



TETRA TECH, INC.

1910 N. Big Spring
Midland, Texas 79705
(432) 686-8081

October 20, 2009

Mr. Geoffrey Leking
New Mexico Oil Conservation Division
1625 N. French Dr.
Hobbs, NM 88240

Ms. Trisha Bad Bear
US Bureau of Land Management
414 West Taylor
Hobbs, NM 88240

RE: MCA 2A Header
Subsurface Investigation Work Plan
Lea County, New Mexico
Unit G, Sec. 29, T17S, R32E

Dear Mr. Leking and Ms. Bad Bear:

On behalf of ConocoPhillips, Tetra Tech submits this work plan to perform a subsurface investigation at ConocoPhillips' MCA 2A Header produced water release site. This work is in support of ConocoPhillips efforts to delineate and remediate a recent 878.4 barrel produced water release reported to the New Mexico Oil Conservation Division (NMOCDD; C141 Attached) but has not been approved. The Site is located below the Mescalero Ridge, approximately 1.1 miles southwest of the ConocoPhillips MCA Unit office in Lea County, New Mexico (32.805893°N, 103.788380°W; Figure 1). The U.S. Bureau of Land Management (BLM) is the land administrator.

The Site is located in the Querecho Plains of eastern New Mexico. This area generally consists of a thin cover of Quaternary sand dunes overlying the undivided Triassic Upper Chinle Group¹. The Pyote series soil at the Site is well drained, non-calcareous fine sands.²

Exposure Pathway Analyses

Depth to water in the vicinity of the Site is estimated to be approximately 76 feet below ground surface (fbgs). This interpretation is based on information gathered at monitoring well MW-20 that is described in ConocoPhillips' remediation project entitled "*Maljamar Gas Plant GW-020*" (log attached). The monitoring well is located approximately 3,560 feet northeast of the Site. The nearest playa is approximately 0.57 miles east of the Site.

Following the ranking criteria presented in "*Guidelines for Remediation of Leaks, Spills, and Releases*" promulgated on August 13, 1993 by the New Mexico Oil Conservation Division, this Site has the following score:

¹ U.S. Department of Agriculture, Natural Resources Conservation Services. Web Soil Survey Database.

² Turner, M.T., D.N. Cox, B.C. Mickelson, A.J. Roath, and C.D. Wilson, 1973. Soil Survey Lea County, New Mexico. U.S. Department of Agriculture Soil Conservation Service, 89p.

<u>Criteria</u>		<u>Ranking Score</u>
Depth to groundwater	<99 feet	10
Distance from water source	>1,000 feet	0
Distance from domestic water source	>200 feet	0
Distance from surface water body	>1,000 feet	<u>0</u>
Total Ranking Score		10

The remediation action level for a ranking score of 10-19 is 10 parts per million (ppm) for benzene, 50 ppm for total benzene, toluene, ethylbenzene, and total xylenes (BTEX), and 1,000 ppm for total petroleum hydrocarbons (TPH).

In the event of oil/gas releases to the environment, the NMOCD uses the New Mexico Water Quality Control Commission's maximum contaminate level of 250 ppm for chloride (20.6.2.3103 NMAC, Subsection A) for delineation.

Scope of Work

The lateral extent of the release area is defined by soil discoloration (Figure 2). To delineate the vertical extent of the produced water affected area, Tetra Tech will use a hand auger and a mobile air rotary drilling unit to describe vertical environmental conditions. Soil samples will be collected every three feet.

1. It is anticipated that 4 auger borings and 2 drill borings will penetrate the affected area. The boring unit will collect split spoon soil samples every three feet in each boring. Soil samples collected from the borings will be field tested using chloride field titration techniques³ to find the vertical clean boundary of the release area. A photo-ionization detector (PID) will be used to screen for volatile organic hydrocarbons (VOC). Diesel range petroleum hydrocarbons (TPH_{DRO}) will be field screened using a PetroFLAG System.⁴ Field analyses using a chloride titration will determine that a clean boundary of less than (<) 250 milligrams per liter (mg/L) chloride. VOC and TPH_{DRO} field analysis will determine the clean boundary of < 50 (ppm) VOC and < 1,000 ppm TPH.
2. The boring locations will be logged according to the Unified Soil Classification System so observations concerning soil types, lithologic changes, and the environmental condition of the encountered soils are noted.

³ Bower, C.A. and G.D. Sherman. 1965. Chloride. In: Methods of Soil Analysis. Am Soc of Agronomy, Madison, WI, Sec 62 – 3.5, pp 947 – 948.

⁴ U.S. Environmental Protection Agency, 2001. Innovative Technology Verification Report, Dexsil Corporation PetroFlag System. Prepared by Tetra Tech EM Inc. for USEPA National Exposure Research Laboratory Office of Research and Development. EPA/R-01/092.

3. Two soil samples from each soil boring (highest chloride and TPH_{DRO} measurement and basal sample, will be submitted to a laboratory for confirmation analyses. The samples will be placed into glass sample jars, sealed with Teflon-lined lids, and placed on ice for transportation to an analytical laboratory where they will be analyzed for chloride (USEPA Method 300.0A), Diesel and Gasoline range TPH (TPH_{DRO} and TPH_{GRO}, Method 8015) and BTEX,(Method 8021). These analyses will be used to confirm clean boundaries have been identified.
4. Soil cuttings will be left inside the catchment basin for handling during site remediation. Each boring will be backfilled from bottom to top with bentonite.
5. Tetra Tech will supervise and direct all subcontractor activities on site.

Tetra Tech will supervise and direct all subcontractor activities, and prepare a report describing and documenting what was done at the Site, including a site map. This report on activities, laboratory results and recommendations will be submitted for USBLM and NMOCD review and ultimate approval for closure.

Project Approach

Mr. Charles Durrett will serve as the Project Manager and will have the authority to commit whatever resources are necessary to support the project team. It will be Mr. Durrett's responsibility to ensure that the Client's needs are met in terms of scope of work and schedule. Mr. Durrett is located in Tetra Tech's Midland, Texas office.

Project Schedule

Tetra Tech will commence work on this project immediately following BLM and NMOCD's approval of this work plan. Please contact me or Mr. John Gates (ConocoPhillips, 575-390-4821), if you have any questions or require additional information.

Sincerely,

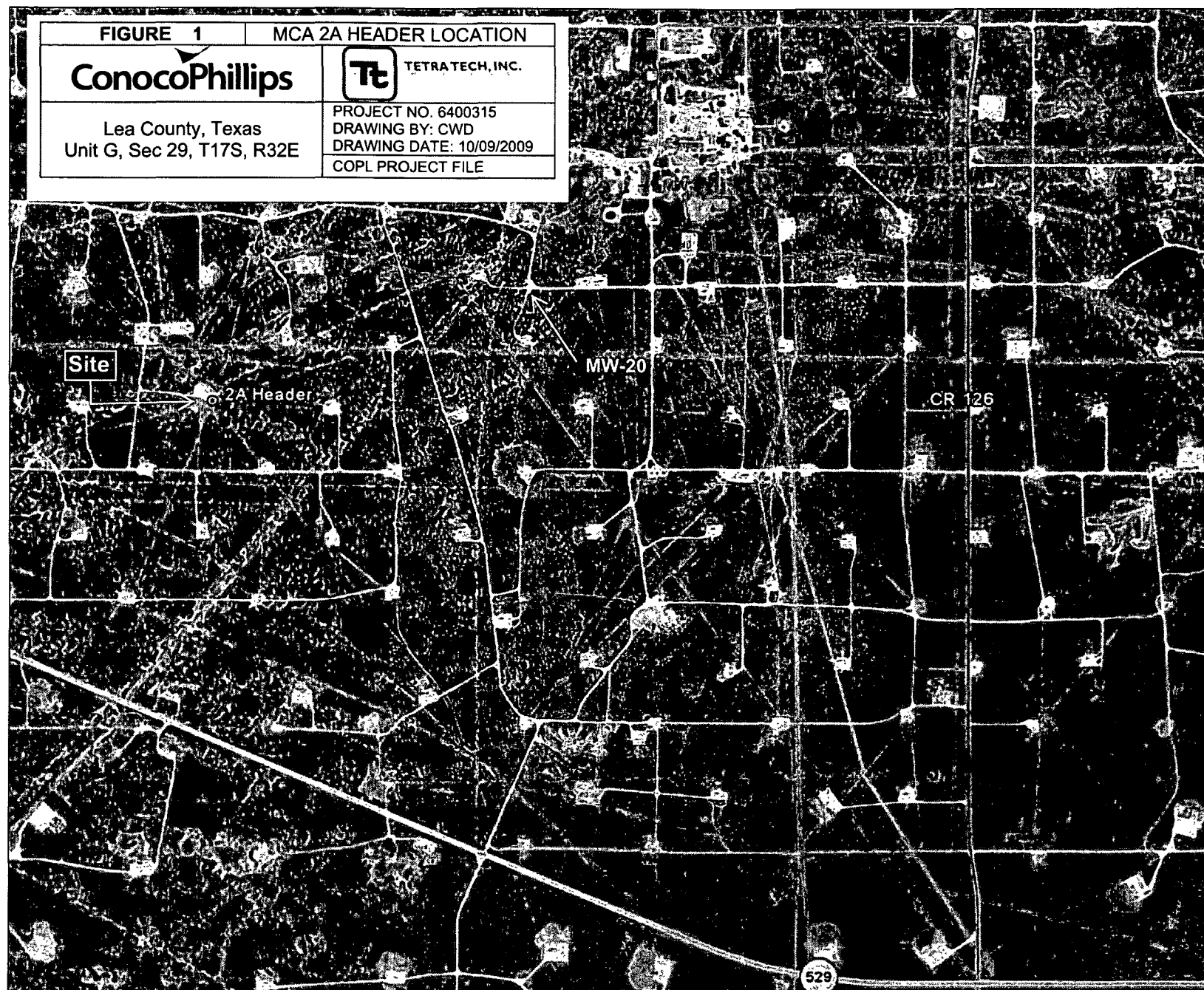
Tetra Tech, Inc.

Charles Durrett

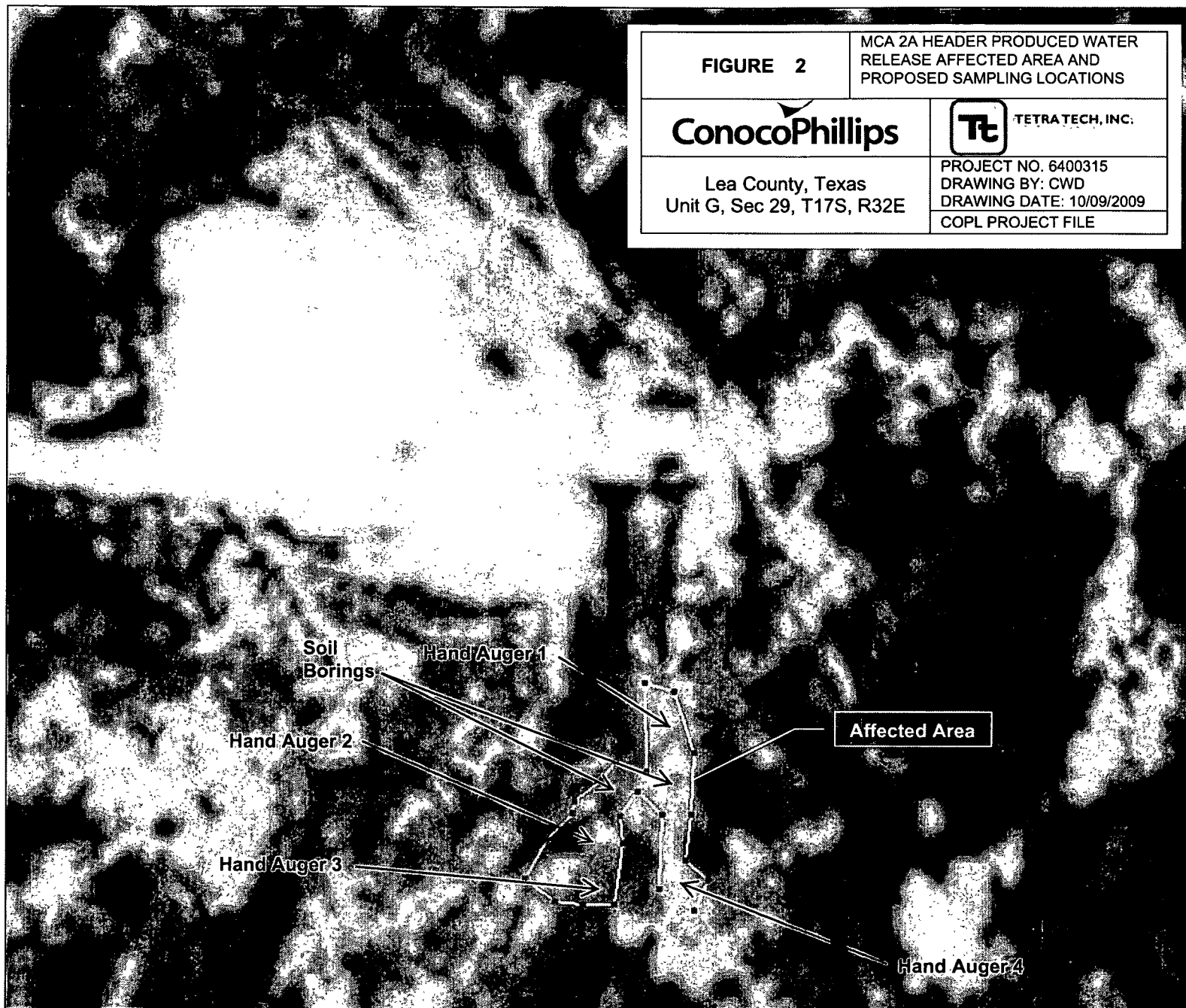
Digitally signed by Charles Durrett
DN: cn=Charles Durrett, o=TETRA TECH, ou=Midland,
TX, email=Charles.Durrett@TetraTech.com, c=US
Date: 2009.10.20 13:36:44 -0500

Charles Durrett
Senior Project Manager

Cc: Mr. John Gates, ConocoPhillips



Source: Google Earth. 2009.



PROJECT NAME: Maxim #2690032

LOCATION: Maljamar Gas Plant, Lea County

MONITORING WELL NO. MW-20

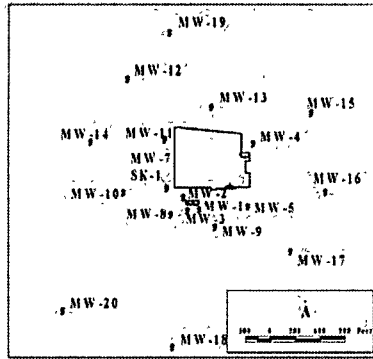
FIELD LOGGED BY: F. Lichnovsky

ELEVATION: GROUND SURFACE (msl): 3975.42 (ft)

GROUNDWATER ELEVATION (msl): 3899.92 (ft)

DRILL TYPE: Truck Mounted Air Rotary

LOCATION MAP



BORE HOLE DIAMETER: 5 (in)

DRILLED BY: Scarborough Drilling

DATE/TIME: HOLE STARTED: 9/18/02

DATE/TIME: COMPLETED: 9/19/02

REMARKS: bgs=Below Ground Surface

ND=Not Detected, NS=No Sample

msl=mean sea level

FOG-First occurrence of groundwater

SWL-Static Water Level

WELL COMPLETION INFORMATION

Measuring Point Description (msl): Top of Casing

Type of Casing: PVC

Measuring Point Elevation (msl): 3976.92

Casing Diameter: 2 in.

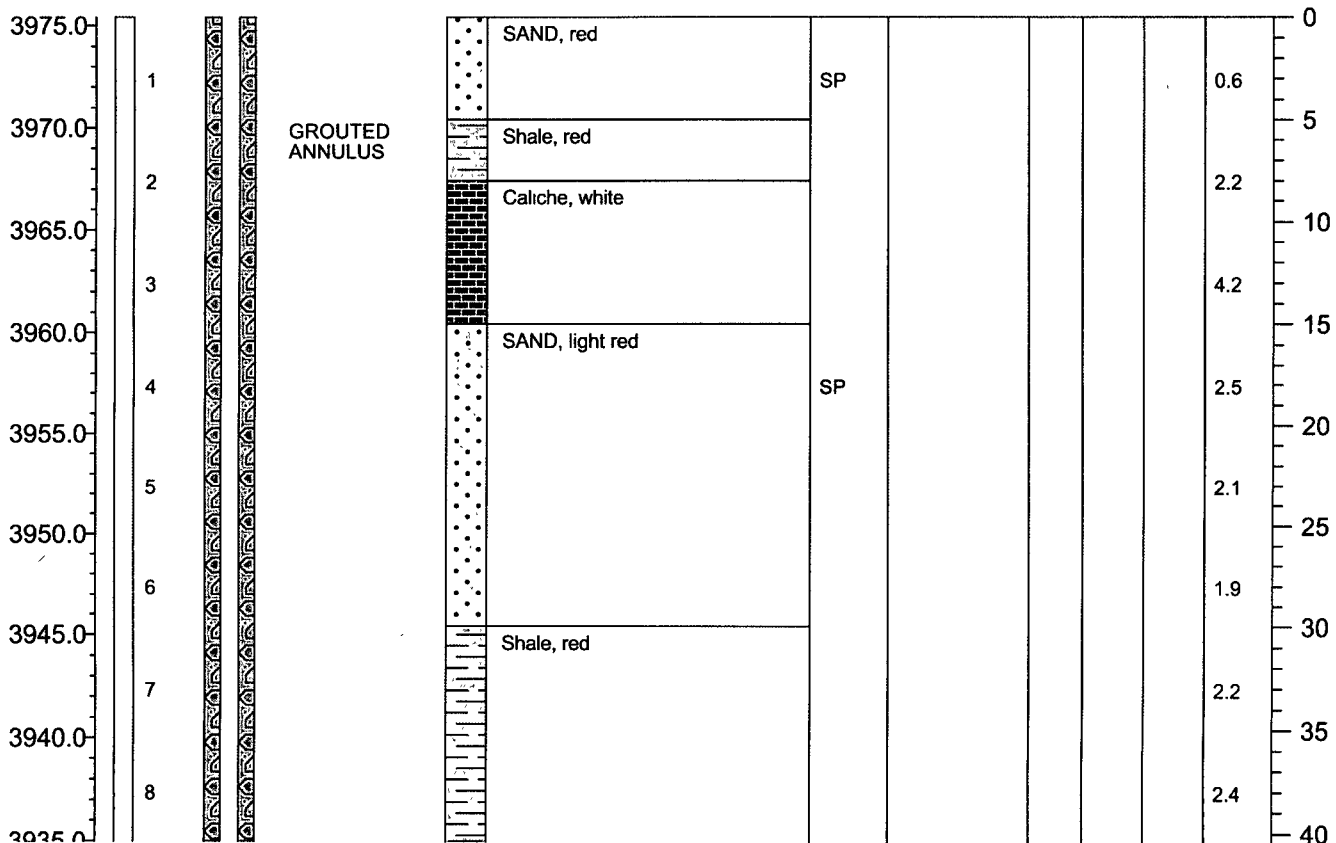
Static Water Level (feet below Top of Casing): 77

Slot Size: 0.010 in

Well Development: Water Extraction Until Visibly Free of Sediment

Well Cap: Locking Cap

ELEVATION (msl) - ft	SAMPLE INTERVAL/ID #	COMPLETION DIAGRAM	CLASSIFICATION AND DESCRIPTION	USCS SYMBOL	BLOW COUNT	ANALYTICAL	TIME	% RECOVERY	PID RESULT (ppm)	DEPTH (bgs) - ft
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Boring Terminated at 120' bgs

Bulk Sampling

2690032

MAXIM
TECHNOLOGIES INC.

EXPLORATORY BORING LOG

MW-20

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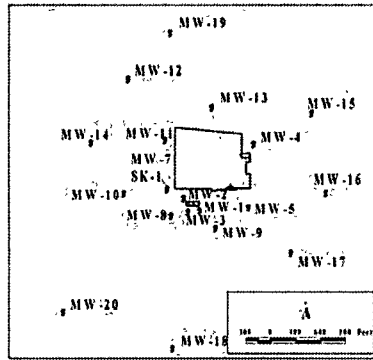
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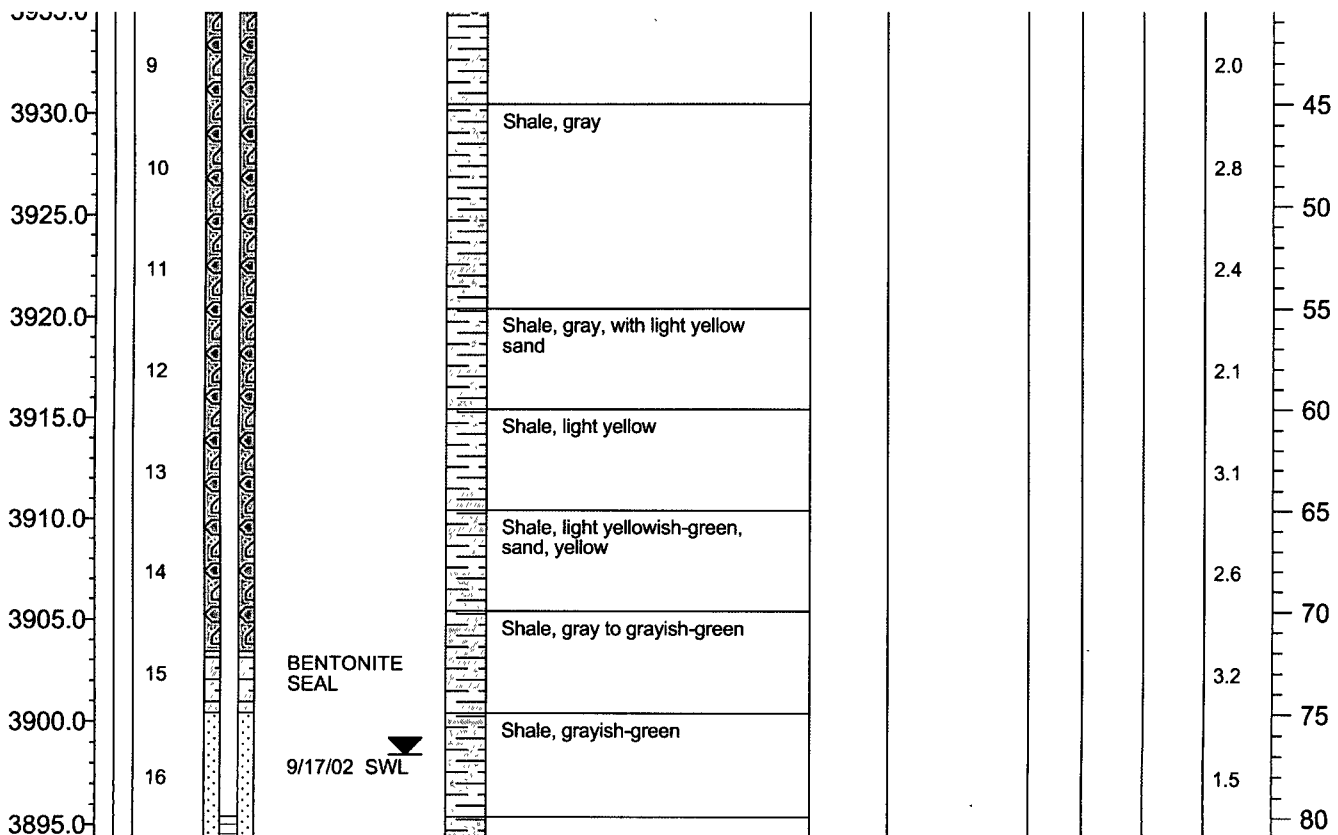
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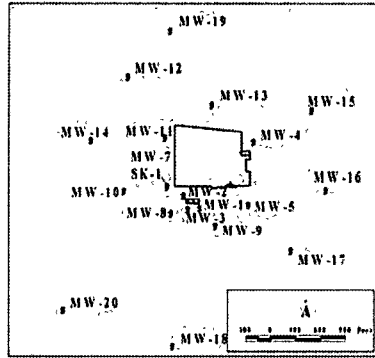
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3890.0	17		Shale, gray, some thin layers of red shale							1.5
3885.0	18		Shale, red							1.4
3880.0	19									2.7
3875.0	20									1.7
3870.0	21		Shale, purplish-red							1.9
3865.0	22									1.7
3860.0	23									1.3
	24									0.9
										120

Boring Terminated at 120' bgs

Bulk Sampling

2690032

MAXIM
TECHNOLOGIES INC.

EXPLORATORY BORING LOG

MW-20

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-141
Revised October 10, 2003

Submit 2 Copies to appropriate
District Office in accordance
with Rule 116 on back
side of form

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company ConocoPhillips Company	Contact John W. Gates
Address 3300 North A St. Bldg 6, Midland, TX 79705-5406	Telephone No. 505.391.3158
Facility Name MCA 2A Header	Facility Type Oil and Gas

Surface Owner Federal	Mineral Owner Federal	Lease No LC-060199A
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LOCATION OF RELEASE

Unit Letter G	Section 29	Township 17S	Range 32E	Feet from the	North/South Line	Feet from the	East/West Line	County Lea
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Latitude **32.48.340** Longitude **103 47.301**

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 878.4bbl (0oil, 878.4water)	Volume Recovered (0oil, 845water)
Source of Release 2" Fiberglass Trunkline	Date and Hour of Occurrence 9/19/09 Unknown	Date and Hour of Discovery 9/19/09 0717
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Pat Hutchins	
By Whom? Tommy Brooks	Date and Hour 9/19/09 1615	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

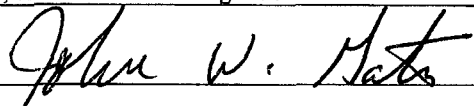
Leak originated from a hole in a 2" fiberglass trunkline due to fatigue. Trunkline was isolated and the 2A header

Describe Area Affected and Cleanup Action Taken.*

300' X 60' X 2" area of sandy pasture land with no livestock present. Spill site will be delineated & remediated in accordance with an agreement with NMOCD and BLM guidelines.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

OIL CONSERVATION DIVISION

Signature: 	Approved by District Supervisor:	
Printed Name: John W. Gates	Approval Date:	Expiration Date:
Title: HSE Lead	Conditions of Approval:	
E-mail Address: John.W.Gates@conocophillips.com	Attached ☐	
Date: 9/21/09 Phone: 505.391.3158		

- Attach Additional Sheets If Necessary