

102.38.111

**Subsurface Site Investigation
Former Unocal Bulk Plant
328.5 Illinois Street
Fairbanks, Alaska
ADEC File No. 102.38.001**

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**For
Unocal RRMC**

February 5, 2003

Unocal RRMC
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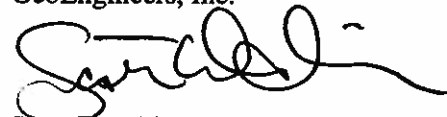
Attention: Dr. Mark Brearley

We are submitting two copies of our report "Subsurface Site Investigation" for the former Unocal Bulk Plant, located at 328.5 Illinois Street in Fairbanks, Alaska. Contractual terms for our services are described in Purchase Order/Contract Number MXB1419; our services were described in "Work Plan – Site Investigation" dated September 10, 2002.

We appreciate the opportunity to be of continued service to Unocal. Please call if you have questions regarding this report.

Yours very truly,

GeoEngineers, Inc.



Scott E. Widness, P.E.
Principal

SEW:skl

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Attachments

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**SUBSURFACE SITE INVESTIGATION
FORMER UNOCAL BULK PLANT
328.5 ILLINOIS STREET
FAIRBANKS, ALASKA
FOR
UNOCAL RRM C**

INTRODUCTION

This report presents the results of our subsurface site investigation at the former Unocal Bulk Plant, located at 328.5 Illinois Street in Fairbanks, Alaska. The site is situated in the Railroad Industrial area which is bounded by Noyes Slough to the north and east and Chena River to the south. See Figure 1 for site vicinity. The site is approximately 3.11 acres that are owned by the Alaska Railroad Corporation (ARRC) and currently leased to Big State Logistics. Big State Logistics owns and occupies two of the existing buildings. The site is shown relative to surrounding physical features on Figure 2. Previous studies have been completed of the railroad industrial area and of specific properties surrounding the site. The Alaska Department of Environmental Conservation (ADEC) requested an investigation of the site. The purpose of this site investigation is to evaluate the nature and extent of soil and ground water contamination at the former bulk plant relative to current ADEC regulations (18AAC75, dated July 11, 2002).

BACKGROUND

The former bulk plant site is situated in the railroad industrial area of Fairbanks which is located just north of downtown. Unocal utilized the western 1.84 acres of the site to store and dispense fuel between approximately 1952 and 1982, and added the western 1.27 acres onto the lease in 1961. Former fuel facilities included two 55,000-gallon and nine 20,000-gallon aboveground storage tanks (ASTs), underground pipelines, pumping facilities, a truck loading rack and fuel dispensing pumps. Fuel stored on the site consisted of diesel and aviation gas. The Alaska Road Commission leased the eastern 1.27 acres of the site from 1941 to 1961. The entire site was leased by Interior Leasing from 1982 to 1989, and by CEM Leasing from 1989 to 2001. From 1982 to 2001, the facility was operated by Petroleum Sales. According to Phil Tannehill, co-owner of Petroleum Sales, the ASTs were removed in 1993, and the piping and dispensing equipment were removed in 1997. It is our understanding that the underground piping removal was performed by Petroleum Sales and was not regulated by ADEC. Big State Logistics is currently leasing the property from the railroad and is utilizing two of the three existing buildings for vehicle maintenance and storage.

PREVIOUS INVESTIGATION

Shannon & Wilson, Inc. (S&W) conducted a site investigation titled "Soil Sampling and Installation of Groundwater Monitoring Wells, Petroleum Sales, Fairbanks, Alaska," dated July 19, 1989. In June 1989, S&W installed two monitoring wells (MW-41 and MW-42) at the site. MW-41 was located just south of the former truck load rack and MW-42 was just north of the pump house, both on the west side of the site. Approximately 4 feet of gravel fill, underlain

by native silty sand and sandy gravel, was encountered in the borings. The depth to ground water during drilling was approximately 16 feet below ground surface (bgs). Odor and sheen were noted for soil samples recovered from the borings, and headspace gas concentrations ranged from 40 to 300 parts per million (ppm). The wells were monitored two weeks after installation. Depths to ground water were 16.52 feet and 15.71 feet bgs in wells MW-41 and MW-42, respectively. Floating product was encountered in both wells at thicknesses of 0.01 feet in MW-41 and 0.03 feet in MW-42. These wells have since been abandoned by Petroleum Sales, although no documentation was encountered during our ADEC and ARRC file reviews. See Figure 2 for locations of the former monitoring wells.

SCOPE OF WORK

This site investigation was conducted to evaluate soil and ground water contamination found on the property formerly leased by Unocal, located at 328.5 Illinois Street, herein referred to as the "site." ADEC requested that Unocal investigate the potential of contamination resulting from past or present operations at the site.

The soil borings and monitoring wells were placed in locations that best represented past operational practices which may have resulted in soil and ground water contamination. Two of the well locations were adjusted by our field engineer to avoid utilities and to better evaluate previous activities at the site.

Our specific scope of services proposed for this subsurface investigation is summarized below.

1. Prepared a site health and safety plan for field personnel and subcontractors involved in the soil boring explorations.
2. Conducted a public utility locate for the monitoring well locations.
3. Subcontracted with Homestead Drilling to advance six soil borings to 17 to 20 feet bgs. The soil borings were advanced using a truck-mounted rotary drill rig.
4. Obtained soil samples from the soil borings using a split spoon sampler advanced at 2.5-foot intervals from the surface to the depth of ground water; collected an additional sample at the bottom of each boring.
5. Using laboratory-supplied containers, collected soil samples from the ground water interface of each boring for chemical analysis. An additional soil sample was collected from a depth interval above the ground water interface when field screening (odor, sheen and headspace) indicated a potential for petroleum-contamination greater than at the interface.
6. Submitted the soil sample(s) to North Creek Analytical, Inc. (NCA) in Bothell, Washington, for chemical analysis. Requested the following analyses for each soil sample: gasoline-range organics (GRO) and benzene, ethylbenzene, toluene and xylenes (BETX) by ADEC Method AK101; diesel-range organics (DRO) by ADEC Method AK102; and total organic carbons (TOC) by Environmental Protection Agency (EPA) Method 9060 Modified.
7. Contained all soil cuttings generated during drilling operations in labeled, 55-gallon steel drums and temporarily stored them on site. Soil cuttings generated during the study will be characterized for transport to OIT, Inc. in Moose Creek for disposal.

8. Observed the installation and construction of six monitoring wells. The monitoring wells are constructed of 2-inch-diameter, Schedule 40 polyvinyl chloride (PVC). Ten-foot well screens with 0.020-inch slots were used and positioned to intersect the seasonal ground water table for the monitoring well. The monitoring wells were capped with locking, watertight well caps. The wells were completed with a medium sand pack, bentonite well seal, concrete collar, and a steel monument installed flush with grade.
9. Developed the monitoring wells and contained the water in two 55-gallon drums for transport and disposal by Alaska Pollution Control in Anchorage.
10. Surveyed and calculated the elevation at the top of the well casing in the new monitoring wells in reference to an existing bench mark elevation and an arbitrary bench mark position determined to be a fixed point for future reference.
11. Returned to the site on October 7, 2002, approximately two weeks after ground water development, to complete ground water monitoring and sampling.
12. Measured the depth to ground water in the new monitoring wells to an accuracy of 0.01 feet using an electronic water level indicator.
13. Purged each ground water monitoring well by removing three times the standing well volume prior to sampling.
14. Collected a representative ground water sample from each monitoring well using nitrile gloves and a new, disposable, 2-inch-diameter bailer and cord to minimize the possibility of cross-contamination, and submitted the samples to NCA for chemical analysis. The samples were collected in laboratory-supplied containers and placed in a cooler on ice. Chain-of-custody procedures were followed during transport of the samples to the laboratory.
15. Requested the following analyses for each ground water sample: GRO/BETX by ADEC Method AK101, DRO by ADEC Method AK102 and halogenated volatile organic compounds (HVOC) by EPA Method 8260B.
16. Prepared this written summary report, including boring and well logs, that presents the results of our field observations and subsurface explorations of soil and ground water beneath the site.

A detailed description of field methods for the above scope items is included in Appendix A.

REGULATORY FRAMEWORK

We understand that ADEC is developing alternate soil and ground water levels for the entire railroad industrial area. This area includes the former bulk plant and numerous other sites.

METHODOLOGY

Six soil borings were drilled at the site using hollow-stem auger equipment on September 24 and 25, 2002. The drill rig was owned and operated by Homestead Drilling Inc. of Fairbanks, Alaska. A 2-inch-diameter PVC monitoring well was installed in each of the corresponding borings (GEI-1, GEI-2, GEI-3, GEI-4, GEI-5 and GEI-6). GeoEngineers' field methods and boring logs are presented in Appendix A.

The locations of the soil borings/monitoring wells were selected by a representative from GeoEngineers and are shown in Figure 2. Monitoring well GEI-1 was located in the vicinity of the former aboveground tanks. GEI-2 and GEI-3 are near the west property line and are likely to be down-gradient of the former site facilities. GEI-4 was located in the vicinity of a former truck loading rack that appeared in a 1962 aerial photograph. GEI-5 and GEI-6 were located in the eastern portion of the site.

GeoEngineers field engineer selected locations and monitored the soil borings and monitoring well installations. Representative soil samples were collected from each boring for field screening. Based on field screening results, soil samples were selected from each boring for GRO/BETX, DRO and TOC analyses. Field screening consisted of visual observations of fuel-stained soil, headspace vapor measurements using a photoionization detector (PID), and sheen generated by immersion in water. Notable fuel odors on soil samples were also documented during drilling. Headspace readings and sheen observations are displayed on the boring logs (Appendix A). Field screening techniques are described in detail in Appendix A.

On October 22, 2002, GeoEngineers collected composite soil samples from the drums corresponding to each monitoring well. The samples were collected and characterized for transport and treatment by Lynden Transport, Inc. and OIT, Inc., respectively. Lab analyses were discussed and summarized in our "Authorization Request for soil Transport and Treatment," letter submitted to ADEC for approval.

GeoEngineers returned to the site approximately two weeks after installation of the monitoring wells to collect ground water samples. Prior to ground water sampling on October 7, 2002, GeoEngineers measured depth to ground water in each well. Free product was not detected in the monitoring wells, and ground water samples were collected for chemical analysis with the following exception. Approximately 6 inches of free product was observed in GEI-4. The ground water samples from all wells except GEI-4 were analyzed by NCA for BETX, GRO, DRO and TOC. The samples collected from GEI-4 were analyzed for hydrocarbon identification (HCID). The product thickness in GEI-4 was measured on October 22 and found to be 0.67 feet thick. A representative free product sample was submitted to NCA for HCID.

PHYSICAL SUBSURFACE CONDITIONS

SOIL CONDITIONS

Soil encountered during drilling consisted of gray/brown medium-dense fill consisting of gravel with silt and sand from the surface to about 2 feet bgs. Gray poorly-graded gravel with sand was encountered below the fill to the depths explored. Occasional silty fine sand layers were periodically encountered during drilling. Soil samples were tested for TOC by EPA Method 9060 Modified. Analytical results suggest that TOC is much less than 1 percent for soil beneath the former bulk plant. GeoEngineers' boring logs, including soil classifications and depths, are presented in Appendix A.

GROUND WATER CONDITIONS

Ground water was measured in each monitoring well at depths ranging from approximately 12.20 feet to 15.68 feet bgs on October 7, 2002. Based on the data obtained during this investigation, shallow ground water at the site appears to flow toward the west-southwest. A report titled "Compilation and Preliminary Interpretations of Hydrologic and Water-Quality Data from the Railroad Industrial Area, Fairbanks, Alaska 1993-1994," published by the USGS in 1996 concluded, "water levels in nearby rivers and sloughs have a considerable influence on ground water flow in the study area. Seasonal and shorter term changes in river stage frequently alter and even reverse the direction of ground water flow." Figure 2 shows relative ground water elevations and flow direction at the site based on the October 7, 2002, data. Physical parameters of ground water collected during sampling are presented in Table 4.

SUBSURFACE CONTAMINATION

Analytical data for soil samples analyzed by NCA during this investigation are summarized in Table 1 and presented in Appendix B. Ground water analytical data supplied by NCA is summarized in Tables 3 and 4 and is also presented in Appendix B. The chemical analytical results are discussed below.

SOIL ANALYTICAL RESULTS

Soil samples were collected for chemical analyses from six soil borings on September 24 and 25, 2002. Representative soil samples were submitted for chemical analysis based on field screening results at various soil depth intervals. The selected soil samples were submitted for analysis of GRO/BETX by Alaska Method AK101, DRO by ADEC Method AK102 and TOC by EPA Method 9060 Modified.

BETX constituents were detected to varying degrees in all samples analyzed. Benzene was detected in all wells except GEI-4. The soil sample from GEI-4 was diluted for GRO quantification which elevated the benzene reporting limit to 0.489 milligrams per kilogram (mg/kg), which resulted in benzene not being detected in the sample. Ethylbenzene and toluene were detected in samples GEI-1(14-14.5), GEI-2 (14-14.5), GEI-2(15-15.5) and GEI-3(19-19.5). Xylenes were detected in the samples from wells GEI-2 and GEI-3.

GRO was detected in wells GEI-1 through GEI-4. Concentrations detected in these wells ranged from 516 mg/kg in GEI-4(15-15.5) to 9,050 mg/kg in GEI-2(14-14.5). NCA noted that the "results reported for the gas range are primarily due to overlap from diesel range hydrocarbons."

DRO was detected in wells GEI-1 through GEI-4. Concentrations detected in these wells ranged from 999 mg/kg in GEI-3(19-19.5) to 6,900 mg/kg in GEI-2(14-14.5).

The soil chemical analytical data for samples obtained in September 2002 are summarized in Table 1 and Figure 3. Laboratory reports and chain-of-custody records for the samples are included in Appendix B.

GROUND WATER ANALYTICAL RESULTS

Ground water samples were collected for chemical analyses from six monitoring wells on October 7, 2002. The representative ground water samples were submitted for analysis of GRO/BETX by ADEC Method AK101, DRO by ADEC Method AK102 and HVOC by EPA Method 8260B. The ground water sample collected from GEI-4 was analyzed for HCID by Washington Department of Ecology Method NWTPH. In addition, our field engineer returned to the site on October 22, 2002, and collected an unpreserved free-product sample from GEI-4 for semivolatile fuel identification by EPA Method 8051 Modified.

GRO and BETX were detected in all of the wells sampled for ground water. Benzene concentrations ranged from 1.26 micrograms per liter ($\mu\text{g/l}$) in GEI-6 to 15,100 $\mu\text{g/l}$ in GEI-2. GRO concentration detections ranged from 12.4 milligrams per liter (mg/l) in GEI-5 to 170 mg/l in GEI-2.

DRO was detected in all ground water samples analyzed. Detected concentrations ranged from 5.79 mg/l to 218 mg/l in wells GEI-6 and GEI-1, respectively.

HVOCs were not detected at or above laboratory method reporting limits in the ground water samples with the following exceptions. 1,2 Dichloroethane was detected at concentrations of 55.0 $\mu\text{g/l}$ and 21.9 $\mu\text{g/l}$ in GEI-1 and GEI-5, respectively.

A free product sample collected from GEI-4 on October 10, 2002, was analyzed for semivolatile fuel identification. NCA concluded the product is Jet A-range fuel with hydrocarbons primarily eluting in the C8 to C20 range.

The ground water chemical analytical data for monitoring well samples obtained in October 2002 are summarized in Table 3 and on Figure 5. The laboratory reports and chain-of-custody records for the October 2002 samples are included in Appendix B.

CONCLUSIONS

A subsurface site investigation was conducted to evaluate the nature and extent of soil and ground water contamination. Specifically, the investigation was focused on identifying the extent and concentrations of residual petroleum hydrocarbons at the former Unocal Bulk Plant site in the railroad industrial area of Fairbanks, relative to existing state regulations.

To accomplish these project objectives, six soil borings were drilled and sampled, and ground water monitoring wells were installed in the six borings. Static water levels were measured and ground water samples were collected from each of the monitoring wells. Free product was encountered in GEI-4 and was analyzed to identify the fuel. Soil and ground water samples from the nine borings/wells were submitted for laboratory analysis.

Analytical results for soil and ground water indicate petroleum contamination is present at varying degrees throughout the site. DRO was detected in soil and ground water collected from all of the borings. Detections in the gasoline range were reportedly mostly due to overlap from the diesel range. Approximately 0.67 feet of free product was encountered in GEI-4 on October 22, 2002. Laboratory analyses identified the product as Jet A-range fuel with hydrocarbons primarily eluting in the C8 to C20 range.

The ground water flow direction, interpolated from the measured depths to ground water in October 2002, is to the west-southwest. According to a United States Geological Survey (USGS) analysis of the ground water flow in the site vicinity, ground water levels and flow directions are highly influenced by gravel pit de-watering and seasonal changes in the Chena river water levels.

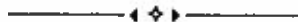
LIMITATIONS

We have prepared this report for use by Unocal RRMC for the former Unocal bulk plant located in Fairbanks, Alaska.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Any electronic form or hard copy of this document (email, text, table, and/or figure), if provided, and any attachments are only a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

Please refer to the Appendix C titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.



We appreciate the opportunity to be of service to Unocal RRMC. Please contact us if you have questions regarding this report.

Yours very truly,

GeoEngineers, Inc.



Deanne K. Hargrave
Geotechnical Engineer



Scott E. Widness, P.E.
Principal

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Attachments

Two copies submitted

cc: **Janice Wiegers**
ADEC – Fairbanks Office

Mervin Gilbertson
Big State Logistics

TABLE 1
 CHEMICAL ANALYTICAL RESULTS - SOIL¹
 FORMER UNOCAL BULK PLANT
 328.5 ILLINOIS STREET, FAIRBANKS, ALASKA
 GEI JOB #0161-522-00

Sample Identification	Date Sampled	BETX ² Method AK101 (mg/kg)				GRO ³ (mg/kg)	DRO ⁴ (mg/kg)	Average TOC ⁵ (mg/kg)
		B	E	T	X			
GEI-1 (14-14.5)	09/24/02	2.69	7.22	15.3	35.8	769 ⁶	1,660	<1000
GEI-2 (14-14.5)	09/24/02	21.6	115	410	1,270	9,050	6,900	4,390
GEI-2 (15-15.5)	09/24/02	16.8	86.8	275	580	4,440 ⁶	3,070	<1000
GEI-3 (14-14.5)	09/24/02	0.442	0.858	4.58	115	742 ⁶	3,590	<1000
GEI-3 (19-19.5)	09/24/02	1.30	13.3	27.5	185 ⁷	2,400 ⁶	999	<1000
GEI-4 (15-15.5)	09/25/02	<0.489	<1.22	<1.22	7.63	516 ⁶	6,490	1,430
GEI-5 (11.5-12)	09/25/02	0.142	<0.150	<0.150	0.443	45.9 ⁶	5.35	<1000
GEI-6 (11.5-12)	09/25/02	0.0983	<0.0381	0.326	0.157	4.05	19.3	<1000
Trip Blank	09/24/02	<0.0200	<0.0500	<0.0500	<0.100	<5.00	--	--

Notes:

¹ Soil samples were submitted to North Creek Analytical Laboratory in Bothell, Washington, for chemical analysis.

² B = benzene, E = ethylbenzene, T = toluene, X = xylenes

³ GRO = Gasoline-Range Organics by AK101.

⁴ DRO = Diesel-Range Organics by AK102

⁵ TOC = Average Total Organic Carbons by Environmental Protection Agency Method 9060 Modified

⁶ Results reported for the gas range are primarily due to overlap from diesel-range hydrocarbons.

⁷ Analyte reporting limits are elevated due to required sample dilutions or to account for interference from coeluting organic compounds present in samples.

mg/kg = milligrams per kilogram

"<" = analyte not detected at or greater than laboratory method reporting limits shown

"--" = sample not analyzed for this parameter

ADEC = Alaska Department of Environmental Conservation

NA = not applicable

**TABLE 2
GROUND WATER ELEVATION DATA
FORMER UNOCAL BULK PLANT
328.5 ILLINOIS STREET, FAIRBANKS, ALASKA
GEI JOB #0161-522-00**

Monitoring Well	Top of Casing Elevation (feet)	Date	Depth to Water (top of casing) (feet)	Ground Water Elevation (feet)
GEI-1	439.44	10/07/02	15.20	424.24
GEI-2	439.51	10/07/02	15.25	424.26
GEI-3	438.96	10/07/02	14.70	424.26
GEI-4	439.22	10/22/02	15.68	424.09 ²
GEI-5	436.63	10/07/02	12.35	424.28
GEI-6	436.58	10/07/02	12.20	424.38

Notes:
¹Elevations are relative to Monitoring Well TH-13, which was recently surveyed.
²Ground water elevation adjusted for floating free product with specific gravity of 0.82.

TABLE 3
SUMMARY OF GROUND WATER ANALYTICAL RESULTS
FORMER UNOCAL BULK PLANT
328.5 ILLINOIS STREET, FAIRBANKS, ALASKA
GEI JOB #0161-522-00

Monitoring Well	Date Sampled	BETX ¹ EPA Method 8021B (µg/l)				GRO ² (mg/l)	DRO ³ (mg/l)	VOC ⁴ (mg/l)
		B	E	T	X			
GEI-1	10/07/02	5,630	704	6,770	3,860	31.7	218	55.0 ⁵
GEI-2	10/07/02	15,100	3,810	56,200	22,000	170	86.5	<50.0
GEI-3	10/07/02	178	339	3,070	12,000	36.6	101	<50.0
GEI-4	10/07/02 ⁶	--	--	--	--	--	--	--
GEI-5	10/07/02	2,310	119	813	1,660	12.4	47.6	21.9 ⁵
GEI-5	10/07/02 *	2,360	127	841	1,660	10.8	--	--
GEI-6	10/07/02	1.26	<0.500	1.95	2.99	58.8	5.79	<1.0

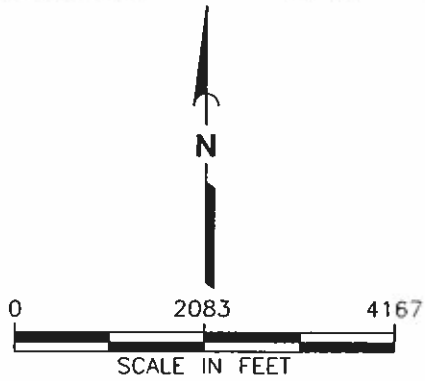
Notes:
¹B = benzene, E = ethylbenzene, T = toluene, X = xylenes
²GRO = Gasoline-Range Organics by Alaska Department of Environmental Conservation (ADEC) Method AK101
³DRO = Diesel-Range Organics by ADEC Method AK102
⁴Volatile Organic Compounds by EPA Method 8260B
⁵Characterized as 1,2-Dichloroethane
⁶Sample analyzed for hydrocarbon identification (HCID), results indicate kerosene or jet fuel
EPA = U.S. Environmental Protection Agency
µg/l = micrograms per liter
mg/l = milligrams per liter
"--" = Not analyzed for this parameter
*** = Duplicate sample

TABLE 4
 WELL PARAMETER DATA
 FORMER UNOCAL BULK PLANT
 328.5 ILLINOIS STREET, FAIRBANKS, ALASKA
 GEI JOB #0161-522-00

Monitoring Well	Date	Dissolved Oxygen ¹ (mg/l)	Temperature ¹ (°F)	Conductivity ¹ (µS/cm)	Specific Conductance ¹ (µS/cm at 25°C)	pH
GEI-1	10/07/02	1.58	40	418	688	6.25
GEI-2	10/07/02	1.78	40	469	767	6.35
GEI-3	10/07/02	1.28	40	493	807	6.64
GEI-4	10/07/02	1.67	41	407	664	—
GEI-5	10/07/02	1.27	43	689	1,083	—
GEI-6	10/07/02	2.18	41	392	633	—

Notes:
¹Dissolved oxygen conductivity and specific conductance concentrations and temperature measurements were obtained from purge water bailed from the well using a YSI Model 85 water quality meter.
 mg/l = milligrams per liter
 °F = degrees Fahrenheit
 µS/cm = micro-Siemens per centimeter
 °C = degrees Celsius

Anchorage P:\0161\522\00\AutoCAD\Vicinity Map.dwg WitnessS:Horgroved 9/5/02



References:
USGS 7.5' topographic quadrangle map "Fairbanks (D-2) SE, AK." 1992.

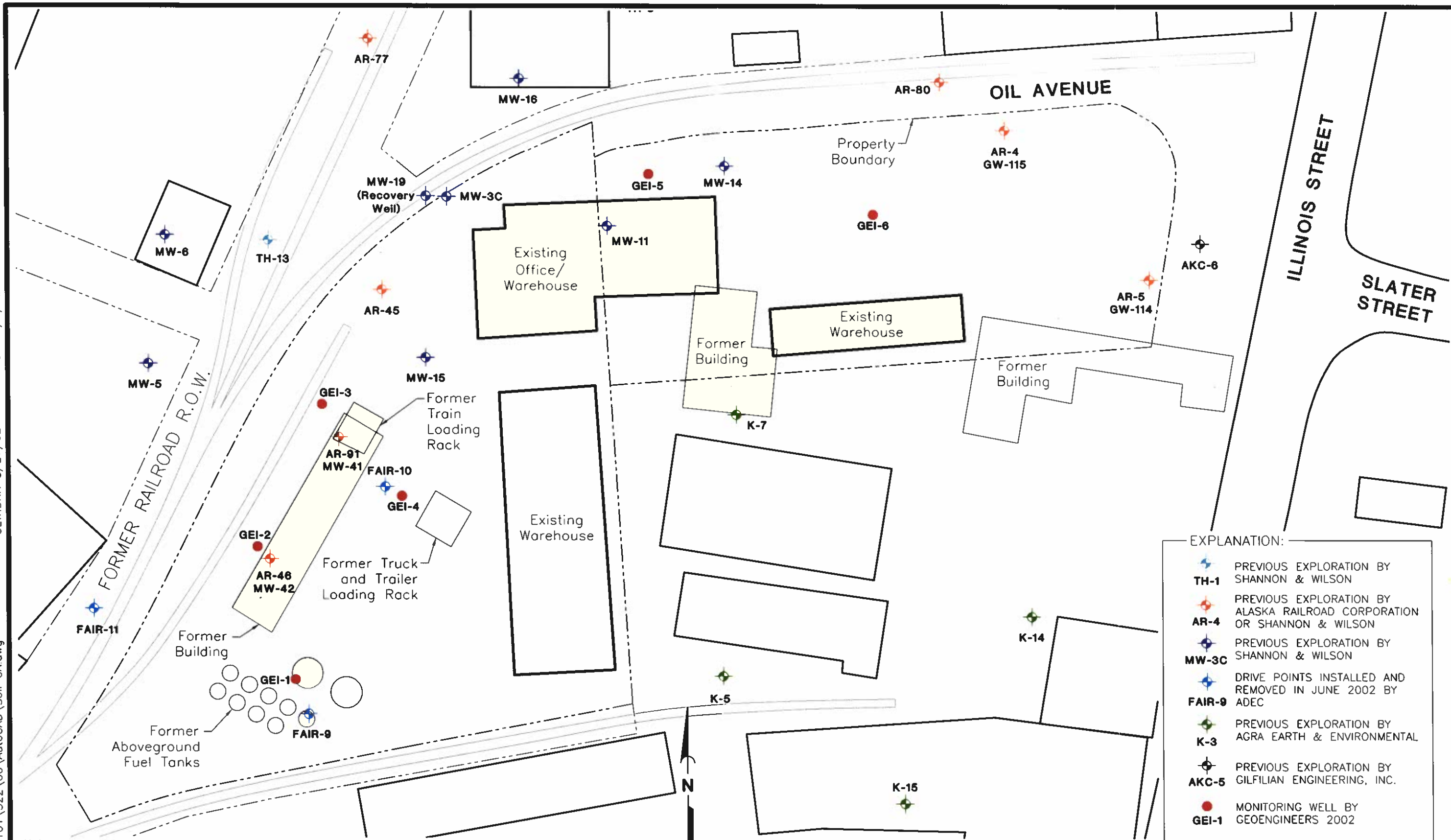


VICINITY MAP
FIGURE 1

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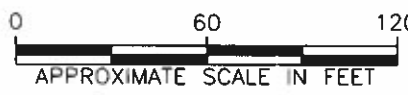
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- Notes:
1. The locations of all features shown are approximate.
 2. This figure was originally produced in color.

References: Drawing based on Alaska Railroad Survey dated 11/82. Wells located from ADEC figures "1960_just_wells_benzene" and "Unocal wells." Additional features based on aerial photos from 1960 and 1998.



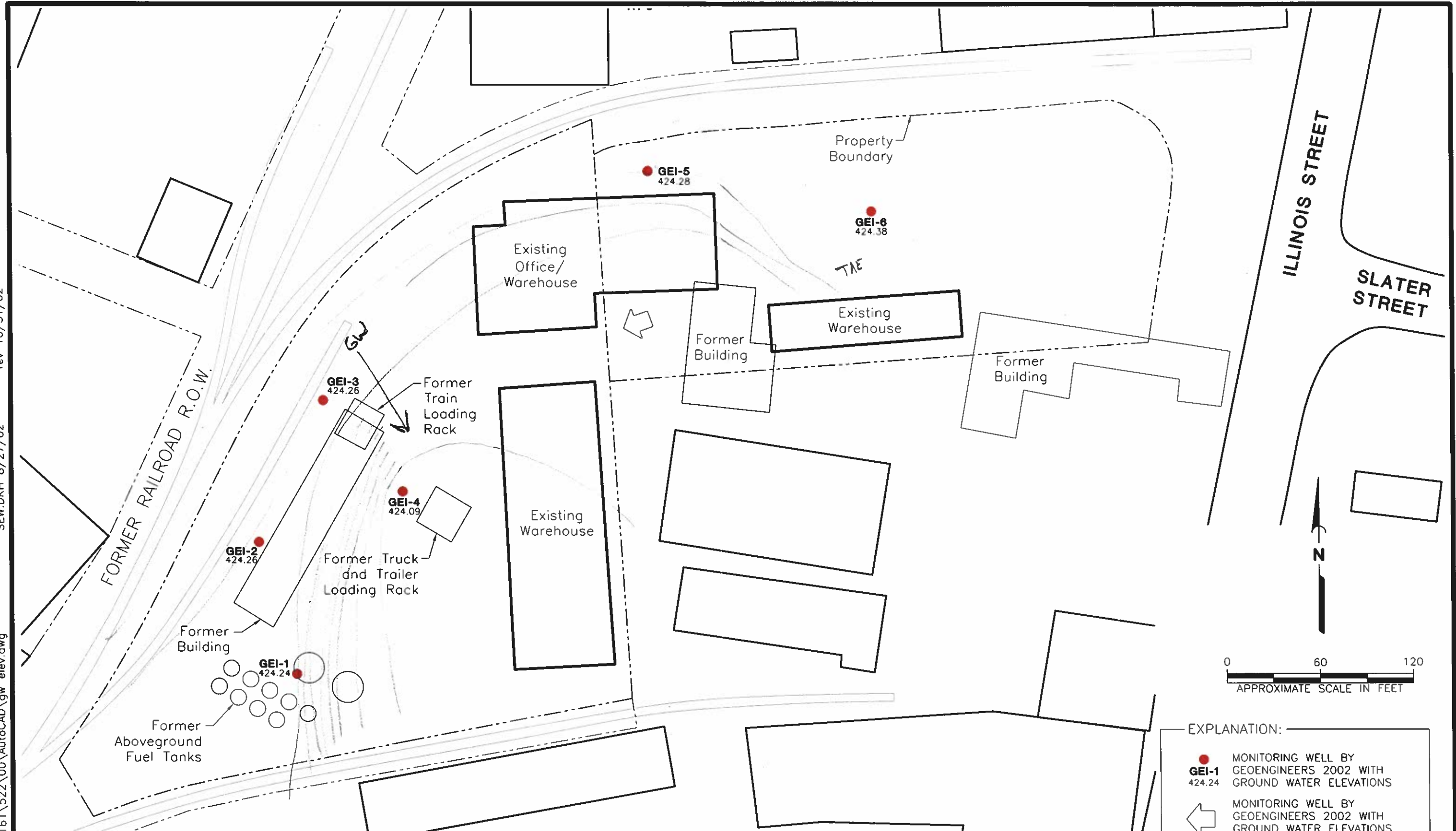
EXPLANATION:

	TH-1	PREVIOUS EXPLORATION BY SHANNON & WILSON
	AR-4	PREVIOUS EXPLORATION BY ALASKA RAILROAD CORPORATION OR SHANNON & WILSON
	MW-3C	PREVIOUS EXPLORATION BY SHANNON & WILSON
	FAIR-9	DRIVE POINTS INSTALLED AND REMOVED IN JUNE 2002 BY ADEC
	K-3	PREVIOUS EXPLORATION BY AGRA EARTH & ENVIRONMENTAL
	AKC-5	PREVIOUS EXPLORATION BY GILFILIAN ENGINEERING, INC.
	GEI-1	MONITORING WELL BY GEOENGINEERS 2002



SITE PLAN
FIGURE 2

Anchorage P:\0161\522\00\AutoCAD\gw elev.dwg SEW:DKH 8/27/02 rev 10/31/02



EXPLANATION:

	MONITORING WELL BY GEOENGINEERS 2002 WITH GROUND WATER ELEVATIONS
	MONITORING WELL BY GEOENGINEERS 2002 WITH GROUND WATER ELEVATIONS

- Notes:
1. The locations of all features shown are approximate.
 2. This figure was originally produced in color.

References: Drawing based on Alaska Railroad Survey dated 11/82. Wells located from ADEC figures "1960_just_wells_benzene" and "Unocal wells." Additional features based on aerial photos from 1960 and 1998.

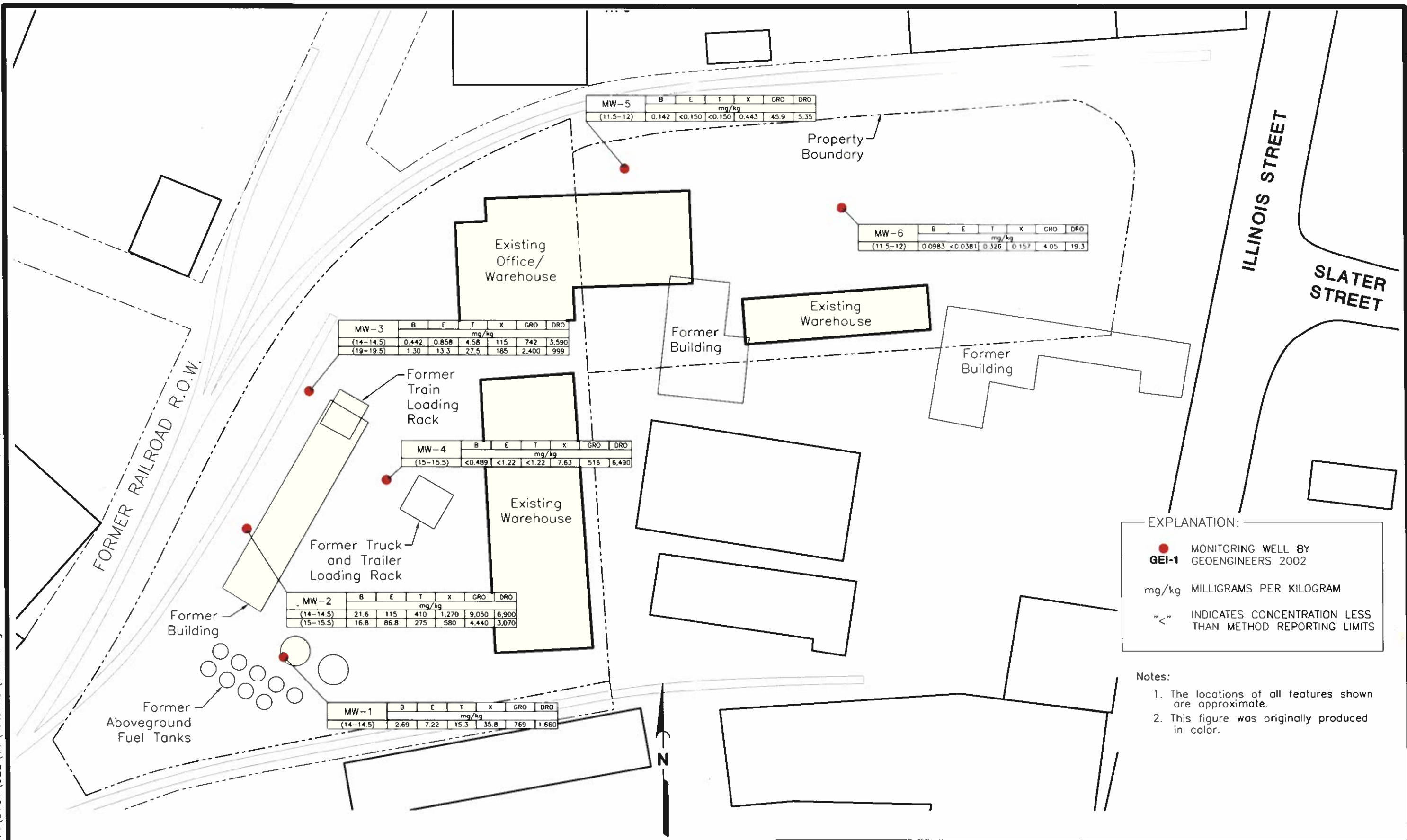


GROUND WATER ELEVATION PLAN

FIGURE 3

SEW:DKH 8/27/02 rev 10/31/02

Anchorage P:\0161\522\00\AutoCAD\Soil1.dwg



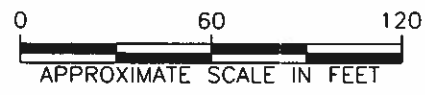
EXPLANATION:

- MONITORING WELL BY GEI-1 GEOENGINEERS 2002
- mg/kg MILLIGRAMS PER KILOGRAM
- "<" INDICATES CONCENTRATION LESS THAN METHOD REPORTING LIMITS

Notes:

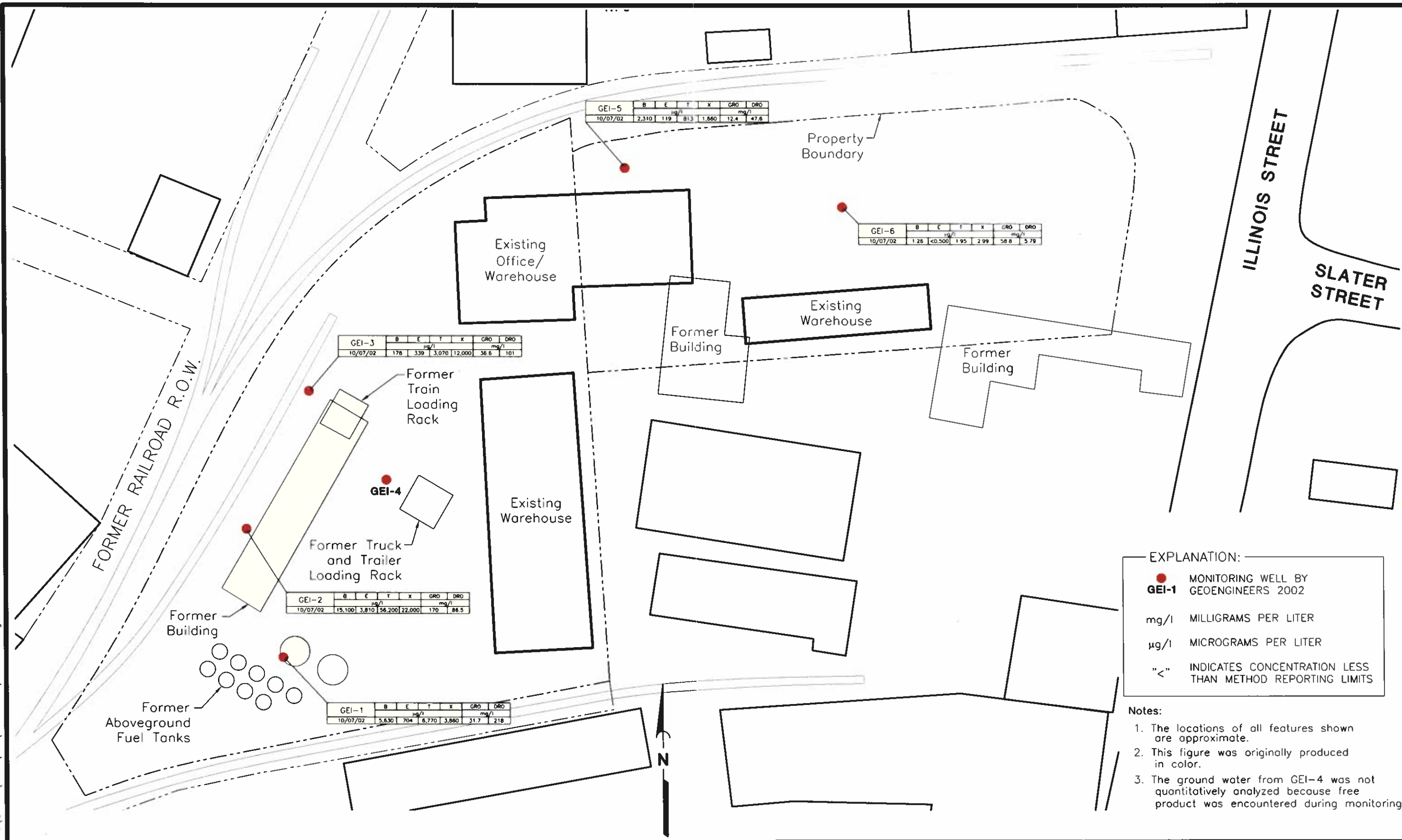
- The locations of all features shown are approximate.
- This figure was originally produced in color.

References: Drawing based on Alaska Railroad Survey dated 11/82. Wells located from ADEC figures "1960_just_wells_benzene" and "Unocal wells." Additional features based on aerial photos from 1960 and 1998.

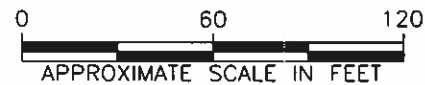


SOIL CHEMICAL ANALYTICAL RESULTS

FIGURE 4



References: Drawing based on Alaska Railroad Survey dated 11/82. Wells located from ADEC figures "1960_just_wells_benzene" and "Unocal wells." Additional features based on aerial photos from 1960 and 1998.



GROUND WATER CHEMICAL ANALYTICAL RESULTS

FIGURE 5