

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

Form C-144
July 21, 2008

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office.
For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

Pit, Closed-Loop System, Below-Grade Tank, or
Proposed Alternative Method Permit or Closure Plan Application

Type of action: ☒ Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method
☐ Closure of a pit, closed-loop system, below-grade tank, or proposed alternative method
☒ Modification to an existing permit
☐ Closure plan only submitted for an existing permitted or non-permitted pit, closed-loop system, below-grade tank, or proposed alternative method

Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, below-grade tank or alternative request

Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

1.
Operator: Murchison Oil & Gas, Inc OGRID #: 15363
Address: 1100 Mira Vista Blvd., Plano, Texas 75093-4698
Facility or well name: Grizzly Bear #2H
API Number: 30-015-40042 OCD Permit Number: 212656
U/L or Qtr/Qtr I Section 1 Township 17S Range 28E County: Eddy
Center of Proposed Design: Latitude 32.861989 Longitude -104.121801 NAD: ☐ 1927 ☒ 1983
Surface Owner: ☐ Federal ☒ State ☐ Private ☐ Tribal Trust or Indian Allotment

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2.
☒ **Pit:** Subsection F or G of 19.15.17.11 NMAC
Temporary: ☒ Drilling ☐ Workover
☐ Permanent ☐ Emergency ☐ Cavitation ☐ P&A
☒ Lined ☐ Unlined Liner type: Thickness 20 mil ☒ LLDPE ☐ HDPE ☐ PVC ☐ Other
☒ String-Reinforced
Liner Seams: ☒ Welded ☒ Factory ☐ Other Volume: bbl Dimensions: L x W x D

3.
☐ **Closed-loop System:** Subsection H of 19.15.17.11 NMAC
Type of Operation: ☐ P&A ☐ Drilling a new well ☐ Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent)
☐ Drying Pad ☐ Above Ground Steel Tanks ☐ Haul-off Bins ☐ Other
☐ Lined ☐ Unlined Liner type: Thickness mil ☐ LLDPE ☐ HDPE ☐ PVC ☐ Other
Liner Seams: ☐ Welded ☐ Factory ☐ Other

4.
☐ **Below-grade tank:** Subsection I of 19.15.17.11 NMAC
Volume: bbl Type of fluid:
Tank Construction material:
☐ Secondary containment with leak detection ☐ Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off
☐ Visible sidewalls and liner ☐ Visible sidewalls only ☐ Other
Liner type: Thickness mil ☐ HDPE ☐ PVC ☐ Other

5.
☐ **Alternative Method:**
Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

6.

Fencing: Subsection D of 19.15.17.11 NMAC (*Applies to permanent pits, temporary pits, and below-grade tanks*)

- ☐ Chain link, six feet in height, two strands of barbed wire at top (*Required if located within 1000 feet of a permanent residence, school, hospital, institution or church*)
- ☒ Four foot height, four strands of barbed wire evenly spaced between one and four feet
- ☐ Alternate. Please specify _____

7.

Netting: Subsection E of 19.15.17.11 NMAC (*Applies to permanent pits and permanent open top tanks*)

- ☐ Screen ☐ Netting ☐ Other Not Applicable
- ☐ Monthly inspections (If netting or screening is not physically feasible)

8.

Signs: Subsection C of 19.15.17.11 NMAC

- ☐ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers
- ☒ Signed in compliance with ~~19.15.3.103~~ NMAC 19.15.16.8 NMAC

9.

Administrative Approvals and Exceptions:

Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.

Please check a box if one or more of the following is requested, if not leave blank:

- ☒ Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau office for consideration of approval.
- ☐ Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

10.

Siting Criteria (regarding permitting): 19.15.17.10 NMAC

Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to drying pads or above-grade tanks associated with a closed-loop system.

Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells SEE FIGURE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site SEE FIGURES	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (<i>Applies to temporary, emergency, or cavitation pits and below-grade tanks</i>) - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image SEE FIGURES	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (<i>Applies to permanent pits</i>) - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image SEE FIGURES	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site SEE FIGURES	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. SEE FIGURE - Written confirmation or verification from the municipality; Written approval obtained from the municipality	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site SEE FIGURE 5	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division SEE FIGURE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map SEE FIGURE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within a 100-year floodplain. - FEMA map SEE FIGURE	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

11.

Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC**Instructions:** Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC
☒ Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC
☒ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
☒ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
☒ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
☒ Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
☐ Previously Approved Design (attach copy of design) API Number: _____ or Permit Number: _____

12.

Closed-loop Systems Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC**Instructions:** Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19.15.17.9
☐ Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15.17.10 NMAC
☐ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
☐ Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
☐ Previously Approved Design (attach copy of design) API Number: _____
☐ Previously Approved Operating and Maintenance Plan API Number: _____ (Applies only to closed-loop system that use above ground steel tanks or haul-off bins and propose to implement waste removal for closure)

13.

Permanent Pits Permit Application Checklist: Subsection B of 19.15.17.9 NMAC**Instructions:** Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC
☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
☐ Climatological Factors Assessment
☐ Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC
☐ Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC
☐ Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC
☐ Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NMAC
☐ Quality Control/Quality Assurance Construction and Installation Plan
☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
☐ Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
☐ Nuisance or Hazardous Odors, including H₂S, Prevention Plan
☐ Emergency Response Plan
☐ Oil Field Waste Stream Characterization
☐ Monitoring and Inspection Plan
☐ Erosion Control Plan
☐ Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

14.

Proposed Closure: 19.15.17.13 NMAC**Instructions:** Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.

- Type: ☒ Drilling ☐ Workover ☐ Emergency ☐ Cavitation ☐ P&A ☐ Permanent Pit ☐ Below-grade Tank ☐ Closed-loop System
☐ Alternative
 Proposed Closure Method: ☐ Waste Excavation and Removal
☐ Waste Removal (Closed-loop systems only)
☒ On-site Closure Method (Only for temporary pits and closed-loop systems)
☒ In-place Burial ☐ On-site Trench Burial
☐ Alternative Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)

15.

Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) **Instructions:** Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
☐ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
☐ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)
☐ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

16.

Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: (19.15.17.13.D NMAC)

Instructions: Please identify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment if more than two facilities are required.

Disposal Facility Name: _____ Disposal Facility Permit Number: _____
 Disposal Facility Name: _____ Disposal Facility Permit Number: _____

Will any of the proposed closed-loop system operations and associated activities occur on or in areas that *will not* be used for future service and operations?

☐ Yes (If yes, please provide the information below) ☐ No

Required for impacted areas which will not be used for future service and operations:

- ☐ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

17.

Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC

Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance.

Ground water is less than 50 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA
Ground water is between 50 and 100 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA
Ground water is more than 100 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; Written approval obtained from the municipality	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within an unstable area. - Engineering measures incorporated into the design, NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Within a 100-year floodplain. - FEMA map	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

18.

On-Site Closure Plan Checklist: (19.15.17.13 NMAC) **Instructions:** Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.

- ☒ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
☒ Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
☐ Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of 19.15.17.11 NMAC
☐ Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirements of 19.15.17.11 NMAC
☒ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
☒ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
☒ Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
☒ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved)
☒ Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
☒ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
☒ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

19.

Operator Application Certification:

I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.

Name (Print): Gregg BoansTitle: Production SupervisorSignature: [Signature]Date: 4.30.2012e-mail address: Gboans@idmii.com and r@rthickseconsult.com Telephone: 575-361-4962 - (Hicks 505-266-5004)

20.

OCD Approval: ☒ Permit Application (including closure plan) ☐ Closure Plan (only) ☐ OCD Conditions (see attachment)

OCD Representative Signature: _____

Signed By: [Signature]Approval Date: JUL 16 2012Title: ESDOCD Permit Number: 212656

21.

Closure Report (required within 60 days of closure completion): Subsection K of 19.15.17.13 NMAC

Instructions: Operators are required to obtain an approved closure plan prior to implementing any closure activities and submitting the closure report. The closure report is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not complete this section of the form until an approved closure plan has been obtained and the closure activities have been completed.

☐ Closure Completion Date: _____

22.

Closure Method:

☐ Waste Excavation and Removal ☐ On-Site Closure Method ☐ Alternative Closure Method ☐ Waste Removal (Closed-loop systems only)
☐ If different from approved plan, please explain.

23.

Closure Report Regarding Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only:

Instructions: Please indentify the facility or facilities for where the liquids, drilling fluids and drill cuttings were disposed. Use attachment if more than two facilities were utilized.

Disposal Facility Name: _____

Disposal Facility Permit Number: _____

Disposal Facility Name: _____

Disposal Facility Permit Number: _____

Were the closed-loop system operations and associated activities performed on or in areas that *will not* be used for future service and operations?

☐ Yes (If yes, please demonstrate compliance to the items below) ☐ No

Required for impacted areas which will not be used for future service and operations:

- ☐ Site Reclamation (Photo Documentation)
☐ Soil Backfilling and Cover Installation
☐ Re-vegetation Application Rates and Seeding Technique

24.

Closure Report Attachment Checklist: *Instructions: Each of the following items must be attached to the closure report. Please indicate, by a check mark in the box, that the documents are attached.*

- ☐ Proof of Closure Notice (surface owner and division)
☐ Proof of Deed Notice (required for on-site closure)
☐ Plot Plan (for on-site closures and temporary pits)
☐ Confirmation Sampling Analytical Results (if applicable)
☐ Waste Material Sampling Analytical Results (required for on-site closure)
☐ Disposal Facility Name and Permit Number
☐ Soil Backfilling and Cover Installation
☐ Re-vegetation Application Rates and Seeding Technique
☐ Site Reclamation (Photo Documentation)

On-site Closure Location: Latitude _____ Longitude _____ NAD: ☐ 1927 ☐ 1983

25.

Operator Closure Certification:

I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and belief. I also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan.

Name (Print): _____ Title: _____

Signature: _____

Date: _____

e-mail address: _____

Telephone: _____

Site Specific Information Figures

Drilling Pit

R.T. Hicks Consultants, Ltd.

901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

Hydrogeologic Report Demonstrating Compliance With Depth to Water Criteria

Figure 1a and 1b and the discussion presented below demonstrates that groundwater (fresh water as defined by NMOCD Rules) at the location is greater than 100 feet beneath the temporary pit.

Figure 1a shows:

1. The location of the temporary pit in the center of the red, orange, yellow and green distance circles.
2. Water wells in the OSE database shown as color coded circles as defined by the total depth of the well. OSE well labels include the permit number, depth to groundwater and date of measurement. Only wells with a total depth greater than zero are included in the figure. Some OSE wells are mis-located in the WATERS database and older wells are often plotted in the center of the quarter quarter quarter of the Section Township and Range. Note that the only OSE well plotted on this map is L-7643 on the south edge of the figure. Because the prefix L is a Lea County well number, air photos show this well plots within the production pad of an oil well and the well is classified as a domestic well, we conclude this well is mis-located..
3. Water wells in Open File Report 95 are color coded squares defined by the total depth of the well (total depth is not always available in this Report). The labels for these wells show depth to groundwater, groundwater elevation and the date of measurement. One well listed in Open File Report 95 (Misc 1 on this figure) could not be located and for reasons described below, we conclude this well does not exist in the area.
4. Water wells from the USGS database with labels showing depth to groundwater, groundwater elevation and the date of the measurement.

Figure 1b shows

1. The same data as presented in Figure 1a
2. Our interpretation of the potentiometric surface

Figure 1C reproduces a portion of the OF-95 potentiometric surface map for the area.

Table 1 (below) presents the data displayed on Figures 1a and 1b for wells listed in Open File Report 95-1. The table uses OSE terminology (numbers after the Section are 1 = NW, 2 = NE, 3=SW and 4=SE) for locations. The first well in the table is in T17S R28E Section 24 NE quarter of NE quarter of SE quarter. Data from the OSE Waters database were not employed in Figures 1a and 1b because the data contained in Open File Report 95 and the USGS are generally more accurate. While Open File Report 95 provided some surface elevation data, we used the topographic map to fill in where the report data were lacking. We also field checked several locations, as shown in the RTH Comments column. We found no evidence that the well labeled Misc 1 ever existed. Because the elevation data listed in OF-95 is 3565 asl and the elevation of the ground surface at this location is more than 3700 feet asl, we believe that the location data presented in OF-95 is incorrect.

Site-Specific Information – Grizzly Bear 2H Murchison Oil & Gas

Location	Measurement Date	Source	Depth Measurement	Groundwater Elevation	Surface Elevation	Field Verification
17.29.8.231	10/14/1977	NMBM OF-95	90.1	3526.90	3617.00	Abandoned
17.28.22.230	10/14/1977	NMBM OF-95	24.2	3540.80	3565.00	Does Not Exist
17.28.14.220	-999	NMBM OF-95	80.0	3510.00	3590.00	Operational
17.29.22.110	11/28/1948	NMBM OF-95	79.7	3470.30	3550.00	Abandoned
17.29.29.400	12/3/1948	NMBM OF-95	210.0	3340.00	3550.00	Not Visited
17.28.2.240	12/1/1948	NMBM OF-95	27.6	3557.00	3585.00	Operational
17.28.22.230	9/3/1948	NMBM OF-95	60.7	3511	3572.0	Abandoned

Geology

The temporary pit is located on a thin layer of Quaternary Older Alluvium (Qoa on Figure 1b). Underlying the alluvial deposits is the Rustler Formation that is composed of anhydrite, gypsum, interbedded sandy clay and shale, and irregular beds of dolomite. Beds of the Rustler are exposed on the location and in the adjacent hillside. Excavation of the nearby Polar Bear pit (about 1500 feet north of the Grizzly Bear 3H) exposed bedded gypsum bedrock. The Rustler overlies the Salado Formation.

West of the location is a closed drainage basin in which the Rustler Formation (Pr) is exposed at the surface. Figure 1a shows the north-south contact between the Rustler Formation and the older alluvium (Qoa) is near the center of Section 1 and is about ½ mile wide (east-west). Figure 1a and our site visit shows this contact is characterized by a break in slope.

Within this closed basin are several surface water bodies (stock ponds or small lakes shown in Figure 2 and 3). In Section 2, west of the location, a windmill is adjacent to a surface water body (see Figure 2). The depth to groundwater near these recharge areas (surface water) is relatively shallow.

Figure 1b is our interpretation of the groundwater surface near the Grizzly Bear 3H pit. Groundwater elevations are 3527 feet asl (east toward Bear Grass Draw), 3557 and 3510 feet asl (west of the location within the closed basin described above). Although plotted on Figure 1b, well Misc 1, south of the site, was not used in the creation of the potentiometric surface because this well does not exist at this location. These data support a conclusion that the elevation of groundwater beneath the proposed location is about 3550. As the surface elevation of the Grizzly Bear 3H well is 3716, simple arithmetic shows the depth to groundwater at the location is (3716-3550=) 166 feet and the distance between the bottom of a 10-foot deep pit and groundwater (possibly confined) is about 156 feet.

Additional Siting Criteria Compliance Demonstration

The information identified in Item 10, “Siting Criteria” of the C-144 is presented below. The descriptions below are associated with the maps presented in Figures 2-9, attached.

Figure 2 and the site visit demonstrates that the location is not within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).

Site-Specific Information – Grizzly Bear 2H Murchison Oil & Gas

- Data from the USDA's National Hydraulic Dataset shows an intermittent stream (shown as a light blue dotted line) south of the temporary pit.
- No watercourses, as defined by NMOCD Rules, or water bodies exist within 300-feet of location.
- Photographs in Appendix SSI-A also support this conclusion

Figure 3 and the site visit demonstrates that the location is not within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. No nearby structures exist within 300 feet of location.

- Figure 3 shows oil and gas facilities northeast of the location and a water tank about 2000 feet southwest of the location
- Photographs in Appendix SSI-A also support this conclusion

Figures 1a, 1b and Figure 2 demonstrates that the location is not within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.

- Figure 1a and 1b show the locations of nearby wells
- Figure 2 will plot the locations of springs and none were plotted or observed.

Figure 4 demonstrates that the location is not within incorporated municipal boundaries and Figures 1a and 1b show that the location is not within a defined municipal fresh water well field (as there are no wells near the location) covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.

- The closest municipality is Artesia, NM; approximately 12 miles southwest.
- No municipal well field is in the area

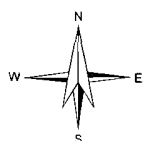
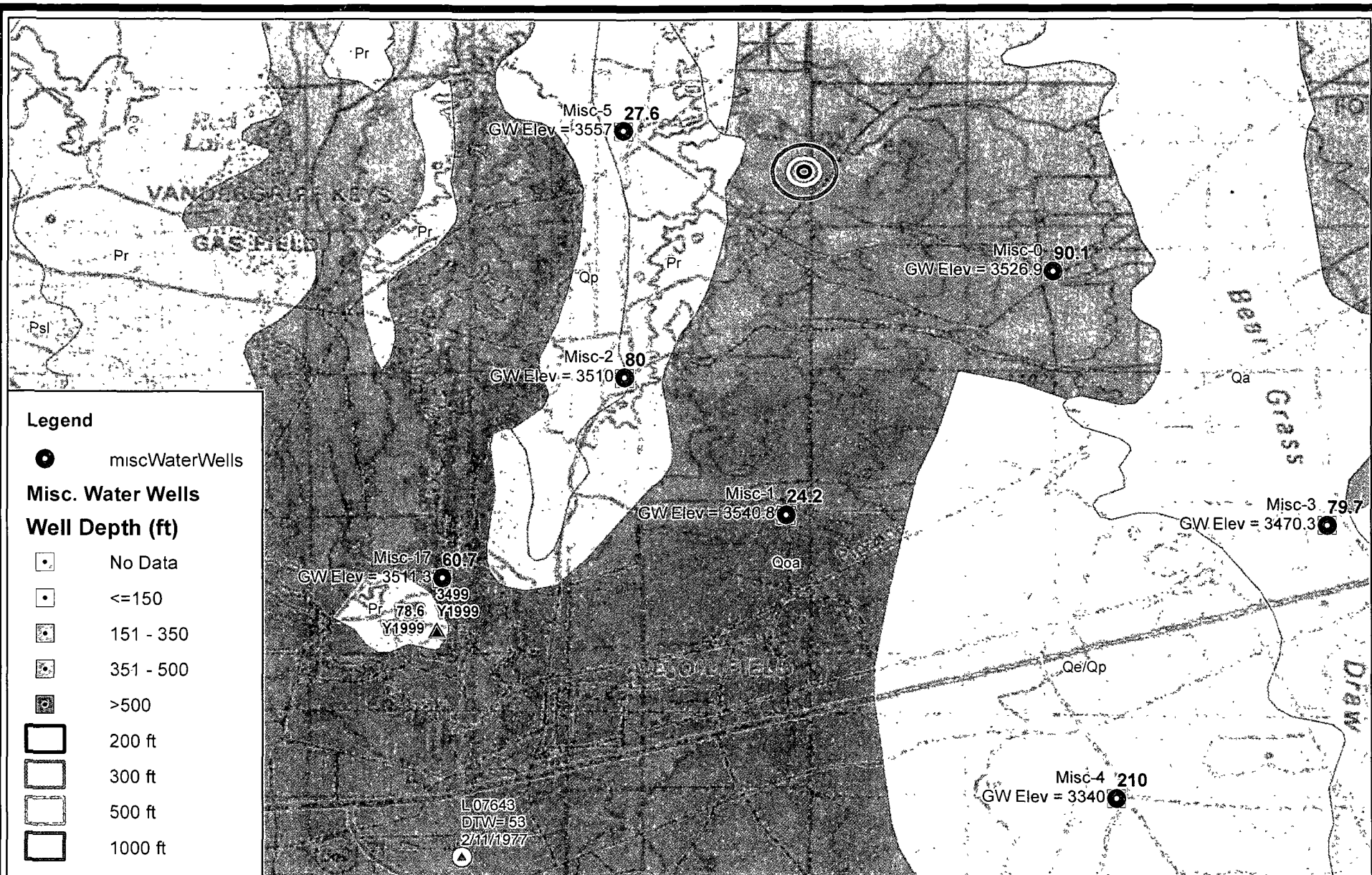
Figure 5 demonstrates the location is not within 500 feet of wetlands.

Figure 6 and our general reconnaissance of the area demonstrates that the nearest mines are caliche pits

Figure 7 shows that the location is outside of an unstable area defined as Karst

Figure 8 demonstrates that the location is not within a 100-year floodplain.

- The location is within Zone X of FEMA Flood Zone Designation. Zone X is defined as an area of minimal flood hazard and above the 500-year flood level.



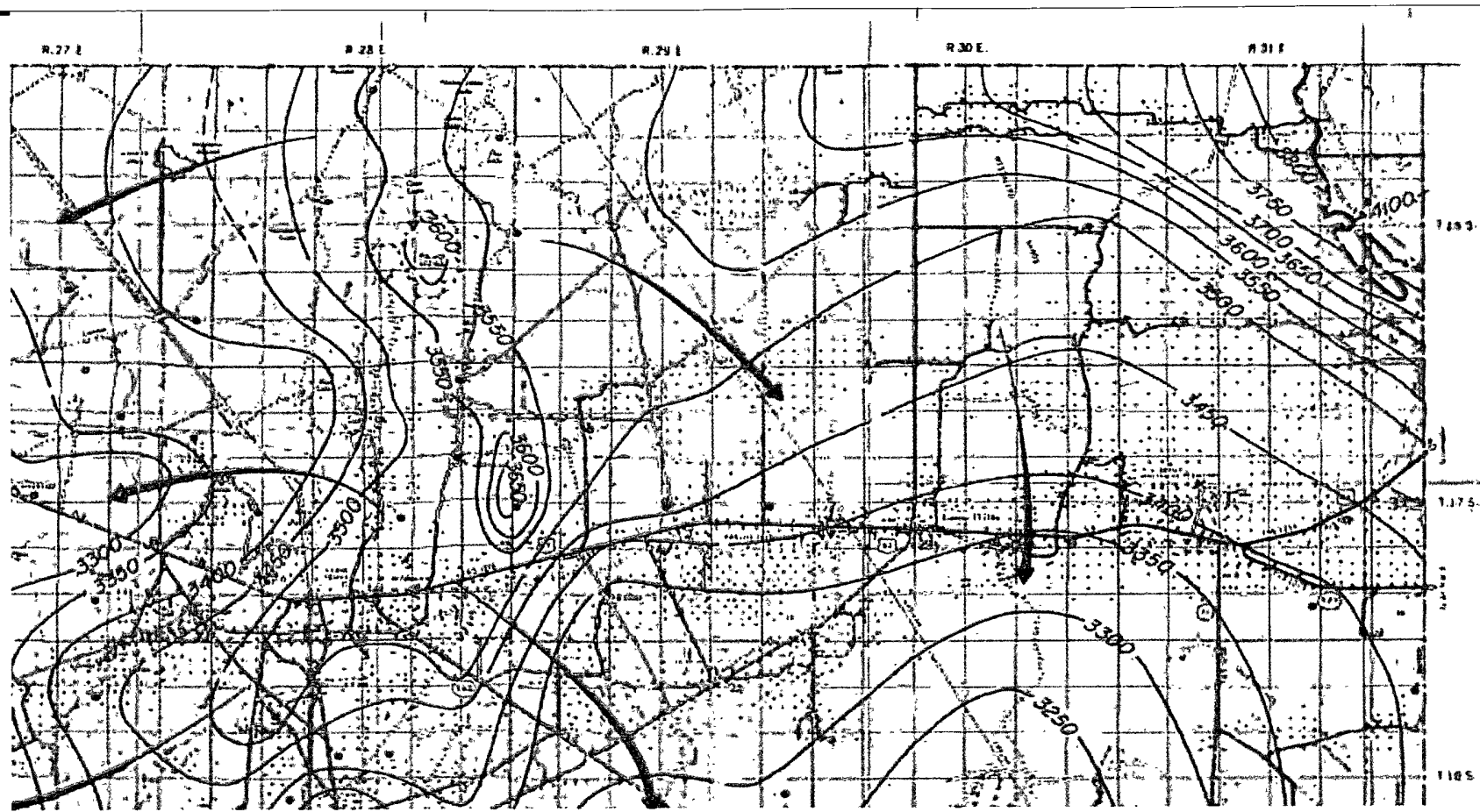
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Geology and Groundwater Data

Figure 1a

Murchison Oil & Gas - Grizzly Bear 2H

July 2012



Section 1 T17S R28E outlined in red

Source NMBMMR Open File Report 95

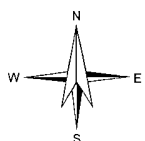
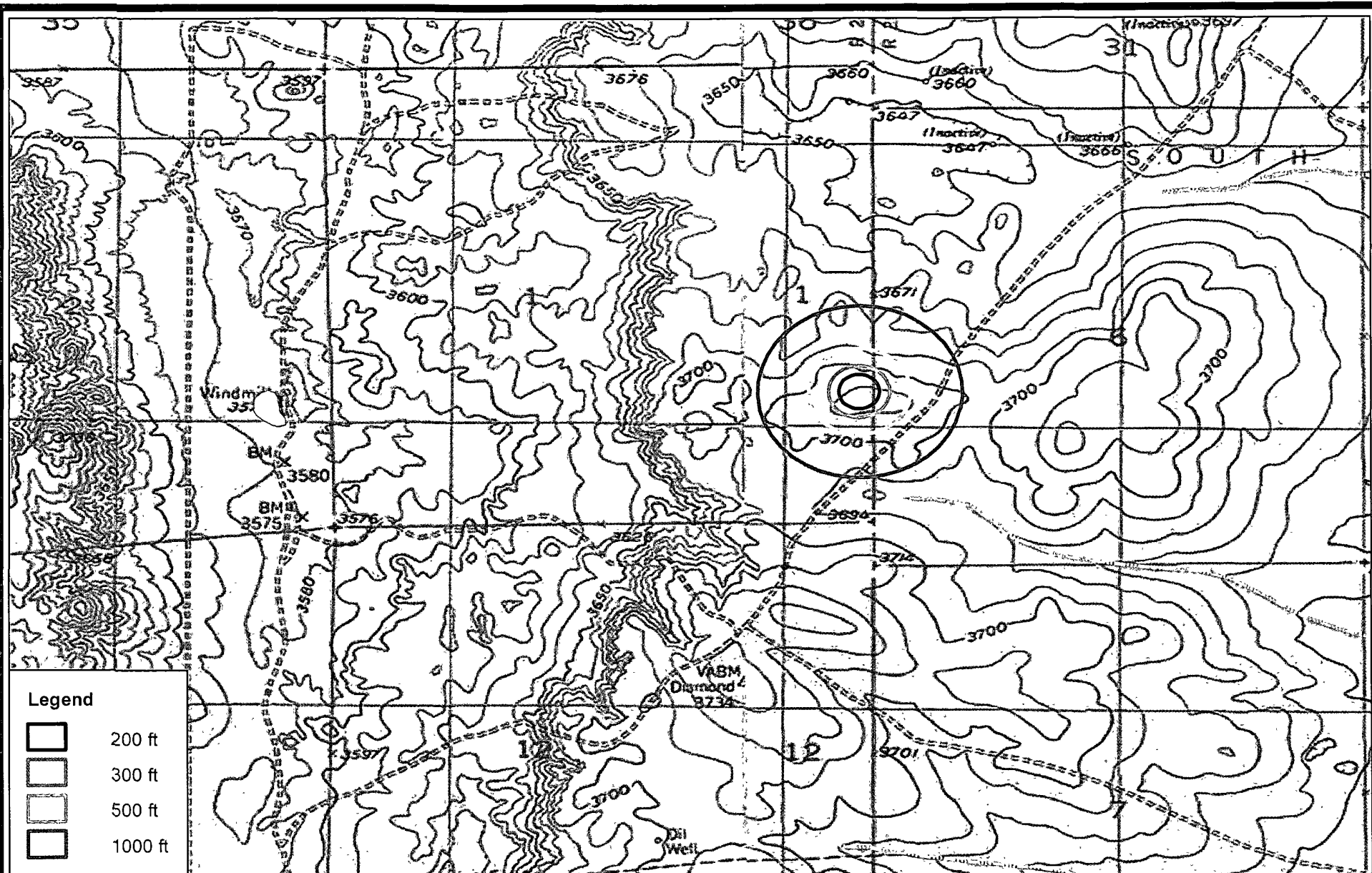
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Groundwater Elevation Map

Murchison Oil & Gas - Polar Bear State Com 2H

Figure 1c

April 2012



0 1,000
Feet

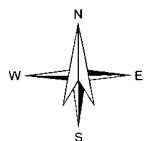
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Topography and Surface Water

Murchison Oil & Gas - Grizzly Bear 2H

Figure 2

April 2012



0 1,000
Feet

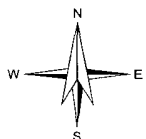
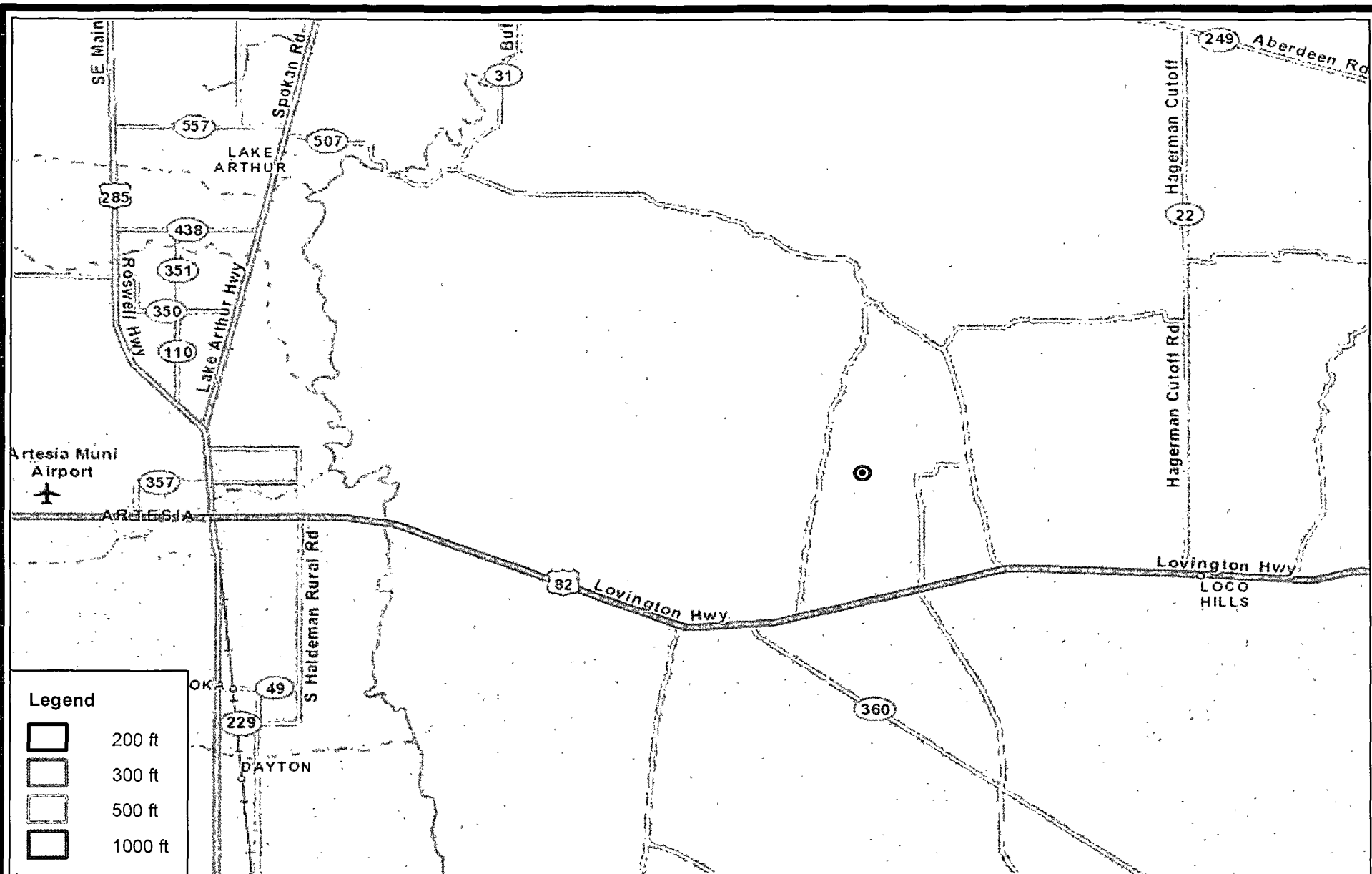
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Air Photograph and Surface Water

Figure 3

Murchison Oil & Gas - Grizzly Bear 2H

April 2012



0 1 2
Miles

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Nearest Incorporated Municipality

Murchison Oil & Gas - Grizzly Bear 2H

Figure 4

April 2012

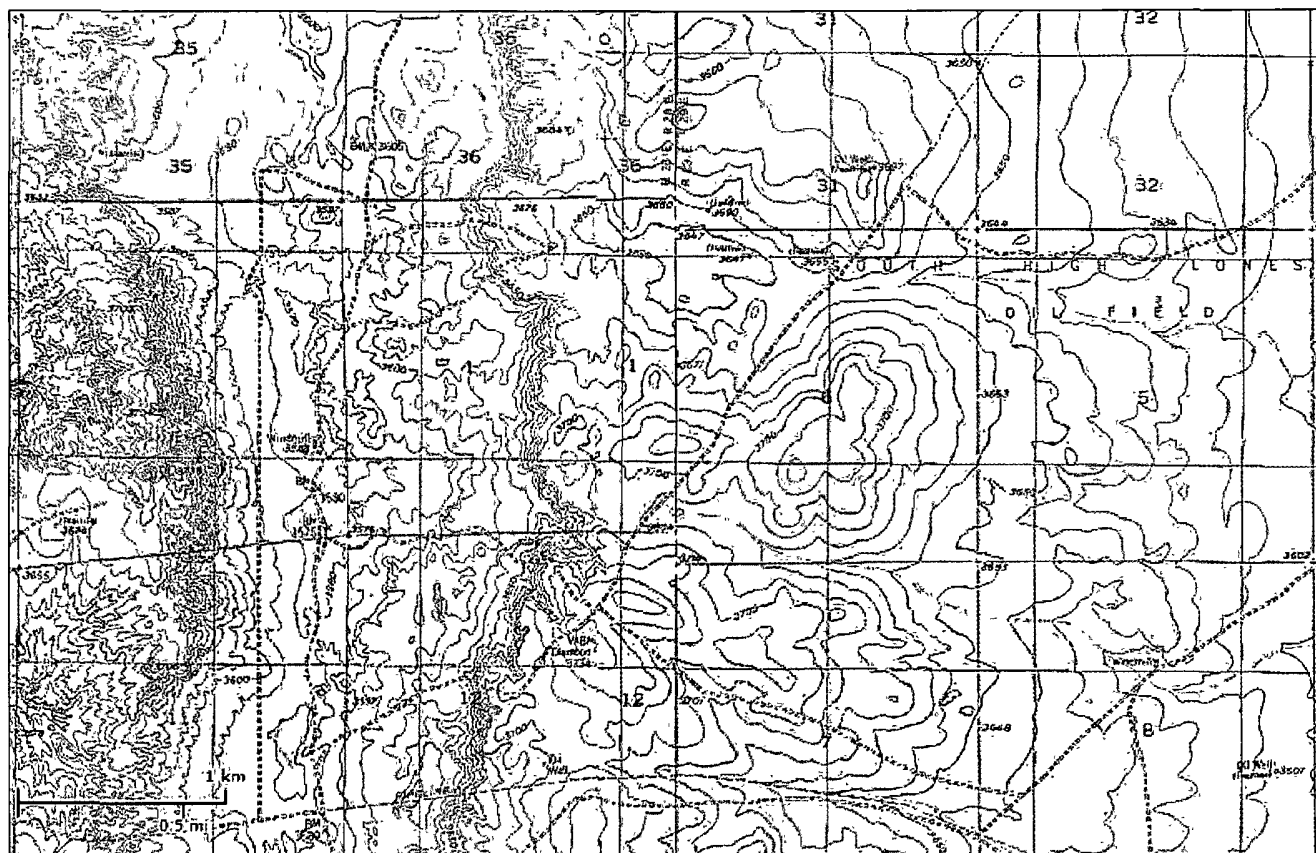


U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands near
Section 1 T17S R28E

Apr 19, 2012



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

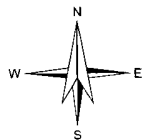
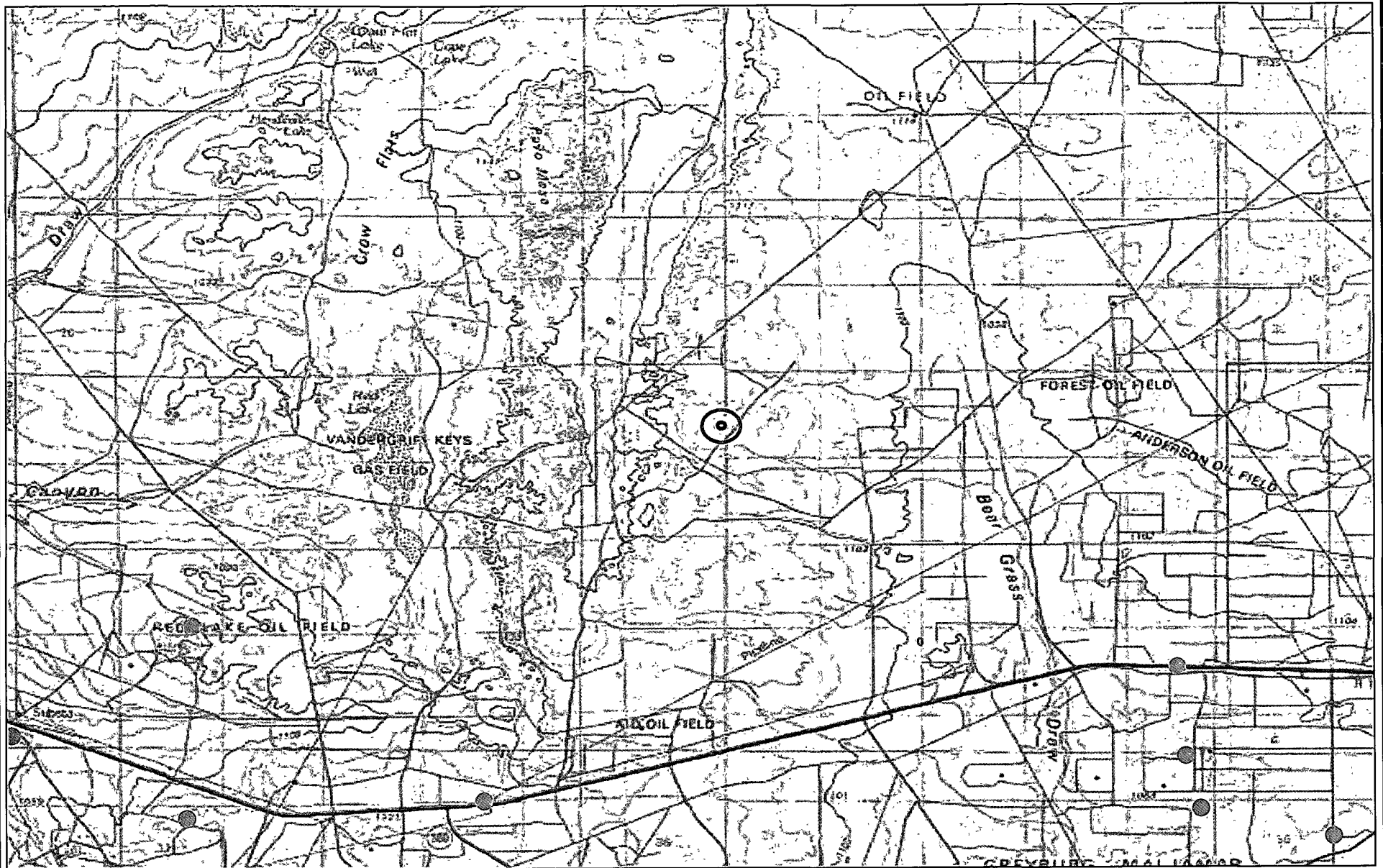
Riparian

- Herbaceous
- Forested/Shrub

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks: Figure 5

Murchison Oil & Gas, Inc.



0 1
Miles

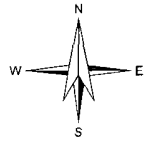
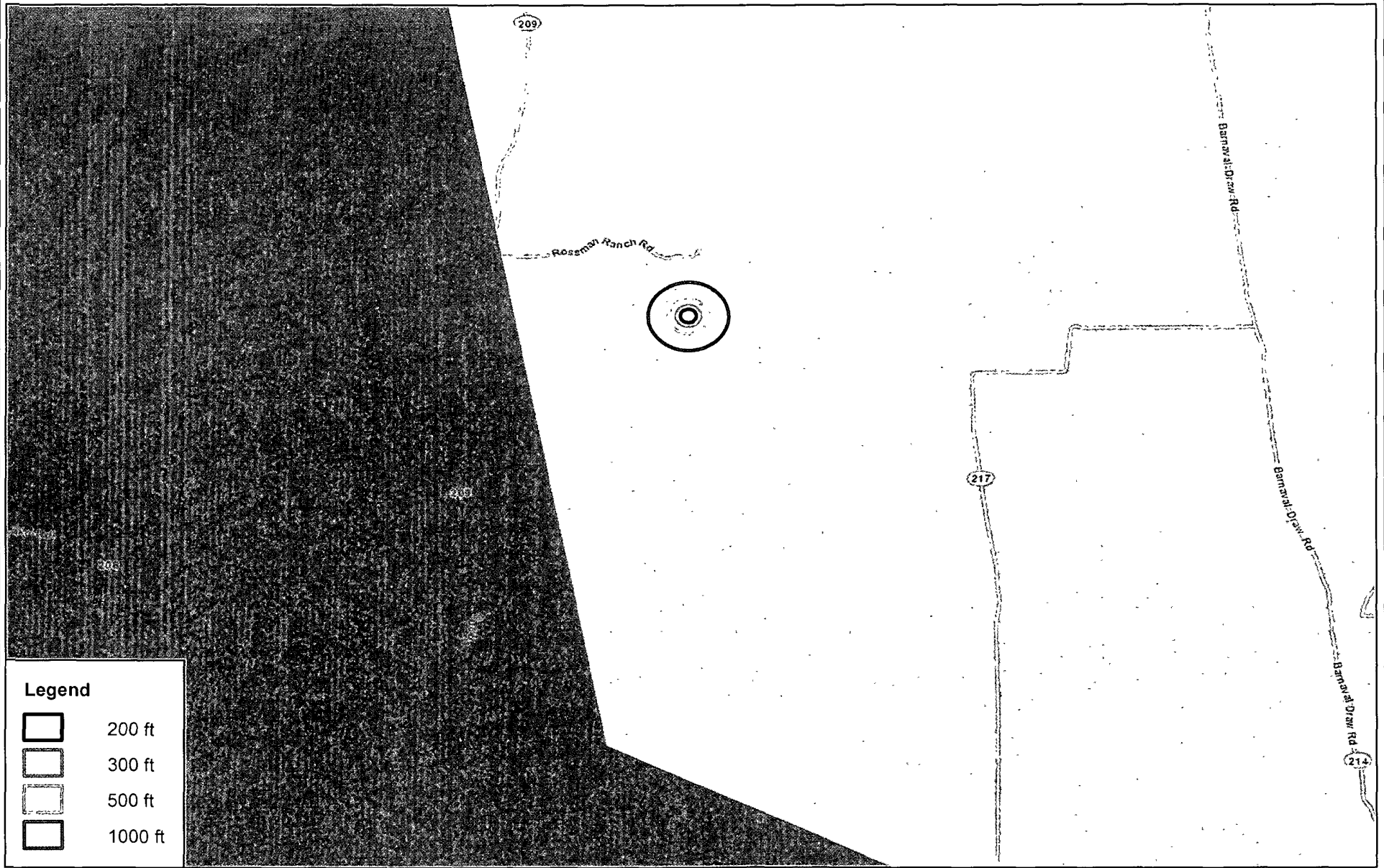
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Nearest Mines (Green Circles = Caliche Pits)

Murchison Oil & Gas - Grizzly Bear 2H

Figure 6

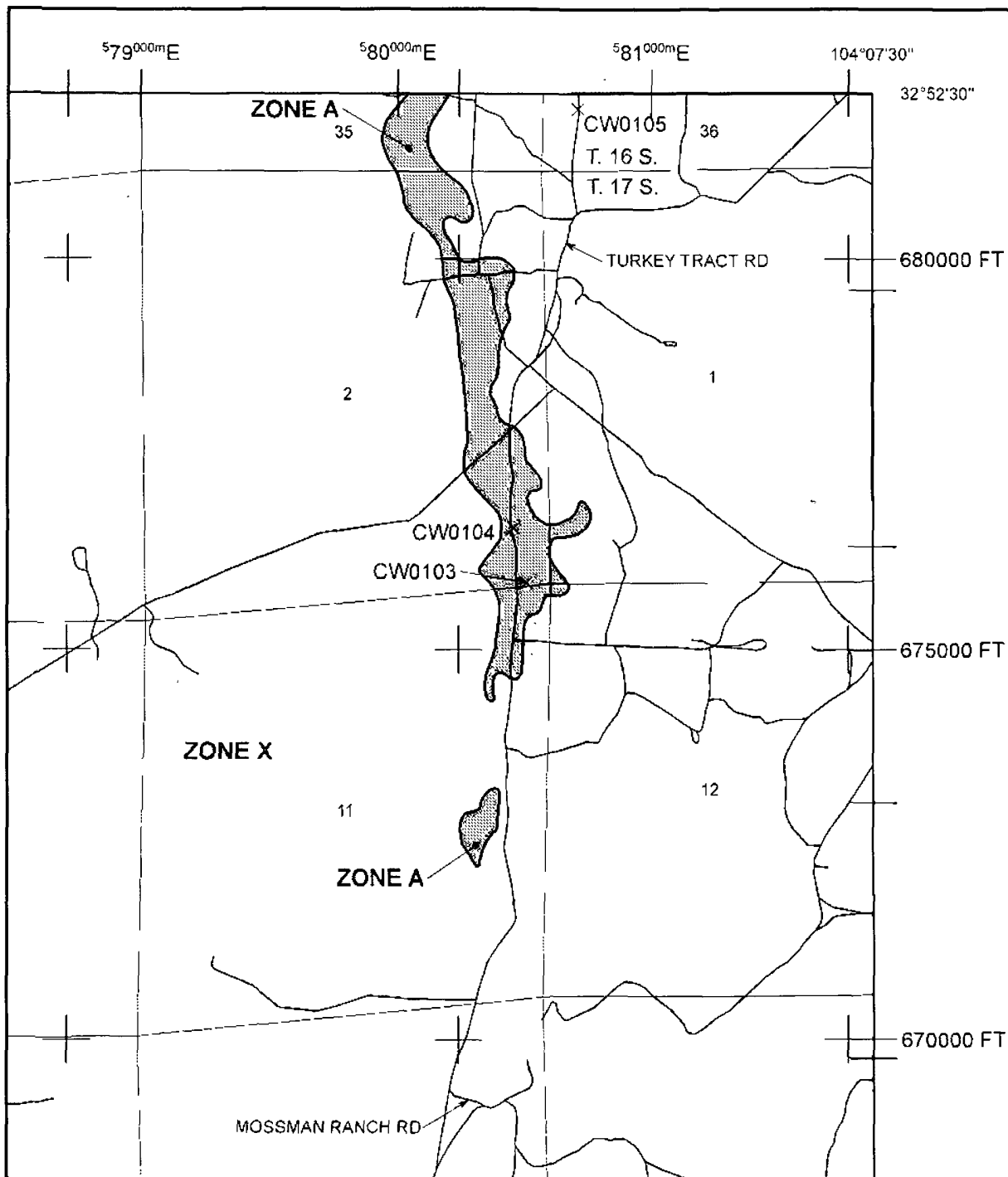
April 2012



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Karst Map
Murchison Oil & Gas - Grizzly Bear 2H

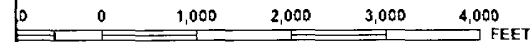
Figure 7
April 2012



ance Program at 1-800-638-6620.



MAP SCALE 1" = 2000'



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0375D

FIRM

**FLOOD INSURANCE RATE MAP
EDDY COUNTY,
NEW MEXICO
AND INCORPORATED AREAS**

PANEL 375 OF 2000

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
EDDY COUNTY	350120	9375	D
UNINCORPORATED AREAS			

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.



**MAP NUMBER
35015C0375D
EFFECTIVE DATE
JUNE 4, 2010**

Federal Emergency Management Agency

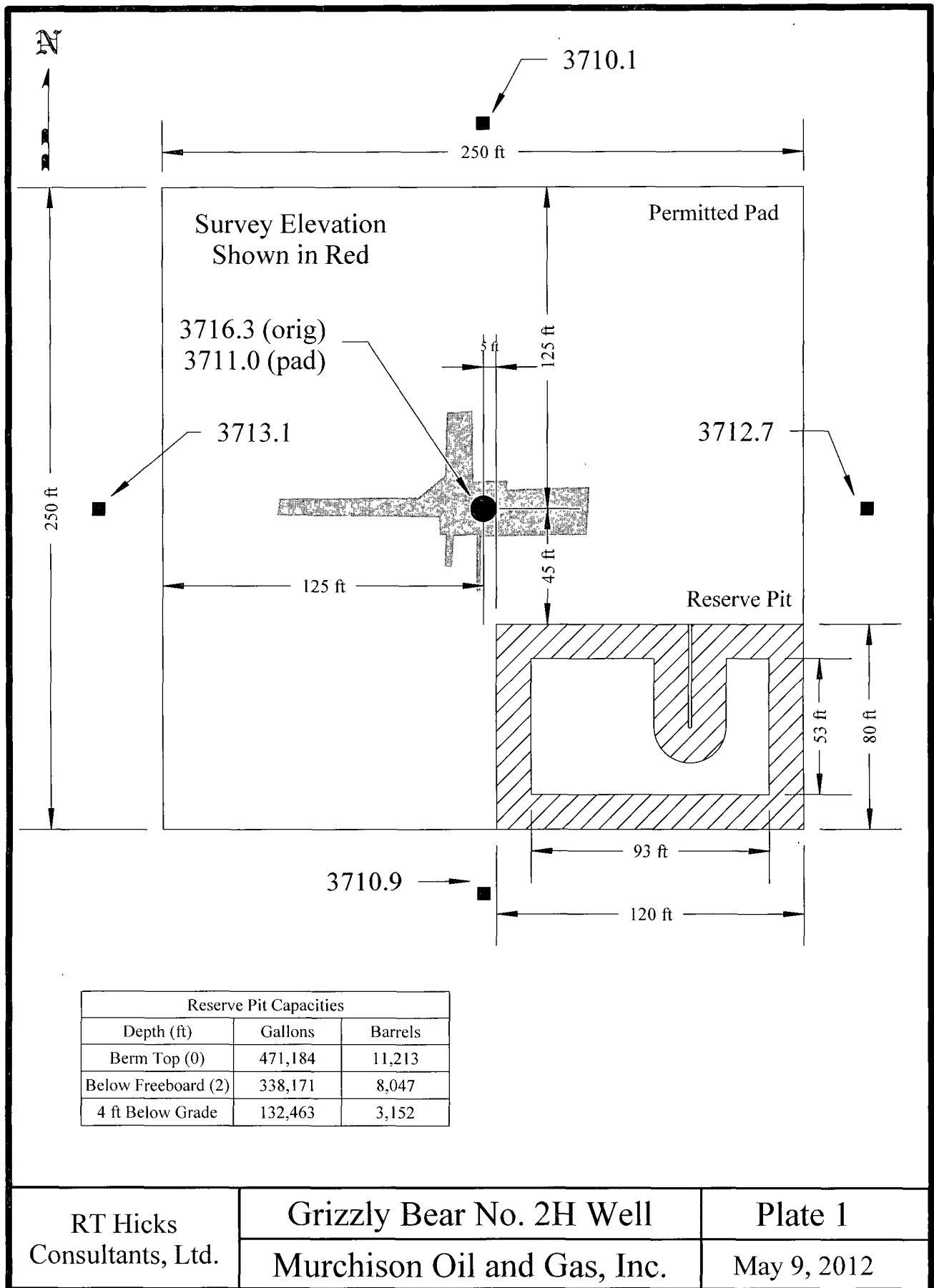
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Site Specific Information Plates

Drilling Pit

R.T. Hicks Consultants, Ltd.

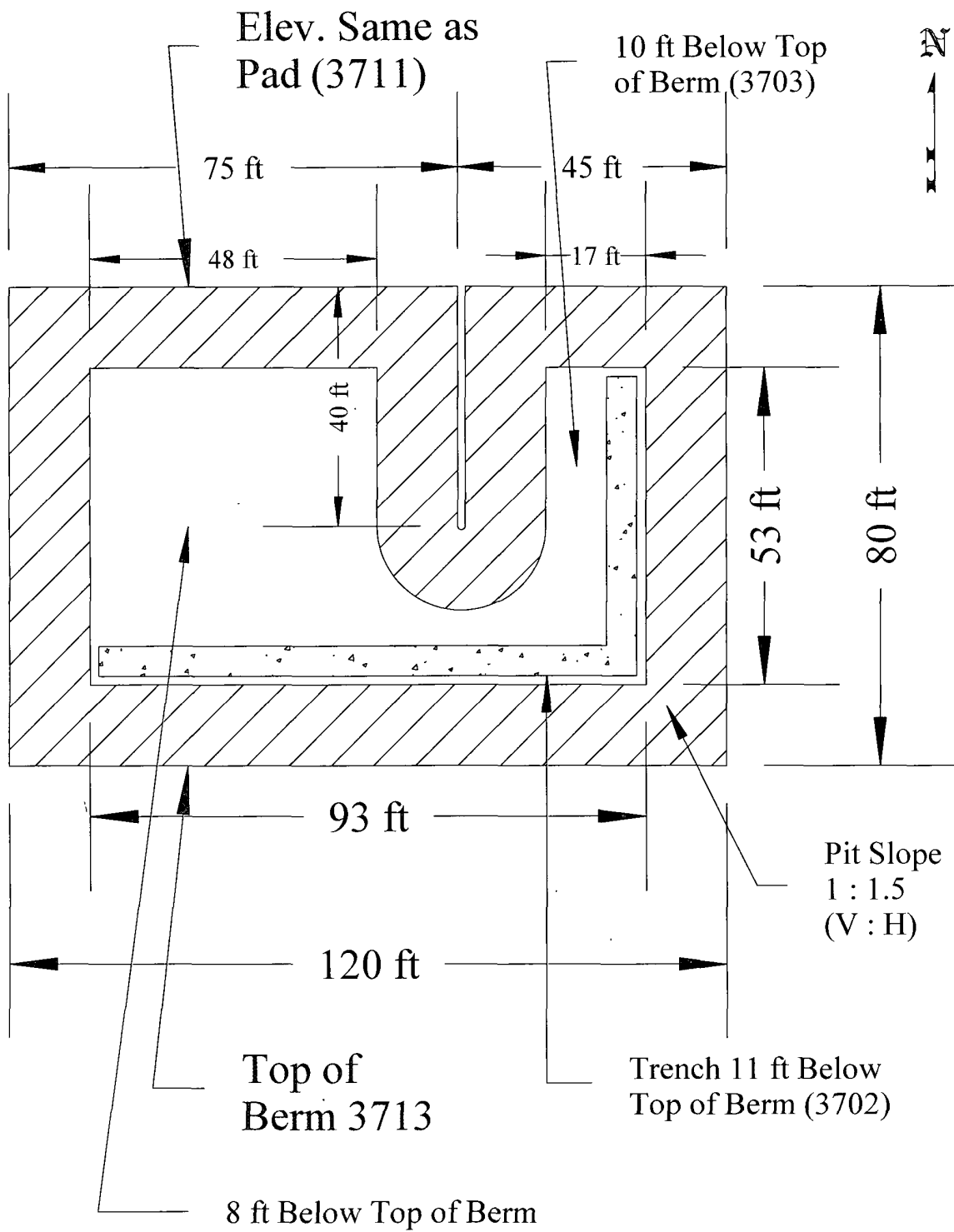
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RT Hicks
Consultants, Ltd.

Grizzly Bear No. 2H Well
Murchison Oil and Gas, Inc.

Plate 1
May 9, 2012



RT Hicks
Consultants, Ltd.

Grizzly Bear No. 2H Well

Reserve Drilling Pit Detail

Plate 2

May 9, 2012

Appendix SSI-A

Groundwater Data from NMBMMR Open File Report 95

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Albuquerque, NM 87104

Records of wells from Eddy County, New Mexico

Location	Well Status	Altitude (feet)	Depth of Well(ft.)	Depth to Water(ft.)	Aquifer	Date of Measurement	Remarks
16.27.27.133	Domestic		180	70	Qtal ?	Apr., 1963	
27.331	Irrigation	3493	1070	27	Ckbf	Jan., 1963	
36.212	Stock	3454	61.4	47.1	Ckbf	Oct. 13, 1977	S.C. >8000; 17°C
16.28. 3.210	Stock	3576	30.0	8.17		Oct. 14, 1977	S.C. 4600; 17°C
12.212	Stock	3579	49.8	47.22		Oct. 14, 1977	S.C. 4100; 21°C
16.30.24.122	Stock	3828	380.1	330.69		Oct. 17, 1977	S.C. 1560; 21.5°C
16.31. 2.122	Stock		320	290+	Ogll ?	Dec. 9, 1948	
2.12124	Stock/Domestic	4116		304.618	Ogll	Mar. 30, 1971	
14.24444	Stock	4396		297.40	Ogll	Mar. 30, 1971	
14.300	Stock			113.4	Dckm ?	Dec. 9, 1948	
22.44414	Stock	4250	167	153.40	Ogll	Mar. 30, 1971	
23.443	Stock	4240	161.8	155.02			
17.27. 3.120	Aband. Stock			130+	Ckbf	Dec. 1, 1948	
5.444		3354	80	30		Oct. 16, 1952	
11.110	Stock			18.1	Ckbf ?	Dec. 1, 1948	
12.413	Irrigation	3472	250	115		Apr., 1954	
16.344	Domestic		1042	260		Jan., 1960	
16.344	Domestic	3435		182.36		Jan. 18, 1966	
16.344	Domestic	3260	1220	175		Mar. 15, 1960	
17.4	Domestic	3386	300	90			
18.234	Domestic	3312	138	111	Qtal	Feb., 1963	
32.313		3420		78.16		Jan. 12, 1973	
32.32		3444	330	140		Aug., 1956	
32.320		3420		92.68		Jan. 9, 1964	
17.28. 2.240	Stock			27.6	Dckm ?	Dec. 1, 1948	

Records of wells from Eddy County, New Mexico

Location	Well Status	Altitude (feet)	Depth of Well(ft.)	Depth to Water(ft.)	Aquifer	Date of Measurement	Remarks
17.28.14.220	Stock/domestic			80	Dckm ?		
19.200	Stock			224.3	Ckbf/Rslr	Dec.2,1948	
22.230	Abandoned stock			45.5	Rslr/Dckm	Dec.1,1948	
24.224	Stock	3565	33.88	24.2		Oct.14,1977	
17.29. 8.231	Stock	3617	92.7	90.13		Oct.14,1977	
22.110	Stock	3550		79.7	Dckm ?	Nov.29,1948	
29.400	Stock			210	Dckm ?	Dec.3,1948	
17.31.34.000	Stock			271+	Dckm	Dec.6,1948	
18.27. 8.240	Unused	3505		181.40		Jan.9,1964	
8.244	Industrial	3513	381	325 ?		Apr.,1951	Oil test
10.200	Unused	3470		46.92		Jan.9,1964	
10.214	Industrial	3493	130	50		Jul.,1958	Oil test
28.13	Domestic/stock	3377	120	100		May,1960	
28.140	Unused	3415		91.37		Jan.9,1964	
33.42	Stock	3447	90	49.3		Sep.,1969	
18.28. 8.330	Stock			81.6	Ckbf/Rslr	Dec.3,1948	
30.110	Stock/domestic	3560		137.1	Ckbf ?	Dec.2,1948	
18.29.24.142	Windmill	3436		156.44		Oct.18,1977	S.C.2600; 21°C
24.23311	Windmill	3436		160.20	Trsc	Apr.8,1971	
24.300	Stock	3430		158.3	Dckm	Apr.28,1950	
34.324	Stock	3440	250	230		Mar.,1960	Yield: 63gpm
18.30.21.4200	Open cased hole	3495		266.48	Trcl	Dec.9,1965	
22.2220	Open cased hole	3430		239.26	Trcl	Apr.8,1971	
26.4140	Stock	3430	223.0	201.67	Trcl	Dec.14,1977	S.C. 1100
31.323	Observation	3370	161.0	157.80		Nov.18,1977	
32.32422	Windmill	3380		161.28	Trcl	Apr.8,1971	
32.413	Abandoned windmill	3370	266	158.77		Oct.18,1977	
18.31. 1.44432	Windmill	3797		460.42	Trcl	Apr.7,1971	
12.223	Stock	3795	480+	453.39		Oct.18,1977	
12.23144	Stock	3775	600	435.34	Trcl	Apr.7,1971	

Records of wells from Eddy County, New Mexico

Location	Well Status	Altitude (feet)	Depth of Well(ft.)	Depth to Water(ft.)	Aquifer	Date of Measurement	Remarks
18.31.14.22133	Open cased hole	3731	400	377.30	Trcl	Apr.6,1971	
35.31324	Domestic	3631	300	261.08	Trcl	Apr.5,1971	
19.27.13.310	Dug well	3450	75	60.7	Ckbf	Sep.3,1948	Very small yield
14.242	Stock/Domestic	3450	95 ?	82.4	Ckbf	Jan.20,1950	North well of 3
16.13	Stock	3342	926	18		Jan.,1969	
19.28. 2.122	Stock	3460	160	128.3	Rslr ?	Dec.13,1948	Yield: 1gpm(est.)
2.23311	Domestic/Stock	3439		153.84	Rslr	Apr.2,1968	
5.21114	Windmill	3547	160.0	150.62	Rslr	Jan.28,1971	
5.411		3530	312	145		Nov.,1969	
9.31	Stock	3545	365	265		May,13,1966	Yield: 60gpm;after 24 hrs. pumping
13.210	Stock	3370		154.5	Rslr	Dec.3,1948	Yield: 3gpm
13.21441	Stock	3369	160	153.02	Rslr	Feb.1,1971	Yield:½(est.)
18.120	Stock	3502		82.8	Ckbf ?	Sep.3,1948	
18.11	Stock	3490	93	74		Mar.,1972	
18.12113	Stock	3505	100	88.31	Rslr	Jan.28,1971	
19.11	Stock	3495	100	91		Mar.,1972	
24.32233	Windmill	3351		130.10	Rslr	Feb.1,1971	
33.210	Stock	3345	170	123.41	Rslr ?	Dec.21,1948	
33.21422	Windmill	3545	125	121.07	Rslr	Jan.28,1971	
36.43233	Windmill	3292	87	71.75	Rslr	Feb1,1971	
19.29.10.43211	Stock	3370	153.0	145.84	Rslr	Feb.1,1971	
13.410	Stock	3310	250	123.2	Rslr/Dckm	Dec.21,1948	
13.41224	Windmill	3310		113.03	Rslr	Dec.9,1965	
13.412243	Open cased hole	3311		110.64	Rslr	Feb. 1, 1971	
20.220	Stock	3305		62.9	Rslr ?	Dec. 13,1948	Yield: 2gpm(est.)
20.24111	Windmill	3305		66.87	Rslr	Feb.1,1971	
23.23144	Windmill	3268	85.0	68.91	Rslr	Feb.1,1971	
25.232	Stock	3355	125.7	64.03		Oct.18,1977	Yield: 1gpm(est.) S.C.2950;21°C
19.30. 9.441	Industrial	3358	300		Rslr		Yield:500gpm; 21°C.
17.441	Stock	3329		142.70	Trsc	Feb. 1,1971	

Records of wells from Eddy County, New Mexico

Location	Well Status	Altitude (feet)	Depth of Well(ft.)	Depth to Water(ft.)	Aquifer	Date of Measurement	Remarks
19.30.25.1122	None			22.98		Dec.16,1977	Abandoned windmill
25.12133	Stock	3239		19.53	Trsc	Feb.1,1971	Windmill
25.123	Observation	3245	42.0	22.73		Nov.18,1977	Abandoned windmill
19.31.27.21144	Open cased hole	3573		142.71	Trsc	Feb.1,1971	
27.23344	Oil test	3573		143		Feb.1,1971	Abandoned
28.330	Domestic	3480		180	Dckm	Nov.29,1948	
28.333		3442		110.07		Dec.14,1977	
28.3332	Domestic/stock	3483	200.0	186.87		Dec.15,1977	S.C.2200
28.33433	Stock	3442	180	108.21	Trsc	Feb.1,1971	Abandoned
31.132		3397	4,103	632.55	Cplm	May, 1973	
33.110	Abandoned	3450	160	100.7	Dckm	Nov.29,1948	North well of 3
33.142	Domestic/stock	3455	250	140		Sep.30,1959	
20.26.36.411	Stock	3240		120.0	Clbd	Oct.6,1948	Yield: 1½gpm
20.27. 1.110	Stock	3367	200+	186.0	Clbd	Sep.7,1948	Yield: 1gpm
2.42	Stock	3365	145	145+			Dry hole
14.42	Stock	3315	81	66		May, 1972	
21.	Domestic	3238	171	150		Feb.,1963	
29.440	Stock	3190	125	75.5	Clbd	Oct.6,1948	Yield: 2½gpm
20.28.14.123		3246	171	140		Oct.24,1973	Yield: 40gpm
28.200	Stock	3225		30.5	Rslr ?	Jan.20,1950	
36.140	Stock	3210		19.1	Rslr ?	Dec.27,1948	
20.29. 3.433	Stock	3300		91.9	Dckm/Rslr	Dec.13,1948	
3.434	Stock, windmill	3300	95.8	88.34		Dec.15,1977	S.C.2300
16.434	Abandoned	3259	103.1	52.28		Dec.15,1977	
20.311	Stock	3246	62.8	43.76		Dec.15,1977	S.C.2700
35.24		3330	339	157		Aug.20,1967	

Records of wells from Eddy County, New Mexico

Location	Well Status	Altitude (feet)	Depth of Well(ft.)	Depth to Water(ft.)	Aquifer	Date of Measurement	Remarks
20.30. 3.223	Stock	3175		6.0	Qtal	Dec. 23, 1948	
3.424	Stock	3185		8.5	Qtal	Dec.23,1948	
5.310	Stock	3184		3.5	Qtal	Dec.23,1948	
7.112	Stock	3227	42.8	27.24		Dec. 15,1977	S.C.2600
16.420	Stock	3220		29.9	Dckm ?	May 1,1950	
17.433	Aband.	3215	66.0	26.35		Dec.15,1977	
20.120	Domestic	3210	90	29.3	Dckm ?	Dec.22,1948	Yield: 5gpm(est.)
20.130	Domestic	3210	60	45.3	Dckm ?	Dec.22,1948	
20.142	Aband.	3205	63.3	10.48		Dec.15,1977	
21.434	Industrial	3335	335	150		Jan.16,1974	Yield: 15gpm(est.) Oil test
31.214	None	3298	180.1	100.95		Oct.16,1977	S.C.8000;20°C
32.341		3365		327.32	Cplm	Sep.,1974	
33.32	Industrial	3330	235	195		Mar.31,1967	Oil test
33.440	Stock	3380	240+	203.8	Dckm ?	Dec.27,1948	
20.31.13.42	Stock,Aband.	3427	32.5	1.1		Oct.5,1977	S.C.8000;70°F
13.440	Stock	3450		203.8	Dckm ?	Dec.22,1948	
15.130	Stock	3450	70 ?	63.1	Dckm ?	Dec.22,1948	
16.24	Stock	3458	110.0	61.0	Dckm ?	Oct.5,1977	Aband.
21.26.23.133	Irrigation	3144.35	418	41.04	Clbd	Jan.21,1970	
24.424	Irrigation	3154.94	320	50.26	Tns1	Jan.10,1975	
25.344	Domestic,Irrigation	3124.65		17.60	Tns1	Jan.16,1974	
36.212	Irrigation	3123.26	200	23.56	Vlfl	Jan.10,1975	
21.27. 1.420	Stock	3180	30	12.7	Rslr/Qtal	Dec.27,1948	Yield: 1gpm(est.)
5.411		3280	2565	199.31	Cplm	Sep.,1974	
6.140	Stock	3190		34.1	Clbd ?	Sep.3,1948	

Records of wells from Eddy County, New Mexico

Location	Well Status	Altitude (feet)	Depth of Well(ft.)	Depth to Water(ft.)	Aquifer	Date of Measurement	Remarks
21.27. 9.330	Stock	3220		81.4	Qta1	Jan.25,1950	
9.333	Domestic	3226	92	80		Apr.,1966	
19.		3116	95	33		Feb.,1959	
19.334	Irrigation	3137.01	320	30.25	Tns1	Feb.18,1975	Yield: 1200gpm
20.220	Stock	3210	126		Rslr ?		
23.330	Stock	3230.2	2565	160.86	Cplm	Mar.,1974	
25.233	Domestic/Stock	3141	270	80		May 29,1975	Yield: 10gpm
28.331	Domestic/Stock	3150	350	40			
29.311	Unused Irrigation	3116.28	236	16.50	Clbd	Jan.3,1962	
29.321	Domestic/Stock	3115	269	7.5	Clbd ?	Oct. 15, 1947	
29.322	Domestic	3150	90	31		Mar.,1956	
29.331	Domestic/Irrigation	3110	268	1.1	Clbd	Feb.,6,1947	
29.343	Stock/Irrigation	3109		13.7	Clbd ?	Oct.13,1947	
29.423	Stock	3150	150	41.3	Rslr ?	Nov.15,1949	
29.434	Irrigation	3120	324	24.76	Clbd	Jan.13,1964	
30.341	Domestic/Stock	3117		16.0	Clbd ?	Oct. 10,1947	
30.431	Irrigation	3115	186	7.0	Clbd		Yield: 1000gpm
30.440		3113	76	14.7	Qta1	Oct.20,1947	
30.442	Domestic	3115.48	256	12.78	Cptn	Jan.10,1975	
30.443	Irrigation	3115		15.5	Qta1 ?	Oct. 10, 1947	
31.111	Irrigation	3115		8.4	Clbd	Oct.20,1947	
31.112	Irrigation	3114.85		15.30	Vlfl	Jan.3,1962	
31.211	Irrigation/Domestic	3116.07	220	13.91	Tns1	Jan.14,1974	
31.212	Domestic/Irrigation	3120	250	10.4	Clbd	Oct.9,1947	
31.212	Potash Refining	3120	315	7.6	Clbd	Jan.17,1950	Yield: 1000gpm

Generic Plans for Temporary Pits

R.T. Hicks Consultants, Ltd.

901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

Temporary Pit Design Plan

Plates SSI-1, SSI-2 and SSI-3 within the Site Specific Information Section show the layout of the temporary pit proposed for this project. However, field conditions will determine the final configuration of the pits.

The design calls for two pits or cells: a standard reserve pit/cell and a fluid storage cell. The fluid storage cell will hold water for use in drilling and/or stimulation. The fluid storage cell of the temporary pit will hold stimulation flow-back for treatment then re-use in drilling or stimulation. The fluid storage cell will not receive drilling waste solids (cuttings/mud). As described in the closure plan, the fluid storage cell is separate from the drilling pit/cell and may be converted to a burial trench in a manner consistent with NMOCD Rules. However, as the closure plan states, closure “in-place” is anticipated.

The operator will ensure that the temporary storage of fluids, fluid reuse or fluid disposal will be conducted in a manner approved by the division that prevents the contamination of fresh water and protects public health and the environment.

Design Plan– Operator Instructions

1. The design will contain liquids and solids and prevent contamination of fresh water and protect public health and the environment.
2. The design prevents run-on of surface water.
3. The operator will post an upright sign in compliance with 19.15.16.8 NMAC. The operator will post the sign in a manner and location such that a person can easily read the legend. The sign will provide the following information: the operator’s name; the location of the site by quarter-quarter or unit letter, section, township and range; and emergency telephone numbers.
4. The pit will be completely fenced at all times excluding drilling and workover/stimulation operations. During drilling or workover operations, the operator is not required to fence the edge of the pit adjacent to the drilling or workover rig.
5. The operator will maintain the fences in good repair from beginning of pit use to the time of pit closure.
6. The drilling and lining contractor will provide for devices to protect the liner from any fluid force or mechanical damage at any point of discharge into or suction from the lined temporary pit.
7. The operator or operator’s representative will inspect the pit before and after lining to ensure that construction of the temporary pit
 - a. Has not penetrated any solution features such as fissures, tubes or caves
 - b. Can prevent unauthorized releases and ensure the confinement of liquids
 - c. is consistent with the design criteria of Plate 1 or any agreed alteration to meet field conditions
 - d. meets the prescriptive mandates outlined below

Construction Plan– Construction Contractor Instructions

- A. Prior to constructing the pit the qualified contractor will examine Plate SSI-1 and SSI-2 and provide the operator (or operator’s representative) with a written affirmation of their understanding of the design.

Temporary Pit Design Plan – Murchison Oil and Gas, Inc

- B. The contractor will strip and stockpile the topsoil for use as the final cover or fill at the time of closure (see Plate SSI-2).
- C. The temporary pit will have a properly constructed foundation and interior slopes consisting of a firm, unyielding base, smooth and free of rocks, debris, sharp edges or irregularities to prevent the liner's rupture or tear.
- D. The interior slopes of the drilling pit will be no steeper than 1.5 horizontal feet to 1 vertical foot (1.5H:1V) and interior berms will be no steeper than 1.5H:1V. The interior slope of the fluid storage cell will be no steeper than 1.5H:1V; therefore we see administrative approval of this slope.
- E. Pit walls will be walked down by a crawler type tractor following construction.
- F. As necessary, a berm or ditch will surround the temporary pit to prevent run-on of surface water.
- G. The exterior walls of the reserve (drilling) pit will be two feet above the lowest natural grade before removal of topsoil and leveling the pad. Therefore, all of the fluid will be stored in the cut of the pit, not in the fill.
- H. The exterior walls of the workover pit (cell) may be greater than two-feet above the lowest natural grade.

Construction Plan– Liner Contractor Instructions

- I. Install a geomembrane liner.
- II. The geomembrane liner will consist of 20-mil string reinforced LLDPE or equivalent liner material that the appropriate division district office approves. The geomembrane liner will be composed of an impervious, synthetic material that is resistant to petroleum hydrocarbons, salts and acidic and alkaline solutions. The liner material will be resistant to ultraviolet light. Liner compatibility will comply with EPA SW-846 method 9090A.
- III. Minimize liner seams and orient them up and down, not across a slope.
- IV. Use factory welded seams where possible.
- V. Prior to any field seaming, the contractor will overlap liners four to six inches and orient seams parallel to the line of maximum slope, *i.e.*, oriented along, not across, the slope. The contractor will minimize the number of welded field seams in corners and irregularly shaped areas. Field seams will be welded by qualified personnel.
- VI. Avoid excessive stress-strain on the liner.
- VII. Geotextile will be placed under the liner where needed to reduce localized stress-strain or protuberances that may otherwise compromise the liner's integrity.
- VIII. Anchor the edges of all liners in the bottom of a compacted earth-filled trench. The anchor trench will be at least 18 inches deep.
- IX. Install any devices used to ensure that the liner is protected from any fluid force or mechanical damage at any point of discharge into or suction from the lined temporary pit.
- X. Fence the pit in a manner that prevents unauthorized access. The contractor will fence the pit to exclude livestock with a four foot fence that has at least four strands of barbed wire evenly spaced in the interval between one foot and four feet above ground level.

Operating and Maintenance Plan

The operator will operate and maintain the pit to contain liquids and solids. The operator will maintain the integrity of the liner to prevent contamination of fresh water and protect public health and the environment as described below.

1. If feasible, the operator will recycle, reuse or reclaim of all fluids in the temporary pit in a manner approved by division rules that prevents the contamination of fresh water and protects public health and the environment. Re-use of drilling fluids and workover fluids (stimulation flow-back) for drilling and stimulation of subsequent wells is anticipated.
2. If re-use is not possible, fluids will be sent to disposal at division-approved facility.
3. The operator will not discharge into or store any hazardous waste in the pit.
4. If any pit liner's integrity is compromised, or if any penetration of the liner occurs above the liquid's surface, then the operator will notify the appropriate division district office within 48 hours (phone or email) of the discovery and repair the damage or replace the liner.
5. If the pit develops a leak or if any penetration of the pit liner occurs below the liquid's surface, then the operator will remove all liquid above the damage or leak line within 48 hours, notify the district office within 48 hours (phone or email) of the discovery and repair the damage or replace the pit liner.
6. The injection or withdrawal of liquids from the pit will be accomplished through a header, diverter or other hardware that prevents damage to the liner by erosion, fluid jets or impact from installation and removal of hoses or pipes.
7. The operator will install diversion ditches and berms around the pit as necessary to prevent the collection of surface water run-on.
8. The operator will immediately remove any visible layer of oil from the surface of the temporary pit and maintain on site an oil absorbent boom to contain and remove oil from the pit's surface.
9. Only fluids used or generated during the drilling or workover (stimulation) process will be discharged to the drilling pit (cell). Only fluids generated workover (stimulation) process will be discharged into the workover cell of the temporary pit.
10. The operator will maintain the temporary pit free of miscellaneous solid waste or debris.
11. Immediately after cessation of drilling and stimulation, the operator will remove any visible or measurable layer of oil from the surface of a pit, in the manner described above.
12. The operator will maintain at least two feet of freeboard for the temporary pit.
13. The operator will inspect the temporary pit containing fluids at least daily during drilling and stimulation to ensure compliance with this plan.
14. After drilling and stimulation operations, the operator will inspect the temporary pit weekly so long as free liquids remain in the temporary pit.
15. The operator will maintain a log of such inspections and make the log available for the district office's review upon request.
16. The operator will file a copy of the log with the appropriate division district office when the operator closes the temporary pit.
17. Within 30 days from the date that the operator releases the applicable rig, the operator will remove all free liquids from the
 - a. drilling cell of the temporary pit after release of the drilling rig and
 - b. workover cell of the temporary pit after release of the stimulation (workover) rig
18. The operator may request an extension of time to hold fluids in the temporary pit.
19. The operator will note the date of the drilling and stimulation rig's release on form C-105 or C-103 upon completion of applicable activities.

Closure Plan- General Conditions

The preferred closure alternative is in-place closure. If the residual solids in the temporary pit do not meet the criteria for in-place closure but meet the criteria for trench burial, the operator will notify NMOCD for permission to proceed with trench burial.

Notifications and Reports

- The operator will notify the landowner by certified mail, return receipt requested, prior to closure, that the operator plans to close the temporary pit.
- The operator of the temporary pit will notify the division district office verbally or by email at least 72 hours, but not more than one week, prior to any closure operation. The notice will include the operator's name and the location to be closed by unit letter, section, township and range, well's name, number, the API number.
- Within 60 days of closure completion, the operator will submit a closure report on form C-144, with necessary attachments to document all closure activities including sampling results; information required by 19.15.17 NMAC; a plot plan; and details on back-filling, capping and covering, where applicable.

Protocols and Procedures

- The operator of the temporary pit will remove all liquids from the temporary pit prior to closure and either:
 - Dispose of the liquids in a division-approved facility, or
 - Recycle, reuse or reclaim the liquids in a manner approved by the district office.
- Except for liquids in the pit that are integral to the closure process, the operator shall remove all free liquids from the temporary pit within 30 days from the date that the operator released the rig. The operator shall note the date of the rig's release on form C-105 or C-103 upon well completion. The operator will request an extension of up to three months from the appropriate division district office if necessary to allow for water re-use.
- The operator will close the temporary pit within six months of the date that the operator releases the rig. An extension not to exceed three months may be requested of the district office.
- The operator will close the pit by an earlier date than the division requires because of imminent danger to fresh water, public health or the environment.
- In the closure report, the operator will certify that all information in the report and attachments is correct and that the operator has complied with all applicable closure requirements and conditions specified in the approved closure plan.
- The operator will provide a plat of the pit location on form C-105 with the closure report within 60 days of closing the temporary pit.

Additional Protocols and Procedures for On-Site Closure

- The C-144 package has been provided to the surface owner as notice of the operator's proposal of an on-site closure as required in 19.15.17.13.F(1)(b).
- Upon receipt of NMOCD approval for on-site closure, the operator will notify the surface owner by certified mail, return receipt requested, that the operator plans to close the pit

Temporary Pit Closure Plan – Murchison Oil and Gas, Inc.

and where the operator has approval for on-site closure. Evidence of mailing of the notice will demonstrate compliance with this requirement.

- The operator will place a steel marker at the center of an on-site burial if on-site burial occurs for the temporary pit. The steel marker will be not less than four inches in diameter and will be cemented in a three-foot deep hole at a minimum. The steel marker will extend at least four feet above mean ground level and at least three feet below ground level. The operator name, lease name and well number and location, including unit letter, section, township and range, and that the marker designates an on-site burial location will be welded, stamped or otherwise permanently engraved into the metal of the steel marker.
- The operator will report the exact location of any on-site burial on form C-105 filed with the division.
- The operator will file a deed notice identifying the exact location of any on-site burial with the county clerk in the county. The exact location of any on-site burial will be transmitted to the surface owner by copy of the form C-105 discussed above.

In-place closure is the preferred closure alternative for the temporary pit. If waste sampling results suggest that standards for in-place closure are not met, the operator will implement trench burial after notification to NMOCD.

Site Reclamation Plan

After the operator has closed the pit, the operator will reclaim the pit location and all areas associated with the pit, including associated access roads to a safe and stable condition that blends with the surrounding undisturbed area. The operator will substantially restore the impacted surface area to the condition that existed prior to oil and gas operations by placement of the soil cover as provided in Subsection H of 19.15.17.13 NMAC, recontour the location and associated areas to a contour that approximates the original contour and blends with the surrounding topography and re-vegetate according to Subsection I of 19.15.17.13 NMAC.

Soil Cover Design Plan

If the operator removes the pit contents or remediates any contaminated soil to the division's satisfaction the soil cover will consist of the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater.

The soil cover for the in-place burial will consist of a minimum of four feet of compacted, non-waste containing, earthen material. The soil cover will include either the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater.

The operator will construct the soil cover to the site's existing grade and prevent ponding of water and erosion of the cover material.

Re-vegetation Plan

1. The first growing season after the operator closes the pit, including access roads, the operator will seed or plant the disturbed areas.
2. The operator will accomplish seeding by drilling on the contour whenever practical.

Temporary Pit Closure Plan – Murchison Oil and Gas, Inc.

3. The operator will obtain vegetative cover that equals 70% of the native perennial vegetative cover (un-impacted by overgrazing, fire or other intrusion damaging to native vegetation).
4. The operator will follow surface owner mandates for the seed mixture and maintain that cover through two successive growing seasons.
5. During the two growing seasons that prove viability, there will be no artificial irrigation of the vegetation.
6. The operator will repeat seeding or planting until it successfully achieves the required vegetative cover.
7. If conditions are not favorable for the establishment of vegetation, such as periods of drought, the operator may request that the division allow the operator to delay seeding or planting until soil moisture conditions become favorable or may require the operator to use additional cultural techniques such as mulching, fertilizing, irrigating, fencing or other practices.
8. The operator will notify the division when it has seeded or planted and when it successfully achieves re-vegetation.

In-place Closure Plan

In the event that sampling of the solids in the temporary pit demonstrates that the pit meets the criteria for in-place closure, the operator will proceed with in-place closure

Siting Criteria Compliance Demonstration for In-Place Burial

The Siting Criteria Compliance Demonstration for the temporary pit ([see Site Specific Information](#)) show that the requirements of 19.15.17.10 NMAC are met for in-place closure.

Waste Material Sampling Plan for In-place Burial

Because the groundwater is more than 100 feet below the bottom of the buried waste (see above), the operator will collect at a minimum, a five point, composite sample of the contents of the temporary pit after treatment or stabilization.

The purpose of the sampling the waste material is to demonstrate that after stabilization with three parts clean fill:

- Benzene, as determined by EPA SW 846 method 8021B or 8260B, does not exceed 0.2 mg/kg;
- Total BTEX, as determined by EPA SW-846 method 8021B or 8260B, does not exceed 50 mg/kg;
- The GRO and DRO combined fraction, as determined by EPA SW-846 method 8015M, does not exceed 500 mg/kg;
- TPH, as determined by EPA method 418.1 does not exceed 2,500 mg/kg;
- Chloride, as determined by EPA method 300.1, does not exceed 1,000 mg/kg or the background concentration, whichever is greater.

Protocols and Procedures for In-Place Burial

In addition to the General Conditions Protocols and Procedures and the Additional Protocols and Procedures for On-site Closure listed above, the operator will execute the following steps for in-place closure of the pit.

Temporary Pit Closure Plan – Murchison Oil and Gas, Inc.

- A. The initial water flow-back from the stimulation process will discharge to the drilling cell of the temporary pit. This water is fresh or slightly brackish. When the flow-back increases in salinity, discharge to the workover cell begins. If oil in the flow-back accumulates in the pit to a measurable thickness, the flow-back is routed to tanks for oil recovery. As the fresh/brackish water moves through the cuttings and residual mud in response to pumping from an underdrain system, this water displaces entrained brine in the cuttings and dissolves any rock salt cuttings, thereby reducing the salinity of these solids. Water pumped by the underdrain system discharges to the workover cell of the temporary pit for disposal or re-use in accordance with NMOCD Rules.
- B. The operator will measure the distance between the top of any solids in the pit and existing grade to determine if stabilized waste (see stabilization methods, below) will be at least 4-feet below existing grade to allow installation of the soil cover (see soil cover design, above).
- C. The operator will stabilize or solidify the contents of the pit to a bearing capacity sufficient to support the temporary pit's final cover. However, the operator will not mix the pit contents with soil or other material at a mixing ratio of greater than 3:1, (3 parts soil or other material to 1 part temporary pit solids).
- D. Cover the geomembrane lined, filled, temporary pit with compacted, non-waste containing, earthen material; construct a division-prescribed soil cover; recontour and re-vegetate the site as described in this plan. Specifically, a 4-foot thick soil cover consistent with NMOCD Rules will be placed over the stabilized waste.
- E. Any excess liner above the stabilized waste will be removed for re-use or disposal.

On-Site Trench Burial Plan (after notice to NMOCD)

On-site trench burial will occur only if in-place burial criteria are not met (e.g. chloride concentration limit).

Siting Criteria Compliance Demonstration for In-Place Burial

The Siting Criteria Compliance Demonstration for the temporary pit (see Site Specific Information) show that the requirements of 19.15.17.10 NMAC are met for trench burial.

Protocols and Procedures for On-Site Trench Burial

In addition to the General Conditions Protocols and Procedures listed above, the operator will employ the following steps for On-Site Trench Burial of the pit.

- 1. The pit liner will be removed above the mud level for re-use if possible. We will use a utility knife and manual power to remove the liner.
- 2. The operator will stabilize the waste to permit transfer from the pit to the separate trench.
- 3. The operator will further stabilize or solidify the contents to a bearing capacity sufficient to support the final cover.
- 4. The operator will not mix the contents with soil or other material at a mixing ratio of greater than 3:1, (3 parts soil or other material to 1 part drilling waste). Specifically, the drilling waste will be stabilized in the pit by adding no more than 3 parts clean fill derived from the excavation of the pit to 1 part drilling waste.
- 5. After stabilization such that the waste material will support the soil cover, the mixture will be sampled pursuant to NMOCD Rules (see below) and placed in the burial trench.

Temporary Pit Closure Plan – Murchison Oil and Gas, Inc.

Construction/Design of Burial Trench

The operator will design and construct on-site trench for closure as specified in 19.15.17.13B.(2) NMAC. Specifically:

- I. The operator will excavate a separate trench to an appropriate depth that allows for the installation of the geomembrane bottom liner, burial of the drilling waste, geomembrane liner cover and the division-prescribed soil cover required pursuant to 19.15.17.13.H NMAC.
- II. The on-site trench will have a properly constructed foundation and side walls consisting of a firm, unyielding base, smooth and free of rocks, debris, sharp edges or irregularities to prevent the liner's rupture or tear.
- III. Geotextile will be placed under the liner where needed to reduce localized stress-strain or protuberances that may otherwise compromise the liner's integrity.
- IV. The on-site trench will be constructed with a geomembrane liner that consists of a 20-mil string reinforced LLDPE liner
- V. The geomembrane liner is composed of an impervious, synthetic material that is resistant to petroleum hydrocarbons, salts and acidic and alkaline solutions. The liner material will be resistant to ultraviolet light. Liner compatibility will comply with EPA SW-846 method 9090A.
- VI. The contractor for the operator will minimize liner seams and orient them up and down, not across a slope. The operator will use factory welded seams where possible. Prior to field seaming, the operator will overlap liners four to six inches and orient liner seams parallel to the line of maximum slope, *i.e.*, oriented along, not across, the slope. The operator will minimize the number of field seams in corners and irregularly shaped areas.
- VII. Qualified personnel will perform field seaming. The contractor will weld field liner seams.
- VIII. The contractor for the operator will install sufficient liner material to reduce stress-strain on the liner.
- IX. The operator will ensure that the outer edges of all liners are secured for the placement of the excavated waste material into the drilling pit (on-site trench).
- X. The contractor for the operator will fold the outer edges of the drilling pit (on-site trench) liner to overlap the waste material in the pit (on-site trench) prior to the installation of the geomembrane cover.
- XI. The contractor for the operator will install a geomembrane cover over the waste material in the lined trench. The operator will install the geomembrane cover in a manner that prevents the collection of infiltration water in the lined trench and on the geomembrane cover after the soil cover is in place.
- XII. The geomembrane cover will consist of a 20-mil string reinforced LLDPE liner. The geomembrane cover will be composed of an impervious, synthetic material that is resistant to petroleum hydrocarbons, salts and acidic and alkaline solutions. Cover compatibility will comply with EPA SW-846 method 9090A.

Waste Material Sampling Plan for On-Site Trench Burial

Because the ground water is more than 100 feet below the bottom of the buried waste (see previously submitted Supplemental Documentation to C-144), the operator will collect at a minimum, a five point, composite sample of the contents of the portion of the temporary pit

Temporary Pit Closure Plan – Murchison Oil and Gas, Inc.

scheduled for trench burial after treatment or stabilization. The purpose of the sampling after the waste material is stabilized is to demonstrate that:

- The TPH concentration, as determined by EPA method 418.1 or other EPA method that the division approves, does not exceed 2500 mg/kg.
- The stabilized waste passes the paint filter liquids test (EPA SW-846, method 9095)
- Using EPA SW-846 method 1312
 - The chloride concentration, as determined by EPA method 300.1 or other EPA method that the division approves, does not exceed 3,000 mg/L or the background concentration, whichever is greater,
 - The concentrations of the inorganic water contaminants specified in Subsection A of 20.6.2.3103 NMAC as determined by appropriate EPA methods do not exceed the standards specified in Subsection A of 20.6.2.3103 NMAC or the background concentration, whichever is greater, and
 - The concentrations of the organic water contaminants specified in Subsection A of 20.6.2.3103 NMAC as determined by appropriate EPA methods do not exceed the standards specified in Subsection A of 20.6.2.3103 NMAC, unless otherwise specified by NMOCD Rules

Confirmation Sampling Plan for On-Site Trench Burial

The operator will test the soils beneath the temporary pit after excavation and prior to trench burial to determine whether a release has occurred. To determine if a release has occurred, the operator and/or qualified contractor will collect, at a minimum:

- A five point, composite sample;
- Individual grab samples from any area that is wet, discolored or showing other evidence of a release.

The operator or qualified contractor will analyze these samples using NMOCD approved EPA methods for:

- Benzene,
- Total BTEX,
- TPH,
- The GRO and DRO combined fraction and
- Chloride

The purpose of this sampling is to demonstrate that:

1. Benzene, as determined by EPA SW-846 method 8021B or 8260B does not exceed 0.2 mg/kg;
2. Total BTEX, as determined by EPA SW-846 method 8021B or 8260B does not exceed 50 mg/kg;
3. The GRO and DRO combined fraction, as determined by EPA SW-846 method 8015M, does not exceed 500 mg/kg;
4. The TPH, as determined by EPA method 418.1 does not exceed 2,500 mg/kg; and
5. Chloride, as determined by EPA method 300.1, does not exceed 1,000 mg/kg or the background concentration, whichever is greater.

Temporary Pit Closure Plan – Murchison Oil and Gas, Inc.

Reporting

The operator shall notify the division of its results of on form C-141. If the operator or the division determines that a release has occurred, then the operator will comply with 19.15.29 NMAC and 19.15.30 NMAC, as appropriate.

Excavation and Removal Closure Plan

IF THE CRITERIA FOR ON-SITE CLOSURE ARE NOT MET, THE OPERATOR WILL ADHERE TO NMOCD RULES AND IMPLEMENT THE FOLLOWING ACTIONS:

Protocols and Procedures for Excavation and Removal

The operator will close the temporary pit by excavating all contents and any synthetic pit liners that cannot be re-used and transferring those materials to one of the division-approved facilities listed below:

Controlled Recovery, Inc.	NM-01-0006
Lea Land, LLC	NM-01-0035

If the sampling program described below demonstrates that a release has not occurred or that any release does not exceed the concentrations specified in Subparagraph (b.ii) of Paragraph (1) of Subsection B of 19.15.17.13 NMAC, then the operator will:

1. Backfill the temporary pit excavation with compacted, non-waste containing, earthen material;
2. Construct a division-prescribed soil cover to existing grade as described in the Soil Cover Plan (above);
3. Recontour and re vegetate the site as described in the Revegetation Plan (above).

Confirmation Sampling Plan for Excavation and Removal

The operator will test the soils beneath the temporary pit after excavation to determine whether a release has occurred. To determine if a release has occurred, the operator and/or qualified contractor will collect, at a minimum:

- A five point, composite sample and;
- Individual grab samples from any area that is wet, discolored or showing other evidence of a release

The purpose of this sampling is to demonstrate that:

- Benzene, as determined by EPA SW-846 method 8021B or 8260B does not exceed 0.2 mg/kg;
- Total BTEX, as determined by EPA SW-846 method 8021B or 8260B does not exceed 50 mg/kg;
- The GRO and DRO combined fraction, as determined by EPA SW-846 method 8015M, does not exceed 500 mg/kg;
- The TPH, as determined by EPA method 418.1 does not exceed 2,500 mg/kg; and
- Chloride, as determined by EPA method 300.1, does not exceed 1,000 mg/kg or the background concentration, whichever is greater.

Temporary Pit Closure Plan – Murchison Oil and Gas, Inc.

Reporting

The operator shall notify the division of its results of on form C-141. If the operator or the division determines that a release has occurred, then the operator will comply with 19.15.29 NMAC and 19.15.30 NMAC, as appropriate.

Survey Information

R.T. Hicks Consultants, Ltd.

901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

District I

1625 N. French Dr., Hobbs, NM 88240

District II

1301 W. Grand Avenue, Artesia, NM 88210

District III

1000 Rio Brazos Rd., Aztec, NM 87410

District IV

1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico

Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.

Santa Fe, NM 87505

Form C-102

Revised October 15, 2009

Submit one copy to appropriate

District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number		² Pool Code		³ Pool Name	
⁴ Property Code		⁵ Property Name GRIZZLY BEAR			⁶ Well Number 2H
⁷ OGRID No. 15363		⁸ Operator Name MURCHISON OIL & GAS, INC.			⁹ Elevation 3716.3

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	1	17 S	28 E		1550	SOUTH	150	EAST	EDDY

¹¹ Bottom Hole Location If Different From Surface

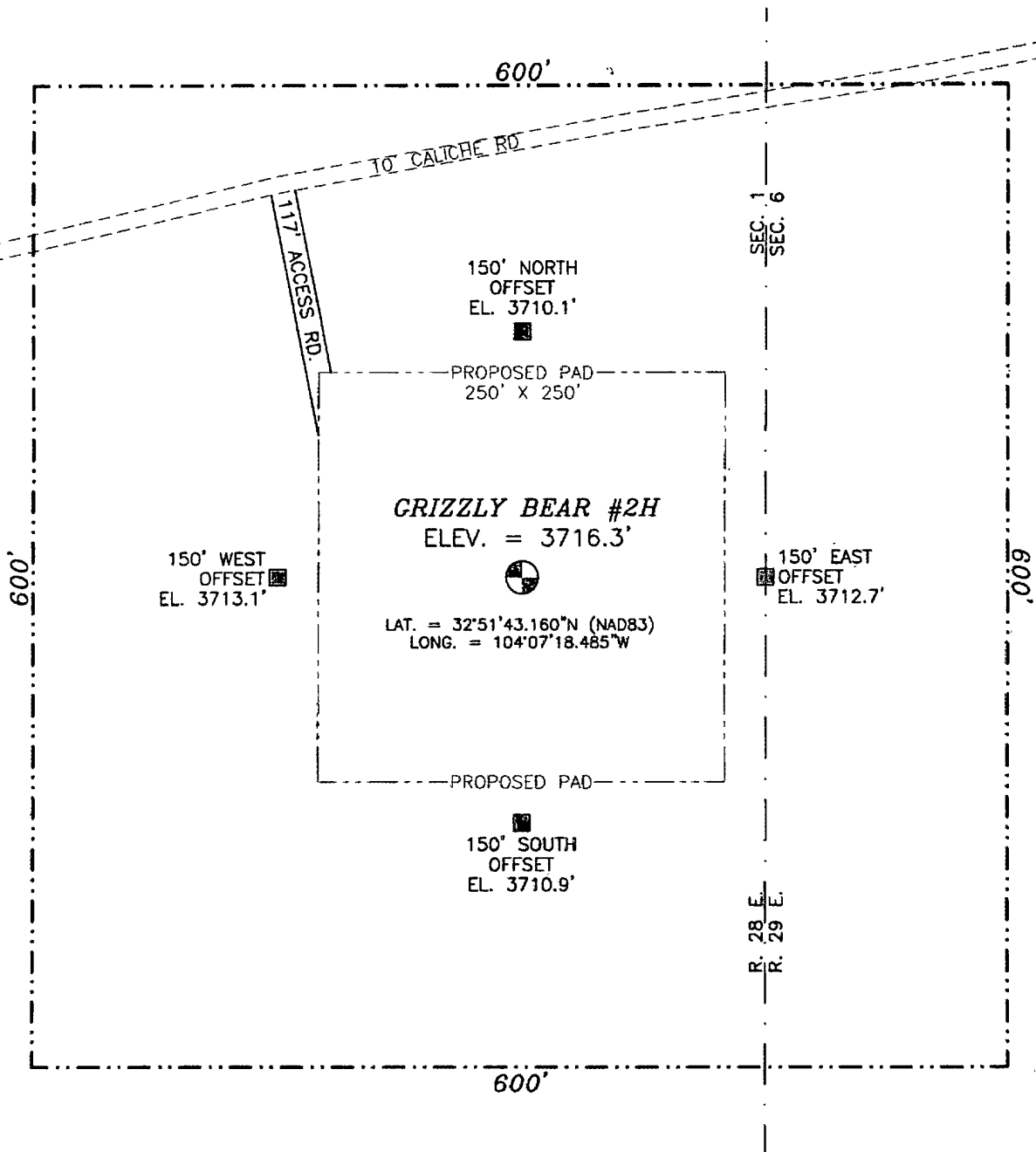
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	1	17 S	28 E		1650	SOUTH	330	WEST	EDDY

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

<p>S89°10'36"W 2678.89 FT S89°10'48"W 2681.02 FT</p> <p>NW CORNER LAT. = 32°52'19.847"N LONG. = 104°08'19.413"W</p> <p>N O CORNER LAT. = 32°52'19.977"N LONG. = 104°07'48.012"W</p> <p>NE CORNER LAT. = 32°52'20.305"N LONG. = 104°07'16.586"W</p> <p>LOT 4 LOT 3 LOT 2 LOT 1</p> <p>COMPUTED</p> <p>BOTTOM OF HOLE LAT. = 32°51'43.941"N LONG. = 104°08'14.576"W</p> <p>330' BOTTOM OF HOLE</p> <p>1650'</p> <p>GRIZZLY BEAR #2H ELEV. = 3716.3' LAT. = 32°51'43.160"N (NAD83) LONG. = 104°07'18.485"W</p> <p>SURFACE LOCATION 150'</p> <p>SW CORNER LAT. = 32°51'27.605"N LONG. = 104°08'18.002"W</p> <p>S O CORNER LAT. = 32°51'27.721"N LONG. = 104°07'47.371"W</p> <p>SE CORNER LAT. = 32°51'27.833"N LONG. = 104°07'16.761"W</p> <p>N89°38'07"E 2613.47 FT N89°38'18"E 2611.60 FT</p>				<p>¹⁷ OPERATOR CERTIFICATION</p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p>Signature _____ Date _____</p> <p>Printed Name _____</p> <p>¹⁸ SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision and that the same is true and correct to the best of my belief.</p> <p>MARCH 5, 2012</p> <p>Date of Survey _____</p> <p>Signature and Seal of Professional Surveyor _____</p> <p>Certificate Number _____ SURVEY NO. 801</p>	
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SECTION 1, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO



010 50 100 200

SCALE 1" = 100'

DIRECTIONS TO LOCATION

FROM STATE HWY. 82 AND CR. 209 GO NORTH ON CR. 209 4.9 MILES STAY RIGHT ON CALICHE LEASE ROAD AND GO EAST 0.8 MILES. TURN RIGHT AND GO SOUTH 0.7 MILES BEND LEFT AND GO EAST 631' TO A PROPOSED ROAD SURVEY AND FOLLOW FLAGS SOUTH 117' TO THE NW. COR. OF PROPOSED PAD FOR THIS LOCATION.

MURCHISON OIL & GAS, INC.

GRIZZLY BEAR #2H

LOCATED 1550 FT. FROM THE SOUTH LINE
AND 150 FT. FROM THE EAST LINE OF
SECTION 1, TOWNSHIP 17 SOUTH,
RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

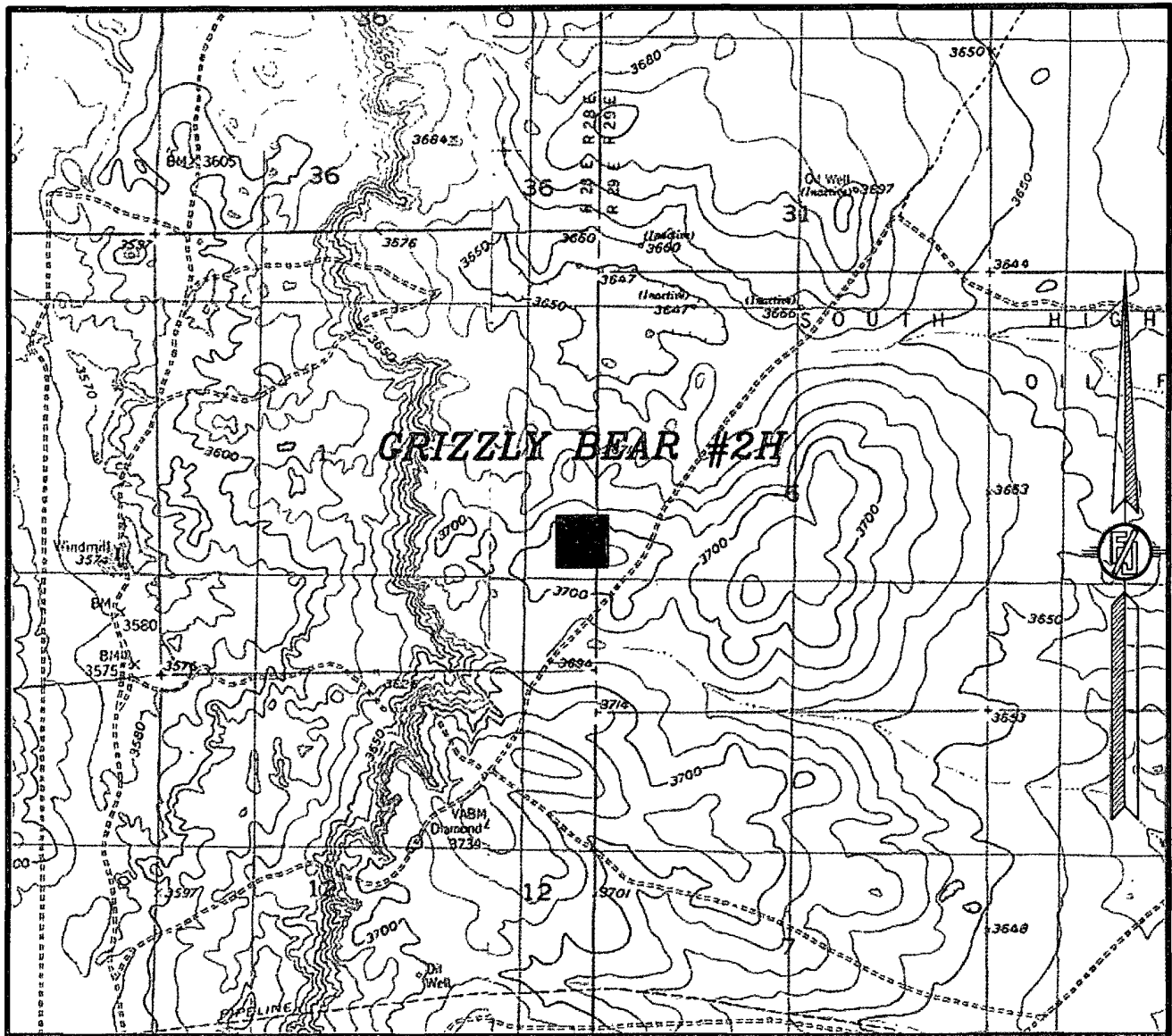
SURVEY NO. 801

MARCH 5, 2012

MADRON SURVEYING, INC. 301 SOUTH CANAL
(575) 234-3341 **CARLSBAD, NEW MEXICO**

301 SOUTH CANAL
(575) 234-3341

SECTION 1, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LOCATION VERIFICATION MAP



USGS QUAD MAP:
RED LAKE
RED LAKE SE

NOT TO SCALE

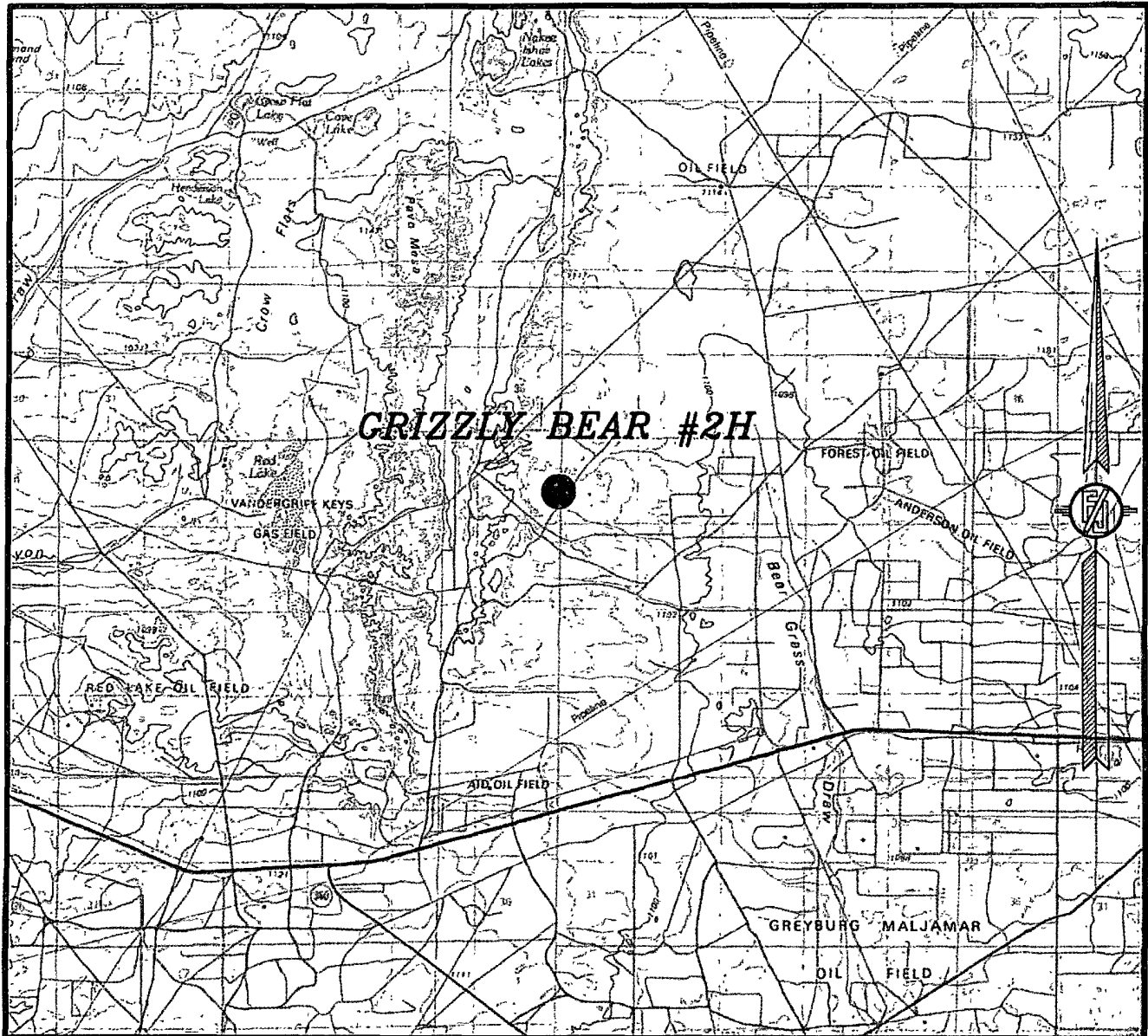
MURCHISON OIL & GAS, INC.
GRIZZLY BEAR #2H
LOCATED 1550 FT. FROM THE SOUTH LINE
AND 150 FT. FROM THE EAST LINE OF
SECTION 1, TOWNSHIP 17 SOUTH,
RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

MARCH 5, 2012

SURVEY NO. 801

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 1, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
VICINITY MAP



NOT TO SCALE

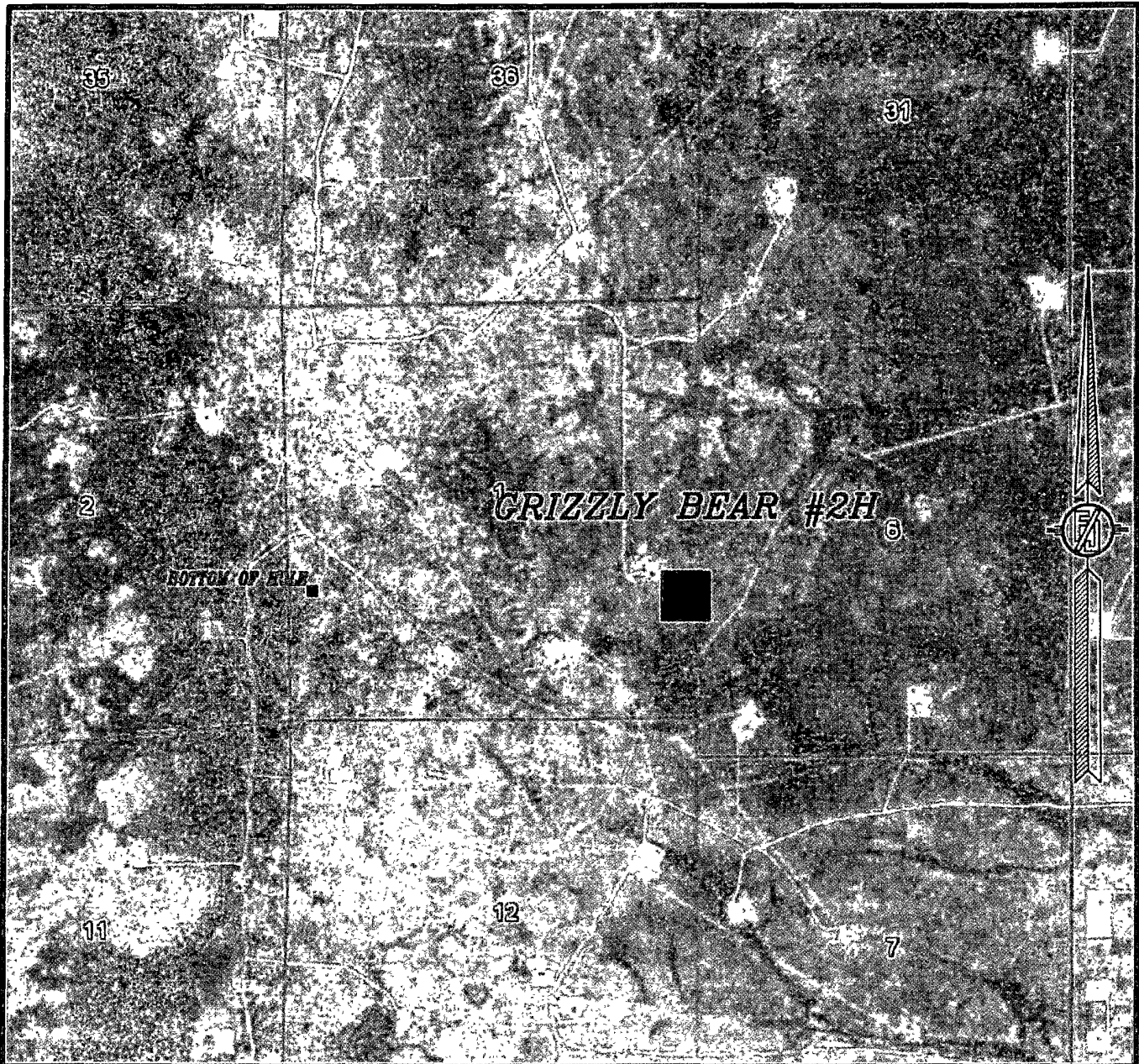
MURCHISON OIL & GAS, INC.
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SECTION 1, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AERIAL PHOTO



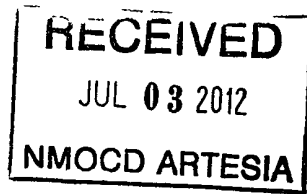
NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
JUNE 2011

MURCHISON OIL & GAS, INC.
GRIZZLY BEAR #2H
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MARCH 5, 2012

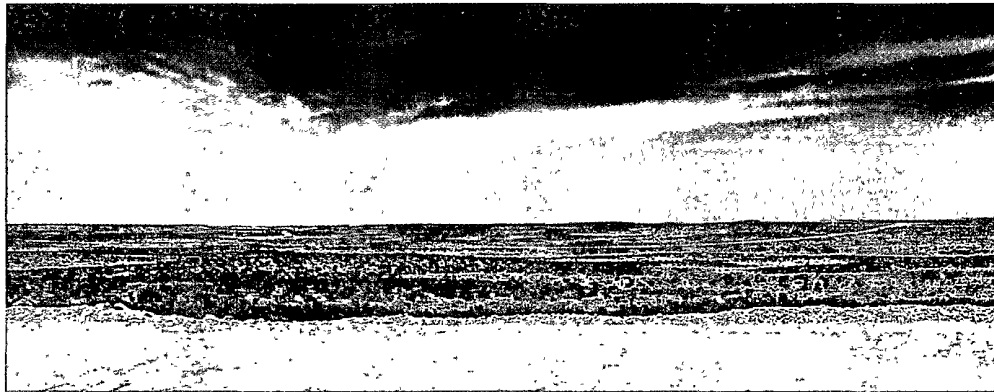
SURVEY NO. 801

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO



July 2012

**Revised C-144 Permit Package for
Grizzly Bear #2H Drilling Pit
Section 1 T17S R28E Eddy County NM**



**Prepared for
Murchison Oil & Gas, Inc.
Plano, Texas**

**Prepared by
R.T. Hicks Consultants, Ltd.
Albuquerque, New Mexico**

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

July 2, 2012

Mr. Mike Bratcher
NMOCD District 2
811 South First Street
Artesia, New Mexico 88210

RE: Grizzly Bear State Com 2H, 30-015-40042 - Unit L Section 1 T17S R28E
Drilling Pit

Dear Mike:

As we discussed today, for the above-referenced well, attached are:

- C-144 Form for the Grizzly Bear 2H drilling pit
- Supplemental information to support the C-144

A completely separate submission for the Grizzly Bear State Com 2H workover pit will be sent to you and copied to Daniel Sanchez. This application for the drilling pit is straight-forward but the movement of frac flow back from Grizzly to other pits may need to be permitted in a manner similar to what we did for the XTO Nash Draw 29 pit.

We would like this permit reviewed as soon as possible. Thanks again for all your hard work.

Sincerely,
R.T. Hicks Consultants



Randall Hicks
Principal

Copy: Murchison Oil and Gas, Inc.
New Mexico State Land Office

C-144 and Site Specific Information for Drilling Pit

R.T. Hicks Consultants, Ltd.

901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104