

AP - 31

**STAGE 1 & 2
WORKPLANS**

DATE:

Aug. 26, 2002

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Mr. William C. Olson
Hydrologist
NMOCD – Environmental Bureau
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

ORIGINAL

RE: WORK PLAN TO DETERMINE THE EXTENT OF HYDROCARBON IMPACTS STAGE 1 AND STAGE 2 ABATEMENT PLAN PROPOSALS (AP-31) O-9 LINE LEAK, RIO ARRIBA COUNTY, NEW MEXICO

Dear Mr. Olson:

Benson-Montin-Greer Drilling Corporation (BMG) is presenting the following work plan to complete the assessment at the AP-31 site. BMG has reviewed your letter dated July 31, 2002 requesting the following information:

1. A site map showing the location of the line leak in relation to the site ground water monitoring wells.
2. Provide a work plan to completely define the extent of groundwater contamination in relation to BMG's activities.
3. Provide a site map showing the location of soil borings, SB-11 through SB-17.

A site map depicting information requested in items 1 and 3 is attached to this proposal.

WORK PLAN – FOR FURTHER SOIL/GROUNDWATER DELINEATION

BMG will implement the following Scope of Work to delineate the extent of horizontal hydrocarbon migration and impacts from the crude oil to groundwater at the site.

1. BMG will mobilize to the site and install up to five, one-inch diameter, temporary monitoring wells in locations cross and down gradient from monitoring well, MW-6 (to the south and southeast). The boreholes for the monitoring wells will be created using a stainless steel hand auger. The borings will be advanced at depths up to 20 feet below ground surface (bgs) or refusal. Groundwater at the site has been documented at depths of approximately 12 feet below ground surface. The temporary wells will be placed with at least 10 feet of slotted screen with the groundwater level interface at approximately the midway point of the slotted screen. Solid, one-inch, schedule 40 pvc will be used as a riser from the slotted screen to the surface. Environmental, 10-20 silica sand will be placed into the borehole annulus to at least two-feet above the slotted PVC screen. Approximately two-feet of bentonite hole plug will

be placed on top of the sand and quenched with clean water. The remainder of the borehole will be backfilled with soil from the borehole.

2. BMG will measure the current groundwater levels, product thickness and evaluate the data to determine the groundwater gradient at the site. Additionally, the temporary wells installed will be developed by purging a minimum of three casing volumes of water from each well. Water samples will be collected and prepared for shipment to a certified laboratory. The groundwater will be analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) and total petroleum hydrocarbons (TPH) using EPA Method 8021/8015 respectively. The groundwater data will be reviewed to determine the extent of hydrocarbon impacts to the groundwater.
3. A single monitoring well constructed in accordance to NMOCD specifications will be installed outside and down gradient of the hydrocarbon impacted groundwater from the O-9 Line Leak. This well will consist of 4-inch PVC casing with 10 to 15 feet of 0.010-slotted screen within the groundwater interface. The well screen will be packed in 10-20 silica sand to 2 feet above the screen, sealed with bentonite and grouted to the surface. The monitoring well will be completed with above ground locking protectors.
4. The monitoring well will be developed by purging a minimum of three casing volumes of water from the well. A water sample will be collected and prepared for shipment to a certified laboratory. The groundwater will be analyzed for BTEX and TPH using EPA Method 8021/8015 respectively. Groundwater analytical data from this monitoring well will be used to determine a point of compliance for analytes in accordance with the New Mexico Groundwater standards.
5. Upon receipt of the laboratory analytical results, BMG will prepare a report to present the results of the investigation. The report will include laboratory analytical results, figures showing the monitoring well locations, boring locations and estimated extent of horizontal migration of crude oil on the groundwater. Copies of the report will be presented to the NMOCD for review.

SCHEDULE

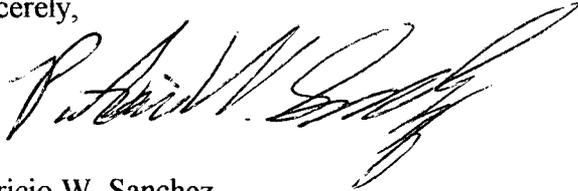
BMG, upon NMOCD's written approval will initiate this work within 30 days of receipt of written approval. Please include Mr. Larry Gore of the Santa Fe National Forest - Cuba District in future mailings, his address and telephone is:

Mr. Larry Gore, Geologist
Santa Fe National Forest
Cuba Ranger District
P.O. Box 130
Cuba, NM 87013
(505)-289-3264

Mr. Bill Olson
August 26, 2002
Page 3

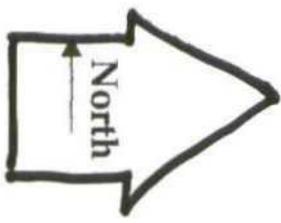
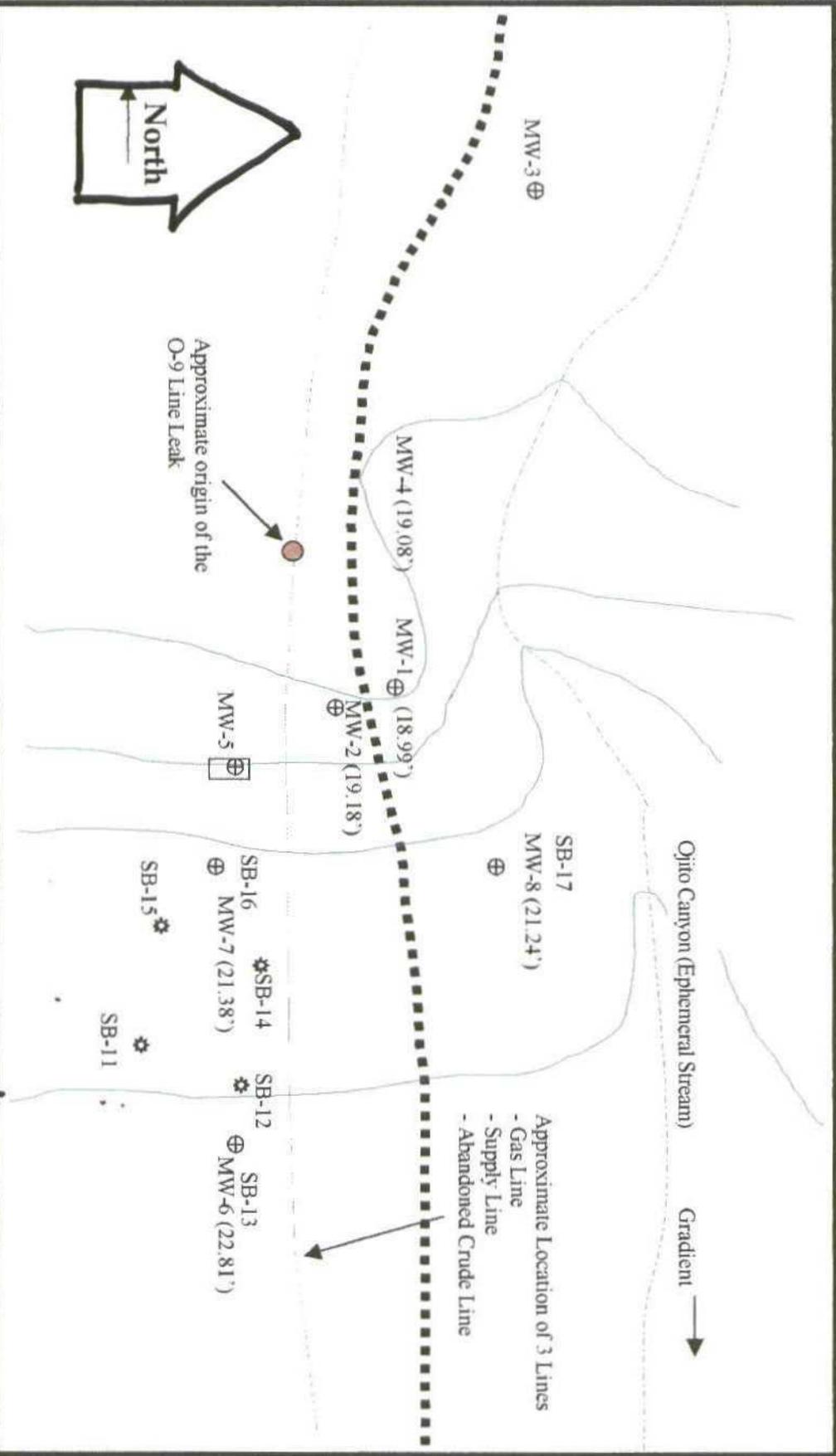
If you have any questions or require additional information please contact BMG at the letterhead address or phone number, or via e-mail at pwsanchez@acrnet.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Patricio W. Sanchez". The signature is fluid and cursive, with a large, sweeping flourish at the end.

Patricio W. Sanchez
Petroleum Engineer
Benson-Montin Greer Drilling Corporation

C ARG, MRD, File 2500-B, Denny Foust – NMOCD Aztec, Larry Gore – USFS/ Santa Fe
(Cuba District), Mr. Don Fernald - AMEC



Approximate origin of the O-9 Line Leak

Ojito Canyon (Ephemeral Stream)

Gradient →

SB-17
MW-8 (21.24')

Approximate Location of 3 Lines
 - Gas Line
 - Supply Line
 - Abandoned Crude Line

Legend

- ✱ - Borehole Location
- ⊕ - Borehole/Monitoring Well Location
- ▬ - Access Road

Map is not to scale



AMEC Earth & Environmental
 2060 Afion Place
 Farmington, NM 87401
 (505) 327-7928

Site Location Map for:
 Benson-Montin-Greer Drilling Corp.
 Ojito Canyon (O-9) Line Leak Location
 Santa Fe National Forest
 Rio Arriba County, New Mexico