

Project # 1937



01396696

RECEIVED

MAR -5 01

COGCC



MAHONEY ENVIRONMENTAL CONSULTING INC.
1601 18th AVENUE
GREELEY, COLORADO 80631
970-332-2646, Fax 970-336-9541

March 2, 2001

Mr. Randall Ferguson, and
Mr. Ed Dimadio
Colorado Oil and Gas Conservation Commission
Denver, Colorado

Re: Sampling of Keota Oil Field Spill Site, SW1/4, Sec4, 9N, 61W .

Dear Mr. Ferguson and Mr. Dimadio

MAHONEY ENVIRONMENTAL CONSULTING INC., was contracted to sample a site associated with historical oil field activity in northern Weld County in SW1/4, Sec 4, 9N, 61W. The site is located on the east side of Weld County Road (WCR) 89 nine miles north of Highway 14 (Figure 1). The site is situated approximately 15 miles northeast from the town of Briggsdale. Access to the site is via a gravel road which intersects WCR 89.

The vicinity is used predominantly for cattle grazing activities. Vegetation in the area is characterized by wild grasses and cacti. No permanent surface water features are present in the study area or in the vicinity.

The Weld County Soil Survey identifies the surface soils as units 40 and 44 on sheet #19. Surface soil unit 40 identified as the Nunn loam is situated on the west side of the hill and is described as: "This deep well drained soil is on slightly dissected plains and stream terraces. It formed in calcareous loamy alluvium. Typically, the surface layer is grayish brown loam 7 inches thick. The subsoil is clay loam 25 inches thick. The substratum to a depth of 60 inches or more is calcareous clay loam. In some areas the surface layer is clay loam. Permeability of this Nunn soil is slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is slight to moderate. The hazard of soil blowing is slight. Range seeding is suitable if the range is in poor condition. This unit is well suited to windbreaks and environmental plantings".

Surface soil unit 44 identified as the Olney fine sandy loam is situated on the top and east side of the hill and is described as: "This deep, well drained soil is on smooth to moderate dissected plains. It formed in calcareous loamy alluvium. Typically the surface layer is brown fine sandy loam 6 inches thick. The upper 12 inches of the subsoil is sandy clay loam or loam, and the lower 10 inches is calcareous sandy loam. The substratum to a depth of 60 inches or more is calcareous sandy loam. Permeability of this Olney soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow to medium, and the hazard of water erosion is slight to moderate. The hazard of soil blowing is slight. Range seeding is suitable if the range is in poor condition. This unit is well suited to windbreaks and environmental plantings".

The Weld County Soil Survey report, Photo Sheet #19, 1978, shows that the subject site had been impacted. The photo illustrates a distinct variation in the surface conditions and the probable impact from the oil field activity (Figure 4). The photo symbol indicates that the west side of the area is a severely eroded area.

The objective of the project was to sample the surface soils at the site to delineate the probable extent of impact from oil field related spills. The probable area of impact from such spills is visibly recognized by a distinct contrast in the vegetation cover. It was observed that the probable impact area was absent of living vegetation. An extensive impacted area of dead decaying vegetation and soils absent of any indication of former vegetation cover is discernible (Figures 2A and 3A).

The visibly impacted area extends from the top of the hill to the east towards WCR 89, an approximate distance of 700 feet. The impacted area is narrow at the top of the hill (approximately 10-20 feet wide) and gradually widens downhill to the west (approximately 300 feet wide at the widest point from north to south).

A second impact area is situated on the east side of the hill. This eastern impact area includes a large non-vegetative area near the top of the hill and three possible smaller impact areas. These areas are also characterized by areas of stressed vegetation (predominantly dead decaying plants and wild grasses) and surface soils with no vegetation.

SCOPE OF WORK

Per instructions from the COGCC, it was estimated that 40 samples would be necessary to evaluate the entire site. It was estimated that a 50 foot grid pattern may sufficiently cover the area.

Samples would be collected to evaluate the surface soil conditions (0-4 inches). The samples would be analyzed for Sodium Absorption Ratio (SAR).

SAMPLING ACTIVITY

MEC Inc. commenced field activity on February 26, 2001. Sampling commenced with the collection of samples at the far western limits of the visible impact area (Sample 1 and 2). Samples 1 and 2 were collected approximately 20 feet east of WCR 89.

Samples were collected in rows from south to the north. The sampling started at 50 foot spacing in all direction. After the first two rows of samples were collected the spacing in the west to east direction was extended to a 100 foot grid (for samples 6 thru 10). Sampling rows four and five for soil samples 11 thru 23 were collected on a 100' by 100' grid pattern. The sampling grid for samples 24 through 30 varied because of the change of shape of the area. Sample locations for 31 through 40 were selected to fill in the evaluation of this large impacted area based on visual observation and the site conditions.

Each soil sampling location was marked with a wire stake orange marker flag. The sample number was written on each flag.

It is MEC Inc. understanding that the COGCC will utilize a Global Position System (GPS) to accurately record the sampling locations. MEC Inc. has prepared a site schematic to illustrate the approximate location of the sampling locations (Figure 2).

Each soil sample was collected as a grab sample. A clean stainless steel scoop was used for extracting the sample. The scoop was cleaned after each sample was collected. The sample was placed in a clean container.

SAMPLE DESCRIPTIONS

Materials sampled included area of visibly stressed vegetation, areas of semi-stressed vegetation, and areas of no visible vegetation present. The stressed vegetation areas showed signs of dead and decaying vegetation. Semi-stressed vegetation areas had a reduced amount of living grasses which showed obvious stunted growth. No vegetation areas had not signs of living or dead vegetation. The sample collection data table (Table 1) shows the observed vegetation condition of each sample.

The majority of the surface soils in the area are loam (sandy clay) deposits consisting of fine grain sediments and a limited amount of sand. Indications of petroleum staining were observed in some samples.

Due to the surface drainage patterns, the moisture condition of the samples varied from dry to wet. Recent snow fall in the area was at the final stages of snow melt.

Sampling of the smaller areas on the east side of the hill included conditions similar to the above samples.

LABORATORY RESULTS

A total of forty-five (45) surface soil samples were collected from the major west hillside impact area and the smaller east side area. The samples were analyzed at Weld Laboratories in Greeley, Colorado.

The SAR values ranged from 1.29 to 29.53. Fifteen (15) of the samples had SAR readings above the COGCC regulatory SAR 12 unit acceptable level. The sampling results including sample location rationale and soil description are included in Table 1.

Based on the sampling results it appears that the samples collected from areas without any indication of vegetation (dead or alive) commonly had SAR levels above 12. Specifically 21 of the samples were collected from areas described as 'No Vegetation present'. Thirteen (13) of these samples were found to have SAR values greater than 12 and, four (4) had SAR values between 10-12.

The Electric Conductivity (EC) and pH readings did not show a discernible pattern. However, five (5) of the 21 samples from the 'No Veg' areas had EC readings greater than 4.

The SAR results were plotted on the site schematic, Figures 2A and 2B. The plot shows a definite trend of elevated readings in the main visibly impacted area extending to the west from the base of the hill. Mixed readings above and below the SAR 12 value were also found on the hill slope in the neck area extending from the top of the hill. A few values of less than 10 SAR were measured from samples in the main area, but these samples were predominantly associated with stressed vegetation sampled areas.

BACKGROUND SAMPLE(s)

Samples number 6 and 11 were located along the boundary of the visible impacted areas in possible native vegetation condition sites. Both locations are located on the south side of the visible impacted area.

The SAR values for sample #6 was 4.36, EC 1.1, and pH 7.8.

The SAR values for sample #11 was 3.28, EC 2.4, and pH 7.7.

Overall, including these two samples, 38 of the 45 samples had SAR values greater than 4.36. In the main spill area, on the west side of the hill, including the above two samples, 36 of the 40 samples had SAR values greater than 4.36. Of the five samples collected on the east side of the hill, two samples had SAR values greater than 4.36.

DELINEATED AREA OF IMPACT

For this project the determination of the area of impact can be based on the following factors:

1) Visible observations. The impacted area(s) are easily recognized by the distinct pattern of vegetation occurrence. The sampling pattern was selected using the visual impacted area as a guide. A majority of the samples were collected from within the damaged vegetation area including areas with remnant dead vegetation present and areas devoid of plants or grasses. Samples were also collected around the perimeter of this area.

The visual impacted area as illustrated on Figures 2A and 2B includes an estimated 15,000 square foot area on the west hillside and 7,500 square foot area on the east hillside.

2) SAR Values. The sampling as described above had SAR values less than the regulatory 12 unit regulatory guideline level with the observed impacted area. The SAR value distribution pattern has been illustrated on Figures 2a and 2b. Figure 3 illustrates the distribution pattern of SAR greater than 12 and 10 on the western hillside. Based on the sampling results it is estimated that a 62,500 square foot area on the western hillside has SAR values greater than 12, and an additional 22,500 square foot area has a SAR value between 10 and 12.

Even though the majority of the SAR values in the upper neck area were below 12, it is visibly obvious that this area has been significantly impacted by the former oil field activities. This area would include an additional 12,500 square foot area not included with the SAR impact areas above.

A greater than 12 distribution pattern was not prepared for the east side of hill area, due to limited size. The large impact area on the east hillside included approximately 6,450 square foot area. This area had elevated SAR values. Even though the two smaller southern areas on the west hillside had low SAR values stressed vegetation conditions was observed. These areas cover approximately 450 square feet.

The above impacted area determinations are estimates. The application of the GPS will provide a more reliable estimate of the actual size of the impacted areas.

Thank you
J. Mahan

TABLE 1
KEOTA OIL FIELD
PRIMARY SPILL IMPACTED AREA INVESTIGATION
Location: WCR 89, 9 miles north of Highway 14, Weld
SOIL LABORATORY ANALYTICAL RESULTS

Analysis	SAR	pH	EC	Sample Location and Rationale	Sample Description
1	15.11	8.7	1.2	SW corner near WCR 89, Semi stressed Veg,* outside visual discernible impact area	Light brown sandy clay
2	6.74	8	0.8	SW corner near WCR 89, Semi stressed Veg, outside visual discernible impact area	Light brown sandy clay
3	6.16	7.8	0.9	NW boundary sample, next to grass and cactus veg area, No Veg at sample location*	Light brown sandy clay
4	5.72	7.6	1.4	West side, semi stressed veg area	Lt to Med brown sandy clay
5	9.97	2.1 8.4	8.4 2.1	West side, semi stressed veg area, located in recent active drainage area**	Med brown, moist sandy clay
6	4.36	7.8	1.1	South of visible impact area, approx 15 ft, grass and cactus veg present*, (may represent Native background sample)	Med brown sandy clay
7	13.29	8.8	3	In drainage, visible impact area, no veg	Moist brown sandy clay
8	10.47	8.5	2.8	Stressed Veg area*, between no veg area	Lt brown sandy clay
9	11.52	8.8	6	Near south bend of impact area on west side, No Veg	Md Brown Clay
10	5.6	8.5	1.8	Veg Area, minor dead/stressed Veg, outside visible impact area on northwest side	Lt to Md Brown Sandy Clay with Veg residue***
11	3.28	7.7	2.4	Veg Area, possible native conditions, outside visible impact area along south side	Lt to Md Brown Sandy Clay
12	7.03	7.6	1.1	Veg Area, Semi stressed Veg, near edge of visible impact area along south side	Lt to Md Brown Sandy Clay
13	15.15	8.4	4.2	In main visible impact area, Stress veg	Dry Light brown sandy clay with veg residue
14	17.95	8.9	2.9	In main visible impact area, No veg	Dry Light brown sandy clay
15	3.19	8.3	1.9	Approx 40 ft from N BBD, Semi Stressed Veg	Dry, Medium Brown Sandy Clay
16	19.91	9.2	2.4	Near turn in impact area on south side, in active drainage area, Stressed Veg	Wet dark-med Brown Sandy Clay
17	24.53	9	3.8	In central part of spill area, No Veg	Light Brown Sandy Clay
18	16.59	8.4	3	North side of central area, near extension of visible impact to north, No Veg	Med brown sandy clay
19	29.53	8.2	4.5	In a northern extension area, No Veg	Med Brown Sandy Clay
20	8.79	8.1	2	South side of central area, approx 20' north of impact area boundary, Stressed Veg	Moist Med Brown with Veg Residue

* Vegetation Conditions Observed (Note the following observations were done in February during winter conditions. The table indicates a variety of observed conditions with respect to vegetation.)

No Veg: pertains to no indication of plant growth at sampling location.

Stressed Veg: pertains to visible indication of former plant growth such as wild grasses, but all the vegetation is dead.

Semi Stressed Veg: pertains to locations observed with dead and some live vegetation.

Some locations were collected in areas with wild grasses and cactus growing similar to surrounding area.

**The irregular landsurface currently has developed drainage pathways that appear to be more active than others, consequently some sample areas are wet and others are dry.

***Veg Residue: Some sampling areas had a higher content of dead decaying veg debris in the samples.

TABLE 1 cont
KEOTA OIL FIELD - SPILL IMPACTED AREA INVESTIGATION
Location: WCR 89, 9 miles north of Highway 14, Weld
SOIL LABORATORY ANALYTICAL RESULTS

Analysis	SAR	pH	EC	Sample Location and Rationale	Sample Description
21	18.3	8.4	2.7	Central area, No Veg	Light Brown Sandy Clay
22	11.36	8	3.5	North Central part of impact area, No Veg.	Slightly moist dark brown clay with old petroleum stain
23	11.86	8.2	2.6	Along north central boundary of impact area, 5 ft from grasses, Stressed Veg	Moist, dark brown sandy clay some Veg Residue
24	10.63	7.8	7	At lower part of south side narrow area, extending from top of hill, Stain soil, No Veg	dark sandy clay
25	4.39	7.8	2.5	At lower part of north side narrow area extending from top of hill, Stain soil, Semi Stress Veg	Dark moist clayey soil
26	9	7.9	4.4	27' from south side of neck area extending from top of hill, Stressed Veg, Dark stain	Dry dark brown clayey soil
27	8.12	8.2	2	central part of neck area, No Veg	Dark brown moist clay
28	4.1	7.8	3.8	Along north side of neck area near north road, Stressed Veg area	Med brown sandy clay
29	15.45	8.2	3.8	Top of hill south side of impact area, No Veg	Lt Brown Clay Soil
30	19.31	7.9	2.9	Top of hill north side of impact area, No Veg	Stain sandy clay soil
31	7.84	8.7	0.6	Central part of top of hill area, Stressed Veg	Dark brown, Veg Residue
32	28.48	8.2	8.2	In middle portion of neck area, No Veg.	Lt to Md Brown Sandy Clay
33	5.24	7.9	2	Along central north boundary area, Stress veg	Light brown sandy clay
34	7.59	8	5	1 ft from south boundary in mid section of neck area, No veg, Native Veg 1 ft too south	Dry dark brown sandy clay
35	5.17	7.8	2.3	Lower Central neck area, Semi Stressed Veg	Dry, Medium Brown Sandy Clay
36	29.25	8.4	6.8	North arm extension approx 40 ft from north bbd, No Veg	Dark-med Brown Sandy Clay
37	5.77	7.8	2.3	In central part of spill area below steep section, Stressed Veg	Dry, Med Brown Sandy Clay
38	4.63	7.9	1.7	North side of spill impact, Stress Veg	Med brown sandy clay
39	9.51	8.7	2.1	200 square foot isolated barren area north of main impact area, Semi Stress veg	Med Brown Sandy Clay
40	16.77	8.6	3.8	Central portion of lower area near western limits of impact, No Veg	Light Brown
SAMPLES 41-45 EAST SIDE OF HILL BELOW					
41	15.62	8.6	3.9	Top of hill of larger impact area on east side of hill, No Veg	Light brown sandy clay
42	6.08	9.3	12.4	Lower part of large impact area on east side of hill, Stress Veg	Med brown sandy clay, with veg residue
43	1.29	5.4	1.1	Barren area to the east on top of hill, No Veg	Med brown sandy clay
44	1.76	8	3.3	Isolated area approx 250 sq ft south of larger spill area on top east side of hill, Both No Veg and Stressed Veg surface conditions	MD brown sandy clay
45	2.6	8.2	3	Isolated southern most area approx 150 sq ft to the south, Both No Veg and Stressed Veg	Med brown sandy clay

SOIL SAMPLING RESULTS BY SURFACE SOIL CONDITIONS

[illegible]

* Vegetation Conditions Observed (Note the following observations were done in February during winter conditions)

The table indicates a variety of observed conditions with respect to vegetation

No. Veg. pertains to no indication of plant growth at sampling location.

Stressed Veg: pertains to visible indication of former plant growth such as wild grasses, but all the vegetation is dead

Semi Stressed Veg: pertains to locations observed with dead and some live vegetation

Some locations were collected in areas with wild grasses and cactus growing similar to surrounding area.

Some locations were collected in areas with wild grasses and cactus growing similar to surrounding area.

***Veg Residue: Some sampling areas had a higher content of dead, decaying veg debris in the samples

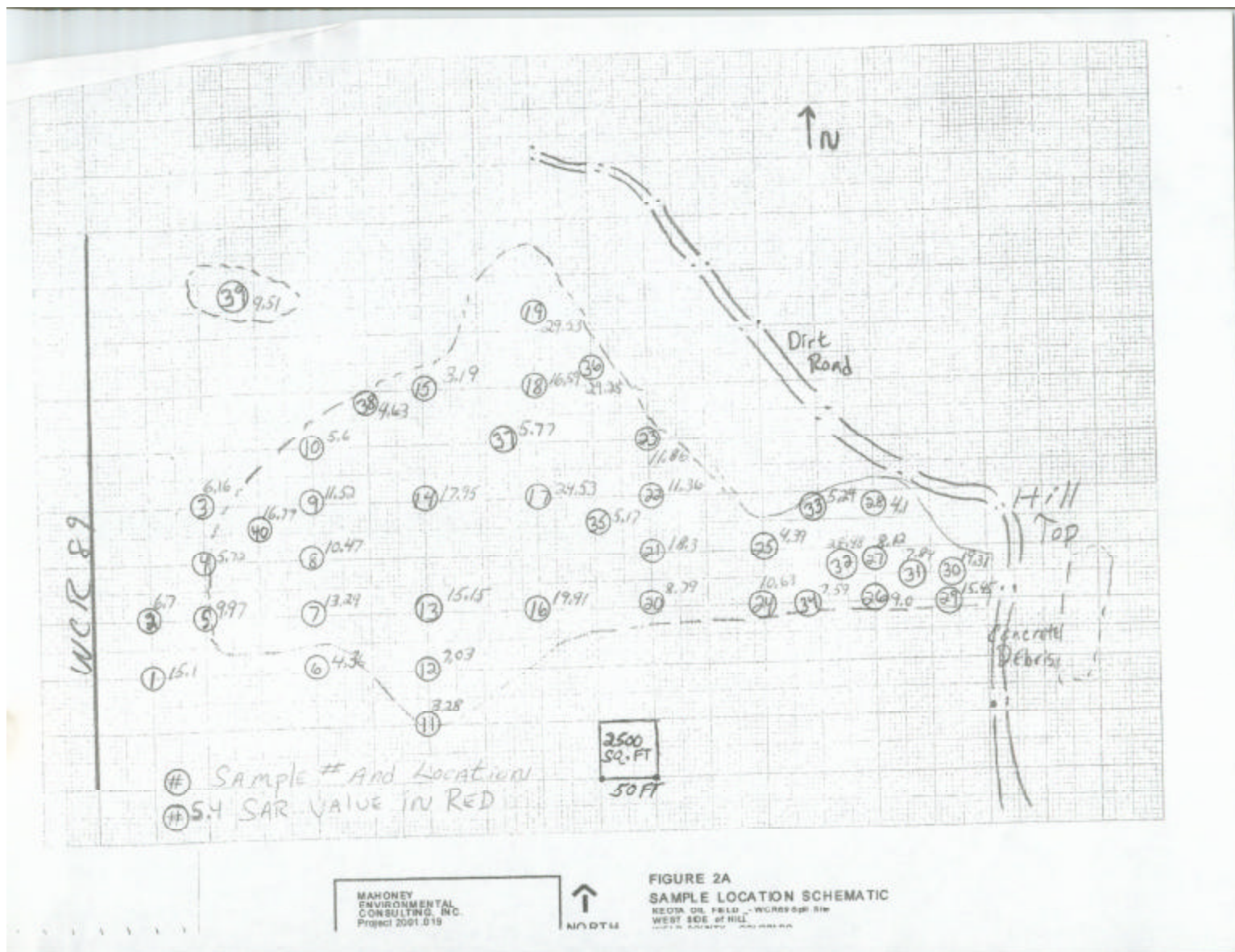
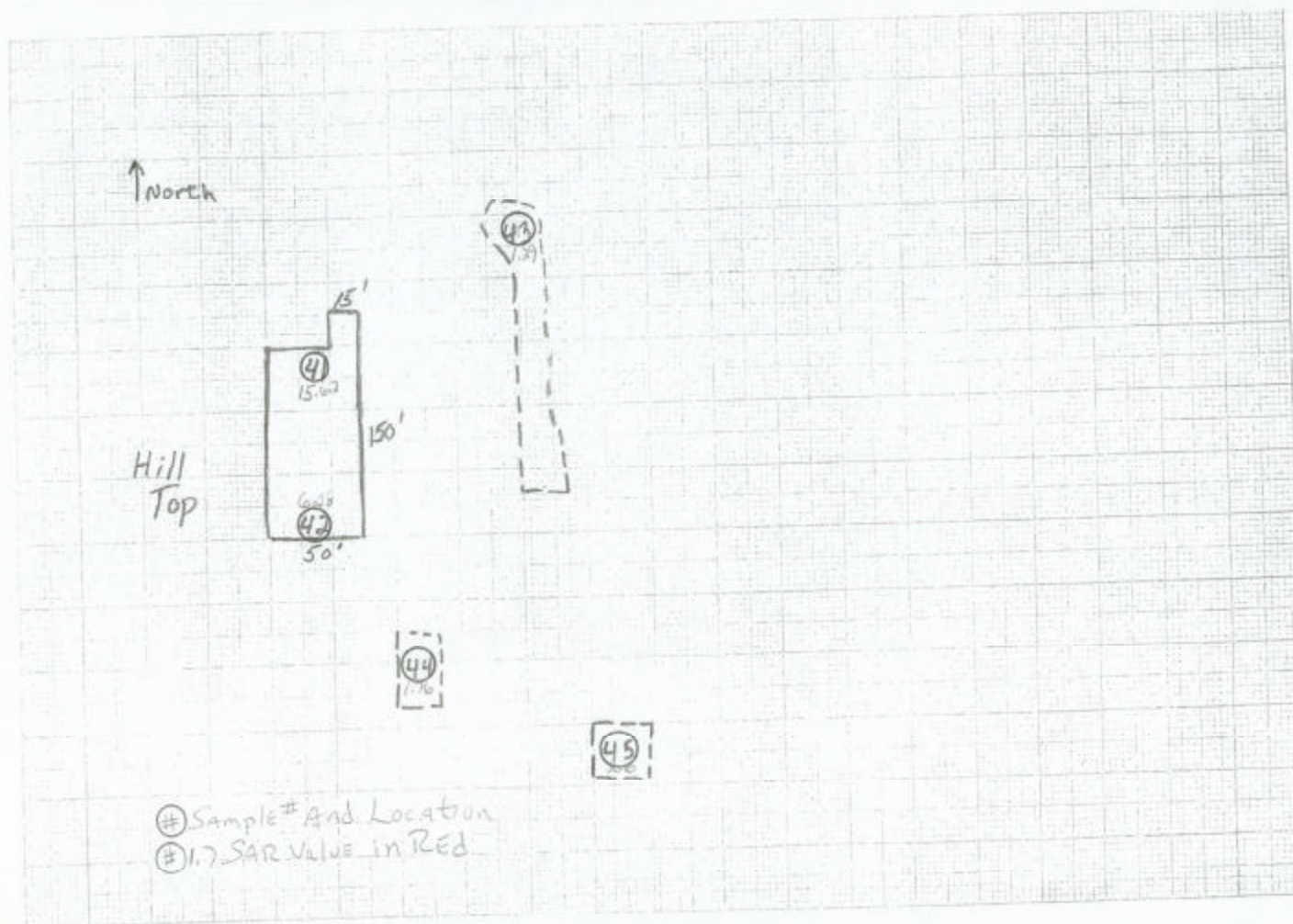


FIGURE 2A
SAMPLE LOCATION SCHEMATIC
KEOTA OIL FIELD - WCR 89 Site
WEST SIDE OF HILL

MAHONEY
ENVIRONMENTAL
CONSULTING, INC.
Project 2001.019

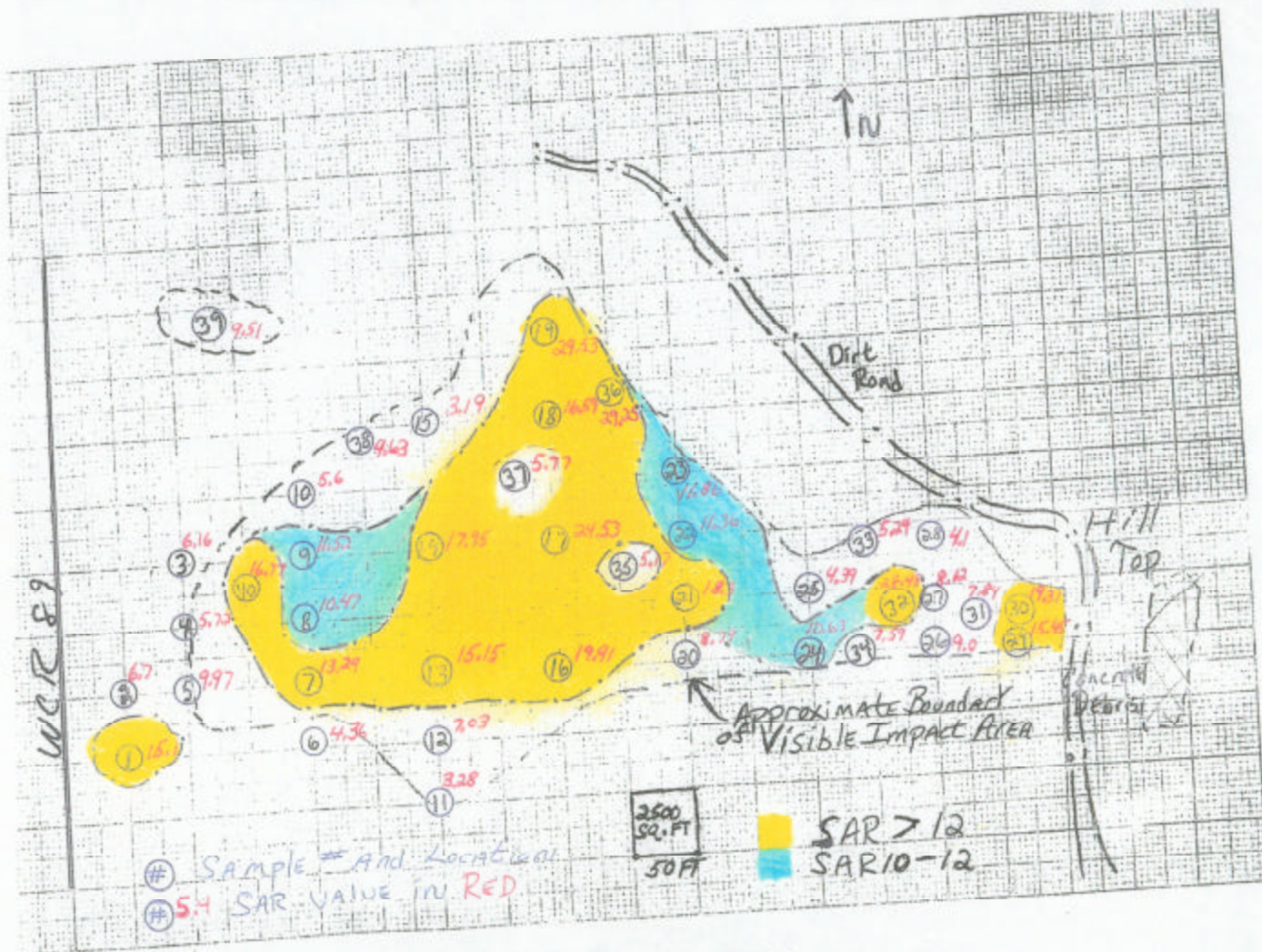




MAHONEY
ENVIRONMENTAL
CONSULTING, INC.
Project 2001.019



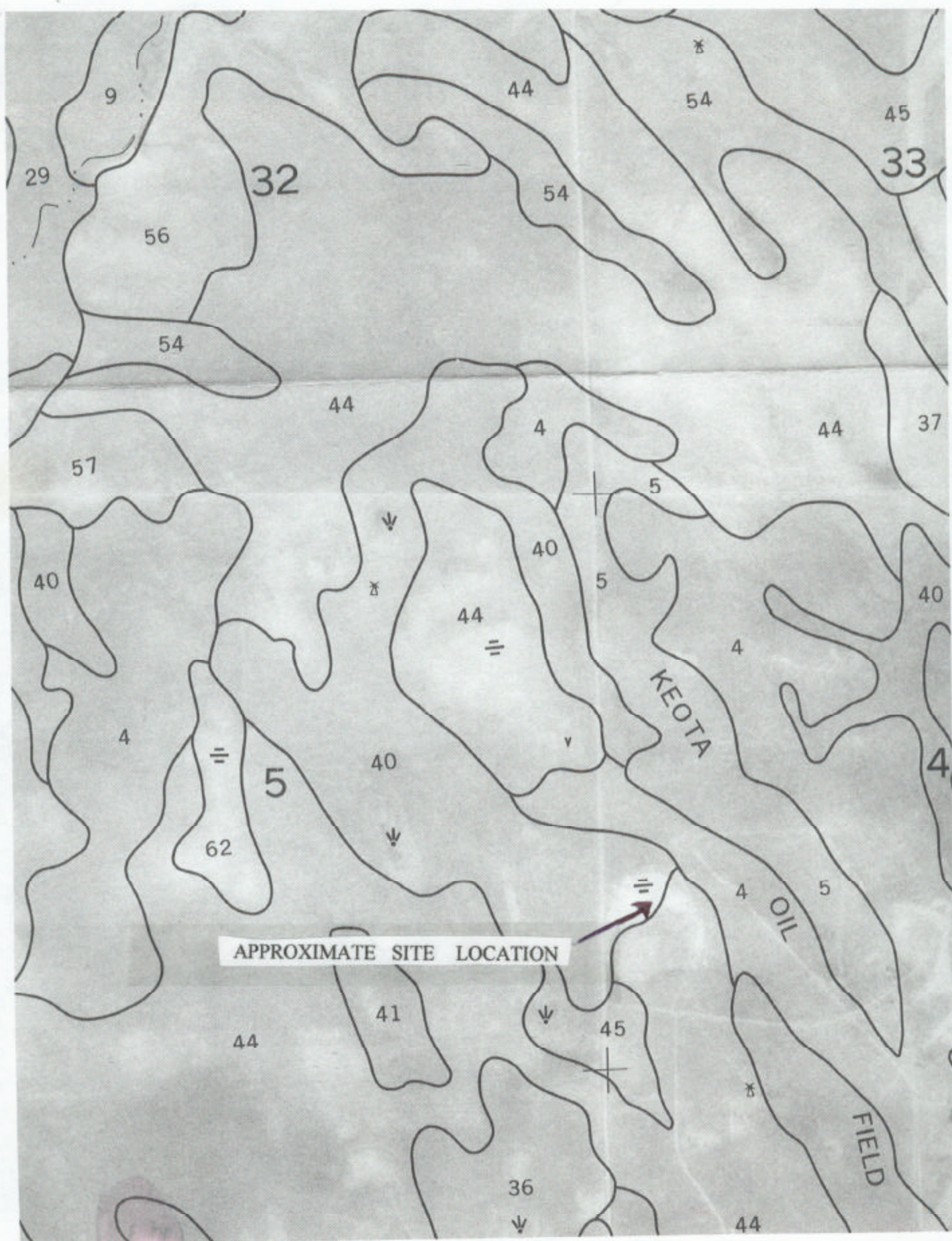
FIGURE 2B
SAMPLE LOCATION SCHEMATIC
KEOTA OIL FIELD - WCR995 pit Site
EAST SIDE of HILL
WELD COUNTY, COLORADO



MAHONEY
ENVIRONMENTAL
CONSULTING, INC.
Project 2001.019



FIGURE 3
SAR > 12 DISTRIBUTION SCHEMATIC
KEOTA OK. FIELD - WCR8989M SW
WEST SIDE OF HILL



WELD LABORATORIES, INC.

1527 First Avenue • Greeley, Colorado 80631

Phone: (970) 353-8118 • Fax: (970) 353-1671

February 28, 2001

Mahoney Environmental Consulting, Inc.

1601 10th Ave.

Greeley, CO 80631

Laboratory No. 4384

Project ID: North Weld County - Keota Oilfield West

Date Sampled: 2/26/01

Date Rec'd: 2/27/01

Date Prepared: 2/27-28/01

Date Analyzed: 2/28/01

Sample ID	pH (SI Units)	Conductivity (mmhos/cm)	Calcium (mg/kg)	Magnesium (mg/kg)	Sodium (mg/kg)	SAR
1	8.7	1.2	3875	110	3500	15.11
2	8.0	0.8	3600	187	1533	6.74
3	7.8	0.9	2850	250	1280	6.16
4	7.6	1.4	3525	383	1343	5.72
5	8.4	2.1	6500	280	3025	9.97
6	7.8	1.1	3125	168	925	4.36
7	8.8	3.0	6350	247	3975	13.29
8	8.5	2.8	4950	217	2775	10.47
9	8.8	6.0	4250	177	2825	11.52
10	8.5	1.8	5975	340	1648	5.80
11	7.7	2.4	4875	325	878	3.28
12	7.6	1.1	3175	154	1498	7.03
13	8.4	4.2	4150	215	3700	15.15
14	8.9	2.9	5875	173	5125	17.95
15	8.3	1.9	4925	191	840	3.19
16	9.2	2.4	3100	110	4150	19.91
17	9.0	3.8	2495	82	4575	24.53
18	8.4	3.0	2480	97	3100	16.59
19	8.2	4.5	1858	60	4750	29.53
20	8.1	2.0	5850	230	2525	8.79
21	8.4	2.7	3000	56	3700	18.30
22	8.0	3.5	4450	187	2850	11.36
23	8.2	2.6	4000	127	2800	11.86

Sampling procedures can affect the value of analytical results - customers are advised to use appropriate sampling protocol to insure samples are truly representative of the bulk sample.

WELD LABORATORIES, INC.

1527 First Avenue • Greeley, Colorado 80631

Phone: (970) 353-8118 • Fax: (970) 353-1671

Sample ID	pH (SI Units)	Conductivity (mmhos/cm)	Calcium (mg/kg)	Magnesium (mg/kg)	Sodium (mg/kg)	SAR
24	7.8	7.0	9150	236	3775	10.63
25	7.8	2.5	6750	295	1360	4.39
26	7.9	4.4	4625	325	2353	9.00
27	8.2	2.0	4025	169	1938	8.12
28	7.8	3.8	4625	308	1070	4.10
29	8.2	3.8	8825	348	5450	15.45
30	7.9	2.9	4675	330	5075	19.31
31	8.7	0.6	3875	253	1868	7.84
32	8.2	8.2	3250	64	6000	28.48
33	7.9	2.0	8800	212	1821	5.24
34	8.0	5.0	3925	295	1835	7.59
35	7.8	2.3	7200	330	1655	5.17
36	8.4	6.8	2775	89	5750	29.25
37	8.1	2.2	6025	255	1685	5.77
38	7.9	1.7	6900	368	1460	4.63
39	8.7	2.1	3625	86	2123	9.51
40	8.6	3.8	3750	203	3900	16.77
41	8.6	3.9	2500	90	2925	15.62
42	9.3	12.4	4875	500	1670	6.08
43	5.4	1.1	2273	164	236	1.29
44	8.0	3.3	4725	388	470	1.76
45	8.2	3.0	4575	263	670	2.60

Sampling procedures can affect the value of analytical results – customers are advised to use appropriate sampling protocol to insure samples are truly representative of the bulk sample.

Chain of Custody Record

North Weld County, Keota Gilchrist
- WEST

Weld Laboratories, Inc.

1527 1st Avenue Established 1978
Greeley, CO 80631-5936
Phone: (970)353-8118 Fax: (970) 353-1671

COMPANY NAME Mahoney ENV CONTACT NAME John Mahoney TELEPHONE NO. 970-353-2644

Project No: <u>2001-019</u>		Samplers: Print Name <u>John Mahoney</u> Signature <u>[Signature]</u>		ANALYSIS										REMARKS						
SAMPLE ID	SAMPLE LOCATION	Composite	Grab	Date	Time	Water	Liquid	Oil	Solid	No. of Containers	SAR	EC	PH							
11	Spill Area		✓							1	0.2									Same as page 1
12	And Boundary		✓							1	0.1									
13	"		✓							1	0.2									
14	"		✓							1	0.1									
15	"		✓							1	0.2									
16	"		✓							1	0.2									
17	"		✓							1	0.1									
18	"		✓							1	0.2									
19	"		✓							1	0.1									
20	"		✓							1	0.2									

COMMENTS:

Page 2 of 5

Relinquished by: (Signature) <u>[Signature]</u>	Received by: (Signature) <u>[Signature]</u>	Date <u>5/27/01</u>	Time <u>11:30</u>
Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Dispatched by: (Signature)	Date: <u>5/27/01</u> Time:	Received for Laboratory by:	Date Time
Method of Shipment:			

Chain of Custody Record
North Weld County - Kenta C. T. Felt
- West

1527 1st Avenue Established 1978
Greeley, CO 80631-5936
Phone: (970)353-8118 Fax: (970) 353-1671

COMPANY NAME Al-Honey & Co CONTACT NAME John Al-Honey TELEPHONE NO. 910-312-2698

Samplers: Print Name <u>John Matheny</u> Signature <u>John Matheny</u>		ANALYSIS
--	--	----------

[illegible]

SAMPLE ID	SAMPLE LOCATION	Compo	Grab	Date	Time	Water	Liquid	Oil	Solid	No. of Containers	DW	EC	pH							REMARKS
21	all Area	V		2606					1	1	0	0	0							Same as
22	and Grounds	V							1	1	0	0	0							Page 1
23	"	V		"					1	1	0	0	0							
24	"	V		"					1	1	0	0	0							
25	"	V		"					1	1	0	0	0							
26	"	V		"					1	1	0	0	0							
27	"	V		"					1	1	0	0	0							
28	"	V		"					1	1	0	0	0							
29	"	V		"					1	1	0	0	0							
30	"	V		"					1	1	0	0	0							

COMMENTS: Page 3 of 5

Relinquished by: (Signature)		Received by: (Signature)		Date	Time
Relinquished by: (Signature)		Received by: (Signature)		Date	Time
Dispatched by: (signature)	Date:	Time:	Received for Laboratory by:	Date	Time
Method of Shipment:					

Chain of Custody Record

North Weld County, Kenda Oil Field
WEST

Weld Laboratories, Inc.

1527 1st Avenue Established 1978
Greeley, CO 80631-5936
Phone: (970)353-8118 Fax: (970) 353-1671

COMPANY NAME Weld Energy E&P CONTACT NAME John McHenry TELEPHONE NO. _____

Project No. <u>2001017</u>		Signature <u>John McHenry</u>		ANALYSIS										REMARKS						
SAMPLE ID	SAMPLE LOCATION	Composite	Grab	Date	Time	Water	Liquid	Oil	Solid	No. of Containers	SAR	PH								
31	grit & sand		✓	1/2/01					✓	1	0	2	1							Same As Page 1
32	"		✓	"					✓	1	0	0	0							
33	"		✓	"					✓	1	0	0	0							
34	"		✓	"					✓	1	0	0	0							
35	"		✓	"					✓	1	0	0	0							
36	"		✓	"					✓	1	0	0	0							
37	"		✓	"					✓	1	0	0	0							
38	"		✓	"					✓	1	0	0	0							
39	"		✓	"					✓	1	0	0	0							
40	"		✓	"					✓	1	0	0	0							

COMMENTS: Page 4 of 5

Relinquished by: (Signature) <u>John McHenry</u>		Received by: (Signature) <u>[Signature]</u>		Date	Time
Relinquished by: (Signature) _____		Received by: (Signature) _____		Date	Time
Dispatched by: (Signature) _____		Date	Time	Received for Laboratory by: _____	
Method of Shipment: _____		Date	Time	Date	

Chain of Custody Record

North West County, Kootenai Oil Field
WCR 89 West

Weld Laboratories, Inc.

1527 1st Avenue Established 1978
Greeley, CO 80631-5936
Phone: (970)353-8118 Fax: (970) 353-1671

COMPANY NAME MaHoney E&V CONTACT NAME John MaHoney TELEPHONE NO. 970-352-2644

Sample: Print Name <u>John MaHoney</u> Signature		ANALYSIS										REMARKS		
Project No: <u>20011-019</u>	Composite	Grab	Date	Time	Sample Type				No. of Containers	AR	EC		PH	
SAMPLE ID	SAMPLE LOCATION					Water	Liquid	Oil	Solid					
41	NORTH END of Loop Area		✓	2/26/01					✓	1	✓	✓	✓	- Small Impact
42	SOUTH END of Loop Area		✓	2/26/01					✓	1	✓	✓	✓	Areas on Top + EA
43	On a Spot Top H-11-TW EAST		✓	2/26/01					✓	1	✓	✓	✓	OF Hill
44	Impact Area South of #42		✓	2/26/01					✓	1	✓	✓	✓	- Surface Sample
45	Far South Impact Area #44		✓	2/26/01					✓	1	✓	✓	✓	2-4 inches
														- Locations illustrated on Site Schematic

COMMENTS: Page 5 of 5

Relinquished by: (Signature) <u>John MaHoney</u>	Received by: (Signature) <u>[Signature]</u>	Date <u>2/27/01</u>	Time <u>1630</u>
Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Dispatched by: (Signature)	Date <u>2/26/01</u> Time	Received for Laboratory by:	Date Time
Method of Shipment:			

Chain of Custody Record

North Weld County, Keota Oil Field
- WEST

Weld Laboratories, Inc.

1527 1st Avenue Established 1978
Greeley, CO 80631-5936
Phone: (970)353-8118 Fax: (970)353-1671

COMPANY NAME MAHONEY ENV CONTACT NAME John Mahoney TELEPHONE NO. 970-352-2644

Project No: <u>2001.019</u>		Sampler's Print Name: <u>John Mahoney</u>		Signature: <u>[Signature]</u>		ANALYSIS										REMARKS				
SAMPLE ID	SAMPLE LOCATION	Composite	Grab	Date	Time	Water	Liquid	Oil	Solid	No. of Containers	SAR	EC	PH							
#1	WEST SPILL			2/26/01						1	LOL									All samples
#2	"									2	LOL									are surface
#3	"									2	LOL									0-4 inches
#4	"									2	LOL									- From
#5	"									2	LOL									Large Spill
#6	Spill Area									2	LOL									Green on West
#7	"									2	LOL									Side of Hill
#8	"									2	LOL									Sampled 1-40
#9	"									2	LOL									- All locations illustrated
#10	"									2	LOL									on Site Schematic

COMMENTS:

Page 1 of 5

Relinquished by: (Signature) <u>[Signature]</u>		Received by: (Signature) <u>[Signature]</u>		Date	Time
Relinquished by: (Signature) <u>[Signature]</u>		Received by: (Signature) <u>[Signature]</u>		Date	Time
Dispatched by: (Signature)	Date	Time	Received for Laboratory by:	Date	Time
Method of Shipment:					