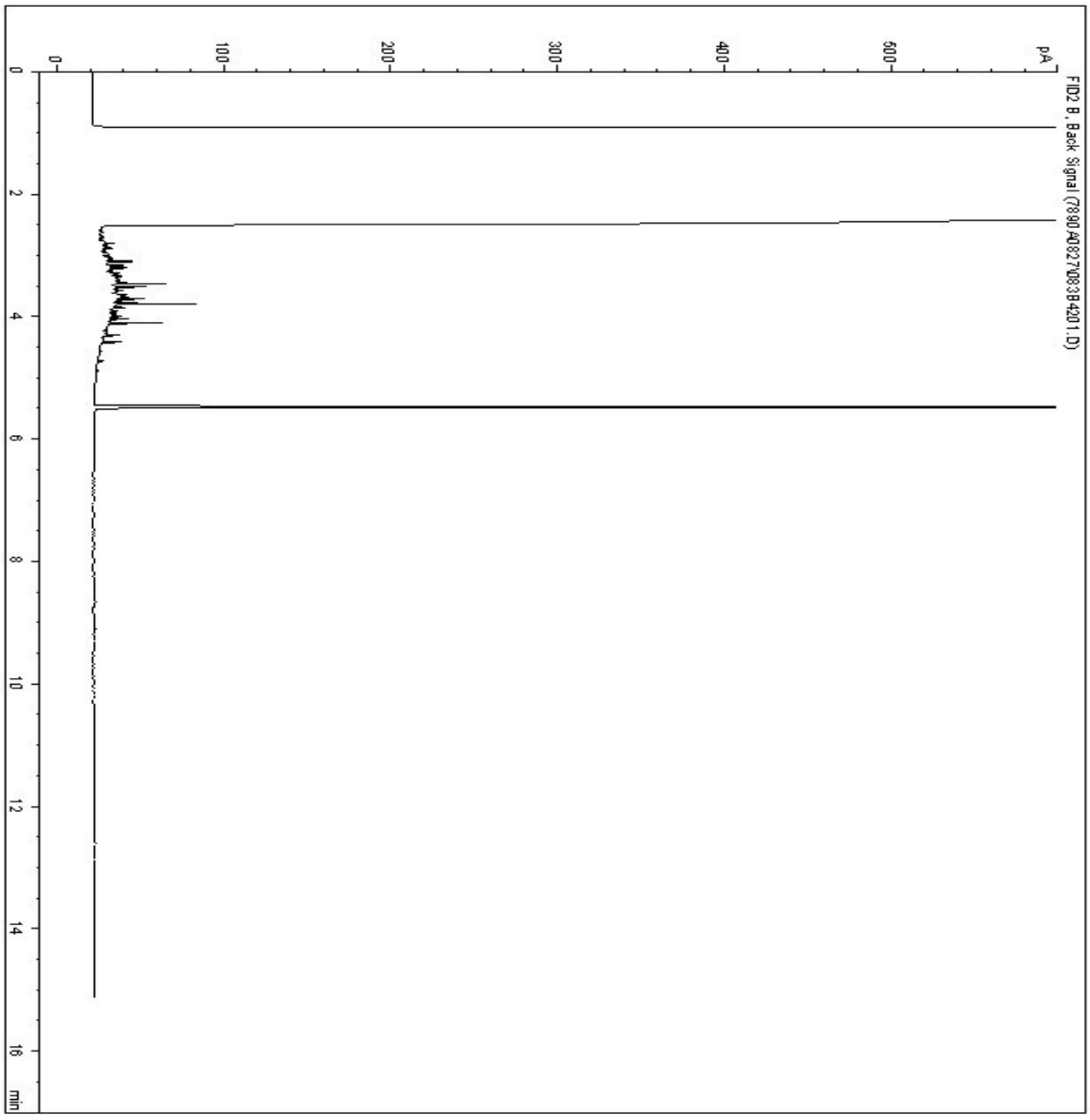
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0191

Client ID: 11W5D-01 (30CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\083B4201.D
Sample Name: BI0191



*** End of Report ***

7890A GC 2011/08/28 9:44:26 AM AK8

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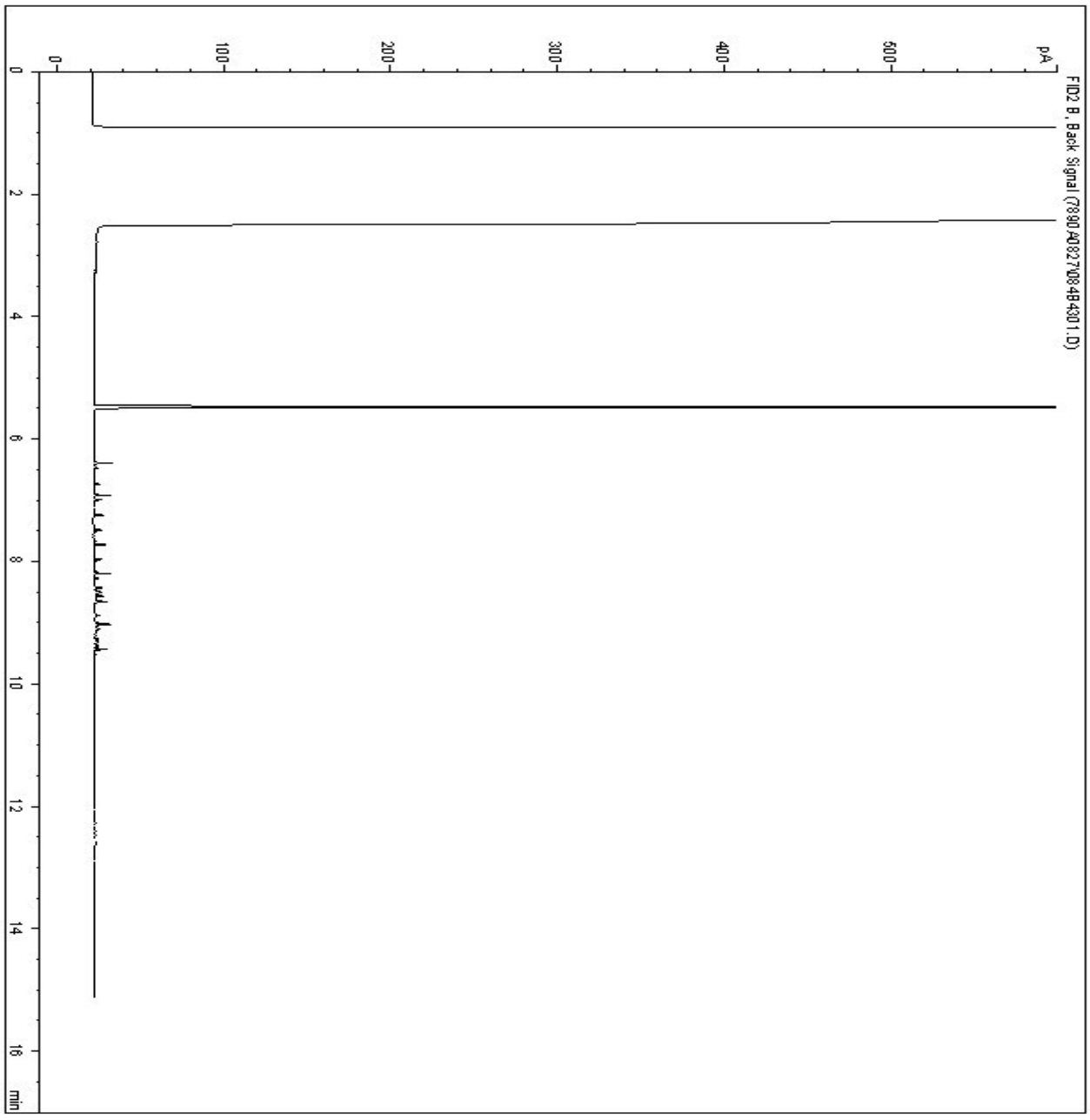
Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0192

Client ID: 11W5A-01 (20CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0827\084B4301.D
Sample Name: BI0192



*** End of Report ***

7890A GC 2011/08/28 9:44:29 AM AK8

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Success Through Science®

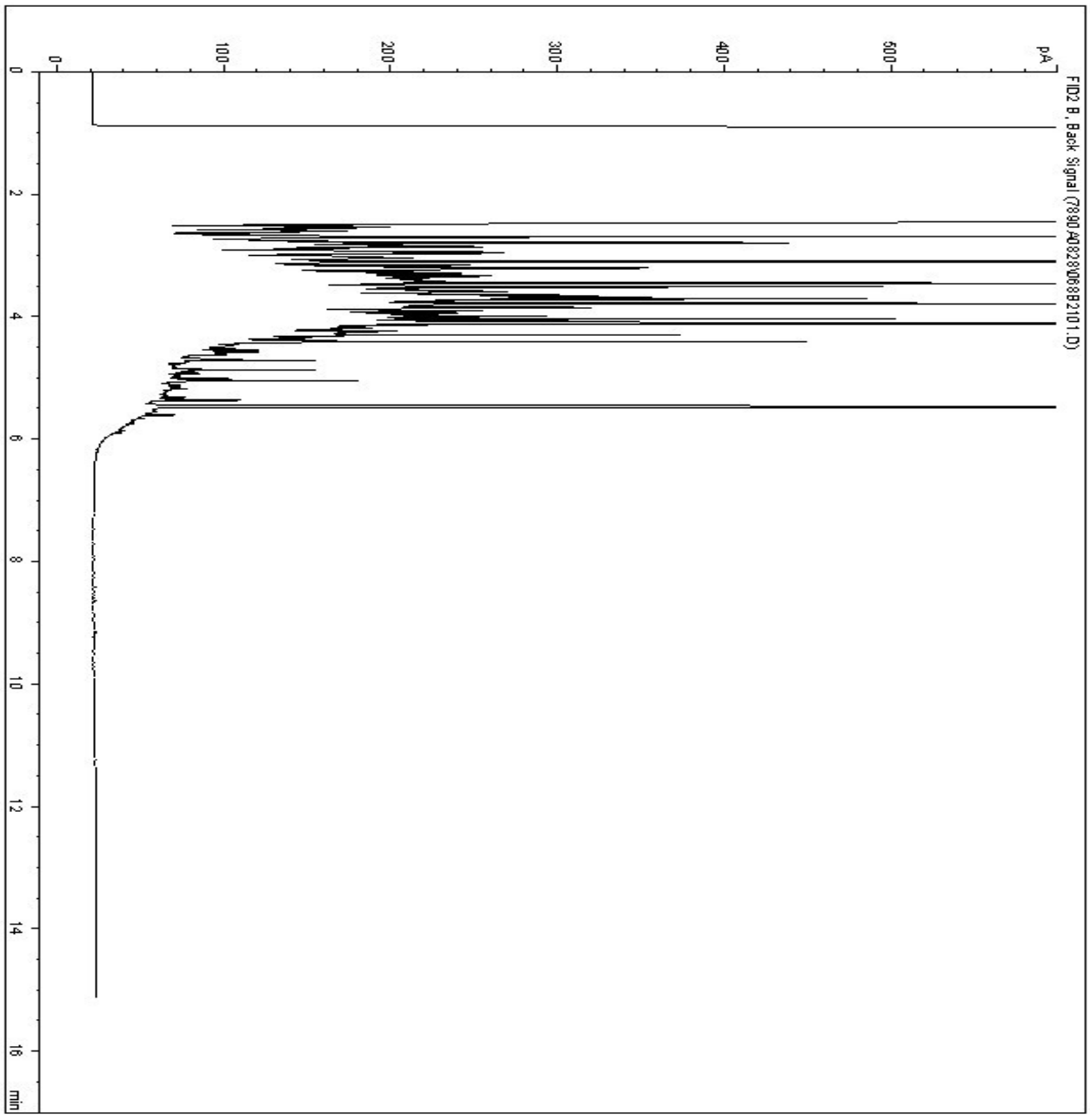
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/30
Maxxam Job #: B177775
Maxxam Sample: BI0196

Client ID: 11W5H-04 (20CM)

CCME Hydrocarbons (F2-F4 in soil) Chromatogram

Data File C:\CHEM32\1\DATA\7890A0828\068B2101.D
Sample Name: BI0196



*** End of Report ***

7890A GC 2011/08/29 8:29:59 AM AK8

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam

Your P.O. #: Y22101187.001
Site Location: WINDY CAMP
Your C.O.C. #: A050087

Attention: DANIELA FELSKE
EBA ENGINEERING CONSULTANTS LTD.
EDMONTON - Rebate
14940-123 AVENUE
EDMONTON, AB
CANADA T5V 1B4

Report Date: 2011/08/22

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B174898
Received: 2011/08/13, 10:00

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH	4	N/A	2011/08/17	AB SOP-00005	SM 2320-B
BTEX/F1 in Water by HS GC/MS	4	N/A	2011/08/18	EENVSOP-00004 EENVSOP-00002	EPA 8260C/5021A/CCME
Cadmium - low level CCME - Dissolved	4	N/A	2011/08/18	AB SOP-00043	EPA 200.8
Cadmium - low level CCME (Total)	4	2011/08/15	2011/08/18	AB SOP-00043	EPA 200.8
Chloride by Automated Colourimetry	4	N/A	2011/08/17	AB SOP-00020	EPA 325.2
Conductivity @25C	4	N/A	2011/08/17	AB SOP-00005	SM 2510-B
CCME Hydrocarbons in Water (F2; C10-C16)	4	2011/08/17	2011/08/18	AB SOP-00040 AB SOP-00037	EPA3510/CCME PHCCWS
Hardness	4	N/A	2011/08/18	AB WI-00065	SM 2340B
Elements by ICP - Dissolved	3	N/A	2011/08/17	AB SOP-00042	EPA 200.7
Elements by ICP - Dissolved	1	N/A	2011/08/20	AB SOP-00042	EPA 200.7
Elements by ICP - Total	4	2011/08/17	2011/08/17	AB SOP-00042	EPA 200.7
Elements by ICPMS - Dissolved	4	N/A	2011/08/18	AB SOP-00043	EPA 200.8
Elements by ICPMS - Total	4	2011/08/17	2011/08/18	AB SOP-00043	EPA 200.8
Ion Balance	4	N/A	2011/08/18	AB WI-00065	SM 1030E
Sum of cations, anions	4	N/A	2011/08/18	AB WI-00065	SM 1030E
Nitrate and Nitrite	4	N/A	2011/08/18	Calc	
Nitrate + Nitrite-N (calculated)	4	N/A	2011/08/18	AB SOP-00023	SM 4110-B
Nitrogen, (Nitrite, Nitrate) by IC	2	N/A	2011/08/17	AB SOP-00023	SM 4110-B
Nitrogen, (Nitrite, Nitrate) by IC	2	N/A	2011/08/18	AB SOP-00023	SM 4110-B
pH @25°C (Alkalinity titrator)	4	N/A	2011/08/17	AB SOP-00005	SM 4500-H+B
Sulphate by Automated Colourimetry	4	N/A	2011/08/17	AB SOP-00018	EPA 375.4
Total Dissolved Solids (Calculated)	4	N/A	2011/08/18	AB WI-00065	SM 1030E

../2

Your P.O. #: Y22101187.001
Site Location: WINDY CAMP
Your C.O.C. #: A050087

Attention: DANIELA FELSKE
EBA ENGINEERING CONSULTANTS LTD.
EDMONTON - Rebate
14940-123 AVENUE
EDMONTON, AB
CANADA T5V 1B4

Report Date: 2011/08/22

CERTIFICATE OF ANALYSIS

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Jeremy Wakaruk, B.Sc., Senior Project Manager
Email: JWakaruk@maxxam.ca
Phone# (780) 577-7105 Ext:7105

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B174898
Report Date: 2011/08/22

EBA ENGINEERING CONSULTANTS LTD.

Site Location: WINDY CAMP
Your P.O. #: Y22101187.001
Sampler Initials: MH

AT1 BTEX AND F1-F2 (WATER)

Maxxam ID		BG4061	BG4080	BG4081	BG4082		
Sampling Date		2011/08/10 10:00	2011/08/10 10:15	2011/08/10 10:45	2011/08/10 12:00		
COC Number		A050087	A050087	A050087	A050087		
	Units	**11W8-1**	**11W8-2**	**11W6-1**	**11W1-1**	**RDL**	**QC Batch**
Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	mg/L	3.3	<0.1	<0.1	<0.1	0.1	5097598
Volatiles							
Benzene	mg/L	<0.0004	<0.0004	<0.0004	<0.0004	0.0004	5097840
Toluene	mg/L	<0.0004	<0.0004	<0.0004	<0.0004	0.0004	5097840
Ethylbenzene	mg/L	<0.0004	<0.0004	<0.0004	<0.0004	0.0004	5097840
o-Xylene	mg/L	<0.0004	<0.0004	<0.0004	<0.0004	0.0004	5097840
m & p-Xylene	mg/L	<0.0008	<0.0008	<0.0008	<0.0008	0.0008	5097840
Xylenes (Total)	mg/L	<0.0008	<0.0008	<0.0008	<0.0008	0.0008	5097840
F1 (C6-C10) - BTEX	mg/L	<0.1	<0.1	<0.1	<0.1	0.1	5097840
(C6-C10)	mg/L	<0.1	<0.1	<0.1	<0.1	0.1	5097840
Surrogate Recovery (%)							
4-BROMOFLUOROBENZENE (sur.)	%	103	102	103	99	N/A	5097840
D4-1,2-DICHLOROETHANE (sur.)	%	94	88	92	91	N/A	5097840
D8-TOLUENE (sur.)	%	88	87	88	88	N/A	5097840
O-TERPHENYL (sur.)	%	109	104	108	102	N/A	5097598

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B174898
Report Date: 2011/08/22

EBA ENGINEERING CONSULTANTS LTD.

Site Location: WINDY CAMP
Your P.O. #: Y22101187.001
Sampler Initials: MH

ROUTINE WATER & DISS. REGULATED METALS (WATER)

Maxxam ID		BG4061		BG4080			BG4081		
Sampling Date		2011/08/10 10:00		2011/08/10 10:15			2011/08/10 10:45		
COC Number		A050087		A050087			A050087		
	Units	**11W8-1**	**QC Batch**	**11W8-2**	**RDL**	**QC Batch**	**11W6-1**	**RDL**	**QC Batch**
Calculated Parameters									
Anion Sum	meq/L	5.7	5092261	4.4	N/A	5092261	37	N/A	5092261
Cation Sum	meq/L	5.9	5092261	4.4	N/A	5092261	32	N/A	5092261
Hardness (CaCO3)	mg/L	200	5092259	170	0.5	5092259	710	0.5	5092259
Ion Balance	N/A	1.0	5092260	0.99	0.01	5092260	0.87	0.01	5092260
Dissolved Nitrate (NO3)	mg/L	<0.01	5092262	0.04	0.01	5092262	2.0	0.01	5092262
Nitrate plus Nitrite (N)	mg/L	<0.003	5092263	0.008	0.003	5092263	0.45	0.003	5092263
Dissolved Nitrite (NO2)	mg/L	<0.01	5092262	<0.01	0.01	5092262	<0.01	0.01	5092262
Total Dissolved Solids	mg/L	290	5092264	230	10	5092264	2000	10	5092264
Misc. Inorganics									
Conductivity	uS/cm	570	5097973	420	1	5097973	3900	1	5097973
pH	N/A	7.10	5098009	7.70	N/A	5098009	7.97	N/A	5098009
Low Level Elements									
Dissolved Cadmium (Cd)	ug/L	0.012	5095501	0.009	0.005	5095501	0.05	0.03	5095501
Anions									
Alkalinity (PP as CaCO3)	mg/L	<0.5	5097680	<0.5	0.5	5097680	<0.5	0.5	5097680
Alkalinity (Total as CaCO3)	mg/L	250	5097680	170	0.5	5097680	430	0.5	5097680
Bicarbonate (HCO3)	mg/L	310	5097680	210	0.5	5097680	530	0.5	5097680
Carbonate (CO3)	mg/L	<0.5	5097680	<0.5	0.5	5097680	<0.5	0.5	5097680
Hydroxide (OH)	mg/L	<0.5	5097680	<0.5	0.5	5097680	<0.5	0.5	5097680
Dissolved Sulphate (SO4)	mg/L	18	5097600	19	1	5097600	320 (1)	5	5097600
Dissolved Chloride (Cl)	mg/L	10	5097503	23	1	5097503	770 (1)	30	5097503
Nutrients									
Dissolved Nitrite (N)	mg/L	<0.003	5098871	<0.003	0.003	5098871	<0.003	0.003	5098871
Dissolved Nitrate (N)	mg/L	<0.003	5098871	0.008	0.003	5098871	0.45	0.003	5098871
Elements									
Dissolved Aluminum (Al)	mg/L	0.075	5098027	0.009	0.001	5098027	0.037	0.001	5098027
Dissolved Antimony (Sb)	mg/L	0.0010	5098027	<0.0006	0.0006	5098027	0.0008 (2)	0.0006	5098027
Dissolved Arsenic (As)	mg/L	0.0033	5098027	0.0009	0.0002	5098027	0.0042	0.0002	5098027
Dissolved Barium (Ba)	mg/L	0.04	5100406	<0.01	0.01	5109488	0.08	0.01	5100406
Dissolved Beryllium (Be)	mg/L	<0.001	5098027	<0.001	0.001	5098027	<0.001	0.001	5098027

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.
(2) Dissolved greater than total. Results are within limits of uncertainty(MU).

Maxxam Job #: B174898
Report Date: 2011/08/22

EBA ENGINEERING CONSULTANTS LTD.

Site Location: WINDY CAMP
Your P.O. #: Y22101187.001
Sampler Initials: MH

ROUTINE WATER & DISS. REGULATED METALS (WATER)

Maxxam ID		BG4061		BG4080			BG4081		
Sampling Date		2011/08/10 10:00		2011/08/10 10:15			2011/08/10 10:45		
COC Number		A050087		A050087			A050087		
	Units	**11W8-1**	**QC Batch**	**11W8-2**	**RDL**	**QC Batch**	**11W6-1**	**RDL**	**QC Batch**
Dissolved Boron (B)	mg/L	0.12	5100406	0.14	0.02	5109488	0.08	0.02	5100406
Dissolved Calcium (Ca)	mg/L	52	5100406	44	0.3	5109488	140	0.3	5100406
Dissolved Chromium (Cr)	mg/L	<0.001	5098027	<0.001	0.001	5098027	0.002	0.001	5098027
Dissolved Cobalt (Co)	mg/L	0.0018	5098027	0.0005	0.0003	5098027	0.0034	0.0003	5098027
Dissolved Copper (Cu)	mg/L	0.0033	5098027	0.0019	0.0002	5098027	0.014	0.0002	5098027
Dissolved Iron (Fe)	mg/L	6.6	5100406	0.59	0.06	5109488	0.87	0.06	5100406
Dissolved Lead (Pb)	mg/L	<0.0002	5098027	<0.0002	0.0002	5098027	<0.0002	0.0002	5098027
Dissolved Lithium (Li)	mg/L	<0.02	5100406	<0.02	0.02	5109488	<0.02	0.02	5100406
Dissolved Magnesium (Mg)	mg/L	17	5100406	14	0.2	5109488	88	0.2	5100406
Dissolved Manganese (Mn)	mg/L	0.39	5100406	0.11	0.004	5109488	3.2	0.004	5100406
Dissolved Molybdenum (Mo)	mg/L	0.0007	5098027	<0.0002	0.0002	5098027	0.0071	0.0002	5098027
Dissolved Nickel (Ni)	mg/L	0.0032	5098027	0.0018	0.0005	5098027	0.0081	0.0005	5098027
Dissolved Phosphorus (P)	mg/L	0.2	5100406	<0.1	0.1	5109488	0.1	0.1	5100406
Dissolved Potassium (K)	mg/L	3.6	5100406	2.4	0.3	5109488	14	0.3	5100406
Dissolved Selenium (Se)	mg/L	<0.0002	5098027	<0.0002	0.0002	5098027	0.0009	0.0002	5098027
Dissolved Silicon (Si)	mg/L	6.6	5100406	3.8	0.1	5109488	7.6	0.1	5100406
Dissolved Silver (Ag)	mg/L	<0.0001	5098027	<0.0001	0.0001	5098027	<0.0001	0.0001	5098027
Dissolved Sodium (Na)	mg/L	35 (1)	5100406	22	0.5	5109488	410	0.5	5100406
Dissolved Strontium (Sr)	mg/L	0.11	5100406	0.09	0.02	5109488	0.38	0.02	5100406
Dissolved Sulphur (S)	mg/L	5.4	5100406	6.3	0.2	5109488	110	0.2	5100406
Dissolved Thallium (Tl)	mg/L	<0.0002	5098027	<0.0002	0.0002	5098027	<0.0002	0.0002	5098027
Dissolved Tin (Sn)	mg/L	<0.001	5098027	<0.001	0.001	5098027	<0.001	0.001	5098027
Dissolved Titanium (Ti)	mg/L	0.001	5098027	<0.001	0.001	5098027	0.003	0.001	5098027
Dissolved Uranium (U)	mg/L	0.0004	5098027	0.0002	0.0001	5098027	0.0058	0.0001	5098027
Dissolved Vanadium (V)	mg/L	0.002	5098027	<0.001	0.001	5098027	0.008	0.001	5098027
Dissolved Zinc (Zn)	mg/L	0.013	5098027	0.008	0.003	5098027	0.009	0.003	5098027

RDL = Reportable Detection Limit
(1) Dissolved greater than total. Results within acceptable limits of precision.

Maxxam

Maxxam Job #: B174898
Report Date: 2011/08/22

EBA ENGINEERING CONSULTANTS LTD.

Site Location: WINDY CAMP
Your P.O. #: Y22101187.001
Sampler Initials: MH

ROUTINE WATER & DISS. REGULATED METALS (WATER)

Maxxam ID		BG4082		
Sampling Date		2011/08/10 12:00		
COC Number		A050087		
	Units	**11W1-1**	**RDL**	**QC Batch**
Calculated Parameters				
Anion Sum	meq/L	3.9	N/A	5092261
Cation Sum	meq/L	4.3	N/A	5092261
Hardness (CaCO3)	mg/L	170	0.5	5092259
Ion Balance	N/A	1.1	0.01	5092260
Dissolved Nitrate (NO3)	mg/L	0.89	0.01	5092262
Nitrate plus Nitrite (N)	mg/L	0.20	0.003	5092263
Dissolved Nitrite (NO2)	mg/L	<0.01	0.01	5092262
Total Dissolved Solids	mg/L	210	10	5092264
Misc. Inorganics				
Conductivity	uS/cm	410	1	5097973
pH	N/A	7.28	N/A	5098009
Low Level Elements				
Dissolved Cadmium (Cd)	ug/L	0.12	0.005	5095501
Anions				
Alkalinity (PP as CaCO3)	mg/L	<0.5	0.5	5097680
Alkalinity (Total as CaCO3)	mg/L	110	0.5	5097680
Bicarbonate (HCO3)	mg/L	140	0.5	5097680
Carbonate (CO3)	mg/L	<0.5	0.5	5097680
Hydroxide (OH)	mg/L	<0.5	0.5	5097680
Dissolved Sulphate (SO4)	mg/L	7	1	5097600
Dissolved Chloride (Cl)	mg/L	53	1	5097503
Nutrients				
Dissolved Nitrite (N)	mg/L	<0.003	0.003	5098871
Dissolved Nitrate (N)	mg/L	0.20	0.003	5098871
Elements				
Dissolved Aluminum (Al)	mg/L	0.22	0.001	5098027
Dissolved Antimony (Sb)	mg/L	<0.0006	0.0006	5098027
Dissolved Arsenic (As)	mg/L	0.0031	0.0002	5098027
Dissolved Barium (Ba)	mg/L	0.03	0.01	5100406
Dissolved Beryllium (Be)	mg/L	<0.001	0.001	5098027
Dissolved Boron (B)	mg/L	0.03	0.02	5100406
Dissolved Calcium (Ca)	mg/L	51	0.3	5100406

RDL = Reportable Detection Limit

Maxxam Job #: B174898
Report Date: 2011/08/22

EBA ENGINEERING CONSULTANTS LTD.

Site Location: WINDY CAMP
Your P.O. #: Y22101187.001
Sampler Initials: MH

ROUTINE WATER & DISS. REGULATED METALS (WATER)

Maxxam ID		BG4082		
Sampling Date		2011/08/10 12:00		
COC Number		A050087		
	Units	**11W1-1**	**RDL**	**QC Batch**
Dissolved Chromium (Cr)	mg/L	0.001	0.001	5098027
Dissolved Cobalt (Co)	mg/L	0.0040	0.0003	5098027
Dissolved Copper (Cu)	mg/L	0.0053	0.0002	5098027
Dissolved Iron (Fe)	mg/L	4.8	0.06	5100406
Dissolved Lead (Pb)	mg/L	0.0006	0.0002	5098027
Dissolved Lithium (Li)	mg/L	<0.02	0.02	5100406
Dissolved Magnesium (Mg)	mg/L	11	0.2	5100406
Dissolved Manganese (Mn)	mg/L	0.78	0.004	5100406
Dissolved Molybdenum (Mo)	mg/L	0.0006	0.0002	5098027
Dissolved Nickel (Ni)	mg/L	0.0044	0.0005	5098027
Dissolved Phosphorus (P)	mg/L	0.2	0.1	5100406
Dissolved Potassium (K)	mg/L	3.7	0.3	5100406
Dissolved Selenium (Se)	mg/L	<0.0002	0.0002	5098027
Dissolved Silicon (Si)	mg/L	7.7	0.1	5100406
Dissolved Silver (Ag)	mg/L	<0.0001	0.0001	5098027
Dissolved Sodium (Na)	mg/L	11	0.5	5100406
Dissolved Strontium (Sr)	mg/L	0.17	0.02	5100406
Dissolved Sulphur (S)	mg/L	3.1	0.2	5100406
Dissolved Thallium (Tl)	mg/L	<0.0002	0.0002	5098027
Dissolved Tin (Sn)	mg/L	<0.001	0.001	5098027
Dissolved Titanium (Ti)	mg/L	0.005	0.001	5098027
Dissolved Uranium (U)	mg/L	0.0004	0.0001	5098027
Dissolved Vanadium (V)	mg/L	0.004	0.001	5098027
Dissolved Zinc (Zn)	mg/L	0.012	0.003	5098027

RDL = Reportable Detection Limit

Maxxam Job #: B174898
Report Date: 2011/08/22

EBA ENGINEERING CONSULTANTS LTD.

Site Location: WINDY CAMP
Your P.O. #: Y22101187.001
Sampler Initials: MH

REGULATED METALS (CCME/AT1) - TOTAL

Maxxam ID		BG4061		BG4080		BG4081		
Sampling Date		2011/08/10 10:00		2011/08/10 10:15		2011/08/10 10:45		
COC Number		A050087		A050087		A050087		
	Units	**11W8-1**	**RDL**	**11W8-2**	**RDL**	**11W6-1**	**RDL**	**QC Batch**
Low Level Elements								
Total Cadmium (Cd)	ug/L	0.35	0.05	0.010	0.005	0.11	0.03	5096067
Elements								
Total Aluminum (Al)	mg/L	13 (1)	0.02	0.072	0.001	2.4 (1)	0.005	5100287
Total Antimony (Sb)	mg/L	<0.006	0.006	0.0008	0.0006	<0.0006	0.0006	5100287
Total Arsenic (As)	mg/L	0.013	0.002	0.0015	0.0002	0.0091	0.0002	5100287
Total Barium (Ba)	mg/L	0.16	0.01	<0.01	0.01	0.12	0.01	5100381
Total Beryllium (Be)	mg/L	<0.01	0.01	<0.001	0.001	<0.001	0.001	5100287
Total Boron (B)	mg/L	0.14	0.02	0.15	0.02	0.09	0.02	5100381
Total Calcium (Ca)	mg/L	63	0.3	49	0.3	150	0.3	5100381
Total Chromium (Cr)	mg/L	0.04	0.01	<0.001	0.001	0.009	0.001	5100287
Total Cobalt (Co)	mg/L	0.013	0.003	0.0008	0.0003	0.0063	0.0003	5100287
Total Copper (Cu)	mg/L	0.087	0.002	0.0021	0.0002	0.028	0.0002	5100287
Total Iron (Fe)	mg/L	38	0.06	1.7	0.06	7.9	0.06	5100381
Total Lead (Pb)	mg/L	0.016	0.002	<0.0002	0.0002	0.0017	0.0002	5100287
Total Lithium (Li)	mg/L	0.03	0.02	<0.02	0.02	<0.02	0.02	5100381
Total Magnesium (Mg)	mg/L	26	0.2	15	0.2	96	0.2	5100381
Total Manganese (Mn)	mg/L	0.69	0.004	0.12	0.004	3.6	0.004	5100381
Total Molybdenum (Mo)	mg/L	<0.002	0.002	<0.0002	0.0002	0.0074	0.0002	5100287
Total Nickel (Ni)	mg/L	0.029	0.005	0.0022	0.0005	0.013	0.0005	5100287
Total Phosphorus (P)	mg/L	0.8	0.1	<0.1	0.1	0.2	0.1	5100381
Total Potassium (K)	mg/L	8.0	0.3	2.1	0.3	15	0.3	5100381
Total Selenium (Se)	mg/L	<0.002	0.002	<0.0002	0.0002	0.0012	0.0002	5100287
Total Silicon (Si)	mg/L	27	0.1	4.2	0.1	14	0.1	5100381
Total Silver (Ag)	mg/L	<0.001	0.001	<0.0001	0.0001	<0.0001	0.0001	5100287
Total Sodium (Na)	mg/L	33	0.5	18	0.5	430	0.5	5100381
Total Strontium (Sr)	mg/L	0.14	0.02	0.09	0.02	0.41	0.02	5100381
Total Sulphur (S)	mg/L	5.6	0.2	4.5	0.2	110	0.2	5100381
Total Thallium (Tl)	mg/L	<0.002	0.002	<0.0002	0.0002	<0.0002	0.0002	5100287
Total Tin (Sn)	mg/L	<0.01	0.01	<0.001 (2)	0.001	<0.001	0.001	5100287
Total Titanium (Ti)	mg/L	0.70	0.01	0.004	0.001	0.17	0.001	5100287

RDL = Reportable Detection Limit
(1) Detection limit raised due to dilution to bring analyte within the calibrated range.
(2) Matrix Spike exceeds acceptance limits for Total Sn due to matrix interference. (Recovery: 125%, limits: 80-120%)

Maxxam Job #: B174898
Report Date: 2011/08/22

EBA ENGINEERING CONSULTANTS LTD.

Site Location: WINDY CAMP
Your P.O. #: Y22101187.001
Sampler Initials: MH

REGULATED METALS (CCME/AT1) - TOTAL

Maxxam ID		BG4061		BG4080		BG4081		
Sampling Date		2011/08/10 10:00		2011/08/10 10:15		2011/08/10 10:45		
COC Number		A050087		A050087		A050087		
	Units	**11W8-1**	**RDL**	**11W8-2**	**RDL**	**11W6-1**	**RDL**	**QC Batch**
Total Uranium (U)	mg/L	0.002	0.001	0.0002	0.0001	0.0062	0.0001	5100287
Total Vanadium (V)	mg/L	0.06	0.01	0.002	0.001	0.023	0.001	5100287
Total Zinc (Zn)	mg/L	0.09	0.03	<0.003	0.003	0.012	0.003	5100287

RDL = Reportable Detection Limit

Maxxam Job #: B174898
Report Date: 2011/08/22

EBA ENGINEERING CONSULTANTS LTD.

Site Location: WINDY CAMP
Your P.O. #: Y22101187.001
Sampler Initials: MH

REGULATED METALS (CCME/AT1) - TOTAL

Maxxam ID		BG4082		
Sampling Date		2011/08/10 12:00		
COC Number		A050087		
	Units	**11W1-1**	**RDL**	**QC Batch**
Low Level Elements				
Total Cadmium (Cd)	ug/L	0.21	0.05	5096067
Elements				
Total Aluminum (Al)	mg/L	20 (1)	0.02	5100287
Total Antimony (Sb)	mg/L	<0.006	0.006	5100287
Total Arsenic (As)	mg/L	0.011	0.002	5100287
Total Barium (Ba)	mg/L	0.19	0.01	5100381
Total Beryllium (Be)	mg/L	<0.01	0.01	5100287
Total Boron (B)	mg/L	0.04	0.02	5100381
Total Calcium (Ca)	mg/L	61	0.3	5100381
Total Chromium (Cr)	mg/L	0.06	0.01	5100287
Total Cobalt (Co)	mg/L	0.018	0.003	5100287
Total Copper (Cu)	mg/L	0.11	0.002	5100287
Total Iron (Fe)	mg/L	47	0.06	5100381
Total Lead (Pb)	mg/L	0.011	0.002	5100287
Total Lithium (Li)	mg/L	0.05	0.02	5100381
Total Magnesium (Mg)	mg/L	25	0.2	5100381
Total Manganese (Mn)	mg/L	1.2	0.004	5100381
Total Molybdenum (Mo)	mg/L	<0.002	0.002	5100287
Total Nickel (Ni)	mg/L	0.041	0.005	5100287
Total Phosphorus (P)	mg/L	0.6	0.1	5100381
Total Potassium (K)	mg/L	9.0	0.3	5100381
Total Selenium (Se)	mg/L	<0.002	0.002	5100287
Total Silicon (Si)	mg/L	37	0.1	5100381
Total Silver (Ag)	mg/L	<0.001	0.001	5100287
Total Sodium (Na)	mg/L	11	0.5	5100381
Total Strontium (Sr)	mg/L	0.21	0.02	5100381
Total Sulphur (S)	mg/L	3.5	0.2	5100381
Total Thallium (Tl)	mg/L	<0.002	0.002	5100287
Total Tin (Sn)	mg/L	<0.01	0.01	5100287
Total Titanium (Ti)	mg/L	1.2	0.01	5100287

RDL = Reportable Detection Limit
(1) Detection limit raised due to dilution to bring analyte within the calibrated range.

Maxxam Job #: B174898
Report Date: 2011/08/22

EBA ENGINEERING CONSULTANTS LTD.

Site Location: WINDY CAMP
Your P.O. #: Y22101187.001
Sampler Initials: MH

REGULATED METALS (CCME/AT1) - TOTAL

Maxxam ID		BG4082		
Sampling Date		2011/08/10 12:00		
COC Number		A050087		
	Units	**11W1-1**	**RDL**	**QC Batch**
Total Uranium (U)	mg/L	0.002	0.001	5100287
Total Vanadium (V)	mg/L	0.07	0.01	5100287
Total Zinc (Zn)	mg/L	0.08	0.03	5100287

RDL = Reportable Detection Limit

Maxxam Job #: B174898
Report Date: 2011/08/22

EBA ENGINEERING CONSULTANTS LTD.

Site Location: WINDY CAMP
Your P.O. #: Y22101187.001
Sampler Initials: MH

General Comments

Sample BG4061-01: Detection limits raised due to sample matrix. Parameters affected are Total Cr, Co, Cu, Pb, Sb, Mo, Ni, Se, Ag, As, Tl, Sn, Ti, U, V, Zn, Be, Cd.

Sample BG4081-01: Detection limit raised for Dissolved and Total Cd due to sample matrix.

Cation anion balance investigated, data quality confirmed.

Sample BG4082-01: Detection limits raised due to sample matrix. Parameters affected are Total Cr, Co, Cu, Pb, Sb, Mo, Ni, Se, Ag, As, Tl, Sn, Ti, U, V, Zn, Be, Cd.

Results relate only to the items tested.

EBA ENGINEERING CONSULTANTS LTD.
Attention: DANIELA FELSKE
Client Project #:
P.O. #: Y22101187.001
Site Location: WINDY CAMP

Quality Assurance Report

Maxxam Job Number: EB174898

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5097503	BA3	Matrix Spike	Dissolved Chloride (Cl)	2011/08/17		NC	%	80 - 120
		Spiked Blank	Dissolved Chloride (Cl)	2011/08/17		110	%	80 - 120
		Method Blank	Dissolved Chloride (Cl)	2011/08/17	<1		mg/L	
		RPD	Dissolved Chloride (Cl)	2011/08/17	1.3		%	20
5097598	RC6	Matrix Spike	O-TERPHENYL (sur.)	2011/08/18		94	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2011/08/18		83	%	70 - 130
		Spiked Blank	O-TERPHENYL (sur.)	2011/08/18		98	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2011/08/18		97	%	70 - 130
		Method Blank	O-TERPHENYL (sur.)	2011/08/18		109	%	50 - 130
			F2 (C10-C16 Hydrocarbons)	2011/08/18	<0.1		mg/L	
		RPD	F2 (C10-C16 Hydrocarbons)	2011/08/18	NC		%	40
5097600	BA3	Matrix Spike	Dissolved Sulphate (SO4)	2011/08/17		NC	%	80 - 120
		Spiked Blank	Dissolved Sulphate (SO4)	2011/08/17		109	%	80 - 120
		Method Blank	Dissolved Sulphate (SO4)	2011/08/17	<1		mg/L	
		RPD	Dissolved Sulphate (SO4)	2011/08/17	3.1		%	20
5097680	KG6	Spiked Blank	Alkalinity (Total as CaCO3)	2011/08/17		98	%	80 - 120
		Method Blank	Alkalinity (PP as CaCO3)	2011/08/17	<0.5		mg/L	
			Alkalinity (Total as CaCO3)	2011/08/17	<0.5		mg/L	
			Bicarbonate (HCO3)	2011/08/17	<0.5		mg/L	
			Carbonate (CO3)	2011/08/17	<0.5		mg/L	
			Hydroxide (OH)	2011/08/17	<0.5		mg/L	
		RPD	Alkalinity (PP as CaCO3)	2011/08/17	NC		%	20
			Alkalinity (Total as CaCO3)	2011/08/17	0.2		%	20
			Bicarbonate (HCO3)	2011/08/17	0.2		%	20
			Carbonate (CO3)	2011/08/17	NC		%	20
			Hydroxide (OH)	2011/08/17	NC		%	20
5097840	NSE	Matrix Spike	4-BROMOFLUOROBENZENE (sur.)	2011/08/18		109	%	70 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2011/08/18		126	%	70 - 130
			D8-TOLUENE (sur.)	2011/08/18		80	%	70 - 130
			Benzene	2011/08/18		91	%	70 - 130
			Toluene	2011/08/18		90	%	70 - 130
			Ethylbenzene	2011/08/18		93	%	70 - 130
			o-Xylene	2011/08/18		100	%	70 - 130
			m & p-Xylene	2011/08/18		88	%	70 - 130
			(C6-C10)	2011/08/18		116	%	70 - 130
		Spiked Blank	4-BROMOFLUOROBENZENE (sur.)	2011/08/18		103	%	70 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2011/08/18		91	%	70 - 130
			D8-TOLUENE (sur.)	2011/08/18		87	%	70 - 130
			Benzene	2011/08/18		97	%	70 - 130
			Toluene	2011/08/18		100	%	70 - 130
			Ethylbenzene	2011/08/18		112	%	70 - 130
			o-Xylene	2011/08/18		109	%	70 - 130
			m & p-Xylene	2011/08/18		105	%	70 - 130
			(C6-C10)	2011/08/18		96	%	70 - 130
		Method Blank	4-BROMOFLUOROBENZENE (sur.)	2011/08/18		107	%	70 - 130
			D4-1,2-DICHLOROETHANE (sur.)	2011/08/18		91	%	70 - 130
			D8-TOLUENE (sur.)	2011/08/18		89	%	70 - 130
			Benzene	2011/08/18	<0.0004		mg/L	
			Toluene	2011/08/18	<0.0004		mg/L	
			Ethylbenzene	2011/08/18	<0.0004		mg/L	
			o-Xylene	2011/08/18	<0.0004		mg/L	
			m & p-Xylene	2011/08/18	<0.0008		mg/L	
			Xylenes (Total)	2011/08/18	<0.0008		mg/L	
			F1 (C6-C10) - BTEX	2011/08/18	<0.1		mg/L	
			(C6-C10)	2011/08/18	<0.1		mg/L	

EBA ENGINEERING CONSULTANTS LTD.
Attention: DANIELA FELSKE
Client Project #:
P.O. #: Y22101187.001
Site Location: WINDY CAMP

Quality Assurance Report (Continued)

Maxxam Job Number: EB174898

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5097840	NSE	RPD	Benzene	2011/08/18	NC		%	40
			Toluene	2011/08/18	NC		%	40
			Ethylbenzene	2011/08/18	NC		%	40
			o-Xylene	2011/08/18	NC		%	40
			m & p-Xylene	2011/08/18	NC		%	40
			Xylenes (Total)	2011/08/18	NC		%	40
			F1 (C6-C10) - BTEX	2011/08/18	NC		%	40
			(C6-C10)	2011/08/18	NC		%	40
5097973	KG6	Spiked Blank	Conductivity	2011/08/17		100	%	90 - 110
		Method Blank	Conductivity	2011/08/17	<1		uS/cm	
		RPD	Conductivity	2011/08/17	0.3		%	20
5098009	KG6	Spiked Blank	pH	2011/08/17		100	%	97 - 103
		RPD	pH	2011/08/17	0.08		%	5
5098027	EO1	Matrix Spike						
		[BG4080-01]	Dissolved Aluminum (Al)	2011/08/18		89	%	80 - 120
			Dissolved Antimony (Sb)	2011/08/18		98	%	80 - 120
			Dissolved Arsenic (As)	2011/08/18		91	%	80 - 120
			Dissolved Beryllium (Be)	2011/08/18		96	%	80 - 120
			Dissolved Chromium (Cr)	2011/08/18		91	%	80 - 120
			Dissolved Cobalt (Co)	2011/08/18		93	%	80 - 120
			Dissolved Copper (Cu)	2011/08/18		91	%	80 - 120
			Dissolved Lead (Pb)	2011/08/18		96	%	80 - 120
			Dissolved Molybdenum (Mo)	2011/08/18		101	%	80 - 120
			Dissolved Nickel (Ni)	2011/08/18		93	%	80 - 120
			Dissolved Selenium (Se)	2011/08/18		100	%	80 - 120
			Dissolved Silver (Ag)	2011/08/18		82	%	80 - 120
			Dissolved Thallium (Tl)	2011/08/18		96	%	80 - 120
			Dissolved Tin (Sn)	2011/08/18		115	%	80 - 120
			Dissolved Titanium (Ti)	2011/08/18		93	%	80 - 120
			Dissolved Uranium (U)	2011/08/18		98	%	80 - 120
			Dissolved Vanadium (V)	2011/08/18		100	%	80 - 120
			Dissolved Zinc (Zn)	2011/08/18		85	%	80 - 120
		Spiked Blank	Dissolved Aluminum (Al)	2011/08/18		98	%	80 - 120
			Dissolved Antimony (Sb)	2011/08/18		88	%	80 - 120
			Dissolved Arsenic (As)	2011/08/18		92	%	80 - 120
			Dissolved Beryllium (Be)	2011/08/18		94	%	80 - 120
			Dissolved Chromium (Cr)	2011/08/18		91	%	80 - 120
			Dissolved Cobalt (Co)	2011/08/18		94	%	80 - 120
			Dissolved Copper (Cu)	2011/08/18		95	%	80 - 120
			Dissolved Lead (Pb)	2011/08/18		95	%	80 - 120
			Dissolved Molybdenum (Mo)	2011/08/18		95	%	80 - 120
			Dissolved Nickel (Ni)	2011/08/18		95	%	80 - 120
			Dissolved Selenium (Se)	2011/08/18		94	%	80 - 120
			Dissolved Silver (Ag)	2011/08/18		81	%	80 - 120
			Dissolved Thallium (Tl)	2011/08/18		96	%	80 - 120
			Dissolved Tin (Sn)	2011/08/18		111	%	80 - 120
			Dissolved Titanium (Ti)	2011/08/18		93	%	80 - 120
			Dissolved Uranium (U)	2011/08/18		95	%	80 - 120
			Dissolved Vanadium (V)	2011/08/18		98	%	80 - 120
			Dissolved Zinc (Zn)	2011/08/18		95	%	80 - 120
		Method Blank	Dissolved Aluminum (Al)	2011/08/18	<0.001		mg/L	
			Dissolved Antimony (Sb)	2011/08/18	<0.0006		mg/L	
			Dissolved Arsenic (As)	2011/08/18	<0.0002		mg/L	
			Dissolved Beryllium (Be)	2011/08/18	<0.001		mg/L	
			Dissolved Chromium (Cr)	2011/08/18	<0.001		mg/L	

EBA ENGINEERING CONSULTANTS LTD.
Attention: DANIELA FELSKE
Client Project #:
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Site Location: WINDY CAMP

Quality Assurance Report (Continued)

Maxxam Job Number: EB174898

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5098027	EO1	Method Blank	Dissolved Cobalt (Co)	2011/08/18	<0.0003		mg/L	
			Dissolved Copper (Cu)	2011/08/18	<0.0002		mg/L	
			Dissolved Lead (Pb)	2011/08/18	<0.0002		mg/L	
			Dissolved Molybdenum (Mo)	2011/08/18	<0.0002		mg/L	
			Dissolved Nickel (Ni)	2011/08/18	<0.0005		mg/L	
			Dissolved Selenium (Se)	2011/08/18	<0.0002		mg/L	
			Dissolved Silver (Ag)	2011/08/18	<0.0001		mg/L	
			Dissolved Thallium (Tl)	2011/08/18	<0.0002		mg/L	
			Dissolved Tin (Sn)	2011/08/18	<0.001		mg/L	
			Dissolved Titanium (Ti)	2011/08/18	<0.001		mg/L	
			Dissolved Uranium (U)	2011/08/18	<0.0001		mg/L	
			Dissolved Vanadium (V)	2011/08/18	<0.001		mg/L	
			Dissolved Zinc (Zn)	2011/08/18	<0.003		mg/L	
		RPD [BG4080-01]	Dissolved Aluminum (Al)	2011/08/18	1.6		%	20
			Dissolved Antimony (Sb)	2011/08/18	NC		%	20
			Dissolved Arsenic (As)	2011/08/18	NC		%	20
			Dissolved Beryllium (Be)	2011/08/18	NC		%	20
			Dissolved Chromium (Cr)	2011/08/18	NC		%	20
			Dissolved Cobalt (Co)	2011/08/18	NC		%	20
			Dissolved Copper (Cu)	2011/08/18	1.4		%	20
			Dissolved Lead (Pb)	2011/08/18	NC		%	20
			Dissolved Molybdenum (Mo)	2011/08/18	NC		%	20
			Dissolved Nickel (Ni)	2011/08/18	NC		%	20
			Dissolved Selenium (Se)	2011/08/18	NC		%	20
			Dissolved Silver (Ag)	2011/08/18	NC		%	20
			Dissolved Thallium (Tl)	2011/08/18	NC		%	20
			Dissolved Tin (Sn)	2011/08/18	NC		%	20
			Dissolved Titanium (Ti)	2011/08/18	NC		%	20
			Dissolved Uranium (U)	2011/08/18	NC		%	20
			Dissolved Vanadium (V)	2011/08/18	NC		%	20
			Dissolved Zinc (Zn)	2011/08/18	NC		%	20
5098871	KU	Matrix Spike	Dissolved Nitrite (N)	2011/08/17		102	%	80 - 120
			Dissolved Nitrate (N)	2011/08/17		NC	%	80 - 120
		Spiked Blank	Dissolved Nitrite (N)	2011/08/17		99	%	80 - 120
			Dissolved Nitrate (N)	2011/08/17		102	%	90 - 110
		Method Blank	Dissolved Nitrite (N)	2011/08/17	<0.003		mg/L	
			Dissolved Nitrate (N)	2011/08/17	<0.003		mg/L	
		RPD	Dissolved Nitrite (N)	2011/08/17	NC		%	20
			Dissolved Nitrate (N)	2011/08/17	0.1		%	20
5100287	EO1	Matrix Spike [BG4080-01]	Total Aluminum (Al)	2011/08/18		NC	%	80 - 120
			Total Antimony (Sb)	2011/08/18		108	%	80 - 120
			Total Arsenic (As)	2011/08/18		89	%	80 - 120
			Total Beryllium (Be)	2011/08/18		90	%	80 - 120
			Total Chromium (Cr)	2011/08/18		103	%	80 - 120
			Total Cobalt (Co)	2011/08/18		100	%	80 - 120
			Total Copper (Cu)	2011/08/18		100	%	80 - 120
			Total Lead (Pb)	2011/08/18		98	%	80 - 120
			Total Molybdenum (Mo)	2011/08/18		114	%	80 - 120
			Total Nickel (Ni)	2011/08/18		105	%	80 - 120
			Total Selenium (Se)	2011/08/18		83	%	80 - 120
			Total Silver (Ag)	2011/08/18		103	%	80 - 120
			Total Thallium (Tl)	2011/08/18		99	%	80 - 120
			Total Titanium (Ti)	2011/08/18		108	%	80 - 120
			Total Uranium (U)	2011/08/18		105	%	80 - 120

EBA ENGINEERING CONSULTANTS LTD.
Attention: DANIELA FELSKE
Client Project #:
P.O. #: Y22101187.001
Site Location: WINDY CAMP

Quality Assurance Report (Continued)

Maxxam Job Number: EB174898

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5100287	EO1	Matrix Spike						
		[BG4080-01]	Total Vanadium (V)	2011/08/18		110	%	80 - 120
			Total Zinc (Zn)	2011/08/18		82	%	80 - 120
		Spiked Blank	Total Aluminum (Al)	2011/08/18		93	%	80 - 120
			Total Antimony (Sb)	2011/08/18		104	%	80 - 120
			Total Arsenic (As)	2011/08/18		88	%	80 - 120
			Total Beryllium (Be)	2011/08/18		88	%	80 - 120
			Total Chromium (Cr)	2011/08/18		101	%	80 - 120
			Total Cobalt (Co)	2011/08/18		100	%	80 - 120
			Total Copper (Cu)	2011/08/18		103	%	80 - 120
			Total Lead (Pb)	2011/08/18		102	%	80 - 120
			Total Molybdenum (Mo)	2011/08/18		105	%	80 - 120
			Total Nickel (Ni)	2011/08/18		105	%	80 - 120
			Total Selenium (Se)	2011/08/18		81	%	80 - 120
			Total Silver (Ag)	2011/08/18		103	%	80 - 120
			Total Thallium (Tl)	2011/08/18		101	%	80 - 120
			Total Tin (Sn)	2011/08/18		119	%	80 - 120
			Total Titanium (Ti)	2011/08/18		103	%	80 - 120
			Total Uranium (U)	2011/08/18		102	%	80 - 120
			Total Vanadium (V)	2011/08/18		106	%	80 - 120
			Total Zinc (Zn)	2011/08/18		86	%	80 - 120
		Method Blank	Total Aluminum (Al)	2011/08/18	0.002, RDL=0.001		mg/L	
			Total Antimony (Sb)	2011/08/18	0.0008, RDL=0.0006		mg/L	
			Total Arsenic (As)	2011/08/18	0.0003, RDL=0.0002		mg/L	
			Total Beryllium (Be)	2011/08/18	<0.001		mg/L	
			Total Chromium (Cr)	2011/08/18	<0.001		mg/L	
			Total Cobalt (Co)	2011/08/18	<0.0003		mg/L	
			Total Copper (Cu)	2011/08/18	0.0003, RDL=0.0002		mg/L	
			Total Lead (Pb)	2011/08/18	<0.0002		mg/L	
			Total Molybdenum (Mo)	2011/08/18	<0.0002		mg/L	
			Total Nickel (Ni)	2011/08/18	<0.0005		mg/L	
			Total Selenium (Se)	2011/08/18	<0.0002		mg/L	
			Total Silver (Ag)	2011/08/18	<0.0001		mg/L	
			Total Thallium (Tl)	2011/08/18	<0.0002		mg/L	
			Total Tin (Sn)	2011/08/18	<0.001		mg/L	
			Total Titanium (Ti)	2011/08/18	<0.001		mg/L	
			Total Uranium (U)	2011/08/18	<0.0001		mg/L	
			Total Vanadium (V)	2011/08/18	<0.001		mg/L	
			Total Zinc (Zn)	2011/08/18	<0.003		mg/L	
		RPD [BG4080-01]	Total Aluminum (Al)	2011/08/18	8.9		%	20
			Total Antimony (Sb)	2011/08/18	NC		%	20
			Total Arsenic (As)	2011/08/18	0.2		%	20
			Total Beryllium (Be)	2011/08/18	NC		%	20
			Total Chromium (Cr)	2011/08/18	NC		%	20
			Total Cobalt (Co)	2011/08/18	NC		%	20
			Total Copper (Cu)	2011/08/18	3.4		%	20
			Total Lead (Pb)	2011/08/18	NC		%	20
			Total Molybdenum (Mo)	2011/08/18	NC		%	20
			Total Nickel (Ni)	2011/08/18	NC		%	20
			Total Selenium (Se)	2011/08/18	NC		%	20
			Total Silver (Ag)	2011/08/18	NC		%	20
			Total Thallium (Tl)	2011/08/18	NC		%	20
			Total Tin (Sn)	2011/08/18	NC		%	20
			Total Titanium (Ti)	2011/08/18	NC		%	20
			Total Uranium (U)	2011/08/18	NC		%	20

EBA ENGINEERING CONSULTANTS LTD.
Attention: DANIELA FELSKE
Client Project #:
P.O. #: Y22101187.001
Site Location: WINDY CAMP

Quality Assurance Report (Continued)

Maxxam Job Number: EB174898

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5100287	EO1	RPD [BG4080-01]	Total Vanadium (V)	2011/08/18	NC		%	20
			Total Zinc (Zn)	2011/08/18	NC		%	20
5100381	NC3	Matrix Spike [BG4080-01]	Total Barium (Ba)	2011/08/17		84	%	80 - 120
			Total Boron (B)	2011/08/17		94	%	80 - 120
			Total Calcium (Ca)	2011/08/17		NC	%	80 - 120
			Total Iron (Fe)	2011/08/17		NC	%	80 - 120
			Total Lithium (Li)	2011/08/17		90	%	80 - 120
			Total Magnesium (Mg)	2011/08/17		90	%	80 - 120
			Total Manganese (Mn)	2011/08/17		92	%	80 - 120
			Total Phosphorus (P)	2011/08/17		94	%	80 - 120
			Total Potassium (K)	2011/08/17		89	%	80 - 120
			Total Silicon (Si)	2011/08/17		94	%	80 - 120
			Total Sodium (Na)	2011/08/17		99	%	80 - 120
			Total Strontium (Sr)	2011/08/17		84	%	80 - 120
		Spiked Blank	Total Barium (Ba)	2011/08/17		84	%	80 - 120
			Total Boron (B)	2011/08/17		93	%	80 - 120
			Total Calcium (Ca)	2011/08/17		91	%	80 - 120
			Total Iron (Fe)	2011/08/17		99	%	80 - 120
			Total Lithium (Li)	2011/08/17		89	%	80 - 120
			Total Magnesium (Mg)	2011/08/17		89	%	80 - 120
			Total Manganese (Mn)	2011/08/17		91	%	80 - 120
			Total Phosphorus (P)	2011/08/17		91	%	80 - 120
			Total Potassium (K)	2011/08/17		89	%	80 - 120
			Total Silicon (Si)	2011/08/17		91	%	80 - 120
			Total Sodium (Na)	2011/08/17		94	%	80 - 120
			Total Strontium (Sr)	2011/08/17		84	%	80 - 120
			Total Sulphur (S)	2011/08/17		100	%	80 - 120
		Method Blank	Total Barium (Ba)	2011/08/17	<0.01		mg/L	
			Total Boron (B)	2011/08/17	<0.02		mg/L	
			Total Calcium (Ca)	2011/08/17	<0.3		mg/L	
			Total Iron (Fe)	2011/08/17	<0.06		mg/L	
			Total Lithium (Li)	2011/08/17	<0.02		mg/L	
			Total Magnesium (Mg)	2011/08/17	<0.2		mg/L	
			Total Manganese (Mn)	2011/08/17	<0.004		mg/L	
			Total Phosphorus (P)	2011/08/17	<0.1		mg/L	
			Total Potassium (K)	2011/08/17	<0.3		mg/L	
			Total Silicon (Si)	2011/08/17	<0.1		mg/L	
			Total Sodium (Na)	2011/08/17	<0.5		mg/L	
			Total Strontium (Sr)	2011/08/17	<0.02		mg/L	
			Total Sulphur (S)	2011/08/17	<0.2		mg/L	
		RPD [BG4080-01]	Total Barium (Ba)	2011/08/17	NC		%	20
			Total Boron (B)	2011/08/17	1.7		%	20
			Total Calcium (Ca)	2011/08/17	0.8		%	20
			Total Iron (Fe)	2011/08/17	0.3		%	20
			Total Lithium (Li)	2011/08/17	NC		%	20
			Total Magnesium (Mg)	2011/08/17	1.2		%	20
			Total Manganese (Mn)	2011/08/17	0.7		%	20
			Total Phosphorus (P)	2011/08/17	NC		%	20
			Total Potassium (K)	2011/08/17	2.1		%	20
			Total Silicon (Si)	2011/08/17	1		%	20
			Total Sodium (Na)	2011/08/17	2.3		%	20
			Total Strontium (Sr)	2011/08/17	NC		%	20
			Total Sulphur (S)	2011/08/17	2.8		%	20
5100406	NC3	Matrix Spike [BG4061-01]	Dissolved Barium (Ba)	2011/08/17		104	%	80 - 120

EBA ENGINEERING CONSULTANTS LTD.
Attention: DANIELA FELSKE
Client Project #:
P.O. #: Y22101187.001
Site Location: WINDY CAMP

Quality Assurance Report (Continued)

Maxxam Job Number: EB174898

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
5100406	NC3	Matrix Spike [BG4061-01]	Dissolved Boron (B)	2011/08/17		117	%	80 - 120
			Dissolved Calcium (Ca)	2011/08/17		NC	%	80 - 120
			Dissolved Iron (Fe)	2011/08/17		NC	%	80 - 120
			Dissolved Lithium (Li)	2011/08/17		96	%	80 - 120
			Dissolved Magnesium (Mg)	2011/08/17		116	%	80 - 120
			Dissolved Manganese (Mn)	2011/08/17		117	%	80 - 120
			Dissolved Phosphorus (P)	2011/08/17		106	%	80 - 120
			Dissolved Potassium (K)	2011/08/17		108	%	80 - 120
			Dissolved Silicon (Si)	2011/08/17		104	%	80 - 120
			Dissolved Sodium (Na)	2011/08/17		92	%	80 - 120
			Dissolved Strontium (Sr)	2011/08/17		105	%	80 - 120
		Spiked Blank	Dissolved Barium (Ba)	2011/08/17		95	%	80 - 120
			Dissolved Boron (B)	2011/08/17		103	%	80 - 120
			Dissolved Calcium (Ca)	2011/08/17		106	%	80 - 120
			Dissolved Iron (Fe)	2011/08/17		109	%	80 - 120
			Dissolved Lithium (Li)	2011/08/17		85	%	80 - 120
			Dissolved Magnesium (Mg)	2011/08/17		107	%	80 - 120
			Dissolved Manganese (Mn)	2011/08/17		95	%	80 - 120
			Dissolved Phosphorus (P)	2011/08/17		106	%	80 - 120
			Dissolved Potassium (K)	2011/08/17		98	%	80 - 120
			Dissolved Silicon (Si)	2011/08/17		91	%	80 - 120
			Dissolved Sodium (Na)	2011/08/17		88	%	80 - 120
			Dissolved Strontium (Sr)	2011/08/17		93	%	80 - 120
			Dissolved Sulphur (S)	2011/08/17		98	%	80 - 120
		Method Blank	Dissolved Barium (Ba)	2011/08/17	<0.01		mg/L	
			Dissolved Boron (B)	2011/08/17	<0.02		mg/L	
			Dissolved Calcium (Ca)	2011/08/17	<0.3		mg/L	
			Dissolved Iron (Fe)	2011/08/17	<0.06		mg/L	
			Dissolved Lithium (Li)	2011/08/17	<0.02		mg/L	
			Dissolved Magnesium (Mg)	2011/08/17	<0.2		mg/L	
			Dissolved Manganese (Mn)	2011/08/17	<0.004		mg/L	
			Dissolved Phosphorus (P)	2011/08/17	<0.1		mg/L	
			Dissolved Potassium (K)	2011/08/17	<0.3		mg/L	
			Dissolved Silicon (Si)	2011/08/17	<0.1		mg/L	
			Dissolved Sodium (Na)	2011/08/17	<0.5		mg/L	
			Dissolved Strontium (Sr)	2011/08/17	<0.02		mg/L	
			Dissolved Sulphur (S)	2011/08/17	<0.2		mg/L	
		RPD [BG4061-01]	Dissolved Barium (Ba)	2011/08/17	NC		%	20
			Dissolved Boron (B)	2011/08/17	0.8		%	20
			Dissolved Calcium (Ca)	2011/08/17	1.0		%	20
			Dissolved Iron (Fe)	2011/08/17	0.002		%	20
			Dissolved Lithium (Li)	2011/08/17	NC		%	20
			Dissolved Magnesium (Mg)	2011/08/17	0.9		%	20
			Dissolved Manganese (Mn)	2011/08/17	0.2		%	20
			Dissolved Phosphorus (P)	2011/08/17	NC		%	20
			Dissolved Potassium (K)	2011/08/17	0.9		%	20
			Dissolved Silicon (Si)	2011/08/17	0.2		%	20
			Dissolved Sodium (Na)	2011/08/17	2.1		%	20
			Dissolved Strontium (Sr)	2011/08/17	0.9		%	20
			Dissolved Sulphur (S)	2011/08/17	0.3		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

EBA ENGINEERING CONSULTANTS LTD.
Attention: DANIELA FELSKE
Client Project #:
P.O. #: Y22101187.001
Site Location: WINDY CAMP

Quality Assurance Report (Continued)

Maxxam Job Number: EB174898

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

Maxxam

Calgary: 4000 19st St. NE, T2E 6P8. Ph: (403) 291-3077, Fax: (403) 735-2240, Toll free: (800) 386-7247
Edmonton: 9331 - 48 Street, T6B 2R4. Ph: (780) 577-7100, Fax: (780) 450-4187. Toll free: (877) 465-8889
www.maxxamanalytics.com

08/567(Z)

Chain of Custody

A050087

Page: 1 of 1

	Invoice To: C/O Report Address ☑	Report To: Same as Invoice ☑	Report Distribution (E-Mail):
Company:	EBA		DFelske@eba.ca
Contact:	Daniela Felske		mhebert@eba.ca
Address:	14940-123 Ave		
	Prov: AB PC: T5V 1B4	Prov: PC:	
Contact #s:	Ph: 780-451-2121 Cell:	Ph: Cell:	

REGULATORY GUIDELINES:
- ☐ AT1
- ☑ CCME
- ☐ Regulated Drinking Water
- ☐ Other:

All samples are held for 60 calendar days after sample receipt, unless specified otherwise.

PO #:	V2210 1187.001
Project # / Name:	
Site Location:	Windy camp
Quote #:	
Sampled By:	Michel Hebert

SERVICE REQUESTED: ☐ RUSH (Contact lab to reserve) Date Required: ☑ REGULAR (5 to 7 Days)

	Sample ID	Depth (unit)	Matrix GW / SW Soil	Date/Time Sampled YY/MM/DD 24:00	SOIL: BTEX F1-F4	Sieve (75 micron)	Regulated Metals (CCME / AT1)	Salinity 4	Assessment ICP Metals	Basic Class II Landfill	WATER: ☐VOCs ☐BTEX F1	☑BTEX F1-F2	☑Routine Water ☐Turb ☐F	☐DOC ☐TOC	Regulated Metals (CCME / AT1) Total	Dissolved	☐Total ☐Dissolved Mercury	Other Analysis: Chloride	HOLD - Do not Analyze	# of Containers Submitted
1	11WS-1		GW	11/08/10 10:00								X	X		X	X		X		8
2	11WS-2		W	11/08/10 10:15								X	X		X	X		X		8
3	11WG-1		W	11/08/10 10:45								X	X		X	X		X		8
4	11W1-1		W	11/08/10 12:00								X	X		X	X		X		8
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

See reverse for package specifics

Please indicate Filtered, Preserved or Both (F, P, F/P) → P F/P ID/RP F P

Relinquished By (Signature/Print): Michel Hebert Michel Hebert	Date (YY/MM/DD): 11/08/11	Time (24:00): 9:00	
Relinquished By (Signature/Print):	Date (YY/MM/DD):	Time (24:00):	
Special Instructions:		# of Jars Used & Not Submitted	

LAB USE ONLY

Received By: AMANDA L'HIRONDELLE	Date: 2011-08-13	Time: 10:00	Maxxam Job #: B174898
Lab Comments:		Custody Seal: ABSENT	Temperature: 10,13,11 / 10,8,11 — Ice: PRESENT

Maxxam

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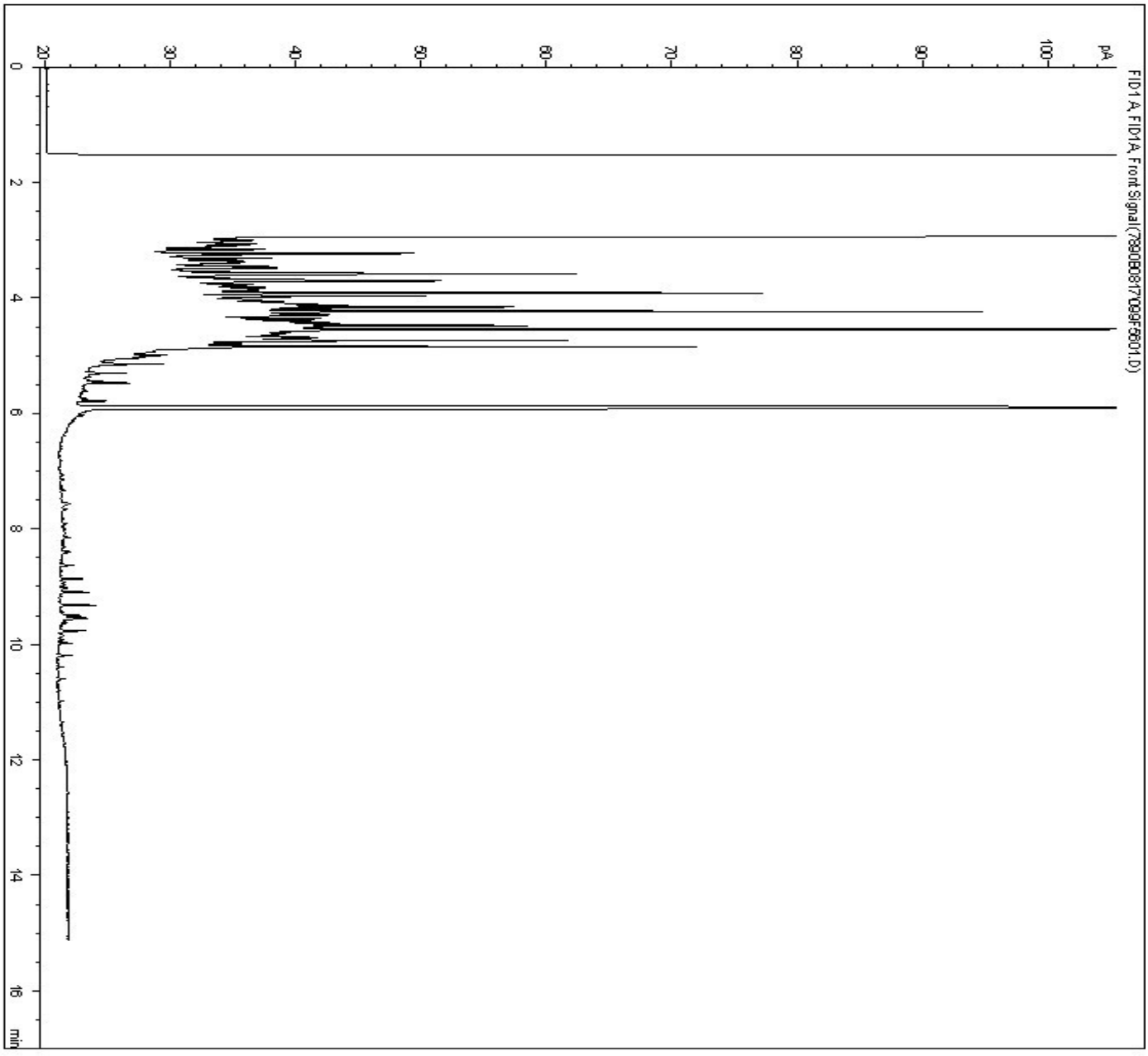
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/22
Maxxam Job #: B174898
Maxxam Sample: BG4061

Site Reference: WINDY CAMP
Client ID: 11W8-1

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0817\099F5601.D
Sample Name: BG4061-02



*** End of Report ***

Instrument 1 2011/08/18 10:08:26 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam

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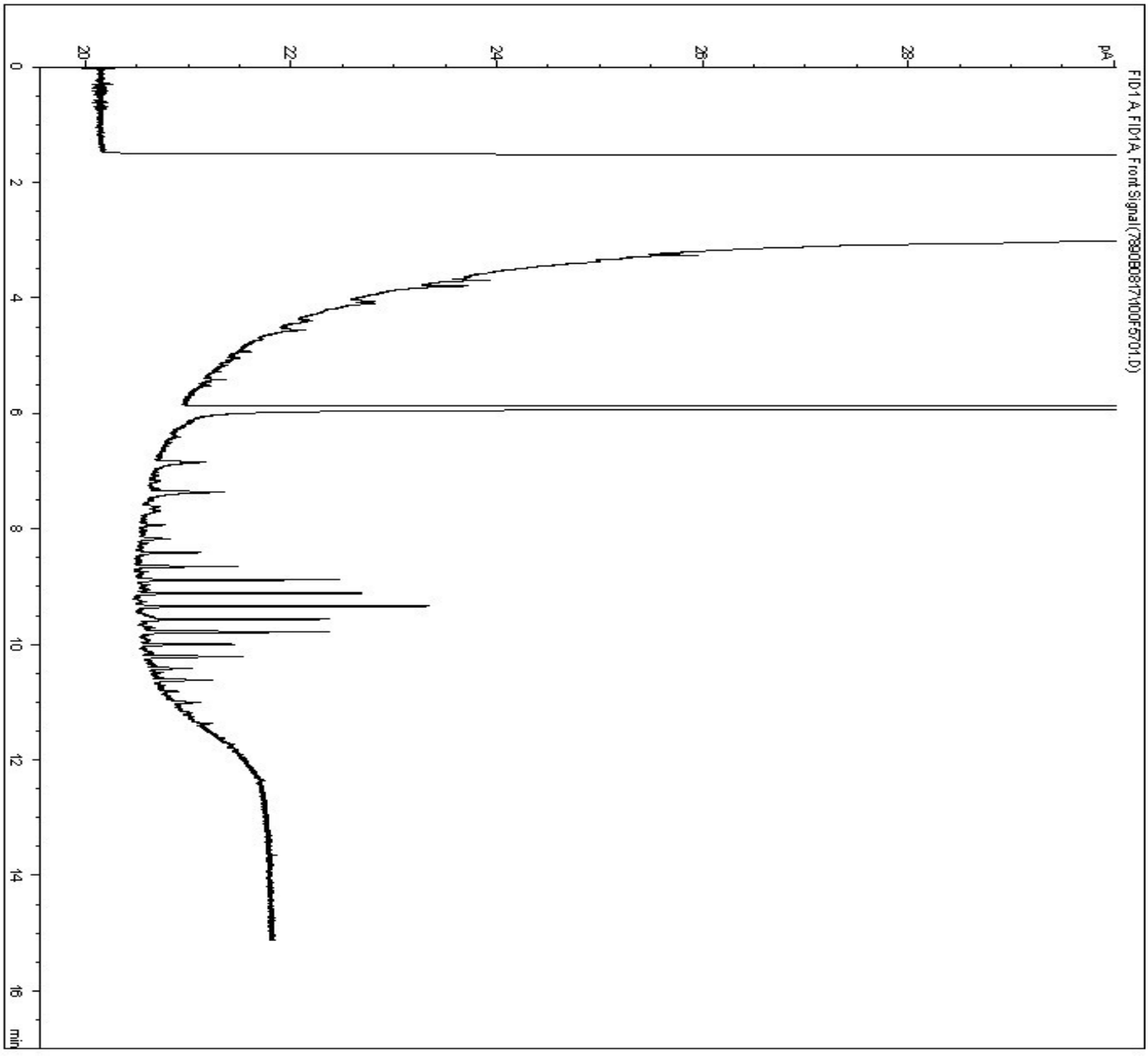
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/22
Maxxam Job #: B174898
Maxxam Sample: BG4080

Site Reference: WINDY CAMP
Client ID: 11W8-2

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0817\100F5701.D
Sample Name: BG4080-02



*** End of Report ***

Instrument 1 2011/08/18 10:08:29 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam

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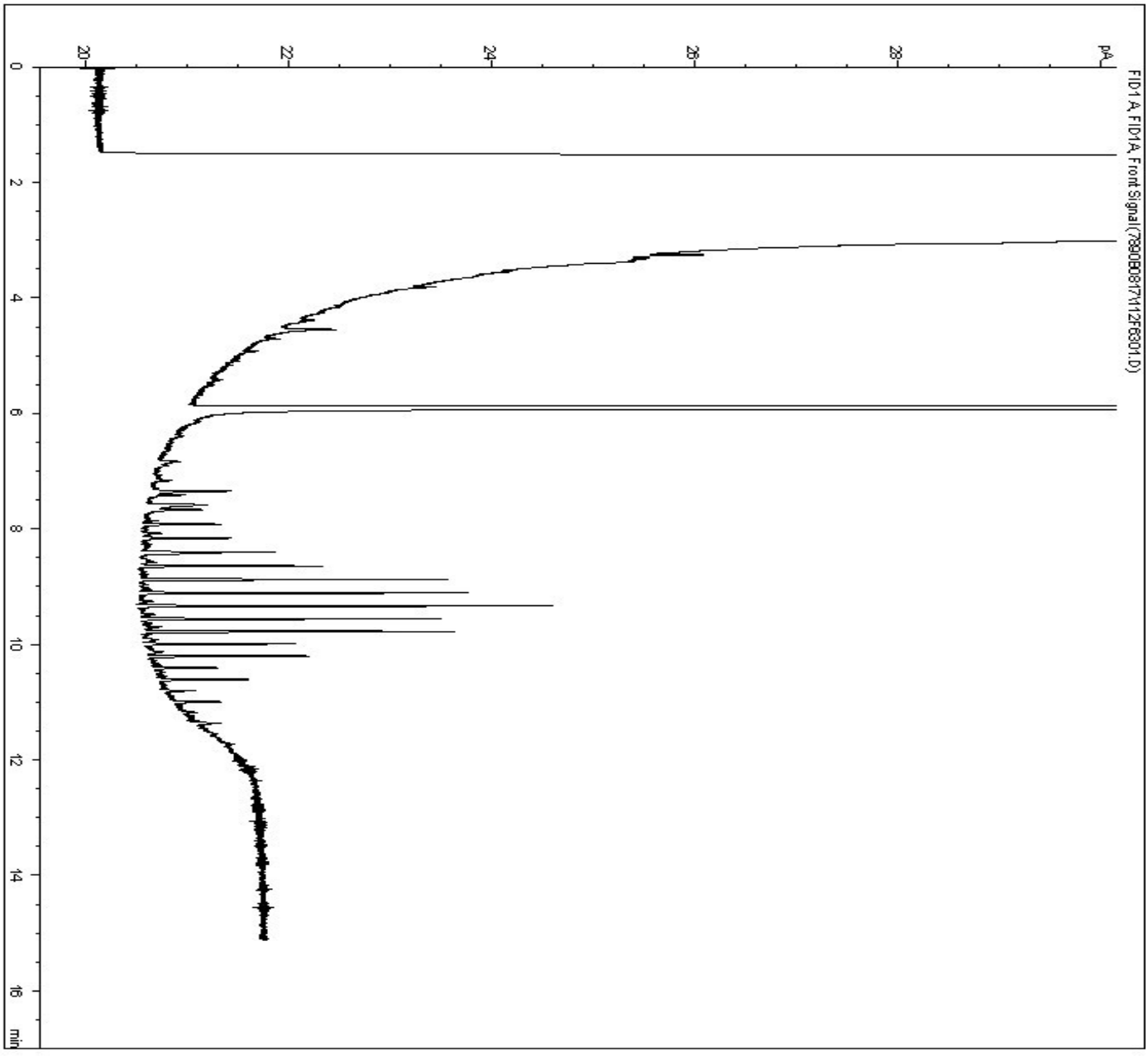
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/22
Maxxam Job #: B174898
Maxxam Sample: BG4081

Site Reference: WINDY CAMP
Client ID: 11W6-1

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0817\112F6301.D
Sample Name: BG4081-02



*** End of Report ***

Instrument 1 2011/08/18 10:08:49 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam

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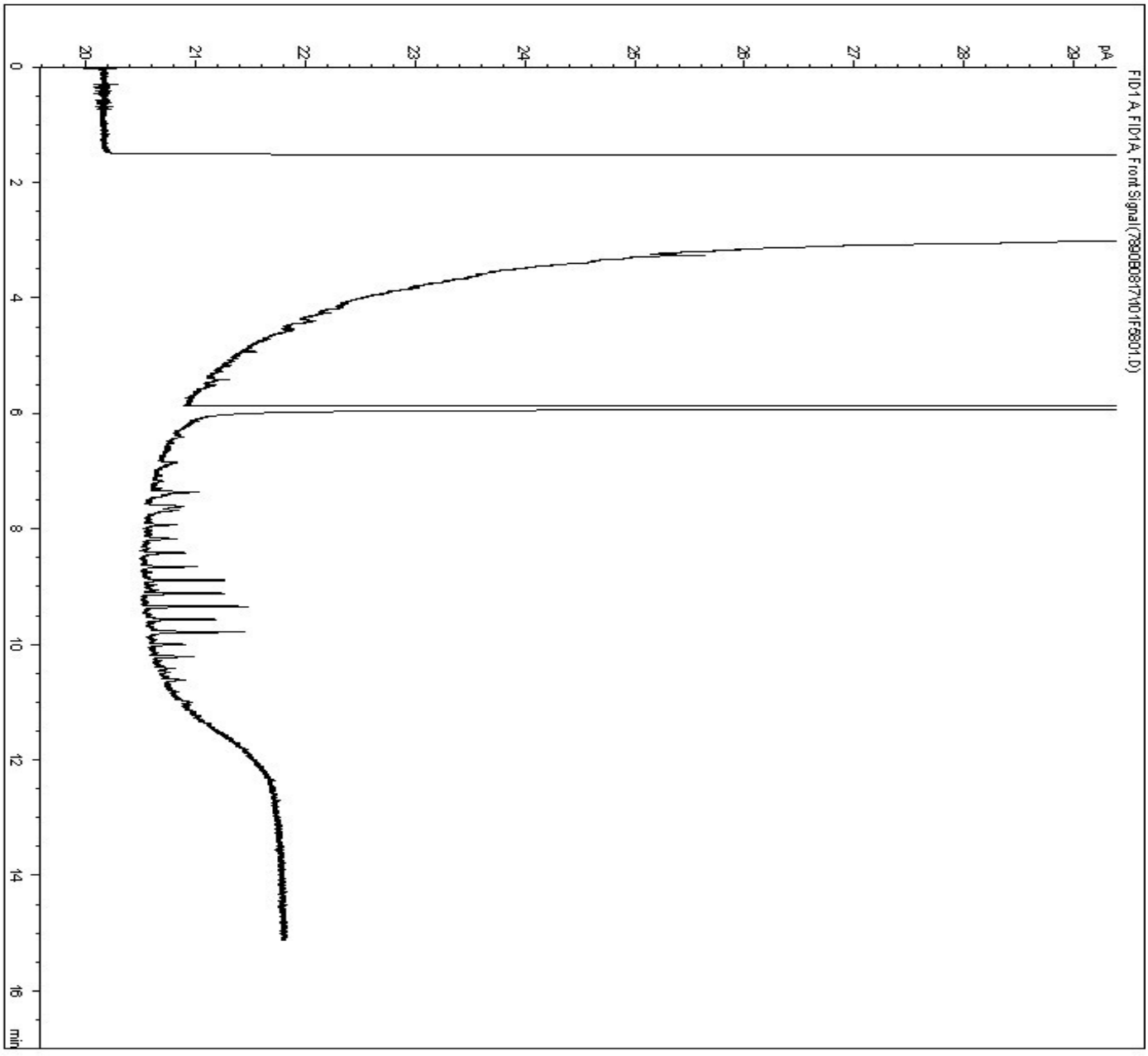
EBA ENGINEERING CONSULTANTS LTD.

Report Date: 2011/08/22
Maxxam Job #: B174898
Maxxam Sample: BG4082

Site Reference: WINDY CAMP
Client ID: 11W1-1

CCME Hydrocarbons in Water (F2; C10-C16) Chromatogram

Data File C:\CHEM32\1\DATA\7890B0817\101F5801.D
Sample Name: BG4082-02



*** End of Report ***

Instrument 1 2011/08/18 10:08:32 AM RC6

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

APPENDIX B

SIREM BIOTREATABILITY PROPOSAL

SiREM
Site Recovery & Management
130 Research Lane, Suite 2
Guelph, Ontario N1G 5G3
Phone: (519) 822-2265
Fax: (519) 822-3151
www.siremlab.com

1 March 2011 SiREM Ref: Si-1274-030111

Daniela Felske
EBA Engineering
A Tetra Tech Company
Environment Practice
14940 - 123 Avenue
Edmonton, AB T5V 1B4

via email: dfelske@eba.ca

Reference: Proposal for Laboratory Biotreatability Study to Assess Biodegradation of Petroleum Hydrocarbons,

Dear Daniela:

Further to your request, SiREM has prepared this proposal that presents a scope of work and estimate of costs to conduct a laboratory biotreatability study to assess the potential for *in situ* bioremediation of petroleum hydrocarbons (PH) in soil from a site in northern Canada (the Site).

The proposed study will evaluate the natural and enhanced aerobic degradation processes for PH using geologic material (i.e., soil) from two locations (Patch and Windy) at the Site. These materials will be used to construct the treatment and control microcosms. The Patch area target PHs are the F3 fraction and the Windy area target PHs are the F2 fraction.

Aerobic and anaerobic treatments will be constructed to assess the rate and extent of biodegradation that can be achieved at the Site by the indigenous microbial populations under natural aerobic *in situ* conditions (intrinsic controls), through the addition of moisture and nutrients separately.

The remainder of this proposal presents: the study approach and methodology (Section 1); the proposed schedule (Section 2); and a cost estimate for the biotreatability study (Section 3).

1. BIOTREATABILITY STUDY APPROACH & METHODOLOGY

The biotreatability study will consist of the following three tasks:

- Microcosm construction (Task 1);
- Microcosm incubation, sampling and analysis (Task 2); and
- Reporting (Task 3).

Geologic materials (soil) for the microcosms will be provided to SiREM by EBA Engineering (EBA). Sampling protocols, shipping requirements and required sample volumes will be provided by SiREM upon acceptance of this proposal.

Task 1 – Microcosm Construction

Site geologic materials will be homogenized under aerobic conditions in a chemical fume hood for the Patch area and under anaerobic conditions in a disposable anaerobic glove bag for the Windy area prior to microcosm construction. Samples will be collected for preliminary analysis of PH (submitted to Maxxam Analytics, Mississauga, ON), nutrients (nitrogen and phosphorus) (Soil and Nutrient Laboratory, University of Guelph, Guelph, ON), moisture, water holding capacity and soil pH. The homogenized materials will be tightly wrapped and stored at 4°C until required for microcosm construction.

Microcosms will be constructed by filling 250 milliliter (mL) (nominal volume) wide-mouth glass bottles with Site geologic material leaving a nominal headspace for gas production (e.g., carbon dioxide). All treatments will be prepared in duplicate as detailed in Table 1 and sufficient replicate samples will be prepared for up to four sacrificial sample events plus an additional set of replicates for an optional additional sampling event.

All treatments and controls will be amended with water to reach approximately one half of the water holding capacity at the start of the study. The microcosms will be weighed weekly and the microcosms will be amended with water (as required) to maintain consistent moisture content. The nutrient treatment amendments will be amended with standard soil nutrients (nitrogen and phosphorus) at a 100:10:1 carbon: nitrogen: phosphorus ratio (concentrations to be determined based on TP analysis).

Intrinsic control microcosms will be used to measure intrinsic biodegradation activity. The Patch area intrinsic controls will be incubated under aerobic conditions and the Windy area intrinsic controls will be incubated under anaerobic conditions.

For the Patch location microcosms, to maintain aerobic conditions and to mimic tilling action, the microcosms will be stirred with a glass rod two to three times per week. The aerobic treatments will be amended with a commercial oxygen releasing compound (to be selected). The nutrient treatment amendments will be amended with standard soil nutrients (nitrogen and phosphorus) at a 100:10:1 carbon: nitrogen: phosphorus ratio (concentrations to be determined based on TP analysis).

The Windy area microcosms will not be mixed due to the proximity of the Site location to permafrost.

Table 1: **Treatments and Controls for Biotreatability Study**

	Treatment/Control	Description	Patch location	Windy location
1	Intrinsic Control	Unamended	2	2
2	Aerobic Treatment	Amended with oxygen releasing compound	2	2
3	Aerobic Nutrient Amended	Amended with oxygen releasing compound plus nitrogen and phosphorus	2	--
4	Nitrate Treatment	Amended with nitrate as electron acceptor	--	2
5	Wastewater	Amended with wastewater as electron acceptor	--	2
		Number of Microcosms	**6**	**8**

Losses in target compounds and changes in degradation compound concentrations will be compared. Averages from the duplicates of each treatment will be calculated and standard deviations provided.

Task 2 - Microcosm Incubation, Sampling and Analysis

Table 2 summarizes the sampling schedule for this study. Baseline samples of the soil will be taken from the homogenized geologic material and analyzed for the applicable PH fraction, nitrogen, phosphorus, moisture, water holding capacity and soil pH.

Biotreatability study microcosms will be incubated for a period up to twelve weeks. Sacrificial soil samples for analysis of PH will be taken at time zero and three time periods (time 0, weeks 4, 8 and 12). Samples of the geologic material will be analyzed at time 0, weeks 4 and 12 for analysis of nitrogen, phosphorus and soil pH. PH analysis by Maxxam Analytics will include two fractions: the F2 and F3 fractions.

Table 2: Scope of Microcosm Sampling and Analysis

Analyte	Number of Microcosms	Matrix	Number of Sample Events	Total Number of Samples
Moisture and water holding capacity	--	Soil	baseline	2
PH – F2 fraction	8	Soil	3 + 2 baseline	26
PH – F3 fraction	6	Soil	3 + 2 baseline	20
Nitrogen and phosphorus	14	Soil	3 + 2 baseline	44
pH	14	Soil	3 +2 baseline	44

Sampling intervals for individual treatments may be modified (either shorter or longer intervals) during the biotreatability study based on observed microbial activity and degradation rates.

Task 3 – Reporting

SiREM will provide monthly updates to EBA via email. SiREM will tabulate the study data and will prepare a report containing the methodology and all data generated from the microcosm study. A draft report will be provided to EBA for review and comment, and a final report will be provided after receipt of the comments on the draft version.

2. SCHEDULE

SiREM is prepared to commence work upon award of contract. Construction of microcosms will commence within two weeks of receiving the geologic materials. A draft report will be submitted within two weeks of receipt of final analytical data and the final report will be provided within two weeks after receipt of comments from EBA on the draft version.

3. COST ESTIMATE AND ASSUMPTIONS

SiREM is prepared to conduct the proposed scope of work for the biotreatability study for a fixed-fee of $12,196 plus applicable taxes. These costs include set-up and analysis of all microcosms, reporting, all professional time, general laboratory disbursements and associated standard analyses.

This cost estimate is based on the following assumptions:

1. No Workplan, other than this proposal will be required for submittal/approval by regulatory agencies.

2. Geologic materials and groundwater sample collection and shipment to SiREM are paid for by customer (costs not included herein).

3. TPH analyses are paid for by customer (costs not included herein).

The contract terms and conditions applicable to laboratory research studies are unique. To minimize the administrative efforts between our firms and to facilitate this business transaction, SiREM recommends, that this proposal be governed by the attached terms and conditions (Attachment A). Your signature below will confirm your acceptance of SiREM's terms and conditions. If you desire to use your own contract form, please forward it to my attention. As soon as we have reached agreement on the terms, SiREM will proceed with its services.

Please note that SiREM is a division of Geosyntec Consultants, Inc, a corporation organized under the laws of the State of Florida.

If SiREM's proposal is acceptable, please indicate agreement by having an authorized representative sign in the space provided below and returning a complete copy of this proposal and attachments to my attention. Should you have any questions or need additional information regarding this quotation, please contact me at 1-866-251-1747 extension 236.

Sincerely,

Sandra Dworatzek, M.Sc.
Senior Manager

Attachment A: Terms and Conditions for Research Studies

Agreed and Accepted By:

SiREM Proposal: Si-1274-030111		Proposal Amount:$ 12,196
Authorized Signature		Date:
Printed Name		
Email Address		
Purchase Order	PO #	☐ No PO will be issued
Prime Contract	☐ Applies, Copy Attached	☐ No Prime Contract Applies

Attachment A: Research Study Terms and Conditions

Order for Research Study. These Terms and Conditions (T&Cs) apply to any research study ("Research Study") performed by SiREM. Such Research Study is initiated by a purchase order, quote or acceptance of a proposal ("Order").

Invoicing and Payment. SiREM, in order to cover the material cost to set up the Research Study, will invoice Client 50% of the total budget for the Research Study established in the Order upon receipt of the Order. Thereafter, SiREM will invoice Client on a time and materials basis up to the total authorized cost. The balance shall be invoiced upon submission of the Research Study report. Payment is due within 30 days of receipt of SiREM's invoice. In the event the Research Study is pursuant to a prime contract between Client and its client, payment for a Research Study greater than $5,000 shall be made the earlier of Client's receipt of payment from its client or 90 days from receipt of SiREM's invoice. Client shall pay an additional charge of one percent (1%) of the amount of the invoice per month or the maximum percentage allowed by law, whichever is the lesser, for any payment received by SiREM beyond the payment terms set forth herein.

Samples and Reporting. Unless otherwise set forth in the Order, Client will obtain samples and ship to SiREM at Client's expense. At Client's request, SiREM will provide sample containers at no cost. SiREM is responsible for resampling costs while samples are in its care, custody and control only to the extent loss or damage to the samples arises out of SiREM's negligence or willful misconduct. The results of the Research Study will be delivered to Client in SiREM's standard report format. In the event that Client desires a different report format, Client agrees to provide a sample to SiREM prior to the performance of the Research Study. Client understands and agrees that the unit prices in the Order assume standard report format and may be adjusted in the event such special reporting format results in an increased level of effort.

Standard of Care and Indemnity. SiREM will perform the Research Study and will dispose of samples in accordance with the schedule (if any) set forth in the Order, and applicable federal, provincial, state or local laws and regulations. The Research Study will be in accordance with SiREM's general operating quality assurance and control program. SiREM will defend, indemnify and hold harmless Client for losses, claims or causes of action to the extent arising out of SiREM's professional negligence or willful misconduct.

Confidentiality. SiREM will maintain as confidential any documents or information provided by Client and Research Study reports and will not release, distribute or publish the same to any third party without prior permission from Client, unless compelled by law or order of a court or regulatory body of competent jurisdiction. In such event, SiREM will provide advance written notice to Client prior to release.

Force Majeure/Consequential Damages. Neither party will hold the other responsible for damages or delays in performance caused by force majeure, acts of God, or other events beyond the reasonable control of the delayed party. In no event will either party be liable to the other for any incidental or consequential damages arising in connection with the Research Study.

Termination. Client may terminate the Order prior to the commencement of the Research Study by written notice to SiREM.

Assignments. The Order is non-assignable by either party without the prior written consent of the other party.

Validity. These T&Cs will be enforced to the fullest extent permitted by law. If any provision is found to be invalid or unenforceable, the provision will be construed and applied in a way that comes as close as possible to expressing the intention of the parties and that saves the validity and enforceability of the provision.

No Third Party Rights. These T&Cs will not create any rights or benefits to parties other than Client and SiREM, provided, however, that if Client is a prime contractor, then Client's client shall be entitled to rely upon the Research Study reports to the same extent as Client, subject to these T&Cs.

Notices: Any information or notices required or permitted under the Order will be deemed to have been sufficiently given if in writing and delivered either personally or by mail to the representatives of the parties as set forth in the Order or as otherwise designated by the parties. Notice given by mail will also be transmitted by facsimile or email at the time of mailing.

Client's Prime Contract. In the event that Client is obligated to flow down the provisions of its prime contract, Client shall provide a copy to SiREM concurrent with its execution of this document to which these T&Cs are attached. SiREM reserves the right to review and accept the mandatory flow down provisions of the prime contract prior to its performance. SiREM shall be bound to the Terms and conditions of the prime contract only to the extent that they are expressly imposed upon Client's subcontractors. SiREM's signature on the document to which these T&Cs are attached shall evidence its acceptance of the prime contract flow down requirements.

Integrated Writing. The Order and these T&Cs, together with any Supplemental T&Cs attached hereto, constitute a final and complete repository of the agreements between Client and SiREM and supersede all prior or contemporaneous communications, representations, or agreements, whether oral or written and shall only be modified through a mutually acceptable written addendum hereto. It is expressly agreed by the parties that if Client issues a Purchase Order or similar document, it shall be solely for financial authorization purposes and any terms and conditions contained therein shall not modify these T&Cs.

APPENDIX C

SIREM BIOTREATABILITY STUDY RESULTS

TABLE 1: SUMMARY OF MICROCOSM TPH, NITROGEN, PHOSPHORUS AND pH RESULTS
Ottawa Site

Treatment	Date	Day	Treatment Replicate	bottle #	F2 (C10-C16) µg/g	F3 (C16-C34) µg/g	F4 (C34-C50) µg/g	Ammonium-N mg/kg	Nitrate-N mg/kg	Nitrite-N	Nitrogen (TKN) %dry	Phosphorus mg/kg	Sulpahte/Sulfur mg/kg/dry	pH	% Moisture	Comments
Aerobic Active Control-Windy	30-Aug-11	-36	AAC-1 -Windy	9	3000	460	--	--	0.10	--	--	1.7	--	6.5	15.0	
			AAC-2 -Windy	10			--	--	--	--	--		--			
			Average Concentration		**3000**	**460**			**0.10**			**1.7**		**6.5**	**15.0**	
	5-Oct-11	0	AAC-1 -Windy	9	3100	450	--	--	0.09	--	--	1.7	--	6.7	18.0	
			AAC-2 -Windy	10	2500	370	--	--	0.10	--	--	3.1	--	6.7	18.0	
			Average Concentration		**2800**	**410**			**0.10**			**2.4**		**6.7**	**18.0**	
	2-Nov-11	28	AAC-1 -Windy	9	2800	530	<2.0	<0.20	0.44	--	--	3.6	--	--	8.0	
			AAC-2 -Windy	10	3700	470	<2.0	3.1	1.9	--	--	4.7	--	--	18.0	
			Average Concentration		**3250**	**500**	**ND**	**1.5**	**1.2**			**4.2**			**13.0**	
																Bottles were sealed and transferred to the anaerobic chamber
	7-Dec-11	63	AAC-1 -Windy	9	1700	530	24	--	--	--	0.10	2.7	--	7.0	13.0	
			AAC-2 -Windy	10	1600	660	26	--	--	--	0.10	4.5	--	6.9	14.0	
			Average Concentration		**1650**	**595**	**25**				**0.10**	**3.6**		**7.0**	**13.5**	
	18-Jan-12	105	AAC-1 -Windy	9	1600	450	27	--	0.35	0.046	0.090	1.3		7.0	11.0	
			AAC-2 -Windy	10	1100	500	21	--	0.31	0.047	0.10	5.1		6.8	13.0	
			Average Concentration		**1350**	**475**	**24**		**0.33**	**0.046**	**0.10**	**3.2**		**6.9**	**12.0**	
Aerobic Treatment Amended with EHC-O-	5-Oct-11	0	EHC-O-1 -Windy	11	3100	450	--	--	0.11	--	--	8.8	--	8.4	18.0	Amended with 0.5 g EHC-O
			EHC-O-2 -Windy	12	2500	370	--	--	0.10	--	--	11.8	--	8.4	18.0	
			Average Concentration		**2800**	**410**			**0.11**			**10.3**		**8.4**	**18.0**	
	2-Nov-11	28	EHC-O-1 -Windy	11	2900	580	<2.0	<0.20	0.64	--	--	6.0	--	--	8.0	
			EHC-O-2 -Windy	12	3000	480	<2.0	<0.20	0.36	--	--	5.7	--	--	18.0	
			Average Concentration		**2950**	**530**	**ND**	**ND**	**0.50**			**5.8**			**13.0**	
	24-Nov-11	50														Re-amended with 0.5 g of EHC-O
	7-Dec-11	63	EHC-O-1 -Windy	11	2000	610	27	--	--	--	0.11	4.3	--	8.3	14.0	
			EHC-O-2 -Windy	12	1500	460	20	--	--	--	0.10	10.5	--	8.4	15.0	
			Average Concentration		**1750**	**535**	**24**				**0.11**	**7.4**		**8.4**	**14.5**	
	18-Jan-12	105	EHC-O-1 -Windy	11	760	380	23	--	0.54	0.57	0.09	3.5		8.2	11.0	
			EHC-O-2 -Windy	12	930	420	23	--	0.36	0.25	0.10	5.2		8.2	18.0	
			Average Concentration		**845**	**400**	**23**		**0.45**	**0.41**	**0.10**	**4.4**		**8.2**	**14.5**	
Nitrate Amended Treatment	5-Oct-11	0	NO_3-1 -Windy	13	3100	450	--	--	0.11	--	--	2.6	--	6.7	18.0	Amended with 30 µL of 200 g/L stock $NaNO_3$
			NO_3-2-Windy	14	2500	370	--	--	0.12	--	--	5.4	--	6.7	18.0	
			Average Concentration		**2800**	**410**			**0.12**			**4.0**		**6.7**	**18.0**	
	2-Nov-11	28	NO_3-1 -Windy	13	3800	470	<2.0	<0.20	0.24	--	--	3.4	--	--	19.0	
			NO_3-2-Windy	14	4900	580	<2.0	<0.20	0.33	--	--	3.9	--	--	18.0	
			Average Concentration		**4350**	**525**	**ND**	**ND**	**0.28**			**3.6**			**18.5**	
	7-Dec-11	63	NO_3-1 -Windy	13	4100	730	24	--	--	--	0.11	2.4	--	7.1	19.0	
			NO_3-2-Windy	14	2600	510	22	--	--	--	0.10	4.3	--	7.1	19.0	
			Average Concentration		**3350**	**620**	**23**				**0.11**	**3.4**		**7.1**	**19.0**	
	22-Dec-11	78														Re-amended with 6.1 ml of 200g/L stock of $NaNO_3$
	18-Jan-12	105	NO_3-1 -Windy	13	2500	460	18	--	1740	0.061	0.32	90		6.7	20.0	
			NO_3-2-Windy	14	2100	380	18	--	1930	0.095	0.26	83		6.7	22.0	
			Average Concentration		**2300**	**420**	**18**		**1835**	**0.078**	**0.29**	**86**		**6.7**	**21.0**	
Sulfate Amended Treatment	5-Oct-11	0	SO_4-1 -Windy	15	3100	450	--	--	0.10	--	--	2.3	--	6.6	18.0	Amended with 51 µL of 200 g/L stock Na_2SO_4
			SO_4-2 -Windy	16	2500	370	--	--	0.10	--	--	1.8	--	6.6	18.0	
			Average Concentration		**2800**	**410**			**0.10**			**2.1**		**6.6**	**18.0**	
	2-Nov-11	28	SO_4-1 -Windy	15	3400	480	15	<0.20	0.16	--	--	4.7	--	--	16.0	
			SO_4-2 -Windy	16	4300	560	12	<0.20	0.11	--	--	3.3	--	--	18.0	
			Average Concentration		**3850**	**520**	**14**	**ND**	**0.14**			**4.0**			**17.0**	
	7-Dec-11	63	SO_4-1 -Windy	15	3500	640	18	--	--	--	0.10	2.3	120	6.9	17.0	
			SO_4-2 -Windy	16	3700	670	23	--	--	--	0.09	1.9	73	6.8	19.0	
			Average Concentration		**3600**	**655**	**21**				**0.10**	**2.1**	**96**	**6.9**	**18.0**	
	22-Dec-11	78														Re-amended with 4.4 ml of 200g/L stock of Na_2SO_4
	18-Jan-12	105	SO_4-1 -Windy	15	2700	450	21	--	2.7	0.074	0.12	102	1900	6.8	21.0	
			SO_4-2 -Windy	16	2500	450	21	--	0.33	0.065	0.11	106	2260	6.7	19.0	
			Average Concentration		**2600**	**450**	**21**		**1.5**	**0.069**	**0.12**	**104**	**2080**	**6.8**	**20.0**	

APPENDIX D
GENERAL CONDITIONS

GENERAL CONDITIONS

GEOTECHNICAL REPORT

This report incorporates and is subject to these “General Conditions”.

1.0 USE OF REPORT AND OWNERSHIP

This geotechnical report pertains to a specific site, a specific development and a specific scope of work. It is not applicable to any other sites nor should it be relied upon for types of development other than that to which it refers. Any variation from the site or development would necessitate a supplementary geotechnical assessment.

This report and the recommendations contained in it are intended for the sole use of EBA’s Client. EBA does not accept any responsibility for the accuracy of any of the data, the analyses or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA’s Client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA’s instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of EBA’s instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. EBA’s instruments of professional service will be used only and exactly as submitted by EBA.

Electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client’s current or future software and hardware systems.

3.0 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, EBA has not been retained to investigate, address or consider and has not investigated, addressed or considered any environmental or regulatory issues associated with development on the subject site.

4.0 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems and methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. EBA does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

5.0 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

6.0 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historic environment. EBA does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional investigation and review may be necessary.

7.0 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

8.0 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

9.0 INFLUENCE OF CONSTRUCTION ACTIVITY

There is a direct correlation between construction activity and structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known.

10.0 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, as well as the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

11.0 DRAINAGE SYSTEMS

Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

12.0 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition assumed. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions assumed in this report in fact exist at the site.

13.0 SAMPLES

EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

14.0 INFORMATION PROVIDED TO EBA BY OTHERS

During the performance of the work and the preparation of the report, EBA may rely on information provided by persons other than the Client. While EBA endeavours to verify the accuracy of such information when instructed to do so by the Client, EBA accepts no responsibility for the accuracy or the reliability of such information which may affect the report.