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ADDENDUM SITE REMEDIATION CLOSURE REPORT HOMCO INTERNATIONAL,INC. LOCATION 151 FACILITY FARMINGTON, NEW MEXICO

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Prepared for:

Mr. Robert Medler
HOMCO INTERNATIONAL, INC.
4710 Bellaire, Suite 200
Houston, TX 77401

Prepared by:

BUYS AND ASSOCIATES, INC.

6574 South Broadway
Suite 200
Littleton, Colorado 80121
(303) 730-2500
FAX (303) 730-2522

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1.0 EXECUTIVE SUMMARY

Buys and Associates, Inc. was contracted by HOMCO International, Inc. (HOMCO) to direct the remediation of industrial leach fields at the HOMCO Location 151 facility located in Farmington, New Mexico. Remedial activities were initially conducted in March, 1991. Remediation was temporarily halted when further work would have prevented the HOMCO facility from performing routine business operations. An account of the remedial activities conducted in March, 1991 is presented in the *Site Remediation Closure Report* of July 19, 1991. Remedial activities resumed in October, 1991 after completion of a building addition and other capital upgrades. All remedial activities were concluded in November, 1991. This report documents the activities conducted in the fall of 1991.

Industrial leach fields at the HOMCO facility were proximate to the HOMCO Fishing Tool Operations building and the Wireline Services building. As of September 25, 1990, HOMCO ceased discharging all industrial waste water to the industrial leach fields. The drain lines, gravel leach fields and impacted soils exceeding New Mexico Oil Conservation Division action levels for petroleum hydrocarbon contaminants were later removed and disposed at an approved facility. An additional source of contaminants in the soils, an indoor sump in the northern margin of the Fishing Tool Operations building, was also removed. These determinations are based on field observations, organic vapor meter monitoring and laboratory analyses. A total of 2,940 cubic yards (yds^3) of material was excavated beneath and near the Fishing Tool Operations building, 1,680 yds^3 in March, 1991 and 1,260 yds^3 in October and November, 1991. A total of 1,405 cubic yards (yds^3) of material was excavated near the Wireline Services building, 15 yds^3 in March, 1991 and 1,390 yds^3 in November, 1991. In addition, approximately 20 yds^3 of soil was excavated from the northeast corner of the facility in an area formerly used as a repository for sump sludges.

One leach field located directly in front of (east of) the Wireline Services building impacted the underlying bedrock to a depth of 18 foot. Liquids and sludges were present in this leach field in larger quantities than observed in other leach fields at the facility. Analytical results from sandstones located on the downgradient margin of the bedrock plume suggest petroleum hydrocarbon constituents in the bedrock degraded relatively quickly as the plume migrated. Remediation of the bedrock plume consisted of excavating the leach field material and the heavily stained soils overlying the bedrock. The excavation was backfilled, compacted to grade and capped with concrete.

All excavations were sampled to verify that desired cleanup levels had been achieved. The excavations were backfilled after analytical results verified that no additional excavation was necessary. The backfill was compacted and tested in accordance with accepted engineering practices in preparation for the construction of concrete floors and pads and the concrete cap.

Contaminated soils beneath the Fishing Tool Operations building (south of the indoor sump that was removed) and the Wireline Services building were left in place. Further excavation would have threatened the structural integrity of the building foundations. Exploratory trenches were dug south of the leach field excavations and Wireline Services building to evaluate the extent to which petroleum hydrocarbon contaminants may have migrated. Field observations, organic vapor meter monitoring and laboratory analyses indicated contaminants had not migrated south of the excavations or the building.

Industrial leach fields and surrounding soils containing petroleum hydrocarbon contaminants exceeding New Mexico Oil Conservation Division action levels have been removed from the HOMCO facility and disposed. No further excavation is required. Approximately 1,200 to 1,800 yds^3 of petroleum hydrocarbon-contaminated materials remain in place beneath the Fishing Tool Operations and Wireline Services buildings. In addition, approximately 900 to 1,200 yds^3 of petroleum hydrocarbon-contaminated materials remain in place in the bedrock between these two buildings. The concrete cap was constructed to isolate these materials in the bedrock. Contaminant sources and the hydraulic head which predominantly drives plume migration have been removed. In addition, the concrete limits the infiltration of surface water and the resultant hydraulic head. None of the materials that remain pose a threat to human health or the environment. No further remedial action is required for these materials.

The new concrete floor constructed inside the Fishing Tool Operations building was sealed to retard fluid migration. Periodic inspection of the floor by local management is recommended to monitor the quality of the seal.

2.0 INTRODUCTION

2.1 SITE DESCRIPTION

The HOMCO International, Inc. (HOMCO) Location 151 facility is situated in the southwest corner of the northwest corner of Section 19, Township 29 North, Range 12 West in San Juan County, New Mexico. It is located at 5432 U.S. Highway 64 in Farmington, New Mexico. The facility encompasses approximately 13.5 acres of land. It is bordered to the south by U.S. Highway 64; to the southeast by Magcobar (a drilling mud company); to the east by Bowen Tools and International Harvestor across a public road; to the northeast by Weskem (a drilling mud company); to the north by Walters drilling company; to the northwest by another drilling mud company; and to the west by two office buildings located across a public street (Figure 2-1).

The facility lies at an approximate elevation of 5380 feet above mean sea level. Echo Ditch is located immediately south of U.S. Highway 64 and approximately one half mile north-northeast of the San Juan River. The topography at the facility is relatively flat. It slopes to the south towards a drainage ditch located on the north side of Highway 64. The north and part of the east edges of the facility are bordered by a sandstone bluff. The majority of the HOMCO facility is surfaced with road base.

Two structures are located at the facility, the HOMCO Fishing Tools Operations (HFTO) building and the HOMCO Wireline Services (HWS) building (Figure 2-1). The HFTO building is the center of plant operations and houses the administrative offices. The HWS building contains a water pump and hot water heater system used to wash logging tools, wireline trucks and passenger vehicles. Significantly dirtier equipment is steam cleaned in the main shop located in the HFTO building. The construction of an addition to the north end of the HFTO building was completed in October, 1991. This addition was added to accommodate new painting and steam cleaning facilities and to increase available space for equipment storage.

2.2 REMEDIAL OBJECTIVE AND SCOPE OF WORK

The remedial effort of March, 1991 was conducted to eliminate the potential for future ground-water contamination caused by vertical migration of leachate from the facility's industrial leach

fields. The scope of work for this remedial effort[1] was designed from information collected during previous investigations[2, 3]. The methods described in the scope of work[1] were approved by the New Mexico Oil Conservation Division (NMOCD). The work consisted of excavation of petroleum hydrocarbon-contaminated soils from abandoned industrial leach fields. Concrete pads adjacent to facility buildings were also removed. Excavated soils, concrete and other materials were disposed at the Envirotech Inc. landfill located near Bloomfield, New Mexico. Remedial activities were temporarily halted when further work would have prevented the HOMCO facility from performing routine business operations. A report[4] of all remedial activities performed through March, 1991 was presented to HOMCO and the NMOCD.

Work resumed in October, 1991 to complete remediation at the HOMCO facility. This work was conducted to remove the leaking indoor sump located in the northern margin of the original HFTO building. In addition, soils containing petroleum hydrocarbon contaminants were to be removed from three discrete areas adjacent to and within the HFTO building. The scope of work developed for the initial remediation[1] was utilized for the later work. The NMOCD was contacted in October, 1991 prior to continuation of remedial activities. The NMOCD stated that the same authorization for disposal previously granted for remedial work remained in effect for the final work[5]. No further approval or oversight was required.

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[1]Buys and Associates, Inc., November 27, 1990, Remediation Work Plan, HOMCO Facility 151, Farmington, New Mexico, 22p.

[2]Sweetwater Corporation, November 21, 1989, Farmington, New Mexico-Location 151, Phase I Site Assessment, 21p.

[3]Buys and Associates, Inc., September 18, 1990, Draft Report for HOMCO Location 151 Phase II Site Investigation, 20p., 8 figures, 2 tables, 2 appendices.

[4]Buys and Associates, Inc., July 19, 1991, Site Remediation Report, HOMCO Location 151 Facility, HOMCO International, Inc., Farmington, New Mexico, 34p., 2 appendices.

[5]Anderson, R., October 18, 1991, New Mexico Oil Conservation Division, personal communication.

3.0 BACKGROUND

3.1 SITE HISTORY

The HOMCO International, Inc. (HOMCO) Location 151 facility is operated primarily as an oilfield equipment rental and storage yard for tools and pipe used in fishing tool operations. Industrial waste water from the HOMCO Fishing Tool Operations (HFTO) building was initially routed to a leach field distribution system. This system was abandoned in 1980 due to insufficient percolation rates. Industrial waste water was then directed to an alternate leach field located west-northwest of the building. Waste water generated in the HFTO building flowed from an indoor sump to an outdoor sump. It was then routed to a holding tank prior to being discharged to the leach field via a perforated polyvinylchloride (PVC) pipe. Industrial waste water generated in the HOMCO Wireline Services (HWS) building was disposed of in an industrial leach field located north of this building.

Between September 19 and 25, 1990, a Water Maze oil/water separator was installed in the HFTO building. The separator processes and recycles wash water used for steam cleaning operations. Industrial waste water from the HWS building was routed via 2-inch diameter PVC pipe to the oil/water separator in the HFTO building. As of September 25, 1990, HOMCO ceased discharging all industrial waste water to leach fields located at the facility.

Sanitary wastes from the HFTO building are discharged to a septic system located near the southeast corner of the building. Sanitary wastes generated in the HWS building are discharged to a septic leach field located north of this building. Additional information regarding the site history and waste streams is presented in the Site Remediation Report of July 19, 1991[4].

3.2 PREVIOUS REMEDIAL WORK

Remediation of the industrial leach fields was initially conducted between March 6 and March 14, 1991[4]. Approximately 20 yds^3 of soil was excavated from the northeast corner of the facility in an area formerly used as a repository for sludges. In addition, approximately 15 yds^3 of soil containing petroleum hydrocarbons was excavated from the leach field north of the HWS building. A total of approximately 1680 yds^3 of petroleum hydrocarbon-contaminated soil was excavated from industrial leach fields at the north end of the HFTO building. Two leach field holding tanks and

two industrial waste-water sumps were also removed. All of the petroleum hydrocarbon-contaminated materials were transported to and disposed of at an approved disposal facility (Envirotech Inc. landfill near Bloomfield, New Mexico).

Verification samples were collected to confirm that desired cleanup levels had been achieved. Soils containing petroleum hydrocarbon contaminants were left in place to the south under the HFTO building and to the southwest towards the entrance to the facility. The remediation of this material was delayed until after the proposed building addition was completed. Additional information regarding the remedial work conducted in March, 1991, including the environmental setting (physiography, geology and hydrology) and a detailed history of previous site investigations, is presented in the Site Remediation Report of July 19, 1991[4].

4.0 REMEDIAL ACTIVITIES

The work plan[1] prepared for the remedial work conducted in March, 1991 was also utilized for the final remediation. A site Health and Safety Plan was prepared in accordance with Occupational Safety and Health (OSHA) regulations established for Hazardous Waste Operations and Emergency Response (29 CFR 1910.120).

4.1 WASTE REMOVAL

4.1.1 General

The New Mexico Oil Conservation Division (NMOCD) requires leach fields containing sludges or liquids contaminated with total petroleum hydrocarbons (TPH) or benzene in concentrations exceeding action standards be removed. NMOCD action standards and analytical methods required to determine contaminant levels are:

- TPH (EPA Method 8015 modified), 100 parts per million (ppm);
- Total benzene, toluene, ethyl benzene and xylenes (EPA Method 8020), 50 ppm; and
- TCLP benzene (EPA Method 8020), 10 ppm;

An alternative to source removal is to demonstrate that the quality of the local ground water is not being adversely affected by contaminant migration from the leach field(s). Source removal was initially chosen as the method of remediation. This alternative avoids the difficult and costly task of penetrating the shallow, massive sandstones and mudstones of the Nacimiento formation at the site in order to collect ground-water quality data. In addition, the cost of disposing the excavated waste was reduced by the availability of a local, certified facility (Envirotech Inc. landfill) which is permitted by the State of New Mexico to receive petroleum hydrocarbon-contaminated wastes.

The specific remedial tasks planned for the HOMCO International, Inc. (HOMCO) facility were:

- Characterize for disposal the soils to be excavated from the interior of the northern margin of the original HOMCO Fishing Tool Operations (HFTO) building;

- Remove the leaking indoor sump from the northern margin of the HFTO building. Remove concrete and excavate petroleum hydrocarbon-contaminated soils as necessary from beneath the interior of the building. Transport and dispose of sump, concrete and soils;

- Remove exterior concrete pad from western margin of HFTO building. Excavate petroleum hydrocarbon-contaminated soils as necessary. Transport and dispose of concrete and soils;

- Excavate, transport and dispose of petroleum hydrocarbon-contaminated soils from between HFTO and HOMCO Wireline Services (HWS) buildings; and

- Excavate an exploratory trench to the southwest of the HFTO building to evaluate the extent to which petroleum hydrocarbon contaminants may have migrated.

All excavation activities were performed under the direct supervision of a Buys and Associates, Inc. representative. Excavation of petroleum hydrocarbon-contaminated soils in each of the areas continued until one of the following criteria was met:

- All detectable signs of contamination were removed as indicated by field observations (stained or odiferous soils) and measurements. Field measurements were made with an organic vapor meter (OVM). A threshold of 50 ppm was used to screen the soils for organic vapors. Soils emitting vapors in concentrations greater than 50 ppm were removed and disposed as petroleum hydrocarbon-contaminated waste. Soils below the 50 ppm threshold were considered clean and left in place; or

- Further excavation threatened the structural integrity of the building foundation or concrete footings.

4.1.2 Initial Contractor Meeting

On October 21, 1991, a representative of Buys and Associates, Inc. visited the HOMCO facility and met with local management (Mr. Roger Covel) to obtain input for performance of the remedial work with minimal impact to facility operations. The Buys and Associates, Inc. representative also met with local contractors and arranged to receive bids for the work. In addition, the Buys and Associates, Inc. representative made disposal arrangements with the local, certified landfill utilized during the previous remedial activities (Envirotech Inc. landfill located near Bloomfield, New Mexico). Representatives of the landfill requested that a characterization sample of soils beneath the HFTO building be collected.

4.1.3 Kickoff Meeting

Buys and Associates, Inc. contracted Envirotech Inc. of Farmington, New Mexico to perform the remedial work, including removal, transportation and disposal of concrete pads within and adjacent to the facility buildings; excavation, transportation and disposal of petroleum hydrocarbon-contaminated soils; backfilling and compaction of all excavations and replacement of all concrete. Representatives of Buys and Associates, Inc., HOMCO, and Envirotech Inc. met at the HOMCO

facility on October 28, 1991 to discuss the objectives of the remedial work. Characterization samples of soils beneath the interior of the HFTO building were collected at this time.

During the remedial work, Buys and Associates, Inc. was responsible for monitoring the excavated soils and the breathing zone for volatile organic constituents using an OVM. OVM responses were used to determine the proper level of respiratory protection. The instrument was also used in conjunction with visual observations to determine the horizontal and vertical extent of each excavation and to locate sampling points. Buys and Associates, Inc. documented all phases of the remedial work with photographs and field notes. Copies of selected photographs are provided in Appendix A.

4.1.4 Fishing Tool Operations Building

The area adjacent to the HFTO building was excavated and backfilled between October 29 and November 1, 1991. Portions of the drain line originating from the HFTO building were also excavated on November 20, 1991. Excavations were dug with a front end loader and trackhoe. The front end loader removed concrete pads adjacent to the HFTO building and the upper 6 to 8 foot of material from the excavations. Excavations below 8 foot were completed with the trackhoe. The depth and extent to which all excavations were dug are depicted in Figure 4-1.

4.1.4.1 *Western Margin of Fishing Tool Operations Building*

The area adjacent to the western margin of the HFTO building and north of the facility fence was excavated from October 29 to November 1, 1991. The excavation was approximately 50-foot wide by 55-foot long by 5- to 6-foot deep (Figure 4-1, Photograph A-1). The south and east walls of this excavation displayed hydrocarbon-stained soils (Photographs A-2, A-3, A-4 and A-5). The north and west walls displayed clean soils. Petroleum hydrocarbon-stained soils exposed in the south wall yielded OVM readings of 105 ppm. The fence was dismantled on November 1, 1991 and the excavation extended southward until all stained soils exceeding OVM criteria were removed. The excavation south of the fence was approximately 10-foot long by 10-foot wide by 5- to 6-foot deep (Figure 4-1). A total of 750 cubic yards (yds^3) of material was removed from this excavation, 725 yds^3 north of the fence and 25 yds^3 south of the fence.

The source of petroleum hydrocarbons in the soil was the leaking indoor sump located in the northern margin of the original HFTO building. The existence of the petroleum hydrocarbon-contaminated material excavated from north of the fence was anticipated in the work plans. The migration of petroleum hydrocarbon contaminants south of the fence was not originally expected. OVM responses within stained material that was excavated ranged from 56 to 105 ppm. OVM responses within the completed excavation ranged from 0 to 5 ppm (Figure 4-2). Contaminated soils on the east wall of the excavation (beneath the HFTO building) were left in place (Photograph A-5).

4.1.4.2 *Southwest-Trending Drain Line*

A drain line was exposed in the west wall of the excavation adjacent to the western margin of the HFTO building (Photograph A-6). This drain line and associated leach field extended to the southwest towards the gateway. The drain line and leach field were excavated on November 1, 1991 (Photograph A-7) as far south as the gateway (approximately 30-foot long by 5-foot wide). The excavation was 5 to 6 foot deep at its northeast margin and 8 to 10 foot deep at its southwest margin (Figure 4-1). The portion of the drain line and leach field which extended south of the gateway (Photograph A-8) was excavated on November 20, 1991. This excavation was approximately 55-foot long and 12-foot wide. It was approximately 8 to 10 foot deep at its northeast margin and 4 to 6 foot deep at its southern margin (Figure 4-1).

Approximately 85 linear feet of drain line and leach field material were excavated. In addition, a total of approximately 310 yds^3 of material was excavated. Of these totals, 30 linear foot of drain line and 130 yds^3 of material were excavated north of the gateway. The balance (55 linear feet of drain line and 180 yds^3 of material) was excavated south of the fence.

The source of petroleum hydrocarbons in the soil was the drain line and leach field which were excavated. This drain line originated from the HFTO building. The existence of this drain line and leach field was not expected. OVM responses within the completed excavation ranged from 0 to 6 ppm (Figure 4-2). All petroleum hydrocarbon-contaminated materials exposed during excavations were removed and disposed.

4.1.4.3 *Interior of Fishing Tool Operations Building*

Prior to conducting operations inside the northern margin of the HFTO building, temporary plastic walls were constructed (Photograph A-9) to minimize the amount of dust and fumes that would impact the building interior. The concrete floor surrounding the leaking indoor sump (in the northern margin of the HFTO building, Figure 4-3) was cut with a concrete saw on October 31, 1991. In addition, holes were drilled at regular intervals into the floor with a jack hammer to facilitate removal of the concrete. The foundation footings beneath the overhead door on the western margin of the building (Figure 4-3) were also cut.

The concrete, sump and all piping were excavated, transported and disposed on November 4, 1991 (Photograph A-9). The excavation was 55-foot long, 20-foot wide and 5 to 6 foot deep (Figure 4-3). The north, south and east walls of this excavation displayed petroleum hydrocarbon-stained soils (Photographs A-10 and A-11). The west wall was extended into the excavation along the western margin of the HFTO building (Section 4.1.4.1). A total of 250 yds^3 of material was removed from this excavation, 200 yds^3 of petroleum hydrocarbon-contaminated soils and 50 yds^3 of concrete.

The source of petroleum hydrocarbons in the soil was the cracked indoor sump. None of the soils contained sludges or were saturated with petroleum hydrocarbons. An OVM response measured within the completed excavation was 0 ppm (Figure 4-3). Contaminated soils on the north, south and east walls of the excavation (beneath the HFTO building) were left in place because further excavation would have threatened the structural integrity of the building (Photographs A-10 and A-11).

4.1.5 Wireline Services Building

The area adjacent to the HWS building was excavated and backfilled in stages between November 1 and 20, 1991. Excavations were dug with a front end loader and trackhoe. The front end loader removed the concrete pads adjacent to the HWS building and the upper 6 to 8 foot of material from the excavation. Excavations below 8 foot were completed with the trackhoe.

4.1.5.1 *Shallow Drain Lines and Leach Fields*

A total of approximately 225 linear foot of drain lines and gravel leach fields that originated from the HWS building were excavated between November 1 and 20, 1991 (Photographs A-12 through A-20). Excavations for these materials extended from approximately 50 foot north of the HWS building to approximately 30 foot south of the gateway (Figure 4-1). The excavations ranged from approximately 15 to 30 foot in width and from approximately 4 to 12 foot in depth. A total of 1020 yds^3 of material was excavated.

The source of petroleum hydrocarbons in the soil was the drain lines and affiliated leach fields that were excavated. Small areas of soil stained by waste oil spilled outside the northeast corner of the HWS building[6] were also excavated (Photograph A-16). Except for the petroleum hydrocarbon-contaminated material between the HFTO and HWS buildings (Figure 4-1), the occurrence of these drain lines, leach fields and petroleum hydrocarbon-contaminated soils (Photographs A-12 through A-17 and A-20) was not expected. OVM responses within stained material that was excavated ranged from 75 to 808 ppm.

4.1.5.2 *Bedrock Plume*

One leach field located directly in front of (east of) the HWS building displayed characteristics different from all other leach fields present at the HOMCO facility. These characteristics are:

- It was installed to a deeper level (approximately 4 to 5 foot; Photographs A-21, A-22 and A-23);
- Liquids and sludges were present in the leach field in quantities larger than those observed in other leach fields;
- The underlying sandstone is more porous than bedrock lithologies exposed in other areas of the facility;
- A bedrock plume was formed by the migration of petroleum hydrocarbons downward into the sandstone to depths of 18 foot (Figure 4-4 and Photographs A-21, A-22 and A-23); no contaminant migration to these depths had been observed elsewhere at the facility; and
- The bedrock plume migrated laterally for distances ranging from 30 to 50 foot; areal migration around other leach fields at the facility was generally limited to 10 to 20 foot.

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[6]Covel, R., November 15, 1991, HOMCO District Manager, personal communication.

These characteristics were determined on November 2 and 3, 1991 by excavating the southern margin of the bedrock plume (Photographs A-21, A-22 and A-23). The excavation was approximately 20 foot long, 20 to 40 foot wide and 15 to 18 foot deep (Figures 4-1 and 4-4). A total of 370 yds^3 of petroleum hydrocarbon-contaminated material was removed. Observations made during the excavation suggested that petroleum hydrocarbon-contaminated material which remained in place (Photograph A-24) underlay a 2,500 square foot area to a depth of 15 to 18 foot. An additional amount of material containing petroleum hydrocarbons extended westward beneath the HWS building.

Remediation of the bedrock plume was not included in the original scope of work approved by the NMOCD. Instead, a different remedial approach was formulated and submitted to the NMOCD on November 12, 1991[7]. This strategy required the excavation of all shallow drain lines, leach fields and heavily-stained soils and bedrock. The underlying bedrock plume (Photograph A-24) would then be capped and left in place. Petroleum hydrocarbon-contaminated materials beneath the HWS building would also be left in place. This strategy was recommended for the following reasons:

- Analytical results of a sample of bedrock collected at the downgradient margin of the bedrock plume suggested the petroleum hydrocarbon constituents degraded relatively quickly as the plume migrated;
- The source of petroleum hydrocarbon contaminants and the hydraulic head which predominantly drives plume migration would be removed; and
- The concrete cap would help to isolate the petroleum hydrocarbons in the bedrock.

The plan was verbally approved by the NMOCD on November 12, 1991. The shallow drain lines, leach fields and heavily-stained soils and bedrock overlying the bedrock plume were excavated beginning November 13, 1991 (Photographs A-12 through A-20). Removal of these materials was described in Section 4.1.5.1. The excavation was backfilled and compacted to grade after completion of all excavations at the facility (Photographs A-25, A-26 and A-27). Installation of the concrete cap is described in Section 4.4.

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[7]Buys and Associates, Inc., November 11, 1991, Remediation Work Plan, HOMCO Facility 151, Farmington, New Mexico, 2 p., 2 figures, 1 table.

The source of petroleum hydrocarbons in the bedrock was the drain line and leach field excavated east of the HWS building (Photographs A-12, A-13 and A-21). The occurrence of this plume was not originally expected. OVM responses within the bedrock plume left in place beneath the concrete cap (Photograph A-24) ranged from 89 to 1028 ppm (Figures 4-2 and 4-4). One OVM response measured within materials left in place beneath the HWS building was 175 ppm (Figure 4-2). A small area of slightly stained soils left in place above the bedrock plume and beneath the concrete cap yielded an OVM response of 220 ppm (Figure 4-2).

4.2 WASTE DISPOSAL

All concrete, the indoor sump, all drain lines, petroleum hydrocarbon-contaminated soils and other materials removed during the excavations were transported to and disposed of in the Envirotech Inc. landfill. This landfill is located approximately 11 miles south of Bloomfield, New Mexico. The facility is certified by the NMOCD to accept petroleum hydrocarbon-contaminated wastes.

4.3 EXPLORATORY TRENCHES

Excavation of one exploratory trench southwest of the HFTO building was originally proposed to evaluate the potential extent of contaminant migration. The widespread existence of drain lines, leach fields and petroleum hydrocarbon-contaminated soils in the vicinity of the HWS building was not expected. Two additional trenches were excavated to evaluate contaminant migration from this area. All three trenches were excavated with the track hoe.

The first exploratory trench was excavated on October 31, 1991. It was dug approximately 25 foot south of the fence and 15 foot west of the HFTO building (Figure 4-1). This location is approximately 15 foot south of the excavation adjacent to the western margin of the HFTO building. The trench was excavated to a depth of approximately 6 foot. It was dug to evaluate the extent to which petroleum hydrocarbon contaminants may have migrated. Competent sandstone was encountered at a depth of 6 foot. A 1- to 2-inch thick seam of black-stained, friable sandstone occurred on top of the competent sandstone. The stained sandstone emanated no hydrocarbon odor. The OVM response measured within the stained material was 2 ppm (Figure 4-2).

The second and third exploratory trenches were excavated on November 21, 1991. The second trench was dug approximately 40 foot south of the gateway (Figure 4-1). This location is approximately 10 foot south of the excavations for the drain lines originating from the HWS building. The trench was excavated to a depth of approximately 12 foot. It was dug to verify that petroleum hydrocarbon contaminants had not migrated south of the excavations. No hydrocarbon stains or odors were noted at any level within the trench (Photograph A-28). The OVM response measured within sandstone at the bottom of the excavation was 0 ppm (Figure 4-2).

The third exploratory trench was dug approximately 10 foot west and 40 foot south of the southeast corner of the HWS building (Figure 4-1). The trench was excavated to a total depth of approximately 15 foot. It was dug to determine whether petroleum hydrocarbon contaminants had migrated from beneath the HWS building. No hydrocarbon stains or odors were noted at any level within the excavation. The OVM response measured within sandstone ranged from 12 ppm at the 12-foot level (Figure 4-2) to 5 ppm at the 15-foot level.

4.4 CONCRETE CAP

The excavations adjacent to the HWS building filled with precipitation on November 14 and 15, 1991. This storm water was removed from the excavations on November 18, 1991 with a vacuum truck. The water was then disposed in the "BioCell" at the Envirotech Inc. facility. The BioCell designed to treat materials saturated with heavy petroleum products such as motor oils. Materials within the BioCell are mixed with fertilizers and periodically watered and tilled. Storm water pumped from the excavations was used to water the materials in the BioCell.

A total of 160 barrels of storm water were pumped from the excavation and disposed in the BioCell at the Envirotech Inc. landfill. The excavations were then backfilled and compacted on November 18 and 19, 1991. Compaction tests performed on November 20, 1991 indicated the excavations had been compacted to 90% compaction.

A concrete cap was installed between the HFTO and HWS buildings (Figure 4-5) to isolate the petroleum hydrocarbons left in place. It measures 99 foot wide between the two buildings and 90 foot long in a north-south direction. It is approximately 0.5 foot thick and is reinforced with steel

rebar construction. The cap was installed at a grade that matches the pre-existing slope to promote surface water drainage to the south. The cap completely covers the ground surface between the HFTO and HWS buildings. It extends a minimum of 10 foot beyond the northern margin of contaminants left in place beneath the HWS building and in the bedrock plume. It extends a minimum of 25 foot beyond the southern margin of these contaminants.

The concrete cap was installed in stages to allow access into the facility. The western third of the cap was installed on November 22, 1991. This portion of the cap was allowed to cure before the eastern two thirds were installed on November 26, 1991.

4.5 RECONSTRUCTION

4.5.1 Concrete Pads

Concrete pads adjacent to the western margin of the HFTO building and north of the facility fence were removed prior to excavation of leach fields and petroleum hydrocarbon-contaminated soils. Backfilling and compaction of excavations adjacent to the HFTO building commenced on October 31, 1991 and concluded on November 1, 1991. Compaction tests performed on November 6, 1991 indicated the excavation had been compacted to 90% compaction.

The concrete pads adjacent to the HFTO building and north of the facility fence were replaced with new steel-reinforced concrete pads (Photograph A-29) poured on November 7, 1991 (Figure 4-5). A segment of the concrete pad south of the facility fence was also replaced. This segment was cracked and replaced at the request of local HOMCO management. All concrete poured adjacent to the HFTO building was tied into the building foundation with rebar.

Concrete pads adjacent to the eastern margin of the HWS building were cracked and required replacement to maintain the integrity of the concrete cap. These pads were replaced by the portion of the concrete cap installed on November 22, 1991 (Figure 4-5).

4.5.2 Interior of Fishing Tool Operations Building

Two pipes exposed in the north wall of the excavation dug on November 4, 1991 (old shop drain and outlet for recycled water, see Figure 4-3) were plugged on November 5, 1991. Backfilling and

compaction of the excavation commenced on November 5, 1991 and concluded on November 6, 1991. Compaction tests performed on November 6, 1991 indicated the excavation had been compacted to 90% compaction.

A floor drain was installed on November 7, 1991 to replace the sump that had been removed. The drain is plumbed into the oil/water separator. A steel-reinforced concrete floor (Photograph A-30) was poured on November 7, 1991. The north, east and south sides of the new concrete floor were tied into the pre-existing concrete floor with steel rebar. The new floor was sealed after the concrete had sufficiently cured. In addition, the joints between the old and new floors were also sealed to retard fluid migration.

4.5.3 Utility Lines

The excavation for the southwest-trending drain line (Section 4.1.4.2) uncovered buried telephone lines at the gateway. These telephone lines connect the HFTO and HWS buildings. The conduit containing these lines was damaged during excavations conducted on November 1, 1991. The telephone lines, however, remained intact. The conduit was repaired on November 21, 1991 after all excavations at the facility were completed and before the concrete cap was installed.

The southwest margin of the excavation for the southwest-trending drain line (Section 4.1.4.2) uncovered the water line for the HWS building. The water line was shut off on November 20, 1991 prior to finishing this portion of the excavation. The water line was repaired and water restored to the HWS building on November 20, 1991 after the excavation was completed.

Industrial waste water from the HWS building was routed via 2-inch diameter polyvinylchloride (PVC) pipe to the oil/water separator in the HFTO building. The PVC line was severed and removed during excavations for the shallow drain lines and leach fields adjacent to the HWS building (Section 4.1.5.1.). A new 2-inch diameter PVC line was installed on November 20 and 21, 1991 after all excavations had been backfilled and compacted and before installation of the concrete cap. The location of this replacement line is depicted in Figure 4-5.

4.5.4 Sanitary Septic System at Wireline Services Building

Excavations for the shallow drain lines and leach fields adjacent to the HWS building (Section 4.1.5.1) required the removal and replacement of the septic holding tank and leach field. The septic holding tank was replaced because the original was damaged beyond repair during the excavation. Septic water remaining within the tank was pumped out and disposed by a local septic tank cleaning service. Septic water spilled from the tank during excavation was also disposed by the same service.

The septic leach field was removed to facilitate excavation of petroleum hydrocarbon-contaminated soils. It was replaced with a septic leach field located approximately 50 foot north of the HWS building and approximately 40 foot north of the concrete cap (Figure 4-5). The new location was selected to preclude flushing of petroleum hydrocarbon-contaminated soils beneath the concrete cap with fluids from the sanitary system. The new sanitary septic system was installed on November 21 and 22, 1991. Percolation tests required for sanitary leach systems were performed by Envirotech Inc. in accordance with New Mexico statute.

4.5.5 Gravel Surfaces

A 4- to 6-inch gravel base was installed at the facility after all activities, except re-installation of the facility fence, had been completed. This gravel replaced road base removed from excavations extending beyond the north and south margins of the concrete cap (Figure 4-5). The road base was installed and compacted to the same grade present at the facility before remedial activities began.

4.5.6 Fence

The fence that secures the southern margin of the facility between the HFTO and HWS buildings was dismantled on November 1, 1991. Dismantling was required to continue the excavation of petroleum hydrocarbon-impacted soils along the western margin of the HFTO building (Section 4.1.4.1). The fence was erected after all excavations and construction at the facility were completed. In the interim, site security was maintained by parking vehicles and construction equipment between the HFTO and HWS buildings.

5.0 ANALYTICAL RESULTS AND INTERPRETATIONS

5.1 ANALYTICAL RESULTS

Most of the analytical work was performed on a rapid turnaround schedule to minimize delays in excavation activities and standby costs. The analytical work initially proposed included one (1) composite sample of soils beneath the HOMCO Fishing Tool Operations (HFTO) building. This sample was required by the Envirotech Inc. landfill. In addition, one verification sample was to be collected from each of three separate excavations (interior of HFTO building, western margin of HFTO building, and between HFTO and HOMCO Wireline Service (HWS) buildings). One other sample was to be collected from within an exploratory trench. The additional industrial leach fields and impacted soils discovered during remedial activities required two (2) characterization samples and an additional six (6) verification samples be collected. Samples were also collected from within two (2) additional exploratory trenches. An inventory of all soil samples collected at the facility in October and November, 1991 is presented in Table 5-1.

Specific analytical methods were required by the New Mexico Oil Conservation Division (NMOCD) for characterization and verification samples. Characterization samples were analyzed for total petroleum hydrocarbons (TPH) by EPA Method 8015 modified and total benzene, toluene, ethyl benzene and xylenes (BTEX) by EPA Method 8020. Verification samples were analyzed for TPH by EPA Method 8015 modified and Toxicity Characteristic Leaching Procedure (TCLP) benzene by EPA Method 8020. The characterization sample collected from beneath the HFTO building was analyzed for TPH by EPA Method 8015 modified, TCLP benzene by EPA Method 8020 and TCLP metals. Samples collected from within the exploratory trenches were analyzed for TPH by EPA Method 8015. The sample collected from within the exploratory trench excavated near the HFTO building was also analyzed for TCLP benzene.

Analytical results for all TPH analyses are presented in Table 5-2. Method detection limits for TPH analyses range from 10 to 1,000 milligrams per kilogram (mg/Kg). Analytical results of total BTEX and TCLP benzene analyses are presented in Table 5-3. Practical quantitation limits for total BTEX analyses range from 4 to 20 micrograms per kilogram (µg/Kg). Practical quantitation limits for TCLP benzene analyses are 40 micrograms per liter (µg/L). Analytical results for the one TCLP metals sample are presented in Table 5-4.

5.1.1 Fishing Tool Operations Building

5.1.1.1 *Western Margin of Fishing Tool Operations Building*

One verification sample of soils within the southwest corner of this excavation (Photograph A-1) was collected on October 30, 1991 (sample number 9110301600, see Table 5-1). It was collected to verify that desired cleanup levels had been achieved. The sample was a composite of the soil from the sidewalls in the corner of the excavation (sample location "2" on Figure 5-1). The soils that were sampled displayed no hydrocarbon staining and emitted no hydrocarbon odors. The organic vapor meter (OVM) response measured for this sample was 0 ppm. The sample contained no TPH or TCLP benzene at detectable levels (Tables 5-2 and 5-3).

5.1.1.2 *Southwest-Trending Drain Line*

One characterization sample was collected on November 15, 1991 (sample number 9111151330, see Table 5-1). It was collected from leach field materials located approximately 8 foot south of the fence (sample location "11" on Figure 5-1). The sample was collected to characterize these materials and determine if further excavation was required. The soils and leach field gravels displayed black stains and emitted hydrocarbon odors. The OVM response measured for these materials was 85 ppm. The sample contained 8,300 mg/Kg TPH, 3 µg/Kg ethyl benzene and 14 µg/Kg xylenes (Tables 5-2 and 5-3). Neither benzene nor toluene occurred at detectable levels.

A second sample (sample number 9111201400 in Table 5-1) was collected from the completed excavation on November 20, 1991. It was collected from the floor of the excavation at a depth of 9 foot (sample location "13" on Figure 5-1). This location is directly beneath the drain line and gravel leach field that were excavated. The sample was collected to verify that desired cleanup levels had been achieved. The sandstone from which the sample was collected displayed no stains and emitted no odors. The OVM response measured for this sample was 6 ppm. The sample contained no TPH or TCLP benzene at detectable levels (Tables 5-2 and 5-3).

5.1.1.3 *Interior of Fishing Tool Operations Building*

One sample of materials beneath the HFTO building was collected on October 28, 1991 (sample number 9110281630, see Table 5-1). It was collected at the request of the Envirotech Inc. landfill to characterize these materials prior to disposal. Samples were collected from three (3) separate

locations inside the HFTO building and composited into one sample for analysis. The three locations were (sample locations labeled "1" on Figure 4-3):

- sludge from within cracks in the indoor sump;
- soil to a depth of 2.9 foot at a location adjacent to the indoor sump; and
- soil to a depth of 2.6 foot at a location near the west overhead door.

The sludge sample was black in color and emitted strong hydrocarbon odors. The sample adjacent to the sump was a sandy silt. It displayed black hydrocarbon staining and emitted strong hydrocarbon odors. The sample near the overhead door was a brown sandy silt that displayed no hydrocarbon stains and emitted no hydrocarbon odors. No OVM readings were measured for these samples. The analytical results indicate the materials contained 15,800 mg/Kg TPH (Table 5-2). Diesel oil was estimated to comprise approximately 32% of this total. The balance (68%) was comprised of heavier petroleum products such as motor oils. No TCLP benzene occurred at detectable levels (Table 5-3). Detectable amounts of TCLP barium (1.8 mg/L) and TCLP lead (4.3 mg/L) were measured in the sample (Table 5-4). Neither barium nor lead exceeded regulatory thresholds established for these two waste parameters. No other TCLP metals were measured in the sample in detectable levels (Table 5-4).

One verification sample was collected at the bottom of the excavation inside the HFTO building (sample number 9111041430, see Table 5-1). It was collected on November 4, 1991 to verify that cleanup levels had been achieved. The sample was collected from a location directly beneath the indoor sump that was removed (Photograph A-11 and sample location "6" on Figure 4-3). The soil sample displayed no hydrocarbon staining and emitted no odors. No OVM reading was measured for this sample. The analytical results indicate the sample contained 32 mg/Kg TPH (Table 5-2). TCLP benzene was detected at 5 µg/L (Table 5-3).

5.1.2 Wireline Services Building

5.1.2.1 *Shallow Drain Lines and Leach Fields*

A total of four (4) soil samples were collected from the excavations for the approximately 225 linear foot of drain lines and gravel leach fields that originated from the HWS building. All four samples were collected on November 15, 1991 to verify that desired cleanup levels had been achieved. The

first verification sample (sample number 9111150815 in Table 5-1) was collected from the sidewall in the northeast corner of the excavation (Photograph A-25 and sample location "8" in Figure 5-1). The soils from which the sample was collected displayed black hydrocarbon staining but emitted no odor. The OVM response measured for this soil sample was 3.8 ppm. The sample contained no TPH or TCLP benzene at detectable levels (Tables 5-2 and 5-3).

The second verification sample (sample number 9111150945 in Table 5-1) was collected from the sidewall in the northwest corner of the excavation (Photograph A-26 and sample location "9" in Figure 5-1). The soils from which the sample was collected displayed no hydrocarbon staining or odor. The OVM response measured for this soil sample was 4 ppm. The sample contained 75 mg/Kg TPH (Table 5-2). No TCLP benzene occurred at detectable levels (Table 5-3).

The third verification sample (sample number 9111151045 in Table 5-1) was collected from the floor of the northern margin of the excavation (sample location "10" in Figure 5-1). This sample location is directly beneath a drain line and gravel leach field that were excavated (Photograph A-15). The sandstone from which the sample was collected displayed no hydrocarbon staining or odor. The OVM response measured for this sample was 5 ppm. The sample contained no TPH or TCLP benzene at detectable levels (Tables 5-2 and 5-3).

The fourth verification sample (sample number 9111151445 in Table 5-1) was collected from the floor of the southern margin of the excavation (sample location "12" in Figure 5-1). This sample location is at a depth of 12 foot and is directly beneath a drain line and gravel leach field that were excavated. The sandstone from which the sample was collected displayed black hydrocarbon staining but emitted no odor. The OVM response measured for this sandstone sample was 18 ppm. The sample contained no TPH or TCLP benzene at detectable levels (Tables 5-2 and 5-3).

5.1.2.2 *Bedrock Plume*

Three samples of sandstone impacted by petroleum hydrocarbons were collected after the southern margin of the bedrock plume was excavated. The first sample (sample number 9111021400 in Table 5-1) was collected on November 2, 1991. It was collected from the sidewall at the southwest corner of the excavation at a depth of 15 foot (sample location "4" in Figures 4-4 and 5-1). The sample

was collected to verify that desired cleanup levels had been achieved. The sandstone from which the sample was collected displayed grey hydrocarbon staining and emitted a sweet/sour odor. The OVM response measured for this sample was 0 ppm. The sample contained no TPH or TCLP benzene at detectable levels (Tables 5-2 and 5-3).

The second sample (sample number 9111041200 in Table 5-1) was collected from within the southern margin of the bedrock plume (Photograph A-24 and sample location "5" in Figures 4-4 and 5-1). The sample was collected on November 4, 1991 at the specific request of the NMOCD[8]. It was collected to characterize the plume. A composite sample of the sandstone from within the plume (from a depth of 8 foot to a depth of 18 foot) was collected. The sandstone from which the sample was collected displayed black hydrocarbon staining and emitted a strong hydrocarbon odor. The OVM response for the sandstones which comprised this sample ranged from 89 to 842 ppm. The analytical results indicate the sandstone contains 5,400 mg/Kg TPH (Table 5-2). Diesel oil is estimated to comprise approximately 80% of this total. The balance (20%) is comprised of heavier petroleum products such as motor oils. Detectable amounts of toluene (39 µg/Kg), ethyl benzene (55 µg/Kg) and xylenes (520 µg/Kg) also occur (Table 5-3). No total benzene occurred at detectable levels.

The third sample (sample number 9111071315 in Table 5-1) was collected from the floor of the excavation at the base of the southern margin of the bedrock plume (sample location "7" in Figures 4-4 and 5-1). The sample was collected on November 7, 1991 at the specific request of the NMOCD[9]. It was collected at a depth of 18 foot to determine the vertical extent of the bedrock plume. The sandstone from which the sample was collected displayed no hydrocarbon staining. The OVM response measured for this sample was 9.8 ppm. The sample contained no TPH, benzene or ethyl benzene at detectable levels (Tables 5-2 and 5-3). Detectable amounts of toluene (0.7 µg/Kg) and xylenes (2 µg/Kg) did occur (Table 5-3).

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[8]Anderson, R., November 4, 1991, New Mexico Oil Conservation Division, personal communication.

[9]Anderson, R., November 7, 1991, New Mexico Oil Conservation Division, personal communication.

5.1.3 Exploratory Trenches South of Fence Line

One verification sample was collected within each of the three exploratory trenches. The first exploratory trench (approximately 15 foot south of the excavation adjacent to the western margin of the HFTO building, see sample location "3" on Figure 5-1) was sampled on October 31, 1991 (sample number 9110310845, see Table 5-1). The sample was collected from the stained sandstone exposed in the bottom of the 6-foot trench. It was collected to verify that no petroleum hydrocarbon contaminants had migrated south of the excavation completed adjacent to the western margin of the HFTO building. The sandstone sample displayed black hydrocarbon staining but emitted no odor. The OVM response measured within the stained material was 2 ppm. The sample contained no TPH or TCLP benzene at detectable levels (Tables 5-2 and 5-3).

The second exploratory trench (approximately 40 foot south of the gateway, see sample location "14" on Figure 5-1) was sampled on November 21, 1991 (sample number 9111211400, see Table 5-1). The sample was collected from sandstone exposed in the bottom of the 12-foot trench (Photograph A-28). It was collected to verify that no petroleum hydrocarbon contaminants had migrated south of the excavations completed at the HWS building. The sample of sandstone displayed no hydrocarbon staining and emitted no odor. The OVM response measured for the sandstone sample was 0 ppm. The sample contained no TPH at detectable levels (Table 5-2).

The third exploratory trench (40 foot south of the HWS building, see sample location "15" on Figure 5-1) was also sampled on November 21, 1991 (sample number 9111211500, see Table 5-1). The sample was collected from sandstone exposed at the 12-foot level in the trench. It was collected to verify that no petroleum hydrocarbon contaminants had migrated from beneath the HWS building. The sample of sandstone displayed no hydrocarbon staining and emitted no odor. The OVM response measured for the sandstone sample was 12 ppm. The sample contained no TPH at detectable levels (Table 5-2).

5.2 INTERPRETATION OF ANALYTICAL RESULTS

The analytical results of the verification samples were compared to NMOCD action levels as the results became available to determine whether desired cleanup levels had been achieved. NMOCD action levels are 100 ppm TPH, 50 ppm total BTEX and 10 ppm TCLP benzene.

5.2.1 Fishing Tool Operations Building

Analytical results of verification samples collected from excavations beneath and adjacent to the HFTO building are below NMOCD action levels. These results indicate desired cleanup levels have been achieved. Additional excavation at the HFTO building is not required.

5.2.2 Wireline Services Building

5.2.2.1 *Shallow Drain Lines and Leach Fields*

Analytical results of the verification samples collected from this excavation are below NMOCD action levels. These results indicate desired cleanup levels have been achieved in areas not capped with concrete. No additional excavation is necessary.

5.2.2.2 *Bedrock Plume*

Petroleum hydrocarbon contaminants occur in the sandstone to depths of approximately 18 foot. These contaminants occur in levels which exceed NMOCD action limits for TPH. The vertical extent of petroleum hydrocarbon contamination coincides with a lithology change from a porous, friable sandstone to a more competent and less porous sandstone.

One verification sample was collected from the excavation of the southern margin of the bedrock plume (sample #9111021400 in Table 5-1 and sample location "4" in Figures 4-4 and 5-1). Analytical results for this sample indicate cleanup levels have been achieved for the area not capped with concrete. No additional excavation is necessary. These results also suggest the hydrocarbon constituents in the bedrock degrade relatively quickly as the plume migrates.

5.2.3 Exploratory Trenches South of Fence Line

Analytical results of the samples collected from the first and second exploratory trench (sample locations "3" and "14" on Figure 5-1) indicate petroleum hydrocarbon contaminants had not migrated south of these excavations in detectable amounts. Analytical results of the sample collected from the third exploratory trench (sample location "15" on Figure 5-1) indicate petroleum hydrocarbon contaminants had not migrated south from the HWS building in detectable amounts.

6.0 SUMMARY AND CONCLUSIONS

Buys and Associates, Inc. directed remediation of industrial leach fields located at the HOMCO International, Inc. (HOMCO) Location 151 facility in Farmington, New Mexico. Remediation was conducted in March, October and November, 1991. In addition to the industrial leach fields, an area formerly used as a repository for sump sludges was also remediated. Approximately 20 cubic yards (yds^3) of soil was excavated from this area.

Industrial leach fields at the HOMCO facility were proximate to the HOMCO Fishing Tool Operations (HFTO) building and the HOMCO Wireline Services (HWS) building. As of September 25, 1990, HOMCO ceased discharging all industrial waste water to the industrial leach fields. The drain lines, gravel leach fields and impacted soils exceeding New Mexico Oil Conservation Division (NMOCD) action levels for petroleum hydrocarbon contaminants were later removed and disposed at an approved facility. An additional source of contaminants in the soils, the indoor sump in the northern margin of the original HFTO building, was also removed. These determinations are based on field observations, organic vapor meter (OVM) monitoring and laboratory analyses. The volumes of materials excavated from each of the areas around and within the HFTO building are tabulated in Table 6-1. A total of 2,940 (yds^3) of materials were excavated, 1,680 yds^3 in March, 1991 and 1,260 yds^3 in October and November, 1991. The volumes of materials excavated from each of the areas around the HWS building are also tabulated in Table 6-1. A total of 1,405 cubic yards (yds^3) of materials were excavated, 15 yds^3 in March, 1991 and 1,390 yds^3 in November, 1991.

One leach field located directly in front of (east of) the HWS building impacted the underlying bedrock to a depth of 18 foot. Liquids and sludges were present in this leach field in larger quantities than observed in other leach fields at the facility. Analytical results from sandstones on the downgradient margin of the bedrock plume suggest petroleum hydrocarbon constituents in the bedrock degrade relatively quickly as the plume migrates. Remediation of the bedrock plume consisted of excavating the material in the leach field and the heavily stained soils overlying the bedrock. The excavation was backfilled, compacted to grade and capped with concrete.

All excavations were sampled to verify that desired cleanup levels had been achieved. The excavations were backfilled after analytical results had verified that no additional excavation was

necessary. The backfill was compacted and tested in accordance with accepted engineering practices in preparation for the construction of concrete floors and pads and the concrete cap.

Contaminated soils beneath the HFTO building (south of the sump that was removed) and the HWS building were left in place. Further excavation would have threatened the structural integrity of the building. Exploratory trenches were dug south of the leach field excavations and HWS building to evaluate the extent to which petroleum hydrocarbon contaminants may have migrated. Field observations, OVM monitoring and laboratory analyses indicated no petroleum hydrocarbon contaminants had migrated south of the excavations or from beneath the HWS building.

Estimates of the volumes of petroleum hydrocarbon-contaminated materials left in place beneath the HFTO and HWS buildings and beneath the concrete cap between these buildings are presented in Table 6-2. A total of 1,200 to 1,800 cubic yards of petroleum hydrocarbon-contaminated materials remain in place beneath the HOMCO Fishing Tool Operations and Wireline Services buildings. In addition, approximately 900 to 1,200 cubic yards of petroleum hydrocarbon-contaminated materials remain in place in the bedrock between these two buildings. These estimates are based on observations made during remedial activities.

Estimates of the maximum concentrations of petroleum hydrocarbon contaminants left in place beneath these three areas are also tabulated in Table 6-2. Concentration estimates are based on analytical results of samples collected during site investigations performed in 1990 and remedial activities conducted in 1991. Maximum concentrations estimated for total petroleum hydrocarbons exceed NMOCD action levels. Toxicity Characteristic Leaching Procedure benzene and total benzene, toluene, ethyl benzene and xylenes concentrations do not exceed NMOCD action levels.

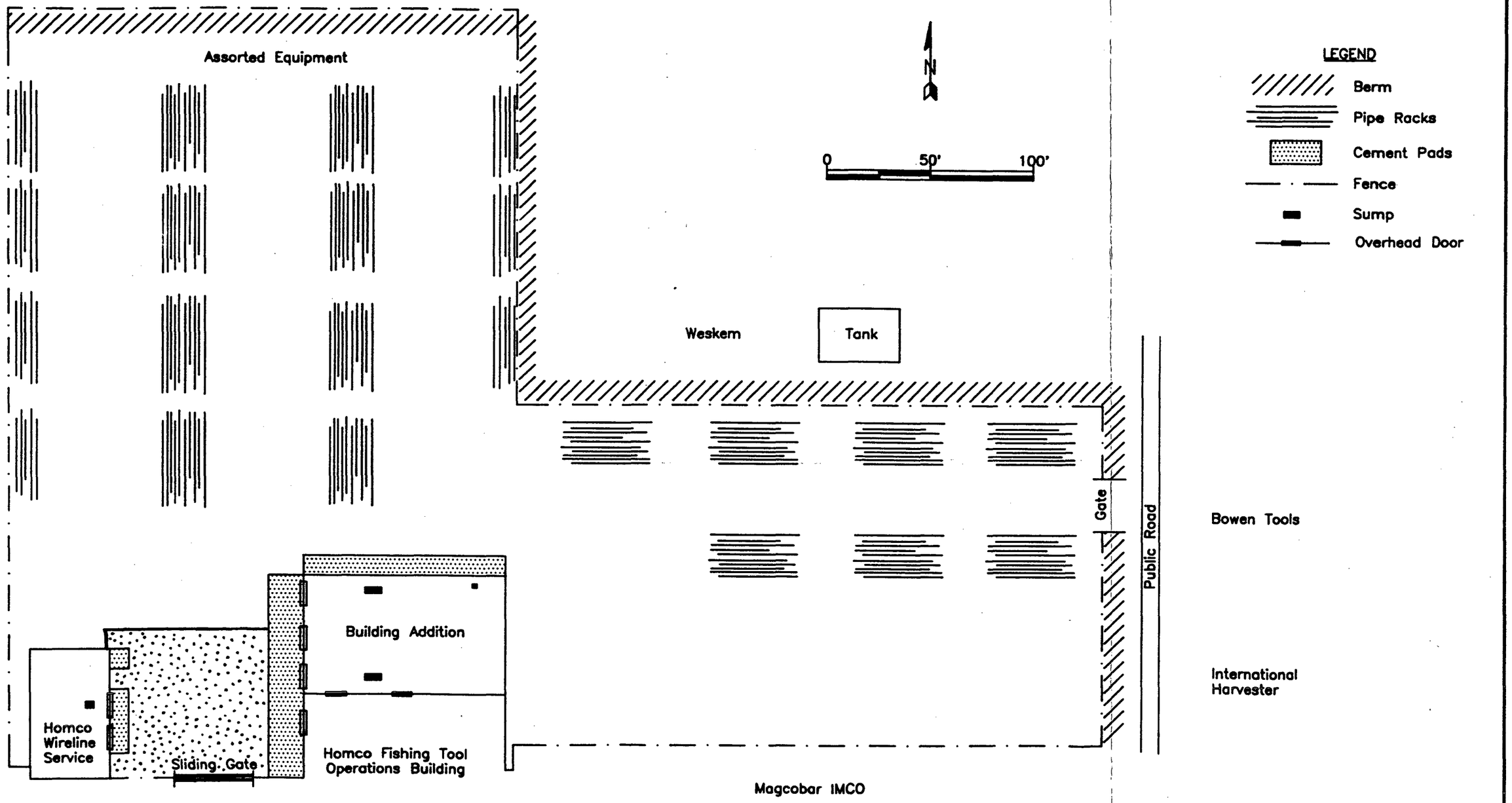
The petroleum hydrocarbon contaminants which remain in place beneath HFTO and HWS buildings and the concrete cap do not pose a threat to human health or the environment. Petroleum hydrocarbon contaminants occurring in the bedrock are isolated. The source of petroleum hydrocarbon contaminants and the hydraulic head which predominantly drives plume migration have been removed. In addition, the concrete floors and aprons of the two buildings and the concrete cap limit the infiltration of surface water and the resultant hydraulic head.

7.0 RECOMMENDATIONS

Industrial leach fields and other sources of petroleum hydrocarbon contaminants located at the HOMCO International, Inc. (HOMCO) Location 151 facility in Farmington, New Mexico have been remediated. Petroleum hydrocarbon contaminants and their sources were satisfactorily excavated and disposed. No further excavation for industrial leach fields is recommended at the HOMCO facility.

Petroleum hydrocarbon-contaminated materials left in place beneath the HOMCO Fishing Tool Operations and Wireline Services buildings and between these buildings are overlain by a concrete cap and concrete floors and aprons. The concrete cap was constructed to isolate these materials in the bedrock. The source of the contaminants and the hydraulic head which predominantly drives plume migration have been removed. In addition, the concrete limits the infiltration of surface water and the resultant hydraulic head. None of the petroleum hydrocarbon-contaminated materials that remain beneath the buildings and the concrete cap pose a threat to human health or the environment. Further remedial action for these materials is not required.

The new concrete floor constructed inside the HOMCO Fishing Tool Operations building was sealed to retard fluid migration. The quality of the seal will diminish with use. Periodic inspection of the floor by local management is recommended to monitor the quality of the seal. Local management was provided with floor sealer for future use.



BUYS & ASSOCIATES

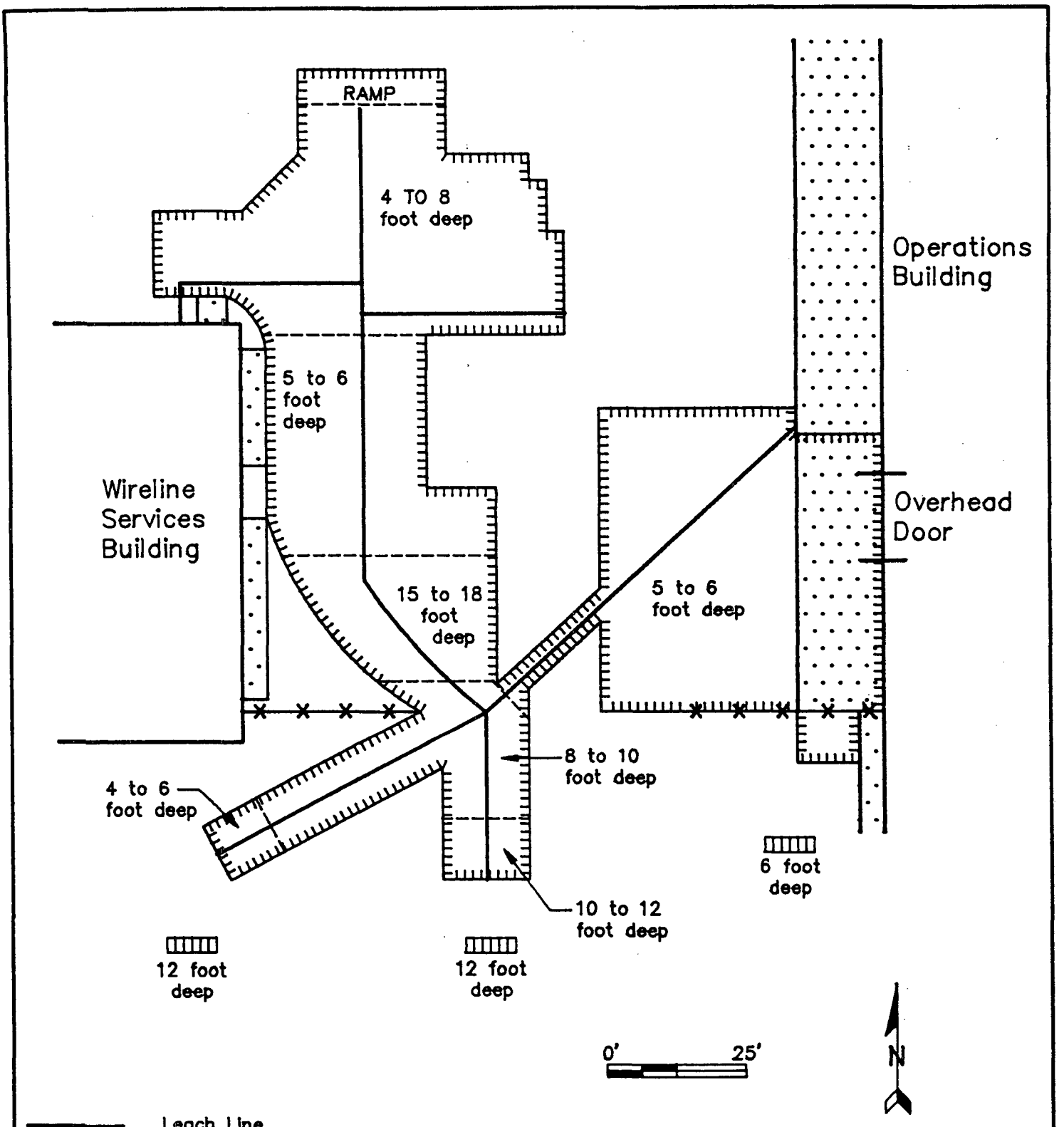
Figure 2-1

PROPERTY LAYOUT

HOMCO

Farmington, New Mexico

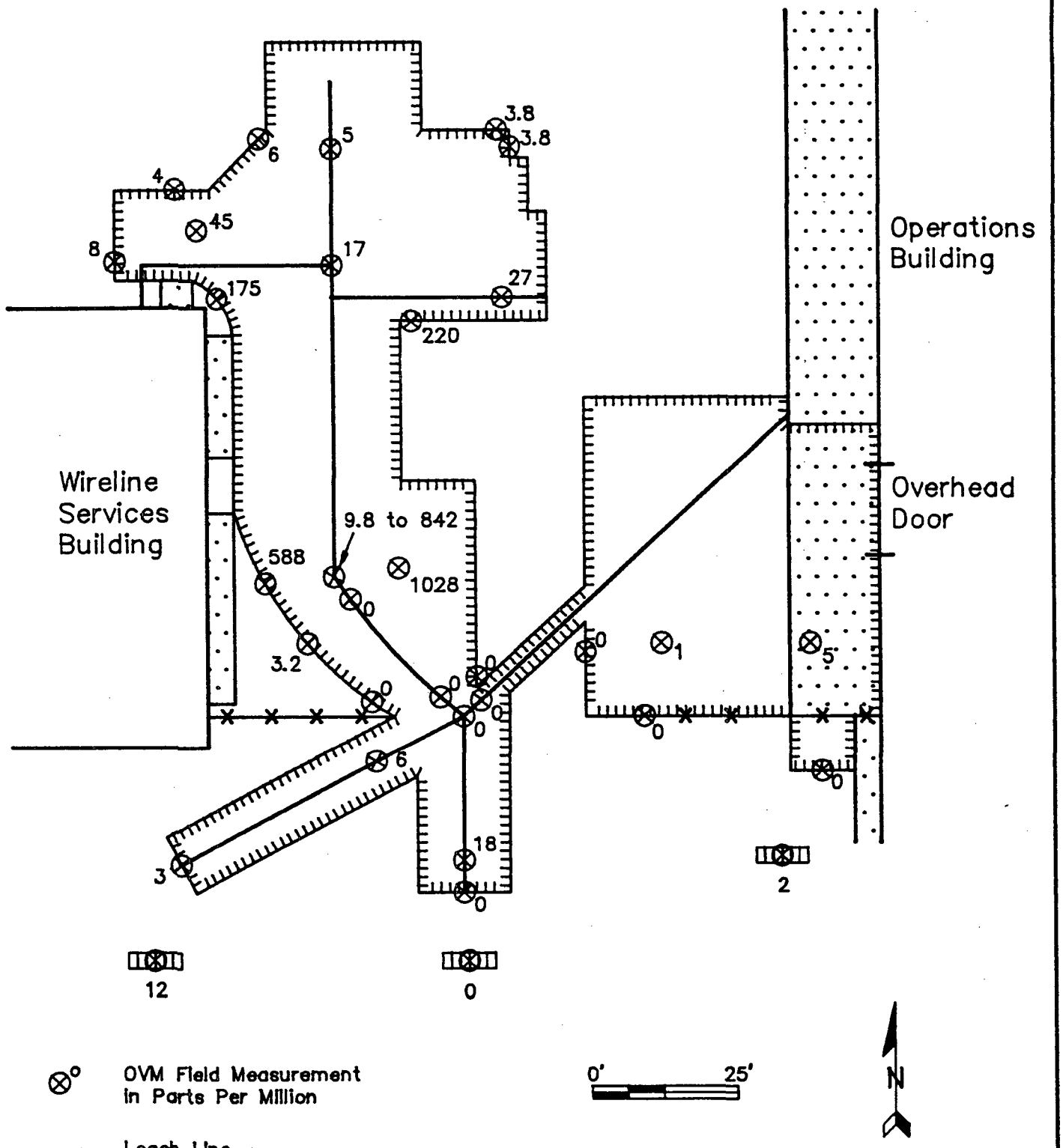
Date: 10/91	Scale: 1"=50'	Drawn by: MNM



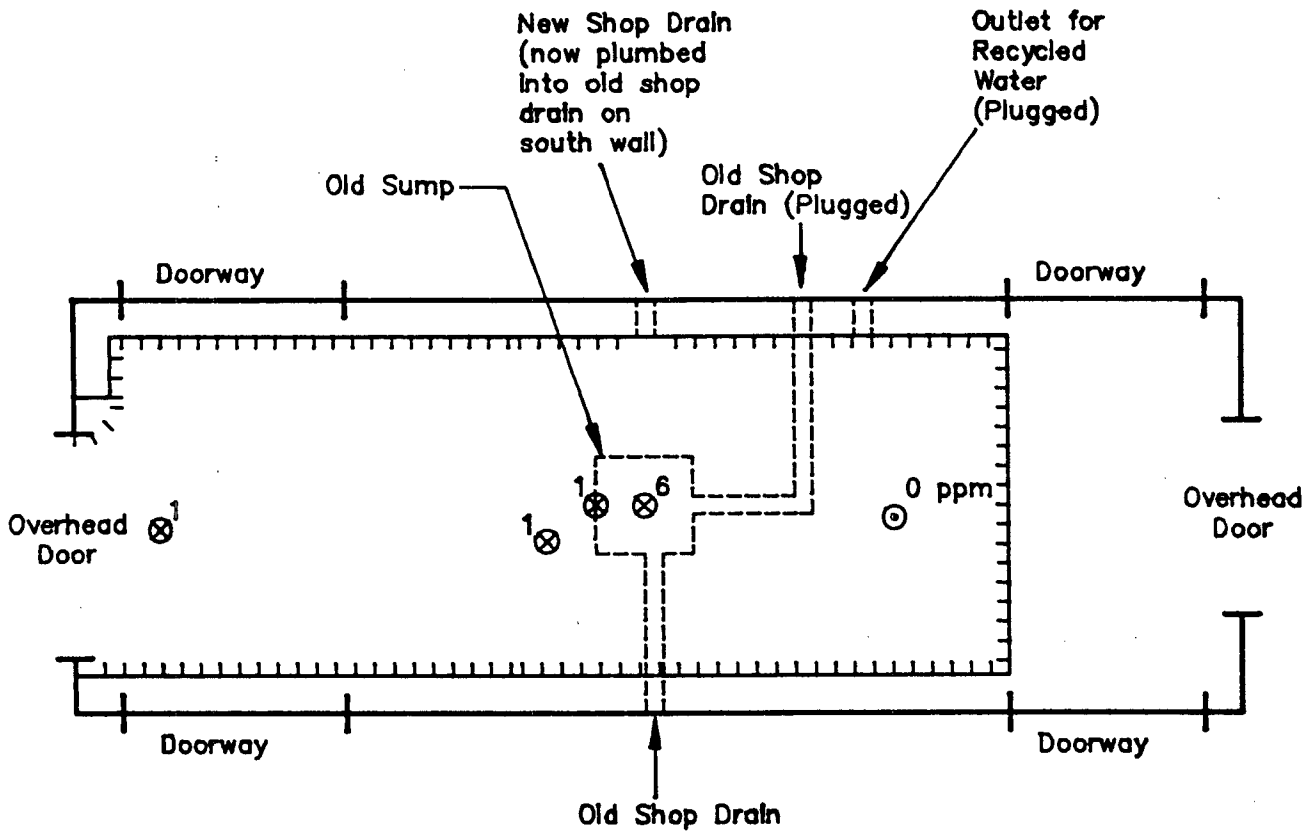
BUYS & ASSOCIATES, INC.

Figure 4–1
Extent of Exterior
Excavations
HOMCO International, Inc.
Farmington, New Mexico

Date: 12–17–91	Drawn By: george
Scale: 1"=25'	Sheet: 1 of 1



BUYS & ASSOCIATES, INC.	
Figure 4–2 *Distribution of OVM Responses,* Exterior Excavations HOMCO International, Inc. Farmington, New Mexico	
Date: 12–17–91	Drawn By: george
Scale: 1"=25'	Sheet: 1 of 1



Exterior/Interior Wall

Doorway

Overhead Door

Drain Line

Extent of Excavation (5 to 6 foot deep)

0 ppm — OVM Field Measurements Within Completed Excavation (in parts per million)

Sample Location (numbers correlate with entries in Table 1)

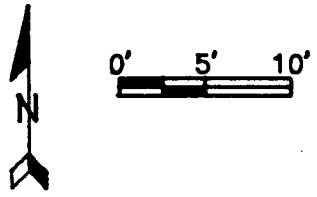


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Figure 4-3
Extent of Interior Excavations, Distribution of OVM Responses, and Sample Location Map.
HOMCO International, Inc.
Farmington, New Mexico

Date: 12-17-91	Drawn By: george
Scale: 7/16"=5'	Sheet: 1 of 1

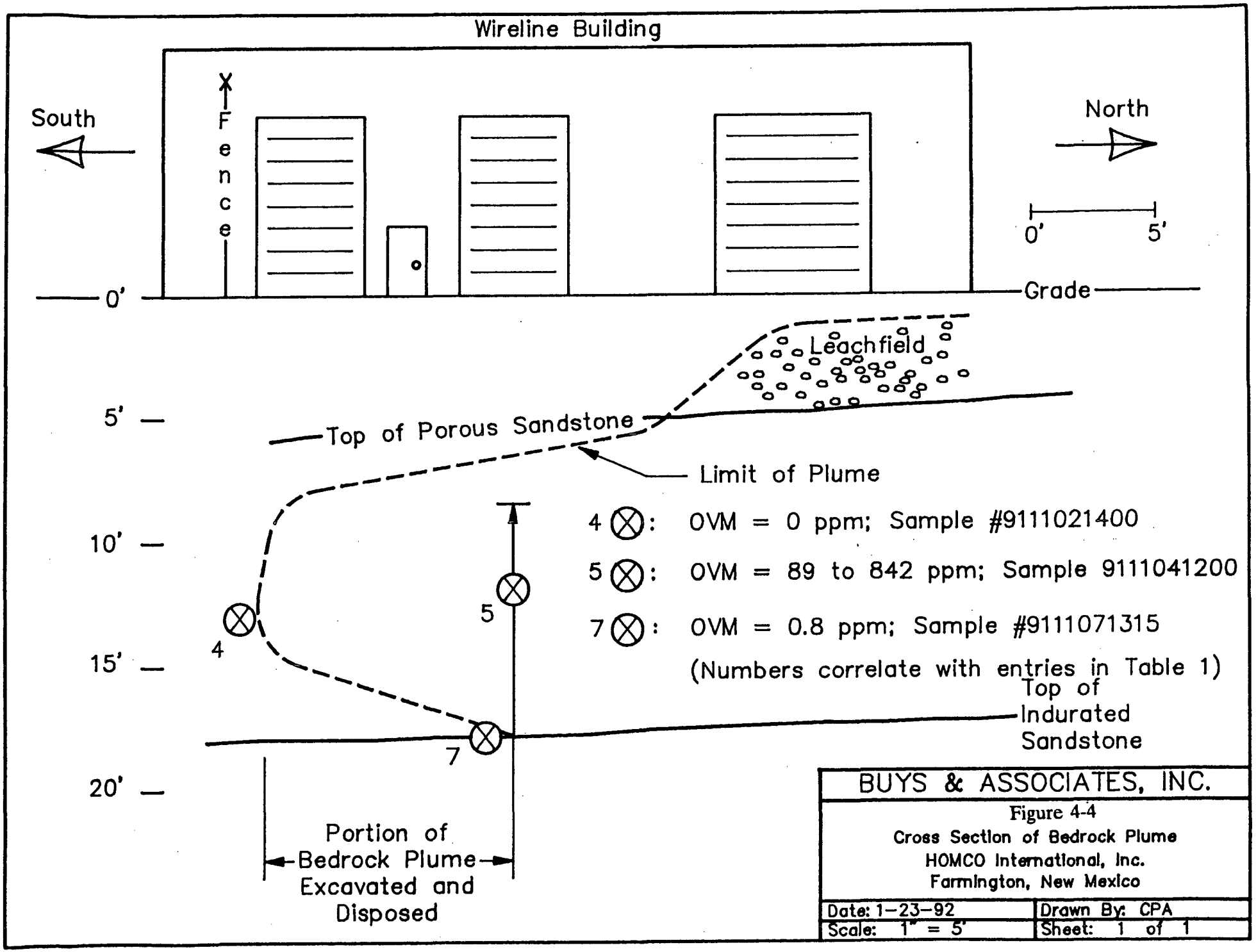

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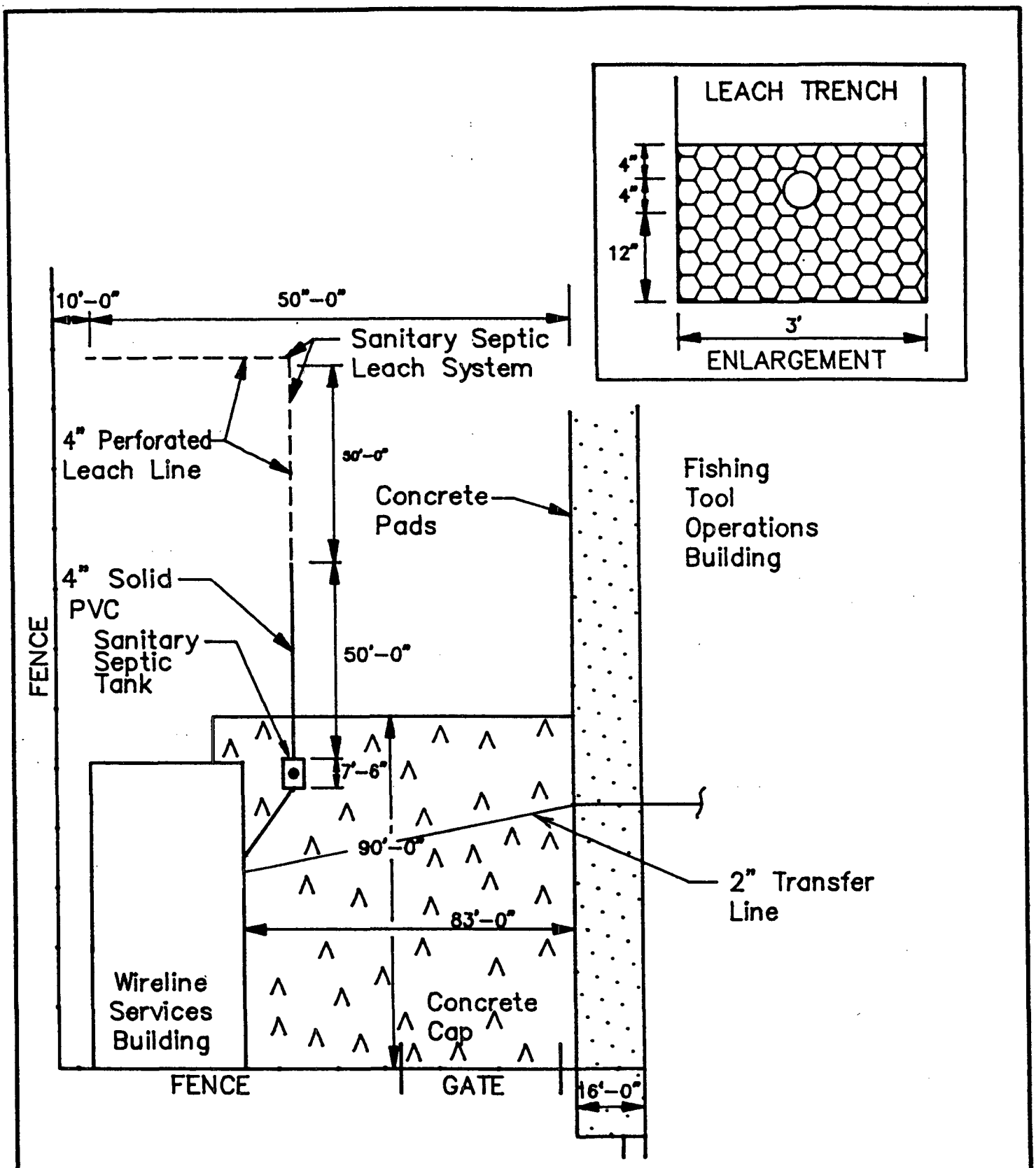
Figure 4-4
Cross Section of Bedrock Plume
HOMCO International, Inc.
Farmington, New Mexico

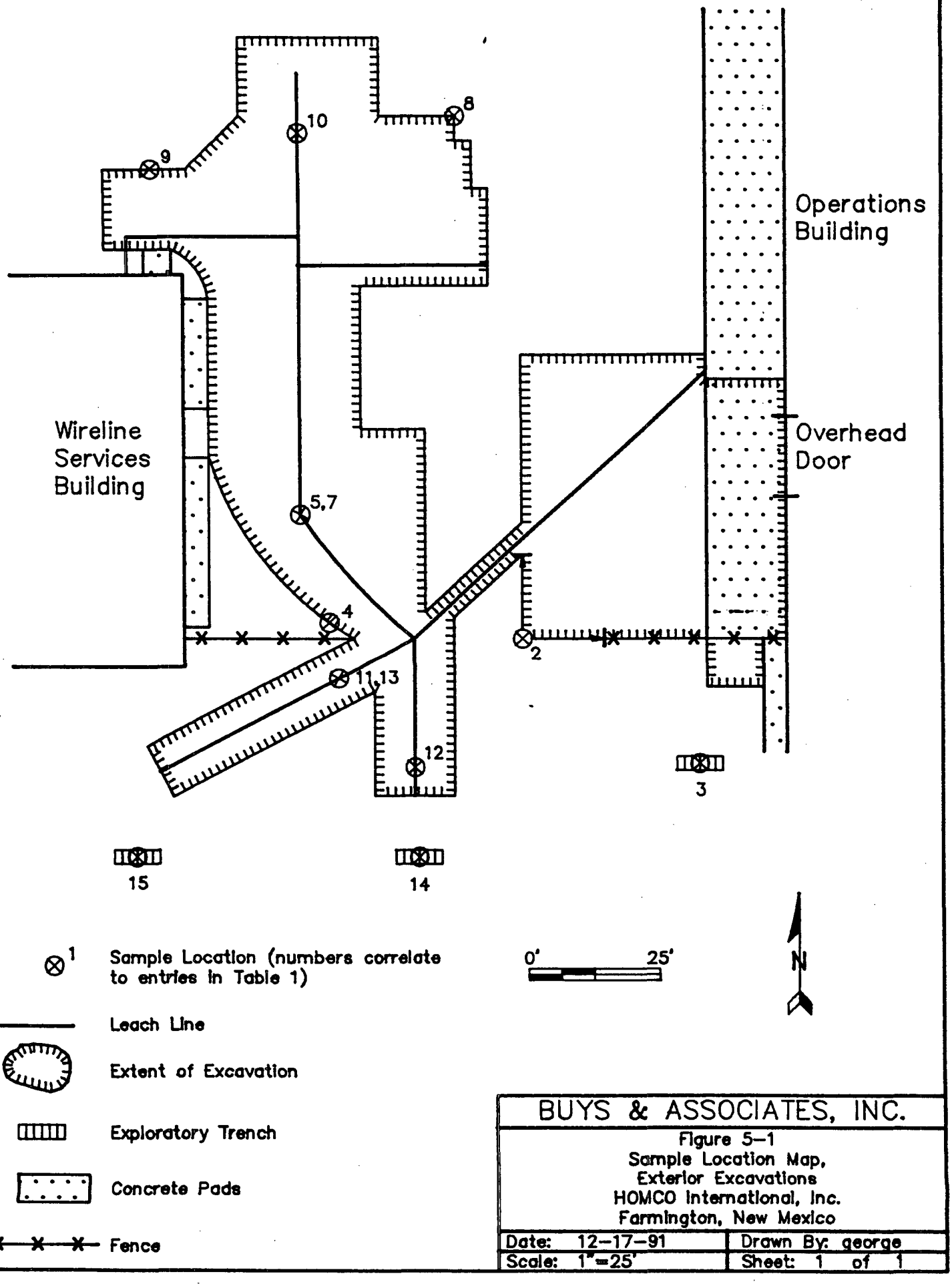
Date: 1-23-92	Drawn By: CPA
Scale: 1" = 5'	Sheet: 1 of 1



BUYS & ASSOCIATES, INC.

Figure 4-5
Site Plan After Completion of
Remedial Activity
HOMCO International, Inc.
Farmington, New Mexico

Date: 1-23-92	Drawn By: CPA
Scale: NONE	Sheet: 1 of 1



BUYS & ASSOCIATES, INC.

Figure 5–1
Sample Location Map,
Exterior Excavations
HOMCO International, Inc.
Farmington, New Mexico

Date: 12–17–91	Drawn By: george
Scale: 1"=25'	Sheet: 1 of 1

Table 5-1
Soil Sample Inventory
Homco International, Inc.
Location 151
Farmington, New Mexico
Page 1

Sample Number	Designation On Location Map	Location	Purpose	Observation
9110281630	1	Composite from 3 locations: cracks in indoor sump; borehole augered adjacent to sump to depth of 2.9'; borehole augered 30' from sump to depth of 2.6'.	Characterize soils beneath concrete floor.	No OVM reading taken; soil near sump stained black, strong hydrocarbon odor; soil distant from sump without stain or odor
9110301600	2	Southwest corner of sidewall in excavation adjacent to Operations Building.	Verify sidewall of excavation.	OVM= 0 ppm; no stain or odor in soil.
9110310845	3	Trench excavated 15' south of southern limit of excavation adjacent to Operations Building.	Characterize stained soils left in place down gradient from excavation.	OVM=2 ppm; 2" thick seam stained black no odor.
9111021400	4	Southern margin of excavation for plume in bedrock.	Verify sidewall of excavation at a depth of 15'.	OVM=0 ppm; grey stain and sweet/sour odor.
9111041200	5	Southern margin of plume in bedrock composited from 8' to 18'.	Characterize plume in bedrock.	OVM= 89-842 ppm; stained black, strong hydrocarbon odor.
9111041430	6	Floor of excavation beneath indoor sump removed from Operations Building.	Verify floor of excavation.	OVM= 0 ppm; no stains or odors.
9111071315	7	Floor of excavation (18') for plume in bedrock.	Verify vertical extent of plume in bedrock.	OVM= 9.8 ppm; No stains or odors.

Table 5-1
Soil Sample Inventory
Homco International, Inc.
Location 151
Farmington, New Mexico
Page 2

Sample Number	Designation On Location Map	Location	Purpose	Observation
9111150815	8	Northeast margin of excavation adjacent to Wireline building.	Verify sidewall of excavation.	OVM= 3.8 ppm; Soil with slight hydrocarbon stain, no odor.
9111150945	9	Northwest margin of excavation adjacent to Wireline building.	Verify sidewall of excavation.	OVM=4 ppm; No stain or odors.
9111151045	10	North margin of excavation adjacent to Wireline building.	Verify floor of excavation beneath drain line that was removed.	OVM= 5 ppm; No stain or odors.
9111151330	11	Leach field trending to west southwest from gateway.	Characterize material in the leachfield.	OVM=85 ppm; Material with black stain and hydrocarbon odor.
9111151445	12	South Margin of excavation for leach field extending to south from gateway.	Verify floor of excavation beneath drain line that was removed.	OVM=18 ppm in stained soil; Soil stained black, no hydrocarbon odor.
9111201400	13	Excavation for leach field extending to west-southwest from gateway.	Verify floor of excavation beneath drain line that was removed.	OVM=6 ppm; no hydrocarbon stain or odors.
9111211400	14	Exploratory trench 40' south of gateway.	Investigate subsurface down gradient of gateway.	OVM= 0 ppm; No hydrocarbon stain or odor.
9111211500	15	Exploratory trench 40' south of Wireline Building.	Investigate subsurface down gradient of Wireline building.	OVM= 12 ppm; No hydrocarbon stain odor.

OVM = Organic Vapor Meter measurement collected in the field.
ppm = parts per million.

TABLE 5-2
SUMMARY OF ANALYTICAL RESULTS
TOTAL PETROLEUM HYDROCARBONS IN SOIL
HOMCO International, Inc.
Location 151
Farmington, New Mexico

SAMPLE NUMBER	*TPH (mg/Kg)*	*MDL (mg/Kg)*	*DIESEL OIL FRACTION (%)*	*MOTOR OIL FRACTION (%)*
9110281630	15800	1000	32	68
9110301600	ND	--	NA	NA
9110310845	ND	--	NA	NA
9111021400	ND	10	NA	NA
9111041200	5400	10	80	20
9111041430	32	10	NA	NA
9111071315	ND	10	NA	NA
9111150815	ND	10	NA	NA
9111150945	75	10	NA	NA
9111151045	ND	10	NA	NA
9111151330	8300	1000	NA	NA
9111151445	ND	10	NA	NA
9111201400	ND	10	NA	NA
9111211400	ND	10	NA	NA
9111211500	ND	10	NA	NA

TPH Total petroleum hydrocarbons by EPA Method 8015 modified.
MDL Method detection limit.
mg/Kg Milligrams per kilogram.
ND Not detected.
NA Not analyzed.

a:\91work\tab2.wk1

TABLE 5-3
SUMMARY OF ANALYTICAL RESULTS
BTEX AND TCLP BENZENE IN SOIL
HOMCO International, Inc.
Location 151
Farmington, New Mexico

SAMPLE NUMBER	*TOTAL BENZENE (ug/Kg)*	*TOTAL TOLUENE (ug/Kg)*	*TOTAL ETHYL BENZENE (ug/Kg)*	*TOTAL XYLENES (ug/Kg)*	*TCLP BENZENE (ug/L)*
9110281630	NA	NA	NA	NA	ND(40)
9110301600	NA	NA	NA	NA	ND(40)
9110310845	NA	NA	NA	NA	ND(40)
9111021400	NA	NA	NA	NA	ND(40)
9111041200	ND(20)	39(20)	55(20)	520(20)	NA
9111041430	NA	NA	NA	NA	5(40)
9111071315	ND(4)	0.7(4)	ND(4)	2(4)	NA
9111150815	NA	NA	NA	NA	ND(40)
9111150945	NA	NA	NA	NA	ND(40)
9111151045	NA	NA	NA	NA	ND(40)
9111151330	ND(20)	ND(20)	3(20)	14(20)	NA
9111151445	NA	NA	NA	NA	ND(40)
9111201400	NA	NA	NA	NA	ND(40)
9111211400	NA	NA	NA	NA	NA
9111211500	NA	NA	NA	NA	NA

All analyses utilized EPA Method 8020
TCLP Toxicity Characteristics Leaching Procedure
ug/Kg Micrograms per kilogram.
ug/L Micrograms per liter.
ND Not detected.
NA Not analyzed.
Practical quantitation limit in parantheses.

a:\91work\tab3.wk1

TABLE 5–4
SUMMARY OF ANALYTICAL RESULTS
TCLP METALS IN SOIL
HOMCO International, Inc.
Location 151
Farmington, New Mexico

SAMPLE NUMBER	*ARSENIC (5.0)*	*BARIUM (100.0)*	*CADMIUM (1.0)*	*CHROMIUM (5.0)*	*LEAD (5.0)*	*MERCURY (0.2)*	*SELENIUM (1.0)*	*SILVER (5.0)*
9110281630	<0.11	1.8	<0.009	<0.018	4.3	<0.0002	<0.18	<0.016

TCLP Toxicity Characteristics Leaching Procedure
Results in milligrams per liter (mg/L).
Regulatory threshold values shown in parentheses.

a:\91work\tab4.wk1

TABLE 6.1
REMEDIATION OF INDUSTRIAL LEACH FIELDS
SUMMARY OF VOLUMES EXCAVATED
HOMCO International, Inc.
Location 151
Farmington, New Mexico

AREA	DATE	VOLUME* (cubic yards)
Sludge disposal area, northeast corner of facility	March 1991	20
Northern margin of HFTO Building	March 1991	1680
Northern margin of HWS Building	March 1991	15
TOTAL EXCAVATED IN MARCH 1991		1715
Western margin of HFTO Building	October and November 1991	750
Drain line trending southwest from HFTO Building	November 1991	310
Interior of HFTO Building	November 1991	200
Shallow drain lines and leach fields adjacent to HWS Building	November 1991	1020
Bedrock plume	November 1991	370
TOTAL EXCAVATED IN OCTOBER/NOVEMBER 1991		2650
TOTAL ALL AREAS		4365

*Volume tally includes drain lines, leach field gravels and impacted soils; concrete floors and pads are not included in these totals.

HFTO = HOMCO Fishing Tool Operations
HWS = HOMCO Wireline Services

a:\91work\table6-1.wk1

TABLE 6.2
REMEDIATION OF INDUSTRIAL LEACH FIELDS
ESTIMATION OF PETROLEUM HYDROCARBON CONTAMINANTS REMAINING AT THE FACILITY
HOMCO International, Inc.
Location 151
Farmington, New Mexico

AREA	AREAL AND VERTICAL EXTENT*	VOLUME** (cubic yards)	MAXIMUM CONTAMINANT CONCENTRATIONS***		
			TCLP benzene	TPH	Total BTEX
Beneath HFTO Building	50' by 100', from grade to 5' or 6'	725 to 900	0	1.6%	45 ppm
Beneath HWS Building	60' by 40', from grade to 5' or 6'	450 to 925	0	0.01%	600 ppb
Beneath concrete cap between HFTO and HWS Buildings	60' by 45', from 6' to 15' or 18'	900 to 1200	0	0.01%	600 ppb
TOTAL ALL AREAS		2075 to 3025			

*Areal and vertical extent estimated from excavations conducted at the facility
**Volume calculated from estimates of areal and vertical extent less amounts already excavated
***Contaminant concentrations based on analytical results of samples collected during site investigations and remedial activities

HFTO = HOMCO Fishing Tool Operations
HWS = HOMCO Wireline Services
TCLP = Toxicity Characteristics Leaching Procedure
TPH = Total Petroleum Hydrocarbons
BTEX = benzene, toluene, ethyl benzene and xylenes

ppm = parts per million
ppb = parts per billion

a:\91work\table6-2.wk1

APPENDIX A

SITE PHOTOGRAPHS

1. View of southwest corner of excavation adjacent to western margin of HFTO building. West wall and southwest corner of this excavation are the furthest extent of the excavation completed in these directions. The total depth of the excavation into the bedrock (light colored material at left in foreground) is also depicted.

2. Closeup view of southwest corner of excavation adjacent to western margin of HFTO building. Hydrocarbon stain in south wall (left center) is from migration of contaminants from sump inside HFTO building. Hydrocarbon visible in the south wall were excavated and disposed after fence (top left) was dismantled. Unstained sidewall (to right of hydrocarbon stain) is furthest extent of excavation to southwest.

3. Closeup view of hydrocarbon stained soils (in south wall of excavation adjacent to western margin of HFTO building) depicted in photograph 2.

4. View of south wall of excavation adjacent to western margin of HFTO building. Hydrocarbon-stained materials are visible in this sidewall. Excavation was extended to south to remove these stained materials after the fence was dismantled.

5. View of southeast corner of excavation adjacent to western margin of HFTO building. Petroleum hydrocarbon contaminants visible in the east wall occur in soils beneath the building foundation. These contaminants migrated from the indoor sump located on the other side of the wall. The east wall was not excavated any further to avoid damage to the building foundation.

6. View of west wall of excavation adjacent to western margin of the HFTO building. The drain line and leach field that trend to the southwest from the HFTO building are visible in the west wall.

7. Excavation of drain line and leach field that extend to southwest from the HFTO building. Note black hydrocarbon stain in leach field gravels and adjacent soils.

8. Excavation of drain line and leach field that extend to southwest from the HFTO building and past the facility fence. Leach field gravels visible in the foreground do not exhibit extensive hydrocarbon staining. Analytical results of sample collected from these materials exceeded NMOCD action levels; leach field was subsequently removed.

9. Removal of concrete and excavation of soils inside northern margin of HFTO building. Note plastic walls (at left and right) constructed to minimize migration of dust and odors into other portion of the building.

10. View of completed excavation inside northern margin of HFTO building.

11. Close up view of completed excavation inside northern margin of HFTO building. Note the hydrocarbon stained soils present in the sidewalls, The excavation was not extended further to avoid damage to the building foundation.

12. Excavation of leach field directly in front of HWS building. Leach field gravels and adjacent soils are saturated with petroleum hydrocarbons. This leach field is the source of contaminants for the bedrock plume.

13. Closeup view of leach field (directly in front of HWS building) depicted in photograph 12.

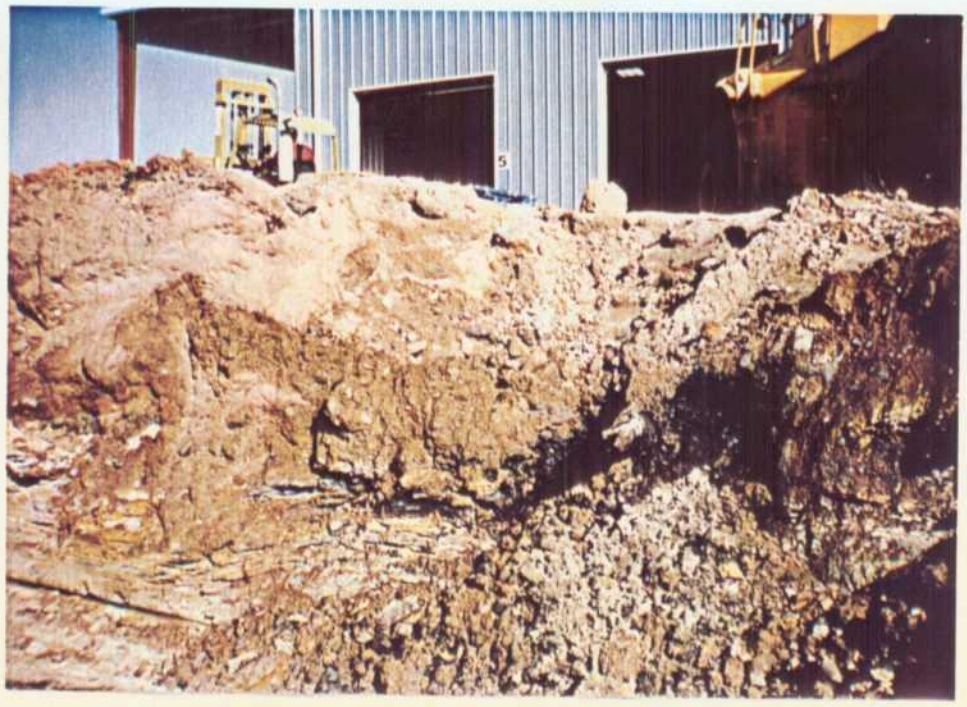
14. Excavation of leach field extending to the north from the front of the HWS building. Leach field gravels and adjacent soils are saturated with petroleum hydrocarbon contaminants.

15. Closeup view of leach field (extending to north from front of HWS building) depicted in photograph 14.

16. View of drain line and leach field that trend in east-west direction along northern margin of HWS building. Surficial soil is stained black from spillage of used oil.

17. Excavation of leach field that trends east-west along northern margin of HFTO building.

18. Excavation of drain line and leach field that trend eastward from HWS building towards HFTO building.



19. Closeup view of drain line and leach field (that trend eastward form HWS building towards HFTO building) depicted in photograph 18.

20. Excavation of drain line and leach field that occur south of the facility fence. This excavation is a continuation of the excavations for the shallow drain lines and leach fields occurring adjacent to the HWS building.

21. View to northwest of excavation for bedrock plume. Overlying leach field was source of petroleum hydrocarbon contaminants for this plume.

22. Closeup view of bedrock plume and overlying leach field.

23. Closeup view of bedrock plume and overlying leach field.

24. View of north wall of completed excavation for southern margin of bedrock plume. The petroleum hydrocarbon contaminants visible in the north wall were sampled for Sample #9111041200. These contaminants were left in place and capped with concrete.

25. View of northeast margin of completed excavation for shallow drain lines and leach fields originating from HWS building.

26. View of northwest margin of completed excavation for shallow drain lines and leach fields originating from HWS building

27. View to south of completed excavation for shallow drain lines and leach fields originating from HWS building.

28. View into exploratory trench excavated south of the gateway. Note absence of hydrocarbon stain on sidewalls of trench.

29. View to south of replacement concrete pads installed along western margin of HFTO building.

30. View of replacement concrete floor installed inside HFTO building.

APPENDIX B

LABORATORY ANALYTICAL REPORTS

Evergreen Analytical, Inc.

4036 Youngfield Street
Wheat Ridge, CO 80033-3862
(303) 425-6021
FAX (303) 425-6854

November 1, 1991

Mr. John Kaszuba
Buys & Associates
6574 S. Broadway #200
Littleton, CO 80121

Data Report : 91-3685
Client Project : 200-10

Dear Mr. Kaszuba:

Enclosed are the analytical results for the samples shown in the Sample Log Sheet. The invoice for this work will be mailed to your Accounts Payable department shortly. If you have any questions concerning the reported information, please contact Carl Smits or me.

Please Note: Samples marked for return on the Sample Log Sheet are considered either hazardous or unsuitable for municipal disposal, or were placed on hold at your request. The former samples will be returned to you immediately for proper storage or disposal. Samples placed on hold will be returned one (1) month from the date of receipt. Samples not considered hazardous will be disposed of at that time.

Thank you for using the services of Evergreen Analytical.

Sincerely,

John H. Barney
President

ml

EVERGREEN ANALYTICAL, INC.
4036 Youngfield, Wheat Ridge, CO 80033
(303) 425-6021

Date Due 11-1-91

Holding Time 11-11-91

TRPH: 3

Rush TCLP Benz + Mets: I

E. A. Cooler # _____

SAMPLE LOG SHEET

Client Buys + Assoc.
Address 6574 S. Broadway #200
Littleton, CO 80121
Contact John Kaszuba
Sampled 10-28-91 COC Received 10-29-91 10:29
Client Project # 200-10
Client P.O. _____
Phone # 730-2500
Fax Number 730-2522 Fax Results? (Y) N Shipping Charges _____

Project # 91-3685
Airbill # Fed-X 2865857912
Custody Seal Intact? (Y) N
COC Present? (Y) N
Sample Tags Present? (Y) N
Sample Tags # Listed? (Y) N
Sample(S) Sealed? (Y) N
Custodian/Date MJM 10-29-91

Special Instructions _____

Lab ID #	Client ID#	Analysis	Mtx	Btl	Loc	File#/Date	R*
X44446A	9110281630	~~TRPH 418.1 TEH-D~~	S	4oz wm	3		
X44446B	↓	TCLP Benzene (8020)	↓	8oz wm	2		
X44446C	↓	TCLP 8 Metals	↓	↓	3		
X44447	TRIP BLK.	HOLD	W	40ml VOA	2		

*Samples to be returned

See reverse side for additional analysis

Route to: SRO X QAO X JB X GO X JDP ___ OFFICE X
SWT 2 WKH 1 MAB 3 DB ___ S/M X ET X

BUYS & ASSOCIATES

CHAIN OF CUSTODY RECORD

per J. Kaszuba - R.G. 10/29/91

6574 S. Broadway, Suite 200
Littleton, CO 80121
(303) 730-2500

Project No. 200-10

Project Name Homco - Farmington

SAMPLERS: (Signature) Chris P. Kaszuba

~~Sample~~ SITE TYPE	SITE IDENTIFICATION	SAMPLE DATE	TIME MILITARY STANDARD	SAMPLE DEPTH (FEET)	SAMPLE TECH.	ANALYSIS REQUIRED: TRPH TEH	TCLP Benzene	TCLP Metals					NUMBER OF CONTAINERS	REMARKS
Soil	911C281630	10/28/91	1630	—		X	X	X					3	Composite
														RUSH!!

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Recieved for Laboratory by: (Signature)	Date/Time		
Relinquished by: (Signature)	Date/Time	Recieved for Laboratory by: (Signature)	Date/Time		
Chris P. Kaszuba	10/29/91 1700		10/29	10/	

SAMPLE SPLIT DATE _____

SAMPLE EXTRACTION DATE _____

SAMPLE ANALYSIS DATE _____

EVERGREEN ANALYTICAL, INC.
4036 Youngfield, Wheat Ridge, CO 80033

TOTAL EXTRACTABLE HYDROCARBONS (TEH)

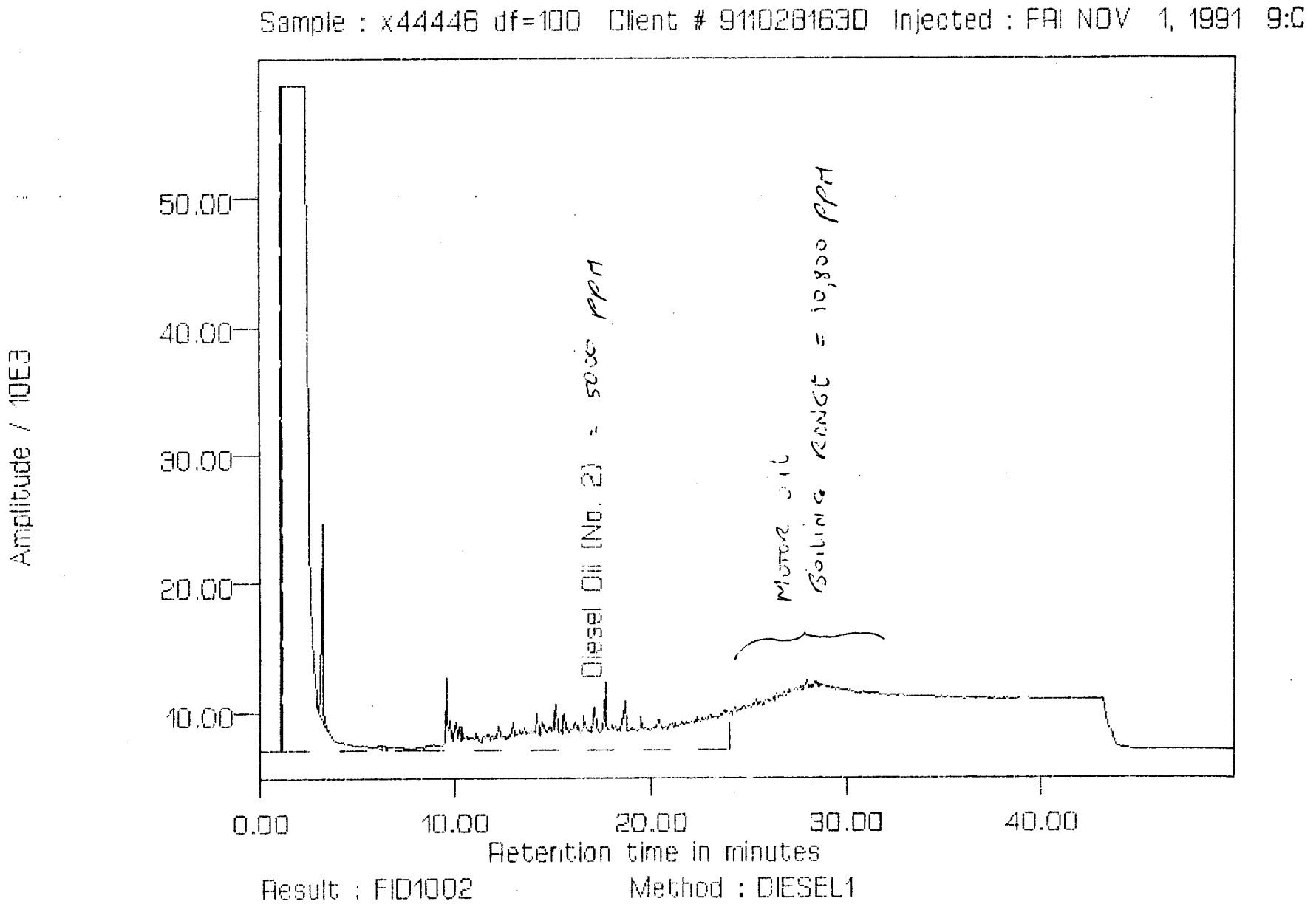
Date Sampled	: 10/28/91	Client Project No.	: 200-10
Date Received	: 10/29/91	Lab Project No.	: 91-3685
Date Prepared	: 10/29/91	Matrix	: Soil
Date Analyzed	: 11/01/91	Method Number	: 3500/M8015

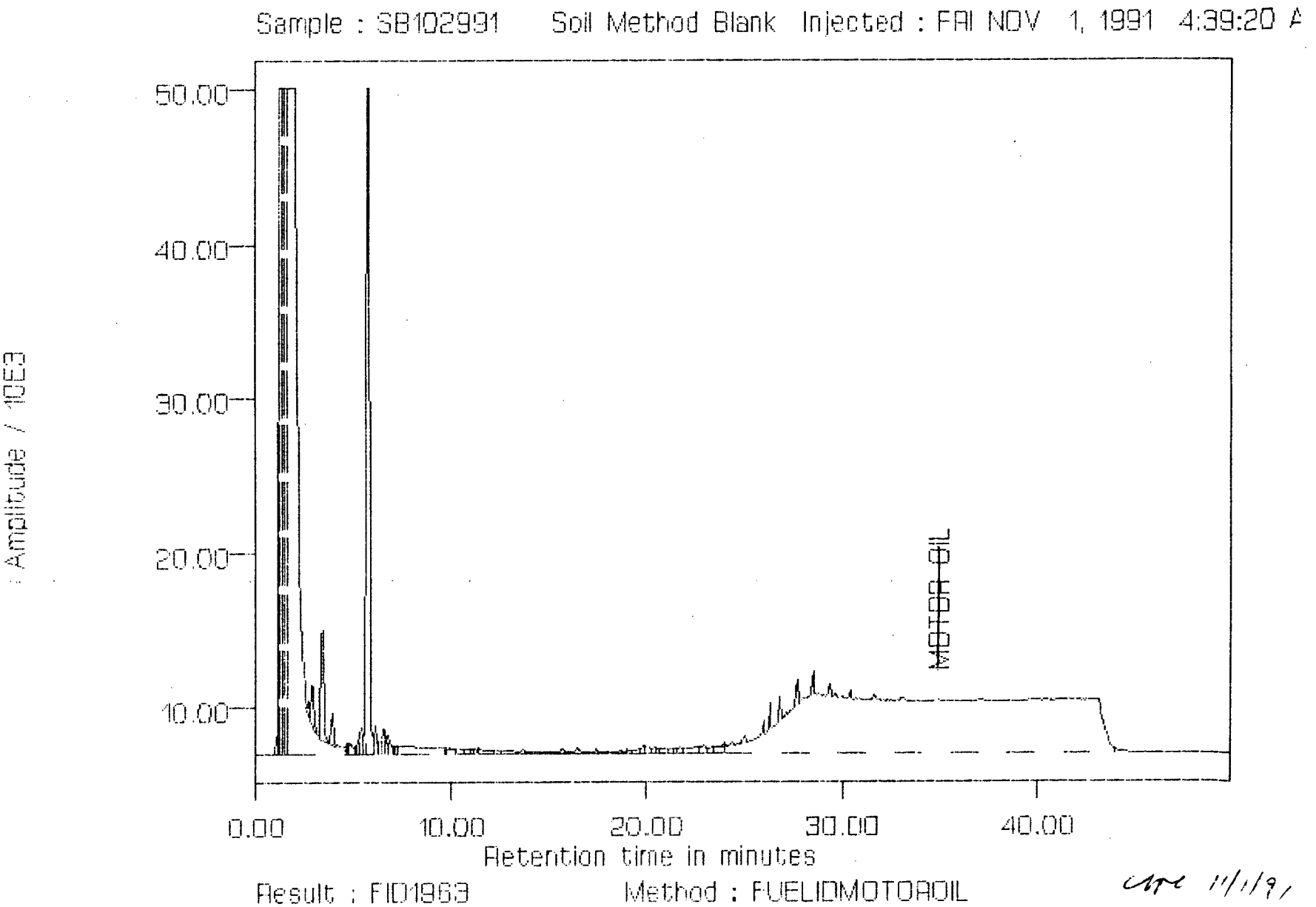
Evergreen Sample #	Client Sample #	Sample Matrix	TEH mg/Kg	MDL mg/Kg
x44446	9110281630	Soil	15,800	1000

QUALIFIERS
U=TEH analyzed for but not detected.
B=TEH found in the blank as well as the sample (blank data should be compared).
MDL=Instrument detection level for this method.

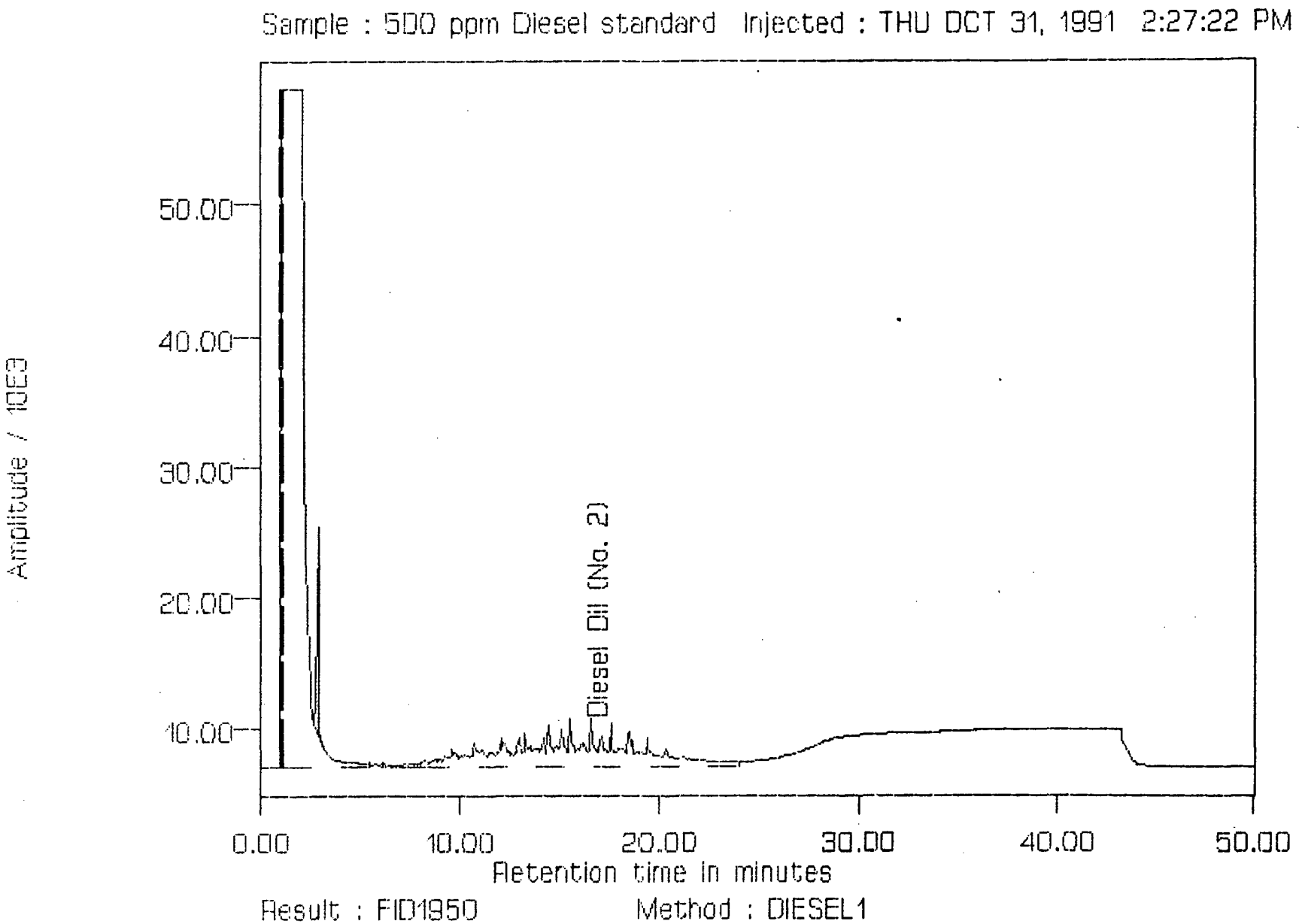
Approved

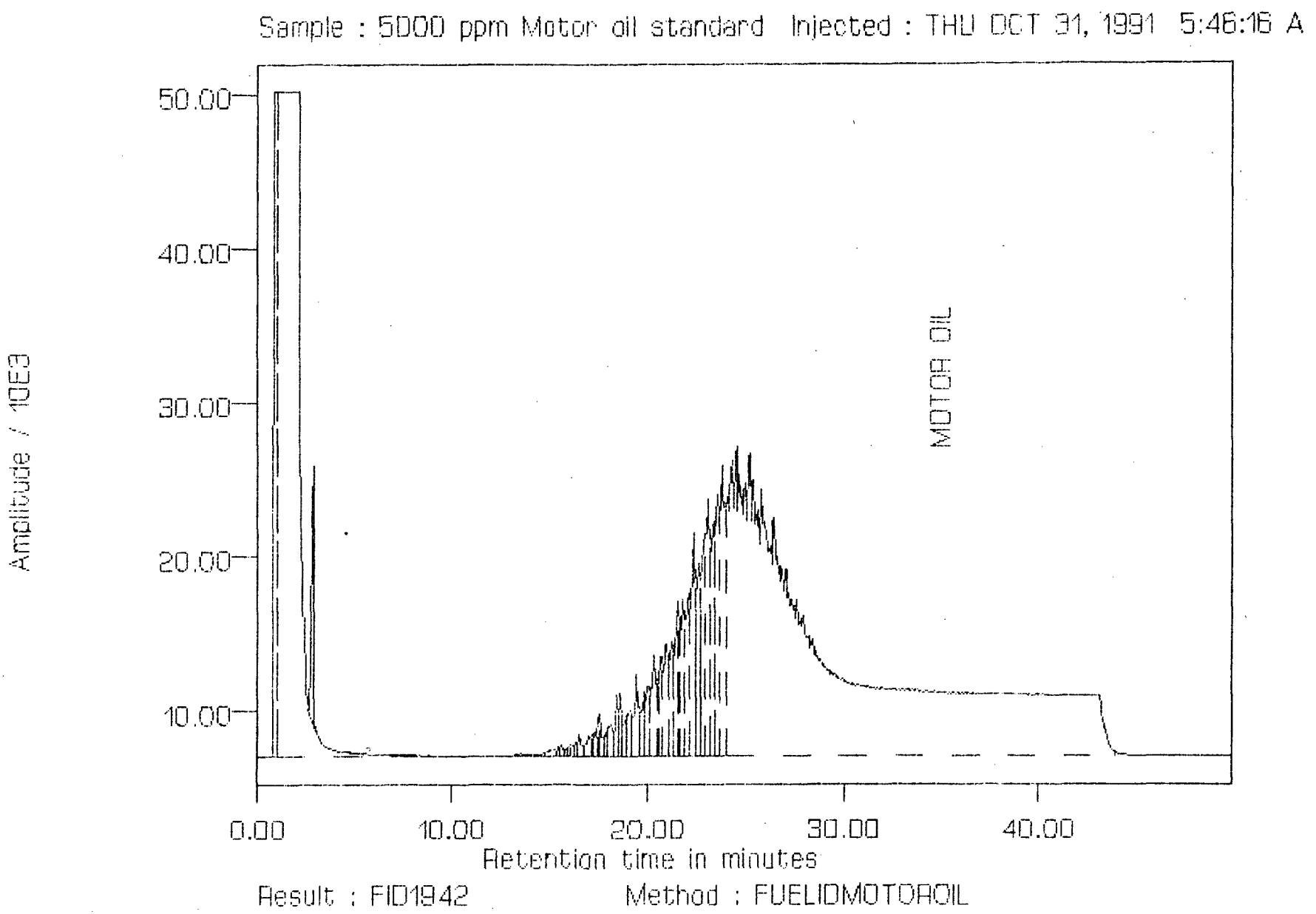
QAO


Sample : x44446 df=100 Client # 9110281630 Injected : FRI NOV 1, 1991 9:C
Amplitude / 10E3
50.00
40.00
30.00
20.00
10.00
Diesel Oil (No. 2) - 5000 ppm
Motor oil
Boiling range = 10,800 ppm
0.00
10.00
20.00
30.00
40.00
Retention time in minutes
Result : FID1002
Method : DIESEL1


Sample : SB102991 Soil Method Blank Injected : FRI NOV 1, 1991 4:39:20 A
50.00
40.00
30.00
20.00
10.00
Amplitude / 10E3
MOTOR OIL
0.00
10.00
20.00
30.00
40.00
Retention time in minutes
Result : FID1963
Method : FUELDMOTOROIL

11/1/91


Sample : 500 ppm Diesel standard Injected : THU OCT 31, 1991 2:27:22 PM
Amplitude / 10E3
50.00
40.00
30.00
20.00
10.00
Diesel Oil (No. 2)
0.00
10.00
20.00
30.00
40.00
50.00
Retention time in minutes
Result : FID1950
Method : DIESEL1


Sample : 5000 ppm Motor oil standard Injected : THU OCT 31, 1991 5:46:16 A
50.00
40.00
30.00
20.00
10.00
Amplitude / 10E3
MOTOR OIL
0.00
10.00
20.00
30.00
40.00
Retention time in minutes
Result : FID1942
Method : FUELIDMOTOROIL

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

TCLP Benzene Data Report

Client Sample #	: 9110281630		
Lab Sample #	: X 44446	Client Project #	: 200-10
Date Sampled	: 10/28/91	Lab Project #	: 91-3685
Date Received	: 10/29/91	Dilution Factor	: 10.000
Date Extracted/Prepared	: 10/30/91	Method	: 8020
Date Analyzed	: 11/01/91	Matrix	: Water
Percent Loss on Drying	: NA	Lab File No.	: PID8075
Methanol extract?	: No	Method Blank No.	: MB11/01/91

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	40

Surrogate Recoveries;
a,a,a-Trifluorotoluene 113%

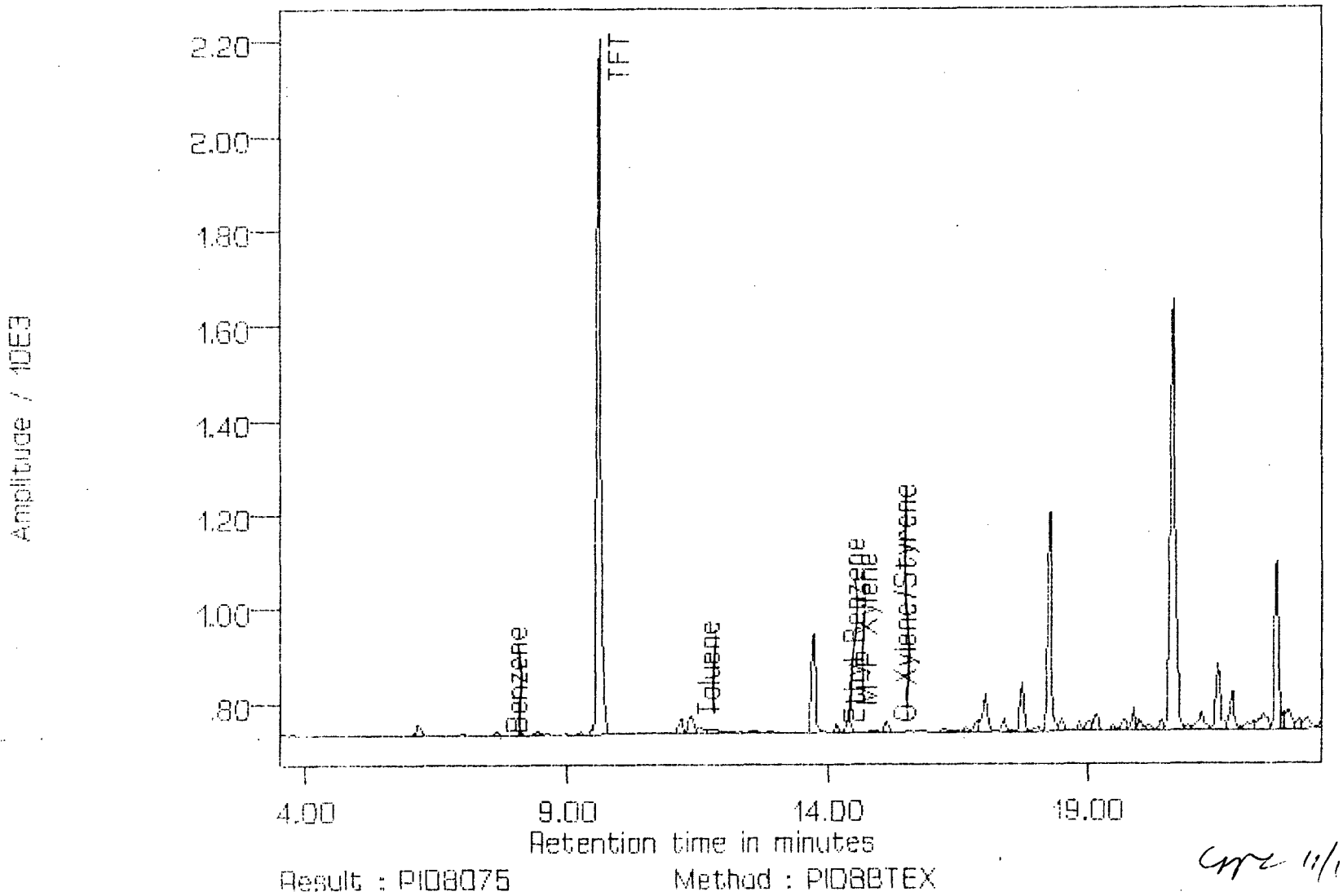
QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = Indicates the Practical Quantitation Limit (PQL).
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln

9110281630

Sample : 5 91-3685;x44446;TCLP;df=10 Injected : FRI NOV 1, 1991 12:43:20 PM



Result : PIDB075 Method : PIDBBTEX

11/1/91

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

TCLP Benzene Data Report

Client Sample #	: N/A		
Lab Sample #	: TCLP BLANK	Client Project #	: 200-10
Date Sampled	: 10/28/91	Lab Project #	: 91-3685
Date Received	: 10/29/91	Dilution Factor	: 10.000
Date Extracted/Prepared	: 10/30/91	Method	: 8020
Date Analyzed	: 11/01/91	Matrix	: Water
Percent Loss on Drying	: NA	Lab File No.	: PID8076
Methanol extract?	: No	Method Blank No.	: MB11/01/91

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	40

Surrogate Recoveries;
a,a,a-Trifluorotoluene 118%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = Indicates the Practical Quantitation Limit (PQL).
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

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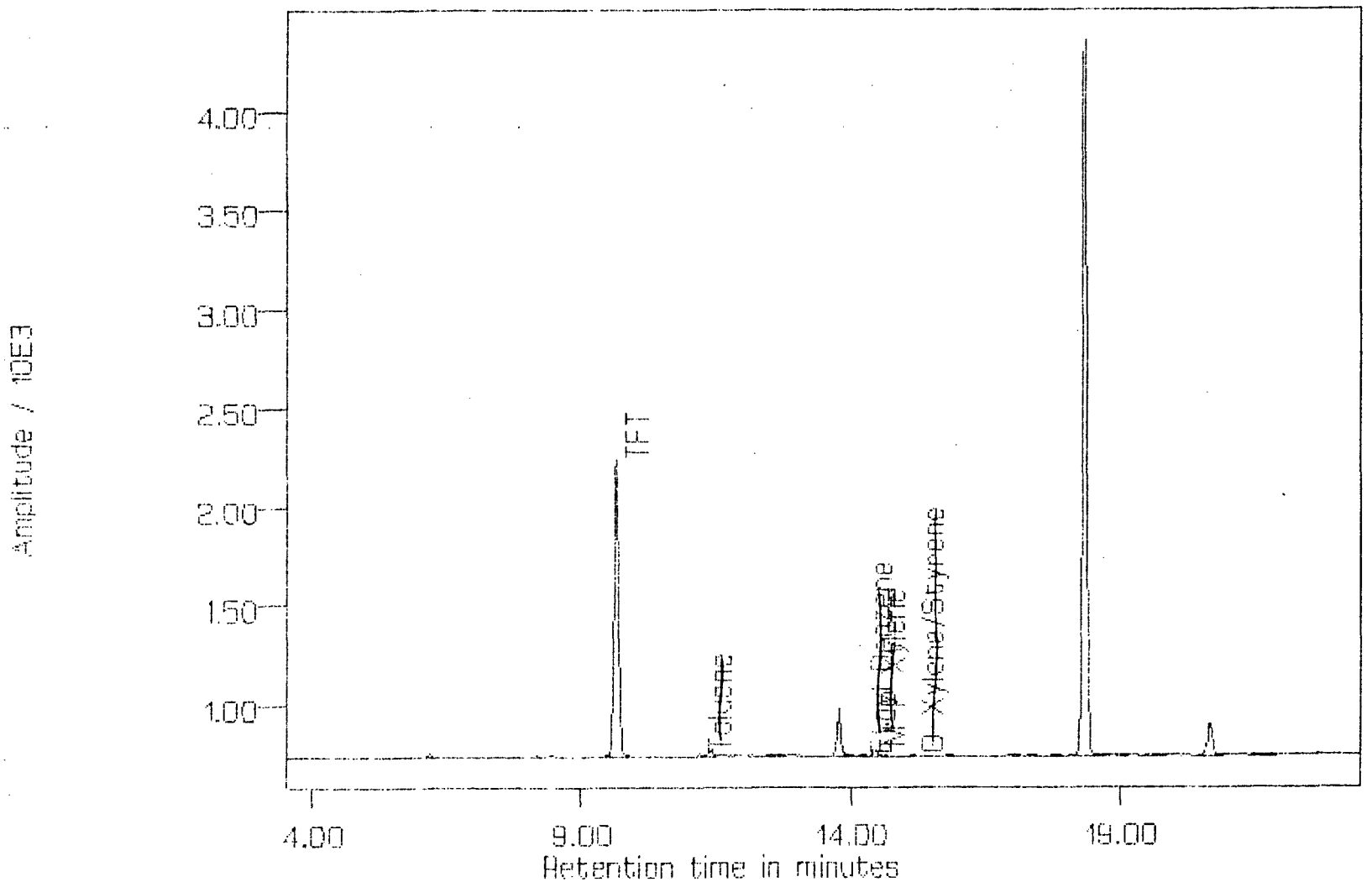
Sample : 6 TCLP Blank 10/30/91 df=10 Injected : FRI NOV 1, 1991 1:25:12 PM



Result : PID8076 Method : PIDBBTEX

11/1/91

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021
TCLP Benzene Data
Method Blank Report

Method Blank Number	: MB11/01/91	Client Project No.	: 200-10
Date Extracted/Prepared	: 10/30/91	Lab Project No.	: 91-3685
Date Analyzed	: 11/01/91	Dilution Factor	: 1.000
		Method	: 8020
		Matrix	: Water
		Lab File No.	: PID8072

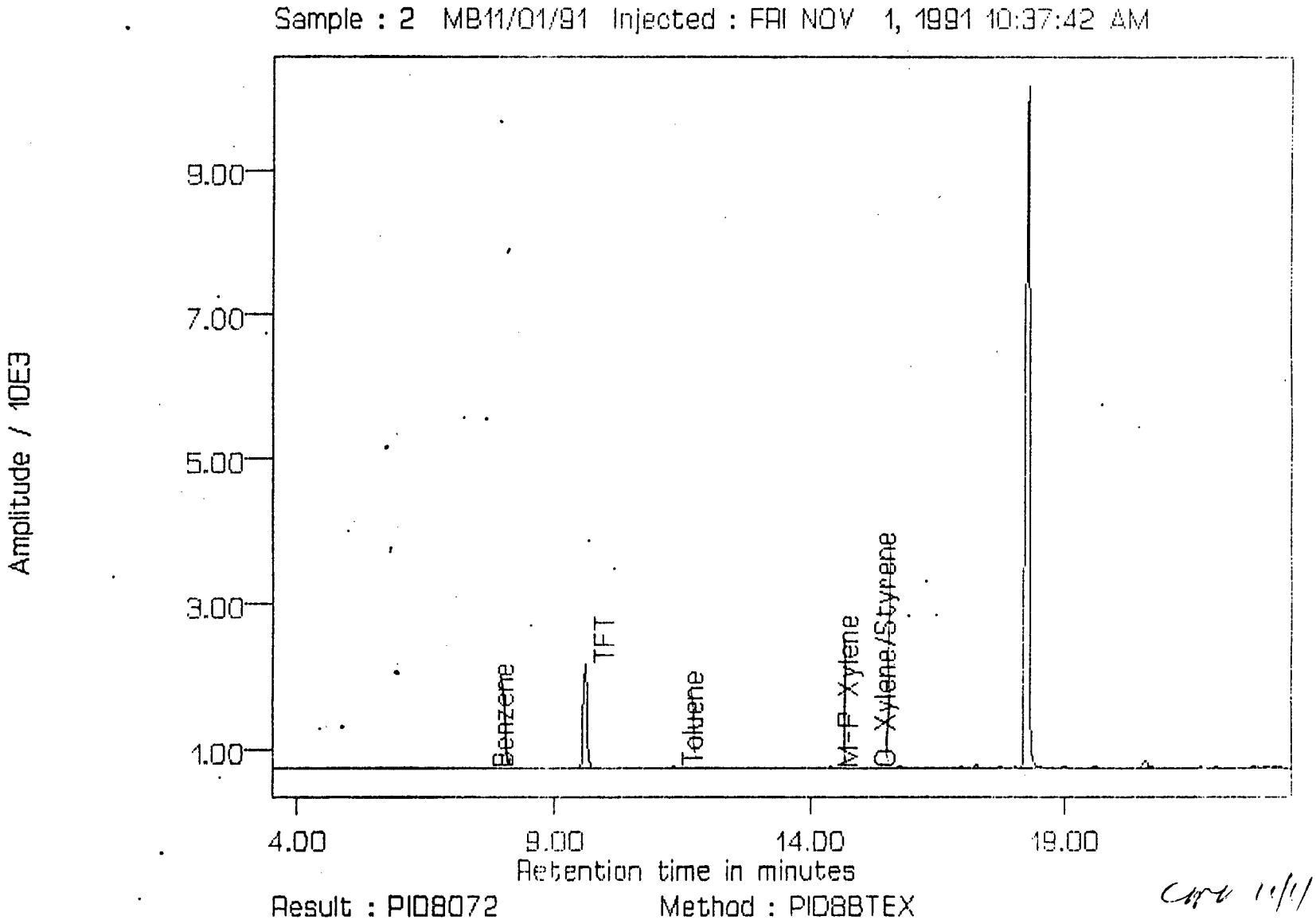
Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	4

Surrogate Recoveries;
a,a,a-Trifluorotoluene 109%

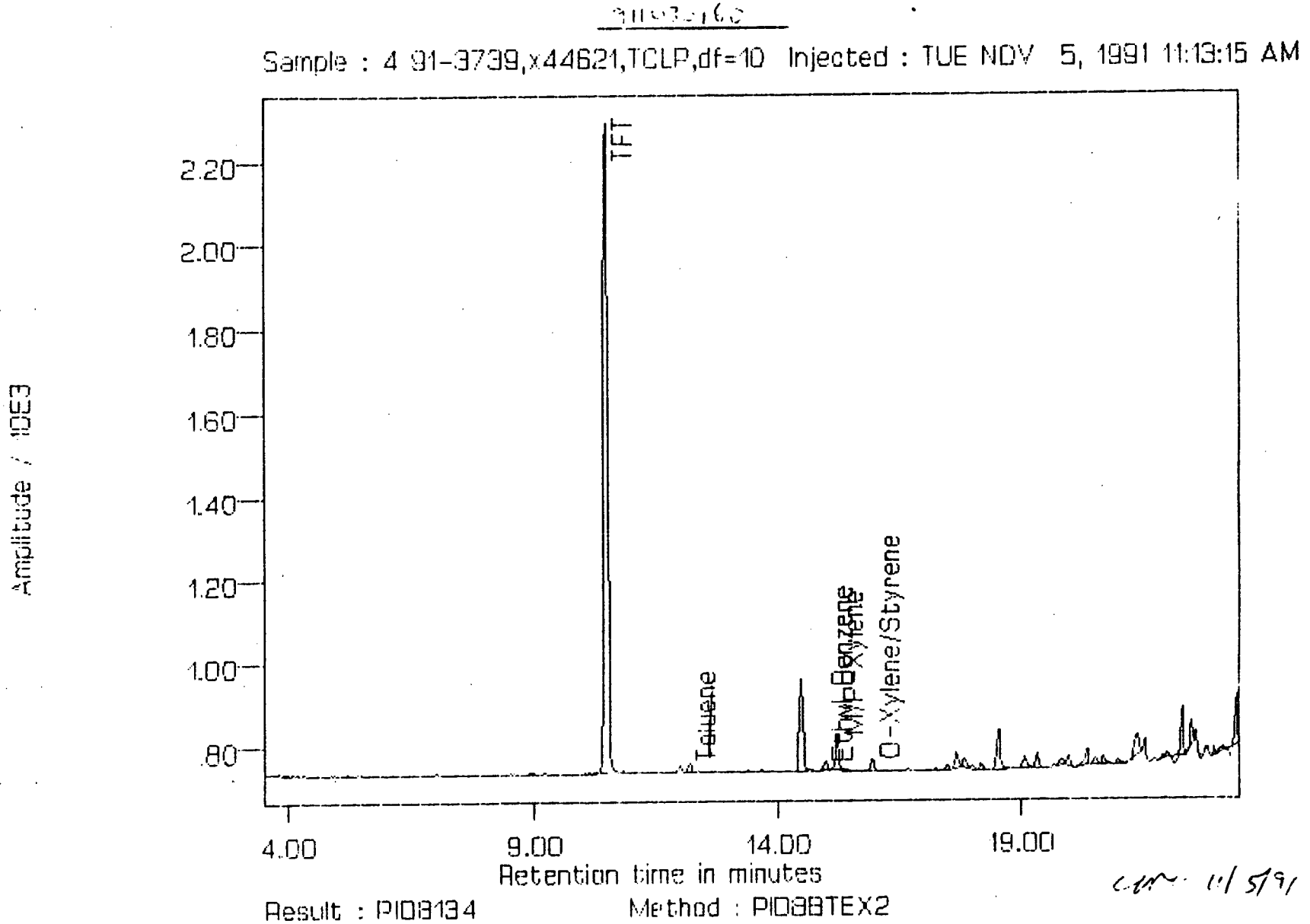
QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = Indicates the Practical Quantitation Limit (PQL).
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln


Sample : 2 MB11/01/91 Injected : FRI NOV 1, 1991 10:37:42 AM
Amplitude / 10E3
9.00
7.00
5.00
3.00
1.00
Benzene
TFT
Toluene
M-P Xylene
O-Xylene/Styrene
4.00
9.00
14.00
19.00
Retention time in minutes
Result : PID8072
Method : PID8BTEX

CRT 11/1/91


Sample : 4 91-3739,x44621,TCLP,df=10 Injected : TUE NOV 5, 1991 11:13:15 AM
Amplitude / 1053
2.20
2.00
1.80
1.60
1.40
1.20
1.00
.80
TFT
Toluene
Ethylbenzene
M/P-Xylene
O-Xylene/Styrene
4.00
9.00
14.00
19.00
Retention time in minutes
Result : PIDB134
Method : PIDBBTEX2

11/5/91

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

TCLP Benzene Data Report

Client Sample #	: 9110310845		
Lab Sample #	: X44622	Client Project #	: 200-10
Date Sampled	: 10/31/91	Lab Project #	: 91-3739
Date Received	: 11/01/91	Dilution Factor	: 10.000
Date Extracted/Prepared	: 11/04/91	Method	: 8020
Date Analyzed	: 11/05/91	Matrix	: Water
Percent Loss on Drying	: NA	Lab File No.	: PID8135
Methanol extract?	: No	Method Blank No.	: MB11/05/91

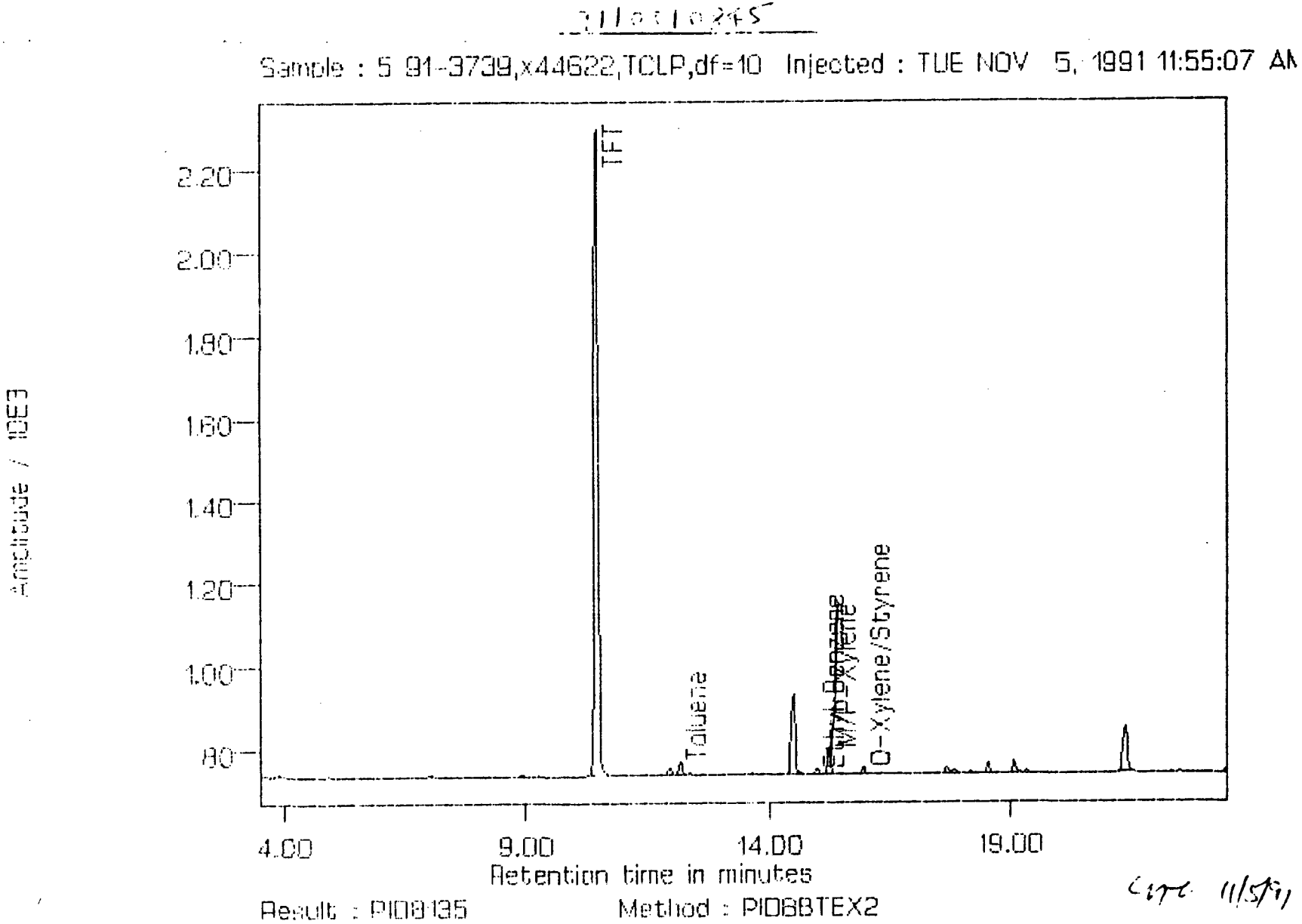
Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	40

Surrogate Recoveries;
a,a,a-Trifluorotoluene 105%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln


Sample : 5 91-3739,x44622,TCLP,df=10 Injected : TUE NOV 5, 1991 11:55:07 AM
Amplitude / 1000
2.20
2.00
1.80
1.60
1.40
1.20
1.00
.80
TFT
Toluene
M/P Xylene
O-Xylene/Styrene
4.00
9.00
14.00
19.00
Retention time in minutes
Result : PID8135
Method : PIDBBTEX2

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021
TCLP Benzene Data Report
Method Blank Report

Method Blank Number	: MB11/05/91	Client Project No.	: 200-10
Date Extracted/Prepared	: 11/05/91	Lab Project No.	: 91-3739
Date Analyzed	: 11/05/91	Dilution Factor	: 1.000
		Method	: 8020
		Matrix	: Water
		Lab File No.	: PID8132

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	4

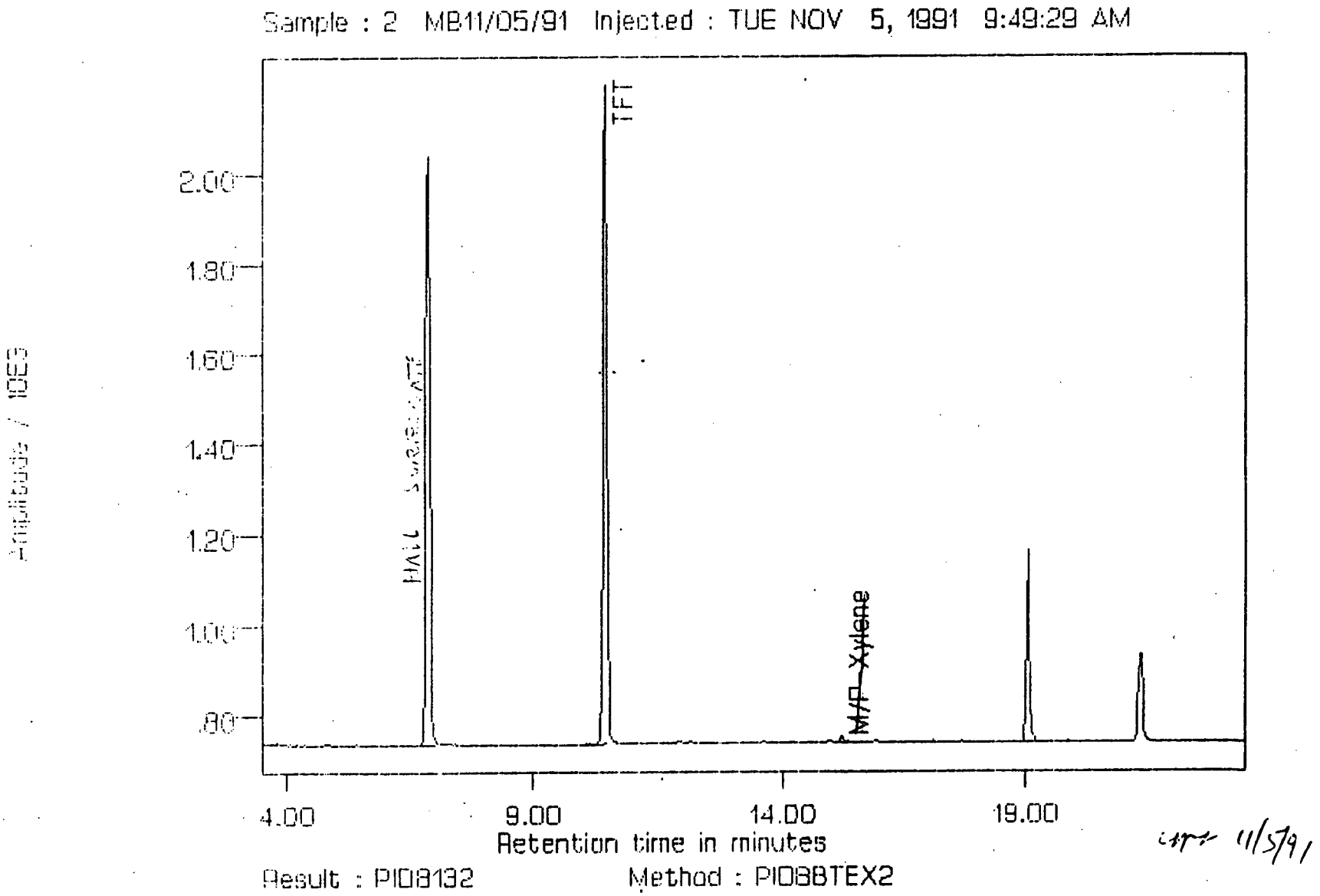
Surrogate Recoveries;
a,a,a-Trifluorotoluene 103%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: Don Weiss

Quality Assurance Officer

forms\btex.pln


Sample : 2 MB11/05/91 Injected : TUE NOV 5, 1991 9:49:29 AM
2.00
1.80
1.60
1.40
1.20
1.00
.80
TFT
4.00
9.00
14.00
19.00
Retention time in minutes
Result : PIDB132
Method : PIDBBTEX2

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

TCLP Benzene Data Report

Client Sample #	: N/A		
Lab Sample #	: TCLP BLANK	Client Project #	: 200-10
Date Sampled	: 10/31/91	Lab Project #	: 91-3739
Date Received	: 11/01/91	Dilution Factor	: 10.000
Date Extracted/Prepared	: 11/04/91	Method	: 8020
Date Analyzed	: 11/05/91	Matrix	: Water
Percent Loss on Drying	: NA	Lab File No.	: PID8133
Methanol extract?	: No	Method Blank No.	: MB11/05/91

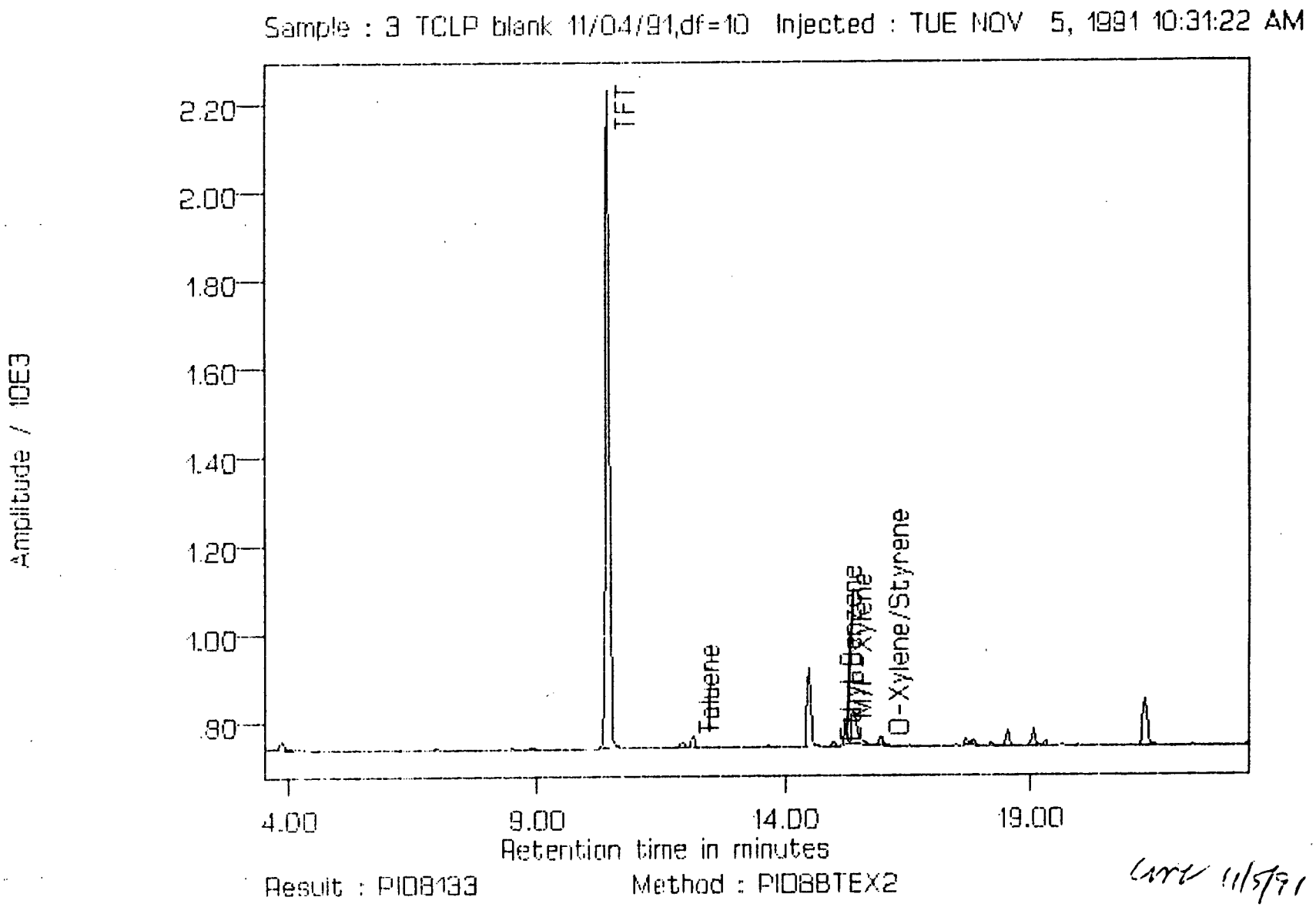
Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	40

Surrogate Recoveries;
a,a,a-Trifluorotoluene 108%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln


Sample : 3 TCLP blank 11/04/91,df=10 Injected : TUE NOV 5, 1991 10:31:22 AM
Amplitude / 10E3
2.20
2.00
1.80
1.60
1.40
1.20
1.00
.80
TFT
Toluene
O-Xylene/Styrene
4.00
9.00
14.00
19.00
Retention time in minutes
Result : PIO8133
Method : PIOBBTEX2

11/5/91

Evergreen Analytical, Inc.

4036 Youngfield Street
Wheat Ridge, CO 80033-3862
(303) 425-6021
FAX (303) 425-6854

November 8, 1991

Mr. John Kaszuba
Buys & Associates
6574 S. Braodway #200
Littleton, CO 80121

Data Report : 91-3774
Client Project : 200-10

Dear Mr. Kaszuba:

Enclosed are the analytical results for the samples shown in the Sample Log Sheet. The invoice for this work will be mailed to your Accounts Payable department shortly. If you have any questions concerning the reported information, please contact Carl Smits or me.

Please Note: Samples marked for return on the Sample Log Sheet are considered either hazardous or unsuitable for municipal disposal or were placed on hold at your request. The former samples will be returned to you immediately for proper storage or disposal. Samples placed on hold will be returned one (1) month from the date of receipt. Samples not considered hazardous will be disposed of at that time.

Thank you for using the services of Evergreen Analytical.

Sincerely,

John H. Barney
President

ab

EVERGREEN ANALYTICAL, INC.
4036 Youngfield, Wheat Ridge, CO 80033
(303) 425-6021

Date Due TEH+BTEX=11-6-91
TCLP=11-8-91

Holding Time
11-16,18-91

E. A. Cooler # N/A

Rush 1 on TEH+BTEX
1 on TCLP

SAMPLE LOG SHEET

Client Burgess & Associates
Address 6574 S. Broadway #200
Littleton, CO 80121
Contact John Kasuba
Sampled 11-2,4-91 COC Received 11-5-91 9:45
Client Project # 200-10
Client P.O.
Phone # 730-2500
Fax Number 730-2522 Fax Results? Y (N) N.S.

Project # 91-3774
Airbill # 286585 7890
Custody Seal Intact? (Y) N
COC Present? (Y) N
Sample Tags Present? (Y) N
Sample Tags # Listed? (Y) N
Sample(S) Sealed? (Y) N
Custodian/Date S. Henry 11-5-91
Shipping Charges C.R. $ 1.97

Special Instructions

Lab ID #	Client ID#	Analysis	Mtx	Btl	Loc	File#/Date	R*
X44800 A	911102 1400	TEH D 8015 mod	S	2oz. W.M.	1		
801 ↓	911102 4	↓	↓	↓	↓		
800 B	911102 1400	TCLP BENZENE		40z. W.M.	2		
801 ↓	911102 4	BTEX 8020	↓	↓	↓		

*Samples to be returned See reverse side for additional analysis

Route to: SRO X QAO X JB X GO X JDP ___ OFFICE X
SWT ___ WKH ___ MAB ___ DB ___ S/M X ET X

BUYS & ASSOCIATES

CHAIN OF CUSTODY RECORD

6574 S. Broadway, Suite 200
Littleton, CO 80121
(303) 730-2500

Project No. 200-10

Project Name HOMCO - Farmington

SAMPLERS: (Signature) JP Kuszula

~~Site~~ Sample TYPE	SITE IDENTIFICATION	SAMPLE DATE	TIME MILITARY STANDARD	SAMPLE DEPTH (FEET)	SAMPLE TECH.	ANALYSIS REQUIRED: TEH	TCLP Benzene	Total BTEX Method 8020	NUMBER OF CONTAINERS	REMARKS
Soil	911102 1400	11/2/91	1400	—	-	X	X		2	Composite
Soil	911104 1200 JPK 11/11/91	11/4/91	1200	8'-18'	-	X		X	2	Composite
										RUSH!!

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Recieved for Laboratory by: (Signature)	Date/Time		
Relinquished by: (Signature) JP Kuszula	Date/Time 11/4/91 1330	Recieved for Laboratory by: (Signature) B. Gomez	Date/Time 11-5-91	9:45	

SAMPLE SPLIT DATE _____

SAMPLE EXTRACTION DATE _____

SAMPLE ANALYSIS DATE _____

EVERGREEN ANALYTICAL, INC.
4036 Youngfield, Wheat Ridge, CO 80033

TOTAL EXTRACTABLE HYDROCARBONS (TEH)

Date Sampled	: 11/02,04/91	Client Project No.	: 200-10
Date Received	: 11/05/91	Lab Project No.	: 91-3774
Date Prepared	: 11/05/91	Matrix	: Soil
Date Analyzed	: 11/06/91	Method Number	: 3500/M8015

Evergreen Sample #	Client Sample #	Sample Matrix	TEH mg/Kg	MDL mg/Kg
X44800	911102 1400	Soil	U	10
X44801	911104 1200	Soil	5,400 (1)	10

QUALIFIERS
U=TEH analyzed for but not detected.
B=TEH found in the blank as well as the sample (blank data should be compared).
MDL=Instrument detection level for this method.
(1) Sample was extrapolated for Diesel and Motor oil.

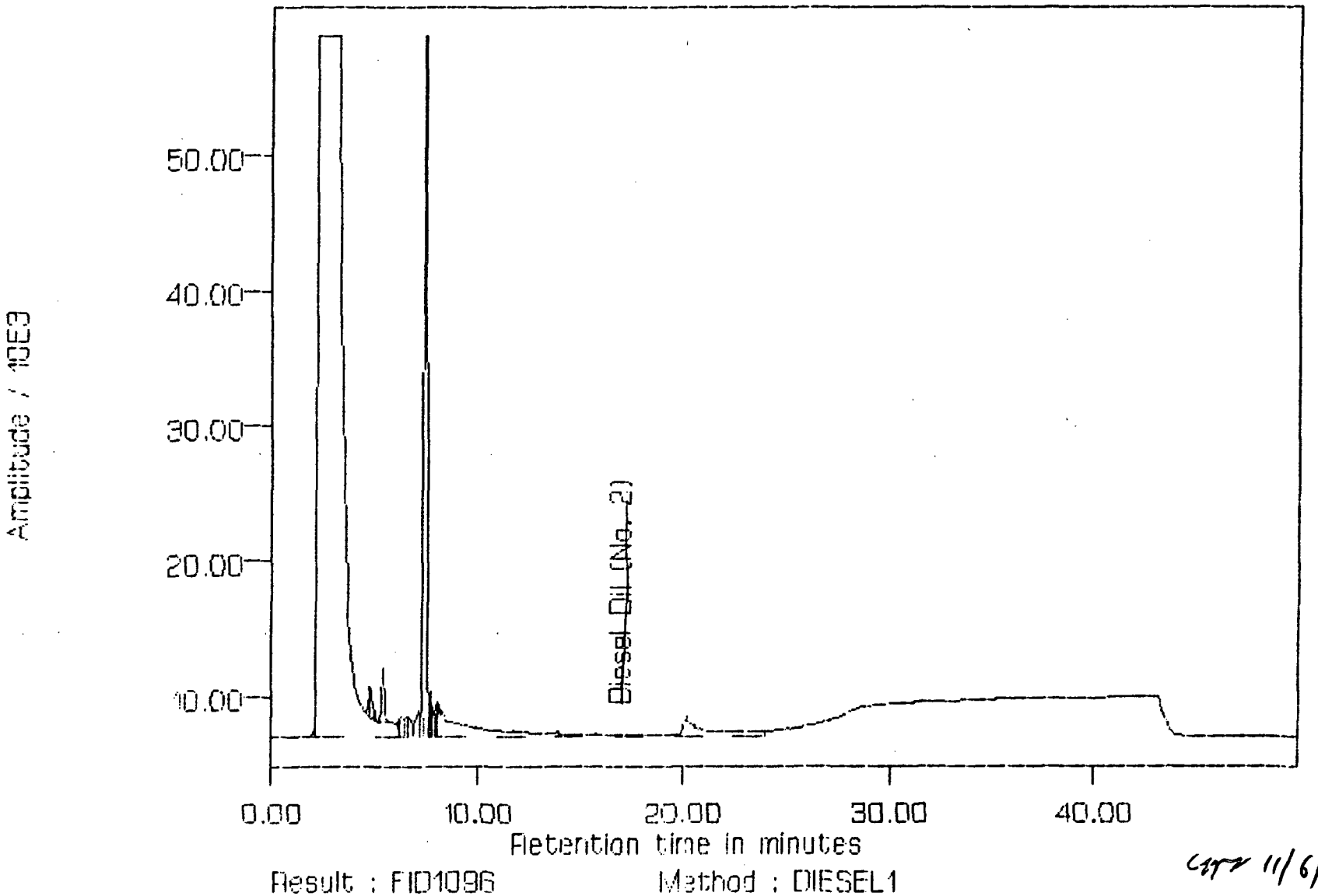
Approved

QAO

TEH3774

911102-1400

Sample : 6 91-3774;X44800;91110214C0;DF=1 Injected : TUE NOV 5, 1991 11:2

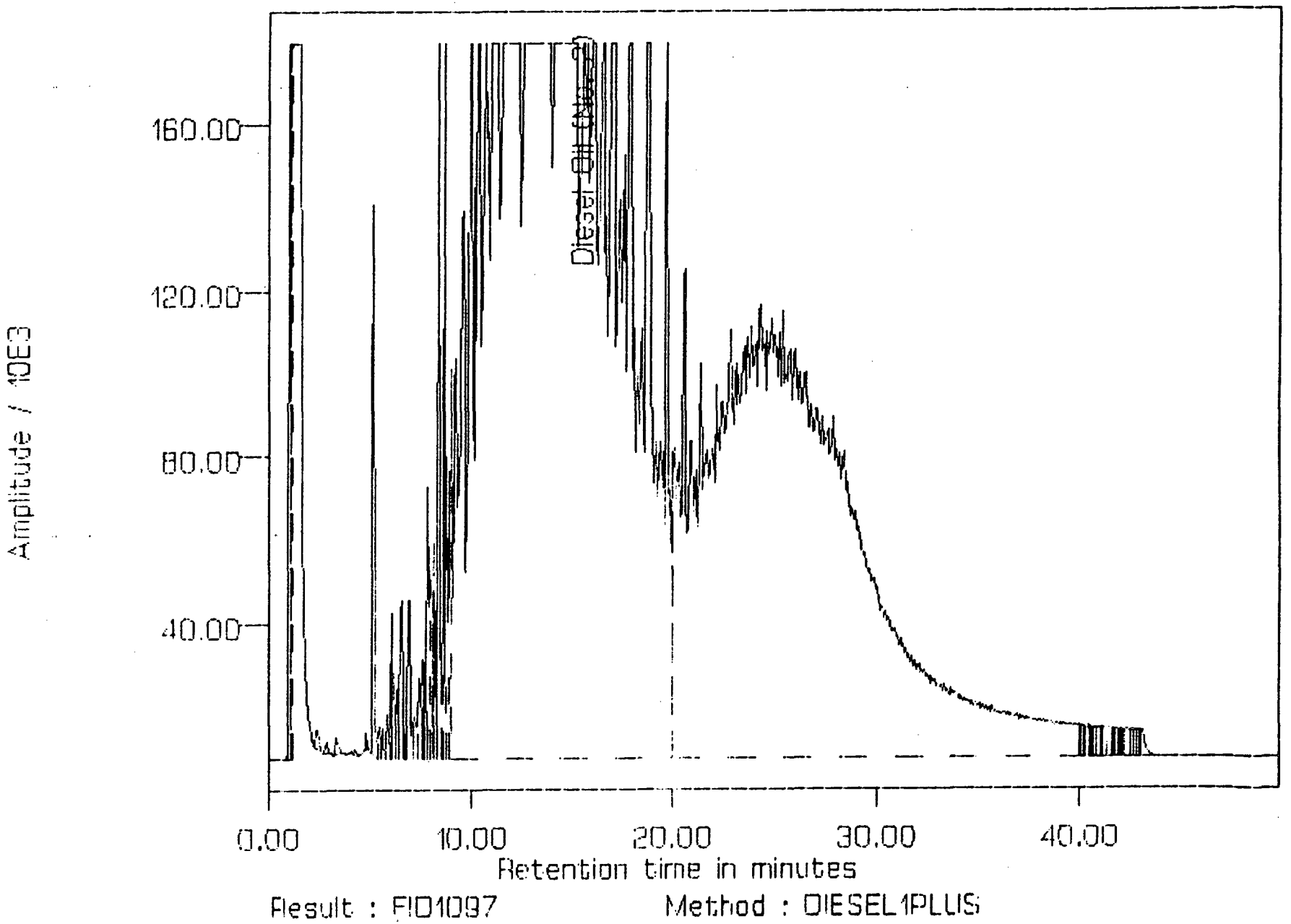


Result : FID1096 Method : DIESEL1

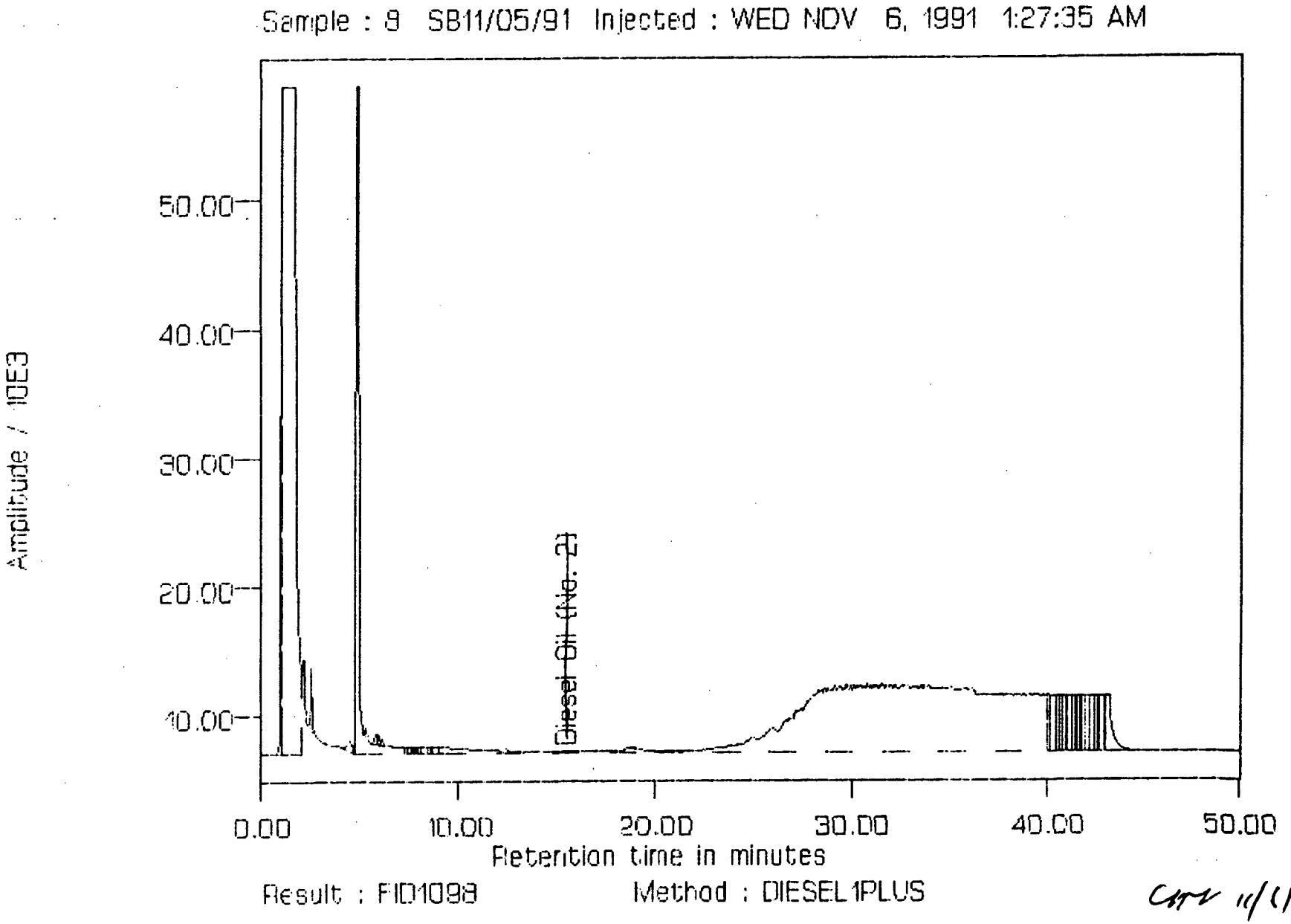
11/6/91

9111C4-1200

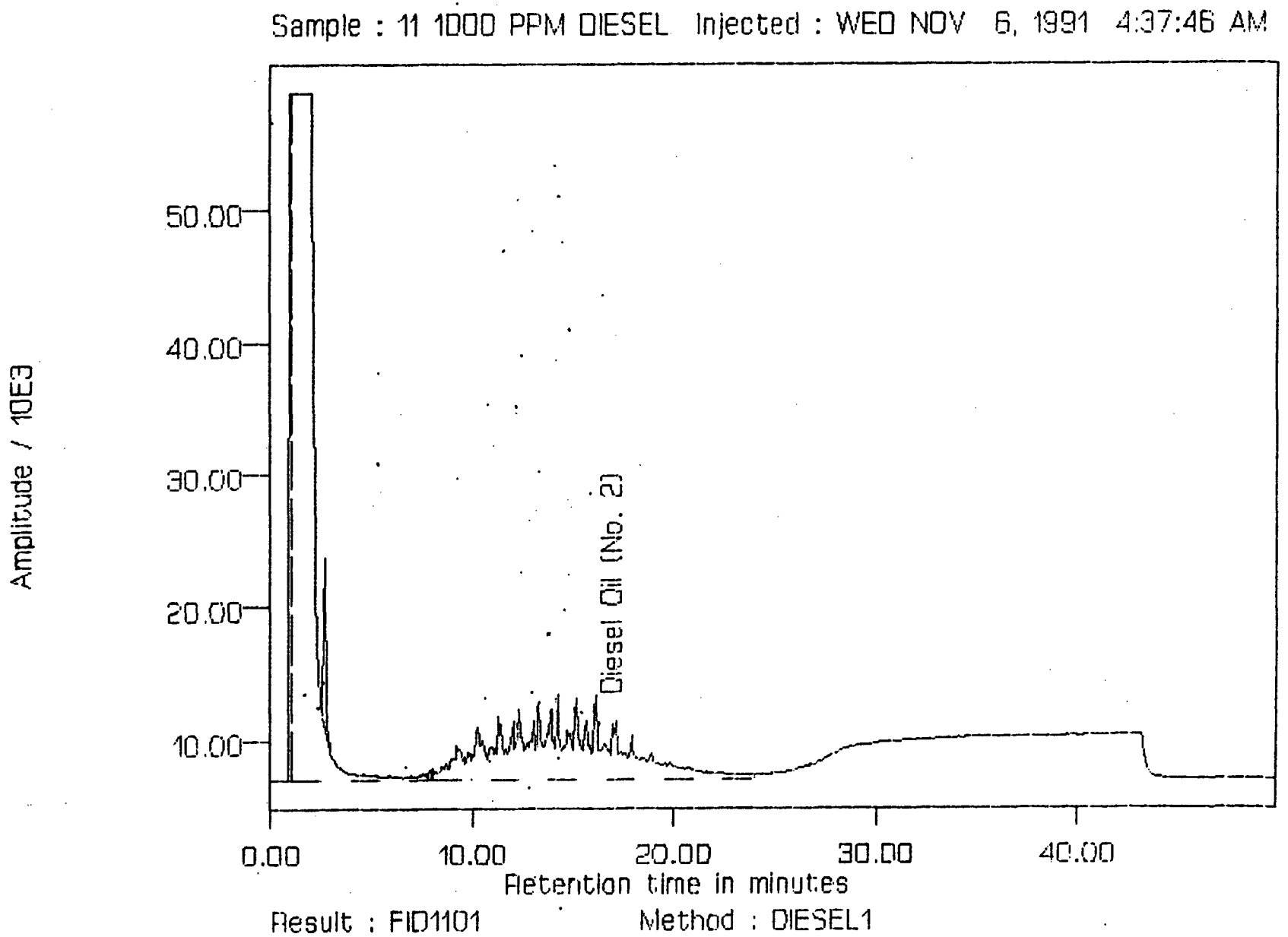
Sample : 7 91-3774;X44801;9111041200;DF=1 Injected : WED NOV 6, 1991

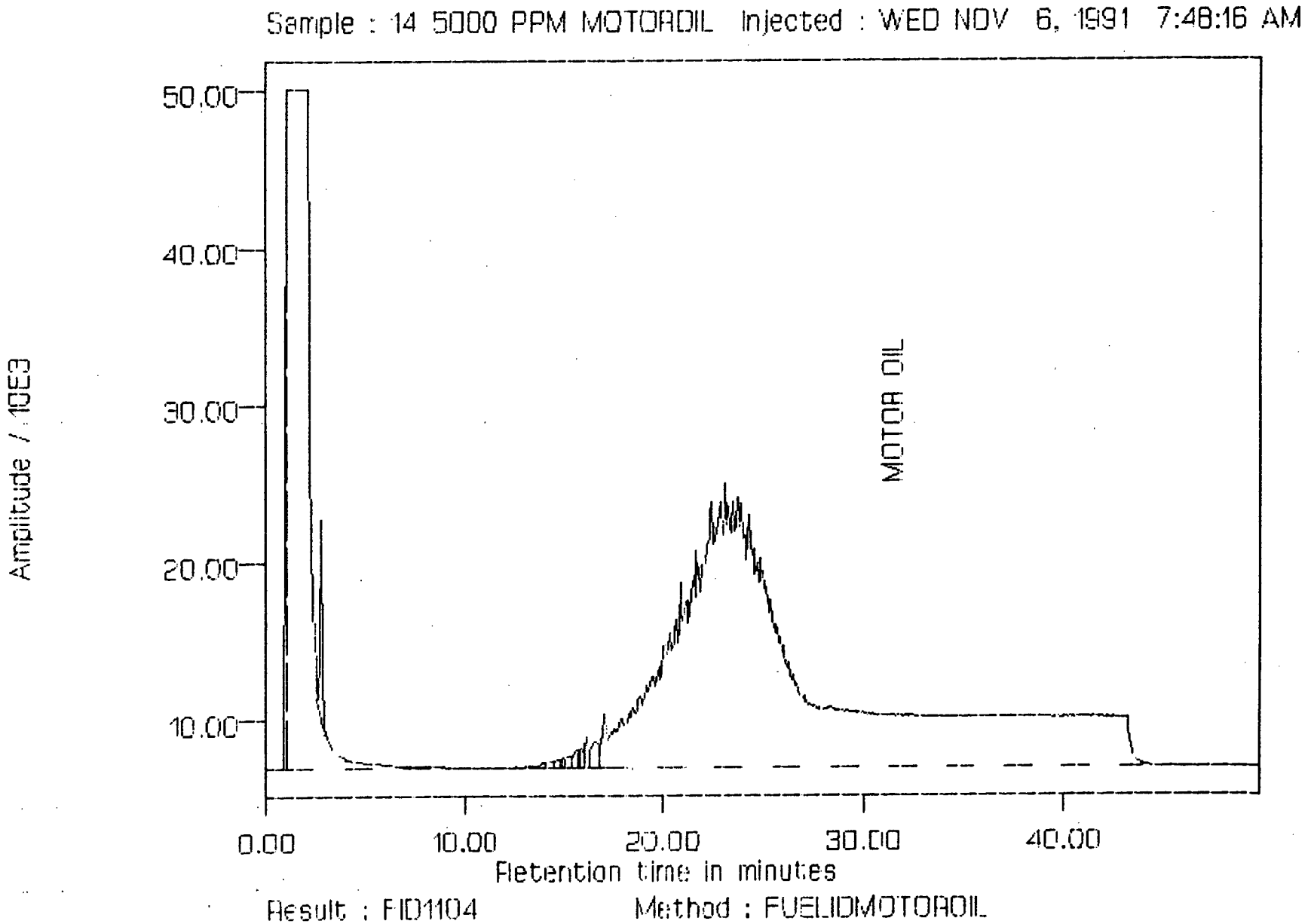


Result : FID1097 Method : DIESEL1PLUS


Sample : 8 SB11/05/91 Injected : WED NOV 6, 1991 1:27:35 AM
Amplitude / 10E3
50.00
40.00
30.00
20.00
10.00
Diesel Oil (Ave. 2)
0.00
10.00
20.00
30.00
40.00
50.00
Retention time in minutes
Result : FID1098
Method : DIESEL1PLUS

11/6/91


Sample : 11 1000 PPM DIESEL Injected : WED NOV 6, 1991 4:37:46 AM
Amplitude / 10E3
50.00
40.00
30.00
20.00
10.00
Diesel Oil (No. 2)
0.00
10.00
20.00
30.00
40.00
Retention time in minutes
Result : FID1101
Method : DIESEL1


Sample : 14 5000 PPM MOTOROIL Injected : WED NOV 6, 1991 7:48:16 AM
50.00
40.00
30.00
20.00
10.00
Amplitude / 10E3
MOTOR OIL
0.00
10.00
20.00
30.00
40.00
Retention time in minutes
Result : FID1104
Method : FUELIDMOTOROIL

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303) 425-6021

TCLP, METALS

Date Sampled : 10/28/91
Date Received : 10/29/91
Date Prepared : 10/30/91
Date Analyzed : 10/31-11/1/91
Client Project No.: 200-10
Lab Project No. : 91-3685
Method : 40 CFR 261.24
Matrix : Soil

Units: mg/L

Client Sample #	911028 1630				
Evergreen Sample #	X44446 C				TCLP LIMITS
As	<0.11				5.0
Ba	1.6				100.0
Cd	<0.008				1.0
Cr	<0.014				5.0
Pb	3.3				5.0
Hg	<0.0002				0.2
Se	<0.15				1.0
Ag	<0.014				5.0

NOTE: Results are reported on the leachate from the TCLP extraction.

Approved

Quality Assurance Officer

3685t1.1

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303) 425-6021

TOXICITY CHARACTERISTIC LEACHING PROCEDURE

SUMMARY REPORT

Client Sample No: 9110281630
Lab Sample No. : X44446 C
Date Sampled : 10/28/91
Date Received : 10/29/91

Client Project No. : 200-10
Lab Project No. : 91-3685
Matrix : Soil

Element/Compound	Spike Recovery* %	Corrected Value** mg/L	Regulatory levels*** mg/L
Arsenic	97	<0.11	5.0
Barium	91	1.8	100.0
Cadmium	86	<0.009	1.0
Chromium	77	<0.018	5.0
Lead	77	4.3	5.0
Mercury	83	<0.0002	0.2
Selenium	84	<0.18	1.0
Silver	89	<0.016	5.0

Qualifiers:

N/R = Not Requested
See attached Data Reports for information regarding analytical procedures and data quality control.
* = Spikes are performed once for each similar matrix (water, soil, etc.) and extraction set.
** = Corrected for Spike Recovery. Method Blank values have not been subtracted.
*** = 40 CFR 261.24 (7-1-90 Edition), Table 1-Maximum concentration of Contaminants for the Toxicity Characteristics.

Quality Assurance Officer

Evergreen Analytical, Inc.

4036 Youngfield Street
Wheat Ridge, CO 80033-3862
(303) 425-6021
FAX (303) 425-6854

November 5, 1991

Mr. John Kaszuba
Buys & Associates
6574 S. Broadway, Suite 200
Littleton, CO 80121

Data Report : 91-3739
Client Project : 200-10

Dear Mr. Keszuba:

Enclosed are the analytical results for the samples shown in the Sample Log Sheet. The invoice for this work will be mailed to your Accounts Payable department shortly. If you have any questions concerning the reported information, please contact Carl Smits or me.

Please Note: Samples marked for return on the Sample Log Sheet are considered either hazardous or unsuitable for municipal disposal, or were placed on hold at your request. The former samples will be returned to you immediately for proper storage or disposal. Samples placed on hold will be returned one (1) month from the date of receipt. Samples not considered hazardous will be disposed of at that time.

Thank you for using the services of Evergreen Analytical.

Sincerely,

John H. Barney
President

ml

EVERGREEN ANALYTICAL, INC.
4036 Youngfield, Wheat Ridge, CO 80033
(303) 425-6021

Date Due TEH = 11/4/91 9:;
TCLP = 11/5/91 5:00 pm

Holding Time 11-12-91

E. A. Cooler # N-A

Rush TEH = 1 TCLP = I+

SAMPLE LOG SHEET

Client BUYS & ASSOCIATES
Address 6574 S. BROADWAY SUITE 200
LITTLETON, CO. 80121
Contact John P. KaszUba
Sampled 10/30-31/91 Received 11/1/91 10:00
Client Project # 200-10
Client P.O. —
Phone # 730-2500.
Fax-Number _____ Fax Results? Y N Shipping Charges $ 1.89
Special Instructions _____

Project # 91-3739
Airbill # FED EXPRESS
Custody Seal Intact? (Y) N
COC Present? (Y) N
Sample Tags Present? (Y) N
Sample Tags # Listed? (Y) N
Sample(S) Sealed? (Y) N
Custodian/Date Todd 11/1/91

Lab ID #	Client ID#	Analysis	Mtx	Btl	Loc	File#/Date	R*
X44621/A	9110301600	TEH-D 8015 mod.	S	202 WM	1		
X44622/A	9110310845	↓	↓	↓	↓		
X44621/B	9110301600	TCLP Benzene 8020		40Z WM			
X44622/B	9110310845	↓	↓	↓	↓		
X44623	TRIP Blank	Hold	W	40ML VIL	4		

*Samples to be returned See reverse side for additional analysis

Route to: SRO X QAO X JB X GO X JDP ___ OFFICE X
SWT 3 WKH ___ MAB 1 S/M X ET X

BUYS & ASSOCIATES

CHAIN OF CUSTODY RECORD

6574 S. Broadway, Suite 200
Littleton, CO 80121
(303) 730-2500

Project No.	Project Name
200-10	Homco - Farmington

SAMPLERS: (Signature) JP Kaszuba

Sample ~~SITE~~ TYPE	SITE IDENTIFICATION	SAMPLE DATE	TIME MILITARY STANDARD	SAMPLE DEPTH (FEET)	SAMPLE TECH.	ANALYSIS REQUIRED: TEH	ANALYSIS REQUIRED: TCLP Boron	NUMBER OF CONTAINERS	REMARKS
Soil	9110301600	10/30/91	1600	—	-	X	X	2	Composite
Soil	9110310845	10/31/91	0845	—	-	X	X	2	Composite
									RUSH

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Recieved for Laboratory by: (Signature)	Date/Time		
Relinquished by: (Signature)	Date/Time	Recieved for Laboratory by: (Signature)	Date/Time		
John P. Kaszuba	10/31/91 1500	Todd Kee	11/1/91 10:00		

SAMPLE SPLIT DATE _____

SAMPLE EXTRACTION DATE _____

SAMPLE ANALYSIS DATE _____

EVERGREEN ANALYTICAL, INC.
4036 Youngfield, Wheat Ridge, CO 80033

FUEL IDENTIFICATION BY GC/FID

Date Sampled : 10/30-31/91
Client Project # : 200-10

Date Received : 11/01/91
Lab Project No. : 91-3739
Date Prepared : 11/01/91
Matrix :Soil
Date Analyzed : 11/03/91
Method Number : 3500/M8015

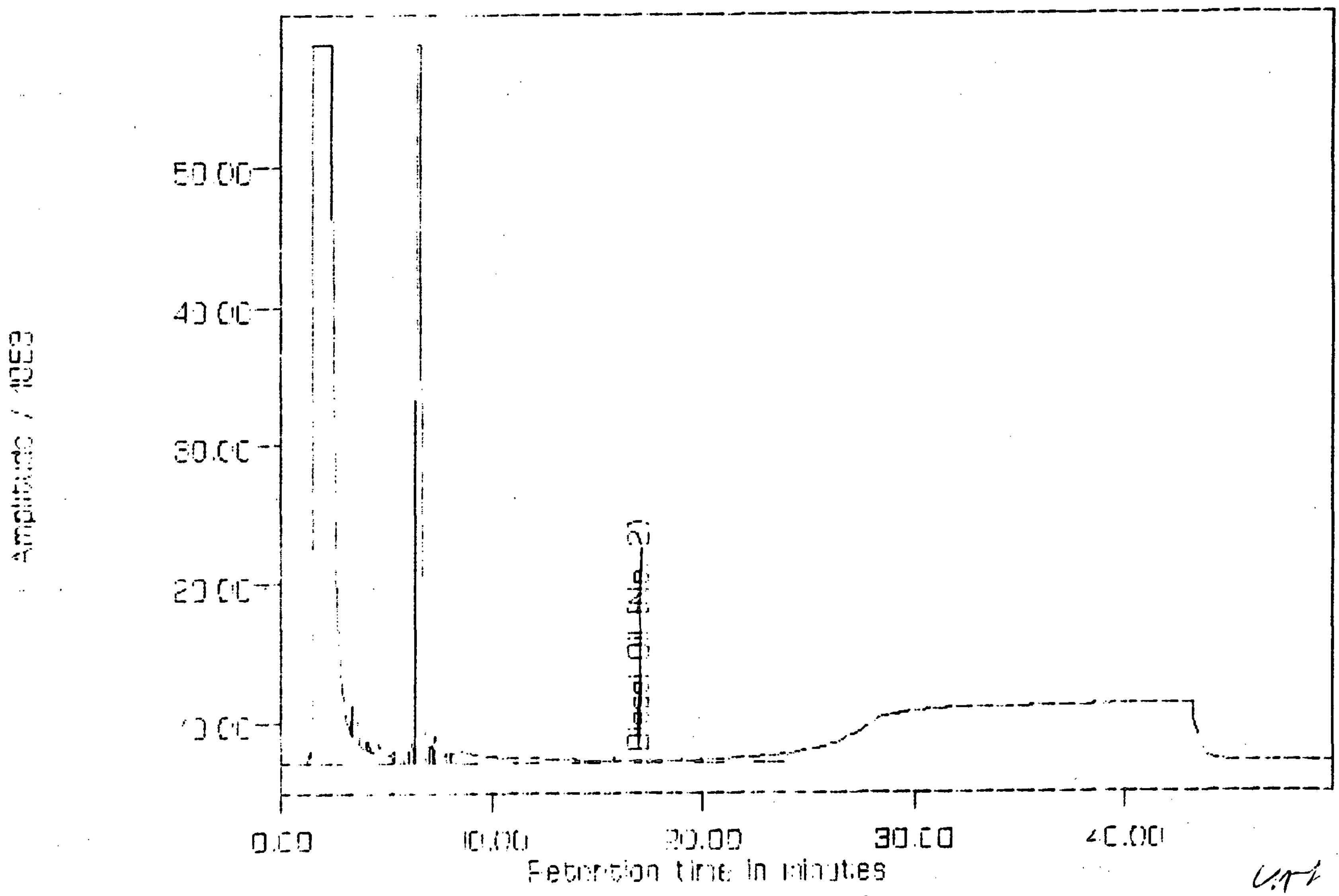
Evergreen Sample #	Client Sample #	Sample Matrix	Tentatively Identified Product	Hydrocarbon Concentration
X44621	9110301600	Soil	NONE	U
X44622	9110310845	Soil	NONE	U

Approved

QAO

TEH3739

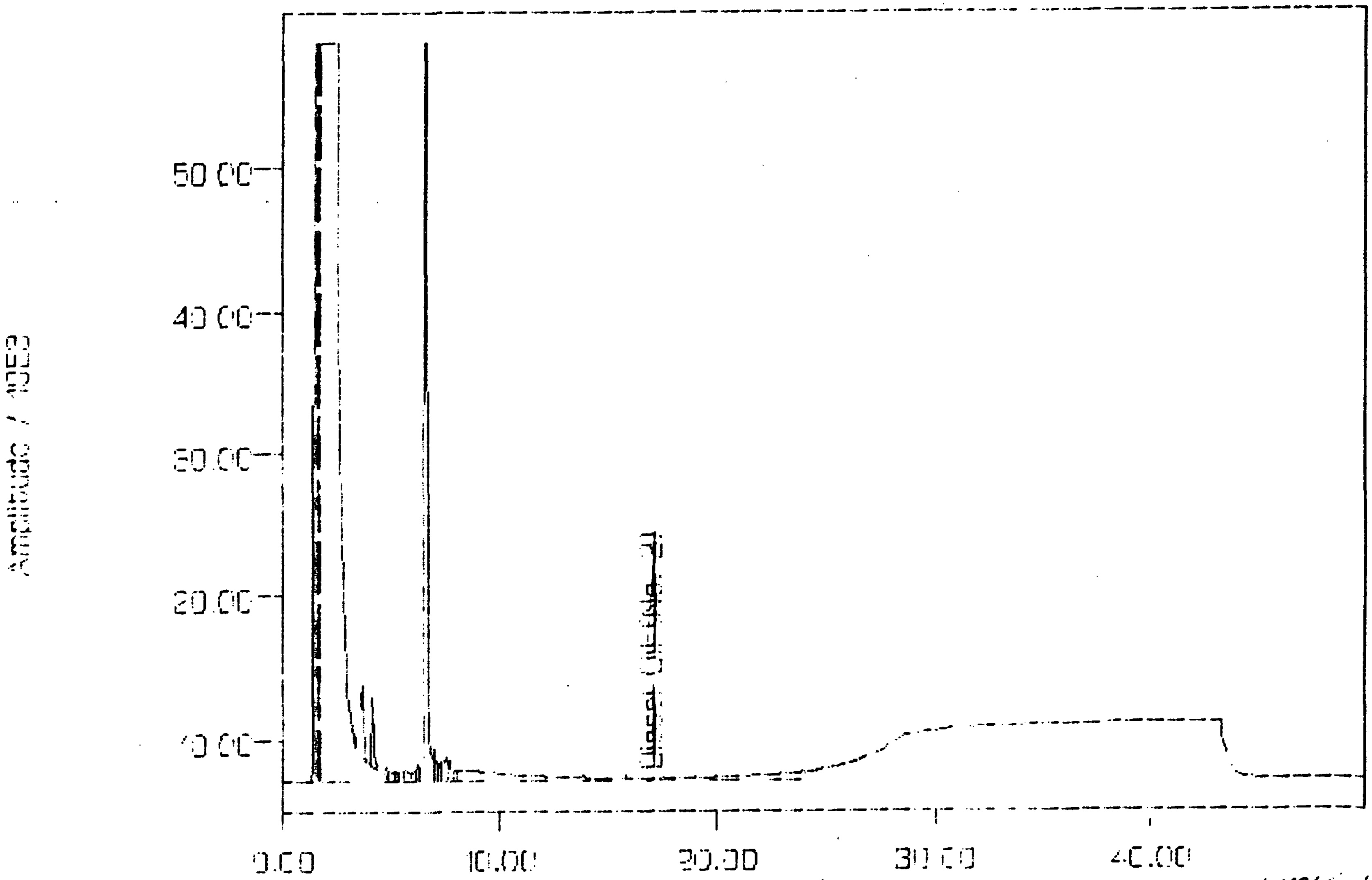
Sample : 17 31-3733;x44621;client#9110301630 Injected : SUN NOV 3, 1991 3



Result : FID1047 Method : DIESEL1

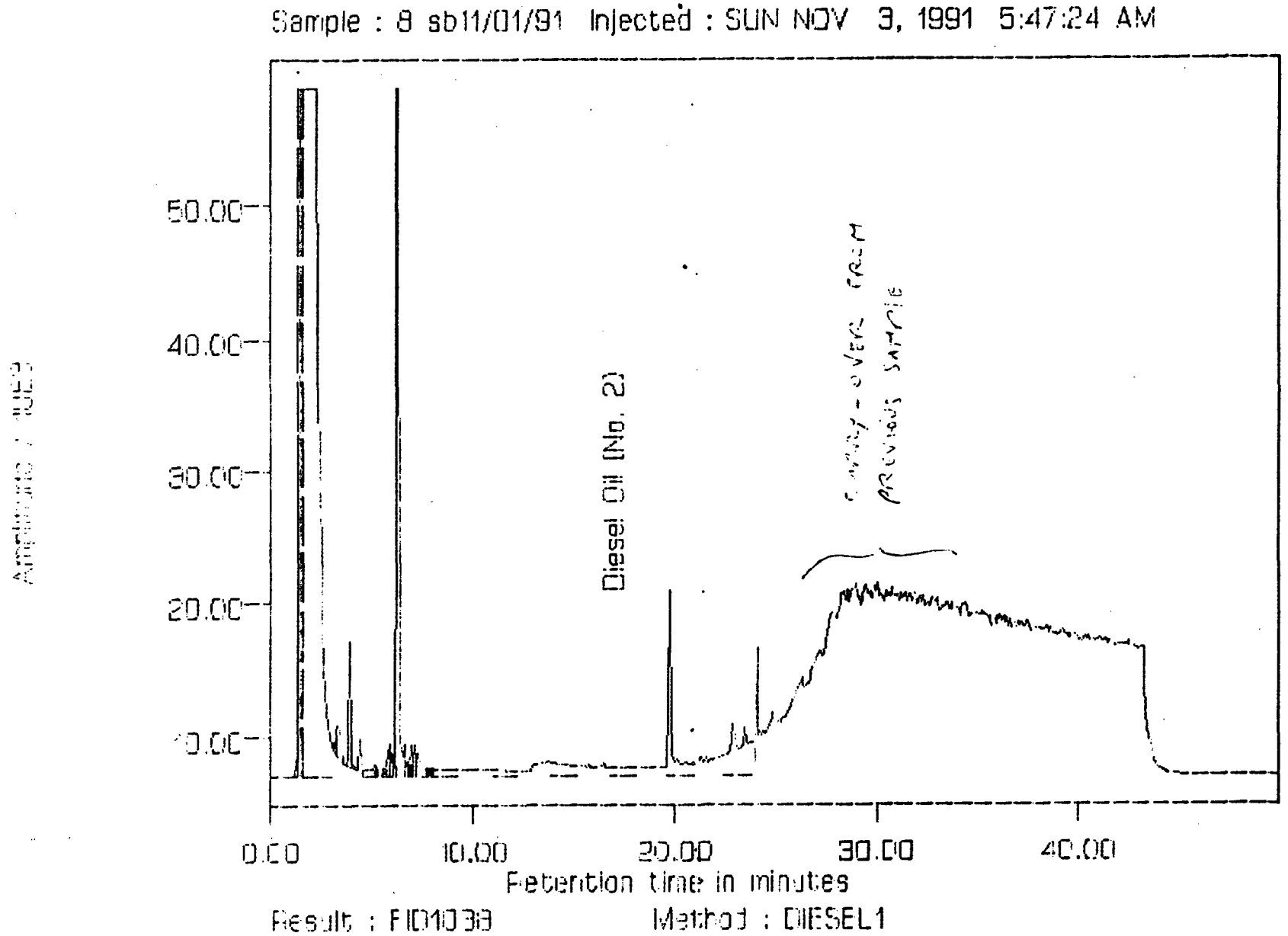
[handwritten initials] 11/5/91

Sample : IE 91-3739;x44622;client#9110310845 Injected : SUN NOV 3, 1991



Result : FID1043 Method : DIESEL1

cw 11/5/91


Sample : 8 sb11/01/91 Injected : SUN NOV 3, 1991 5:47:24 AM
50.00
40.00
30.00
20.00
10.00
Diesel Oil (No. 2)
0.00
10.00
20.00
30.00
40.00
Retention time in minutes
Result : FID1038
Method : DIESEL1

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

TCLP Benzene Data Report

Client Sample #	: 9110301600		
Lab Sample #	: X44621	Client Project #	: 200-10
Date Sampled	: 10/31/91	Lab Project #	: 91-3739
Date Received	: 11/01/91	Dilution Factor	: 10.000
Date Extracted/Prepared	: 11/04/91	Method	: 8020
Date Analyzed	: 11/05/91	Matrix	: Water
Percent Loss on Drying	: NA	Lab File No.	: PID8134
Methanol extract?	: No	Method Blank No.	: MB11/05/91

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	40

Surrogate Recoveries;
a,a,a-Trifluorotoluene 109%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

TCLP Benzene Data Report

Client Sample #	: 911102 1400		
Lab Sample #	: X44800	Client Project #	: 200-10
Date Sampled	: 11/02/91	Lab Project #	: 91-3774
Date Received	: 11/05/91	Dilution Factor	: 10.000
Date Extracted/Prepared	: 11/07/91	Method	: 8020
Date Analyzed	: 11/07/91	Matrix	: Water
Percent Loss on Drying	: NA	Lab File No.	: PID5207
Methanol extract?	: No	Method Blank No.	: MB11/07/91

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	40

Surrogate Recoveries;
a,a,a-Trifluorotoluene 102%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

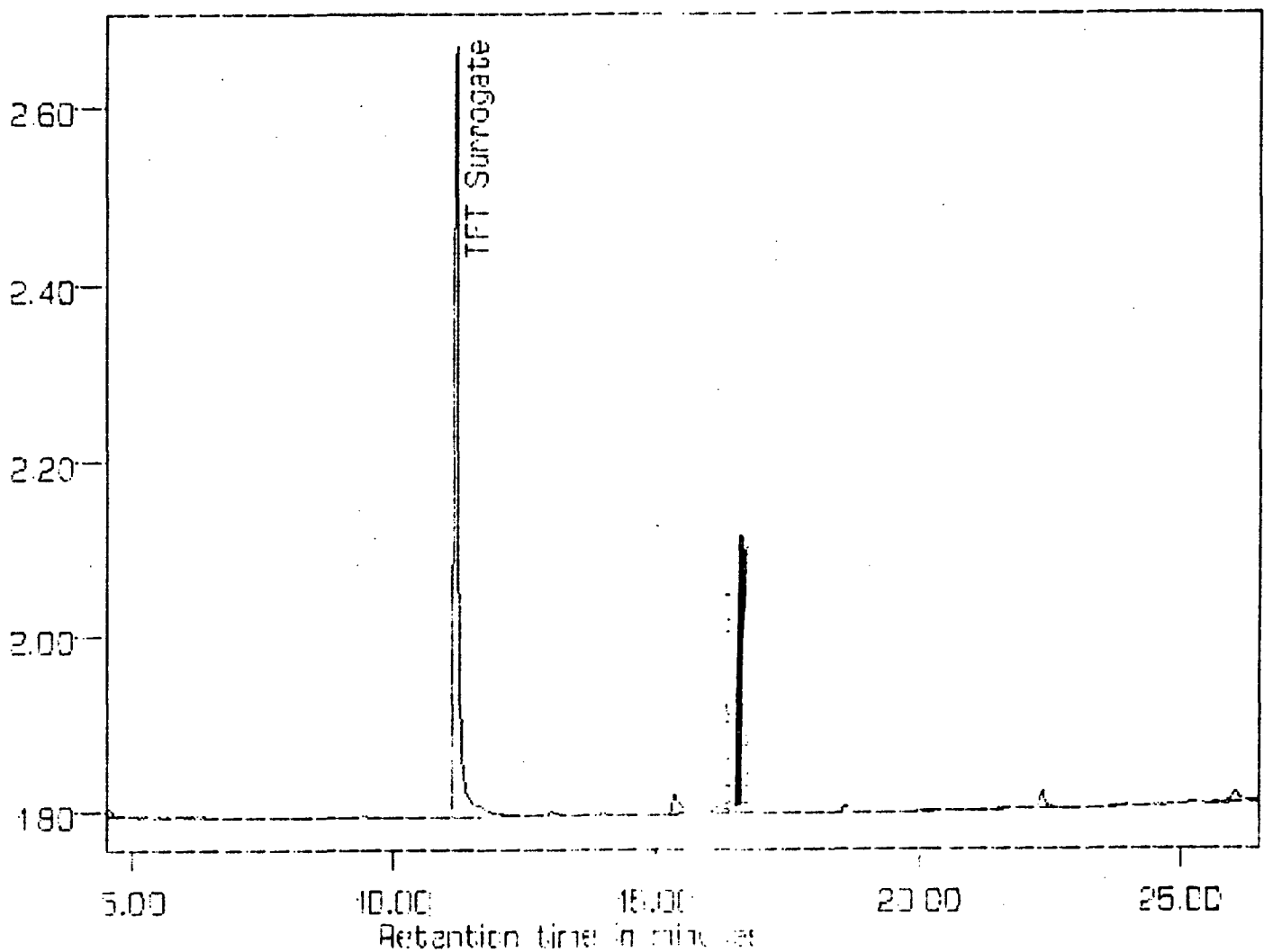
Approved: Dan Weiss

Quality Assurance Officer

forms\btex.pln

911102 1400

Sample : 17 91-3774,X44800,TCLP,I [illegible]=10 Injected : THU NOV 7, 1991 5:22:52



Result : P105207 Method : P [illegible]TEX.40

Copy 11/8/91

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

TCLP Benzene Data Report

Client Sample #	: N/A		
Lab Sample #	: TCLP BLANK	Client Project #	: 200-10
Date Sampled	: 11/02/91	Lab Project #	: 91-3774
Date Received	: 11/05/91	Dilution Factor	: 10.000
Date Extracted/Prepared	: 11/07/91	Method	: 8020
Date Analyzed	: 11/07/91	Matrix	: Water
Percent Loss on Drying	: NA	Lab File No.	: PID5199
Methanol extract?	: No	Method Blank No.	: MB11/07/91

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	40

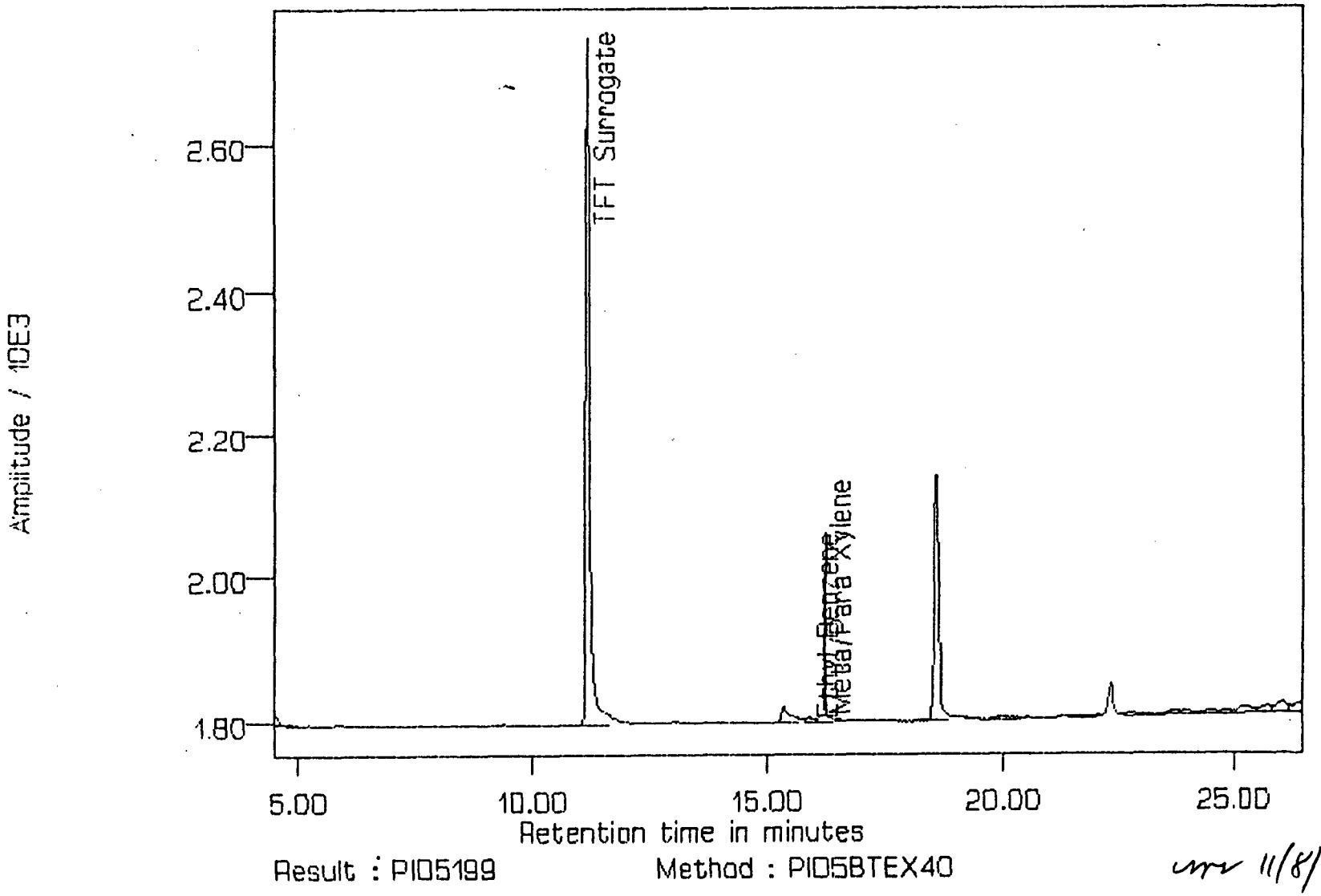
Surrogate Recoveries;
a,a,a-Trifluorotoluene 112%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln

Sample : 9 TCLP BLANK 11/07/91 Injected : THU NOV 7, 1991 12:43:37 PM



Result : PI05199 Method : PI05BTEX40

11/8/91

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021
TCLP Benzene Data Report
Method Blank Report

Method Blank Number	: MB11/07/91	Client Project No.	: 200-10
Date Extracted/Prepared	: 11/07/91	Lab Project No.	: 91-3774
Date Analyzed	: 11/07/91	Dilution Factor	: 1.000
		Method	: 8020
		Matrix	: Water
		Lab File No.	: PID5187

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	4

Surrogate Recoveries;
a,a,a-Trifluorotoluene 103%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

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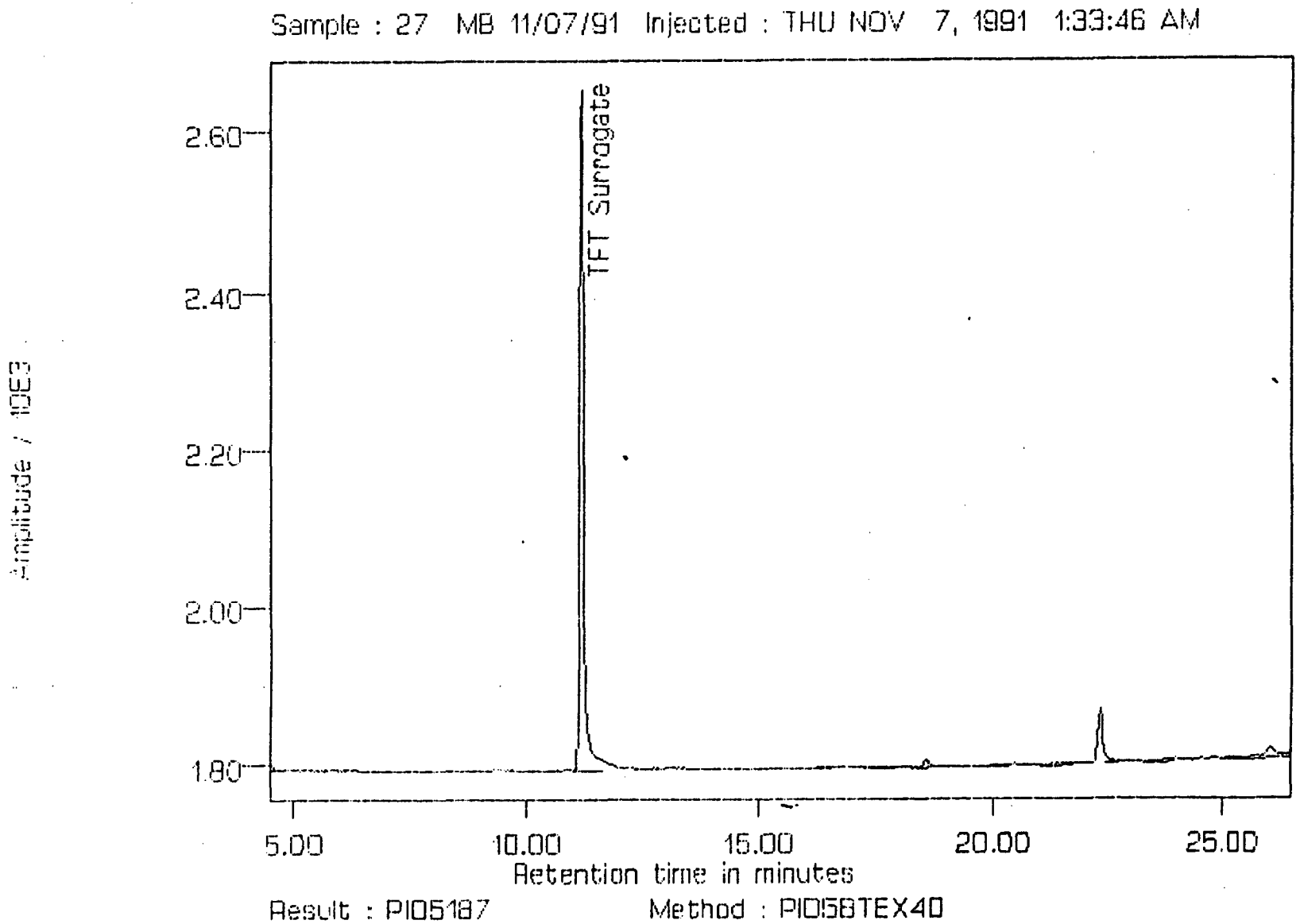
Sample : 27 MB 11/07/91 Injected : THU NOV 7, 1991 1:33:46 AM
TFT Surrogate
2.60
2.40
2.20
2.00
1.80
Amplitude / 1063
5.00
10.00
15.00
20.00
25.00
Retention time in minutes
Result : P105187
Method : P1058TEX40

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

BTEX Data Report

Client Sample #	: 911104-1200		
Lab Sample #	: X44801	Client Project #	: 200-10
Date Sampled	: 11/04/91	Lab Project #	: 91-3774
Date Received	: 11/05/91	Dilution Factor	: 5.000
Date Extracted/Prepared	: 11/05/91	Method	: 8020
Date Analyzed	: 11/05/91	Matrix	: Soil
Percent Loss on Drying	: NA	Lab File No.	: PID5155
Methanol extract?	: No	Method Blank No.	: MB11/05/91

Compound Name	Cas Number	Concentration ug/Kg		PQL* ug/Kg
Benzene	71-43-2		U	20
Toluene	108-88-3	39		20
Ethyl Benzene	100-41-4	55		20
Total Xylenes	1330-20-7	520		20**

** This is Evergreen's estimated PQL value for a single xylene peak.

Surrogate Recoveries;
a,a,a-Trifluorotoluene 72%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

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S111104 - 1405

11/6/91

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021
BTEX Data Report
Method Blank Report

Method Blank Number	: MB11/05/91	Client Project No.	: 200-10
Date Extracted/Prepared	: 11/05/91	Lab Project No.	: 91-3774
Date Analyzed	: 11/05/91	Dilution Factor	: 1.000
		Method	: 8020
		Matrix	: Water
		Lab File No.	: PID5137

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	4
Toluene	108-88-3		U	4
Ethyl Benzene	100-41-4		U	4
Total Xylenes	1330-20-7		U	4**

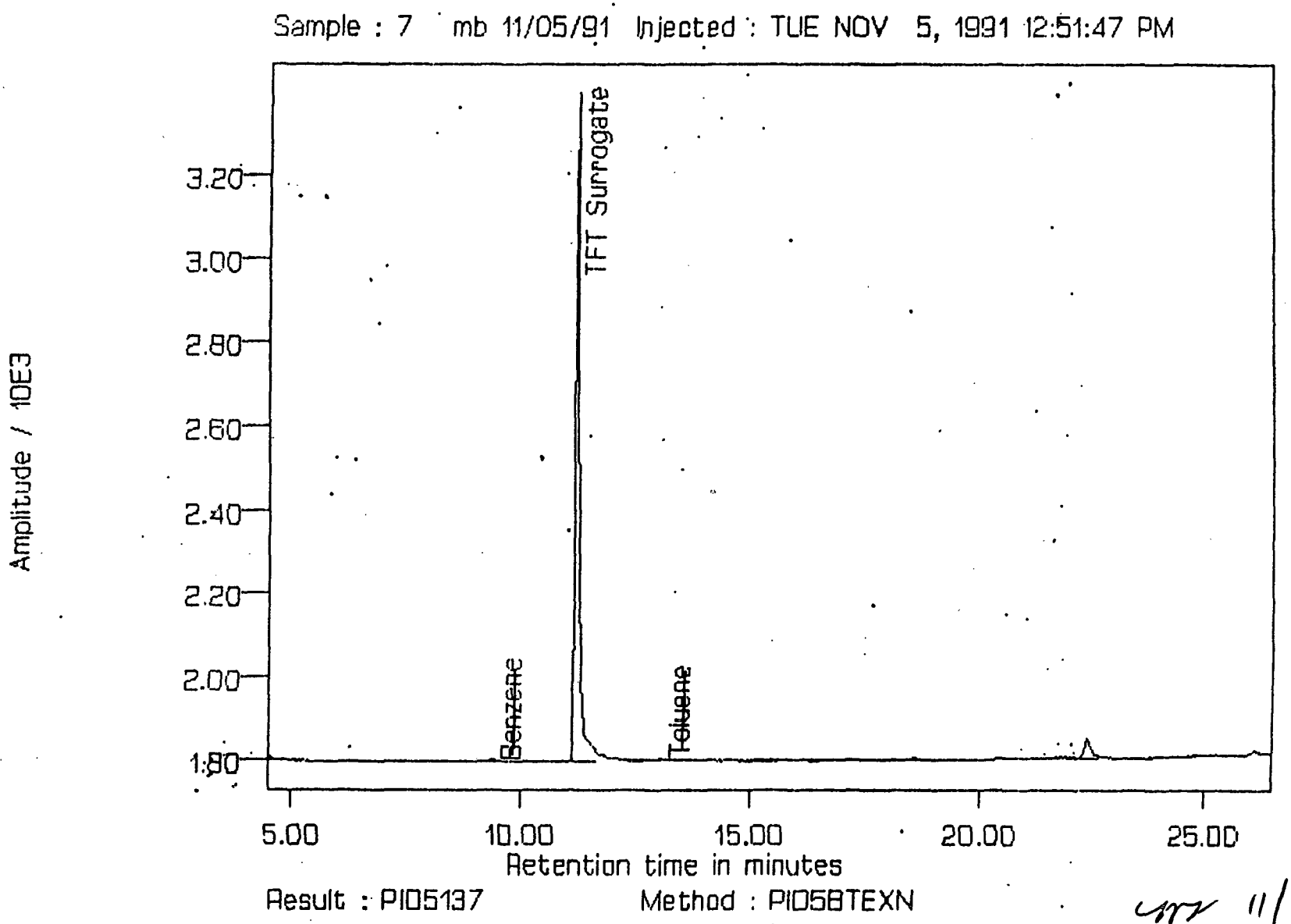
** This is Evergreen's estimated PQL value for a single xylene peak.

Surrogate Recoveries;
a,a,a-Trifluorotoluene 80%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln


Sample : 7 mb 11/05/91 Injected : TUE NOV 5, 1991 12:51:47 PM
Amplitude / 10E3
3.20
3.00
2.80
2.60
2.40
2.20
2.00
1.80
TFT Surrogate
Benzene
Toluene
5.00
10.00
15.00
20.00
25.00
Retention time in minutes
Result : PI05137
Method : PI05BTEXN

11/6/91

Evergreen Analytical, Inc.

4036 Youngfield Street
Wheat Ridge, CO 80033-3862
(303) 425-6021
FAX (303) 425-6854

November 11, 1991

Mr. John Kaszuba
Buys & Associates
6574 S. Broadway #200
Littleton, CO 80121

Data Report : 91-3840
Client Project : 200-10

Dear Mr. Kaszuba:

Enclosed are the analytical results for the samples shown in the Sample Log Sheet. The invoice for this work will be mailed to your Accounts Payable department shortly. If you have any questions concerning the reported information, please contact Carl Smits or me.

Please Note: Samples marked for return on the Sample Log Sheet are considered either hazardous or unsuitable for municipal disposal, or were placed on hold at your request. The former samples will be returned to you immediately for proper storage or disposal. Samples placed on hold will be returned one (1) month from the date of receipt. Samples not considered hazardous will be disposed of at that time.

Thank you for using the services of Evergreen Analytical.

Sincerely,

John H. Barney
President

ml

EVERGREEN ANALYTICAL, INC.
4036 Youngfield, Wheat Ridge, CO 80033
(303) 425-6021

Date Due X45129 = 11/22/91
X45130 = 11/11/91

Holding Time 11/18/91
11/21/91

E. A. Cooler # _____

Rush 1 ON

SAMPLE LOG SHEET

Client Buys & Associates
Address 6574 S. Broadway #200
Littleton, CO 80121
Contact John Kaszuba
Sampled 11/4-7/91 Received 11/8/91 10:00
Client Project # 200-16
Client P.O. ——
Phone # 730-2500
Fax Number 730-2522 Fax Results? (Y) N Shipping Charges ——

Project # 91-3840
Airbill # 286585 7864
Custody Seal Intact? (Y) N
COC Present? (Y) N
Sample Tags Present? (Y) N
Sample Tags # Listed? (Y) N
Sample(S) Sealed? (Y) N
Custodian/Date R Haney 11/8/91

Special Instructions T.A.T per Robert

Lab ID #	Client ID#	Analysis	Mtx	Btl	Loc	File#/Date	R*
X45129A	9111041430	TEH-D 8015 mod	S	2oz wm	3		
X45130A	1315	↓	↓	↓	↓		
X45129B	1430	TCLP BENZENE			↓		
X45130B	1315	BTEX 8020	↓	↓	2		

*Samples to be returned See reverse side for additional analysis

Route to: SRO X QAO X JB X GO X JDP ___ OFFICE X
SWT ___ WKH ___ MAB ___ DB ___ S/M X ET X

BUYS & ASSOCIATES

CHAIN OF CUSTODY RECORD

6574 S. Broadway, Suite 200
Littleton, CO 80121
(303) 730-2500

Project No. 200-10

Project Name HOMECO - Farmington

SAMPLERS: (Signature) John P. Kazubo

Sample Type	SITE IDENTIFICATION	SAMPLE DATE	TIME MILITARY STANDARD	SAMPLE DEPTH (FEET)	SAMPLE TECH.	ANALYSIS REQUIRED: TEH	TCLP Benzene	Total BTEX (Method 8020)	NUMBER OF CONTAINERS	REMARKS
Soil	9111041430	11/4/91	1430	—		X	X		3	Composite, Std Turnaround
Soil	9111071315	11/7/91	1315	18'		X		X	3	RUSH!!!

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Recieved for Laboratory by: (Signature)	Date/Time		
Relinquished by: (Signature) JP Kazubo	Date/Time 11/7/91 1400	Recieved for Laboratory by: (Signature)	Date/Time 11/8 10:00		

SAMPLE SPLIT DATE _____

SAMPLE EXTRACTION DATE _____

SAMPLE ANALYSIS DATE _____

EVERGREEN ANALYTICAL, INC.
4036 Youngfield, Wheat Ridge, CO 80033

TOTAL EXTRACTABLE HYDROCARBONS (TEH)

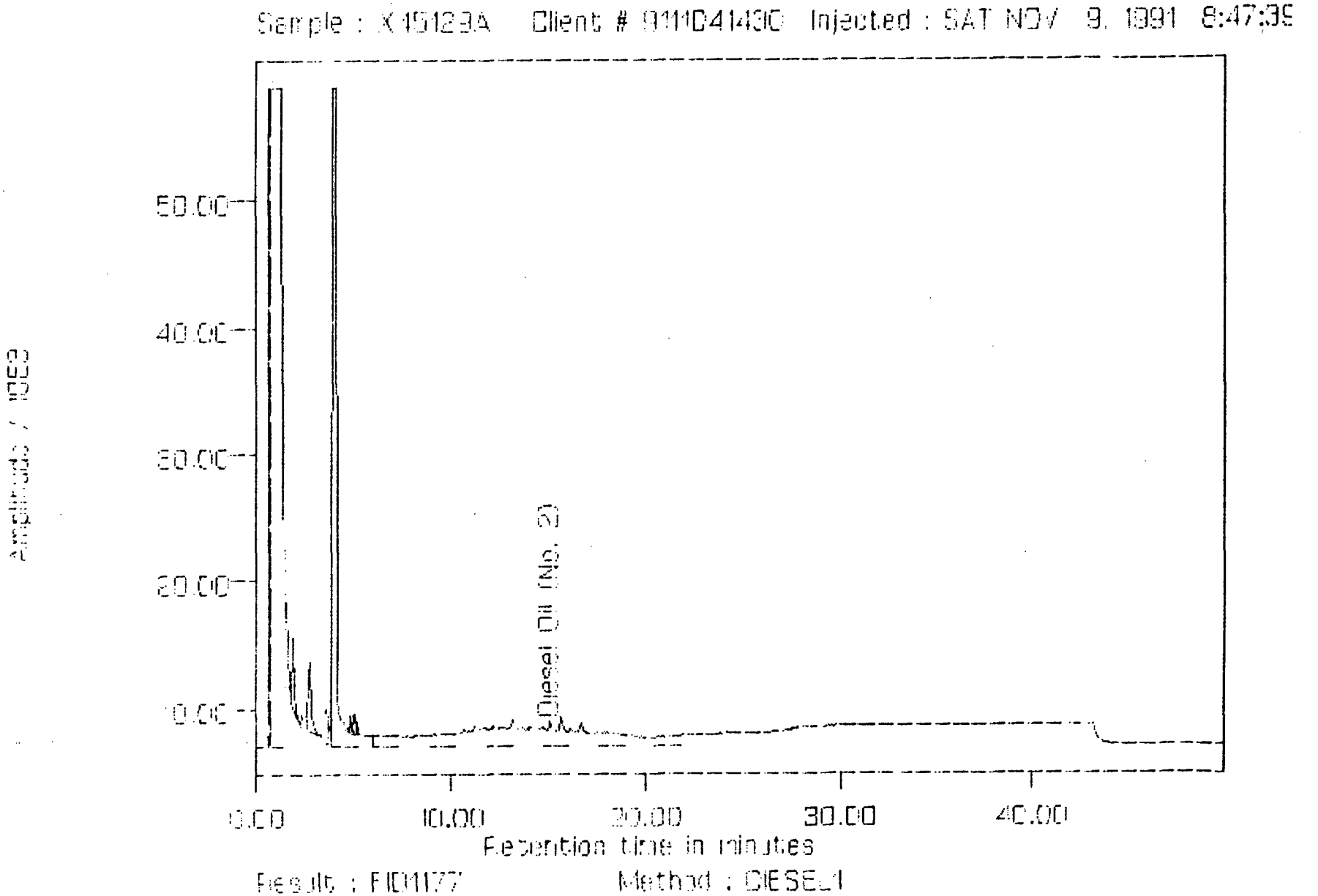
Date Sampled	: 11/04,07/91	Client Project No.	: 200-10
Date Received	: 11/08/91	Lab Project No.	: 91-3840
Date Prepared	: 11/08/91	Matrix	: Soil
Date Analyzed	: 11/09/91	Method Number	: 3500/M8015

Evergreen Sample #	Client Sample #	Sample Matrix	TEH mg/Kg	MDL mg/Kg
X45129A	9111041430	Soil	32	10
X45130A	9111071315	Soil	U	10

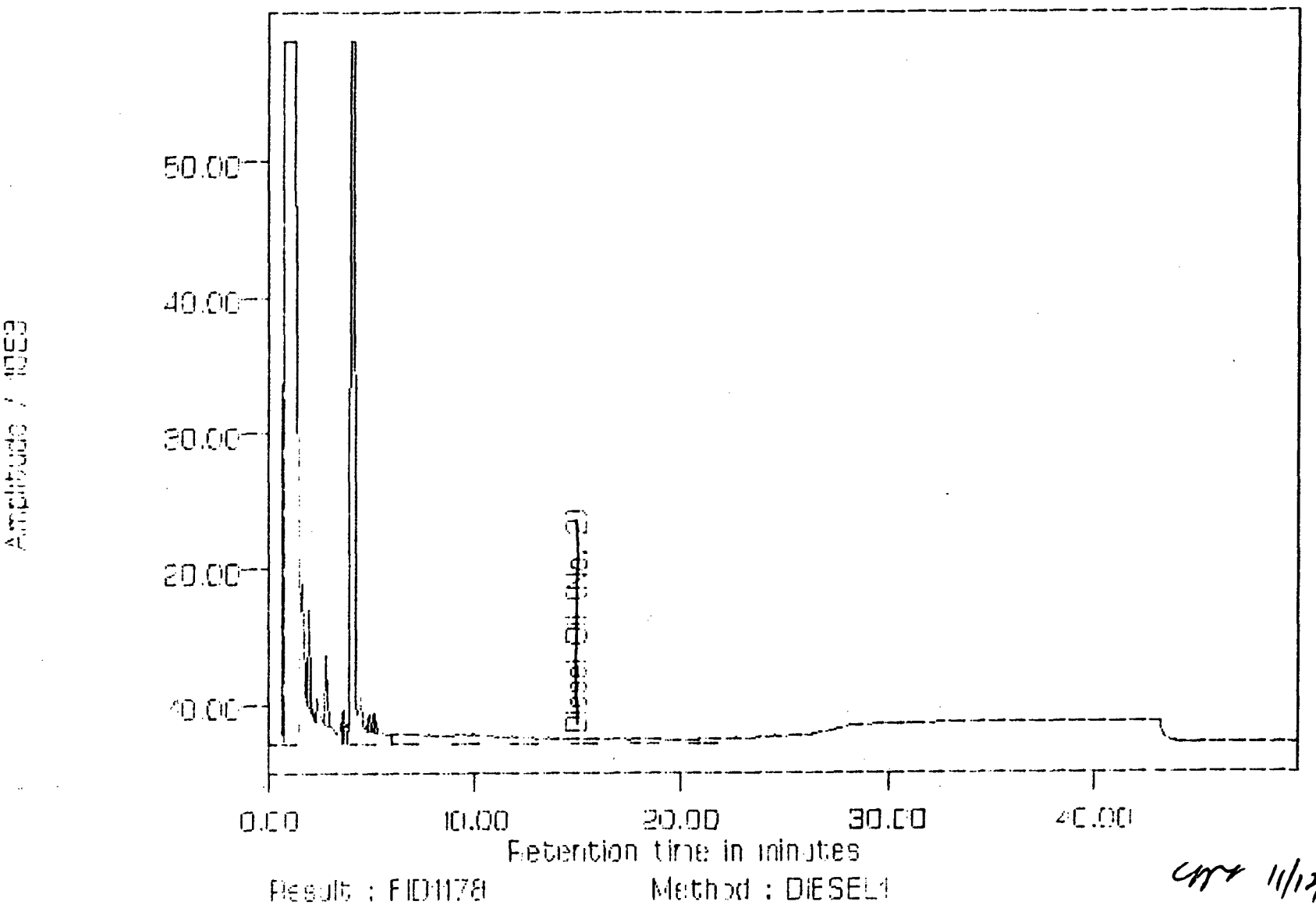
QUALIFIERS
U=TEH analyzed for but not detected.
B=TEH found in the blank as well as the sample (blank data should be compared).
MDL=Instrument detection level for this method.

Bryan L. Hodges
Approved

QAO

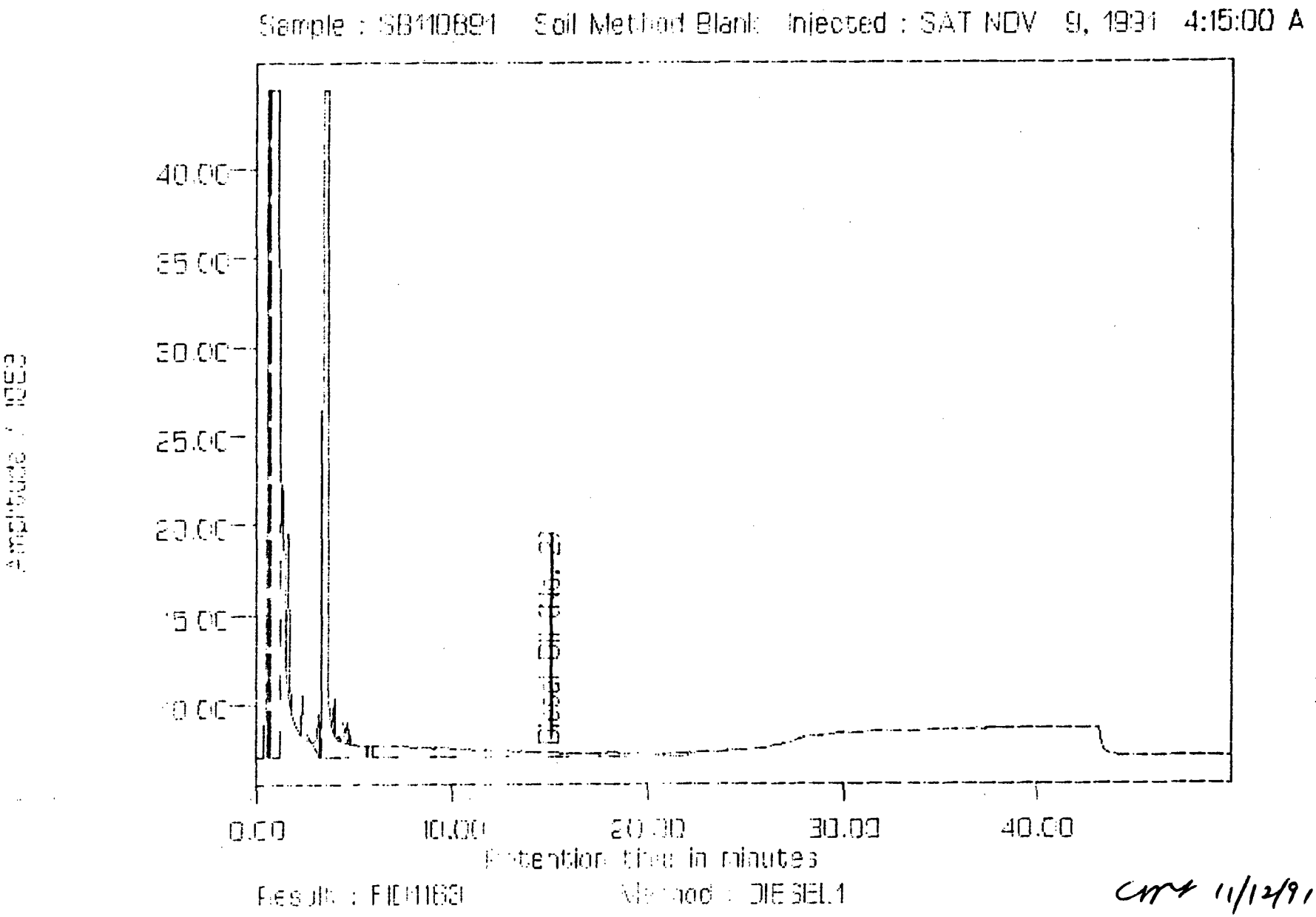

Sample : X15123A Client # 9111041430 Injected : SAT NOV 9, 1991 8:47:39
50.00
40.00
30.00
20.00
10.00
0.00
Diesel Oil (No. 2)
0.00
10.00
20.00
30.00
40.00
Retention time in minutes
Result : FID1177
Method : DIESEL1

Sample : X45130A Client # 9111071315 Injected : SAT NOV 3, 1991 9:51:01

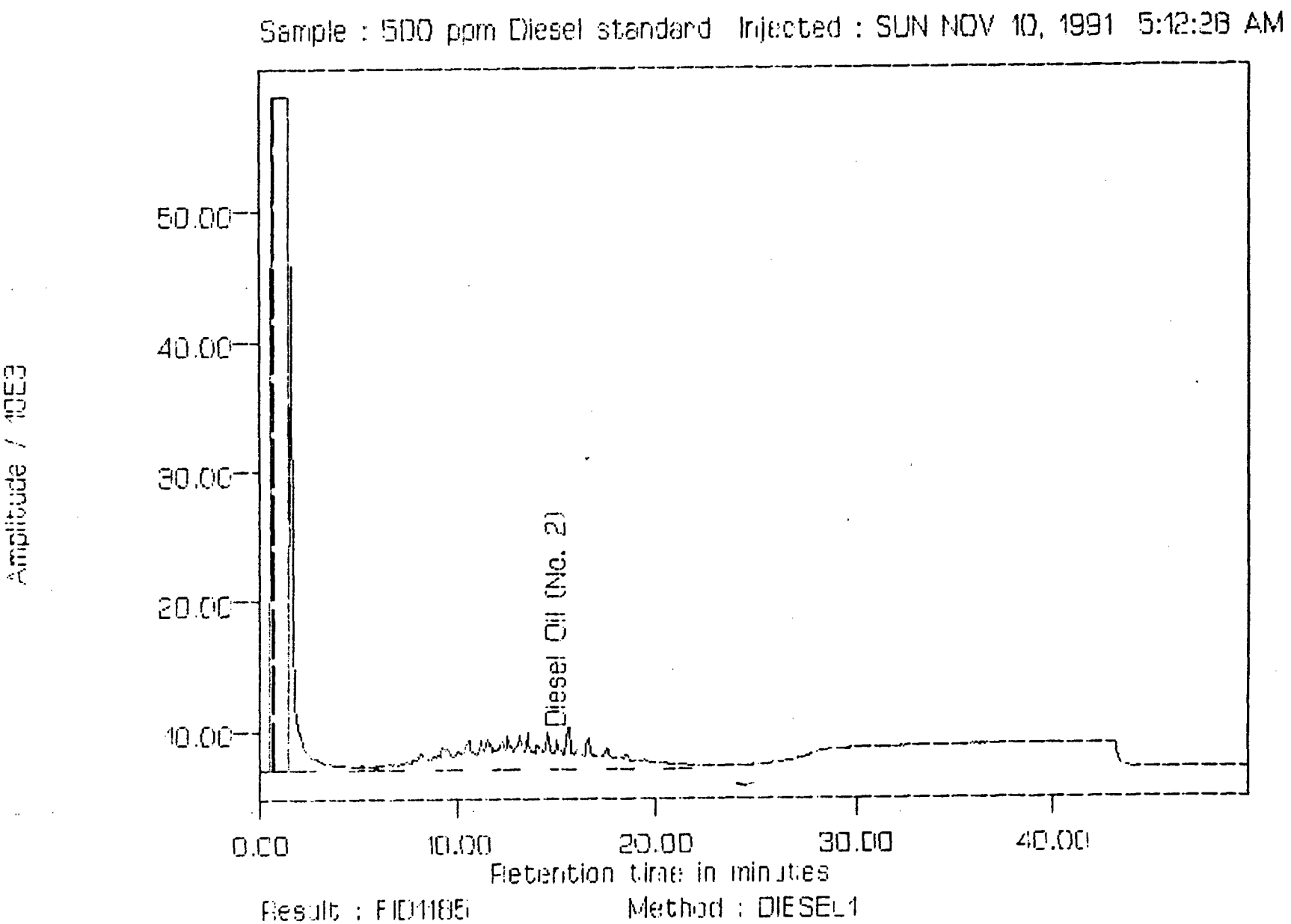


Result : FID1178 Method : DIESEL1

11/1/91


Sample : SB110891 Soil Method Blank Injected : SAT NOV 9, 1991 4:15:00 A
40.00
35.00
30.00
25.00
20.00
15.00
10.00
0.00
10.00
20.00
30.00
40.00
Retention time in minutes
Result : FID11631
Method : DIESEL1

CRA 11/12/91


Sample : 500 ppm Diesel standard Injected : SUN NOV 10, 1991 5:12:28 AM
Amplitude / 1000
50.00
40.00
30.00
20.00
10.00
Diesel Oil (No. 2)
0.00
10.00
20.00
30.00
40.00
Retention time in minutes
Result : FID1185
Method : DIESEL1

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

TCLP Benzene Data Report

Client Sample #	: 911041430		
Lab Sample #	: X45129	Client Project #	: 200-10
Date Sampled	: 11/04/91	Lab Project #	: 91-3840
Date Received	: 11/08/91	Dilution Factor	: 10.000
Date Extracted/Prepared	: 11/14/91	Method	: 8020
Date Analyzed	: 11/15/91	Matrix	: TCLP Extract
Percent Loss on Drying	: NA	Lab File No.	: PID8452
Methanol extract?	: No	Method Blank No.	: MB11/15/91

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2	5	J	40

~~** This is Evergreen's estimated PQL value for a single xylene peak.~~

delete typo as per Carl Anderson of Evergreen. JPK 12/5/91

Surrogate Recoveries;
a,a,a-Trifluorotoluene 86%

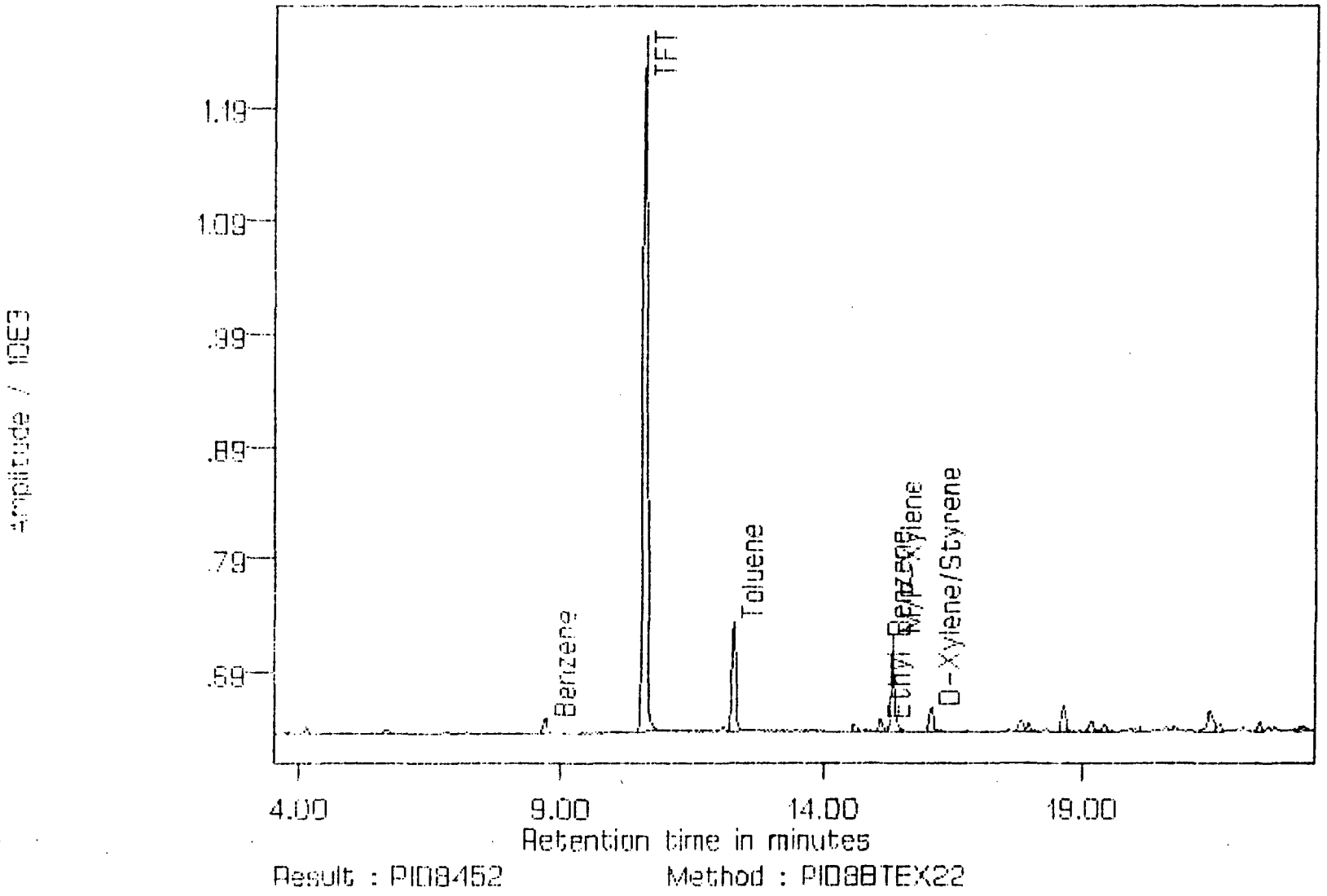
QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln

9110-1430

Sample : 22 91-3640,x45129,TCLP,df=10 Injected : FRI NOV 15, 1991 11:44:06 PM



Result : PID8452 Method : PID8BTEX22

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

TCLP Benzene Data Report

Client Sample #	: NA		
Lab Sample #	: TCLP BLANK 11	Client Project #	: 200-10
Date Sampled	: NA	Lab Project #	: 91-3840
Date Received	: NA	Dilution Factor	: 10.000
Date Extracted/Prepared	: 11/14/91	Method	: 8020
Date Analyzed	: 11/15/91	Matrix	: TCLP Extract
Percent Loss on Drying	: NA	Lab File No.	: PID8451
Methanol extract?	: No	Method Blank No.	: MB11/15/91

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	40

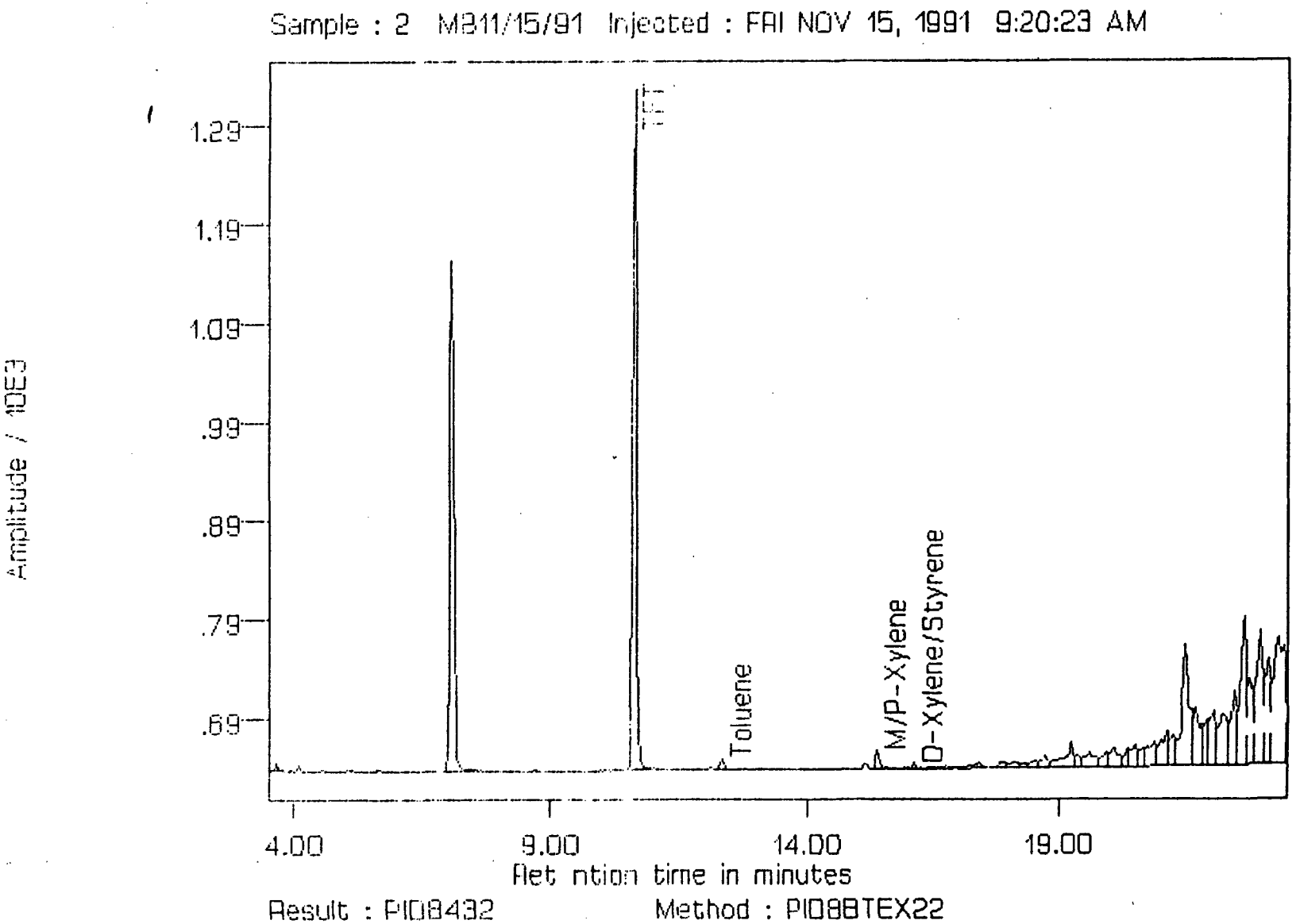
** This is Evergreen's estimated PQL value for a single xylene peak.

Surrogate Recoveries;
a,a,a-Trifluorotoluene 79%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln


Sample : 2 M811/15/91 Injected : FRI NOV 15, 1991 9:20:23 AM
Amplitude / 10E3
1.29
1.19
1.09
.99
.89
.79
.69
Toluene
M/P-Xylene
O-Xylene/Styrene
4.00
9.00
14.00
19.00
Retention time in minutes
Result : PID8432
Method : PID8BTEX22

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021
TCLP Benzene Data Report
Method Blank Report

Method Blank Number	: MB11/15/91	Client Project No.	: 200-10
Date Extracted/Prepared	: 11/15/91	Lab Project No.	: 91-3840
Date Analyzed	: 11/15/91	Dilution Factor	: 1.000
		Method	: 8020
		Matrix	: Water
		Lab File No.	: PID8432

Compound Name	Cas Number	Concentration ug/L	PQL* ug/L
Benzene	71-43-2	U	4

** This is Evergreen's estimated PQL value for a single xylene peak.

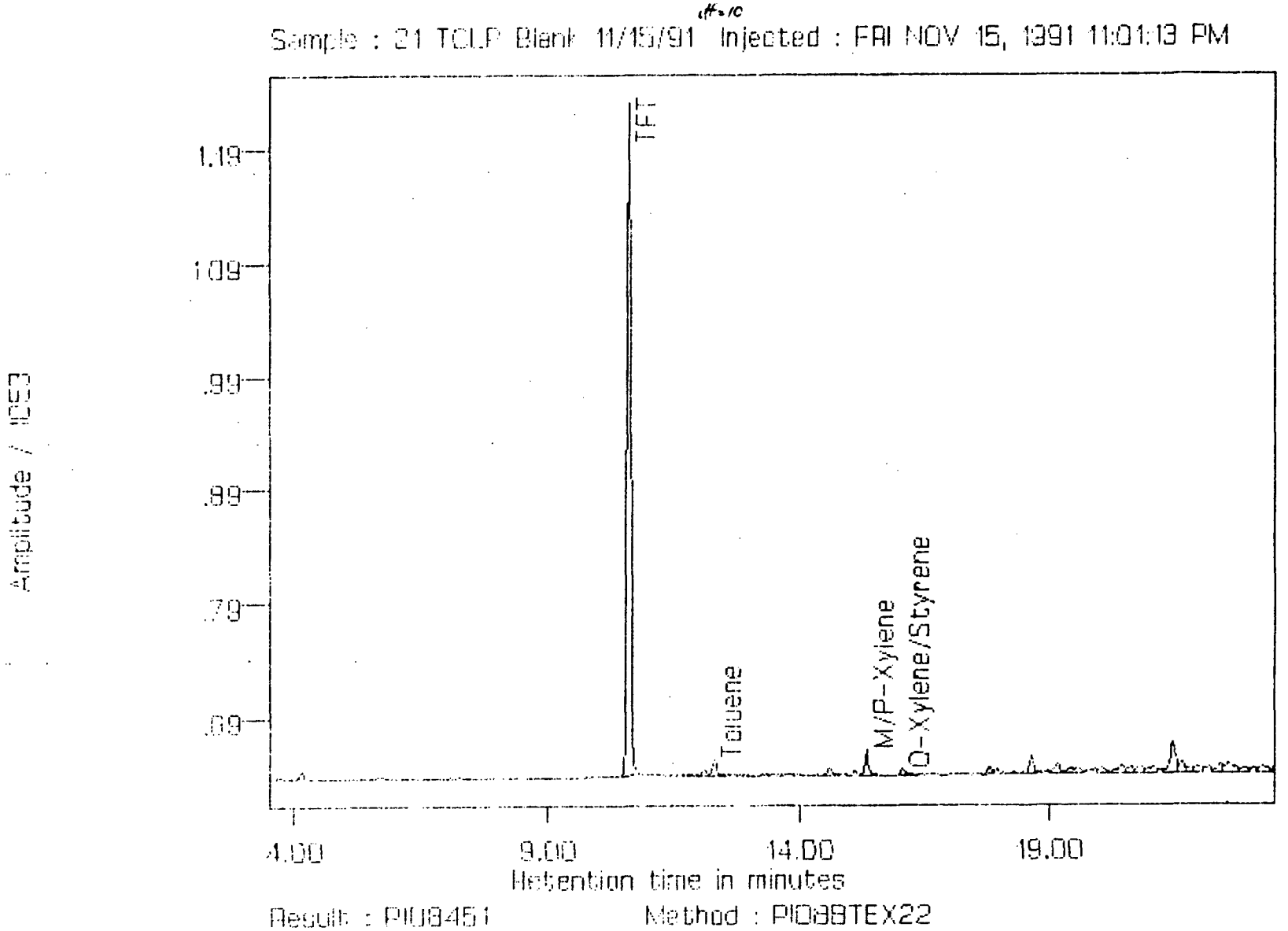
Surrogate Recoveries;
a,a,a-Trifluorotoluene 96%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____

_____
Quality Assurance Officer

forms\btex.pln


Sample : 21 TCLP Blank 11/15/91 Injected : FRI NOV 15, 1991 11:01:13 PM
1.19
1.09
.99
.89
.79
.69
TCE
Toluene
M/P-Xylene
O-Xylene/Styrene
4.00
9.00
14.00
19.00
Retention time in minutes
Result : PIU8451
Method : PIO88TEX22

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

BTEX Data Report

Client Sample #	: 9111071315		
Lab Sample #	: X45130	Client Project #	: 200-10
Date Sampled	: 11/07/91	Lab Project #	: 91-3840
Date Received	: 11/08/91	Dilution Factor	: 1.000
Date Extracted/Prepared	: 11/08/91	Method	: 8020
Date Analyzed	: 11/08/91	Matrix	: Soil
Percent Loss on Drying	: NA	Lab File No.	: PID5239
Methanol extract?	: No	Method Blank No.	: MB11/08/91

Compound Name	Cas Number	Concentration ug/Kg		PQL* ug/Kg
Benzene	71-43-2		U	4
Toluene	108-88-3	0.7	J	4
Ethyl Benzene	100-41-4		U	4
Total Xylenes	1330-20-7	2	J	4**

** This is Evergreen's estimated PQL value for a single xylene peak.

Surrogate Recoveries;
a,a,a-Trifluorotoluene 83%

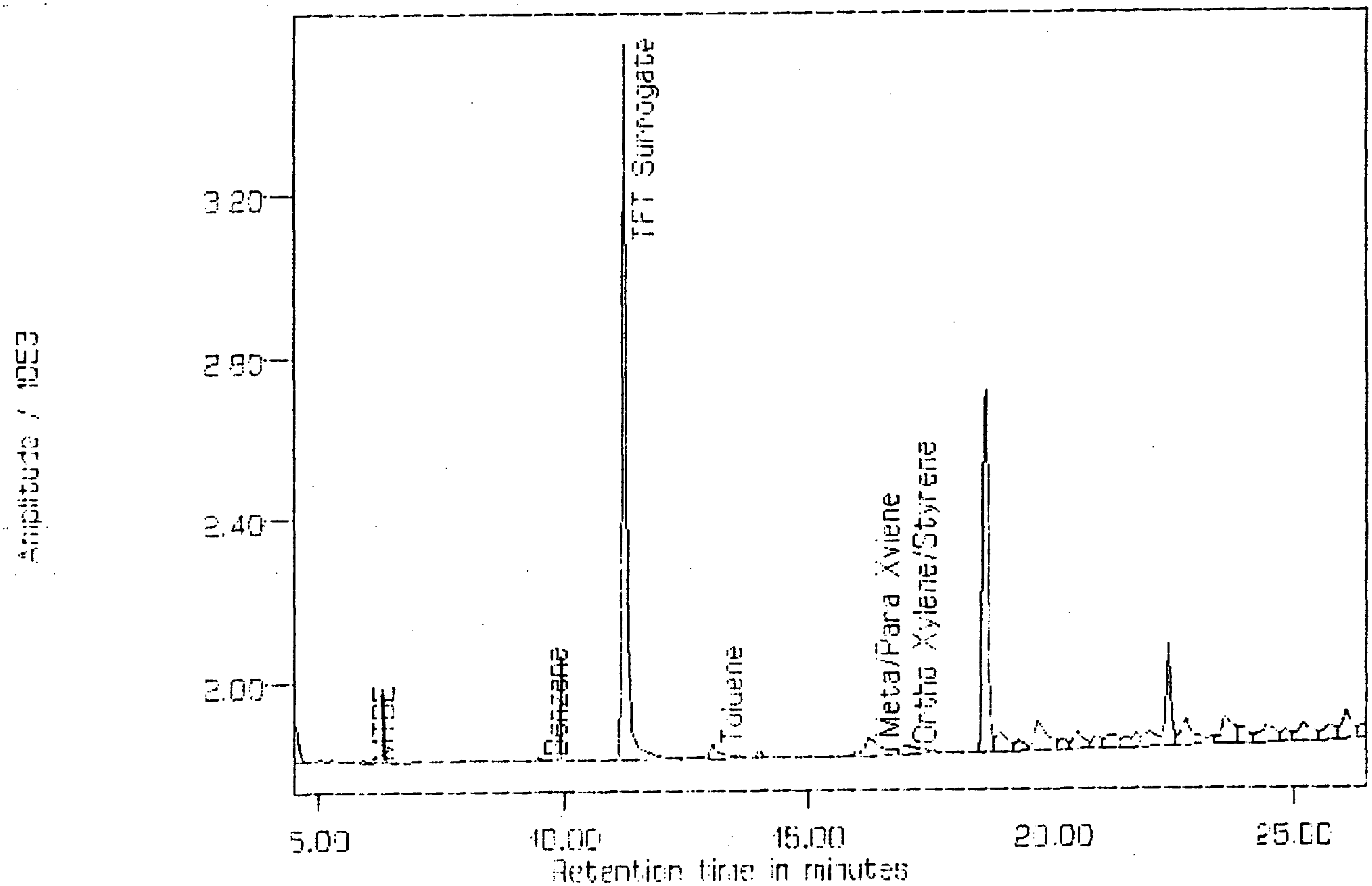
QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln

911107 1315

Sample : 9. 31-3840 X45130.S DF-1 Injected : FRI NOV 8, 1991 2:50:01 PM



Result : P105289 Method : P053TEX40

11/12/91

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021
BTEX Data Report
Method Blank Report

Method Blank Number	: MB11/08/91	Client Project No.	: 200-10
Date Extracted/Prepared	: 11/08/91	Lab Project No.	: 91-3840
Date Analyzed	: 11/08/91	Dilution Factor	: 1.000
		Method	: 8020
		Matrix	: Water
		Lab File No.	: PID5232

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	4
Toluene	108-88-3		U	4
Ethyl Benzene	100-41-4		U	4
Total Xylenes	1330-20-7		U	4**

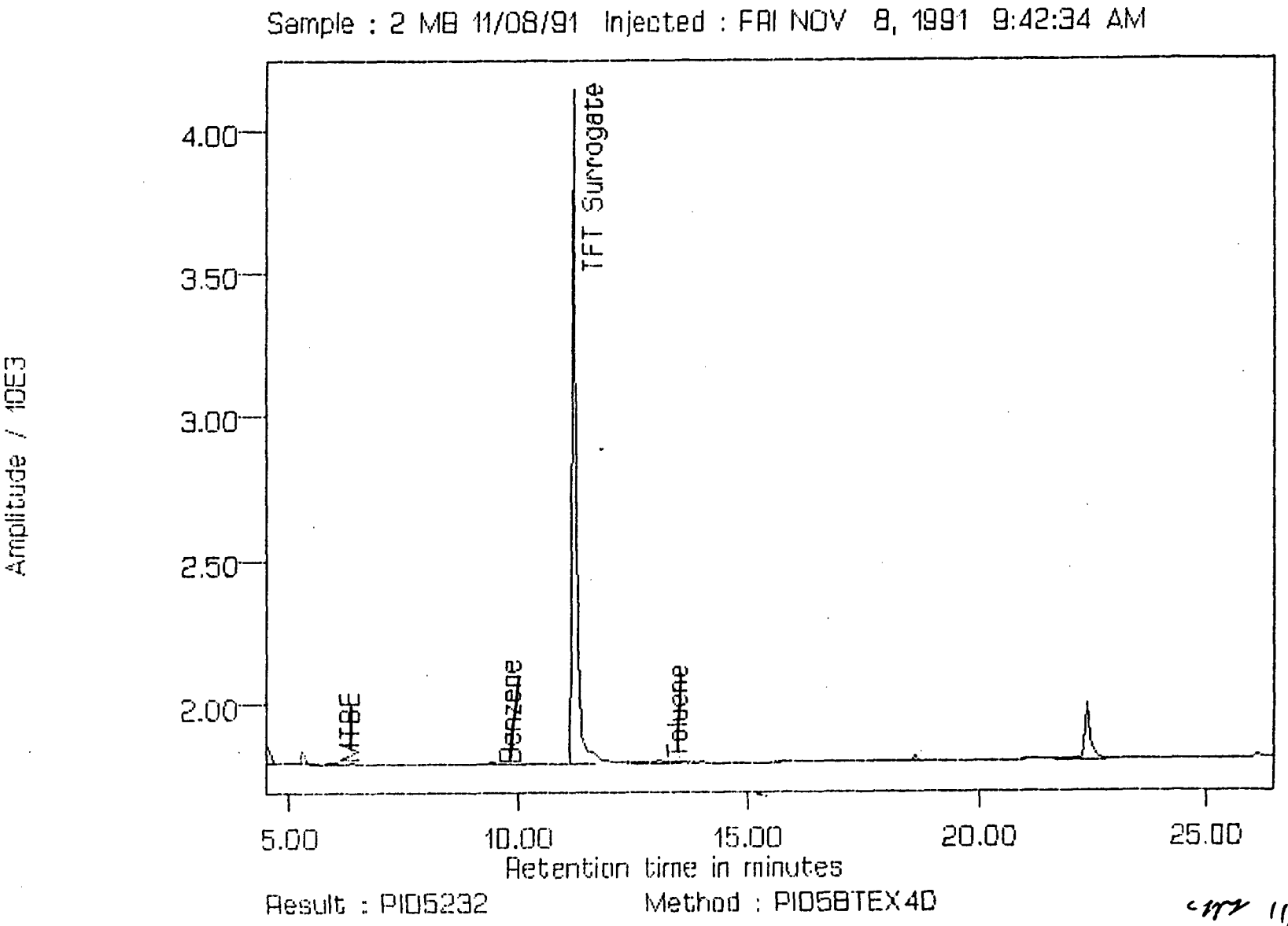
** This is Evergreen's estimated PQL value for a single xylene peak.

Surrogate Recoveries;
a,a,a-Trifluorotoluene 113%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved _____ _____
Quality Assurance Officer

forms\btex.pln


Sample : 2 MB 11/08/91 Injected : FRI NOV 8, 1991 9:42:34 AM
Amplitude / 10E3
4.00
3.50
3.00
2.50
2.00
TFT Surrogate
Benzene
Toluene
5.00
10.00
15.00
20.00
25.00
Retention time in minutes
Result : PID5232
Method : PID5BTEX4D

11/12/91

Evergreen Analytical, Inc.

4036 Youngfield Street
Wheat Ridge, CO 80033-~~3865~~
(303) 425-6021
FAX (303) 425-6854

November 20, 1991

Mr. John Kaszuba
Buys & Associates
6574 S. Braodway, #200
Littleton, CO 80121

Data Report : 91-3955
Client Project : 200-10

Dear Mr. Kaszuba:

Enclosed are the analytical results for the samples shown in the Sample Log Sheet. The invoice for this work will be mailed to your Accounts Payable department shortly. If you have any questions concerning the reported information, please contact Carl Smits or me.

Please Note: Samples marked for return on the Sample Log Sheet are considered either hazardous or unsuitable for municipal disposal, or were placed on hold at your request. The former samples will be returned to you immediately for proper storage or disposal. Samples placed on hold will be returned one (1) month from the date of receipt. Samples not considered hazardous will be disposed of at that time.

Thank you for using the services of Evergreen Analytical.

Sincerely,

John H. Barney
President

ab

EVERGREEN ANALYTICAL, INC.
4036 Youngfield, Wheat Ridge, CO 80033
(303) 425-6021

Date Due TEH,BTEX=11/19/91
TCLP=11/20/91

Holding Time 11/29/91

E.A. Cooler # 231

Rush 2=TEH,BTEX
I on TCLP

SAMPLE LOG SHEET

Client Buys & Associates
Address 6574 S. Broadway, #200
Littleton, CO 80121
Contact John Kaszuba
Sampled 11/15/91 Received 11/15/91 16:30
Client Project # 200-10
Client P.O. _____
Phone # 730-2500
Fax Number 730-2522 Fax Results? Y

Project # 91-3955
Airbill # 2865857923
Custody Seal Intact? Y
COC Present? Y
Sample Tags Present? Y
Sample Tags Listed? Y
Sample(S) Sealed? Y
Custodian/Date B. Gomez 11/18/91
Shipping Charges N/A

Special Instructions _____

Lab ID #	Client ID#	Analysis	Mtx	Btl	Loc	File #/ Date	R*
X45637A/B	911115 0815	TEH-D 8015 mod.	S	2ozwm	7		
X45638A/B	911115 0945	"	"	"	"		
X45639A/B	911115 1045	"	"	"	"		
X45640A/B	911115 1330	"	"	"	"		
X45641A/B	911115 1445	"	"	"	"		
X45637C	911115 0815	TCLP Benzene	"	"	2		
X45638C	911115 0945	"	"	"	"		
X45639C	911115 1045	"	"	"	"		
X45640C	911115 1330	BTEX 8020	"	"	"		
X45641C	911115 1445	TCLP Benzene	"	"	"		

*Samples to be returned

Route to: SRX QAX JBX GOX JP _ OFFICE X ST3X KH__ MB3X S/M X ET X

BUYS & ASSOCIATES

6574 S. Broadway, Suite 200
Littleton, CO 80121
(303) 730-2500

CHAIN OF CUSTODY RECORD

Project No. 200-10

Project Name Homco - Farmington

SAMPLERS: (Signature) JP Vanzuba

Sample Site Type	SITE IDENTIFICATION	SAMPLE DATE	TIME MILITARY STANDARD	SAMPLE DEPTH (FEET)	SAMPLE TECH.	ANALYSIS REQUIRED: TEIT	TCLP Benzene	Total BTEX						NUMBER OF CONTAINERS	REMARKS
Soil	9111150815	11/15/91	0815	—		X	X							3	STANDARD TURNAROUND
	9111150945		0945	—		X	X							3	
	9111151045		1045	5'		X	X							3	
	9111151330		1330	6'		X		X						3	RUSH 24 hr
	9111151445		1445	12'		X	X							3	

Please RUSH all Samples

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Recieved for Laboratory by: (Signature)	Date/Time		
			—		
Relinquished by: (Signature) JP Vanzuba	Date/Time 11/15/91 1630	Recieved for Laboratory by: (Signature) L. Gomez	Date/Time 11/18/91 8:30		

SAMPLE SPLIT DATE _____

SAMPLE EXTRACTION DATE _____

SAMPLE ANALYSIS DATE _____

BUYS & ASSOCIATES

CHAIN OF CUSTODY RECORD

6574 S. Broadway, Suite 200
Littleton, CO 80121
(303) 730-2500

Project No. 200-10

Project Name Homco - Farmington

SAMPLERS: (Signature) J P Kingston

Site Type	Site Identification	Sample Date	Time Military Standard	Sample Depth (Feet)	Sample Tech.	Analysis Required: TE1+	TCLP Benzene	Total BTEX	Number of Containers	Remarks
soil		11/15/91	0815	—		X	X		3	STANDARD
			0915	—		X	X		3	TURNAROUND
			1045	5'		X	X		3	
			1330	6'		X		X	3	RUSH
			1445	12'		X	X		3	

Please Run All Samples

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Recieved for Laboratory by: (Signature)	Date/Time		
Relinquished by: (Signature) J P Kingston	Date/Time 11/15/91 1630	Recieved for Laboratory by: (Signature) B. Gomez	Date/Time 11/15/91		

SAMPLE SPLIT DATE _____

SAMPLE EXTRACTION DATE _____

SAMPLE ANALYSIS DATE _____

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

TCLP Benzene Data Report

Client Sample #	: 911115-0815		
Lab Sample #	: X45637	Client Project #	: 200-10
Date Sampled	: 11/15/91	Lab Project #	: 91-3955
Date Received	: 11/15/91	Dilution Factor	: 10.000
Date Extracted/Prepared	: 11/19/91	Method	: 8020
Date Analyzed	: 11/19/91	Matrix	:TCLP Extract
Percent Loss on Drying	: NA	Lab File No.	: PID8525
Methanol extract?	: No	Method Blank No.	: MB11/19/91

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	40

** This is Evergreen's estimated PQL value for a single xylene peak.

Surrogate Recoveries;
a,a,a-Trifluorotoluene 88%

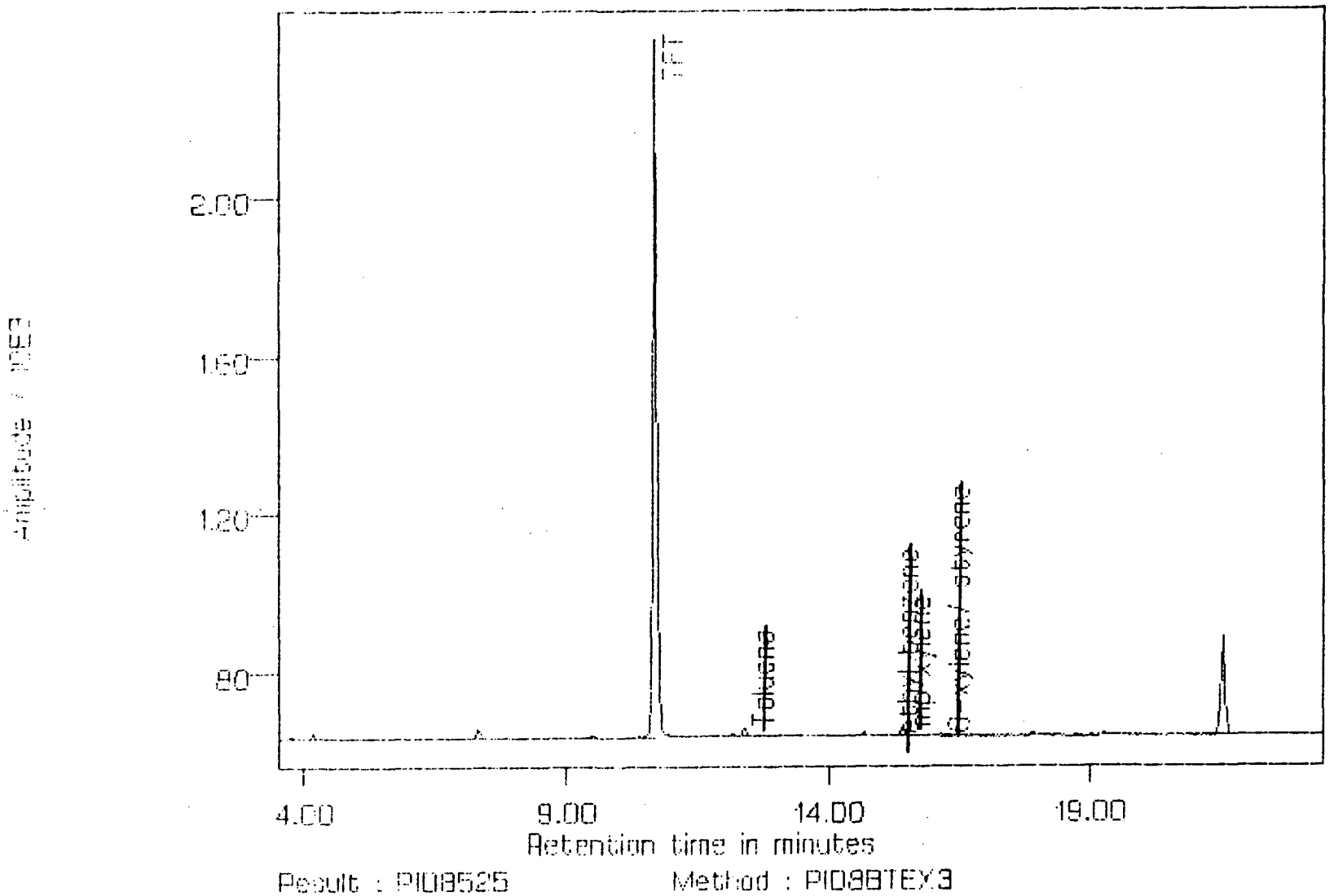
QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln

911115-0815

Sample : 5 91-3955,x45637,TCLP benzene,df=10 Injected : TUE NOV 19, 1991 12



Result : PID8525 Method : PID8BTEX3

11-19-91

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

TCLP Benzene Data Report

Client Sample #	: 911115-0945		
Lab Sample #	: X45638	Client Project #	: 200-10
Date Sampled	: 11/15/91	Lab Project #	: 91-3955
Date Received	: 11/15/91	Dilution Factor	: 10.000
Date Extracted/Prepared	: 11/19/91	Method	: 8020
Date Analyzed	: 11/19/91	Matrix	:TCLP Extract
Percent Loss on Drying	: NA	Lab File No.	: PID8526
Methanol extract?	: No	Method Blank No.	: MB11/19/91

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	40

** This is Evergreen's estimated PQL value for a single xylene peak.

Surrogate Recoveries;
a,a,a-Trifluorotoluene 87%

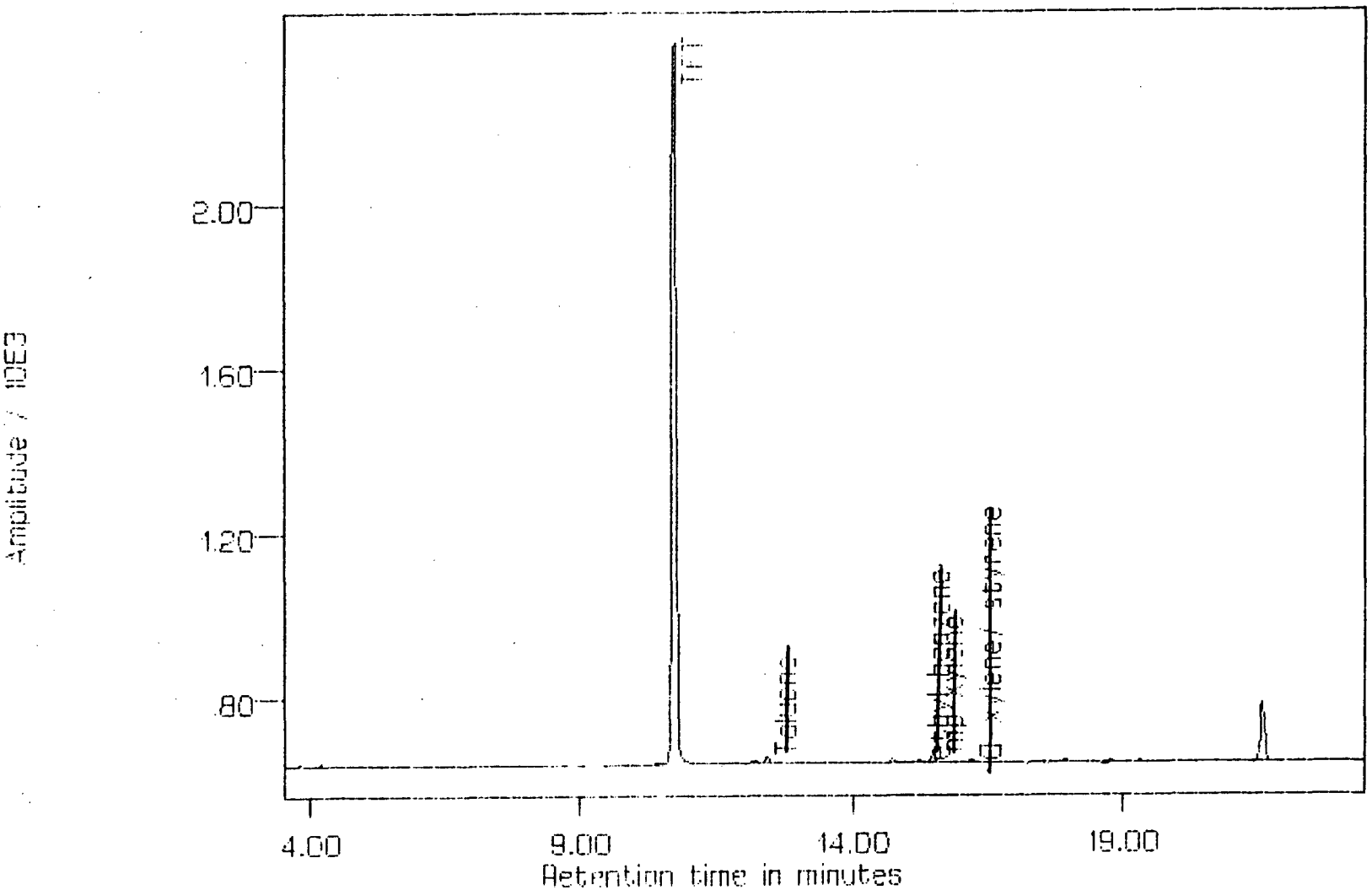
QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln

911115-0945

Sample : B 91-3955,x45638,TCLP benzene,df=10 Injected : TUE NOV 19, 1991 12:



Result : PID8526 Method : PID8BTEX3

11-19-91

mjm

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

TCLP Benzene Data Report

Client Sample #	: 911115-1045		
Lab Sample #	: X45639	Client Project #	: 200-10
Date Sampled	: 11/15/91	Lab Project #	: 91-3955
Date Received	: 11/15/91	Dilution Factor	: 10.000
Date Extracted/Prepared	: 11/19/91	Method	: 8020
Date Analyzed	: 11/19/91	Matrix	:TCLP Extract
Percent Loss on Drying	: NA	Lab File No.	: PID8527
Methanol extract?	: No	Method Blank No.	: MB11/19/91

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	40

** This is Evergreen's estimated PQL value for a single xylene peak.

Surrogate Recoveries;
a,a,a-Trifluorotoluene 87%

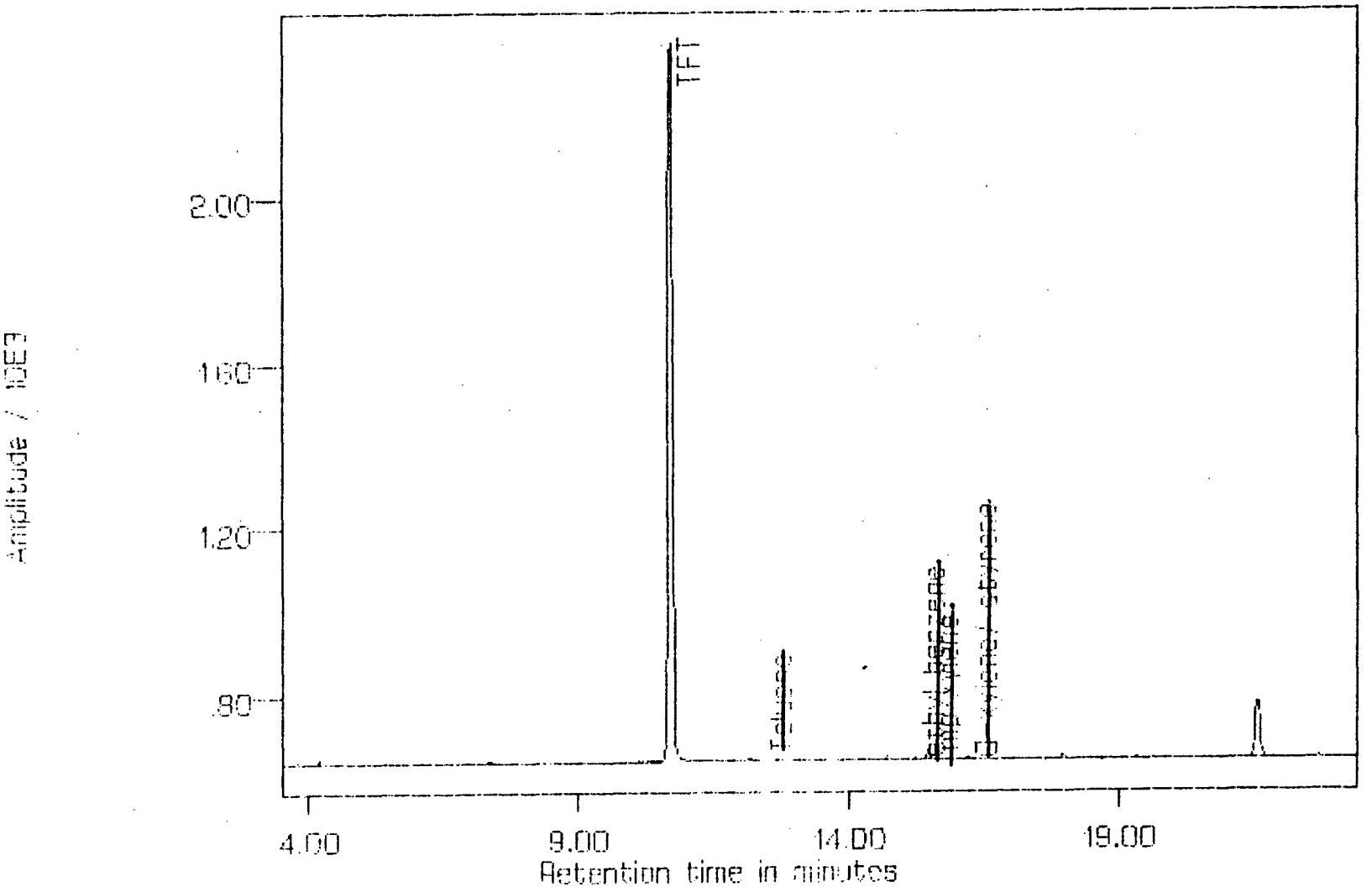
QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln

911115-1045

Sample : 7 91-3955,x45639,TCLP benzene,df=10 Injected : TUE NOV 19, 1991 1:



Result : PID8527 Method : PID8BTEX3

11-19-91

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

TCLP Benzene Data Report

Client Sample #	: 911115-1445		
Lab Sample #	: X45641	Client Project #	: 200-10
Date Sampled	: 11/15/91	Lab Project #	: 91-3955
Date Received	: 11/15/91	Dilution Factor	: 10.000
Date Extracted/Prepared	: 11/19/91	Method	: 8020
Date Analyzed	: 11/19/91	Matrix	:TCLP Extract
Percent Loss on Drying	: NA	Lab File No.	: PID8528
Methanol extract?	: No	Method Blank No.	: MB11/19/91

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	40

** This is Evergreen's estimated PQL value for a single xylene peak.

Surrogate Recoveries;
a,a,a-Trifluorotoluene 84%

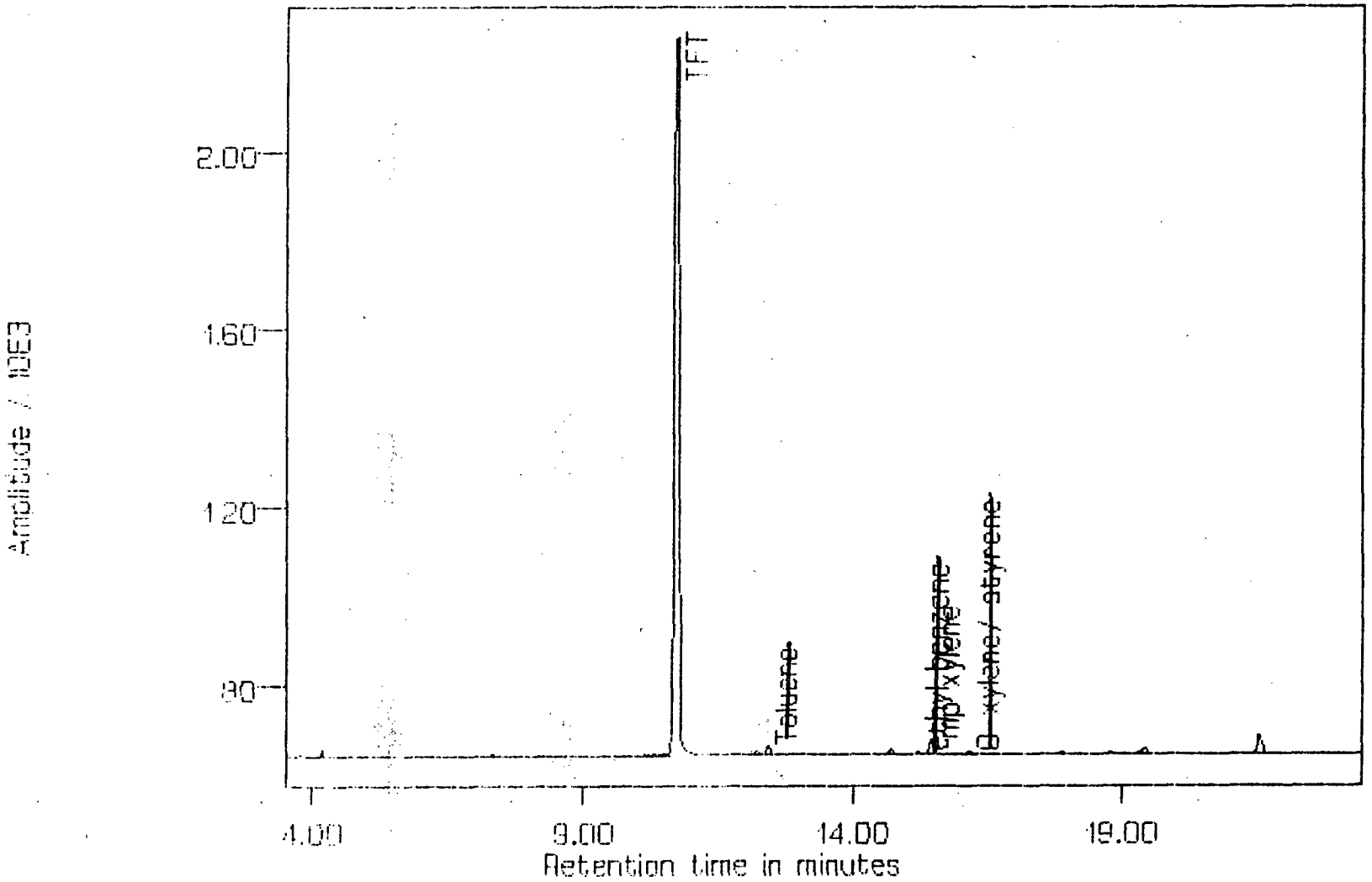
QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln

911115-1445

Sample : 8 91-3955,x45641,TCLP benzene,df=10 Injected : TUE NOV 19, 1991 2:



Result : PID8528 Method : PID8BTEX3

11-19-91

MJM

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

TCLP Benzene Data Report

Client Sample #	: NA		
Lab Sample #	: TCLP BLANK	Client Project #	: 200-10
Date Sampled	: 11/15/91	Lab Project #	: 91-3955
Date Received	: 11/15/91	Dilution Factor	: 10.000
Date Extracted/Prepared	: 11/19/91	Method	: 8020
Date Analyzed	: 11/19/91	Matrix	:TCLP Extract
Percent Loss on Drying	: NA	Lab File No.	: PID8524
Methanol extract?	: No	Method Blank No.	: MB11/19/91

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	40

** This is Evergreen's estimated PQL value for a single xylene peak.

Surrogate Recoveries;
a,a,a-Trifluorotoluene 88%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: D. Blaser

Quality Assurance Officer

forms\btex.pln

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021
TCLP Benzene Data Report
Method Blank Report

Method Blank Number	: MB11/19/91	Client Project No.	: 200-10
Date Extracted/Prepared	: 11/19/91	Lab Project No.	: 91-3955
Date Analyzed	: 11/19/91	Dilution Factor	: 1.000
		Method	: 8020
		Matrix	: Water
		Lab File No.	: PID8522

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	4

** This is Evergreen's estimated PQL value for a single xylene peak.

Surrogate Recoveries;
a,a,a-Trifluorotoluene 96%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln

EVERGREEN ANALYTICAL, INC.
4036 Youngfield, Wheat Ridge, CO 80033

TOTAL EXTRACTABLE HYDROCARBONS (TEH)

Date Sampled	: 11/15/91	Client Project No.	: 200-10
Date Received	: 11/15/91	Lab Project No.	: 91-3955
Date Prepared	: 11/18/91	Matrix	: Soil
Date Analyzed	: 11/18,19/91	Method Number	: 3500/M8015

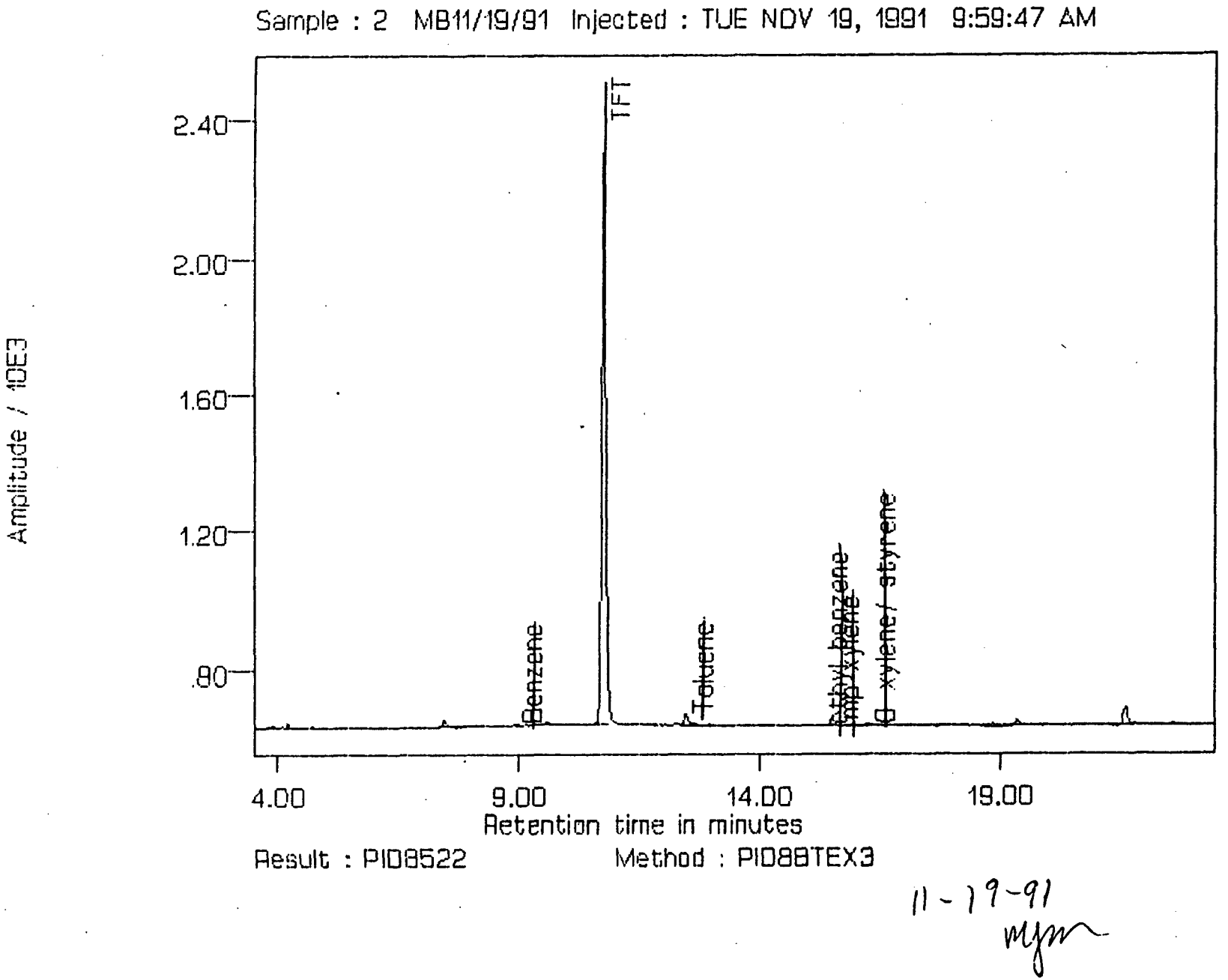
Evergreen Sample #	Client Sample #	Sample Matrix	TEH* mg/Kg	MDL mg/Kg
X45637	911115 0815	Soil	U	10
X45638	911115 0945	Soil	75	10
X45639	911115 1045	Soil	U	10
X45640	911115 1330	Soil	8,300	1000
X45641	911115 1445	Soil	U	10
X45641-DUP	911115 1445	Soil	U	10

QUALIFIERS
U=TEH analyzed for but not detected.
B=TEH found in the blank as well as the sample (blank data should be compared).
MDL=Instrument detection level for this method.

*=Material heavier than diesel based on a one-point calibration.

Approved

QAO


Sample : 2 MB11/19/91 Injected : TUE NOV 19, 1991 9:59:47 AM
Amplitude / 10E3
2.40
2.00
1.60
1.20
.80
TFT
Benzene
Toluene
Ethyl benzene
m,p-xylene
o-xylene/ styrene
4.00
9.00
14.00
19.00
Retention time in minutes
Result : PID8522
Method : PID88TEX3

11-19-91
mjm

EVERGREEN ANALYTICAL, INC.
4036 Youngfield, Wheat Ridge, CO 80033

TOTAL EXTRACTABLE HYDROCARBONS (TEH)

Date Sampled	: 11/15/91	Client Project No.	: 200-10
Date Received	: 11/15/91	Lab Project No.	: 91-3955
Date Prepared	: 11/18/91	Matrix	: Soil
Date Analyzed	: 11/18,19/91	Method Number	: 3500/M8015

Evergreen Sample #	Client Sample #	Sample Matrix	TEH* mg/Kg	MDL mg/Kg
X45637	911115 0815	Soil	U	10
X45638	911115 0945	Soil	75	10
X45639	911115 1045	Soil	U	10
X45640	911115 1330	Soil	8,300	1000
X45641	911115 1445	Soil	U	10
X45641-DUP	911115 1445	Soil	U	10

QUALIFIERS
U=TEH analyzed for but not detected.
B=TEH found in the blank as well as the sample (blank data should be compared).
MDL=Instrument detection level for this method.

*=Material heavier than diesel based on a one-point calibration.

Approved

QAO

Evergreen Analytical, Inc.

4036 Youngfield Street
Wheat Ridge, CO 80033-~~3865~~
(303) 425-6021
FAX (303) 425-6854

November 20, 1991

Mr. John Kaszuba
Buys & Associates
6574 S. Braodway, #200
Littleton, CO 80121

Data Report : 91-3955
Client Project : 200-10

Dear Mr. Kaszuba:

Enclosed are the analytical results for the samples shown in the Sample Log Sheet. The invoice for this work will be mailed to your Accounts Payable department shortly. If you have any questions concerning the reported information, please contact Carl Smits or me.

Please Note: Samples marked for return on the Sample Log Sheet are considered either hazardous or unsuitable for municipal disposal, or were placed on hold at your request. The former samples will be returned to you immediately for proper storage or disposal. Samples placed on hold will be returned one (1) month from the date of receipt. Samples not considered hazardous will be disposed of at that time.

Thank you for using the services of Evergreen Analytical.

Sincerely,

John H. Barney
President

ab 11-20-91

Enclosed is the signed original for TEH analyses. We regret that the report sent originally was not properly signed. We hope that this has not caused any undue inconvenience. Sincerely, Mary Meinel Q.A.O.

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

BTEX Data Report

Client Sample #	: 911115-1330		
Lab Sample #	: X45640	Client Project #	: 200-10
Date Sampled	: 11/15/91	Lab Project #	: 91-3955
Date Received	: 11/15/91	Dilution Factor	: 5.000
Date Extracted/Prepared	: 11/19/91	Method	: 8020
Date Analyzed	: 11/19/91	Matrix	: Soil
Percent Loss on Drying	: NA	Lab File No.	: PID5544
Methanol extract?	: No	Method Blank No.	: MB11/19/91

Compound Name	Cas Number	Concentration ug/Kg		PQL* ug/Kg
Benzene	71-43-2		U	20
Toluene	108-88-3		U	20
Ethyl Benzene	100-41-4	3	J	20
Total Xylenes	1330-20-7	14	J	20**

** This is Evergreen's estimated PQL value for a single xylene peak.

Surrogate Recoveries;
a,a,a-Trifluorotoluene 92%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

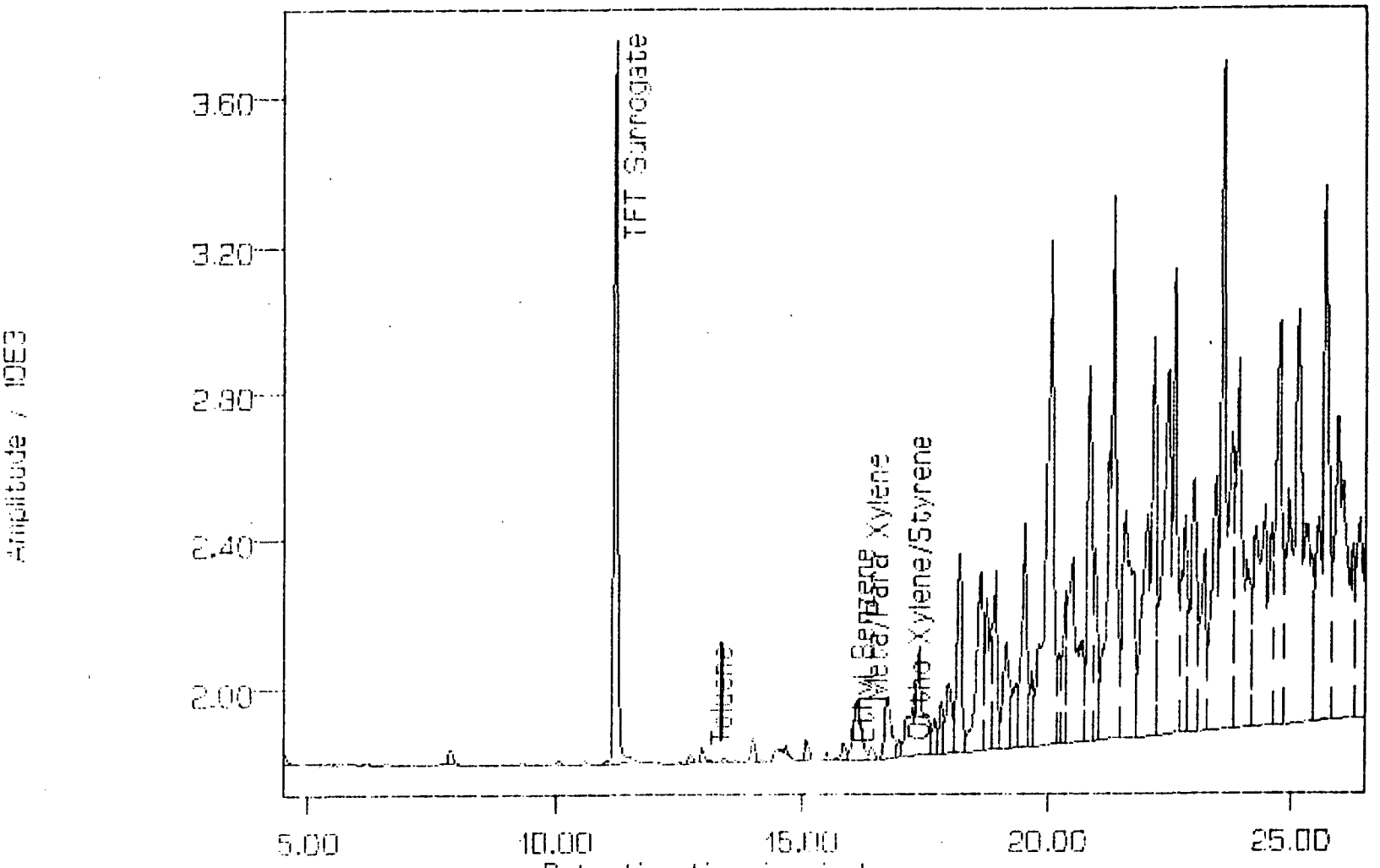
Approved: _____

_____
Quality Assurance Officer

forms\btex.pln

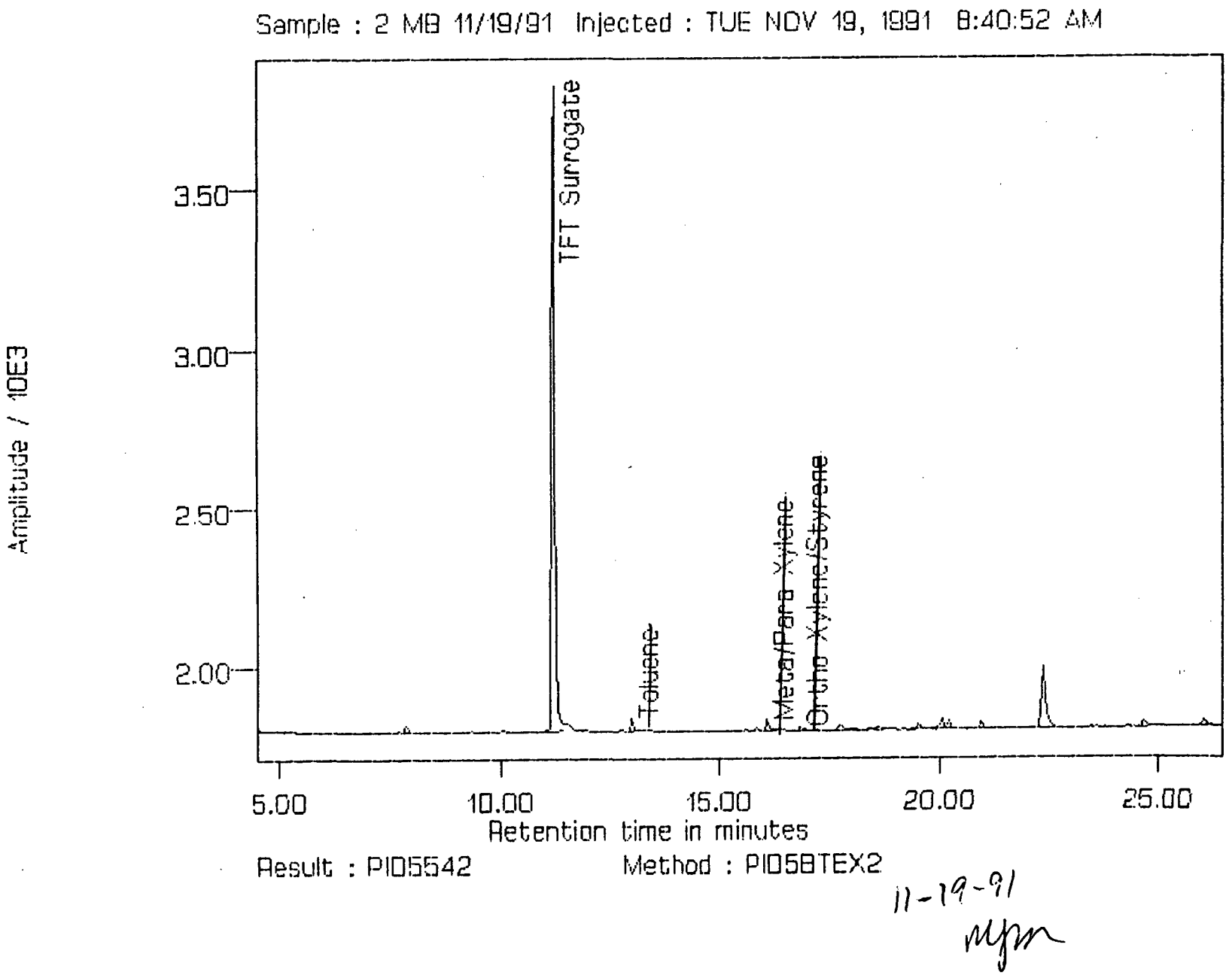
911115 - 1330

Sample : 4 91-3955,x45640,s,df=5 Injected : TUE NOV 19, 1991 10:00:28 AM



Result : PID5544 Method : PID5BTEX2

11-19-91


Sample : 2 MB 11/19/91 Injected : TUE NOV 19, 1991 8:40:52 AM
Amplitude / 10E3
3.50
3.00
2.50
2.00
TFT Surrogate
Toluene
Meta/Para Xylene
Ortho Xylene/Styrene
5.00
10.00
15.00
20.00
25.00
Retention time in minutes
Result : PID5542
Method : PID5BTEX2

11-19-91
mpm

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021
BTEX Data Report
Method Blank Report

Method Blank Number	: MB11/19/91	Client Project No.	: 200-10
Date Extracted/Prepared	: 11/19/91	Lab Project No.	: 91-3955
Date Analyzed	: 11/19/91	Dilution Factor	: 1.000
		Method	: 8020
		Matrix	: Water
		Lab File No.	: PID5542

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	4
Toluene	108-88-3		U	4
Ethyl Benzene	100-41-4		U	4
Total Xylenes	1330-20-7		U	4**

** This is Evergreen's estimated PQL value for a single xylene peak.

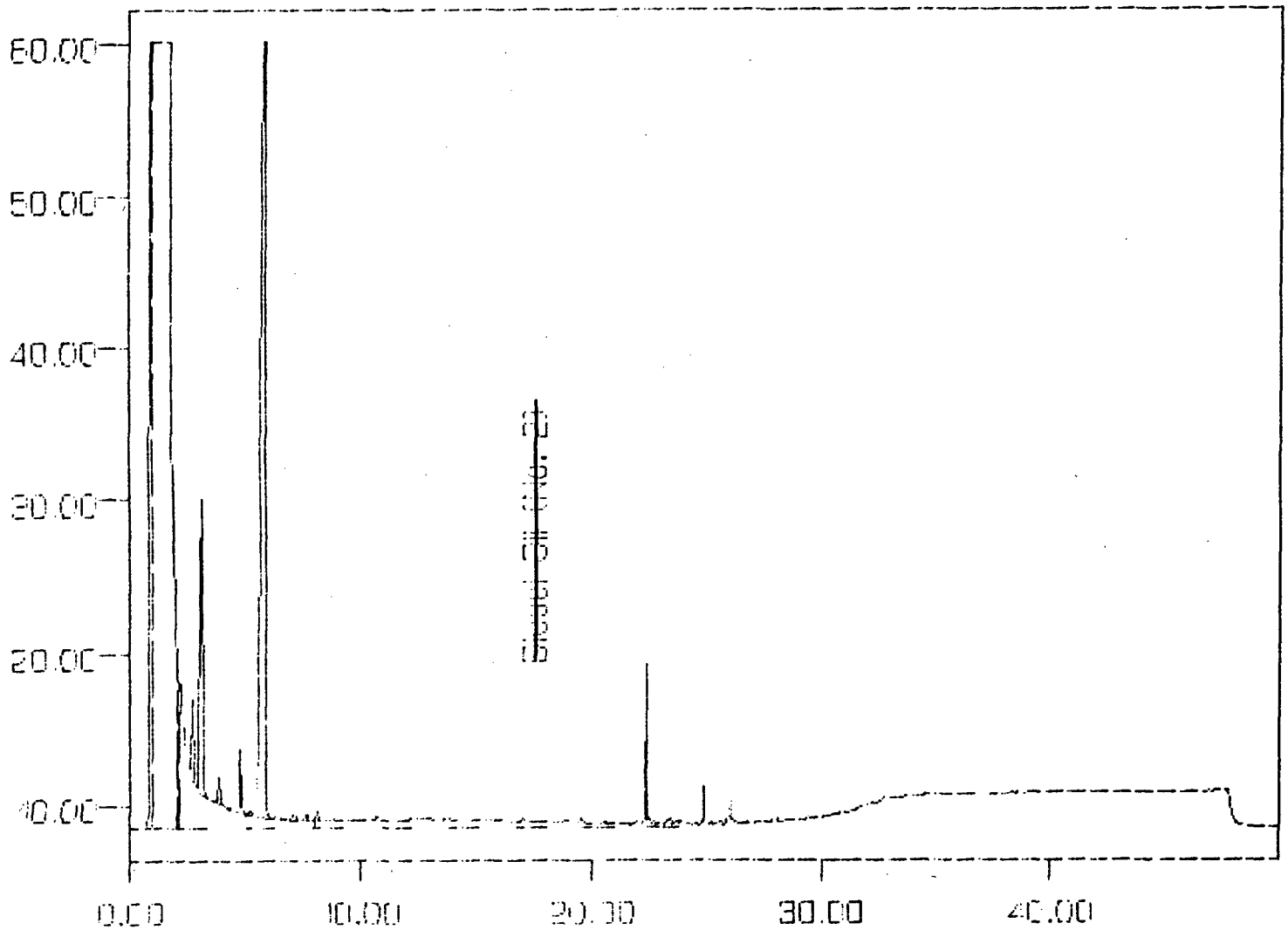
Surrogate Recoveries;
a,a,a-Trifluorotoluene 96%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

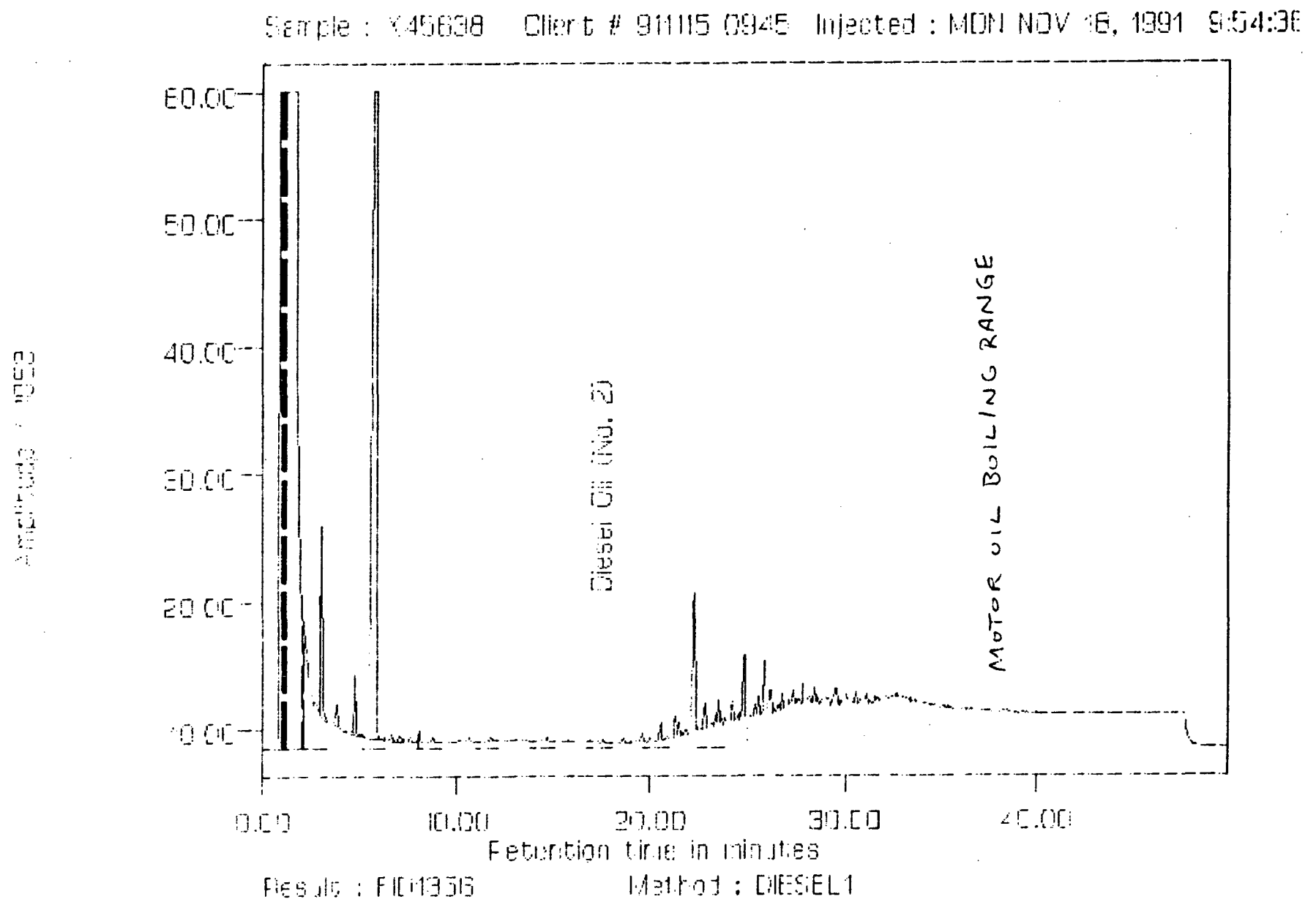
forms\btex.pln

Sample : X456837 Client # 91115 0815 Injected : MON NOV 18, 1991 8:46:14

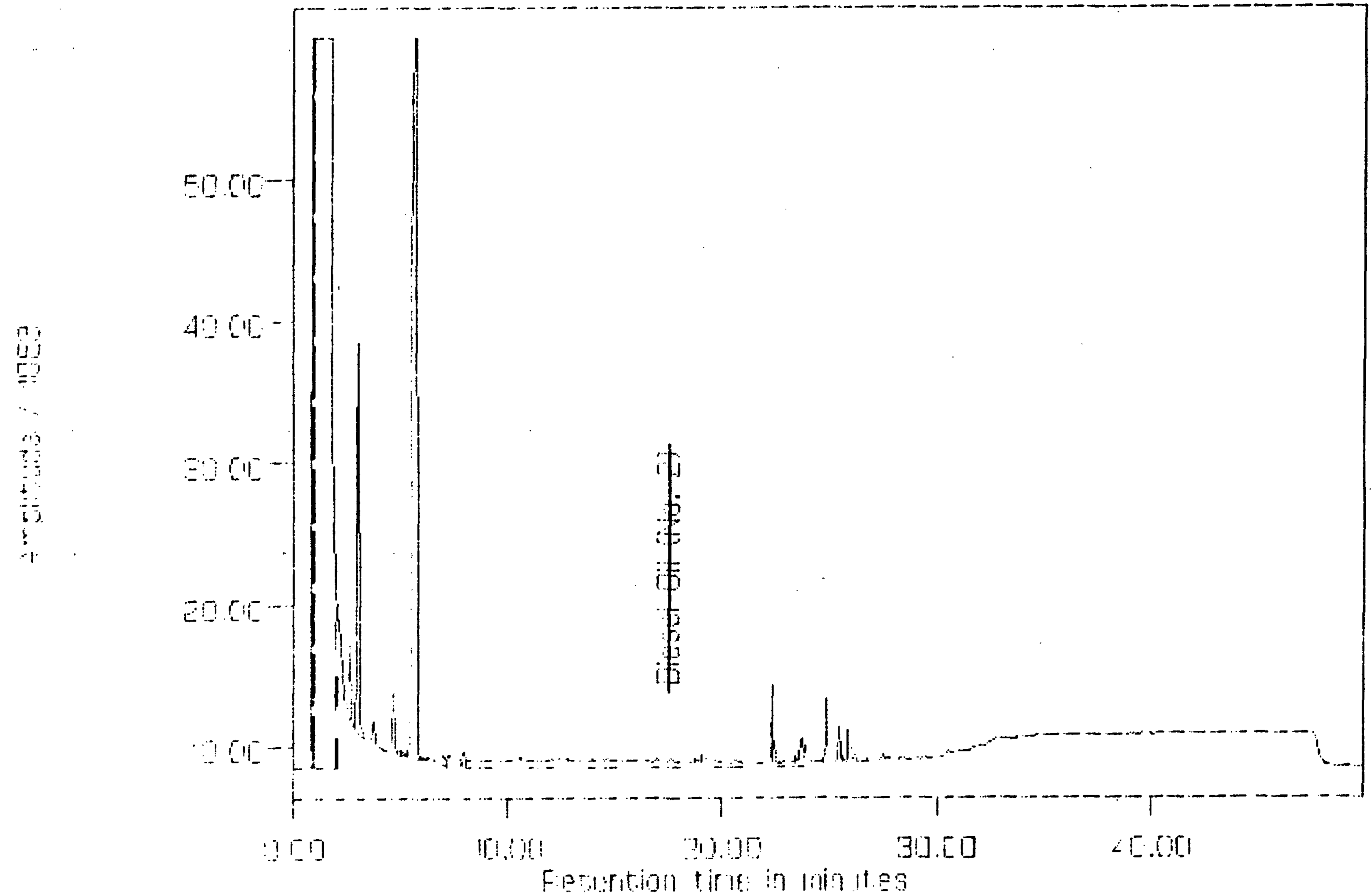


Result : FID1335 Method : DIESEL1

11-19-91

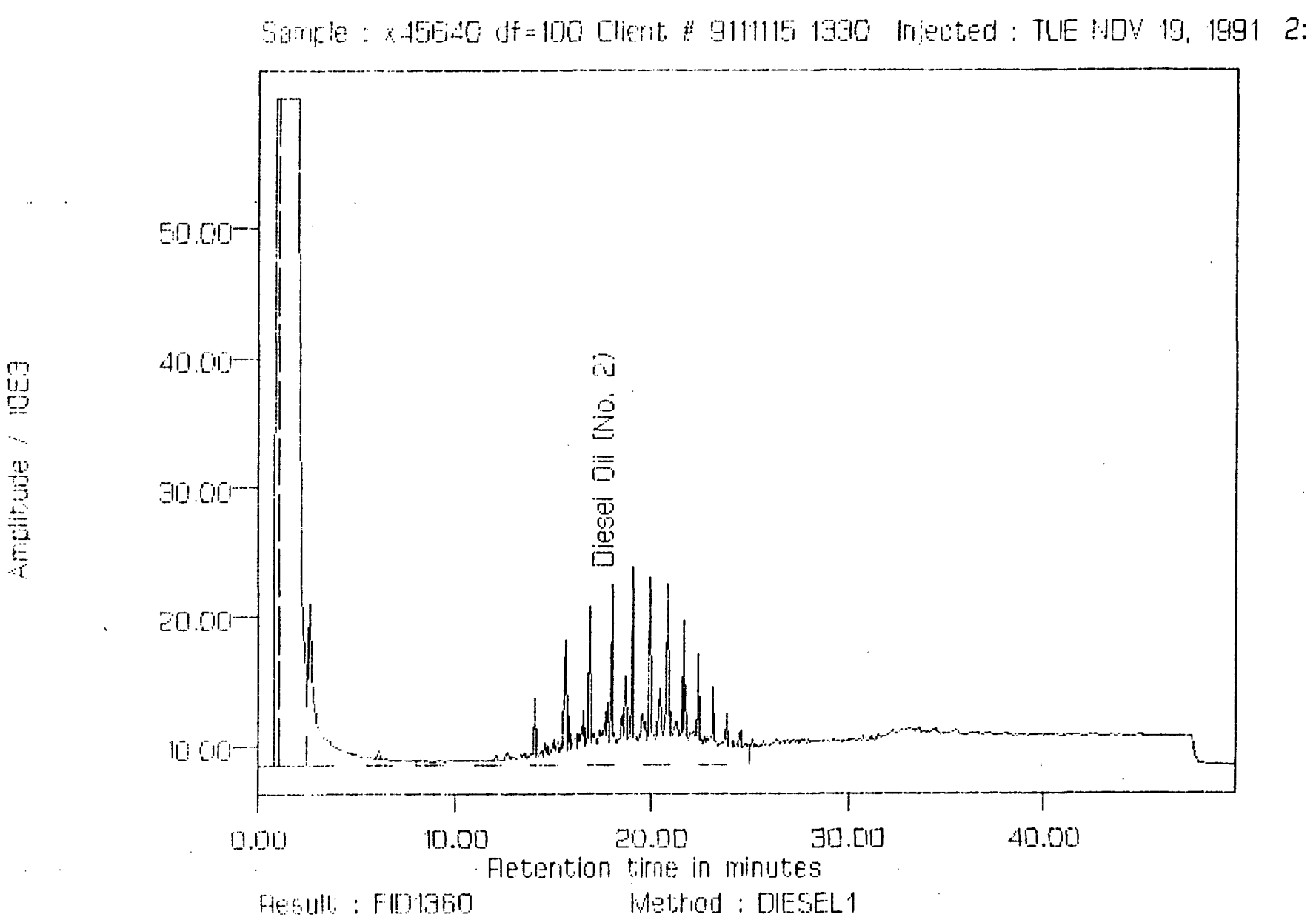

Sample : Y456638 Client # 911115 0945 Injected : MON NOV 16, 1991 9:54:38
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Diesel Oil (No. 2)
MOTOR OIL BOILING RANGE
0.00
10.00
20.00
30.00
40.00
Retention time in minutes
Result : FID13516
Method : DIESEL1

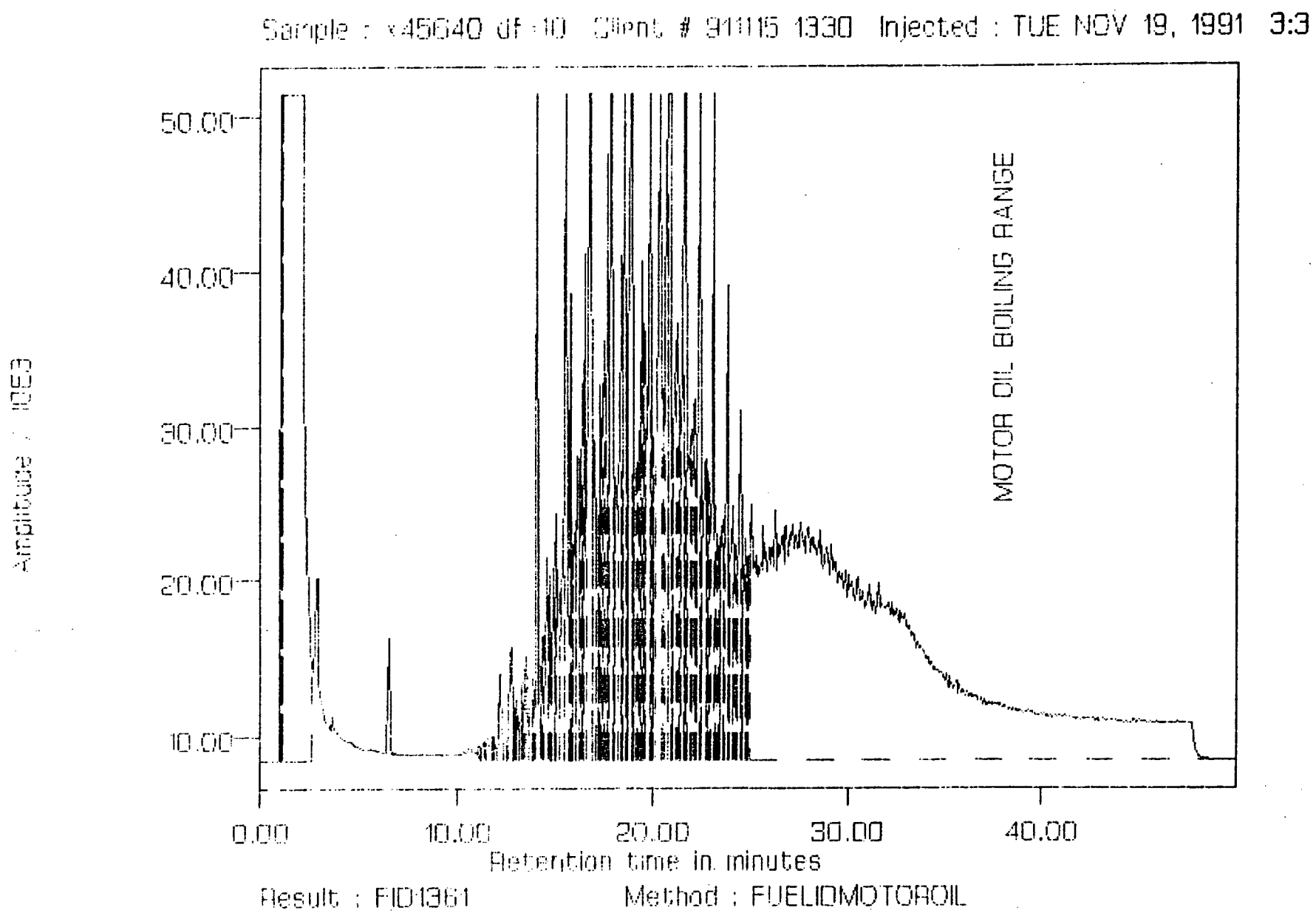
Sample : K45639 Client # 911-15 10 45 Injected MON NOV 18, 1991 11:01:46



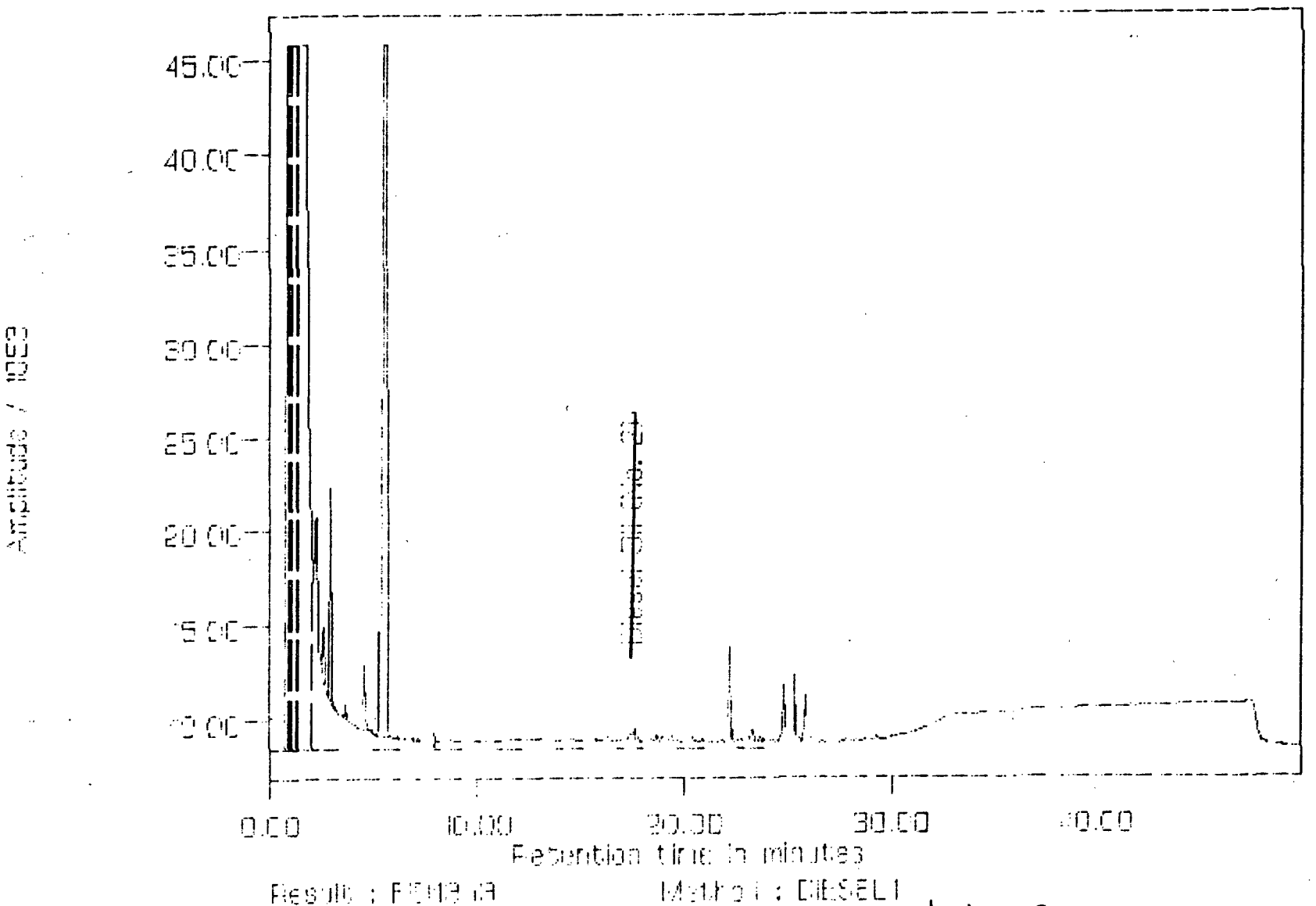
Result : FID1357 Method : DIESEL1

11-19-91
MJM


Sample : x45640 df=100 Client # 9111115 1330 Injected : TUE NOV 19, 1991 2:
Amplitude / 1063
50.00
40.00
30.00
20.00
10.00
Diesel Oil (No. 2)
0.00
10.00
20.00
30.00
40.00
Retention time in minutes
Result : FID1360
Method : DIESEL1


Sample : 45640 df=10 Client # 911115 1330 Injected : TUE NOV 19, 1991 3:3
Amplitude - 1953
50.00
40.00
30.00
20.00
10.00
MOTOR OIL BOILING RANGE
0.00
10.00
20.00
30.00
40.00
Retention time in minutes
Result : FID1361
Method : FUELIDMOTOROIL

Sample : X4F1641 Client # 911115 1445 Injected : MON NOV 18, 1991 6:26:51

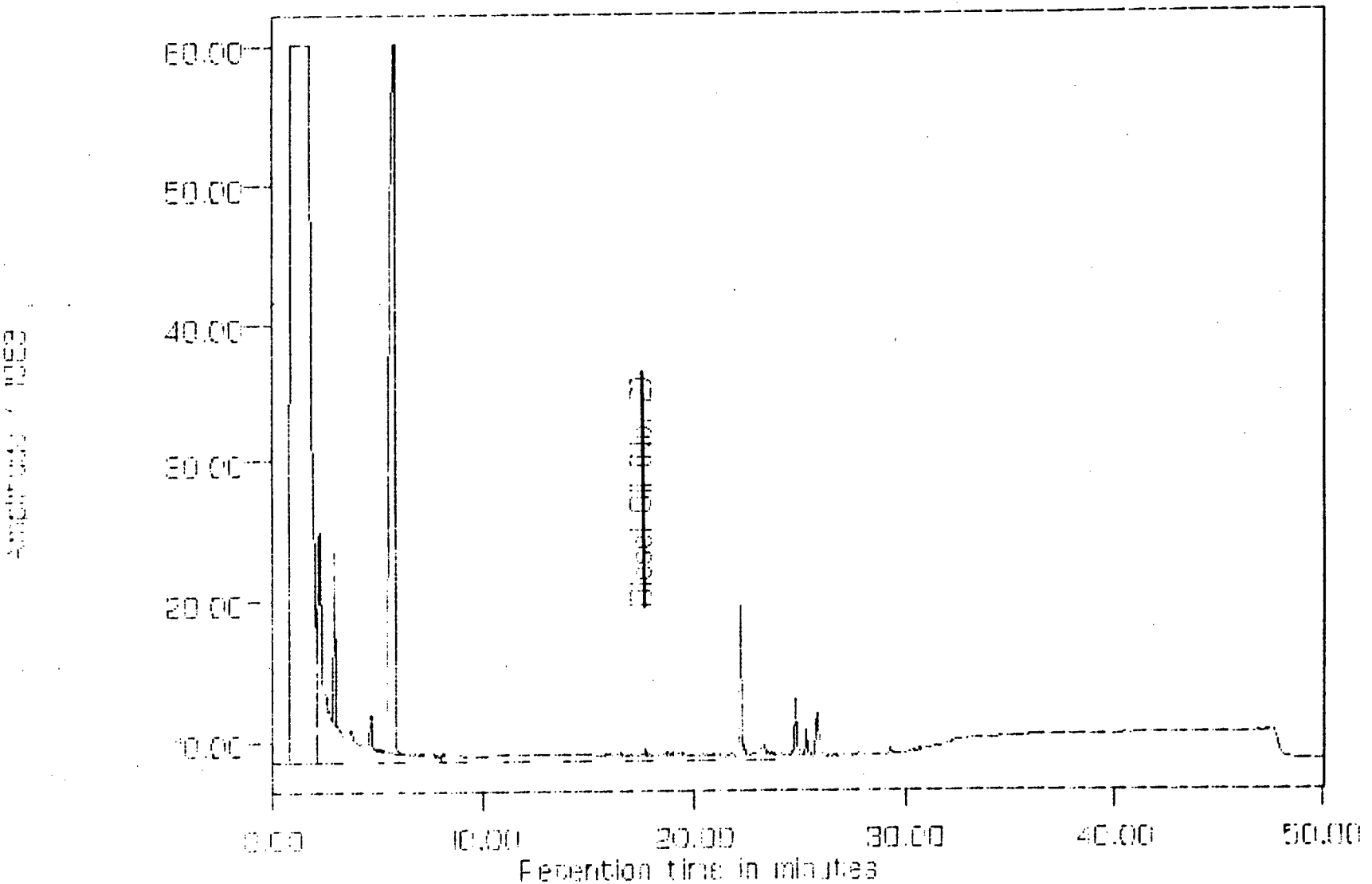


Result : F1641.RA Method : DIESEL1

11-19-91

mjm

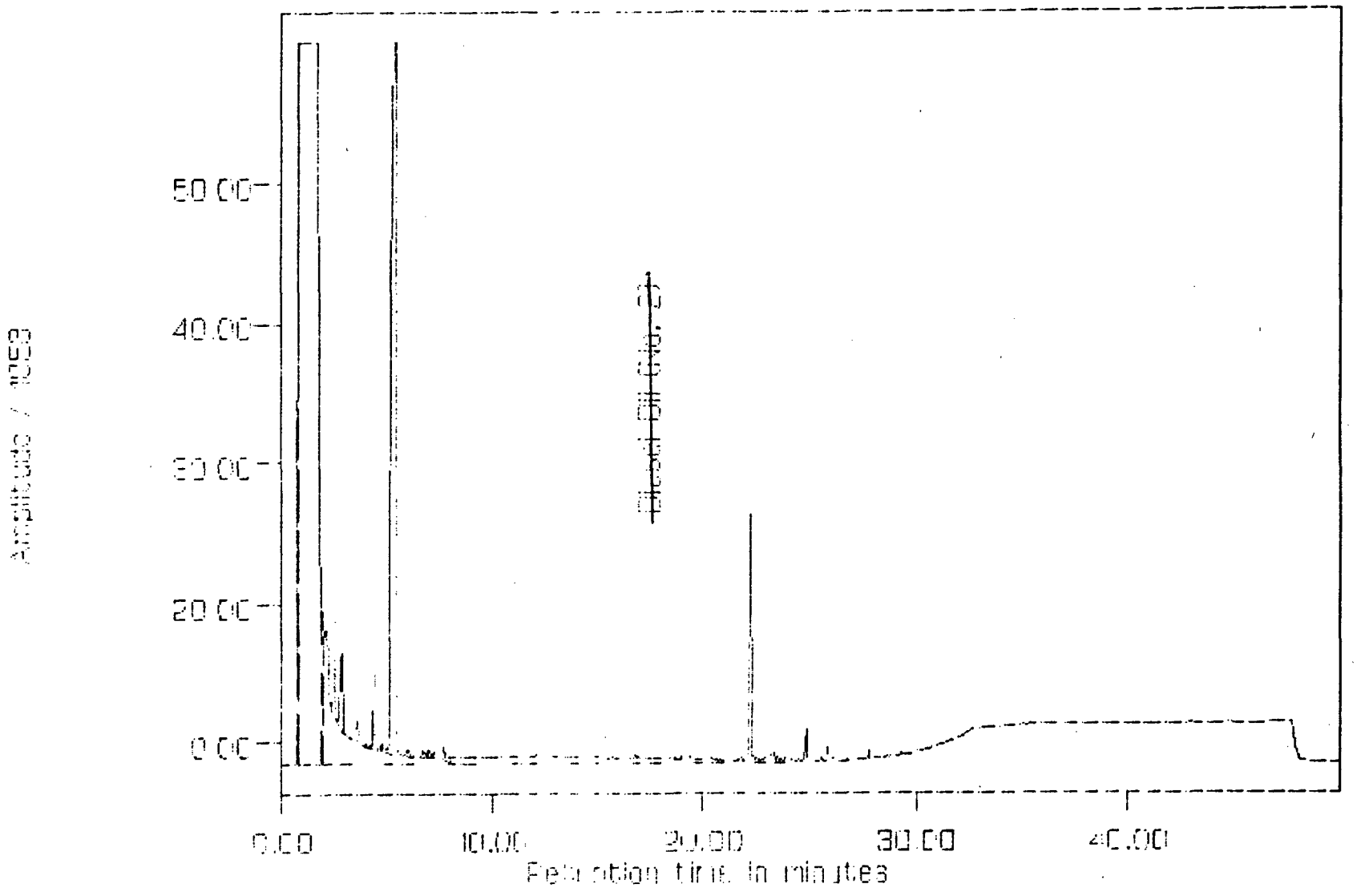
Sample : X455541-DUP Client # 911115 1445 Injected : MON NOV 18, 1991 7:3



Result : FID13S1 Method : DIESEL1

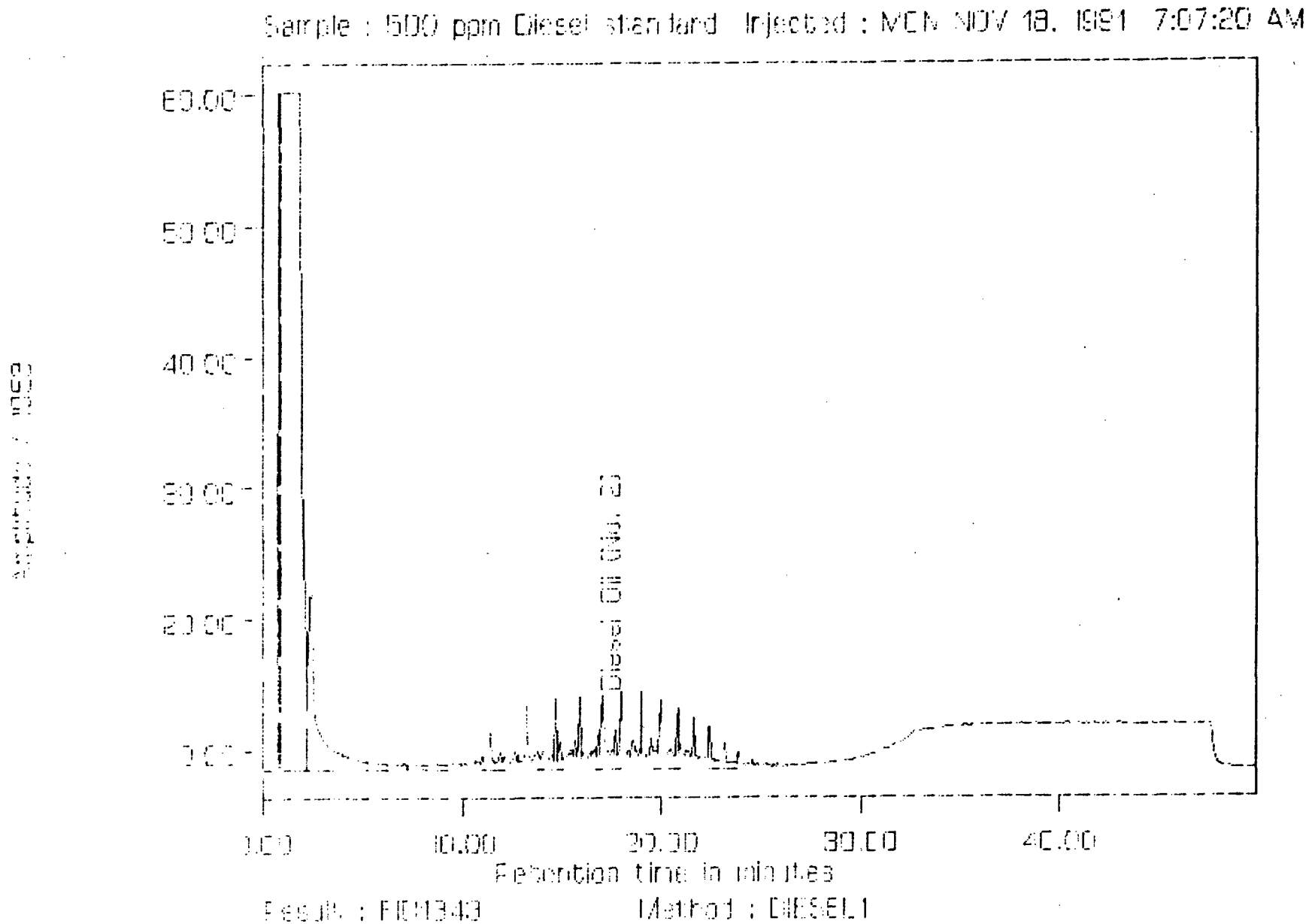
11-19-91

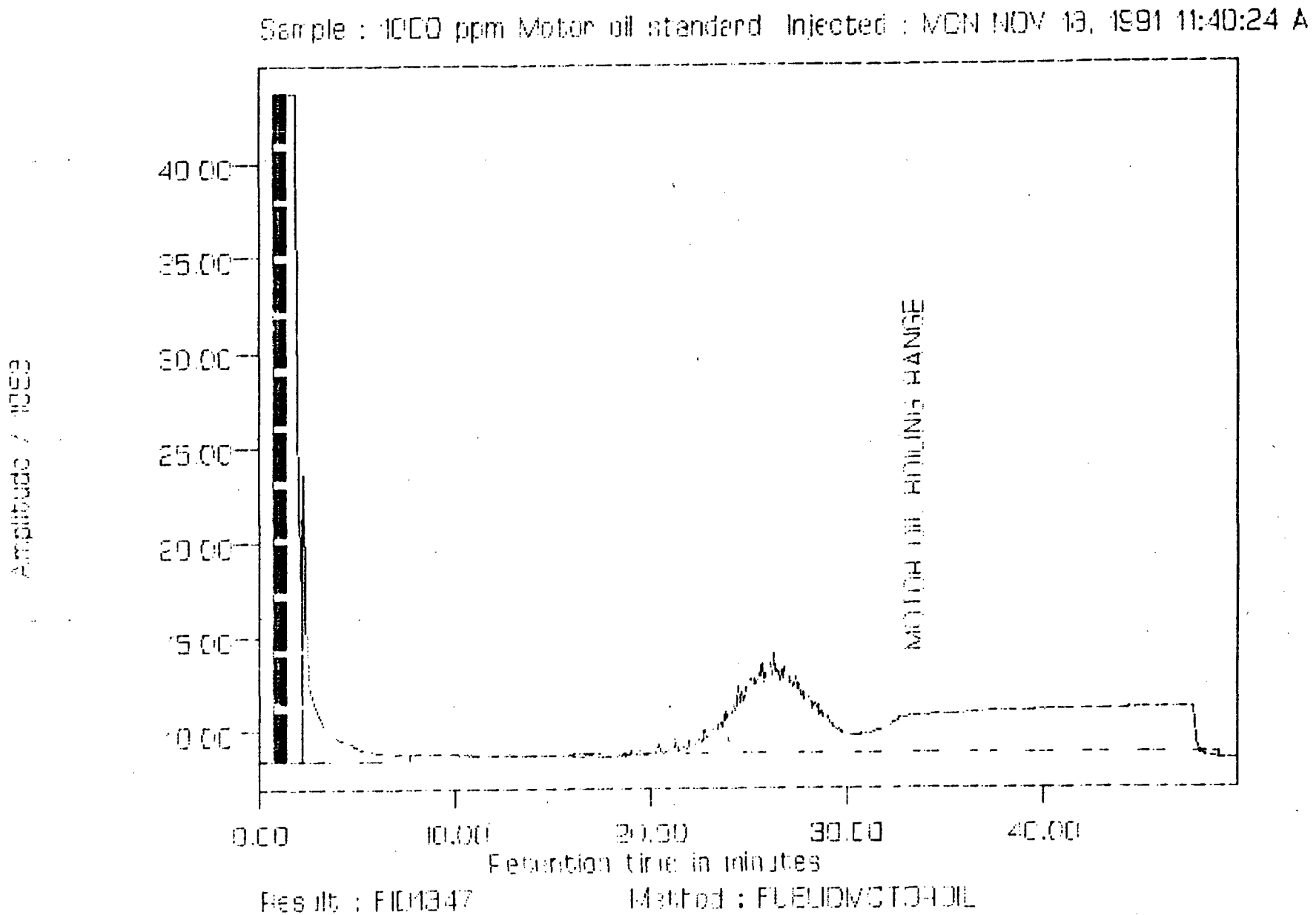
Sample : SB111891 Soil Method Blank Injected : MON NOV 18, 1991 5:19:35 PM



Result : FID1B52 Method : DIESEL1

11-19-91


Sample : 5000 ppm Diesel standard Injected : MON NOV 18, 1991 7:07:20 AM
60.00
50.00
40.00
30.00
20.00
10.00
Diesel Oil Std. 10
10.00
20.00
30.00
40.00
Retention time in minutes
Method : DIESEL1


Sample : 1000 ppm Motor oil standard Injected : MON NOV 18, 1991 11:40:24 A
40.00
35.00
30.00
25.00
20.00
15.00
10.00
0.00
10.00
20.00
30.00
40.00
Retention time in minutes
Result : FID1347
Method : FLUIDMOTOROIL

Evergreen Analytical, Inc.

4036 Youngfield Street
Wheat Ridge, CO 80033-3862
(303) 425-6021
FAX (303) 425-6854

December 9, 1991

Mr. John Kaszuba
Buys & Associates
6574 South Broadway, #200
Littleton, CO 80121

Data Report : 91-4040
Client Project : 200-10

Dear Mr. Kaszuba:

Enclosed are the analytical results for the samples shown in the Sample Log Sheet. The invoice for this work will be mailed to your Accounts Payable department shortly. If you have any questions concerning the reported information, please contact Carl Smits or me.

Please Note: Samples marked for return on the Sample Log Sheet are considered either hazardous or unsuitable for municipal disposal or were placed on hold at your request. The former samples will be returned to you immediately for proper storage or disposal. Samples placed on hold will be returned one (1) month from the date of receipt. Samples not considered hazardous will be disposed of at that time.

Thank you for using the services of Evergreen Analytical.

Sincerely,

John H. Barney
President

ml

EVERGREEN ANALYTICAL, INC.
4036 Youngfield, Wheat Ridge, CO 80033
(303) 425-6021

Date Due TEH=12/2/91
TCLP=12/9/91

Holding Time 12/4-5/91

E.A. Cooler # N/A

Rush _____

SAMPLE LOG SHEET

Client Buys & Associates
Address 6574 S. Broadway, #200
Littleton, CO 80121
Contact John Kaszuba
Sampled 11/20-21/91 Received 11/22/91 9:30
Client Project # 200-10
Client P.O. _____
Phone # 730-2500
Fax Number 730-2522 Fax Results? Y

Project # 91-4040
Airbill # 2865857886
Custody Seal Intact? Y
COC Present? Y
Sample Tags Present? Y
Sample Tags Listed? Y
Sample(S) Sealed? Y
Custodian/Date B. Gomez 11/22/91
Shipping Charges CR $1.97

Special Instructions _____

Lab ID #	Client ID#	Analysis	Mtx	Btl	Loc	File #/ Date	R*
X46033A/B	9111201400	TCLP BENZENE	S	2wm	2		
X46034A	9111211400	TEH-D 8015 mod.	"	"	1		
X46035A	9111211500	"	"	"	"		
X46033C	9111201400	"	"	"	"		

*Samples to be returned
Route to: ST3 MB2 JP__ KH__ GOX OFFICE X QAX JBX SRX S/M X ET X
Checked by: RH

BUYS & ASSOCIATES

CHAIN OF CUSTODY RECORD

6574 S. Broadway, Suite 200
Littleton, CO 80121
(303) 730-2500

Project No.	Project Name
200-10	Homco- Farmington

SAMPLERS: (Signature) J P Kaszuba

Sample ~~SITE~~ TYPE	SITE IDENTIFICATION	SAMPLE DATE	TIME MILITARY STANDARD	SAMPLE DEPTH (FEET)	SAMPLE TECH.	ANALYSIS REQUIRED: TEH	ANALYSIS REQUIRED: TCLP Benzene	NUMBER OF CONTAINERS	REMARKS
Soil	9111201400	11/20/91	1400	9'		X	X	3	Standard
Soil	911121 1400	11/21/91	1400	12'		X		1	Turnaround
Soil	911121 1500	11/21/91	1500	12'		X		1	↓

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Recieved for Laboratory by: (Signature)	Date/Time		
Relinquished by: (Signature)	Date/Time	Recieved for Laboratory by: (Signature)	Date/Time		
J P Kaszuba	11/21/91 1700	B Gomez	11/22/91	09:30	

SAMPLE SPLIT DATE _____

SAMPLE EXTRACTION DATE _____

SAMPLE ANALYSIS DATE _____

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

TCLP Benzene Data Report

Client Sample #	: 9111201400		
Lab Sample #	: X46033	Client Project #	: 200-10
Date Sampled	: 11/20/91	Lab Project #	: 91-4040
Date Received	: 11/22/91	Dilution Factor	: 10.000
Date Extracted/Prepared	: 11/24/91	Method	: 8020
Date Analyzed	: 11/25/91	Matrix	: TCLP Extract
Percent Loss on Drying	: NA	Lab File No.	: PID8659
Methanol extract?	: No	Method Blank No.	: MB112591

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	40

Surrogate Recoveries;
a,a,a-Trifluorotoluene 93%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

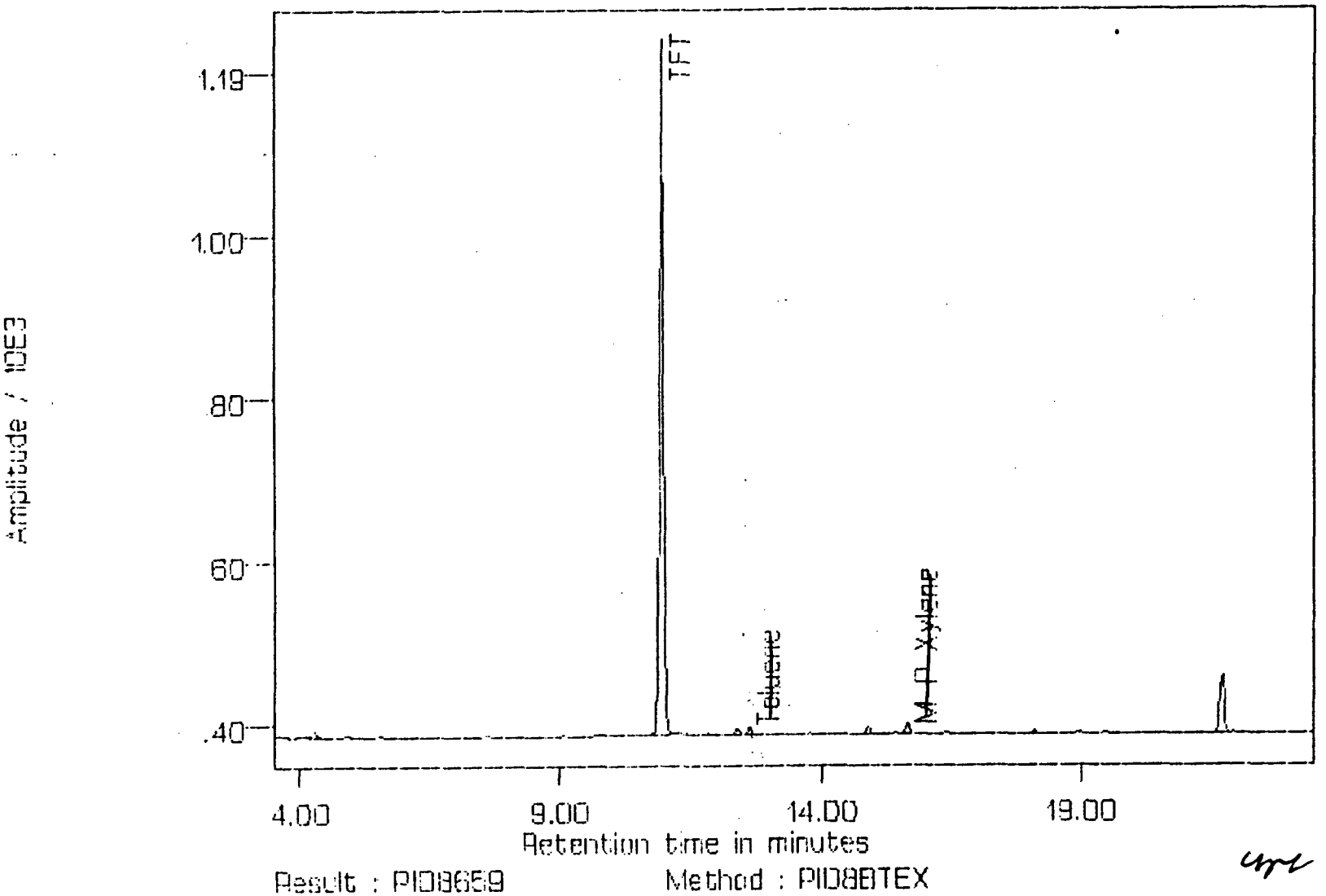
Approved: Don Sears

Quality Assurance Officer

forms\btex.pln

911120 1400

Sample : 9 91-4040,X46033,TCLP BENZENE,DF=10 Injected : MON NOV 25, 199



Result : PID86659 Method : PID88TEX

12/9/91

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

TCLP Benzene Data Report

Client Sample #	: N/A		
Lab Sample #	: TCLP BLANK	Client Project #	: 200-10
Date Sampled	: 11/20/91	Lab Project #	: 91-4040
Date Received	: 11/22/91	Dilution Factor	: 10.000
Date Extracted/Prepared	: 11/24/91	Method	: 8020
Date Analyzed	: 11/25/91	Matrix	: TCLP Extract
Percent Loss on Drying	: NA	Lab File No.	: PID8657
Methanol extract?	: No	Method Blank No.	: MB112591

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	40

Surrogate Recoveries;
a,a,a-Trifluorotoluene 107%

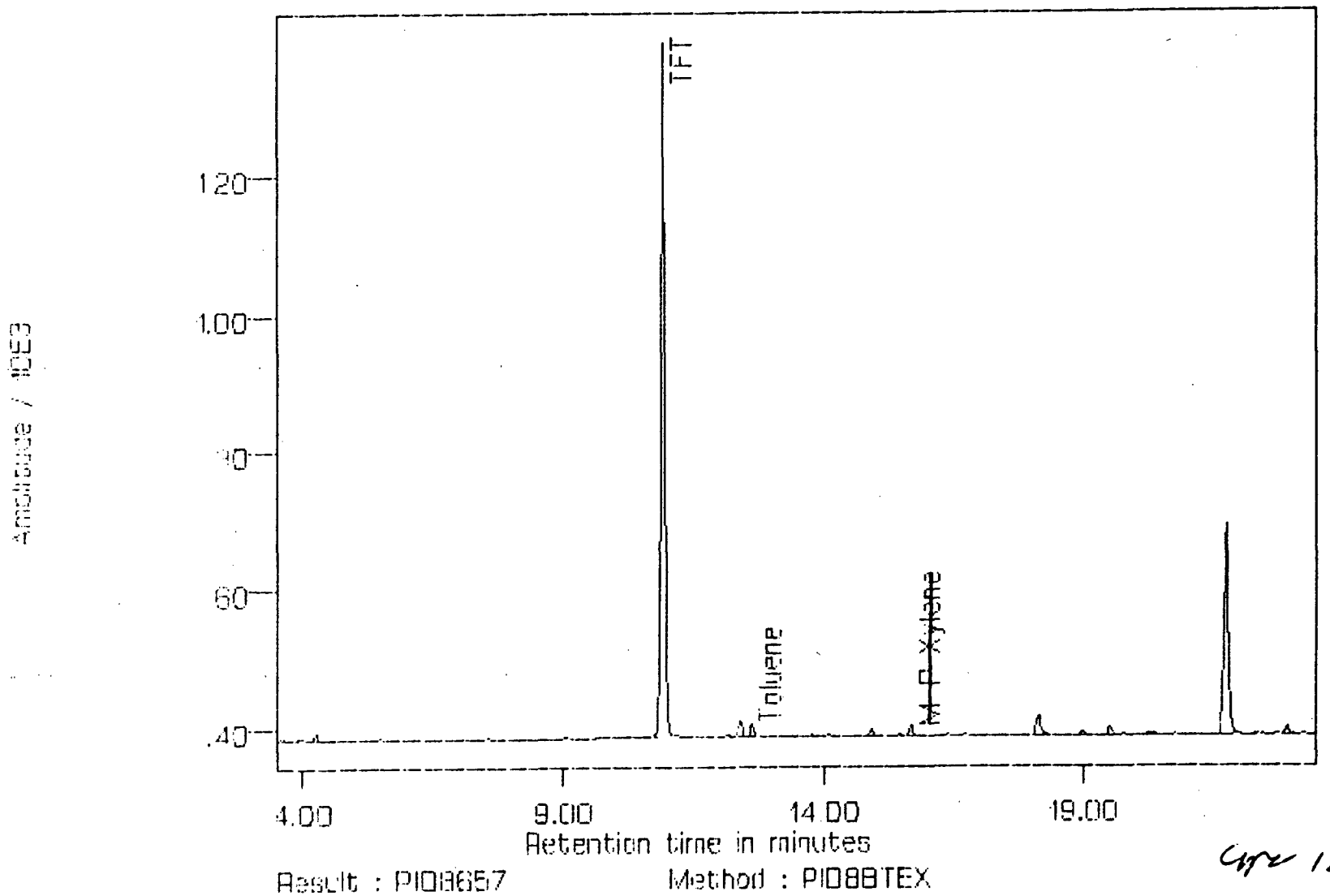
QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln

ff = 1c

Sample : 7 Blank TCLP benzene 11/24/91 Injected : MON NOV 25, 1991 1:36:18



Result : PID18657 Method : PID8BTEX

Cyrr 1/9/91

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021
TCLP Benzene Data Report
Method Blank Report

Method Blank Number	: MB112591	Client Project No.	: 200-10
Date Extracted/Prepared	: 11/25/91	Lab Project No.	: 91-4040
Date Analyzed	: 11/25/91	Dilution Factor	: 1.000
		Method	: 8020
		Matrix	: Water
		Lab File No.	: PID8652

Compound Name	Cas Number	Concentration ug/L		PQL* ug/L
Benzene	71-43-2		U	4

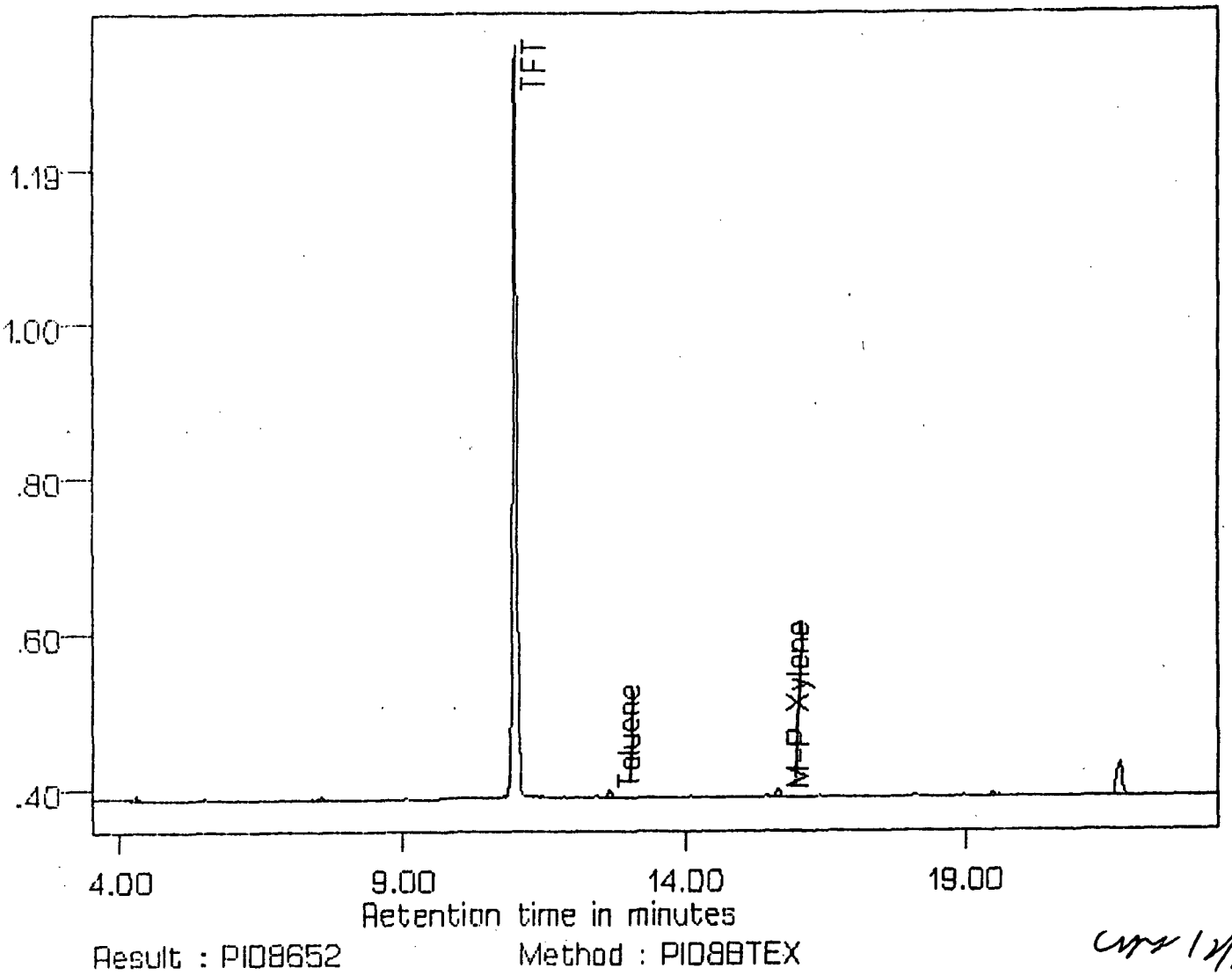
Surrogate Recoveries;
a,a,a-Trifluorotoluene 103%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data
* = The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
NA = Not applicable or not available.

Approved: _____ _____
Quality Assurance Officer

forms\btex.pln

Sample : 2 MB11/25/91 Injected : MON NOV 25, 1991 9:51:55 AM



Result : PI08652 Method : PI08BTEX

12/9/91

EVERGREEN ANALYTICAL, INC.
4036 Youngfield, Wheat Ridge, CO 80033

TOTAL EXTRACTABLE HYDROCARBONS (TEH)

Date Sampled	: 11/20,21/91	Client Project No.	: 200-10
Date Received	: 11/22/91	Lab Project No.	: 91-4040
Date Prepared	: 11/25/91	Matrix	: Soil
Date Analyzed	: 11/26/91	Method Number	: 3500/M8015

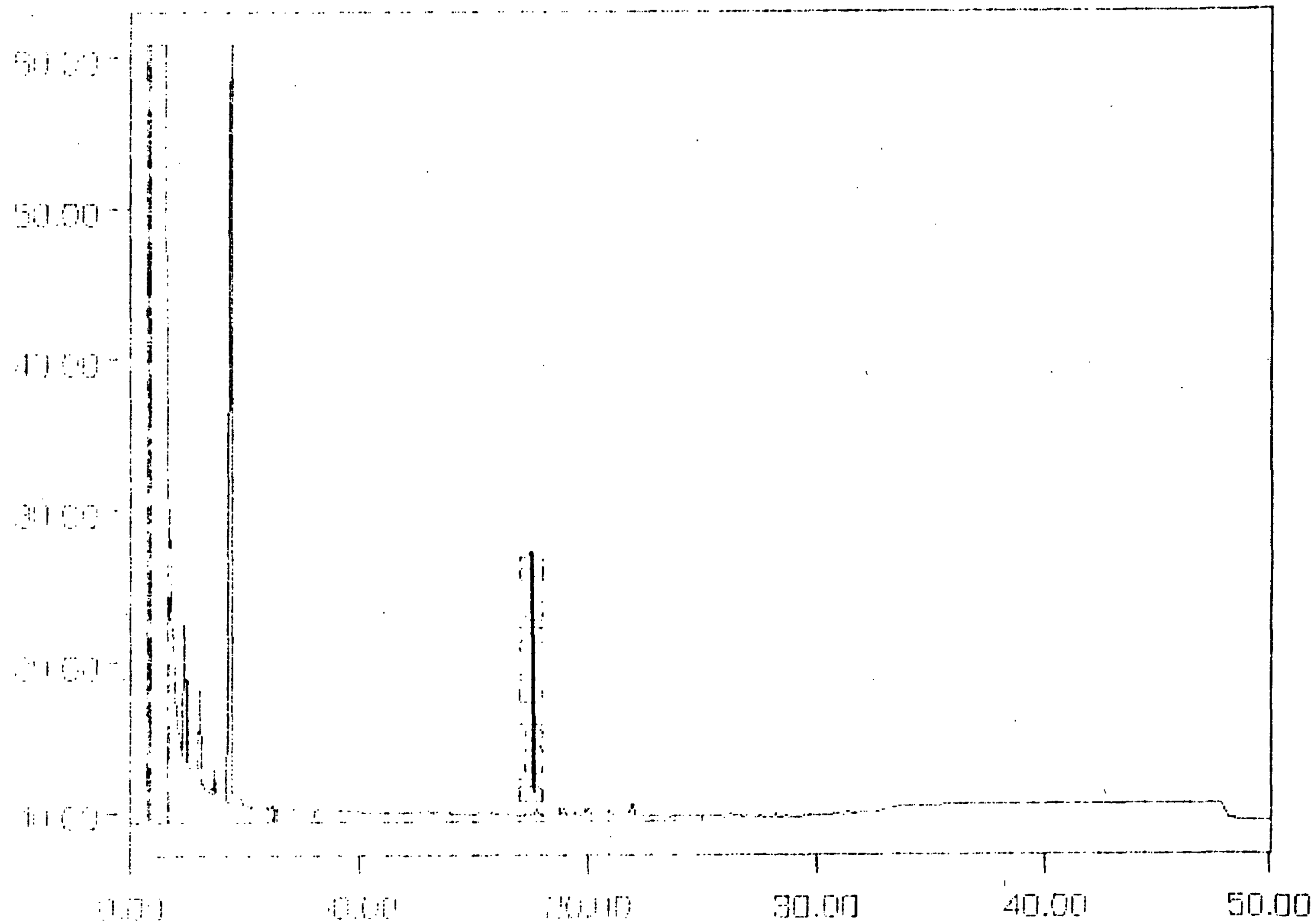
Evergreen Sample #	Client Sample #	Sample Matrix	TEH mg/Kg	MDL mg/Kg
X46033C	9111201400	Soil	U	10
X46034A	9111211400	Soil	U	10
X46035A	9111211500	Soil	U	10

QUALIFIERS
U=TEH analyzed for but not detected.
B=TEH found in the blank as well as the sample (blank data should be compared).
MDL=Instrument detection level for this method.

Bryan J. Hodges
Approved

QAO

Sample : [illegible] 03.90   Client # 911201400   Injected : TUE NOV 26, 1991 12:56:20

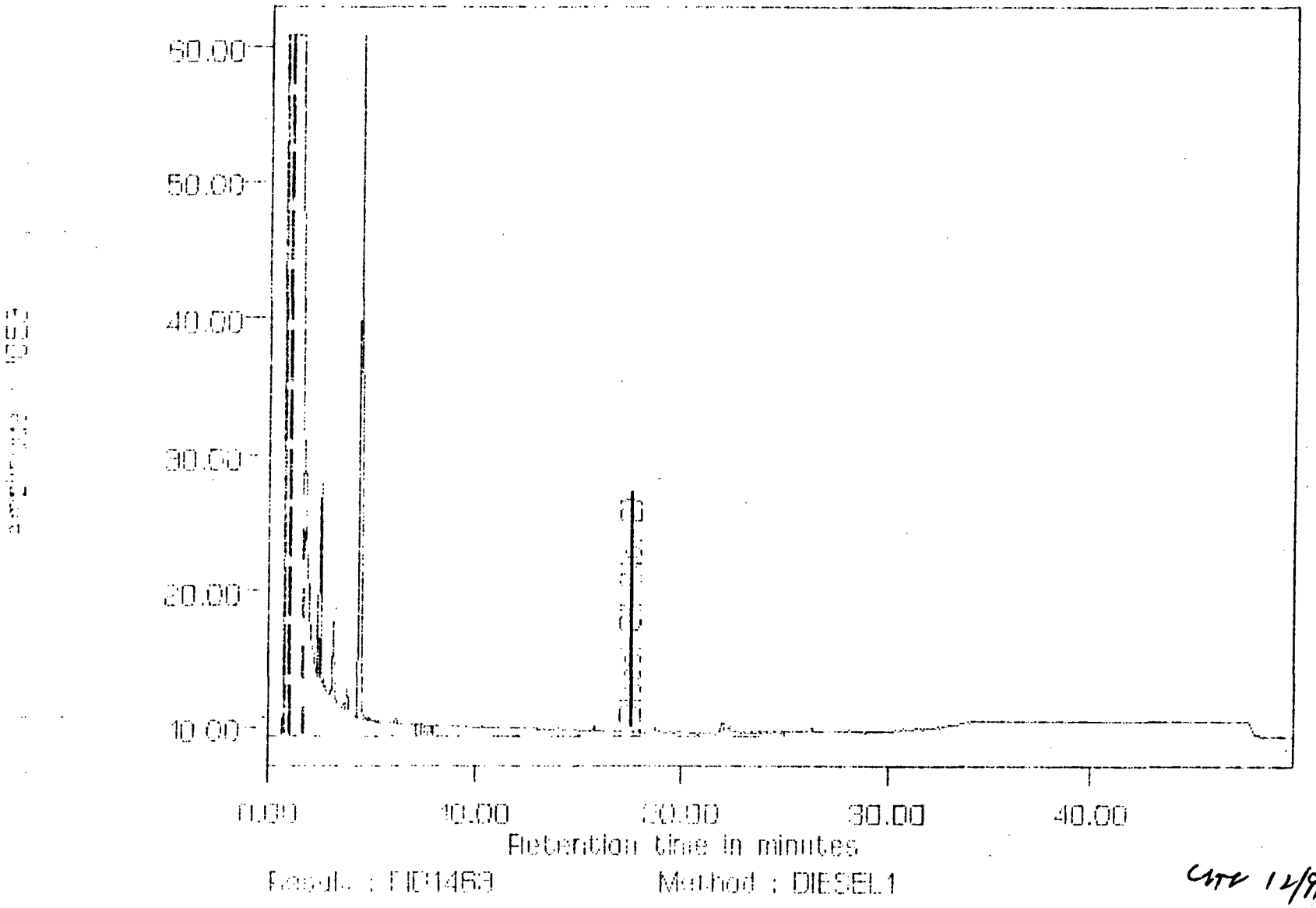


Retention time in minutes

Scale : [illegible]   Method : DIESEL1

Cert 12/9/91

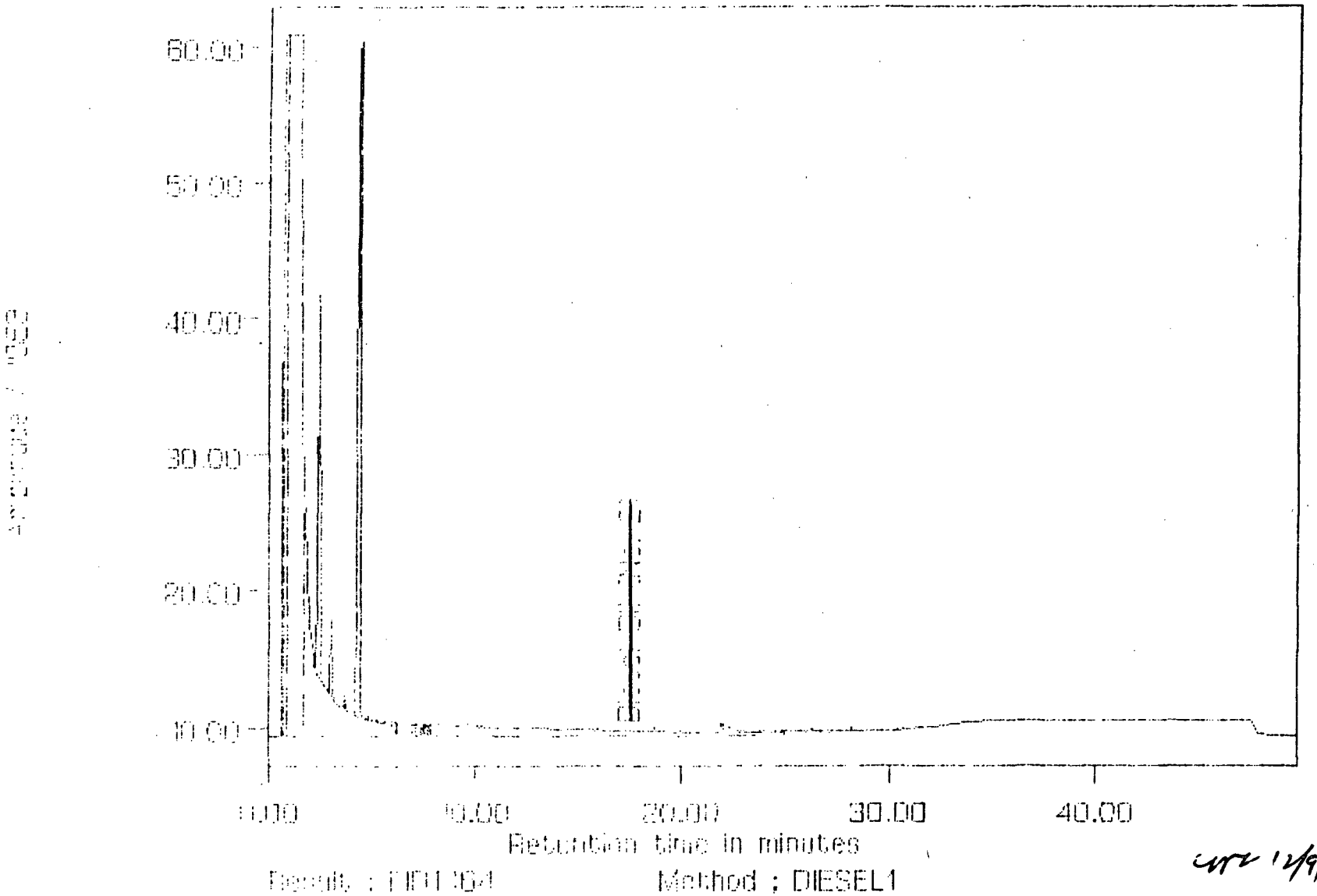
Sample : 3-[illegible]34A Client # 9111211400 Injected : TUE NOV 26, 1991 2:02:33



Result : FID1469 Method : DIESEL1

Cote 12/9/91

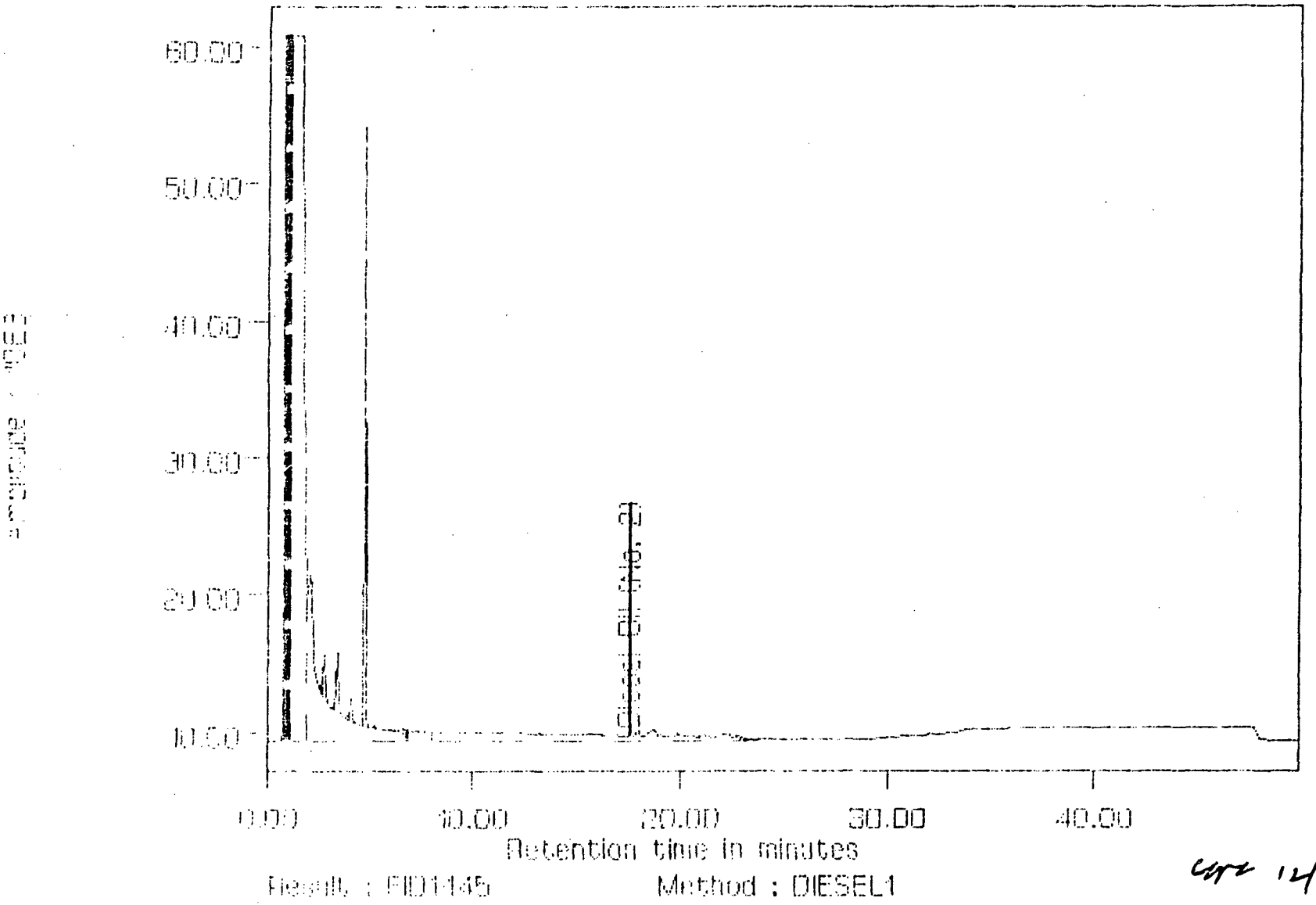
Sample : X46035A Client # 0111115D0 Injected : TUE NOV 26, 1991 3:08:31



Result : FID1364 Method ; DIESEL1

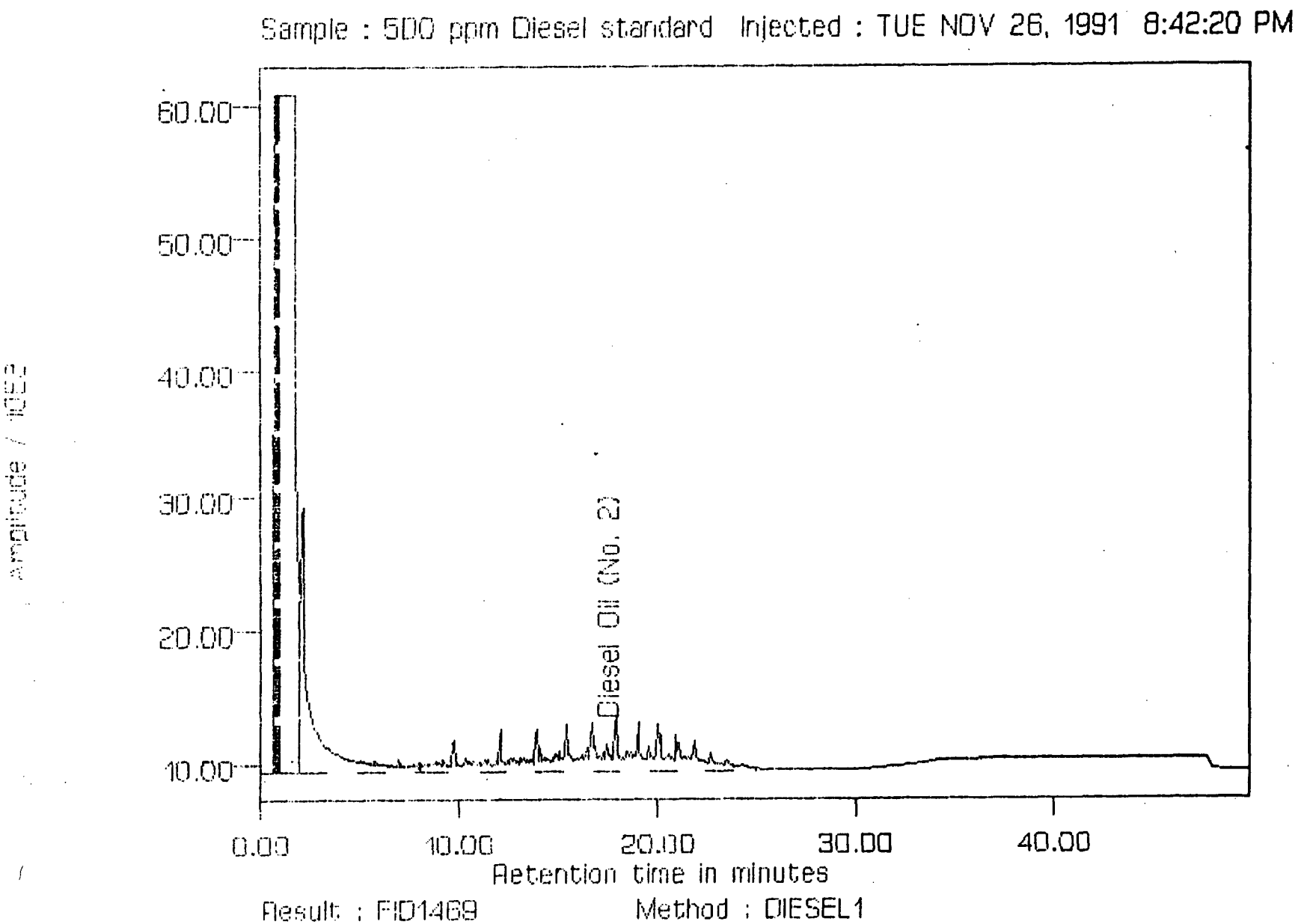
12/9/91

Sample : SB112591 Soil Method Blank Injected : MON NOV 25, 1991 4:24:11



Result : FID1145 Method : DIESEL1

Cgrz 12/9/91


Sample : 500 ppm Diesel standard Injected : TUE NOV 26, 1991 8:42:20 PM
60.00
50.00
40.00
30.00
20.00
10.00
Amplitude / 10E3
Diesel Oil (No. 2)
0.00
10.00
20.00
30.00
40.00
Retention time in minutes
Result : FID1468
Method : DIESEL1

APPENDIX C

FIELD NOTES

10/28/91 Monday

Location: Homco - Farmington

Weather: Overcast, 30's

Personnel: J. Kaszuba B.A

Verl Farnsworth Envirotech

Equipment:

On-Site Schedule

Start: 1330 Kaszuba On Site
1430 Envirotech On-Site

Finish: At hotel

Total: 10 (JPK)

10/28/91

0700 Leave for airport. Flight delays w/ weather.

1300 Land in Farmington

1330 Kaszuba on site. Unpack supplies. Walk over site. Check in w/ office.

1430 Envirotech on site. Go over work to be done.

1500 Cut 2 access holes in concrete floor of Operations Bldg.:
- 1 hole 3' W of West margin of indoor sump.
- 1 hole 5' E of Overhead door

1530 Auger soil from hole by sump.
TD = 35", auger refusal.
Black sandy silt, HC stain/odor.

1600 Auger soil from hole by overhead door.
TD = 31" Sandy silt, brown, no HC stain or odor.
Release Envirotech from site.
~~Photograph sample locations (photo log, p. 56)~~

10/28/91

1605 Composite a soil sample from both borings and from soil/sludge exposed in cracks behind cement sidewalls of sump (& took a hammer to the deteriorating sidewall of the sump to expose this material).

1630 Sample info:
Sample # 911028.1630
Type: soil, composite
Location: borings (2) thru floor of Operations building, thru-going cracks in sump sidewall
Purpose: characterize waste (soil) prior to excavation

Parameters:
TRPH (Diesel), Method 418.1
TCLP Benzene
TCLP Metals

10/28/91

1640 Leave site.

1700 Deliver samples (after packaging) to Fed Ex.

1710 Check in @ hotel, stop work.

Summary

- travel to Farmington
- site tour w/ contractors
- collect characterization sample for soil beneath Operations Bldg. (p. 52)

10/29/91 Tuesday

Location: Homco - Farmington

Weather: overcast, 20s

Personnel: J. Kaszuba BOA
V. Farnsworth + Crew Enviotech

Equipment: Front End Loader
3 Dump Bed Trucks
Track Hoe
OVM

Start: 0800 JPK
Finish 1700 JPK
Break - 1
Total = 8

10/29/91

0800 Kaszuba @ the site.

0815 Verl Farnsworth (Envirotech) @ site. Informs me that personnel + equipment will arrive @ ~0930.

0820 Request Homco (Roger Covel) to move ground equipment that will be in the way of our work on the outside.

0915 Photograph yesterday's sample locations (see photo log, p. 56).

1000 Front End Loader on site. Still waiting for Track Hoe Check in w/ office.

1030 Trucks (dump beds, 2) on site. Have safety briefing, read/sign H+S plan.

1045 Begin work. Remove exterior concrete pad

Photo Log (Roll #1)

Date	Photo #	Description
10/29/91	1	Boring location adjacent to sump
"	2	Boring location adjacent to overhead door
"	3	Sample location on sidewall of sump
"	4	Interior view of Operations Bldg.
"	5	Beginning of work at exterior pads
10/30/91	6+7	W wall of excavation w/ leachfield
"	8	S wall of excavation
"	9	E wall of excavation, note stain below foundation
"	10	S wall of excavation, note stain
"	11+12	Extent of stain on S wall
	13	Extent of stain on W wall

Photo Log (cont'd)

Date	Photo #	Description
10/31/91	14	Cross-sectional view of drain field exposed in W wall.
11/1/91	15+16	Drain field being excavated (drain field extends SW from Operations Bldg)
"	17	Another leachfield exposed in NW SW corner of excavation for 1st leachfield.
"	18	S wall of fence line excavation after excavation complete. OVM readings here were 0 ppm x and 2 ppm in exploratory trench 10' to south.
"	19	Leachfield uncovered in front of Wireline Bldg.
"	20	Side wall w/ stain + drainline continuing to S beyond fence.
11/2/91	21-24	Views to N + NW of drainlines in front of Wireline Bldg.

10/29/91

1145 Begin excavating beneath exterior concrete. ~~Soils here~~ Uncover a leachfield. Soils here same as previous remediations.

1205 Have excavated and transported 40 yds^3. Trucks will keep running, workers here will break for lunch.

1220 Kaszuba breaks for lunch.

1320 Return to work

1330 Loads to date:
- 5 soil
- 2 concrete
] Total = 7

1400 Track hoe on site

1410 Light snow starts. Black, HC-stained soil exposed @ 3' level.

1430 Snow stops. Another load of soil excavated & loaded to haul. Truck load (3 loader buckets) is 20 yds^3.

10/29/91

1500 Two more loads of soil excavated & hauled.

1545 Another load of soil.

1600 Last two loads of soil.

Secure Excavation.

1615 Envirotech leaves site.

1645 Kaszuba leaves site.

1700 At hotel, stop work.

Summary

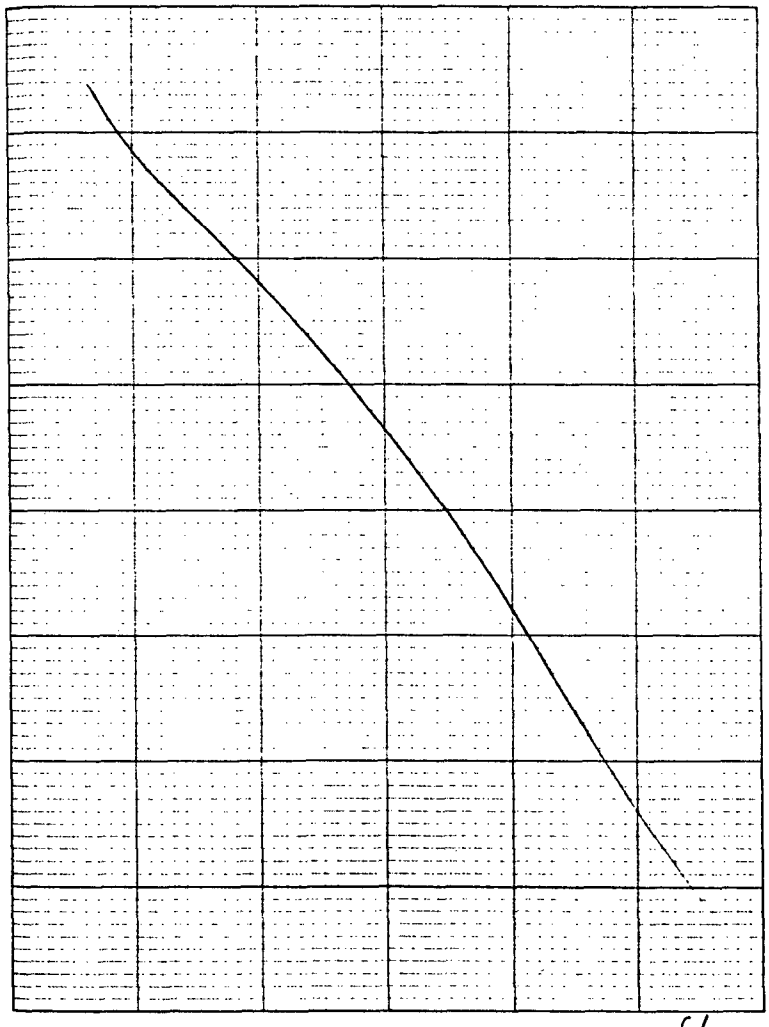
- remove exterior concrete, transport to landfill (equivalent yardage = 40 yds^3 or two truck loads).
- excavate, transport & dispose of HC-stained soils
  - 11 loads × 20 yds^3/load = 220 yds^3
- charges: ① mob/demob = 500
  ② concrete
  - excavate/transport = part of 1650 lump sum
  - dispose = 40 × 16 = 640
  ③ soil ~~complete~~
  - excavate/transport = 220 yds^3
  - dispose = 220 × 16 =

10/29/91

Summary

task	volume	unit	cost
mob/demob	–	500	500
remove & transport concrete	part of lump sum	1650	1650
dispose concrete	40	16	640
excavate & export soil	220		
TOTAL TODAY			+

excavation limited to exterior of washbay door
- max depth = 4'
- black, HC stained soil evident on floor of excavation at fenceline



10/30/91 Wednesday

Location: Honeoo - Farmington

Weather: Overcast, 30s, light snow

Personnel: JP Kaszuba B+A
V. Farnsworth + Crew Enviotech

Equipment: Same

JPK

Start: 0730

Finish: 1730

Break = 1.5

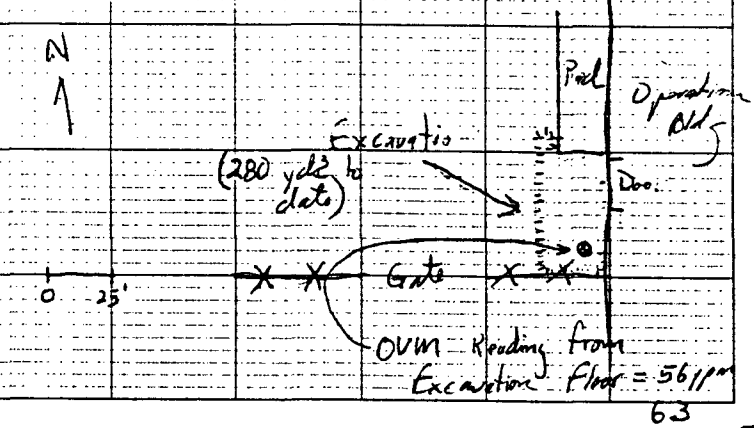
Total = 8.5

10/30/91

0730 Kaszuba @ site. One dump bed already here.

0735 Enviotech on site. Begin work. Load 3 trucks w/ soil.

0800 Down to 5' @ SE corner of excavation, have scraped top of Ss (several inches) at this level. OVM headspace reading = 56 ppm. Will need to scrape more Ss before stopping; status of excavation:



10/30/91

0830 Will take SE corner of S. down a few inches while working rest of excavation. Will recheck soils left in place for closure criteria of 50 ppm.

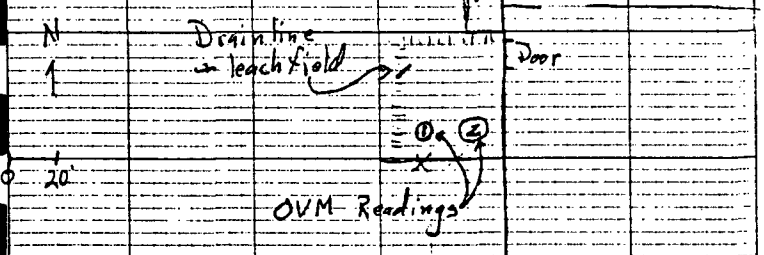
0850 Check in w/ office.

1000 Excavation continue

1100 Kaszuba breaks for lunch.

1230 Return to work. Survey progress:
- slight stain on W wall

Addition



10/30/91

1230 (cont'd) OVM Readings:
① Excavation bottom, 1 ppm
② Excavation bottom, 5 ppm
The bottom of the S margin of the excavation will serve as the field guide for removing HC-impacted soil.
Also:
- heavy sidewall stain in S wall (@ fence line) and E wall (beneath building foundation.

1340 Photographs (logged on p. 56).

1345 Observations:
- small plume associated w/ old leachfield
- major plume associated w/ interior sump

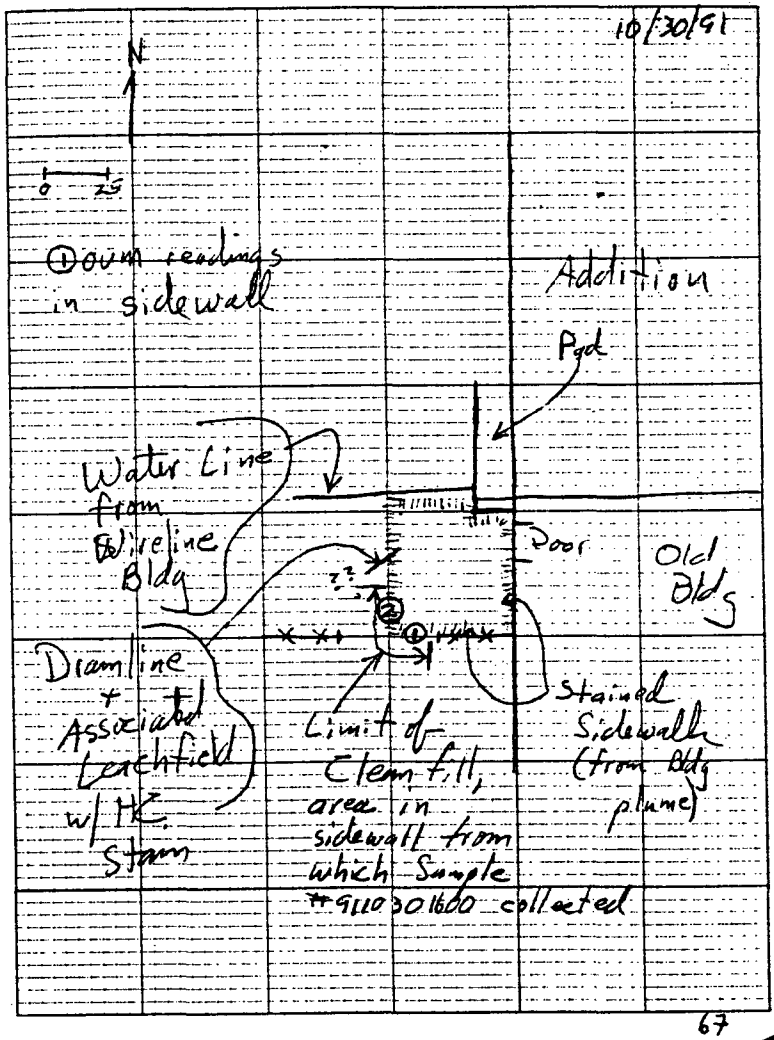
10/30/91

1500 Plume extends S beneath fence. Will need to trench to S of fence to determine extent of problem. Call phone company to have lines flagged. Confirmation #911030141130230, lines will be marked by 1500 on 11/1/91 (phone # 1-800-321-2537)

530 Clean out existing excavation, take stock of situation (see sketch, p. 67). Note:

545 - E & S walls w/ HC stain
- SW corner clean
- OVM Reading #1 = 0 ppm
- OVM Reading #2 = 0 ppm
- W wall @ dramline w/ HC stain

10/30/91



10/30/91

600 Collect composite sample (map p. 66/67)
- SAMPLE = 9110301600
- Location: composite sample from SW corner sidewalls
- Purpose: verify clean excavation between leachfield plume and plume from Bldg
- Parameters: TEH + TCLP benzene

645 Last load of the day. Total volume of soil excavated + hauled today (to landfill) = 360.
Envirotech leaves site.

1700 Kaszuba leaves site, pick up supplies

1730 At hotel, stop work.

10/30/91

Summary

- excavate & transport 360 yds³
  - 580 yds³ to date
- define 2 plumes
  - leachfield extending beneath drive
  - leak from indoor sump
- collect 1 verification sample @ SW corner of excavation (p. 67-68)

10/31/91 Thursday

Location: Homco - Farmington

Weather: Overcast, 20's, 1"-2" snow on ground from last night

Personnel: JP Kaszuba B.A
V. Farnsworth Envirotech
+ Crew

Equipment: Same

Start: 0730 TEH on site

Stop: 1700

Break = 1

Total = 8.5

10/31/91

0730 Kaszuba on site. Expect delays in starting this morning w/ cold weather and snowy/icy roads.

0800 Envirotech on site. Warm up the equipment.

0830 Exploratory trench S of fenceline
- 22' S of fenceline, centered on S well
- 1"-2" thick seam of black-stained Ss @ depth of ~6'
- sits on top of interface between friable Ss & competent Ss
- no ~~staining~~ odor
- OVM reading = 2 ppm

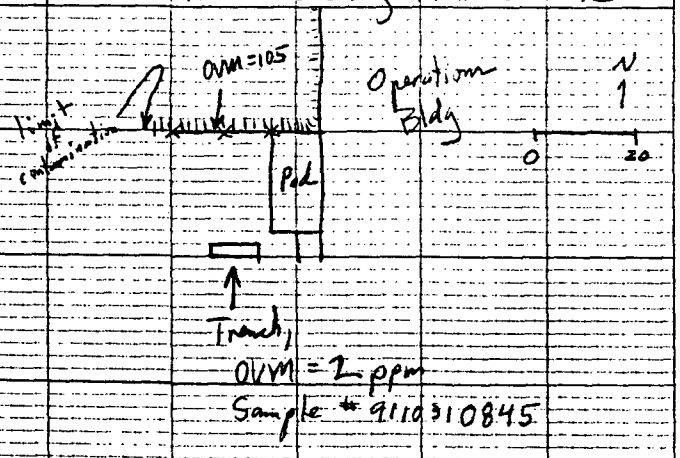
0845 Collect verification sample from stained material in trench:
Sample #: 911031/0845
Location: exploratory trench depicted on p 73
Purpose: verify composition of black seam in Ss, S limit of excavation.
Parameters: TCLP Benzene, TEH

10/31/91

0900 Begin filling in excavation by building ramp inward

0905 Sample from stained soil in South wall to determine severity
- OVM = 105 ppm

0910 Status of south wall contaminants:
- volume to excavate, if necessary = 35' x 20' x 5' = 130 yds³ of material exceeding field criteria



10/31/91

0920 Enviotech begins building plastic wall in building for dust/fume containment.

1000 Backfilling of excavation continues. Evaluate leachfield on W wall of excavation:
- width of stain ≅ 10'
- OVM of material beneath drain line, OVM = 1145 ppm

1025 Call Robert Gomez @ Evergreen Analytical, check status of characterization sample (Sample # 9110281630). Results will not be available until Friday afternoon.

1115 Tape inside of drain line. Line extends 20' towards gate. Assume contaminants extend 10' past line,
∴ 30' long x 10' wide x 5' deep
≅ 60 yds³.

1200 Kazenbe breaks for lunch.

10/31/91

Cost Adel Ovr / Change Orders

1. 8" of road metal after work is done, per Homco request (Town)
2. Tie exterior concrete slabs into foundation footings, per Homco request (Conrad); will tie all concrete
3. Cut footing from underneath overhead door to get better access to contaminants, replace when complete, per JPK request
4. Seal joints in concrete, per JPK request
5. Concrete disposal costs not part of excavation / transportation fee; add on $16/yard disposal
6. "Snake" to measure length of drainpipe/leachfield ~~pipe to be~~ well into yard
7. Compaction testing of fill material which will underlie concrete, inside building and out (not previously specified between JPK & Enviro-tech).

go to p. 82

10/31/91

1300 Check in w/ office (DJK + mwb).
Decide following:
- excavate material as needed from beneath face
- excavate remaining leachfield as necessary

1330 Confer w/ Vart Farnsworth. Need cost for weekend work (e.g. jobs not originally bid to include OT)

1345 Inform Roger Conrad that face will be removed for excavation and reinstalled when complete. Also inform that leachfield underlying W margin of driveway will be excavated.

1400 E half of access driveway now backfilled. Homco will have access when rest of leachfield is excavated.

10/31/91

1500 Deliver verification samples collected to date to Federal Express.

1630 Complete concrete work.

1650 Secure site. Leave site.

1700 At hotel. Stop work.

10/31/91

Summary

- backfill ~2/3 of excavation
- excavate trench to S of fence to determine limits of plume from beneath bldg
  - collect verification sample from HC-stained seam @ bottom of trench (p. 71)
- building interior
  - cut concrete
  - jack hammer ~~concrete~~ holes into concrete to facilitate removal
- verify work left to do w/ office
  - ~100 yd³ to S of fence
  - ~100 yd³ w/ remnants of leachfield
  - ~200 yd³ w/ concrete
- change orders/clarifications specified on p. 71.

11/1/91 Friday

Location: Hunco - Farmington

Weather: clear, 20s

Personnel:		
	J. Kaszuba	B-1
	V. Farnsworth + crew	Enviratech

Equipment: Same

Start: 0730

Stop: 1700

Break: 0.5 + 1.0 +

Total = 8.0

		11/1/91
0730	Kaszuba on site.	
0745	Enviro tech on site.	
0800	Begin excavating leachfield + drainline which extends to SW. Excavate + transport 60 yds, contamination still remains. Observations: - contaminant extend to >5' beneath drainline (i.e. 6'-7'). - expose another leachfield in SW corner of excavation - potentially another leachfield extending from Wireline Services Bldg. - photos taken, see p. 57	
0830	Dismantle fence adjacent to Operation Bldg.	
0835	Kaszuba breaks from work.	
0905	Return to work.	

11/1/91

0930 Loader stuck

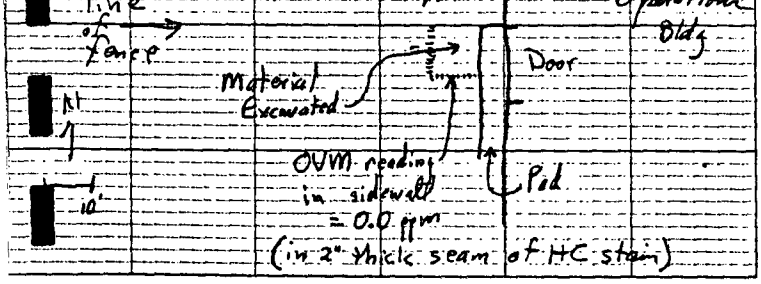
1000 Loader free

1005 Expose phone line. Break conduit, no wire breaks. Check phones inside - 6 lines work. Homco has 6 active lines (as per conversation w/ Roger Cowell), ∴ no damage. Will repair conduit when excavation complete.

1030 Begin excavation @ fence line.

00 Complete excavation S of fenceline:

- OVM @ excavation limit, S wall, = 0 ppm



11/1/91

1115 Clean out loose material from fenceline excavation, continue to load excavated material as trucks arrive. Verification sample for S fenceline will be the sample collected from exploratory trench yesterday. (Trench cut + sample collected from 10's of southern limit of fenceline excavation).

1130 fill in fenceline excavation. Photo documents limit of excavation (see p. 57). Compact while backfilling. Ot Only contaminated material left in place (as defined by field testing w/ OVM) is that which underlies building foundation (W wall of bldg).

1200 Kaszubas breakin for lunch.

1300 Return to work. Excavate nearby recently discovered leachfield in front of Wireline building. Photo (see p. 57)

11/1/91

Add-Ons / Change Orders
(cont'd from p. 74)

(2) (cont'd) Compaction testing was assumed (by Envirotech) to be ~~sub~~ sub contracted by Homco and was never clearly discussed by JPK + Envirotech.

(8) Envirotech bid job assuming no weekend work (weekend OT). Additional cost for weekend work by Envirotech = $80.10 / hour.

(9) Concrete in front of overhead door & (located immediately in front of fence) to be replaced as per Roger Covel.

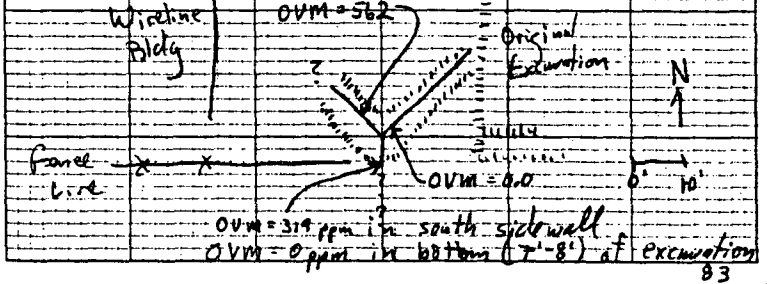
(10) Re-install fence ~~until all~~ ~~con~~ after all concrete work done. Park vehicles in entry way (for security) until fence installed, as per Roger Covel. (as per proj. d)

(11) Repair / replace conduit for phone during excavation S of fence, as per needs of project.

go to p. 102

11/1/91

1330 Drainline pipe continues to S @ least another 10'. ~~The original at a different angle~~ than the drainline exposed from the Operations Bldg. Apparent that drainline from Operations Bldg (SW trend) and Wireline Bldg (SE trend) intersected. Intersection tied lines together, sent 3rd drain continuing to S and into front area of facility (outside fence). Will stop S limit of excavation @ fence line, will excavate S-trending line later (this job or next one).



11/1/91

345 OVM readings in Drainline Excavation (see sketch, p. 83)
- stained sidewall, S wall:
OVM = 314 ppm
- unstained floor of excavation, S extent:
OVM = 0.0 ppm

1400 Verification sample from south sidewall (e.g. material to be left in place for now)
Sample #: 911101.1400
Purpose: Characterize/verify composition of material to be left in place.
Location: S Wall, stained soil @ drainline
Parameters: TCLP BTEX, TPH
Photo: see p. 57

sample not submitted for analysis

1403 OVM in excavation floor of SW trending drainline, see sketch p. 83 for location. OVM = 0.0 ppm. Excavation complete. Backfill

(pic 11/6/91)

11/1/91

1410 Use trackhoe to excavate drainline from Operations Bldg (SW line) to clean level of 7'-8', as indicated by OVM. Will end up w/ clean excavation for SW line up to S fence line (see sketch, p. 83).

1415 Call Shea @ Evergreen. Preliminary test results available. Final results to be ready this evening. Lab will FAX results when ready.

1425 Check in w/ office. Describe results to date.

1445 Field measurement of black-stained soil in NW-trending drainline: OVM = 562 ppm (see sketch ~~1425~~ on p. 83 for location). This line & associated leachfield have to be excavated.

1500 Change orders, see p. 82.

1515 Confer w/ Verl Farnsworth. Will work thru weekend.

11/1/91

1530 Measure phone line conduit for replacement.

1535 Measure extent of drainline to S of fenceline. Line runs 12.5' S of fence. Estimated volume to excavate to the south =

length = 12.5' line + 10' migration = 22.5'
width = 10'
depth = 8' (based on existing excavation).

Total Volume = 22.5' x 10' x 8' = 1800 ft³
= 67 yd³

Assumes extensive migration has not occurred.

1540 Phone line info:
- conduit in area to be excavated to S of fence
- conduit would have been moved, repaired & replaced anyway to extend excavation to S of fence ∴ treat phone line repair as change order (see p. 82).

11/1/91

1620 Last loads of soil to landfill for the day. Total amount of soil transported today = 300 yd³ (15 truck loads).

1630 Walk over buried water line (effluent from Wireline Bldg to Operations Bldg) w/ Homco & Enviro tech. Will avoid if possible, will repair if ruptured.

1635 Secure site w/ loader @ fenceline. Homco will park pickups to finish security. Enviro tech leave site.

1645 Clean up & leave site.

1700 Stop Work

11/1/91

Summary

excavations yield 300 yds^3 of soil
= 880 yds^3 to date
- trace drain and excavate drainline w/ leachfield extending SW from Operations Bldg to Gateway
  - 7-8' deep
  - OVM = 0 (on completion) on floor

excavate material from beneath fence adjacent to Operations Bldg

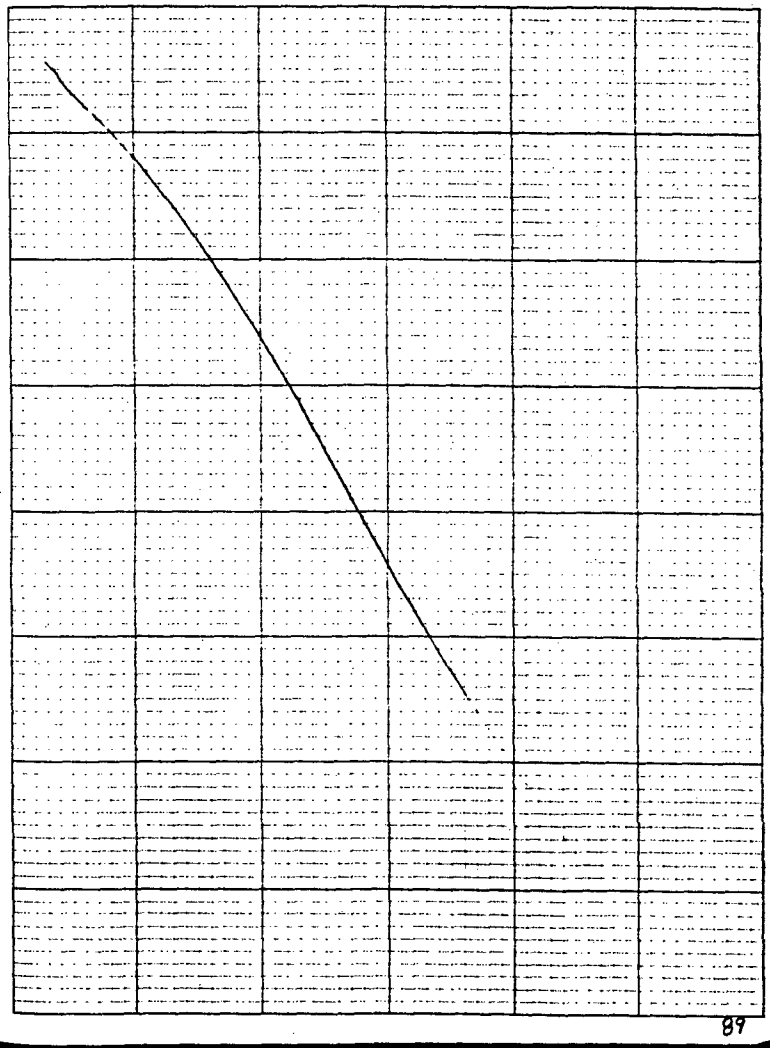
excavate leachfield from Operations Bldg to Gateway

expose 2nd leachfield coming down from Wireline

expose 3rd leachfield extending southward to parking area (e.g. to S of fenceline)

expose phone line @ gateway

remove E portion of fence/gate, secure site w/ vehicles



11/2/91 Saturday

Location: Homco - Farmington

Weather: Partly cloudy, 20s

Personnel: J. Kaszuba Bot
V. Farnsworth Enviratech
3 truck drivers "
J. Monge "

Equipment: Same

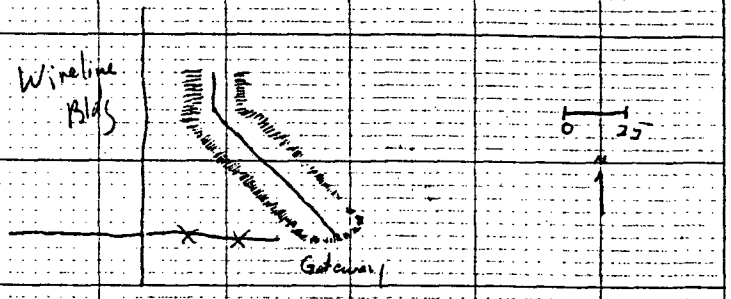
Start: 0730
Finish: 1730
Break = 1.0
Total = 9

11/2/91

0730 Kaszuba on site.

0735 Enviratech on site.

0745 Continue excavation in front of Wireline Bldg. Drainline has taken a turn from NW to N (after 50' from gate):



Also:
- excavation @ 15' width to start, will widen in some places depending on disposition of contaminants
- photos, see p. 57 + 92

Photo Log (Roll #2)

Date	Photo #	Description
11/2/91	1	View to NW of drainline in front of Wireline Bldg.
"	2-9	Excavating/expanding sidewalls laterally and into bedrock to clean HC stain.
"	10	S limit of excavation (View location ① on p. 96)
"	11	Leichfield source
"	12	NE S wall of excavation
"	13	Final disposition of S wall of excavation as depicted on p. 95
"	14	Example of access into buildings (Wireline) @ days end
11/3/91	15	Limit of excavation in vicinity of MW-1030.
11/4/91	16	Track hoe removing concrete
"	17	Plastic wall to retard dust + odors.

Photo Log (Roll #2) (cont'd)

DATE	Photo #	Description
11/4/91	18	E wall of excavation
"	19	S wall of excavation
"	20	entire excavation
"	21	Portion of stockpile excavated from interior
"	22	Completed excavation.
"	23	Completed excavation, E wall
"	24	Completed excavation, S wall.

→ did not develop properly per JK 11/6/91

11/2/91

1445 Package sample for shipping (from p. ~~98~~ 96):
- Sample # = 911102/400
- location: SW corner of excavation, sidewall
- purpose: verify composition of material left in place (pursuant OVM criteria)
- parameters: TCLP Benzene, TEPH
- misc: collected in deep excavation

1715 Leave site.

1730 At hotel, stop work.

11/2/91

Summary

- identify 2 distinct plumes associated w/ leachfield/drainlines:
  - shallow (≤ 6') plume underlying maze of drainlines
  - deep (≈ 15') plume emanating from major leachfield in front of (E of) Wireline Bldg
- severe effluent line from Wireline Bldg; will replace after completing excavation
- verification sample, see p. 98
- excavate 260 yd³ today
  - 1140 to date
  - bulk of today's total from deep plume
- excavate into deep plume to gather data on severity & extent
  - severity - exceed criteria
  - extent - minimum 1400 yd³ to excavate
  - source - leachfield, E of Wireline Bldg
  - misc - S limit excavated as depicted on p. 95-97

11/2/91

1400 (cont'd) Samples:

① = 0.0 ppm; also verification sample (= 911102140, see p. 98)
② = 3.2 ppm; grey stain
③ = 588 ppm; black, strong odor
④ = 0.0 ppm; grey stain, sour odor
⑤ = 1028 ppm; black, strong odor
⑥ = 788 ppm; black, strong odor
⑦ = 91 ppm; grey, mild odor

1500 Sidewall to W clean as indicated w/ sketch (p. 96). Work S wall until clean soil reached.
OVM readings (p. 95):
⑧ 0.0 ppm; grey, sour odor
⑨ 0.0 ppm; grey, sour odor

1530 Soil meeting clean criteria encountered as depicted on p. 95. Clean out excavation to TD at this point.

11/2/91

1530 Backfill clean portion of excavation. Clean line is anything S of "regular" door into Wireline Bldg. (see sketch, p. 95); S of N end of this door. After backfill in complete access to Wireline Bldg will be restored.

1430 Access to Wireline Bldg restored. Secure site.

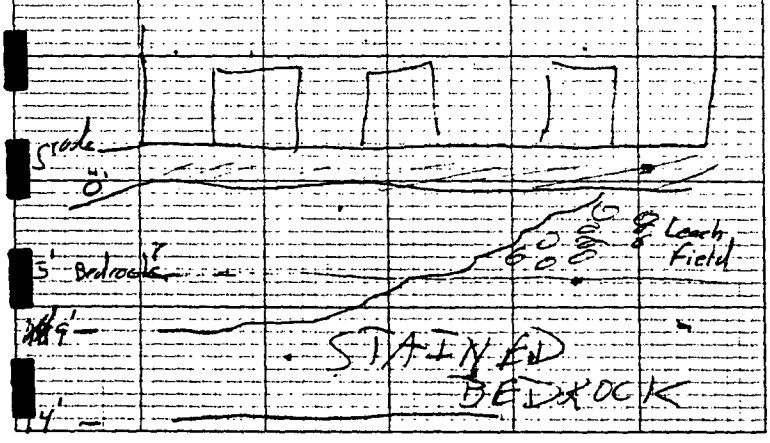
1435 Envirotech leaves site.
~~Gustav Approximate~~ Estimate minimum volume to excavate ~~into~~ for "deep" plume:
$50' \times 50' \times 15' = 37,500\ ft^3$
$\approx 1,400\ yd^3$.
Will call in this info & confer w/ DJK/MWB.

11/2/91

0930 Severe drainline (Wireline Bldg to Sump in Operations Bldg)

1000 Obtain parts + plug line. Will replace line when excavation complete.

1130 Continuing drainline excavation, widening of excavation to clear out sidewalls. Uncover a second layer of contamination below the first:



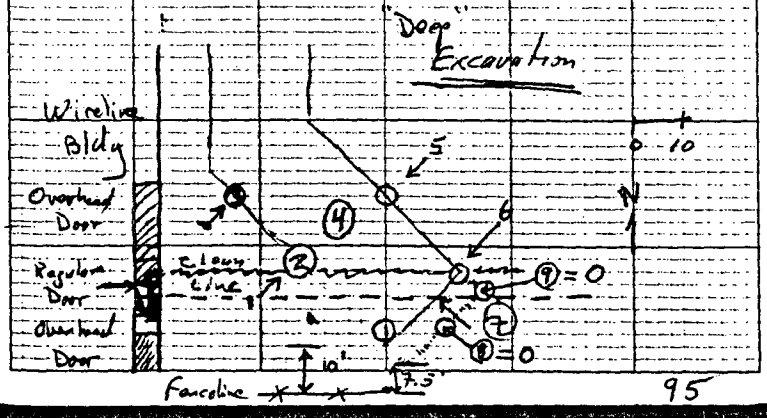
11/2/91

1300 Uncover sufficient volume of material to verify sketch on p. 94; also:
- leachfield source, not Bldg
Wireline Bldg
- stained area ~5' thick, TD = 14'
- photos, see p. 92.

1230 Lunch

1330 Return

1400 Samples w/ OVM as indicated on sketch:



11/3/91 Add-Ons/Change Orders
(cont'd from p. 74 & 82)

(12) Replace water line (effluent from Wireline Bldg) after completing excavation

(13) Compaction of deep excavation will be required, as per project. Envirotech will return to job site and regrade after settling has occurred.

11/4/91

(14) Characterization samples on each basin for deep plume.

(15) Install 2 interior drains + assoc. piping rather than drain trough, plug old drain trough w/ concrete (as per Roger Conn).

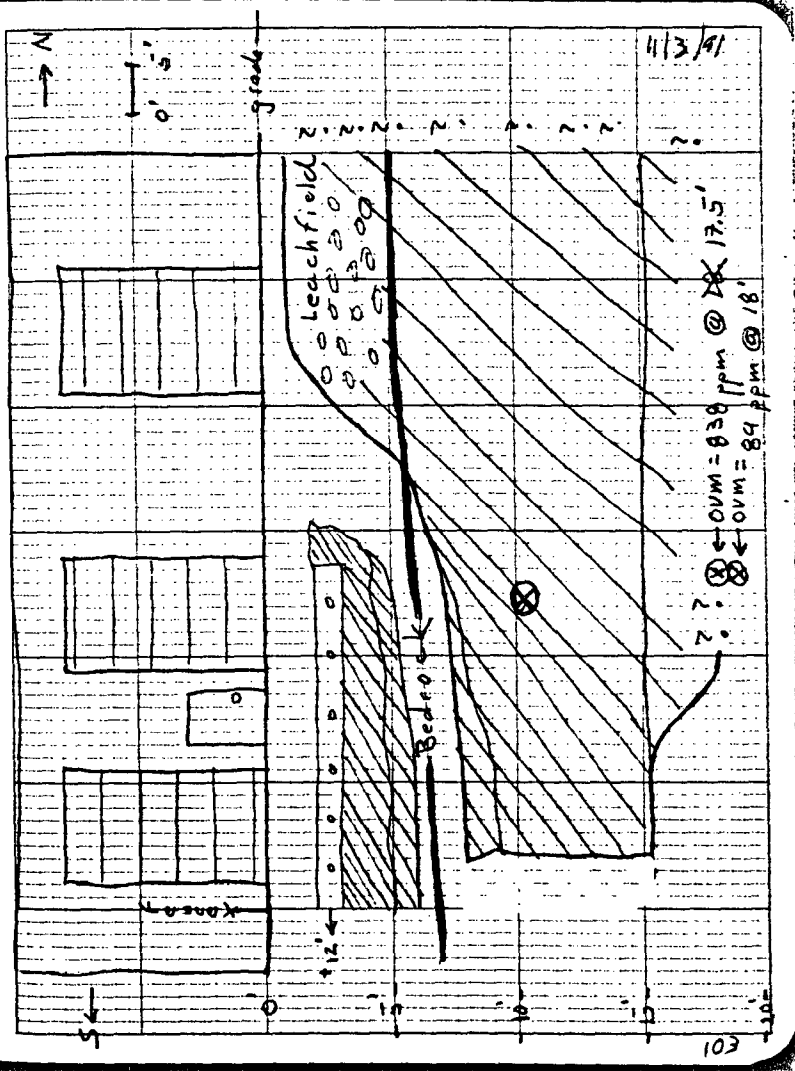
(16) Permanently plug one old drain line and bring "fresh" water recycle line exposed by excavation, as per Steve.

11/3/91

(17) Lay sewer line underneath concrete slab anticipate future expansion. 11/20/91 NOT, per connection @ Bldg. #4

to p. 136

4/3/91



11/3/91 Sunday

Location: Homeco - Farmington

Weather: scattered clouds, 20's

Personnel		
	J. Kaszuba	B&A
	V. Farnsworth	Emiotech
	Drivers	1.1

Equipment None

Start: 0730
Stop: 1500
Break = 1
Total = 6.5

	11/3/91
0730	Kaszuba on site.
0740	Emiotech on site.
0750	Continue excavation, of deep plume. Will take excavation to depth on E & W walls up to * a new "clean line" that is easily verifyable (e.g. will square out the excavation). Will do this to enable the plume to be easily located should work be put on hold.
1015	Down to 18' in center of excavation. OVM Readings ① Floor, 8.38 ppm (sketch, p. 103) ② Wall, west, @ building, 8.42 ppm (⑧ on sketch, p. 103) ③ floor @ 18', 89 ppm - into hard Ss & out of friable Ss
~~1030~~	~~Based on OVM observations, plume extends to Bedrock~~ complete.

1/13/97

1030 Based on O&M observations:
- plume extends as deep as competent bedrock:
  - friable 5'-13'
  - competent, hard 18' for +
- plume extends westward beneath wireline bldg - limit of excavation to concrete pads of this bldg
- revise volume estimate:
  50' x 50' x 18' = 1700 yds^3
to get all contamination
- to get just beachfield down to a depth of 5' (i.e. bedrock), assume: 50' x 50' x 5' = 450 yds^3
- photo, see p. 92

1100 Stop excavation here. Will confer w/ Homco-Houston & BP-Denver regarding course of action. Until decision made, will remove contaminated soils excavated this AM, will ~~store up access~~ improve access to Wireline Bldg, & will secure excavation for the day. Will get ready to move inside in AM.

1200 Lunch

1300 Return to work. Finish cleaning out excavation to TD. Secure access to wireline bldg. Sketch areal & cross-sectional views of work to date. Estimate volume of soil left to excavate for deep plume:

→ 60 x 45 x 18 = 1800 yds^3

→ Volume to excavate for drainline to South =
(10 + 12.5) x 15 x 5 ≈ 33 yds^3, round up to 50 yds^3
(10 = estimate of migration; 15 = drainline)

→ Inside volume = 65' x 25' x 6' (assume 6' depth) = 350 yds^3

11/3/91

1400 Excavation complete (for today's goals). Secure excavation. Soil moved to landfill today = 240 yds³.

1415 Envirotech leave site. Kaszaba prepares sketches for N.A. Homco Houston.

1430 Check in w/ mwB.

1450 Leave site.

11/3/91

Summary

- Soil excavated today = 240 yds³
  - 1380 yds³ to date (41.4K)
  - ~~750~~ 880 from adjacent to operations Bldg, ~~drainfield SW down to fenceline~~
  - 130 from fenceline NW up to Wireline Bldg, shallow plume
  - 370 from deep plume to date, to define the problem
  - 130 drainfield SW down to fenceline
- Soil volumes left
  - Wireline Bldg
    - deep plume, 1800 yds³ (54K)
    - shallow plume only, 450 yds³ (13.5K)
  - S of fenceline, shallow plume, min. 50 yds³ (1500)
  - bldg interior, 350 yds³ (10,500)
- water in bottom of excavation, manmade seepage
- excavation cleaned to TD, ready to be backfilled or extended
- change orders, see p. 102
- concrete (holding tank?) encountered in front of (E) Wireline Bldg

11/4/91 Monday

Location: Homco - Farmington

Weather: clear, 20s

Personnel: J. Kazybaa B.A

Equipment: Same

Start: 0730

Finish: 1700

Break = 1

Total = 8.5

11/4/91

0730	At job site. Enviroteck on site.
0750	Check in w/ office
0820	FAX sketches to Medler.
0840	Check in w/ office. State standards:
	TPH 8015 modified = 100 ppm
	~~Total~~ BTEX 8020 50 ppm
	Benzene 10 ppm
0855	Call B. Medler. Leave message.
0915	Medler calls back. Report situation.
	- call Roger Anderson, OCD, see what he wants, do under OCD guidance
0920	Call office, get OCD #: (505) 827-5812
0921	Call OCD, Roger Anderson
	Recommendations:
	- sample
	- protocal:
	- TPH, 8015 modified
	- Total BTEX, 8020

0930 Notify Meeller of OCD 2 request.

0900 Work inside Operations Bldg begun. Remove concrete.

0915 Call Evergreen, Shea Greiner.
- need (wash soil sample, TPH (8015) + Total BTEX (8020)
- midday, Wed
- will also end more containers

0930 Work continues inside. Photos, see p. 12

1000 Collect sample:
- Sample # 91104 1200
- location: N wall of excavation for deep plume (e.g. along S face of deep plume); composite from 6' to 18'
- purpose: determine/characterize deep plume as required by OCD
- parameters: TEH (8015)
  Total BTEX (8020)

11/4/91

1230 Deliver sample (after packaging) to Fed Ex.

1245 Lunch

1345 Return to work. Interior excavation begun. Observations:
- soils beneath sump/drainline not saturated
- soils w/ HC stain/odor (in fill) to TD of ~5'
- bedrock (friable) @ 5'
  - OVM = 0.0 ppm
- sidewalls to N, S, & E w/ same contaminants to same depth
- will leave in place, further pursuit will endanger structural integrity of building
- photos, see p. 93
- sketch, see p. 112
- no sludges/saturated soils encountered on interior excavation.

11/4/91

11/4/91

1430 Verification sample for interior excavation collected:
- Sample # 911104 1430
- Location: interior excavation, floor (5.5' below grade) immediately beneath old sump
- purpose: verification
- parameters: TEH (8015) ICLP benzene

1515 Excavation complete & completed to clean level ~5.5'. Photos, see p. 93. Will backfill & compact tomorrow.

1520 Pipes (subgrade & @ grade) exposed in interior excavation (sketch, p. 112)
- Old Shop Drain = will be permanently plugged @ backfill time
- ~~New Shop~~
- Recycled water = will also be permanently plugged

11/4/91

1520 (cont'd)
- other shop drain = will be replaced w/ in situ pipe + concrete + floor drain
- sump = will be replaced w/ floor drain
- New Shop Drain = will be capped + plumbed into floor drain

1635 Last load of the day. Tally for interior excavation:
- concrete = 50 yds
- soil = 200 yds

1640 Secure site. Clean up.

1650 Leave site.

1700 At hotel. Stop work.

11/4/91

Summary

- deep plume
  - confer w/ OCD, Media, MNB + DNIC
  - sample material in deep plume to characterize it (p. 110) as per OCD request
- interior excavation completed
  - 200 yds soil, 50 yds concrete
  - soils beneath sump + drain not saturated or sludgy
  - drain + sump replaced
  - clean excavation @ ~5.5' depth
    - verification sample (p. 110)
  - sidewall soils left in place to N, E + S contain contaminated soil
    - no further excavation possible w/o damaging structural integrity
    - no saturation or sludges in sidewalls
- excavation to date, 1280 total soil
  90 concrete

11/5/91 Tuesday

Location: Homco - Farmington

Weather: Clear, 20s

Personnel: J. Kaszuba B&A
V. Farnsworth Envirotech

Equipment: Same
plus Sheepsfoot Compactor
plus small tractor

Start: 0730

Finish: 1630

Break = 1

Total = 8

11/5/91

0730	Kaszuba on site.
0735	Leave site, purchase gas + film
0800	Return to site.
0805	Check in w/ office.
0850	Off the phone. Envirotech now on site. Today's activity to include backfill + compaction of interior excavation.
0900	Change travel plans w/ airport + rental car.
0910	Photograph interior excavation before work begins (see p. 118).
1000	Envirotech brings Sheepsfoot on site for compaction.
1130	Kaszuba breaks for lunch
1230	Errands + supplies.
1330	Return to site. Compaction continues. All pipes to be plugged are plugged w/ caprock or expanding cement. Pipe to be topped w/ filter + riser unit. Compaction complete.

Photo Log (Roll # 3)

Date	#	Description
11/5/91	1	Completed interior excavations.
11/6/91	2	Completion.
11/13/91	3-4	Completed conc interior concrete
"	5	Completed exterior concrete
"	6	Continued excavation of Wireline Leach field.
"	7-10	Trace leach line thru septic system and to N
"	11-12	Trace leach line to E from Wireline Bldg
"	13	View of excavation for W & E lines
"	14	View of leach line to North
"	15-18	Excavate line to E.
11/14/91	19	Excavating Wireline Leach field to W towards Bldg.
"	20	Excavating sidewall (of E line) to N.

Photo Log (Roll # 3, cont'd)

Date	#	Description
11/14/91	21, 22	Expose septic liner buried in saturated contaminated material.
"	23	Square off + clean out excavation to E.

Photo Log, Roll # 4

Date	#	Comments
11/14/91	1, 2	Remove septic tank, W wall of saturated mat.
"	3, 4	W-trending line @ N edge of Wireline Bldg.
11/15/91	5, 8	Same
"	6, 7	NE margin of excavation.
"	9, 10	Completed W excavation
"	11	View to S
"	12	View to N
"	13, 15, 16	Excavation S of fence
"	14	W line @ Wireline Bldg
11/20/91	11/13/91 17, 18	~~Completed~~ S excavation
11/20/91	19	Excavation of WSW drain line
"	20-22	Views of completed excavation of WSW line
11/21/91	23	Trench @ S line S of gateway
"	24	Trench @ WSW line from gateway

11/5/91

1100 Check in w/ office

1500 Compaction (w/ watering) continues

1630 Kaszuba stops work & leaves site.

Summary

- begin interior construction
  - backfill & compact
  - plug off 2 pipes from addition
    - recycled water pipe
    - blind pipe
  - tap sump pipe (leading from addition) for future tie to floor drain

11/6/91 Wednesday

Location: Homco - Farmington

Weather: partly cloudy, 30s

Personnel: Same

Equipment: Same

Start: 0730

~~Finish~~ Finish: 1730 Break = 1.5

Total = 8.5

0730 Check in w/ MWB

0745 At site. One Envirotech person already here warming up equipment

0755 First loads of clean fill arrive. Construction on interior continues.

0830 Receive FAXes for lab results from DOT sampler of 10/30 & 10/31.

0845 Call Evergreen, correct error (name) on Chain of Custody for 11/4/91.

11/6/91

0910 Photos of compaction activities see p. 118 Compaction now outside too.

1030 Kaszuba leaves site. Drop off film for developing.

100 Lunch

230 Return to work - pick up developed film

1300 Return to site. Compaction complete. Compaction tests showed 100% compaction. Written results to be submitted tomorrow.

345 Received preliminary FAX results for "deep plume" sample. Final results expected later today.

1400 Enviratech putting final touches to interior prep work.

1430 Cut & remove pad to be replaced @ Fishing Tool Bldg as per Change Order #9, p. 82.

11/6/91

1530 Drill finish preparation for pouring concrete in Operations Bldg.

1700 Enviratech leaves site. Kaszuba prepares receiver FAX for sample from deep plume.

1730 At hotel. Stop work.

Summary

- continue preparation for interior construction:
  - compacting/backfilling
  - preparing for concrete.

11/7/91 Thursday

Location = Hemco - Farmington

Weather = ~~clear~~, 30s

Personnel: J. Kasyuba - B&A
Envirotech

Equipment: Same

Start: 0730
~~Finish~~
Finish 1700
Break = 0.5
Total = 9

11/7/91

0730 At site (JPK + Envirotech)

0800 ~~JPK to~~ Continue preparation for concrete.

0900 Call Evergreen re: Sample #911041200:
- 5,700 ppm
- 80% Diesel
- 20% Heavy (lube oil, etc.)
- value ~~estimate~~ extrapolated because sample not diluted
- dilution & re-analysis will not significantly change value
- value listed is accurate to +/- 15%

0930 Cost estimates for 2 options (excavate w/ cap + leave in place) obtained from V. Farnsworth and tabulated, see p. 126.

1000 Review cost estimate w/ DJK, both agree w/ pushing for Option #2.

11/7/91

1030 Phone con w/ Rodger Anderson, OCL
- closest Mon (Tentative)
- need a proposal (FAX: 827-5741)
  - how we want to do it
  - present analytical results
  - soil venting? for continual remediation
- remove the leachfield, heavy stained soil & laterals
- caging
- verification sample from bottom of hole (TEH + Total BTEX)

1050 Phone con w/ Shea of Evergreen
- such on TEH and Total BTEX
- receive samples Fri, have results Mon AM

1100 Notify Bob Medler

1105 Out in w/ DOE, notify him.

11/7/91

1110 Confer w/ V. Fromsworth re: will collect verification sample during break in concrete/interior work.

1200
1145 Notify Roger Covel of status of project.

1200 Kanzaba breaks for lunch.

1230 Return to work. Concrete truck on site. Begin pouring concrete.

1315 Collect verification sample from bottom of excavation:
- Sample # 911107 1315
- Location: excavation for deep plume, bottom of excavation @ 18'
- Purpose: verify clean excavation @ pit bottom
- parameters: TEH, Total BTEX
- misc.
  - OVM = 9.8 ppm
  - fresh cut w/ backhoe trackhoe @ pit bottom

11/7/91

Option 1: Excavate + dispose phone, assume area 50 * 50 * 18'

50

- excavation/disposal = $30/yard
- 1666 yd³ x 30/yd = $50,000
- rebuild road base = 2,000

Total = 52,000 ODE

Option 2: Excavate to 5', backfill, compact, cap w/ concrete

- excate:

(50 x 50 x 5)(30/yd) =

(460 yd³)(30/yd) = 14,000

- cap w/ concrete after backfill & compaction = 10,000

Total ODE = 24,000

Also: excavation to S of gate figure in both, assume (20 x 15 x 5') yd³ 30/yd or $1700 for 55 yd³.

11/7/91

1015
1030 Phone con w/ B. Medler

- notify the State of status
- present Option 2
- see what they want

- mins from Medler
  - the State will probably require concrete cap anyway
  - Medler is guessing that State will require casing into bedrock as well as ground water wells to check for impact to ground water → he's betting on this because contaminants are in bedrock and will never get at about

11/7/91

1400 Kaszuba leaver site, Envirotech finishes concrete work.

420 Samples to Fed Ex

1430 Airport

700 Home. Stay Work

Summary

- obtain sample results for characterization of deep plume, communicate to OCD
  - OCD wants sample from bottom of excavation
  - OCD wants written proposal for deep plume (see p. 126, 128)
- collect sample from bottom of excavation (p. 129)
- pour concrete inside bldg and outside

11/13/91

Wednesday

Location: Homco-Farmington

Weather: clear foggy A.M., clearing 30s

Personnel: Same

Equipment: Same

Start 0730 on site

Finish 1700

Break = 1

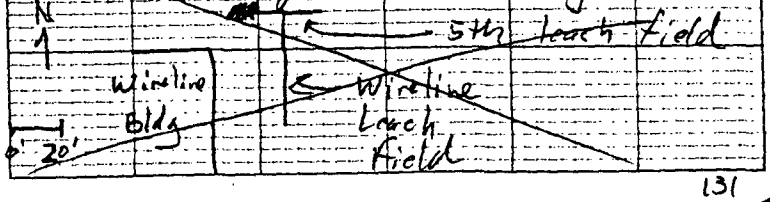
Total = 8.5

0730 Kaszuba on site. Unpack equipment. Check in w/ office

0800 Envirotech on site.

0815 Begin excavation (continued) on Wireline Leach Field.

0830 Expose a 5th leach line. Trends E-W located off NE corner of Wireline Bldg.



10/13/91

0900 Mix drummed material from sump (sludge previously sampled) w/ soil for disposal.

0930 Confer w/ Steve of Homco for misc. items for concrete cap, see p. 102

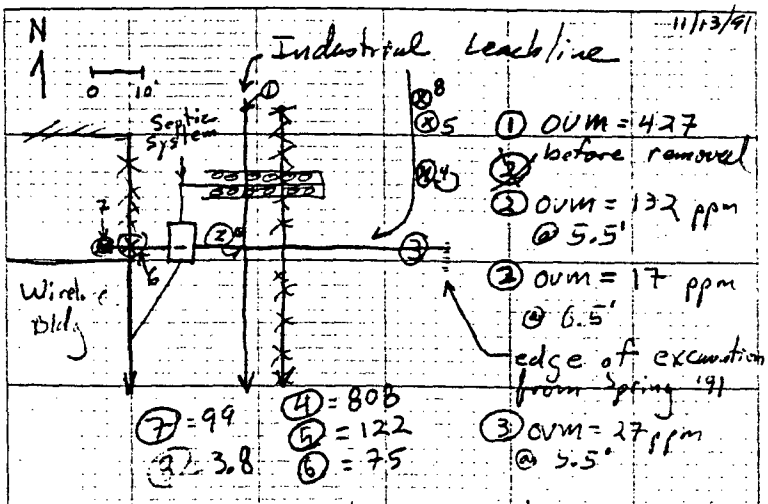
1130 Lunch

1230 Return to work

1300 Trace leach line to N and thru septic line. Expose septic leachfield and corner of septic holding tank. Will have to move septic drainfield because of potential for flushing deep plume (which will be capped) to the S (i.e. move septic drainfield, from wireline bldg, from current position to S of deep plume).

1530 Crack hole in septic tank while excavating. Call for truck to pump it out.

11/13/91



1000 Finish excavating line to E. Photos.

1630 Stop Excavation for today. Secure site. Will finish E excavation and balance of wireline leachfield tomorrow. Loads today = 360 yd³ soil / 10 yd³ concrete (leftover)

1700 At hotel. Stop work

11/13/91

Summary

leach (in yds³)
- 360 soil (1940's to date)
- 10 concrete (100 to date)

- today's distribution
  - 160 for N line (disconnected today)
  - 100 for E line (relict from Spring '91 work)
  - 260 for Wireline leach field

septic system
- cut to get N line
- will be moved to prevent flushing underneath concrete cap

misc
- drummed pump material (pump that was removed); mix w/ soil & transport for disposal
- pump out Wireline septic system

11/14/91

Thursday

Location: Homeco - Farmington
Weather: Overcast, 30's

Personnel: Same Equipment: Same
Start: 0730
Finish: 1630
Break = 1
Total = 8

0730 Kaszuba on site.
0735 Envirotech on site. Warm up equipment, move equip around to excavation.
0800 Excavate & haul first loads.
0830 Continue excavation of line to E. OVM reading in sidewall (C#4 sketch p. V133) = 808 ppm. Continue excavating.
0900 Shift to Wireline leach field. Excavate to W to reach bldg. Expose septic lines. Lines buried in saturated leach material (see photos). Saturated material extends to ~6'; must remove as per NMOCD.

11/14/91

Add On / Change Orders (From p. 102)

3) Pump septic leachfield to prevent flushing underneath the concrete cap.

1) ~~Repair~~ septic holding tank. Replace

2) Seal interior concrete, per request of Roger Covel

11/15/91

21) Stand by rate for inactivity on Mon (11/11/91) and Tues (11/12/91) while waiting for NMOCD to approve excavation plan for Wireline leach field = $500/day → compromise from $1000/day on original bid

11/18/91

22) Water which has accumulated in pits from heavy rain and snow will be disposed of by Basin Disposal, as per project needs.

11/19/91

23) Extra samples as per OCD + project requirements (7th total to date)
- characterize WSW drainline (1 sample)
- verify Wireline excavation (3 samples)
- characterize Wireline material left in place (2)
- verify line extending S of gateway (1)
- verify line to WSW of gateway (1)
- exploratory trenches (2)

11/14/91

0945 Check in w/ office.

1200 Expand excavation of E leach line. OVM reading on N wall (#5 on sketch, p. 133) = 122 ppm.

1215 Lunch

1315 Pick up supplies. Heavy rain for ~ 1/4 hour.

1330 At site. Septic truck pumps out balance of septic tank and rain water plus drainage from Wireline Bldg (washing machine effluent according to Roger Covel) accumulated in dog pit.

1345 Excavate septic tank to remove balance of saturated material (Photos taken, see photo log, p. 119).

1430 Expose leach line trending W past N edge of Wireline Bldg. Photo. Sample for OVM (#6, sketch, p. 133). OVM = 75 ppm.

1445 Excavate leach line ~ 5' to W. OVM reading (#7, sketch, p. 133) = 99 ppm.

1500 Widen excavation for leach line to E. OVM reading (#8 on sketch, p. 133) = 3.8 ppm

11/14/91

530 Clean out excavation to TD.

1545 Secure site after last loads of the day:
- soil today = 350 yds^3 (2290 to date)
- concrete (septic system) = 10 yds^3 (110 to date)

600 Envirotech leaves site. Rain begins again. Will make map of final excavation & collect verification samples tomorrow.

1610 Check w/ Evergreen Analytical, confirm shipment of samples tomorrow.

615 Check in w/ Chris

630 Clean up & stop work.

Summary

Excavation
- soil: 350 yds^3 today, 2290 to date
- concrete: 10 yds^3 today, 110 to date

New line exposed
- extending to W on N edge of Wireline Bldg

11/15/91

Friday

Location: Homco: Farmington

Weather: overcast, 30s, damp (rain last night)

Personnel: Same, Equipment: Same

Start: 0730

Finish 1700 Break = 0.5

Total = 9

0730 Kaszuba on site

0740 Map excavation (see sketch, p. 140). Plot ovm readings & sample locations.

0745 Envirotech on site. Warm up equipment

0800 Water in excavation from last night's rain. Mix soil w/ water to solidify the mud & enable work to continue.

0815 Collect verification sample of NE sidewall (see map, p. 140)
- Sample # 911115 0815
- Location: NE sidewall composite
- Purpose: verification, clean excavation
- Parameters: TEH, TCLP benzene

0830 Begin excavating leach line on N edge of Wireline bldg. Photos, see p. 119

11/15/91

500 Fill in S excavation (S of fence).
Take photos before backfilling.
Package samples for shipping.

1600 Envirotech finisher backfilling.
Grade yard + fill holes to extent possible to facilitate Homco access.

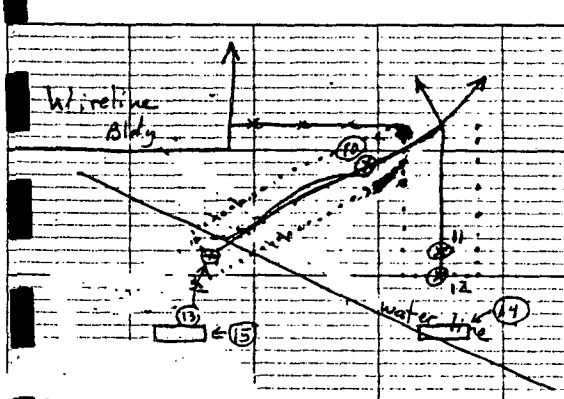
1615 Envirotech leaves site.

1630 Kaszuba leaves site. Deliver samples to Fed Ex.

1700 At hotel. Stop work.

Summary 11/15/91

- excavations
  - 140 yds³ soil today
    - 120 yds³ from line S of fence
    - 20 yds³ from line to W of N of Wireline bldg)
  - to date
    - 2430 yds³ soil
    - 110 yds³ concrete
- trench lines
  - complete line to S of fence
  - complete line to W of N side of Wireline bldg
  - discovered line to WSW of gateway
- sampler/OVM readings
  - see sketches, p. 140 & 142
- verification
  - NE sidewall #911115 0815, see p. 139
  - NW sidewall #911115 0945, see p. 141
  - N floor, #911115 1045, see p. 141
  - S floor, S of fence, #911115 1445, see p. 143
- characterization
  - line tracing WSW from gateway, #911115 1730, see p. 143



11/21/91

⑭ OVM = 5 @ 15', no stain

⑮ OVM = 12, Sample # 911121.1500 @ 12', no stain

⑯ OVM = 0, sample # 911121.1400 @ 12', no stain

11/20/91

⑫ OVM = 6, floor @ 9', unstained, sample # 911120.1400

⑬ OVM = 3, sidewall, unstained

11/15/91

⑩ OVM = 0, no stain, sidewall

⑪ OVM = 18, # 911115.1445 (@ 12', black soil)

⑰ OVM = 95, # 911115.1330 @ 6' (bottom of leach trench)

11/15/91

1200 Discover leach line to WSW. ~~Trench~~ @ Measure line @ 32' length WSW (see sketch, p. 142).

1230 Lunch. Rain slackens

1300 Trench ↓ to WSW line @ 1/2 way point (see sketch). Take OVM reading (= 10).

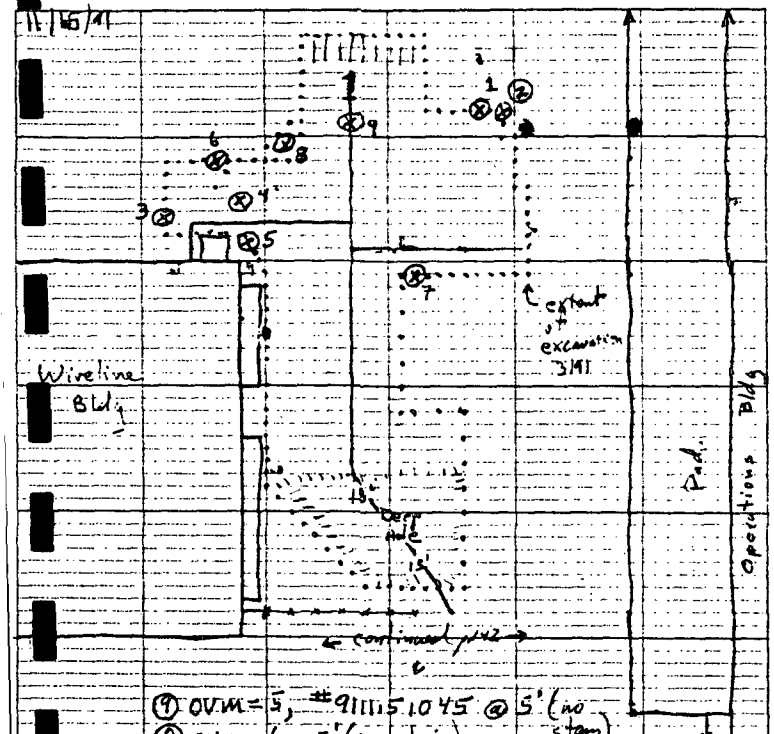
1330 Collect characterization sample @ location #10:
- Sample # 911115.1330, see sketch p. 142
- Location: center of WSW line, below steam pipe @ a depth of ~5'.
- Purpose: characterize WSW line to determine if it must be excavated.
- Parameters: TEH, total BTEX

Will determine course of action from WSW leach line after receiving sample results.

1345 Finish off S leach line

1445 Excavate to 12' depth w/ trackhoe. Collect OVM & verification sample.
- Sample # 911115.1445
- Location: S edge of S line, on floor @ depth of 12' in black material w/ OVM hit (see sketch, p. 142)
- Purpose: verification; Parameters: TEH, TCLP organics

11/6/91



⑨ OVM = 5, #911115 1045 @ 5' (no stain)
⑧ OVM = 6 @ 5' (in stain)
⑦ OVM = 220 (in stain)
⑥ OVM = 4; 911115 0945 (no stain)
⑤ OVM = 175 (in stain)
④ OVM = 45 @ 5.5'
③ OVM = 8 (in stain)
② #911115 0815 (in stain)
① OVM = 3.8 (in stain) Final Excavation

11/15/91

0900 Finish at line. OVM readings and photos (p. 119). Remove 60 yd³ today (60 yd³ yesterday), 120 yd³ total from far at line.

0930 Start excavation @ fenceline, trace line to #5. First, expose telephone line to ensure it doesn't get severed. Continue to collect OVM readings in the excavation.

0945 Collect verification sample in NW sidewall
- Sample # 911115 0945, see sketch p. 140
- Location: NW sidewall, no stain
- Purpose: verify clean NW sidewall
- Parameters: Same

1015 Rain starts

1045 Collect verification sample in floor of N margin of excavation.
- Sample # 911115 1045, see sketch, p. 140
- Location: N margin of floor of excavation
- Purpose: to verify clean floor
- Parameters same

1130 Continue excavation in heavy rain. Build berms in around excavations to prevent water from pooling in.

⑨ OVM = 5, #911115 1845 @ 4', no stain

Wednesday 11/20/91

Location: Homeco - Farmington
Weather: clear, 20s in AM

Personnel: Same
Equipment: Same

Start: 0730
Finish: 1630
Break = 1
Total = 8

0730 Kaszuba on site. Check in w/ Roger Cruel.

0800 Check in w/ Evergreen. Preliminary results of yesterday's analytical report are finalized today. No changes.

0810 Envirotech on site. Inform them that WSW line must be removed. Decide to install septic leach system to N of Wireline Bldg so that construction may occur simultaneously w/ excavation of leach line. Will install leach system @ least 50' N of Wireline Bldg and also N of previous Wireline excavation. These precautions will assure that the leach septic leach system will not flush into the capped area (i.e. percolation will & evaporation will take place before lateral movement into the capped area)

11/20/91

0830 Western Tech on site to conduct compaction tests

0835 Notify B. Medler of work status.

0840 Confer w/ DJK regarding design of septic leach system.

0845 Begin excavating drain line @ WSW of gateway (see photos, p. 119).

0930 Kaszuba picks up supplies.

1000 Back @ site.

1100 Extend excavation up to water line (feeds Wireline Bldg). Stained soil @ waterline (seam ½' thick). OVM = 51 ppm. Must extend excavation past waterline; will shut off water & repair line when complete.

11/20/91

1115 Work continues in area to be capped:
- trenching to lay line between Wireline & Operations Bldgs

1200 Lunch

1300 Return to work. Excavation complete. No stained material left. OVM reading (see sketch, p. 142)

1400 Collect verification sample. Take photos (see p. 119).

Sample #911120140C

Location: floor of WSW Drain line @ a TD of 9', in unstained soil, beneath former line (location #10, sketch on p. 142)

Purpose: Verify clean excavation

Parameters: TEH, TCLP benzene

Misc: collected beneath what was worst stain, did not collect further to WSW, in sidewall, because each line that was removed from there contained no visible stain

1415 Refill excavation.

1430 Water line repaired, water on. Continue filling excavation.

11/20/91

1445 Package sample for shipping.

1515 Confer w/ Roger Covel → use 4" line added for future expansion to sewer line ∴ no need to run a blind 4" line beneath the concrete cap. Also, Bart to expect a phone bill → static in one line, presumably from our work @ Wireline Bldg.

1615 Envirotech leaves site.

1630 Kaszuba leaves site; stop work.

Summary:
- excavate WSW drain line (180 yds^3)
- excavation
  - soil today = 220 yds^3; 2650 to date
  - 180 for WSW line; 40 for installation of septic tank
- verification sample for WSW drain line, see p. 148
- Envirotech continues construction
  - drain line between bldgs
  - septic system

11/21/91 Thursday

Location: Homco - Farmington
Weather: partly cloudy, 20s
Personnel: same
Equipment: same
Start: 0800
Finish: 1700
Bank: L
Total: 8

0800 Pick up ice for samples, travel to site.
0830 Enviro-tech on site.
845 Measure out location of septic leach system. Minimum distance for any trench or perforation from N edge of Wireline Bldg will be 50'. This will ensure:
- min of 10' from all excavations previously performed
- min of 50' from all contaminants left in place beneath cap

11/21/91

1200 Lunch
1300 Return to work.
1315 Excavate exploratory trenches as depicted on p. 142:
- ITEM #14
- trench 10' S of S drainline @ gateway
- TD = 12'
- no stain or odor, no evidence of contaminants migrating laterally to this location
- OVM =
- purpose - verify extent of stain from S drainline @ gateway
- OVM = 0 ppm
- soil sample
- Sample # 911121 1400
- location trench bottom
- purpose - verify no lateral migration
- Parameter - TEH

1415 Excavate second exploratory trench
- ITEM #15 on p. 142
- 10' W x 40' S of SE corner of Wireline Bldg.

11/21/91

1415 (cont'd)
- TD = 12'
- purpose: verify no migration from underneath Wireline Bldg
- OVM = 12
- sample collected
- sample # 911121500
- location: trench bottom
- purpose: verify no contaminant migration from beneath Wireline Bldg
- parameters: TEH
- misc:
- no stain or odor, no evidence of contaminant migration except ovm
- very hard bedrock starting @ ~7', do not expect it to be permeable to contaminants in this hard zone, which lasts to 11.5'
- collect sample from friable bedrock @ 12', ovm sample too

1510 Deepen the record trench (#15 on p. 151) to explore source of OVM readings.

		11/21/91
1520	Collect sample from 15' - friable bedrock - OVM = 5 ppm	
1530	Back fill trench. Keep sample for trench @ 12' level - highest ovm reading, under "aquatard" of hard Bs, will give "worst" case results from this trench.	
1600	Package samples	
1615	Go over construction activities w/ V. Farnsworth (Envirotech) and Steve of Homco.	
1635	Leave site. Deliver samples to Fed Ex.	
1700	At hotel, stop work.	

11/21/91

Summary

- excavate 2 exploratory trenches S of gateway to check for migration of contaminants
  - 2 S of S-trending drainline excavation
  - 2 S of Wireline Bldg
  - sampler in each trench (see p. 151-2)
- construction continues
- septic leach system for Wireline Bldg to N of the Bldg
  - min 50' from any contaminants left in place