



Braun Environmental, Inc.

355 S. Teller St, Suite 200, Lakewood, Colorado 80226 Office: 303-697-0950 888-988-7698 Fax 303-697-2140

July 28, 2015

Bob Parker
Texas Tea of Colorado, LLC
14405 W Colfax Avenue, #298
Lakewood, Colorado 80401

RE: Site Investigation for Pace Well No 2, Weld County, Colorado

Dear Mr. Parker:

On July 15, 2015, Braun Environmental, Inc., at the request of Bob Parker of Texas Tea of Colorado, LLC (TTOC), performed a site visit to inspect a pipeline section that services the Pace No 2 Well, located near the town of Firestone in Weld County Colorado. The purpose of the visit was to investigate a petroleum hydrocarbon release to soils that had been discovered during work being performed within a fenced Anadarko Oil Company facility, and to determine the source of the release and whether the impacts discovered were attributed to one source or to multiple sources. Art Braun met with Don Morgan, a representative for TTOC Company, along with Anadarko personnel that were on site. Since the location was inside an Anadarko's fenced facility, they were present to unlock gates, to provide safety on the facility, and to observe the work being done.

Anadarko had begun some excavating recently and had discovered volatile petroleum vapors. When the suspected piping had been reached, they stated that soil staining and odors were present, thus indicating that a release had occurred. At the time of the Braun inspection, there were multiple pipes visible at various depths below ground surface ranging from 2 feet to 4 feet. Groundwater was intercepted at a depth of 6 feet below the ground surface (Figure 1).

Site Inspection

Braun arrived at the site at 7:00 am on July 15, 2015, inspected the excavation, and had the people present describe the piping and other features that had been uncovered. The night before Braun's arrival, a light rain had washed the excavation so that some re-digging was required to see the features. Braun carefully examined the two pipes that were identified to him as being possible sources for the impacts (fiberglass and green steel) and the soils around them, visually, using the olfactory senses, and using a pre-calibrated Photoionization Detector (PID). Since the fiberglass pipe and soils below it down to the water table had been removed prior to the site visit, those soils were no longer available for direct observation. However, the soils at the water table could still be sampled, and the removed section of fiberglass pipe was still available.

Observations-Site Layout

The three-inch diameter fiberglass pipe that services the Pace No 2 well (owned by TTOC) was found to have been buried to a depth of just short of 4 feet (Photo 1). At a point near the center of the excavation, the pipe was said to have contained a slip-on plastic sleeve (a smooth plastic coupling), fit and glued over the fiberglass pipe. A section of that pipe had been removed prior to Braun's visit, so the only in-place portions of the piping remaining at the time of the inspection were where it entered the excavation from the north and south. Adjacent to this pipe on the west was a smaller 1" orange plastic pipe that was reported to have also once contained oil. That pipe was found to be intact with no obvious damage or defects where it has been exposed. Neither the 1" orange pipe, nor the pieces that had been cut from fiberglass pipe were found to contain any visible staining that might suggest that either pipe had leaked oil.

Three feet to the east of the fiberglass pipe was a 3-inch diameter coated steel pipe (green coating) at a depth of 4 feet below ground surface. Near the north edge of the excavation the pipe was covered with a rubberized wrap, having a total length of about 12 inches. Some discussion developed, but it is concluded that this wrap was installed to cover a welded joint. No bare steel was found to be exposed to soils and the wrap appeared to be in good condition. The group stated

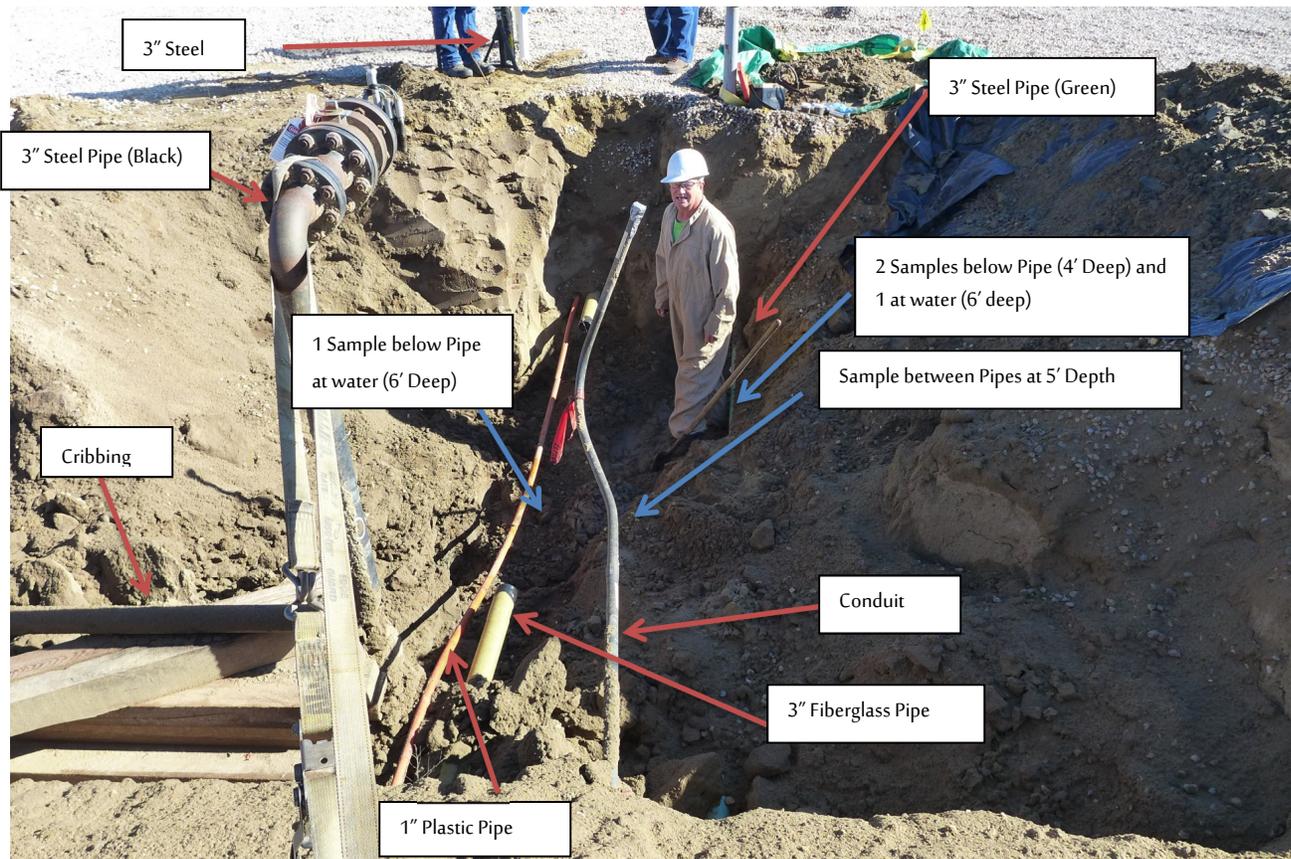


Photo 1 - View North of Excavation

that this pipe had been an old Kerr McGee line (still in use), that eventually would wind up belonging to Anadarko. There was no petroleum hydrocarbon staining on the pipe that would indicate that any oil had leaked from it.

A third 3-inch diameter steel line was found running east-west at a depth of about 2 feet below ground surface, entering the south end of the excavated area. This line belongs to Anadarko and was being excavated at the time the vapors were found. Note that the pipe is at a depth of 2 feet, but the current excavation is at nearly 4 feet at the location of the timber cribbing used to support the pipe (Photo 2). This pipe has a black coating and had been fully exposed in the trench at the time of the site visit (Figure 1). It was supported by wood blocking on the east and was tied to the chain link fence that surrounds the area using a strap. That pipe also appeared to be in good condition with a blank flange on its east end. There was mention that Anadarko was in the process of installing a compressor at this location. The pipe was dead ended at the blank flange and the question arose on what it had been connected to previously. Looking to the north, another blank flanged black colored pipe was stubbed up about 6 feet north of the north edge of the



Photo 2 - View East of Excavation

excavation with the end of the pipe pointing south toward the one terminating in the trench. A grey steel support saddle was also located just north of the center of the excavation approximately over the green steel pipe. It must have also supported a pipe at one time.

Details on Fiberglass Pipe

The removed section of fiberglass pipe was still on site and was inspected during the visit. The section containing the sleeve appeared to be clean with no evidence of petroleum hydrocarbon staining that would normally be found at the location of a leak in a pipe. Discussions with Bob Parker and Don Morgan concerning the issue shed more light on the subject. Mr. Parker said that he had heard that the pipe (fiberglass) had been physically damaged by someone about ten or so years ago, and a repair had been made. He did not know who had damaged it or who had it repaired. He also said that the pipe had been purged of all fluid about two years ago (July of 2013) and has not contained any since. Mr. Morgan ran two pressure tests on the line, one about

two weeks ago and a second one week ago. During the last test, which was run after the pipe and patch was exposed by Anadarko personnel in the excavation, it showed small bubbles at the joint indicating a very small leak. He said that the bubbles contained no oil and that the area around the bubbles was not stained with petroleum hydrocarbons. Based on this information, it appears that this discovered leak might have been the result of disturbance and movement of the pipe during the excavation by Anadarko crews immediately prior to the second test. Since no staining was found on the pipe, it is unlikely that the pipe had leaked any fluid previous to that second test.

Braun was at some disadvantage for making observations on the soils, since they had all been removed from the surface down to the ground water surface at 6 feet prior to the site visit. At the time of the visit, the soils remaining around the perimeter of the excavation from the surface to a depth of four feet, contained no petroleum hydrocarbon impacts as evidenced visually, and by the PID. Based on this observation, the most likely location of the release was somewhere within the excavated area. Based on discussions with personnel that were on site at the time of the visit, the petroleum hydrocarbon impacts had been detected in the soils near the location of the repair sleeve on the fiberglass pipe, but it was not stated at what exact location and at what distance below ground surface the impacted soils began. The impacts of soils at the groundwater surface at a depth of 6 feet were present at the time of the site visit. It is possible that someone that was involved with the excavation did take photos that might help resolve this question.

General Observations of Soils

The soils in the trench are composed of silty sands. These sands, after disturbance, such as trenching, are porous in nature and readily allow flow of fluids. The native soils adjacent to the pit were not exposed well enough to allow conclusions to be drawn, but generally the intact soils will tend to have lower permeabilities than the disturbed soils within the trench. Thus the disturbed soils could potentially allow higher fluid flow rates than in the native undisturbed soils. If the leak would be slow, the fluid flow through the undisturbed soils could keep up with the higher flow rate through the disturbed soils. Alternatively, if the flow rate of the leak would be great enough, the rate of flow in the undisturbed soils could not keep up with the flow in the disturbed soils, and would the result would be damming and flooding of the trench. The data indicates that the flow rate was either fairly small, or alternatively at a higher but very limited

intermittent rate, since no damming or buildup of fluids in the trench were found to be present.

Further investigations will be necessary to determine the extents of the release. However, at this time, the Anadarko personnel on site at the time of the visit stated that they had found the western limit using a hand auger, and it was within a few feet (interpreted to be 3 to 5 feet) of the western edge of the excavation. The southern limit appears to be within the excavation and the northern and eastern limits have not been yet determined. Based on the site observations, the volume of the release appears to be small, likely in the range of 25 to 100 gallons. If this is the case, the northern and eastern limits would be anticipated to be a similar distance to that found on the west.

Soil Sample Results

Soil samples were collected using Braun Environmental standard procedures, transported under standard chain of custody procedures, and hand delivered to eAnalytics Laboratory in Loveland, Colorado. The laboratory tested for BTEX (benzene, toluene, ethylbenzene, xylenes) using EPA Method 8260, and for TVPH (gasoline) and TEPH (diesel) range compounds using EPA Method 8015 (Attachment B). No groundwater samples were collected as part of this investigation.

Two soil samples (071515-1 and 071515-2) were taken at a depth of 4.5 feet, from directly below the green steel pipe at the locations shown in Figure 1. That figure shows the excavation both in plan view and in section. Those two samples exhibited some staining, some detectable odor, but very little measureable volatiles were found using the PID. Sample 071515-1 had a reading of 3.5 parts per million (ppm) and Sample 071515-2 read 3 ppm. The laboratory testing found the sample to contain very low levels of xylenes and TVPH (gasoline) with both samples meeting Colorado Oil and Gas Conservation Commission (COGCC) standards for soils. The pipe was carefully inspected along its exposed coated surface and along the portion covered with the rubberized coating. No visible leaks or evidence of any leaks were found.

Soil Sample 071515-5 was collected from the top of the groundwater surface, at a location directly below Sample 071515-1 at a depth of 6.0 feet. The soil showed visible dark soil staining, contained a dark colored fluid, had a strong odor, and produced a PID reading of 35 ppm. The sample was found to contain higher concentrations of all tested petroleum hydrocarbon

compounds with levels of benzene, TVPH (gasoline), and TEPH (diesel) that exceeded COOGCC standards. Soil Sample 071515-3 was collected from the top of the groundwater surface directly below the fiberglass pipe at a depth of 6 feet. It had a strong odor, produced a PID reading of 125 ppm, and exceeded COOGCC standards for benzene, TVPH (gasoline), and TEPH (diesel).

Soil Sample 071515-4 was located and intended to test the disturbed soil in the area between the two pipes at a depth that would place it below the bottom of the pipes, but above the groundwater surface. The sample was collected from a point located halfway between the two pipes at a depth of 5 feet. The sample had an odor of gasoline, produced a PID reading of 35 ppm, and contained only detectable concentrations of TVPH (gasoline) and no other target analytes. The TVPH (gasoline) concentrations were well below COOGCC standards that would require any remediation.

Discussion and Recommendations

Based on the information collected, it is concluded that a leak has occurred sometime in the past, and the source of the release must have been near the center of the excavation. The ability of Braun to pinpoint the exact location of the release was somewhat hampered by the removal of soils prior to the site visit. Using the available data, it appears that a release did occur at a point located near the center of the excavation and the released fluid had traveled directly downward to the groundwater surface. It appears that either the relative rate of the release rate was slow, or one or more small higher volume short term releases occurred, as evidenced by the small area of impacted soils found above the groundwater surface, and the lack of evidence that fluid ponded sufficiently to produce migration along the trench. Once the fluid reached the groundwater surface, it moved laterally outward from the original location. A review of the gas chromatograph curves show the components of Sample 071515-3 from below the fiberglass pipe near the center of the excavation, match the components found in Sample 071515-5 taken from below the green steel pipe at the northeast corner of the excavation. The components for both include gasoline and diesel range compounds, and the distance between the two sample points is only 6 feet. Thus, lateral movement of the released fluid along the groundwater surface for this distance is both possible and likely.

The green steel pipe was carefully inspected, and that inspection found it to be intact and in good condition with no breaches or any visible damage, and no physical evidence of any current leakage or of any past leaks. The two soils samples 071515-1 and 071515-2, collected from immediately below the pipe, were found to contain only very small concentrations of gasoline range components (TVPH), and no detectable diesel range components (TEPH). Both of the soil samples met COOGCC standards. Any loss sourced from a leak in that pipe would be expected to leave traces of diesel components, whether the leak were recent or had occurred a long time in the past.

Reaching conclusions for the fiberglass are a little more difficult, since the pipe and soils around it had been removed prior to the site inspection, thus the precise location of the source could not be precisely pinpointed. The initial assumption had been made that it had occurred at the fiberglass pipe, but no physical evidence remained to prove that theory. The fact that the fiberglass pipe had been damaged sometime in the past, and at the time the repair was made (early 2000's?), there would have not likely have been a cleanup if the release was small. This event might explain the source of the impacts found in the excavation. Repair of the pipe using the repair sleeve would have required that the pipe be clean for the patch to stick, so the pipe would have been thoroughly cleaned at that time.

Braun's inspection of the fiberglass pipe and the repair area showed no evidence of any petroleum hydrocarbon staining. This would be consistent with the source, the volume, and timing of the release being from a breach of the pipe that occurred immediately prior to the installation of the patch. An additional fact is that the pipe has not been used to move oil for two years. Additionally, since the location of the leak that produced the bubbles found during the most recent pressure test had no petroleum hydrocarbon staining, this is good indication that the fiberglass pipe had never leaked fluids after that repair. Again, the leak that produced the bubbles could have easily developed after the excavation and exposure of the pipe by Anadarko. Could there be another potential source for the impacts that were found?

The three-inch black steel pipe that was stubbed up and blank flanged on both sides of the excavation might lead to a possible explanation. Review of historical aerial photographs show that in 1999, in the area of the excavation, the only visible non-agricultural feature is the

north-south trench that contains the fiberglass pipe (Attachment A). The area appears to have been first developed to contain its current equipment sometime between 1999 and April of 2003. A white-colored square shaped structure that fits between the two black pipe stubs shown in Figure 1, first appeared in a photo taken on April 13, 2003. Sometime between August of 2006 and March of 2008, the area was fenced to the same configuration as seen today. The area had a surface composed of native soils until sometime, probably in early 2012, when an aerial photo taken in October of that year shows the new gravel surface. The October 6, 2014 photo shows the structure over the trench and current excavation to be still in place. However, the Braun site visit on July 15, 2015 found that the structure has been removed. The photos show that the structure was in place for at least 12 years, and the lines leading to it surely contained oil and gas. Over the life of the structure it is highly likely that some leakage or spills associated with maintenance of piping and equipment occurred. Those leaks or spills could easily have leaked onto the porous sand surface below the structure and migrated downward to the groundwater, alternatively producing those impacts.

One additional question is generated with the help of the historic aerial photos. When and why did the fiberglass pipe get physically breached in the first place? From the photos, the pipe line appears to have already been in place in 1999 with the ground surface above it still devoted to agricultural. Once that pipe had been installed and the trench covered, the operator of the well would have no reason to come back to the line. Since it was buried to a depth of 4 feet, the farmer working the surface would have no reason to plow or dig to a depth of greater than half the depth of the pipe. That leaves the most likely group to have damaged the pipe being the persons that installed the equipment between the two pieces of stubbed up black pipe and directly over the trench containing the fiberglass pipe. In retrospect, it might have been a better idea to install the equipment off to the side of the trench instead of over it. Since the black steel pipe is installed at a depth of 2 feet below ground surface, it would take very little over-excavation by an operator to reach the depth of the fiberglass pipe. An additionally factor that might contribute to the damage seen is that the south leg of the stubbed up black pipe is located perpendicular to the fiberglass pipe. Digging perpendicular to the pipe would make it very easy for the equipment operator to simply rub a tooth over the fragile fiberglass thus breaking a hole. Alternatively, if the digging had been done parallel to the pipe, the operator might have felt the pipe before breaking through it, and the break would have a little different nature than what we see at the repair.

Based on the evidence collected, it is our professional opinion that the release is not the result of a recent leak in the fiberglass pipe and most likely the result one of these two alternatives.

- 1) The first alternative is that when the current Anadarko equipment was first installed sometime around 2000 and an equipment operator accidentally physically breached the fiberglass pipe, let out a small volume of oil, and then repaired the pipe. At that time small releases did not always require cleanup, so the release was left in place. The pipe would have to have been cleaned thoroughly for the patch to adhere so we would find it to still be clean in 2015.
- 2) The second alternative is that the separator (or other equipment) located over the trench for 12 or so years has experienced small losses or spills over its life. The losses were small enough that they slowly migrated vertically downward over a very small area to reach the groundwater surface.

While a leak of the fiberglass line occurring sometime after its physical breach and repair is possible, no evidence was found during our investigation that would lead to that conclusion. The evidence, instead points to either of the two alternatives discussed above.

Sincerely,

BRAUN ENVIRONMENTAL, INC.

A handwritten signature in black ink, appearing to read 'A. Braun', written in a cursive style.

Art Braun, P.E.

CAB/rl

Attachment A – Historical Aerial Photos
Area Around Pace No 2 Excavation



October 3, 1999



April 13, 2003



October 30, 2004



October 22, 2005



April 23, 2006



March 30, 2008



June 15, 2010



May 4, 2011



October 7, 2012



October 6, 2013



June 2, 2014



October 6, 2014

Attachment B – Analytical Report

Pace No 2 Excavation

Test Report

eANALYTICS LABORATORY

July 16, 2015

Client: Braun Environmental Inc.

Project: TTOC

Lab ID: 3607

Date Samples Received: 7/15/2015

Number of Samples: 5

Sample Condition: Samples arrived intact and in appropriate sample containers

Sample Temperature: Within acceptable range of 2-6° C, or as specified in EPA Method

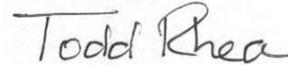
The quality control procedures associated with the requested analyses were satisfactorily passed before the samples were run.

Thank you for allowing eAnalytics Laboratory to provide laboratory services for you.

Sincerely,



Christopher Dieken
Quality Assurance Manager



Todd Rhea
Laboratory Manager

eAnalytics Laboratory

4130 Clydesdale Parkway Loveland CO 80538



Client: Braun Environmental Inc. Lab ID: 3607
 Project: TTOC
 Analysis: BTEX / TVPH Method: EPA8260
 TEPH EPA8015

Sample Name	Benzene mg/kg	Toluene mg/kg	Ethyl- benzene mg/kg	Total Xylenes mg/kg	TVPH mg/kg	TEPH mg/kg	Date Sampled	Date Analyzed	Lab ID
071515-1	<0.010	<0.010	<0.010	0.012	1.36	<10.0	07/15/15	07/15/15	3607 1
071515-2	0.025	0.025	<0.010	0.056	1.88	<10.0	07/15/15	07/15/15	3607 2
071515-3	0.571	5.52	2.74	18.9	829	686	07/15/15	07/15/15	3607 3
071515-4	<0.010	<0.010	<0.010	<0.010	0.54	<10.0	07/15/15	07/15/15	3607 4
071515-5	0.352	7.13	2.75	21.7	1198	2518	07/15/15	07/15/15	3607 5



Client: Braun Environmental Inc.

Lab ID: 3607

Project: TTOC

Method: EPA8260

Sample Name	Dibromo-fluoromethane % Recovery	1,2 Dichloro-ethane-D4 % Recovery	Toluene-D8 % Recovery	4-Bromo-fluorobenzene % Recovery	Date Sampled	Date Analyzed	Lab ID
071515-1	97	101	99	91	07/15/15	07/15/15	3607 1
071515-2	100	94	102	93	07/15/15	07/15/15	3607 2
071515-3	93	91	101	93	07/15/15	07/15/15	3607 3
071515-4	93	102	97	99	07/15/15	07/15/15	3607 4
071515-5	103	91	100	101	07/15/15	07/15/15	3607 5

eAnalytics Laboratory

4130 Clydesdale Parkway Loveland CO 80538



Client: Braun Environmental Inc. Lab ID: 3607
 Project: TTOC
 Analysis: BTEX / TVPH Method: EPA8260
 TEPH EPA8015

Sample Name	Benzene % Rec	Toluene % Rec	Ethyl- benzene % Rec	Total Xylenes % Rec	TVPH % Rec	TEPH % Rec	Date Analyzed	Lab ID
Laboratory Control Sample (70-130%)	105	95	88	107	105	100	07/15/15	LCS 3607 1
Method Blank	< 0.010 mg/kg	< 0.010 mg/kg	< 0.010 mg/kg	< 0.010 mg/kg	< 0.50 mg/kg	< 10.0 mg/kg	07/15/15	MB 3607 1

Test Report

eANALYTICS LABORATORY

July 16, 2015

Client: Braun Environmental
Project: TTOC
Lab ID: 3607
Date Samples Received: 7/15/2015
Number of Samples: 5
Sample Condition: Samples arrived intact and in appropriate sample containers
Sample Temperature: Within acceptable range of 2-6° C, or as specified in EPA Method

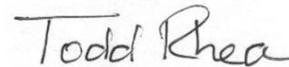
The quality control procedures associated with the requested analyses were satisfactorily passed before the samples were run.

Thank you for allowing eAnalytics Laboratory to provide laboratory services for you.

Sincerely,



Christopher Dieken
Quality Assurance Manager



Todd Rhea
Laboratory Manager

eAnalytics Laboratory

4130 Clydesdale Parkway Loveland CO 80538

Chain of Custody

eANALYTICS

LABORATORY

Chain of Custody Fo

 4130 Clydesdale Parkway Loveland CO 80538 Phone: (970) 667-6975 Fax: (970) 669-0941 www.eAnalyticsLab.com			CLIENT INFORMATION (*New Clients please fill out completely)										ANALYSIS INFORMATION (Select analysis by checking box on corresponding sample line)									
Company: Braun Environmental Inc			Number of Containers Matrix (S) Soil (W) Water (V) Vapor (O) Other BTEX (EPA 8260) / TVPH (EPA 8260) TEPH (EPA 8015) Vapor BTEX / TVPH (EPA TO-14) Full VOC (EPA 8260) Semi-Volatiles (Full List / PAH's) TRPH / Oil & Grease RCRA 8 Metals (Total / TCLP / Dissolved) React. / Ignit. / Corrosivity / Paint Filter pH / TSS / TDS Metals (Specify) PCBs / Pesticides / Herbicides Anions (Specify)	Other Analysis																		
Project: TTOC																						
Project Manager: Art Braun																						
Sampler: A. Braun																						
Phone/Email: 303-988-7697 braunenv@msn.com																						
Address: 3555 Teller St Ste 200 Lakewood CO 80226																						
Lab ID	Sample Name	Sampling Date/Time																				
1	071515-1	7/15/15 8:02 AM	1	S	X	X																
2	071515-2	8:14 AM																				
3	071515-3	8:26 AM																				
4	071515-4	8:29 AM																				
5	071515-5	8:52 AM																				
Comments:																						
Turnaround Time (Business Days) TAT begins when sample is received by eANALYTICS <input type="radio"/> Normal (5-10 Days) <input type="radio"/> 3 Day (25%) <input type="radio"/> 2 Day (50%) <input type="radio"/> 1 Day (100%) <input type="radio"/> Same Day (300%) Rush analysis requires an extra charge. If possible please inform eANALYTICS in advance for rush analysis.										Record of Custody Relinquished by: <i>[Signature]</i> Date: 7-15-15 Company: Braun Environmental Time: 12:00 PM Received by: _____ Date: _____ Company: _____ Time: _____												
Colorado OPS Project: Yes / No For eANALYTICS Use Samples Received Intact: <input checked="" type="radio"/> Yes / <input type="radio"/> No Received Within Temperature Range (2-6°C): <input checked="" type="radio"/> Yes / <input type="radio"/> No Sample Preservative: <input checked="" type="radio"/> Ice / <input type="radio"/> None / <input type="radio"/> Acid / <input type="radio"/> Other										Relinquished by: _____ Date: _____ Company: _____ Time: _____ Received by: <i>[Signature]</i> Date: 7-15-15 Company: eANALYTICS Time: 12:00 PM												

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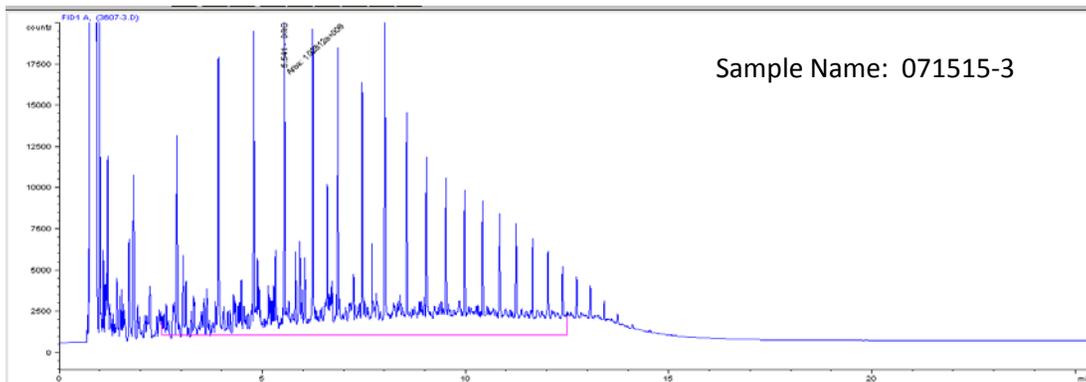
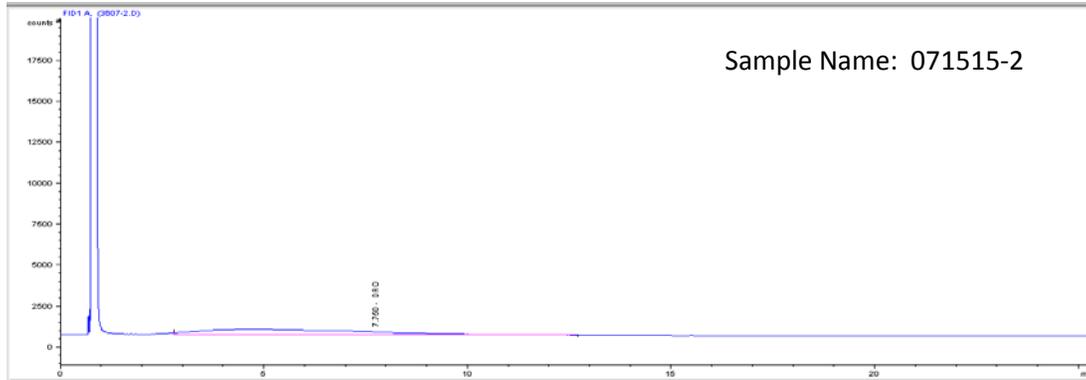
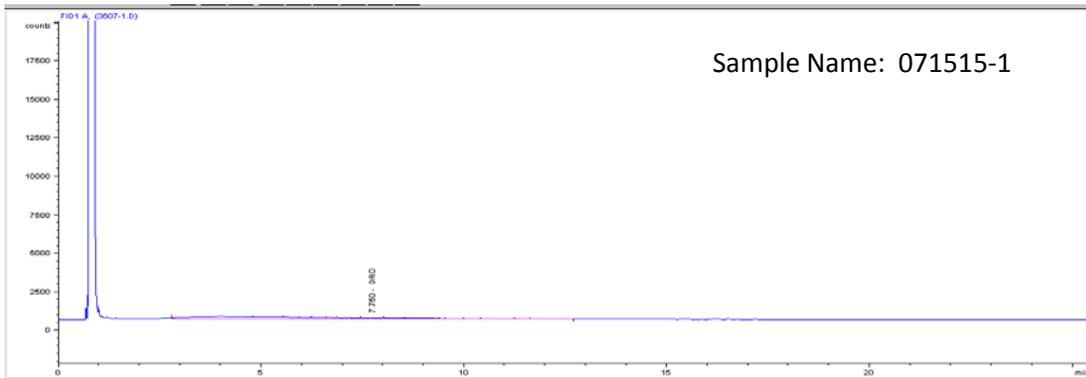
Client: Braun Environmental

Lab ID: 3607

Project: TTOC

Analysis: TEPH

Method: EPA8015



eAnalytics Laboratory
4130 Clydesdale Parkway Loveland CO 80538

eANALYTICS

L A B O R A T O R Y

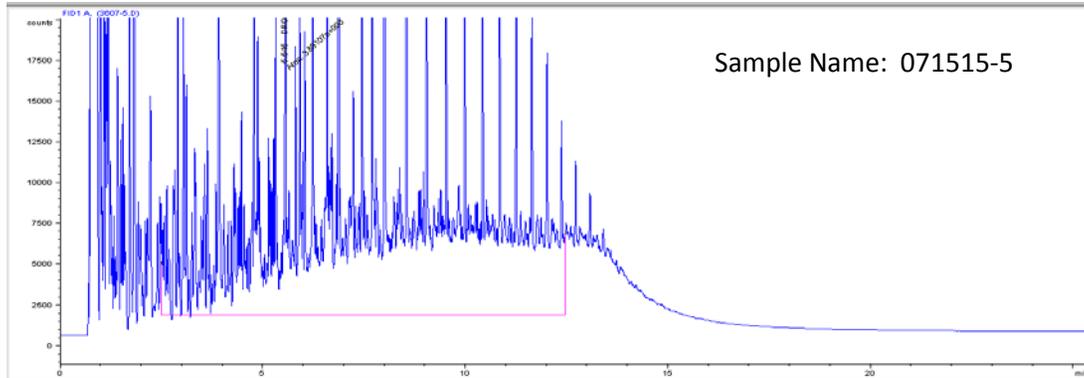
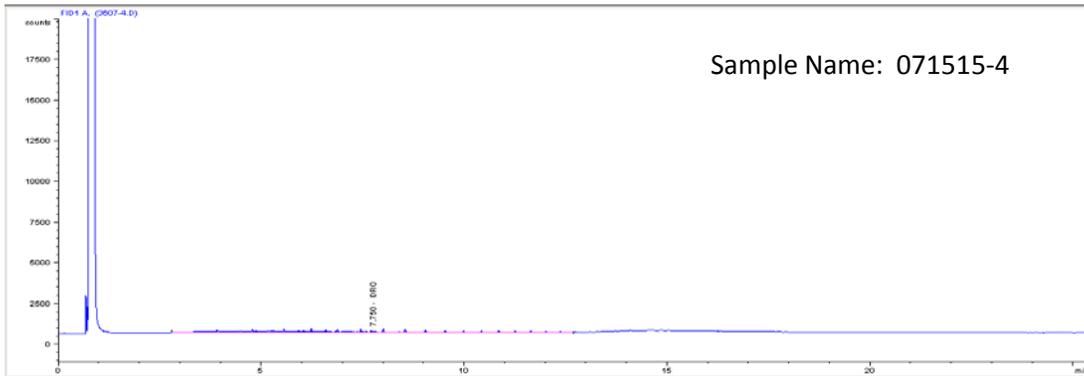
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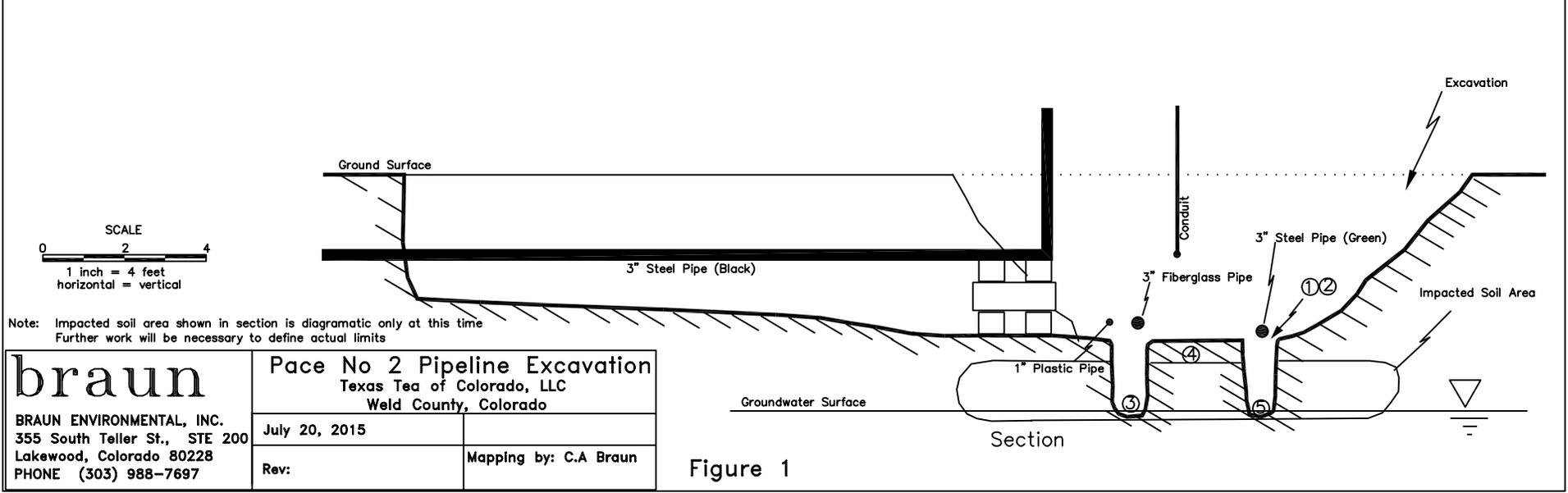
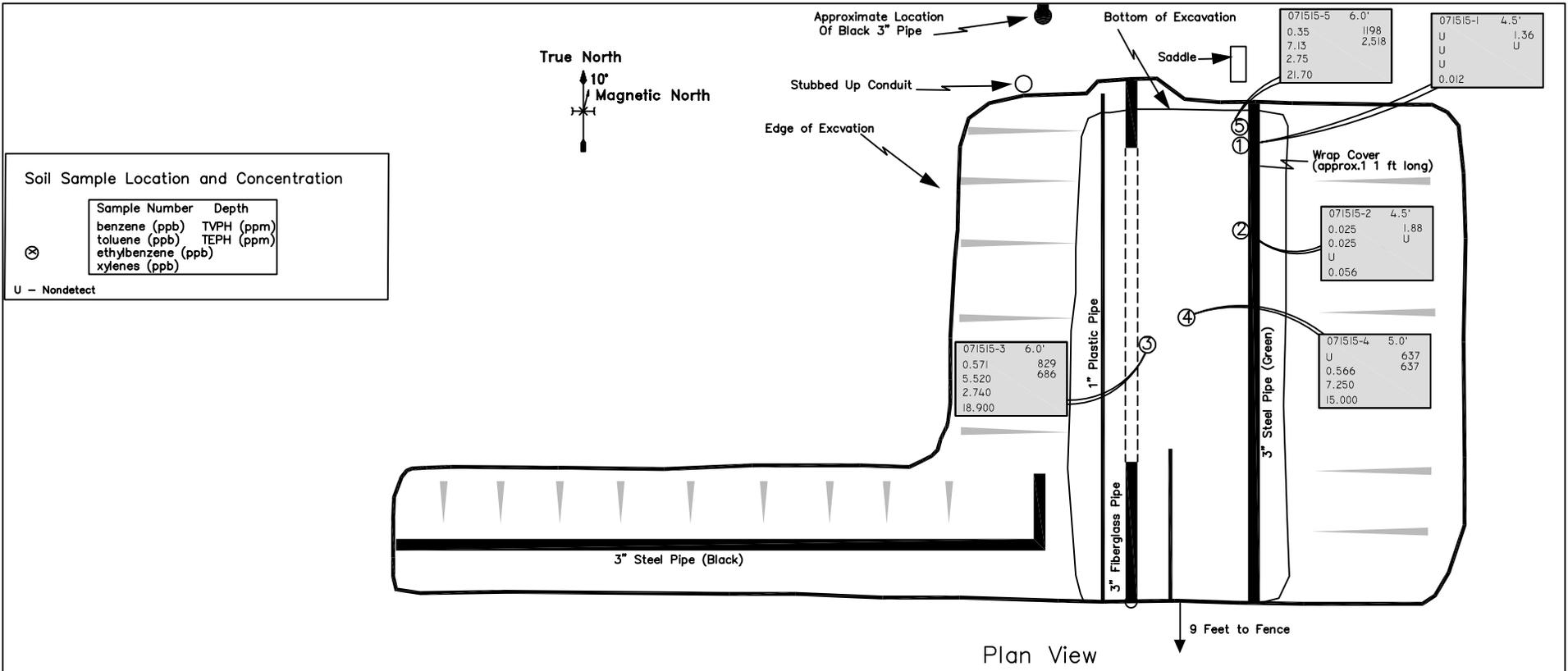
Lab ID: 3607

Project: TTOC

Analysis: TEPH

Method: EPA8015





<p>BRAUN ENVIRONMENTAL, INC. 355 South Teller St., STE 200 Lakewood, Colorado 80228 PHONE (303) 988-7697</p>	Pace No 2 Pipeline Excavation Texas Tea of Colorado, LLC Weld County, Colorado	
	July 20, 2015	Mapping by: C.A Braun
	Rev:	

Figure 1