3R - 50

GENERAL CORRESPONDENCE

YEAR(S):

2001

BLAGG ENGINEERING, INC.
P.O. Box 87, Bloomfield, New Mexico 87413
Phone: (505)632-1199 Fax: (505)632-3903

May 11, 2001

Mr. William C. Olson - Hydrologist
State of New Mexico Oil Conservation Division (**NMOCD**)
Environmental Bureau
1220 St. Francis Drive
Santa Fe, NM 87505

RE: Cross Timbers Operating Company (CTOC)
2000 Annual Groundwater Reports, San Juan County, NM
Permanent Closure Requested

Dear Mr. Olson:

Blagg Engineering, Inc. (**BEI**), on behalf of CTOC, respectfully submits the attached 2000 annual groundwater reports in which permanent closure is requested.

A total of seven (7) well sites, listed below, are associated with this correspondence. All work performed at these sites has been incorporated into individual packets (attached).

1. Frost, Jack B # 2
2. Hare GC B # 1E
3. Johnson, E.J. C # 1E
4. McCoy GC C # 1
5. Prespentt GC # 1
6. Stedje GC # 1
7. Sullivan Frame A # 1

The summaries and/or conclusions made for each site are based on data made available from the enclosed material as well as the information noted below. Any site specific inquiries should be examined within the individual packets.

On March 7, 2000, BEI communicated with NMOCD (fax and telecommunication) with respect to an apparent discrepancy in laboratory results by the two (2) analytical subcontractors employed (see attached *facsimile cover page* and *spreadsheet* documents). After examining the information, the NMOCD made recommendations as noted on the attached summary (*Sampling Event Categorization* ....) in order to achieve verification for permanent closure. In addition, NMOCD reiterated that the approved groundwater management plan (**GMP**) must be adhered to.

It should be noted that CTOC, upon acquiring these sites, as well as numerous others from BP Amoco (formerly Amoco Production Company) in 1998, requested from NMOCD to incorporate BP Amoco's own GMP for their exclusive use. It is BEI's understanding that the NMOCD approved this request. The approved GMP is included with this correspondence.

According to the above noted summary and GMP, BEI concludes that permanent closure has been

achieved at the sites included in this transmittal. Residual groundwater and/or soil contamination, if any, does not appear to pose a threat to nearby freshwater supplies, public health, or to the environment.

It should be recognized that CTOC, in the case of the McCoy GC C #1 well site, went beyond the recommendation made by NMOCD in the above noted summary (*Sampling Event Categorization* ....) by establishing four (4) consecutive quarterly sampling events below the NMWQCC's standards for BTEX (benzene, toluene, ethylbenzene, and total xylenes) in order to add more credibility to the suggestions made by NMOCD.

If you have questions, please call either myself or Jeffrey C. Blagg. Thank you for your cooperation and assistance.

Sincerely,
BLAGG ENGINEERING, INC.

Nelson Velez
Staff Geologist

Reviewed by:

Jeffrey C. Blagg, P.E.
President

Attachments: **Facsimile Cover Page & Spreadsheet**
Sampling Event Categorization and Permanent Closed Site Listing - Summary
CTOC's Groundwater Management Plan
Individual Well site packets

cc: Denny Foust, Environmental Geologist, NMOCD, Aztec, NM
Bill Liess, Regional Environmental Officer, Bureau of Land Management, Farmington, NM (2 copies of federal lease sites only)
Nina Hutton, Environmental & Safety Manager, CTOC, Ft. Worth, TX

NV/nv

PERM-00.CVL

BLAGG ENGINEERING, INC.

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FACSIMILE COVER PAGE

DATE: MAR. 7, 2000

TO: BILL OLSON

COMPANY: NMOCD

FAX #: (505) 827-8177

FROM: NELSON VELEZ

NO. PAGES INCLUDING COVER: 2

MESSAGE:

CONTENT INCLUDES:

Spreadsheet of lab result comparisons between Envirotech, Inc. lab and On-Site Technologies. The 1999 sampling events was analyzed by Evirotech and the 2000 events by On-Site Tech. Jeffrey and I would like to convey our opinions to what appears to be a major discrepancy in the findings. Hopefully you can review the attached document before we call this afternoon to discuss this matter. Thanks. NJV

CROSS TIMBERS GROUNDWATER MONITOR WELL LAB RESULTS

SAMPLE DATE	MONITOR WELL No:	D.T.W. (ft)	T.D. (ft)	TDS mg/L	COND. umhos	pH	PRODUCT (in)	BTEX EPA METHOD 8021 (PPB) Benzene	Toluene	Ethyl Benzene	Total Xylene
JOHNSON, E.J. C #1E - PROD. TANK PIT											
27-Sep-99	MW #1	15.32	20.00	3,440	6,920	7.5		13.9	11.0	17.2	10.0
18-Feb-00		15.39			3,100	7.7		2.4	ND	11.0	ND
27-Sep-99	MW #2	12.96	20.00	720	1,472	8.1		58.7	39.0	90.2	107.4
18-Feb-00		13.08			1,500	8.2		ND	ND	86	42.6
27-Sep-99	MW #3	8.24	20.00	3,410	6,840	8.0		22.7	3.3	2.1	11.6
18-Feb-00		8.51			3,100	8.0		ND	ND	ND	ND
HARE GC B #1E - SEPARATOR PIT											
09-Dec-99	MW #2	6.99	18.00	3,500	7,020	7.0		9.0	8.7	5.3	10.7
21-Feb-00		7.47			3,100	7.1		ND	ND	ND	ND
09-Dec-99	MW #3	5.31	17.00	3,380	6,770	7.0		5.7	5.3	2.8	4.3
21-Feb-00		5.61			3,200	7.1		ND	ND	ND	ND
FROST, JACK B #2 - SEPARATOR PIT											
27-Sep-99	MW #1	8.73	20.00	3,400	6,810	8.0		24.9	4.0	ND	6.3
18-Feb-00		9.26			3,800	8.0		ND	ND	ND	ND
27-Sep-99	MW #2	11.71	20.00	915	1,876	7.6		350.0	60.1	90.5	253.9
18-Feb-00		11.87			1,900	7.7		0.9	ND	3	3.9
27-Sep-99	MW #3	13.76	20.00	2,080	4,180	8.1		21.2	3.1	3.1	15.1
18-Feb-00		12.87			2,700	8.2		ND	ND	ND	ND
MCCOY GC C #1 - BLOW PIT											
29-Nov-99	MW #1	5.85	15.00	1,360	2,735	7.0		8.5	3.4	35.0	68.7
21-Feb-00		5.74			2,000	7.2		ND	ND	ND	ND
29-Nov-99	MW #2	5.44	15.00	1,200	2,430	7.0		3.9	8.2	ND	73.5
21-Feb-00		5.36			1,700	7.2		ND	ND	ND	ND
29-Nov-99	MW #3	6.07	15.00	1,420	2,850	7.0		79.2	117	16.8	456.2
15-Mar-00		6.01			2,000	7.3		ND	ND	83	348
PRESPENTT GC #1 - BLOW PIT											
09-Dec-99	MW #2	14.38	20.00	275	505	6.5		7.9	14.9	26.9	73.4
21-Feb-00		16.38			500	7.0		ND	ND	ND	0.6
09-Dec-99	MW #3	13.84	20.00	260	515	7.2		9.4	20.9	15.7	33.0
21-Feb-00		15.68			500	7.6		ND	ND	0.9	19.2
STEDJE GC #1 - SEPARATOR PIT											
29-Nov-99	MW #2	10.80	15.00	450	910	7.1		50.0	37.3	124.0	621.8
15-Mar-00		10.57			800	7.3		ND	ND	ND	ND
29-Nov-99	MW #3	10.51	15.00	475	960	7.2		9.9	3.5	75.0	154.6
21-Feb-00		10.61			700	7.7		ND	ND	ND	ND
SULLIVAN FRAME A #1 - BLOW PIT											
03-Nov-99	MW #2	6.34	15.00	5,100	10,220	7.0		9.9	3.7	1.0	1.8
22-Feb-00		6.60			2,100	7.3		ND	ND	ND	ND

BLAGG ENGINEERING, INC.
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March 7, 2000

Sampling event Categorization and Permanent Closed Site Listing

(Based on telecom with Bill Olson of NMOCD)

Quarterly Sampling - utilizing current data

1) McCoy GC C # 1 - sample MW # 3 ASAP, if below standards, sample one more quarter for below standards results, then request permanent closure.
2) Stedje GC # 1 - sample MW # 2 ASAP, if below standards, sample one more quarter for below standards results, then request permanent closure.
3) Frost, Jack B # 2 - sample all MW's next quarter, if all are below standards, then request permanent closure.
4) Johnson, E.J. C# 1E - sample all MW's next quarter, if all are below standards, then request permanent closure.

Requesting Permanent Closure for the following Sites - utilizing current data

1) Hare GC B # 1E
2) Prespentt GC # 1
3) Sullivan Frame A # 1 - after verifying the TDS levels in all MW's and chloride content in MW #2.

CROSS TIMBERS OPERATING COMPANY

GROUNDWATER MANAGEMENT PLAN
(for groundwater encountered during pit closure activities)

Cross Timbers Operating Company (**CTOC**) may undertake unlined earthen pit closures for well locations in the San Juan Basin (including vulnerable areas, expanded vulnerable areas, and Area III). These closures may include removing contaminated media from the pit area (**source**), soil sampling (when accessible), and groundwater sampling. Groundwater may be encountered during pit closure activities at some locations. This Remediation Plan addresses cases where groundwater has been or may be encountered during initial closure activities. Pits where groundwater has been or may be encountered will be assessed and remediated according to the following options.

1.0 Preliminary Investigation and/or Remediation of Impacted Groundwater

1.1 A preliminary investigation will be conducted. This typically entails excavation of source contamination, sampling of soils (*when accessible*) and groundwater within the pit area. Sampling will be in accordance to the New Mexico Oil Conservation Division (**NMOCD**) Pit Closure Guidance. All initial groundwater samples from the excavated pit area will be analyzed for benzene, toluene, ethylbenzene, total xylenes (**BTEX**), and anion/cation. If a product sheen is present, samples may also be analyzed for polynuclear aromatic hydrocarbons (**PAH**) .

Note that the regulatory standards for only BTEX, anion/cation, and possibly PAH (if a product sheen is present) constituents will be addressed as discussed below.

1.2. If the initial groundwater samples from the excavated pit area are below regulatory standards prior to any remedial action to the groundwater (i.e. pumping, skimming, etc), remedial action will be terminated and the pit considered permanently closed unless otherwise stated on the pit closure verification form.

1.3 If the initial groundwater samples from the excavated pit area exceed regulatory standards, a determination of lateral extent in the suspected down gradient direction will be attempted. This will be conducted by advancement of a test hole(s) via trackhoe/backhoe or other means of acceptable subsurface advancement.

1.4 The contaminated portion of groundwater within the excavated area pit may be removed using various methods **(i.e. skimmer, pumps, air injection, natural attenuation, etc)**.

1.4.1 The following categories will determine what action to undertake if remedial action has been conducted prior to the initial sampling of the excavated pit area or after subsequent samples have been collected.

1.4.1a If the laboratory results are below regulatory standards from both the excavated pit area and suspected down gradient samples, then the pit area will be monitored only.

1.4.1b If the laboratory results exceed regulatory standards from the excavated pit area but are below from the suspected down gradient samples, then the pit area will be further remediated and/or monitored only.

1.4.1c If the laboratory results exceed regulatory standards from both the excavated pit area and the suspected down gradient samples, then a determination of the lateral extent will be established and the pit area will be further remediated and/or monitored only.

1.4.1d If the laboratory results are below regulatory standards from the excavated pit area but are exceeded from the suspected down gradient samples, then a determination of the lateral extent will be established and the delineated area will be remediated and/or monitored only.

1.5 If the site conditions are unsatisfactory for further remedial actions and groundwater cleanup standards are not achieved, then *drive points and/or monitor wells* **(sampling point)** may be utilized to delineate lateral extent and monitor the groundwater impact area. The number of sampling points installed will depend on such conditions as the size of the source area, availability of space at the work site, and any surface obstructions that may hinder potential sampling point locations.

1.5.1 Figure 1 displays a typical drive point construction and completion that may be applied.

1.5.2 Figure 2 & 3 display typical monitor well construction and completion that may be applied.

1.6 During installation of the sampling point(s), a soil sample from immediately above the water table may be collected and field screened using an Organic Vapor Meter (**OVM**). Boring logs for each sampling point will be completed and filed within the pit closure records for each well site.

1.7 If auger refusal is encountered prior to reaching groundwater and contamination appears at the refusal depth, a risk based assessment will be implemented.

1.8 After installation of the sampling point(s), development and sampling of each point(s) will be conducted. Sampling will include observation of the initial bail, field testing for Total Dissolved Solids (**TDS**), and testing for appropriate constituents by laboratory analyses.

2.0 Groundwater Monitoring Program

This section addresses subsequent sampling of attempted remediated groundwater employing the sampling points previously mentioned. Please note that the options listed below are categorized into three distinct scenarios that may be experienced during the initial sampling event for each individual sampling point. The scenarios are defined as follows; 1) non detects or low concentrations (**defined as levels below 25 % of the regulatory standards** [i.e. benzene < 2.5 ppb]), 2) below regulatory standards (i.e. benzene < 10 ppb but > 2.5 ppb), and 3) those exceeding regulatory standards.

2.1 Four consecutive sampling events demonstrating results below regulatory standards for any individual sampling point will achieve permanent closure for that particular sampling point unless otherwise stated.

2.2 If the initial sampling event results reveal below standards for the anion/cation (or a statistical equivalence to the natural conditions utilizing the furthest up gradient sampling point) and/or PAH constituents, then sampling of those constituents will be discontinued.

2.3 If the initial up gradient samples reveal non detects or low concentrations for the appropriate constituents, then sampling of that sampling point(s) will be terminated.

2.4 If the initial pit area samples exceed regulatory standards and the down gradient(s) reveals non detects or low concentrations for the appropriate constituents, then the down gradient sampling point(s) will be terminated and the pit area sampled on a quarterly basis.

2.5 If the initial pit area and down gradient samples are below regulatory standards but exceed low concentrations for the appropriate constituents, then those sampling points will be sampled on a quarterly basis.

2.6 If the initial pit area samples exceed regulatory standards and the down gradient(s) reveals non detects or low concentrations for the appropriate constituents, then the down gradient sampling point(s) will be terminated and the pit area sampled on an annual basis.

2.7 If the initial pit area samples exceed regulatory standards and the down gradient(s) is below regulatory standards but exceed low concentrations for the appropriate constituents, then the pit area sampling point(s) will be conducted annually and the down gradient(s) on a quarterly basis.

2.8 If the initial pit area and down gradient samples exceed regulatory standards, then those sampling points will be sampled on an annual basis. Afterwards, a determination of lateral extent will be undertaken.

2.9 In residential areas, if the TDS level at any sampling point is less than or statistically equivalent to the background up gradient sampling point, then the site will be considered meeting the allowable TDS concentration for closure.

2.10 All sampling and analysis activities will utilize approved US EPA procedures.

3.0 Risk Assessment of Impacted Groundwater

3.1 At sites near residential areas where regulatory standards have been exceeded for the appropriate constituents in groundwater, a water well survey will be conducted. If this survey indicates that a water supply well is within 1000 feet, then the potential risk to water supply well(s) will be considered, and appropriate actions will be recommended to NMOCD.

3.2 If potential water well(s) are not present, and if concentrations of the previously addressed constituents exceed regulatory standards, CTOC may petition for closure. Such a petition might include an evaluation of risk demonstrating that the remaining contaminants do not pose a threat to nearby fresh water supplies due to geochemical equilibrium, public health and the environment.

4.0 Scheduling

Groundwater investigation and remediation activities will begin as soon as practical at each site. Priorities will be assigned based upon the results of site and/or risk assessment and field considerations. The NMOCD will be notified at least 48 hours in advance of all scheduled field related activities. All documents submitted for approval will be submitted to the NMOCD Santa Fe Office with copies provided to the NMOCD Aztec Office.

5.0 Reporting

Notification will continue to be made to NMOCD when impacted groundwater is encountered during pit remediation.

On a annual basis commencing January, 1999 or upon written notification from NMOCD, a summary of groundwater remediation activities for each individual well site will be submitted to the Santa Fe and District Office. This summary will include:

5.1 A description of all activities which occurred during the investigation, interpretations or conclusions, and possible recommendations.

5.2 The laboratory analytic or field reports of soil and water sampling including copies of the laboratory or field quality assurance / quality control data.

5.3 Summary tables listing historical and current groundwater laboratory analytic results.

5.4 A site map and a water table elevation map using the water table elevation of the groundwater in all pertinent sampling points.

5.5 A lithologic and completion diagram for each sampling point.

5.6 The disposition of all wastes generated.

5.7 Any risk analysis and type of remediation method used if remediation is required for each location at which contaminated groundwater has been encountered.

6.0 Plug and Abandonment of Sampling Points

Upon notification from NMOCD that permanent closure has been achieved at an individual well site, each sampling point will be plugged and abandoned as follows:

6.1 Drive points will be removed from the subsurface and boring grouted with 5% bentonite concrete slurry to ground surface.

6.2 Those monitor wells whose tops are above surface grade will be cut down to grade and grouted with 5% bentonite concrete slurry to ground surface.

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REPORTS

DATE:
1999-2000

5

CROSS TIMBERS OPERATING COMPANY

GROUNDWATER REMEDIATION REPORT

1999-2000

SULLIVAN FRAME A #1
(D) SECTION 30, T29N, R10W, NMPM
SAN JUAN COUNTY, NEW MEXICO

PREPARED FOR:
MR. WILLIAM C. OLSON
NEW MEXICO OIL CONSERVATION DIVISION

MAY 2001

PREPARED BY:
BLAGG ENGINEERING, INC.

Consulting Petroleum / Reclamation Services
P.O. Box 87
Bloomfield, New Mexico 87413

Cross Timbers Operating Company (CTOC)
Sullivan Frame A # 1 - Blow/Reserve Pit
Nw/4 Nw/4 Sec. 30, T29N, R10W

Site Assessment Date:	**June 4, 1992 (Documentation Included)**
Pit closure Date:	**November 1, 1994 (Documentation Included)**
Monitor Well Installation Date:	**October 13, 1999**
Monitor Well Sampling Date:	**November 3, 1999**

Groundwater Monitor Well Sampling Procedures:

Groundwater samples were collected from site monitor wells (MW's) following US EPA: SW-846 protocol. The samples were collected using new disposable bailers and placed in new laboratory supplied 40 ml glass vials with teflon septa caps. Samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) per US EPA Method 8021. Additional groundwater was collected and place in laboratory supplied 500 ml plastic containers and analyzed for general water quality per US EPA Method 600/4-79-020. The samples were preserved cool (BTEX samples also preserved with mercuric chloride) and hand delivered to a qualified laboratory for testing. Waste generated during monitor well sampling and development was disposed of utilizing the separator tank pit located on the well site.

Water Quality Information:

BTEX and general chemistry results for the three (3) quarterly sampling events are summarized in the following tables. All MW BTEX constituents satisfactorily meet the New Mexico Water Quality Control Commission's (NMWQCC) allowable concentrations for groundwater. The general water quality results for chloride and total dissolved solids (TDS) also met NMWQCC standards for groundwater or was close to the normal levels seen within the San Juan basin. The general water quality results also disclosed excessive sulfate and fluoride levels within all MW's during the November 3, 1999 sampling event.

Summary:

Based on the determined groundwater gradient (figures 2, 3, and 4), MW #3 appears to be positioned to sufficiently substantiate and delineate the source area. However, the gradient is relatively flat, therefore capable of switching directions to the north or west very easily.

In accordance with the attached correspondence (*refer to letter dated May 11, 2001 - RE: CTOC, 2000 Annual Groundwater Reports, San Juan County, NM, Permanent Closure Requested*) and the NMOCD previously approved groundwater management plan (GMP), specifically Section 2.0, CTOC respectfully request permanent closure for the site blow/reserve pit.

This document contains all pertinent information detailed in section 5.0 (Reporting) of the GMP. Upon receiving permanent closure notification from NMOCD, CTOC will conduct plug and abandonment of all sampling points as addressed in Section 6.0 of the GMP.

Finally, CTOC request the NMOCD to contact Pamco, Inc. as to their highly probable subsurface soil and groundwater impact derived from their Lechner #2 earthen pit (actively discharging prior to and during CTOC's monitor well installations), located up gradient of CTOC's abandoned pit being investigated (see figures 3 and 4).

CROSS TIMBERS GROUNDWATER MONITOR WELL LAB RESULTS

SUBMITTED BY BLAGG ENGINEERING, INC.

SULLIVAN FRAME A #1 - BLOW PIT
UNIT D, SEC. 30, T29N, R10W

REVISED : JULY 10, 2000

FILENAME: (A1-2Q-00.WK4) NJV

SAMPLE DATE	MONITOR WELL No:	D.T.W. (ft)	T.D. (ft)	TDS mg/L	COND. umhos	pH	PRODUCT (in)	BTEX EPA METHOD 8021 (PPB) Benzene	Toluene	Ethyl Benzene	Total Xylene
03-Nov-99	MW #1	4.68	15.00	4,220	8,450	7.3		ND	ND	ND	ND
22-Feb-00		5.21			-	-		-	-	-	-
14-Mar-00		5.15			2,600	7.5		-	-	-	-
29-Jun-00		5.29			-	-		-	-	-	-
03-Nov-99	MW #2	6.34	15.00	5,100	10,220	7.0		9.9	3.7	1.0	1.8
22-Feb-00		6.60			2,100	7.3		ND	ND	ND	ND
14-Mar-00		6.73			2,300	7.3		-	-	-	-
29-Jun-00		6.88			4,700	7.2		4	ND	ND	ND
03-Nov-99	MW #3	3.41	13.00	12,320	24,650	7.3		ND	ND	ND	ND
22-Feb-00		3.83			-	-		-	-	-	-
14-Mar-00		4.01			4,000	7.5		-	-	-	-
29-Jun-00		4.28			4,100	7.6		ND	ND	ND	ND

GENERAL WATER QUALITY

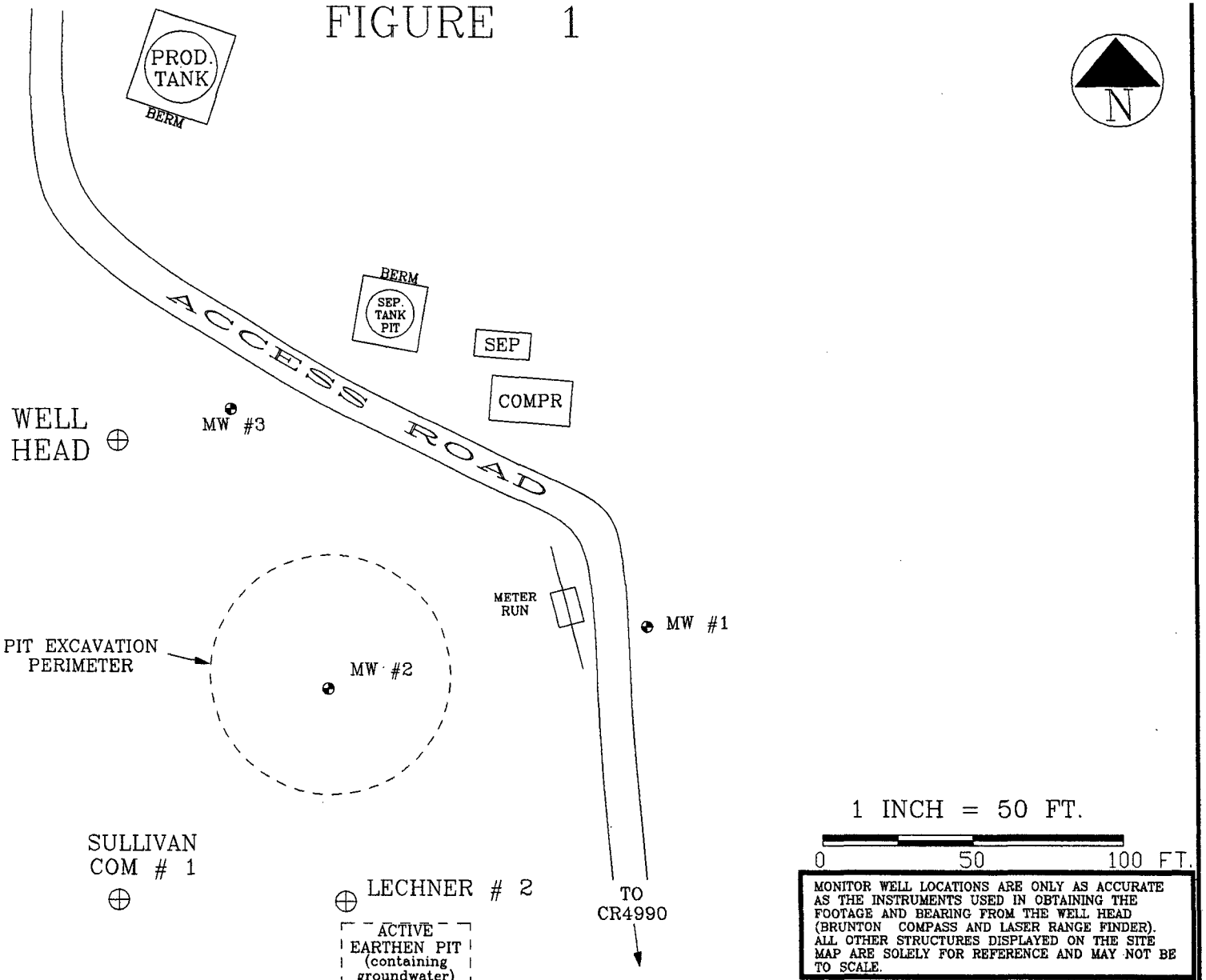
CROSS TIMBERS OPERATING COMPANY

SULLIVAN FRAME A #1

SAMPLING DATES : 11 / 3 / 99 , 3 / 14 / 00 , & 6 / 29 / 00 .

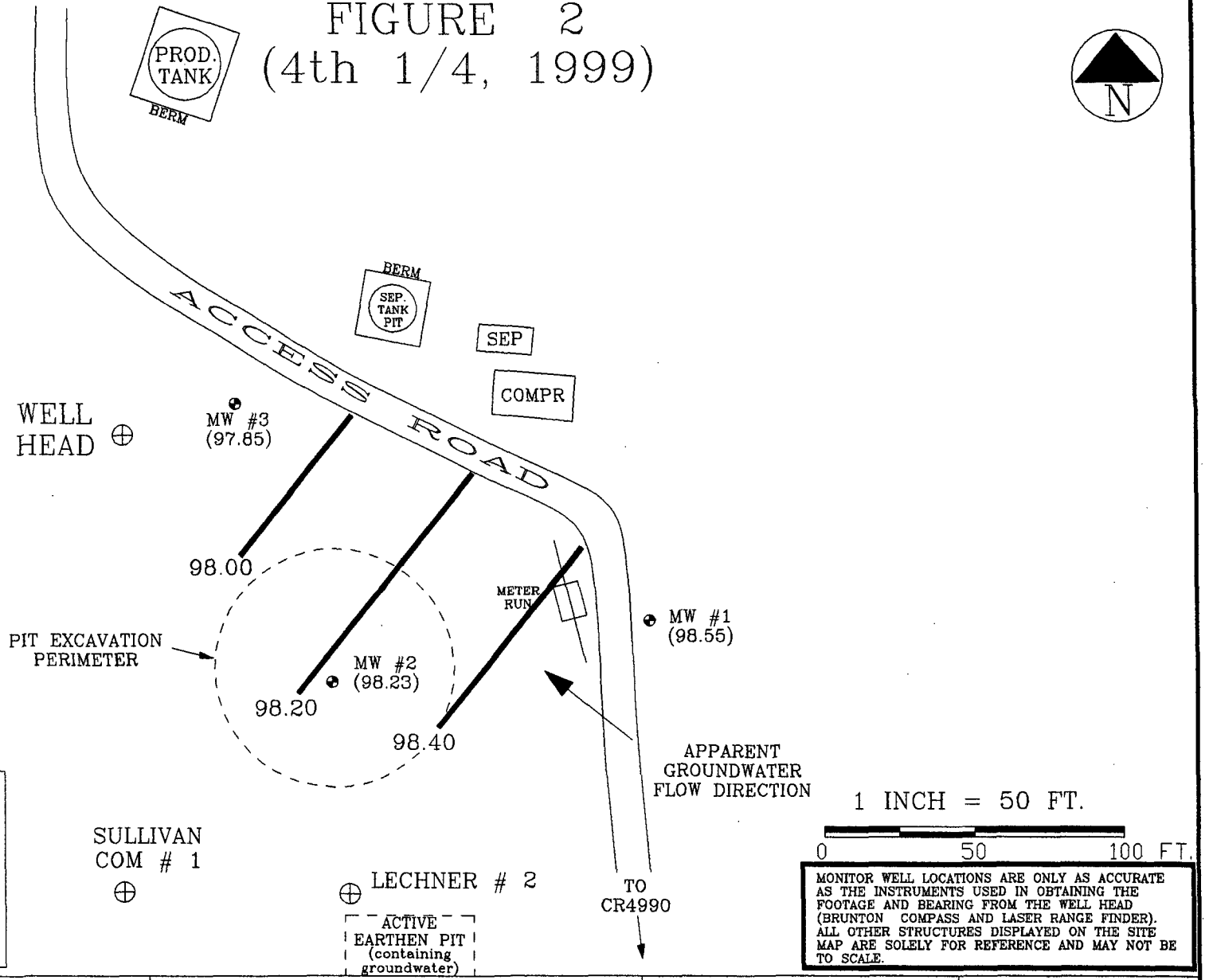
PARAMETERS	MW # 1	MW # 2	MW # 3	Units
LAB pH	7.31	7.00	7.34	s. u.
LAB CONDUCTIVITY @ 25 C	8,450	10,220	24,650	umhos / cm
TOTAL DISSOLVED SOLIDS @ 180 C	4,220	5,100	12,320	mg / L
03/14/00	2,080	2,080	3,440	mg / L
06/29/00	-	-	3,010	mg / L
TOTAL DISSOLVED SOLIDS (Calc)	4,198	5,047	12,192	mg / L
SODIUM ABSORPTION RATIO	31.8	32.7	73.5	ratio
TOTAL ALKALINITY AS CaCO3	780	512	528	mg / L
TOTAL HARDNESS AS CaCO3	305	415	497	mg / L
BICARBONATE as HCO3	780	512	528	mg / L
CARBONATE AS CO3	< 1	< 1	< 1	mg / L
HYDROXIDE AS OH	< 1	< 1	< 1	mg / L
NITRATE NITROGEN	< 0.1	< 0.1	< 0.1	mg / L
NITRITE NITROGEN	0.012	0.012	0.003	mg / L
CHLORIDE	13.2	410	1.9	mg / L
03/14/00	-	5.5	-	mg / L
06/29/00	-	42.4	-	mg / L
FLUORIDE	2.48	2.44	7.80	mg / L
PHOSPHATE	1.6	2.4	0.4	mg / L
SULFATE	2,320	2,640	7,920	mg / L
IRON	< 0.001	< 0.001	< 0.001	mg / L
CALCIUM	90.6	107	118	mg / L
MAGNESIUM	19.10	36.0	49.2	mg / L
POTASSIUM	2.51	7.61	6.12	mg / L
SODIUM	1,275	1,531	3,768	mg / L
CATION / ANION DIFFERENCE	0.30	0.04	0.01	%

FIGURE 1



CROSS TIMBERS OPERATING CO. SULLIVAN FRAME A #1 NW/4 NW/4 SEC. 30, T29N, R10W SAN JUAN COUNTY, NEW MEXICO	BLAGG ENGINEERING, INC. CONSULTING PETROLEUM / RECLAMATION SERVICES P.O. BOX 87 BLOOMFIELD, NEW MEXICO 87413 PHONE: (505) 632-1199	PROJECT: MW INSTALL. DRAWN BY: NJV FILENAME: SFA1-SM.SKD REVISED: 12/4/99 NJV	SITE MAP 11/99

FIGURE 2
(4th 1/4, 1999)



Top of Well Elevation

MW #1	(103.23)
MW #2	(104.57)
MW #3	(101.26)

MW #1 (98.55) Groundwater Elevation as of 11/3/99.

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

CROSS TIMBERS OPERATING CO.

SULLIVAN FRAME A #1

NW/4 NW/4 SEC. 30, T29N, R10W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: MW SAMPLING

DRAWN BY: NJV

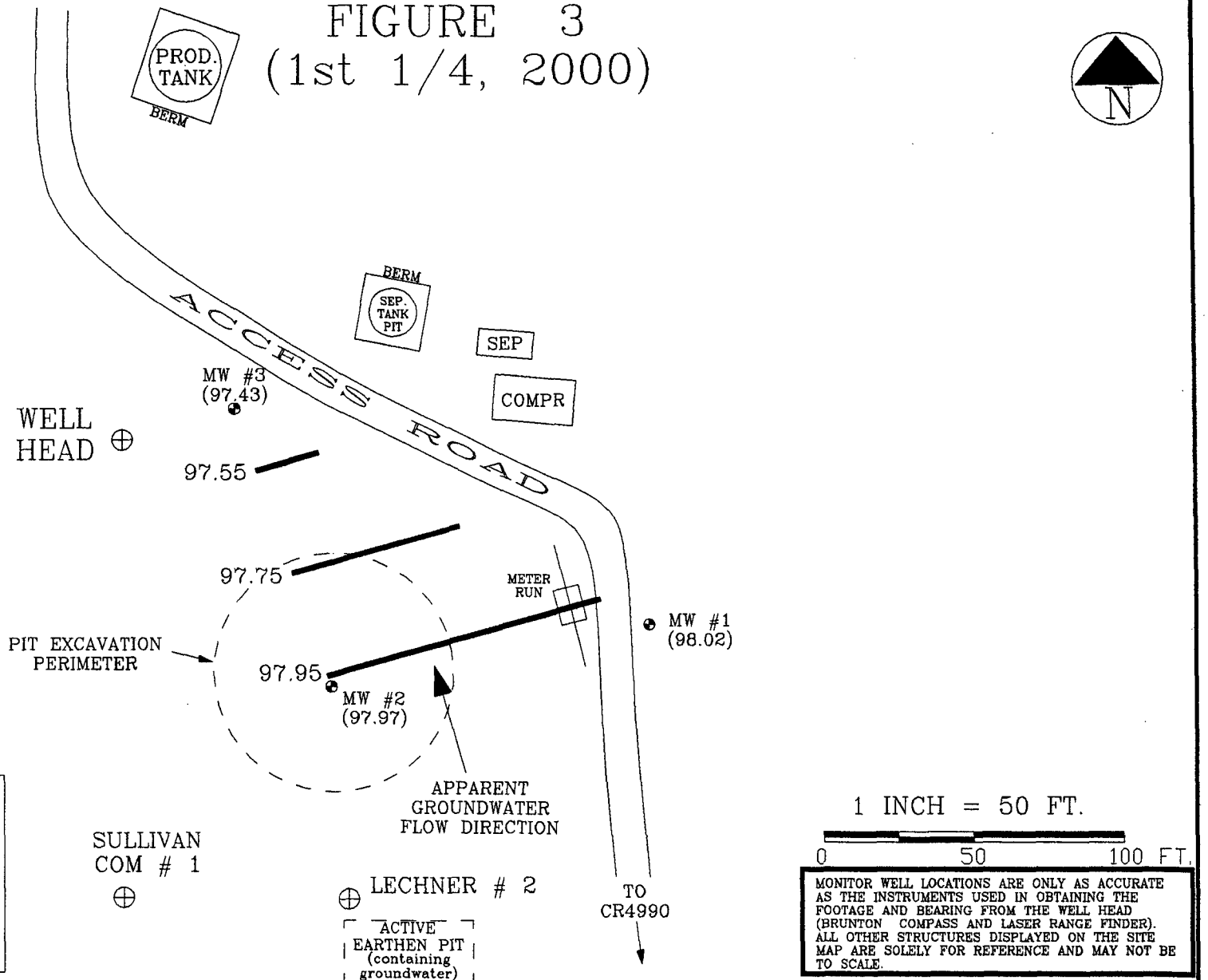
FILENAME: SFA1-GW.SKD

REVISED: 11/17/99 NJV

GROUNDWATER GRADIENT MAP

11/99

FIGURE 3
(1st 1/4, 2000)



Top of Well Elevation	
MW #1	(103.23)
MW #2	(104.57)
MW #3	(101.26)

MW #1 (98.02) Groundwater Elevation as of 2/22/00.

1 INCH = 50 FT.

0 50 100 FT.

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

CROSS TIMBERS OPERATING CO.

SULLIVAN FRAME A #1

NW/4 NW/4 SEC. 30, T29N, R10W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: MW SAMPLING

DRAWN BY: NJV

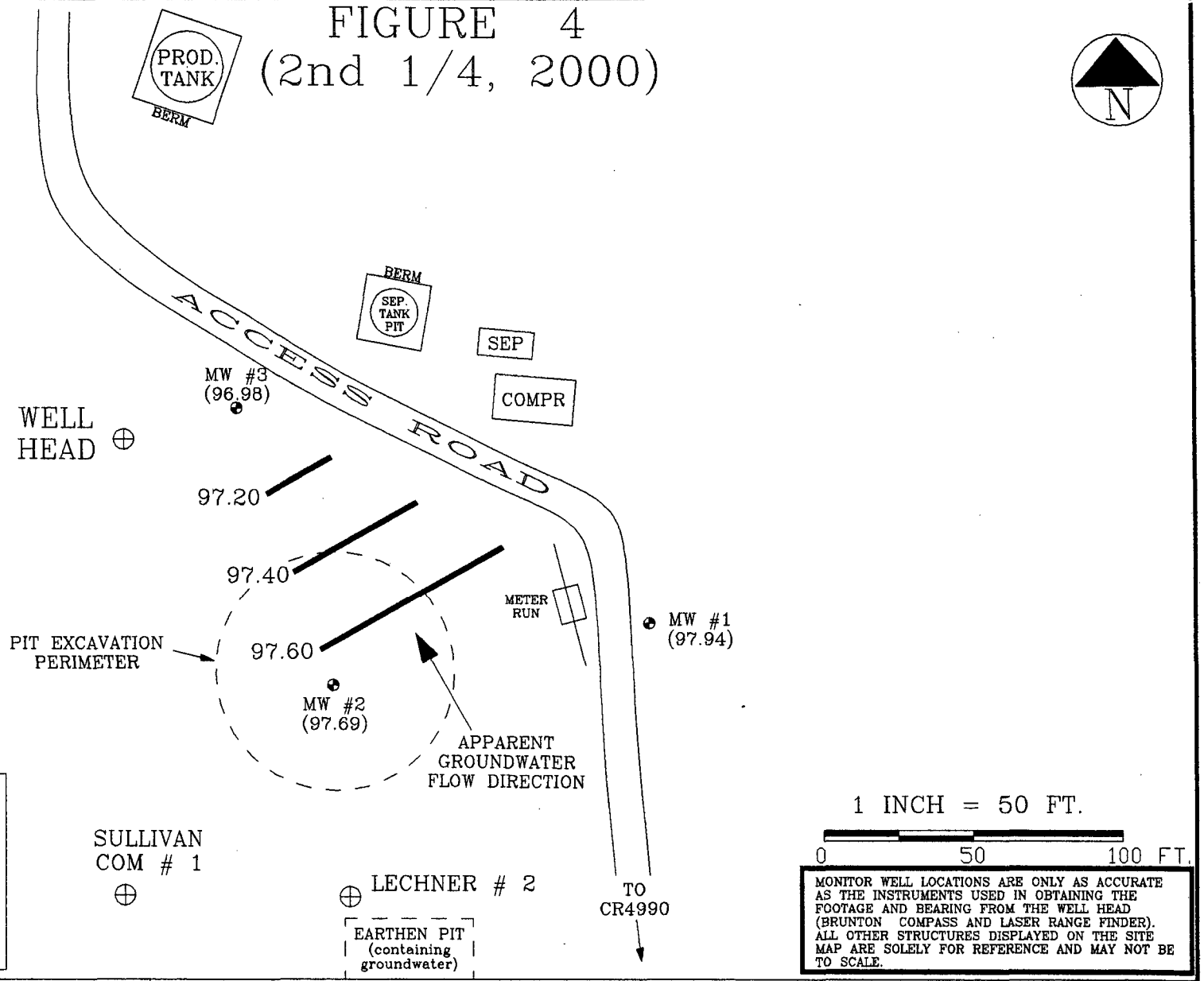
FILENAME: 02-22-GW.SKD

REVISED: 04/04/01 NJV

GROUNDWATER GRADIENT MAP

02/00

FIGURE 4
(2nd 1/4, 2000)



Top of Well Elevation	
MW #1	(103.23)
MW #2	(104.57)
MW #3	(101.26)

MW #1 (97.94) Groundwater Elevation as of 6/29/00.

1 INCH = 50 FT.

0 50 100 FT.

MONITOR WELL LOCATIONS ARE ONLY AS ACCURATE AS THE INSTRUMENTS USED IN OBTAINING THE FOOTAGE AND BEARING FROM THE WELL HEAD (BRUNTON COMPASS AND LASER RANGE FINDER). ALL OTHER STRUCTURES DISPLAYED ON THE SITE MAP ARE SOLELY FOR REFERENCE AND MAY NOT BE TO SCALE.

CROSS TIMBERS OPERATING CO.

SULLIVAN FRAME A #1

NW/4 NW/4 SEC. 30, T29N, R10W

SAN JUAN COUNTY, NEW MEXICO

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

PROJECT: MW SAMPLING

DRAWN BY: NJV

FILENAME: 06-29-GW.SKD

REVISED: 04/04/01 NJV

GROUNDWATER GRADIENT MAP

06/00

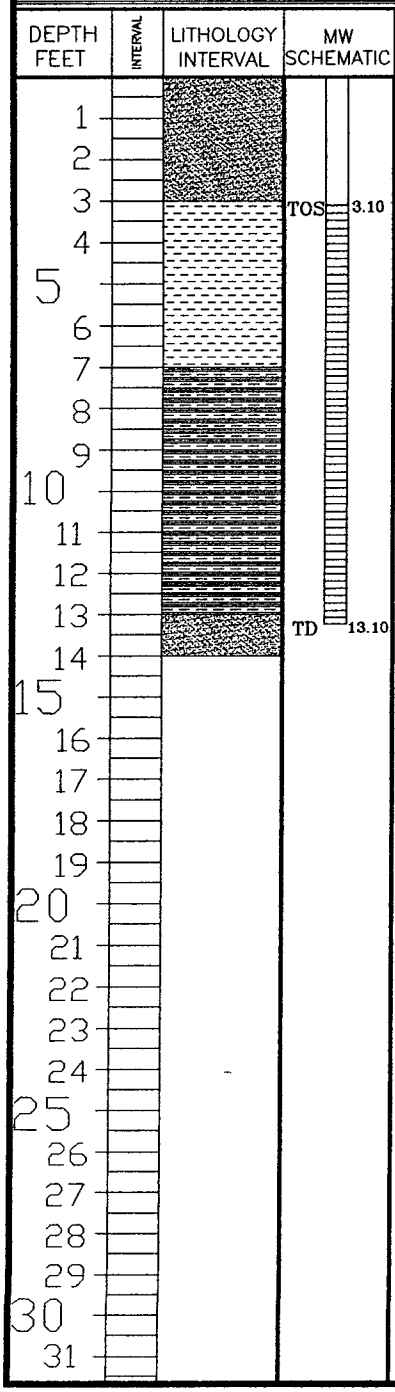
BLAGG ENGINEERING, Inc.

P.O. BOX 87
BLOOMFIELD, NM 87413
(505) 632-1199

BORE / TEST HOLE REPORT

BORING #..... BH - 1
MW #..... 1
PAGE #..... 1
DATE STARTED 10/13/99
DATE FINISHED 10/13/99
OPERATOR..... DE
PREPARED BY NJV

CLIENT: CROSS TIMBERS OPERATING COMPANY
LOCATION NAME: SULLIVAN FRAME A #1
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (ENVIROTECH CME61)
BORING LOCATION: 186 FT., S70.5E FEET FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 1.60 FT. ABOVE GROUND SURFACE.

GW DEPTH ON 11/3/99 = 2.78 FT. (APPROX.) FROM GROUND SURFACE.

GRAYISH ORANGE SAND, NON COHESIVE, SLIGHTLY MOIST TO SATURATED, FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (0.00 – 3.00 FT. INTERVAL).

OLIVE GRAY SILTY SAND, NON COHESIVE, SATURATED, FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (3.00 – 7.00 FT. INTERVAL).

OLIVE GRAY SILTY CLAY TO CLAY, SLIGHTLY PLASTIC TO PLASTIC, SATURATED, FIRM TO STIFF, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (7.00 – 13.00 FT. INTERVAL).

MODERATE YELLOWISH BROWN SAND, NON COHESIVE, SUPERSATURATED, FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (13.00 – 14.00 FT. INTERVAL).

NOTE:
- SAND.
- SILTY SAND.
- SILTY CLAY TO CLAY.

TOS – TOP OF SCREEN FROM GROUND SURFACE.
TD – TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
GW – GROUND WATER.

DRAWING: BH-1.SKD	DATE: 1/28/00	DWN BY: NJV

BLAGG ENGINEERING, Inc.

P.O. BOX 87
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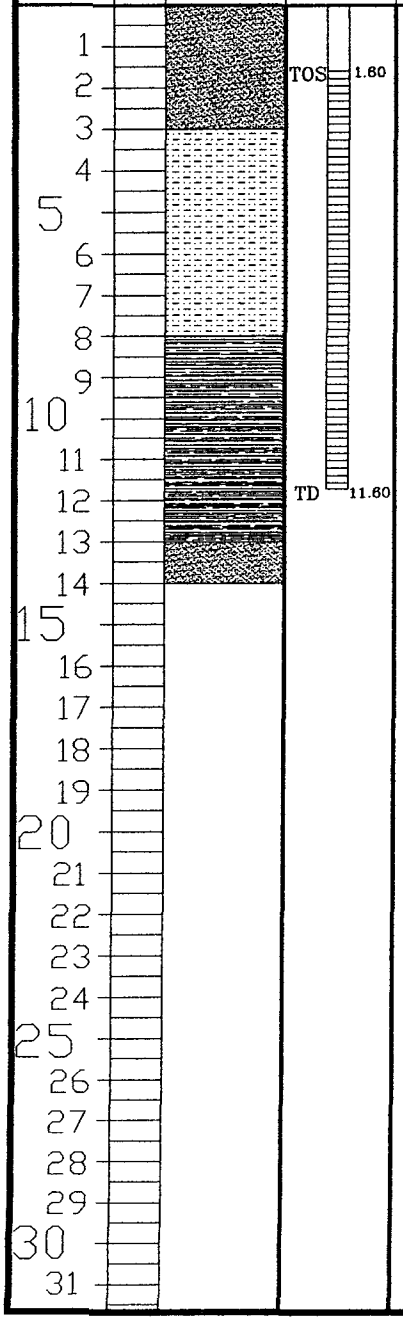
(505) 632-1199

BORE / TEST HOLE REPORT

BORING #..... BH - 2
MW #..... 2
PAGE #..... 2
DATE STARTED 10/13/99
DATE FINISHED 10/13/99
OPERATOR..... DE
PREPARED BY NJV

CLIENT: CROSS TIMBERS OPERATING COMPANY
LOCATION NAME: SULLIVAN FRAME A #1
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (ENVIROTECH CME61)
BORING LOCATION: 108 FT., S40E FEET FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 3.40 FT. ABOVE GROUND SURFACE.

GW DEPTH ON 11/3/99 = 2.94 FT. (APPROX.) FROM GROUND SURFACE.

GRAYISH ORANGE SAND, NON COHESIVE, SLIGHTLY MOIST TO SATURATED, FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (0.00 - 3.00 FT. INTERVAL).

DARK GRAY SILTY SAND TO SILTY CLAY, NON COHESIVE TO SLIGHTLY PLASTIC, SATURATED, FIRM TO LOOSE, SLIGHT HYDROCARBON ODOR DETECTED PHYSICALLY (3.00 - 8.00 FT. INTERVAL).

LIGHT TO MEDIUM GRAY CLAY, PLASTIC, SATURATED, FIRM TO STIFF, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY (8.00 - 13.00 FT. INTERVAL).

PALE YELLOWISH BROWN SAND, NON COHESIVE, SUPERSATURATED, FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (13.00 - 14.00 FT. INTERVAL).

NOTE:
- SAND.
- SILTY SAND TO SILTY CLAY.
- CLAY.

TOS - TOP OF SCREEN FROM GROUND SURFACE.
TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
GW - GROUND WATER.

DRAWING: BH-2.SKD	DATE: 1/28/00	DWN BY: NJV

BLAGG ENGINEERING, Inc.

P.O. BOX 87
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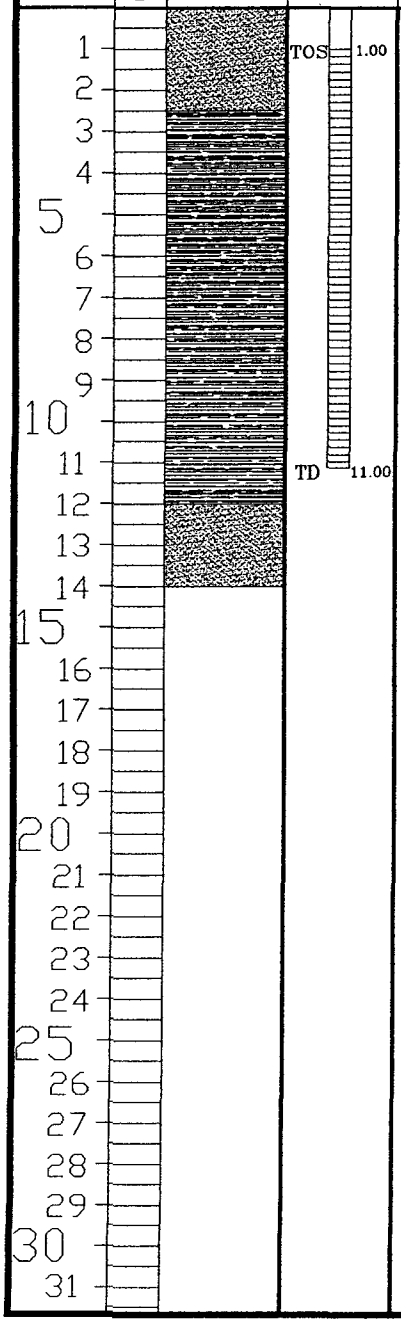
(505) 632-1199

BORE / TEST HOLE REPORT

BORING #..... BH - 3
MW #..... 3
PAGE #..... 3
DATE STARTED 10/13/99
DATE FINISHED 10/13/99
OPERATOR..... DE
PREPARED BY NJV

CLIENT: CROSS TIMBERS OPERATING COMPANY
LOCATION NAME: SULLIVAN FRAME A #1
CONTRACTOR: BLAGG ENGINEERING, INC.
EQUIPMENT USED: MOBILE DRILL RIG (ENVIROTECH CME61)
BORING LOCATION: 39 FT., N74.5E FEET FROM WELL HEAD.



FIELD CLASSIFICATION AND REMARKS

GROUND SURFACE

TOP OF CASING APPROX. 2.00 FT. ABOVE GROUND SURFACE.
GW DEPTH ON 11/3/99 = 1.41 FT. (APPROX.) FROM GROUND SURFACE.

GRAYISH ORANGE SAND, NON COHESIVE, SLIGHTLY MOIST TO SATURATED, FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (0.00 - 2.50 FT. INTERVAL).

OLIVE GRAY CLAY, PLASTIC, SATURATED, FIRM TO STIFF, NO APPARENT HYDROCARBON ODOR DETECTED PHYSICALLY (2.50 - 12.00 FT. INTERVAL).

MODERATE YELLOWISH BROWN SAND, NON COHESIVE, SUPERSATURATED, FIRM TO LOOSE, NO APPARENT DISCOLORATION OBSERVED OR HYDROCARBON ODOR DETECTED PHYSICALLY (12.00 - 14.00 FT. INTERVAL).

NOTE: - SAND.

- CLAY.

TOS - TOP OF SCREEN FROM GROUND SURFACE.
TD - TOTAL DEPTH OF MONITOR WELL FROM GROUND SURFACE.
GW - GROUND WATER.

DRAWING: BH-3.SKD	DATE: 1/28/00	DWN BY: NJV

MONITOR WELL #1

CROSS TIMBERS OPERATING CO.

HARE GC B # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: JAN. '00

FILENAME: MW-1

MONITOR WELL #2

CROSS TIMBERS OPERATING CO.

HARE GC B # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: JAN. '00

FILENAME: MW-2

MONITOR WELL #3

CROSS TIMBERS OPERATING CO.

HARE GC B # 1E

MONITOR WELL CONSTRUCTION & COMPLETION

INSTALLED WITH MOBILE RIG

BLAGG ENGINEERING, INC.

CONSULTING PETROLEUM / RECLAMATION SERVICES

P.O. BOX 87

BLOOMFIELD, NEW MEXICO 87413

PHONE: (505) 632-1199

MONITOR WELL SCHEMATIC

DRAFTED BY: NJV

DATE: JAN. '00

FILENAME: MW-3

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : CROSS TIMBERS OPER. CO. **CHAIN-OF-CUSTODY # :** 7308

LOCATION : SULLIVAN FRAME A # 1 **LABORATORY (S) USED :** ENVIROTECH, INC.

Date : November 3, 1999 **SAMPLER :** R E P

Filename : 11-03-99.WK4 **PROJECT MANAGER :** N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1	103.23	98.55	4.68	15.00	1120	7.5	3,500	5.00	-
2	104.57	98.23	6.34	15.00	1145	7.0	5,600	4.25	-
3	101.26	97.85	3.41	13.00	1210	7.4	8,300	4.75	-

NOTES : Volume of water purged from well prior to sampling; V = pi X r2 X h X 7.48 gal./ft3) X 3 (wellbores).

(i.e. 2" MW r = (1/12) ft. h = 1 ft.) (i.e. 4" MW r = (2/12) ft. h = 1 ft.)

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water (or 24 oz.).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

Collected BTEX and anion / cation samples for all MW 's listed above .

Fair to good recovery in all MW 's .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #1	Date Reported:	11-07-99
Chain of Custody:	7308	Date Sampled:	11-03-99
Laboratory Number:	G365	Date Received:	11-03-99
Sample Matrix:	Water	Date Analyzed:	11-04-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**ND**	**1**	**0.2**
Toluene	**ND**	**1**	**0.2**
Ethylbenzene	**ND**	**1**	**0.2**
p,m-Xylene	**ND**	**1**	**0.2**
o-Xylene	**ND**	**1**	**0.1**
Total Xylene	**ND**		
Total BTEX	**ND**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**100 %**
	Bromofluorobenzene	**100 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **Sullivan Frame A #1.**

Analyst

Review

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #2	Date Reported:	11-07-99
Chain of Custody:	7308	Date Sampled:	11-03-99
Laboratory Number:	G366	Date Received:	11-03-99
Sample Matrix:	Water	Date Analyzed:	11-04-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**9.9**	**1**	**0.2**
Toluene	**3.7**	**1**	**0.2**
Ethylbenzene	**1.0**	**1**	**0.2**
p,m-Xylene	**1.8**	**1**	**0.2**
o-Xylene	**ND**	**1**	**0.1**
Total Xylene	**1.8**		
Total BTEX	**16.4**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**96 %**
	Bromofluorobenzene	**96 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **Sullivan Frame A #1.**

Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #3	Date Reported:	11-07-99
Chain of Custody:	7308	Date Sampled:	11-03-99
Laboratory Number:	G367	Date Received:	11-03-99
Sample Matrix:	Water	Date Analyzed:	11-04-99
Preservative:	HgCl2 & Cool	Analysis Requested:	BTEX
Condition:	Cool & Intact		

Parameter	Concentration (ug/L)	Dilution Factor	Det. Limit (ug/L)
Benzene	**ND**	**1**	**0.2**
Toluene	**ND**	**1**	**0.2**
Ethylbenzene	**ND**	**1**	**0.2**
p,m-Xylene	**ND**	**1**	**0.2**
o-Xylene	**ND**	**1**	**0.1**
Total Xylene	**ND**		
Total BTEX	**ND**		

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Trifluorotoluene	**98 %**
	Bromofluorobenzene	**98 %**

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **Sullivan Frame A #1.**

Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #1	Date Reported:	11-08-99
Laboratory Number:	G365	Date Sampled:	11-03-99
Chain of Custody:	7308	Date Received:	11-03-99
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	11-05-99
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		Units
pH	**7.31**	s.u.		
Conductivity @ 25° C	**8,450**	umhos/cm		
Total Dissolved Solids @ 180C	**4,220**	mg/L		
Total Dissolved Solids (Calc)	**4,198**	mg/L		
SAR	**31.8**	ratio		
Total Alkalinity as CaCO3	**780**	mg/L		
Total Hardness as CaCO3	**305**	mg/L		
Bicarbonate as HCO3	**780**	mg/L	12.78	meq/L
Carbonate as CO3	**<1**	mg/L	0.00	meq/L
Hydroxide as OH	**<1**	mg/L	0.00	meq/L
Nitrate Nitrogen	**<0.1**	mg/L	0.00	meq/L
Nitrite Nitrogen	**0.012**	mg/L	0.00	meq/L
Chloride	**13.2**	mg/L	0.37	meq/L
Fluoride	**2.48**	mg/L	0.13	meq/L
Phosphate	**1.6**	mg/L	0.05	meq/L
Sulfate	**2,320**	mg/L	48.30	meq/L
Iron	**<0.001**	mg/L		
Calcium	**90.6**	mg/L	4.52	meq/L
Magnesium	**19.10**	mg/L	1.57	meq/L
Potassium	**2.51**	mg/L	0.06	meq/L
Sodium	**1,275**	mg/L	55.46	meq/L
Cations			61.62	meq/L
Anions			61.64	meq/L
Cation/Anion Difference			**0.03%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983. Water And Waste Water", 18th ed., 1992.

Comments: **Sullivan Frame A #1.**

Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #2	Date Reported:	11-08-99
Laboratory Number:	G366	Date Sampled:	11-03-99
Chain of Custody:	7308	Date Received:	11-03-99
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	11-05-99
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		Units
pH	**7.00**	s.u.		
Conductivity @ 25° C	**10,220**	umhos/cm		
Total Dissolved Solids @ 180C	**5,100**	mg/L		
Total Dissolved Solids (Calc)	**5,047**	mg/L		
SAR	**32.7**	ratio		
Total Alkalinity as CaCO3	**512**	mg/L		
Total Hardness as CaCO3	**415**	mg/L		
Bicarbonate as HCO3	**512**	mg/L	8.39	meq/L
Carbonate as CO3	**<1**	mg/L	0.00	meq/L
Hydroxide as OH	**<1**	mg/L	0.00	meq/L
Nitrate Nitrogen	**<0.1**	mg/L	0.00	meq/L
Nitrite Nitrogen	**0.012**	mg/L	0.00	meq/L
Chloride	**410**	mg/L	11.57	meq/L
Fluoride	**2.44**	mg/L	0.13	meq/L
Phosphate	**2.4**	mg/L	0.08	meq/L
Sulfate	**2,640**	mg/L	54.96	meq/L
Iron	**<0.001**	mg/L		
Calcium	**107**	mg/L	5.34	meq/L
Magnesium	**36.0**	mg/L	2.96	meq/L
Potassium	**7.61**	mg/L	0.19	meq/L
Sodium	**1,531**	mg/L	66.60	meq/L
Cations			75.09	meq/L
Anions			75.13	meq/L
Cation/Anion Difference			**0.04%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983. Water And Waste Water", 18th ed., 1992.

Comments: **Sullivan Frame A #1.**

Analyst

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

CATION / ANION ANALYSIS

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #3	Date Reported:	11-08-99
Laboratory Number:	G367	Date Sampled:	11-03-99
Chain of Custody:	7308	Date Received:	11-03-99
Sample Matrix:	Water	Date Extracted:	N/A
Preservative:	Cool	Date Analyzed:	11-05-99
Condition:	Cool & Intact		

Parameter	Analytical Result	Units		Units
pH	**7.34**	s.u.		
Conductivity @ 25° C	**24,650**	umhos/cm		
Total Dissolved Solids @ 180C	**12,320**	mg/L		
Total Dissolved Solids (Calc)	**12,192**	mg/L		
SAR	**73.5**	ratio		
Total Alkalinity as CaCO3	**528**	mg/L		
Total Hardness as CaCO3	**497**	mg/L		
Bicarbonate as HCO3	**528**	mg/L	8.65	meq/L
Carbonate as CO3	**<1**	mg/L	0.00	meq/L
Hydroxide as OH	**<1**	mg/L	0.00	meq/L
Nitrate Nitrogen	**<0.1**	mg/L	0.00	meq/L
Nitrite Nitrogen	**0.003**	mg/L	0.00	meq/L
Chloride	**1.9**	mg/L	0.05	meq/L
Fluoride	**7.80**	mg/L	0.41	meq/L
Phosphate	**0.4**	mg/L	0.01	meq/L
Sulfate	**7,920**	mg/L	164.89	meq/L
Iron	**<0.001**	mg/L		
Calcium	**118**	mg/L	5.89	meq/L
Magnesium	**49.2**	mg/L	4.05	meq/L
Potassium	**6.12**	mg/L	0.16	meq/L
Sodium	**3,768**	mg/L	163.91	meq/L
Cations			174.00	meq/L
Anions			174.03	meq/L
Cation/Anion Difference			**0.01%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983. Water And Waste Water", 18th ed., 1992.

Comments: **Sullivan Frame A #1.**

Analyst

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CHAIN OF CUSTODY RECORD

7308

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
BLAGG / CROSS TIMBERS	SULLIVAN FRAME A #1	
Sampler: REP	Client No. 40340	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX (8021)	ANION/ CATION					Remarks
MW#1	11.3.99	1120	G365	WATER DEP.	3	✓	✓					
MW#2	11.3.99	1145	G366	WATER	3	✓	✓					
MW#3	11.3.99	1210	G367	WATER	3	✓	✓					
												BTEX SAMPLES
												PRESERVE - $HgCl_2$/ COOL
												A/C SAMPLES
												PRESERVE - COOL

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	11.3.99	13:00		11.3.99	1300
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.

5796 U.S. Highway 64
Farmington, New Mexico 87401
(505) 632-0615

Sample Receipt	Y	N	N/A
Received Intact	✓		
Cool - Ice/Blue Ice	✓		

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS
QUALITY ASSURANCE REPORT

Client:	N/A	Project #:	N/A
Sample ID:	11-04-BTEX QA/QC	Date Reported:	11-07-99
Laboratory Number:	G362	Date Sampled:	N/A
Sample Matrix:	Water	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	11-04-99
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	I-Cal RF:	C-Cal RF:	%Diff. Accept. Range 0 - 15%	Blank Conc.	Detect. Limit
Benzene	1.5053E-001	1.5102E-001	**0.32%**	**ND**	**0.2**
Toluene	3.0995E-001	3.1001E-001	**0.02%**	**ND**	**0.2**
Ethylbenzene	8.9920E-002	9.0028E-002	**0.12%**	**ND**	**0.2**
p,m-Xylene	2.7841E-001	2.7847E-001	**0.02%**	**ND**	**0.2**
o-Xylene	2.6467E-002	2.6546E-002	**0.30%**	**ND**	**0.1**

Duplicate Conc. (ug/L)	Sample	Duplicate	%Diff.	Accept Limit
Benzene	**ND**	**ND**	**0.0%**	**0 - 30%**
Toluene	**ND**	**ND**	**0.0%**	**0 - 30%**
Ethylbenzene	**ND**	**ND**	**0.0%**	**0 - 30%**
p,m-Xylene	**ND**	**ND**	**0.0%**	**0 - 30%**
o-Xylene	**ND**	**ND**	**0.0%**	**0 - 30%**

Spike Conc. (ug/L)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Limits
Benzene	**ND**	**50.0**	**50.0**	**100%**	**39 - 150**
Toluene	**ND**	**50.0**	**50.0**	**100%**	**46 - 148**
Ethylbenzene	**ND**	**50.0**	**50.0**	**100%**	**32 - 160**
p,m-Xylene	**ND**	**100.0**	**100**	**100%**	**46 - 148**
o-Xylene	**ND**	**50.0**	**50.0**	**100%**	**46 - 148**

ND - Parameter not detected at the stated detection limit.

* - Administrative level set at 80 - 120.

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.
Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: **QA/QC for samples G362 - G367.**

Analyst

Review

5796 U.S. Highway 64 • Farmington, NM 87401 • Tel 505 • 632 • 0615 • Fax 505 • 632 • 1865

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : CROSS TIMBERS OPER. CO. **CHAIN-OF-CUSTODY # :** 10359

LOCATION : SULLIVAN FRAME A # 1 **LABORATORY (S) USED :** ON - SITE TECH.

Date : February 22, 2000 **SAMPLER :** N J V

Filename : 02-22-00.WK4 **PROJECT MANAGER :** N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1	103.23	98.02	5.21	15.00	-	-	-	-	-
2	104.57	97.97	6.60	15.00	1240	7.3	2,100	4.25	-
3	101.26	97.43	3.83	13.00	-	-	-	-	-

NOTES : Volume of water purged from well prior to sampling: V = pi X r2 X h X 7.48 gal./ft3) X 3 (wellbores).

(i.e. 2" MW r = (1/12) ft. h = 1 ft.) (i.e. 4" MW r = (2/12) ft. h = 1 ft.)

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water (or 24 oz.).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

Very poor recovery and large quantity of sediment during purging in MW # 2 . Collected BTEX sample from MW # 2 only .

OFF: (505) 325-5667

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556

ANALYTICAL REPORT

Date: *01-Mar-00*

Client:	Blagg Engineering	**Client Sample Info:**	CTOC - Sullivan Frame A #1
Work Order:	0002051	**Client Sample ID:**	MW #2
Lab ID:	0002051-01A **Matrix:** AQUEOUS	**Collection Date:**	2/22/2000 12:40:00 PM
Project:	CTOC - Sullivan Frame A #1	**COC Record:**	10359

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		**SW8021B**				Analyst: **DM**
Benzene	ND	0.5		µg/L	1	2/28/2000
Toluene	ND	0.5		µg/L	1	2/28/2000
Ethylbenzene	ND	0.5		µg/L	1	2/28/2000
m,p-Xylene	ND	1		µg/L	1	2/28/2000
o-Xylene	ND	0.5		µg/L	1	2/28/2000

Qualifiers:

PQL - Practical Quantitation Limit

ND - Not Detected at Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

10250

CHAIN OF CUSTODY RECORD

ON SITE TECHNOLOGIES, LTD.

612 E. Murray Dr. • P.O. Box 2606 • Farmington, NM 87499
LAB: (505) 325-5667 • FAX: (505) 327-1496

Date: 2/22/00

Page: 1 of 1

Purchase Order No.:	Project No.		
SEND INVOICE TO: Name	Nelson Velez	REPORT RESULTS TO: Name	same — Title
Company	Blagg Engineering, Inc. — Dept.	Company	
Address	P.O. Box 87	Mailing Address	
City, State, Zip	Bloomfield, NM 87413	City, State, Zip	
		Telephone No.	632-1199 — Telefax No. 632-3903

PROJECT LOCATION: CTOC - Sullivan Frame A #1

SAMPLER'S SIGNATURE: Nelson Velez

SAMPLE IDENTIFICATION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	SAMPLE PRES.	Number of Containers	ANALYSIS REQUESTED: BTEX (8021)	LAB ID
MW #2	2/22/00	1240	water	cool & HCl	2	✓	0002051-01A

Relinquished by: Nelson Velez	Date/Time 2/22/00 1330	Received by: OC	Date/Time 2/22/00 1330
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time

Method of Shipment:

Rush | 24-48 Hours | 10 Working Days | By Date: 2/28/00

Authorized by: _____ Date _____
(Client Signature Must Accompany Request)

Special Instructions / Remarks:
Please Fax Results upon Analytical Completion.

Distribution: White - On Site Yellow - LAB Pink - Sampler Goldenrod - Client

On Site Technologies, LTD.

Date: *01-Mar-00*

CLIENT: Blagg Engineering
Work Order: 0002051
Project: CTOC - Sullivan Frame A #1

QC SUMMARY REPORT
Method Blank

Sample ID: **MB1** Batch ID: **GC-1_000228** Test Code: **SW8021B** Units: **µg/L** Analysis Date **2/28/2000** Prep Date:

Client ID: **0002051** Run ID: **GC-1_000228A** SeqNo: **24562**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.5									
Ethylbenzene	ND	0.5									
m,p-Xylene	ND	1									
Methyl tert-Butyl Ether	ND	1									
o-Xylene	ND	0.5									
Toluene	.0832	0.5									J

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: *01-Mar-00*

CLIENT: Blagg Engineering
Work Order: 0002051
Project: CTOC - Sullivan Frame A #1

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: **0002039-02AMS** Batch ID: **GC-1_000228** Test Code: **SW8021B** Units: **µg/L** Analysis Date **2/28/2000** Prep Date:
Client ID: **0002051** Run ID: **GC-1_000228A** SeqNo: **24563**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	893.8	10	800	119.1	96.8%	73	126				
Ethylbenzene	1399	10	800	637.1	95.3%	88	113				
m,p-Xylene	6044	20	1600	4542	93.8%	83	112				
Methyl tert-Butyl Ether	812.5	20	800	35.51	97.1%	81	125				
o-Xylene	1389	10	800	617.7	96.5%	93	110				
Toluene	2642	10	800	1861	97.7%	76	126				

Sample ID: **0002039-02AMSD** Batch ID: **GC-1_000228** Test Code: **SW8021B** Units: **µg/L** Analysis Date **2/28/2000** Prep Date:
Client ID: **0002051** Run ID: **GC-1_000228A** SeqNo: **24564**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	891.7	10	800	119.1	96.6%	73	126	893.8	0.2%	6	
Ethylbenzene	1394	10	800	637.1	94.6%	88	113	1399	0.4%	5	
m,p-Xylene	6019	20	1600	4542	92.3%	83	112	6044	0.4%	7	
Methyl tert-Butyl Ether	819.4	20	800	35.51	98.0%	81	125	812.5	0.8%	9	
o-Xylene	1390	10	800	617.7	96.6%	93	110	1389	0.0%	6	
Toluene	2634	10	800	1861	96.7%	76	126	2642	0.3%	6	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: *01-Mar-00*

CLIENT: Blagg Engineering
Work Order: 0002051
Project: CTOC - Sullivan Frame A #1

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: **LCS WATER** Batch ID: **GC-1_000228** Test Code: **SW8021B** Units: **µg/L** Analysis Date **2/28/2000** Prep Date:

Client ID: **0002051** Run ID: **GC-1_000228A** SeqNo: **24561**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	40.38	0.5	40	0	100.9%	89	112				
Ethylbenzene	41.28	0.5	40	0	103.2%	93	112				
m,p-Xylene	78.41	1	80	0	98.0%	88	108				
Methyl tert-Butyl Ether	40.59	1	40	0	101.5%	87	115				
o-Xylene	41.17	0.5	40	0	102.9%	93	112				
Toluene	40.9	0.5	40	0.0832	102.0%	92	111				

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: *01-Mar-00*

CLIENT: Blagg Engineering
Work Order: 0002051
Project: CTOC - Sullivan Frame A #1

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: **CCV1 BTEX_0001** Batch ID: **GC-1_000228** Test Code: **SW8021B** Units: **µg/L** Analysis Date **2/28/2000** Prep Date:
Client ID: **0002051** Run ID: **GC-1_000228A** SeqNo: **24558**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.18	0.5	20	0	100.9%	85	115				
Ethylbenzene	20.93	0.5	20	0	104.7%	85	115				
m,p-Xylene	39.52	1	40	0	98.8%	85	115				
Methyl tert-Butyl Ether	19.8	1	20	0	99.0%	85	115				
o-Xylene	20.84	0.5	20	0	104.2%	85	115				
Toluene	20.44	0.5	20	0	102.2%	85	115				
1,4-Difluorobenzene	89.71	0	100	0	89.7%	80	105				
4-Bromochlorobenzene	89.1	0	100	0	89.1%	78	108				
Fluorobenzene	88.62	0	100	0	88.6%	78	108				

Sample ID: **CCV2 BTEX_0001** Batch ID: **GC-1_000228** Test Code: **SW8021B** Units: **µg/L** Analysis Date **2/28/2000** Prep Date:
Client ID: **0002051** Run ID: **GC-1_000228A** SeqNo: **24559**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.4	0.5	20	0	97.0%	85	115				
Ethylbenzene	20.04	0.5	20	0	100.2%	85	115				
m,p-Xylene	37.84	1	40	0	94.6%	85	115				
Methyl tert-Butyl Ether	20.64	1	20	0	103.2%	85	115				
o-Xylene	20.14	0.5	20	0	100.7%	85	115				
Toluene	19.68	0.5	20	0	98.4%	85	115				
1,4-Difluorobenzene	89.28	0	100	0	89.3%	80	105				
4-Bromochlorobenzene	89.66	0	100	0	89.7%	78	108				
Fluorobenzene	88.78	0	100	0	88.8%	78	108				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
Work Order: 0002051
Project: CTOC - Sullivan Frame A #1

QC SUMMARY REPORT
Continuing Calibration Verification Standard

Sample ID: **CCV3 BTEX_0001** Batch ID: **GC-1_000228** Test Code: **SW8021B** Units: **µg/L** Analysis Date **2/28/2000** Prep Date:
Client ID: **0002051** Run ID: **GC-1_000228A** SeqNo: **24560**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	38.89	0.5	40	0	97.2%	85	115				
Ethylbenzene	39.58	0.5	40	0	99.0%	85	115				
m,p-Xylene	75.31	1	80	0	94.1%	85	115				
Methyl tert-Butyl Ether	41.12	1	40	0	102.8%	85	115				
o-Xylene	40.19	0.5	40	0	100.5%	85	115				
Toluene	39.55	0.5	40	0	98.9%	85	115				
1,4-Difluorobenzene	89.13	0	100	0	89.1%	80	105				
4-Bromochlorobenzene	92.77	0	100	0	92.8%	78	108				
Fluorobenzene	87.92	0	100	0	87.9%	78	108				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 01-Mar-00

CLIENT: Blagg Engineering
Work Order: 0002051
Project: CTOC - Sullivan Frame A #1
Test No: SW8021B

QC SUMMARY REPORT
SURROGATE RECOVERIES

Aromatic Volatiles by GC/PID

Sample ID	14FBZ	4BCBZ	FLBZ					
0002039-02A	87.2	88	87.8					
0002039-02AMS	87.3	89.3	86					
0002039-02AMSD	87.1	89.6	86.4					
0002039-03A	84.8	89.3	86.2					
0002039-05A	86.3	87.9	86.5					
0002039-06A	84.6	86	84.8					
0002042-04A	88.4	89.7	86.8					
0002043-02A	85.4	89.5	85.3					
0002044-02A	91.2	90	90.4					
0002048-01A	90	89.6	89					
0002048-02A	91.4	91.1	90					
0002050-01A	90.1	90.4	89					
0002050-02A	90.4	89.4	89.2					
0002050-03A	89.8	89.5	89.7					
0002050-04A	90.7	89.9	89					
0002051-01A	89.5	89.9	89.5					
0002053-01A	89.1	88.1	89.6					
0002053-02A	89.6	89.5	88.4					
0002053-03A	89.6	88.6	89.7					
0002053-04A	89.5	89.7	89.4					
CCV1 BTEX_00010	89.7	89.1	88.6					
CCV2 BTEX_00010	89.3	89.6	88.8					
CCV3 BTEX_00010	89.1	92.8	87.9					
LCS WATER	88.9	89.1	87.8					
MB1	90.2	88.3	89.7					

Acronym		Surrogate	QC Limits
14FBZ	=	1,4-Difluorobenzene	80-105
4BCBZ	=	4-Bromochlorobenzene	78-108
FLBZ	=	Fluorobenzene	78-108

*** Surrogate recovery outside acceptance limits**

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : CROSS TIMBERS OPER. CO. **CHAIN-OF-CUSTODY # :** 7465

LOCATION : SULLIVAN FRAME A # 1 **LABORATORY (S) USED :** ENVIROTECH

Date : March 14, 2000 **SAMPLER :** N J V

Filename : 03-14-00.WK4 **PROJECT MANAGER :** N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1	103.23	98.08	5.15	15.00	0940	7.5	2,600	5.00	-
2	104.57	97.84	6.73	15.00	1015	7.3	2,300	4.00	-
3	101.26	97.25	4.01	13.00	1005	7.5	4,000	4.50	-

NOTES : Volume of water purged from well prior to sampling: V = pi X r2 X h X 7.48 gal./ft3) X 3 (wellbores).

(i.e. 2" MW r = (1/12) ft. h = 1 ft.) (i.e. 4" MW r = (2/12) ft. h = 1 ft.)

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water (or 24 oz.).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

Poor recovery and sediment during purging in all MW 's . Collected TDS from all MW 's & chloride sample from MW # 2 only .

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

Water Analysis

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #1	Date Reported:	03-15-00
Laboratory Number:	G935	Date Sampled:	03-14-00
Sample Matrix:	Water	Date Received:	03-14-00
Preservative:	Cool	Date Analyzed:	03-15-00
Condition:	Cool & Intact	Chain of Custody:	7465

Parameter	Analytical Result	Units
Total Dissolved Solids @ 180C	**2,080**	mg/L

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983. Water And Waste Water", 18th ed., 1992.

Comments: **Sullivan Frame A #1.**

Christine M Walters
Analyst

Review

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

Water Analysis

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #2	Date Reported:	03-15-00
Laboratory Number:	G936	Date Sampled:	03-14-00
Sample Matrix:	Water	Date Received:	03-14-00
Preservative:	Cool	Date Analyzed:	03-15-00
Condition:	Cool & Intact	Chain of Custody:	7465

Parameter	Analytical Result	Units
Total Dissolved Solids @ 180C	**2,080**	mg/L
Chloride	**5.5**	mg/L

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983. Water And Waste Water", 18th ed., 1992.

Comments: **Sullivan Frame A #1.**

Christine M Walters
Analyst

Review

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ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

Water Analysis

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW #3	Date Reported:	03-15-00
Laboratory Number:	G937	Date Sampled:	03-14-00
Sample Matrix:	Water	Date Received:	03-14-00
Preservative:	Cool	Date Analyzed:	03-15-00
Condition:	Cool & Intact	Chain of Custody:	7465

Parameter	Analytical Result	Units
Total Dissolved Solids @ 180C	**3,440**	mg/L

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983. Water And Waste Water", 18th ed., 1992.

Comments: **Sullivan Frame A #1.**

Christine M Walters
Analyst

Review

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CHAIN OF CUSTODY RECORD

7465

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
BLAGG / CROSS TIMBERS	SULLIVAN FRAME A #1	

Sampler:	Client No.
NJV	403410

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TDS	CHLORIDE					Remarks: ALL SAMPLES PRESERVED COOL
MW #1	3/14/00	0940	G935	WATER	1	✓						
MW #2	3/14/00	1015	G936	WATER	1	✓	✓					
MW #3	3/14/00	1005	G937	WATER	1	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Velez	3/14/00	1340	Keeley Johnson	3/14/00	1340
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.

5796 U.S. Highway 64
Farmington, New Mexico 87401
(505) 632-0615

Sample Receipt	Y	N	N/A
Received Intact			
Cool - Ice/Blue Ice			

BLAGG ENGINEERING, INC.

MONITOR WELL SAMPLING DATA

CLIENT : CROSS TIMBERS OPER. CO.

CHAIN-OF-CUSTODY # : 10610
08050

LOCATION : SULLIVAN FRAME A # 1

LABORATORY (S) USED : ON - SITE TECH.
ENVIROTECH

Date : June 29, 2000

SAMPLER : N J V

Filename : 06-29-00.WK4

PROJECT MANAGER : N J V

WELL #	WELL ELEV. (ft)	WATER ELEV. (ft)	DEPTH TO WATER (ft)	TOTAL DEPTH (ft)	SAMPLING TIME	pH	CONDUCT (umhos)	VOLUME PURGED (gal.)	FREE PRODUCT (ft)
1	103.23	97.94	5.29	15.00	-	-	-	-	-
2	104.57	97.69	6.88	15.00	1635	7.2	4,700	4.00	-
3	101.26	96.98	4.28	13.00	1650	7.6	4,100	4.25	-

NOTES : Volume of water purged from well prior to sampling: V = pi X r2 X h X 7.48 gal./ft3) X 3 (wellbores).

(i.e. 2" MW r = (1/12) ft. h = 1 ft.) (i.e. 4" MW r = (2/12) ft. h = 1 ft.)

Ideally a minimum of three (3) wellbore volumes:

1.25 " well diameter = 0.19 gallons per foot of water (or 24 oz.).

2 bails per foot - small teflon bailer.

3 bails per foot - 3 / 4 " teflon bailer.

2.00 " well diameter = 0.49 gallons per foot of water.

4.00 " well diameter = 1.95 gallons per foot of water.

Comments or note well diameter if not standard 2 ".

Fair recovery in MW # 2 & # 3 . Collected BTEX from both MW 's . Collected chloride from MW # 2 & TDS from MW # 3 .

OFF: (505) 325-5667
FAX: (505) 327-1496

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556
FAX: (505) 327-1496

ANALYTICAL REPORT

Date: *18-Jul-00*

Client:	Blagg Engineering	**Client Sample Info:**	Sullivan Frame A #1
Work Order:	0006073	**Client Sample ID:**	MW #2
Lab ID:	0006073-01A **Matrix:** AQUEOUS	**Collection Date:**	6/29/2000 4:35:00 PM
Project:	Cross Timbers - Sullivan Frame A #1	**COC Record:**	10610

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		**SW8021B**				Analyst: **DM**
Benzene	4	0.5		µg/L	1	7/11/2000
Toluene	ND	0.5		µg/L	1	7/11/2000
Ethylbenzene	ND	0.5		µg/L	1	7/11/2000
m,p-Xylene	ND	1		µg/L	1	7/11/2000
o-Xylene	ND	0.5		µg/L	1	7/11/2000

Qualifiers:

PQL - Practical Quantitation Limit
ND - Not Detected at Practical Quantitation Limit
J - Analyte detected below Practical Quantitation Limit
B - Analyte detected in the associated Method Blank
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: (505) 325-5667
FAX: (505) 327-1496

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-1556
FAX: (505) 327-1496

ANALYTICAL REPORT

Date: *18-Jul-00*

Client:	Blagg Engineering	**Client Sample Info:**	Sullivan Frame A #1
Work Order:	0006073	**Client Sample ID:**	MW #3
Lab ID:	0006073-02A **Matrix:** AQUEOUS	**Collection Date:**	6/29/2000 4:50:00 PM
Project:	Cross Timbers - Sullivan Frame A #1	**COC Record:**	10610

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
AROMATIC VOLATILES BY GC/PID		**SW8021B**				Analyst: **DM**
Benzene	ND	0.5		µg/L	1	7/11/2000
Toluene	ND	0.5		µg/L	1	7/11/2000
Ethylbenzene	ND	0.5		µg/L	1	7/11/2000
m,p-Xylene	ND	1		µg/L	1	7/11/2000
o-Xylene	ND	0.5		µg/L	1	7/11/2000

Qualifiers:

PQL - Practical Quantitation Limit
ND - Not Detected at Practical Quantitation Limit
J - Analyte detected below Practical Quantitation Limit
B - Analyte detected in the associated Method Blank
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

Water Analysis

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 2	Date Reported:	06-30-00
Laboratory Number:	H640	Date Sampled:	06-29-00
Sample Matrix:	Water	Date Received:	06-30-00
Preservative:	Cool	Date Analyzed:	06-30-00
Condition:	Cool & Intact	Chain of Custody:	8050

Parameter	Analytical Result	Units
Chloride	**42.4**	mg/L

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983. Water And Waste Water", 18th ed., 1992.

Comments: **Sullivan Frame A #1.**

Analyst

Review

5796 U.S. Highway 64 • Farmington, NM 87401 • Tel 505 • 632 • 0615 • Fax 505 • 632 • 1865

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

Water Analysis

Client:	Blagg / Cross Timbers	Project #:	403410
Sample ID:	MW # 3	Date Reported:	06-30-00
Laboratory Number:	H641	Date Sampled:	06-29-00
Sample Matrix:	Water	Date Received:	06-30-00
Preservative:	Cool	Date Analyzed:	06-30-00
Condition:	Cool & Intact	Chain of Custody:	8050

Parameter	Analytical Result	Units
Total Dissolved Solids @ 180C	**3,010**	mg/L

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983. Water And Waste Water", 18th ed., 1992.

Comments: **Sullivan Frame A #1.**

Analyst

Review

5796 U.S. Highway 64 • Farmington, NM 87401 • Tel 505 • 632 • 0615 • Fax 505 • 632 • 1865

10610

CHAIN OF CUSTODY RECORD

Date: 6/29/00

Page: 1 of 1

ON SITE TECHNOLOGIES, LTD.

612 E. Murray Dr. • P.O. Box 2606 • Farmington, NM 87499
LAB: (505) 325-5667 • FAX: (505) 327-1496

Purchase Order No.:	Project No.		
SEND INVOICE TO: Name T. BURGG		REPORT RESULTS TO: Name N. VELEZ	Title
Company BURGG ENGINEERING, INC.	Dept.	Company JAMZ	
Address		Mailing Address	
City, State, Zip		City, State, Zip	
		Telephone No. 632-1199	Telefax No. 632-3903

PROJECT LOCATION: CROSS TIMBERS - SULLIVAN FARM A #1

SAMPLER'S SIGNATURE: Nelson Velez

SAMPLE IDENTIFICATION	SAMPLE DATE	TIME	MATRIX	PRES.	Number of Containers	ANALYSIS REQUESTED: BTEX (8021)	LAB ID
MW #2	6/29/00	1635	WATER	HCl & COOL	2	✓	000073-01A
MW #3	6/29/00	1650	WATER	HCl & COOL	2	✓	-02A

Relinquished by: Nelson Velez	Date/Time 6/30/00 1345	Received by: Heidi Rea	Date/Time 6/30/00 1345
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time

Method of Shipment:

Rush | 24-48 Hours | 10 Working Days | By Date

Authorized by: _____ Date _____
(Client Signature Must Accompany Request)

Special Instructions / Remarks:

Distribution: White - On Site Yellow - LAB Pink - Sampler Goldenrod - Client

CHAIN OF CUSTODY RECORD

08050

Client / Project Name	Project Location	ANALYSIS / PARAMETERS
BLAGG / CROSS TIMBERS	SULLIVAN FRAME A #1	
Sampler: NJV	Client No. 403410	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	CHLORIDE	TDS					Remarks
												BOTH SAMPLES PRESERV. - COOL
MW #2	6/29/00	1635	H640	WATER	1	✓						
MW #3	6/29/00	1650	H641	WATER	1		✓					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Nelson Vdy	6/30/00	1050	[signature] L. Ceplecha	6.30.00	1050
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.

5796 U.S. Highway 64
Farmington, New Mexico 87401
(505) 632-0615

Sample Receipt	Y	N	N/A
Received Intact	✓		
Cool - Ice/Blue Ice	✓		

On Site Technologies, LTD.

Date: *18-Jul-00*

CLIENT: Blagg Engineering
Work Order: 0006073
Project: Cross Timbers - Sullivan Frame A #1

QC SUMMARY REPORT
Method Blank

Sample ID: **MB1** Batch ID: **GC-1_000711** Test Code: **SW8021B** Units: **µg/L** Analysis Date: **7/11/2000** Prep Date:

Client ID: **0006073** Run ID: **GC-1_000711A** SeqNo: **29854**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	.0595	0.5									J
Ethylbenzene	ND	0.5									
m,p-Xylene	ND	1									
Methyl tert-Butyl Ether	ND	1									
o-Xylene	ND	0.5									
Toluene	.0916	0.5									J

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: *18-Jul-00*

CLIENT: Blagg Engineering
Work Order: 0006073
Project: Cross Timbers - Sullivan Frame A #1

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: **0006072-29AMS** Batch ID: **GC-1_000711** Test Code: **SW8021B** Units: **µg/L** Analysis Date: **7/11/2000** Prep Date:

Client ID: **0006073** Run ID: **GC-1_000711A** SeqNo: **29855**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	10880	100	8000	2621	103.3%	73	126				
Ethylbenzene	9217	100	8000	919.5	103.7%	88	113				
m,p-Xylene	16530	200	16000	844.8	98.1%	83	112				
Methyl tert-Butyl Ether	37240	200	8000	30020	90.2%	81	125				
o-Xylene	8424	100	8000	62.34	104.5%	93	110				
Toluene	8474	100	8000	86.84	104.8%	76	126				

Sample ID: **0006072-29AMSD** Batch ID: **GC-1_000711** Test Code: **SW8021B** Units: **µg/L** Analysis Date: **7/11/2000** Prep Date:

Client ID: **0006073** Run ID: **GC-1_000711A** SeqNo: **29856**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	10610	100	8000	2621	99.9%	73	126	10880	2.5%	6	
Ethylbenzene	8993	100	8000	919.5	100.9%	88	113	9217	2.5%	5	
m,p-Xylene	16140	200	16000	844.8	95.6%	83	112	16530	2.4%	7	
Methyl tert-Butyl Ether	36330	200	8000	30020	78.8%	81	125	37240	2.5%	9	S
o-Xylene	8255	100	8000	62.34	102.4%	93	110	8424	2.0%	6	
Toluene	8278	100	8000	86.84	102.4%	76	126	8474	2.4%	6	

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: *18-Jul-00*

CLIENT: Blagg Engineering
Work Order: 0006073
Project: Cross Timbers - Sullivan Frame A #1

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: **LCS WATER** Batch ID: **GC-1_000711** Test Code: **SW8021B** Units: **µg/L** Analysis Date: **7/11/2000** Prep Date:

Client ID: **0006073** Run ID: **GC-1_000711A** SeqNo: **29853**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.66	0.5	40	0.0595	104.0%	89	112				
Ethylbenzene	41.39	0.5	40	0	103.5%	93	112				
m,p-Xylene	78.06	1	80	0	97.6%	88	108				
Methyl tert-Butyl Ether	41.46	1	40	0	103.7%	87	115				
o-Xylene	41.44	0.5	40	0	103.6%	93	112				
Toluene	41.62	0.5	40	0.0916	103.8%	92	111				

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: *18-Jul-00*

CLIENT: Blagg Engineering
Work Order: 0006073
Project: Cross Timbers - Sullivan Frame A #1

QC SUMMARY REPORT

Continuing Calibration Verification Standard

Sample ID: **CCV1 BTEX_0007** Batch ID: **GC-1_000711** Test Code: **SW8021B** Units: **µg/L** Analysis Date: **7/11/2000** Prep Date:

Client ID: **0006073** Run ID: **GC-1_000711A** SeqNo: **29850**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.97	0.5	20	0	109.8%	85	115				
Ethylbenzene	21.8	0.5	20	0	109.0%	85	115				
m,p-Xylene	41.3	1	40	0	103.2%	85	115				
Methyl tert-Butyl Ether	21.84	1	20	0	109.2%	85	115				
o-Xylene	21.96	0.5	20	0	109.8%	85	115				
Toluene	21.9	0.5	20	0	109.5%	85	115				
1,4-Difluorobenzene	89.22	0	100	0	89.2%	80	105				
4-Bromochlorobenzene	85.5	0	100	0	85.5%	78	108				
Fluorobenzene	87.73	0	100	0	87.7%	78	108				

Sample ID: **CCV2 BTEX_0007** Batch ID: **GC-1_000711** Test Code: **SW8021B** Units: **µg/L** Analysis Date: **7/11/2000** Prep Date:

Client ID: **0006073** Run ID: **GC-1_000711A** SeqNo: **29851**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.06	0.5	20	0	105.3%	85	115				
Ethylbenzene	20.8	0.5	20	0	104.0%	85	115				
m,p-Xylene	39.43	1	40	0	98.6%	85	115				
Methyl tert-Butyl Ether	21.51	1	20	0	107.5%	85	115				
o-Xylene	21.03	0.5	20	0	105.2%	85	115				
Toluene	21.03	0.5	20	0	105.1%	85	115				
1,4-Difluorobenzene	89.09	0	100	0	89.1%	80	105				
4-Bromochlorobenzene	85.09	0	100	0	85.1%	78	108				
Fluorobenzene	87.47	0	100	0	87.5%	78	108				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: Blagg Engineering
Work Order: 0006073
Project: Cross Timbers - Sullivan Frame A #1

QC SUMMARY REPORT
Continuing Calibration Verification Standard

Sample ID: **CCV3 BTEX_0007** Batch ID: **GC-1_000711** Test Code: **SW8021B** Units: **µg/L** Analysis Date: **7/11/2000** Prep Date:

Client ID: **0006073** Run ID: **GC-1_000711A** SeqNo: **29852**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.47	0.5	40	0	103.7%	85	115				
Ethylbenzene	41.06	0.5	40	0	102.7%	85	115				
m,p-Xylene	77.66	1	80	0	97.1%	85	115				
Methyl tert-Butyl Ether	43.51	1	40	0	108.8%	85	115				
o-Xylene	41.46	0.5	40	0	103.6%	85	115				
Toluene	41.6	0.5	40	0	104.0%	85	115				
1,4-Difluorobenzene	88.8	0	100	0	88.8%	80	105				
4-Bromochlorobenzene	84.38	0	100	0	84.4%	78	108				
Fluorobenzene	87.12	0	100	0	87.1%	78	108				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 18-Jul-00

CLIENT: Blagg Engineering
Work Order: 0006073
Project: Cross Timbers - Sullivan Frame A #
Test No: SW8021B

QC SUMMARY REPORT
SURROGATE RECOVERIES

Aromatic Volatiles by GC/PID

Sample ID	14FBZ	4BCBZ	FLBZ					
0006066-03A	87.7	83.5	86.2					
0006066-04A	87.5	81.9	85.6					
0006066-06A	89.8	85.5	88.2					
0006066-07A	89.7	84.9	88.1					
0006069-02A	89.7	85.2	88.1					
0006069-03A	89.7	85.4	88.1					
0006070-02A	88.2	83.4	86.8					
0006072-29A	89	84.6	87.4					
0006072-29AMS	88.1	85.5	86.5					
0006072-29AMSD	88.4	86	86.8					
0006072-30A	88.6	84.3	86.9					
0006072-32A	89.4	85.6	87.9					
0006072-34A	88.8	85.6	87					
0006073-01A	89.1	84.5	87.9					
0006073-02A	90	84.8	88.6					
0006074-01A	89.4	84.4	88.2					
0006074-02A	89.7	84.9	88.2					
0006074-03A	88.5	83.6	88.7					
0006074-04A	89.7	85.4	88.5					
CCV1 BTEX_00070	89.2	85.5	87.7					
CCV2 BTEX_00070	89.1	85.1	87.5					
CCV3 BTEX_00070	88.8	84.4	87.1					
LCS WATER	88.7	85.7	87.1					
MB1	89.4	85.1	88.4					

Acronym		Surrogate	QC Limits
14FBZ	=	1,4-Difluorobenzene	80-105
4BCBZ	=	4-Bromochlorobenzene	78-108
FLBZ	=	Fluorobenzene	78-108

*** Surrogate recovery outside acceptance limits**

1

JJ

94248

ENVIROTECH Inc.

5796 US HWY. 64, FARMINGTON, NM 87401
(505) 632-0615

1360

FIELD REPORT: SITE ASSESSMENT

JOB No: 92140
PAGE No: 1 of 1

PROJECT: PIT ASSESSMENTS & CLOSURE
CLIENT: AMOCO PRODUCTION COMPANY
CONTRACTOR: ENVIROTECH, INC.
EQUIPMENT USED: EXTENDAHOE

DATE STARTED: 6-4-92
DATE FINISHED: 6-4-92
ENVIRO. SPCLT: J.W.
OPERATOR: G.S.
ASSISTANT: T.C.

LOCATION: LSE: Sullivan Frame G.U.A WELL: No 1 QD: N.W 1/4 NW 1/4
SEC: 30 TWP: 29N RNG: 10W PM: N.M CNTY: S.J. ST: N.M PIT: Blow
LAND USE: River ~~Bottom~~ (Marsh) Pasture LEASE FEE
SURFACE CONDITIONS: EARthen Pit

FIELD NOTES & REMARKS: ~~Pit is~~ located approx 50' south and 100' East of well head. Pit has been abanded but is still visible. Could not dig test hole in pit, too soft, seems to be drilling mud. Recovered a sample for testing TPH. Pit is located approx. 5' above surrounding ground level.

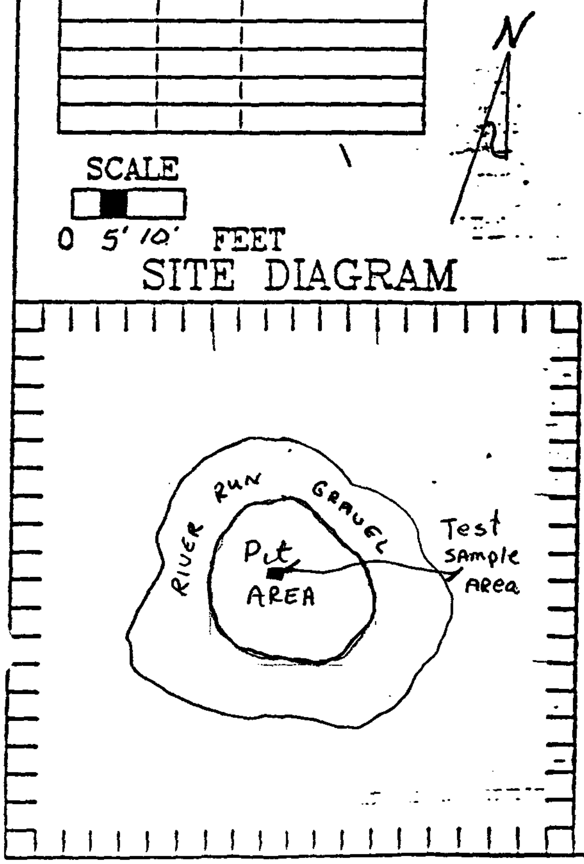
SAMPLE INVENTORY:

SMPL ID:	SMPL TYPE:	LABORATORY ANALYSIS:
T-1@2'	Soil	TPH

SCALE

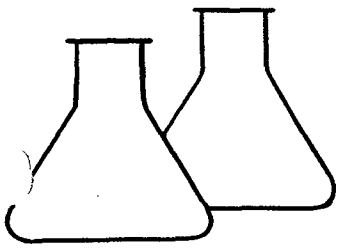
0 5' 10' FEET

SITE DIAGRAM



TEST HOLE LOGS:

Depth	TH#: 1 SOIL TYPE:	SMPL TYPE:	OVM/TPH	TH#: 2 SOIL TYPE:	SMPL TYPE:	OVM/TPH	TH#: 3 SOIL TYPE:	SMPL TYPE:	OVM/TPH	TH#: 4 SOIL TYPE:	SMPL TYPE:	OVM/TPH
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
12												
14												
16												
18												
20												



ENVIROTECH LABS

5796 US HIGHWAY 64-3014 • FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 • FAX: (505) 632-1865

EPA METHOD 418.1
TOTAL PETROLEUM HYDROCARBONS

Client:	AMOCO	Project #:	92140
Sample ID:	T-1 @ 2'	Date Reported:	07-16-92
Laboratory Number:	1128	Date Sampled:	06-04-92
Sample Matrix:	Soil	Date Received:	06-04-92
Preservative:	Cool	Date Analyzed:	07-16-92
Condition:	Cool & Intact	Analysis Needed:	TPH

Parameter	Concentration (mg/kg)	Det. Limit (mg/kg)
Total Petroleum Hydrocarbons	4,520	5.0

Method: Method 418.1, Petroleum Hydrocarbons, Total Recoverable, Chemical Analysis of Water and Waste, USEPA Storet No.4551, 1978

ND - Parameter not detected at the stated detection limit.

Comments: Sullivan Frame GUA #1 Blow Pit 94248

Vanessa Ransom
Analyst

Review

T560

CHAIN OF CUSTODY RECORD

94248

Client/Project Name	Project Location	ANALYSIS/PARAMETERS
Amoco 92140	Blow Pit Sullivan Frame G.U.A #1	
Sampler: (Signature) Jim Weakee	Chain of Custody Tape No.	

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	TPH						Remarks
T-1 @ 2'	6-4-92	1130	1128	Soil	1	✓						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Jim Weakee	6-4-92	1730	Tony Tinton	6/4/92	1730
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

ENVIROTECH INC.
5796 U.S. Highway 64-3014
Farmington, New Mexico 87401
(505) 632-0615

80109

District I
P.O. Box 1980, Hobbs, NM
District II
P.O. Drawer DD, Artesia, NM 88211
District III
1000 Rio Brazos Rd, Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

SUBMIT 1 COPY TO APPROPRIATE DISTRICT OFFICE AND 1 COPY TO SANTA FE OFFICE

PIT REMEDIATION AND CLOSURE REPORT

Operator: Amoco Production Company **Telephone:** (505) - 326-9200

Address: 200 Amoco Court, Farmington, New Mexico 87401

Facility Or: Well Name SULLIVAN FRAME A #1

Location: Unit or Qtr/Qtr Sec D Sec 30 T 29N R 10 W County SAN JUAN

Pit Type: Separator ___ Dehydrator ___ Other RESERVE ?

Land Type: BLM ___, State ___, Fee X, Other ___

Pit Location: (Attach diagram)
Pit dimensions: length 40', width 40', depth ~6'
Reference: wellhead X, other ___
Footage from reference: 105
Direction from reference: 55 Degrees X East North ___ of ___ West South X

Depth To Ground Water: (Vertical distance from contaminants to seasonal high water elevation of ground water)	Less than 50 feet (20 points) 50 feet to 99 feet (10 points) Greater than 100 feet (0 Points)	20
Wellhead Protection Area: (Less than 200 feet from a private domestic water source, or; less than 1000 feet from all other water sources)	Yes (20 points) No (0 points)	0
Distance To Surface Water: (Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 200 feet (20 points) 200 feet to 1000 feet (10 points) Greater than 1000 feet (0 points)	0
	RANKING SCORE (TOTAL POINTS):	20

B0109

Date Remediation Started: 9-30-94 **Date Completed:** 10-17-94

Remediation Method: (Check all appropriate sections) Excavation X Approx. cubic yards 300

Landfarmed ___ Insitu Bioremediation ___

Other SOIL - RAN THROUGH ROCK CRUSHER

Remediation Location: (ie. landfarmed onsite, name and location of offsite facility) Onsite ___ Offsite X PAUL VELASQUEZ CRUSHER NEAR GARCIA GC B #1 (J-21-29-10)

General Description Of Remedial Action:

Excavation - ALLOW WATER TO AERATE - DISSIPATION OF CONTAMINATES IN WATER.

PIT CLOSURE SUBMITTED TO NMOCD & DENIED - 12/5/96 LETTER CORRESPONDENCE (ATTACHED).

Ground Water Encountered: No ___ Yes X Depth 5'

Final Pit: Closure Sampling: (if multiple samples, attach sample results and diagram of sample locations and depths)

Sample location see Attached Documents

Sample depth 5'

Sample date 9/30, 10/17 Sample time ___

Sample Results

Benzene(ppm) ___

Total BTEX(ppm) ___

Field headspace(ppm) ___

TPH ___

Ground Water Sample: Yes X No ___ (If yes, attach sample results)

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

DATE 10/25/94

SIGNATURE B J Shaw PRINTED NAME AND TITLE Buddy D. Shaw Environmental Coordinator

" " " " 10-20-94 REW - O.K.

RESULTS to BOB McCOY 10-4-94 REW

CLIENT: AMOCO	BLAGG ENGINEERING, INC. P.O. BOX 87, BLOOMFIELD, NM 87413 (505) 632-1199	LOCATION NO: B0109 C.O.C. NO: 2055 2155

FIELD REPORT: PIT CLOSURE VERIFICATION

LOCATION: NAME: SULLIVAN FRAME A WELL #: 1 PIT: RESERVE

QUAD/UNIT: D SEC: 30 TWP: 29N RNG: 10 W BM: NM CNTY: SJ ST: NM

QTR/FOOTAGE: NW / NW 990'FNL 990'FWL CONTRACTOR: PAUL + SONS

DATE STARTED: 9-30-94

DATE FINISHED: 10-17-94

ENVIRONMENTAL SPECIALIST: REW

SOIL REMEDIATION: EXCAVATION APPROX. 40 FT. x 40 FT. x 6 FT. DEEP.

DISPOSAL FACILITY: PAUL VELASQUEZ CRUSHER CUBIC YARDAGE: 300

LAND USE: AGRICULTURAL LEASE: FEE

FIELD NOTES & REMARKS: PIT LOCATED APPROXIMATELY 105 FEET SSS°E FROM WELLHEAD.

DEPTH TO GROUNDWATER: 5' NEAREST WATER SOURCE: >1000' NEAREST SURFACE WATER: >1000'

NMOCD RANKING SCORE: 20 NMOCD TPH CLOSURE STD: 100 PPM

SOIL AND EXCAVATION DESCRIPTION: SOIL EXCAVATED TO GROUNDWATER AT 5'. WATER SURFACE FOAMY ON SOUTH HALF, POSSIBLE STAINING VISIBLE AT WATER / SOIL INTERFACE ON SOUTH EDGE OF PIT, LOTS OF COBBLE IN SOIL.

10-17-94: COLLECT ANOTHER WATER SAMPLE.

10-31-94: COLLECT ANOTHER SAMPLE AFTER PUMPING.

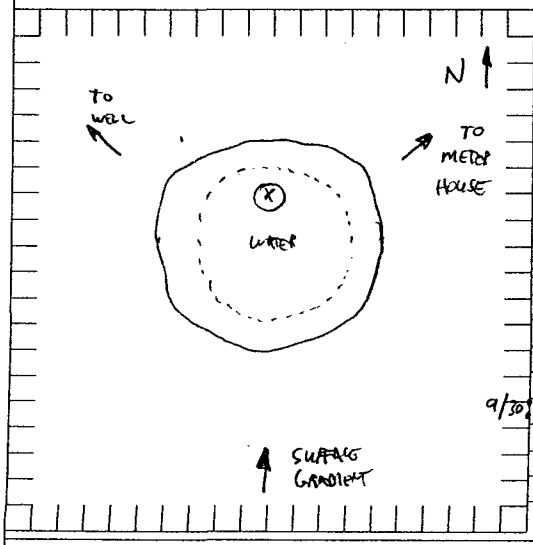
FIELD 418.1 CALCULATIONS

SAMPLE I.D.	LAB No:	WEIGHT (g)	mL. FREON	DILUTION	READING	CALC. ppm

SCALE

0 10 20 FT

PIT PERIMETER

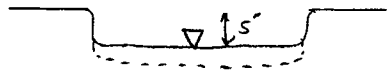


OVM RESULTS

SAMPLE ID	FIELD HEADSPACE PID (ppm)
1	
2	
3	
4	
5	

LAB	SAMPLES
9/30	PIT WATER @ 5' BTEX DIRTY
10/17	BTEX

PIT PROFILE



TRAVEL NOTES: CALLOUT: 9-29-94 ONSITE: 9-30-94 0830

10-17-94 1130 hrs.

OFF: (505) 325-8786

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-5667

AROMATIC VOLATILE ORGANICS

Attn:	*R. E. O'Neill*	Date:	10/4/94
Company:	*Blagg Engineering*	*Lab ID:*	*2055*
Address:	*P.O. Box 87*	*Sample ID:*	*3377*
City, State:	*Bloomfield, NM 87413*	*Job No.*	*2-1000*

Project Name:	***Sullivan Frame A #1***				
Project Location:	***Pit Water @ 5' - Reserve Pit***				
Sampled by:	REO	Date:	9/30/94	Time:	8:40
Analyzed by:	DLA	Date:	10/4/94		
Sample Matrix:	*Water*				

Aromatic Volatile Organics

Component	*Measured Concentration ug/L*	*Detection Limit Concentration ug/L*
Benzene	123.3	*0.2*
Toluene	26.4	*0.2*
Ethylbenzene	19.3	*0.2*
m,p-Xylene	549.2	*0.2*
o-Xylene	25.6	*0.2*
	TOTAL 743.9 ug/L	

ND - Not Detectable

Method *- SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by: [signature]
Date: 10/4/94

OFF: (505) 325-8786

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-5667

AROMATIC VOLATILE ORGANICS

Attn:	*R. E. O'Neill*	Date:	10/19/94
Company:	*Blagg Engineering*	*Lab ID:*	*2155*
Address:	*P.O. Box 87*	*Sample ID:*	*3640*
City, State:	*Bloomfield, NM 87413*	*Job No.*	*2-1000*

Project Name:	***Sullivan Frame A #1***				
Project Location:	***Reserve Pit Water***				
Sampled by:	REO	Date:	10/17/94	Time:	11:30
Analyzed by:	DLA	Date:	10/19/94		
Sample Matrix:	*Water*				

Aromatic Volatile Organics

Component	*Measured Concentration ug/L*	*Detection Limit Concentration ug/L*
Benzene	0.9	*0.2*
Toluene	4.1	*0.2*
Ethylbenzene	0.5	*0.2*
m,p-Xylene	7.5	*0.2*
o-Xylene	1.5	*0.2*
	TOTAL *14.6 ug/L*	

ND - Not Detectable

Method - *SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by: JaL

Date: 10/19/94

AFTER PUMPING THE PIT

OFF: (505) 325-8786

ON SITE TECHNOLOGIES, LTD.

LAB: (505) 325-5667

AROMATIC VOLATILE ORGANICS

Attn:	*R. E. O'Neill*	Date:	11/1/94
Company:	*Blagg Engineering*	*Lab ID:*	*2244*
Address:	*P.O. Box 87*	*Sample ID:*	*3808*
City, State:	*Bloomfield, NM 87413*	*Job No.*	*2-1000*

Project Name:	***Sullivan Frame A #1***				
Project Location:	***Reserve Pit Water***				
Sampled by:	REO	Date:	10/31/94	Time:	8:00
Analyzed by:	DLA	Date:	11/1/94		
Sample Matrix:	*Water*				

Aromatic Volatile Organics

Component	*Measured Concentration ug/L*	*Detection Limit Concentration ug/L*
Benzene	1.2	*0.2*
Toluene	0.4	*0.2*
Ethylbenzene	ND	*0.2*
m,p-Xylene	1.0	*0.2*
o-Xylene	ND	*0.2*
	TOTAL 2.6 ug/L	

ND - Not Detectable

Method - *SW-846 EPA Method 8020 Aromatic Volatile Organics by Gas Chromatography*

Approved by: DLA

Date: 11/2/94

CHAIN OF CUSTODY RECORD

2055

ON SITE TECHNOLOGIES, LTD.

657 W. Maple • P. O. Box 2606 • Farmington NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

Date: 9-30-94

Page 1 of 1

BD 109

Purchase Order No.:	Reference No.:		
SEND INVOICE TO: Name		REPORT RESULTS TO: Name	P. E. O'NEILL / Title EE
Company	BLAGG ENGINEERING / Dept.	Company	SAME
Address	P.O. BOX 87	Mailing Address	SAME
City, State, Zip	BLOOMFIELD, N.M. 87413	City, State, Zip	
		Telephone No.	632-1199 / Telefax No.

Special Instructions:
SULLIVAN FRAME A #1 RESERVE PIT

Sampler: R. E. O'NEILL

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE/ GRAB	PRESERVATIVES	Number of Containers	ANALYSIS REQUESTED: BTEX	Remarks (matrix)
PIT WATER @ 5' 9/30	0840		$HgCl_2$ - cool	2	✓ 3377-2055	WATER

Relinquished by: R. E. O'Neill	Date/Time 9/30 1410	Received by:	Date/Time 10/3/94 0900
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time

Method of Shipment:

Authorized by: R. E. O'Neill (Client Signature Must Accompany Request) Date 9-30-94

Rush	5 Working Days	10 Working Days	Sampling Location:

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client

CHAIN OF CUSTODY RECORD

2155

ON SITE TECHNOLOGIES, LTD.

657 W. Maple • P. O. Box 2606 • Farmington NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

Date: 10-17-94

Page 1 of 1

80109

Purchase Order No.:	Reference No.:		
SEND INVOICE TO	Name		
	Company	BLAGG ENGINEERING	Dept.
	Address	P.O. BOX 87	
	City, State, Zip	BLOOMFIELD, N.M. 87413	

REPORT RESULTS TO	Name: R. E. O'NEILL	Title: EE	
	Company: SAME		
	Mailing Address: SAME		
	City, State, Zip		
	Telephone No.: 632-1199	Telefax No.	

Special Instructions:
SULLIVAN FRAME A #1

Sampler: R. E. O'NEILL

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE/GRAB	PRESERVATIVES	Number of Containers	BTEX									Remarks (matrix)
RESERVE PIT WATER	10/17 1130	—	HgCl2 - ICE	2	✓		364 C-2155							WATER

Relinquished by: R. E. O'Neill	Date/Time 10/17 1355	Received by: [illegible]	Date/Time 10/17/94 1355
Relinquished by: [illegible]	Date/Time 10/19/94 0727	Received by: [illegible]	Date/Time 10/19/94 0727
Relinquished by:	Date/Time	Received by:	Date/Time

Method of Shipment:

Authorized by: R. E. O'Neill Date 10/17/94
(Client Signature Must Accompany Request)

Rush	5 Working Days	10 Working Days	Sampling Location:

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client

CHAIN OF CUSTODY RECORD

ON SITE TECHNOLOGIES, LTD.
657 W. Maple • P. O. Box 2606 • Farmington NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

2244

Date: 10-31-94

80109

Purchase Order No.:		Reference No.:	
SEND INVOICE TO	Name		
	Company: BLAGG ENGINEERING	Dept.	
	Address: P.O. BOX 87		
	City, State, Zip: BLOOMFIELD, N.M. 87413		

REPORT RESULTS TO	Name: R. E. O'NEILL	Title: EE	
	Company: SAME		
	Mailing Address: SAME		
	City, State, Zip		
	Telephone No. 632-1199	Telefax No.	

Special Instructions: SULLIVAN FRAME A #1

Sampler: R E. O'NEILL

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE/GRAB	PRESERVATIVES	Number of Containers	BTEX										Remarks (matrix)
RESERVE PIT WATER 10/31	0800	–	HgCl2-COOL	2	✓			3808-2244							WATER

Relinquished by: R. E. O'Neill 11/1 ~~10/31~~	Date/Time ~~7:49~~ 4:10	Received by: [signature]	Date/Time 11/1/94 9:40
Relinquished by:	Date/Time	Received by:	Date/Time
Relinquished by:	Date/Time	Received by:	Date/Time
Method of Shipment:		Rush / 5 Working Days / 10 Working Days	Sampling Location:

Authorized by: R. E. O'Neill Date 10/31/94
(Client Signature Must Accompany Request)

Distribution: White – On Site Yellow – LAB Pink – Sampler Goldenrod – Client

(16)

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

December 5, 1996

CERTIFIED MAIL
RETURN RECEIPT NO. P-269-269-222

Mr. B.D. Shaw
Amoco Production Company
200 Amoco Court
Farmington, New Mexico 87401

RE: FINAL SAN JUAN BASIN PIT CLOSURE REPORTS

Dear Mr. Shaw:

The New Mexico Oil Conservation Division (OCD) has completed a review of Amoco Production Company's (Amoco) October 25, 1994 "AMOCO PRODUCTION COMPANY PIT CLOSURE VERIFICATIONS" which were submitted on behalf of Amoco by their consultant Blagg Engineering, Inc. This document contains "PIT REMEDIATION AND CLOSURE REPORTS" for 34 unlined pits in the San Juan Basin of Northwestern New Mexico.

The OCD's review of the above referenced document is addressed below:

A. The pit closure/soil remediation activities conducted at the sites listed below are **approved.**

1.	A.L. Elliott B#2 (Blow pit)	Unit M, Sec. 10, T29N, R09W.
2.	A.L. Elliott B#7 (Blow pit II)	Unit L, Sec. 10, T29N, R09W.
✓3.	Jack Frost B#1E (Blow pit)	Unit M, Sec. 27, T27N, R10W.
✓4.	Jack Frost B#1E (Dehy pit)	Unit M, Sec. 27, T27N, R10W.
5.	Jack Frost B#1E (Separator pit)	Unit M, Sec. 27, T27N, R10W.
6.	GCU #200E (Separator pit)	Unit P, Sec. 29, T29N, R12W.
7.	GCU #200E (Blow pit)	Unit P, Sec. 29, T29N, R12W.
8.	Heath GC G#1E (Blow pit)	Unit I, Sec. 08, T29N, R09W.
9.	Heath GC G#1E (Separator pit)	Unit I, Sec. 08, T29N, R09W.
10.	Heath GC G#1E (Dehy pit)	Unit I, Sec. 08, T29N, R09W.
11.	Jones LS #1A (Blow pit)	Unit J, Sec. 35, T29N, R08W.
✓12.	Kutz Deep Test A#1 (Blow pit)	Unit O, Sec. 27, T28N, R10W.
✓13.	C.A. McAdams B#1 (Blow pit)	Unit J, Sec. 28, T27N, R10W.
✓14.	C.A. McAdams B#1 (Separator pit)	Unit J, Sec. 28, T27N, R10W.
✓15.	C.A. McAdams B#2 (Blow pit)	Unit E, Sec. 28, T27N, R10W.
✓16.	Pipkin GC A#1E (Blow/tank pit)	Unit C, Sec. 07, T27N, R10W.
✓17.	Pipkin GC A#1E (Dehy pit)	Unit C, Sec. 07, T27N, R10W.
✓18.	Pipkin GC A#1E (Separator pit)	Unit C, Sec. 07, T27N, R10W.
✓19.	P.O. Pipkin #5 (Blow pit)	Unit A, Sec. 07, T27N, R10W.
20.	Pritchard #3 (Separator pit)	Unit H, Sec. 31, T29N, R08W.

Please be advised that OCD approval does not relieve Amoco of liability if remaining contaminants are found to pose a future threat to surface water, ground water, human health or the environment. In addition, OCD approval does not relieve Amoco of responsibility for compliance with any other federal, state or local laws and/or regulations.

B. The pit remedial activities conducted at the sites listed below are satisfactory. However, according to the reports, onsite landfarming and/or composting actions are still continuing at the sites. Subsequently, the OCD cannot issue final closure approval at this time and approval of closure actions at these sites is **denied**. Please resubmit final closure reports for these sites upon completion of the landfarming and/or composting activities. The final reports will include the results of the soil remediation levels achieved, the laboratory analyses and associated quality assurance/quality control data and the disposition of the remediated soils.

1.	A.L. Elliott B#1 (Separator pit)	Unit H, Sec. 10, T29N, R09W.
2.	A.L. Elliott B#1A (Separator pit)	Unit F, Sec. 10, T29N, R09W.
3.	A.L. Elliott B#1A (Blow pit)	Unit F, Sec. 10, T29N, R09W.
4.	A.L. Elliott B#2 (Compressor pit)	Unit M, Sec. 10, T29N, R09W.
5.	A.L. Elliott B#2 (Separator pit)	Unit M, Sec. 10, T29N, R09W.
6.	A.L. Elliott B#5E (Separator pit)	Unit P, Sec. 10, T29N, R09W.
7.	A.L. Elliott B#7 (Blow pit I)	Unit L, Sec. 10, T29N, R09W.
8.	W.D. Heath A#7 (Blow/compressor)	Unit J, Sec. 08, T29N, R09W.
9.	W.D. Heath A#9E (Blow pit)	Unit J, Sec. 09, T29N, R09W.
✓10.	Valencia Canyon Unit #15 (Blow pit)	Unit I, Sec. 27, T28N, R04W.

C. The final pit remedial contaminant levels at the sites listed below are in excess of the OCD's recommended remediation levels. Consequently, the OCD cannot issue final closure approval and approval of closure actions at these sites is **denied**. The OCD requests that Amoco address the extent of the remaining contamination at these sites. The OCD will reconsider issuing closure approval upon resubmission of pit closure forms which address the remaining extent of contamination at the sites. The resubmitted forms should include the completed form and all pertinent information elated to the extent of contamination, the results of the soil remediation levels achieved, the results of the soil remediation levels achieved, the laboratory analyses and associated quality assurance/quality control data and the disposition of the remediated soils.

✓1.	Martin C. Federal #1 (Separator)	Unit B, Sec. 03, T27N, R10W.
✓2.	P.O. Pipkin #5 (Separator pit)	Unit A, Sec. 07, T27N, R10W.

D. Ground water at the sites listed below is contaminated with petroleum related constituents in excess of New Mexico Water Quality Control Commission ground water standards and the extent of ground water contamination at the sites has not been determined. Therefore, approval of these pit closure forms is **denied**. The OCD requests that Amoco investigate the extent of contamination and, if necessary, remediate contaminated ground water pursuant to Amoco's November 21, 1995 ground water investigation/remediation work plan which was approved by the OCD on November 29, 1995.

1. Jack Frost B#2 (Separator pit) Unit D, Sec. 27, T27N, R10W.
2. Sullivan Frame A#1 (Reserve pit) Unit D, Sec. 30, T29N, R10W.

To simplify the approval process for both Amoco and OCD, the OCD requests that Amoco submit all future pit closure reports only upon completion of all closure activities including onsite landfarming or composting of contaminated soils. The reports should include the completed form and all pertinent information related to the extent of contamination, the results of the soil remediation levels in the pits and landfarms, all laboratory analyses and associated quality assurance/quality control data and the disposition of all remediated soils.

If you have any questions, please call me at (505) 827-7154.

Sincerely,

William C. Olson
Hydrogeologist
Environmental Bureau

xc: OCD Aztec District Office
Bill Liess, BLM Farmington District Office
Nelson Velez, Blagg Engineering, Inc.