

AR0219

REMEDIAL INVESTIGATION
REPORT
APPENDICES

(First Operable Unit - Source Control)

BROWN & BRYANT SUPERFUND SITE
Arvin, California

Prepared by
U.S. Environmental Protection Agency
Region IX

May 28, 1993



APPENDIX A

Soil Boring Locations and Depths Drilled

E & E - TAT Soil Borings

DRILL HOLE NAMES AND COORDINATES

LAB LETTER	HOLE NUMBER	NORTHING	EASTING	ELEVATION	TOTAL DEPTH	DATE COMPLETED
A	AP-13	620934.52	1754551.78		85	02/27/90
B	AP-14	620744.31	1754590.55		96	03/05/90
C	SB-01	620627.29	1754588.47		47	03/03/90
D	SB-02	620619.86	1754594.44		31	03/05/90
E	SB-03	620936.96	1754578.41		32	03/06/90
F	SB-04	620935.41	1754531.10		32	03/06/90
G	SB-05	621401.21	1754590.99		47	03/07/90
H	AP-16	620578.52	1754391.38		100	03/12/90
I	AP-12	620654.41	1754442.18		130	03/14/90
J	SB-06	620702.87	1754441.95		57	03/16/90
K	SB-08	620603.56	1754440.31		55	03/17/90
L	SB-07	620654.49	1754491.64		57	03/17/90
M	SB-09	620652.53	1754389.83		57	03/18/90
N	SB-10	620954.91	1754206.03		57	03/19/90
O	SB-11	620783.75	1754220.67		57	03/19/90
P	SB-12	620954.79	1754316.42		57	03/20/90
Q	AP-06	620784.27	1754173.14		112	03/27/90
R	AP-15	620956.55	1754164.47		112	03/27/90
S	AP-07	620951.89	1754267.86		112	03/28/90
T	AR-02	620404.90	1754331.38		132	03/29/90
U	AP-17	620592.15	1754565.31		97	04/03/90
V	SB-13	620602.06	1754586.38		52	04/01/90
W	SB-14	620604.86	1754588.34		52	04/02/90
X	SB-15	620600.91	1754583.86		52	04/02/90
Y	SB-16	620635.43	1754600.86		52	04/02/90
Z	SB-17	620608.05	1754620.77		52	04/04/90
AA	SB-18	620601.84	1754611.95		52	04/04/90
BB	SB-19	620895.51	1754255.71		52	04/08/90
CC	SB-20	620866.46	1754255.41		52	04/08/90
DD	SB-21	620441.59	1754610.41		102	04/10/90
EE	SB-22	620586.00	1754532.16		52	04/11/90
FF	AR-04	620422.56	1754617.64		122	04/12/90
GG	SB-23	620438.67	1754502.28		132	04/12/90
HH	SB-24	620451.50	1754233.63		52	04/10/90
II	SB-25	NOT DRILLED				
JJ	AP-11	NOT DRILLED				
KK	AP-10	NOT DRILLED				
LL	AP-09	NOT DRILLED				
MM	SB-27	620445.25	1754185.45		130	04/14/90
NN	SB-26	620552.89	1754194.96		130	04/15/90
OO	SB-29	621433.54	1754573.57		100	04/16/90

BOREHOLE DATA

Brown & Bryant, Arvin, CA
E & E Drilling, November 1991

Borehole Number	Drilling Depth (ft.)	Location Description	Water Depth (ft.)	State Coordinates		Ground Elevation
				Northing	Easting	
SB-401	70	West of former sump area	66.2	620,655	1,754,370	431.15
SB-402	67	East of former sump area	66.2	620,653	1,754,528	431.14
SB-403	69	Southern depression area	65.4	620,560	1,754,451	429.63
SB-404	35	Former sump area	N/A	620,660	1,754,443	431.56
SB-405	69	Southern depression area near pond	63.5	620,548	1,754,491	429.60
SB-406	71	Background	66.8	621,044	1,754,585	433.32
SB-407	66.5	North of pond	54.5	620,550	1,754,564	430.36
SB-408	67	West of pond	64.3	620,492	1,754,487	430.20
SB-410	70	South of pond, off-site	66.2	620,412	1,754,562	430.70
SB-411	70	Northeast corner	67.8	620,955	1,754,567	432.50
SB-413	35	Tank area	N/A	620,819	1,754,420	432.56
SB-414	5	Tank area	N/A	620,793	1,754,416	432.72
SB-415	5	Tank area	N/A	620,813	1,754,417	432.80
SB-416	5	Tank area	N/A	620,795	1,754,449	432.43
SB-417	3	Beneath warehouse	N/A	620,847	1,754,315	432.53
SB-418	3.5	Beneath warehouse	N/A	620,860	1,754,305	432.50
SB-421	64	Former sump area	N/A	620,695	1,754,434	431.72
SB-422	90	Background	75.4	621,105	1,754,560	433.34
SB-423	70	Leased railroad property	69.7	620,792	1,754,210	432.18
SB-424	69	Former sump area	66.8	620,664	1,754,453	431.60

TABLE 6-1
 Reconnaissance Coreholes
 Information Summary
 SPTCo./Santa Fe - Arvin, California
 July 1992
 K/J 910006

COREHOLE ID	START DATE	END DATE	NORTHING (1) (FL)	EASTING (1) (FL)	TOTAL DEPTH (2) (FL)	SURFACE ELEVATION (3) (FL)	STATIC GROUNDWATER DEPTH (2) (FL)	FIRST ENCOUNTERED GROUNDWATER DEPTH (2) (FL)
CA01 (4)	6/25/91	6/25/91	619311.36	1753713.12	102.00	426.00	NE	NE
CA02	7/9/91	7/10/91	620240.89	1754199.26	74.00	429.64	67.70	72.00
CA03	7/8/91	7/9/91	620250.00	1754330.00	72.80	430.20	66.60	67.90
CA04	7/15/91	7/16/91	620364.17	1754770.70	72.00	429.70	70.50	68.00
CA05	7/2/91	7/3/91	620357.00	1754545.00	85.00	431.00	65.20	ND
CA06	6/30/91	7/1/91	620372.65	1754370.75	73.00	431.15	66.75	68.00
CA07	7/11/91	7/12/91	620262.76	1754465.58	70.40	430.56	68.80	69.00
CA08	7/16/91	7/17/91	620509.76	1754727.63	72.00	430.70	65.00	69.20
CA09	7/23/91	7/24/91	620763.71	1754710.97	69.50	432.29	65.30	68.00
CA10	7/3/91	7/4/91	620394.28	1754164.54	71.00	431.10	68.50	ND
CA11	7/14/91	7/15/91	620453.76	1754300.96	74.00	430.96	68.50	69.50
CA12	7/10/91	7/11/91	620340.71	1754254.62	71.00	429.63	66.90	68.80
CA13	7/12/91	7/13/91	620086.42	1754227.90	69.00	428.13	65.90	ND
CA14	7/25/91	7/26/91	620470.58	1754419.54	71.20	432.10	67.20	67.75
CA15	8/5/91	8/5/91	619629.75	1754114.89	77.50	427.97	73.30	71.00
CA16	6/27/91	6/28/91	620913.00	1754232.50	80.00	433.20	71.80	74.00
CA17	7/13/91	7/14/91	620536.81	1754162.62	80.00	432.00	71.50	72.00
CA18	7/24/91	7/25/91	620680.00	1754150.00	77.20	432.06	71.50	73.20
CA19	8/6/91	8/6/91	620861.00	1754223.00	75.50	433.00	72.10	72.00
CA20	7/27/91	7/28/91	620789.00	1754189.00	76.00	433.02	71.40	72.50
CA21	7/29/91	7/31/91	620960.00	1754162.00	75.80	434.42	72.20	71.62
CA22	8/7/91	8/8/91	620743.00	1754233.00	73.50	432.70	70.10	ND
CA23	8/24/91	8/25/91	620417.50	1754527.10	69.50	431.60	64.70	67.00
CA24	8/26/91	8/27/91	620606.89	1754296.10	72.00	432.50	68.42	69.00
CA25	8/10/91	8/11/91	620844.00	1754199.00	75.50	431.80	68.75	ND
CA26	8/13/91	8/14/91	620961.00	1754202.00	76.50	433.52	69.80	74.00
CA27	8/12/91	8/12/91	620916.00	1754175.00	76.00	433.81	69.90	ND
CA28	8/8/91	8/10/91	619503.02	1753956.15	83.00	425.90	NE	NE
CA29	8/19/91	8/20/91	620259.52	1754684.57	80.00	429.70	64.90	69.00
CA30	8/21/91	8/22/91	620392.89	1753846.68	81.00	429.40	78.62	ND
CA31	8/23/91	8/23/91	620458.95	1754948.16	72.50	430.70	66.30	ND
CA32	8/28/91	8/28/91	619264.00	1753910.00	20.00	NS	NE	NE
CA33	8/28/91	8/28/91	619349.00	1753925.00	20.00	NS	NE	NE
CB01	7/11/91	7/15/91	619312.73	1753722.01	225.00	425.00	ND	140.00
CB02	7/30/91	8/9/91	620675.88	1754150.95	220.00	432.00	ND	ND (5)
CB03	8/22/91	8/27/91	620236.70	1754669.68	220.00	430.00	ND	ND
CB04	7/18/91	7/24/91	620386.17	1754368.63	225.00	431.00	ND	ND
CB05	7/25/91		620091.00	1754227.00	220.00	428.00	ND	ND
CB06	8/11/91	8/14/91	619496.72	1753954.84	220.00	426.00	ND	ND
S16A	8/27/91	8/27/91	620926.00	1754246.00	21.00	433.00	NE	NE
S19A	8/27/91	8/27/91	620894.00	1754241.00	51.00	433.00	NE	NE
S21A	8/27/91	8/27/91	620936.00	1754162.00	18.50	434.00	NE	NE

1. California State Plane Coordinate System
2. Depth measured in feet below ground surface.
3. Surface elevations were measured from temporary benchmarks established at each corehole location.
4. Corehole identification is in accordance with the following conventions: CAXX designates an A-zone corehole followed by the identification number, CBXX designates a B-zone corehole followed by the identification number, SXXA designates a shallow boring adjacent to an A-zone corehole designated XX.

NE - Not Encountered
 ND - Not Determined
 NS - Not Surveyed

APPENDIX B

**Field Sampling Reports for Surface Soil and Groundwater
Sampling Activities Performed by EPA Staff**

FIELD SAMPLING REPORT

**QUARTERLY GROUNDWATER MONITORING
JANUARY, 1991**

**BROWN & BRYANT SUPERFUND SITE
Arvin, CA**

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September, 1992

INTRODUCTION

Surface soil samples and quarterly groundwater samples were collected at the Brown & Bryant Superfund Site in Arvin, California on January 15 - 19, 1991. The sampling event was conducted by the U.S. EPA, Region 9, Environmental Services Branch in support of the Brown & Bryant in-house RI/FS. This was the first quarterly groundwater monitoring event at the Brown & Bryant Site.

The objective, sampling procedures, and analytical methods used for this investigation are described in the document Field Sampling Plan for Quarterly Groundwater Monitoring and Surface Soil Sampling, Brown & Bryant Site, Arvin CA, January, 1991. This report summarizes the procedures that were followed and any deviations from the sampling plan.

METHODS AND SCOPE OF WORK

GROUNDWATER SAMPLES

The samplers collected 19 groundwater samples, including 3 blanks and 2 duplicates. An attempt was made to sample all site wells, but EPAS-1 and AP-5 were dry. A total of 12 site wells plus two municipal wells were sampled. (See Figure 1 for a map of the site with well locations. See Table 1 for a list of the wells sampled and the associated log and sample numbers.) Samples were collected for the following analyses: RAS+SAS Volatiles (routine detection limits, with 1,2-DCP and 1,2,3-TCP) or RAS+SAS Volatiles (low detection limits, with 1,2-DCP and 1,2,3-TCP), SAS EDE & DBCP, SAS Herbicides, RAS+SAS Pesticides/PCBs (with chlorobenzilate and dimethoate), SAS Organophosphorus Pesticides, SAS Carbamate and Urea Pesticides, RAS+SAS Semivolatiles (with PCNB), RAS metals, SAS anions, SAS alkalinity, and SAS TDS. (See Appendix A for Request for Analysis Table 5.1 of the sampling plan.)

Groundwater samples were collected from site wells using either decontaminated bailers or the decontaminated piston pump. Wells were sounded to determine the volume of standing water in the well casing. A minimum of three times this casing volume was purged from the well prior to sample collection to ensure that only fresh formation water would be sampled. Additionally, pH, electrical conductivity, and temperature of the water were monitored after each collected casing volume. Stabilization of these parameters during purging was also used as an indicator of fresh formation water. (See Table 2 for information about each well, such as water level, pH, conductivity, temperature, turbidity, sampling method, and comments.)

The samples were collected at flow rates appropriate to each parameter. The samples were preserved and packaged according to the procedures discussed in the sample plan. All documentation was completed and shipped with the samples. Samples were shipped to the respective laboratories via Federal Express overnight service.

SOIL SAMPLES

Thirteen soil samples were collected, including one duplicate sample. Sample locations were selected as described in the sample plan. Three soil sampling locations were staked in each of two different areas of the site, for a total of six locations. At each location, a sample was collected at the surface and from 1 foot below the surface, for a total of twelve sampling points. (See Figure 2 for a map of the site with soil sampling locations. See Table 1 for a list of sample locations and the associated log and sample numbers.) The samples were collected from the points of a triangular grid centered over a suspected hot spot. The exact sample location for the primary sample in each group of three was based on yellow surface staining. The two secondary locations for each group of three were located 10 feet from the primary location and at or near surface stains when possible. Samples were collected for SAS Dinoseb and RAS+SAS Semivolatiles (with PCNB). (See Appendix A for Request for Analysis Table 5.2 from the sampling plan.)

Samples were collected using decontaminated stainless steel trowels and hand held augers. Surface debris was first removed from the location. The surface sample was collected first. The top 1 inch of soil from the designated 1 square foot area was removed, deposited in a paper paint bucket, and thoroughly mixed. The soil was then transferred to wide mouth jars. Using the auger, the samplers then removed and discarded the top 1 foot of soil from the center of the sampled area. The subsequent soil removed by the auger was transferred to a clean paper paint bucket until sufficient volume was recovered. This soil was thoroughly mixed using a decontaminated trowel and transferred to wide mouth jars. (See Table 3 for information about each soil location, such as date of collection, depth, and comments.)

The samples were chilled and packaged according to the procedures discussed in the sample plan. All documentation was completed and shipped with the samples. Samples were shipped to the respective laboratories via Federal Express overnight service.

LABORATORY INFORMATION

The laboratories for this sampling event were the U.S. EPA Region 9 Laboratory and participants in EPA's Contract Laboratory Program (CLP). The Case and SAS numbers associated with this investigation are LV1S15, 15725, and 5989Y. The samples collected for volatiles, EDB/DBCP, Semivolatiles, Pesticides/PCBs, Anions, Alkalinity, and TDS were shipped to the U.S. EPA Region 9 Lab in Las Vegas, NV under Case Number LV1S15. Metals were sent to Associated Labs, Inc. in Orange, CA under Case Number 15725. Organophosphorus Pesticides, Carbamate and Urea Pesticides, and Herbicides were analyzed at Pacific Analytical in Carlsbad, CA under SAS Number 5989Y.

WATER LEVEL MEASUREMENTS

Water level measurements for each well were taken January 28, 1991. (See Table 4.) For consistency, the wells were sounded by the same person and all measurements were taken in the smallest time frame possible. The measurements represent the distance from the top of the water column in the well to the mark at the top of the well casing. If no such mark exists, the measurement is taken at the north side of the top of the inner casing. For this event, the wells were sounded ten days subsequent to the final day of sampling. The water level measurements were not taken prior to the sampling event for logistical reasons.

DEVIATIONS FROM THE SAMPLING PLAN

All sampling activities were consistent with those in the sampling plan with the following exceptions.

- The sample plan identified three target areas for surface soil sampling. Two of these three areas were sampled. The third area was not sampled because recent rainfall had flooded the targeted location.
- The plan states that surface soil samples would be collected from a one-foot diameter circle to a depth of three inches. The samples were collected from the one-foot diameter circle to a depth of one inch because the amount of soil produced was more than sufficient for the necessary sample volume.
- Table 5.1 of the sampling plan stipulated that sample AMW-14D would be a duplicate of AMW-4R. AMW-14D was actually collected at well AP-3.

SUMMARY

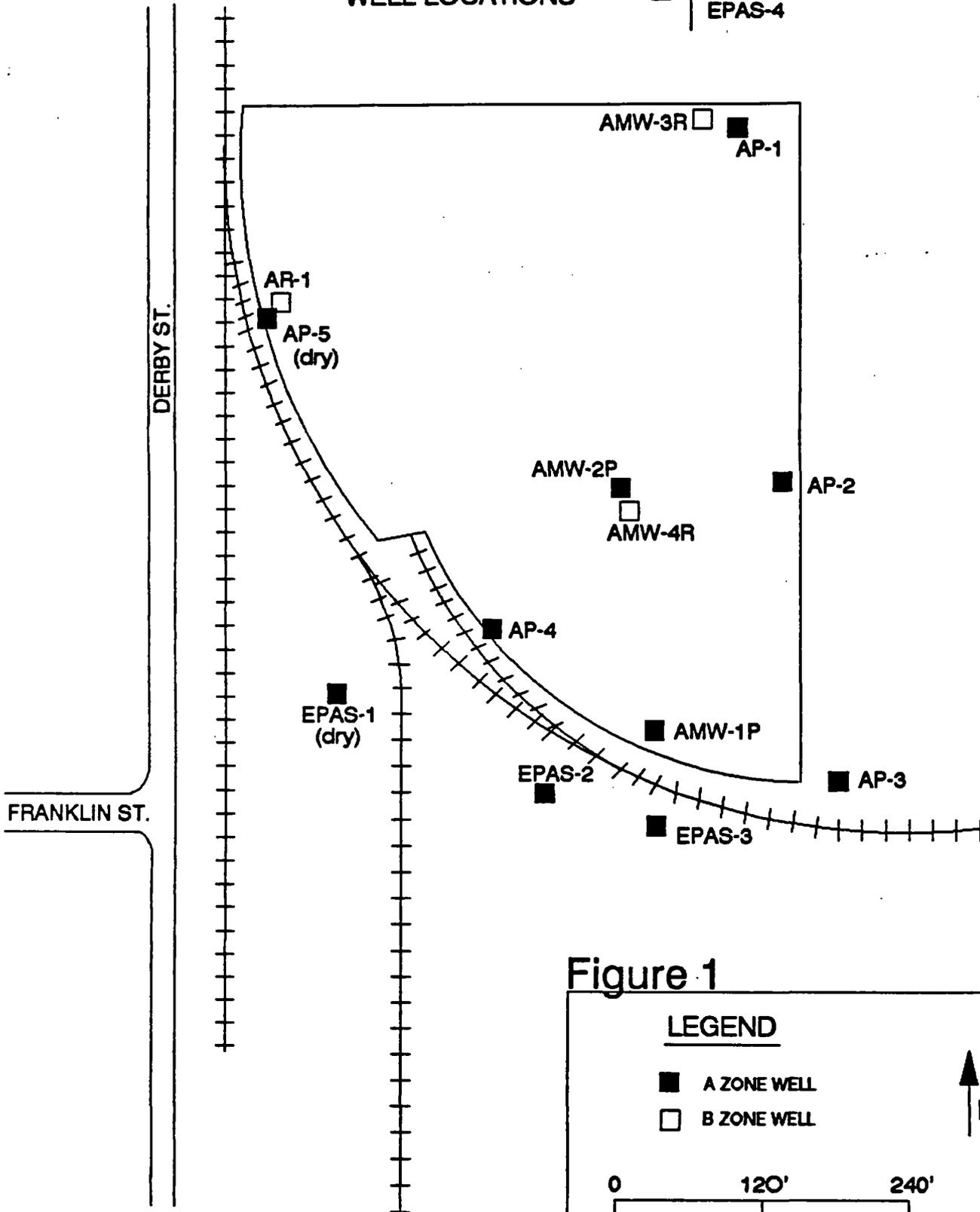
In January 1991, the following samples were collected at Brown & Bryant Superfund Site in Arvin, California:

- 11 Groundwater Samples for RAS+SAS Volatiles (routine detection limits), SAS EDB & DBCP, SAS Herbicides, RAS+SAS Pesticides/PCBs, SAS Organophosphorus Pesticides, SAS Carbamate and Urea Pesticides, RAS+SAS Semivolatiles, RAS metals, SAS anions, SAS alkalinity, and SAS TDS.
- 8 Groundwater Samples for RAS+SAS Volatiles (low detection limits), SAS EDB & DBCP, SAS Herbicides, RAS+SAS Pesticides, SAS Organophosphorus Pesticides, SAS Carbamate and Urea Pesticides, RAS+SAS Semivolatiles, RAS metals, SAS anions, SAS alkalinity, and SAS TDS.
- 13 Soil Samples for SAS Dinoseb and RAS+SAS Semivolatiles.

All of the procedures outlined in the Field Sampling Plan for Quarterly Groundwater Monitoring and Surface Soil Sampling, Brown & Bryant Site, Arvin CA were followed with the minor exceptions described in this report.

No unusual circumstances or insurmountable difficulties occurred during the sampling event.

BROWN & BRYANT WELL LOCATIONS



BROWN & BRYANT SOIL SAMPLE LOCATIONS

JANUARY 1991

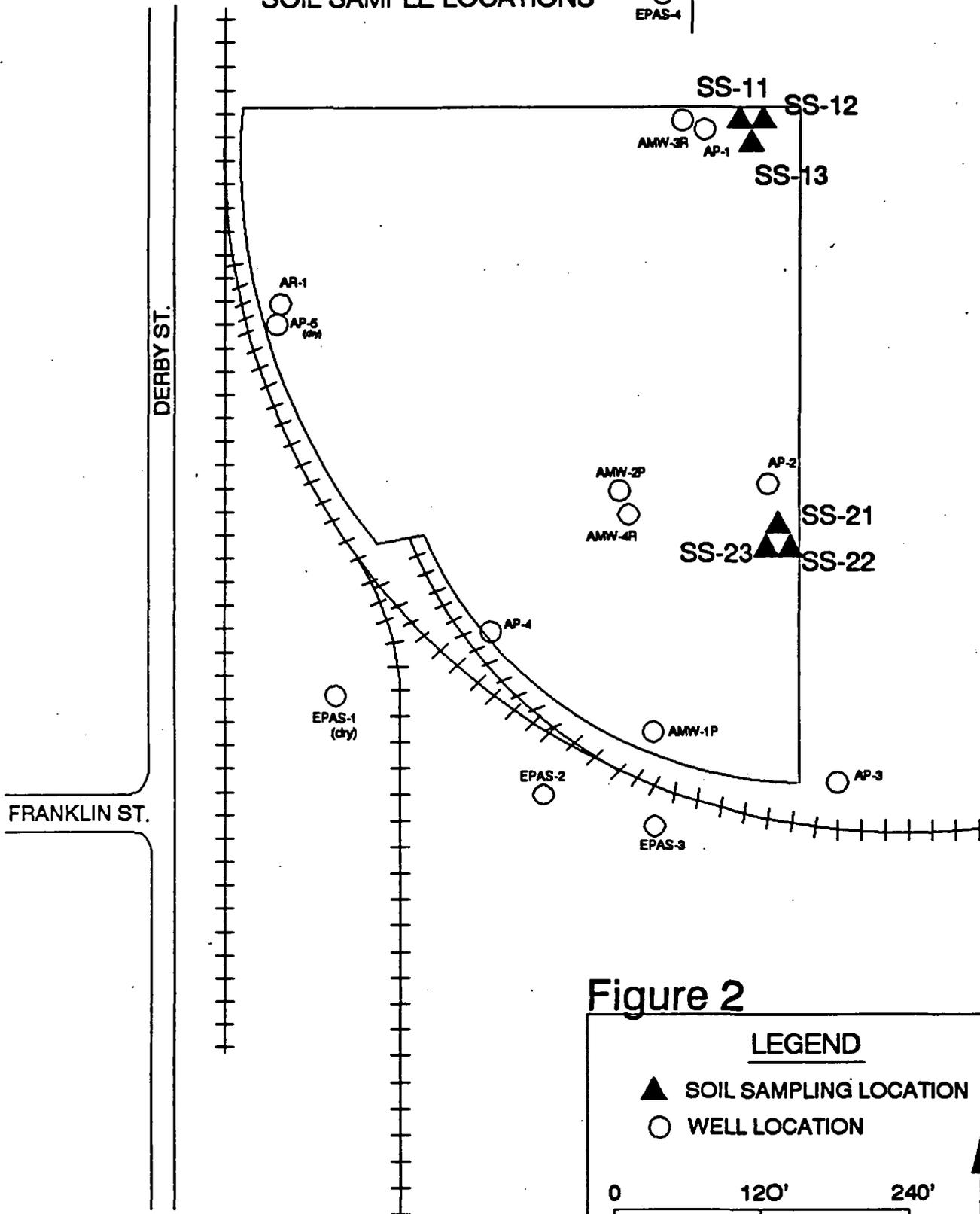
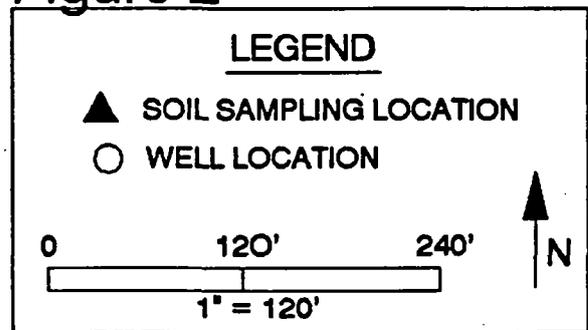


Figure 2



BROWN & BYRANT JANUARY GROUNDWATER SAMPLING
DATA MANAGEMENT SAMPLE ID NUMBERS

LOCATION NUMBER	WELL CODE	JAN. SAMPLE LOG NUMBERS	RAS SAMPLE #	SAS SAMPLE #
PERCHED ZONE				
AMW-1P	MW01	MW01D001E01A	MYF417	5989Y-25
AMW-2P	MW02	MW02D001E01A	MYF410	5989Y-23
AP-01	MW11	MW11D001E01A	MYF415	5989Y-35
AP-02	MW12	MW12D001E01A	MYF408	5989Y-21
AP-03	MW13	MW13D001E01A	MYF423	5989Y-31
AP-04	MW14	MW14D001E01A	MYF420	5989Y-26
AP-05	MW15	DRY		
EPAS-01	MW21	DRY		
EPAS-02	MW22	MW22D001E01A	MYF412	5989Y-30
EPAS-03	MW23	MW23D001E01A	MYF411	5989Y-29
EPAS-04	MW24	MW24D001E01A	MYF416	5989Y-36
REGIONAL UNCONFINED				
AR-01	MW31	MW31D002E01A	MYF422	5989Y-28
AMW-3R	MW33	MW33D002E01A	MYF413	5989Y-32
AMW-4R	MW34	MW34D002E01L	MYF419	5989Y-24
MUNICIPAL WELLS				
CW-1	DW01	DW01D003E01A	MYF405	5989Y-01
CW-5	DW05	DW05D003E01A	MYF406	5989Y-02
QUALITY CONTROL SAMPLES				
AP-11	MW91	MW91D000E01E	MYF407	5989Y-20
AP-12	MW92	MW92D000E01E	MYF418	5989Y-27
AP-13	MW93	MW93D000E01E	MYF414	5989Y-33
AMW-12P	MW02	MW02D001E01R	MYF409	5989Y-22
AP-8D	MW13	MW13D001E01R	MYF421	5989Y-34

BROWN & BYRANT JANUARY 1991 SOIL SAMPLING
DATA MANAGEMENT SAMPLE ID NUMBERS

LOCATION NUMBER	JANUARY 1991 SOIL LOG NUMBERS	RAS SAMPLE #	SAS SAMPLE #
SS11	SS11D000E01A	SS11-0	5989Y-08
SS11	SS11D001E01A	SS11-1	5989Y-09
SS11	SS11D000E01R	SS41-0	5989Y-07
SS12	SS12D000E01A	SS12-0	5989Y-03
SS12	SS12D001E01A	SS12-1	5989Y-04
SS13	SS13D000E01A	SS13-0	5989Y-05
SS13	SS13D001E01A	SS13-1	5989Y-06
SS21	SS21D000E01A	SS21-0	5989Y-10
SS21	SS21D001E01A	SS21-1	5989Y-11
SS22	SS22D000E01A	SS22-0	5989Y-12
SS22	SS22D001E01A	SS22-1	5989Y-13
SS23	SS23D000E01A	SS23-0	5989Y-14
SS23	SS23D001E01A	SS23-1	5989Y-15

Brown & Bryant January 1991 Sampling Event
Table 2.0: Groundwater Sampling Information

SAMPLE LOCATION	DATE	TIME	WATER LEVEL (FT)	pH	CONDUCTIVITY (umhos/cm)	TURBIDITY (ntu)	TEMP (oC)	METHOD OF COLLECTION	HNu (mu)
AMW-1P	01/17/91	17:43	66.02	6.33	11370	52.6	20.3	BAILER	0
AMW-2P	01/17/91	11:05	66.81	7.21	10500	5.4	19.7	BAILER	0-14
AMW-3R	01/19/91	10:45	154.45	7.92	895	1.2	20.0	PISTON PUMP	-
AMW-4R	01/17/91	11:50	154.65	7.05	888	0.30	21.1	PISTON PUMP	-
AP-1	01/19/91	12:50	65.16	8.05	920	145	21.1	BAILER	-
AP-2	01/16/91	13:45	64.82	7.43	1280	66.7	21.4	BAILER	-
AP-3	01/19/91	10:30	65.05	7.02	1725	>200	20.0	BAILER	-
AP-4	01/17/91	16:30	66.24	7.00	2060	31.8	21.1	BAILER	-
AR-1	01/17/91	18:05	156.0	8.01	1280	0.59	18.9	PISTON PUMP	0
EPAS-2	01/18/91	14:02	69.24	6.87	2050	10.0	21.2	BAILER	-
EPAS-3	01/18/91	17:01	67.96	6.10	4710	35.0	21.5	BAILER	-
EPAS-4	01/19/91	14:15	64.70	9.17	613	-	17.8	PISTON PUMP	-
CW-1	01/15/91	10:38	NA	8.47	340	5.08	25.4	SPIGOT	-
CW-5	01/15/91	11:31	NA	8.55	310	0.98	23.8	SPIGOT	-
AP-11	01/16/91	10:15	NA					BAILER	
AP-12	01/17/91	15:30	NA					PISTON PUMP	
AP-13	01/18/91	14:00	NA					BAILER	

**Brown & Bryant January 1991 Sampling Event
Table 2.0: Groundwater Sampling Information**

SAMPLE LOCATION	COMMENTS
AMW-1P	bend or obstruction at 69', must use double length 2" bailer to purge
AMW-2P	duplicate location for AMW-12P, first purge volume amber and cloudy
AMW-3R	
AMW-4R	volatile Lab QC sample
AP-1	crusty brown flakes (rust) in purge water
AP-2	purge water cloudy and brown with flakes
AP-3	duplicate location for AP-8D
AP-4	
AR-1	
EPAS-2	water cloudy and yellow gray, lot of rust in water
EPAS-3	well bailed dry after 3 purge volumes, Lab QC sample
EPAS-4	
CW-1	
CW-5	
AP-11	
AP-12	
AP-13	

Brown & Bryant January 1991 Sampling Event

Table 3.0 Soil Sampling Information

Sample Location	Date	Time	Sample Depth	Comments
SS11-0	01/15/91	15:30	0-1"	fine to medium light brown sand, duplicate location for SS41
SS11-1	01/15/91	15:35	12"	fine to medium light brown sand
SS12-0	01/15/91	15:50	0-1"	fine to medium light brown sand, asphalt pieces in sample area were excluded from sample
SS12-1	01/15/91	16:00	24"	fine to medium light brown sand, sample taken 2 feet bgs because sample location one foot high on pile, two foot depth was within approximate horizontal plane of the other samples
SS13-0	01/15/91	15:30	0-1"	fine to medium sand
SS13-1	01/15/91	15:45	12"	fine to medium sand, samplers had to break through thin asphalt layer
SS21-0	01/16/91	11:10	0-1"	Lab QC sample
SS21-1	01/16/91	11:20	12"	white nodules in soil
SS22-0	01/16/91	11:40	0-1"	-
SS22-1	01/16/91	11:55	12"	-
SS23-0	01/16/91	11:10	0-1"	greenish yellow surface soil stains
SS23-1	01/16/91	11:20	12"	-

**Brown & Bryant January 1991 Sampling Event
Table 4.0: Initial Water Level Measurements**

WELL	DATE	WATER LEVEL (feet below surface)
AMW-1P	01/28/91	66.09
AMW-2P	01/28/91	66.79
AMW-3R	01/28/91	154.56
AMW-4R	01/28/91	154.52
AP-1	01/28/91	65.14
AP-2	01/28/91	64.88
AP-3	01/28/91	65.03
AP-4	01/28/91	65.91
AP-5	01/28/91	70.68 (dry)
AR-1	01/28/91	156.16
EPAS-1	01/28/91	dry
EPAS-2	01/28/91	69.17
EPAS-3	01/28/91	68.23
EPAS-4	01/28/91	64.45

APPENDIX A

**REQUEST FOR ANALYSIS TABLES 5.1 and 5.2
FROM THE SAMPLING PLAN**

5.0 REQUEST FOR ANALYSIS

In each quarterly groundwater sampling, 21 water samples will be collected, including 2 duplicates and three blanks. Of these 21 samples, all will be analyzed for RAS metals, RAS+SAS semivolatiles (add PCNB), RAS+SAS pesticides/PCBs (add chlorobenzilate and dimethoate) and the following SAS parameters: EDB & DBCP, carbamate pesticides, organophosphorus pesticides, herbicides, chloride, nitrate-nitrite, sulfate, alkalinity (carbonate and bicarbonate separately), and total dissolved solids (Table 5.1). Only 12 of the 21 samples will be analyzed for RAS volatiles for routine quantitation limits with the addition of 1,3-DCP and 1,2,3-TCP (making this RAS+SAS), and the remaining 9 samples will be analyzed for RAS+SAS volatiles for low quantitation limits with the addition of 1,3-DCP and 1,2,3-TCP. The RAS+SAS and SAS requirements for water analyses are included in Appendix A.

20 soil samples, including 2 duplicates will be analyzed for RAS+SAS semivolatiles with the addition of PCNB, and SAS dinoseb (Table 5.2). The SAS requirements for soil analyses are included in Appendix A.

The analytical and quality control requirements for field measurements (pH, conductivity, turbidity, and water levels) are included in Appendix B.

All sampling will be completed in one week.

TABLE 5.1 REQUEST FOR ANALYSIS OF WATERS (pg 1 of 3)

CLP	RAS+SAS	RAS	SAS	SAS	RAS	RAS	SAS	SAS	
ANALYSES REQUESTED	VOA's	VOA's	EDB & DBCP	HERBICIDES	METALS (total)	SEMI VOAs PEST & PCBs	OP & CARBAMATE PESTICIDES	Cl, NO2/NO3 ALK, SO4, TDS	
PRESERVATIVES	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Chill to 4 C	add HNO3 to pH <2	Chill to 4 C	Chill to 4 C	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days (<28 days for TDS & ALK)	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days (<25 days for TDS & ALK)	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	
CONCENTRATION	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	4 x 1 liter amber glass bottle (2)*	4 x 1 liter amber glass bottle (2)*	1 x 500 ml poly bottle (1/2)*	
SAMPLE LOCATION	LOW	MED							
AMW-1P	X		2	2	2	1	4	4	1
AMW-2P	X		2	2	2	1	4	4	1
AMW-12D (DUP OF 2P)	X		2	2	2	1	4	4	1
AP-01	X		2	2	2	1	4	4	1
AP-02	X		2	2	2	1	4	4	1
AP-03	X		2	2	2	1	4	4	1
AP-04	X		2	2	2	1	4	4	1
AP-05 (dry)	X		2	2	2	1	4	4	1
EPAS-1 (dry)	X		2	2	2	1	4	4	1

* Minimum bottle requirements for low volumes. See also Section 6.4.

TABLE 5.1 REQUEST FOR ANALYSIS OF WATERS (pg 2 of 3)

CLP ANALYSES REQUESTED	RAS+SAS VOA's	RAS VOA's	SAS EDB & DBCP	SAS HERBICIDES	RAS METALS (total)	RAS SEMI VOAs PEST & PCBs	SAS OP & CARBAMATE PESTICIDES	SAS Cl, NO2/NO3, ALK, SO4, TDS	
PRESERVATIVES	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Chill to 4 C	add HNO3 to pH <2	Chill to 4 C	Chill to 4 C	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days (<28 days for TDS & ALK)	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days (<25 days for TDS & ALK)	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS				
SAMPLE LOCATION	CONCENTRATION LOW MED	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	4 x 1 liter amber glass bottle (2)*	4 x 1 liter amber glass bottle (2)*	1 x 500 ml poly bottle (1/2)*
EPAS-2 (LAB QC)	X		4	4	4	2	8	8	2
EPAS-3		X	2	2	2	1	4	4	1
EPAS-4 (bckgrd)	X		2	2	2	1	4	4	1
AMW-4R	X		6 (VOA lab QC)	2	2	1	4	4	1
AMW-14D (DUP OF 4R)	X		3	2	2	1	4	4	1
AR-1	X		3	2	2	1	4	4	1
AMW-3R	X		3	2	2	1	4	4	1
CITY-1	X		3	2	2	1	4	4	1
CITY-5	X		3	2	2	1	4	4	1

* Minimum bottle requirements for low volumes. See also Section 6.4.

TABLE 5.1 REQUEST FOR ANALYSIS OF WATERS (pg 3 of 3)

CLP ANALYSES REQUESTED	RAS+SAS VOA's	RAS VOA's	SAS EDB & DBCP	SAS HERBICIDES	RAS METALS (total)	RAS SEMI VOAs PEST & PCBs	SAS OP & CARBAMATE PESTICIDES	SAS Cl, NO2/NO3 ALK, SO4, TDS	
PRESERVATIVES	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Chill to 4 C	add HNO3 to pH <2	Chill to 4 C	Chill to 4 C	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, [40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days prior to extraction, [40 days after extraction	Hold <7 days prior to extraction, [40 days after extraction	Hold <7 days (<28 days for TDS & ALK)	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, [40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days prior to extraction, [40 days after extraction	Hold <5 days prior to extraction, [40 days after extraction	Hold <5 days (<25 days for TDS & ALK)	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS				
SAMPLE LOCATION	CONCENTRATION LOW MED	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	4 x 1 liter amber glass bottle (2)*	4 x 1 liter amber glass bottle (2)*	1 x 500 ml poly bottle (1/2)*
AP-11 (blank)	X	3		2	2	1	4	4	1
AP-12 (blank)	X	3		2	2	1	4	4	1
AP-12 (blank)	X	3		2	2	1	4	4	1
TOTALS	17 4	30	26	44	44	22	88	88	22

* Minimum bottle requirements for low volumes. See also Section 6.4.

Note: If none of the above wells are dry, an additional Lab QC sample will be required for all parameters, except VOAs. The location of the additional Lab QC will be selected in the field.

TABLE 5.2 REQUEST FOR ANALYSIS OF SOILS (pg 1 of 3)

CLP			SAS	RAS+SAS	
ANALYSES REQUESTED			DINOSEB	SEMIVOAs Plus PCNB	
PRESERVATIVES			Chill to 4 C	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)			Hold <14 days prior to extraction, 40 days after extraction	Hold <14 days prior to extraction, 40 days after extraction	
CONTRACT HOLDING TIME (s)			Hold <10 days prior to extraction, 40 days after extraction	Hold <10 days prior to extraction, 40 days after extraction	
SAMPLE x SAMPLE			NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	
SAMPLE LOCATION	SAMPLE ID #	CONCENTRATION		1 x 4 oz amber glass jar	1 x 4 oz amber glass jar
		LOW	MED		
SS11 (Surface)	SS11D000E01A		X	1	1
SS11 (Surface)	SS11D000E01R DUP OF SS1		X	1	1
SS12 (Surface)	SS12D000E01A		X	1	1
SS13 (Surface)	SS13D000E01A		X	1	1
SS11 (1 foot)	SS11D001E01A		X	1	1
SS12 (1 foot)	SS12D001E01A		X	1	1
SS13 (1 foot)	SS13D001E01A		X	1	1
SS21 (Surface)	SS21D000E01L LAB QC		X	1	1
SS22 (Surface)	SS22D000E01A		X	1	1

TABLE 5.2 REQUEST FOR ANALYSIS OF SOILS (pg 2 of 3)

CLP ANALYSES REQUESTED		SAS DINOSEB	RAS+SAS SEMIVOCAs Plus PCNB
PRESERVATIVES		Chill to 4 C	Chill to 4 C
ANALYTICAL HOLDING TIME (s)		Hold <14 days prior to extraction, 40 days after extraction	Hold <14 days prior to extraction, 40 days after extraction
CONTRACT HOLDING TIME (s)		Hold <10 days prior to extraction, 40 days after extraction	Hold <10 days prior to extraction, 40 days after extraction
SAMPLE x SAMPLE		NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS
SAMPLE LOCATION	SAMPLE ID #	CONCENTRATION LOW MED	1 x 4 oz amber glass jar
SS23 (surface)	SS23D000E01A	X	1
SS21 (1 foot)	SS21D001E01A	X	1
SS22 (1 foot)	SS22D001E01A	X	1
SS23 (1 foot)	SS23D001E01A	X	1
SS31 (Surface)	SS31D000E01A	X	1
SS32 (Surface)	SS32D000E01A	X	1
SS33 (Surface)	SS33D000E01A	X	1
SS31 (1 foot)	SS31D001E01A	X	1
SS31 (1 foot)	SS31D001E01R (DUP OF SS31)	X	1

TABLE 5.2 REQUEST FOR ANALYSIS OF SOILS (pg 3 of 3)

CLP ANALYSES REQUESTED		SAS DINOSEB	BAS+SAS SEMIVOCs Plus PCNB
PRESERVATIVES		Chill to 4 C	Chill to 4 C
ANALYTICAL HOLDING TIME (s)		Hold <14 days prior to extraction, 40 days after extraction	Hold <14 days prior to extraction, 40 days after extraction
CONTRACT HOLDING TIME (s)		Hold <10 days prior to extraction, 40 days after extraction	Hold <10 days prior to extraction, 40 days after extraction
SAMPLE x SAMPLE		NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS
SAMPLE LOCATION	SAMPLE ID #	CONCEN- TRATION LOW MED	1 x 4 oz amber glass jar 1 x 4 oz amber glass jar
SS32 (1 foot)	SS32D001E01A	X	1
SS33 (1 foot)	SS33D001E01A	X	1
TOTALS			20
			20

FIELD SAMPLING REPORT
QUARTERLY GROUNDWATER MONITORING
APRIL, 1991

BROWN & BRYANT SUPERFUND SITE
Arvin, CA

Prepared by:

Robbie Hedeem
Quality Assurance Management Section
Environmental Services Branch
U.S. EPA, Region 9

September, 1992

INTRODUCTION

Quarterly groundwater samples were collected at the Brown & Bryant Superfund Site in Arvin, California on April 9 - 12, 1991. The sampling event was conducted by the U.S. EPA, Region 9, Environmental Services Branch in support of the Brown & Bryant in-house RI/FS. This was the second quarterly groundwater monitoring event at the Brown & Bryant Site.

The objective, sampling procedures, and analytical methods used for this investigation are described in the document Field Sampling Plan for Quarterly Groundwater Monitoring and Surface Soil Sampling, Brown & Bryant Site, Arvin CA, January, 1991 and in a memo dated 4/02/91 which amends the plan (see Appendix A). This report summarizes the procedures that were followed and any deviations from the sampling plan.

METHODS AND SCOPE OF WORK

WATER LEVEL MEASUREMENTS

Prior to the commencement of any sampling, the water level at each well was measured. For consistency, the wells were sounded by the same person and all measurements were taken in the smallest time frame possible. The measurements represent the distance from the top of the water column in the well to the mark at the top of the well casing. If no such mark exists, the measurement is taken at the north side of the top of the inner casing. For this event, the wells were sounded April 9, 1991. (See Table 3.0)

GROUNDWATER SAMPLES

The samplers collected 19 groundwater samples, including 3 blanks and 2 duplicates. An attempt was made to sample all site wells, but EPAS-1 and AP-5 were dry. A total of 12 site wells plus two municipal wells were sampled. (See Figure 1 for a map of the site with well locations. See Table 1 for a list of the wells sampled and the associated log and sample numbers.) Samples were collected for the following analyses: RAS+SAS Volatiles (routine detection limits, with 1,2-DCP and 1,2,3-TCP) or RAS+SAS Volatiles (low detection limits, with 1,2-DCP and 1,2,3-TCP), SAS EDB & DBCP, SAS Herbicides, RAS+SAS Semivolatiles (with PCNB), RAS metals, SAS anions, SAS alkalinity, and SAS TDS. (See Appendix A for Table 5.1 Request for Analysis of Waters.)

Groundwater samples were collected from site wells using either decontaminated bailers or the decontaminated piston pump. Wells were sounded to determine the volume of standing water in the well casing. A minimum of three times this casing volume was purged from the well prior to sample collection to ensure that only fresh formation water would be sampled. Additionally, pH, electrical conductivity, and temperature of the water were monitored after each collected casing volume. Stabilization of these parameters during purging was also used as an indicator of fresh formation water. (See Table 2 for information about each well, such as water level, pH, conductivity, temperature, turbidity, sampling method, and comments.)

The samples were collected at flow rates appropriate to each parameter. The samples were preserved and packaged according to the procedures discussed in the sample plan. All documentation was completed and shipped with the samples. Samples were shipped to the respective laboratories via Federal Express overnight service.

LABORATORY INFORMATION

The laboratories for this sampling event were the U.S. EPA Region 9 Laboratory and participants in EPA's Contract Laboratory Program (CLP). The Case and SAS numbers associated with this investigation are LV1S29, 16213, and 6155Y. The samples collected for volatiles, EDB/DBCP, Semivolatiles, Anions, Alkalinity, and TDS were shipped to the U.S. EPA Region 9 Lab in Las Vegas, NV under Case Number LV1S29. Metals were sent to Associated Labs, Inc. in Orange, CA under Case Number 16213. Herbicides were analyzed at Pacific Analytical in Carlsbad, CA under SAS Number 6155Y.

DEVIATIONS FROM THE SAMPLING PLAN

All sampling activities were consistent with those in the sampling plan with the following exceptions.

- Due to sampling difficulties at well AP-4, purging was abandoned after the second purge volume. Purging resumed the following morning and one additional purge volume was collected prior to sampling.
- The location number for the duplicate sample at well AP-3 was AP-13D on the Request for Analysis Table. This duplicate was renamed AP-23D in the field.

SUMMARY

In April 1991, the following samples were collected at Brown & Bryant Superfund Site in Arvin, California:

- 11 Groundwater Samples for RAS+SAS Volatiles (routine detection limits), SAS EDB & DBCP, SAS Herbicides, RAS+SAS Semivolatiles, RAS metals, SAS anions, SAS alkalinity, and SAS TDS.
- 8 Groundwater Samples for RAS+SAS Volatiles (low detection limits), SAS EDB & DBCP, SAS Herbicides, RAS+SAS Semivolatiles, RAS metals, SAS anions, SAS alkalinity, and SAS TDS.

All of the procedures outlined in the Field Sampling Plan for Quarterly Groundwater Monitoring and Surface Soil Sampling, Brown & Bryant Site, Arvin CA were followed with the minor exceptions described in this report.

No unusual circumstances or insurmountable difficulties occurred during the sampling event.

BROWN & BRYANT WELL LOCATIONS

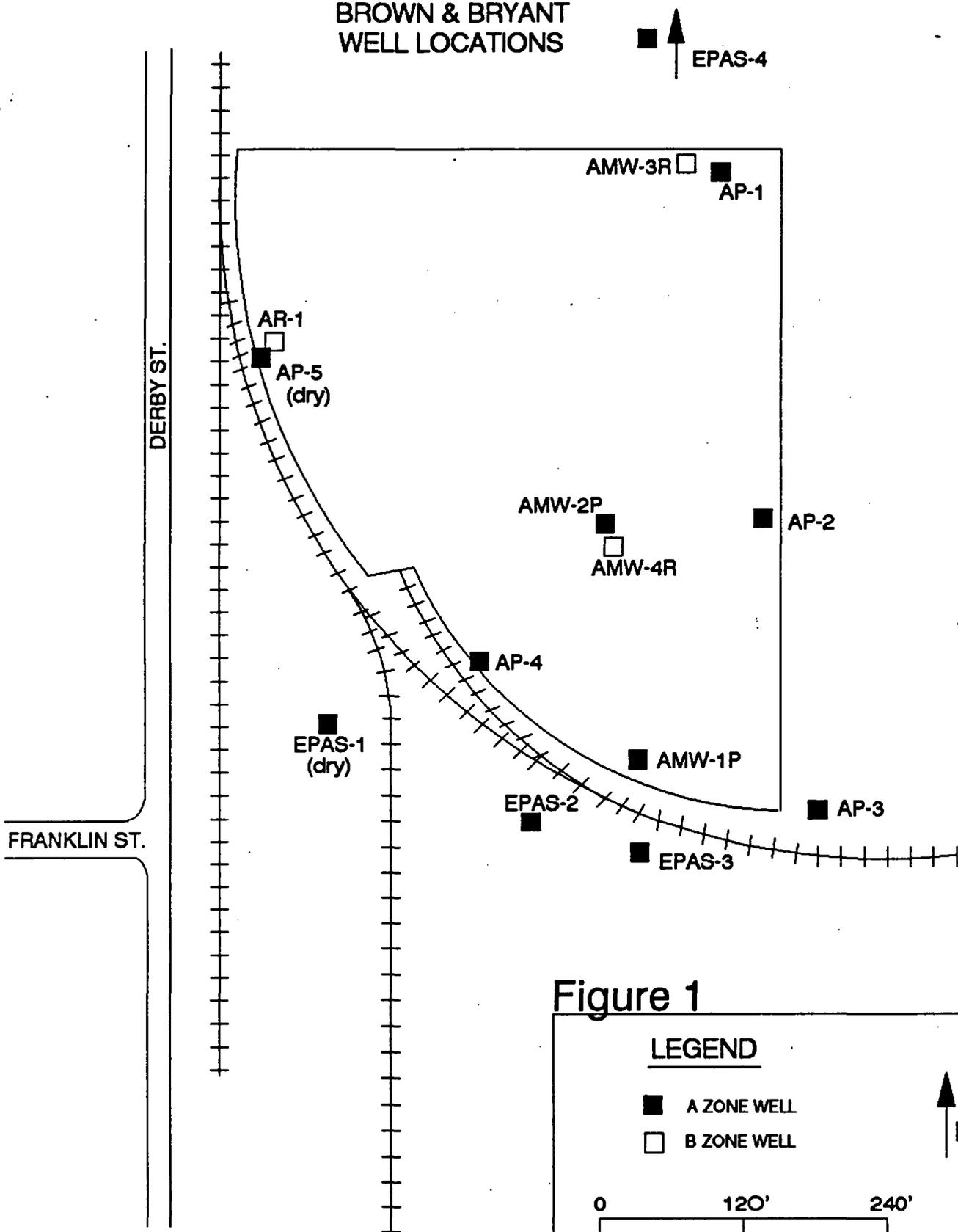


Figure 1

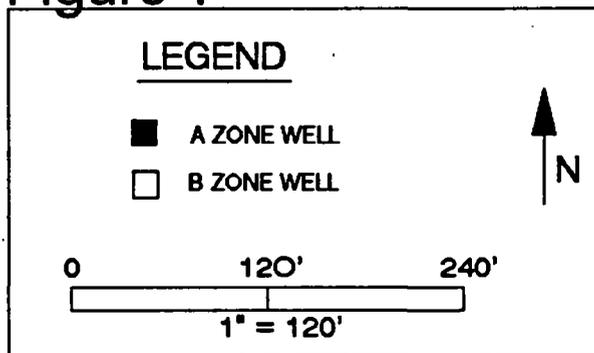


TABLE 1

BROWN & BYRANT APRIL 1991 GROUNDWATER SAMPLING
DATA MANAGEMENT SAMPLE ID NUMBERS

LOCATION NUMBER	WELL CODE	APR. SAMPLE LOG NUMBERS	RAS SAMPLE #	SAS SAMPLE #
PERCHED ZONE				
AMW-1P	MW01	MW01D001E02A	MYF864	6155Y-01
AMW-2P	MW02	MW02D001E02A	MYF853	6155Y-03
AP-01	MW11	MW11D001E02A	MYF854	6155Y-04
AP-02	MW12	MW12D001E02A	MYF855	6155Y-05
AP-03	MW13	MW13D001E02A	MYF856	6155Y-06
AP-04	MW14	MW14D001E02A	MYF858	6155Y-08
AP-05	MW15	DRY		
EPAS-01	MW21	DRY		
EPAS-02	MW22	MW22D001E02L	MYF861	6155Y-11
EPAS-03	MW23	MW23D001E02A	MYF862	6155Y-12
EPAS-04	MW24	MW24D001E02A	MYF863	6155Y-13
REGIONAL UNCONFINED				
AR-01	MW31	MW31D002E02A	MYF865	6155Y-15
AMW-3R	MW33	MW33D002E02A	MYF866	6155Y-16
AMW-4R	MW34	MW34D002E02L	MYF851	6155Y-14
MUNICIPAL WELLS				
CW-1	DW01	DW01D003E02A	MYF867	6155Y-17
CW-5	DW05	DW05D003E02A	MYF868	6155Y-18
QUALITY CONTROL SAMPLES				
AP-11	MW91	MW91D000E02E	MYF869	6155Y-19
AP-12	MW92	MW92D000E02E	MYF870	6155Y-20
AP-13	MW93	MW93D000E02E	MYF871	6155Y-21
AMW-11D	MW01	MW01D001E02R	MYF852	6155Y-02
AP-23D	MW13	MW13D001E02R	MYF857	6155Y-07

Brown & Bryant April 1991 Sampling Event
 Table 2.0: Groundwater Sampling Information

SAMPLE LOCATION	DATE	TIME	WATER LEVEL (FT)	pH	CONDUCTIVITY (umhos/cm)	TURBIDITY (ntu)	TEMP (oC)	METHOD OF COLLECTION	HNu (mu)
AMW-1P	04/12/91	11:15	66.50	6.52	10260	66	21.9	BAILER	0.2
AMW-2P	04/11/91	17:24	67.14	7.27	8260	24	22.0	BAILER	2-80
AMW-3R	04/12/91	13:30	154.50	7.74	8200	-	21.5	PISTON PUMP	-
AMW-4R	04/11/91	18:20	154.58	7.71	909	-	21.6	PISTON PUMP	5-20
AP-1	04/09/91	16:34	65.40	7.17	919	73.0	22.7	BAILER	0
AP-2	04/09/91	16:55	65.26	7.20	1390	191.5	23.0	BAILER	0
AP-3	04/10/91	14:40	65.56	7.17	1680	-	21.0	BAILER	4
AP-4	04/10/91	11:05	66.16	7.19	2120	-	22.0	BAILER	-
AR-1	04/10/91	17:50	156.26	7.86	1265	0.55	21.3	PISTON PUMP	-
EPAS-2	04/10/91	12:48	69.50	7.13	1850	30.0	21.3	BAILER	0.7
EPAS-3	04/12/91	19:10	68.70	6.71	4970	-	22.0	BAILER	0.5
EPAS-4	04/12/91	16:30	64.50	7.54	550	21.6	19.0	SEE COMMENTS	-
CW-1	04/11/91	15:54	NA	8.61	370	-	24.5	SPIGOT	-
CW-5	04/11/91	16:40	NA	8.97	315	-	23.8	SPIGOT	-
AP-11	04/09/91	14:00	NA					BAILER	
AP-12	04/11/91	14:10	NA					BAILER	
AP-13	04/12/91	10:30	NA					PISTON PUMP	

Brown & Bryant April 1991 Sampling Event
Table 2.0: Groundwater Sampling Information

SAMPLE LOCATION	COMMENTS
AMW-1P	purge water is bright yellow green/opaque, HNu (water) = 0.2 ppm, duplicate location for AMW-11D
AMW-2P	water is yellow and clear
AMW-3R	
AMW-4R	
AP-1	turbid water
AP-2	
AP-3	duplicate location for AP-23D
AP-4	purging stopped due to sampling difficulties, resumed the next morning, <3 purge volumes collected
AR-1	Lab QC sample for low CRQL volatiles
EPAS-2	water is yellow green, Lab QC sample
EPAS-3	significant drawdown during purging, recharge rate measured at 9.6 gal/hour, water is yellow
EPAS-4	purged with piston pump, sampled with bailer
CW-1	
CW-5	according to Steve Williams, Arvin Community Service District, CW-5 is 702' deep, the water level is at 327' and the total screened interval is 520'
AP-11	
AP-12	
AP-13	

Brown & Bryant April 1991 Sampling Event
Table 3.0: Initial Water Level Measurements

WELL	DATE	WATER LEVEL (feet below surface)
AMW-1P	04/09/91	66.42
AMW-2P	04/09/91	67.14
AMW-3R	04/09/91	154.76
AMW-4R	04/09/91	154.74
AP-1	04/09/91	65.40
AP-2	04/09/91	65.26
AP-3	04/09/91	66.50
AP-4	04/09/91	66.30
AP-5	04/09/91	dry
AR-1	04/09/91	156.34
EPAS-1	04/09/91	dry
EPAS-2	04/09/91	69.56
EPAS-3	04/09/91	68.72
EPAS-4	04/09/91	64.64

APPENDIX A

AMENDMENT TO THE SAMPLING PLAN

04/02/91



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, Ca. 94105

April 2, 1991

MEMORANDUM

SUBJECT: Amendment to the Field Sampling Plan For Quarterly Groundwater Monitoring and Surface Soil Sampling, Brown & Bryant Site

FROM: Tom Huetteman *Tom*
Quality Assurance Management Section (P-3-2)

TO: Cynthia Wetmore
Northern California Section (H-6-2)

This memo outlines proposed changes to the Field Sampling Plan for Brown & Bryant. The results of the first quarter sampling were reviewed to determine if the target analyte list could be reduced. It was found that no significant concentrations were found in any of the samples analyzed for organophosphorus pesticides, chlorinated pesticides, and carbamate and urea pesticides; almost all samples were non-detect. For this reason, and because there is little other evidence to suggest that these compounds are present at the site in significant levels, it is proposed that these analyses be dropped for the time being from the quarterly groundwater monitoring. After the new monitoring wells are installed at the site, it may be advisable to conduct another round of sampling for these parameters.

Attached is a revised Table 5.1 which includes these changes. The second round of sampling is scheduled for the week of April 8. In future monitoring rounds we will probably need to include some additional analyses for the feasibility study. We should consult with the project engineer prior to the next sampling round.

Call me if any other changes are necessary.

cc: Herb Levine, H-8-4

TABLE 5.1 REQUEST FOR ANALYSIS OF WATERS (pg 1 of 3)

CLP	RAS+SAS	RAS	SAS	SAS	RAS	RAS	SAS	
ANALYSES REQUESTED	VOA's	VOA's	EDB & DBCP	HERBICIDES	METALS (total)	SEMI VOAs	Cl, NO2/NO3 ALK, SO4, TDS	
PRESERVATIVES	Add 2 drops 1:1 HCL Chill to 4 C	Add 2 drops 1:1 HCL Chill to 4 C	Add 2 drops 1:1 HCL Chill to 4 C	Chill to 4 C	add HNC3 to pH <2	Chill to 4 C	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days (<28 days for TDS & ALK)	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days (<25 days for TDS & ALK)	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	
SAMPLE LOCATION	CONCENTRATION	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	2 x 1 liter amber glass bottle (1)*	1 x 500 ml poly bottle (1/2)*
	LOW MED							
AMW-1P	X		2	2	2	1	2	1
AMW-11D DUP OF 2P	X		2	2	2	1	2	1
AMW-2P	X		2	2	2	1	2	1
AP-01	X		2	2	2	1	2	1
AP-02	X		2	2	2	1	2	1
AP-03	X		2	2	2	1	2	1
AP-13D DUP OF AP3	X		2	2	2	1	2	1
AP-04	X		2	2	2	1	2	1
AP-05 (dry)	X		2	2	2	1	2	1

* Minimum bottle requirements for low volumes. See also Section 6.4.

TABLE 5.1 REQUEST FOR ANALYSIS OF WATERS (pg 2 of 3)

CLP	RAS+SAS	RAS	SAS	SAS	RAS	RAS	SAS	
ANALYSES REQUESTED	VOA's	VOA's	EDB & DBCP	HERBICIDES	METALS (total)	SEMI VOA's	Cl, NO2/NO3 ALK, SO4, TDS	
PRESERVATIVES	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Chill to 4 C	add HNO3 to pH <2	Chill to 4 C	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days (<28 days for TDS & ALK)	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days (<25 days for TDS & ALK)	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	
SAMPLE LOCATION	CONCEN- TRATION LOW MED	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	2 x 1 liter amber glass bottle (1)*	1 x 500 ml poly bottle (1/2)*
EPAS-1 (dry)	X		2	2	2	1	2	1
EPAS-2 (LAB QC)	X		4	4	4	2	4	2
EPAS-3		X	2	2	2	1	2	1
EPAS-4 (bckgrd)	X		2	2	2	1	2	1
AMW-4R	X		3	2	2	1	2	1
AR-1	X		6 (VOA Lab QC)	2	2	1	2	1
AMW-3R	X		3	2	2	1	2	1
CITY-1	X		3	2	2	1	2	1
CITY-2	X		3	2	2	1	2	1

* Minimum bottle requirements for low volumes. See also Section 6.4.

TABLE 5.1 REQUEST FOR ANALYSIS OF WATERS (pg 3 of 3)

CLP	RAS+SAS	RAS	SAS	SAS	RAS	RAS	SAS	
ANALYSES REQUESTED	VOA's	VOA's	EDB & DBCP	HERBICIDES	METALS (total)	SEMI VOAs	Cl, NO2/NO3 ALK, SO4, TDS	
PRESERVATIVES	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Chill to 4 C	add HNO3 to pH <2	Chill to 4 C	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days (<28 days for TDS & ALK)	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days (<25 days for TDS & ALK)	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	
SAMPLE LOCATION	CONCENTRATION	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	2 x 1 liter amber glass bottle (1)*	1 x 500 ml poly bottle (1/2)*
AP-11 (blank)	X	3		2	2	1	2	1
AP-12 (blank)	X	3		2	2	1	2	1
AP-12 (blank)	X	3		2	2	1	2	1
TOTALS	17 4	30	26	44	44	22	44	22

* Minimum bottle requirements for low volumes. See also Section 6.4.

Note: If none of the above wells are dry, an additional Lab QC sample will be required for all parameters, except VOAs. The location of the additional Lab QC will be selected in the field.

FIELD SAMPLING REPORT

**QUARTERLY GROUNDWATER MONITORING
JULY, 1991**

**BROWN & BRYANT SUPERFUND SITE
Arvin, CA**

Prepared by:

**Robbie Hedeem
Quality Assurance Management Section
Environmental Services Branch
U.S. EPA, Region 9**

September, 1992

INTRODUCTION

Quarterly groundwater samples were collected at the Brown & Bryant Superfund Site in Arvin, California on July 30 - August 3, 1991. The sampling event was conducted by the U.S. EPA, Region 9, Environmental Services Branch in support of the Brown & Bryant in-house RI/FS. This was the third quarterly groundwater monitoring event at the Brown & Bryant Site.

The objective, sampling procedures, and analytical methods used for this investigation are described in the document Field Sampling Plan for Quarterly Groundwater Monitoring and Surface Soil Sampling, Brown & Bryant Site, Arvin CA, January, 1991 and in a memo dated 7/25/91 which amends the plan (see Appendix A). This report summarizes the procedures that were followed and any deviations from the sampling plan.

METHODS AND SCOPE OF WORK

WATER LEVEL MEASUREMENTS

Prior to the commencement of sampling, the water level at each well was measured. For consistency, the wells were sounded by the same person and all measurements were taken in the smallest time frame possible. The measurements represent the distance from the top of the water column in the well to the mark at the top of the well casing. If no such mark exists, the measurement is taken at the north side of the top of the inner casing. For this event, the wells were sounded July 30-31, 1991. All on-site wells were measured 7/30/91. Only those offsite and far from initial sampling activities were sounded early on 7/31/91. All water level measurements could not be completed in one day due to extreme (>105 oF) temperatures on 7/30/91. (See Table 3.0)

GROUNDWATER SAMPLES

The samplers collected 19 groundwater samples, including 3 blanks and 2 duplicates. An attempt was made to sample all site wells, but EPAS-1 and AP-5 were dry. A total of 12 site wells plus two municipal wells were sampled. (See Figure 1 for a map of the site with well locations. See Table 1 for a list of the wells sampled and the associated log and sample numbers.) Samples were collected for the following analyses: RAS+SAS Volatiles (routine detection limits, with 1,2-DCP and 1,2,3-TCP) or RAS+SAS Volatiles (low detection limits, with 1,2-DCP and 1,2,3-TCP), SAS EDB & DBCP, SAS Herbicides, RAS Semivolatiles, SAS Carbamate and Urea Pesticides, RAS metals (total), SAS anions, SAS alkalinity, and SAS TDS. (See Appendix A for Table 5.1: Request for Analysis of Waters.)

Groundwater samples were collected from site wells using either decontaminated bailers or the decontaminated piston pump. Wells were sounded to determine the volume of standing water in the well casing. A minimum of three times this casing volume was purged from the well prior to sample collection to ensure that only fresh formation water would be sampled. Additionally, pH, electrical conductivity, and temperature of the water were monitored after each collected casing volume. Stabilization of these parameters during purging was also used as an indicator of fresh formation water. (See Table 2 for information about each well, such as water level, pH, conductivity, temperature, turbidity, sampling method, and comments.)

The samples were collected at flow rates appropriate to each parameter. The samples were preserved and packaged according to the procedures discussed in the sample plan. All documentation was completed and shipped with the samples. Samples were shipped to the respective laboratories via Federal Express overnight service.

LABORATORY INFORMATION

The laboratories for this sampling event were the U.S. EPA Region 9 Laboratory and participants in EPA's Contract Laboratory Program (CLP). The Case and SAS numbers associated with this investigation are LV1S57, 16882, and 6543Y. The samples collected for volatiles, EDB/DBCP, Semivolatiles, Anions, Alkalinity, and TDS were shipped to the U.S. EPA Region 9 Lab in Las Vegas, NV under Case Number LV1S57. Metals were sent to Associated Labs, Inc. in Orange, CA under Case Number 16882. Herbicides were analyzed at Keystone Labs in Houston, TX under SAS Number 6543Y. Carbamate and Urea Pesticides were shipped to PBS&J Environmental Labs in Orlando, FL under SAS Number 6543Y.

DEVIATIONS FROM THE SAMPLING PLAN

All sampling activities were consistent with procedures outlined in the sampling plan. The following activity occurred during the sampling event, but was beyond the scope of the sampling plan.

- At the request of the site RPM, split subsurface soil samples were accepted from samplers from Kennedy/Jenks Consultants. The sampling activities that produced these particular samples were not observed by the EPA field team. The samples were sealed and packaged by Kennedy/Jenks personnel. Three samples in brass sleeves were shipped for RAS+SAS Volatiles (routine detection limits) to the Region 9 Lab in Las Vegas, NV under Case Number LV1S63. Two samples in glass jars, each with soil composited over a 1 foot interval, were shipped for SAS Dinoseb analysis to Triangle Labs in Research Triangle Park, NC under SAS Number 6606Y. (See Table 1 for sample numbers and locations.)

SUMMARY

In July 1991, the following samples were collected at Brown & Bryant Superfund Site in Arvin, California:

11 Groundwater Samples for RAS+SAS Volatiles (routine detection limits), SAS EDB & DBCP, SAS Herbicides, RAS Semi-volatiles, SAS Carbamate and Urea Pesticides, RAS metals, SAS anions, SAS alkalinity, and SAS TDS.

8 Groundwater Samples for RAS+SAS Volatiles (low detection limits), SAS EDB & DBCP, SAS Herbicides, RAS Semi-volatiles, SAS Carbamate and Urea Pesticides, RAS metals, SAS anions, SAS alkalinity, and SAS TDS.

Additionally, three split subsurface soil samples for RAS+SAS Volatiles and two split subsurface soil samples for SAS Dinoseb were received from the PRP's consultant and shipped for analysis.

All of the procedures outlined in the Field Sampling Plan for Quarterly Groundwater Monitoring and Surface Soil Sampling, Brown & Bryant Site, Arvin CA were followed with the minor exceptions described in this report.

No unusual circumstances or insurmountable difficulties occurred during the sampling event.

BROWN & BRYANT WELL LOCATIONS

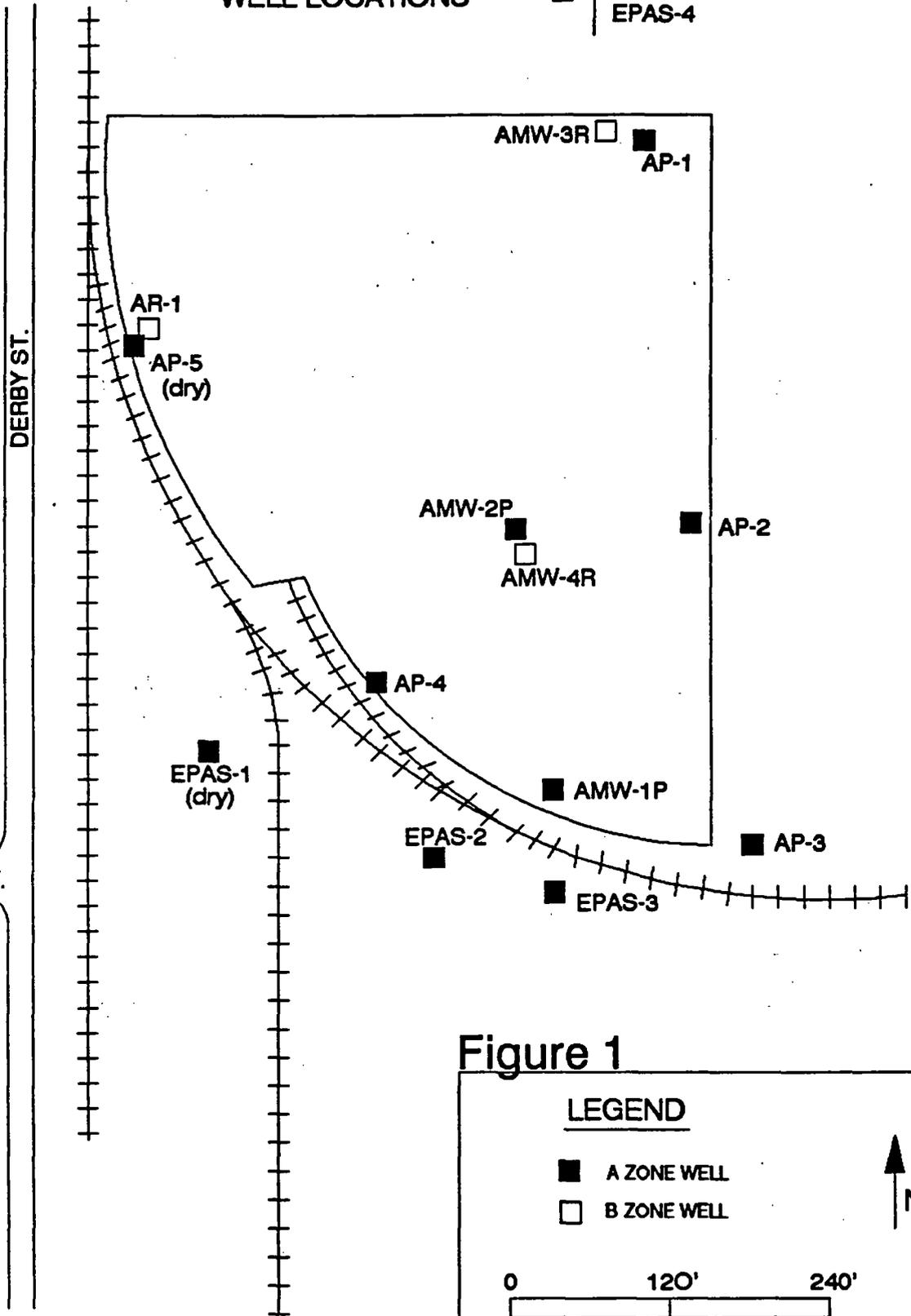


Figure 1

BROWN & BRYANT JULY 1991 GROUNDWATER SAMPLES

DATA MANAGEMENT SAMPLE ID NUMBERS

LOCATION WELL NUMBER	WELL CODE	JULY 91 SAMPLE LOG NUMBERS	RAS IN SAMPLE #	RAS OR SAMPLE #	SAS SAMPLE #	REG 9 SAMPLE #
PERCHED ZONE						
AMW-1P	MW01	MW01D001E03A	MYG544	YJ241	6543Y-01	LV1S57-01
AMW-2P	MW02	MW02D001E03A	MYG546	YJ243	6543Y-03	LV1S57-03
AP-01	MW11	MW11D001E03A	MYG547	YJ244	6543Y-04	LV1S57-04
AP-02	MW12	MW12D001E03A	MYG548	YJ245	6543Y-05	LV1S57-05
AP-03	MW13	MW13D001E03A	MYG549	YJ246	6543Y-06	LV1S57-06
AP-04	MW14	MW14D001E03A	MYG551	YJ248	6543Y-08	LV1S57-08
AP-05	MW15	DRY				
EPAS-01	MW21	DRY				
EPAS-02	MW22	MW22D001E03L	MYG552	YJ249	6543Y-11	LV1S57-11
EPAS-03	MW23	MW23D001E03A	MYG553	YJ250	6543Y-12	LV1S57-12
EPAS-04	MW24	MW24D001E03A	MYG554	YJ251	6543Y-13	LV1S57-13
REGIONAL UNCONFINED						
AR-01	MW31	MW31D002E03L	MYG556	YJ253	6543Y-15	LV1S57-15
AMW-3R	MW33	MW33D002E03A	MYG557	YJ254	6543Y-16	LV1S57-16
AMW-4R	MW34	MW34D002E03A	MYG555	YJ252	6543Y-14	LV1S57-14
MUNICIPAL WELLS						
CW-01	DW01	DW01D003E03A	MYG558	YJ255	6543Y-17	LV1S57-17
CW-05	DW05	DW05D003E03A	MYG559	YJ256	6543Y-18	LV1S57-18
QUALITY CONTROL SAMPLES						
AP-11	MW91	MW91D000E03E	MYG560	YJ257	6543Y-19	LV1S57-19
AP-12	MW92	MW92D000E03E	MYG561	YJ258	6543Y-20	LV1S57-20
AP-13	MW93	MW93D000E03E	MYG562	YJ259	6543Y-21	LV1S57-21
AP-13D	MW13	MW13D002E03R	MYG550	YJ247	6543Y-07	LV1S57-07
AMW-11D	MW02	MW02D001E03R	MYG545	YJ242	6543Y-02	LV1S57-02

NOTE: CASE # 16882

BROWN & BRYANT JULY 1991 SOIL SAMPLES FROM KJC

DATA MANAGEMENT SAMPLE ID NUMBERS

<u>LOCATION NUMBER</u>	<u>CODE</u>	<u>JULY 91 SAMPLES LOG NUMBERS</u>	<u>RAS SAMPLE #</u>	<u>SAS SAMPLE #</u>	<u>REG 9 SAMPLE #</u>
VOAs, EDB & DBCP					
CA-20	SB20	SB20D025E03A			LV1S63-01
CA-20	SB20	SB20D033E03A			LV1S63-02
CA-20	SB20	SB20D073E03A			LV1S63-03
DINOSEB					
CA-21	SB21	SB21D020E03A		6606Y-01	
CA-21	SB21	SB21D040E03A		6606Y-02	

SAMPLE NOTES:

VOAs, EDB & DBCP

<u>EPA #</u>	<u>KJC #</u>	
LV1S63-01	CA20-025.0	sleeve
LV1S63-02	CA20-033.0	sleeve
LV1S63-03	CA20-073.0	sleeve

KJC also supplied six 4 oz jars for each of the above samples. These jars contained soil composited from:

CA20-024.0, CA20-024.5, CA20-025.0	} six jars
CA20-032.0, CA20-032.5, CA20-033.0	} six jars
CA20-072.0, CA20-072.5, CA20-073.0	} six jars

These above containers were shipped, but not analyzed because they were composites.

DINOSEB

<u>EPA #</u>	<u>KJC #</u>
6606Y-01	CA21-019.0, CA21-019.5, CA21-020.0 (composite)
6606Y-02	CA21-039.0, CA21-039.5, CA21-040.0 (composite)

Brown & Bryant July 1991 Sampling Event
Table 2.0: Groundwater Sampling Information

SAMPLE LOCATION	DATE	TIME	WATER LEVEL (FT)	pH	CONDUCTIVITY (umhos/cm)	TURBIDITY (ntu)	TEMP (oC)	METHOD OF COLLECTION	HNu (mu)
AMW-1P	08/02/91	07:20	66.5	6.42	9670	23	21.7	BAILER	-
AMW-2P	08/03/91	08:20	67.84	7.57	9200	-	22.8	BAILER	-
AMW-3R	07/30/91	18:26	154.74	7.94	887	.50	25.1	PISTON PUMP	-
AMW-4R	08/01/91	09:48	154.60	8.40	970	5.9	24.1	PISTON PUMP	-
AP-1	07/30/91	17:35	66.4	7.46	1008	32.3	24.3	BAILER	-
AP-2	08/01/91	10:20	65.91	8.20	1300	155.9	23	BAILER	-
AP-3	08/02/91	11:26	66.27	7.06	1680	65	22.5	BAILER	-
AP-4	08/02/91	12:43	65.30	6.61	2520	-	25.1	BAILER	-
AR-1	07/31/91	13:40	156.15	7.37	1202	.40	26.1	PISTON PUMP	-
EPAS-2	08/01/91	08:24	69.92	7.69	1898	17	23.3	BAILER	0
EPAS-3	07/31/91	08:37	69.23	7.12	4900	20.3	23.1	BAILER	-
EPAS-4	08/01/91	14:27	66.66	8.19	646	12.01	20.1	BAILER	-
CW-1	07/31/91	11:10	NA	9.08	340	.19	26.1	SPIGOT	-
CW-5	07/31/91	11:48	NA	8.91	305	.72	26.1	SPIGOT	-
AP-11	07/30/91	15:00	NA					PISTON PUMP	
AP-12	08/01/91	15:00	NA					BAILER	
AP-13	08/02/91	09:00	NA					BAILER	

Brown & Bryant July 1991 Sampling Event
 Table 2.0: Groundwater Sampling Information

SAMPLE LOCATION	COMMENTS
AMW-1P	
AMW-2P	duplicate location for AMW-11D
AMW-3R	
AMW-4R	
AP-1	
AP-2	
AP-3	duplicate location for AP-13D
AP-4	
AR-1	Lab QC Sample for volatiles
EPAS-2	recharge slow after second purge volume
EPAS-3	purge water brown and silty, sample water clear and pale yellow
EPAS-4	
CW-1	Steve Williams of Arvin Community Services District: CW-1: depth=700', depth to water=345'
CW-5	Steve Williams of Arvin Community Services District: CW-5: depth=702', depth to water=335'
AP-11	
AP-12	
AP-13	

Brown & Bryant July 1991 Sampling Event
Table 3.0: Initial Water Level Measurements

WELL	DATE	WATER LEVEL (feet below surface)
AMW-1P	07/30/91	66.43
AMW-2P	07/30/91	67.73
AMW-3R	07/30/91	154.75
AMW-4R	07/30/91	154.66
AP-1	07/30/91	66.44
AP-2	07/30/91	65.96
AP-3	07/30/91	66.25
AP-4	07/30/91	66.75
AP-5	07/30/91	71.22
AR-1	07/30/91	156.34
EPAS-1	07/31/91	dry
EPAS-2	07/31/91	69.92
EPAS-3	07/31/91	69.23
EPAS-4	07/31/91	66.85

APPENDIX A

AMENDMENT TO THE SAMPLING PLAN

07/25/91



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, Ca. 94105

JUL 25 1991

MEMORANDUM

SUBJECT: July 1991 Groundwater Sampling at Brown & Bryant

FROM: Robbie Hedeem
Quality Assurance Management Section (P-3-2)

TO: Cynthia Wetmore, RPM
Northern California Section, (H-6-1)

The Environmental Services Branch will conduct the third quarterly groundwater sampling round at the Brown & Bryant Superfund Site on July 29 through August 4, 1991. The sampling will proceed according to the procedures in the EPA Field Sampling Plan for Quarterly Groundwater Monitoring, Brown & Bryant Site, dated January, 1991.

Samples will be collected for the analyses included on the attached revised Table 5.0. These analyses are identical to those outlined in the sampling plan, except that the analyses for RAS pesticides and organophosphorus pesticides have been deleted due to low analytical results in the first two sampling rounds. Pentachloronitrobenzene was also dropped, but RAS semi-volatiles remains on the list. (The carbamate pesticides analysis was not included in the second sampling round, but it was decided to include them in this round due to the small amounts detected in the first sampling round.)

Samples will be collected in the same manner as previously.

Please call me at 744-1535 if you have any questions.

Attachment

TABLE 5.1 REQUEST FOR ANALYSIS OF WATERS (pg 1 of 3)

CLP ANALYSES REQUESTED	RAS+SAS VOA's	RAS VOA's	SAS EDB & DBCP	SAS HERBICIDES	RAS METALS (total)	RAS SEMI VOAs	SAS Cl, NO2/NO3, ALK, SO4, TDS	SAS carbamate pesticides	
PRESERVATIVES	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Chill to 4 C	add HNO3 to pH <2	Chill to 4 C	Chill to 4 C	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg] 40 days after extraction	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days (<28 days for TDS & ALK)	Hold <7 days prior to extraction, 40 days after extraction	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg] 40 days after extraction	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days (<25 days for TDS & ALK)	Hold <5 days prior to extraction, 40 days after extraction	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS				
SAMPLE LOCATION	CONCENTRATION	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	2 x 1 liter amber glass bottle (1)*	1 x 500 ml poly bottle (1/2)*	2 x 1 liter amber glass bottle (1)*
AMW-1P	X		2 medium level	2 medium level	2 medium level	1 medium level	2 medium level	1 medium level	2 medium level
AMW-11D DUP OF 2P	X		2 medium level	2 medium level	2 medium level	1 medium level	2 medium level	1 medium level	2 medium level
AMW-2P	X		2 medium level	2 medium level	2 medium level	1 medium level	2 medium level	1 medium level	2 medium level
AP-01	X		2	2	2	1	2	1	2
AP-02	X		2	2	2	1	2	1	2
AP-03	X		2	2	2	1	2	1	2
AP-13D DUP OF AP3	X		2	2	2	1	2	1	2
AP-04	X		2	2	2	1	2	1	2
AP-05 (dry)	X		2	2	2	1	2	1	2

* Minimum bottle requirements for low volumes. See also Section 6.4.

TABLE 5.1 REQUEST FOR ANALYSIS OF WATERS (pg 2 of 3)

CLP ANALYSES REQUESTED	RAS+SAS VOA's	RAS VOA's	SAS EDB & DBCP	SAS HERBICIDES	RAS METALS (total)	RAS SEMI VOA's	SAS Cl, NO2/NO3, ALK, SO4, TDS	SAS carbamate pesticides	
PRESERVATIVES	Add 2 drops 1:1 HCL Chill to 4 C	Add 2 drops 1:1 HCL Chill to 4 C	Add 2 drops 1:1 HCL Chill to 4 C	Chill to 4 C	add HNO3 to pH <2	Chill to 4 C	Chill to 4 C	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days (<28 days for TDS & ALK)	Hold <7 days prior to extraction, 40 days after extraction	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days (<25 days for TDS & ALK)	Hold <5 days prior to extraction, 40 days after extraction	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS				
SAMPLE LOCATION	CONCENTRATION	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	2 x 1 liter amber glass bottle (1)*	1 x 500 ml poly bottle (1/2)*	2 x 1 liter amber glass bottle (1)*
EPAS-1 (dry)	X		2	2	2	1	2	1	2
EPAS-2 (LAB QC)	X		4	4	4	2	4	2	4
EPAS-3		X	2 medium level	2 medium level	2 medium level	1 medium level	2 medium level	1 medium level	2 medium level
EPAS-4 (bckgrd)	X		2	2	2	1	2	1	2
AMW-4R	X		3	2	2	1	2	1	2
AR-1	X		6 (VOA lab QC)	2	2	1	2	1	2
AMW-3R	X		3	2	2	1	2	1	2
CITY-1	X		3	2	2	1	2	1	2
CITY-2	X		3	2	2	1	2	1	2

* Minimum bottle requirements for low volumes. See also Section 6.4.

TABLE 5.1 REQUEST FOR ANALYSIS OF WATERS (pg 3 of 3)

CLP	RAS+SAS	RAS	SAS	SAS	RAS	RAS	SAS	SAS	
ANALYSES REQUESTED	VOA's	VOA's	EDB & DBCP	HERBICIDES	METALS (total)	SEMI VOAs	Cl, NO2/NO3 ALK,SO4,TDS	carbamate pesticides	
PRESERVATIVES	Add 2 drops 1:1 HCL Chill to 4 C	Add 2 drops 1:1 HCL Chill to 4 C	Add 2 drops 1:1 HCL Chill to 4 C	Chill to 4 C	add HNO3 to pH <2	Chill to 4 C	Chill to 4 C	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Mg]	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days (<28 days for TDS & ALK)	Hold <7 prior to extraction, 40 days after extraction	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Mg]	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days (<25 days for TDS & ALK)	Hold <5 prior to extraction, 40 days after extraction	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	
SAMPLE LOCATION	CONCENTRATION LOW MED	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	2 x 1 liter amber glass bottle (1)*	1 x 500 ml poly bottle (1/2)*	2 x 1 liter amber glass bottle (1)*
AP-11 (blank)	X	3	2	2	1	2	1	2	
AP-12 (blank)	X	3	2	2	1	2	1	2	
AP-12 (blank)	X	3	2	2	1	2	1	2	
TOTALS	17 4	30	26	44	44	22	44	22	44

* Minimum bottle requirements for low volumes. See also Section 6.4.

Note: If none of the above wells are dry, an additional Lab QC sample will be required for all parameters, except VOAs. The location of the additional Lab QC will be selected in the field.

FIELD SAMPLING REPORT

QUARTERLY GROUNDWATER MONITORING
DECEMBER, 1991

BROWN & BRYANT SUPERFUND SITE
Arvin, CA

Prepared by:

Robbie Hedeem
Quality Assurance Management Section
Environmental Services Branch
U.S. EPA, Region 9

September, 1992

INTRODUCTION

Surface soil samples, treatability waters and quarterly groundwater samples were collected at the Brown & Bryant Superfund Site in Arvin, California on December 9 - 13, 1991. The sampling event was conducted by the U.S. EPA, Region 9, Environmental Services Branch in support of the Brown & Bryant in-house RI/FS. This was the fourth quarterly groundwater monitoring event at the Brown & Bryant Site.

The objective, sampling procedures, and analytical methods used for this investigation are described in the document Field Sampling Plan for Quarterly Groundwater Monitoring and Surface Soil Sampling, Brown & Bryant Site, Arvin CA, January, 1991 and an amendment to the plan dated 11/30/91 (see Appendix A). This report summarizes the procedures that were followed and any deviations from the sampling plan.

METHODS AND SCOPE OF WORK

WATER LEVEL MEASUREMENTS

Prior to the commencement of any sampling, the water level at each of the wells was measured. For consistency, the wells were sounded by the same person and all measurements were taken in the smallest time frame possible. The measurements represent the distance from the top of the water column in the well to the mark at the top of the well casing. If no such mark exists, the measurement is taken at the north side of the top of the inner casing. During this sampling event all wells were sounded within about a three hour period, except well EPAS-1. Well EPAS-1 was sounded two days later due to accessibility problems and because it was expected to be dry. (See Table 4.)

GROUNDWATER SAMPLES

The samplers collected 19 groundwater samples, including 3 blanks and 2 duplicates. An attempt was made to sample all site wells, but EPAS-1 and AP-5 were dry. A total of 12 site wells plus two municipal wells were sampled. (See Figure 1 for a map of the site with well locations. See Table 1 for a list of the wells sampled and the associated log numbers and sample numbers.) Samples were collected for the following analyses: RAS+SAS Volatiles (routine detection limits, with 1,2-DCP and 1,2,3-TCP) or RAS+SAS Volatiles (low detection limits, with 1,2-DCP and 1,2,3-TCP), SAS EDB & DBCP, SAS Herbicides, SAS Carbamate Pesticides, RAS Semivolatiles, RAS metals, SAS anions, SAS alkalinity, and SAS TDS. (See Table 5.1 of Appendix A.)

Groundwater samples were collected from site wells using either decontaminated bailers or the decontaminated piston pump. Wells were sounded to determine the volume of standing water in the well casing. A minimum of three times this casing volume was purged from the well prior to sample collection to ensure that only fresh formation water would be sampled. Additionally, pH, electrical conductivity, and temperature of the water were monitored after each collected casing volume. Stabilization of these parameters during purging was also used as an indicator of fresh formation water. (See Table 2 for information about each well, such as water level, pH, conductivity, temperature, turbidity, sampling method, and comments.)

The samples were collected at flow rates appropriate to each parameter. The samples were preserved and packaged according to the procedures discussed in the sample plan. All documentation was completed and shipped with the samples. Samples were shipped to the respective laboratories via Federal Express overnight service.

SOIL SAMPLES

Nineteen soil samples were collected, including two duplicate samples. Sample locations were selected as described in the sample plan. Most of the site is paved and soil locations were limited to a narrow strip of exposed soil along the site boundary and a few areas in the central portion of the site. The site toxicologist, Roxy Barnett, selected the locations based on staining, drainage patterns, and areas of known contamination. Additionally, locations were selected for distribution among the exposed soil pockets at the site and to avoid duplication of previous soil locations. (See Figure 2 for a map of the site with soil sampling locations. See Table 1 for a list of sample locations and the associated log numbers and sample numbers.) Samples were collected for the following analyses: RAS+SAS Volatiles (routine detection limits, with 1,2-DCP and 1,2,3-TCP), SAS EDB & DBCP, SAS Herbicides, RAS Pesticides, SAS Carbamate Pesticides, SAS Organophosphorus Pesticides, RAS+SAS Semi-volatiles (with PCNB), and RAS metals. (See Table 5.2 of Appendix A.)

Soil samples were collected using sterile disposable plastic scoops. Surface debris was first removed from the sample location. Soil collected to a depth of six inches was deposited in a paper paint bucket and set aside. Soil from the bottom of the hole was then collected and placed directly into a wide mouth jar for the volatile analysis. The soil remaining in the paper paint bucket was thoroughly mixed and then transferred to the remaining sample containers. (See Table 3 for information about each soil location, such as date collected, sampling depth, and comments.)

The samples were chilled prior to shipment and then packaged according to the procedures discussed in the sample plan. All documentation was completed and shipped with the samples. Samples were shipped to the respective laboratories via Federal Express overnight service.

TREATABILITY WATERS

Purge water from the quarterly monitoring wells was collected in three fifty-five (55) gallon drums for shipment to Solarchem, Inc. Solarchem would perform tests on the water to determine if Ultraviolet/Oxidation can reduce the contaminants to meet drinking water criteria. Prior to shipment, samples of the purge water in the drums were collected.

The three drums were filled with purge water from the existing A Zone (perched aquifer) wells (AP-1, AP-2, AP-3, AP-4, EPAS-2, EPAS-3, AMW-1P, and AMW-2P.) The water from each well was equally distributed among the drums. The drums were approximately half full so they were filled to the top with purge water from well AR-1.

Four treatability water samples were collected, including one duplicate. (See Table 1 for a list of location, log, and sample numbers.) The water was considered to be thoroughly mixed by the movement of the drums and by the addition of water from each subsequent well. A sample was collected from each of the three drums of collected purge water. (See Table 2 for sampling information.) Samples were collected by dropping decontaminated two-inch bailers through the bung on the drums. The sample containers were filled at flow rates appropriate to each parameter. Samples were collected for the following analyses: RAS+SAS Volatiles (routine detection limits, with 1,2-DCP and 1,2,3-TCP), SAS EDB & DBCP, SAS Herbicides, RAS Semivolatiles, and RAS Pesticides. (See Table 5.3 of Appendix A.)

The samples were preserved and packaged according to the procedures discussed in the sample plan. All documentation was completed and shipped with the samples. Samples were shipped to the respective laboratories via Federal Express overnight service.

Subsequent to the sample collection the drums were refilled to zero headspace with water from Well AR-1. The drums were prepared for shipment to Canada and released to John Basili of Solarchem who was onsite to facilitate the transfer of the drums to the shipping company.

LABORATORY INFORMATION

The laboratories for this sampling event were the U.S. EPA Region 9 Laboratory and participants in EPA's Contract Laboratory Program (CLP). The Case and SAS numbers associated with this investigation are LV2S19, 17532, and 6939Y. The samples collected

for RAS+SAS Volatiles, SAS EDB/DBCP, RAS+SAS and RAS Semi-volatiles, RAS Pesticides/PCBs, SAS anions, SAS alkalinity, and SAS TDS were shipped to the U.S. EPA Region 9 Lab in Las Vegas under Case Number LV2S19. SAS Herbicides were sent to Southwest Research Institute in San Antonio, TX under SAS 6939Y. SAS Carbamate Pesticides were shipped to Eureka Labs, Inc. in Sacramento, CA under SAS 6939Y. Samples for SAS Organophosphorus Pesticides were sent to Wadsworth/Alert Labs, Inc. in Pittsburg, PA under SAS 6939Y. RAS Metals samples were shipped to Natural Resources Lab in Golden, CO using Case Number 17532.

DEVIATIONS FROM THE SAMPLING PLAN

All sampling activities were consistent with those in the sampling plan and amendments with the following exceptions. Some of these items fall within the scope of the plan, but are presented to clarify what actually occurred in the field.

- Table 5.1 of the 11/30/91 amendment to the sampling plan stipulated that sample AP-13D would be a duplicate of sample AP-3. Due to field logistics, AP-13D was actually collected as a duplicate of AR-1.
- The 11/30/91 amendment to the plan allowed for the collection of 20 surface soil samples plus two duplicates. The rationale section of the amendment stated that 15 - 20 samples would be required. Seventeen soil samples plus two duplicates was the number of samples actually collected.
- The 11/30/91 amendment to the plan states that soil for the samples would be collected to a depth of 6 inches and the volatile sample would be collected at 6+ inches. Wherever possible, the samples were collected in this manner. However, much of the site is paved and only a few pockets of soil exist. Much of the exposed soil appears to be fill dirt over pavement. The samplers were not prepared to penetrate pavement which also would not have served the objective of surface soil collection. The toxicologist determined that the patches of soil over pavement would be acceptable for her purposes. When it was not possible to collect soil to 6 inches, samplers collected soil to the greatest depth possible and recorded that depth on the log sheet.
- The 11/30/91 amendment to the plan states that half of the standard sample volume will be collected for the treatability water samples for herbicides, semivolatiles, and pesticides. This was planned to reduce the amount of dilution caused when refilling the drum. Dave Taylor of ICF Technology reviewed the amendment and recommended that full volume be collected for all parameters. Full volume was collected for all parameters for all the treatability water samples. (The comment, response, and approval memos relating to the 11/30/91 amendment are attached to the amendment in Appendix A.)

- The list of parameters under "4 medium waters" in the narrative section of the Request for Analysis in the 11/30/91 amendment is incorrect. This list refers to the treatability water samples. It omits RAS pesticides but incorrectly includes metals, anions, alkalinity and TDS. Table 5.1 of the amendment is correct and was followed in the field.

SUMMARY

In January 1991, the following samples were collected at Brown & Bryant Superfund Site in Arvin, California:

- 11 Groundwater Samples for RAS+SAS Volatiles (regular detection limits), SAS EDB & DBCP, SAS Herbicides, SAS Carbamate Pesticides, RAS Semivolatiles, RAS Metals, SAS Anions, Alkalinity, and TDS.
- 8 Groundwater Samples for RAS+SAS Volatiles (low detection limits), SAS EDB & DBCP, SAS Herbicides, SAS Carbamate Pesticides, RAS Semivolatiles, RAS Metals, SAS Anions, Alkalinity, and TDS.
- 19 Surface Soil Samples for RAS+SAS Volatiles, SAS EDB & DBCP, SAS Herbicides, RAS Pesticides, SAS Organophosphorus Pesticides, SAS Carbamate Pesticides, RAS+SAS Semivolatiles, and RAS metals.
- 4 Treatability Water (Waste Water) Samples for RAS+SAS Volatiles (routine detection limits), SAS EDB & DBCP, SAS Herbicides, RAS Semivolatiles and RAS Pesticides.

All of the procedures outlined in the Field Sampling Plan for Quarterly Groundwater Monitoring and Surface Soil Sampling, Brown & Bryant Site, Arvin CA and amendments were followed with the minor exceptions described in this report.

No unusual circumstances or insurmountable difficulties occurred during the sampling event.

BROWN & BRYANT WELL LOCATIONS

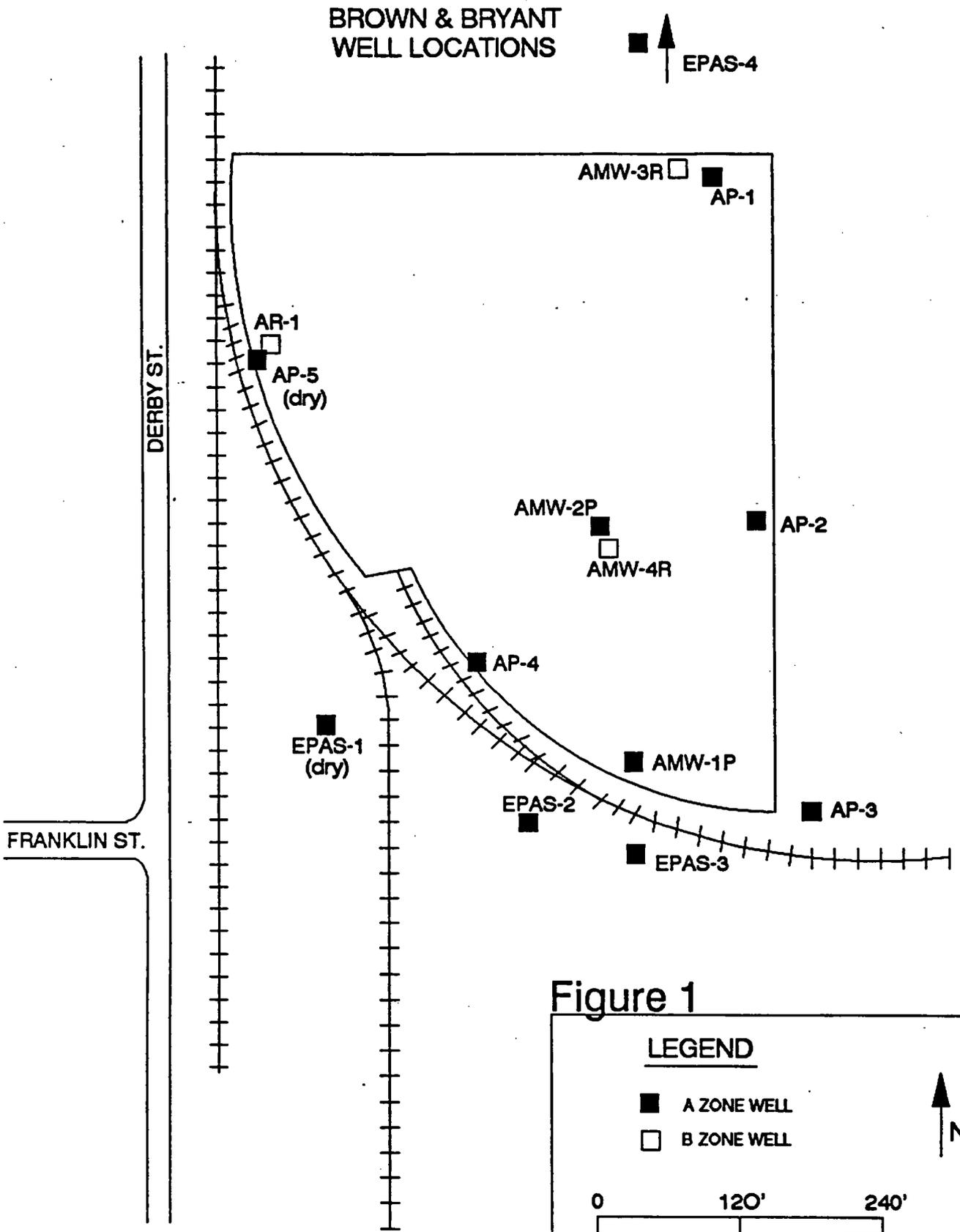
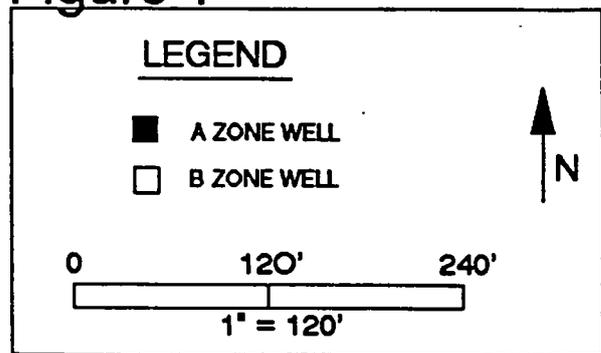


Figure 1



BROWN & BRYANT
SOIL SAMPLE LOCATIONS

DECEMBER 1991

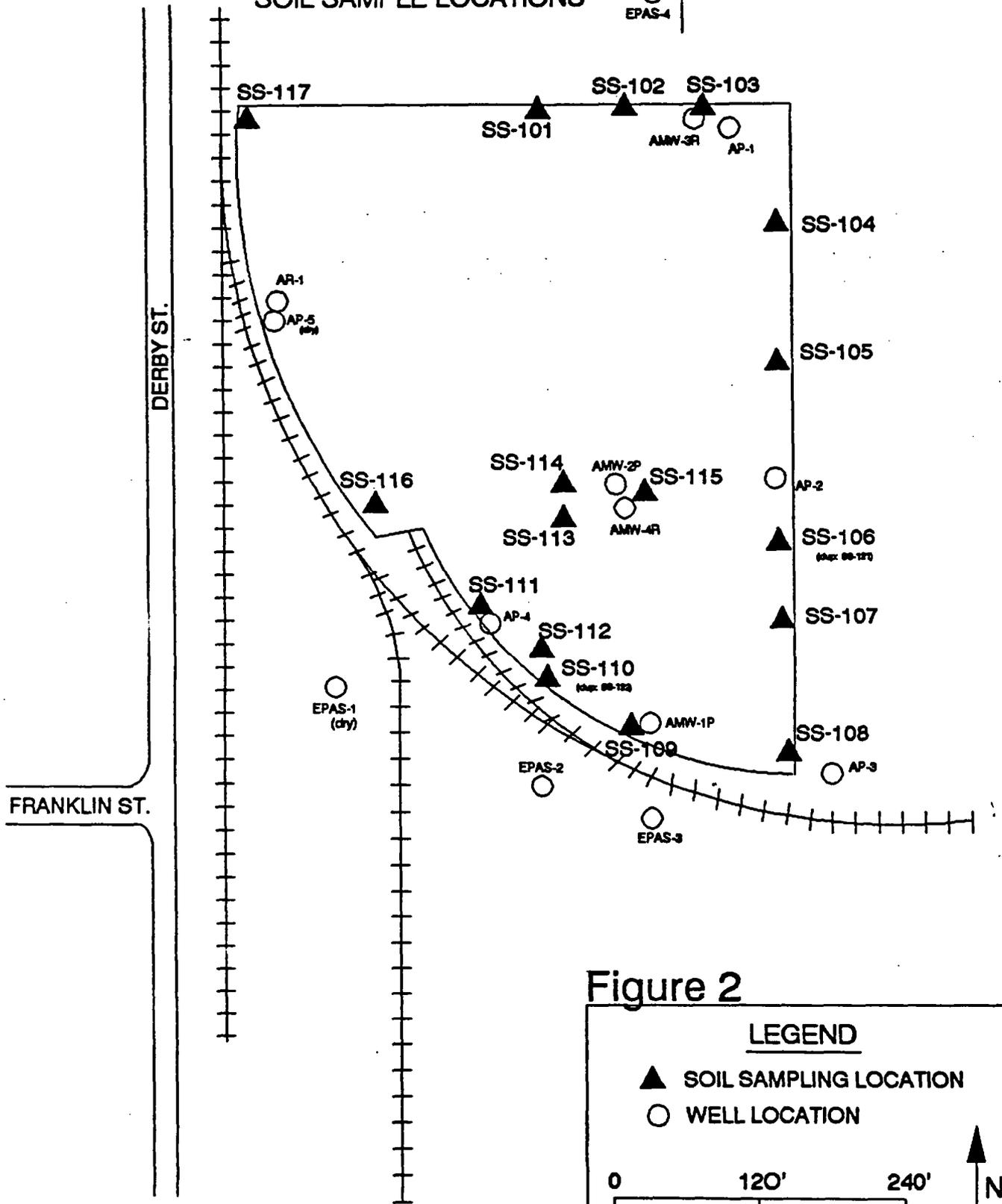
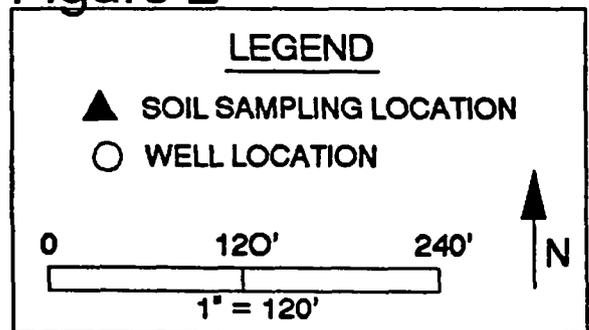


Figure 2



BROWN & BRYANT DECEMBER 1991 GROUNDWATER SAMPLES

DATA MANAGEMENT SAMPLE ID NUMBERS

<u>LOCATION NUMBER</u>	<u>WELL CODE</u>	<u>DEC 91 SAMPLE LOG NUMBERS</u>	<u>RAS SAMPLE #</u>	<u>SAS SAMPLE #</u>	<u>REG 9 SAMPLE #</u>
PERCHED ZONE					
AMW-1P	MW01	MW01D001E05A	MYH147	6939Y-17	LV2S19-17
AMW-2P	MW02	MW02D001E05A	MYH149	6939Y-19	LV2S19-19
AP-01	MW11	MW11D001E05A	MYH134	6939Y-04	LV2S19-04
AP-02	MW12	MW12D001E05A	MYH135	6939Y-05	LV2S19-05
AP-03	MW13	MW13D001E05A	MYH136	6939Y-06	LV2S19-06
AP-04	MW14	MW14D001E05A	MYH138	6939Y-08	LV2S19-08
AP-05	MW15	DRY			
EPAS-01	MW21	DRY			
EPAS-02	MW22	MW22D001E05L	MYH140	6939Y-10	LV2S19-10
EPAS-03	MW23	MW23D001E05A	MYH150	6939Y-20	LV2S19-20
EPAS-04	MW24	MW24D001E05A	MYH141	6939Y-11	LV2S19-11
REGIONAL UNCONFINED					
AR-01	MW31	MW31D002E05A	MYH143	6939Y-13	LV2S19-13
AMW-3R	MW33	MW33D002E05A	MYH144	6939Y-14	LV2S19-14
AMW-4R	MW34	MW34D002E05A	MYH142	6939Y-12	LV2S19-12
MUNICIPAL WELLS					
CW-01	DW01	DW01D003E05A	MYH145	6939Y-15	LV2S19-15
CW-05	DW05	DW05D003E05A	MYH146	6939Y-16	LV2S19-16
QUALITY CONTROL SAMPLES					
AP-11	MW91	MW91D000E05E	MYH131	6939Y-01	LV2S19-01
AP-12	MW92	MW92D000E05E	MYH132	6939Y-02	LV2S19-02
AP-13	MW93	MW93D000E05E	MYH133	6939Y-03	LV2S19-03
AP-13D	MW31	MW31D002E05R	MYH137	6939Y-07	LV2S19-07
AMW-11D	MW02	MW02D001E05R	MYH148	6939Y-18	LV2S19-18

BROWN & BRYANT DECEMBER 1991 SURFACE SOIL SAMPLES

DATA MANAGEMENT SAMPLE ID NUMBERS

<u>LOCATION NUMBER</u>	<u>WELL CODE</u>	<u>DEC 91 SAMPLE LOG NUMBERS</u>	<u>RAS SAMPLE #</u>	<u>SAS SAMPLE #</u>	<u>REG 9 SAMPLE #</u>
SS-101	SS01	SS01DD001E05A	MYH151	6939Y-101	LV2S19-101
SS-102	SS02	SS02DD001E05A	MYH152	6939Y-102	LV2S19-102
SS-103	SS03	SS03DD001E05A	MYH153	6939Y-103	LV2S19-103
SS-104	SS04	SS04DD001E05A	MYH154	6939Y-104	LV2S19-104
SS-105	SS05	SS05DD001E05A	MYH155	6939Y-105	LV2S19-105
SS-106	SS06	SS06DD001E05A	MYH156	6939Y-106	LV2S19-106
SS-107	SS07	SS07DD001E05A	MYH157	6939Y-107	LV2S19-107
SS-108	SS08	SS08DD001E05A	MYH158	6939Y-108	LV2S19-108
SS-109	SS09	SS09DD001E05A	MYH159	6939Y-109	LV2S19-109
SS-110	SS10	SS10DD001E05A	MYH160	6939Y-110	LV2S19-110
SS-111	SS11	SS11DD001E05A	MYH161	6939Y-111	LV2S19-111
SS-112	SS12	SS12DD001E05A	MYH162	6939Y-112	LV2S19-112
SS-113	SS13	SS13DD001E05A	MYH163	6939Y-113	LV2S19-113
SS-114	SS14	SS14DD001E05A	MYH164	6939Y-114	LV2S19-114
SS-115	SS15	SS15DD001E05A	MYH165	6939Y-115	LV2S19-115
SS-116	SS16	SS16DD001E05A	MYH166	6939Y-116	LV2S19-116
SS-117	SS17	SS17DD001E05A	MYH167	6939Y-117	LV2S19-117

QUALITY CONTROL SAMPLES

SS-121	SS06	SS06DD001E05R	MYH171	6939Y-121	LV2S19-121
SS-122	SS10	SS10DD001E05R	MYH172	6939Y-122	LV2S19-122
SS-121	SS06	SS06DD001E05L	MYH171	6939Y-121	LV2S19-121
SS-122	SS10	SS10DD001E05L	MYH172	6939Y-122	LV2S19-122

BROWN & BRYANT DECEMBER 1991 TREATABILITY WATER SAMPLES

DATA MANAGEMENT SAMPLE ID NUMBERS

<u>LOCATION NUMBER</u>	<u>WELL CODE</u>	<u>DEC 91 SAMPLE LOG NUMBERS</u>	<u>RAS SAMPLE #</u>	<u>SAS SAMPLE #</u>	<u>REG 9 SAMPLE #</u>
TW-201	WW01	WW01D000E05A	-	6939Y-201	LV2S19-201
TW-202	WW02	WW02D000E05L	-	6939Y-202	LV2S19-202
TW-203	WW03	WW03D000E05A	-	6939Y-203	LV2S19-203

QUALITY CONTROL SAMPLE

TW-204	WW01	WW01D000E05R	-	6939Y-204	LV2S19-204
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Note: Case Number LV2S19
Case Number 17532
SAS Number 6939Y

Brown & Bryant December 1991 Sampling Event
Table 2.0: Groundwater Sampling Information

SAMPLE LOCATION	DATE	TIME	WATER LEVEL (FT)	pH	CONDUCTIVITY (umhos/cm)	TURBIDITY (ntu)	TEMP (oC)	DO (mg/l)	METHOD OF COLLECTION	HNu (mu)
AMW-1P	12/10/91	11:50	67.60	6.34	9410	94	20.9	-	BAILER	3
AMW-2P	12/11/91	12:24	68.80	7.25	7220	-	21.2	3.5	BAILER	-
AMW-3R	12/09/91	18:20	155.15	7.54	800	-	19.5	-	PISTON PUMP	-
AMW-4R	12/11/91	12:29	154.60	7.69	1192	0.53	19.6	5.8	PISTON PUMP	2
AP-1	12/09/91	17:55	67.7	7.40	902	39.4	20.4	5.3	BAILER	-
AP-2	12/11/91	11:56	67.08	7.12	1290	22.7	21.2	6.7	BAILER	0
AP-3	12/12/91	12:18	67.2	7.10	1425	-	23.0	-	BAILER	-
AP-4	12/10/91	11:55	67.56	7.04	3150	23.8	21.0	-	BAILER	3
AR-1	12/12/91	16:54	156.38	7.95	1311	2.30	21.0	6.7	PISTON PUMP	0
EPAS-2	12/11/91	16:42	70.6	7.03	1046	82.0	20.5	6.0	BAILER	0
EPAS-3	12/12/91	13:05	70.3	7.10	516	-	21.3	6.9	BAILER	0
EPAS-4	12/10/91	17:15	69.08	7.72	720	145	18.4	-	BAILER	-
CW-1	12/11/91	15:40	NA	7.10	350	0.95	25.0	-	SPIGOT	-
CW-2	12/11/91	16:10	NA	7.41	335	0.24	24.0	-	SPIGOT	-
TW-201	12/12/91	16:00	NA	-	-	-	-	-	BAILER	-
TW-202	12/12/91	16:15	NA	-	-	-	-	-	BAILER	-
TW-203	12/12/91	16:25	NA	-	-	-	-	-	BAILER	-
AP-11	12/10/91	08:20	NA						BAILER	
AP-12	12/09/91	14:54	NA						PISTON PUMP	
AP-13	12/12/91	08:40	NA						BAILER	

Brown & Bryant December 1991 Sampling Event
 Table 2.0: Groundwater Sampling Information

SAMPLE LOCATION	COMMENTS
AMW-1P	water color: very bright yellow
AMW-2P	duplicate location for AMW-11D
AMW-3R	
AMW-4R	
AP-1	well bailed dry just prior to completion of 2nd purge volume
AP-2	
AP-3	
AP-4	
AR-1	Lab QC sample for volatiles only, duplicate location for AP-13D
EPAS-2	Lab QC sample, water color: pale yellow
EPAS-3	water color: yellow brown
EPAS-4	
CW-1	
CW-2	
TW-201	duplicate location for TW-204
TW-202	Lab QC sample
TW-203	
AP-11	
AP-12	
AP-13	

Brown & Bryant December 1991 Sampling Event

Table 3.0 Soil Sampling Information

Sample Location	Date	Time	Sample Depth	Comments
SS-101	12/10/91	16:30	0-3"	sandy with pebble size pieces of cement
SS-102	12/10/91	16:40	0-3"	fine to coarse sand
SS-103	12/10/91	16:55	0-4"	fine to coarse sand
SS-104	12/10/91	17:00	0-6"	fine to medium sand
SS-105	12/10/91	17:05	0-4"	fine to medium sand, coarse particles in flow lines parallel to fence and berm
SS-106	12/10/91	17:15	0-6"	fine to coarse sand, some pebbles, duplicate location for SS-121, Lab QC sample
SS-107	12/13/91	11:17	0-6"	fine to medium sand, organic detritus
SS-108	12/13/91	11:31	0-6"	fine to coarse sand, material appears to be fill to retain sump liner
SS-109	12/13/91	11:45	0-6"	fine to coarse sand, pebbles to 1 cm
SS-110	12/13/91	09:13	0-3"	fine to coarse sand with dark (oily?) patches, duplicate location for SS-122, Lab QC sample
SS-111	12/13/91	09:25	0-6"	fine to coarse sand, evidence of runoff
SS-112	12/13/91	09:28	0-3"	medium to coarse sand, some pebbles
SS-113	12/13/91	13:43	0-2"	fine to medium sand, hard dark brown substrate material at 2"
SS-114	12/13/91	13:48	0-6"	fine to medium sand
SS-115	12/13/91	13:54	0-4"	medium to coarse sand
SS-116	12/13/91	09:40	0-2"	fine to medium sand, hard dark brown substrate material at 2"
SS-117	12/13/91	14:05	0-6"	fine to medium sand

Brown & Bryant December 1991 Sampling Event
 Table 4.0: Initial Water Level Measurements

WELL	DATE	TIME	WATER LEVEL (feet below surface)	HNu (mu)
AMW-1P	12/09/91	16:55	65.65	0
AMW-2P	12/09/91	16:25	68.76	2 - 6
AMW-3R	12/09/91	12:15	155.15	0
AMW-4R	12/09/91	16:40	155.03	0
AP-1	12/09/91	12:05	67.81	0
AP-2	12/09/91	16:14	67.09	0
AP-3	12/09/91	15:40	67.23	0
AP-4	12/09/91	16:00	67.56	1
AP-5	12/09/91	12:30	dry	0
AR-1	12/09/91	12:45	156.71	0
EPAS-1	12/11/91	08:00	dry	0
EPAS-2	12/09/91	15:15	70.55	0
EPAS-3	12/09/91	15:30	70.16	0
EPAS-4	12/09/91	11:45	69.33	0

APPENDIX A

AMENDMENT TO THE SAMPLING PLAN

11/30/91



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, Ca. 94105

November 30, 1991

MEMORANDUM

SUBJECT: Amendment to the Field Sampling Plan For Quarterly Groundwater Monitoring and Surface Soil Sampling, Brown & Bryant Site

FROM: Robbie Hedeem *Robbie Hedeem*
Quality Assurance Management Section (P-3-2)

TO: Cynthia Wetmore
Northern California Section (H-6-2)

The Environmental Services Branch will conduct the fourth quarterly groundwater sampling round at the Brown & Bryant Superfund Site on December 8 through December 16, 1991. This memo outlines proposed changes to the EPA Field Sampling Plan for Quarterly Groundwater Monitoring, Brown & Bryant Site, dated January, 1991. These changes include the collection of 20 surface soil samples for use in a toxicology study and the collection and shipment of well water (purge water) for a treatability study. Samples of this purge water will be collected and shipped to the Contract Lab Program (CLP) along with other samples.

This is the third amendment to the plan. The first amendment is attached, as is the memo detailing revisions for the third sampling round. The second amendment to the plan is not attached as it is specific to a subsurface soil sampling event and does not apply to this event.

The sampling will proceed according to the procedures in the Field Sampling Plan (FSP) except as noted here. The collection of the quarterly groundwater samples will take place as described in the plan and updated by previous amendments. The parameters for analysis for the quarterly groundwater samples are the same as the last (third) round of quarterly sampling.

Soil Sampling

Rationale for Sampling

The EPA toxicologist assigned to the Brown & Bryant Site, Roxy Barnett, has reviewed the existing surface soil sample data and determined that the existing analyses were inadequate for the following reasons: 1) there is an insufficient number of samples upon which to base decisions, and 2) there was an incomplete scan of analyses.

Twenty additional samples (plus two duplicates) are needed to fill the data gap. These samples will be collected within the fenced area on the site. The data will be used in evaluating the dust and air pathways of exposure during the Risk Assessment. The intent of the sampling is to estimate the volume of dust generated and the amount of potential emissions.

Rationale for Number and Location of Samples

The toxicologist has determined that 15 - 20 samples (plus two duplicates) will be needed based on the size of the site and on previous sample locations. The exact location of the samples will be determined by the toxicologist in the field. Sample locations will be selected by the following criteria:

1. location of past sampling (to avoid duplication)
2. physical properties of the site such as topography, drainage patterns, obstructions
3. "hot spots", staining, areas of known contamination

The location for duplicate samples will also be chosen in the field. Duplicates will be selected from locations suspected to contain significant, but not high, levels of contaminants. The above three criteria will be used to estimate contaminant levels. The rationale for the selection of the Lab QC samples is the same as those for the duplicate samples, with the added criteria that the Lab QC sample be representative of the majority of samples. The soil appears similar across the site, so the duplicate sample locations have been designated as the Lab QC samples.

Rationale for Analyses

The samples will be analyzed for the entire list of potential chemicals at the site as defined in the Brown & Bryant Work Plan (December, 1990). Those analyses are: RAS Volatiles, SAS EDB & DBCP, SAS Herbicides, RAS Pesticides, SAS Carbamate Pesticides, SAS Organophosphorus Pesticides, RAS + SAS Semi-volatiles, and RAS Metals. (See attached Request for Analyses).

Sample Collection

Procedures in Section 6.1.3 of the Sample Plan will be followed except as outlined below.

Sample locations will be staked by the toxicologist. All samples will be from a single location (no compositing by location). Samples will be collected using disposable plastic scoops. All soil samples will be shipped as medium level samples.

1. After removing any surface vegetation and rocks, press the bottom of a paper paint bucket into the soil to create an impression.
2. Within this circle, collect soil to a depth of six (6) inches and place in the bucket. Set the bucket aside.
3. Collect enough soil from the bottom of the hole (6+ inches) to fill the sample container for volatile analysis. Place soil directly into the container, completely filling the container. Replace the cap promptly.
4. Use the scoop to thoroughly, but gently homogenize the soil in the bucket.
5. Fill the remaining sample containers and wipe the outside of the container. Exclude small rocks and pebbles, if possible. Return any unused soil to the hole.
6. Immediately place samples on ice.
7. Complete logsheet for the location, including location map and general texture of the soil. An example logsheet is attached.

Treatability Study Waters

Rationale for Sampling

The rationale for the treatability study are discussed in Section 5.2 of the attached "SOW for Remedy Selection Test, UV Treatment of Ground Water," 11/14/91. Rationales for the number of samples for this event and the analyses requested are related to the study and described in Section 5.4 of the above document.

Sample Collection

Three fifty-five (55) gallon drums will be filled with purge water from the most highly contaminated wells in the perched aquifer. For the purposes of the test, it is not necessary for the water to be exactly representative of the water in the aquifer. Purge water will be distributed equally among the three drums. Care will be taken to minimize volatilization when transferring water into the drums. If water from the most contaminated wells is insufficient to fill the drums, they will be topped off with purge water from a well with lower contamination.

One sample from each drum, plus one duplicate (four total samples) will be collected. The drums will be sampled by lowering a short (18") teflon bailer (2" diameter) into the drum. It is assumed that the addition of water from several wells and the transportation of the drums will have caused near complete mixing. Samples will be collected for the following parameters in the order listed: RAS volatiles and SAS EDB/DBCP, RAS Semi-volatiles, SAS herbicides, and RAS pesticides. Collection procedures will be those outlined in the FSP, except that only 1 one-liter amber bottle (half volume) will be collected for the semi-volatiles, herbicides, and pesticides. Half volume of those parameters will be collected in order to reduce dilution caused by refill of the drum. Full volume will be collected for the volatiles and EDB/DBCP. After sample collection, the drums will be refilled to zero headspace, capped, and prepared for shipment. Transportation of the drums will be accomplished by a carrier licensed for such shipment.

We acknowledge that this process will cause a fair amount of volatilization, but we will make every effort to reduce the volatiles lost and deliver the most contaminated water possible to the vendor.

REQUEST FOR ANALYSIS

Please reserve space for the following analyses with the CLP. This fourth round of sampling is scheduled to take place December 8 - 14, 1991.

- 22 medium soils for: R+S VOAs (reg. CRQLs) and SAS EDB/DBCP
SAS herbicides
RAS pesticides
SAS carbamate pesticides including aldicarb
SAS organophosphorus pesticides
R+S semi-volatiles (plus Pentachlorobenzene)
RAS metals
- 11 low waters for: R+S VOAs (reg. CRQLs)
- 8 low waters for: R+S VOAs (low CRQLs)
- 19 low waters for: SAS EDB/DBCP
SAS herbicides
RAS semi-volatiles
- 15 low waters for: RAS metals
SAS carbamate pesticides including aldicarb
SAS anions (Cl, SO₄, NO₃/NO₂)
SAS alkalinity
SAS TDS
- 4 medium waters for: R+S VOA (reg. CRQLs)
SAS EDB/DBCP
SAS herbicides
SAS carbamate pesticides including aldicarb
RAS semi-volatiles
RAS metals
SAS anions (Cl, SO₄, NO₃/NO₂)
SAS alkalinity
SAS TDS

All volatile analyses are RAS+SAS due to the addition of 1,3-Dichloropropane and 1,2,3-Trichloropropane to the TCL.

Attached is a revised Table 5.1 and Tables 5.2 and 5.3 which include the above changes. The SAS QC requests are not attached (they are about an inch thick), but have already been provided to the RSCC. These SAS requests have been used in the past and have been reviewed.

Attachments

TABLE 5.1 REQUEST FOR ANALYSIS OF WATERS (pg 1 of 3)

CLP ANALYSES REQUESTED	RAS+SAS VOA's low CRQLs	RAS + SAS VOA's reg. CRQLs	SAS EDB & DBCP	SAS HERBICIDES	RAS METALS (total)	RAS SEMI VOAs	SAS Cl, NO2/NO3 ALK, SO4, TDS	SAS carbamate pesticides	
PRESERVATIVES	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Chill to 4 C	add HNO3 to pH <2	Chill to 4 C	Chill to 4 C	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days (<28 days for TDS & ALK)	Hold <7 days prior to extraction, 40 days after extraction	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days (<25 days for TDS & ALK)	Hold <5 days prior to extraction, 40 days after extraction	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS				
SAMPLE LOCATION	CONCENTRATION LOW MED	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	2 x 1 liter amber glass bottle (1)*	1 x 500 ml poly bottle (1/2)*	2 x 1 liter amber glass bottle (1)*
AP-11 (blank)	X	3	2	2	1	2	1	2	
AP-12 (blank)	X	3	2	2	1	2	1	2	
AP-12 (blank)	X	3	2	2	1	2	1	2	
AP-01	X		2	2	2	1	2	1	2
AP-02	X		2	2	2	1	2	1	2
AP-03	X		2	2	2	1	2	1	2
AP-13D [DUP OF AP3]	X		2	2	2	1	2	1	2
AP-04	X		2	2	2	1	2	1	2
AP-05 (dry)	X								

* Minimum bottle requirements for low volumes. See also Section 6.4.

TABLE 5.1 REQUEST FOR ANALYSIS OF WATER (pg 2 of 3)

CLP	RAS+SAS	RAS - SAS	SAS	SAS	RAS	RAS	SAS	SAS	
ANALYSES REQUESTED	VOA's low CRQLs	VOA's reg. CRQLs	EDB & DBCP	HERBICIDES	METALS (total)	SEMI VOAs	Cl, NO2/NO3 ALK, SO4, TDS	carbamate pesticides	
PRESERVATIVES	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Chill to 4 C	add HNO3 to pH < 2	Chill to 4 C	Chill to 4 C	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days (<28 days for TDS & ALK)	Hold <7 prior to extraction, 40 days after extraction	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days (<25 days for TDS & ALK)	Hold <5 prior to extraction, 40 days after extraction	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	
SAMPLE LOCATION	CONCEN- TRATION LOW MED	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	2 x 1 liter amber glass bottle (1)*	1 x 500 ml poly bottle (1/2)*	2 x 1 liter amber glass bottle (1)*
EPAS-1 (dry)	X								
EPAS-2 (LAB QC)	X		4	4	4	2	4	2	4
EPAS-4 (bckgrd)	X		2	2	2	1	2	1	2
AMW-4R	X	3		2	2	1	2	1	2
AR-1	X	6 (VOA lab QC)		2	2	1	2	1	2
AMW-3R	X	3		2	2	1	2	1	2
CITY-1	X	3		2	2	1	2	1	2
CITY-2	X	3		2	2	1	2	1	2

* Minimum bottle requirements for low volumes. See also Section 6.4.

TABLE 5.1 REQUEST FOR ANALYSIS OF WATERS (pg 3 of 3)

CLP	RAS+SAS	RAS + SAS	SAS	SAS	RAS	RAS	SAS	SAS
ANALYSES REQUESTED	VOA's	VOA's	EDB & DBCP	HERBICIDES	METALS	SEMI VOAs	Cl, NO2/NO3	carbamate
	low CRQLs	reg. CRQLs			(total)		ALK, SO4, TDS	pesticides
PRESERVATIVES	Add 2 drops 1:1 HCl **	Add 2 drops 1:1 HCl **	Add 2 drops 1:1 HCl **	Chill to 4 C **	add HNO3 to pH <2	Chill to 4 C **	Chill to 4 C **	Chill to 4 C **
ANALYTICAL	Hold <14	Hold <14	Hold <14	Hold <7 days	Hold to <6	Hold <7 days	Hold <7	Hold <7
HOLDING TIME (s)	days	days	days	prior to extraction, 40 days after extraction	months [26 days for Hg]	prior to extraction, 40 days after extraction	(<28 days for TDS & ALK)	prior to extraction, 40 days after extraction
CONTRACT	Hold <10	Hold <10	Hold <10	Hold <5 days	Hold to <6	Hold <5 days	Hold <5	Hold <5
HOLDING TIME (s)	days	days	days	prior to extraction, 40 days after extraction	months [26 days for Hg]	prior to extraction, 40 days after extraction	(<25 days for TDS & ALK)	prior to extraction, 40 days after extraction
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS
CONCENTRATION	3 x 40 ml glass vial	2 x 40 ml glass vial	2 x 40 ml glass vial	2 x 1 liter amb.widemouth glass bottle	1 x 500 ml poly bottle	2 x 1 liter amb.widemouth glass bottle	1 x 500 ml poly bottle	2 x 1 liter amb.widemouth glass bottle
LOCATION	LOW MED (3)*	(2)*	(2)*	(1)*	(1/2)*	(1)*	(1/2)*	(1)*
AMW-1P	X	2 medium level	2 medium level	2 medium level	1 medium level	2 medium level	1 medium level	2 medium level
AMW-11D DUP OF 2P	X	2 medium level	2 medium level	2 medium level	1 medium level	2 medium level	1 medium level	2 medium level
AMW-2P	X	2 medium level	2 medium level	2 medium level	1 medium level	2 medium level	1 medium level	2 medium level
EPAS-3	X	2 medium level	2 medium level	2 medium level	1 medium level	2 medium level	1 medium level	2 medium level

** Medium level samples will be shipped without ice.

* Minimum bottle requirements for low volumes. See also Section 6.4.

Note: If none of the above wells are dry, an additional Lab QC sample will be required for all parameters, except VOAs. The location of the additional Lab QC will be selected in the field.

TABLE 5.2 REQUEST FOR ANALYSIS OF SURFACE SOILS - ORGANICS AND METALS (page 1 of 2)

CLP ANALYSES REQUESTED	RAS + SAS VOA's reg. CRQLs	SAS EDB & DBCP	SAS HERBICIDES	RAS PESTICIDES	SAS CARBAMATE PESTICIDES	SAS ORGANO-P PESTICIDES	RAS + SAS SEMI VOAs	RAS METALS
PRESERVATIVES	chilled **	chilled **	chilled **	chilled **	chilled **	chilled **	chilled **	none
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days prior to extraction, 40 days after extraction	Hold <14 days prior to extraction, 40 days after extraction	Hold <14 days prior to extraction, 40 days after extraction	Hold <14 days prior to extraction, 40 days after extraction	Hold <14 days prior to extraction, 40 days after extraction	Hold to <6 months [28 days for Hg]
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days prior to extraction, 40 days after extraction	Hold <10 days prior to extraction, 40 days after extraction	Hold <10 days prior to extraction, 40 days after extraction	Hold <10 days prior to extraction, 40 days after extraction	Hold <10 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS
SAMPLE LOCATION	CONCENTRATION LOW MED	1 x 4 oz amber jar	included with the RAS VOAs 1 x 4 oz amber jar	1 x 4 oz amber jar	1 x 4 oz amber jar	1 x 4 oz amber jar	1 x 4 oz amber jar	1 x 4 oz amber jar
SS-101	X	1	1	1	1	1	1	1
SS-102	X	1	1	1	1	1	1	1
SS-103	X	1	1	1	1	1	1	1
SS-104	X	1	1	1	1	1	1	1
SS-105	X	1	1	1	1	1	1	1
SS-106	X	1	1	1	1	1	1	1
SS-107	X	1	1	1	1	1	1	1
SS-108	X	1	1	1	1	1	1	1
SS-109	X	1	1	1	1	1	1	1
SS-110	X	1	1	1	1	1	1	1
SS-111	X	1	1	1	1	1	1	1
SS-112	X	1	1	1	1	1	1	1
SS-113	X	1	1	1	1	1	1	1

** Medium soils will be shipped without ice.

TABLE 5.2 REQUEST FOR ANALYSIS OF SURFACE SOILS - ORGANICS AND METALS (page 2 of 2)

CLP ANALYSES REQUESTED	RAS VOA's	SAS EDB & DBCP	SAS HERBICIDES	RAS PESTICIDES	SAS CARBAMATE PESTICIDES	SAS ORGANO-P PESTICIDES	RAS + SAS SEMI VOAs	RAS METALS
PRESERVATIVES	chilled **	chilled **	chilled **	chilled **	chilled **	chilled **	chilled **	none
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days prior to extraction, 40 days after extraction	Hold <14 days prior to extraction, 40 days after extraction	Hold <14 days prior to extraction, 40 days after extraction	Hold <14 days prior to extraction, 40 days after extraction	Hold <14 days prior to extraction, 40 days after extraction	Hold to <6 months [28 days for Hg]
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days prior to extraction, 40 days after extraction	Hold <10 days prior to extraction, 40 days after extraction	Hold <10 days prior to extraction, 40 days after extraction	Hold <10 days prior to extraction, 40 days after extraction	Hold <10 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS
SAMPLE LOCATION	CONCENTRATION	1 x 4 oz amber jar	included with the RAS VOAs	1 x 4 oz amber jar	1 x 4 oz amber jar			
	LOW MED							
SS-114	X	1		1	1	1	1	1
SS-115	X	1		1	1	1	1	1
SS-116	X	1		1	1	1	1	1
SS-117	X	1		1	1	1	1	1
SS-118	X	1		1	1	1	1	1
SS-119	X	1		1	1	1	1	1
SS-120	X	1		1	1	1	1	1
SS-121 dup & QC	X	1		1	1	1	1	1
SS-122 dup & QC	X	1		1	1	1	1	1

** Medium level samples will be shipped without ice.

SURFACE SOIL SAMPLING LOG

p. ___ of ___

PROJECT NAME/ADDRESS: _____

DATE: _____ SAMPLING TEAM: _____

FIELD CONDITIONS: _____

METHOD OF SAMPLING: _____

SAMPLE LOCATION: _____

SAMPLING DEPTH(S): _____ TIME SAMPLING STARTS: _____ TIME SAMPLING ENDS: _____

SAMPLES: ___ DISCRETE ___ COMPOSITE METHOD OF HOMOGENIZING: _____

SAMPLE ID NUMBER(S): _____

VEGETATIVE COVER, TYPE, CONDITION: _____

SOIL TYPE/DESCRIPTION: _____

SOIL ANOMALIES (ROOTS, STAINS, ODORS, ETC.): _____

SCHEMATIC SAMPLING LOCATIONS:

COMMENTS/PROBLEMS:

Approximate Scale: _____

NOTE: Schematic dimensions are site specific.

Logger's Initials: _____

April 2, 1991

MEMORANDUM

SUBJECT: Amendment to the Field Sampling Plan For Quarterly Groundwater Monitoring and Surface Soil Sampling, Brown & Bryant Site

FROM: Tom Huetteman
Quality Assurance Management Section (P-3-2)

TO: Cynthia Wetmore
Northern California Section (H-6-2)

This memo outlines proposed changes to the Field Sampling Plan for Brown & Bryant. The results of the first quarter sampling were reviewed to determine if the target analyte list could be reduced. It was found that no significant concentrations were found in any of the samples analyzed for organophosphorus pesticides, chlorinated pesticides, and carbamate and urea pesticides; almost all samples were non-detect. For this reason, and because there is little other evidence to suggest that these compounds are present at the site in significant levels, it is proposed that these analyses be dropped for the time being from the quarterly groundwater monitoring. After the new monitoring wells are installed at the site, it may be advisable to conduct another round of sampling for these parameters.

Attached is a revised Table 5.1 which includes these changes. The second round of sampling is scheduled for the week of April 8. In future monitoring rounds we will probably need to include some additional analyses for the feasibility study. We should consult with the project engineer prior to the next sampling round.

Call me if any other changes are necessary.

cc: Herb Levine, H-8-4

MEMORANDUM

SUBJECT: July Groundwater Sampling at the Brown & Bryant Site

**FROM: Robbie Hedeem
Quality Assurance Management Section (P-3-2)**

**TO: Cynthia Wetmore, RPM
Northern California Section, (H-6-1)**

The Environmental Services Branch will conduct the third quarterly groundwater sampling round at the Brown & Bryant Superfund Site on July 29 through August 4, 1991. The sampling will proceed according to the procedures in the EPA Field Sampling Plan for Quarterly Groundwater Monitoring, Brown & Bryant Site, dated January, 1991.

Samples will be collected for the analyses included on the attached revised Table 5.0. These analyses are identical to those outlined in the sampling plan, except that the analyses for RAS pesticides and organophosphorus pesticides have been deleted due to low analytical results in the first two sampling rounds. Pentachloronitrobenzene was also dropped, but RAS semi-volatiles remains on the list. (The carbamate pesticides analysis was not included in the second sampling round, but it was decided to include them in this round due to the small amounts detected in the first sampling round.)

Samples will be collected in the same manner as previously.

Please call me at 744-1535 if you have any questions.

Attachment



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, Ca. 94105

Robbie
Dec
FY1 - field
work

MEMORANDUM

November 14, 1991

SUBJECT: SOW for Remedy Selection Test
UV Treatment of Ground Water

FROM: Vance Fong, Treatment Engineer, H-8-4

TO: Cynthia Wetmore, Remedial Project Manager, H-6-2

cc: Jeri Simmons, Contract Officer, P-7-2
Robbie Hedeem, QAMS, P-3-2

This memorandum transmits the attached Scope of Work, Section 5.0 of the Statement of Work for the Remedy Selection Test. The remedy selection test will be performed for treatment of contaminated ground water collected at Brown and Bryant using UV/Oxidation. The Scope of Work is written for sole source vendor based on the determination which we have reached.

The remedy selection test will be the second step in the tiered approach taken for the treatability study process for Brown & Bryant. The test is designed to verify whether the UV/Oxidation can meet the perched water cleanup criteria and at what cost. The information obtained from the test should be sufficient to support the detailed analysis of alternatives in the ground water feasibility study.

5.0 Scope of Work

5.1 Background

Treatment alternatives for remediation of the contaminated perched zone water have been one of the major components in the three-tiered approach treatability study for Brown & Bryant. Steps one, two, and three are remedy screening, remedy selection, and remedy design respectively.

The feasibility of Ultraviolet/Oxidation has been evaluated in step one, remedy screening, through a recent removal action conducted by On-Scene Coordinators of EPA, Region 9. Rinsewater containing dinoseb generated through washing of contaminated soil was treated using a Solarchem UV/Oxidation unit. The destruction efficiency has been documented for reducing dinoseb concentrations in the washed water to less than 1000 ug/l.

The said removal action focused on bulk removal of dinoseb and not treatment of minute contaminant quantities. Noticeably, ground water at Brown & Bryant also contain a variety of other herbicides, pesticides/PCBs, volatile and semivolatile compounds. Thus, it was requested that the second step of the tiered approach be conducted to verify whether UV/Oxidation can meet the drinking water criteria for the contaminants which have been detected in the perched zone water deemed important by the Remedial Project Manager.

5.2 Test Objectives/Rationales

It was recommended that the Solarchem unit, while it was on-site, be utilized to obtain performance data at contaminant concentrations near the drinking water standards for dinoseb as well as other key contaminants. However, as limited by budget and schedule constraints, only dinoseb destruction data was collected. It is determined that the performance data for the other key contaminants are equally as important as dinoseb in evaluating the applicability of the technology for ground water treatment.

In the absence of relevant performance data in the available technical literature, especially for the complex contaminant mixture in ground water at Brown & Bryant, the remedy selection test will provide critical information in order to effectively evaluate the following criteria specific to the site:

- 1) Overall protection of human health and the environment
- 2) Compliance with ARARs
- 3) Long-term effectiveness and performance
- 4) Reduction of toxicity, mobility, and volume
- 5) Short-term effectiveness
- 6) Implementability
- 7) Cost.

Vendor's experience has shown that "99% of organic compounds absorb light at wave length from 200-230 nm" (John Basile of Solarchem). Unknown is whether the compounds absorb the photonic energy, become excited, and decompose through oxidation in the presence of hydroxyl radicals. Since the oxidation potentials vary for different compounds, the rates of destruction are different. For compounds which have much high oxidation potential or are resistant to destruction because of other factors, the additives such as ENOX 350 and/or 450 are needed to enhance the rate of reaction. Space time, which relates to the "rayox dosage" also play a fundamentally important role in future system design and reactor configuration. Overall, the reactor size & configuration, rayox dosage per unit of destruction, the need of additives, and the completeness of the destruction will determine the feasibility of the technology. It is understood that Solarchem will interpret all testing data, make and guarantee its conclusion and recommendations. The conclusion and recommendations may be sufficient for the remedial design. The third tier, remedial design test (post ROD) may not be necessary.

Since the remedy selection test will require vendor-specific equipment, additives, and experience to assure high-quality, quantitative data and best possible technology performance. It is justified to conduct the test as vendor treatability study as suppose to generic treatability study as discussed in Section 2.4.4 of the draft Guide for Conducting Treatability Studies Under CERCLA, Oct. 2, 1991.

5.3 Data Use

The primary data users are the Remedial Project Manager, EPA Treatment Engineer of Technical Support Section, EPA Laboratory Personnel, Region 9 Environmental Services Branch, and possibly remedial design consultants. The data will be used in determining whether UV/Oxidation by Solarchem can meet drinking water criteria or any cleanup levels established based on site-specific condition. The data and the interpretation thereof will also be used on the comparison between the performance of UV/Oxidation and other possible ground water remediation technologies in the detailed screening of the remedial alternatives of the FS. If a ROD is signed to utilize UV/Oxidation as a component of the preferred remedial alternative, the data, data interpretation, conclusion and recommendations in the Testing Report may be used for treatment unit design and remedial action.

Type of decisions made based upon the data and any conclusion therefrom may include but not necessarily limit to the following:

1. The technology meets or does not meet treatment goals;
2. Further consideration of the technology or screen it out from;
3. The technology is more or less superior than other ground remedial technologies in level of protectiveness, meeting ARARs, implementability, and cost; and
4. Design decisions.

5.4 Data Quality Objectives

The minimum level of confidence and maximum levels of uncertainties/variability for decision type DQOs are set at comparable levels as what were set forth for the RI data. Whenever possible, since this is a focused test plan and little variability in concentration is expected in well mix ground water samples, 95% confidence and less than 30% uncertainty levels should be aimed. The following tasks will contribute to the overall confidence and uncertainties:

- Field sample collection,
- Loss of contaminants to air, containers, test equipment, and ozone stripping,
- Remedy selection testing and sampling, and
- CLP analysis

Unlike site characterization, the degree of contamination in the aquifer is generally immaterial to the remedy selection test. However, it is advised that the three 55 gallon drums contain perched water at as high concentrations and as many contaminants as one can possibly find. It is also advised that the contaminant loss be minimized. It is so determined based on the above

discussion that the field sampling procedure be executed comparable to obtaining level III. To maximum extent practicable, the existing Ground Water Sampling/Monitoring plan should be used with adequate modification. Specific direction will be given in the Field Sampling section below.

The remedy selection testing and sampling are of critical importance to obtaining the confidence level as well as minimizing uncertainties. Since this task will occur at the vendor's facility, it is requested that the vendor follow its strictest procedures. EPA Treatment Engineer will closely oversee this test indirectly by telephone calls. It was indicated in the September 12, 1991 facsimile transmittal from Solarchem that Solarchem "will analyze internally for one or two surrogate compounds". EPA requests that these limited analysis be performed as strictly as possible. The results should be used on a limited basis unless used in conjunction with the EPA analytical data. EPA also requests that Solarchem minimize the loss of contamination when bottling the effluent samples and, to the extent practicable, quantify the VOC loss through ozone stripping. Due to the limited flow rate and the relatively large number of analyses, it is uncertain that sufficient effluent water would be available for QA samples. Since this is the control step, the above specified goals regarding confidence and uncertainty levels may not be achieve.

CLP analyses should introduce the least errors and uncertainties in comparison with the sample gathering and the testing phases. CLP analyses will take place at much more control environments. To the maximum extent practicable, the existing QAPP for analysis of ground water samples should be used. However, these analyses will be performed for treated ground water samples which contain minute quantity of contaminants at or near the MCLs. QA samples, duplicates and probably spikes will be sent to the CLP labs along with the effluent samples as instructed in the Testing Requirements below. CLP analyses shall attain level IV data quality. Level IV is defined specifically for this tier as:

1. CLP RAS VOA's and EDB and DBCP
2. CLP RAS Base Neutral Acids (semivolatiles or BNA)
3. CLP RAS pesticides
4. CLP SAS herbicides
5. Data are well documented and of known quality
6. Rigorous QA/QC checks include lab duplicates, blind spikes, field duplicate for drum characterization samples, and possibly quality performance evaluation samples.

5.5 Sample Collection

As discussed in section 5.4 above, three completely filled (no head space) 55 drums of ground water from the perched zone will be collected. These are plastic drums that meet EPA and DOT standard. Contacts in company which makes the qualified drums has been given to the Environmental Services Branch.

It is preferred that the drums contain perched water of as high concentrations and as many compound as possible. In order to accomplish the above objectives, a given drum may contain waters from different wells. Wells from which the perched water will be drawn need to be predetermine based on review of the existing ground water monitoring data.

In order to maintain consistency and comparability between runs, it is important to fill the drums with more or less the same volumes of water from each well. This is to ensure that each drum has comparable concentrations and equal number of contaminants for each of the ten runs which will be performed at the vendor facility.

The drums will be sampled prior to shipping following these steps:

1. Each sample should be made up of waters from all three layers of a given drum. This is accomplished with the use of a long handle bailing cup. The first sample must contain at least 1 liter for the herbicide analysis; the second sample must contain at least 120 milliliter for the VOC analysis; the third sample must contain at least 1 liter for the semivolatle analysis; and the forth sample must contain at least 1 liter for the pesticide/PCB analysis.
2. Repeat step (1) to obtain a duplicate.
3. Repeat step (1) + (2) for the other two drums.
4. Ensure that the head space in each drum is minimized before covering them with lids. The drums need to be filled with additional water.
5. Ensure that the drums are secured and ready for shipping
6. Complete Labeling, chain of custody and other necessary paperwork.

5.6 Transportation Requirements

A carrier who is frequently used by Solarchem is recommended by the vendor. Contact phone number and address are provided in the Appendix.

Paperwork requirement regarding the shipment and transportation instruction should be followed to avoid unnecessary delays and mishap. Recommendation of this nature can be found in the Appendix.

Shipment will be addressed to:

Solarchem Environmental System, Inc.
Unit 4-40 West Wilmot Street
Richmond Hill, Ontario
Canada L4B 1H8
Attention: Mr. Keith Bircher

5.7 Testing Requirements

Solarchem will perform a total of ten runs subdivided into two sets of runs. The two sets of runs will be separated by the first CLP analysis. Solarchem will execute the second set of runs upon the receipt of the analytical data for the first set of runs. The first set on runs include three runs. There will be seven runs in the subsequent set. The sequence and timetable are set in section 5.10, Schedule of Execution.

All runs will have 3 different UV dose levels. Thus, for each run, there will be an inlet sample, 3 effluent samples and 3 duplicate samples, a pair of effluent and duplicate samples per UV dose level. The inlet sample must be at least 4 liters (1 liter for herbicide, 1 liter for VOC, 1 liter for Base-Neutral Acids (BNA or semivolatiles), and 1 liter for pesticide/PCB analyses). No duplicate will be collected for the inlet. Each of the effluent sample, just as the inlet sample, must be at least 4 liters and divided into four containers (1 liter/container) for the above analysis. The duplicate sample will be one one-liter container and will be in rotating order of analysis; that is first duplicate should be analyzed herbicide, the next duplicate for VOC, etc.

For the first set of runs, the reaction condition is such that: natural PH, no additives will be used, and no ozone will be injected. The following table summarized the reaction condition for all runs.

TABLE 1

Run #	pH	H ₂ O ₂ PPM	Ozone	UV	Additives	Inlet Samp.	Effl. Sample	dup. Samp.
1	Nat.	~30	no	UV1 UV2 UV3	no	yes	yes yes yes	no Herb. VOC BNA
2	Nat.	~60	no	UV1 UV2 UV3	no	yes	yes yes yes	no P/PCB Herb. VOC
3	Nat.	15or120	no	UV1 UV2 UV3	no	yes	yes yes yes	no BNA P/PCB Herb.
4	TBD	TBD	no	UV1 UV2 UV3	no	yes	yes yes yes	no VOC BNA P/PCB
5	TBD	TBD	no	UV1 UV2 UV3	Enox510	yes	yes yes yes	no Herb. VOC BNA
6	TBD	TBD	no	UV1 UV2 UV3	Enox510	yes	yes yes yes	no P/PCB Herb. VOC.
7	TBD	TBD	yes	UV1 UV2 UV3	Enox350	yes	yes yes yes	no BNA P/PCB Herb.
8	TBD	TBD	yes	UV1 UV2 UV3	Enox350	yes	yes yes yes	no VOC. BNA P/PCB

Table 1 (continued)

Run #	pH	H ₂ O ₂ PPM	Ozone	UV	Additives	Inlet Samp.	Effl. Sample	dup. Samp.
9	TBD	TBD	yes	UV1 UV2 UV3	Enox450	yes	yes yes yes	no Herb. VOC semi.
10	TBD	TBD	yes	UV1 UV2 UV3	Enox450	yes	yes yes yes	no P/PCB Herb. VOC

The Vendor will preserve the remaining untreated water adequately for the second set of runs. The vendor will adjust its testing parameters for the next set of runs in consultation with EPA. The testing parameters will be adjusted based on the invalidated data from the CLP lab. Upon the completion of the test, vendor will send the remaining treated water back to the Arvin site. Early notification must be sent to EPA about the return of the treated water:

Attention: Cynthia Wetmore
H-6-2
EPA, Region 9
75 Hawthorne Street
San Francisco, CA 94105

Cynthia can be reached at (415) 744-2218

5.8 Analysis Requirements/Data Validation

Vendor will collect and ship all samples to CLP Lab in accordance with section 5.7 above Table 1 above and the timetable set forth in section 5.10 below. EPA will notify Solarchem of the address of the CLP lab.

CLP lab will analyze sample shipment 1 (first three runs) and shipment 2 (last 7 runs) immediately in accordance with section 5.4 above and the timetable in section 5.10 below. ESB/RPM will send Solarchem invalidated data immediately upon the receipt of such data from the CLP lab. ESB/RPM then proceed with data validation and will provide Technical Support and Solarchem with the validated data.

5.9 Vendor Treatability Study Report

The Vendor will submit a Final Testing Report to the above address. The report will include but not limited to the following sections:

1. UV/Oxidation Technology Description
2. Solarchem Test System Description
3. Treatability Study Approach
4. Summary of Test Data
5. Data Interpretation
6. Conclusion and Recommendation
7. Appendix (containing tables and graphs)

5.10 Schedule of Execution

<u>Task</u>	<u>Start</u>	<u>Complete</u>
Field Sampling	12/8	12/13
ESB Ships Drums to Vendor	12/13	12/13
Vendor Receives Drums	12/15	12/15
First Set of Runs	12/15	12/21
Vendor Ships Samples to CLP	12/21	12/21
CLP Receives Samples	12/23	12/23
Vendor Receives Unvalidated Data	01/15	01/15
Vendor Adjusts Test Para.	01/15	01/16
Second Set of Runs	01/16	01/21
Vendor Ships Samples to CLP	01/21	01/21
CLP Receives Samples	01/23	01/23
Vendor Receives Unvalidated Data	02/15	02/15
Vendor Prepares Report	02/15	03/01

After Validated data is received by EPA, EPA will check the report against the validated data.



ICF TECHNOLOGY INCORPORATED

MEMORANDUM

TO: Robbie Hedeem, Environmental Scientist
Quality Assurance Management Section (P-3-2)

THROUGH: Kent Kitchingman, Chief
Quality Assurance Management Section (P-3-2)

FROM: ~~David R. Taylor~~
David R. Taylor, Ph.D., Senior Investigation Coordinator
Environmental Services Assistance Team (ESAT)

DATE: December 6, 1991

SUBJECT: Amendment to Brown and Bryant Field Sampling Plan dated November 30, 1991

The proposed changes to the Field Sampling Plan for the Brown and Bryant site have been reviewed. No major problems are found with the proposed changes. The comments below reflect possible impacts that the changes may have on data quality for the treatability study. These comments were also provided to Robbie Hedeem on her voice mail on December 5th.

Specific Comments (on Treatability Study Samples)

1. The collection procedure described for the half volume samples in the statement that the half volume samples "will be collected in order to reduce dilution caused by refill of the drum" is not clear as written. It is recommended that the drums be filled as much as possible with water from the "most contaminated wells" and that all sample bottles be filled from the drums after the most contaminated wells are exhausted. However, the dilution that will occur after replacing the material removed for the analyses with less concentrated water represents a small percentage of the overall barrel volume. The improvement in the analytical results from collecting normal sample volumes outweighs any potential dilution problem.
2. It is recommended that the original sample volume (2 x 1L), rather than half that volume, be collected for the extractable analyses (semivolatile organic compounds, herbicides, and pesticides) where possible. With only one liter of material to work with, the laboratory must either extract all of the sample, leaving no material for a reextraction if surrogate recoveries are low, or if some other QC or laboratory problem occurs; or else they must extract 500 mLs which will result in a doubling of detection limits.

It is also recommended that double volumes be provided for laboratory QC purposes. Otherwise, there will be no information on potential matrix effects available for use in the design of the treatability study, since

Ms. Robbie Hedeem
December 6, 1991

the laboratory will use lab water for QC purposes.

The document will be retained by ESAT. If you have any questions, I can be reached at (415) 882-3059.

cc: Jacob Silva, QAMS (P-3-2)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, Ca. 94105

DEC 17 1991

MEMORANDUM

SUBJECT: Review of the Amendment to the Field Sampling Plan for Quarterly Groundwater Monitoring and Surface Soil Sampling, Brown & Bryant Site, December 1991

FROM: Robbie Hedeem
Quality Assurance Management Section, P-3-2

TO: Cynthia Wetmore, Remedial Project Manager
Northern California Section, H-6-2

The Amendment to the Field Sampling Plan for Quarterly Groundwater Monitoring and Surface Soil Sampling, Brown & Bryant Site has been reviewed by Dave Taylor at ICF (comments attached). The two comments address concerns that collecting half volume samples from the drums of treatability water would impact the data quality for those samples. I agree with these comments and it has been decided to collect full volume for all samples and to also collect full volume for all QC samples.

This memo should be considered an amendment to the plan. If you have any questions, please call me at 744-1535.

Attachment

cc: Jacob Silva, without attachment

160 Spear Street, Suite 1380
San Francisco, California
94105-1535

415/957-0110



ICF TECHNOLOGY INCORPORATED

MEMORANDUM

TO: Robbie Hedeem
Quality Assurance Management Section (P-3-2)

THROUGH: Kent Kitchingman, Chief
Quality Assurance Management Section (P-3-2)

FROM: ~~DP~~ David R. Taylor, Ph.D., Senior Investigation Coordinator
Environmental Systems Assistance Team (ESAT)

DATE: December 19, 1991

SUBJECT: Amendment to the Field Sampling Plan for Quarterly Groundwater
Monitoring and Surface Soil Sampling, Brown and Bryant Site,
December 1991

The memo incorporating the additional changes in the sampling plan was reviewed. The larger sampling volume should help ensure that the required quantitation limits are achieved and that the associated quality control samples can be run. There should be relatively little impact on quantitation limits due to dilution. The revised plan is recommended for approval.

The document will be retained by ESAT. If you have any questions, I can be reached at (415) 882-3059.

cc: Jacob Silva, QAMS, P-3-2

FIELD SAMPLING REPORT

QUARTERLY GROUNDWATER MONITORING
APRIL, 1992

BROWN & BRYANT SUPERFUND SITE
Arvin, CA

Prepared by:

Robbie Hedeem
Quality Assurance Management Section
Environmental Services Branch
U.S. EPA, Region 9

September, 1992

INTRODUCTION

Quarterly groundwater samples were collected at the Brown & Bryant Superfund Site in Arvin, California on April 14 - 23, 1992. The sampling event was conducted by the U.S. EPA, Region 9, Environmental Services Branch in support of the Brown & Bryant in-house RI/FS. This was the fifth quarterly groundwater monitoring event at the Brown & Bryant Site and the first to include the thirteen newly constructed wells at the site.

The objective, sampling procedures, and analytical methods used for this investigation are described in the document Field Sampling Plan for Quarterly Groundwater Monitoring, Brown & Bryant Site, Arvin CA, REVISED: March, 1992. This report summarizes the procedures that were followed and any deviations from the sampling plan.

METHODS AND SCOPE OF WORK

WATER LEVEL MEASUREMENTS

Water level measurements for each well were taken April 21, 1992. (See Table 3.0.) For consistency, the wells were sounded by the same person and all measurements were taken in the smallest time frame possible. The measurements represent the distance from the top of the water column in the well to the mark at the top of the well casing. For wells with dedicated pumps, the water level is measured to the side of the sounding port nearest the center of the well cap. For other wells, if no mark or notch is apparent at the top of the casing, the measurement is taken at the north side of the top of the inner casing. For this event, the wells could not be sounded until the dedicated pumps and caps were placed in the newly installed wells. No sampling occurred for three days prior to the measurement of water levels.

GROUNDWATER SAMPLES

The samplers collected 34 groundwater samples, including 7 blanks and 3 duplicates. All site wells were sampled with the following exceptions. EPAS-1 and AP-5 were dry. As planned, wells WA-4 and WA-5 were not sampled. A total of 23 site wells plus one municipal well were sampled. (See Figure 1 for a map of the site with well locations. See Table 1 for a list of the wells sampled and the associated log and sample numbers.) Samples were collected for the following analyses: RAS+SAS Volatiles (routine detection limits, with 1,2-DCP and 1,2,3-TCP) or RAS+SAS Volatiles (low detection limits, with 1,2-DCP and 1,2,3-TCP), SAS EDB & DBCP, SAS Dinoseb, SAS Carbamate/Urea Pesticides plus Aldicarb (8 samples only), RAS metals (total), SAS anions, SAS alkalinity, and SAS TDS. (See Appendix A for the Request for Analysis section of the sample plan.)

Groundwater samples were collected from site wells using either decontaminated bailers, the decontaminated piston pump, or dedicated electric submersible pumps (Grundfos Redi-flo2 pumps). Wells were sounded to determine the volume of standing water in the well casing. A minimum of three times this casing volume was purged from the well prior to sample collection to ensure that only fresh formation water would be sampled. Additionally, pH, electrical conductivity, and temperature of the water were monitored after each collected casing volume. Stabilization of these parameters during purging was also used as an indicator of fresh formation water. (See Table 2 for information about each well, such as water level, pH, conductivity, temperature, turbidity, sampling method, and comments.)

The samples were collected at flow rates appropriate to each parameter. The samples were preserved and packaged according to the procedures discussed in the sample plan. All documentation was completed and shipped with the samples. Samples were shipped to the respective laboratories via Federal Express overnight service.

LABORATORY INFORMATION

The laboratories for this sampling event were the U.S. EPA Region 9 Laboratory and participants in EPA's Contract Laboratory Program (CLP). The Case and SAS numbers associated with this investigation are LV2S45, 7196Y, and 7457Y. The samples collected for volatiles, EDB/DBCP, Metals, Anions, Alkalinity, and TDS were shipped to the U.S. EPA Region 9 Lab in Las Vegas, NV under Case Number LV2S45. Dinoseb and Carbamate Pesticides were analyzed at PBS&J Environmental Labs in Orlando, FL under SAS Number 7196Y.

The Dinoseb results submitted by PBS&J were rejected by U.S. EPA Region 9 due to the laboratory's failure to perform proper calibrations and failure to use dilution to bring the samples into the calibration range. The unused sample volume for seventeen of the samples was then sent to TCT-St. Louis for reanalysis of Dinoseb under SAS Number 7457Y.

DEVIATIONS FROM THE SAMPLING PLAN

All sampling activities were consistent with procedures outlined in the sampling plan with the following exceptions.

- One extra blank sample, AP-17, was required.
- Wells AP-2, AP-4, and WA-8 were purged completely dry prior to the collection of three full purge volumes. These wells were sampled without waiting two hours for the well to recharge.

- Duplicate volatile samples were collected at AR-1, WA-2, and AMW-4R. The vials marked with the duplicate location (AMW-11R, AMW-12R, and AMW-13R) as the sample location were collected first in the sequence of parameters. The vials marked with the well as the sample location were taken last in the sequence of parameters. These duplicates were collected to determine the variance of results for volatiles collected immediately after decreasing flow rate versus those taken after several minutes of sampling at low flow rates. There were not enough samples to make any valid conclusions.
- Personnel from Kennedy/Jenks Consultants observed the sampling and collected splits from all the wells.

SUMMARY

In April 1992, the following samples were collected at Brown & Bryant Superfund Site in Arvin, California:

- 19 Groundwater Samples for RAS+SAS Volatiles (routine detection limits), SAS EDB & DBCP, SAS Dinoseb, RAS metals, SAS anions, SAS alkalinity, and SAS TDS.
- 15 Groundwater Samples for RAS+SAS Volatiles (low detection limits), SAS EDB & DBCP, SAS Dinoseb, RAS metals, SAS anions, SAS alkalinity, and SAS TDS.
- 8 Groundwater Samples for SAS Carbamate/Urea Pesticides plus Aldicarb.

All of the procedures outlined in the REVISED Field Sampling Plan for Quarterly Groundwater Monitoring, Brown & Bryant Site, Arvin CA were followed with the minor exceptions described in this report.

No unusual circumstances or insurmountable difficulties occurred during the sampling event.

BROWN & BRYANT WELL LOCATIONS

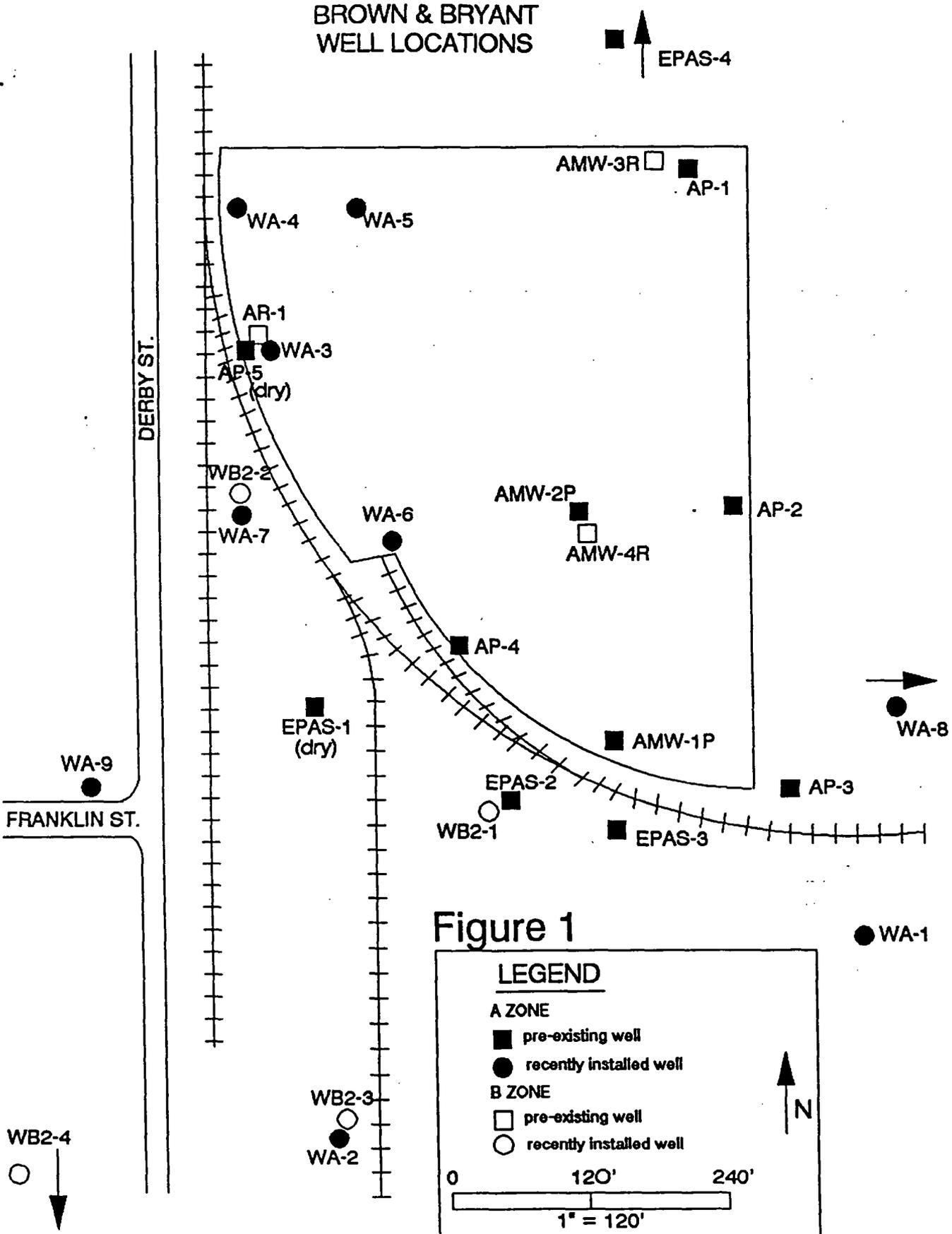


Figure 1

BROWN & BRYANT APRIL 1992 GROUNDWATER SAMPLES
DATA MANAGEMENT SAMPLE ID NUMBERS

<u>LOCATION NUMBER</u>	<u>WELL CODE</u>	<u>APR 92 SAMPLE LOG NUMBERS</u>	<u>RAS IN SAMPLE #</u>	<u>SAS SAMPLE #</u>
A ZONE (PERCHED ZONE)				
AMW-1P	MW01	MW01D001E07A	MYH628	SY0398
AMW-2P	MW02	MW02D001E07A	MYH626	SY0399
AP-01	MW11	MW11D001E07A	MYH614	SY0384
AP-02	MW12	MW12D001E07A	MYH615	SY0385
AP-03	MW13	MW13D001E07A	MYH616	SY0386
AP-04	MW14	MW14D001E07L	MYH617	SY0387
AP-05	MW15	DRY		
EPAS-01	MW21	DRY		
EPAS-02	MW22	MW22D001E07A	MYH624	SY0394
EPAS-03	MW23	MW23D001E07A	MYH627	SY0397
EPAS-04	MW24	MW24D001E07A	MYH625	SY0395
WA-1	MW41	MW41D001E07A	MYH618	SY0388
WA-2	MW42	MW42D001E07A	MYH619	SY0389
WA-3	MW43	MW43D001E07A	MYH620	SY0390
WA-4	MW44	NOT SAMPLED		
WA-5	MW45	NOT SAMPLED		
WA-6	MW46	MW46D001E07A	MYH630	SY0400
WA-7	MW47	MW47D001E07L	MYH621	SY0391
WA-8	MW48	MW48D001E07A	MYH622	SY0392
WA-9	MW49	MW49D001E07A	MYH623	SY0393
B ZONE (REGIONAL UNCONFINED)				
AR-01	MW31	MW31D002E07L	MYH607	SY0377 (VOA QC ONLY)
AMW-3R	MW33	MW33D002E07A	MYH608	SY0378
AMW-4R	MW34	MW34D002E07A	MYH609	SY0379
WB2-1	MW51	MW51D002E07A	MYH610	SY0380
WB2-2	MW52	MW52D002E07A	MYH611	SY0381
WB2-3	MW53	MW53D002E07A	MYH612	SY0382
WB2-4	MW54	MW54D002E07A	MYH613	SY0383
MUNICIPAL WELLS				
CW-01	DW01	DW01D003E07A	MYH606	SY0376

BROWN & BRYANT APRIL 1992 GROUNDWATER SAMPLES
DATA MANAGEMENT SAMPLE ID NUMBERS

<u>LOCATION NUMBER</u>	<u>WELL CODE</u>	<u>APR 92 SAMPLE LOG NUMBERS</u>	<u>RAS IN SAMPLE #</u>	<u>SAS SAMPLE #</u>
QUALITY CONTROL SAMPLES				
AP-11	MW91	MW91D000E07E	MYH598	SY0368
AP-12	MW92	MW92D000E07E	MYH599	SY0369
AP-13	MW93	MW93D000E07E	MYH600	SY0370
AP-14	MW94	MW94D000E07E	MYH601	SY0371
AP-15	MW95	MW95D000E07F	MYH602	SY0372
AP-16	MW96	MW96D000E07F	MYH603	SY0373
AP-17	MW97	MW97D000E07E	MYH631	SY0405
AP-21	MW43	MW43D001E07R	MYH604	SY0374
AP-22	MW22	MW22D001E07R	MYH605	SY0375
AP-23	MW02	MW02D001E07R	MYH626	SY0396
AMW-11R	MW34	MW34D002E07R		SY0401 (VOAs ONLY)
AMW-12R	MW31	MW31D002E07R		SY0402 (VOAs ONLY)
AMW-14R	MW42	MW42D001E07R		SY0404 (VOAs ONLY)

NOTE: CASE # LV2S45 (VOAs, EDB/DBCP, ANIONS, METALS) REGION 9 LAB
SAS # 7196Y (CARBAMATES/ALDICARB, DINOSEB) PBS&J
SAS # 7457Y (DINOSEB) TCT-St. Louis

(Dinoseb data produced by PBS&J was rejected. The unused sample volume for the following samples were shipped to TCT-St. Louis for reanalysis: SY0375, SY0380, SY0381, SY0382, SY0383, SY0388, SY0389, SY0390, SY0391, SY0392, SY0393, SY0394, SY0396, SY0397, SY0398, SY0399, and SY0400)

Brown & Bryant April 1992 Sampling Event
 Table 2.0: Groundwater Sampling Information

SAMPLE LOCATION	DATE	TIME	WATER LEVEL (FT)	pH	CONDUCTIVITY (umhos/cm)	TURBIDITY (ntu)	TEMP (oC)	DO (mg/l)	METHOD OF COLLECTION	HNu (mu)	
AMW-1P	04/17/92	09:32	68.01	6.50	9090	95	21.9	6.2	BAILER	-	
AMW-2P	04/16/92	10:10	69.70	7.07	5000	53.8	23.0	3.8	BAILER	0.8	
AMW-3R	04/14/92	08:13	155.36	7.76	830	26	22.9	7.0	PISTON PUMP	-	
AMW-4R	04/15/92	17:30	155.18	7.90	880	0.43	23.8	-	PISTON PUMP	-	
AP-1	04/14/92	18:40	69.10	7.65	872	5.3	22.0	5.3	BAILER	-	
AP-2	04/15/92	18:17	68.00	6.48	1400	18.8	22.5	-	BAILER	0.2	
AP-3	04/15/92	18:00	68.51	7.17	1500	94.3	22.0	6.2	BAILER	-	
AP-4	04/16/92	17:15	68.50	7.22	2850	25.8	23.1	-	BAILER	5.5	
AP-5			DRY								
AR-1	04/16/92	10:22	156.50	7.69	1389	1.9	22.4	-	PISTON PUMP	-	
EPAS-1			DRY								
EPAS-2	04/15/92	10:46	71.62	6.84	2930	17.7	24.0	5.5	BAILER	0.6	
EPAS-3	04/15/92	11:53	71.62	7.16	5330	109	23.2	7.2	BAILER	1.0	
EPAS-4	04/14/92	16:15	71.08	7.61	947	86	20.0	-	BAILER	-	
CW-1	04/22/92	14:18	-	8.85	360	-	26.8	-	SPIGOT	-	
WA-1	04/23/92	12:12	67.05	7.39	937	0.5	22.1	12	ELECTRIC PUMP	0	
WA-2	04/23/92	10:23	68.97	7.56	1161	4.1	23.4	10.4	ELECTRIC PUMP	0.5	
WA-3	04/23/92	10:35	73.83	7.25	1940	4.5	25.0	-	BAILER	0	
WA-4			DIDN'T COLLECT SAMPLE								
WA-5			DIDN'T COLLECT SAMPLE								
WA-6	04/22/92	12:33	71.92	6.62	5610	1.15	25.6	2.5	ELECTRIC PUMP	0	
WA-7	04/17/92	13:30	73.24	7.68	2870	10.5	23.4	2.95	BAILER	-	
WA-8	04/16/92	17:30	69.71	7.86	2000	10.5	22.0	6.4	BAILER	4.5-12	
WA-9	04/21/92	15:35	69.80	7.47	1810	13.5	25.4	4.2	ELECTRIC PUMP	1-10	
WB2-1	04/21/92	18:12	154.25	7.61	1422	1.67	23.9	8.4	ELECTRIC PUMP	-	
WB2-2	04/22/92	16:10	156.81	10.04	1084	37	24.0	8.1	ELECTRIC PUMP	-	
WB2-3	04/22/92	17:39	152.91	7.73	999	1.10	23.7	9.8	ELECTRIC PUMP	0	
WB2-4	04/22/92	18:57	166.88	8.53	723	3.12	23.5	4.0	ELECTRIC PUMP	0.5	
AP-11	04/14/92	11:15							BAILER		
AP-12	04/15/92	12:45							PISTON PUMP		
AP-13	04/16/92	14:15							BAILER		
AP-14	04/17/92	10:22							BAILER		
AP-15	04/21/92	17:20							FIELD		
AP-16	04/22/92	15:25							FIELD		
AP-17	04/23/92	08:53							BAILER		

Brown & Bryant April 1992 Sampling Event
 Table 2.0: Groundwater Sampling Information

SAMPLE LOCATION	COMMENTS
AMW-1P	water is yellow
AMW-2P	duplicate location for AP-23
AMW-3R	
AMW-4R	volatile duplicate location for AMW-11R
AP-1	
AP-2	well purged dry after 1.5 purge volumes (2.25 gallons), less than 3 purge volumes collected, metallic flakes in water
AP-3	slow to recharge
AP-4	less than 3 purge volumes collected
AP-5	
AR-1	volatile duplicate location for AMW-12R
EPAS-1	
EPAS-2	water is yellow green, duplicate location for AP-22
EPAS-3	purged dry at 2.5 purge volumes
EPAS-4	water very silty
CW-1	
WA-1	clear water, purged at 190 Hz, HNu for all new wells is affected by gasket at top of casing
WA-2	volatile duplicate location for AMW-13R, water is murky green, purged at 190 Hz, sampled volatiles 187 Hz, sampled rest 188 Hz
WA-3	duplicate location for AP-21
WA-4	
WA-5	
WA-6	water is slight yellow, HNu (well) = 0, HNu (water) = 5, purged at 190 Hz = 0.42 gal/min
WA-7	slow recharge approximately 1 liter/min, water silty, bailer was dedicated to well
WA-8	dry after 1 purge volume, less than 3 purge volumes collected, HNu (water) = 2
WA-9	250 Hz = 1.3 gal/min, 200 Hz = 0.6 gal/min, sampled at 190 Hz
WB2-1	purged at 350 Hz = 2.86 gal/min, sampled at 280 Hz (volatiles at 277 Hz)
WB2-2	
WB2-3	purged at 350 Hz, sampled at 272.7 Hz
WB2-4	purged at 350 Hz, purged dry after third purge volume but recovered quickly
AP-11	
AP-12	
AP-13	
AP-14	
AP-15	field blank collected during purging at WB2-1
AP-16	field blank collected during purging at WB2-2
AP-17	

Brown & Bryant April 1992 Sampling Event

Table 3.0: Initial Water Level Measurements

WELL	DATE	TIME	WATER LEVEL (feet below surface)	HNu * (mu)
AMW-1P	04/21/92	18:04	67.95	10-30
AMW-2P	04/21/92	18:15	69.71	50-100
AMW-3R	04/21/92	17:20	155.06	0.5
AMW-4R	04/21/92	18:23	155.02	25
AP-1	04/21/92	17:25	68.96	0
AP-2	04/21/92	18:30	68.33	0
AP-3	04/21/92	15:50	68.45	0
AP-4	04/21/92	17:54	68.60	1.2
AP-5	04/21/92		dry	-
AR-1	04/21/92	16:48	156.68	0
EPAS-1	04/21/92		dry	-
EPAS-2	04/21/92	13:12	71.60	0.2
EPAS-3	04/21/92	13:28	71.54	1.1
EPAS-4	04/21/92	16:24	71.07	0
WA-1	04/21/92	14:10	67.04	0.5
WA-2	04/21/92	12:20	68.91	0.1
WA-3	04/21/92	16:39	73.82	0.4
WA-4	04/21/92	17:00	75.01	0.2
WA-5	04/21/92	17:10	72.19	0
WA-6	04/21/92	17:39	71.84	0.1
WA-7	04/21/92	15:59	73.12	0
WA-8	04/21/92	13:42	70.46	0.4
WA-9	04/21/92	11:30	69.80	3.0
WB2-1	04/21/92	13:00	154.25	0.2
WB2-2	04/21/92	16:12	156.59	0.2
WB2-3	04/21/92	12:37	152.72	0
WB2-4	04/21/92	11:58	166.75	1.2

* Drager tubes were also used to test the environment at wells AMW-1P, AMW-2P, AMW-3R, EPAS-4, WA-3, and WA-6. The tubes used were methyl bromide 5/B for 1,2-Dichloropropane. All results were negative.

APPENDIX A

REQUEST FOR ANALYSIS TABLE 5.1
FROM THE SAMPLING PLAN

5.0 REQUEST FOR ANALYSIS

For the April 1992 quarterly groundwater sampling, thirty-three (33) water samples will be collected, including three (3) duplicates and six (6) blanks. All sampling will be completed in two weeks, April 13-24, 1991. The anticipated sampling schedule is included in Appendix E. Please reserve space for the following analyses with the Region 9 Lab/CLP.

28 low waters for SAS EDB/DBCP
SAS dinoseb
RAS metals
SAS anions (Cl, SO₄, NO₃/NO₂)
SAS alkalinity (carbonate, bicarbonate, total)
SAS TDS

14 low waters for R+S VOAs (low CRQLs)

14 low waters for R+S VOAs (regular CRQLs)

2 low waters for SAS carbamate/urea pesticides plus aldicarb

5 medium waters for R+S VOAs (regular CRQLs)
SAS EDB/DBCP
SAS dinoseb
SAS carbamate/urea pesticides plus aldicarb
RAS metals
SAS anions (Cl, SO₄, NO₃/NO₂)
SAS alkalinity (carbonate, bicarbonate, total)
SAS TDS

Please note that the samples designated medium do not contain medium concentrations of all the above parameters. Only the volatiles, EDB/DBCP, and dinoseb levels are likely to be elevated in the medium samples. The other parameters marked as medium are likely to be low concentration and the labs should not treat the samples in any way that would unnecessarily elevate the quantitation limits. The samples for these parameters will be marked "medium" for safety reasons only.

All volatile analyses are RAS+SAS due to the addition of 1,3-Dichloropropane and 1,2,3-Trichloropropane to the TCL.

The SAS EDB/DBCP is to be first analyzed using the RAS volatile analysis. Any sample not detected or detected at less than 20 ppb using the RAS method must be analyzed using Method 504.

The SAS requirements/Client Request Forms are included in Appendix A.

The analytical and quality control requirements for field measurements (pH, conductivity, turbidity, and water levels) are included in Appendix B.

TABLE 5.1 REQUEST FOR ANALYSIS OF WATERS (pg 1 of 5)

QUALITY CONTROL SAMPLES

CLP ANALYSES REQUESTED	RAS+SAS VOA's low CRQLs	RAS + SAS VOA's reg. CRQLs	SAS EDB & DBCP	SAS DINOSEB	SAS CARBAMATES + aldicarb	RAS METALS (total)	SAS Cl, NO2/NO3 ALK, SO4, TDS	
PRESERVATIVES	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Chill to 4 C	Chill to 4 C	add HNO3 to pH <2	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months (26 days for Hg)	Hold <7 days (<28 days for TDS & ALK)	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months (26 days for Hg)	Hold <5 days (<25 days for TDS & ALK)	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS				
SAMPLE LOCATION	CONCENTRATION LOW MED	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	1 x 500 ml poly bottle (1/2)*
AP-11 (blank)	X	3	2	2	2	1	1	
AP-12 (blank)	X	3	2	2	2	1	1	
AP-13 (blank)	X	3	2	2	2	1	1	
AP-14 (blank)	X	3	2	2	2	1	1	
AP-15 (blank)	X	3	2	2	2	1	1	
AP-16 (blank)	X	3	2	2	2	1	1	
AP-21 DUP OF WA-7	X	2	2	2	2	1	1	
AP-22 DUP OF EPAS-2	X	2	2	2	2	1	1	

* Minimum bottle requirements for low volumes. See also Section 6.4.

TABLE 5.1 REQUEST FOR ANALYSIS OF WATERS (pg 2 of 5)

B ZONE WELLS

CLP	RAS+SAS	RAS + SAS	SAS	SAS	SAS	RAS	SAS	
ANALYSES REQUESTED	VOA's Low CRQLs	VOA's reg. CRQLs	EDB & DBCP	DINOSEB	CARBAMATES + aldicarb	METALS (total)	Cl, NO2/NO3 ALK, SO4, TDS	
PRESERVATIVES	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Chill to 4 C	Chill to 4 C	add HNO3 to pH <2	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days (<28 days for TDS & ALK)	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days (<25 days for TDS & ALK)	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	
SAMPLE LOCATION	CONCEN- TRATION LOW MED	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	1 x 500 ml poly bottle (1/2)*
CW-1	X	3	2	2		1	1	
AR-1	X	6 (VOA lab QC)	2	2		1	1	
AMW-3R	X	3	2	2		1	1	
AMW-4R	X	3	2	2		1	1	
WB2-1	X	3	2	2		1	1	
WB2-2	X	3	2	2		1	1	
WB2-3	X	3	2	2		1	1	
WB2-4	X	3	2	2		1	1	

* Minimum bottle requirements for low volumes. See also Section 6.4.

TABLE 5.1 REQUEST FOR ANALYSIS OF WATERS (pg 3 of 5)

A ZONE WELLS

CLP	RAS+SAS		RAS + SAS		SAS		SAS		SAS		RAS		SAS	
ANALYSES REQUESTED	VOA's		VOA's		EDB & DBCP		DINOSEB		CARBAMATES		METALS		Cl, NO2/NO3	
	low CRQLs		reg. CRQLs						+ aldicarb		(total)		ALK, SO4, TDS	
PRESERVATIVES	Add 2 drops 1:1 HCl		Add 2 drops 1:1 HCl		Add 2 drops 1:1 HCl		Chill to 4 C		Chill to 4 C		add HNO3 to pH <2		Chill to 4 C	
	Chill to 4 C		Chill to 4 C		Chill to 4 C									
ANALYTICAL HOLDING TIME (s)	Hold <14 days		Hold <14 days		Hold <14 days		Hold <7 days prior to extraction, 40 days after extraction		Hold <7 days prior to extraction, 40 days after extraction		Hold to <6 months [26 days for Hg]		Hold <7 days (<28 days for TDS & ALK)	
CONTRACT HOLDING TIME (s)	Hold <10 days		Hold <10 days		Hold <10 days		Hold <5 days prior to extraction, 40 days after extraction		Hold <5 days prior to extraction, 40 days after extraction		Hold to <6 months [26 days for Hg]		Hold <5 days (<25 days for TDS & ALK)	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS		NO. OF BOTTLES PER ANALYSIS		NO. OF BOTTLES PER ANALYSIS		NO. OF BOTTLES PER ANALYSIS		NO. OF BOTTLES PER ANALYSIS		NO. OF BOTTLES PER ANALYSIS		NO. OF BOTTLES PER ANALYSIS	
SAMPLE LOCATION	CONCEN- TRATION	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	1 x 500 ml poly bottle (1/2)*						
AP-1	X		2	2	2		1	1						
AP-2	X		2	2	2		1	1						
AP-3	X		2	2	2		1	1						
AP-4 LAB QC	X		4	4	4		2	2						
WA-8	X		2	2	2		1	1						
WA-1	X		2	2	2	2	1	1						
WA-2	X		2	2	2		1	1						
WA-3 dup location	X		2	2	2		1	1						
WA-7 LAB QC	X		4	4	4	4	2	2						

* Minimum bottle requirements for low volumes. See also Section 6.4.

TABLE 5.1 REQUEST FOR ANALYSIS OF WATERS (pg 5 of 5)

A ZONE WELLS - MEDIUM LEVEL

CLP	RAS+SAS	RAS + SAS	SAS	SAS	SAS	RAS	SAS	
ANALYSES REQUESTED	VOA's	VOA's	EDB & DBCP	DINOSEB	CARBAMATES	METALS	Cl, NO2/NO3	
	low CRQLs	reg. CRQLs			+ aldicarb	(total)	ALK,SO4,TDS	
PRESERVATIVES	Add 2 drops 1:1 HCl **	Add 2 drops 1:1 HCl **	Add 2 drops 1:1 HCl **	Chill to 4 C **	Chill to 4 C **	add HNO3 to pH <2	Chill to 4 C **	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days (<28 days for TDS & ALK)	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days (<25 days for TDS & ALK)	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	
SAMPLE LOCATION	CONCEN- TRATION LOW MED	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amb.widemouth glass bottle (1)*	2 x 1 liter amb.widemouth glass bottle (1)*	1 x 500 ml poly bottle (1/2)*	1 x 500 ml poly bottle (1/2)*
AP-23	X		2	2	2	2	1	1
DUP OF AMW-2P			MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL
EPAS-3	X		2	2	2	2	1	1
			MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL
AMW-1P	X		2	2	2	2	1	1
			MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL
AMW-2P dup location	X		2	2	2	2	1	1
			MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL
WA-6	X		2	2	2	2	1	1
			MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL

** Medium level samples will be chilled before shipping, but will be shipped without ice.

* Minimum bottle requirements for low volumes. See also Section 6.4.

FIELD SAMPLING REPORT

**QUARTERLY GROUNDWATER MONITORING
JULY, 1992**

**BROWN & BRYANT SUPERFUND SITE
Arvin, CA**

Prepared by:

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Quality Assurance Management Section
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October, 1992

INTRODUCTION

Quarterly groundwater samples were collected at the Brown & Bryant Superfund Site in Arvin, California on July 27 - 30, 1992. The sampling event was conducted by the U.S. EPA, Region 9, Environmental Services Branch in support of the Brown & Bryant in-house RI/FS. This was the sixth quarterly groundwater monitoring event at the Brown & Bryant Site.

The objective, sampling procedures, and analytical methods used for this investigation are described in the document Field Sampling Plan for Quarterly Groundwater Monitoring, Brown & Bryant Site, Arvin CA, REVISED: March, 1992 and in an amendment to the plan dated 7/13/92 (see Appendix A). This report summarizes the procedures that were followed and any deviations from the sampling plan.

METHODS AND SCOPE OF WORK

WATER LEVEL MEASUREMENTS

Water level measurements for each well were taken July 27, 1992. (See Table 3.0.) For consistency, the wells were sounded by the same person and all measurements were taken in the smallest time frame possible. The measurements represent the distance from the top of the water column in the well to the mark at the top of the well casing. For wells with dedicated pumps, the water level is measured to the side of the sounding port nearest the center of the well cap. For other wells, if no mark or notch is apparent at the top of the casing, the measurement is taken at the north side of the top of the inner casing.

GROUNDWATER SAMPLES

The samplers collected 26 groundwater samples, including 4 blanks and 3 duplicates. All of the recently installed wells (WA-1 to WA-9 and WB2-1 to WB2-4) were sampled. The pre-existing B zone wells (AMW-3R, AMW-4R, and AR-1) were also sampled. Additionally, samples were collected from AMW-1P and AMW-2P for limited analyses (see Appendix A for Request for Analysis Table). A total of 18 site wells plus one municipal well were sampled. (See Figure 1 for a map of the site with well locations. See Table 1 for a list of the wells sampled and the associated log and sample numbers.) Samples were collected for the following analyses: RAS+SAS Volatiles (routine detection limits, with 1,2-DCP and 1,2,3-TCP) or RAS+SAS Volatiles (low detection limits, with 1,2-DCP and 1,2,3-TCP), SAS EDB & DBCP, SAS Dinoseb, RAS metals (total), SAS anions, SAS alkalinity, and SAS TDS. (See Appendix A for Request for Analysis Table.)

Groundwater samples were collected from site wells using either decontaminated bailers, the decontaminated piston pump, or dedicated electric submersible pumps (Grundfos Redi-flo2 pumps). Wells were sounded to determine the volume of standing water in the well casing. A minimum of three times this casing volume was purged from the well prior to sample collection to ensure that only fresh formation water would be sampled. Additionally, pH, electrical conductivity, and temperature of the water were monitored after each collected casing volume. Stabilization of these parameters during purging was also used as an indicator of fresh formation water. (See Table 2 for information about each well, such as water level, pH, conductivity, temperature, turbidity, sampling method, and comments.)

The samples were collected at flow rates appropriate to each parameter. The samples were preserved and packaged according to the procedures discussed in the sample plan. All documentation was completed and shipped with the samples. Samples were shipped to the respective laboratories via Federal Express overnight service.

LABORATORY INFORMATION

The laboratories for this sampling event were the U.S. EPA Region 9 Laboratory and participants in EPA's Contract Laboratory Program (CLP). The Case and SAS numbers associated with this investigation are LV2S62 and 7432Y. The samples collected for volatiles, EDB/DBCP, Metals, Anions, Alkalinity, and TDS were shipped to the U.S. EPA Region 9 Lab in Las Vegas, NV under Case Number LV2S62. Dinoseb samples were analyzed at TCT - St. Louis under SAS Number 7432Y.

DEVIATIONS FROM THE SAMPLING PLAN

All sampling activities were consistent with procedures outlined in the sampling plan and amendment with the following exceptions.

- Blank sample, AP-15, was not required because sampling was completed one day earlier than anticipated.
- Samples for volatile analyses (including EDB/DBCP) from wells with submersible pumps were collected last in the sequence of parameters. This was done because water collected immediately after decreasing flow rate is water that was in the tubing during the time that the pump was running at higher flow rates. Samples taken after several minutes of sampling at low flow rates are actually drawn into the pumping system at low flow rates. Volatiles were the last parameter collected at the following wells: AMW-3R, AMW-4R, AR-1, WA-1, WA-2, WA-5, WA-9, WB2-1, WB2-2, WB2-3, and

WB2-4. The volatile samples at WA-6 were collected first because the purge rate was so slow that it was not decreased for sample collection.

Volatile samples collected using bailers were still taken prior to any other parameters.

- Two Lab Quality Control sample locations were added. A Lab QC sample was collected for medium level samples at WA-6. WB2-1 was designated as a Lab QC sample to ensure that a sufficient number of QC samples were collected.
- The duplicate for dinoseb, AP-26, was collected at AMW-2P instead of WA-6. This was done to reduce the total volume of sample needed at WA-6.
- Kennedy/Jenks Consultants provided bailers to dedicate to wells WA-3, WA-4, WA-7, and WA-8.

SUMMARY

In July 1992, the following samples were collected at Brown & Bryant Superfund Site in Arvin, California:

- 10 Groundwater Samples for RAS+SAS Volatiles (routine detection limits), SAS EDB & DBCP, SAS Dinoseb, RAS metals, SAS anions, SAS alkalinity, and SAS TDS.
- 13 Groundwater Samples for RAS+SAS Volatiles (low detection limits), SAS EDB & DBCP, SAS Dinoseb, RAS metals, SAS anions, SAS alkalinity, and SAS TDS.
- 2 Groundwater Samples for RAS+SAS Volatiles (routine detection limits), SAS EDB & DBCP, and SAS Dinoseb.
- 1 Groundwater Sample for SAS Dinoseb.

All of the procedures outlined in the REVISED Field Sampling Plan for Quarterly Groundwater Monitoring, Brown & Bryant Site, Arvin CA and amendment were followed with the minor exceptions described in this report.

No unusual circumstances or insurmountable difficulties occurred during the sampling event.

BROWN & BRYANT WELL LOCATIONS

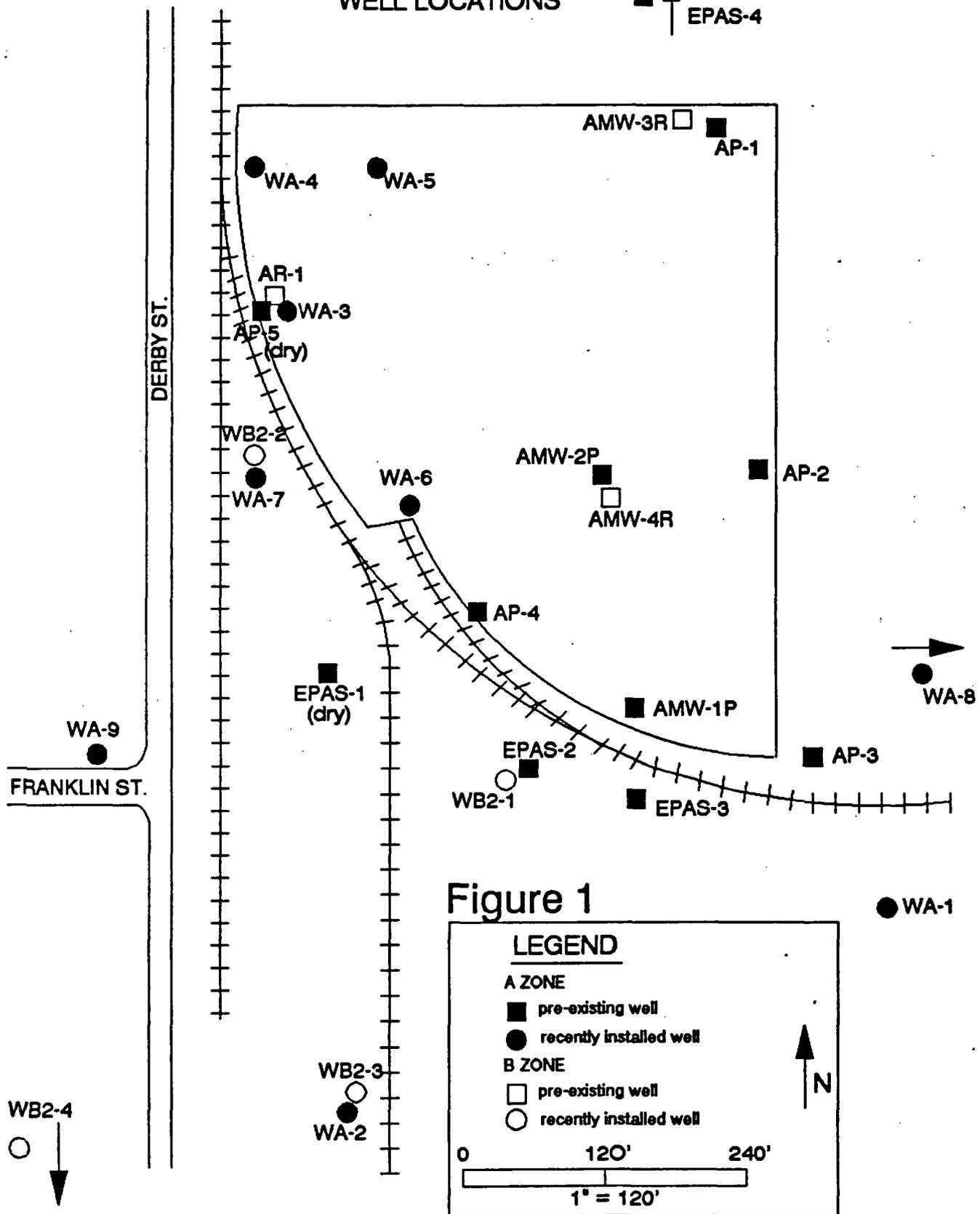


Figure 1

LEGEND

A ZONE

- pre-existing well
- recently installed well

B ZONE

- pre-existing well
- recently installed well

0 120' 240'

1" = 120'

N

BROWN & BRYANT JULY 1992 GROUNDWATER SAMPLES
DATA MANAGEMENT SAMPLE ID NUMBERS

<u>LOCATION NUMBER</u>	<u>WELL CODE</u>	<u>JUL 92 SAMPLE LOG NUMBERS</u>	<u>RAS IN SAMPLE #</u>	<u>REG 9 SAS SAMPLE #</u>	<u>DINOSEB SAS SAMPLE #</u>
A ZONE (PERCHED ZONE)					
AMW-1P	MW01	MW01D001E08A	--	SY0978	SY1378
AMW-2P	MW02	MW02D001E08A	--	SY0979	SY1379
AP-01	MW11	NOT SAMPLED			
AP-02	MW12	NOT SAMPLED			
AP-03	MW13	NOT SAMPLED			
AP-04	MW14	NOT SAMPLED			
AP-05	MW15	DRY			
EPAS-01	MW21	DRY			
EPAS-02	MW22	NOT SAMPLED			
EPAS-03	MW23	NOT SAMPLED			
EPAS-04	MW24	NOT SAMPLED			
WA-1	MW41	MW41D001E08L	MYJ462	SY0962	SY1362
WA-2	MW42	MW42D001E08A	MYJ463	SY0963	SY1363
WA-3	MW43	MW43D001E08A	MYJ464	SY0964	SY1364
WA-4	MW44	MW44D001E08A	MYJ465	SY0965	SY1365
WA-5	MW45	MW45D001E08A	MYJ466	SY0966	SY1366
WA-6	MW46	MW46D001E08L	MYJ480	SY0980	SY1380
WA-7	MW47	MW47D001E08A	MYJ467	SY0967	S71367
WA-8	MW48	MW48D001E08A	MYJ468	SY0968	SY1368
WA-9	MW49	MW49D001E08A	MYJ469	SY0969	SY1369
B ZONE (REGIONAL UNCONFINED)					
AR-01	MW31	MW31D002E08A	MYJ475	SY0975	SY1375
AMW-3R	MW33	MW33D002E08A	MYJ477	SY0977	SY1377
AMW-4R	MW34	MW34D002E08A	MYJ476	SY0976	SY1376
WB2-1	MW51	MW51D002E08L	MYJ470	SY0970	SY1370
WB2-2	MW52	MW52D002E08L	MYJ471	SY0971	SY1371
WB2-3	MW53	MW53D002E08A	MYJ472	SY0972	SY1372
WB2-4	MW54	MW54D002E08A	MYJ473	SY0973	SY1373
MUNICIPAL WELLS					
CW-01	DW01	DW01D003E08A	MYJ474	SY0974	SY1374
CW-05	DW05	NOT SAMPLED			

**BROWN & BRYANT JULY 1992 GROUNDWATER SAMPLES
DATA MANAGEMENT SAMPLE ID NUMBERS**

<u>LOCATION NUMBER</u>	<u>WELL CODE</u>	<u>JUL 92 SAMPLE LOG NUMBERS</u>	<u>RAS IN SAMPLE #</u>	<u>SAS SAMPLE #</u>	<u>DINOSEB SAMPLE #</u>
QUALITY CONTROL SAMPLES					
AP-11	MW91	MW91D000E08E	MYJ455	SY0955	SY1355
AP-12	MW92	MW92D000E08E	MYJ456	SY0956	SY1356
AP-13	MW93	MW93D000E08F	MYJ457	SY0957	SY1357
AP-14	MW94	MW94D000E08E	MYJ458	SY0958	SY1358
AP-25	MW47	MW47D001E08R	MYJ460	SY0960	SY1360
AP-26	MW02	MW02D001E08R	--	--	SY1381
AP-27	MW51	MW51D002E08R	MYJ461	SY0961	SY1361

NOTE: CASE # LV2S62 (VOAs, EDB/DBCP, ANIONS, ALKALINITY, TDS, METALS)
REGION 9 LAB - LAS VEGAS

SAS # 7432Y-01 (DINOSEB)
TCT - St. Louis

Brown & Bryant July 1992 Sampling Event
 Table 2.0: Groundwater Sampling Information

SAMPLE LOCATION	DATE	TIME	WATER LEVEL (FT)	pH	CONDUCTIVITY (umhos/cm)	TURBIDITY (ntu)	TEMP (oC)	DO (mg/l)	METHOD OF COLLECTION	HNu (mu)
AMW-1P	07/28/92	10:07	68.90	6.37	8920	-	22.7	-	BAILER	0.5
AMW-2P	07/30/92	09:20	70.15	7.54	4310	35.0	23.2	-	BAILER	0.4
AMW-3R	07/27/92	18:08	155.50	7.28	919	0.43	24.7	12	PISTON PUMP	BG
AMW-4R	07/28/92	16:30	155.30	7.82	982	0.41	24.9	-	PISTON PUMP	BG
AR-1	07/28/92	11:16	157.10	7.56	1314	0.46	24.6	-	PISTON PUMP	BG
CW-1	07/29/92	11:37	-	8.41	346	2.41	26.2	-	TAP	-
WA-1	07/29/92	12:12	67.84	7.25	1274	5.40	23.0	-	ELECTRIC PUMP	BG
WA-2	07/29/92	14:50	69.55	7.55	1260	1.85	25.4	-	ELECTRIC PUMP	BG
WA-3	07/28/92	10:40	74.22	7.63	1990	12.25	23.9	-	BAILER	-
WA-4	07/29/92	17:48	73.35	7.75	1240	104.1	25.1	-	BAILER	BG
WA-5	07/27/92	17:35	72.60	7.57	1072	4.6	30.9	-	ELECTRIC PUMP	1.6
WA-6	07/29/92	10:15	72.33	6.66	4910	0.54	28.9	-	ELECTRIC PUMP	2.5
WA-7	07/29/92	10:47	73.52	7.34	2820	35.6	24.6	-	BAILER	BG
WA-8	07/30/92	10:17	71.00	7.46	1733	9.30	22.3	-	BAILER	BG
WA-9	07/29/92	17:43	69.66	7.33	2160	13.65	28.1	-	ELECTRIC PUMP	0
WB2-1	07/30/92	09:32	154.58	7.52	1410	1.30	-	-	ELECTRIC PUMP	2.4
WB2-2	07/28/92	15:49	156.88	9.54	1211	23.6	24.8	-	ELECTRIC PUMP	6.0
WB2-3	07/28/92	17:16	152.98	7.44	1061	3.35	24.4	-	ELECTRIC PUMP	6.5
WB2-4	07/28/92	18:28	167.12	7.99	849	2.68	25.9	-	ELECTRIC PUMP	2.5
AP-11	07/27/92	14:22							PISTON PUMP	
AP-12	07/28/92	08:15							BAILER	
AP-13	07/29/92	14:23							FIELD	
AP-14	07/30/92	07:30							BAILER	

Brown & Bryant July 1992 Sampling Event
 Table 2.0: Groundwater Sampling Information

SAMPLE LOCATION	COMMENTS
AMW-1P	
AMW-2P	Sample collected for dinoseb, volatiles only. Duplicate location for dinoseb. Lock needs replacement.
AMW-3R	
AMW-4R	
AR-1	
CW-1	
WA-1	Lab QC sample for Volatiles. Purged at 200 Hz = 1.5 gallons/minute. Sampled at 182.9 Hz.
WA-2	Purged at 190 Hz.
WA-3	
WA-4	
WA-5	Purged at 190 Hz. Sampled at 189 and 188 Hz.
WA-6	Purged at 190 to 200 Hz. Sampled at 190 Hz.
WA-7	Duplicate Location
WA-8	
WA-9	Purged at 188 to 192 Hz.
WB2-1	Duplicate Location. Purged at 350 Hz = 2.5 gallons/minute. Sampled at 280 Hz.
WB2-2	Purged at 350 Hz. Sampled at 285 Hz.
WB2-3	Purged at 350 Hz. Sampled at 270 Hz and 267.3 Hz (VOAs).
WB2-4	Purged at 330 Hz. Sampled at 300 Hz and 296.0 Hz (VOAs).
AP-11	Piston Pump Blank
AP-12	Bailer Blank
AP-13	Field Blank poured at WA-4.
AP-14	Bailer Blank

Brown & Bryant July 1992 Sampling Event
Table 3.0: Initial Water Level Measurements

WELL	DATE	TIME	WATER LEVEL (feet below surface)	HNu (mu)
AMW-1P	07/27/92	12:03	68.88	1.2
AMW-2P	07/27/92	11:50	70.14	42
AMW-3R	07/27/92	11:14	155.50	-
AMW-4R	07/27/92	11:39	155.38	BG
AP-1	07/27/92	11:10	69.43	-
AP-2	07/27/92	11:28	68.84	-
AP-3	07/27/92	15:30	69.01	BG
AP-4	07/27/92	12:10	69.01	BG
AP-5	07/27/92	10:58	dry	-
AR-1	07/27/92	10:52	157.06	-
EPAS-1	07/27/92	16:00	dry	-
EPAS-2	07/27/92	14:51	71.71	BG
EPAS-3	07/27/92	15:39	71.77	BG
EPAS-4	07/27/92	16:54	71.64	BG
WA-1	07/27/92	15:05	66.55	-
WA-2	07/27/92	16:21	69.52	BG
WA-3	07/27/92	10:45	74.22	-
WA-4	07/27/92	10:25	75.39	-
WA-5	07/27/92	10:33	72.60	-
WA-6	07/27/92	12:19	72.32	3.9
WA-7	07/27/92	14:20	73.46	BG
WA-8	07/27/92	15:47	70.88	BG
WA-9	07/27/92	16:46	69.55	BG
WB2-1	07/27/92	14:45	154.52	4.9
WB2-2	07/27/92	14:30	156.91	3.2
WB2-3	07/27/92	16:14	153.02	4.0
WB2-4	07/27/92	16:33	167.15	BG

[Background (BG) = 2.1 mu]

APPENDIX A

Revised AMENDMENT TO THE FIELD SAMPLING PLAN
July 13, 1992

AMENDMENT TO THE FIELD SAMPLING PLAN
July 2, 1992

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

JUL 13 1992

MEMORANDUM

SUBJECT: Revised Amendment to the FSP for
Quarterly Groundwater Monitoring,
Brown & Bryant Site, Arvin, CA, March, 1992 Revision.

FROM: Tina Diebold, Chemist *Tina Diebold*
Quality Assurance Management Section (P-3-2)

TO: Cynthia Wetmore, RPM
Northern California Section (H-6-2)

Revisions have been made to the July 2, 1992 Amendment to the Field Sampling Plan for Quarterly Monitoring, Brown & Bryant Site (March 1992 Revision), which describes the procedures to be followed during the July 27-31, 1992 round of groundwater monitoring at Brown & Bryant. These revisions, which are presented in the following pages, were made to address the reviewer's comments, and also as a result of data recently received from the April, 1992 round of sampling.

Please call me at 744-1528 if you have any questions or require further revisions.

Attachments: Revised Request for Analysis Table (Table 2)
Revised SAS Requests (7/13/92)

cc: Tom Huetteman, Northern California Section (H-6-2)
Robbie Hedeem, Quality Assurance Management Section (P-3-2)

REVISIONS

A. SAMPLE LOCATIONS

While collection of groundwater samples at Brown & Bryant will take place on a semiannual basis in the future, it should be noted that monitoring well water level measurements will still be taken quarterly.

B. ANALYSES

The analytical holding time for SAS Nitrate-N and Nitrite-N is 7 days for the Brown & Bryant groundwater samples, rather than the 48 hours specified by the analytical method (300.0). Information on the exact distribution of nitrate/nitrite species is not needed for the Brown & Bryant RI/FS. The parameters Nitrate-N and Nitrite-N are requested rather than total Nitrate-Nitrite, because the total measurement would require the use of an additional method. The use of one method, Method 300.0, allows for the determination of sulfate and chloride, while providing sufficient information on nitrate and nitrite. The contract holding time for Nitrite-N and Nitrate-N is 5 days.

In response to comments from the RSCC, the minimum sample volume for the anions, alkalinity, and total dissolved solids bottle has been increased to 375 ml from 250 ml.

Recent data indicates a need for modifications to some SAS requests. The SAS Requests previously issued for EDB/DBCP have required that all VOC samples be analyzed first by GC/MS (RAS TCL VOCs plus EDB and DBCP). Then, all the VOC samples with concentrations of EDB and/or DBCP determined to be less than 20 ug/l by GC/MS were required to be analyzed by the GC method 504. Data from the April, 1992 sampling event appears to indicate that these requirements were not met for all samples. To ensure adequate quantitation limits for EDB and DBCP in this round of sampling, the EDB/DBCP SAS Request will be modified to require that all samples except for those collected from the three medium wells be analyzed by SAS Method 504, in addition to the GC/MS method. That is, all VOC samples will be required to be analyzed by the RAS + SAS TCL VOC method (GC/MS), and all VOC samples, except those collected from wells AMW-1P, AMW-2P, and WA-6, must also be analyzed by SAS Method 504.

Changes in QC sample designations and SAS Requests have resulted in a minor redistribution of the number of medium and low level samples. The Request for Analysis Table (Table 2) and the SAS requests have been modified accordingly and are attached. A revised summary of the analyses requested is presented below:

No. of SamplesAnalyses

14	(14 low)	RAS+SAS VOCs (low CRQLs)
12	(9 low, 3 medium)	RAS+SAS VOCs (reg. CLP CRQLs)
26	(23 low, 3 med.)	EDB & DBCP by RAS+SAS VOCs
23	(23 low)	EDB & DBCP by SAS Method 504
27	(24 low, 3 med.)	SAS Dinoseb (8150)
24	(23 low, 1 med.)	RAS Total Metals
24	(23 low, 1 med.)	SAS Anions (Cl, NO ₂ /NO ₃ , SO ₄) and Alkalinity and TDS

C. DATA QUALITY

Recently received data from the last round of sampling at Brown & Bryant (April, 1992) has prompted a reconsideration of the designated QC wells. ESB samplers now plan to collect a field duplicate from deep well WB2-1 instead of from perched well WA-6. Data reported from the April, 1992 round of sampling - the first EPA sampling of that well - indicated 1700 ug/l of 1,2-dichloropropane and 30 ug/l of DBCP. The collection and analysis of a duplicate sample from the well should provide greater confidence in the reported level of any contaminants, which is more critical for the deep wells. Samplers will still collect a field duplicate for dinoseb only from WA-6.

Data reported for the new well WA-1 showed that samples from WA-1 would only be suitable as LAB QC for the RAS + SAS VOCs (regular CRQLs) only. The LAB QC for the other parameters will now be well WB2-2.

E. HEALTH & SAFETY

The amended Health & Safety Plan for July, 1992 groundwater monitoring at Brown & Bryant is under review and will be submitted as soon as it is approved.

TABLE 2 REQUEST FOR ANALYSIS OF WATERS (pg 1 of 4)

QUALITY CONTROL SAMPLES

CLP	RAS+SAS	RAS + SAS	SAS	SAS	RAS	SAS
ANALYSES REQUESTED	VOA's	VOA's	EDB & DBCP	DINOSEB	METALS	Cl, NO2/NO3
	[low CRQLs	[reg. CRQLs		8150	(total)	ALK, SO4, TDS
PRESERVATIVES	Add 2 drops 1:1 HCl	Add 2 drops 1:1 HCl	Add 2 drops 1:1 HCl	Chill to 4 C	add HNO3 to pH <2	Chill to 4 C
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days for NO2/NO3 Hold <28 days for Cl, SO4 Hold <7 days for TDS. Hold <14 days for ALK.
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days for NO2/NO3 Hold <25 days for Cl, SO4 Hold <5 days for TDS. Hold <12 days for ALK.
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS			
CONCENTRATION	3 x 40 ml glass vial	2 x 40 ml glass vial	2 x 40 ml glass vial	2 x 1 liter amber glass bottle	1 x 1 liter poly bottle	1 x 500 ml poly bottle
LOW	(3)*	(2)*	(2)*	(1)*	(1/2)*	(3/4)*
AP-11 (blank)	X	3	2	2	1	1
AP-12 (blank)	X	3	2	2	1	1
AP-13 (blank)	X	3	2	2	1	1
AP-14 (blank)	X	3	2	2	1	1
AP-15 (blank)	X	3	2	2	1	1
AP-25 [dup. of WA-7	X	2	2	2	1	1
AP-26 [dup. of WA-6 for dinoseb only	X			2 MEDIUM LEVEL		
AP-27 [dup. of WB2-1	X	3	2	2	1	1

* Minimum bottle requirements for low volumes.

TABLE 2 REQUEST FOR ANALYSIS OF WATERS (pg 2 of 4)

NEW A ZONE WELLS

CLP ANALYSES REQUESTED	RAS+SAS VOA's low CRQLs	RAS + SAS VOA's reg. CRQLs	SAS EDB & DBCP	SAS DINOSEB 8150	RAS METALS (total)	SAS Cl, NO2/NO3 ALK, SO4, TDS	
PRESERVATIVES	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Chill to 4 C	add HNO3 to pH <2	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days for NO2/NO3 Hold <28 days for Cl, SO4 Hold <7 days for TDS. Hold <14 days for ALK.	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days for NO2/NO3 Hold <25 days for Cl, SO4 Hold <5 days for TDS. Hold <12 days for ALK.	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	
SAMPLE LOCATION	CONCEN- TRATION LOW MED	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	1 x 500 ml poly bottle (3/4)*
WA-1 LAB QC for reg. CRQL VOAs only	X		4	2	2	1	1
WA-2	X		2	2	2	1	1
WA-3	X		2	2	2	1	1
WA-4	X		2	2	2	1	1
WA-5	X		2	2	2	1	1
WA-7 dup. location	X		2	2	2	1	1
WA-8	X		2	2	2	1	1
WA-9	X		2	2	2	1	1

* Minimum bottle requirements for low volumes.

TABLE 2 REQUEST FOR ANALYSIS OF WATERS (pg 3 of 4)

B ZONE WELLS

CLP	RAS+SAS	RAS + SAS	SAS	SAS	RAS	SAS	
ANALYSES REQUESTED	VOA's	VOA's	EDB & DBCP	DINOSEB	METALS	Cl, NO2/NO3	
	low CRQLs	reg. CRQLs		8150	(total)	ALK, SO4, TDS	
PRESERVATIVES	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Chill to 4 C	add HNO3 to pH <2	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days for NO2/NO3 Hold <28 days for Cl, SO4 Hold <7 days for TDS. Hold <14 days for ALK.	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days for NO2/NO3 Hold <25 days for Cl, SO4 Hold <5 days for TDS. Hold <12 days for ALK.	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	
SAMPLE LOCATION	CONCEN- TRATION LOW MED	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	1 x 500 ml poly bottle (3/4)*
WB2-1 dup. location	X	3		2	2	1	1
WB2-2 LAB QC	X	6		4	4	2	2
WB2-3	X	3		2	2	1	1
WB2-4	X	3		2	2	1	1
CITY WELL 1	X	3		2	2	1	1
AR-1	X	3		2	2	1	1
AMW-4R	X	3		2	2	1	1
AMW-3R	X	3		2	2	1	1

* Minimum bottle requirements for low volumes.

TABLE 2 REQUEST FOR ANALYSIS OF WATERS (pg 4 of 4)

MEDIUM A ZONE WELLS - MEDIUM LEVEL

CLP	RAS+SAS	RAS + SAS	SAS	SAS	RAS	SAS
ANALYSES REQUESTED	VOA's low CRQLs	VOA's reg. CRQLs	EDB & DBCP	DINOSEB 8150	METALS (total)	Cl, NO2/NO3 ALK, SO4, TDS
PRESERVATIVES	Add 2 drops 1:1 HCl ** Chill to 4 C	Add 2 drops 1:1 HCl ** Chill to 4 C	Add 2 drops 1:1 HCl ** Chill to 4 C	Chill to 4 C **	add HNO3 to pH <2	Chill to 4 C **
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, [40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days for NO2/NO3 Hold <28 days for Cl, SO4 Hold <7 days for TDS. Hold <14 days for ALK.
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, [40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days for NO2/NO3 Hold <25 days for Cl, SO4 Hold <5 days for TDS. Hold <12 days for ALK.
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS
SAMPLE LOCATION	CONCEN- TRATION LOW MED 3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amb.widemouth glass bottle (2)*	1 x 500 ml poly bottle (1/2)*	1 x 500 ml poly bottle (3/4)*
AMW-1P	X	2	2	2		
		MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL		
AMW-2P	X	2	2	2		
		MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL		
WA-6	X	2	2	2	1	1
		MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL
AP-26				2		
dup. of WA-6 for dinoseb only (see pg. 1 of 4)				MEDIUM		

* Minimum bottle requirements for low volumes.

160 Spear Street, Suite 1380
San Francisco, California
94105-1535

415/957-0110



ICF TECHNOLOGY INCORPORATED

MEMORANDUM

TO: Cynthia Wetmore, Remedial Project Manager
Remedial Action Branch, Northern California Section (H-6-2)

THROUGH: *for* Kent Kitchingman, Chief *by* *JKF*
Quality Assurance Management Section (P-3-2)

FROM: Gerald P. Manuell, ^{*2pm*} Investigation Coordinator
Environmental Services Assistance Team

DATE: July 15, 1992

SUBJECT: Revisions to the July 1992 Brown and Bryant Field Sampling Plan,
prepared by EPA Quality Assurance Management Section (EPA Document
Control Number: W4CA01SHJF2)

The revised Special Analytical Services (SAS) requests for analyses included with the July 1992 revision to the Brown and Bryant Field Sampling Plan (FSP) have been reviewed and are recommended for approval. It should be understood that by expanding the contract holding time for the Nitrite/Nitrate analysis from 24 hours to 5 days, much of the nitrite anion may essentially oxidize to the nitrate anion. The analytical data for this analyses will be qualified and therefore may not be useable for all purposes.

Questions or comments may be referred to me at (415) 882-3068. The document will be retained in the ESAT files until requested.

cc.: Hedy Ficklin, EPA QAMS Task Monitor (P-3-2)

ICF KAISER ENGINEERS

ICF KAISER ENGINEERS INC.
160 B FEAR STREET, SUITE 1380
SAN FRANCISCO, CA 94108-1332
415/837-0110

MEMORANDUM

TO: Pat Mack, USEPA Region IX

FROM: Clyde Hedin, ICF/ESAT **CHH**

DATE: July 16, 1992

SUBJECT: Determination of EDB/DBCP in Brown & Bryant Samples

We are routinely asked to analyze water samples from the Brown and Bryant site for ethyl dibromide (EDB) and 1,2-dibromochloropropane (DBCP). The requests typically call for analysis by purge and trap GC/MS, followed by GC/ECD by Method 504 if the levels of either of these analytes are below specified threshold concentrations. In order to provide the Region with the most reliable and useful data possible, we are proposing that the following specifications be applied to the analyses:

Purge and trap GC/MS analysis for EDB/DBCP will initially be performed. If the sample concentration of either EDB or DBCP equal or exceed 2.0 ug/L, analysis by Method 504 will not be required. The GC/MS results will be reported for those samples exceeding 2 ug/L of either analyte, and GC/ECD results will be reported for the remaining samples.

We are proposing these changes for the following reasons:

BETTER RESULTS - The purge and trap GC/MS method is more accurate and precise, especially for samples with EDB/DBCP concentrations above 2 ug/L. GC/MS instruments are more stable than ECD detectors, and less influenced by sample contamination. Method 504 also utilizes solvent extraction, where analyte recoveries are often affected by matrix interferences.

LESS INTERFERENCE - GC/MS is mass selective, and is not affected by peak coelution in complex mixtures. Samples from Brown and Bryant found to contain above 2 ug/L of EDB or DBCP also contain numerous other halogenated organic compounds. While selective detection and quantitation of these complex samples is possible with GC/MS, peak coelution and interference is always a problem with GC/ECD analysis. Many Brown and Bryant samples contain chlorinated propanes which elute around the same time as EDB. False positives or artificially high EDB results are common with such samples.

REDUCTION IN ANALYSIS AND REPORTING TIME - Because electron capture detectors are very sensitive to halogenated compounds, they are easily saturated when exposed to high concentrations. It may take several hours for the signal to return to baseline after high level exposure. The linear range for EDB/DBCP is approximately from 0.05 to 0.5 ug/L. Samples containing high levels of EDB/DBCP need several dilutions, and therefore consume more analysis time.

We feel application of these specifications will not only enhance data quality, but will help eliminate any confusion caused by comparison of results obtained from two distinctly different methods. Please call me if you have any questions.

cc: Jerry Vail

faxed to RSCC on 7/20/92

page 1 of 2

RECORD OF COMMUNICATION

July 20, 1992

SUBJECT: Determination of EDB/DBCP in Brown & Bryant Samples

FROM: Tina Diebold, EPA Reg. 9, QAMS (P-3-2) *Tina Diebold*

TO: Jane Anderson, ICF/ESAT, RSCC

This is in reply to the July 16 proposal of Clyde Hedin, ICF/ESAT, regarding the analysis of Brown & Bryant VOC samples for EDB/DBCP, which was submitted in response to the July 13 SAS Requests issued by EPA Reg. 9 for those analyses. The lead samplers and RPM for the 7/27-31 Brown & Bryant sampling event have discussed the proposal, and have decided that the following two sets of analytical and reporting conditions will meet our DQOs.

EPA Reg. 9 has submitted two SAS Requests for RAS+SAS VOCs by GC/MS, one for regular CRQLs, and one for low CRQLs (25 ml purge volume). For samples analyzed by the low CRQL GC/MS SAS Request, all samples with either EDB or DBCP results exceeding 2.0 ug/L as determined by GC/MS will NOT be analyzed by EPA (SAS) Method 504 (GC/ECD). The GC/MS results will be reported for those samples exceeding 2.0 ug/L of either analyte, and GC/ECD results will be reported for the remaining samples. Note that if the GC/MS quantitation limit for EDB or DBCP is raised above 2.0 ug/L due to dilution, etc., and either the EDB or DBCP results is "nondetect", then the sample must be analyzed using SAS Method 504.

AND

For samples analyzed by the regular CRQL GC/MS SAS Request, all samples with either EDB or DBCP results exceeding 10.0 ug/L as determined by GC/MS will NOT be analyzed by EPA (SAS) Method 504 (GC/ECD). The GC/MS results will be reported for those samples exceeding 10.0 ug/L of either analyte, and GC/ECD results will be reported for the remaining samples. Note that if the GC/MS quantitation limit for EDB or DBCP is raised above 10.0 ug/L due to dilution, etc., and either the EDB or DBCP results is "nondetect", then the sample must be analyzed using SAS Method 504.

THE ABOVE CONDITIONS ARE ACCEPTABLE PROVIDED THE LABORATORY HAS DEMONSTRATED A 2.0 ug/L OR LOWER QUANTITATION LIMIT FOR EDB AND FOR DBCP. CONFIRM IN WRITING.

OR

Alternatively, it would be acceptable to EPA Reg. 9 for a 10.0 ug/L threshold to be used for both the low and regular CRQL GC/MS analyses. Note that if the GC/MS quantitation limit for EDB or DBCP is raised above 10.0 ug/L due to dilution, etc., and either the EDB or DBCP results is "nondetect", then the sample must be analyzed using SAS Method 504.

NOTE: Because some of the GC/MS EDB/DBCP data from the April, 1992 sampling event was rejected, and because we are herein allowing the above changes, we would like to add the following requirement to the EDB/DBCP SAS Requests: "The laboratory must notify the lead sampler, Robbie Hedeem, (or the RPM, Tom Huetteman, if the lead sampler is not available) via the RSCC immediately if the laboratory cannot meet the Internal Quality Control Check, Control Limits and Corrective Actions specified in the SAS Requests."

PLEASE CALL ME AT 744-1528 IF YOU HAVE ANY QUESTIONS OR NEED TO DISCUSS THIS FURTHER. PLEASE TRANSMIT LABORATORY REPLY TO ME AT FAX 744-1476.

cc: Pat Mack, EPA Reg. 9 Lab (P-3-1-1)

ICF/ESAT FSP Reviewer

July, 1992 Brown & Bryant FSP Amendment



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, Ca. 94105

JUL 02 1992

MEMORANDUM

SUBJECT: Amendment to the Field Sampling Plan for Quarterly Monitoring, Brown & Bryant Site, for July 1992

FROM: Tina Diebold *Tina Diebold*
Quality Assurance Management Section (P-3-2)

TO: Cynthia Wetmore, RPM
Northern California Section (H-6-2)

The Environmental Services Branch (ESB) will conduct the next round of groundwater monitoring at the Brown & Bryant Superfund Site from July 27-31, 1992. Except for the changes outlined on the following pages, sampling will proceed according to the methods in the EPA Field Sampling Plan for Quarterly Monitoring, Brown & Bryant Site, March 1992 revision.

Please call me at X1528 if you have any questions or require any additional changes.

cc: Robbie Hedeem, Quality Assurance Management Section (P-3-2)
Tom Huetteman, Northern California Section (H-6-2)

CHANGES TO FIELD SAMPLING PLAN for QUARTERLY MONITORING,
BROWN & BRYANT SITE, ARVIN, CA, MARCH, 1992 REVISION

A. SAMPLE LOCATIONS

Due to the consistency of previous monitoring data, there is no apparent need to maintain the prior frequency of groundwater data collection at Brown & Bryant Superfund Site in Arvin, California. Future groundwater monitoring will take place on a semiannual rather than a quarterly basis. The transition from quarterly to semiannual groundwater monitoring will be completed by fall, 1992. Semiannual monitoring will then continue for an, as yet, undetermined period.

During the July, 1992 round of sampling, nineteen wells will be sampled. All of the new wells will be sampled due to the limited existing data for these wells. In addition, all existing deep wells will be sampled because of the threat that contamination in this aquifer would pose to the municipal water supply. Accordingly, City Well #1 will also be sampled.

Results obtained from recent rounds of sampling indicated a significant departure from historic concentration trends for the volatile organic compounds of concern and rejected dinoseb data for two of the existing shallow wells. Therefore, these wells, AMW-1P and AMW-2P, may be resampled in this round of groundwater monitoring. A list of the wells to be sampled is presented in Table 1.

If there are scheduling problems or problems encountered in the field that interfere with our ability to collect samples from all of the wells listed in Table 1, we will prioritize the wells according to your Remedial Investigation (RI) report needs. The wells which can be considered for postponed sampling (until fall, 1992) are the three existing deep wells. Of these three wells, the furthest downgradient will be given priority. The preferential sampling order is, thus, AR-1, AMW-4R, AMW-3R.

B. ANALYSES

As is detailed in the March 1992 revised FSP, the samples will be analyzed for RAS + SAS volatile organic compounds (VOCs), SAS EDB/DBCP, SAS dinoseb, SAS anions (Cl, SO₄, NO₃/NO₂), and RAS metals. An exception to the March 1992 Request for Analysis list is the omission of SAS carbamates/aldicarb, because those compounds have not been observed at significant levels in previous monitoring results.

Another change to the March 1992 FSP is the use of updated SAS Requests for the parameters listed above. These updated SAS requests include new Laboratory QC Summary Reports, which must be

completed by the SAS laboratory, and submitted along with the analytical data. ESB has updated many of the frequently used SAS Requests and developed the QC summary forms in order to minimize misinterpretation by the laboratories and emphasize the QC requirements. The dinoseb SAS Request, in particular, was updated to avoid the laboratory performance problems which have adversely affected dinoseb data obtained in previous sampling rounds. A revised Request for Analysis Table (Table 2) is provided below. The SAS requests will be forwarded as soon as the updates have been finalized.

C. DATA QUALITY

Due to laboratory performance problems for dinoseb in the last round of sampling at Brown & Bryant, a dinoseb performance evaluation (PE) sample, if available, will be shipped blind to the assigned laboratory along with the routine samples collected during the July, 1992 sampling event. The PE sample results reported by the laboratory will be evaluated and used as an indication of the quality of dinoseb analyses by the laboratory. ESB is working with the Quality Assurance Technical Support laboratory (QATS) in Las Vegas to develop a customized dinoseb PE sample. If we are able to obtain a QATS PE sample, then QATS will assist in the evaluation of results. If we are unable to obtain a dinoseb PE sample for this round of sampling, we anticipate using such samples in future Brown & Bryant sampling events.

Fast-turnaround on the submission of data (Form I's only) will be requested of the laboratory performing dinoseb analyses to allow for faster detection of data problems. Timely resolution of dinoseb data problems has been difficult to obtain in previous sampling rounds. Form I's will be required to be submitted to the Region by the dinoseb laboratory within 21 days after their receipt of the last sample in the Sample Delivery Group (SDG). In addition, fast-turnaround on the dinoseb data validation reports will be requested to facilitate the timely completion of the Remedial Investigation (RI) Report, which is due this fiscal year.

D. QUALITY CONTROL SAMPLES

Quality control samples will be collected at the same frequency (i.e., 10%) prescribed in the March 1992 FSP for Brown & Bryant. Field duplicates will be collected from WA-7, which has shown moderate contamination, and WA-6, which has shown the highest concentration of the new wells. One field sample will be designated as the "LAB QC" sample. The LAB QC sample will be taken from a well which has good recovery and has shown moderate contamination.

Equipment blanks will be collected every day that groundwater samples are collected. However, to avoid the collection of an inordinate proportion of QC samples, the collection of a blank will be optional on days when three or fewer samples are collected. A minimum of four equipment blanks will be collected. At least one of the equipment blanks will be collected from the piston pump after the pump has been decontaminated.

E. HEALTH & SAFETY

An amended Health & Safety Plan for the July, 1992 round of sampling at Brown & Bryant is under preparation. Results of previous groundwater monitoring and air monitoring performed on site by the Regional Hygienist have allowed us to downgrade the hazard level of some of the wells. These new hazard levels, along with the protective clothing needed for the July, 1992 sampling round, are presented in Table 3.

TABLE 1. BROWN & BRYANT MONITORING WELLS
Scheduled for Sampling in 7/92

WELL
NUMBER

WA-1
WA-2
WA-3
WA-4
WA-5
WA-6
WA-7
WA-8
WA-9

NOTE: Well specifications can be found
in Tables 6.1 and 6.2 of the
Field Sampling Plan for Quarterly
Monitoring, Brown & Bryant Site,
March 1992 revision.

WB2-1
WB2-2
WB2-3
WB2-4

CITY WELL 1

AMW-1P
AMW-2P

AR-1
AMW-4R
AME-3R

TABLE 2 REQUEST FOR ANALYSIS OF WATERS (pg 1 of 4)

QUALITY CONTROL SAMPLES

CLP ANALYSES REQUESTED		RAS+SAS VOA's low CRQLs	RAS + SAS VOA's reg. CRQLs	SAS EDB & DBCP	SAS DINOSEB 8150	RAS METALS (total)	SAS Cl, NO2/NO3 ALK, SO4, TDS	
PRESERVATIVES		Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Add 2 drops 1:1 HCl Chill to 4 C	Chill to 4 C	add HNO3 to pH <2	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)		Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days (<28 days for TDS & ALK)	
CONTRACT HOLDING TIME (s)		Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days (<25 days for TDS & ALK)	
SAMPLE x SAMPLE		NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	
SAMPLE LOCATION		CONCENTRATION LOW MED	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	1 x 500 ml poly bottle (1/2)*
AP-11 (blank)	X		3	2	2	1	1	
AP-12 (blank)	X		3	2	2	1	1	
AP-13 (blank)	X		3	2	2	1	1	
AP-14 (blank)	X		3	2	2	1	1	
AP-15 (blank)	X		3	2	2	1	1	
AP-25 dup. of WA-7	X			2	2	1	1	
AP-26 dup. of WA-6	MEDIUM LEVEL Well Listed on Pg. 4 of 4							

* Minimum bottle requirements for low volumes.

TABLE 2 REQUEST FOR ANALYSIS OF WATERS (pg 3 of 4)

B ZONE WELLS

CLP	RAS+SAS		RAS + SAS		SAS		SAS		RAS		SAS				
ANALYSES REQUESTED	VOA's		VOA's		EDB & DBCP		DINOSEB		METALS		Cl, NO2/NO3				
	low CRQLs		reg. CRQLs				8150		(total)		ALK, SO4, TDS				
PRESERVATIVES	Add 2 drops 1:1 HCl Chill to 4 C		Add 2 drops 1:1 HCl Chill to 4 C		Add 2 drops 1:1 HCl Chill to 4 C		Chill to 4 C		add HNO3 to pH <2		Chill to 4 C				
ANALYTICAL HOLDING TIME (s)	Hold <14 days		Hold <14 days		Hold <14 days		Hold <7 days prior to extraction, 40 days after extraction.		Hold to <6 months [26 days for Hg]		Hold <7 days (<28 days for TDS & ALK)				
CONTRACT HOLDING TIME (s)	Hold <10 days		Hold <10 days		Hold <10 days		Hold <5 days prior to extraction, 40 days after extraction		Hold to <6 months [26 days for Hg]		Hold <5 days (<25 days for TDS & ALK)				
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS		NO. OF BOTTLES PER ANALYSIS		NO. OF BOTTLES PER ANALYSIS		NO. OF BOTTLES PER ANALYSIS		NO. OF BOTTLES PER ANALYSIS		NO. OF BOTTLES PER ANALYSIS				
SAMPLE LOCATION	CONCEN- TRATION	3 x 40 ml glass vial	2 x 40 ml glass vial	2 x 40 ml glass vial	2 x 1 liter amber glass bottle	1 x 1 liter poly bottle	1 x 500 ml poly bottle	LOC	MED	(3)*	(2)*	(2)*	(1)*	(1/2)*	(1/2)*
WB2-1	X		3		2		2			1		1			
WB2-2	X		3		2		2			1		1			
WB2-3	X		3		2		2			1		1			
WB2-4	X		3		2		2			1		1			
CITY WELL 1	X		3		2		2			1		1			
AR-1	X		3		2		2			1		1			
AMW-4R	X		3		2		2			1		1			
AMW-3R	X		3		2		2			1		1			

* Minimum bottle requirements for low volumes.

TABLE 2. REQUEST FOR ANALYSIS OF WATERS (pg 2 of 4)

NEW A ZONE WELLS

CLP	RAS+SAS	RAS + SAS	SAS	SAS	RAS	SAS	
ANALYSES REQUESTED	VOA's	VOA's	EDB & DBCP	DINOSEB	METALS	Cl, NO2/NO3	
	low CRQLs	reg. CRQLs		8150	(total)	ALK, SO4, TDS	
PRESERVATIVES	Add 2 drops 1:1 HCl	Add 2 drops 1:1 HCl	Add 2 drops 1:1 HCl	Chill to 4 C	add HNO3 to pH <2	Chill to 4 C	
ANALYTICAL HOLDING TIME (s)	Hold <14 days	Hold <14 days	Hold <14 days	Hold <7 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <7 days (<28 days for TDS & ALK)	
CONTRACT HOLDING TIME (s)	Hold <10 days	Hold <10 days	Hold <10 days	Hold <5 days prior to extraction, 40 days after extraction	Hold to <6 months [26 days for Hg]	Hold <5 days (<25 days for TDS & ALK)	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	NO. OF BOTTLES PER ANALYSIS	
SAMPLE LOCATION	CONCENTRATION	3 x 40 ml glass vial (3)*	2 x 40 ml glass vial (2)*	2 x 40 ml glass vial (2)*	2 x 1 liter amber glass bottle (1)*	1 x 1 liter poly bottle (1/2)*	1 x 500 ml poly bottle (1/2)*
WA-1 LAB QC	X		4	4	4	2	2
WA-2	X		2	2	2	1	1
WA-3	X		2	2	2	1	1
WA-4	X		2	2	2	1	1
WA-5	X		2	2	2	1	1
WA-7 dup. location	X		2	2	2	1	1
WA-8	X		2	2	2	1	1
WA-9	X		2	2	2	1	1

* Minimum bottle requirements for low volumes.

TABLE 2 REQUEST FOR ANALYSIS OF WATERS (pg 4 of 4)

MEDIUM A ZONE WELLS - MEDIUM LEVEL

CLP	RAS+SAS		RAS + SAS		SAS		SAS		RAS		SAS	
ANALYSES REQUESTED	VOA's		VOA's		EDB & DBCP		DINOSEB		METALS		Cl, NO2/NO3	
	low CRQLs		reg. CRQLs				8150		(total)		ALK, SO4, TDS	
PRESERVATIVES	Add 2 drops 1:1 HCL **		Add 2 drops 1:1 HCL **		Add 2 drops 1:1 HCL **		Chill to 4 C **		add HNO3 to pH <2		Chill to 4 C **	
ANALYTICAL HOLDING TIME (s)	Hold <14 days		Hold <14 days		Hold <14 days		Hold <7 days prior to extraction, 40 days after extraction		Hold to <6 months [26 days for Hg]		Hold <7 days (<28 days for TDS & ALK)	
CONTRACT HOLDING TIME (s)	Hold <10 days		Hold <10 days		Hold <10 days		Hold <5 days prior to extraction, 40 days after extraction		Hold to <6 months [26 days for Hg]		Hold <5 days (<25 days for TDS & ALK)	
SAMPLE x SAMPLE	NO. OF BOTTLES PER ANALYSIS		NO. OF BOTTLES PER ANALYSIS		NO. OF BOTTLES PER ANALYSIS		NO. OF BOTTLES PER ANALYSIS		NO. OF BOTTLES PER ANALYSIS		NO. OF BOTTLES PER ANALYSIS	
SAMPLE LOCATION	CONCEN- TRATION		3 x 40 ml glass vial (3)*		2 x 40 ml glass vial (2)*		2 x 40 ml glass vial (2)*		2 x 1 liter amb.widemouth glass bottle (1)*		1 x 500 ml poly bottle (1/2)*	
	LOW	MED										
AMW-1P		X		2	2	2						
				MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL						
AMM-2P		X		2	2	2						
				MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL						
WA-6 dup. location		X		2	2	2	1	1				
				MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL				
AP-26 dup. of WA-6		X		2	2	2	1	1				
				MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL	MEDIUM LEVEL				

* Minimum bottle requirements for low volumes.

TABLE 3. HAZARD LEVELS AND PROTECTIVE CLOTHING FOR 7/92
SAMPLING OF BROWN & BRYANT MONITORING WELLS

WELL NUMBER	PURGING/SAMPLING METHOD	HAZARD LEVEL	PROTECTIVE CLOTHING	NOTES
WA-1	Dedicated Submersible Pump	D	Tyvek	Downgrade to street clothes okay if very hot weather.
WA-2	Dedicated Submersible Pump	D	Street Clothes	
WA-3	PVC Bailer/Teflon Bailer	D	Tyvek	Downgrade to street clothes okay if very hot weather.
WA-4	PVC Bailer/Teflon Bailer	C/D	Tyvek/Face Shield	APR+GMAH Carts. Available
WA-5	Dedicated Submersible Pump	C/D	Tyvek/Face Shield	APR+GMAH Carts. Available
WA-6	Dedicated Submersible Pump	C	Tyvek/APR+GMAH Cartridges	Chemrel not needed, due to low splash hazard
WA-7	PVC Bailer/Teflon Bailer	C/D	Tyvek/Face Shield	APR+GMAH Carts. Available
WA-8	PVC Bailer/Teflon Bailer	D	Street Clothes	
WA-9	Dedicated Submersible Pump	D	Street Clothes	
WB2-1	Dedicated Submersible Pump	D	Street Clothes	
WB2-2	Dedicated Submersible Pump	D	Street Clothes	
WB2-3	Dedicated Submersible Pump	D	Street Clothes	
WB2-4	Dedicated Submersible Pump	D	Street Clothes	
CITY WELL 1	Tap	D	Street Clothes	
AMW-1P	PVC Bailer/Teflon Bailer	C	Chemrel/APR+GMAH Cartridges	
AMW-2P	PVC Bailer/Teflon Bailer	C	Chemrel/APR+GMAH Cartridges	
AR-1	Piston Pump/Piston Pump	D	Street Clothes	
AMW-4R	Piston Pump/Piston Pump	D	Tyvek	Tyvek due to higher surface conc. area; dust protect.
AMR-3R	Piston Pump/Piston Pump	D	Tyvek	Street clothes OK if hot

APPENDIX C

**Target Analytes and Quantitation Limits
for Soil and Groundwater Analyses**

MATRIX: GROUNDWATER

ANALYSIS TYPE	COMPOUND	REQUESTED QUANTITATION LIMIT (ug/l)
VOLATILES	chloromethane	2,10
	bromomethane	2,10
	vinyl chloride	2,10
	chloroethane	2,10
	methylene chloride	1,5,10
	acetone	2,10
	carbon disulfide	1,5,10
	1,1-dichloroethene	1,5,10
	1,1-dichloroethane	1,5,10
	1,2-dichloroethene (total)	1,5,10
	chloroform	1,5,10
	1,2-dichloroethane	1,5,10
	2-butanone	2,10
	1,1,1-trichloroethane	1,5,10
	carbon tetrachloride	1,5,10
	vinyl acetate	2,10
	bromodichloromethane	1,5,10
	1,2-dichloropropane	1,5,10
	cis-1,3-dichloropropene	1,5,10
	trichloroethene	1,5,10
	dibromochloromethane	1,5,10
	1,1,2-trichloroethane	1,5,10
	benzene	1,5,10
	trans-1,3-dichloropropene	1,5,10
	bromoform	1,5,10
	4-methyl-2-pentanone	2,10
	2-hexanone	2,10
	tetrachloroethene	1,5,10
	toluene	1,5,10
	1,1,2,2-tetrachloroethane	1,5,10
	chlorobenzene	1,5,10
	ethyl benzene	1,5,10
	styrene	1,5,10
xylene (total)	1,5,10	
	1,3-dichloropropane	1,5
	1,2,3-trichloropropane	1,5
	EDB (1,2-dibromoethane)	0.5
	DBCP (1,2-dibromo-3-chloropropane)	0.5

MATRIX: GROUNDWATER

ANALYSIS TYPE	COMPOUND	REQUESTED QUANTITATION LIMIT (ug/l)
SEMIVOLATILES	pentachloronitrobenzene	10
	phenol	10
	bis(2-chloroethyl) ether	10
	2-chlorophenol	10
	1,3-dichlorobenzene	10
	1,4-dichlorobenzene	10
	benzyl alcohol	10
	1,2-dichlorobenzene	10
	2-methylphenol	10
	bis(2-chloroisopropyl) ether	10
	4-methylphenol	10
	n-nitroso-di-n-dipropylamine	10
	hexachloroethane	10
	nitrobenzene	10
	isophorone	10
	2-nitrophenol	10
	2,4-dimethylphenol	10
	benzoic acid	25,50
	bis(2-chloroethoxy) methane	10
	2,4-dichlorophenol	10
	1,2,4-trichlorobenzene	10
	naphthalene	10
	4-chloroaniline	10
	hexachlorobutadiene	10
	4-chloro-3-methylphenol (para-chloro-meta-cresol)	10
	2-methylnaphthalene	10
	hexachlorocyclopentadiene	10
	2,4,6-trichlorophenol	10
	2,4,5-trichlorophenol	25,50
	2-chloronaphthalene	10
	2-nitroaniline	25,50
	dimethylphthalate	10
	acenaphthylene	10
	2,6-dinitrotoluene	10
	3-nitroaniline	25,50
	acenaphthene	10
	2,4-dinitrophenol	25,50
	4-nitrophenol	25,50
	dibenzofuran	10
	2,4-dinitrotoluene	10
	diethylphthalate	10
	4-chlorophenyl-phenyl ether	10
	fluorene	10
	4-nitroaniline	25,50
	4,6-dinitro-2-methylphenol	25,50
n-nitrosodiphenylamine	10	
4-bromophenyl-phenylether	10	

MATRIX: GROUNDWATER

ANALYSIS TYPE	COMPOUND	REQUESTED QUANTITATION LIMIT (ug/l)
SEMIVOLATILES	hexachlorobenzene	10
	pentachlorophenol	25,50
	phenanthrene	10
	anthracene	10
	carbazole	10
	di-n-butylphthalate	10
	fluoranthene	10
	pyrene	10
	butylbenzylphthalate	10
	3,3'-dichlorobenzidine	10,20
	benzo(a)anthracene	10
	chrysene	10
	bis(2-ethylhexyl)phthalate	10
	di-n-octylphthalate	10
	benzo(b)fluoranthene	10
	benzo(k)fluoranthene	10
	benzo(a)pyrene	10
	indeno(1,2,3-cd)pyrene	10
	dibenz(a,h)anthracene	10
	benzo(g,h,i)perylene	10
PESTICIDES/ PCBs	alpha-BNC	0.05
	beta-BNC	0.05
	delta-BNC	0.05
	gamma-BNC (lindane)	0.05
	heptachlor	0.05
	aldrin	0.05
	heptachlor epoxide	0.05
	endosulfan I	0.05
	dieldrin	0.1
	4,4'-DDE	0.1
	endrin	0.1
	endosulfan II	0.1
	4,4'-DDD	0.1
	endosulfan sulfate	0.1
	4,4'-DDT	0.1
	methoxychlor	0.5
	endrin ketone	0.1
	alpha-chlordane	0.5
	gamma-chlordane	0.5
	toxaphene	1.0
	arochlor-1016	0.5
	arochlor-1221	0.5
	arochlor-1232	0.5
	arochlor-1242	0.5
	arochlor-1248	0.5
	arochlor-1254	1.0
	arochlor-1260	1.0
	chlorobenzilate	1.0

MATRIX: GROUNDWATER

ANALYSIS TYPE	COMPOUND	REQUESTED QUANTITATION LIMIT (ug/l)
CARBAMATE PESTICIDES	aldicarb	10
	aminocarb	-
	barban	0.5
	carbaryl	0.2
	carbofuran	32
	chlorpropham	0.3
	diuron	0.09
	fenuron	-
	fenuron-TCA	-
	fluometuron	111
	linuron	0.09
	methiocarb	0.2
	methomyl	89
	mexacarbate	5.2
	monuron	0.03
	monuron-TCA	-
	neburon	0.12
	oxamyl	92
	propham	0.7
	propoxur	1.1
siduron	-	
swep	-	
ORGANO- PHOSPHORUS PESTICIDES	DEF	10
	azinphos methyl	10
	bolstar (suprophos)	10
	chlorpyrifos	10
	coumaphos	10
	demeton, O,S	10
	diazinon	10
	dichlorvos	10
	dimethoate	10
	disulfoton	10
	EPN	10
	ethoprop	10
	fensulfothion	10
	fenthion	10
	malathion	10
	merphos	10
	mevinphos	10
	monocrotophos	10
	naled	10
	parathion-ethyl	10
	parathion-methyl	10
	phorate	10
	ronnel	10
sulfotep	10	
TEPP	10	
stirophos (tetrachlorovinphos)	10	

MATRIX: GROUNDWATER

ANALYSIS TYPE	COMPOUND	REQUESTED QUANTITATION LIMIT (ug/l)	
HERBICIDES	dinoseb	0.7,1	
	2,4-D (2,4-Dichlorophenoxyacetic acid)	1	
	2,4-DB (2,4-Dichlorophenoxybutanoic acid)	1	
	2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)	1	
	2,4,5-TP (2,4,5-Trichlorophenoxypropionic acid)	1	
	chlorbenzilate	1	
	dicamba	1	
	dalapon	1	
	dichloroprop	1	
	METALS	aluminum	200
		antimony	60
arsenic		10	
barium		200	
beryllium		5	
cadmium		5	
calcium		5000	
chromium		10	
cobalt		50	
copper		25	
iron		100	
lead		5	
magnesium		5000	
manganese		15	
mercury		0.2	
nickel		40	
potassium		5000	
selenium		5	
silver		10	
sodium	5000		
thallium	10		
vanadium	50		
zinc	20		
ANIONS	chloride	1000	
	nitrate/nitrite	100	
	sulfate	1000	
ALKALINITY	carbonate	2000	
	bicarbonate	2000	
	total alkalinity	2000	
TOTAL DISSOLVED SOLIDS		20,000	

MATRIX: SURFACE SOIL

ANALYSIS TYPE	COMPOUND	REQUESTED QUANTITATION LIMIT (ug/kg)	
VOLATILES	chloromethane	10	
	bromomethane	10	
	vinyl chloride	10	
	chloroethane	10	
	methylene chloride	5	
	acetone	10	
	carbon disulfide	5	
	1,1-dichloroethene	5	
	1,1-dichloroethane	5	
	1,2-dichloroethene (total)	5	
	chloroform	5	
	1,2-dichloroethane	5	
	2-butanone	10	
	1,1,1-trichloroethane	5	
	carbon tetrachloride	5	
	vinyl acetate	10	
	bromodichloromethane	5	
	1,2-dichloropropane	5	
	cis-1,3-dichloropropene	5	
	trichloroethene	5	
	dibromochloromethane	5	
	1,1,2-trichloroethane	5	
	benzene	5	
	trans-1,3-dichloropropene	5	
	bromoform	5	
	4-methyl-2-pentanone	10	
	2-hexanone	10	
	tetrachloroethene	5	
	toluene	5	
	1,1,2,2-tetrachloroethane	5	
	chlorobenzene	5	
	ethyl benzene	5	
	styrene	5	
	xylenes (total)	5	
		1,3-dichloropropane	5
		1,2,3-trichloropropane	5
		EDB (1,2-dibromoethane)	5
		DBCP (1,2-dibromo-3-chloropropane)	5

MATRIX: SURFACE SOIL

ANALYSIS TYPE	COMPOUND	REQUESTED QUANTITATION LIMIT (ug/kg)
SEMIVOLATILES	pentachloronitrobenzene	330
	phenol	330
	bis(2-chloroethyl) ether	330
	2-chlorophenol	330
	1,3-dichlorobenzene	330
	1,4-dichlorobenzene	330
	benzyl alcohol	330
	1,2-dichlorobenzene	330
	2-methylphenol	330
	bis(2-chloroisopropyl) ether	330
	4-methylphenol	330
	n-nitroso-di-n-dipropylamine	330
	hexachloroethane	330
	nitrobenzene	330
	isophorone	330
	2-nitrophenol	330
	2,4-dimethylphenol	330
	benzoic acid	1600
	bis(2-chloroethoxy) methane	330
	2,4-dichlorophenol	330
	1,2,4-trichlorobenzene	330
	naphthalene	330
	4-chloroaniline	330
	hexachlorobutadiene	330
	4-chloro-3-methylphenol (para-chloro-meta-cresol)	330
	2-methylnaphthalene	330
	hexachlorocyclopentadiene	330
	2,4,6-trichlorophenol	330
	2,4,5-trichlorophenol	1600
	2-chloronaphthalene	330
	2-nitroaniline	1600
	dimethylphthalate	330
	acenaphthylene	330
	2,6-dinitrotoluene	330
	3-nitroaniline	1600
	acenaphthene	330
	2,4-dinitrophenol	1600
	4-nitrophenol	1600
	dibenzofuran	330
	2,4-dinitrotoluene	330
	diethylphthalate	330
4-chlorophenyl-phenyl ether	330	
fluorene	330	
4-nitroaniline	1600	
4,6-dinitro-2-methylphenol	1600	
n-nitrosodiphenylamine	330	
4-bromophenyl-phenylether	330	

MATRIX: SURFACE SOIL

ANALYSIS TYPE	COMPOUND	REQUESTED QUANTITATION LIMIT (ug/kg)
SEMIVOLATILES	hexachlorobenzene	330
	pentachlorophenol	1600
	phenanthrene	330
	anthracene	330
	di-n-butylphthalate	330
	fluoranthene	330
	pyrene	330
	butylbenzylphthalate	330
	3,3'-dichlorobenzidine	660
	benzo(a)anthracene	330
	chrysene	330
	bis(2-ethylhexyl)phthalate	330
	di-n-octylphthalate	330
	benzo(b)fluoranthene	330
	PESTICIDES/ PCBs	alpha-BNC
beta-BNC		8
delta-BNC		8
gamma-BNC (lindane)		8
heptachlor		8
aldrin		8
heptachlor epoxide		8
endosulfan I		8
dieldrin		16
4,4'-DDE		16
endrin		16
endosulfan II		16
4,4'-DDD		16
endosulfan sulfate		16
4,4'-DDT		16
methoxychlor		80
endrin ketone		16
alpha-chlordane		80
gamma-chlordane		80
toxaphene		160
arochlor-1016		80
arochlor-1221		80
arochlor-1232		80
arochlor-1242	80	
arochlor-1248	80	
arochlor-1254	160	
arochlor-1260	160	

MATRIX: SURFACE SOIL

ANALYSIS TYPE	COMPOUND	REQUESTED QUANTITATION LIMIT (ug/kg)
CARBAMATE PESTICIDES	aldicarb	12
	aminocarb	-
	barban	-
	carbaryl	-
	carbofuran	-
	chlorpropham	-
	diuron	-
	fenuron	-
	fenuron-TCA	-
	fluometuron	-
	linuron	-
	methiocarb	-
	methomyl	-
	mexacarbate	-
	monuron	-
	monuron-TCA	-
	neburon	-
	oxamyl	-
	propham	-
	propoxur	-
siduron	-	
sweep	-	
ORGANO-PHOSPHORUS PESTICIDES	DEF	100
	azinphos methyl	100
	bolstar (suprophos)	100
	chlorpyrifos	100
	coumaphos	100
	demeton, O,S	100
	diazinon	100
	dichlorvos	100
	dimethoate	100
	disulfoton	100
	EPN	100
	ethoprop	100
	fensulfothion	100
	fenthion	100
	malathion	100
	merphos	100
	mevinphos	100
	monocrotophos	100
	naled	100
	parathion-ethyl	100
	parathion-methyl	100
	phorate	100
ronnel	100	
sulfotep	100	
TEPP	100	
stirophos (tetrachlorovinphos)	100	

MATRIX: SURFACE SOIL

ANALYSIS TYPE	COMPOUND	REQUESTED QUANTITATION LIMIT (ug/kg)
HERBICIDES	dinoseb	10
	2,4-D	10
	(2,4-Dichlorophenoxyacetic acid)	
	2,4-DB	10
	(2,4-Dichlorophenoxybutanoic acid)	
	2,4,5-T	10
	(2,4,5-Trichlorophenoxyacetic acid)	
	2,4,5-TP	10
	(2,4,5-Trichlorophenoxypropionic acid)	
	chlorbenzilate	10
	dicamba	10
	dalapon	10
dichloroprop	10	
METALS	aluminum	200
	antimony	60
	arsenic	10
	barium	200
	beryllium	5
	cadmium	5
	calcium	5000
	chromium	10
	cobalt	50
	copper	25
	iron	100
	lead	5
	magnesium	5000
	manganese	15
	mercury	0.2
	nickel	40
	potassium	5000
	selenium	5
	silver	10
	sodium	5000
thallium	10	
vanadium	50	
zinc	20	

APPENDIX D

List of Data Validation Reports for Brown & Bryant

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

CASE:LV0S09 MEMO 01 LABORATORY: REGION IX ANALYSIS: MEDIUM LEVEL FOR SAS VOLAITLES	10 SOIL DATE OF VALIDATION REPORT: 05/09/90 EVENT:
SAS: 5307Y MEMO 02 LABORATORY: SOUTHWEST LAB OF OKLAHOMA (SWOK) ANALYSIS: LOW LEVEL FOR SAS DINOSEB	39 SOIL DATE OF VALIDATION REPORT: 05/16/90 EVENT:
SAS: 5307Y MEMO 04 LABORATORY: SOUTHWEST LAB OF OKLAHOMA (SWOK) ANALYSIS: LOW LEVEL FOR SAS DINOSEB	20 SOIL DATE OF VALIDATION REPORT: 05/22/90 EVENT:
SAS: 5307Y MEMO 03 LABORATORY: SOUTHWEST LAB OF OKLAHOMA (SWOK) ANALYSIS: LOW LEVEL FOR SAS DINOSEB	4 SOIL DATE OF VALIDATION REPORT: 05/23/90 EVENT:
SAS: 5307Y MEMO 06 LABORATORY: SOUTHWEST LAB OF OKLAHOMA (SWOK) ANALYSIS: LOW LEVEL FOR SAS DINOSEB	20 SOIL DATE OF VALIDATION REPORT: 05/24/90 EVENT:
SAS: 5307Y MEMO 09 LABORATORY: SOUTHWEST LAB OF OKLAHOMA (SWOK) ANALYSIS: LOW LEVEL FOR SAS DINOSEB	20 SOIL DATE OF VALIDATION REPORT: 05/31/90 EVENT:
SAS: 5307Y MEMO 05 LABORATORY: SOUTHWEST LAB OF OKLAHOMA (SWOK) ANALYSIS: LOW LEVEL FOR SAS DINOSEB	20 SOIL DATE OF VALIDATION REPORT: 06/01/90 EVENT:
SAS: 5307Y MEMO 10 LABORATORY: SOUTHWEST LAB OF OKLAHOMA (SWOK) ANALYSIS: LOW LEVEL FOR SAS DINOSEB	20 SOIL DATE OF VALIDATION REPORT: 06/04/90 EVENT:
SAS: 5307Y MEMO 11 LABORATORY: SOUTHWEST LAB OF OKLAHOMA (SWOK) ANALYSIS: LOW LEVEL FOR SAS DINOSEB	9 SOIL DATE OF VALIDATION REPORT: 06/05/90 EVENT:
CASE:LV0S09 MEMO 08 LABORATORY: REGION IX ANALYSIS: LOW LEVEL FOR RAS SEMIVOLATILES	15 SOIL DATE OF VALIDATION REPORT: 06/08/90 EVENT:

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

CASE:LV0S09 MEMO 07	15 SOIL	DATE OF VALIDATION REPORT: 06/14/90
LABORATORY: REGION IX ANALYSIS: LOW LEVEL FOR SAS VOLATILES		
EVENT:		
CASE:13802 MEMO 15	12 SOIL	DATE OF VALIDATION REPORT: 06/27/90
LABORATORY: S-CUBED (S3) ANALYSIS: LOW LEVEL FOR RAS VOLATILES + SEMIVOLATILES		
EVENT:		
CASE:13802 MEMO 17	12 SOIL	DATE OF VALIDATION REPORT: 06/27/90
LABORATORY: S-CUBED (S3) ANALYSIS: RAS - VOLATILES + SEMIVOLATILES		
EVENT:		
CASE:13802 MEMO 18	14 SOIL	DATE OF VALIDATION REPORT: 06/29/90
LABORATORY: S-CUBED (S3) ANALYSIS: LOW LEVEL FOR RAS VOLATILES + SEMIVOLATILES		
EVENT:		
CASE:LV0S09 MEMO 13	10 SOIL	DATE OF VALIDATION REPORT: 06/29/90
LABORATORY: REGION IX ANALYSIS: MEDIUM LEVEL FOR SAS VOLATILES		
EVENT:		
CASE:LV0S09 MEMO 12	10 SOIL	DATE OF VALIDATION REPORT: 07/02/90
LABORATORY: REGION IX ANALYSIS: LOW LEVEL FOR RAS VOLATILES		
EVENT:		
CASE:LV0S09 MEMO 14	10 SOIL	DATE OF VALIDATION REPORT: 07/05/90
LABORATORY: REGION IX ANALYSIS: LOW LEVEL FOR RAS SEMIVOLATILES		
EVENT:		
CASE:LV0S09 MEMO 16	15 SOIL	DATE OF VALIDATION REPORT: 07/05/90
LABORATORY: REGION IX ANALYSIS: LOW LEVEL FOR RAS VOLATILES		
EVENT:		
CASE:LV0S09 MEMO 26	18 SOIL	DATE OF VALIDATION REPORT: 07/26/90
LABORATORY: REION IX ANALYSIS: HIGH LEVEL FOR SAS VOLATILES		
EVENT:		
CASE:13802 MEMO 24	13 SOIL	DATE OF VALIDATION REPORT: 07/27/90
LABORATORY: S-CUBED (S3) ANALYSIS: LOW LEVEL FOR RAS VOLATILES + SEMIVOLATILES		
EVENT:		

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

CASE:LV0S09 MEMO 21	10 SOIL	DATE OF VALIDATION REPORT: 07/27/90
LABORATORY: REGION IX ANALYSIS: HIGH LEVEL FOR SAS VOLATILES		
EVENT:		
SAS: 5307Y MEMO 22	20 SOIL	DATE OF VALIDATION REPORT: 07/30/90
LABORATORY: SOUTHWEST LAB OF OKLAHOMA (SWOK) ANALYSIS: LOW LEVEL FOR SAS DINOSEB		
EVENT:		
CASE:13842 MEMO 27	18 SOIL	DATE OF VALIDATION REPORT: 07/31/90
LABORATORY: S-CUBED (S3) ANALYSIS: LOW LEVEL FOR RAS VOLATILES + SEMIVOLATILES		
EVENT:		
CASE:13842 MEMO 29	18 SOIL	DATE OF VALIDATION REPORT: 07/31/90
LABORATORY: S-CUBED (S3) ANALYSIS: LOW LEVEL FOR RAS VOLATILES + SEMIVOLATILES		
EVENT:		
SAS: 5307Y MEMO 19	20 SOIL	DATE OF VALIDATION REPORT: 08/01/90
LABORATORY: SOUTHWEST LAB OF OKLAHOMA (SWOK) ANALYSIS: LOW LEVEL FOR SAS DINOSEB		
EVENT:		
CASE:13877 MEMO 30	21 SOIL	DATE OF VALIDATION REPORT: 08/06/90
LABORATORY: ENSECO/CALIFORNIA ANALYTICAL ANALYSIS: LOW LEVEL FOR RAS VOLATILES + SEMIVOLATILES		
EVENT:		
CASE:LV0S09 MEMO 28	10 SOIL	DATE OF VALIDATION REPORT: 08/06/90
LABORATORY: REGION IX ANALYSIS: HIGH LEVEL FOR SAS VOLATILES		
EVENT:		
CASE:13842 MEMO 25	18 SOIL	DATE OF VALIDATION REPORT: 08/07/90
LABORATORY: S-CUBED (S3) ANALYSIS: LOW LEVEL FOR RAS VOLATILES + SEMIVOLATILES		
EVENT:		
SAS: 5307Y MEMO 23	17 SOIL	DATE OF VALIDATION REPORT: 08/08/90
LABORATORY: SOUTHWEST LAB OF OKLAHOMA (SWOK) ANALYSIS: LOW LEVEL FOR SAS DINOSEB		
EVENT:		
CASE:LV0S09 MEMO 31	21 WATER	DATE OF VALIDATION REPORT: 08/10/90
LABORATORY: REGION IX ANALYSIS: LOW LEVEL FOR RAS SEMIVOLATILES		
EVENT:		

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

CASE:13802	MEMO 20	19 SOIL	DATE OF VALIDATION REPORT: 08/13/90
LABORATORY: S-CUBED (S3)		ANALYSIS: LOW LEVEL FOR RAS VOLATILES + SEMIVOLATILES	
EVENT:			
CASE:LV0S09	MEMO 32	21 WATER	DATE OF VALIDATION REPORT: 08/13/90
LABORATORY: REGION IX		ANALYSIS: LOW LEVEL FOR RAS + SAS SEMIVOLATILES (1,2-DCP; 1,3-DCP; EDB/DBCP; 1,2,3-TCP)	
EVENT:			
CASE:14455	MEMO 33	15 SOIL	DATE OF VALIDATION REPORT: 08/30/90
LABORATORY: WEYERHAUSER ANALYTICAL SERVICES (WEYER)		ANALYSIS: LOW CONCENTRATION FOR RAS METALS	
EVENT:			
CASE:14455	MEMO 34	13 SOIL	DATE OF VALIDATION REPORT: 09/10/90
LABORATORY: WEYERHAUSER ANALYTICAL SERVICES (WEYER)		ANALYSIS: LOW CONCENTRATION FOR RAS METALS	
EVENT:			
CASE:14455	MEMO 35	15 SOIL	DATE OF VALIDATION REPORT: 09/13/90
LABORATORY: WEYERHAUSER ANALYTICAL SERVICES (WEYER)		ANALYSIS: LOW CONCENTRATION FOR RAS METALS	
EVENT:			
CASE:LV1S15	MEMO 01	19 WATER	DATE OF VALIDATION REPORT: 02/26/91
LABORATORY: REGION IX		ANALYSIS: SAS CHLORIDE, NITRATE-N, NITRITE-N, SULFATE, TDS & ALKALINITY	
EVENT:			
CASE:LV1S15	MEMO 02	19 WATER	DATE OF VALIDATION REPORT: 03/11/91
LABORATORY: REGION IX		ANALYSIS: LOW LEVEL FOR RAS SEMIVOLATILES + PCNB	
EVENT:			
CASE:15725	MEMO 03	19 WATER	DATE OF VALIDATION REPORT: 03/12/91
LABORATORY: ASSOCIATED LABORATORIES, INC. (ALI)		ANALYSIS: LOW CONCENTRATION FOR RAS METALS	
EVENT:			
CASE:LV1S15	MEMO 04	13 SOIL	DATE OF VALIDATION REPORT: 03/13/91
LABORATORY: REGION IX		ANALYSIS: (13) MEDIUM LEVEL SOIL FOR RAS SEMIVOLATILES + SAS PCNB	
EVENT:			

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

<p>CASE:LV1S15 MEMO 05 19 WATER DATE OF VALIDATION REPORT: 03/20/91</p> <p>LABORATORY: REGION IX ANALYSIS: LOW LEVEL FOR RAS + SAS VOLATILES (1,2-DCP; 1,3-DCP; EDB/DBCP; 1,2,3-TCP)</p> <p style="text-align: right;">EVENT:</p>
<p>CASE:LV1S15 MEMO 07 19 WATER DATE OF VALIDATION REPORT: 04/03/91</p> <p>LABORATORY: REGION IX ANALYSIS: LOW LEVEL FOR SAS EDB/DBCP</p> <p style="text-align: right;">EVENT:</p>
<p>SAS: 5989Y MEMO 06 19 WATER DATE OF VALIDATION REPORT: 04/04/91</p> <p>LABORATORY: PACIFIC ANALYTICAL, INC. ANALYSIS: LOW LEVEL FOR SAS ORGANOPHOSPHORUS-PESTICIDES</p> <p style="text-align: right;">EVENT:</p>
<p>CASE:LV1S15 MEMO 10 19 WATER DATE OF VALIDATION REPORT: 04/08/91</p> <p>LABORATORY: REGION IX ANALYSIS: LOW LEVEL FOR TCP RAS PESTICIDES/PCBs + SAS CHLOROBENZILATE</p> <p style="text-align: right;">EVENT:</p>
<p>SAS: 5989Y MEMO 08 19 WATER DATE OF VALIDATION REPORT: 04/10/91</p> <p>LABORATORY: PACIFIC ANALYTICAL, INC. ANALYSIS: LOW LEVEL FOR SAS HERBICIDES</p> <p style="text-align: right;">EVENT:</p>
<p>SAS: 5989Y MEMO 09 13 SOIL DATE OF VALIDATION REPORT: 04/10/91</p> <p>LABORATORY: PACIFIC ANALYTICAL, INC. ANALYSIS: LOW LEVEL FOR SAS DINOSEB</p> <p style="text-align: right;">EVENT:</p>
<p>CASE:LV1S29 MEMO 02 19 WATER DATE OF VALIDATION REPORT: 04/23/91</p> <p>LABORATORY: REGION IX ANALYSIS: LOW CONCENTRATION FOR RAS SEMIVOLATILES</p> <p style="text-align: right;">EVENT:</p>
<p>SAS: 5989Y MEMO 11 19 WATER DATE OF VALIDATION REPORT: 04/24/91</p> <p>LABORATORY: PACIFIC ANALYTICAL, INC. ANALYSIS: LOW CONCENTRATION FOR SAS CARBAMATE & UREA PESTICIDES</p> <p style="text-align: right;">EVENT:</p>
<p>CASE:LV1S29 MEMO 01 19 WATER DATE OF VALIDATION REPORT: 05/16/91</p> <p>LABORATORY: REGION IX ANALYSIS: LOW LEVEL FOR SAS VOLATILES</p> <p style="text-align: right;">EVENT:</p>

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

<p>CASE:16213 MEMO 04 19 WATER DATE OF VALIDATION REPORT: 06/18/91</p> <p>LABORATORY: ASSOCIATED LABORATORIES, INC. (ALI)</p> <p>ANALYSIS: (15) LOW & (4) MEDIUM CONCENTRATION FOR RAS METALS</p> <p>EVENT:</p>
<p>CASE:LV1S29 MEMO 03 19 WATER DATE OF VALIDATION REPORT: 06/18/91</p> <p>LABORATORY: REGION IX</p> <p>ANALYSIS: LOW CONCENTRATION FOR SAS ALKALINITY, TDS, CHLORIDE, NITRATE-N, NITRITE-N, SULFATE</p> <p>EVENT:</p>
<p>CASE:LV1S29 MEMO 05 19 WATER DATE OF VALIDATION REPORT: 06/28/91</p> <p>LABORATORY: REGION IX</p> <p>ANALYSIS: (15) LOW & (4) MEDIUM FOR SAS EDB/DBCP BY EPA METHOD 504</p> <p>EVENT:</p>
<p>SAS: 6155Y MEMO 06 19 WATER DATE OF VALIDATION REPORT: 07/15/91</p> <p>LABORATORY: PACIFIC ANALYTICAL, INC.</p> <p>ANALYSIS: LOW LEVEL FOR SAS HERBICIDES</p> <p>EVENT:</p>
<p>SAS: 6278Y MEMO 02 5 WATER DATE OF VALIDATION REPORT: 07/15/91</p> <p>LABORATORY: PACIFIC ANALYTICAL, INC.</p> <p>ANALYSIS: SAS - EDB/DBCP, HERBICIDES, ORGANOPHOSPHORUS-PESTICIDES</p> <p>EVENT:</p>
<p>CASE:16355 MEMO 01 5 WATER DATE OF VALIDATION REPORT: 07/16/91</p> <p>LABORATORY: ECOTECK LABORATORY SERVICES</p> <p>ANALYSIS: LOW LEVEL RAS - PESTICIDES/PCBs</p> <p>EVENT:</p>
<p>SAS: 6262Y MEMO 01 12 SOIL DATE OF VALIDATION REPORT: 09/06/91</p> <p>LABORATORY: SOUTHWEST RESEARCH INSTITUTE (SWRI)</p> <p>ANALYSIS: (10) LOW & (2) HIGH LEVEL FOR SAS HERBICIDES + DINOSEB ANALYSES</p> <p>EVENT:</p>
<p>CASE:LV1S63 MEMO 01 3 SOIL DATE OF VALIDATION REPORT: 10/28/91</p> <p>LABORATORY: REGION IX</p> <p>ANALYSIS: RAS + SAS VOLATILES + 1,3-DCP; 1,2,3-TCP; EDB/DBCP</p> <p>EVENT:</p>
<p>CASE:LV1S57 MEMO 01 19 WATER DATE OF VALIDATION REPORT: 11/19/91</p> <p>LABORATORY: REGION IX</p> <p>ANALYSIS: RAS SEMIVOLATILES</p> <p>EVENT:</p>

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

SAS: 6543Y	MEMO 04	19 WATER	DATE OF VALIDATION REPORT: 12/06/91
LABORATORY: KEYSTONE LABORATORIES, INC. (KEYTX)			EVENT:
ANALYSIS: SAS HERBICIDES			
SAS: 6606Y	MEMO 02	2 SOIL	DATE OF VALIDATION REPORT: 12/06/91
LABORATORY: TRIANGLE LABS., INC.			EVENT:
ANALYSIS: SAS DINOSEB			
CASE:LV1S57	MEMO 06	18 WATER	DATE OF VALIDATION REPORT: 12/06/91
LABORATORY: REGION IX			EVENT:
ANALYSIS: SAS EDB/DBCP BY EPA METHOD 504			
CASE:LV1S57	MEMO 08	1 WATER	DATE OF VALIDATION REPORT: 12/11/91
LABORATORY: REGION IX			EVENT:
ANALYSIS: SAS EDB/DBCP BY EPA METHOD 504			
SAS: 6543Y	MEMO 07	19 WATER	DATE OF VALIDATION REPORT: 12/24/91
LABORATORY: POST, BUCKLEY, SCHUH + JERNIGAN			EVENT:
ANALYSIS: (15) LOW & (4) MEDIUM LEVEL FOR SAS CARBAMATE/UREA PESTICIDES			
CASE:LV1S57	MEMO 03	19 WATER	DATE OF VALIDATION REPORT: 01/10/92
LABORATORY: REGION IX			EVENT:
ANALYSIS: R+S VOLATILES (LDL) + SAS 1,3-DCP; 1,2,3-TCP; EDB/DBCP			
CASE:LV1S57	MEMO 02	19 WATER	DATE OF VALIDATION REPORT: 01/14/92
LABORATORY: REGION IX			EVENT:
ANALYSIS: (19) LOW CONCENTRATION FOR SAS CHLORIDE, NITRATE-N, NITRITE-N, SULFATE, TDS & ALKANLINITY			
CASE:16882	MEMO 05	18 WATER	DATE OF VALIDATION REPORT: 01/15/92
LABORATORY: ASSOCIATED LABORATORIES, INC. (ALI)			EVENT:
ANALYSIS: (15) LOW & (3) MEDIUM CONCENTRATION FOR RAS METALS			
CASE:16882	MEMO 09	1 WATER	DATE OF VALIDATION REPORT: 01/20/92
LABORATORY: ASSOCIATED LABORATORIES, INC. (ALI)			EVENT:
ANALYSIS: MEDIUM CONCENTRATION FOR RAS METALS			

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

SAS: 6714Y MEMO 01	20 SOIL	DATE OF VALIDATION REPORT: 02/10/92
LABORATORY: WEYERHAEUSER ANALYTICAL SERVICES (WEYER)		
ANALYSIS: SAS VOA + EDB/DBCP		
EVENT:		
SAS: 6714Y MEMO 12	18 SOIL	DATE OF VALIDATION REPORT: 02/10/92
LABORATORY: AMERICAN ANALYTICAL & TECHNICAL SRVCE (AATS)		
ANALYSIS: SAS SEMIVOLATILES + PCNB		
EVENT:		
CASE:17190 MEMO 03	15 SOIL	DATE OF VALIDATION REPORT: 02/12/92
LABORATORY: NATURAL RESOURCES LABORATORY (NFT)		
ANALYSIS: LOW CONCENTRATION FOR RAS METALS		
EVENT:		
SAS: 6714Y MEMO 30	12 SOIL	DATE OF VALIDATION REPORT: 02/14/92
LABORATORY: AMERICAN ANALYTICAL & TECHNICAL SRVCE (AATS)		
ANALYSIS: SAS SEMIVOLATILES + PCBN		
EVENT:		
CASE:17190 MEMO 06	20 SOIL	DATE OF VALIDATION REPORT: 02/14/92
LABORATORY: NATURAL RESOURCES LABORATORY (NFT)		
ANALYSIS: (19) LOW & (1) MEDIUM CONCENTRATION FOR RAS METALS		
EVENT:		
CASE:17190 MEMO 23	20 SOIL	DATE OF VALIDATION REPORT: 02/14/92
LABORATORY: NATURAL RESOURCES LABORATORY (NFT)		
ANALYSIS: LOW CONCENTRATION FOR RAS METALS		
EVENT:		
SAS: 6714Y MEMO 18	20 SOIL	DATE OF VALIDATION REPORT: 02/15/92
LABORATORY: WEYERHAEUSER ANALYTICAL SERVICES (WEYER)		
ANALYSIS: SAS VOLATILES + EDB/DBCP		
EVENT:		
SAS: 6714Y MEMO 02	20 SOIL	DATE OF VALIDATION REPORT: 02/20/92
LABORATORY: WEYERHAEUSER ANALYTICAL SERVICES (WEYER)		
ANALYSIS: SAS VOLATILES & EDB/DBCP		
EVENT:		
SAS: 6714Y MEMO 07	13 SOIL	DATE OF VALIDATION REPORT: 02/20/92
LABORATORY: WEYERHAEUSER ANALYTICAL SERVICES (WEYER)		
ANALYSIS: SAS VOLATILES		
EVENT:		
SAS: 6714Y MEMO 15	8 SOIL	DATE OF VALIDATION REPORT: 02/20/92
LABORATORY: INTECH		
ANALYSIS: SAS OIL & GREASE		
EVENT:		

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

SAS: 6714Y	MEMO 19	9 SOIL	DATE OF VALIDATION REPORT: 02/20/92
LABORATORY: WEYERHAEUSER ANALYTICAL SERVICES (WEYER)			EVENT:
ANALYSIS: SAS VOLATILES + EDB/DBCP			
SAS: 6714Y	MEMO 24	3 SOIL	DATE OF VALIDATION REPORT: 02/20/92
LABORATORY: SOUTHWEST RESEARCH INSTITUTE (SWRI)			EVENT:
ANALYSIS: SAS DINOSEB			
SAS: 6714Y	MEMO 33	18 SOIL	DATE OF VALIDATION REPORT: 02/21/92
LABORATORY: AMERICAN ANALYTICAL & TECHNICAL SRVCE (AATS)			EVENT:
ANALYSIS: SAS SEMIVOLATILES + PCNB			
CASE:17190	MEMO 08	11 SOIL	DATE OF VALIDATION REPORT: 02/21/92
LABORATORY: DATACHEM LABORATORIES, INC. (DATAC)			EVENT:
ANALYSIS: LOW CONCENTRATION FOR RAS PESTICIDES/PCBs			
CASE:17190	MEMO 34	17 SOIL	DATE OF VALIDATION REPORT: 02/21/92
LABORATORY: DATACHEM LABORATORIES, INC. (DATAC)			EVENT:
ANALYSIS: RAS PESTICIDES/PCBs			
SAS: 6714Y	MEMO 20	20 SOIL	DATE OF VALIDATION REPORT: 02/25/92
LABORATORY: WEYERHAEUSER ANALYTICAL SERVICES (WEYER)			EVENT:
ANALYSIS: SAS VOLATILES + EDB/DBCP			
SAS: 6714Y	MEMO 27	7 SOIL	DATE OF VALIDATION REPORT: 02/25/92
LABORATORY: EUREKA LABORATORIES, INC.			EVENT:
ANALYSIS: SAS CARBAMATES/UREA PESTICIDES + ALDICARB			
CASE:17190	MEMO 35	20 SOIL	DATE OF VALIDATION REPORT: 02/25/92
LABORATORY: DATACHEM LABORATORIES, INC. (DATAC)			EVENT:
ANALYSIS: LOW LEVEL FOR RAS PESTICIDES/PCBs			
CASE:17190	MEMO 37	12 SOIL	DATE OF VALIDATION REPORT: 02/25/92
LABORATORY: DATACHEM LABORATORIES, INC. (DATAC)			EVENT:
ANALYSIS: LOW LEVEL FOR RAS PESTICIDES/PCBs			
SAS: 6714Y	MEMO 13	16 SOIL	DATE OF VALIDATION REPORT: 02/26/92
LABORATORY: SOUTHWEST RESEARCH INSTITUTE (SWRI)			EVENT:
ANALYSIS: SAS DINOSEB			

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

SAS: 6714Y	MEMO 25	20 SOIL	DATE OF VALIDATION REPORT: 02/26/92
LABORATORY: AMERICAN ANALYTICAL & TECHNICAL SRVCE (AATS)			EVENT:
ANALYSIS: SAS SEMIVOLATILES + PCNB			
SAS: 6714Y	MEMO 26	20 SOIL	DATE OF VALIDATION REPORT: 02/27/92
LABORATORY: EUREKA LABORATORIES, INC.			EVENT:
ANALYSIS: SAS CARBAMATES/UREA PESTICIDES + ALDICARB			
SAS: 6714Y	MEMO 04	20 SOIL	DATE OF VALIDATION REPORT: 02/28/92
LABORATORY: AMERICAN ANALYTICAL & TECHNICAL SRVCE (AATS)			EVENT:
ANALYSIS: SAS SEMIVOLATILES + PCNB			
SAS: 6714Y	MEMO 05	20 SOIL	DATE OF VALIDATION REPORT: 02/28/92
LABORATORY: EUREKA LABORATORY			EVENT:
ANALYSIS: SAS CARBAMATES + ALDICARB			
SAS: 6714Y	MEMO 10	2 SOIL	DATE OF VALIDATION REPORT: 02/28/92
LABORATORY: EUREKA (ERI)			EVENT:
ANALYSIS: SAS CARBAMATES + ALDICARB			
SAS: 6714Y	MEMO 11	19 SOIL	DATE OF VALIDATION REPORT: 02/28/92
LABORATORY: EUREKA (ERI)			EVENT:
ANALYSIS: SAS CARBAMATES + ALDICARB			
CASE:17190	MEMO 16	17 SOIL	DATE OF VALIDATION REPORT: 02/28/92
LABORATORY: DATACHEM LABORATORIES, INC. (DATAC)			EVENT:
ANALYSIS: RAS PESTICIDES/PCB			
SAS: 6714Y	MEMO 22	20 SOIL	DATE OF VALIDATION REPORT: 03/02/92
LABORATORY: EUREKA LABORATORIES, INC.			EVENT:
ANALYSIS: SAS CARBAMATES/UREA PESTICIDES + ALDICARB			
SAS: 6714Y	MEMO 38	12 SOIL	DATE OF VALIDATION REPORT: 03/02/92
LABORATORY: ATEC ENVIRONMENTAL			EVENT:
ANALYSIS: LOW CONCENTRATION FOR SAS GRAIN SIZE, POROSITY, PERMEABILITY & MOISTURE CONTENT			

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

SAS: 6714Y	MEMO 14	5 SOIL	DATE OF VALIDATION REPORT: 03/04/92
LABORATORY: MACK LABORATORIES, INC.			
ANALYSIS: SAS pH, NITRATE-N, NITRITE-N, SULFATE			
EVENT:			
SAS: 6714Y	MEMO 21	20 SOIL	DATE OF VALIDATION REPORT: 03/04/92
LABORATORY: EUREKA LABORATORIES, INC.			
ANALYSIS: SAS CARBAMATES/UREA PESTICIDES + ALDICARB			
EVENT:			
CASE:17190	MEMO 29	20 SOIL	DATE OF VALIDATION REPORT: 03/04/92
LABORATORY: NATURAL RESOURCES LABORATORY (NFT)			
ANALYSIS: LOW CONCENTRATION FOR RAS METALS			
EVENT:			
CASE:17190	MEMO 36	18 SOIL	DATE OF VALIDATION REPORT: 03/04/92
LABORATORY: DATACHEM LABORATORIES, INC. (DATAC)			
ANALYSIS: LOW LEVEL FOR RAS PESTICIDES/PCBS			
EVENT:			
CASE:LV2S19	MEMO 06	8 WATER	DATE OF VALIDATION REPORT: 03/04/92
LABORATORY: REGION IX			
ANALYSIS: LOW LEVEL FOR RAS + SAS VOLATILES + 1,3-DCP; 1,2,3-TCP; EDB/DBCP			
EVENT:			
SAS: 6714Y	MEMO 28	8 SOIL	DATE OF VALIDATION REPORT: 03/06/92
LABORATORY: THERMO ANALYTICAL INC./ERG			
ANALYSIS: SAS TOTAL ORGANIC CARBON (TOC)			
EVENT:			
CASE:17190	MEMO 32	8 SOIL	DATE OF VALIDATION REPORT: 03/09/92
LABORATORY: NATURAL RESOURCES LABORATORY (NFT)			
ANALYSIS: LOW CONCENTRATION FOR RAS METALS			
EVENT:			
SAS: 6714Y	MEMO 17	20 SOIL	DATE OF VALIDATION REPORT: 03/10/92
LABORATORY: WEYERHAEUSER ANALYTICAL SERVICES (WEYER)			
ANALYSIS: SAS VOLATILES + EDB/DBCP			
EVENT:			
SAS: 6714Y	MEMO 31	3 SOIL	DATE OF VALIDATION REPORT: 03/10/92
LABORATORY: MACK LABORATORIES, INC.			
ANALYSIS: SAS pH, NITRATE-N, NITRITE-N, SULFATE			
EVENT:			

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

CASE:LV2S19 MEMO 03 LABORATORY: REGION IX ANALYSIS: RAS + SAS VOLATILES + 1,3-DCP; 1,2,3-TCP; EDB/DBCP EVENT:	19 SOIL DATE OF VALIDATION REPORT: 03/10/92
CASE:LV2S19 MEMO 14 LABORATORY: REGION IX ANALYSIS: LOW LEVEL FOR SAS EDB/DBCP BY EPA METHOD 504 EVENT:	23 WATER DATE OF VALIDATION REPORT: 03/11/92
CASE:17190 MEMO 09 LABORATORY: DATACHEM LABORATORIES, INC. (DATAC) ANALYSIS: LOW LEVEL FOR RAS PESTICIDES/PCBs EVENT:	13 SOIL DATE OF VALIDATION REPORT: 03/13/92
CASE:LV2S19 MEMO 08 LABORATORY: REGION IX ANALYSIS: LOW LEVEL FOR SAS SEMIVOLATILES EVENT:	5 WATER DATE OF VALIDATION REPORT: 03/17/92
CASE:LV2S19 MEMO 07 LABORATORY: REGION IX ANALYSIS: LOW LEVEL FOR RAS + SAS VOLATILES 1,3-DCP; 1,2,3-TCP; EDB/DBCP EVENT:	15 WATER DATE OF VALIDATION REPORT: 03/18/92
CASE:LV2S19 MEMO 09 LABORATORY: REGION IX ANALYSIS: MEDIUM LEVEL FOR RAS + SAS SEMIVOLATILES & PCNB EVENT:	19 SOIL DATE OF VALIDATION REPORT: 03/19/92
CASE:LV2S19 MEMO 01 LABORATORY: REGION IX ANALYSIS: LOW CONCENTRATION FOR SAS CHLORIDE, NITRATE-N, NITRITE-N, SULFATE, TDS, ALKALINITY EVENT:	19 WATER DATE OF VALIDATION REPORT: 03/23/92
CASE:LV2S19 MEMO 02 LABORATORY: REGION IX ANALYSIS: LOW & MEDIUM LEVEL FOR RAS SEMIVOLATILES EVENT:	18 WATER DATE OF VALIDATION REPORT: 03/24/92
CASE:17532 MEMO 11 LABORATORY: NATURAL RESOURCES LABORATORY (NFT) ANALYSIS: MEDIUM CONCENTRATION FOR RAS METALS EVENT:	19 SOIL DATE OF VALIDATION REPORT: 03/27/92

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

SAS: 6939Y MEMO 15	19 SOIL	DATE OF VALIDATION REPORT: 04/01/92
LABORATORY: WADSWORTH/ALERT LABORATORIES, INC. (WADS)		
ANALYSIS: MEDIUM LEVEL FOR SAS ORGANOPHOSPHORUS PESTICIDES		
EVENT:		
CASE:LV2S19 MEMO 17	4 WATER	DATE OF VALIDATION REPORT: 04/02/92
LABORATORY: REGION IX		
ANALYSIS: LOW LEVEL FOR RAS PESTICIDES/PCBs		
EVENT:		
CASE:17532 MEMO 12	19 WATER	DATE OF VALIDATION REPORT: 04/13/92
LABORATORY: NATURAL RESOURCES LABORATORY (NFT)		
ANALYSIS: (15) LOW & (4) MEDIUM CONCENTRATION FOR RAS METALS		
EVENT:		
SAS: 6714Y MEMO 43	20 SOIL	DATE OF VALIDATION REPORT: 04/17/92
LABORATORY: ATEC ENVIRONMENTAL		
ANALYSIS: LOW LEVEL FOR SAS HERBICIDES		
EVENT:		
SAS: 6939Y MEMO 04	19 SOIL	DATE OF VALIDATION REPORT: 04/23/92
LABORATORY: EUREKA LABS., INC.		
ANALYSIS: (19) MEDIUM LEVEL FOR SAS CARBAMATE & UREA PESTICIDES & (19) N-METHYLCARBAMATES		
EVENT:		
SAS: 6939Y MEMO 05	19 WATER	DATE OF VALIDATION REPORT: 04/27/92
LABORATORY: EUREKA LABS., INC.		
ANALYSIS: (15) LOW & (4) MEDIUM LEVEL FOR SAS CARBAMATE & UREA PESTICIDES & SAS N-METHYLCARBAMATES		
EVENT:		
SAS: 6714Y MEMO 40	20 SOIL	DATE OF VALIDATION REPORT: 04/28/92
LABORATORY: ATEC ENVIRONMENTAL		
ANALYSIS: LOW LEVEL FOR SAS HERBICIDES		
EVENT:		
SAS: 6714Y MEMO 39	20 SOIL	DATE OF VALIDATION REPORT: 05/05/92
LABORATORY: ATEC ENVIRONMENTAL		
ANALYSIS: LOW LEVEL FOR SAS HERBICIDES		
EVENT:		
SAS: 6714Y MEMO 41	11 SOIL	DATE OF VALIDATION REPORT: 05/05/92
LABORATORY: ENVIRONMENTAL CONSULTING		
ANALYSIS: LOW LEVEL FOR SAS HERBICIDES		
EVENT:		

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

SAS: 6714Y	MEMO 44	20 SOIL	DATE OF VALIDATION REPORT: 05/15/92
LABORATORY: ATEC ENVIRONMENTAL			EVENT:
ANALYSIS: LOW LEVEL FOR SAS HERBICIDES			
SAS: 6714Y	MEMO 45	6 SOIL	DATE OF VALIDATION REPORT: 05/15/92
LABORATORY: ATEC ENVIRONMENTAL			EVENT:
ANALYSIS: LOW LEVEL FOR SAS HERBICIDES			
SAS: 6939Y	MEMO 13	42 WATER+SOIL	DATE OF VALIDATION REPORT: 05/15/92
LABORATORY: SOUTHWEST RESEARCH INSTITUTE (SWRI)			EVENT:
ANALYSIS: (23) LOW LEVEL WATER FOR SAS HERBICIDES & (19) SOIL/SEDIMENT FOR SAS HERBICIDES			
SAS: 6714Y	MEMO 42	20 SOIL	DATE OF VALIDATION REPORT: 05/20/92
LABORATORY: ATEC ENVIRONMENTAL			EVENT:
ANALYSIS: LOW LEVEL FOR SAS HERBICIDES			
CASE:LV2S45	MEMO 04	17 WATER	DATE OF VALIDATION REPORT: 06/01/92
LABORATORY: REGION IX			EVENT:
ANALYSIS: LOW LEVEL FOR RAS + SAS VOLATILES + 1,3-DCP; 1,2,3-TCP; EDB/DBCP			
CASE:LV2S45	MEMO 02	14 WATER	DATE OF VALIDATION REPORT: 06/05/92
LABORATORY: REGION IX			EVENT:
ANALYSIS: (13) LOW & (1) MEDIUM CONCENTRATION FOR SAS TOTAL DISSOLVED SOLIDS (TDS)			
CASE:LV2S45	MEMO 07	20 WATER	DATE OF VALIDATION REPORT: 06/08/92
LABORATORY: REGION IX			EVENT:
ANALYSIS: LOW LEVEL FOR RAS + SAS VOLATILES & 1,3-DCP; 1,2,3-TCP; EDB/DBCP			
CASE:LV2S19	MEMO 16	16 SOIL	DATE OF VALIDATION REPORT: 06/12/92
LABORATORY: REGION IX			EVENT:
ANALYSIS: MEDIUM LEVEL FOR SAS PESTICIDES/PCBS			
CASE:LV2S45	MEMO 08	13 WATER	DATE OF VALIDATION REPORT: 06/15/92
LABORATORY: REGION IX			EVENT:
ANALYSIS: LOW LEVEL FOR SAS EDB/DBCP BY EPA METHOD 504			

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

<p>CASE:LV2S45 MEMO 05 14 WATER DATE OF VALIDATION REPORT: 06/16/92</p> <p>LABORATORY: REGION IX ANALYSIS: (13) LOW & (1) MEDIUM FOR SAS CHLORIDE, NITRATE-N, NITRITE-N, SULFATE, CARBONATE, BICARBONATE, & TOTAL ALKALINITY</p> <p>EVENT:</p>
<p>CASE:LV2S45 MEMO 01 20 WATER DATE OF VALIDATION REPORT: 06/30/92</p> <p>LABORATORY: REGION IX ANALYSIS: (16) LOW & (4) MEDIUM CONCENTRATION FOR SAS TOTAL DISSOLVED SOLIDS (TDS)</p> <p>EVENT:</p>
<p>CASE:LV2S45 MEMO 03 20 WATER DATE OF VALIDATION REPORT: 07/02/92</p> <p>LABORATORY: REGION IX ANALYSIS: (16) LOW & (4) MEDIUM SAS CHLORIDE, NITRATE-N, NITRITE-N, SULFATE, CARBONATE, BICARBONATE, & TOTAL ALKALINITY</p> <p>EVENT:</p>
<p>CASE:LV2S45 MEMO 09 17 WATER DATE OF VALIDATION REPORT: 07/08/92</p> <p>LABORATORY: REGION IX ANALYSIS: (14) LOW & (3) MEDIUM LEVEL FOR SAS EDB/DBCP BY EPA METHOD 504</p> <p>EVENT:</p>
<p>SAS: 7196Y MEMO 06 34 WATER DATE OF VALIDATION REPORT: 07/15/92</p> <p>LABORATORY: POST, BUCKLEY, SCHUH, JERNIGAN ANALYSIS: (20) LOW & (5) MEDIUM LEVEL FOR SAS DINOSEB, & (8) LOW CARBAMATE/UREA PESTICIDES & ALDICARB ANALYSES</p> <p>EVENT:</p>
<p>CASE:LV2S45 MEMO 10 14 WATER DATE OF VALIDATION REPORT: 07/16/92</p> <p>LABORATORY: REGION IX ANALYSIS: (13) LOW & (1) MEDIUM CONCENTRATION FOR RAS TOTAL METALS</p> <p>EVENT:</p>
<p>CASE:LV2S45 MEMO 11 20 WATER DATE OF VALIDATION REPORT: 07/28/92</p> <p>LABORATORY: REGION IX ANALYSIS: (16) LOW & (4) MEDIUM CONCENTRATION FOR RAS TOTAL METALS</p> <p>EVENT:</p>
<p>SAS: 6714Y MEMO 46 20 SOIL DATE OF VALIDATION REPORT: 07/31/92</p> <p>LABORATORY: EAGLE PITCHER ENVIRONMENTAL ANALYSIS: (19) LOW & (1) MEDIUM LEVEL FOR SAS ORGANOPHOSPHORUS PESTICIDES</p> <p>EVENT:</p>
<p>SAS: 6714Y MEMO 47 20 SOIL DATE OF VALIDATION REPORT: 08/04/92</p> <p>LABORATORY: EAGLE PITCHER ENVIRONMENTAL ANALYSIS: (19) LOW & (1) MEDIUM LEVEL FOR SAS ORGANOPHOSPHORUS PESTICIDES</p> <p>EVENT:</p>

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

SAS: 6714Y MEMO 48	20 SOIL	DATE OF VALIDATION REPORT: 08/07/92
LABORATORY: EAGLE PITCHER ENVIRONMENTAL		
ANALYSIS: LOW LEVEL FOR SAS ORGANOPHOSPHORUS PESTICIDES		
EVENT:		
SAS: 6714Y MEMO 49	20 SOIL	DATE OF VALIDATION REPORT: 08/07/92
LABORATORY: EAGLE PITCHER ENVIRONMENTAL		
ANALYSIS: LOW LEVEL FOR SAS ORGANOPHOSPHORUS PESTICIDES		
EVENT:		
SAS: 6714Y MEMO 50	16 SOIL	DATE OF VALIDATION REPORT: 08/07/92
LABORATORY: EAGLE PITCHER ENVIRONMENTAL		
ANALYSIS: LOW FOR SAS ORGANOPHOSPHORUS PESTICIDES		
EVENT:		
SAS: 7432Y MEMO 06	14 WATER	DATE OF VALIDATION REPORT: 09/09/92
LABORATORY: TCT-ST. LOUIS		
ANALYSIS: (12) LOW & (2) MEDIUM LEVEL FOR SAS DINOSEB		
EVENT:		
SAS: 7432Y MEMO 07	12 WATER	DATE OF VALIDATION REPORT: 09/09/92
LABORATORY: TCT-ST. LOUIS		
ANALYSIS: (10) LOW & (2) MEDIUM LEVEL FOR SAS DINOSEB		
EVENT:		
CASE:LV2S62 MEMO 02	20 WATER	DATE OF VALIDATION REPORT: 09/09/92
LABORATORY: REGION IX		
ANALYSIS: LOW CONCENTRATION FOR SAS TOTAL DISSOLVED SOLIDS (TDS)		
EVENT:		
CASE:LV2S62 MEMO 01	13 WATER	DATE OF VALIDATION REPORT: 09/10/92
LABORATORY: REGION IX		
ANALYSIS: LOW LEVEL FOR SAS VOLATILE (LDL) & SAS EDB/DBCP		
EVENT:		
CASE:LV2S62 MEMO 05	20 WATER	DATE OF VALIDATION REPORT: 09/11/92
LABORATORY: REGION IX		
ANALYSIS: LOW LEVEL FOR SAS EDB/DBCP BY EPA METHOD 504		
EVENT:		
CASE:LV2S62 MEMO 08	3 WATER	DATE OF VALIDATION REPORT: 09/11/92
LABORATORY: REGION IX		
ANALYSIS: (2) LOW & (1) MEDIUM CONCENTRATION FOR SAS TOTAL DISSOLVED SOLIDS (TDS)		
EVENT:		

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

CASE:LV2S62 MEMO 03 LABORATORY: REGION IX ANALYSIS: (2) LOW & (3) MEDIUM LEVEL FOR SAS EDB/DBCP BY EPA METHOD 504 EVENT:	5 WATER DATE OF VALIDATION REPORT: 09/16/92
CASE:LV2S62 MEMO 04 LABORATORY: REGION IX ANALYSIS: (16 GW) & (4 W) SAS CHLORIDE, NITRATE-N, NITRITE-N, SULFATE, CARBONATE, BICARBONATE, & TOTAL ALKALINITY EVENT:	20 WATER DATE OF VALIDATION REPORT: 09/16/92
CASE:LV2S62 MEMO 10 LABORATORY: REGION IX ANALYSIS: (2) LOW & (1) MEDIUM CONCENTRATION FOR RAS TOTAL METALS EVENT:	3 WATER DATE OF VALIDATION REPORT: 09/18/92
CASE:LV2S62 MEMO 09 LABORATORY: REGION IX ANALYSIS: (2) LOW & (1) MEDIUM SAS CHLORIDE, NITRATE-N, NITRITE-N, SULFATE, CARBONATE, BICARBONATE, & TOTAL ALKALINITY EVENT:	3 WATER DATE OF VALIDATION REPORT: 09/21/92
SAS: 7457Y MEMO 01 LABORATORY: TCT-ST. LOUIS ANALYSIS: (12) LOW & (5) MEDIUM LEVEL FOR SAS DINOSEB EVENT:	17 WATER DATE OF VALIDATION REPORT: 09/23/92
CASE:LV2S62 MEMO 11 LABORATORY: REGION IX ANALYSIS: (9) LOW & (3) MEDIUM FOR RAS & SAS VOLATILES & SAS 1,3-DCP; 1,2,3-TCP; EDB/DBCP EVENT:	12 WATER DATE OF VALIDATION REPORT: 09/23/92
CASE:LV2S62 MEMO 12 LABORATORY: REGION IX ANALYSIS: LOW CONCENTRATION FOR RAS TOTAL METALS EVENT:	20 WATER DATE OF VALIDATION REPORT: 09/24/92
CASE:LV3S12 MEMO 01 LABORATORY: REGION IX ANALYSIS: (18) LOW & (2) MEDIUM CONCENTRATION FOR SAS TOTAL DISSOLVED SOLIDS (TDS) EVENT:	20 WATER DATE OF VALIDATION REPORT: 01/13/93
CASE:LV3S12 MEMO 02 LABORATORY: REGION IX ANALYSIS: (6) LOW & (3) MEDIUM CONCENTRATION FOR SAS TOTAL DISSOLVED SOLIDS (TDS) EVENT:	9 WATER DATE OF VALIDATION REPORT: 01/13/93

INFORMATION AVAILABLE FOR THE BROWN & BRYANT DATABASE

CASE:LV3S12 MEMO 03 LABORATORY: REGION IX ANALYSIS: LOW LEVEL FOR RAS & SAS VOLATILES (LDL)	19 WATER DATE OF VALIDATION REPORT: 01/22/93 EVENT:
CASE:LV3S12 MEMO 05 LABORATORY: REGION IX ANALYSIS: (5) LOW & (5) MEDIUM LEVEL FOR RAS & SAS VOLATILES	10 WATER DATE OF VALIDATION REPORT: 01/29/93 EVENT:
CASE:LV3S12 MEMO 04 LABORATORY: REGION IX ANALYSIS: (5) LOW & (1) MEDIUM LEVEL FOR RAS SEMIVOLATILES	6 WATER DATE OF VALIDATION REPORT: 02/04/93 EVENT:
CASE:LV3S12 MEMO 06 LABORATORY: REGION IX ANALYSIS: (18) LOW & (2) MEDIUM SAS CHLORIDE, NITRATE-N, NITRITE-N, SULFATE, CARBONATE, BICARBONATE & ALKALINITY	20 WATER DATE OF VALIDATION REPORT: 02/11/93 EVENT:
CASE:LV3S12 MEMO 07 LABORATORY: REGION IX ANALYSIS: SAS CHLORIDE, NITRATE-N, NITRITE-N, SULFATE, CARBONATE, BICARBONATE & ALKALINITY	9 WATER DATE OF VALIDATION REPORT: 02/11/93 EVENT:
CASE:LV3S12 MEMO 08 LABORATORY: REGION IX ANALYSIS: (6) LOW & (3) MEDIUM CONCENTRATION FOR RAS TOTAL METALS	9 WATER DATE OF VALIDATION REPORT: 02/12/93 EVENT:
CASE:LV3S12 MEMO 09 LABORATORY: REGION IX ANALYSIS: (19) LOW & (1) MEDIUM CONCENTRATION FOR RAS TOTAL METALS	20 WATER DATE OF VALIDATION REPORT: 02/12/93 EVENT:
CASE:LV3S12 MEMO 10 LABORATORY: REGION IX ANALYSIS: (6) LOW & (3) MEDIUM LEVEL FOR SAS EDB/DBCP BY EPA METHOD 504	9 WATER DATE OF VALIDATION REPORT: 02/26/93 EVENT:
CASE:LV3S12 MEMO 11 LABORATORY: REGION IX ANALYSIS: LOW LEVEL FOR SAS EDB/DBCP BY EPA METHOD 504	20 WATER DATE OF VALIDATION REPORT: 02/26/93 EVENT: