NM - 38

INSPECTIONS & DATA

SOUTHWEST RESEARCH AND INFORMATION CENTER
P.O. Box 4524 Albuquerque, NM 87106 505-262-1862

July 29, 1992

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Environmental Protection Administration
Navajo Nation Division of Natural Resources
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Window Rock, AZ 86515

Mr. William J. LeMay, Director
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Ms. Kathleen Sisneros, Director
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New Mexico Environment Department
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Mr. Leonard Tsosie, President
Whitehorse Lake Chapter, Navajo Nation
General Delivery -- Whitehorse Lake Chapter House
Whitehorse Lake, NM 87373

SUBJECT: **FIELD RECONNAISSANCE OF PRODUCED WATER DISCHARGES AT HOSPAH OIL FIELD, McKINLEY COUNTY, NEW MEXICO**

Dear Ms. Hoskie, Mr. LeMay, Ms. Sisneros, and Mr. Tsosie:

This letter and the attached documentation, including photographs, serve as a report of the results of a field reconnaissance study conducted by Southwest Research and Information Center (SRIC) staff in the Hospah Oil Field in eastern McKinley County on July 14 and July 27, 1992. (See Attachment I for general location.) The field work carried out by SRIC staff members Raymond Morgan and Chris Shuey on July 14 was conducted in conjunction with a series of water fairs sponsored by the New Mexico Environment Department (NMED) and Navajo Nation Environmental Protection Administration (NNEPA). Mr. Morgan revisited the area on July 27 to verify some of the observations we made on July 14.

This letter also gives SRIC's recommendations for regulatory actions that may be needed to address the range of surface water, ground water and air quality impacts that have resulted or may have resulted from oil production operations in the area.

SUMMARY OF FINDINGS

Based on our observations and sampling data, SRIC believes that waters of the state are being adversely affected by discharges of produced water from oil-field production facilities in the Hospah area. We also believe that the health of people who live in the Hospah area is potentially, if not actually, affected by exposure to routine emissions of hydrogen sulfide gas from those same oil-field facilities. We communicated our observations and these findings to staff members of NNEPA and NMED's Surface Water Quality Bureau on July 15 and to staff members of the New Mexico Oil Conservation Division's Environmental Bureau (NMOCD/EB) on July 22. Photos documenting our observations were shown to NMOCD/EB staff on July 22.

DESCRIPTION OF THE STUDY AREA

The community of Hospah is located approximately 47 miles north of Grants and about 5.5 miles south of the community of Whitehorse Lake along Navajo Route 9 in eastern McKinley County. (See Attachment I.) It is located in the so-called checkerboard area, which consists of federal public lands, state public lands, and private lands interspersed with lands allotted to Navajo families.

The community itself consists of a number of buildings used as headquarters and lodging for employees of the American Exploration Company (AEC), which operates most of the oil wells and tank batteries in the area. A church and the homes of several Navajo families are located within three miles of the center of the community. Cattle and sheep graze throughout the area, which is characterized by bedrock outcrops on the north and south and topographic lows that coincide with the drainage pattern of Sandoval Arroyo, which flows to the east. (See Attachment II.)

OIL PRODUCTION ACTIVITIES IN THE HOSPAH OIL FIELD

Oil was first produced in the Hospah Oil Field in 1926. (Christiansen 1989) As of May 1988, the field was characterized by 97 producing oil wells operating on five different leases that cover parts of five sections in Township 18 North, Range 9 West and in T17N, R9W and T17N, R8W. (Boyer 1988) AEC, which took over operations in the Hospah Oil Field from Tesoro Petroleum Corporation in 1988, operates three large and one small oil-water storage and separation tank batteries, the locations of which are shown in Attachment II. Their names and location numbers are summarized on the following page:

Tank Battery	Location(s)
Hospah Sand Unit (HSU) and Santa Fe Railroad "A" (SFR-A)	T18N,R9W,36; T18N,R8W,31; T17N,R9W,1
Hanson Federal (HF)	T17N,R8W,6
Santa Fe Railroad (SFR)	T17N,R8W,7
Santa Fe Railroad "B" (SFR-B)	T17N,R8W,5

Unlined skimming/settling ponds for produced water are associated with each of the four tank batteries. The typical designs of the two-cell ponds are shown in Photos 1 and 2, which are enclosed as part of Attachment III. The cells shown in these photos are contiguous; that is, fluids discharged from the pond in Photo 1 enter the pond shown in Photo 2 prior to discharge to an unnamed arroyo as shown in Photo 3.

Oil-water mixtures are pumped to the tank batteries, apparently by underground gathering lines; we observed no separation equipment, storage tanks or disposal pits at the sites of individual producing wells. An unknown volume of produced water is used for enhanced oil recovery. (Boyer 1988) Anywhere from 58 to 175 gallons per minute (0.08 to 0.25 million gallons per day) of produced water are discharged to Sandoval Arroyo or its tributaries from the skimming/settling ponds at the four tank batteries. (Boyer 1988) Many of the producing wells are stripper wells, according to NMOCD/EB staff members. (We did not inspect NMOCD production records to determine how many wells produce from the Hospah pool, nor how many of those wells are stripper wells.)

Our reconnaissance was confined to an area located south and southeast of the community in section 1 of T17N, R9W and in sections 5, 6, 7 and 8 of T17N, R8W. All four tank batteries shown in Attachment II are within the areas we visited.

FIELD OBSERVATIONS MADE ON JULY 14

During our initial visit to the Hospah area on July 14, we observed and photographed the following:

- Grayish produced water exhibiting an oil sheen being discharged from skimming/settling ponds at the SFR tank battery in section 7 of T17N, R8W to an unnamed tributary of Sandoval Arroyo; (See Attachment II for

location and Photos 1 through 4 in Attachment III.)

- Black, oily stains on the banks and in the bottom sediments of the receiving watercourse and for at least several hundred meters downstream of its confluence with Sandoval Arroyo; (See Attachment II for locations and Photos 5 through 12 in Attachment III.)

- Grayish flow in Sandoval Arroyo approximately 0.4 miles downstream from an outfall at skimming/settling ponds associated with the HSU/SFR-A tank battery in section 1 of T17N, R9W.

Discharges to Sandoval Arroyo and its tributaries were observed from the skimming/settling ponds at the SFR and HSU/SFR-A tank batteries on this date. No discharges were observed from the ponds associated with the Hanson Federal and SFR-B tank batteries. (See Attachment II for locations.)

The black material that we observed on the banks and in the bottom sediments (see Photos 6, 7, 9, 11 and 12) was oily to the touch. The extent and degree of staining diminished with distance from the outfall point at the SFR tank battery. However, we observed black staining and black bottom sediments in Sandoval Arroyo near the section 5 fence line and again in Sandoval Arroyo about 1 mile upstream from Sandoval Lake in the northeastern corner of section 4. (See Attachment II.) We also observed grayish sediments on the banks of Sandoval Lake, which is a wetland that contains marsh plants and is located behind a constructed earthen dam. The produced water discharges from the upstream tank batteries are the only significant sources of water to the lake; runoff from rain and snowmelt is limited in this arid, pinon-juniper landscape.

We observed oil sheens on the surface of fluids in the unnamed tributary to Sandoval Arroyo at points where the velocity of the flow slowed significantly. We observed no oil sheen on the surface of water in the southern portion of Sandoval Lake within a dozen meters of the earthern dam.

SAMPLING CONDUCTED ON JULY 14

On July 14, we collected two samples of fluids from the unnamed arroyo at a point a few meters downstream from a culvert under Sand Spring Road just inside the fence line in section 6. We also collected one sample of water from a hose at the residence of Lena and Roger Tsosie in the southwestern corner of section 6. (See Attachment II.)

SURFACE WATER SAMPLES. From fluids in the unnamed arroyo, we collected one sample in a 1-gallon plastic cubitainer, leaving approximately one inch of headspace in the container. The spout of the container was sealed with a piece of aluminum foil secured by a rubber band. We collected a second set of samples in two 40-milliliter (ml) glass vials equipped with septums inside the caps. (These vials were provided by NMED.) We submerged each vial in the fluids of the watercourse and made sure that neither vial contained air bubbles after they were sealed. Even though all three sample containers were new, we rinsed each with fluids from the watercourse before sealing the containers. All three sample containers were placed on ice in a standard 48-quart Coleman cooler. Each sample was separately identified by the standard identification method used by NMED and NMOCD (i.e., two-digit year, two-digit month, two-digit day, and four-digit time). An NMED "Water Well Field Test" form was used to record the sampling location and identification number for the 1-gallon sample. (See Attachment IV.)

DOMESTIC WATER SAMPLE. We collected a 1-gallon sample of water from a hose at the Tsosie residence. We allowed the water to run for five minutes prior to collecting the sample in a plastic cubitainer. The sample was identified by the standard method and a water fair form was completed. It is enclosed as Attachment V.

The hose at the Tsosie residence is connected to a value box located about 50 meters from the home. The value box is connected to an underground pipeline that contains water from a domestic well at the AEC headquarters in Hospah. Mrs. Tsosie said the family uses the water from the community well for livestock watering, gardening, and most domestic uses except drinking. She said the family uses the water for drinking only during periods of the year when travel is limited by weather and road conditions; otherwise, she said, the family hauls its drinking water from Crownpoint, about 40 miles (by road) from Hospah. Mrs. Tsosie said she does not drink water from the community water system because it develops a colorful sheen after sitting in a barrel inside her home. (The barrel was empty on the day of our visit.)

ANALYTICAL RESULTS -- SURFACE WATER SAMPLES. Surface waters collected in the 1-gallon cubitainer were analyzed on July 15 at the Manuelito (N.M.) Chapter Water Fair sponsored by NNEPA and NMED. Water fair analytical results are shown in Attachment IV and are summarized on the following page:

Parameter	Result	Regulatory Standard
Conductivity	2650 µmhos/cm	1000 µmhos/cm*
Iron	0 mg/l	1.0 mg/l**
Nitrate	1.8 mg/l	10 mg/l***
Organic Vapor	>100 ppm	<10 ppm rec'd****
pH	8.5	6-9 units***
Sulfate	>250 mg/l	250 mg/l***

* NMED recommended limit.
** N.M. Water Quality Control Commission Regulation 3-103.B. for ground water.
*** USEPA primary and secondary drinking water standards, 40 CFR Part 141.
**** NMOCD recommended limit.

A flame ionization detector (FID) was used by NMED personnel to test for organic vapors in the headspace of the sample container. A concentration meter attached to the FID was observed by SRIC staff to go off the scale immediately after the instrument's probe was inserted into the container through the aluminum foil seal. At the time the concentration was measured, the meter was set as a maximum detection limit of 100 ppm. A strong hydrocarbon and sulfide odor emanated from the container after it was opened.

The two 40-ml vial samples were kept in an ice bath until transported to the state Scientific Laboratory Division (SLD) by SRIC staff on July 17. Based on advice from staff members of the NMED Ground Water Bureau, we requested that the samples be analyzed for aromatic and halogenated VOCs (volatile organic compounds) according to USEPA methods 601 and 602. A copy of the SLD analytical chemistry request form is enclosed as Attachment VI. Analytical results are pending and will be reported to all agencies as soon as they are available.

The discharge from the SFR tank battery was sampled by NMOCD in 1988. According to the SLD analytical results form, which is enclosed as Attachment VII, NMOCD/EB staff members observed "some color, HC [hydrocarbon] odor" in the fluids in the arroyo about 0.5 miles downstream from the tank battery outfall. As shown in Attachment VII, halogenated VOCs were not detected in the fluids, but 55 light-end hydrocarbon compounds were detected in the 1-to-5 ppm range. Laboratory conductivity, pH and iron values of the 1988 sample were similar to the values reported in the 1992 water fair analyses for the fluids discharged from the SFR tank battery. It is important to note that both samples showed nondetectable

concentrations of iron in the produced water.

ANALYTICAL RESULTS -- TSOSIE DOMESTIC WATER. Water fair analytical results for the sample of water from the hose at the Tsosie residence are shown in Attachment V. No organic vapors were detected in the sample. The inorganic results are similar to those reported by NMOCD for a sample collected from the AEC community water well on August 4, 1989. (NMOCD 1989) The two sets of results are summarized below:

Parameter	August 1989 Result	July 1992 Result
Conductivity	1000 µmhos/cm	966 µmhos/cm (lab)
Iron	0.08 mg/l	0. mg/l
Nitrate	0.4 mg/l	0. mg/l
Organic Vapors	ND	---
Aromatic and Halogenated VOCs	---	ND
pH	8.5 units	8.4 units (lab)
Sulfate	>250 mg/l	268 mg/l
Total Diss. Solids	---	658 mg/l

ND not detected
--- not analyzed

FIELD OBSERVATIONS MADE ON JULY 27

Mr. Morgan of the SRIC staff revisited the Hospah area on July 27 for the purpose of confirming the names and locations of the tank batteries listed above and for remeasuring distances between those batteries and the Tsosie residence. While in the field, Mr. Morgan observed produced water discharges from the SFR tank battery and from the HSU/SFR-A tank battery. The fluids discharged from the SFR tank battery ponds were black, not grayish as noted during our visit on July 14. Mr. Morgan described the fluids as oily to the touch.

PRESENCE OF HYDROGEN SULFIDE GAS

On July 14, we noted strong sulfide odors emanating from the produced water outfall at the SFR tank battery and in the unnamed arroyo at the culvert under Sand Spring Road. These same odors were evident near Lena Tsosie's home, which is situated in a low-lying area approximately 325 meters north of the SFR tank battery. (See Attachment II.) Mrs. Tsosie reported that "sewer-like" smells were pervasive around her home during calm weather

conditions and especially during the early morning hours just before dawn. She said the smells are strong enough to disturb the family's sleep and occasionally to make family members feel nauseous. Mrs. Tsosie's statements were recorded in our field notes, which are enclosed as Attachment VIII.

Sulfide odors were present throughout the area upon Mr. Morgan's inspection on July 27. He reported that the smells were noticeable near the tank batteries and in the unnamed arroyo near our sampling point at the culvert under Sand Spring Road.

DISCUSSION OF OBSERVATIONS AND RESULTS AND RECOMMENDATIONS FOR REGULATORY ACTION

PRODUCED WATER DISCHARGES. AEC applied to the U.S. Environmental Protection Agency (Region VI) for a National Pollutant Discharge Elimination System (NPDES) permit in October 1988. (Quiroga 1988) The information available to SRIC does not indicate whether EPA ever acted upon the application. NMED and NMOCD officials told us that to their knowledge AEC does not have an NPDES permit for discharges of produced water to Sandoval Arroyo and its tributaries.

Discharges of produced water to "waters of the United States" were prohibited under a zero-discharge general permit issued by EPA Region VI on February 25, 1991. (USEPA 1991; 56 *Federal Register* 7696-7708) Certainly, the Sandoval Arroyo surface-water system is a "water of the United States" for purpose of regulation under the federal Clean Water Act's NPDES program. However, there are at least two significant exceptions to the zero-discharge permit.

The first exception allows discharges of produced water to waters of the U.S. in cases where the discharged fluids have "a use in agriculture or wildlife propagation . . ." (See 40 CFR Part 435.50.) Produced waters may be discharged, subject to conditions of an NPDES permit, if the quality of the waters "is good enough for wildlife or livestock watering or other agricultural uses . . ." (See 40 CFR Part 435.51(c).) The discharges in the Hospah area are used for livestock purposes; they may also be used for wildlife purposes to the extent that wildlife use Sandoval Lake.

The second exception allows discharges of produced water from stripper oil wells, which are defined as wells that produce 10 barrels of crude oil per day or less. (See 40 CFR Part 435.60.) Whether an NPDES permit is required for stripper-well discharges to waters of the U.S. is unclear.

The extent to which the Clean Water Act's NPDES program or the New Mexico Water Quality Control Commission's (NMWQCC) standards for interstream streams apply to the produced water discharges in the Hospah area should be clarified. Effluent discharges to waters of the United States, unless otherwise exempted from NPDES requirements, are illegal without an NPDES permit and subject to private causes of action under the Clean Water Act. (See 33 U.S.C. section 1365.) Appropriate steps should be taken by the appropriate regulatory agencies to eliminate or mitigate the apparent adverse effects of AEC's discharges to the Sandoval Arroyo system.

TANK BATTERIES AND UNLINED PONDS. The four tank batteries operated by AEC in the Hospah area are centralized facilities and can be regulated under NMOCD Rule 711. NMOCD/EB officials said that to their knowledge neither AEC nor its predecessor had applied for Rule 711 permits for the tank batteries in the Hospah area. The officials said they will conduct an inspection of the area and determine if such permits are needed.

All of the skimming/settling ponds at the four tank batteries are unlined. We observed no evidence of ground-water monitoring at any of the ponds. While the two water wells that are known to exist in the immediate area of the tank batteries (the AEC community well and Navajo Nation windmill 15T-564) tap deep aquifers that may be protected from near-surface contamination, any shallow alluvial ground water that meets the State Engineer's definition of fresh water must be protected under the New Mexico Oil and Gas Act. (See section 70-2-12.B(15) N.M.S.A. 1978.) As such, SRIC believes that NMOCD must require ground-water monitoring to determine if alluvial ground water is present and whether it is fresh water protectable under the Oil and Gas Act. If it is, NMOCD must require measures to protect that ground water from contamination by leakage of produced water from ponds at the AEC tank batteries.

AEC'S COMMUNITY WATER WELL. The extent to which AEC's community water well should be regulated as a public water supply under the federal Safe Drinking Water Act should be determined by the appropriate regulatory agency. SRIC could not determine how many people drink continuously from the AEC community water system, but it was clear from our investigation that a community system exists by virtue of the fact that a pipeline delivers water from the AEC well to several points within the area.

HYDROGEN SULFIDE EMISSIONS. Based on the statements of Mrs.

Tsosie and observations made by SRIC staff members on two different occasions, hydrogen sulfide emissions are routine in the Hospah area and, occasionally during calm weather conditions, cause discomfort among members of the Tsosie family. Since H_2S is heavier than air, it clings to the surface and can travel substantial distances from its source or sources. The Tsosie residence is located in a low-lying area within one-half mile of three tank batteries, at least one of which is situated at a higher elevation than that of the Tsosie residence.

NMED, which has regulatory responsibities for air quality protection, and NMOCD, which has statutory responsibilities to protect public health, should require H_2S monitoring in the area and determine, based on the results of that monitoring, if AEC should be required to take steps to prevent or abate hydrogen sulfide releases from its wells and production facilities.

CONCLUDING REMARKS

The results of SRIC's study of discharges in the Hospah Oil Field are similar to those reported by NMOCD staff members in years past. Attention to the observed environmental and potential public health problems in the area has been low due to the remoteness of the Hospah Oil Field and, quite possibly, to the limited number of staff that state and tribal agencies can devote to field reconnaissance. SRIC's participation in the joint NNEPA-NMED water fairs during the week of July 13 was intended to assist the two agencies in identifying actual or potential water quality concerns in the Navajo Nation's Eastern Agency. This we accomplished as this report and its accompanying documentation demonstrate. Coordinated regulatory action by state, tribal and federal agencies is needed to confirm these findings and to remedy any environmental violations that may exist.

SRIC stands ready to continue to assist state and tribal agencies in environmental surveillance efforts. Please feel free to call us if you have questions about this report or need additional information.

Sincerely,

Chris Shuey, Director
Community Water Quality Program
w: 505-262-1862

Raymond Morgan
SRIC Navajo Community Liaison
h: 505-862-7202

xc (without photographs):

Roger Anderson, Chief, NMOCD Environmental Bureau
Frank Chavez, District Manager, NMOCD Aztec District
Amos Johnson, NNEPA Public Water Supply Program
Myron Knudson, USEPA Region VI, Water Management Division
Jim Piatt, NMED Surface Water Quality Bureau
Lena and Roger Tsosie, Hospah residents

REFERENCES

Boyer 1988. Boyer, David (NMOCD/EB). Letter to Kathleen Sisneros (NMEID/SWQB), re: Surface Water Discharge, Tesoro Petroleum Corporation, Hospah, N.M.; May 16, 1988.

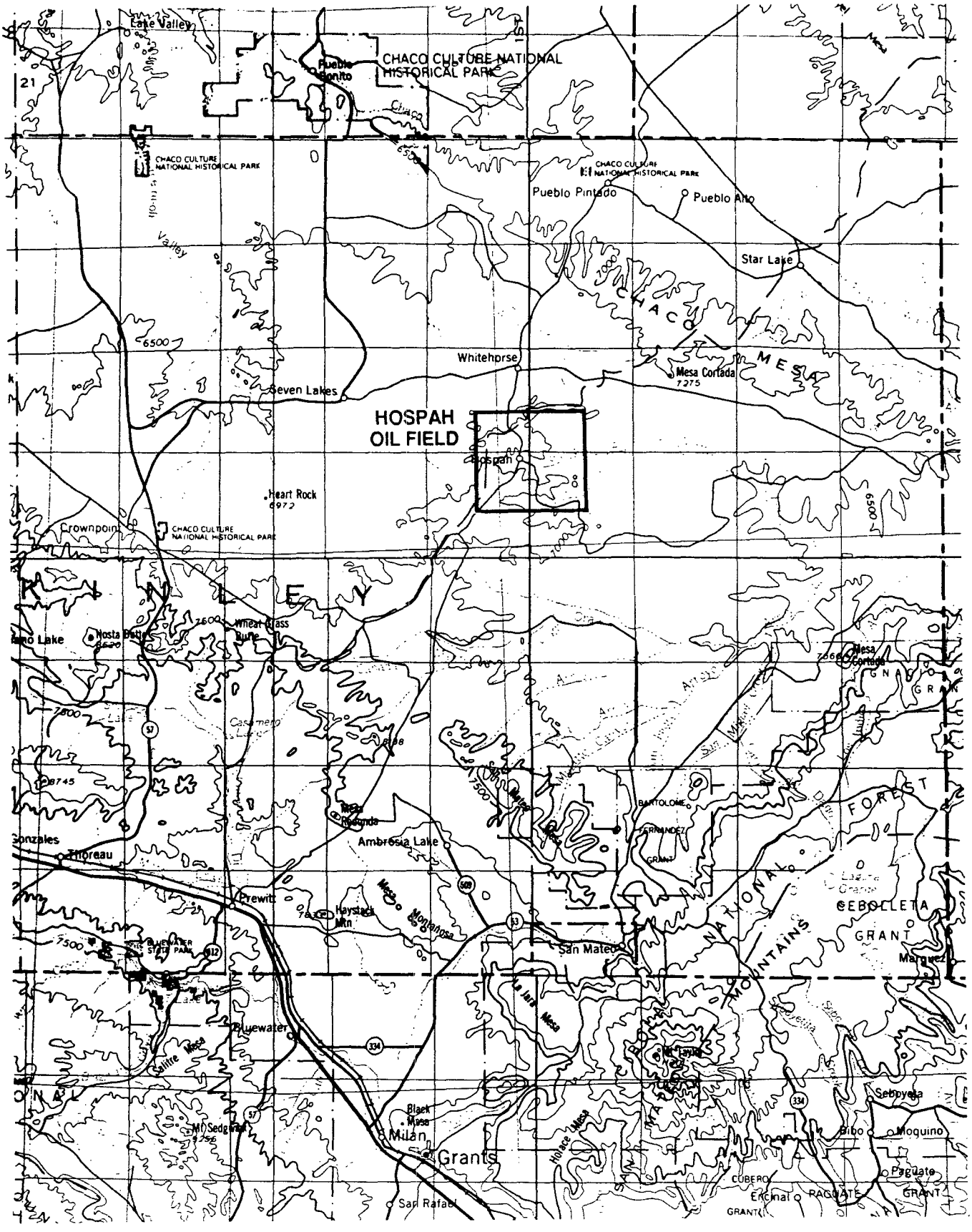
Christainsen 1989. Christiansen, Paige. *The story of oil in New Mexico*. Scenic Trips to the Geologic Past No. 14. New Mexico Bureau of Mines and Mineral Resources, New Mexico Institute of Mining and Technology (Socorro), 1989; page 56.

NMOCD 1989. New Mexico Oil Conservation Division. Scientific Laboratory Division Analytical Reports No. OR-89-1222 and No. WC-2814; received October 3, 1989, and October 25, 1989, respectively.

Quiroga 1988. Quiroga, Roy (American Exploration Company). Letter to Myron Kaudson [sic] (U.S. Environmental Protection Agency, Dallas), re: NPDES Surface Water Discharge Permit, Hospah Field, McKinley County, New Mexico; October 13, 1988.

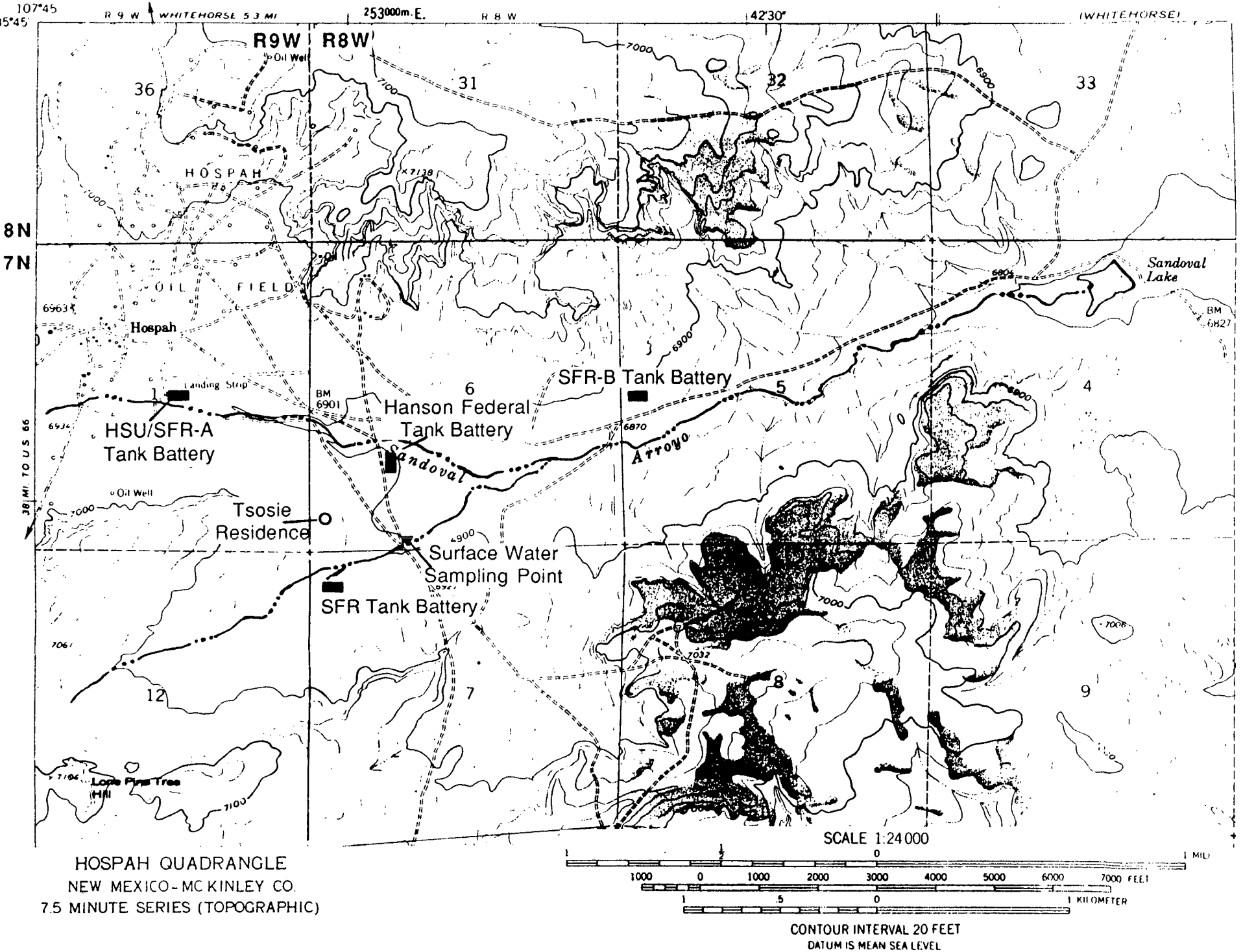
USEPA 1991U.S. Environmental Protection Agency. Final NPDES General Permits for the Oil and Gas Extraction Point Source Category -- States of Louisiana (LAG320000), New Mexico (NMG320000), Oklahoma (OKG320000), and Texas (TXG320000). 56 *Federal Register* 7696-7708, February 25, 1991.

ATTACHMENT I



Map modified from U.S. Geological Survey *State of New Mexico* 1:500,000 scale map, revised 1985.

ATTACHMENT II



HOSPAH QUADRANGLE
NEW MEXICO - MC KINLEY CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

ATTACHMENT III

IDENTIFICATION OF HOSPAH-AREA PHOTOS*

Photo No.	Description
1	Primary skimming/settling pond for produced water discharges from American Exploration Company Santa Fe Railroad (SRF) tank battery in NW1/4 of NW1/4 of Section 7, T17N, R8W, McKinley County, New Mexico; the closest residence is approximately 325 meters north of this point and approximately 10 to 15 meters lower in elevation.
2	Secondary skimming/settling pond that receives produced water from the primary pond in Photo 1; neither ponds have liners; both have netting for protection of migratory birds; strong hydrogen sulfide odor noted around tank battery.
3	Produced water outfall from secondary skimming/ settling pond.
4	Oily stains observed on dirt and vegetation at discharge point from secondary pond.
5	Produced water discharged to unnamed arroyo, which is a tributary to Sandoval Arroyo; confluence of two streams is approximately 1,300 meters from this point; arroyo trends in a northeasterly direction.
6	Black stains on banks of unnamed arroyo approximately 150 meters downstream from discharge point shown in Photo 5; these stains were oily to the touch; discharge pipe and SFR tank battery is visible in background.
7	Closeup of black, oily stains on banks and bottom sediments of unnamed arroyo at same location as in Photo 6.
8	Fluid in unnamed arroyo flows through a culvert under a dirt road locally called Sand Spring Road; this point is at a fence line which marks the boundary between section 7 to the south and section 6 to the north; cattle were observing drinking the fluid in the arroyo shortly before this photo was taken; black stains on banks and bottom sediments were oily to the touch.
9	Black, oily stains on banks, vegetation and bottom sediments at culvert approximately 160 meters downstream from SFR tank battery; strong hydrogen sulfide odor present at this location; one 1-gallon sample and two 40-milliliter samples of fluids in arroyo collected at this location; subsequent water fair analyses of the fluids showed conductivity of 2650 micromhos/centimeter, pH of 8.5, nitrate concentration of 1.8 milligrams

per liter (mg/l), sulfate concentration greater than 250 mg/l, and organic vapor level of greater than 100 parts per million, based on a flame ionization detector meter reading.

10 Same point in unnamed arroyo looking downstream from culvert under Sand Spring Road.

11 Closeup of black, oily stains on banks and bottom sediments approximately 10 meters downstream from culvert under Sand Spring Road; vegetation kills were apparent in stream and along its banks; oily sediments observed to at least 15 centimeters in stream bottom.

12 Black stains on banks and black, oily bottom sediments observed in Sandoval Arroyo approximately 300 meters downstream from confluence with unnamed arroyo shown in Photos 1 through 11; this point is approximately 100 meters from a fence that marks the eastern boundary of section 6 and the western boundary of section 5 at an elevation of approximately 6,860 feet; black and gray staining in Sandoval Arroyo observed again about 0.5 miles downstream from this point.

* All photos taken by Southwest Research and Information Center staff on July 14, 1992.

cls/sric/7-24-92

Photo No. 1

American Exploration Co.
Santa Fe RR Tank Battery
17N.8W.7.11, Hospah, NM
primary skimming pond
7-14-92

Photo No. 2

American Exploration Co.
Santa Fe RR Tank Battery
17N.8W.11, Hospah, NM
secondary skimming pond
(7-14-92)

Photo No. 3

Produced water outfall from secondary skimming pond at American Exploration Co. Santa Fe RR Tank Battery at Hospah, NM. (7-14-92)

Photo No. 4

Closeup of AEC outfall into unnamed tributary to Sandoval Arroyo, 7-14-92.

Photo No. 5

AEC discharge to unnamed
tributary of Sandoval Arroyo
17.8.7.1, McKinley County
(7-14-92)

Photo No. 6

Black, oily stains on banks of unnamed arroyo appx. 150 meters downstream of AEC SFR outfall; (7-14-92)

Photo No. 7

Closeup of oily stains on
banks and sediments downstream
of AEC-SFR outfall (7-14-92)

Photo No. 8

Cattle were observed drinking from unnamed arroyo fed by produced water discharges from AEC-SFR tank battery (7-14-92)

Photo No. 9

Black, oily stains and sediments in arroyo 160 meters downstream of AEC-SFR outfall; SRIC sampling location (7-14-92)

Photo No. 10

SRIC sampling location looking downstream(7-14-92)

Photo No. 11

Vegetation kills, strong H_2S odor in unnamed arroyo receiving produced water (7-14-92)

Photo No. 12

Gray murky water w/ black oily texture on banks, in sediments of Sandoval Arroyo (7-14-92)

Mrs. Tsosie said Bob Durbin is no longer the "foreman for the oil company. Another man from Texas is; she doesn't know his name.

Mrs. Tsosie says the family becomes nauseated at the ~~smell~~ "sewer-like" smell when the air is calm. [H_2S?] She wonders if the smell is from sewer discharges at Hospah or oil wastewater or both.

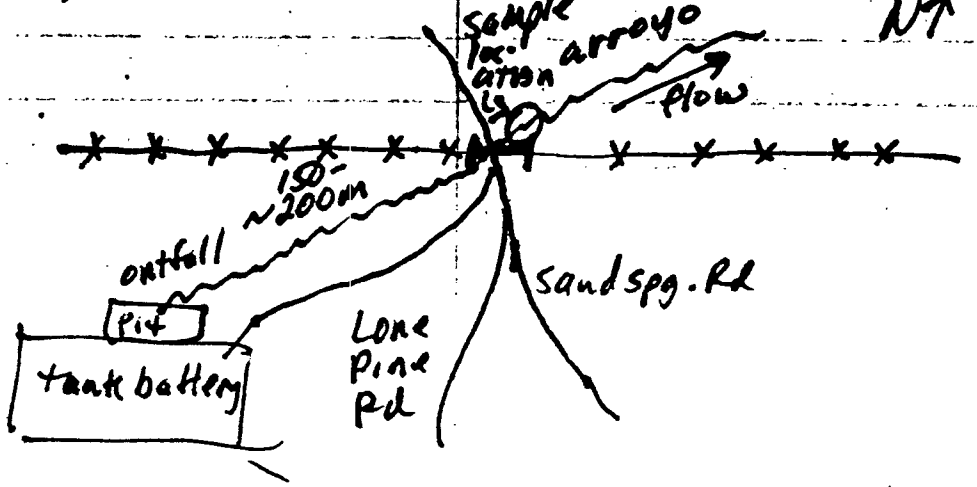
Strong H_2S smells were evident to us when we were at the Tsosie residence, and later again when taking samples of surface water at the culvert under Sand Spring Road & downstream from one of the tank batteries. Tsosie residence is situated in topographic low & surrounded on south & west by producing wells & 2 tank batteries, both of which are higher in elevation.

9207141315

Collected 1-gal. sample of water from flowing stream, downstream from oil & gas tank battery, for water fair analyses.

9207141321 photos taken!

Collected 2 40-ml samples of water in same arroyo for VOC/hab analyses. Submerged vials for good samples; no air bubbles present. Sediments oily to touch. Water was murky w/ discernible oily sheen and oily/sulfury smell. Banks of arroyo were black w/ HC staining. Bottom sediments turned water black when churned up.



a Complaint to Nav. EPA by Roger Tsosie. (See Hospah oil & gas file.) OCD analyses showed no VOCs, TPH.

OCD determined water was from Durbin domestic water at Hospah Community ~ 1.2 miles NW of Tsosie residence. Area is characterized by numerous producing oil wells & tank batteries operated by American Exploration Co. Mrs. Tsosie confirmed that the water from her hose comes from a main well at Hospah.

Location as best as we can determine is ~~17 N. 8 W. 7 . 44~~ 17. 8. 6. ~~3312~~ 3412

C. Shuey, R. Morgan 9/14/92

Mrs. Tsosie says her family is 6 people. She thinks another Navajo family nearby may be on the same water system, but isn't sure. A mission at the community is on the system. The Durbin residence is also on system.

ATTACHMENT VIII

(Field notes of C. Shuey, SRIC, 7/14/92)

Sample # 9207141159

Water from hose at Tsosie residence s/E Hospah community. Allowed water to run for 5 minutes to clear line from valve box ~ 130 meters away. Collected unfiltered, unpreserved sample in 1-gal. cubitainer. Water was clear; slight whitish film on top. No smells, no unusual tastes.

Talked to Leac Tsosie who said an oily sheen often develops on top of water when it's left standing in a barrel inside the house. For that reason, the family doesn't usually use that water for ~~dom~~ drinking — only in an emergency. They get drinking water from Crownpoint (hauled). Family uses water from the hose for livestock, bathing, cooking, cleaning.

This water source was sampled & tested by OCD in Aug. '89 following

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2553

Date Received	4/12/88	Lab No.	ICP-137	User Code	☒ 82235	☐ Other:

COLLECTION DATE & TIME: yy 88 | mm 04 | dd 19 | hh 11 | mm 05

COLLECTED BY:

COLLECTION SITE DESCRIPTION: Tesoro Oil - Hospah Final Outfall

TO:

OWNER:

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg., PO Box 2088
SANTA FE, NM 87504-2088

ATTN: David Boyer
TELEPHONE: 827-5812

SITE LOCATION:
County: McKinley

Township, Range, Section, Tract: (10N06E24342) 17N+018W+016+4214

STATION/ WELL CODE:

LATITUDE, LONGITUDE:

SAMPLING CONDITIONS:

☐ Bailed ☒ Dipped	☐ Pump ☐ Tap	Water Level:	Discharge: ~1759pm	Sample Type: GRAB

pH(00400)	Conductivity(Uncorr.)	Water Temp.(00010)	Conductivity at 25°C (00094)
9.5	2280 µmho	17 °C	µmho

FIELD COMMENTS:

SAMPLE FIELD TREATMENT
Check proper boxes:

- ☒ WPN: Water Preserved w/HNO_3 Non-Filtered
- WPF: Water Preserved w/HNO_3 Filtered

LAB ANALYSIS REQUESTED:

- ☒ ICAP Scan
- Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	0.2		Silicon	5.1	
Barium	<0.1		Silver	<0.1 ☐	
Beryllium	<0.1		Strontium	0.3	
Boron	0.2		Tin	<0.1	
Cadmium	<0.1 ☐		Vanadium	<0.1	
Calcium	6.9		Zinc	0.1	
Chromium	<0.1 ☐		Arsenic		☒ <0.005
Cobalt	<0.05		Selenium		☒ <0.005
Copper	<0.1		Mercury		☒ <0.0005
Iron	0.3				☐
Lead	<0.1 ☐				☐
Magnesium	2.1				☐
Manganese	0.06				☐
Molybdenum	<0.1				☐
Nickel	<0.1				☐

LAB COMMENTS: 01665?

For OCD Use:
Date Owner Notified: 6/27/88
Phone or ~~Letter~~?
Initials: DTC

ICAP Analyst JB
Date Analyzed 5/11/88

Reviewer Jim Ashley
Date Received 5/16/88

CATIONS				ANIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT	ANALYTE	MEQ.	PPM	DET. LIMIT
Ca	0.50	10.00	<3.0	HC03	11.54	704.00	<1.0
Mg	0.30	3.70	<0.3	SO4	11.29	542.00	<10.0
Na	27.88	641.00	<10.0	CL	4.12	146.00	<5.0
K	0.08	3.00	<0.3				
Mn	0.00	0.00		NO3	0.00	0.00	< 0.
Fe	0.00	0.00		C03	0.00	0.00	< 1.
				NH3	0.00	0.00	< 0.
				PO4	0.00	0.00	< 0.
SUMS	28.76	657.70			26.95	1392.00	

Total Dissolved Solids= 1818
Ion Balance = 106.73%

WC No. = ~~8801347~~
Date out/By _____

859

WNN

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 6/7/85 LAB NO. WC-1347 USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235

Collection DATE 05/04/19 SITE INFORMATION ▶ Sample location Tesoro Oil - Final Outfall

Collection TIME 1105 Collection site description Hospah

Collected by — Person/Agency Bayless/Bailey/OCD

SEND FINAL REPORT TO ▶
ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088
Attn: David Boyer

Phone: 827-5812

Station/well code T17N, R8W, 6.4A Owner

SAMPLING CONDITIONS

☐ Bailed ☐ Pump ☒ Dipped ☐ Tap	Water level —	Discharge 175 gpm	Sample type Grab	
pH (00400) 9.5	Conductivity (Uncorrected) 2280 µmho	Water Temp. (00010) 17 °C	Conductivity at 25°C (00094) µmho	

Field comments Discharge from Final Oil-Water Separator to array

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted 1

☒ NF: Whole sample (Non-filtered) ☐ F: Filtered in field with 0.45 µm membrane filter ☐ A: 2 ml H_2SO_4/L added

☒ NA: No acid added ☐ Other-specify: ☐ A: 5ml conc. HNO_3 added ☐ A: 4ml fuming HNO_3 added

ANALYTICAL RESULTS from SAMPLES

NA		Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	2732	µmho	6/3
☐ Total non-filterable residue (suspended) (00530)		mg/l	
☒ Other: Lab pH	8.68		6/3
☐ Other:			
☐ Other:			

A-H_2SO_4			
☐ Nitrate-N + , Nitrate-N total (00630)		mg/l	
☐ Ammonia-N total (00610)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Chemical oxygen demand (00340)		mg/l	
☐ Total organic carbon ( )		mg/l	
☐ Other:			
☐ Other:			

From NF, NA Sample:

			Date Analyzed
☒ Calcium	10.0	mg/l	5/19
☒ Potassium	3	mg/l	5/10
☒ Magnesium	3.7	mg/l	5/19
☒ Sodium	641	mg/l	5/10
☒ Bicarbonate	704	mg/l	6/3
☒ Chloride	146	mg/l	5/25
☒ Sulfate	542	mg/l	"
☒ Total Solids	1818	mg/l	5/20
☐			
☐			
☒ Cation/Anion Balance			

Analyst | Date Reported 6/7/85 | Reviewed by

Laboratory remarks
124

FOR OCD USE -- Date Owner Notified 6/27/85 Phone or (Letter)? Inital

ANALYSES PERFORMED

LAB. No.: OR- 501

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
- ☒ (754) Aromatic & Halogenated Purgeables
- ☐ (765) Mass Spectrometer Purgeables
- ☐ (766) Trihalomethanes

Other Specific Compounds or Classes

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
- ☐ (760) Organochlorine Pesticides
- ☐ (755) Base/Neutral Extractables
- ☐ (758) Herbicides, Chlorophenoxy acid
- ☐ (759) Herbicides, Triazines
- ☐ (760) Organochlorine Pesticides
- ☐ (761) Organophosphate Pesticides
- ☐ (767) Polychlorinated Biphenyls (PCB's)
- ☐ (764) Polynuclear Aromatic Hydrocarbons
- ☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
aro. etic purgeables	see remarks		
halogenated purgeables	N.D.		
* DETECTION LIMIT *	.5 ug/L	+ DETECTION LIMIT +	

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: fifty five compounds ranging from early eluting thru the C3 substituted benzene fraction detected by the photoionization detector. Not yet identified. Concentrations range from 1 - 5 ppb.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☐ No ☑ Seal(s) broken by: not sealed date: _____

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 5/3/88 Analyst's signature: Mary C. Eden

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R Meyerhein

ATTACHMENT VII

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

STATE OF NEW MEXICO ENVIRONMENT

REP- 88-0501-G

David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088

PHONE(S): 827-5812

SUBMITTER: David Boyer

S.L.D. No. OR- 501-A&B

DATE REC. 4/21/88

PRIORITY 3

USER CODE: 3 2 2 3 5

CODE: 2 6 0

SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8 8 0 4 1 9 1 1 0 5 D W S

SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER: _____ CODE: _____

COUNTY: McKinley ; CITY: Nospah CODE: _____

LOCATION CODE: (Township-Range-Section-Tracts) 1 7 N+0 8 W+0 6+4 2 1 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
- ☒ (754) Aromatic & Halogenated Purgeables
- ☐ (765) Mass Spectrometer Purgeables
- ☐ (766) Trihalomethanes

Other Specific Compounds or Classes

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
- ☐ (760) Organochlorine Pesticides
- ☐ (755) Base/Neutral Extractables
- ☐ (758) Herbicides, Chlorophenoxy acid
- ☐ (759) Herbicides, Triazines
- ☐ (760) Organochlorine Pesticides
- ☐ (761) Organophosphate Pesticides
- ☐ (767) Polychlorinated Biphenyls (PCB's)
- ☐ (764) Polynuclear Aromatic Hydrocarbons
- ☐ (762) SDWA Pesticides & Herbicides

Remarks: _____

FIELD DATA:

pH= 9.5 ; Conductivity= ~~2200~~ umho/cm at 17 °C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate 125 g/m

Depth to water _____ ft.; Depth of well _____ ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Tesoro - Final oil-water separator outfall to arroyo. Some color, HC odor

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities.(signature collector): D Boyer Method of Shipment to the Lab: State Car

This form accompanies 2 Septum Vials, 1 Glass Jugs, and/or _____ _____

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
- ☒ P-Ice Sample stored in an ice bath (Not Frozen).
- ☐ P-$Na_2S_2O_3$ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from _____ to _____

at (location) _____ on ___/___/___ - ___:___ and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☐ No ☐

Signatures _____ _____

For OCD Use: Date Owner Notified 4/27/88 Phone or (Letter?) _____ Initials BJB

ATTACHMENT VI

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION
700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106
Organic Chemistry Section - Telephone: (505) 841-2570

1 SLD No.:

Date Received:

Request ID No. 025137-C

2 User Code #: 55321

3 Request ID No.:

Priority Code #: 3 (If "1" or "2", call EID-SLD Coordinator)

5 Facility Name: American Exploration Co., Santa Fe RR Lease Tank Battery

6 County: McKinley

7 City: Hospah, NM

8 State: NM

9 Sample Location: 17N08E06.3433

10 Collected By: Chris SHUEY (First / Last) On: 92/07/14 (Date: YY/MM/DD) At: 1321 hrs. (Time: 24 hr. clock, 3:00 pm = 1500 hrs.)

11 Codes: Submitter / WSS # / Organization

12 Latitude (DDMMSS) / Longitude (DDDMMSS) / 2 Digit ID (if needed)

13 Report To: Name: Martha Rosenquist

14 Phone #: 505-473-3473

Address: N.M. Environment Dept / Ground Water Bureau
1911 Fifth St., Suite 205

City, State Zip: Santa Fe, NM 87501

15 Sample Purpose:
- [ ] Compliance
- [ ] Check
- [x] Monitoring
- [ ] Special

Sampling Information:
- [x] Grab
- [ ] Composite _____ (Composite Time Period)
  - [ ] Flow Proportioned
  - [ ] Equal Aliquot
- [ ] Sample Split w/Permittee
- [ ] Chain of Custody

16 Field Data: pH: 8.5, Conductivity: 2650 umhos @ _____ °C, Temperature: _____ °C, Chlorine Residual: _____ mg/l, Flow: _____

17 Sample Source:
- [x] Stream
- [ ] Lake
- [ ] Drain
- [ ] Pool
- [ ] WWTP
- [ ] Well; Depth: _____
- [ ] Spring
- [ ] Distribution
- [ ] Point-of-Entry
- [ ] Other: _____

18 Field Notes/Sample #: 92071413 21; sample is from unnamed arroyo that is tributary to Sandoval Arroyo; fluid is oil field produced water discharged to unnamed arroyo from skimming pond at tank battery; sample collected ~150 m downstream of discharge point.

19 Sample Type:
- [x] Water
- [ ] Soil
- [ ] Food
- [ ] Wastewater
- [ ] Other _____

This form accompanies a single sample consisting of:
- 2 - septum vial(s) (volume = 40 ml)
- _____ - glass jugs (volume = _____)
- _____ - _____ (volume = _____)

20 Preservation:
- [ ] N - None — No Preservation; Sample stored at room temperature
- [x] P-Ice — Sample stored in an ice bath (Not Frozen)
- [ ] P-TS — Sample Preserved with Sodium Thiosulfate to remove chlorine residual
- [ ] P-HCl — Sample Preserved with Hydrochloric Acid (2 drops/40 ml)
- [ ] Other _____

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required.

Volatile Screens:

- [ ] (753) Aliphatic Headspace (1-5 Carbons)
- [x] (754) Aromatic & Halogenated Purgeables (EPA 601 & 602)
- [ ] (765) Mass Spectrometer Purgeables (EPA 624)
- [ ] (766) SDWA Total Trihalomethanes (EPA 501.1)
- [ ] (774) SDWA VOC's I [8 Regulated +] (EPA 502.2)
- [ ] (775) SDWA VOC's II [EDB & DBCP] (EPA 504)

Other Specific Compounds or Classes:

- [ ] ( ) _____
- [ ] ( ) _____
- [ ] ( ) _____

Semivolatile Screens:

- [ ] (763) Acid Extractables
- [ ] (751) Aliphatic Hydrocarbons
- [ ] (755) Base/Neutral Extractables (EPA 625)
- [ ] (756) Base/Neutral/Acid Extractables (EPA 8270)
- [ ] (758) Herbicides, Chlorophenoxy Acid
- [ ] (759) Herbicides, Triazines
- [ ] (760) Organochlorine Pesticides
- [ ] (761) Organophosphate Pesticides
- [ ] (767) Polychlorinated Biphenyls (PCB's)
- [ ] (764) Polynuclear Aromatic Hydrocarbons
- [ ] (762) SDWA Pesticides & Herbicides

Remarks: Water fair results on 7/15/92: OVA reading > 100 ppm; NO_3 1.8 mg/l; Fe 0.0 mg/l; SO_4 > 250 mg/l

This Form Will NOT Be Returned With Your Results. Please RETAIN A COPY!

ATTACHMENT IV

Environmental Improvement Division
Ground Water Bureau
Runnels Building
Santa Fe, New Mexico 87503
Ph: 827-2917

WATER WELL FIELD TEST

EXAMEN DE LA NORIA

3865

PRESS HARD - A PLANA CON FUERSA

FIELD SAMPLE ID # 920714 1315

HOW TO TAKE A WATER SAMPLE

1. Turn on the tap and let the cold water run for at least five minutes.
2. Collect at least one quart of water in a washed, well rinsed, covered container such as a plastic milk jug or canning jar.
3. Old samples can give inaccurate results. Collect the sample as close to the time of testing as possible and write down the date and time you took the sample.

COMO TOMAR MUESTRAS DE NORIA

1. Abra la llave y deje que corra el agua fria cinco minutos a lo menos.
2. Recoja cuando menos un cuarto de agua en un envase lavado, bien enjuagado y tapado; puede ser un envase de plástico de leche o un frasco de envasar con tapa también.
3. Los resultados obtenidos de muestras que ya tengan tiempo, o viejas, pueden ser incorrectos.

WELL INFORMATION (1-18 to be completed by well owner or user.)
INFORMACION SOBRE LA NORIA (Debe de ser dada por el dueño (a) de la noria la persona que lo usa.)

1. Sampling date - Fecha de la muestra: 7-14-92
   Site: unnamed arroyo tributary to Sandoval Arroyo; surface water
2. Name - Nombre: American Exploration Co. — Phone No. - Teléfono:
3. Mailing address - Dirección (para correspondencia): Hospah Oil Field, McKinley County, NM
4. City, State, Zip code - Ciudad, Estado, Zona postal: Star Rt. 2, Cuba, NM 87013
5. Location of well (if different from mailing address) - Local de la noria (si es diferente a la anterior): Surface water ~200 m downstream from produced water discharge pipe at American Exploration Co. tank battery
6. Well owner (if different from name above) - Dueño (a) de la noria (si es diferente al nombre dado anteriormente):
7. How many people use this well as a source of drinking water? - ¿Cuántas personas usan este noria de agua como recurso de agua potable? no human use observed; livestock use observed
8. How long have they been using it? - ¿Cuánto tiempo tienen usándolo?
9. Concrete pad around the well? - ¿Plancha de concreto? ☐ YES - SI ☐ NO — N/A
10. Distance from well to nearest septic system leachfield. - Distancia entre la noria del campo de lodo del sistema séptico mas cercano. N/a
11. Well driller's name and address - Nombre y dirección de la persona que perforó la noria: N/a
12. Suspected problems. - Problemas que se sospechan. ☐ None - Ninguno ☐ Describe - Describa: Oily sheen on surface of water; black oily staining, scum on banks of arroyo; heavy black oily sludges in sediments on bottom of arroyo
13. Casing material - Cubierta: N/a ☐ Steel - Acero ☐ PVC
14. Depth of well - Profundidad de la noria: N/a
15. Depth to water - Profundidad del agua: N/a
16. Method of well construction. - Método del construcción: ☐ Drilled - Perforada ☐ Dug - Excavada ☐ Driven - Cavada ☐ Other - Please describe - Otro - Por favor describa: N/a
17. Age of well (years) - Edad (años): N/a
18. Are you using a water treatment unit? - ¿Esta Ud. usando un aparato especial para el purificarar el agua? ☒ Yes - Si ☐ No
   Check type: - Marque que tipo es:
   - ☐ Distillation - Destilación
   - ☐ Reverse osmosis - Osmosis inversa
   - ☐ Chlorination - Tratamiento de cloro
   - ☐ Carbon filter - Filtro de carbón
   - ☐ Oxidation & removal - Oxidación y removimiento
   - ☐ Water softener - Ablandador o suavizador de agua
   - ☒ Other - otro/Please describe - Por favor describa: sedimentation and skimming in 2 pits prior to surface discharge

LABORATORY RESULTS - RESULTADOS del LABORATORIO

pH: 8.5	Temperature (degrees Centigrade)
Conductivity (micromhos/cm) 1300 at 25° C † : 2650	
Organic vapor: ☐ Not detected	☒ Detected
Flame ionization (parts per million): 7100 ppm	
Photo ionization (parts per million)	
Nitrate as N (mg/l) 10 mg/l*: 1.8	Manganese (mg/l) 0.05 mg/l †
Sulfate (mg/l) 250 mg/l †: >250	Sulfide (mg/l) 0.05 mg/l †
Iron (mg/l) 0.3 mg/l †: 0	
Analyst - Analizador	Date - Fecha

*Health standard †Aesthetic standard

AVISO

Los exámenes para tomar muestras de agua hechos por la oficina *Environmental Improvement Division* de Nuevo México (EID), son sólamente para analizar los productos químicos y características anotadas en esta forma, llamada en inglés, *Water Well Field Test.* Estos exámenes no deben considerarse un sustituto de un análisis completo de laboratorio, ni tampoco incluyen ningún análisis biológico (por ejemplo de bacteria, etc.). Además, si la manera en que fué tomada la muestra no fué la recomendada por EID, los resultados del examen de la muestra quizá den a conocer un componente o una característica que en realidad no se encuentra presente en su agua o quizá no den a conocer un componente o característica que sí esté presente. Si tiene usted alguna pregunta, por favor pregúntele a un representante de EID.

NOTICE

The water sample tests performed by the New Mexico Environmental Improvement Division (EID) are only for those chemicals or characteristics listed on the Water Well Field Test form. The tests are not a substitute for a complete laboratory analysis, nor do they include any biological (i.e., bacterial, etc.) analyses. In addition, the test results may show a compound or characteristic not actually present in your water, or may fail to show a compound or characteristic which is actually present, if the manner in which your water sample was taken and/or preserved is significantly different from the manner recommended by the EID. If you have any questions, please ask an EID representative.

COMMENTS - COMENTARIOS

This water testing program was made possible by special appropriations from the New Mexico Legislature. - Este programa para tomar muestras y analizar el agua se logró por la Legislatura de Nuevo México.

Please read the back of this form. - Por favor lea al reverso de esta forma.

ATTACHMENT V

Environmental Improvement Division
Ground Water Bureau
Runnels Building
Santa Fe, New Mexico 87503
Ph: 827-2917

HEALTH and ENVIRONMENT

WATER WELL FIELD TEST

EXAMEN DE LA NORIA

3864

PRESS HARD-A PLANA CON FUERSA

SAMPLE FIELD # NO. 9207141159

HOW TO TAKE A WATER SAMPLE

1. Turn on the tap and let the cold water run for at least five minutes.
2. Collect at least one quart of water in a washed, well rinsed, covered container such as a plastic milk jug or canning jar.
3. Old samples can give inaccurate results. Collect the sample as close to the time of testing as possible and write down the date and time you took the sample.

COMO TOMAR MUESTRAS DE NORIA

1. Abra la llave y deje que corra el agua fría cinco minutos a lo menos.
2. Recoja cuando menos un cuarto de agua en un envase lavado, bien enjuagado y tapado; puede ser un envase de plástico de leche o un frasco de envasar con tapa también.
3. Los resultados obtenidos de muestras que ya tengan tiempo, o viejas, pueden ser incorrectos.

WELL INFORMATION (1-18 to be completed by well owner or user.)

INFORMACION SOBRE LA NORIA (Debe de ser dada por el dueño (a) de la noria la persona que lo usa.) 17.8.6.4312 Mannelito

1. Sampling date - Fecha de la muestra: 7-14-92
   Field Test Location: Hose at Tsosie residence from central community well
2. Name - Nombre: ROGER & LENA TSOSIE
   Alternate location: (NONE)
3. Mailing address - Dirección (para correspondencia): HCR #79 BOX 100, Whitehorse Lake Chapter
4. City, State, Zip code - Ciudad, Estado, Zona postal: Cuba, NM 87013
5. Location of well (if different from mailing address) - Local de la noria (si es diferente a la anterior): McKinley County; Hospah community 17.8.6.4312 (Home-site lease descr.)
6. Well owner (if different from name above) - Dueño (a) de la noria (si es diferente al nombre dado anteriormente): American Exploration Co.
7. How many people use this well as a source of drinking water? - ¿Cuántas personas usan este noria de agua como recurso de agua potable? at least 6 in Tsosie family; others at AEC H2S
8. How long have they been using it? - ¿Cuánto tiempo tienen usándolo? at least 15 yrs.
9. Concrete pad around the well? - ¿Plancha de concreto? ☐ YES - SI ☐ NO unk.
10. Distance from well to nearest septic system leachfield. - Distancia entre la noria del campo de lixivio del sistema séptico mas cercano. outhouse only; no septic tank system
11. Well driller's name and address - Nombre y dirección de la persona que perforó la noria: American Exploration Co. Star Rte. #2 Cuba, NM 87013 — Donnie Hall Regional Supt. 344-2508
12. Suspected problems - Problemas que se sospechan: ☐ None - Ninguno Describe: - Describa: when sample collected, clear, no odors from hose at home; homeowner reports oily film on surface of water after it has sat in a water barrel inside the home.*
13. Casing material - Cubierta: unk. ☐ Steel - Acero ☐ PVC
14. Depth of well - Profundidad de la noria: unk.
15. Depth to water - Profundidad del agua: unk.
16. Method of well construction: - Método del construcción: ☒ Drilled - Perforada ☐ Dug - Excavada ☐ Driven - Cavada ☐ Other - Please describe. - Otro - Por favor describa.
17. Age of well (years) - Edad (años): unk.
18. Are you using a water treatment unit? - ¿Está Ud. usando un aparato especial para el purificarar el agua? ☐ Yes - Si ☒ No

Check type: - Marque que tipo es:

- ☐ Distillation - Destilación
- ☐ Reverse osmosis - Osmosis inversa
- ☐ Chlorination - Tratamiento de cloro
- ☐ Carbon filter - Filtro de carbón
- ☐ Oxidation & removal - Oxidación y removimiento
- ☐ Water softener - Ablandador o suavizador de agua
- ☐ Other - otro/Please describe - Por favor describa: _____

*Family uses this water for drinking purposes only in an emergency; uses water for cooking, bathing, cleaning, livestock

LABORATORY RESULTS - RESULTADOS del LABORATORIO

pH: 8.5	Temperature (degrees Centigrade):
Conductivity (micromhos/cm) 1300 at 25° C † : 1000	
Organic vapor: ☒ Not detected ☐ Detected	
Flame ionization (parts per million):	
Photo ionization (parts per million):	
Nitrate as N (mg/l) 10 mg/l* : 0.4	Manganese (mg/l) 0.05 mg/l †:
Sulfate (mg/l) 250 mg/l † : >250	Sulfide (mg/l) 0.05 mg/l †:
Iron (mg/l) 0.3 mg/l † : .08	
Analyst - Analizador:	Date - Fecha:

*Health standard †Aesthetic standard

AVISO

Los exámenes para tomar muestras de agua hechos por la oficina *Environmental Improvement Division* de Nuevo México (EID), son sólamente para analizar los productos químicos y características anotadas en esta forma, llamada en inglés, *Water Well Field Test*. Estos exámenes no deben considerarse un sustituto de un análisis completo de laboratorio, ni tampoco incluyen ningún análisis biológico (por ejemplo de bacteria, etc.). Además, si la manera en que fué tomada la muestra no fué la recomendada por EID, los resultados del examen de la muestra quizá den a conocer un componente o una característica que en realidad no se encuentra presente en su agua o quizá no den a conocer un componente o caraterística que sí esté presente. Si tiene usted alguna pregunta, por favor pregúntele a un representante de EID.

COMMENTS - COMENTARIOS

NOTICE

The water sample tests performed by the New Mexico Environmental Improvement Division (EID) are only for those chemicals or characteristics listed on the Water Well Field Test form. The tests are not a substitute for a complete laboratory analysis, nor do they include any biological (i.e., bacterial, etc.) analyses. In addition, the test results may show a compound or characteristic not actually present in your water, or may fail to show a compound or characteristic which is actually present, if the manner in which your water sample was taken and/or preserved is significantly different from the manner recommended by the EID. If you have any questions, please ask an EID representative.

This water testing program was made possible by special appropriations from the New Mexico Legislature. - Este programa para tomar muestras y analizar el agua se logró por la Legislatura de Nuevo México.

Please read the back of this form. - Por favor lea al reverso de esta forma.

505-393-0120

711-01-0012 Expansion

District I
1625 N. French Dr., Hobbs, NM 88240 ✓
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-138
Revised March 17, 1999

Submit Original
Plus 1 Copy
to Appropriate
District Office

REQUEST FOR APPROVAL TO ACCEPT SOLID WASTE

1. RCRA Exempt: ☑ Non-Exempt: ☒ Non Exempt MK Verbal Approval Received: Yes ☐ No ☐	4. Generator Jenex of Texas 5. Originating Site Odessa TX
2. Management Facility Destination C&C Landfarm Inc	6. Transporter Environmental Technology
3. Address of Facility Operator Monument NM	8. State Texas
7. Location of Material (Street Address or ULSTR) 8373 + W. Loop 338 Odessa, TX.	

9. Circle One:

A. All requests for approval to accept oilfield exempt wastes will be accompanied by a certification of waste from the Generator; one certificate per job.

B. All requests for approval to accept non-exempt wastes must be accompanied by necessary chemical analysis to PROVE the material is not-hazardous and the Generator's certification of origin. No waste classified hazardous by listing or testing will be approved

All transporters must certify the wastes delivered are only those consigned for transport.

BRIEF DESCRIPTION OF MATERIAL:

Soil Contaminated with Crude oil + BS + W mixture. approx 70 Fluid bbls in 400-500 yds. ~~bbls~~ of soil.

Estimated Volume 500 cy Known Volume (to be entered by the operator at the end of the haul) _____ cy

SIGNATURE Jim Cooper (Waste Management Facility Authorized Agent) TITLE: President DATE: 6-4-02

TYPE OR PRINT NAME: Jim Cooper TELEPHONE NO. 505-369-7108

0672021

(This space for State Use)

APPROVED BY: [signature] TITLE: [illegible] DATE: [illegible]

APPROVED BY: [signature] TITLE: Environmental [illegible] DATE: [illegible]

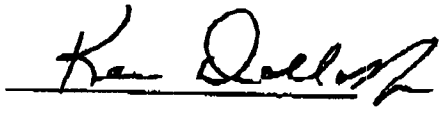
JENEX ACQUISITION CORPORATION
DBA: JENEX OF TEXAS
12200 W I-20
ODESSA, TEXAS 79763

CERTIFICATION

I Kenneth Dolloff, Manager of the Jenex Acquisition Corporation facility dba: Jenex of Texas, Inc. hereby certify that the 400-500 Yards of soil is being transported from Odessa, Texas to the C & C Landfarm, Inc. near Monument, New Mexico.

The soil was removed from an accidental spill of approximately 70 barrels of crude oil and BS&W along the highway and it was removed and piled for disposal in a permitted landfarm handling oilfield waste.

Kenneth Dolloff



NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
Betty Rivera
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

FAX

TO: MARTYNE KIELING

FROM: LARRY
Energy Minerals and Natural Resources Department,
Oil Conservation Division

RE:

DATE: 6/11/02

THIS IS CRUDE CONTAMINATED TEXAS SOIL FROM A TRANSPORT TRUCK INVOLVED IN ACCIDENT. ANALYSIS IS ON THE WAY.

3 Pages (Including Transmittal)

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
Betty Rivera
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

FAX

TO: MARYNE KIELING

FROM: LARRY JOHNSON
Energy Minerals and Natural Resources Department,
Oil Conservation Division

RE: JENEX SAMPLES

DATE: 6/12/02

C-138 SUBMITTAL BY JENEX — HWY SPILL IN ODESSA TX - PRODUCT IS ON PLASTIC BESIDE THE ROADWAY & OFFICALS ARE NERVOUS.

8 Pages (Including Transmittal)

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
P.O. BOX 4845
MIDLAND, TX 79704
OFFICE 915/522-1139
FAX 915/520-4310

FACSIMILE TRANSMITTAL

DATE: 6/11/02

TO: mr Larry Johnson

FROM: Chance Johnson

RE:

FAX NO.: 1-505-393-0720

NUMBER OF PAGES: 7 **(INCLUDING THIS COVERSHEET)**

COMMENTS: mr. Johnson -
3PS + 3PN are "stockpile" samples
If you have any questions please call
Chance Johnson @ 522-1139 or 238-4055.

ANALYTICAL REPORT

Prepared for:

CHANCE JOHNSON
E.T.G.I.
P.O. BOX 4845
MIDLAND, TX 79704

Project: Jenex
Order#: G0203370
Report Date: 05/17/2002

Certificate
US EPA Laboratory Code TX00158

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

CHANCE JOHNSON
E.T.G.L
P.O. BOX 4945
MIDLAND, TX 79704

Order#: G0203370
Project: JEN 1102R
Project Name: Jones
Location: Odessa

Lab ID: 0203370-05
Sample ID: SPS

TCLP BTEX 8021B,1311

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0001749-02	5/17/02	5/18/02 14:36	1	1	CK	1311/8021B

Parameter	Result µg/L	RL
Benzene	33.4	1.00
Ethylbenzene	497	1.00
Toluene	361	1.00
p/m-Xylene	479	1.00
o-Xylene	252	1.00

Lab ID: 0203370-06
Sample ID: SPN

TCLP BTEX 8021B,1311

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0001749-02	5/17/02	5/18/02 14:50	1	1	CK	1311/8021B

Parameter	Result µg/L	RL
Benzene	67.9	1.00
Ethylbenzene	626	1.00
Toluene	531	1.00
p/m-Xylene	594	1.00
o-Xylene	312	1.00

Approval: Roland K Tuttle 5-20-02
Roland K. Tuttle, Lab Director, QA Officer — Date
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Blazzgbe, Lab Tech.
Sara Molina, Lab Tech.

DL = Diluted out NA = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS I, LTD. 12600 West I-20 East, Odessa, TX 79765 Ph: 915-563-1800

Environmental Lab of Texas I, Ltd.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

238-4055

Project Manager: Chance Johnson
Company Name: E.T.G.I.
Company Address: 4000 West Wall
City/State/Zip: Midland TX 79705
Telephone No: (915) 522-1139
Fax No: (915) 560-4310
Sampler Signature: [signature]

Project Name: Jenex
Project #: Jen 1102R
Project Loc: Odessa
PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Water	Sludge	Soil	Other (specify)	TPH: 418.1 8015M (005) 1005	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RCI	TCLP BTEX	RUSH TAT (Pre-Schedule)	Standard TAT
0203970-01	South	5/15/02	16:48	1	X									X		X							X				
02	East	5/15/02	17:00	1	X									X		X							X				
03	N.W.	5/15/02	17:05	1	X									X		X							X				
04	EEB #1	5/16/02	12:35	1	X									X		X							X				
05	SPS	5/16/02	13:05	1	X									X		X							X		X		
06	SPN	5/16/02	1300	1	X									X		X							X		X		
07	WEB #1	5/16/02	11:55	1	X									X		X							X				
08	WEB # 2	5/16/02	12:05	1	X									X		X							X				
09	WEB # 3	5/16/02	12:10	1	X									X		X							X				
10	WEB # 4	5/16/02	12:17	1	X									X		X							X				

Special Instructions: A.S.A.P call chance with verbal

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	5/16/02	14:00			
Relinquished by:	Date	Time	Received by ELOT: [signature]	5-16-02	1400

Sample Containers Intact? (Y) N
Temperature Upon Receipt: 3.5°C
Laboratory Comments:
*Add TCLP BTEX to samples as per Chance 05-17-02 @ 0850

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

CHANCE JOHNSON
E.T.G.I.
P.O. BOX 4845
MIDLAND, TX 79704

Order#: G0203378
Project: JEN 11028
Project Name: Jenex
Location: Odessa

Lab ID: 0203378-04
Sample ID: EKB #1

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0081736-02		5/16/02 11:06	1	25	CK	8021B

Parameter	Result mg/kg	RL
Benzene	<25.0	25.0
Ethylbenzene	<25.0	25.0
Toluene	33.6	25.0
p/m-Xylene	59.0	25.0
o-Xylene	<25.0	25.0

Lab ID: 0203378-05
Sample ID: SP8

1005 TNRCC Rev 03

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		5/16/02	1	10	CK	1005

Parameter	Result mg/kg	RL
DRO, >C12-C35	5460	250
GRO, C6-C12	5570	250
TOTAL, C6-C35	11030	250

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

CHANCE JOHNSON
E.T.G.L
P.O. BOX 4845
MIDLAND, TX 79704

Order#: G0303170
Project: JEN 1102R
Project Name: Jones
Location: Odessa

Lab ID: 0303170-03
Sample ID: SPS

Total

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0301736-03		5/16/02 11:38	1	100	CK	8021B

Parameter	Result µg/kg	RL
Benzene	2900	100
Ethylbenzene	3700	100
Toluene	17500	100
p/m-Xylene	39800	100
o-Xylene	18600	100

2-8

Lab ID: 0303170-06
Sample ID: SPN

1005 TNRCC Rev 03

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		5/16/02	1	10	CK	1005

Parameter	Result mg/kg	RL
DRO, >C12-C35	5678	250
GRO, C6-C12	5990	250
TOTAL, C6-C35	11668	250

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

CHANCE JOHNSON
E.T.G.I.
P.O. BOX 4845
MIDLAND, TX 79704

Order#: G0203370
Project: JEN 1102R
Project Name: Jones
Location: Odessa

Lab ID: 0203370-06
Sample ID: SPN

Total

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0001726-02		5/16/02 17:51	1	100	CK	8021B

Parameter	Result ug/kg	RL
Benzene	3620	100
Ethylbenzene	42800	100
Toluene	26900	100
p/m-Xylene	45400	100
o-Xylene	31200	100

3.6 ppm

Lab ID: 0203370-07
Sample ID: WEB #1

1005 TNRCC Rev 03

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		5/16/02	1	1	CK	1005

Parameter	Result mg/kg	RL
DRO, >C12-C35	41.2	25.0
GRO, C6-C12	<25.0	25.0
TOTAL, C6-C35	41.2	25.0

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ANALYTICAL REPORT

Prepared for:

CHANCE JOHNSON
E.T.G.I.
P.O. BOX 4845
MIDLAND, TX 79704

Project:	Jenex
Order#:	G0203370
Report Date:	05/17/2002

Certificates
US EPA Laboratory Code TX00158

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

CHANCE JOHNSON
E.T.G.L
P.O. BOX 4845
MIDLAND, TX 79704

Order#: G0203370
Project: JEN 1102R
Project Name: Jones
Location: Odessa

Lab ID: 0203370-05
Sample ID: SPS

TCLP BTEX 8021B,1311

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0001749-02	5/17/02	5/18/02 14:36	1	1	CK	1311/8021B

Parameter	Result µg/L	RL
Benzene	33.4	1.00
Ethylbenzene	497	1.00
Toluene	361	1.00
p/m-Xylene	479	1.00
o-Xylene	252	1.00

Lab ID: 0203370-06
Sample ID: SPN

TCLP BTEX 8021B,1311

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0001749-02	5/17/02	5/18/02 14:58	1	1	CK	1311/8021B

Parameter	Result µg/L	RL
Benzene	67.9	1.00
Ethylbenzene	626	1.00
Toluene	531	1.00
p/m-Xylene	594	1.00
o-Xylene	312	1.00

Approved: Roland K Tuttle 5-20-02
Date:
Roland K. Tuttle, Lab Director, QA Officer
Coley D. Keene, Org. Tech. Director
Jeanne McMurray, Inorg. Tech. Director
Sandra Blevagbe, Lab Tech.
Sara Molina, Lab Tech.

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS I, LTD. 12600 West I-20 East, Odessa, TX 79765 Ph: 915-563-1800

Environmental Lab of Texas I, Ltd.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

258-4055

Project Manager: Chance Johnson
Company Name: E.T.G.I.
Company Address: 4600 West Wall
City/State/Zip: Midland TX 79705
Telephone No: (915) 522 1139
Fax No: (915) 580 4310
Sampler Signature: [signature]

Project Name: Jenex
Project #: Jen 11028
Project Loc: Odessa
PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Water	Sludge	Soil	Other (specify)	TPH: 418.1 8015M (8015) 1005	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RCI	TCLP BTEX	RUSH TAT (Pre-Schedule)	Standard TAT
020339-01	South	5/15/02	16:48	1	X									X		X							X				
02	East	5/15/02	17:00	1	X									X		X							X				
03	N.W.	5/15/02	17:05	1	X									X		X							X				
04	EEB #1	5/16/02	12:35	1	X									X		X							X				
05	SPS	5/16/02	13:05	1	X									X		X							X		X		
06	SPN	5/16/02	1300	1	X									X		X							X		X		
07	WEB #1	5/16/02	11:55	1	X									X		X							X				
08	WEB # 2	5/16/02	12:05	1	X									X		X							X				
09	WEB # 3	5/16/02	12:10	1	X									X		X							X				
10	WEB #4	5/16/02	12:17	1	X									X		X							X				

Special Instructions: A.S.A.P Call chance with Verbal

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	5/16/02	14:00			
Relinquished by:	Date	Time	Received by ELOT: [signature]	5-16-02	1400

Sample Containers Intact? (Y) N
Temperature Upon Receipt: 3.5°C
Laboratory Comments:
Add TCLP BTEX to soilpiles per Chance 05-17-02 @ 0850

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

CHANCE JOHNSON
E.T.G.I.
P.O. BOX 4946
MIDLAND, TX 79704

Order#: [illegible]
Project: JEN 1182R
Project Name: Jones
Location: Odessa

Lab ID: [illegible]
Sample ID: ESB #1

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0001736-02		5/16/02 17:56	1	25	CK	8021B

Parameter	Result mg/kg	RL
Benzene	<25.0	25.0
Ethylbenzene	<25.0	25.0
Toluene	33.6	25.0
p/m-Xylene	39.0	25.0
o-Xylene	<25.0	25.0

Lab ID: 0203370-05
Sample ID: SP5

1005 TNRCC Rev 03

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		5/16/02	1	10	CK	1005

Parameter	Result mg/kg	RL
DRO, >C12-C35	5460	250
GRO, C6-C12	5670	250
TOTAL, C6-C35	11030	250

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

CHANCE JOHNSON
E.T.G.I.
P.O. BOX 4845
MIDLAND, TX 79704

Order#: [illegible]
Project: JEN 1182R
Project Name: Jones
Location: Odessa

Lab ID: [illegible]
Sample ID: SPS

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
[illegible]		5/16/02 11:28	1	100	CK	8021B

Parameter	Result µg/kg	RL
Benzene	2800	100
Ethylbenzene	37600	100
Toluene	17500	100
p/m-Xylene	39800	100
o-Xylene	19600	100

Lab ID: [illegible]
Sample ID: SPN

1005 TNRCC Rev 03

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		5/16/02	1	10	CK	1005

Parameter	Result mg/kg	RL
DRO, >C12-C35	5470	250
GRO, C6-C12	5990	250
TOTAL, C6-C35	11660	250

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

CHANCE JOHNSON
E.T.G.L.
P.O. BOX 4845
MIDLAND, TX 79704

Order#: G0203370
Project: JEN 1102R
Project Name: Jenct
Location: Odessa

Lab ID: 0203370-06
Sample ID: SPN

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0001736-02		5/16/02 17:53	1	100	CK	8021B

Parameter	Result µg/kg	RL

HOSPAH 8/5/92

Lake Sandoval

HOSPAH 8/5/92

Outlet pipes on downstream side of Lake Sandoval.

HOSPAH 8/5/92

Arroyo on downstream side of outlet from Lake Sandoval


TESORO
PETROLEUM CORP
FIELD
OFFICE

Tesoro - Hospah 4/19/88

Tesoro - Hospah 4/19/88

Hospah 4/19/88

HOSPAH 8/5/92

Unlined pond @ tank battery

HOSPAH 8/5/92

Unlined pond @ tank battery

HOSPAH 8/5/92

Discharge pipe from unlined pond @ tank battery

HOSPAH 8/5/92

Discharge pipe from unlined pond @ tank battery

HOSPAH 8/5/92

Unlined pond @ tank battery

HOSPAH 8/5/92

Unlined pond @ tank battery

HOSPAH 8/5/92

Unlined pond @ tank battery

Hospah

Discharge pipe from unlined pond @ tank battery

8/5/92

HOSPAH 8/5/92

Drainage ditch between unlined ponds & Lake Sandoval

8/5/92

HOSPAH

Drainage ditch between unlined ponds & Lake Sandoval

HOSPAH 8/5/92

Drainage ditch from unlined pond (Santa Fe RR Battery).

HOSPAH 8/5/92

Drainage ditch from unlined pond @ Santa Fe Tank Battery (Sediment sample taken).

HOSPAH 8/5/92

Navajo home @ Hospah oil field

HOSPAH 8/5/92

HOSPATH

8/5/92

HOSPAH 8/5/92

Final Skim pond

HOSPAH 8/5/92

Final Skim pond

HASPATH 8/5/92

Arroyo - outlet below final skim.

HOSPAH 8/5/92

Arroyo below final skim.

Sample location (soil + water)

HOSPAH 8/5/92

Lake Sandoval

HOSPAH 8/5/92

Lake Sandoval - looking
up stream

HOSPATH 8/5/92

Lake Sandoval