

# Berry Petroleum Company

Brundage Canyon Field

4000 South 4028 West  
Route 2 Box 7735  
Roosevelt, UT 84066

Ph. (435) 722-1325  
Fax: (435) 722-1321  
[www.bry.com](http://www.bry.com)

May 11, 2007

State Of Utah  
Division of Oil, Gas & Mining  
1594 W. North Temple,  
Suite 1210 Box 145801  
Salt Lake City, Utah 84114-5801

Re: Application for Permit to Drill

Attached please find one (1) original and (1) copy of an *Application for Permit to Drill* on the following  
Fee surface, Fee mineral well. **Please replace this new APD for the old LC FEE 1-12-57**

**LC FEE 1-12D-57**

If you have any questions regarding this "APD" please call me at (435) 722-1325 or (435) 823-1808.

Thank you,

Shelley E. Crozier  
Regulatory & Permitting Specialist  
[sec@bry.com](mailto:sec@bry.com)

RECEIVED

MAY 14 2007

DIV. OF OIL, GAS & MINING

STATE OF UTAH  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

FORM 3

AMENDED REPORT   
(highlight changes)

<b>APPLICATION FOR PERMIT TO DRILL</b>		5. MINERAL LEASE NO: FEE	6. SURFACE: FEE
1A. TYPE OF WORK: DRILL <input checked="" type="checkbox"/> REENTER <input type="checkbox"/> DEEPEN <input type="checkbox"/>		7. IF INDIAN, ALLOTTEE OR TRIBE NAME:	
8. TYPE OF WELL: OIL <input checked="" type="checkbox"/> GAS <input type="checkbox"/> OTHER _____ SINGLE ZONE <input checked="" type="checkbox"/> MULTIPLE ZONE <input type="checkbox"/>		8. UNIT or CA AGREEMENT NAME: N/A	
2. NAME OF OPERATOR: <b>BERRY PETROLEUM COMPANY</b>		9. WELL NAME and NUMBER: LC FEE 1-12D-57	
3. ADDRESS OF OPERATOR: RT. 2 BOX 7735 CITY ROOSEVELT STATE UTAH ZIP 84066		PHONE NUMBER: (435)722-1325	
4. LOCATION OF WELL (FOOTAGES) 533091X 4434858Y 40.065224 -110.611978		10. FIELD AND POOL, OR WILDCAT: LAKE CANYON	
AT SURFACE: 1060' FNL, 380' FEL NAD 27 532983X 4435010Y 40.066592 -110.613236 40.065306 LAT AT PROPOSED PRODUCING ZONE: BHL: 559' FNL, 733' FEL 110.611994 LONG		11. QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: (NE/NE) SEC. 12, T.5S., R.7W. U.S.B.&M.	
14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE: 21.1 MILES FROM DUCHESNE, UTAH		12. COUNTY: DUCHESNE	13. STATE: UTAH
15. DISTANCE TO NEAREST PROPERTY OR LEASE LINE (FEET) 380'	16. NUMBER OF ACRES IN LEASE: 80.00	17. NUMBER OF ACRES ASSIGNED TO THIS WELL: 40	
18. DISTANCE TO NEAREST WELL (DRILLING, COMPLETED, OR APPLIED FOR) ON THIS LEASE (FEET) N/A	19. PROPOSED DEPTH: 4840' TVD	20. BOND DESCRIPTION: RLB0005651	
21. ELEVATIONS (SHOW WHETHER DF, RT, GR, ETC.): 6585' GR	22. APPROXIMATE DATE WORK WILL START: REFER TO BPC SOP PLAN	23. ESTIMATED DURATION: REFER TO BPC SOP PLAN	

24. PROPOSED CASING AND CEMENTING PROGRAM: SEE ATTACHMENT

SIZE OF HOLE	CASING SIZE, GRADE, AND WEIGHT PER FOOT	SETTING DEPTH	CEMENT TYPE, QUANTITY, YIELD, AND SLURRY WEIGHT		
12 1/4	8 5/8 J-55 STC 24#	320' +	TYPE III + ADDITIVES	130 SX	1.43 CF/SK 14.3 PPG
7 7/8	5 1/2 J-55 LTC 15.5#	4840'	HI-FILL MODIFIED+ADDITIVES	250 SX	3.46 CF/SK 11.0 PPG
			65/35 POZ+6% GEL+3% KCL+ADDITIVES	300 SX	1.92 CF/SK 13.0 PPG
NOTE: ACTUAL VOLUMES PUMPED WILL BE CALIPER HOLE VOLUME+25% EXCESS					

25. ATTACHMENTS: SEE CEMENT RECOMMENDATION ATTACHMENT

VERIFY THE FOLLOWING ARE ATTACHED IN ACCORDANCE WITH THE UTAH OIL AND GAS CONSERVATION GENERAL RULES:

<input checked="" type="checkbox"/> WELL PLAT OR MAP PREPARED BY LICENSED SURVEYOR OR ENGINEER	<input checked="" type="checkbox"/> COMPLETE DRILLING PLAN (BPC SOP ON FILE WITH STATE)
<input checked="" type="checkbox"/> EVIDENCE OF DIVISION OF WATER RIGHTS APPROVAL FOR USE OF WATER	<input type="checkbox"/> FORM 5, IF OPERATOR IS PERSON OR COMPANY OTHER THAN THE LEASE OWNER

NAME (PLEASE PRINT) SHELLEY E. CROZIER TITLE REGULATORY & PERMITTING SPECIALIST

SIGNATURE *Shelley E. Crozier* DATE 05/10/07

(This space for State use only)

API NUMBER ASSIGNED: 43-013-33656

Approved by the  
Utah Division of  
Oil, Gas and Mining

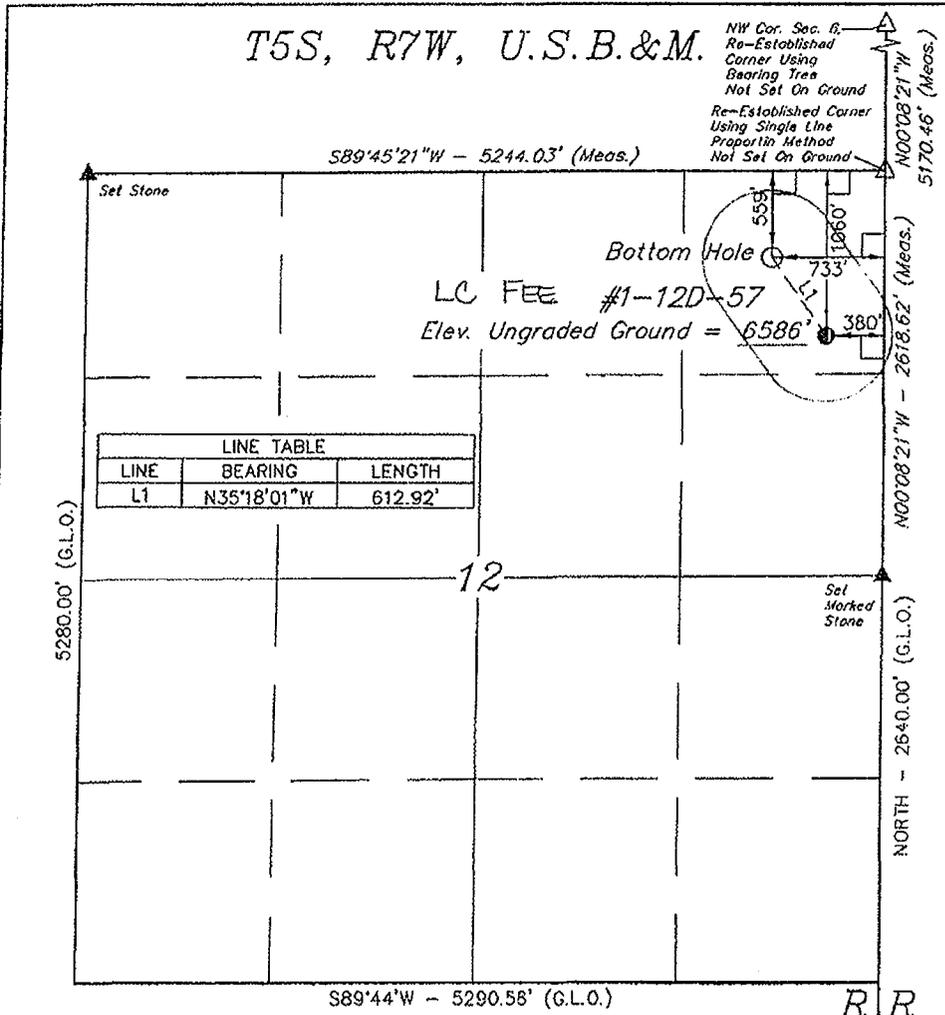
RECEIVED  
MAY 25 2007

(See Instr. \_\_\_\_\_)  
Date: 0502-07  
By: *[Signature]*

DIV. OF OIL, GAS & MINING

(11/2001)

T5S, R7W, U.S.B.&M.



NW Cor. Sec. 6.  
Re-Established  
Corner Using  
Bearing Tree  
Not Set On Ground  
Re-Established Corner  
Using Single Line  
Proportion Method  
Not Set On Ground

LINE TABLE		
LINE	BEARING	LENGTH
L1	N35°18'01"W	612.92'

**LEGEND:**

- └ = 90° SYMBOL
- = PROPOSED WELL HEAD.
- ▲ = SECTION CORNERS LOCATED.

(NAD 83)  
 LATITUDE = 40°03'54.95" (40.065264)  
 LONGITUDE = 110°36'45.74" (110.612706)  
 (NAD 27)  
 LATITUDE = 40°03'55.10" (40.065306)  
 LONGITUDE = 110°36'43.18" (110.611994)

R  
7  
W

R  
6  
W

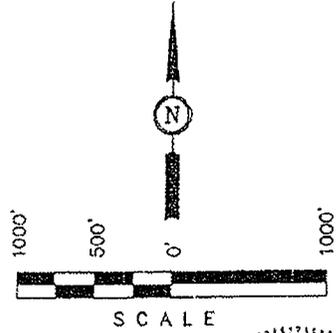
**BERRY PETROLEUM COMPANY**

Well location, LC FEE #1-12D-57, located as shown in the NE 1/4 NE 1/4 of Section 12, T5S, R7W, U.S.B.&M., Duchesne County, Utah.  
**BASIS OF ELEVATION**

BENCH MARK (M67) LOCATED IN THE SW 1/4 OF SECTION 9, T5S, R4W, U.S.B.&M. TAKEN FROM THE DUCHESNE SE QUADRANGLE, UTAH, DUCHESNE COUNTY, 7.5 MINUTE QUAD. (TOPOGRAPHIC MAP) PUBLISHED BY THE UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY. SAID ELEVATION IS MARKED ON CAP AS BEING 6097 FEET.

**BASIS OF BEARINGS**

BASIS OF BEARINGS IS A G.P.S. OBSERVATION.



**CERTIFICATE**  
 THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.  
 [Signature]  
 REGISTERED LAND SURVEYOR  
 REGISTRATION NO. 161318  
 STATE OF UTAH

REVISED: 04-11-07

<b>UINTAH ENGINEERING &amp; LAND SURVEYING</b> 85 SOUTH 200 EAST - VERNAL, UTAH 84078 (435) 789-1017		
SCALE 1" = 1000'	DATE SURVEYED: 01-05-07	DATE DRAWN: 01-19-07
PARTY J.W. A.A. L.K.		REFERENCES G.L.O. PLAT
WEATHER COLD		FILE BERRY PETROLEUM COMPANY

SELF-CERTIFICATION STATEMENT

The following self-certification statement is provided per federal requirements dated June 15, 1988.

Please be advised that Berry Petroleum Company is considered to be the operator of the following well.

LC FEE 1-12D-57

NE 1/4, NE 1/4, 1060' FNL, 380' FEL, Section 12, T. 5 S., R. 7 W., U.S.B.&M.

BHL: NE 1/4, NE 1/4, 559' FNL 733' FEL

Lease: FEE

Duchesne, County, Utah

Berry Petroleum Company is responsible under the terms of the lease for the operations conducted upon the lease lands.



Shelley E. Crozier  
Regulatory & Permitting Specialist  
Berry Petroleum Company  
4000 South 4028 West  
Route 2, Box 7735  
Roosevelt, Utah 84066  
435-722-1325

BERRY PETROLEUM COMPANY  
LC FEE 1-12D-57

Surface location NE 1/4, NE 1/4, 1060' FNL, 380' FEL, Section 12, T. 5 S., R. 7 W., U.S.B.&M.  
BHL: NE ¼, NE ¼, 559' FNL 733' FEL  
Duchesne County, Utah

ONSHORE ORDER NO. 1

DRILLING PROGRAM

1,2 **Estimated Tops of Geological Markers and Formations Expected to Contain Water, Oil and Gas and Other Minerals**

<b>FORMATION</b>	<b>DRILL DEPTH * @ BHL (TVD)</b>	<b>DRILL DEPTH * @ SHL (TVD)</b>
Uinta	Surface	On Surface
Green River	362'	349'
Green River Upper Marker	785'	773'
Mahogany	1,446'	1,439'
Tgr3 Marker	2,466'	2,459'
Douglas Creek	3,242'	3,225'
*Black Shale	3,877'	3,866'
*Castle Peak	4,131'	4,265'
Uteland Butte Ls.	4,513'	4,503'
Wasatch	4,748'	4,739'
TD	4,848'	4,840'
Base of Moderately Saline Water (less than 10,000 ppm)	6,602'	6,659'

\*PROSPECTIVE PAY

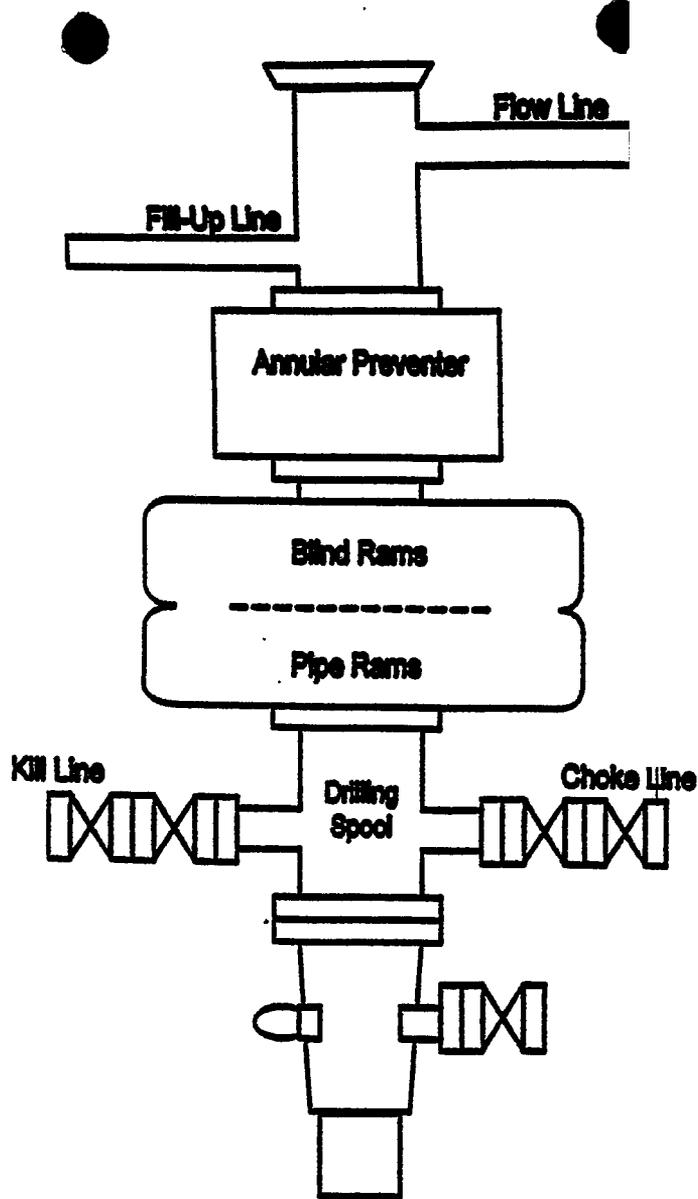
**Berry is locating the well at the surface location and directionally drilling from this location to minimize surface disturbance and Berry will be able to utilize the existing road and pipelines in the area.**

**Furthermore, Berry hereby certifies that it is the sole working interest owner with 460 feet of the entire directional well bore and the remainder of the section.**

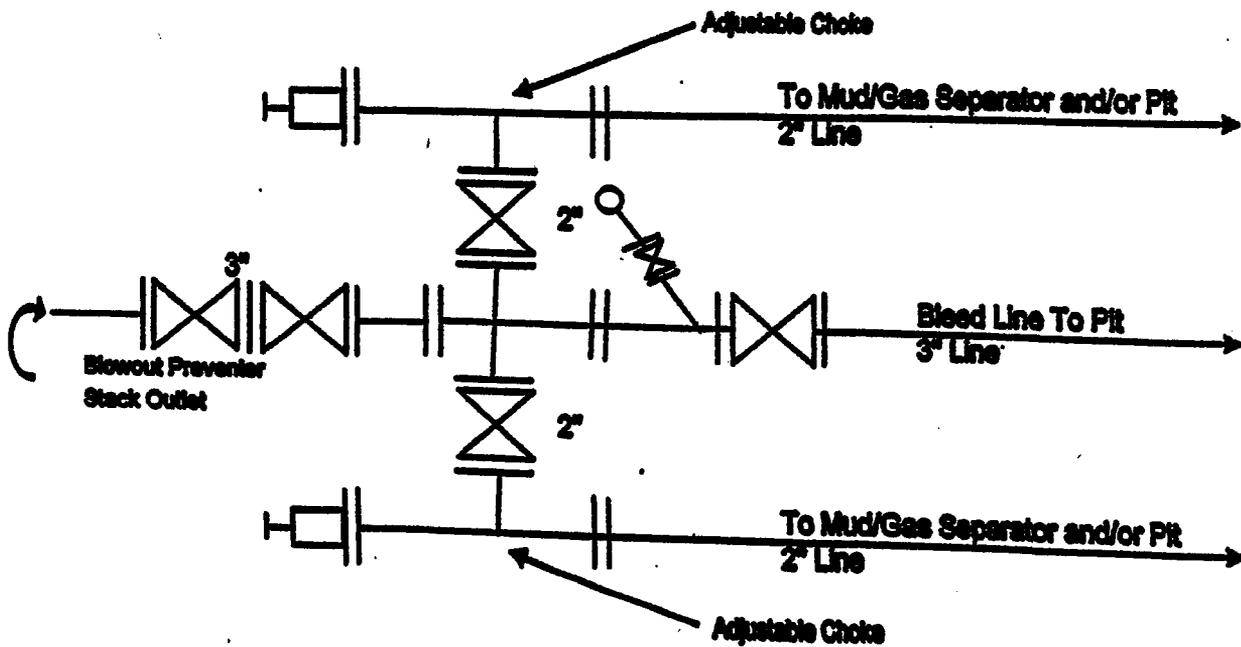
3 **Pressure Control Equipment : (Schematic Attached)**

The BOP and related equipment shall meet the minimum requirements of Onshore Oil and Gas Order No. 2 for equipment and testing requirements, procedures, etc. A 2M system will be utilized. The attached diagram depicts the use of an annular in conjunction with double rams. However, an annular, double rams or both may be used depending on the drilling rig contracted. Chart recorders will be used for all pressure tests. Test charts, with individual test results identified, shall be maintained on location while drilling and shall be made available to representative upon request.

# BOP Diagram



## 2,000 PSI Choke Manifold Equipment



Berry Petroleum Company  
 Drilling Program  
 LC FEE 1-12D-57  
 Duchesne County, Utah  
 Page Two

The anticipated bottom hole pressure will be less than 3,000 psi.

<u>Depth Intervals</u>	<u>BOP Equipment</u>
0 – 320'+	No Pressure Control
320'+ – 4840'	9" 2000# Ram Type BOP 9" 2000# Annular BOP

**4 Proposed Casing and Cementing Program**

The proposed Casing Program will be as follows:

<u>Purpose</u>	<u>Depth</u>	<u>Hole Size</u>	<u>Casing Size</u>	<u>Type</u>	<u>Connection</u>	<u>Weight</u>
Surface	320'+	12 1/4"	8-5/8"	J-55	ST&C	24#
Production	4840'	7-7/8"	5-1/2"	J-55	LT&C	15.5#
<u>Surface</u>	<u>Fill</u>	<u>Type &amp; Amount</u>				

**SEE ATTACHED CEMENT PROCEDURES**

<u>Production</u>	<u>Type &amp; Amount</u>
-------------------	--------------------------

**SEE ATTACHED CEMENT PROCEDURES**

Production casing will be cemented to surface. For production casing, actual cement volumes will be determined from the caliper log plus a minimum of 25% excess.

**5 Drilling Fluids Program**

<u>Interval</u>	<u>Weight</u>	<u>Viscosity</u>	<u>Fluid Loss</u>	<u>Remarks</u>
0' – 320'+	8.6	27	NC	Spud Mud or air
320'+-4840'	8.6	27	NC	KCL Water

**6 Evaluation Program**

Logging Program:	HRI-GR-SP with SDL-DSN-PE: surface casing to TD. Preserve samples from all show intervals.
Sampling:	10' dry cut samples: Douglas Creek to TD. Preserve samples From all show intervals.
Surveys:	As deemed necessary
Mud Logger:	As deemed necessary
Drill Stem Tests:	As deemed necessary
Cores:	As deemed necessary

**7 Abnormal Conditions**

No abnormal temperatures or pressures or other hazards are anticipated.

**8 Anticipated Starting Dates and Notification of Operations**

Drilling Activity:

Anticipated Commencement Date:	Upon approval of the APD.
Drilling Days:	Approximately 6 days.
Completion Days:	Approximately 7 days.

BERRY PETROLEUM COMPANY  
LC FEE 1-12D-57

Surface location NE 1/4, NE 1/4, 1060' FNL, 380' FEL, Section 12, T. 5 S., R. 7 W., U.S.B.&M.  
BHL: NE 1/4, NE 1/4, 559' FNL 733' FEL  
Duchesne County, Utah

ONSHORE ORDER NO. 1

MULTI POINT SURFACE USE & OPERATIONS PLAN

**1 Existing Roads**

To reach the Berry Petroleum Company well, LC FEE 1-12D-57, in Section 12-T5S-R7W:

Start in Duchesne, Utah. Proceed west on US Highway 40. Travel west 8.3 miles. Turn south and then west 5.7 miles. Keep proceeding south 7.0 miles to the LC Fee 1-12D-57 access road. Turn southwest and go 0.1 +/- miles to the LC Fee 1-12D-57 location.

The existing oilfield service road may need some surface material to prevent or repair holes in the road due to heavy truck traffic during the drilling and completion operation. If repairs are made the operator will secure material from private sources.

Please see the attached map for additional details.

**2 Planned Access Road**

See Topographic Map "B" for the location of the proposed access road.

**3 Location of Existing Wells**

See Topographic Map "C" for the location of existing wells within a 1 mile radius.

**4 Location of Tank Batteries, Production Facilities and Production Gathering and Service Lines**

All permanent (on site for six months or longer) structures constructed or installed will be painted a flat, non-reflective, earth tone color to match one of the standard environmental colors, as determined by the five state Rocky Mountain Inter-Agency Committee. All facilities will be painted within six months of installation. Facilities required to comply with the Occupational Safety and Health Act (OSHA) will be excluded. The required paint color is desert brown (10YR 6/4) unless otherwise designated by the Authorized Officer.

A containment dike will be constructed completely around those production facilities which contain fluids (i.e., production tanks, produced water tanks). This dike will be constructed of compacted subsoil, be impervious, hold 100% of the capacity of the largest tank. The site specific APD will address additional capacity if such is needed due to environmental concerns. The use of topsoil for the construction of dikes will not be allowed. If a Spill Prevention, Control, and Countermeasure (SPCC) Plan is required by the Environmental Protection Agency, the containment dike may be expanded with the Authorized Agency Officer's approval to meet SPCC requirements.

A description of the proposed pipeline and a map illustrating the proposed route is attached.

All site security guidelines identified in Federal regulation 43 CFR 3126.7, will be adhered to. All off-lease storage, off-lease measurement, or commingling on-lease or off-lease production will have prior written approval from the Authorized Agency Officer.

Gas meter runs will be located approximately 100 feet from the wellhead. Where necessary, the gas line will be anchored down from the wellhead to the meter.

#### **5 Location and Type of Water Supply**

*Water for the drilling and completion will be pumped or trucked from the Berry source wells located in Sec. 23, T5S, R5W or Sec. 24, T5S, R5W, permit # 43-11041, or from Douglas E. & Yordis Nielsen source well located in Sec. 12, T5S, R6W, permit # 43-1628, or from Duchesne City Culinary Water Dock located in Sec. 1, T4S, R5W or from East Duchesne Water, Arcadia Feedlot, Sec. 28, T3S, R3W or from Petroglyph Operating Company 08-04 Waterplant, Sec. 8, T5S, R3W.*

#### **6 Source of Construction Materials**

All construction materials for this location site and access road shall be borrow material accumulated during construction of the location site and access road.

Additional gravel or pit lining material will be obtained from a private source.

The use of materials under Authorized Agency jurisdiction will conform with 43 CFR 3610.2-3.

#### **7 Methods of Handling Waste Materials**

Drill cuttings will be contained and buried in the reserve pit.

Drilling fluids, including salts and chemicals, will be contained in the reserve pit. Upon termination of drilling and completion operations, the liquid contents of the reserve pit will be used at the next drill site or will be removed and disposed of at an approved waste disposal facility within 180 days after drilling is terminated. Upon well completion, weather permitting (summer months), any hydrocarbons in the pit shall be removed in accordance with 43 CFR 3162.7-1.

Unless otherwise specified, the reserve pit will be constructed on the location and will not be located within natural drainages, where a flood hazard exists or surface runoff will destroy or damage the pit walls. The reserve pit will be constructed so that it will not leak, break, or allow discharge of liquids.

If it is determined at the onsite that a pit liner is necessary, the reserve pit will be lined with a synthetic reinforced liner a minimum of 12 millimeters thick, with sufficient bedding used to cover any rocks. The liner will overlap the pit walls and be covered with dirt and/or rocks to hold it in place. Trash or scrap that could puncture the liner will not be disposed of in the pit.

Reserve pit leaks are considered an unacceptable and undesirable event and will be orally reported to the Authorized Agency Officer.

After first production, produced wastewater will be trucked to one of the following approved waste water disposal sites: R.N. Industries, Inc. Sec. 4, T2S, R2W, Bluebell; MC & MC Disposal Sec. 12, T6S, R19E, Vernal; LaPoint Recycle & Storage Sec. 12, T5S, R19E, LaPoint or Water Disposal Inc. Sec. 32, T1S, R1W, Roosevelt, used in the operations of the field or, unless prohibited by the Authorized Officer, confined to the approved pit or storage tank for a period not to exceed 90 days. The use of such pit is hereby approved as part of this Application for Permit to Drill.

Production fluids will be contained in leak-proof tanks. All production fluids will be disposed of at approved disposal sites. Produced water, oil, and other byproducts will not be applied to roads or well pads for control of dust or weeds. The indiscriminate dumping of produced fluids on roads, well sites, or other areas will not be allowed.

Any spills of oil, gas, salt water, or other noxious fluids will be immediately cleaned up and removed to an approved disposal site.

A chemical portable toilet will be furnished with the drilling rig.

Garbage, trash, and other waste materials will be collected in a portable, self-contained, fully enclosed trash cage during operations. Trash will not be burned on location.

All debris and other waste materials not contained in the trash cage will be cleaned up and removed from the location promptly after removal of the completion rig (weather permitting).

Any open pits will be fenced during the operations. The fencing will be maintained with best efforts until such time as the pits are backfilled.

No chemicals subject to reporting under SARA Title III (hazardous materials) in an amount equal to or greater than 10,000 pounds will be used, produced, stored, transported, or disposed of annually in association with the drilling, testing, or completing of wells. Furthermore, extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, will not be used, produced, stored, transported, or disposed of in association with the drilling, testing, or completing of wells within these areas.

## **8 Ancillary Facilities**

There are no ancillary facilities planned for at this time and none are foreseen in the future.

## **9 Wellsite Layout**

The attached Location Layout diagram describes drill pad cross-sections, cuts and fills, and locations of the mud tanks, reserve pit, pipe racks, trailer parking, spoil dirt stockpile(s) and surface material stockpile(s)

## 10 Plans for Restoration of the Surface

The dirt contractor will be provided with approved copies of the Surface Use Plan prior to construction activities.

Upon well completion, within a reasonable time, the location and surrounding area will be cleared of all unused tubing, materials, trash, and debris not required for production.

Abandoned well sites, roads, and other disturbed areas will be restored as near as practical to their original condition. Where applicable, these conditions may include the re-establishment of irrigation systems, the re-establishment of appropriate soil conditions, and the re-establishment of vegetation as specified.

All disturbed areas will be re-contoured to the approximate natural contours.

Any drainage rerouted during the construction activities shall be restored to its original line of flow or as near as possible.

Prior to backfilling the reserve pit, the fence surrounding the reserve pit will be removed. The pit liner will be folded, torn, and perforated after the pit dries and prior to backfilling the reserve pit.

Before any dirt work associated with reserve pit restoration takes place, the reserve pit shall be as dry as possible. All debris in it will be removed. Other waste and spoil materials will be disposed of immediately upon completion of operations. The reserve pit will be reclaimed within 180 days from the date of well completion, weather permitting. Once reclamation activities have begun, the activities will be completed within 30 days.

After the reserve pit has been reclaimed, no depressions in the soil covering the reserve pit will be allowed. The object is to keep seasonal rainfall and runoff from seeping into the soil used to cover the reserve pit. Diversion ditches and water bars will be used to divert runoff as needed.

Prior to the construction of the location, the top 12 inches of soil material (if present) will be stripped and stockpiled. Placement of the topsoil is noted on the location plat attached. Topsoil shall be stockpiled separately from subsoil materials. Topsoil salvaged from the reserve pit shall be stockpiled separately near the reserve pit.

When restoration activities have been completed, the location site and new access road cuts and shoulders shall be reseeded. Prior to reseeding, all disturbed areas, including the old access road, will be scarified and left with a rough surface.

The Authorized Agency Officer shall be contacted for the required seed mixture. Seed will be broadcast and the amount of seed mixture per acre will be doubled. The seeded area will then be "walked" with a dozer to assure coverage of the seeds. The seed mixture will reflect the recommendation from the Archeology study done.

At final abandonment, all casing shall be cut off at the base of the cellar or 3 feet below final restored ground level, whichever is deeper, and cap the casing with a metal plate a minimum of

0.25 inches thick. The cap will be welded in place and the well location and identity will be permanently inscribed on the cap. The cap also will be constructed with a weep hole.

**11 Surface Ownership**

**Division of Wildlife Resources  
1594 W. North Temple, Suite 2110  
Salt Lake City, UT 84114-6301  
1-801-538-4792**

**12 Other information**

All lease and/or unit operations will be conducted in such a manner that full compliance is made with all applicable laws, regulations, Onshore Oil and Gas Orders, the approved Plan of Operations, and any applicable Notice to Lessees. The operator is fully responsible for the actions of his subcontractors. A copy of these conditions will be furnished to the field representative to ensure compliance.

The operator will control noxious weeds along access road use authorizations, pipeline route authorizations, well sites or other applicable facilities. A list of noxious weeds may be obtained from the Authorized Agency or the appropriate County Extension Office.

Drilling rigs and/or equipment used during drilling operations on this location will not be stacked or stored on administered lands after the conclusion of drilling operations or at any other time without authorization by the Authorized Agency Officer. If authorization is obtained, such storage is only a temporary measure.

Travel is restricted to only approved travel routes.

A class III archaeological survey will be conducted on all lands, unless landowner waives rights for archaeological survey. All personnel will refrain from collecting artifacts and from disturbing any significant cultural resources in the area. The operator is responsible for informing all persons in the area who are associated with this project that they may be subject to prosecution for knowingly disturbing historic or archaeological sites or for collecting artifacts. All vehicular traffic, personnel movement, construction, and restoration activities shall be confined to the areas examined, as referenced in the archaeological report, and to the existing roadways and/or evaluated access routes. If historic or archaeological materials are uncovered during construction, the Operator is to immediately stop work that might further disturb such materials and contact the Authorized Agency Officer.

Within five working days, the Authorized Agency Officer will inform the operator as to:

Whether the materials appear eligible for the National Historic Register of Historic Places;

The mitigation measures the operator will likely have to undertake before the site can be used (assuming in-situ preservation is not necessary); and,

The time frame for the Authorized Officer to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Officer, that the findings of the Authorized Officer are correct and that the mitigation measures are appropriate.

If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the Authorized Agency Officer and/or the surface owner will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise the operator will be responsible for mitigation costs. The Authorized Agency Officer and/or the surface owner will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the Authorized Agency Officer that required mitigation has been completed, the Operator will then be allowed to resume construction.

All Surface Use Conditions of Approval associated with the Landowner Surface Use Agreement and Environmental Analysis Mitigation Stipulations will be adhered to.

All well site locations will have appropriate signs indicating the name of the operator, the lease serial number, the well name and number, the survey description of the well (either footages or the quarter/quarter section, the section, township, and range).

**13 Operator's Representative and Certification**

A) Representative  
NAME: Shelley E. Crozier  
ADDRESS: Berry Petroleum Company  
4000 South 4028 West  
Route 2, Box 7735  
Roosevelt, Utah 84066  
PHONE: 435-722-1325

All lease and/or unit operations will be conducted in such a manner that full compliance is made with all applicable laws, regulations and onshore oil and gas orders. The operator is fully responsible for the actions of its subcontractors. A copy of these conditions will be furnished to the field representative to ensure compliance.

The drilling permit will be valid for a period of one year from the date of approval. After permit termination, a new application will be filed for approval for any future operations.

B) Certification:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge and belief, true and correct; and that the work associated with the operations proposed herein will be performed by Berry Petroleum Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

May 10, 2007  
DATE

Shelley E. Crozier  
Shelley E. Crozier  
Regulatory & Permitting Specialist  
Berry Petroleum Company

LAKE CANYON PROJECT,  
DUCHESNE COUNTY, UTAH:  
RESULTS OF AN INTENSIVE CULTURAL  
RESOURCES INVENTORY



UTAH STATE PROJECT NUMBER: **U-06-UI-1538i,s**

*Prepared for:*

Berry Petroleum Company  
950 17<sup>th</sup> Street, Suite 2400  
Denver, CO 80202

*Written By:*

Gordon C. Tucker Jr., Ph.D.



URS Corporation  
8181 E. Tufts Avenue  
Denver, Colorado 80237

Project No.: 22239100.00001

January 3, 2007

**COVER PAGE**  
**Must Accompany All Project Reports**  
**Submitted to Utah SHPO**



**Project Name:** Berry Petroleum Company Lake Canyon Project **State Proj. No.** U-06-UI-1538i,s

**Report Date:** January 3, 2007 **County(ies):** Duchesne

**Principal Investigator:** Robert J. Mutaw, Ph.D.

**Field Supervisor(s):** Gordon C. Tucker Jr., Ph.D.

**Records search completed at what office(s)?** Utah State Historical Society

**Record search date(s):** October 23, 2006; November 7, 2006;

**Area Surveyed – Intensive (<15 m intervals):** 1,074 acres **Recon/Intuitive (>15 m intervals):** \_\_\_\_\_ acres

**7.5' Series USGS Map Reference(s):** Rabbit Gulch, UT (1980); Buck Knoll, UT (1962)

SITES REPORTED	COUNT / SMITHSONIAN SITE NUMBERS
Archaeological Sites	<u>3/42DC2258, 42DC2259, 42DC2260</u>
Revisits (no inventory form update)	<u>0</u>
Updates (updated IMACS site inventory form attached)	<u>0</u>
New recordings (IMACS site inventory form attached)	<u>3/42DC2258, 42DC2259, 42DC2260</u>
Total Count of Archaeological Sites	<u>3</u>
Historic Structures (USHS 106 site info form attached)	<u>0</u>
Total National Register Eligible Sites	<u>1/42DC2260</u>

- Checklist of Required Items, attached**
1.  Copy of the final report
  2.  Copy of 7.5' Series USGS map with surveyed/excavated area clearly identified
  3. Completed IMACS site inventory forms
    - Parts A and B or C
    - IMACS Encoding Form
    - Site Sketch Map
    - Photographs
    - Copy of the appropriate 7.5' Series USGS map with site location marked and Smithsonian site number clearly labeled
  4.  Completed "Cover Page" accompanying final report and survey materials

*For UDSH office use only*

## **Abstract**

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On behalf of Berry Petroleum Company (Berry), URS Corporation conducted an intensive cultural resources inventory of approximately 807 acres for actual or likely oil/gas wells and 58,150 feet (267 acres) of new or upgraded access roads on Ute tribal lands and State of Utah Division of Wildlife Resources lands in the Lake Canyon area, Duchesne County, Utah. Three historic sites (42DC2258, 42DC2259, and 42DC2260) and ten isolated finds (IF) were documented. One site, the Deerhorn No. 1 Gilsonite Mine (42DC2260), is considered eligible for listing in the National Register of Historic Places (NRHP), but it is unlikely to be adversely affected by project activities. The other three sites and all of the IFs have been recommended as not eligible for listing in the NRHP. Because the project will not affect any historic properties, it was recommended that it be allowed to proceed as planned.

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Berry Petroleum Company (Berry) proposes to open a new oil field in the Lake Canyon area of Duchesne County, Utah. Actual or likely wells and connecting access roads are found on lands administered by the Ute Indian Tribe (Tribe) and the State of Utah, Division of Wildlife Resources (DWR). The Tribe is obliged under Section 106 of the National Historic Preservation Act (NHPA) of 1966 (P.L. 89-665, 16 U.S.C. 470 *et seq.*, as amended through 2000), and implementing regulations (36 CFR 800), to consider the effects of this project upon any historic properties, which are defined as districts, sites, buildings, structures, or objects that are included in or eligible for inclusion in the National Register of Historic Places (NRHP). In similar fashion, the DWR must take into account the effects of the undertaking on any historic property (DWR Administrative Rules R657-28-3). The Tribe and DWR required that Berry comply with the provisions of federal and state regulations. In turn, Berry has contracted with URS Corporation (URS) to conduct all necessary cultural resources studies for the project. Fieldwork was authorized through an access permit issued by the Tribe's Energy and Minerals Resource Division.

The study area (hereafter, the Area of Potential Effects or APE) is defined as a combination of the following areas: (1) 10 acres surrounding four new well pads—Tribal 16-30-46, Tribal 8-31-46, Tribal 15-31-46, and State 4-6-56; (2) approximately 767 acres where future wells might be placed; and (3) 200-foot (ft)-wide corridors along approximately 58,150 ft (11 miles) of new or upgraded roads to the well locations. An intensive cultural resources survey was conducted within the APE, which encompasses a total of approximately 1,074 acres.

The surveyed well locations and access roads are depicted on the Rabbit Gulch, UT (1980) and Buck Knoll, UT (1962) 7.5' USGS topographic quadrangle maps (Figures 1-1 and 1-2).

The archaeological survey was conducted on October 23 through November 3, 2006. The project principal investigator is Robert J. Mutaw, Ph.D., Cultural Resources Team Leader for the URS Denver office. Gordon C. Tucker Jr., Ph.D., URS Senior Archaeologist, conducted the fieldwork, assisted by Deborah Jensen, URS Staff Archaeologist GIS Specialist. Brad Pinnecoose and Leallen Blackhair, oil and gas technicians with the Energy and Minerals Division, accompanied Dr. Tucker and Ms. Jensen when on Tribal lands. Ms. Jensen completed the IMACS forms, prepared the site sketch maps, and illustrated the artifacts. Dr. Tucker prepared the report, which was reviewed for completeness and accuracy by Dr. Mutaw. Lynne Disette prepared the location maps, Jeanne DeFauw finalized the sketch maps, and Aileen Torres formatted the report.

This report describes the background, methods, and results of an intensive cultural resources survey of the APE. The report complies in form and contents with the Secretary of the Interior's Guidelines for Archaeological Documentation.

Human use of an area, today and in the past, is conditioned to a large extent by environmental parameters. The environment does not determine how and to what extent human groups will respond; rather, it provides opportunities for, and imposes constraints upon, human behavior, ameliorated to a greater or lesser extent by culture. To understand how human groups in an area adapted to a local situation, we must first understand the regional environmental milieu. A description of the present environment is followed by a discussion of past regional environmental conditions.

## **2.1 PRESENT ENVIRONMENT**

The project area is located south of the Uinta Basin, in the Tavaputs Plateau section of the Colorado Plateau physiographic province (McNab and Avers 1996). The underlying geological strata rise gradually upward south from the center of the Uinta Basin (McNab and Avers 1996), such that the area is distinguished by dipping ridge tops and deeply incised canyons (Loosle and Estes 2004). The area is underlain by approximately 20,000-25,000 ft of sedimentary deposits, which include Paleozoic to Late Cenozoic age marine and continental limestones, sandstones, and shales. Oil shale and other hydrocarbon deposits are found in the Cenozoic age Green River shales (Hintze 1980; Moyle 1981; Murphy 1981a).

Duchesne County is generally characterized by a semiarid to arid continental climate with four well-defined seasons. As measured at Duchesne, Utah, for the period 1906-2005, the average annual maximum and minimum temperatures are 60.4°F and 29.8°F, respectively (WRCC 2006). Summers are mild with occasional hot spells and most summer precipitation is associated with thunderstorms. Winters are cold but usually not severe. The average total annual precipitation is 9.51 inches, and August (1.23 inches) and November (0.53 inches) are the wettest and driest months, respectively. The average annual snowfall is 25.7 inches, more than 80 percent of which falls during December through March. The average growing season (the number of days between the last freeze in the spring and the first freeze in the fall, at a daily minimum temperature of 32°F) is 113 days (United States Department of Agriculture [USDA] 1959).

The project area is located within the juniper-pinyon and big sagebrush association of the Upper Sonoran life zone. Juniper, pinyon, black sagebrush, mountain brush, and various grasses historically dominated the endemic vegetation communities (McNab and Avers 1996). Willows and cottonwoods grow in the riparian zones, and pockets of Douglas fir are found on north-facing slopes in some areas. Following settlement by European-Americans in the mid-nineteenth century, the valley bottoms have been cultivated with hay grasses and alfalfa (Murphy 1981b; USDA 1959).

Mammals currently or historically known to inhabit the area include moose, elk, mule deer, pronghorn antelope, black bear, cougar, bobcat, coyote, beaver, raccoon, fox, prairie dog, mink, and muskrat. Avifauna commonly seen in the area include bald and golden eagles, hawks, falcons, mallards, teal, Canada goose, curlews, snipe, blue cranes, sandhill cranes, robins, swallows, blackbirds, crows, sparrows, killdeer, and meadowlarks. Native aquatic species include cutthroat trout, suckers, and chubs (Barton 1998).

Soils in the general area developed in a semiarid to arid, continental climate (Wilson 1959: 7). They are low in organic matter and nitrogen but are high in minerals. Soil colors (dry) range from light brown to yellowish brown or very pale brown.

## 2.2 PALEOENVIRONMENT

Mehring (1986) provides a comprehensive overview of prehistoric environments in Utah. This overview is briefly summarized below.

Climatic events during the late Pleistocene and early Holocene epochs worked together to create the modern landscape. Most significantly, pluvial (increased rainfall) episodes, which are attributable to moist-cool climatic conditions, filled what are now dry and salt-encrusted basins with large freshwater lakes, which were joined by great fish-filled rivers. The largest of these pluvial lakes were Lake Lahontan in western Nevada and Lake Bonneville in western Utah and eastern Nevada. At approximately 14,000 B.C., the depth of Lake Bonneville had expanded to more than 900 ft above the present level of its modern remnant, the Great Salt Lake. Following catastrophic downcutting and the waning of continental and mountain glaciers, lake levels had fallen to the same elevation of Great Salt Lake by 9000 B.C. Thereafter, as the regional climate fluctuated between warm-dry and cool-moist conditions, the lake levels waxed and waned. The strandlines of these ancient lakes are now clearly visible on the flanks of the hills and mountains that surround the Salt Lake valley.

The abundance and distribution of plants, animals, and aboriginal populations reacted in concert with these climatic variations. The now treeless deserts were filled with woodlands, and herds of camels, horses, and mammoths grazed the steppes and fertile marshes. As the lakes shrank, rivers ceased to flow, springs dried, and plants and animals migrated northward and upwards to higher elevations. Humans were obliged to some extent to follow these resources upon which they were very much dependent. As the trend towards aridity continued, plants and animals continued to adjust their ranges. Reduced effective moisture and higher temperatures prevailed until ca. 2000 B.C. The next millennia witnessed a return to cooler and moister conditions: the rains returned with regularity, and lakes and marshes again dotted the basin floors. Shrubs such as sagebrush and shadscale retreated to lower elevations and south as grass and woodland communities advanced downslope. A warm-dry episode prevailed from the early A.D. 1100s to the early 1400s, which followed 100 years of warm-moist conditions and preceded cool-moist conditions that lasted until the early A.D. 1600s. Essentially modern conditions have existed since then.

Paleoclimatic reconstructions for northeastern Utah are based upon data obtained from several bogs in the Uinta Mountains and from archaeological excavations in the Dutch John area (Johnson and Loosle 2002: 5-6). The record shows that between 8000 and 6600 years before present (BP), climatic conditions were cooler than today. Through the last half of the Middle Holocene (before 4800 BP), the regional climate was generally warm and dry, peaking at ca. 4700-3400 BP. Effective moisture levels were generally greater than today until ca. 1700 BP, after which time warmer and drier conditions prevailed. Colder conditions, probably with increased effective moisture, returned ca. 550 BP and continued for the next 400 years.

It is uncertain to what extent and in what manner regional populations responded to these paleoclimatic perturbations. It is safe to assume, however, that such adaptations will be manifest in the archaeological record. Given the oftentimes discrete and isolated nature of cultural resources investigations in the region, it may be some time before a more complete picture of human adaptations to changing climatic parameters throughout the full extent of human history in the region can be pieced together.

### 3.1 CULTURAL HISTORY

Humans have occupied Utah for at least 11,000 years, and perhaps longer (Jennings 1986). This lengthy span of occupation can be segregated into prehistoric and historic eras. A general review of the prehistory and history of the Uinta Basin and the Tavaputs Plateau areas of northeastern Utah has been prepared by Spangler (1995). A summary of this overview is provided below, augmented by additional information from other sources, such as *Prehistoric Uinta Mountain Occupations* (Johnson and Loosle 2002), and *History of Duchesne County* (Barton 1998).

#### 3.1.1 Prehistoric Era

The cultural chronology of northeastern Utah is summarized in Table 3-1. This chronological sequence serves principally as an organizing device rather than depicting marked cultural change. The Tavaputs Plateau and Uinta Basin lie on the periphery of three large cultural/geographic regions: the Southwest, Great Plains, and Great Basin. The first occupants of the area were variably influenced by the cultural traditions and economic adaptations of these three areas.

**Table 3-1**  
**CHRONOLOGICAL SEQUENCE**  
**FOR NORTHEASTERN UTAH\***

Episode	Age Range
Paleoindian Era	ca. 10,000—6000 B.C.
Archaic Era	6000 B.C.—A.D. 1
Early Archaic Period	6000—2000 B.C.
Late Archaic Period	2000 B.C.—A.D. 1
Late Prehistoric Era	A.D. 1—A.D. 1776
Uinta Fremont Period	A.D. 1—A.D. 1600
Protohistoric Period	A.D. 1650-1776
Historic Era	AD 1776—present

\*Source: Reynolds et al. (1983); ANF (2005a, 2005b).

Paleoindian people have been characterized as highly mobile, subsisting on now-extinct large animals such as mammoth and large bison, which were dispatched with spears and atlatl darts (ANF 2005a). The artifactual hallmarks of this era are finely worked projectile points, such as Clovis, Folsom, Agate Basin, Midland, Medicine Lodge Creek, and various unnamed lanceolate and stemmed points (ANF 2005a). No Paleoindian projectile points have been recovered in stratigraphic or chronometrically controlled contexts in the region. They have typically been found on the surface of sites, usually in mixed contacts (ANF 2005a). Because of the paucity of sites containing stratified deposits of possible Paleoindian age, very little has been postulated as to Paleoindian lifeways in the region (Spangler 1995).

The advent of a more balanced foraging strategy that included the intensive processing of floral resources and the procurement of smaller game animals heralds the start of the Archaic era. Archaic groups were generally less mobile and areally restricted than Paleoindians (ANF 2005a). Group movements were based on the seasonal availability of edible plants and animals. In higher elevations, such as the Tavaputs Plateau, plant and animal resources peaked at different times of the season, and indigenous groups could exploit this extended period of availability by moving from one ecozone to another. By winter, however, most of these groups were encamped in the lowlands. Typical artifacts and features include stemmed, corner-notched, and side-notched projectile points; groundstone; scrapers; basketry; rock-lined storage and thermal features; relatively substantial brush structures with internal hearths and pits, which were occupied in the late summer or fall; and activity areas (Loosle and Johnson 2003).

The ANF has divided the Archaic era into Early and Late periods. The Early Archaic period is represented by several dozen sites in the Uinta Basin and Tavaputs Plateau, from which temporally diagnostic projectile points have been recovered. Early Archaic components at Dutch John, on the northern flank of the Uinta Mountains suggest late summer or fall occupations, focused on the procurement and processing of plant seeds and the hunting of deer and mountain sheep (ANF 2005a). During the Late Archaic period, the appearance of slab-lined basins in open settings and the replacement of large side-notched points with Elko series corner-notched points suggest the adoption of a highly mobile strategy focused on late winter or early spring processing of roots, tubers and possibly cactus pads (ANF 2005a; Loosle and Johnson 2003).

Approximately 2,000 years ago, with the advent of auspicious regional climatic conditions, indigenous groups adopted a more sedentary lifestyle and cultivated crops such as maize and squash. In the ANF, these changes are encapsulated as the Late Prehistoric era. Aboriginal farming groups that inhabited Utah north of the Ancestral Puebloan area are collectively known as the Fremont culture. Marwitt (1970) has defined five regional variants, including the Uinta Fremont, which represents Fremont occupation in northeastern Utah (Johnson and Loosle 2002). Hallmarks of the Fremont tradition include the bow and arrow, corn cultivation, and ceramics. Limited agriculture was added to the subsistence strategy of the Uinta Basin occupants, although hunting and gathering remained important. Uinta Fremont sites are typically small settlements in the lowlands, consisting of one to five shallow pit structures. Linked to these lowland residences are upland sites, which are characterized by short occupational duration, fall season visits, Rose Spring corner-notched arrow points, brush structures, targeting of specific resources, and emphasis on large game (Loosle and Johnson 2003). Limestone-tempered ceramics (Uinta Gray ware), specialized groundstone types, and aboveground storage features were later added to this assemblage. Upland Fremont sites—such as 42DC316, Gilsonite Ridge Rockshelter (42DC317), 42DC1210, 42DC1211, and Anthro Mountain (42DA1424)—demonstrate that people were tethered to lowland sites and reflect a collector strategy that focused on the acquisition of a limited number of patchy resources such as large mammals and Cheno-ams (Loosle and Johnson 2003).

Numic-speaking groups occupied the Uinta Basin and adjacent regions at the time of European contact. The Ute occupied the region south of the Yampa and Green Rivers, and Shoshone people north of there. Ethnographic documents indicate that the Green River was the dividing line between Eastern Utes and Western Utes. The antiquity of the Ute in the Uinta Basin is unknown, although it is generally held that they have been in the Basin since the thirteenth or fourteenth century AD. Intermountain Ware pottery, side-notched projectile points, and wikiups

in juniper and pinyon groves document the presence of the Shoshone. The artifact assemblage of the Ute/Shoshone period includes glass trade beads, steatite pipes, metal projectile points, horses' tack, and rock art with horse motifs (Reynolds et al. 1983). Evidence for this Protohistoric period on the ANF is at best scanty, limited to surface finds of Desert Side-notched points and brownware ceramics (Johnson and Loosle 2002).

### **3.1.2 Historic Era**

Although Spanish explorers may have visited northeastern Utah in the late 1600s, the Dominguez-Escalante expedition in 1776 is the first well-documented account of European presence in the Uinta Basin. Traveling north from New Mexico and southern Colorado, they passed through Douglas Canyon in west-central Colorado to the White River, and camped near present-day Rangely, Colorado. Moving northwest to the Green River, the party camped just east of Myton on September 17, 1776, calling this campsite *La Ribera de San Cosme*. The next day, they traveled west to the junction of the Strawberry and Duchesne rivers (*El Rio de Santa Catarina, de Sena, and El Rio de San Cosme*) and camped for the night in a meadow approximately one mile north of the town of Duchesne. The party continued westward to Utah Lake and returned to Santa Fe in early 1777 (Barton 1998; Reynolds et al. 1983).

The next major European influence came with the arrival of the fur trappers and traders. In the early 1800s, the Green River basin in Wyoming and northern Utah was being intensively explored and trapped. By 1824, trappers Etienne Provost, Antoine Robidoux, and William Huddard were leading companies that actively trapped and traded for furs in the basin. William Ashley arrived the following year and established two new traditions in the fur business. Instead of trading furs with Indian trappers, he proposed that European trappers do their own work and be paid for the number of pelts brought in. He also established the rendezvous system, in which supplies were brought annually to an agreed-upon location where they could be purchased with furs. Ashley sent out parties in 1822, 1823, and 1824, but not until the spring of 1825 was the Green River in Wyoming reached (Barton 1998; Reynolds et al. 1983).

Government-sponsored exploration of the Louisiana Purchase and other parts of the west began with the Lewis and Clark expedition in 1804-1806, and continued until 1876. The main purpose of these various expeditions was to determine the usefulness of the land. Of the several accounts, John C. Fremont's reports were the most informative. He was instructed to find and map trails to Oregon and California to aid the settlement of the west. Fremont's group visited northeastern Utah in 1844. Kit Carson guided a third Fremont army expedition from the Arkansas River to California, and the party traveled west along the White River to the Green River (Reynolds et al. 1983).

By 1870, cattle raising in the west had become a major economic activity; stockmen were supplying military posts and the new settlements. When the railroad was completed, cattle could be shipped out of the area to major market centers. Despite heavy losses during especially harsh winters, the cattle industry boomed. Between 1878 and 1885, the range overflowed with cattle. By 1887-1888, the market was flooded and prices sharply dropped. In the late nineteenth century, cattle management improved when smaller herds were provided with more shelter and supplemental feed (Reynolds et al. 1983). One of the more successful ranchers at this time was Preston Nutter, who secured a grazing lease of more than 665,000 acres on the Uintah Indian Reservation in the early 1890s (Bailey 2004; Barton 1998). The Nutter Ranch headquarters was

located in Nine Mile Canyon, approximately 10 mi. south of the project area, but his cattle ranged across public lands from Blue Mountain on the Colorado-Utah border to the west Tavaputs Plateau.

Sheep raising became more prevalent in the early twentieth century and conflicts arose between the two industries everywhere in the western grasslands. Wool sales were a major source of income for stockmen in the Uinta Basin (Reynolds et al. 1983).

Cattle ranching on lands marginal for farming was a widespread practice in both northeastern Utah and northwestern Colorado. The discovery of various minerals in the same area gave added impetus to the quest for exploitation of Indian-held lands. Many conflicts arose between Europeans and the Uintah Ute Indians in western Uintah County. Continued conflict between Indians and Europeans led to the establishment of several forts—Fort Thornburgh in 1881 and Fort Duchesne in 1886—and the stationing of federal troops until 1910. Various strategies for settling the “Indian problem” ultimately led to the removal of the Utes to reservations with only sporadic and usually unsuccessful attempts to compensate them for their losses of lands and resources (Barton 1998; Reynolds et al. 1983).

The opening of the Ute reservation to European settlement initiated animosity among the Indians, Mormons, and non-Mormons of the region. The Indians did not want European settlement on their lands and the Mormons and non-Mormons both believed that the other would receive preferential treatment. Of the original three million acres set aside as the Uintah Reservation, one million became available to homesteaders (Barton 1998).

At the same time that cattle ranching was flourishing on grasslands, and settlers were farming small fertile tracts near streams, another boom was occurring in the more barren oil shale lands of western Colorado and eastern Utah. Gilsonite, a lightweight, glossy black, bituminous asphaltite (Notarianni 2006), was discovered in the 1870s and was successfully mined in several areas of Duchesne and Uintah Counties well into the twentieth century (Barton 1998; Bender 1970; Reynolds et al. 1983). Gilsonite was mined in vertical fissures with pick and shovel, and ore was hoisted from the shafts. This method limited the depth of these operations to approximately 100 ft (Notarianni 2006). Gilsonite was shipped from this area to eastern markets via the Uintah Toll Road between Vernal, Fort Duchesne, and Dragon, then by way of the Uintah Railway from Dragon to Mack, Colorado, where it connected with the Denver & Rio Grande Western Railroad mainline (Bender 1970; Notarianni 2006). Gilsonite has many commercial uses, including paints, varnishes, insulating compounds, sealers, asphalt floor tiles, roofing materials, printing inks, rope and cable lubricants, and fingerprint powders (Bender 1970: 14).

### **3.2 PREVIOUS RESEARCH**

Ten surveys have previously been conducted in or near the project area (Table 3-2). All of these previous projects were conducted for energy development in 1997 (n = 1), 2005 (n = 2), and 2006 (n = 7). The total acreage surveyed ranged from 4 to 837 acres, with a total of 1,920 acres and a median of 54 acres.

**Table 3-2  
PREVIOUS SURVEYS IN THE PROJECT AREA**

STATE PROJECT NO.	LOCATION			PROJECT(S)	COMPANY*
	Township	Range	Section(s)		
U-97-AY-0575i	4S	6W	3, 10, 11, 15	Bates 9-1, Tribal 11-1, Reimann 10-1, and Gulf Tribal 15-1 Pipelines and Access	AIA
U-05-MQ-0365i,s,p	4S	6W	17, 18, 19, 20, 21, 22, 26, 27, 28, 30, 31, 34, 35, 36	Lake Canyon 3D Seismic Program	MOAC
	4S	7W	24, 25, 26, 34, 35, 36		
	5S	5W	6, 7, 8, 17, 18, 19		
	5S	6W	1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 18, 22, 23, 24, 25, 27, 34, 35		
	5S	7W	1, 2, 3, 10, 11, 12		
U-05-MQ-0371s	4S	6W	14, 23, 26	Skitzzy Canyon DWR Parcels	MOAC
U-06-AY-0002i	5S	6W	11, 12, 13	Lake Canyon Compressor Locality	AIA
U-06-MQ-0631i,p	5S	5W	19	Cottonwood Canyon Pipeline Extension	MOAC
	5S	6W	24		
U-06-MQ-0632i	5S	6W	24	Coyote Compressor Locality	MOAC
U-06-MQ-718i,s	4S	5W	26, 27, 34, 35	Cottonwood Canyon Road Realignment	MOAC
	5S	5W	3, 4, 7, 8, 9, 18, 19		
	5S	6W	24		
U-06-MQ-0906i	5S	6W	13, 24	Ute/FNR 4-13-56, 5-13-56, 12-13-56, 13-13-56, 3-24-56, 5-24-56, 12-24-56 Wells	MOAC
U-06-MQ-1805i	5S	6W	12, 24	Ute/FNR 14-12-56, 2-24-56, 9-24-56, 10-24-56 Wells	MOAC
U-06-MQ-1228i	5S	6W	24	Ute/FNR 15-24-56	MOAC

\*Abbreviations: AIA, An Independent Archaeologist; MOAC, Montgomery Archaeological Consultants.

Three sites have been recorded in the project area (Table 3-3). One site is a small prehistoric lithic scatter, whose age and cultural affiliation could not be determined. The two historic sites reflect the regionally pervasive themes of agriculture and mining. On the basis of diagnostic artifacts, the gilsonite mine (**42DC1992**) has been dated to 1915-1930, while the brush corral/fence (**42DC2040**) has been dated to 1930-1975. The mine and the lithic scatter are considered eligible for listing in the National Register of Historic Places.

**Table 3-3  
KNOWN CULTURAL RESOURCES IN THE PROJECT AREA**

SITE NO.	LOCATION			SITE TYPE	RECORDING DATE(S)	RECC
	Township	Range	Section(s)			
42DC1992	4S	6W	14	Historic Gilsonite Mine	5/1/2005	MO
42DC2040	5S	6W	24	Historic Brush Corral & Fence	6/10/2005	MO
42DC2165	5S	6W	24	Prehistoric Lithic Scatter	6/27/2006	MO

Notes: <sup>1</sup>Recorder—MOAC, Montgomery Archaeological Consultants.

Two archaeologists walked multiple parallel transects, spaced no more than 15 m apart, within the following areas:

- Corridors 200 ft wide along existing and new roads/pipelines
- Blocks of 10 acres for staked well locations
- Topographically selected areas of varying sizes (for example, valley bottoms and mesa tops)

A Trimble® GeoXT™ handheld GPS receiver was used to determine with submeter accuracy the real-time and post-processed location of each access roads, well centerstakes, and block areas.

As they walked, the archaeologists carefully inspected the ground surface for any evidence of past, patterned human activity, 50 years or older. When visible, road cuts and ravine walls were closely inspected for buried cultural evidence. In general, the wells and roads placed in the canyons are found in geomorphological settings that are subject to active erosion and deposition, while locations on the ridges are more conducive to the conservation of cultural resources.

When cultural evidence was encountered, the area around the original discovery was reconnoitered to determine if it was a site or an isolated find. A site is defined as a discrete locus of past human activity that may contain several artifacts in close proximity or a cultural feature. An isolated find (IF) consists of a few undistinguished artifacts, unassociated with any other cultural manifestations. The Trimble® receiver was used to determine the location of each site and IF. Sites were mapped in plan view, described, and photographed, while the IFs were simply described and sketched (or photographed). The plan view map depicted natural landmarks and the areal extent of all artifacts and features. Black-and-white and digital photographs were taken to illustrate the site setting. If features were present, then closer views were photographed.

The eligibility of the site or IF for listing in the NRHP was evaluated in the field. An IF is generally considered to be not eligible for the NRHP, although it could have local significance. The integrity of each site was assessed first, integrity defined as “the ability of a property to convey its significance” (Townsend et al. 1993: 17). The NRHP criteria recognize seven aspects or qualities that, in various combinations, define integrity: location, design, setting, materials, workmanship, feeling, and association. Once the integrity of a property was assessed, then its eligibility for listing in the NRHP was evaluated according to the following criteria, described at 36 CFR 60.4:

*The quality of significance in American history, architecture, archeology, engineering and culture is present in districts, sites, buildings, structures, and objects that possess integrity ...and that*

- a. are associated with events that have made a significant contribution to the broad patterns of our history; or*
- b. are associated with the lives of persons significant in our past; or*
- c. embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lake individual distinction; or*
- d. have yielded, or may be likely to yield, information important in prehistory or history.*

Three sites and 10 IFs were documented in the APE. These resources are briefly described below. Appendix A illustrates the site and IF locations. Additional information about the sites can be found in the Intermountain Antiquities Computer System (IMACS) forms, which are included as Appendix B.

## **5.1 SITES**

### **5.1.1 42DC2258**

This site is a large, but mostly dispersed scatter of historic artifacts. It is not within the APE, but was identified during an initial reconnaissance of the project area. It is located immediately south of a recently upgraded two-track road, just west of Indian Canyon and U.S. 191. A dry wash forms the southern boundary of the site. The site covers an area measuring approximately 200 ft by 100 ft, or 0.5 acre. A dense concentration of artifacts is located in the northwestern corner of the site, and probably represents the original dumping location. Sheet wash may have scattered the other artifacts across the site. The majority of the artifacts found on the site are metal cans of varying sizes and contents, dominated by evaporated milk cans. Numerous fragments of bottle glass (milk, clear, cobalt, and brown) are also present. Small amounts of ceramics (white earthenware and porcelain), rubber, leather, dimensioned lumber, and metal also occur on the site. Diagnostic attributes (can sizes and bottle trademarks) suggest that most of the artifacts were at least manufactured, if not discarded at this location, in the 1940s and 1950s. Some artifacts were manufactured locally (for example, a Pepsi-Cola bottle that originated at the "Larsen Bros., Roosevelt, Utah" bottling plant. Some bottles apparently had more distant origins; for example, a beverage bottle and bleach bottle were manufactured in Los Angeles and Oakland, California, respectively. In the aggregate, these artifacts probably represent domestic refuse that was repeatedly dumped over a period of years alongside the road by local residents.

### **5.1.2 42DC2259**

This site is a large, dispersed scatter of historic artifacts, which is found in a large open (chained) area, near the intersection of several two-track roads, on a level mesa top between Indian and Lake Canyons. The site area measures approximately 75 ft in diameter, covering an area of approximately 0.10 acres. The artifact assemblage includes numerous cans of various sizes and contents, fragments of bottle glass (brown, clear, and purple), and dimensioned lumber. The lumber includes three or four 1" x 12" wooden planks that have been bolted and screwed together as a frame of unknown purpose. The purple glass suggests that this artifact, at least, was manufactured before 1917, the year after which manganese was no longer added as a coloring agent to glass. A trademark on another bottle has an age range of 1920-1964. This evidence suggests that domestic refuse was has been dumped here, beginning probably in the early 1920s.

### **5.1.3 42DC2260 (Deerhorn No. 1 Gilsonite Mine)**

This site is a historic gilsonite mine. It consists of an adit, tailings pile, access road, and small scatter of debris at the base of the tailings pile. The access road is approximately 10 ft wide, cut at a grade of 10 percent into a steep (40 percent hillslope) on the west side of Matilda Canyon. It begins at a road following the bottom of Matilda Canyon and climbs uphill for approximately 800 ft to the adit. The gilsonite vein is oriented nearly vertical, with a bearing of N50°E. The

cut continues upslope for approximately 50 ft from the main opening, which is braced with log cribbing. The tailings pile consists of small fragments of gray shale that are strewn in a narrow (50 ft wide) swath down slope from the adit. Two large (6" x 9") hole-in-top cans were found at the top of the pile. At the base of the tailings pile is a pile of debris, including dimensioned lumber (with wire nails), sheet metal, an enameled pot, a galvanized metal tub, several large metal cans, and thin-gauge wire. It is possible that the lumber and sheet metal may have been part of a small, collapsed shed associated with the mine.

According to the General Land Office Records (GLO) that are available from the Bureau of Land Management (BLM 2006), the Raven Mining Co. acquired the title to two mines on November 21, 1907, under the authority of the Mineral Patent Lode (14 Stat. 251) of July 26, 1866. In 1902, the 57<sup>th</sup> Congress granted to the Raven Mining Company a mineral lease, not to exceed 640 acres, on the Uintah and White River Indian Reservation (Kappler 1904). The U.S. Government allotted \$70,064.48 to the tribe for this particular lease. A map prepared by the Raven Mining Company in 1902 shows their "Hydro-Carbon" claims on the Uintah Indian Reservation. One of these mines, whose location closely corresponds to that recorded as 42DC2261, is labeled the Deerhorn No. 1 claim, measuring 600 ft by 1,500 ft (20.66 acres), with a bearing of N52°38'E (Raven Mining Company 1905). Immediately north of the Deerhorn claim are the Tom Benton and the McConnell claims, both encompassing 20.66 acres and oriented N52°14'E and N74°10'E, respectively.

## **5.2 ISOLATED FINDS**

### **5.2.1 LC-IF-1**

This isolated find consists of a small scatter of historic artifacts. It is not within the APE, but was identified during an initial reconnaissance of the project area. It is located 10 ft north of a recently upgraded two-track road and approximately 100 ft west of Site 42DC2258. The artifacts are concentrated within an area that measures approximately 8 ft in diameter. The assemblage includes 15 artifacts, more than half of which are several types of metal cans, and the remainder consists of beverage bottles made of clear and green glass. A Coca-Cola bottle was produced at the "Vernal, Utah" bottling plant, while a "Pure Spirits of Gum Turpentine" bottle was manufactured in Fairmont, West Virginia. The age ranges of several artifacts with diagnostic trademarks ranged between 1920 and 1975, but most date to the 1940s and 1950s. The limited number of artifacts in a small area suggests that this is a single-episode deposit of domestic refuse.

### **5.2.2 LC-IF-2**

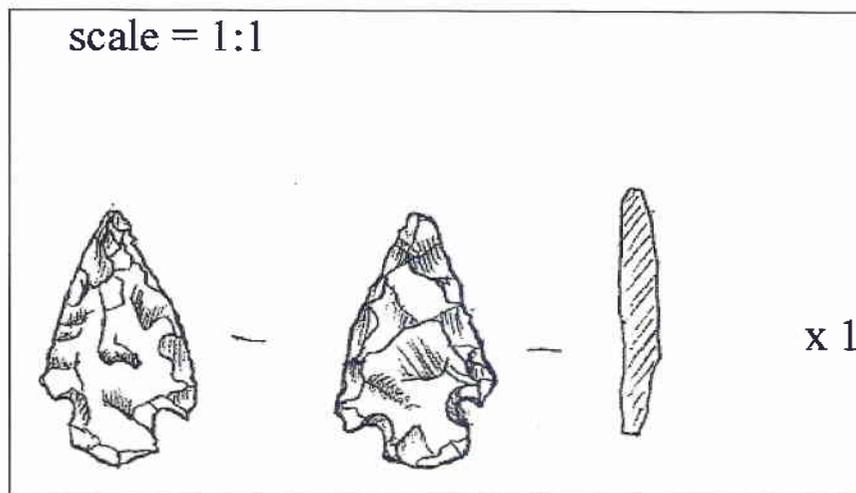
This isolated find consists of two metal cans, found in the bottom of Lake Canyon. The first artifact is a crimped seal can with a solder dot on the top. It measures 3-1/4" in diameter and 4" tall, corresponding to a No. 303 can, which typically contained vegetables, some fruits and juices, and soups (Rock 1980: 100) and was first manufactured in 1936 (Kirkpatrick and Duran 1981: Table 7). The second artifact is a key-opened, crimped seal can. It measures 2-1/2" in diameter and 3" tall, corresponding to an 8Z Regular can, which typically contained meat and fish products and was first manufactured in 1938. Unknown persons apparently discarded these artifacts at this location sometime after the mid-1930s.

**5.2.3 LC-IF-3**

This isolated find is a small corner-notched projectile point, which was found in a chained area on top of a gently sloping mesa (Figures 5-1 and 5-2). It measures 27 mm long, 17 mm wide, and 3 mm thick, with excurvate blade margins and a rounded base. It resembles a Rose Spring Corner-notched point, which is typically found on Late Prehistoric Uinta Fremont sites in this area (Loosle and Johnson 2003). The artifact reflects an emphasis on the hunting of small to medium-sized game animals.



**Figure 5-1. LC-IF-3 Rose Spring Corner-notched projectile point (scale in cm).**



**Figure 5-2. Sketch of LC-IF-3, Rose Spring Corner-notched projectile point.**

## 5.2.4 LC-IF-4

This isolated find consists of a mano and a metate, which are found in pinyon-juniper woodlands on a level mesa top (Figures 5-3 and 5-4). The metate is an angular fragment of sandstone, which measures 60 cm long and 22 cm wide. A pecked area measuring 26 cm long and 11 cm wide is found at one end of the artifact. The mano is a broken quartzite cobble, which measures 17 cm long (incomplete), 10 cm wide, and 7.5 cm thick. Slight pecking is evident on one face. The mano is located approximately 30 cm downslope and 20 cm to the side of the metate.



Figure 5-3. LC-IF-4, metate (center) and mano (top right) (scale in cm).

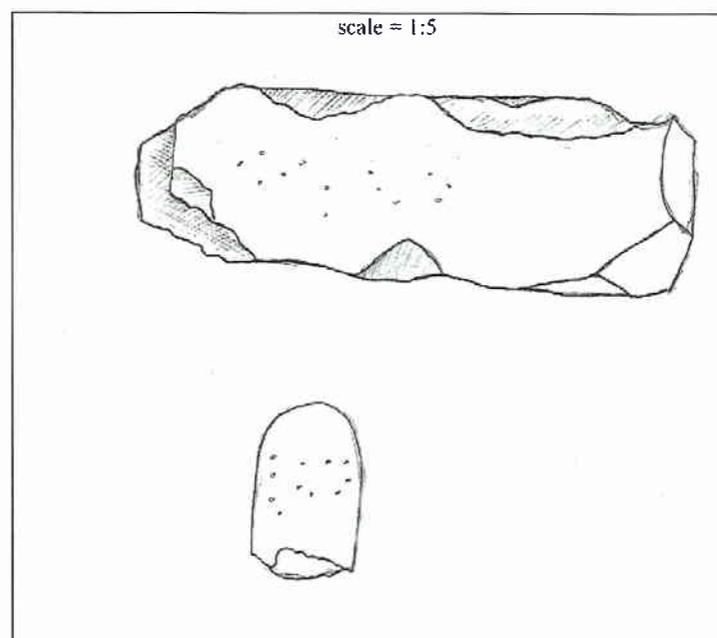


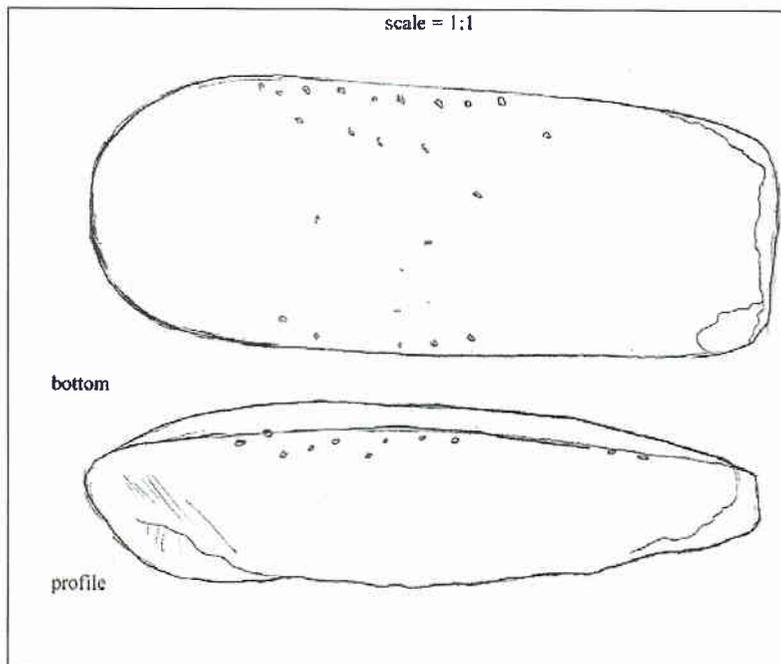
Figure 5-4. Sketch of LC-IF-4, metate (top) and mano (bottom).

**5.2.5 LC-IF-5**

This isolated artifact is a two-handed mano (Figures 5-5 and 5-6), found in pinyon-juniper woodlands on top of a level mesa. It is made of red quartzite and measures 16 cm long, 7 cm wide, and 4.5 cm thick. One end is squared off and battered, while the opposite end is rounded and unused.



**Figure 5-5. LC-IF-5, two-handed mano (scale in cm).**



**Figure 5-6. Sketch of LC-IF-5, two-handed mano.**

### 5.2.6 LC-IF-6

This isolated find is a small scatter of historic artifacts, located approximately 35 ft east of a two-track road in pinyon-juniper woodlands on top of a level mesa. The artifacts are concentrated within an area measuring approximately 8 ft by 6 ft, at the base of a pinyon pine tree. The assemblage includes the following artifact types:

- 25—No. 19 evaporated milk cans (1950-present)
- 6—“Becker’s Mellow Beer” cans, manufactured by Becker’s Products Co., Ogden, Utah (1932-1962) (Figure 5-7)
- 3—No. 1 tall sanitary cans (post-1936)
- 1—Zippo lighter fluid can
- 1—“Johnson’s Wax Co. Hard Gloss Glo-Coat Floor Polish” can (post-1932)
- 1—Clorox bleach bottle (brown)
- 1—vinegar bottle (clear)
- 1—drinking glass (clear)

Although some of these items could have been manufactured as early as the 1930s, the Becker’s Mellow Beer can was produced in 1956 (Tavern Trove 2006) and best establishes the date for when these items were probably deposited at this location.

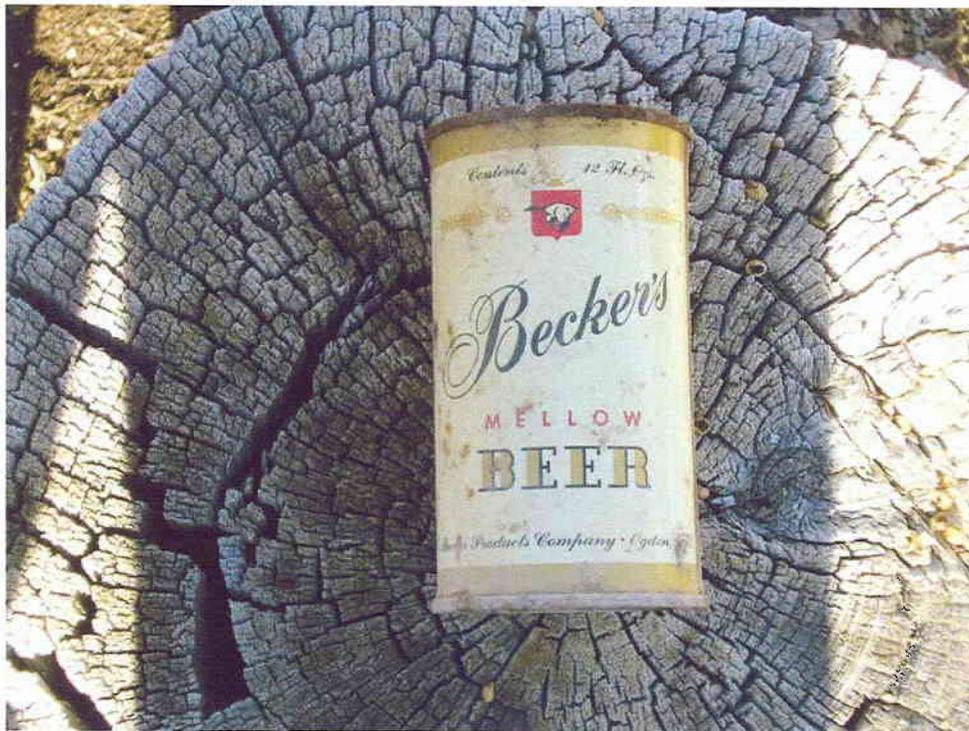


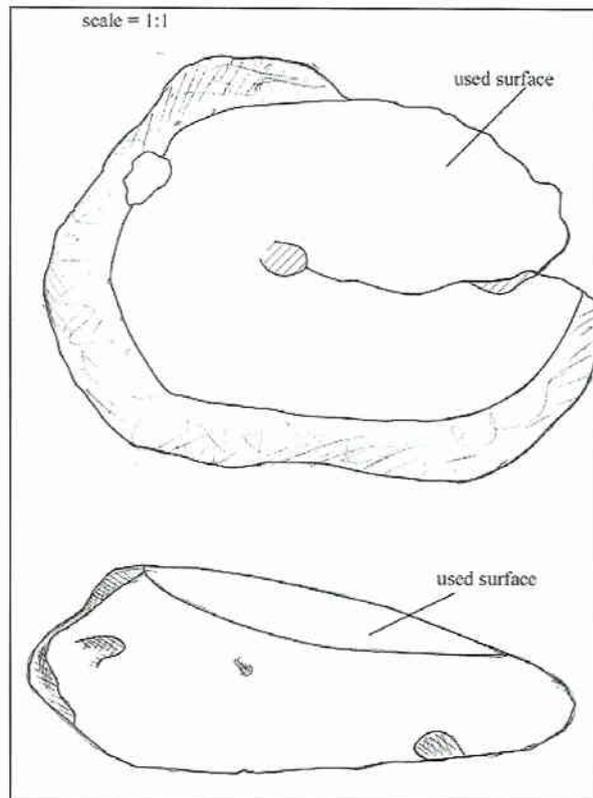
Figure 5-7. LC-IF-6, beer can.

**5.2.7 LC-IF-7**

This isolated artifact is a small, quartzite unifacial mano (Figures 5-8 and 5-9). It was found in pinyon-juniper woodlands, on top of a level mesa. It measures 13 cm long, 9 cm wide, and 4 cm thick. The use surface is a smoothed oval area on one face. It was probably used for pinyon nut processing.



**Figure 5-8. LC-IF-7, unifacial mano (scale in cm).**



**Figure 5-9. Sketch of LC-IF-7, unifacial mano.**

**5.2.8 LC-IF-8**

This find is a hole-in-top can (Figure 5-10). It was found in pinyon-juniper woodlands on top of a level mesa. It is a No. 2-1/2 can (Kirkpatrick and Duran 1981: Table 7), which was ordinarily used for fruits, some vegetables, and some juices (Rock 1980: 100). The diameter of the hole-in-top is 2-1/8". One end has been cut  $\frac{3}{4}$  of the way around to remove the contents. These types of cans date to the early twentieth century (Kirkpatrick and Duran 1981: Table 7).



**Figure 5-10. LC-IF-8, hole-in-top can (scale in cm).**

**5.2.9 LC-IF-9**

This find is a small, quartzite mano (Figures 5-11 and 5-12). It was found underneath a pinyon log, in pinyon-juniper woodlands on top of a level mesa. It measures 10 cm long, 7.5 cm wide, and 4 cm thick.



Figure 5-11. LC-IF-9, manó (scale in cm).

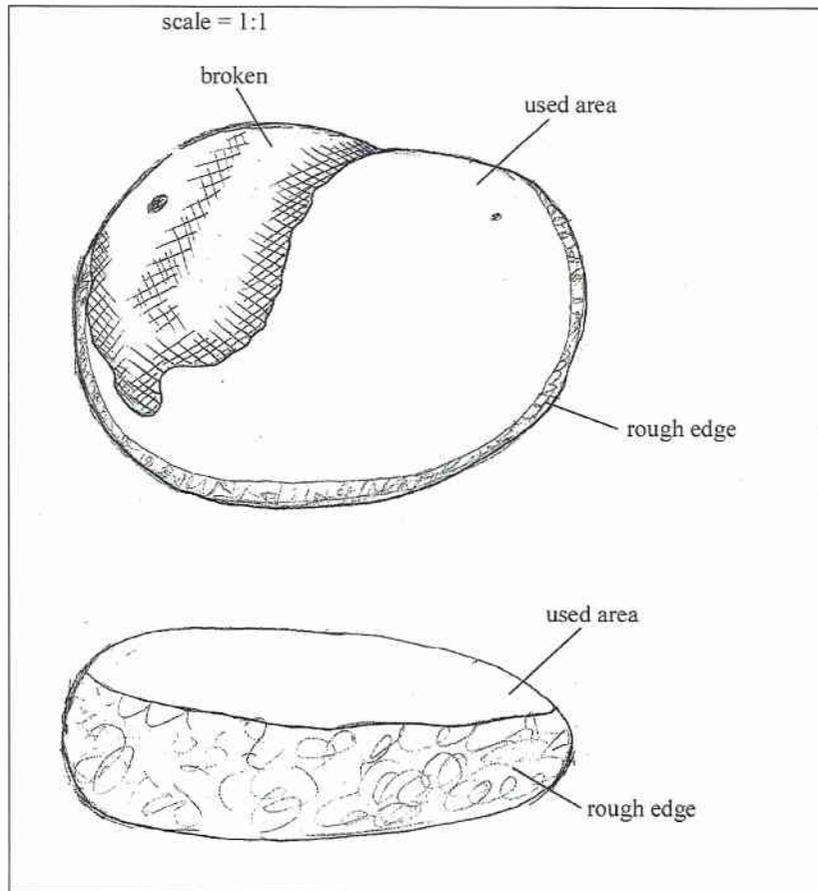


Figure 5-12. Sketch of LC-IF-9, manó.

## 5.2.10 LC-IF-10

This find is a concentration of 20 ceramic sherds, found in pinyon-juniper woodlands on top of a level mesa. The assemblage includes 16 body sherds and four rim sherds (Figure 5-13). The sherds have a grayish brown paste and appear to be tempered with either limestone or fine-grained sand. The rims are deeply everted, with vertical punctuate marks on the exterior, just below the rim. The majority of the sherds are clustered in an area with a diameter of approximately 0.5 m, but a few have been carried slightly downslope by slope wash. This was probably a single vessel that was dropped and broke into many smaller fragments. The age and/or cultural affiliation of these artifacts are questionable. Byron Loosle, Ashley National Forest Archaeologist, remarked (personal communication to G. Tucker, 14 November 2006) that he hasn't "seen any ware like that before in our area - with that kind of a decoration on the neck." Jim Truesdale of A.I.A., noted (personal communication to G. Tucker, 14 November 2006) that "the color of the sherds and everted rim is strange." He also surmised that the decoration and temper suggests possibly some type of Ute "brown ware." David V. Hill opined (personal communication to G. Tucker, 20 November 2006) that "The light gray paste color and the incised lines look more like Uintah Basin Fremont than Ute."



Figure 5-13. LC-IF-10, ceramics (scale in cm). Body sherds at top, rim sherds at bottom.

All of the cultural resources that were documented in the APE have been evaluated for eligibility for listing in the NRHP based upon the criteria described in Section 4. Although the 10 isolated finds are considered not eligible for the NRHP, the sherds found in the “pot drop” at **LF-IF-10** have been identified as Uinta Fremont and, therefore, may have local significance.

Sites **42DS2258** and **42DC2259** are varying-sized scatters of historic artifacts. They probably represent casual use of the upland areas south of the Uinta valley by ranchers, hunters, miners, or recreationists. They are not associated with important local events or personages, are not architecturally unique, and are unlikely to yield additional important information important to a great understanding of the local history. Therefore, they are recommended as **not eligible** for the NRHP. Further work at these localities is considered unnecessary.

The Deerhorn No. 1 Gilsonite Mine (**42DC2260**) is associated with the opening of the Uintah Indian Reservation to mining claims, an important local event. Therefore, the site is recommended as **eligible** for the NRHP under criterion A and should be avoided by project activities. If avoidance can be accomplished, then further work at the site is considered unnecessary.

Berry Petroleum's proposed Lake Canyon oilfield expansion project area was intensively surveyed for cultural resources. The areas surveyed include access and pipeline corridors, staked oil/gas well locations, and future well locations. The survey documented three sites and 10 isolated finds (IF). Two of the sites are scatters of historic artifacts and are not considered eligible for listing in the NRHP. The third site is the historic Deerhorn No. 1 Gilsonite Mine, which is recommended as eligible for the NRHP and should be avoided by project activities. The 10 IFs are considered not eligible for the NRHP, but the concentration of 20 Uinta Fremont sherds may have local significance.

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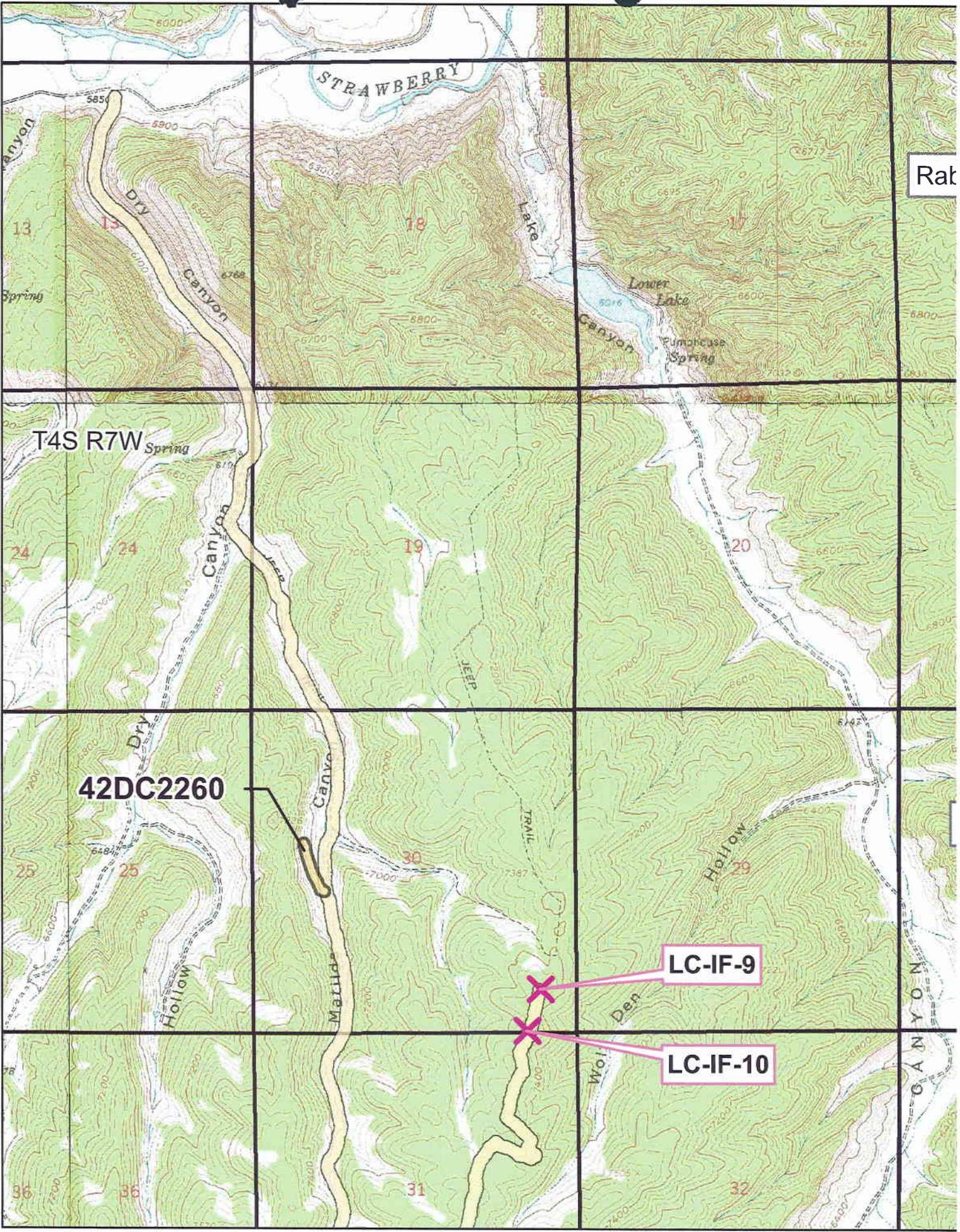
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**Appendix A**  
**Site Location Maps**



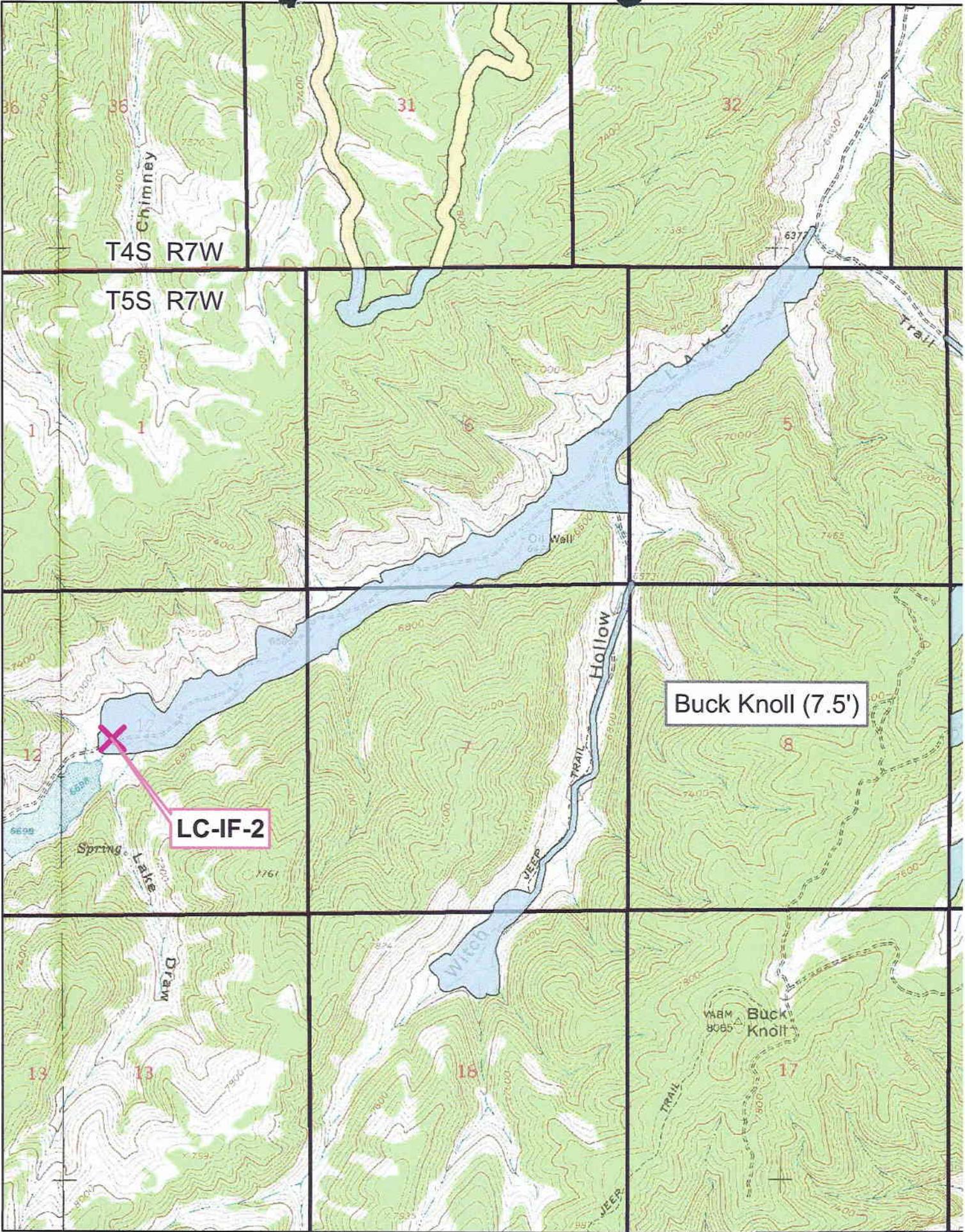
Rab

T4S R7W

42DC2260

LC-IF-9

LC-IF-10



T4S R7W

T5S R7W

Chimney

Spring Lake

Witch Hollow

Buck Knoll (7.5')

LC-IF-2

Buck Knoll

Draw

Witch

TRAIL

TRAIL

JEEP

36

36

31

32

1

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8

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13

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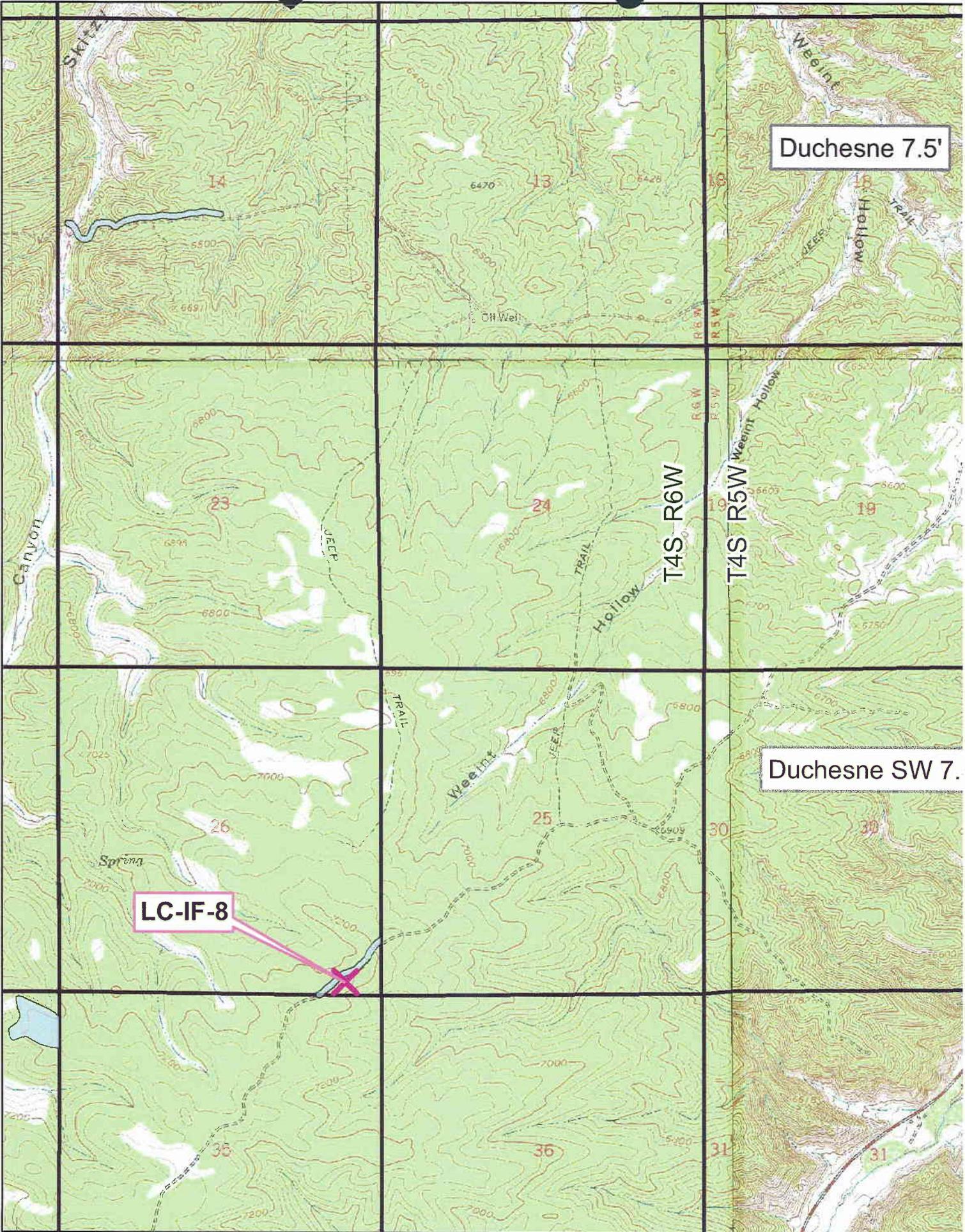
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Duchesne 7.5'

T4S R6W

T4S R5W

Duchesne SW 7.

LC-IF-8

**Appendix B**  
**Intermountain Antiquities Computer System (IMACS) Site Forms**

# IMACS SITE FORM

## Part A - Administrative Data

INTERMOUNTAIN ANTIQUITIES COMPUTER SYSTEM

Form approved for use by:

BLM - Utah, Idaho, Wyoming, Nevada

Division of State History - Utah, Wyoming

USFS - Intermountain Region

NPS - Utah, Wyoming

4. State: **Utah**

5. Project: **Berry Petroleum, Lake Canyon**

\*6. Report No.:

7. Site Name / Property Name: **None**

8. Class:  Prehistoric  Historic

\*1. State No. **42DC2258**

\*2. Agency No.

3. Temp. No. **LC-1**

County: **Duchesne**

Paleontologic

Ethnographic

9. Site Type: **Historic artifact scatter**

\*10. Elevation: **5860 ft.**

\*11. UTM Grid: Zone 11 2 5 4 7 2 3 7 m E 4 4 4 2 0 0 2 m N

\*12. SW ¼ of SW ¼ of SW ¼ of Sec. 15, T. 4S, R. 5W

\*13. Meridian: **Uintah**

\*14. Map Reference: **Duchesne, Utah 7.5' (1980)**

15. Aerial Photo: **None**

16. Location and Access:

**From Duchesne, Utah, travel South on Highway 191, which intersects Highway 40. From that intersection, travel south for 2 miles. Turn West onto graded dirt road going up Trail Canyon. The site is located approximately 0.15 miles up the canyon, on the south side of the road.**

\*17. Land Owner: **Ute Indian Tribe**

\*18. Federal Administrative Units: **N/A**

\*19. Location of Curated Materials: **N/A**

20. Site Description:

**The historic scatter of artifacts is located just south of the bladed road going up Trail Canyon. The site is located between the road and a shallow drainage that runs at the base of the hillslope to the south. The main concentration is found towards the western end of the defined site area, within 5 feet of the south edge of road. Singular artifacts (mostly cans) continue in low numbers off to the south and east—probably carried there by slope wash.**

**Artifacts consist generally of metal cans (various sizes, but mostly evaporated milk), glass (brown, clear, cobalt blue, and purple), earthenware ceramics, and miscellaneous metal. This site most likely represents domestic trash dumped along the existing two-track road over a period of time, beginning 60 to 70 years ago.**

**Site area measures 200 feet east-west by 100 feet north-south.**

\*21. Site Condition:  Excellent (A)  Good (B)  Fair (C)  Poor (D)

\*22. Impact Agent(s): **road (RD), fluvial erosion (ER)**

\*23. National Register Status:  Significant (C)  Not Significant (D)  Unevaluated (Z)

**Justify: Site is an unremarkable collection of discarded historic artifacts. It is unassociated with any significant local events or personages and not architecturally distinctive, nor is it likely to yield additional information about the local history.**

24. Photos: **LC-1, 1-3 (B&W); LC-D1-1, 3-5 (Digital)**

25. Recorded by: **Gordon C. Tucker Jr.**

\*26. Survey Organization: **URS Corporation (UI)**

\*28. Survey Date: **24 October 2006**

27. Assisting Crew Members: **Deborah Jensen**

Attachments:  Part B  Topo Map  Photos  Continuation Sheets  
 Part C  Site Sketch  Artifact/ Feature Sketch  
 Other  
 Part E

# Part A - Environmental Data

Site No. **42DC2258**

\*29. Slope: **2** (Degrees) **open** Aspect (Degrees)

\*30. Distance to Permanent Water: **390 meters**

\*Type of Water Source:  Spring/Seep (A)  Stream/River (B)  Lake(C)  Other (D)

Name of Water Source: **Indian Canyon River**

\*31. Geographic Unit: **Book Cliffs-Roan Plateau (CAB)**

\*32. Topographic Location: - See Guide for additional information

## Primary Landform: Canyon (G)

Mountain Spine (A)

Hill (B)

Tableland/Mesa (C)

Ridge (D)

Valley (E)

Plain (F)

Canyon (G)

Island (H)

Alluvial Fan (A)

Alcove/Rock Shelter (B)

Arroyo (C)

Basin (D)

Cave (E)

Cliff (F)

Delta (G)

Detached Monolith (H)

## Secondary Landform: Slope (Q)

Dune (I)

Floodplain (J)

Ledge (K)

Mesa/Butte (L)

Playa (M)

Port Geo Feature(N)

Plain (O)

Ridge/Knoll (P)

Slope (Q)

Terrace/Bench (R)

Talus Slope (S)

Island (T)

Outcrop (U)

Spring Mound/Bog (V)

Valley (W)

Cutbank (X)

Riser (Y)

Multiple S. Landforms (1)

Bar (2)

Lagoon (3)

Ephemeral Wash (4)

Kipuka (5)

Saddle/Pass (6)

Graben (7)

Describe: **Site is located in narrow valley between bladed road and shallow drainage that runs at the base of the hillslope to the south.**

\*33. On Site Depositional Context:

Fan (A)

Talus (B)

Dune (C)

Stream Terrace (D)

Playa (E)

Outcrop (Q)

Extinct Lake (F)

Extant Lake (G)

Alluvial Plain (H)

Colluvium (I)

Moraine (J)

Flood Plain (K)

Marsh (L)

Landslide/Slump (M)

Delta (N)

Desert Pavement (P)

Stream Bed (R)

Aeolian (S)

None (T)

Residual (U)

Description of Soil: **Yellowish brown sandy loam**

34. Vegetation: **Sage, rabbitbrush, and cactus.**

\*a. Life Zone:

Arctic-alpine (A)

Hudsonian (B)

Canadian (C)

Transitional (D)

Upper Sonoran (E)

Lower Sonoran (F)

\*b. Community: Primary On Site Q Secondary On Site R Surrounding Site H

Aspen (A)

Spruce-Fir(B)

Douglas Fir (C)

Alpine Tundra (D)

Ponderosa Pine (E)

Lodgepole Pine (F)

Other/Mixed Conifer (G)

Pinyon-Juniper Woodland (H)

Wet Meadow (I)

Dry Meadow (J)

Oak-Maple Shrub (K)

Riparian (L)

Grassland/Steppe (M)

Desert Lake Shore (N)

Shadscale Community (O)

Tall Sagebrush (P)

Low Sagebrush (Q)

Barren (R)

Marsh/Swamp (S)

Lake/Reservoir (T)

Agricultural (U)

Blackbrush (V)

Creosote Bush (Y)

Describe:

\*35. Miscellaneous Text

36. Comments/Continuations

# Part C - Historic Sites

Site No.(s): **42DC2258**

1. Site Type: **Historic artifact scatter**
- \*2. Historic Theme(s): **Farming/Ranching (agriculture)**
- \*3. Culture: Cultural Affiliation **EA** Dating Method **F** Cultural Affiliation \_\_\_\_\_ Dating Method \_\_\_\_\_  
Describe: **Based on types of artifacts found in the assemblage**
- \*4. Oldest Date: **1936** Recent Date: **1954**  
How determined? **Estimated from diagnostic artifacts**
5. Site Dimensions **60 m x 30 m** \*Area: **1,800 sq m**
- \*6. Surface Collection/Method:  None(A)  Designed Sample (C)  
 Grab Sample(B)  Complete Collection (D)  
Sampling Method:
7. Estimated Depth of Fill:  Surface (A)  20 - 100cm (C)  Fill noted but unknown (E)  
 0 - 20cm (B)  100cm + (D)  Depth suspected but not tested (F)  
How Estimated: **Inspection of drainage cutbank**  
(If tested, show location on site map)
8. Excavation Status:  Excavated (A)  Tested (B)  Unexcavated (C)  
Testing Method:
9. Summary of Artifacts and Debris: *(Refer to guide for additional categories)*  
 Glass (GL)  Bone (BO)  Leather (LE)  Ammunition (AM)  Domestic Items (DI)  
 Metal (ME)  Ceramics (CS)  Wire (WI)  Wood (WD)  Kitchen Utensils (KU)  
 Nails (NC,NW)  Fabric (FA)  Tin Cans (TC)  Rubber (RB)  Car/Car Parts (CR)  
 Describe:  
**Artifacts consist generally of metal cans (various sizes, but mostly evaporated milk), bottle glass (brown, clear, cobalt blue, and purple), and earthen ware ceramics.**  
  
**Other artifacts include miscellaneous metal (including metal strap), bottom portion of light bulb, pieces of rubber, pieces of leather, and dimensioned lumber.**

10. Ceramic Artifacts:

Paste	Glaze/Slip	Decoration	Pattern	Vessel Form(s)	Number
<b>Earthenware</b>	<b>Clear</b>				<b>6</b>
<b>Porcelain</b>	<b>Clear</b>		<b>Pattern on rim</b>		<b>5</b>

- a. Estimated Number of Ceramic Trademarks   0    
Describe:

# Part C - Historic Sites

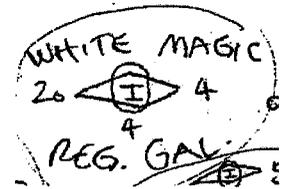
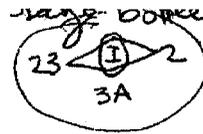
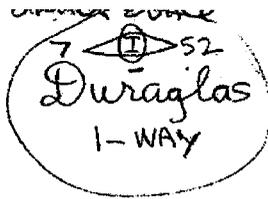
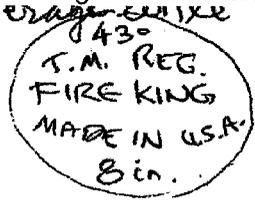
Site No.(s): 42DC2258

## 11. Glass:

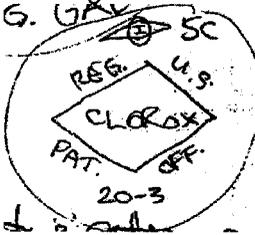
#	Manufacture	Color	Function	Trademarks	Decoration
100+	Kerr, Pepsi-Cola, Larsen Brothers, White Magic, unknown	Clear	Beverage bottles, casserole dish	"LB" Larsen Brothers (Roosevelt, Utah), see below	
180	Clorox, unknown	Brown	Bleach bottles, beverage bottles	see below	
7	Unknown	Cobalt Blue	Unknown		
12	Unknown	Purple	Unknown		

### Describe: Domestic Items

Clear glass trademarks:



Brown glass trademarks:



12. Maximum Density - #/sq m (glass and ceramics): 60-75

## 13. Tin Cans:

Type	Opening	Size	Modified	Label/Mark	Function
Evaporated milk, quantity 80-100	Variety, mostly punch type	4" tall, 3" diameter			Evaporated milk
No. 1 can, quantity 10	Full open or cross	4" tall, 2 5/8" diameter			
No. 1 tall can, quantity 5	Full openings	4 3/8", 3 1/8" diameter			
No. 1 oval, quantity 3	Rolled key lid	4 5/16" long, 3 1/16" wide			Sardine can
Meat can, quantity 1	Punch knife	3" long by 2 1/2" wide			Meat can
No. 3 can, quantity 5	Knife openings	7" tall, 4 4/16" diameter			
Coffee can lid, quantity 5		5" diameter			Coffee
No. 5 can, quantity 2		5 9/16" tall, 5" diameter			Syrup?
Fuel can, quantity 1		12" tall, 8" long, 8" wide			Fuel can with handle
Pint can, quantity 7		5 5/8" tall, 4" long, 2" wide			

Describe:

\*14. Landscape and Constructed Features (locate on site map) - *(See guide for additional categories)*

- |   |   |  |   |
|---|---|--|---|
| <input checked="" type="checkbox"/> Trail/Road (TR) | <input type="checkbox"/> Dump (DU)            | <input type="checkbox"/> Dam, Earthen (DA) | <input type="checkbox"/> Hearth/Campfire (HE) |
| <input type="checkbox"/> Tailings (MT,ML)           | <input type="checkbox"/> Depression (DE)      | <input type="checkbox"/> Ditch (DI)        | <input type="checkbox"/> Quarry (QU)          |
| <input type="checkbox"/> Rock Alignment (RA)        | <input type="checkbox"/> Cemetery Burial (CB) | <input type="checkbox"/> Inscriptions (IN) | <input type="checkbox"/> Other (OT):          |

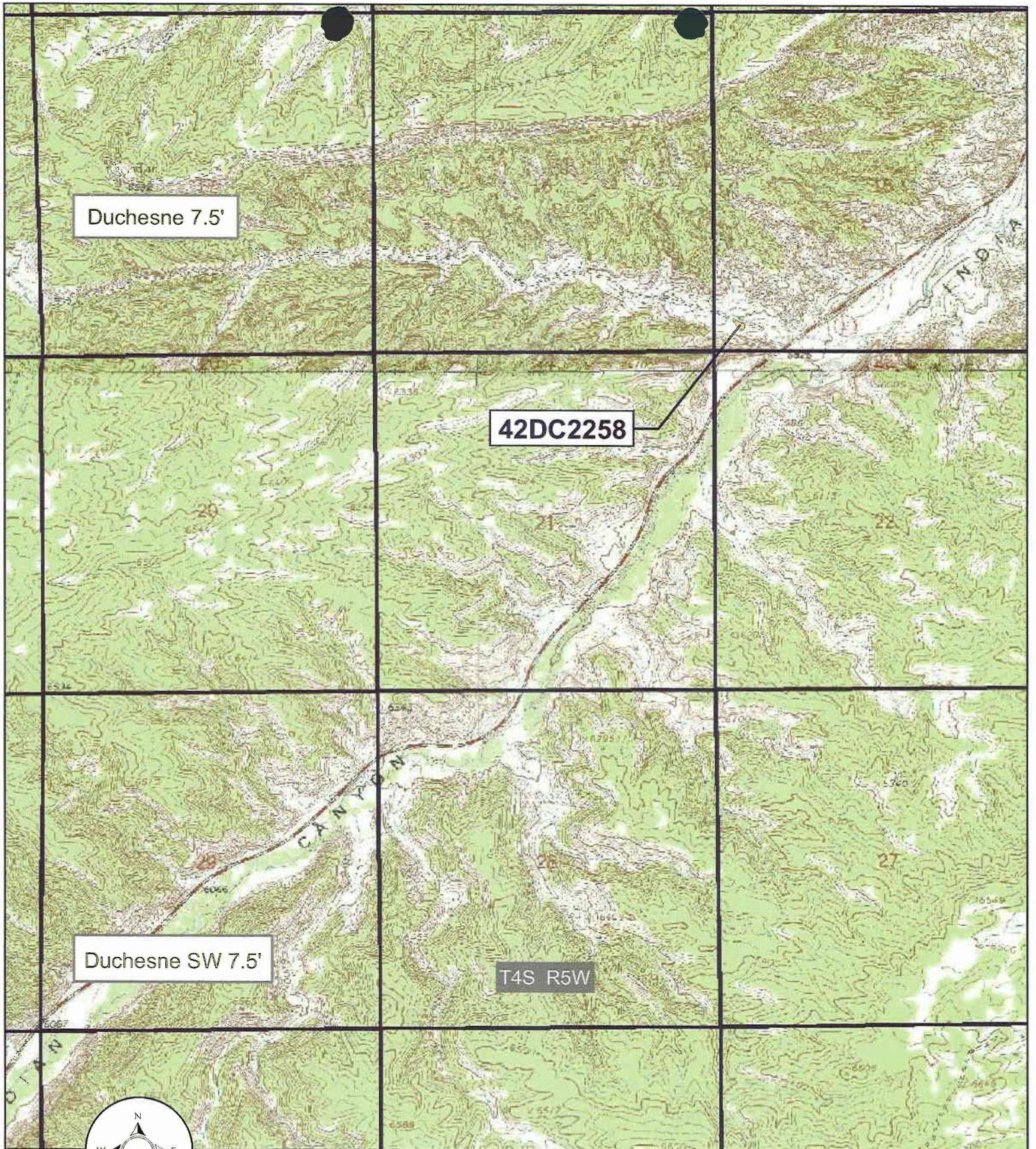
Describe: **Graded road runs east-west directly north of the site.**

\*15. Buildings and Structures (locate on site map)

#	Material	Type	#	Material	Type
---	----------	------	---	----------	------

Describe: **None observed**

16. Comments/Continuations - *Please make note of any Historic Record searches performed (for example - County Records, General Land Office, Historical Society, Land Management Agency Records, Oral Histories/interviews).*

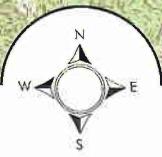


Duchesne 7.5'

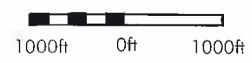
42DC2258

Duchesne SW 7.5'

T4S R5W



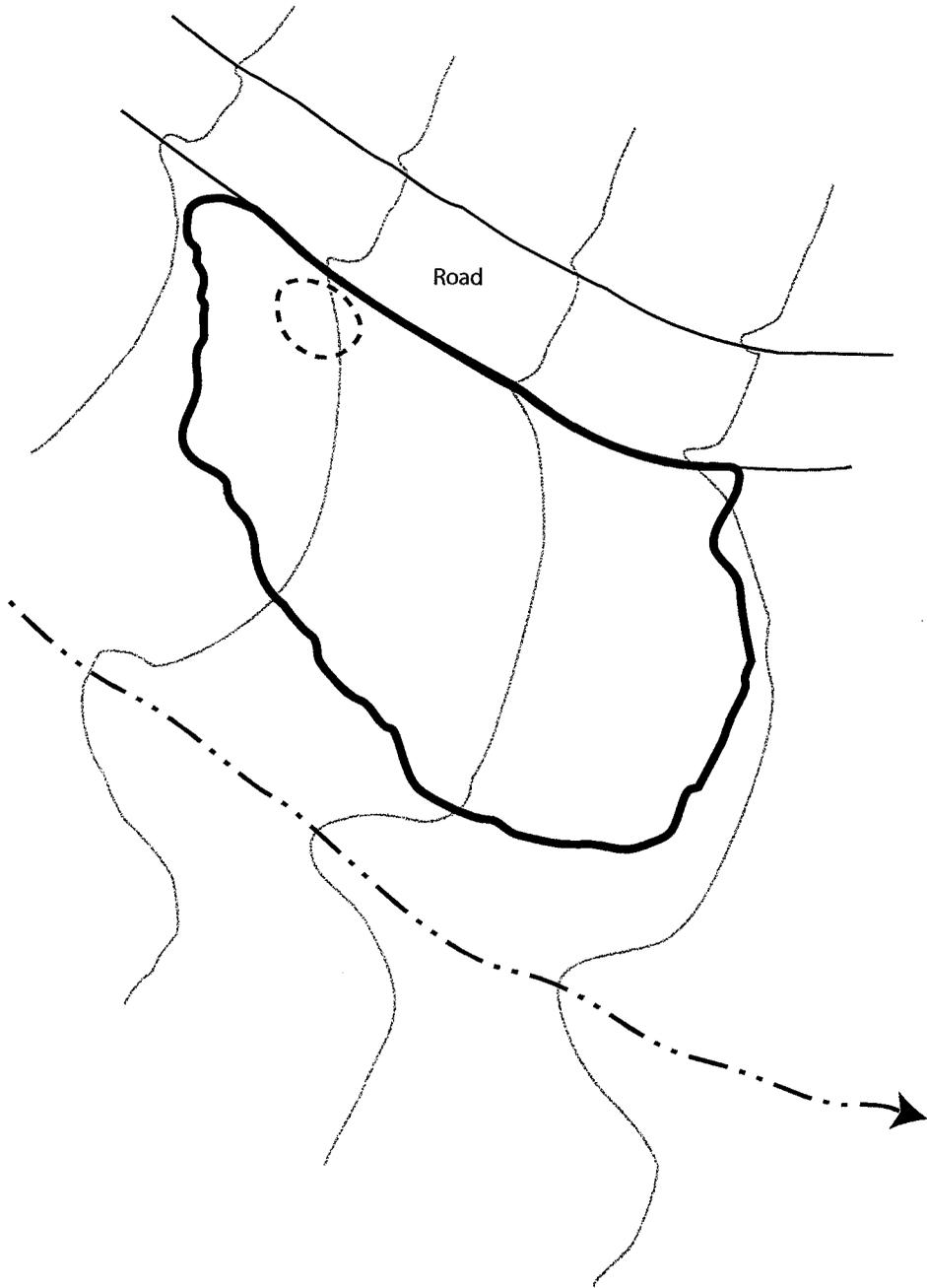
SCALE 1:24,000



Site 42DC2258 Location Map  
 Berry Petroleum Company  
 Lake Canyon Project  
 Proposed Oil and Gas Locations

USGS 7.5' Topographic Quadrangle Maps:  
 Duchesne (1980) and  
 Duchesne SW (1964)

**URS**



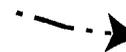
Contour Lines Are Approximate



### Sketch Map of 42DC2258

 Site Boundary

 Artifact Concentration

 Drainage/Wash

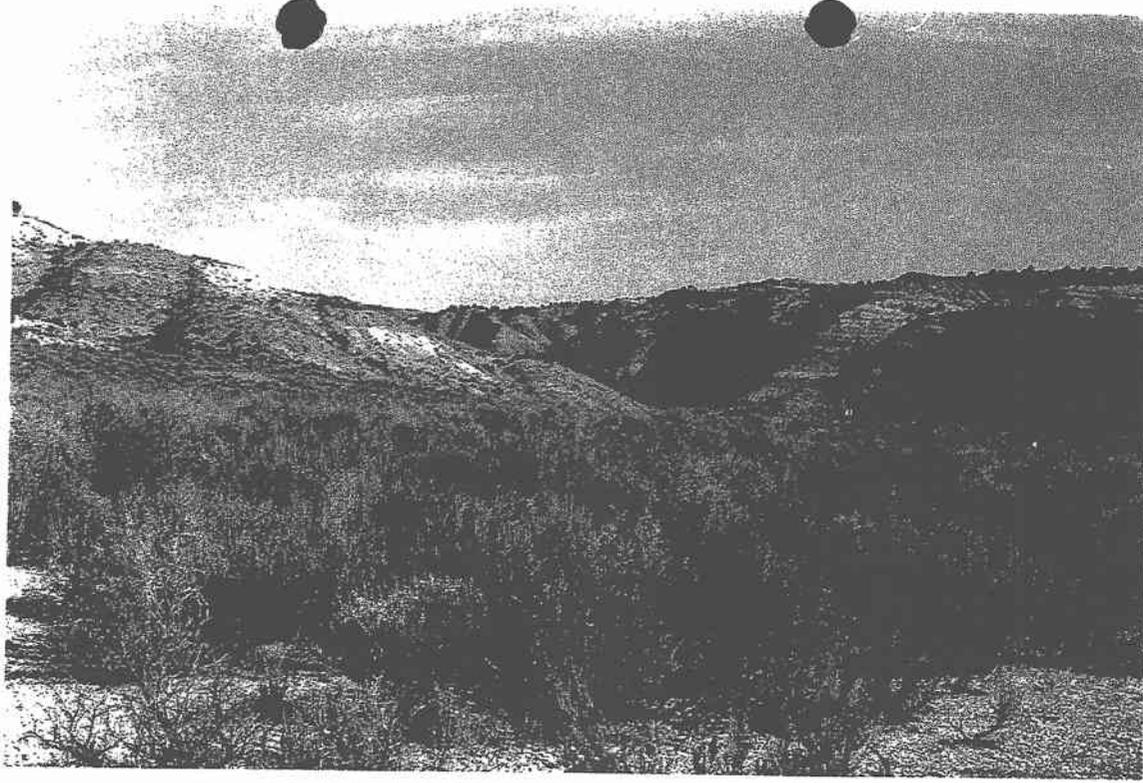
K011 LC-1: exp. 2  
42DC2258

Overview of historic artifact scatter.  
Looking west. 10/24/2006. URS Corporation



Roll LC-1: exp. 1  
42DC2258

Overview of historic artifact scatter.  
Looking east. 10/24/2006. URS Corporation



Roll LC-1: exp. 3

42DC2258

Close up view of tin can concentration.  
Looking north. 10/24/2006. URS Corporation



# IMACS SITE FORM

## Part A - Administrative Data

INTERMOUNTAIN ANTIQUITIES COMPUTER SYSTEM

Form approved for use by:

BLM - Utah, Idaho, Wyoming, Nevada

Division of State History - Utah, Wyoming

USFS - Intermountain Region

NPS - Utah, Wyoming

\*1. State No. **42DC2259**

\*2. Agency No.

3. Temp. No. **LC-3**

County: **Duchesne**

4. State: **Utah**

5. Project: **Berry Petroleum, Lake Canyon**

\*6. Report No.:

7. Site Name / Property Name:

8. Class:  Prehistoric  Historic

Paleontologic

Ethnographic

9. Site Type: **Historic artifact scatter**

\*10. Elevation: **7530 ft.**

\*11. UTM Grid: Zone 11 2 | 5 3 8 1 7 2 | m E 4 4 3 5 5 3 2 | m N

\*12. **SE** ¼ of **SW** ¼ of **SW** ¼ of Sec. **3**, T. **5S**, R. **6W**

\*13. Meridian: **Uintah**

\*14. Map Reference: **Buck Knoll, Utah 7.5' (1962)**

15. Aerial Photo: **None**

16. Location and Access:

**From Duchesne, Utah, travel south on Highway 191, which intersects Highway 40. From that intersection, travel south for 2 miles. Turn west onto graded dirt road going up Trail Canyon. Drive 6.5 miles on the main graded dirt road, then turn south at the intersection of graded road onto two-track road. Continue on the two-track road for 5 miles to an intersection of several two-track roads. The site is located on the west side of the road.**

\*17. Land Owner: **State of Utah, Division of Wildlife Resources**

\*18. Federal Administrative Units: **N/A**

\*19. Location of Curated Materials: **N/A**

20. Site Description:

**Large, dispersed scatter of historic artifacts. Site is located in a large, open, chained area near the intersection of several roads.**

\*21. Site Condition:  Excellent (A)  Good (B)  Fair (C)  Poor (D)

\*22. Impact Agent(s): **road (RD), fluvial erosion (ER)**

\*23. National Register Status:  Significant (C)  Not Significant (D)  Unevaluated (Z)

Justify: **Site is an unremarkable collection of discarded historic artifacts. It is unassociated with any significant local events or personages and not architecturally distinctive, nor is it likely to yield additional information about the local history.**

24. Photos: **LC-1, 6-7 (B&W); LC-D-1, 21-22 (Digital)**

25. Recorded by: **Gordon C. Tucker Jr.**

\*26. Survey Organization: **URS Corporation (UI)**

\*28. Survey Date: **29 October 2006**

27. Assisting Crew Members: **Deborah Jensen**

Attachments:  Part B  Topo Map  Photos  Continuation Sheets  
 Part C  Site Sketch  Artifact/ Feature Sketch  
 Other  
 Part E

# Part A - Environmental Data

Site No.: 42DC2259

\*29. Slope: 2 (Degrees) open Aspect (Degrees)

\*30. Distance to Permanent Water: 2,200 meters

\*Type of Water Source:  Spring/Seep (A)  Stream/River (B)  Lake(C)  Other (D)

Name of Water Source: Right Fork Indian Canyon River

\*31. Geographic Unit: Book Cliffs-Roan Plateau (CAB)

\*32. Topographic Location: - See Guide for additional information

## Primary Landform:

- |   |  |   |   |  |
|---|--|---|---|--|
| <input type="checkbox"/> Mountain Spine (A)   | <input type="checkbox"/> Alluvial Fan (A)        | <input type="checkbox"/> Dune (I)             | <input type="checkbox"/> Slope (Q)            | <input type="checkbox"/> Riser (Y)                 |
| <input type="checkbox"/> Hill (B)             | <input type="checkbox"/> Alcove/Rock Shelter (B) | <input type="checkbox"/> Floodplain (J)       | <input type="checkbox"/> Terrace/Bench (R)    | <input type="checkbox"/> Multiple S. Landforms (1) |
| <input type="checkbox"/> Tableland/Mesa (C)   | <input type="checkbox"/> Arroyo (C)              | <input type="checkbox"/> Ledge (K)            | <input type="checkbox"/> Talus Slope (S)      | <input type="checkbox"/> Bar (2)                   |
| <input checked="" type="checkbox"/> Ridge (D) | <input type="checkbox"/> Basin (D)               | <input type="checkbox"/> Mesa/Butte (L)       | <input type="checkbox"/> Island (T)           | <input type="checkbox"/> Lagoon (3)                |
| <input type="checkbox"/> Valley (E)           | <input type="checkbox"/> Cave (E)                | <input type="checkbox"/> Playa (M)            | <input type="checkbox"/> Outcrop (U)          | <input type="checkbox"/> Ephemeral Wash (4)        |
| <input type="checkbox"/> Plain (F)            | <input type="checkbox"/> Cliff (F)               | <input type="checkbox"/> Port Geo Feature(N)  | <input type="checkbox"/> Spring Mound/Bog (V) | <input type="checkbox"/> Kipuka (5)                |
| <input type="checkbox"/> Canyon (G)           | <input type="checkbox"/> Delta (G)               | <input checked="" type="checkbox"/> Plain (O) | <input type="checkbox"/> Valley (W)           | <input type="checkbox"/> Saddle/Pass (6)           |
| <input type="checkbox"/> Island (H)           | <input type="checkbox"/> Detached Monolith (H)   | <input type="checkbox"/> Ridge/Knoll (P)      | <input type="checkbox"/> Cutbank (X)          | <input type="checkbox"/> Graben (7)                |

Describe: Site is located on the ridge spine of a series of deep canyons and flat mesas. The ridge runs north-south between Indian Canyon (2 miles east) and Lake Canyon (2 miles west).

\*33. On Site Depositional Context

- |   |   |  |  |
|---|---|--|--|
| <input type="checkbox"/> Fan (A)            | <input type="checkbox"/> Outcrop (Q)        | <input type="checkbox"/> Moraine (J)         | <input type="checkbox"/> Desert Pavement (P)     |
| <input type="checkbox"/> Talus (B)          | <input type="checkbox"/> Extinct Lake (F)   | <input type="checkbox"/> Flood Plain (K)     | <input type="checkbox"/> Stream Bed (R)          |
| <input type="checkbox"/> Dune (C)           | <input type="checkbox"/> Extant Lake (G)    | <input type="checkbox"/> Marsh (L)           | <input type="checkbox"/> Aeolian (S)             |
| <input type="checkbox"/> Stream Terrace (D) | <input type="checkbox"/> Alluvial Plain (H) | <input type="checkbox"/> Landslide/Slump (M) | <input type="checkbox"/> None (T)                |
| <input type="checkbox"/> Playa (E)          | <input type="checkbox"/> Colluvium (I)      | <input type="checkbox"/> Delta (N)           | <input checked="" type="checkbox"/> Residual (U) |

Description of Soil: Soil has developed in place

34. Vegetation: Site is located in a chained area with grasses and sagebrush dominating the vegetation. Surrounding areas are pinyon-juniper dominant.

\*a. Life Zone:

- Arctic-alpine (A)  Hudsonian (B)  Canadian (C)  Transitional (D)  Upper Sonoran (E)  Lower Sonoran (F)

\*b. Community: Primary On Site M Secondary On Site Q Surrounding Site H

- |                    |                             |                         |                    |
|--------------------|-----------------------------|-------------------------|--------------------|
| Aspen (A)          | Other/Mixed Conifer (G)     | Grassland/Steppe (M)    | Marsh/Swamp (S)    |
| Spruce-Fir(B)      | Pinyon-Juniper Woodland (H) | Desert Lake Shore (N)   | Lake/Reservoir (T) |
| Douglas Fir (C)    | Wet Meadow (I)              | Shadscale Community (O) | Agricultural (U)   |
| Alpine Tundra (D)  | Dry Meadow (J)              | Tall Sagebrush (P)      | Blackbrush (V)     |
| Ponderosa Pine (E) | Oak-Maple Shrub (K)         | Low Sagebrush (Q)       | Creosote Bush (Y)  |
| Lodgepole Pine (F) | Riparian (L)                | Barren (R)              |                    |

Describe:

\*35. Miscellaneous Text

36. Comments/Continuations

# Part C - Historic Sites

Site No.(s): **42DC2259**

1. Site Type: **Historic artifact scatter**
- \*2. Historic Theme(s): **Farming/Ranching (agriculture)**
- \*3. Culture: Describe Cultural Affiliation **EA** Dating Method **F** Cultural Affiliation Dating Method
- \*4. Oldest Date: **1917** Recent Date: **1964**  
How determined? Trademarks and glass color (purple)
5. Site Dimensions **23 m x 23 m** \*Area: **529 sq m**
- \*6. Surface Collection/Method:  None(A)  Designed Sample (C)  
 Grab Sample(B)  Complete Collection (D)  
Sampling Method:
7. Estimated Depth of Fill:  Surface (A)  20 - 100cm (C)  Fill noted but unknown (E)  
 0 - 20cm (B)  100cm + (D)  Depth suspected but not tested (F)  
How Estimated: **Road cut**  
(If tested, show location on site map)
8. Excavation Status:  Excavated (A)  Tested (B)  Unexcavated (C)  
Testing Method:
9. Summary of Artifacts and Debris: *(Refer to guide for additional categories)*  
 Glass (GL)  Bone (BO)  Leather (LE)  Ammunition (AM)  Domestic Items (DI)  
 Metal (ME)  Ceramics (CS)  Wire (WI)  Wood (WD)  Kitchen Utensils (KU)  
 Nails (NC,NW)  Fabric (FA)  Tin Cans (TC)  Rubber (RB)  Car/Car Parts (CR)  
Describe:  
**Artifact scatter includes dozens of metal cans of various sizes, pieces of glass (clear, purple and brown), and dimensioned lumber.**  
  
**Lumber consists of approximately 4 – 1” by 12” planks bolted and screwed together as a frame.**
10. Ceramic Artifacts: Paste Glaze/Slip Decoration Pattern Vessel Form(s) Number  
  
**None observed**
- a. Estimated Number of Ceramic Trademarks   0    
Describe:

# Part C - Historic Sites

Site No.(s): **42DC2259**

11. Glass:

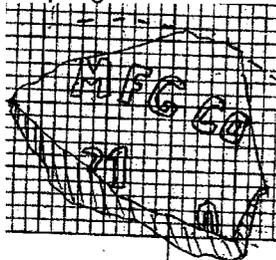
#	Manufacture	Color	Function	Trademarks	Decoration
20	Hazel-Atlas Glass Co.	Clear		See below	
5		Purple		See below	
10		Brown			

Describe:

Clear glass trademarks:



Purple glass trademarks:



12. Maximum Density - #/sq m (glass and ceramics): **4-6**

13. Tin Cans:

Type	Opening	Size	Modified	Label/Mark	Function
Coffee can, quantity 6		3" tall, 5" diameter			
No. 2 cans, quantity 12		4 9/16" tall, 3 7/16" diameter			

Describe: **Cans date from 1936 to 1974**

\*14. Landscape and Constructed Features (locate on site map) - (See guide for additional categories)

- Trail/Road (TR)       Dump (DU)       Dam, Earthen (DA)       Hearth/Campfire (HE)
- Tailings (MT,ML)       Depression (DE)       Ditch (DI)       Quarry (QU)
- Rock Alignment (RA)       Cemetery Burial (CB)       Inscriptions (IN)       Other (OT):

Describe: **Two-track road is directly east of the site.**

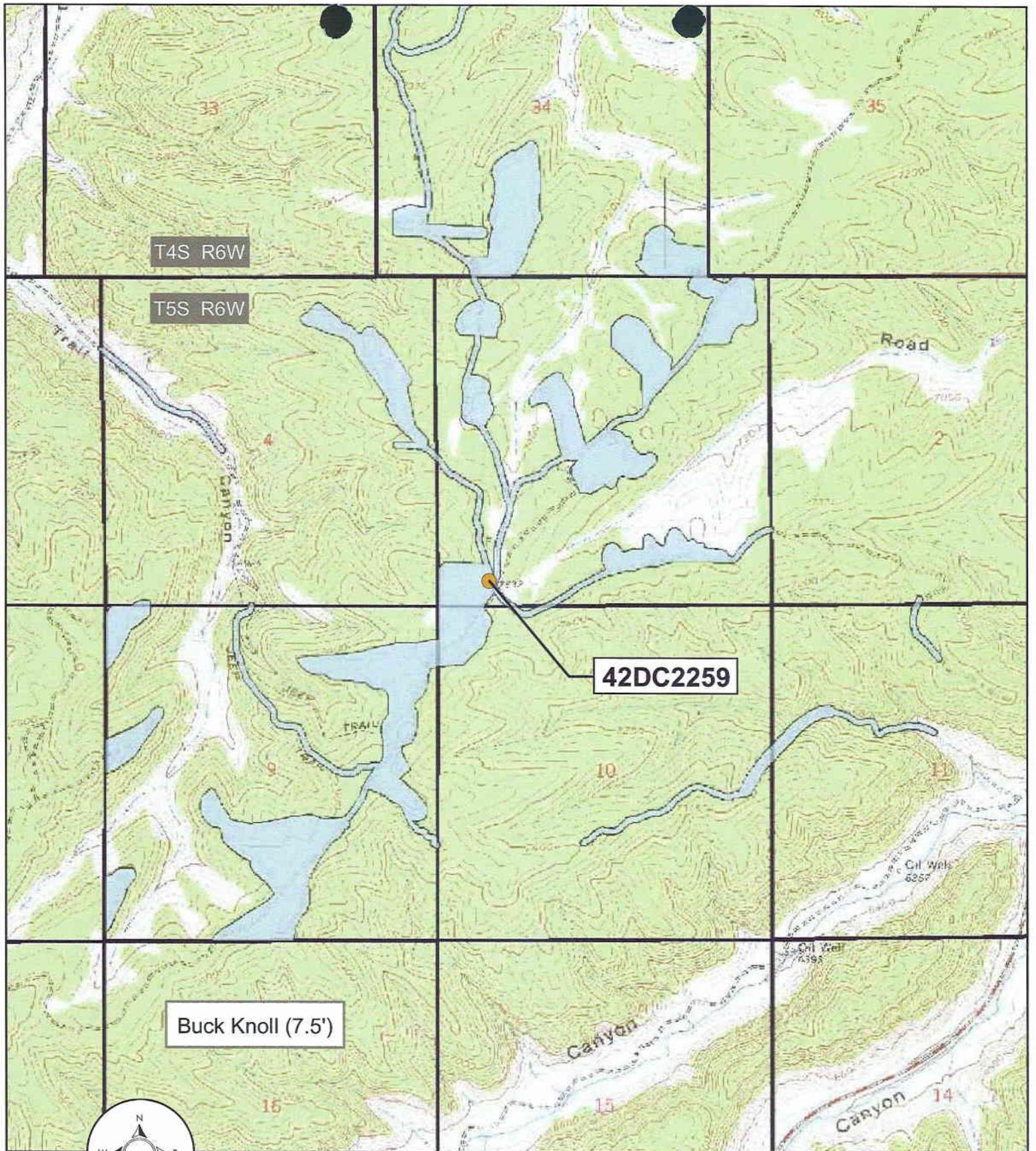
\*15. Buildings and Structures (locate on site map)

#      Material      Type      #      Material      Type

**None**

Describe:

16. Comments/Continuations - Please make note of any Historic Record searches performed (for example - County Records, General Land Office, Historical Society, Land Management Agency Records, Oral Histories/interviews).



**42DC2259**

**Buck Knoll (7.5')**



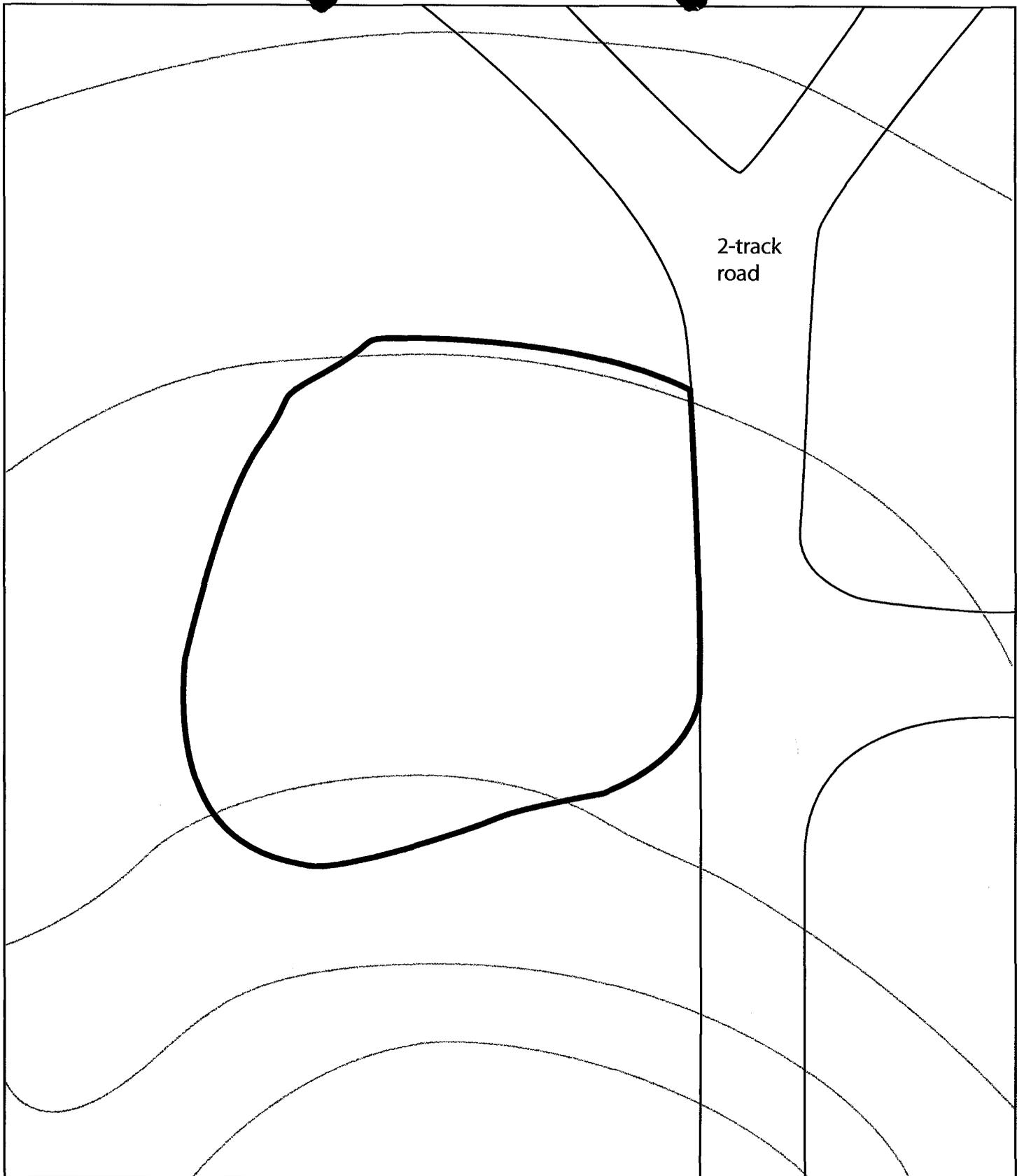
SCALE 1:24,000



**URS**

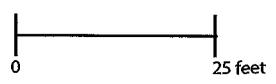
Site 42DC2259 Location Map  
 Berry Petroleum Company  
 Lake Canyon Project  
 Proposed Oil and Gas Locations

USGS 7.5' Topographic Quadrangle Map:  
 Buck Knoll (1962)



2-track  
road

Sketch Map of 42DC2259



Contour Lines Are Approximate

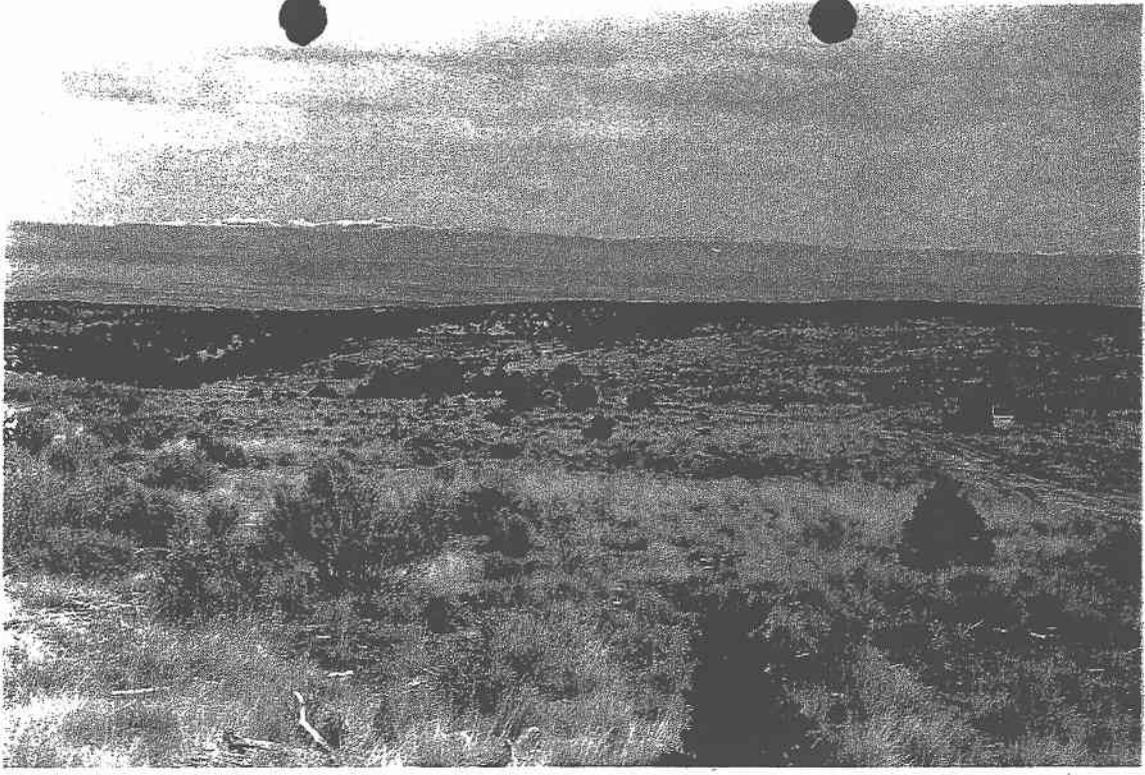
 Site Boundary



**URS**

Roll LC-1: exp. 6  
42DC2259

Overview of historic artifact scatter.  
Looking north. 10/24/2006. URS Corporation



Roll LC-1: exp. 7  
42DC2259

Overview of historic artifact scatter.  
Looking south. 10/24/2006. URS Corporation



# IMACS SITE FORM

## Part A - Administrative Data

INTERMOUNTAIN ANTIQUITIES COMPUTER SYSTEM

Form approved for use by:

BLM - Utah, Idaho, Wyoming, Nevada  
Division of State History - Utah, Wyoming  
USFS - Intermountain Region  
NPS - Utah, Wyoming

\*1. State No.: **42DC2260**

\*2. Agency No.:

3. Temp. No.: **LC-4**

County: **Duchesne**

4. State: **Utah**

5. Project: **Berry Petroleum, Lake Canyon**

\*6. Report No.:

7. Site Name / Property Name: **Deerhorn No. 1 Gilsonite Mine**

8. Class:  Prehistoric  Historic  Paleontologic  Ethnographic

9. Site Type: **Mine**

\*10. Elevation: **6940 ft.**

\*11. UTM Grid (NAD27): Zone 1 | 2 | 5 | 3 | 3 | 1 | 2 | 6 | m E 4 | 4 | 3 | 9 | 2 | 9 | 4 | m N

\*12. SE ¼ of SW ¼ of NW ¼ of Sec. 30, T. 4S, R. 6W  
NW ¼ of SW ¼ of Sec. 30, T. 4S, R. 6W

\*13. Meridian: **Uintah**

\*14. Map Reference: **Buck Knoll, Utah 7.5' (1962)**

15. Aerial Photo: **None**

16. Location and Access:

**From the intersection of Highways 40 and 191 in Duchesne, Utah, travel 8 miles west on Highway 40. Take the Strawberry River turnoff to the south. Continue on this road through the Strawberry River canyon for 7 miles to the Dry Canyon turnoff to the south. Drive up Dry Canyon for 1.5 miles to the intersection of Matilda Canyon, on the east side of Dry Canyon. Travel up Matilda Canyon to the end of the Jeep trail, 1.2 miles. The site is located on the west side of Matilda Canyon. An access road, approximately 10 feet wide, leading to the mine, is cut in the hillslope with a grade of 10% on a 40% slope.**

\*17. Land Owner: **Ute Indian Tribe**

\*18. Federal Administrative Units: **N/A**

\*19. Location of Curated Materials: **N/A**

20. Site Description:

**Historic gilsonite mine with associated historic artifacts.**

\*21. Site Condition:  Excellent (A)  Good (B)  Fair (C)  Poor (D)

\*22. Impact Agent(s): **Erosion (ER), Road (RD)**

\*23. National Register Status:  Significant (C)  Not Significant (D)  Unevaluated (Z)

Justify: **The Deerhorn No. 1 Gilsonite Mine is associated with the opening of the Uintah Indian Reservation to mining claims, an important local event.**

24. Photos: **LC-1, 9-12 (B&W); LC-D-1, 35-39 (Digital)**

25. Recorded by: **Gordon C. Tucker Jr.**

\*26. Survey Organization: **URS Corporation (UI)**

\*28. Survey Date: **2 November 2006**

27. Assisting Crew Members: **Deborah Jensen**

Attachments:  Part B  Topo Map  Photos  Continuation Sheets  
 Part C  Site Sketch  Artifact/ Feature Sketch  
 Other  
 Part E

# Part A - Environmental Data

Site No.: **42DC2260**

\*29. Slope: **40** (Degrees) Aspect: **90** (Degrees)

\*30. Distance to Permanent Water: **3,000 meters**

\*Type of Water Source:  Spring/Seep (A)  Stream/River (B)  Lake(C)  Other (D)

Name of Water Source: **Lake Canyon Stream**

\*31. Geographic Unit: **Book Cliffs-Roan Plateau (CAB)**

\*32. Topographic Location: - See Guide for additional information

## Primary Landform:

- |   |  |  |   |  |
|---|--|--|---|--|
| <input type="checkbox"/> Mountain Spine (A)   | <input type="checkbox"/> Alluvial Fan (A)        | <input type="checkbox"/> Dune (I)            | <input checked="" type="checkbox"/> Slope (Q) | <input type="checkbox"/> Riser (Y)                 |
| <input type="checkbox"/> Hill (B)             | <input type="checkbox"/> Alcove/Rock Shelter (B) | <input type="checkbox"/> Floodplain (J)      | <input type="checkbox"/> Terrace/Bench (R)    | <input type="checkbox"/> Multiple S. Landforms (1) |
| <input type="checkbox"/> Tableland/Mesa (C)   | <input type="checkbox"/> Arroyo (C)              | <input type="checkbox"/> Ledge (K)           | <input type="checkbox"/> Talus Slope (S)      | <input type="checkbox"/> Bar (2)                   |
| <input checked="" type="checkbox"/> Ridge (D) | <input type="checkbox"/> Basin (D)               | <input type="checkbox"/> Mesa/Butte (L)      | <input type="checkbox"/> Island (T)           | <input type="checkbox"/> Lagoon (3)                |
| <input type="checkbox"/> Valley (E)           | <input type="checkbox"/> Cave (E)                | <input type="checkbox"/> Playa (M)           | <input type="checkbox"/> Outcrop (U)          | <input type="checkbox"/> Ephemeral Wash (4)        |
| <input type="checkbox"/> Plain (F)            | <input type="checkbox"/> Cliff (F)               | <input type="checkbox"/> Port Geo Feature(N) | <input type="checkbox"/> Spring Mound/Bog (V) | <input type="checkbox"/> Kipuka (5)                |
| <input type="checkbox"/> Canyon (G)           | <input type="checkbox"/> Delta (G)               | <input type="checkbox"/> Plain (O)           | <input type="checkbox"/> Valley (W)           | <input type="checkbox"/> Saddle/Pass (6)           |
| <input type="checkbox"/> Island (H)           | <input type="checkbox"/> Detached Monolith (H)   | <input type="checkbox"/> Ridge/Knoll (P)     | <input type="checkbox"/> Cutbank (X)          | <input type="checkbox"/> Graben (7)                |

Describe: **Site is located on the west side of Matilda Canyon, partway up a steep (40%) slope.**

\*33. On Site Depositional Context

- |   |   |  |  |
|---|---|--|--|
| <input type="checkbox"/> Fan (A)              | <input type="checkbox"/> Outcrop (Q)        | <input type="checkbox"/> Moraine (J)         | <input type="checkbox"/> Desert Pavement (P) |
| <input checked="" type="checkbox"/> Talus (B) | <input type="checkbox"/> Extinct Lake (F)   | <input type="checkbox"/> Flood Plain (K)     | <input type="checkbox"/> Stream Bed (R)      |
| <input type="checkbox"/> Dune (C)             | <input type="checkbox"/> Extant Lake (G)    | <input type="checkbox"/> Marsh (L)           | <input type="checkbox"/> Aeolian (S)         |
| <input type="checkbox"/> Stream Terrace (D)   | <input type="checkbox"/> Alluvial Plain (H) | <input type="checkbox"/> Landslide/Slump (M) | <input type="checkbox"/> None (T)            |
| <input type="checkbox"/> Playa (E)            | <input type="checkbox"/> Colluvium (I)      | <input type="checkbox"/> Delta (N)           | <input type="checkbox"/> Residual (U)        |

Description of Soil: **Very shallow residual soil**

34. Vegetation: **Landscape is dominated by grasses and sagebrush.**

\*a. Life Zone:

- Arctic-alpine (A)  Hudsonian (B)  Canadian (C)  Transitional (D)  Upper Sonoran (E)  Lower Sonoran (F)

\*b. Community: Primary On Site Q Secondary On Site M Surrounding Site H

- |                    |                             |                         |                    |
|--------------------|-----------------------------|-------------------------|--------------------|
| Aspen (A)          | Other/Mixed Conifer (G)     | Grassland/Steppe (M)    | Marsh/Swamp (S)    |
| Spruce-Fir(B)      | Pinyon-Juniper Woodland (H) | Desert Lake Shore (N)   | Lake/Reservoir (T) |
| Douglas Fir (C)    | Wet Meadow (I)              | Shadscale Community (O) | Agricultural (U)   |
| Alpine Tundra (D)  | Dry Meadow (J)              | Tall Sagebrush (P)      | Blackbrush (V)     |
| Ponderosa Pine (E) | Oak-Maple Shrub (K)         | Low Sagebrush (Q)       | Creosote Bush (Y)  |
| Lodgepole Pine (F) | Riparian (L)                | Barren (R)              |                    |

Describe:

\*35. Miscellaneous Text

36. Comments/Continuations

# Part C - Historic Sites

Site No.(s): **42DC2260**

1. Site Type: **Historic gilsonite mine**

\*2. Historic Theme(s): **Mining**

Culture:	Cultural Affiliation	Dating Method	Cultural Affiliation	Dating Method
	<b>EA</b>	<b>F, I</b>		

Describe: **Historic records**

\*4. Oldest Date: **1902** Recent Date: **unknown**  
How determined? **Historic map**

5. Site Dimensions: **425 m x 180 m** \*Area **76,500** sq m

\*6. Surface Collection/Method:  None(A)  Designed Sample (C)  
 Grab Sample(B)  Complete Collection (D)  
Sampling Method:

7. Estimated Depth of Fill:  Surface (A)  20 - 100cm (C)  Fill noted but unknown (E)  
 0 - 20cm (B)  100cm + (D)  Depth suspected but not tested (F)  
How Estimated: **Open adit and mine tailings**  
(If tested, show location on site map)

8. Excavation Status:  Excavated (A)  Tested (B)  Unexcavated (C)  
Testing Method:

9. Summary of Artifacts and Debris: *(Refer to guide for additional categories)*

<input type="checkbox"/> Glass (GL)	<input type="checkbox"/> Bone (BO)	<input type="checkbox"/> Leather (LE)	<input type="checkbox"/> Ammunition (AM)	<input checked="" type="checkbox"/> Domestic Items (DI)
<input checked="" type="checkbox"/> Metal (ME)	<input type="checkbox"/> Ceramics (CS)	<input type="checkbox"/> Wire (WI)	<input checked="" type="checkbox"/> Wood (WD)	<input checked="" type="checkbox"/> Kitchen Utensils (KU)
<input checked="" type="checkbox"/> Nails (NC,NW)	<input type="checkbox"/> Fabric (FA)	<input checked="" type="checkbox"/> Tin Cans (TC)	<input type="checkbox"/> Rubber (RB)	<input type="checkbox"/> Car/Car Parts (CR)

Describe:

**Artifacts include cans of differing sizes, pieces of milled lumber and sheet metal panels, an enameled pot, galvanized metal tub, thin gauge wire, and wire nails of various sizes in the lumber.**

10. Ceramic Artifacts: Paste Glaze/Slip Decoration Pattern Vessel Form(s) Number

**None observed**

a. Estimated Number of Ceramic Trademarks 0  
Describe:

# Part C - Historic Sites

Site No.(s): **42DC2260**

11. Glass: # Manufacture Color Function Trademarks Decoration

**None observed**

Describe:

12. Maximum Density - #/sq m (glass and ceramics): **0**

13. Tin Cans:

Type	Opening	Size	Modified	Label/Mark	Function
<b>Hole-in-top, quantity 2</b>		<b>Full gallon, 8 3/4" tall, 6 3/16" diameter</b>			
<b>Metal can, quantity 6</b>		<b>8 3/4" tall, 6 3/16" diameter</b>			

Describe: **Two large cans were found at the top of the tailings pile. Other cans are found in a small scatter of historic artifacts at base of tailings pile.**

\*14. Landscape and Constructed Features (locate on site map) - (See guide for additional categories)

- Trail/Road (TR)     
  Dump (DU)     
  Dam, Earthen (DA)     
  Hearth/Campfire (HE)  
 Tailings (MT,ML)     
  Depression (DE)     
  Ditch (DI)     
  Quarry (QU)  
 Rock Alignment (RA)     
  Cemetery Burial (CB)     
  Inscriptions (IN)     
  Other (OT):

Describe:

**Tailings pile of small fragments of grayish shale are strewn down slope in a narrow swath, 50 feet wide. Road (10% grade) is a two-track cut into the canyon slope (40% grade).**

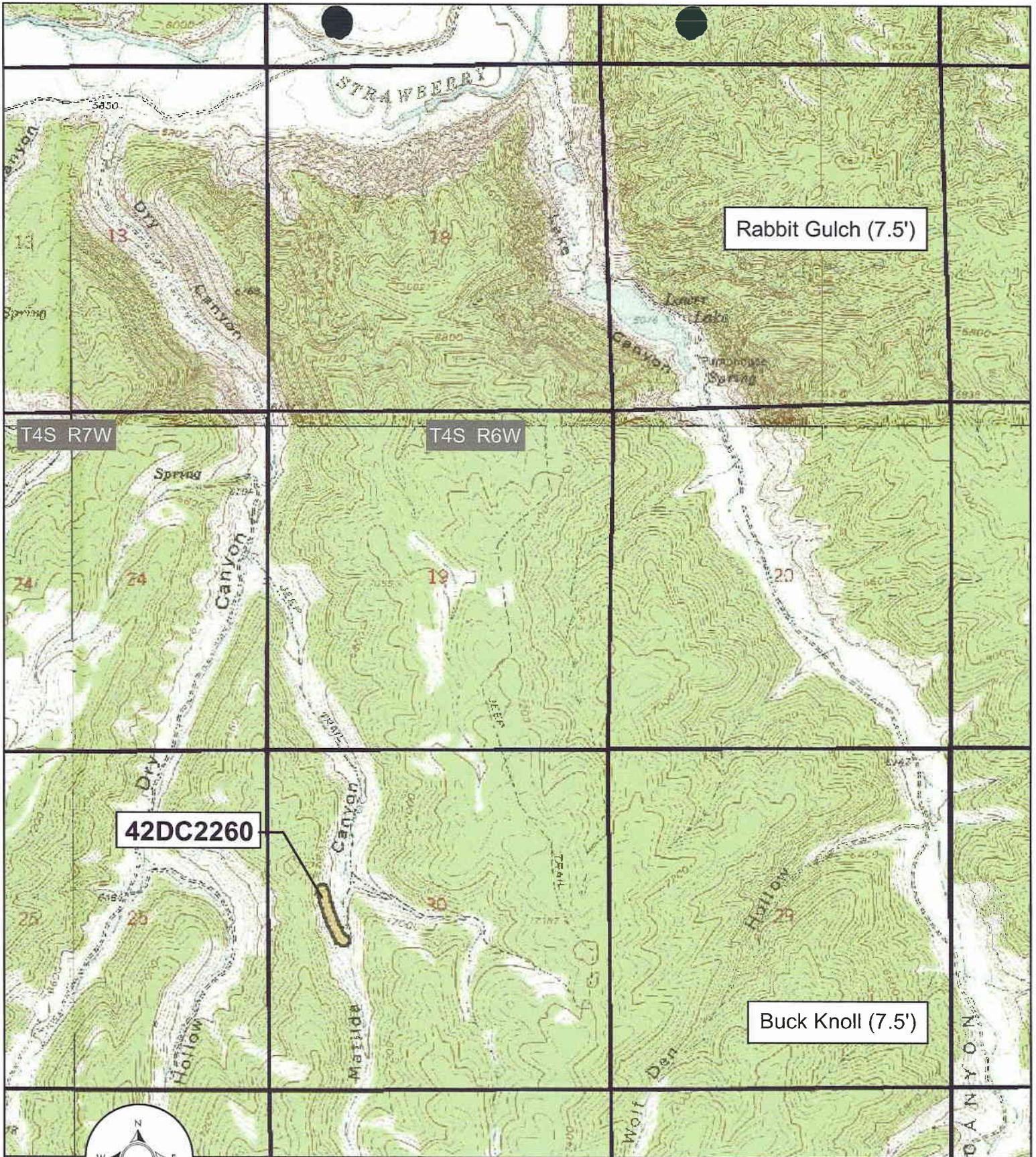
\*15. Buildings and Structures (locate on site map)

#	Material	Type	#	Material	Type
<b>1</b>	<b>Log</b>	<b>Mine/adit</b>			

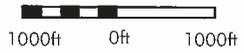
Describe: **Vertical cut for mine follows gilsonite seam upslope. Log cribbing used in mine cut.**

16. Comments/Continuations - Please make note of any Historic Record searches performed (for example - County Records, General Land Office, Historical Society, Land Management Agency Records, Oral Histories/interviews).

**A map prepared in 1902 by the Raven Mining Co. shows several gilsonite mines in the vicinity of the project area. The recorded location corresponds to the Deerhorn No. 1 Mine (Source: Diagram of Hydro-carbon Claims, Located by the Raven Mining Co. on the Uintah Indian Reservation, Utah, Under the Provisions of the Act of Congress Approved May 27, 1902).**



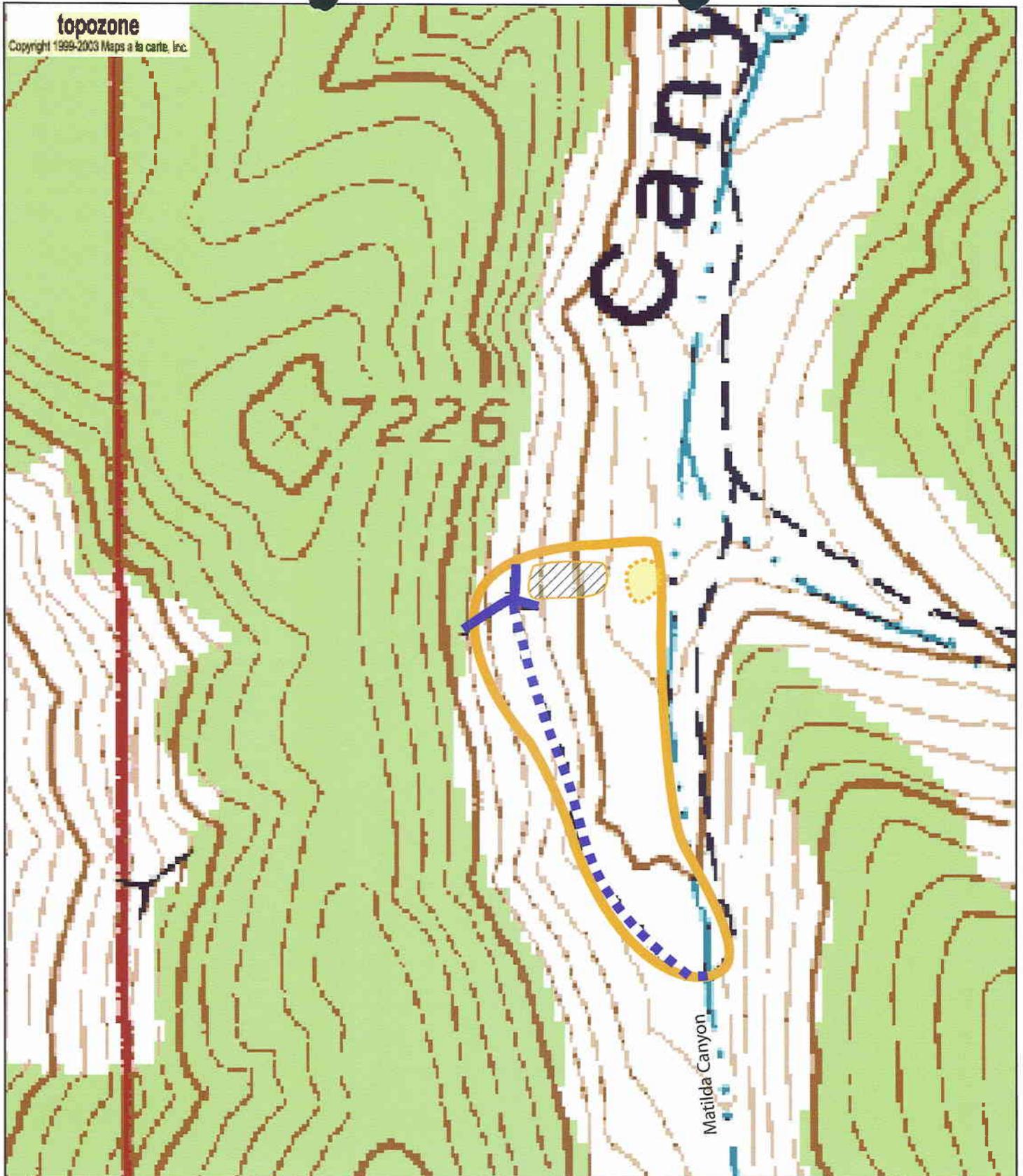
SCALE 1:24,000



**URS**

Site 42DC2260 Location Map  
 Berry Petroleum Company  
 Lake Canyon Project  
 Proposed Oil and Gas Locations

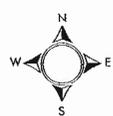
USGS 7.5' Topographic Quadrangle Maps:  
 Rabbit Gulch (1980) and  
 Buck Knoll (1962)



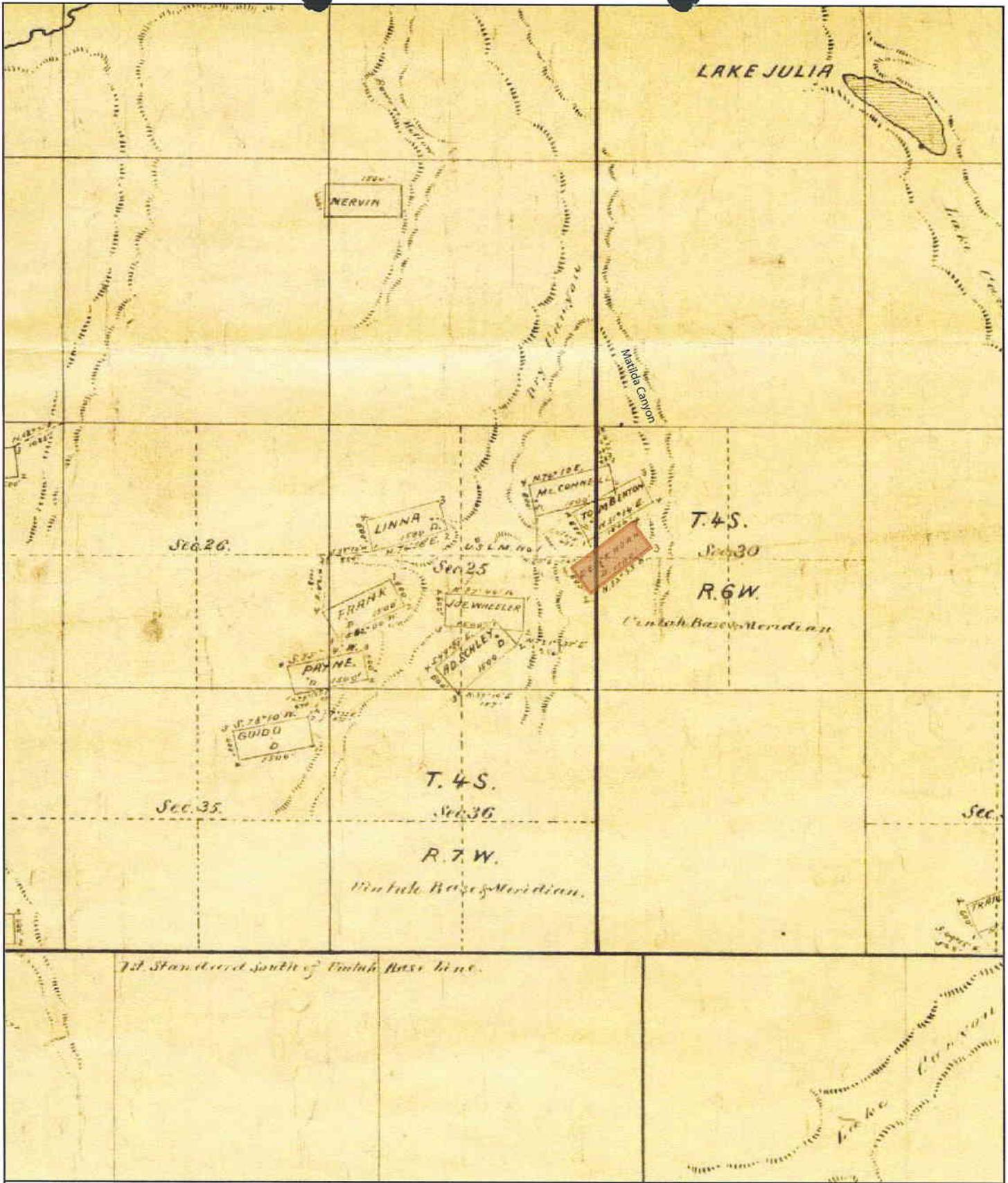
Site Map of 42DC2260



Contour Lines Are Approximate



-  Site Boundary
-  Access Road
-  Mine Adit
-  Tailings Pile
-  Artifact Concentration



URS

Site 42DC2260

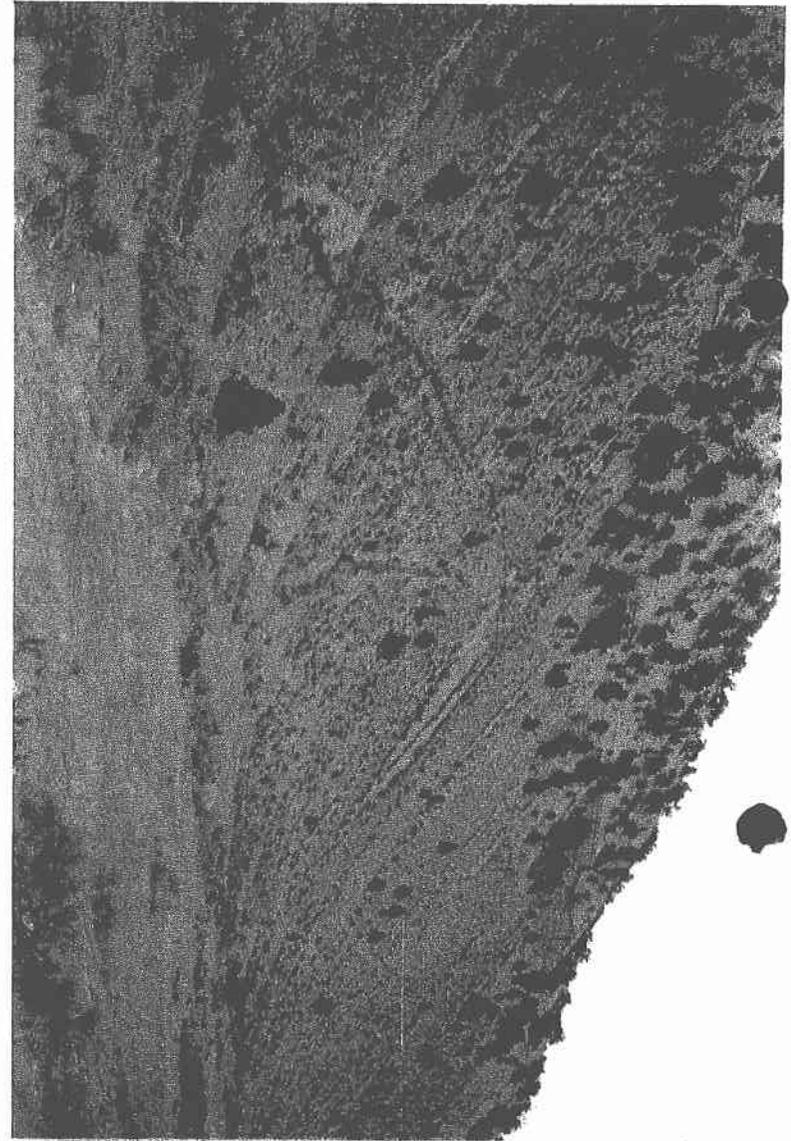


Diagram of Hydro-Carbon Claims  
 Located by the Raven Mining Co.  
 on the Uintah Indian Reservation,  
 Utah, under the provisions of the  
 Act Of Congress  
 approved May 27, 1902

Roll LC-1: exp. 10  
**Deerhorn No. 1 Gilsonite Mine 42DC2260**  
Entrance portal and cut for mine adit.  
Looking east. 10/24/2006. URS Corporation



Roll LC-1: exp. 9  
**Deerhorn No. 1 Gilsonite Mine 42DC2260**  
Overview of historic gilsonite mine.  
Looking northwest. 10/24/2006. URS Corporation

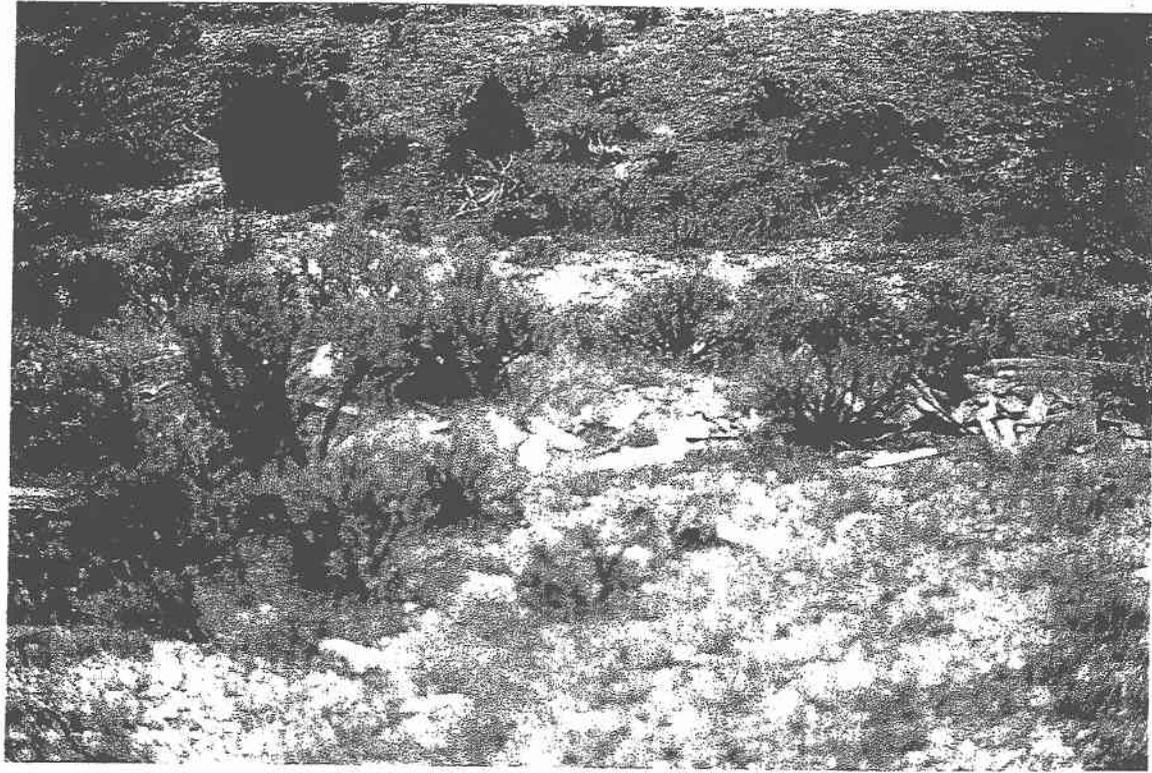


Roll LC-1; exp. 12

Deerhorn No. 1 Gilsonite Mine 42DC2260

Milled lumber debris located below tailings pile.

Looking east. 10/24/2006. URS Corporation

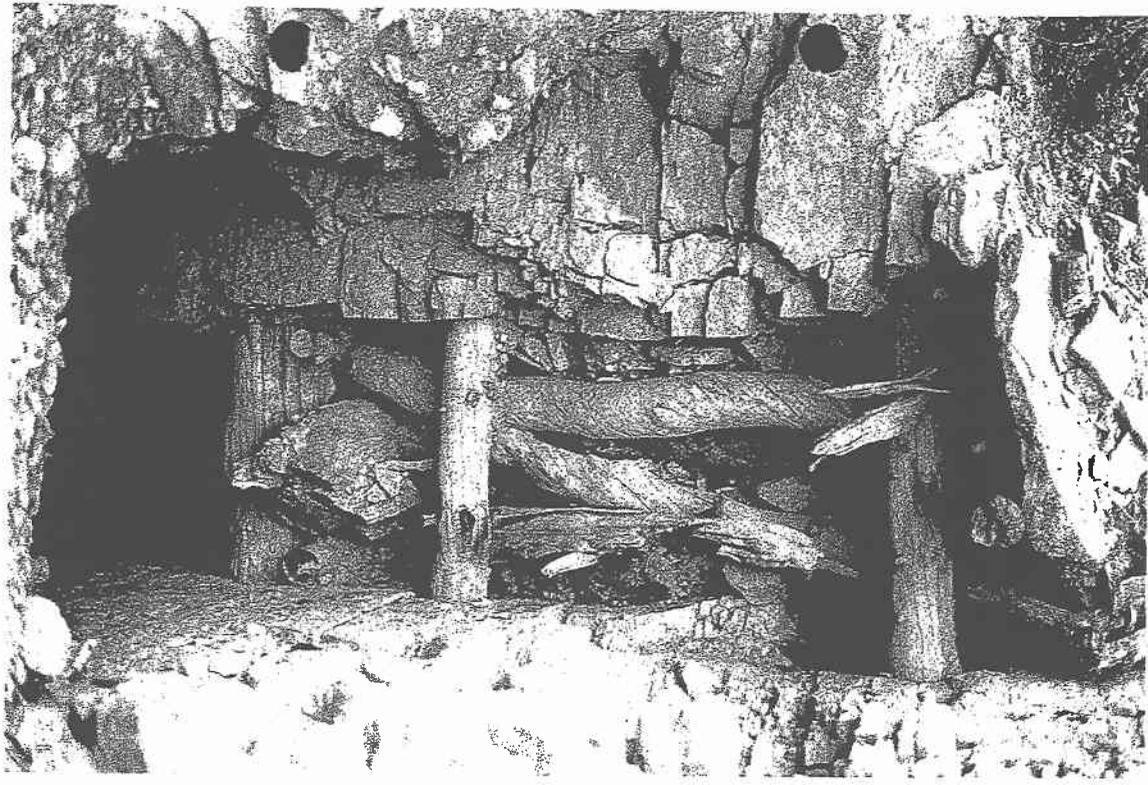


Roll LC-1; exp. 11

Deerhorn No. 1 Gilsonite Mine 42DC2260

Cribbing/roof support of logs at adit entrance.

Looking east. 10/24/2006. URS Corporation



# BERRY PETROLEUM COMPANY

LC FEE #1-12D-57

LOCATED IN DUCHESNE COUNTY, UTAH  
SECTION 12, T5S, R7W, U.S.B.&M.

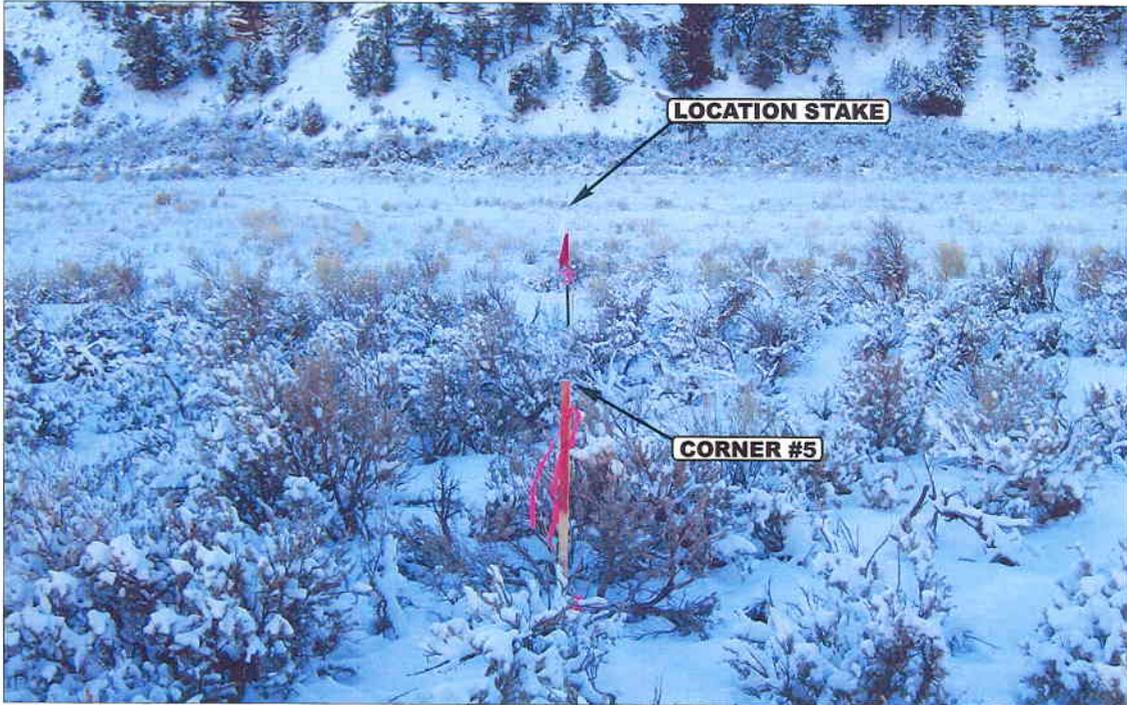


PHOTO: VIEW FROM CORNER #5 TO LOCATION STAKE

CAMERA ANGLE: SOUTHEASTERLY



PHOTO: VIEW FROM BEGINNING OF PROPOSED ACCESS

CAMERA ANGLE: SOUTHWESTERLY



- Since 1964 -

**U**  
**E**  
**L**  
**S** Uintah Engineering & Land Surveying  
85 South 200 East Vernal, Utah 84078  
435-789-1017 uels@uelsinc.com

LOCATION PHOTOS

01 18 07  
MONTH DAY YEAR

PHOTO

TAKEN BY: J.W.

DRAWN BY: L.K.

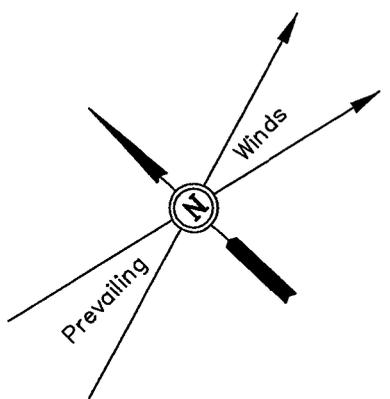
REVISED: 04-11-07

# BERRY PETROLEUM COMPANY

## LOCATION LAYOUT FOR

LC FEE #1-12D-57  
SECTION 12, T5S, R7W, U.S.B.&M.

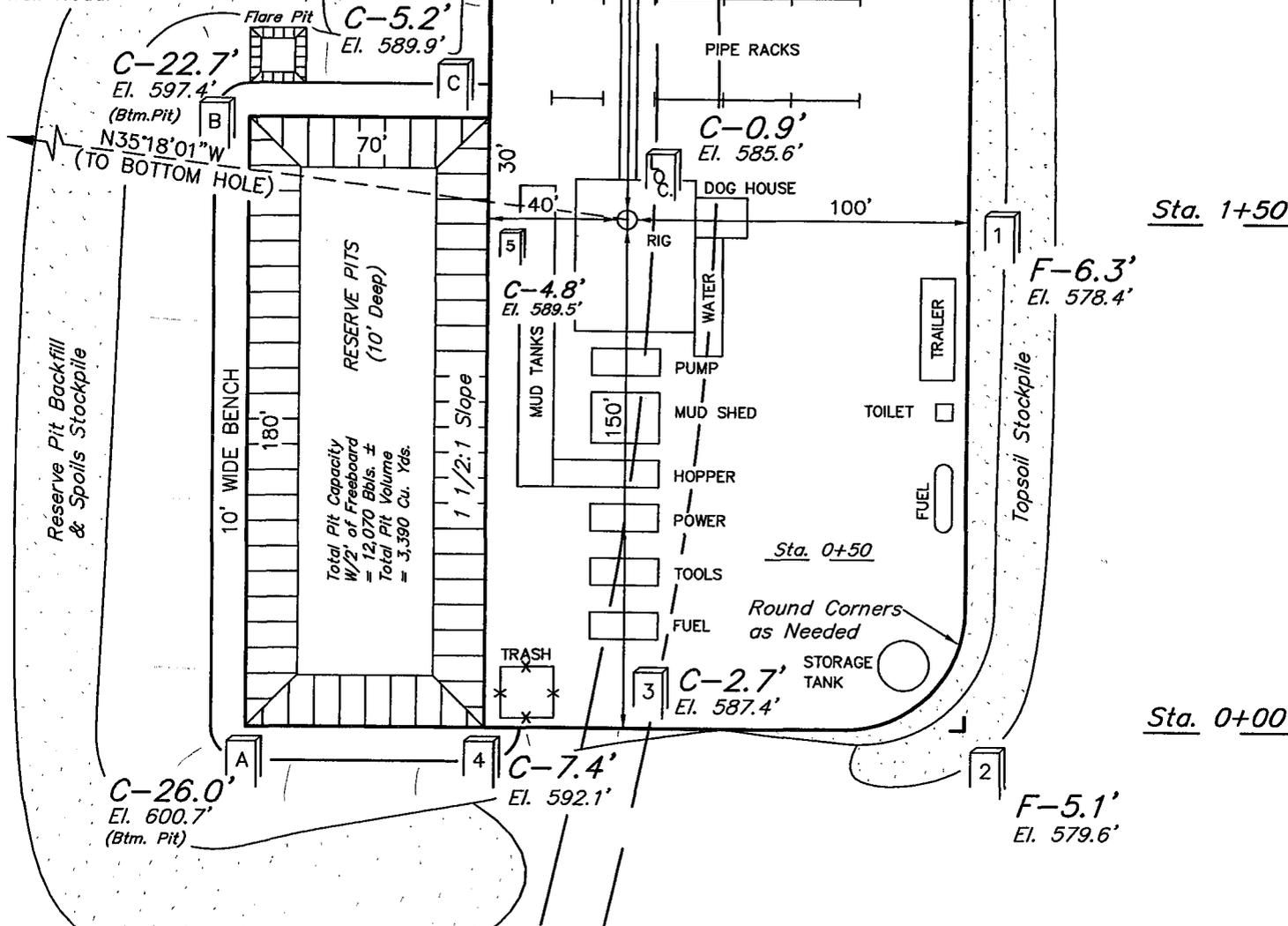
1060' FNL 380' FEL



SCALE: 1" = 50'  
DATE: 01-19-07  
DRAWN BY: L.K.  
REVISED: 04-11-07

Approx. Top of Cut Slope

**NOTE:**  
Flare Pit is to be located a min. of 100' from the Well Head.



Elev. Ungraded Ground at Location Stake = 6585.6'  
 Elev. Graded Ground at Location Stake = 6584.7'

# BERRY PETROLEUM COMPANY

## TYPICAL CROSS SECTIONS FOR

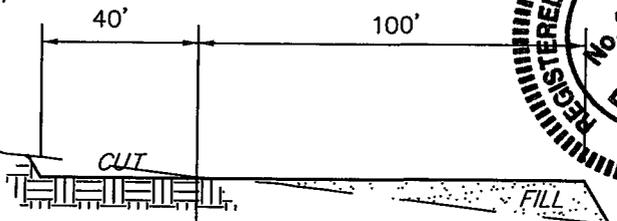
LC FEE #1-12D-57  
SECTION 12, T5S, R7W, U.S.B.&M.  
1060' FNL 380' FEL



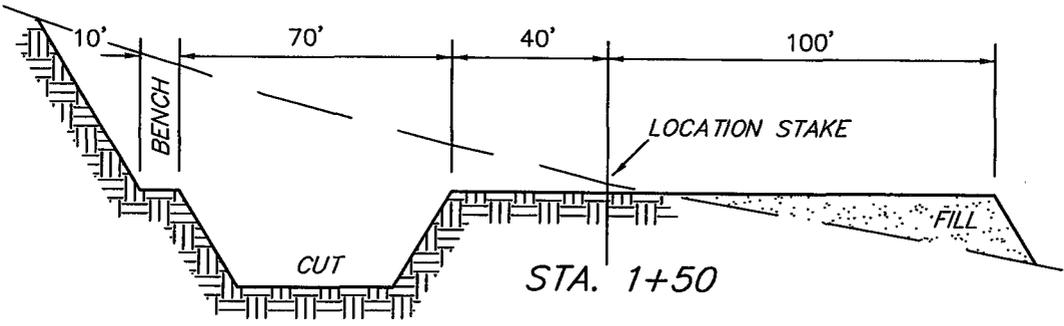
1" = 20'  
X-Section Scale  
1" = 50'

DATE: 01-19-07  
DRAWN BY: L.K.  
REVISED: 04-11-07

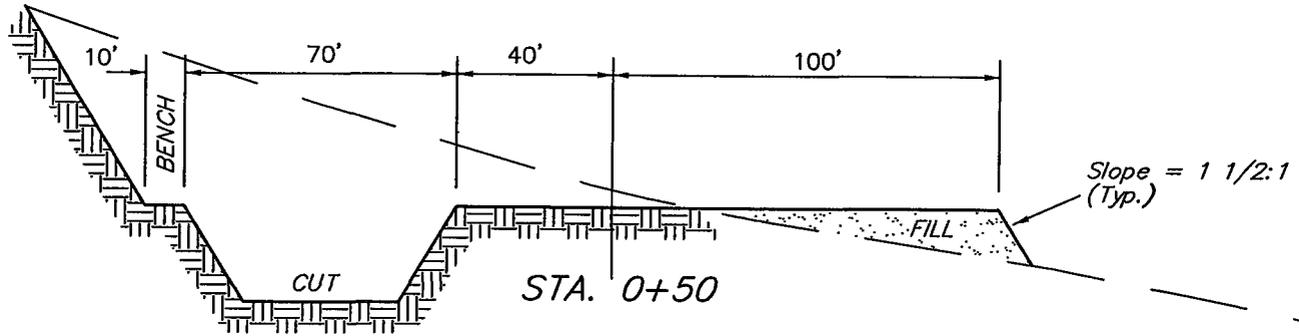
Preconstruction Grade



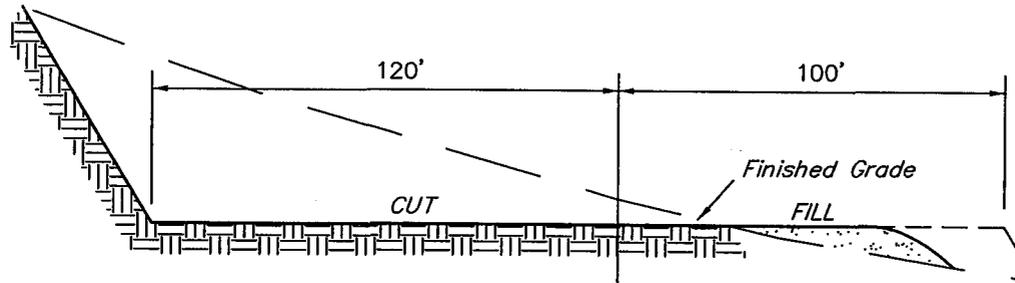
STA. 3+00



STA. 1+50



STA. 0+50



STA. 0+00

\* NOTE:  
FILL QUANTITY INCLUDES  
5% FOR COMPACTION

### APPROXIMATE YARDAGES

CUT	
(12") Topsoil Stripping	= 2,800 Cu. Yds.
Remaining Location	= 12,330 Cu. Yds.
<b>TOTAL CUT</b>	<b>= 15,130 CU.YDS.</b>
<b>FILL</b>	<b>= 4,270 CU.YDS.</b>

EXCESS MATERIAL	= 10,860 Cu. Yds.
Topsoil & Pit Backfill (1/2 Pit Vol.)	= 4,500 Cu. Yds.
EXCESS UNBALANCE (After Interim Rehabilitation)	= 6,360 Cu. Yds.

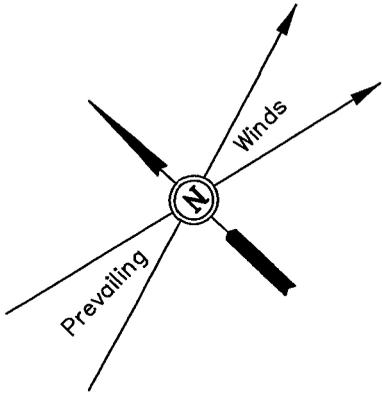
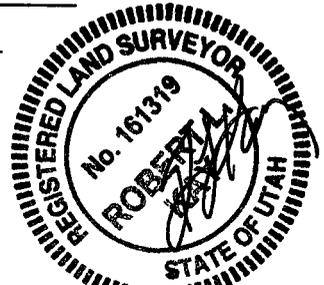
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85 So. 200 East \* Vernal, Utah 84078 \* (435) 789-1017

# BERRY PETROLEUM COMPANY

## LOCATION LAYOUT FOR

LC FEE #1-12D-57  
SECTION 12, T5S, R7W, U.S.B.&M.

1060' FNL 380' FEL



SCALE: 1" = 50'  
DATE: 01-19-07  
DRAWN BY: L.K.  
REVISED: 04-11-07

Approx.  
Top of  
Cut Slope

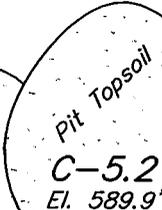
Proposed Access  
Road

F-4.2'  
El. 580.5'

Sta. 3+00

**NOTE:**

Flare Pit is to be located a min. of 100' from the Well Head.



Approx.  
Toe of  
Fill Slope

C-22.7'  
El. 597.4'  
(Btm. Pit)

N35°18'01"W  
(TO BOTTOM HOLE)

C-5.2'  
El. 589.9'

C-0.9'  
El. 585.6'

Sta. 1+50

Reserve Pit Backfill  
& Spoils Stockpile

CLOSED SYSTEM

Topsail Stockpile

F-6.3'  
El. 578.4'

Sta. 0+50

Round Corners  
as Needed

Sta. 0+00

C-26.0'  
El. 600.7'  
(Btm. Pit)

C-7.4'  
El. 592.1'

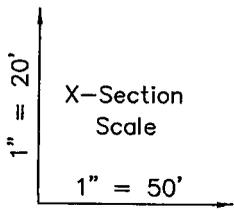
F-5.1'  
El. 579.6'

Elev. Ungraded Ground at Location Stake = 6585.6'  
Elev. Graded Ground at Location Stake = 6584.7'

# BERRY PETROLEUM COMPANY

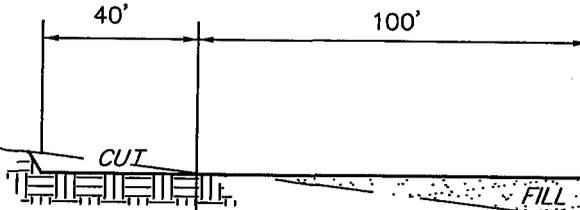
## TYPICAL CROSS SECTIONS FOR

LC FEE #1-12D-57  
SECTION 12, T5S, R7W, U.S.B.&M.  
1060' FNL 380' FEL

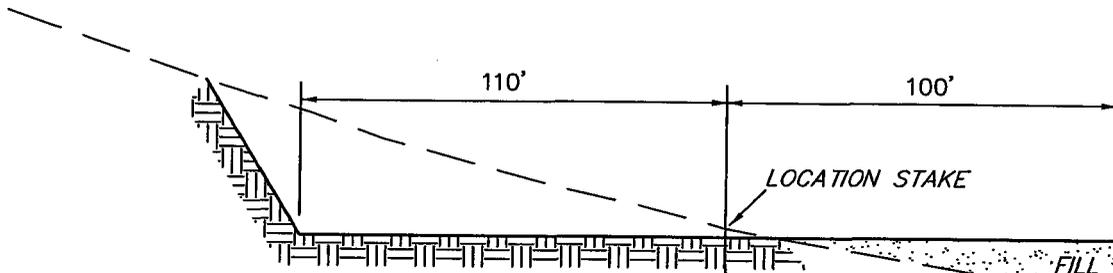


DATE: 01-19-07  
DRAWN BY: L.K.  
REVISED: 04-11-07

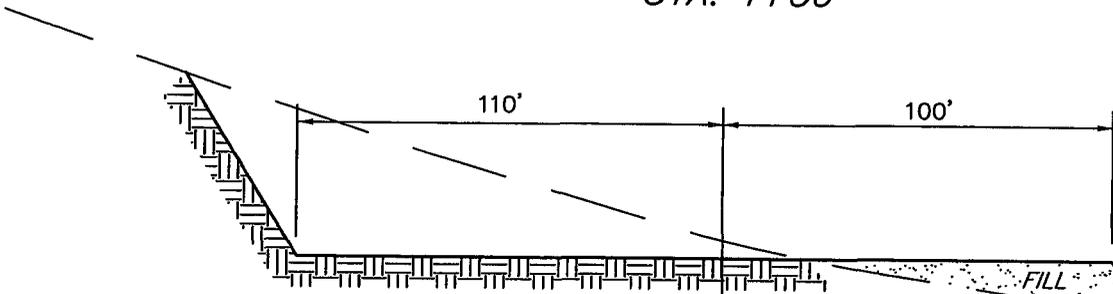
Preconstruction Grade



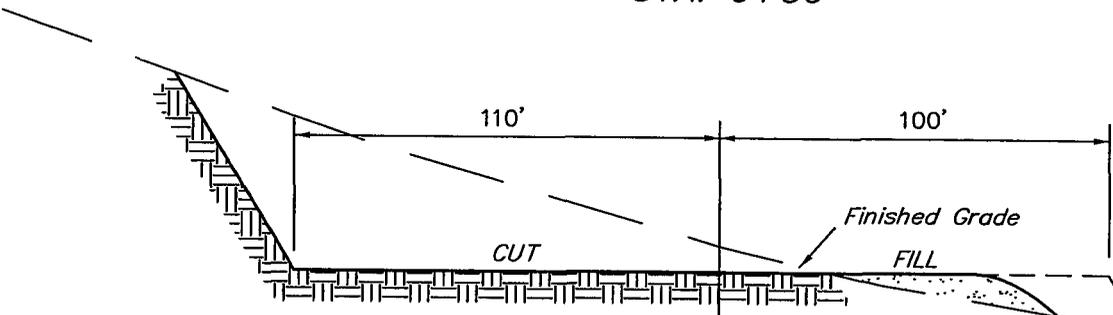
STA. 3+00



STA. 1+50



STA. 0+50



STA. 0+00

\* NOTE:  
FILL QUANTITY INCLUDES  
5% FOR COMPACTION

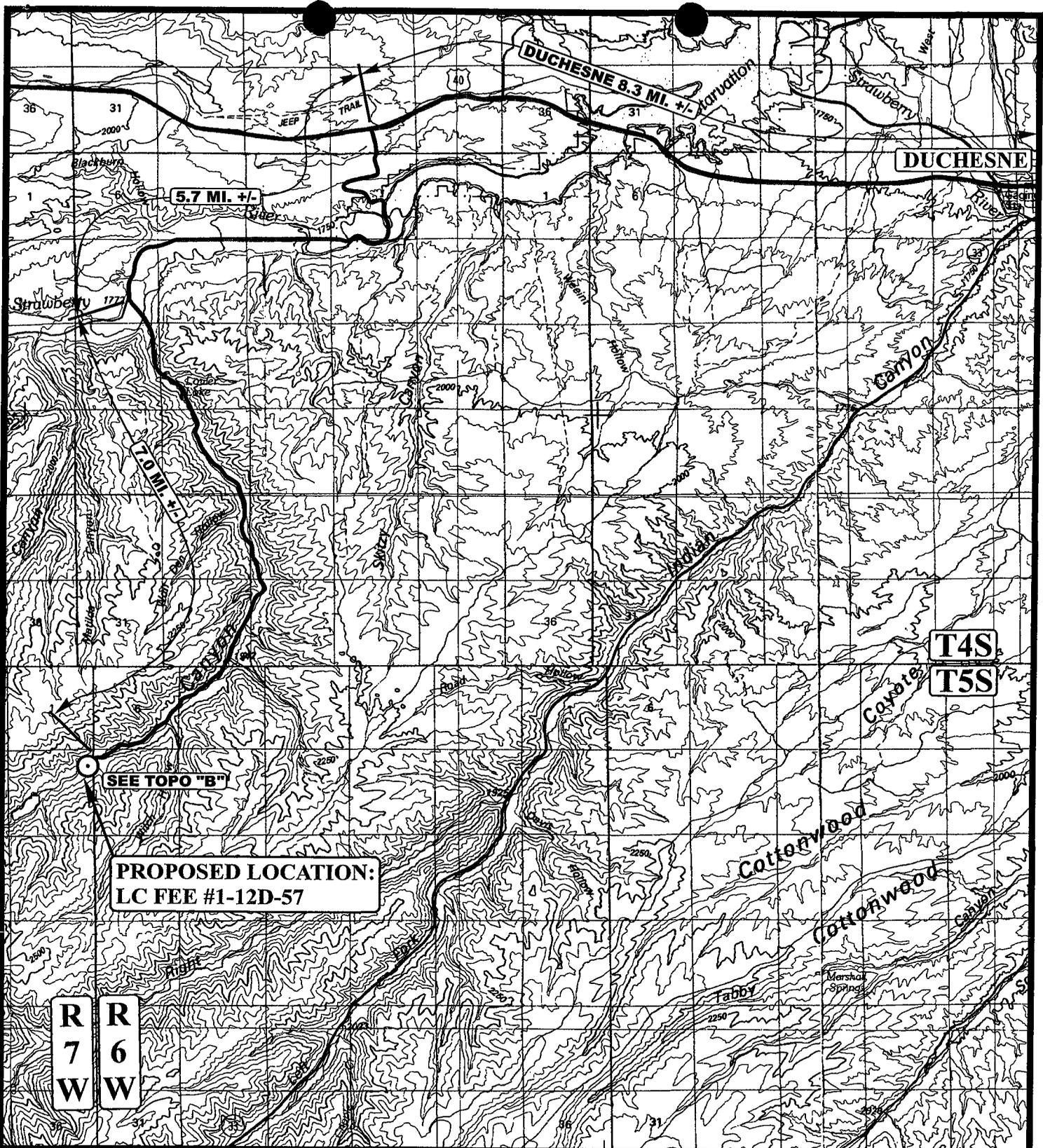
### APPROXIMATE YARDAGES

CUT		
(12") Topsoil Stripping	=	2,560 Cu. Yds.
Remaining Location	=	6,930 Cu. Yds.
<b>TOTAL CUT</b>	=	<b>9,490 CU.YDS.</b>
<b>FILL</b>	=	<b>4,270 CU.YDS.</b>

EXCESS MATERIAL	=	5,220 Cu. Yds.
Topsoil	=	2,560 Cu. Yds.

EXCESS UNBALANCE = 2,660 Cu. Yds.  
(After Interim Rehabilitation)

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**LEGEND:**

○ PROPOSED LOCATION

**BERRY PETROLEUM COMPANY**

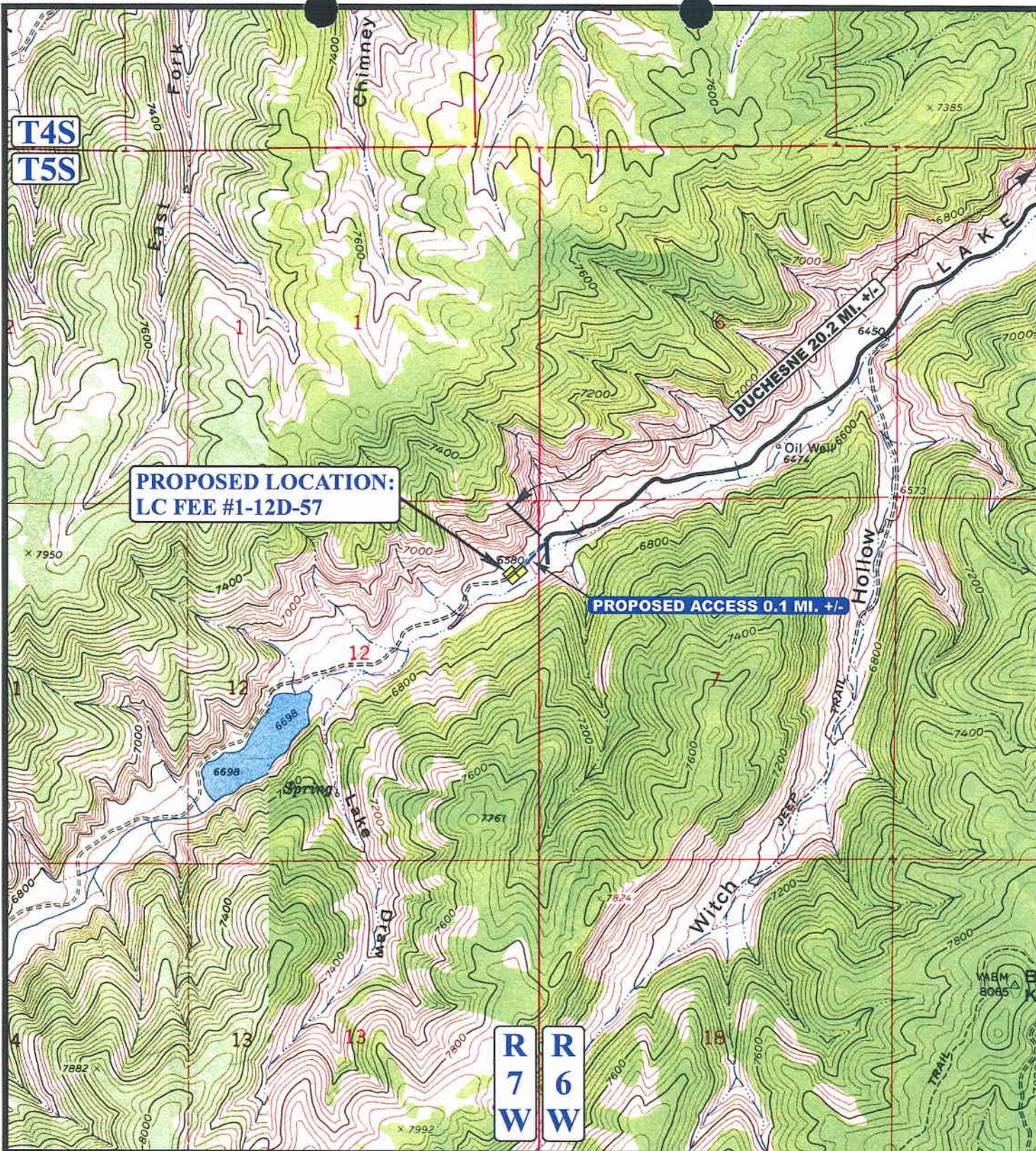
LC FEE #1-12D-57  
 SECTION 12, T5S, R7W, U.S.B.&M  
 1060' FNL 380' FEL



**UEIS**  
 Uintah Engineering & Land Surveying  
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 (435) 789-1017 \* FAX (435) 789-1813

**TOPOGRAPHIC** 01 18 07  
 MAP MONTH DAY YEAR  
 SCALE: 1:100,000 DRAWN BY: L.K. REVISED: 04-11-07





**PROPOSED LOCATION:  
LC FEE #1-12D-57**

**PROPOSED ACCESS 0.1 MI. +/-**

**DUCHESNE 20.2 MI. +/-**

**LEGEND:**

-  EXISTING ROAD
-  PROPOSED ACCESS ROAD

**BERRY PETROLEUM COMPANY**

**LC FEE #1-12D-57  
SECTION 12, T5S, R7W, U.S.B.&M  
1060' FNL 380' FEL**



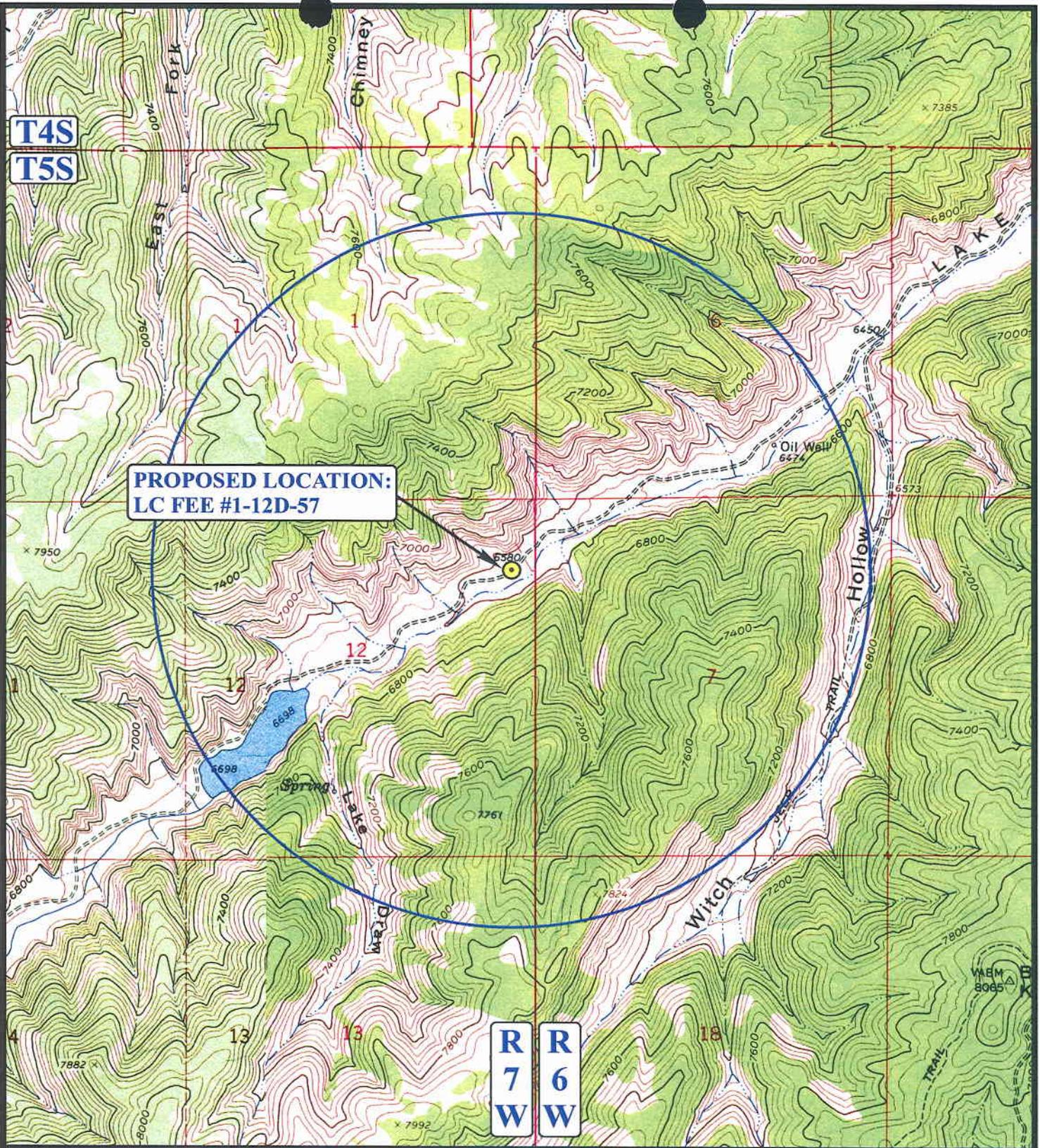
**Uintah Engineering & Land Surveying**  
85 South 200 East Vernal, Utah 84078  
(435) 789-1017 \* FAX (435) 789-1813



**TOPOGRAPHIC MAP** **01 18 07**  
MONTH DAY YEAR

SCALE: 1" = 2000' DRAWN BY: L.K. REVISED: 04-11-07





**PROPOSED LOCATION:  
LC FEE #1-12D-57**

**LEGEND:**

- ⊗ DISPOSAL WELLS
- PRODUCING WELLS
- ⊖ SHUT IN WELLS
- ⊗ WATER WELLS
- ABANDONED WELLS
- ⊖ TEMPORARILY ABANDONED

**BERRY PETROLEUM COMPANY**

**LC FEE #1-12D-57  
SECTION 12, T5S, R7W, U.S.B.&M  
1060' FNL 380' FEL**



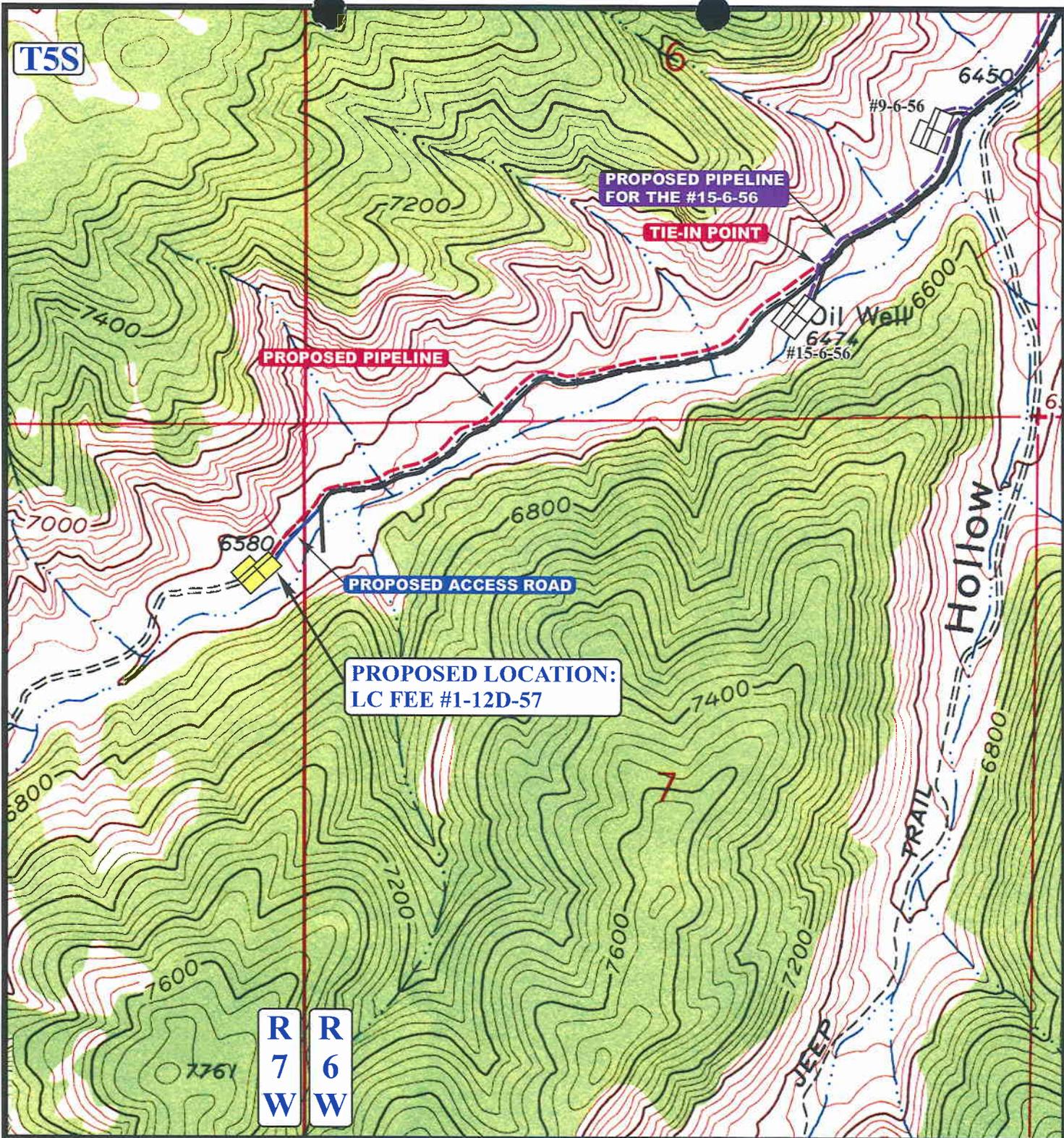
**Uintah Engineering & Land Surveying**  
85 South 200 East Vernal, Utah 84078  
(435) 789-1017 \* FAX (435) 789-1813



**TOPOGRAPHIC MAP** **01 18 07**  
MONTH DAY YEAR

SCALE: 1" = 2000' DRAWN BY: L.K. REVISED: 04-11-07





**APPROXIMATE TOTAL PIPELINE DISTANCE = 4,716' +/-**

**LEGEND:**

- PROPOSED ACCESS ROAD
- EXISTING PIPELINE
- PROPOSED PIPELINE
- PROPOSED PIPELINE (SERVICING OTHER WELLS)



**BERRY PETROLEUM COMPANY**

LC FEE #1-12D-57  
 SECTION 12, T5S, R7W, U.S.B.&M  
 1060' FNL 380' FEL



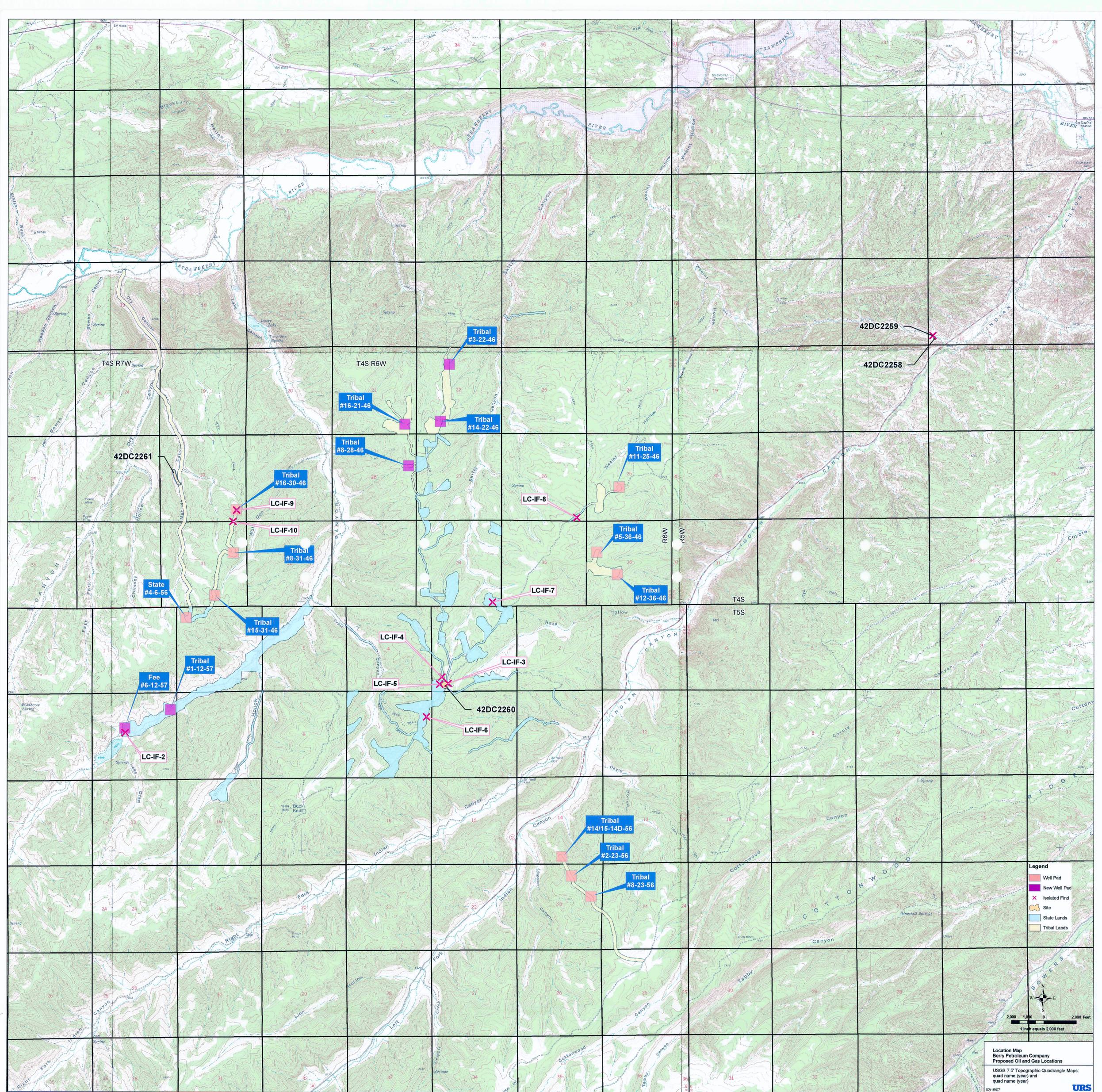
Uintah Engineering & Land Surveying  
 85 South 200 East Vernal, Utah 84078  
 (435) 789-1017 \* FAX (435) 789-1813

**TOPOGRAPHIC MAP**

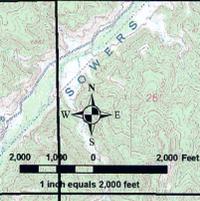
**01 18 07**  
 MONTH DAY YEAR

SCALE: 1" = 1000' DRAWN BY: L.K. REVISED: 04-11-07

**D**  
 TOPO



- Legend**
- Well Pad
  - New Well Pad
  - Isolated Find
  - Site
  - State Lands
  - Tribal Lands



Location Map  
 Berry Petroleum Company  
 Proposed Oil and Gas Locations  
 USGS 7.5 Topographic Quadrangle Maps:  
 quad name (year)  
 and quad name (year)  
 02/15/07 **URS**

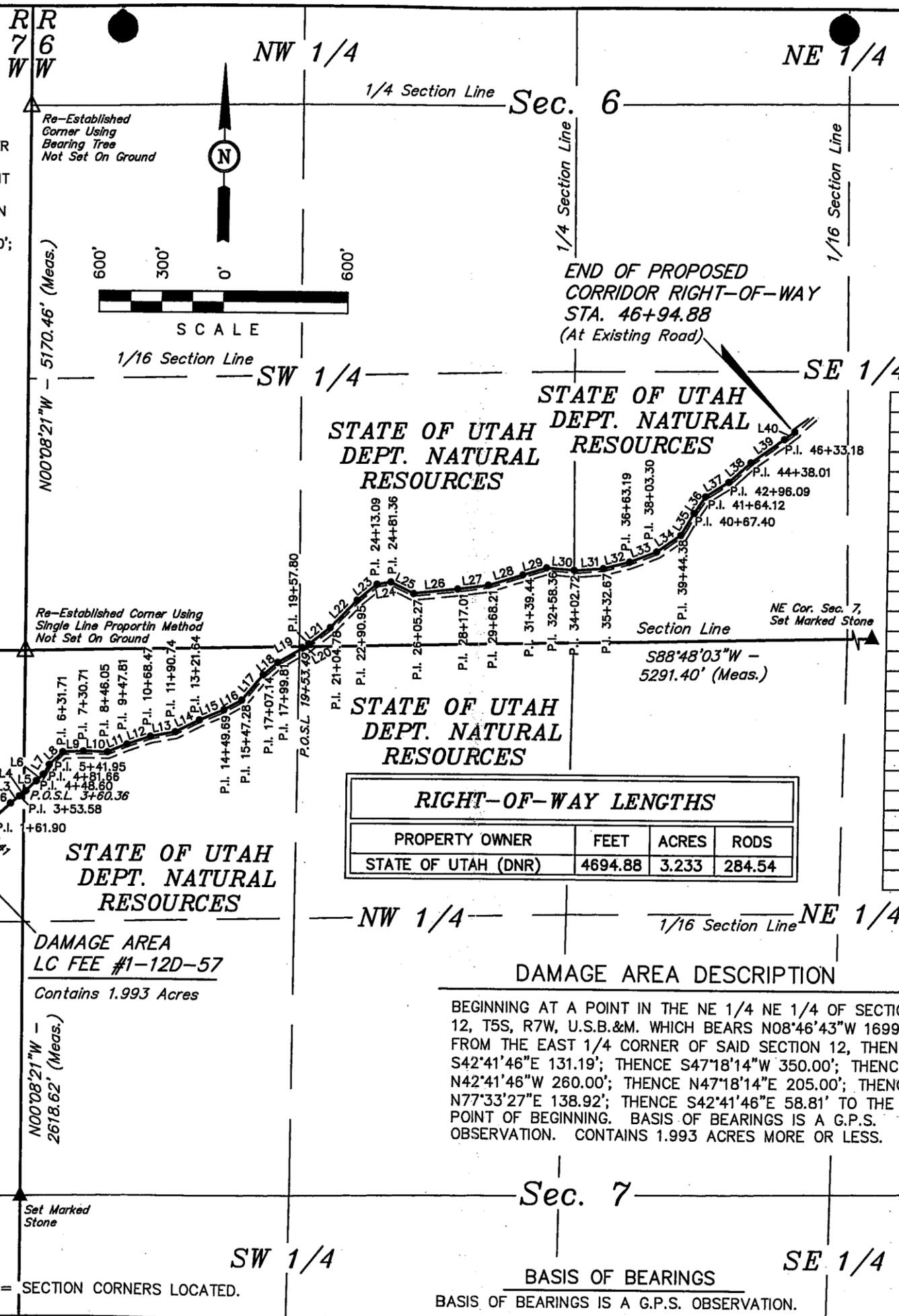
**CORRIDOR RIGHT-OF-WAY DESCRIPTION**

A 30' WIDE RIGHT-OF-WAY 15' ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE.

BEGINNING AT A POINT IN THE NE 1/4 NE 1/4 OF SECTION 12, T5S, R7W, U.S.B.&M., WHICH BEARS N08°46'43"W 1699.85' FROM THE EAST 1/4 CORNER OF SAID SECTION 12, THENCE N41°46'51"E 161.90'; THENCE N45°30'51"E 116.76'; THENCE N51°36'22"E 74.92'; THENCE N45°34'15"E 6.78'; TO A POINT ON THE EAST LINE OF THE NE 1/4 NE 1/4 OF SAID SECTION 12, WHICH BEARS N00°08'21"W 1933.77' FROM THE EAST 1/4 CORNER OF SAID SECTION 12, THENCE N45°34'15"E 88.24'; THENCE N49°49'28"E 33.06'; THENCE N30°08'54"E 60.29'; THENCE N46°17'07"E 89.76'; THENCE N87°23'27"E 99.00'; THENCE S88°23'51"E 115.34'; THENCE N67°53'25"E 101.76'; THENCE N71°24'38"E 120.66'; THENCE N79°31'02"E 122.27'; THENCE N63°20'36"E 130.90'; THENCE N67°10'27"E 128.05'; THENCE N61°03'52"E 97.59'; THENCE N39°51'28"E 159.86'; THENCE N49°13'25"E 92.67'; THENCE N59°58'26"E 153.68'; TO A POINT ON THE NORTH LINE OF THE NE 1/4 NW 1/4 OF SECTION 7, T5S, R6W, U.S.B.&M., WHICH BEARS N26°59'07"E 2970.48' FROM THE WEST 1/4 CORNER OF SAID SECTION 7, THENCE N59°58'26"E 4.31'; THENCE N51°52'24"E 146.98'; THENCE N44°14'26"E 186.17'; THENCE N51°05'18"E 122.14'; THENCE N80°46'48"E 68.27'; THENCE S63°54'02"E 123.91'; THENCE N84°02'38"E 211.74'; THENCE N82°32'00"E 151.20'; THENCE N72°37'50"E 171.23'; THENCE N72°53'00"E 118.92'; THENCE S85°28'57"E 144.36'; THENCE N85°21'14"E 129.95'; THENCE N75°41'32"E 130.52'; THENCE N68°48'17"E 140.11'; THENCE N55°15'30"E 141.08'; THENCE N30°28'51"E 123.02'; THENCE N33°31'09"E 96.72'; THENCE N57°47'01"E 131.97'; THENCE N47°57'28"E 141.92'; THENCE N54°24'23"E 195.17'; THENCE N52°24'23"E 61.70' TO A POINT IN THE SW 1/4 SE 1/4 OF SECTION 6, T5S, R6W, U.S.B.&M., WHICH BEARS N58°36'12"W 1861.62' FROM THE SOUTHEAST CORNER OF SAID SECTION 6. THE SIDE LINES OF SAID DESCRIBED RIGHT-OF-WAY BEING SHORTENED OR ELONGATED TO MEET THE GRANTOR'S PROPERTY LINES. BASIS OF BEARINGS IS A G.P.S. OBSERVATION. CONTAINS 3.233 ACRES MORE OR LESS.

NOTE:

**BERRY PETROLEUM COMPANY**  
**LOCATION DAMAGE AREA & CORRIDOR RIGHT-OF-WAY ON STATE OF UTAH DEPT. OF NATURAL RESOURCES**  
 (For LC FEE #1-12D-57)  
 LOCATED IN SECTION 12, T5S, R7W, U.S.B.&M., SECTIONS 7 & 6, T5S, R6W, U.S.B.&M., DUCHESNE COUNTY, UTAH



LINE TABLE			LINE TABLE		
LINE	BEARING	LENGTH	LINE	BEARING	LENGTH
L1	N41°46'51"E	161.90'	L24	N80°46'48"E	68.27'
L2	N45°30'51"E	116.76'	L25	S63°54'02"E	123.91'
L3	N51°36'22"E	74.92'	L26	N84°02'38"E	211.74'
L4	N45°34'15"E	6.78'	L27	N82°32'00"E	151.20'
L5	N45°34'15"E	88.24'	L28	N72°37'50"E	171.23'
L6	N49°49'28"E	33.06'	L29	N72°53'00"E	118.92'
L7	N30°08'54"E	60.29'	L30	S85°28'57"E	144.36'
L8	N46°17'07"E	89.76'	L31	N85°21'14"E	129.95'
L9	N87°23'27"E	99.00'	L32	N75°41'32"E	130.52'
L10	S88°23'51"E	115.34'	L33	N68°48'17"E	140.11'
L11	N67°53'25"E	101.76'	L34	N55°15'30"E	141.08'
L12	N71°24'38"E	120.66'	L35	N30°28'51"E	123.02'
L13	N79°31'02"E	122.27'	L36	N33°31'09"E	96.72'
L14	N63°20'36"E	130.90'	L37	N57°47'01"E	131.97'
L15	N67°10'27"E	128.05'	L38	N47°57'28"E	141.92'
L16	N61°03'52"E	97.59'	L39	N54°24'23"E	195.17'
L17	N39°51'28"E	159.86'	L40	N52°24'23"E	61.70'
L18	N49°13'25"E	92.67'	L41	S42°41'46"E	131.19'
L19	N59°58'26"E	153.68'	L42	S47°18'14"W	350.00'
L20	N59°58'26"E	4.31'	L43	N42°41'46"W	260.00'
L21	N51°52'24"E	146.98'	L44	N47°18'14"E	230.00'
L22	N44°14'26"E	186.17'	L45	N77°33'27"E	138.92'
L23	N51°05'18"E	122.14'	L46	S42°41'46"E	58.81'

**RIGHT-OF-WAY LENGTHS**

PROPERTY OWNER	FEET	ACRES	RODS
STATE OF UTAH (DNR)	4694.88	3.233	284.54

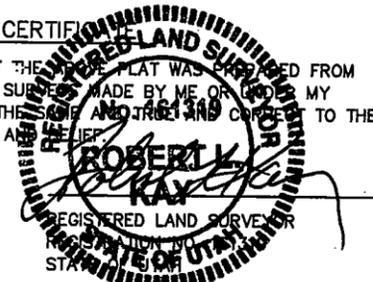
BEGINNING OF PROPOSED CORRIDOR RIGHT-OF-WAY STA. 0+00 (At Edge of Damage Area)

STATE OF UTAH DEPT. NATURAL RESOURCES

DAMAGE AREA LC FEE #1-12D-57 Contains 1.993 Acres

**DAMAGE AREA DESCRIPTION**  
 BEGINNING AT A POINT IN THE NE 1/4 NE 1/4 OF SECTION 12, T5S, R7W, U.S.B.&M. WHICH BEARS N08°46'43"W 1699.85' FROM THE EAST 1/4 CORNER OF SAID SECTION 12, THENCE S42°41'46"E 131.19'; THENCE S47°18'14"W 350.00'; THENCE N42°41'46"W 260.00'; THENCE N47°18'14"E 205.00'; THENCE N77°33'27"E 138.92'; THENCE S42°41'46"E 58.81' TO THE POINT OF BEGINNING. BASIS OF BEARINGS IS A G.P.S. OBSERVATION. CONTAINS 1.993 ACRES MORE OR LESS.

CERTIFIED TRUE AND CORRECT  
 THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEY MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.



REVISED: 04-11-07  
 REVISED: 01-30-07

**UINTAH ENGINEERING & LAND SURVEYING**  
 85 SOUTH - 200 EAST • (435) 789-1017  
 VERNAL, UTAH - 84078

SCALE 1" = 600'	DATE 01-20-07
PARTY J.W. L.K.	REFERENCES G.L.O. PLAT
WEATHER COLD	FILE 4 8 1 7 5

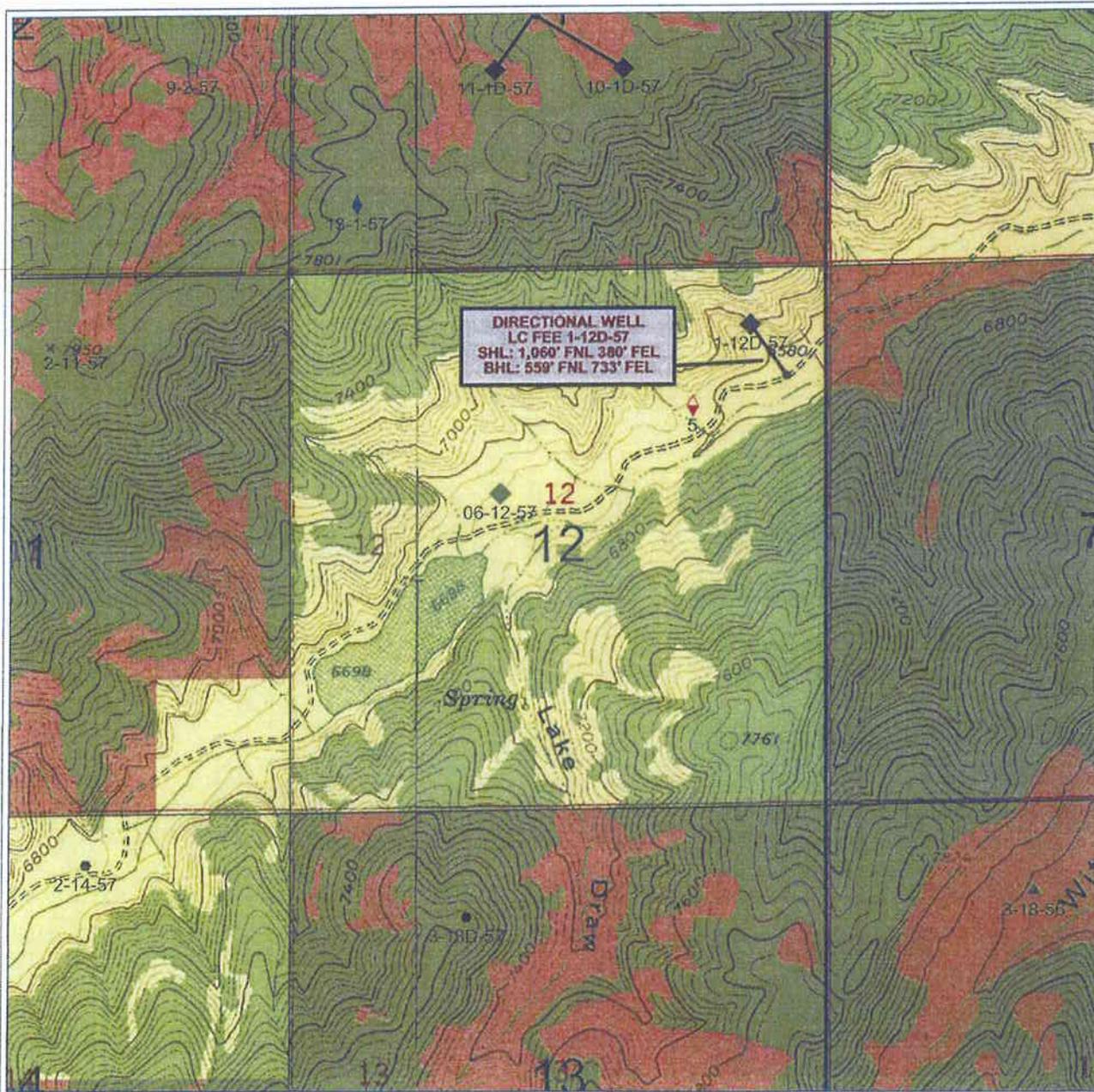
NOTE:  
 BEGINNING STA. 0+00 BEARS N08°46'43"W 1699.85' FROM THE EAST 1/4 CORNER OF SECTION 12, T5S, R7W, U.S.B.&M.  
 P.O.S.L. 3+60.36 BEARS N00°08'21"W 1933.77' FROM THE EAST 1/4 CORNER OF SECTION 12, T5S, R6W, U.S.B.&M.  
 P.O.S.L. 19+53.59 BEARS N26°59'07"E 2970.48' FROM THE EAST 1/4 CORNER OF SECTION 12, T5S, R6W, U.S.B.&M.  
 END STA. 46+94.88 BEARS N58°36'12"W 1861.62' FROM THE SOUTHEAST CORNER OF SECTION 6, T5S, R6W, U.S.B.&M.

Sec. 12

Sec. 7

▲ = SECTION CORNERS LOCATED.

BASIS OF BEARINGS IS A G.P.S. OBSERVATION.



Berry Petroleum Company

**Lake Canyon Project**

LC Fee 1-12D-57

Directional Location Plat

Sec 12 T5S R7W



POSTED WELL DATA

● Well Label

ATTRIBUTE MAP

 Any Digital Log IS PRESENT  
 Any Raster Log IS PRESENT

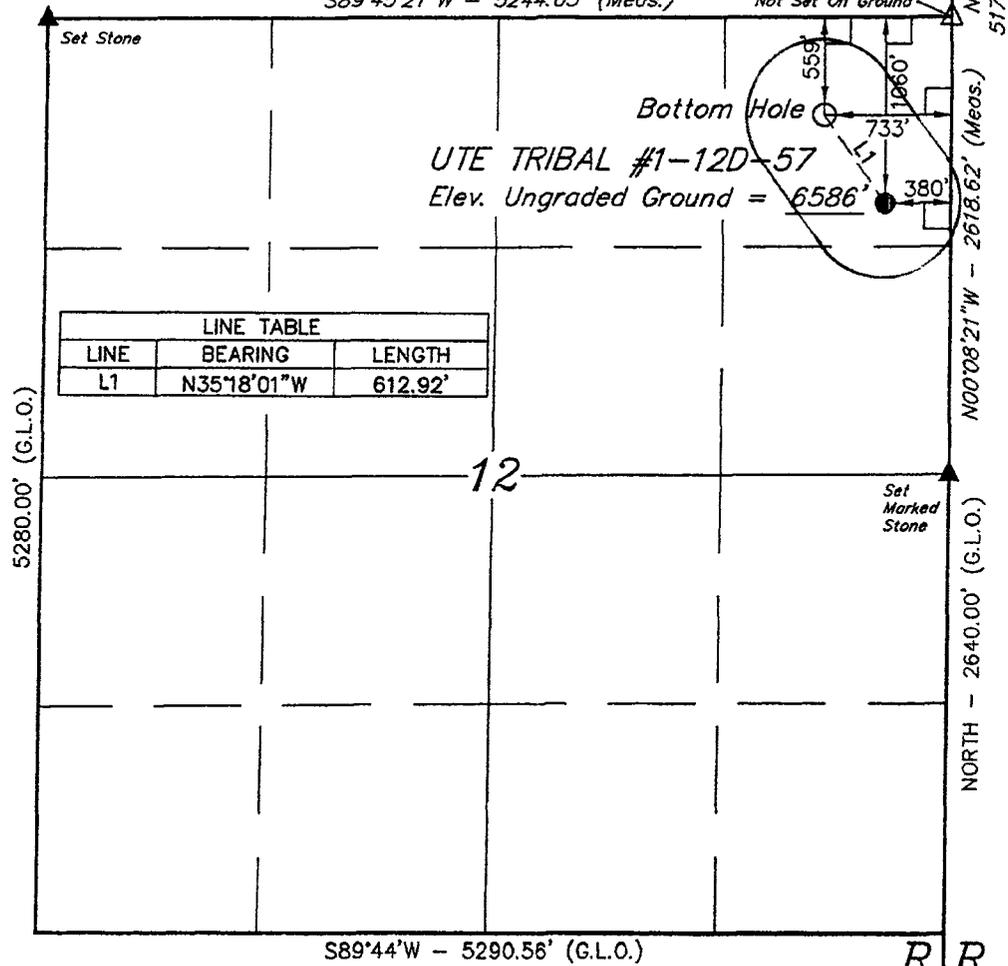
WELL SYMBOLS

- Conceptual Location
- ▲ Approved APD
- ◆ Geologic Prognosis Prepared
- ◇ Corehole
- Location Only
- ◆ Waiting on State
- ◆ Working on APD

August 8, 2007

T5S, R7W, U.S.B.&M.

NW Cor. Sec. 6,  
Re-Established  
Corner Using  
Bearing Tree  
Not Set On Ground  
Re-Established Corner  
Using Single Line  
Proportin Method  
Not Set On Ground



**BERRY PETROLEUM COMPANY**

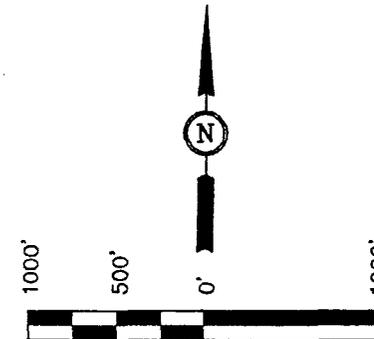
Well location, LC FEE #1-12D-57, located as shown in the NE 1/4 NE 1/4 of Section 12, T5S, R7W, U.S.B.&M., Duchesne County, Utah.

**BASIS OF ELEVATION**

BENCH MARK (M67) LOCATED IN THE SW 1/4 OF SECTION 9, T5S, R4W, U.S.B.&M. TAKEN FROM THE DUCHESNE SE QUADRANGLE, UTAH, DUCHESNE COUNTY, 7.5 MINUTE QUAD. (TOPOGRAPHIC MAP) PUBLISHED BY THE UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY. SAID ELEVATION IS MARKED ON CAP AS BEING 6097 FEET.

**BASIS OF BEARINGS**

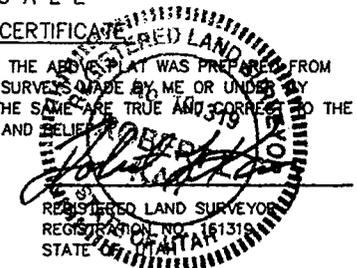
BASIS OF BEARINGS IS A G.P.S. OBSERVATION.



SCALE

CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.



REVISED: 04-11-07

**UINTAH ENGINEERING & LAND SURVEYING**  
85 SOUTH 200 EAST - VERNAL, UTAH 84078  
(435) 789-1017

**LEGEND:**

- └─┘ = 90° SYMBOL
- = PROPOSED WELL HEAD.
- ▲ = SECTION CORNERS LOCATED.

(NAD 83)  
LATITUDE = 40°03'54.95" (40.065264)  
LONGITUDE = 110°36'45.74" (110.612706)  
(NAD 27)  
LATITUDE = 40°03'55.10" (40.065306)  
LONGITUDE = 110°36'43.18" (110.611994)

SCALE 1" = 1000'	DATE SURVEYED: 01-05-07	DATE DRAWN: 01-19-07
PARTY J.W. A.A. L.K.		REFERENCES G.L.O. PLAT
WEATHER COLD		FILE BERRY PETROLEUM COMPANY



Proposal No: 1001102953A

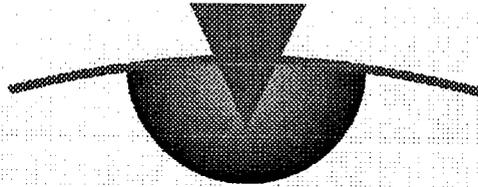
**Berry Petroleum Co**  
LC Fee 1-12D-57

12 T5SR7W  
Duchesne County, Utah  
April 24, 2007

### Cement Recommendation

**Prepared for:**  
Tim McDonald  
Berry Petroleum Co.

**Prepared by:**  
WESLEY D COOK  
District Technical Supervisor  
Vernal, Utah  
Bus Phone: (435)781-2294  
Mobile: (435)828-4121



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**Service Point:**  
Vernal  
Bus Phone: (435) 781-2294  
Fax: (435) 789-4530

**Service Representatives:**  
Darrin Bailey  
Senior Sales Rep  
Vernal, Utah  
Bus Phone: (435) 781-2294

Operator Name: Berry Petroleum Co  
Well Name: LC Fee 1-12D-57  
Job Description: Cement 5-1/2 inch Production Casing  
Date: April 24, 2007



Proposal No: 1001102953A

**JOB AT A GLANCE**

Depth (TVD)	4,848 ft
Depth (MD)	4,892 ft
Hole Size	7.875 in
Casing Size/Weight :	5 1/2 in, 15.5 lbs/ft
Pump Via	
Total Mix Water Required	8,151 gals
<b>Pre-Flush</b>	
Fresh Water	10 bbls
Density	8.3 ppg
<b>Spacer</b>	
KCl Water	10 bbls
Density	8.4 ppg
<b>Spacer</b>	
Fresh Water	20 bbls
Density	8.3 ppg
<b>Lead Slurry</b>	
PL2+SF+3#CSE+3%KCL+0.25:	250 sacks
Density	11.0 ppg
Yield	3.46 cf/sack
<b>Tail Slurry</b>	
PL II HS	300 sacks
Density	13.0 ppg
Yield	1.92 cf/sack
<b>Displacement</b>	
Fresh Water	115 bbls
Density	8.3 ppg

Operator Name: Berry Petroleum Co  
 Well Name: LC Fee 1-12D-57  
 Job Description: Cement 5-1/2 inch Production Casing  
 Date: April 24, 2007



Proposal No: 1001102953A

**WELL DATA**

**ANNULAR GEOMETRY**

ANNULAR I.D. (in)	DEPTH(ft)	
	MEASURED	TRUE VERTICAL
8.097 CASING	342	342
7.875 HOLE	4,892	4,848

**SUSPENDED PIPES**

DIAMETER (in)		WEIGHT (lbs/ft)	DEPTH(ft)	
O.D.	I.D.		MEASURED	TRUE VERTICAL
5.500	4.950	15.5	4,892	4,848

Float Collar set @ 4,852 ft  
 Mud Density 8.40 ppg  
 Mud Type Water Based  
 Est. Static Temp. 142 ° F  
 Est. Circ. Temp. 113 ° F

**VOLUME CALCULATIONS**

342 ft x 0.1926 cf/ft with 0 % excess = 65.9 cf  
 3,158 ft x 0.1733 cf/ft with 46 % excess = 800.2 cf  
 1,392 ft x 0.1733 cf/ft with 136 % excess = 569.7 cf  
 40 ft x 0.1336 cf/ft with 0 % excess = 5.3 cf (inside pipe)  
**TOTAL SLURRY VOLUME = 1441.2 cf**  
 = 257 bbls

Confirm well data with customer representative prior to pumping.

**Operator Name:** Berry Petroleum Co  
**Well Name:** LC Fee 1-12D-57  
**Job Description:** Cement 5-1/2 inch Production Casing  
**Date:** April 24, 2007



**Proposal No:** 1001102953A

**FLUID SPECIFICATIONS**

Pre-Flush 10.0 bbls Fresh Water @ 8.34 ppg  
 Spacer 10.0 bbls KCl Water @ 8.4 ppg  
 Spacer 20.0 bbls Fresh Water @ 8.34 ppg

<u>FLUID</u>	<u>VOLUME CU-FT</u>	<u>VOLUME FACTOR</u>	<u>AMOUNT AND TYPE OF CEMENT</u>
Lead Slurry	866	/ 3.46	= 250 sacks Premium Lite II Cement + 0.05 lbs/sack Static Free + 3% bwoc Potassium Chloride + 0.25 lbs/sack Cello Flake + 5 lbs/sack Kol Seal + 0.002 gps FP-6L + 10% bwoc Bentonite + 0.5% bwoc Sodium Metasilicate + 3 lbs/sack CSE-2 + 201.6% Fresh Water
Tail Slurry	575	/ 1.92	= 300 sacks Premium Lite II High Strength + 0.05 lbs/sack Static Free + 1% bwoc Calcium Chloride + 0.4% bwoc FL-63 + 0.25 lbs/sack Cello Flake + 2 lbs/sack Kol Seal + 0.002 gps FP-6L + 0.2% bwoc BA-59 + 92.5% Fresh Water
Displacement			115.5 bbls Fresh Water @ 8.34 ppg

**CEMENT PROPERTIES**

	<b>SLURRY NO. 1</b>	<b>SLURRY NO. 2</b>
Slurry Weight (ppg)	11.00	13.00
Slurry Yield (cf/sack)	3.46	1.92
Amount of Mix Water (gps)	21.03	9.65
Amount of Mix Fluid (gps)	21.03	9.65
Estimated Pumping Time - 70 BC (HH:MM)	4:30	3:30

**COMPRESSIVE STRENGTH**

24 hrs @ 144 ° F (psi)	2300
72 hrs @ 144 ° F (psi)	2550

Compressive strengths and thickening times are estimates only. Final laboratory testing will determine retarder loadings, if necessary.



## CONDITIONS

**BJ Services' performance of services and sale of materials is expressly conditioned upon the applicability of the Terms and Conditions contained in the current BJ Services Price Book. The Terms and Conditions include, among other things, an indemnity in favor of BJ Services from Customer for damage to the well bore, reservoir damage, loss of the hole, blowouts and loss of control of the well, even if caused by the negligence or other fault of BJ Services. The Terms and Conditions also limit the warranties provided by the BJ Services and the remedies to which Customer may be entitled in the event of a breach of warranty by BJ Services. For these reasons, we strongly recommend that you carefully review a copy of the Terms and Conditions. If you do not have a copy of the BJ Services Price Book, you can view the Terms and Conditions on BJ Services Web Site, [www.bjservices.com](http://www.bjservices.com). By requesting that BJ Services perform the services described herein, Customer acknowledges that such Terms and Conditions are applicable to the services. Further, by requesting the services, Customer warrants that its representative on the well location or other service site will be fully authorized to acknowledge such Terms and Conditions by executing a Field Receipt or other document presented by BJ Services containing such Terms and Conditions.**

**In the event that Customer and BJ Services have executed a Master Services Agreement covering the work to be performed, such Master Services Agreement shall govern in place of the Terms and Conditions. If you are interested in entering into Master Services Agreement with BJ Services, please contact us through the "Go BJ" button on the BJ Services Web Site.**

Operator Name: Berry Petroleum Co  
Well Name: LC Fee 1-12D-57  
Date: April 24, 2007



Proposal No: 1001102953A

## PRODUCT DESCRIPTIONS

### **BA-59**

A free flowing powder which provides improved bonding and minimizes gas migration. Provides expansion properties and zero free water to cement slurries.

### **Bentonite**

Commonly called gel, it is a clay material used as a cement extender and to control excessive free water.

### **CSE-2**

An additive which contributes to low density, high compressive strength development of cement slurries at all temperature ranges. This material also controls free water without the need for standard extenders.

### **Calcium Chloride**

A powdered, flaked or pelletized material used to decrease thickening time and increase the rate of strength development.

### **Cello Flake**

Graded (3/8 to 3/4 inch) cellophane flakes used as a lost circulation material.

### **FL-63**

A non-retarding, non-viscosifying fluid loss additive particularly suited for use with coil tubing and/or close tolerance liner cementing. FL-63 is effective from low to high temperatures. Concentrations of 0.2% to 1.0% BWOC are typical.

### **FP-6L**

A clear liquid that decreases foaming in slurries during mixing.

### **Kol Seal**

A granular, lightweight material (specific gravity of 1.3) used to control lost circulation in zones of natural and induced fractures, cavities and high permeability.

### **Potassium Chloride**

A granular salt used to reduce clay swelling caused by water-base stimulation fluids.

### **Premium Lite II Cement**

Premium Lite II is a high-yield, cost effective lightweight cement blend that provides exceptional compressive strength and reduced permeability when mixed at low slurry weights.

### **Premium Lite II High Strength**

Premium Lite II High Strength is a high-yield, cost effective lightweight cement blend that provides exceptional compressive strength and reduced permeability when mixed at low slurry weights.

### **Sodium Metasilicate**

An accelerator used to decrease the thickening time of cement slurries.

### **Static Free**

An anti-static additive used to prevent air entrainment due to agglomerated particles. Can be used in Cementing and Fracturing operations to aid in the flow of dry materials.



Proposal No: 1001102955A

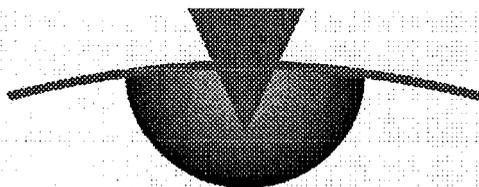
**Berry Petroleum Co**  
LC Fee 1-12D-57

12 T5S R7W  
Duchesne County, Utah  
April 24, 2007

**Cement Recommendation**

**Prepared for:**  
Tim McDonald  
Berry Petroleum Co.

**Prepared by:**  
WESLEY D COOK  
District Technical Supervisor  
Vernal, Utah  
Bus Phone: (435)781-2294  
Mobile: (435)828-4121



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Fax: (435) 789-4530

**Service Representatives:**

Darrin Bailey  
Senior Sales Rep  
Vernal, Utah  
Bus Phone: (435) 781-2294

Operator Name: Berry Petroleum Co  
Well Name: LC Fee 1-12D-57  
Job Description: Cement 5-1/2 inch Production Casing  
Date: April 24, 2007



Proposal No: 1001102955A

**JOB AT A GLANCE**

Depth (TVD)	4,848 ft
Depth (MD)	4,892 ft
Hole Size	7.875 in
Casing Size/Weight :	5 1/2 in, 15.5 lbs/ft
Pump Via	
Total Mix Water Required	7,235 gals
<b>Pre-Flush</b>	
Fresh Water	10 bbls
Density	8.3 ppg
<b>Spacer</b>	
KCl Water	10 bbls
Density	8.4 ppg
<b>Spacer</b>	
Fresh Water	20 bbls
Density	8.3 ppg
<b>Lead Slurry</b>	
PL2+SF+3#CSE+3%KCL+0.25%	257 sacks
Density	11.0 ppg
Yield	3.46 cf/sack
<b>Tail Slurry</b>	
50:50:2+3%KCL+0.5%EC-1+0.1	323 sacks
Density	14.3 ppg
Yield	1.27 cf/sack
<b>Displacement</b>	
Fresh Water	115 bbls
Density	8.3 ppg

Operator Name: Berry Petroleum Co  
 Well Name: LC Fee 1-12D-57  
 Job Description: Cement 5-1/2 inch Production Casing  
 Date: April 24, 2007



Proposal No: 1001102955A

**WELL DATA**

**ANNULAR GEOMETRY**

ANNULAR I.D. (in)	DEPTH(ft)	
	MEASURED	TRUE VERTICAL
8.097 CASING	342	342
7.875 HOLE	4,892	4,848

**SUSPENDED PIPES**

DIAMETER (in)		WEIGHT (lbs/ft)	DEPTH(ft)	
O.D.	I.D.		MEASURED	TRUE VERTICAL
5.500	4.950	15.5	4,892	4,848

Float Collar set @ 4,852 ft  
 Mud Density 8.40 ppg  
 Mud Type Water Based  
 Est. Static Temp. 131 ° F  
 Est. Circ. Temp. 106 ° F

**VOLUME CALCULATIONS**

342 ft x 0.1926 cf/ft with 0 % excess = 65.9 cf  
 3,758 ft x 0.1733 cf/ft with 27 % excess = 824.5 cf  
 792 ft x 0.1733 cf/ft with 194 % excess = 403.4 cf  
 40 ft x 0.1336 cf/ft with 0 % excess = 5.3 cf (inside pipe)  
**TOTAL SLURRY VOLUME = 1299.1 cf**  
 = 232 bbls

Confirm well data with customer representative prior to pumping.

Operator Name: Berry Petroleum Co  
 Well Name: LC Fee 1-12D-57  
 Job Description: Cement 5-1/2 inch Production Casing  
 Date: April 24, 2007



Proposal No: 1001102955A

**FLUID SPECIFICATIONS**

Pre-Flush 10.0 bbls Fresh Water @ 8.34 ppg  
 Spacer 10.0 bbls KCl Water @ 8.4 ppg  
 Spacer 20.0 bbls Fresh Water @ 8.34 ppg

FLUID	VOLUME CU-FT	VOLUME FACTOR	AMOUNT AND TYPE OF CEMENT
Lead Slurry	890	/ 3.46	= 257 sacks Premium Lite II Cement + 0.05 lbs/sack Static Free + 3 lbs/sack CSE-2 + 3% bwow Potassium Chloride + 0.25 lbs/sack Cello Flake + 5 lbs/sack Kol Seal + 0.002 gps FP-6L + 10% bwoc Bentonite + 0.5% bwoc Sodium Metasilicate + 201.6% Fresh Water
Tail Slurry	409	/ 1.27	= 323 sacks (50:50) Poz (Fly Ash):Class G Cement + 0.05 lbs/sack Static Free + 3% bwow Potassium Chloride + 0.5% bwoc EC-1 + 0.25 lbs/sack Cello Flake + 0.002 gps FP-6L + 2% bwoc Bentonite + 0.3% bwoc Sodium Metasilicate + 56.3% Fresh Water

Displacement 115.5 bbls Fresh Water @ 8.34 ppg

**CEMENT PROPERTIES**

	SLURRY NO. 1	SLURRY NO. 2
Slurry Weight (ppg)	11.00	14.30
Slurry Yield (cf/sack)	3.46	1.27
Amount of Mix Water (gps)	21.03	5.67
Amount of Mix Fluid (gps)	21.03	5.67
Estimated Pumping Time - 70 BC (HH:MM)	4:30	3:30
<b>COMPRESSIVE STRENGTH</b>		
24 hrs @ 144 ° F (psi)		2300
72 hrs @ 144 ° F (psi)		2550

Compressive strengths and thickening times are estimates only. Final laboratory testing will determine retarder loadings, if necessary.

Slurry volumes are based off of 25% excess with gauge hole.



## CONDITIONS

**BJ Services' performance of services and sale of materials is expressly conditioned upon the applicability of the Terms and Conditions contained in the current BJ Services Price Book. The Terms and Conditions include, among other things, an indemnity in favor of BJ Services from Customer for damage to the well bore, reservoir damage, loss of the hole, blowouts and loss of control of the well, even if caused by the negligence or other fault of BJ Services. The Terms and Conditions also limit the warranties provided by the BJ Services and the remedies to which Customer may be entitled in the event of a breach of warranty by BJ Services. For these reasons, we strongly recommend that you carefully review a copy of the Terms and Conditions. If you do not have a copy of the BJ Services Price Book, you can view the Terms and Conditions on BJ Services Web Site, [www.bjservices.com](http://www.bjservices.com). By requesting that BJ Services perform the services described herein, Customer acknowledges that such Terms and Conditions are applicable to the services. Further, by requesting the services, Customer warrants that its representative on the well location or other service site will be fully authorized to acknowledge such Terms and Conditions by executing a Field Receipt or other document presented by BJ Services containing such Terms and Conditions.**

**In the event that Customer and BJ Services have executed a Master Services Agreement covering the work to be performed, such Master Services Agreement shall govern in place of the Terms and Conditions. If you are interested in entering into Master Services Agreement with BJ Services, please contact us through the "Go BJ" button on the BJ Services Web Site.**

**Operator Name:** Berry Petroleum Co  
**Well Name:** LC Fee 1-12D-57  
**Date:** April 24, 2007



**Proposal No:** 1001102955A

## PRODUCT DESCRIPTIONS

### **Bentonite**

Commonly called gel, it is a clay material used as a cement extender and to control excessive free water.

### **CSE-2**

An additive which contributes to low density, high compressive strength development of cement slurries at all temperature ranges. This material also controls free water without the need for standard extenders.

### **Cello Flake**

Graded (3/8 to 3/4 inch) cellophane flakes used as a lost circulation material.

### **Class G Cement**

Intended for use as a basic cement from surface to 8000 ft as manufactured, or can be used with accelerators and retarders to cover a wide range of well depths and temperatures.

### **EC-1**

A proprietary product that provides expansive properties and improves bonding at low to moderate temperatures.

### **FP-6L**

A clear liquid that decreases foaming in slurries during mixing.

### **Kol Seal**

A granular, lightweight material (specific gravity of 1.3) used to control lost circulation in zones of natural and induced fractures, cavities and high permeability.

### **Potassium Chloride**

A granular salt used to reduce clay swelling caused by water-base stimulation fluids.

### **Potassium Chloride**

A granular salt used to reduce clay swelling caused by water-base cementing fluids.

### **Poz (Fly Ash)**

A synthetic pozzolan, (primarily Silicon Dioxide). When blended with cement, Pozzolan can be used to create lightweight cement slurries used as either a filler slurry or a sulfate resistant completion cement.

### **Premium Lite II Cement**

Premium Lite II is a high-yield, cost effective lightweight cement blend that provides exceptional compressive strength and reduced permeability when mixed at low slurry weights.

### **Sodium Metasilicate**

An accelerator used to decrease the thickening time of cement slurries.

### **Sodium Metasilicate**

An extender used to produce an economical, low density cement slurry.

**Operator Name:** Berry Petroleum Co  
**Well Name:** LC Fee 1-12D-57  
**Date:** April 24, 2007



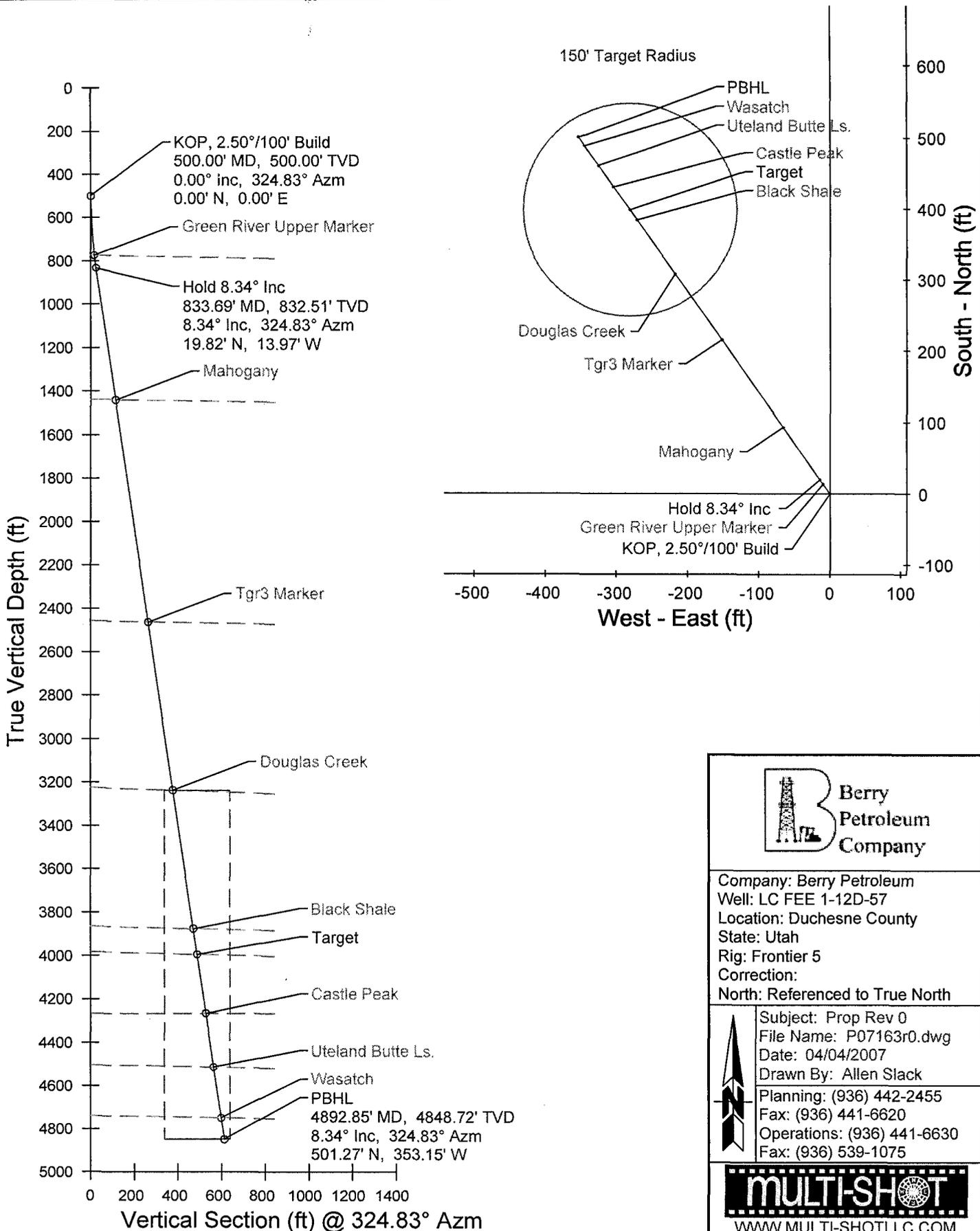
**Proposal No:** 1001102955A

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**PRODUCT DESCRIPTIONS (Continued)**

**Static Free**

An anti-static additive used to prevent air entrainment due to agglomerated particles. Can be used in Cementing and Fracturing operations to aid in the flow of dry materials.





**Berry Petroleum Company**

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Company: Berry Petroleum  
 Well: LC FEE 1-12D-57  
 Location: Duchesne County  
 State: Utah  
 Rig: Frontier 5  
 Correction:  
 North: Referenced to True North

---

Subject: Prop Rev 0  
 File Name: P07163r0.dwg  
 Date: 04/04/2007  
 Drawn By: Allen Slack

---

Planning: (936) 442-2455  
 Fax: (936) 441-6620  
 Operations: (936) 441-6630  
 Fax: (936) 539-1075

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**MULTI-SHOT**

WWW.MULTI-SHOTLLC.COM

The customer should only rely on this document after independently verifying all paths, targets, coordinates, lease and hard lines represented. Any decisions made or wells drilled utilizing this or any other information supplied by Multi-Shot, LLC are at the sole risk and responsibility of the customer. Multi-Shot, LLC is not responsible for the accuracy of this schematic or the information contained herein.



Job Number: P07-163  
 Company: Berry Petroleum  
 Lease/Well: LC FEE 1-12D-57  
 Location: Duchesne County  
 Rig Name: Frontier 5  
 RKB: 14'  
 G.L. or M.S.L.: 6586'

State/Country: Utah  
 Declination:  
 Grid: Referenced to True North  
 File name: F:\WELLPL~1\2007\P07160\S\IP07163\07163.SVY  
 Date/Time: 04-Apr-07 / 14:24  
 Curve Name: Prop Rev 0

WINSERVE SURVEY CALCULATIONS  
 Minimum Curvature Method  
 Vertical Section Plane 324.83  
 Vertical Section Referenced to Wellhead  
 Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT    Direction Deg		Dogleg Severity Deg/100
<b>KOP, 2.50°/100' Build</b>									
500.00	.00	324.83	500.00	.00	.00	.00	.00	.00	.00
600.00	2.50	324.83	599.97	1.78	-1.26	2.18	2.18	324.83	2.50
700.00	5.00	324.83	699.75	7.13	-5.02	8.72	8.72	324.83	2.50
<b>Green River Upper Marker</b>									
774.47	6.86	324.83	773.81	13.42	-9.45	16.42	16.42	324.83	2.50
800.00	7.50	324.83	799.14	16.03	-11.29	19.61	19.61	324.83	2.50
<b>Hold 8.34° Inc</b>									
833.69	8.34	324.83	832.51	19.82	-13.97	24.25	24.25	324.83	2.50
<b>Mahogany</b>									
1448.58	8.34	324.83	1440.90	92.75	-65.35	113.46	113.46	324.83	.00
<b>Tgr3 Marker</b>									
2481.82	8.34	324.83	2463.20	215.30	-151.69	263.37	263.37	324.83	.00
<b>Douglas Creek</b>									
3263.69	8.34	324.83	3236.80	308.04	-217.02	376.81	376.81	324.83	.00
<b>Black Shale</b>									
3910.21	8.34	324.83	3876.48	384.72	-271.04	470.61	470.61	324.83	.00
<b>Target</b>									
4028.99	8.34	324.83	3994.00	398.81	-280.97	487.85	487.85	324.83	.00
<b>Castle Peak</b>									
4302.89	8.34	324.83	4265.00	431.30	-303.86	527.58	527.58	324.83	.00

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
<b>Uteland Butte Ls.</b>									
4553.54	8.34	324.83	4513.00	461.03	-324.80	563.95	563.95	324.83	.00
<b>Wasatch</b>									
4791.96	8.34	324.83	4748.90	489.30	-344.72	598.54	598.54	324.83	.00
<b>PBHL</b>									
4892.85	8.34	324.83	4848.72	501.27	-353.15	613.18	613.18	324.83	.00

**WORKSHEET  
APPLICATION FOR PERMIT TO DRILL**

APD RECEIVED: 05/14/2007

API NO. ASSIGNED: 43-013-33656

WELL NAME: LC FEE 1-12D-57  
 OPERATOR: BERRY PETROLEUM COMPANY ( N2480 )  
 CONTACT: SHELLY CROZIER

PHONE NUMBER: 435-722-1325

PROPOSED LOCATION:

NENE 12 050S 070W  
 SURFACE: 1060 FNL 0380 FEL  
 BOTTOM: 0559 FNL 0733 FEL  
 COUNTY: DUCHESNE  
 LATITUDE: 40.06522 LONGITUDE: -110.6120  
 UTM SURF EASTINGS: 533091 NORTHINGS: 4434858  
 FIELD NAME: WILDCAT ( 1 )

INSPECT LOCATN BY: / /		
Tech Review	Initials	Date
Engineering	DKN	6/25/07
Geology		
Surface		

LEASE TYPE: 4 - Fee  
 LEASE NUMBER: FEE  
 SURFACE OWNER: 4 - Fee

PROPOSED FORMATION: GRRV  
 COALBED METHANE WELL? NO

RECEIVED AND/OR REVIEWED:

- Plat
- Bond: Fed[] Ind[] Sta[] Fee[]  
(No. RLB0005651 )
- Potash (Y/N)
- Oil Shale 190-5 (B) or 190-3 or 190-13
- Water Permit  
(No. 43-11041 )
- RDCC Review (Y/N)  
(Date: 06/01/2007 )
- Fee Surf Agreement (Y/N)
- Intent to Commingle (Y/N)

LOCATION AND SITING:

- R649-2-3.
- Unit: \_\_\_\_\_
- R649-3-2. General  
Siting: 460 From Qtr/Qtr & 920' Between Wells
- R649-3-3. Exception
- Drilling Unit  
Board Cause No: \_\_\_\_\_  
Eff Date: \_\_\_\_\_  
Siting: \_\_\_\_\_
- R649-3-11. Directional Drill

COMMENTS:

Needs Presite (03-20-07)

STIPULATIONS:

- 1- Spacing Strip
- 2- STATEMENT OF BASIS
- 3- Surface Csg Cont Strip

T5S R6W

T5S R6W

2

1

6

BHL  
1-12D-57  
LC FEE 1-12D-57

LC FEE 6-12-57

11

12

7

LC TRIBAL 3-18-56

14

13

18

OPERATOR: BERRY PETR CO (N2480)

SEC: 12 T.5S R.7WE

FIELD: WILDCAT (001)

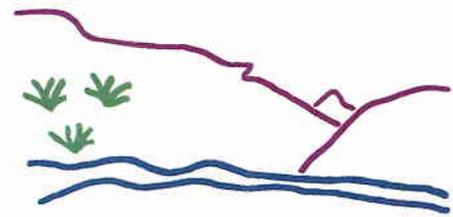
COUNTY: DUCHESNE

SPACING: R649-3-11 / DIRECTIONAL DRILLING

- Field Status**
- ABANDONED
  - ACTIVE
  - COMBINED
  - INACTIVE
  - PROPOSED
  - STORAGE
  - TERMINATED

- Unit Status**
- EXPLORATORY
  - GAS STORAGE
  - NF PP OIL
  - NF SECONDARY
  - PENDING
  - PI OIL
  - PP GAS
  - PP GEOTHERML
  - PP OIL
  - SECONDARY
  - TERMINATED

- Wells Status**
- GAS INJECTION
  - GAS STORAGE
  - LOCATION ABANDONED
  - NEW LOCATION
  - PLUGGED & ABANDONED
  - PRODUCING GAS
  - PRODUCING OIL
  - SHUT-IN GAS
  - SHUT-IN OIL
  - TEMP. ABANDONED
  - TEST WELL
  - WATER INJECTION
  - WATER SUPPLY
  - WATER DISPOSAL
  - DRILLING



Utah Oil Gas and Mining



PREPARED BY: DIANA MASON  
DATE: 15-MAY-2007

# Application for Permit to Drill

## Statement of Basis

Utah Division of Oil, Gas and Mining

5/21/2007

Page 1

APD No	API WellNo	Status	Well Type	Surf Ownr	CBM
354	4-301-33365-60-00		OW	P	No
<b>Operator</b>	BERRY PETROLEUM COMPANY	<b>Surface Owner-APD</b>			
<b>Well Name</b>	LC FEE 1-12-57	<b>Unit</b>			
<b>Field</b>	UNDESIGNATED	<b>Type of Work</b>			
<b>Location</b>	FL FL GPS Coord (UTM) E N				

### Geologic Statement of Basis

Berry proposes to set 300' of surface casing at this location. The base of the moderately saline water is estimated to be at 6,600 feet in this area. This location lies on the transition between the Uinta Formation and the Green River Formation and is located on valley fill alluvium. The Uinta Formation is not expected to produce prolific aquifers. Water may be found in alluvium deposited in valley floors. The proposed location is in a recharge area for the aquifers of the Green River Formation and fresh water can be expected to be found in the Green River Formation. A search of Division of Water Rights records indicates 2 water wells within a 10,000 foot radius of the proposed location. The wells are over a mile south of the proposed location. They are 65 and 110 feet deep and are used for stock watering, irrigation and domestic use. The wells are owned by private individuals. These wells probably produce from valley fill alluvium. The proposed casing and cement program should adequately protect any useable ground water.

Brad Hill  
APD Evaluator

5/21/2007  
Date / Time

### Surface Statement of Basis

The general area is within the Lake Canyon drainage or side canyons of Lake Canyon. Lake Canyon is named for a reservoir lake located in the canyon bottom approximately 8 road miles up canyon from the confluence of Lake Canyon drainage with the Strawberry River. The City of Duchesne is approximately 14 road miles to the east of the road junction leading to Lake Canyon. Access to the area is by State of Utah and Duchesne County paved highways to the Lake Canyon graveled Duchesne County Road. Approximately 0.1 miles of new road will be constructed to reach the location.

Topography in the Lake Canyon area consists of a wide-bottomed canyon rimmed by excessively steep or vertical sidewall cliffs. Outwash plains or deposits of till are common along both sides of the canyon. A few narrow bottomed side drainages exist and have similar steep sides. A perennial stream exists and flows into the Lake originating at springs approximately 1-1/2 miles upstream. Overflow from the lake subs into the bottom of the drainage a short distance below the lake, depending on the amount of flow for the particular year and time of the year. Seeps and small springs infrequently occur within the drainage.

The proposed LC FEE #1-12D-57 oil well is on the west side of the canyon on a gentle outwash which extends east from near vertical cliffs to the west. Lake Canyon Lake and dam is approximately 1/2 mile southwest of the location. No drainages intersect the proposed location and no diversions are needed.

The two track road that runs through the location may be improved and replace the existing road. If this is done the County road will be rehabilitated. This would extend to a tie-in on the west side of the dam. Betterment to and crossing the dam would not be required to reach other wells beyond this well.

The Utah Division of Wildlife Resources owns the surface and the minerals are owned by the United States Government and held in trust for the Ute Indian Tribe. Ben Williams represented the UDWR at the pre-site. The BLM representing the Ute Tribe was invited to the pre-site review but was not able to attend.

# Application for Permit to Drill

## Statement of Basis

Utah Division of Oil, Gas and Mining

5/21/2007

Page 2

The UDWR requested the well site be located on the outwash to protect elk and deer forage in the bottom of the canyon. The area is classified as critical winter habitat for both elk and deer. To reduce the impact on these species during this critical period, DWR will require a seasonal activity restriction for road construction, pad construction, drilling or work-over rigs from Dec 1 thru March 15th as part of their surface use agreement with Berry Petroleum. In addition Mr. Williams requested that if a pump jack is installed on the location that a reduced sound emission muffler be installed on the motor.

Mr. Williams gave Mr. Crozier of Berry Petroleum a copy of his wildlife evaluation and a seed mixture to be used to revegetate un-used portions of the disturbed area.

The selected location appears to be a suitable location for drilling and operating a well.

Floyd Bartlett  
Onsite Evaluator

3/20/2007  
Date / Time

### Conditions of Approval / Application for Permit to Drill

Category	Condition
Pits	A synthetic liner with a minimum thickness of 16 mils with a felt subliner shall be properly installed and maintained in the reserve pit if a closed loop system is not used..

# ON-SITE PREDRILL EVALUATION

## Utah Division of Oil, Gas and Mining

**Operator** BERRY PETROLEUM COMPANY  
**Well Name** LC FEE 1-12-57  
**API Number** 43-013-33594-0 **APD No** 354 **Field/Unit** UNDESIGNATED  
**Location: 1/4,1/4** **Sec** **Tw** **Rng** **FL** **FL**  
**GPS Coord (UTM)** 533095 4434870 **Surface Owner**

### Participants

Floyd Bartlett (DOGM), Jeff Crozier (Berry Petroleum Company), Ben Williams (UDWR), Shaun Hawk (Uintah Engineering and Land Surveying).

### Regional/Local Setting & Topography

The general area is within the Lake Canyon drainage or side canyons of Lake Canyon. Lake Canyon is named for a reservoir lake located in the canyon bottom approximately 8 road miles up canyon from the confluence of Lake Canyon drainage with the Strawberry River. The City of Duchesne is approximately 14 road miles to the east of the road junction leading to Lake Canyon. Access to the area is by State of Utah and Duchesne County paved highways to the Lake Canyon graveled Duchesne County Road. Approximately 0.1 miles of new road will be constructed to reach the location.

Topography in the Lake Canyon area consists of a wide-bottomed canyon rimmed by excessively steep or vertical sidewall cliffs. Outwash plains or deposits of till are common along both sides of the canyon. A few narrow bottomed side drainages exist and have similar steep sides. A perennial stream exists and flows into the Lake originating at springs approximately 1-1/2 miles upstream. Overflow from the lake subs into the bottom of the drainage a short distance below the lake, depending on the amount of flow for the particular year and time of the year. Seeps and small springs infrequently occur within the drainage.

The proposed LC FEE #1-12D-57 oil well is on the west side of the canyon on a gentle outwash which extends east from near vertical cliffs to the west. Lake Canyon Lake and dam is approximately 1/2 mile southwest of the location. No drainages intersect the proposed location and no diversions are needed.

The Utah Division of Wildlife Resources owns the surface and the minerals are owned by the United States Government and held in trust for the Ute Indian Tribe.

### Surface Use Plan

#### **Current Surface Use**

Grazing  
Recreational  
Wildlife Habitat  
Deer Winter Range

#### **New Road**

<b>Miles</b>	<b>Well Pad</b>	<b>Src Const Material</b>	<b>Surface Formation</b>
0.1	<b>Width</b> 220	Length 300	Onsite
			UNTA

**Ancillary Facilities** N

Waste Management Plan Adequate? Y

### Environmental Parameters

**Affected Floodplains and/or Wetland** N

**Flora / Fauna**

Big sagebrush, cheat grass, slender wheatgrass, Indian Ricegrass salina wild rye and annual weed.

Deer, elk, coyotes, bobcats and numerous small mammals, birds and raptors.

**Soil Type and Characteristics**

Shallow rubbly sandy clay loam.

**Erosion Issues** N

**Sedimentation Issues** N

**Site Stability Issues** N

**Drainage Diversion Required** N

**Berm Required?** N

**Erosion Sedimentation Control Required?** N

**Paleo Survey Run?** N    **Paleo Potential Observed?** N    **Cultural Survey Run?** Y    **Cultural Resources?** N

**Reserve Pit**

**Site-Specific Factors**

**Site Ranking**

<b>Distance to Groundwater (feet)</b>	>200	0
<b>Distance to Surface Water (feet)</b>	>1000	0
<b>Dist. Nearest Municipal Well (ft)</b>	>5280	0
<b>Distance to Other Wells (feet)</b>	300 to 1320	10
<b>Native Soil Type</b>	Mod permeability	10
<b>Fluid Type</b>	Fresh Water	5
<b>Drill Cuttings</b>	Normal Rock	0
<b>Annual Precipitation (inches)</b>	10 to 20	5
<b>Affected Populations</b>	<10	0
<b>Presence Nearby Utility Conduits</b>	Not Present	0

**Final Score** 30    1    **Sensitivity Level**

**Characteristics / Requirements**

Two sets of drawings have been submitted. Present plans are to drill the well using a closed loop mud circulation system. If an open loop system is used a reserve pit will be located in an area of cut on the southwest portion of the location. Its dimensions will be 70' x 180' x 10' deep. A liner with sub felt is required. Berry commonly uses a 16 mil liner.

**Closed Loop Mud Required?** N    **Liner Required?** Y    **Liner Thickness** 16    **Pit Underlayment Required?** Y

**Other Observations / Comments**

The two track road that runs through the location may be improved and replace the existing road. If this is done the County road will be rehabilitated. This would extend to a tie-in on the west side of the dam. Betterment to and crossing the dam would not be required to reach other wells beyond this well..

This well was originally submitted as the LC FEE #1-12-57 and has been changed to a directional well.

Floyd Bartlett  
Evaluator

3/20/2007  
Date / Time

**STATE ACTIONS**  
**Resource Development Coordinating Committee**  
**Public Lands Policy Coordination Office**  
**5110 State Office Building**  
**SLC, UT 84114**  
**Phone No. 537-9230**

<b>1. State Agency</b> Oil, Gas and Mining 1594 West North Temple, Suite 1210 Salt Lake City, UT 84114-5801	<b>2. Approximate date project will start:</b>  Upon Approval or May 29, 2007
<b>3. Title of proposed action:</b> Application for Permit to Drill	
<b>4. Description of Project:</b>  Berry Petroleum Company proposes to drill the LC Fee 1-12D-57 well (wildcat) on a Fee lease, Duchesne County, Utah. This action is being presented to the RDCC for consideration of resource issues affecting state interests. The Division of Oil, Gas and Mining is the primary administrative agency in this action and must issue approval before operations commence.	
<b>5. Location and detailed map of land affected (site location map required, electronic GIS map preferred)</b> (include UTM coordinates where possible) (indicate county) 1060' FNL 380' FEL, NE/4 NE/4, Section 12, Township 5 South, Range 7 West, Duchesne County, Utah	
<b>6. Possible significant impacts likely to occur:</b> Surface impacts include up to five acres of surface disturbance during the drilling and completion phase (estimated for five weeks duration). If oil and gas in commercial quantities is discovered, the location will be reclaimed back to a net disturbance of between one and two acres – not including road, pipeline, or utility infrastructure. If no oil or gas is discovered, the location will be completely reclaimed.	
<b>7. Identify local government affected</b> a. Has the government been contacted? No. b. When? c. What was the response? d. If no response, how is the local government(s) likely to be impacted?	
<b>8. For acquisitions of land or interests in land by DWR or State Parks please identify state representative and state senator for the project area. Name and phone number of state representative, state senator near project site, if applicable:</b> a. Has the representative and senator been contacted? N/A	
<b>9. Areawide clearinghouse(s) receiving state action:</b> (to be sent out by agency in block 1) Uintah Basin Association of Governments	
<b>10. For further information, contact:</b>   Diana Mason Phone: (801) 538-5312	<b>11. Signature and title of authorized officer</b>   Gil Hunt, Associate Director Date: May 15, 2007

STATE OF UTAH  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

FORM 3

AMENDED REPORT   
(highlight changes)

**APPLICATION FOR PERMIT TO DRILL**

1A. TYPE OF WORK: DRILL <input checked="" type="checkbox"/> REENTER <input type="checkbox"/> DEEPEN <input type="checkbox"/>		5. MINERAL LEASE NO: <b>FEE</b>	6. SURFACE: <b>FEE</b>
B. TYPE OF WELL: OIL <input checked="" type="checkbox"/> GAS <input type="checkbox"/> OTHER _____ SINGLE ZONE <input checked="" type="checkbox"/> MULTIPLE ZONE <input type="checkbox"/>		7. IF INDIAN, ALLOTTEE OR TRIBE NAME:	
2. NAME OF OPERATOR: <b>BERRY PETROLEUM COMPANY</b>		8. UNIT or CA AGREEMENT NAME: <b>N/A</b>	
3. ADDRESS OF OPERATOR: <b>RT. 2 BOX 7735</b> CITY <b>ROOSEVELT</b> STATE <b>UTAH</b> ZIP <b>84066</b>		PHONE NUMBER: <b>(435)722-1325</b>	9. WELL NAME and NUMBER: <b>LC FEE 1-12D-57</b>
4. LOCATION OF WELL (FOOTAGES) <b>533091 X 4434858 Y 40.065224 -110.611978</b>		10. FIELD AND POOL, OR WILDCAT: <b>LAKE CANYON</b>	
AT SURFACE: <b>1060' FNL, 380' FEL</b> NAD 27 <b>532983 X 4435010 Y 40.066592 -110.613236</b> 40.065306 LAT AT PROPOSED PRODUCING ZONE: <b>BHL: 559' FNL, 733' FEL</b> 110.611994 LONG		11. QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: <b>(NE/NE)</b> <b>SEC. 12, T.5S., R.7W.</b> <b>U.S.B.&amp;M.</b>	
14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE: <b>21.1 MILES FROM DUCHESNE, UTAH</b>		12. COUNTY: <b>DUCHESNE</b>	13. STATE: <b>UTAH</b>
15. DISTANCE TO NEAREST PROPERTY OR LEASE LINE (FEET) <b>380'</b>	16. NUMBER OF ACRES IN LEASE: <b>80.00</b>	17. NUMBER OF ACRES ASSIGNED TO THIS WELL: <b>40</b>	
18. DISTANCE TO NEAREST WELL (DRILLING, COMPLETED, OR APPLIED FOR) ON THIS LEASE (FEET) <b>N/A</b>	19. PROPOSED DEPTH: <b>4840'</b>	20. BOND DESCRIPTION: <b>RLB0005651</b>	
21. ELEVATIONS (SHOW WHETHER DF, RT, GR, ETC.): <b>6585' GR</b>	22. APPROXIMATE DATE WORK WILL START: <b>REFER TO BPC SOP PLAN</b>	23. ESTIMATED DURATION: <b>REFER TO BPC SOP PLAN</b>	

**24. PROPOSED CASING AND CEMENTING PROGRAM: SEE ATTACHMENT**

SIZE OF HOLE	CASING SIZE, GRADE, AND WEIGHT PER FOOT	SETTING DEPTH	CEMENT TYPE, QUANTITY, YIELD, AND SLURRY WEIGHT		
12 1/4	8 5/8 J-55 STC 24#	300'	TYPE III + ADDITIVES	130 SX	1.43 CF/SK 14.3 PPG
7 7/8	5 1/2 J-55 LTC 15.5#	4840'	HI-FILL MODIFIED+ADDITIVES	250 SX	3.46 CF/SK 11.0 PPG
			65/35 POZ+6% GEL+3% KCL+ADDITIVES	300 SX	1.92 CF/SK 13.0 PPG

NOTE: ACTUAL VOLUMES PUMPED WILL BE CALIPER HOLE VOLUME+25% EXCESS

**25. ATTACHMENTS: SEE CEMENT RECOMMENDATION ATTACHMENT**

VERIFY THE FOLLOWING ARE ATTACHED IN ACCORDANCE WITH THE UTAH OIL AND GAS CONSERVATION GENERAL RULES:

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> WELL PLAT OR MAP PREPARED BY LICENSED SURVEYOR OR ENGINEER     | <input checked="" type="checkbox"/> COMPLETE DRILLING PLAN (BPC SOP ON FILE WITH STATE)      |
| <input checked="" type="checkbox"/> EVIDENCE OF DIVISION OF WATER RIGHTS APPROVAL FOR USE OF WATER | <input type="checkbox"/> FORM 5, IF OPERATOR IS PERSON OR COMPANY OTHER THAN THE LEASE OWNER |

NAME (PLEASE PRINT) SHELLEY E. CROZIER TITLE REGULATORY & PERMITTING SPECIALIST

SIGNATURE *Shelley E. Crozier* DATE 05/10/07

(This space for State use only)

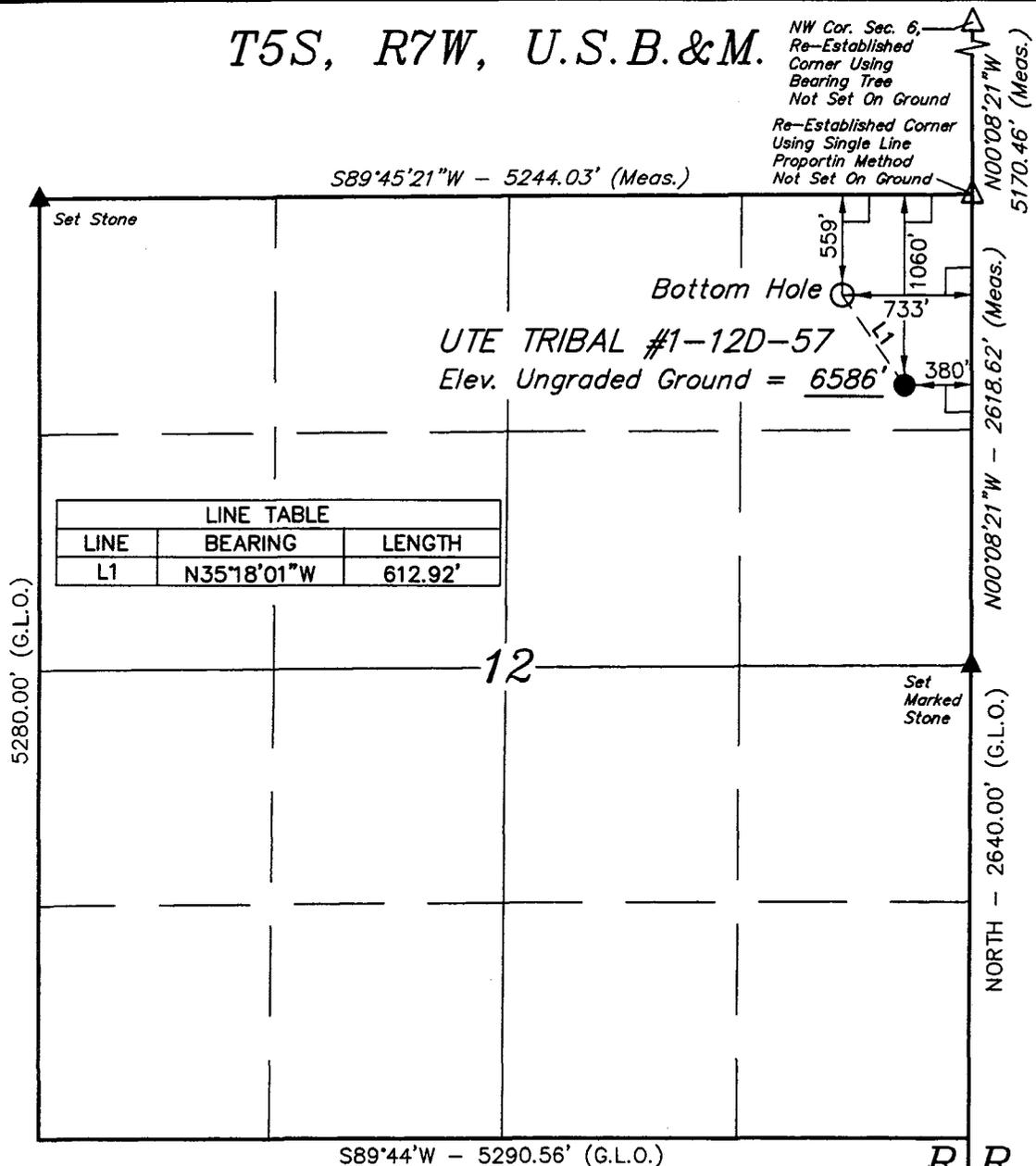
API NUMBER ASSIGNED: 43-013-33656

APPROVAL:

RECEIVED  
MAY 14 2007  
DIV. OF OIL, GAS & MINING

T5S, R7W, U.S.B.&M.

NW Cor. Sec. 6,  
Re-Established  
Corner Using  
Bearing Tree  
Not Set On Ground  
  
Re-Established Corner  
Using Single Line  
Proportin Method  
Not Set On Ground



UTE TRIBAL #1-12D-57  
Elev. Ungraded Ground = 6586'

LINE TABLE		
LINE	BEARING	LENGTH
L1	N35°18'01\"W	612.92'

**BERRY PETROLEUM COMPANY**

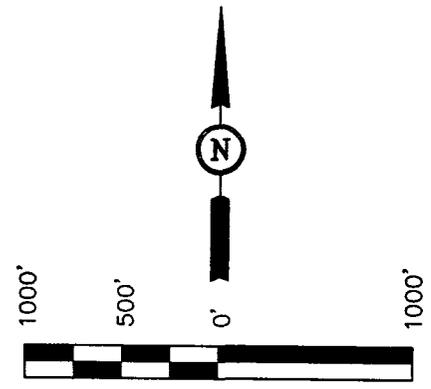
Well location, LC FEE #1-12D-57, located as shown in the NE 1/4 NE 1/4 of Section 12, T5S, R7W, U.S.B.&M., Duchesne County, Utah.

**BASIS OF ELEVATION**

BENCH MARK (M67) LOCATED IN THE SW 1/4 OF SECTION 9, T5S, R4W, U.S.B.&M. TAKEN FROM THE DUCHESNE SE QUADRANGLE, UTAH, DUCHESNE COUNTY, 7.5 MINUTE QUAD. (TOPOGRAPHIC MAP) PUBLISHED BY THE UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY. SAID ELEVATION IS MARKED ON CAP AS BEING 6097 FEET.

**BASIS OF BEARINGS**

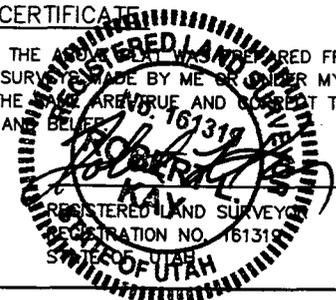
BASIS OF BEARINGS IS A G.P.S. OBSERVATION.



SCALE

**CERTIFICATE**

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEY MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAID ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.



REVISED: 04-11-07

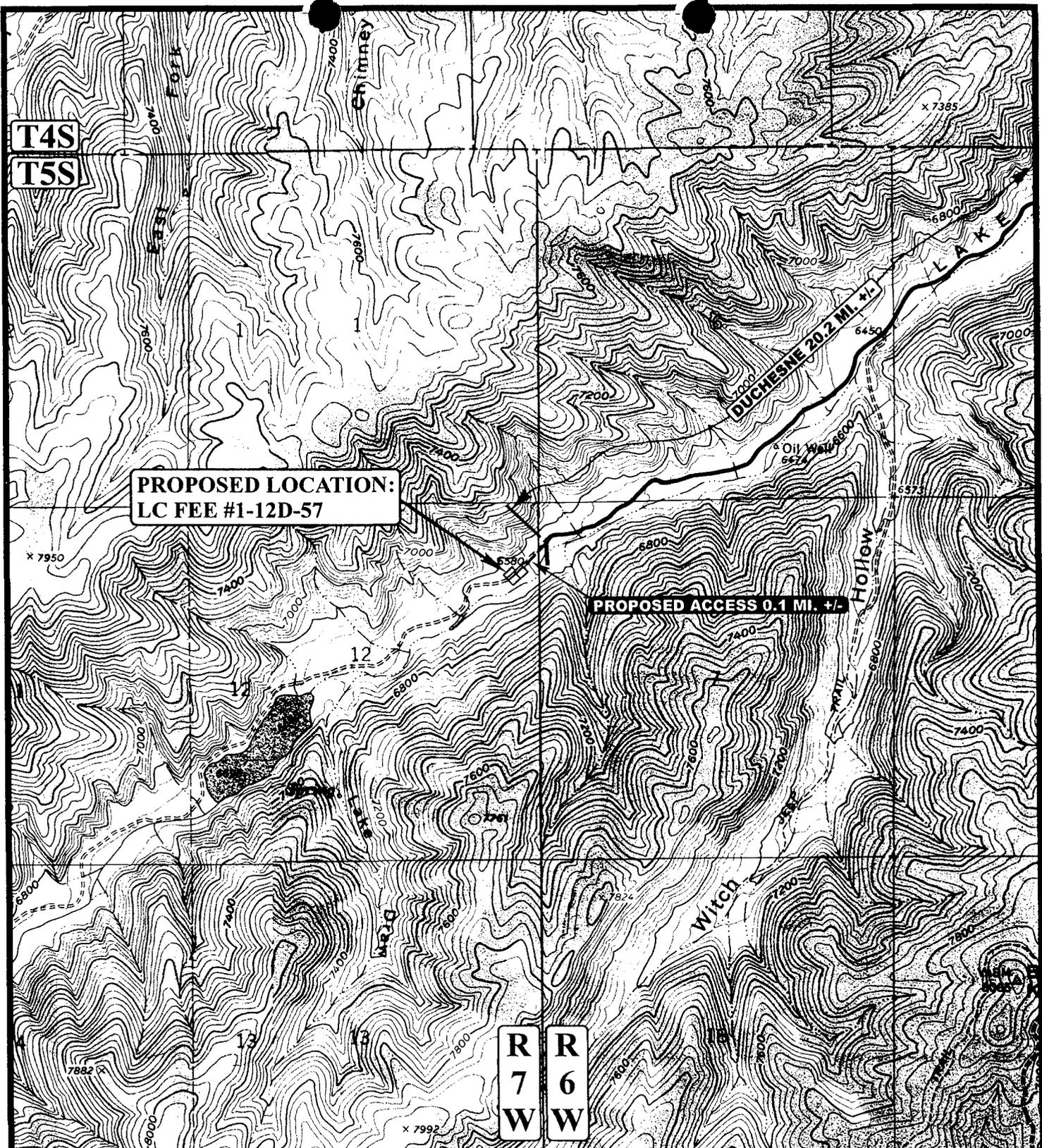
**UINTAH ENGINEERING & LAND SURVEYING**  
85 SOUTH 200 EAST - VERNAL, UTAH 84078  
(435) 789-1017

**LEGEND:**

- = 90° SYMBOL
- = PROPOSED WELL HEAD.
- = SECTION CORNERS LOCATED.

(NAD 83)  
LATITUDE = 40°03'54.95" (40.065264)  
LONGITUDE = 110°36'45.74" (110.612706)  
(NAD 27)  
LATITUDE = 40°03'55.10" (40.065306)  
LONGITUDE = 110°36'43.18" (110.611994)

SCALE 1" = 1000'	DATE SURVEYED: 01-05-07	DATE DRAWN: 01-19-07
PARTY J.W. A.A. L.K.	REFERENCES G.L.O. PLAT	
WEATHER COLD	FILE BERRY PETROLEUM COMPANY	



**PROPOSED LOCATION:  
LC FEE #1-12D-57**

**PROPOSED ACCESS 0.1 MI. +/-**

**LEGEND:**

- EXISTING ROAD
- - - - - PROPOSED ACCESS ROAD

**BERRY PETROLEUM COMPANY**

LC FEE #1-12D-57  
SECTION 12, T5S, R7W, U.S.B.&M  
1060' FNL 380' FEL



**Uintah Engineering & Land Surveying**  
85 South 200 East Vernal, Utah 84078  
(435) 789-1017 \* FAX (435) 789-1813



**TOPOGRAPHIC  
MAP**

<b>01</b>	<b>18</b>	<b>07</b>
MONTH	DAY	YEAR

SCALE: 1" = 2000' DRAWN BY: L.K. REVISED: 04-11-07



**From:** Robert Clark  
**To:** Mason, Diana  
**Date:** 5/21/2007 9:30 AM  
**Subject:** RDCC short turn-around comments

**CC:** Anderson, Tad; Mcneill, Dave; Wright, Carolyn  
The following comments are in response to short turn-around items **RDCC #7968 and RDCC #7969**.

**RDCC #7968, Comments begin:** The Lone Wolf Exploration and Production Company proposal to drill the State 36-14 wildcat well, in Emery County, may require a permit, known as an Approval Order, from the Executive Secretary of the Air Quality Board. If any compressor or pump stations are constructed at the site, a permit application, known as a Notice of Intent (NOI), should be submitted to the Executive Secretary at the Utah Division of Air Quality at 150 N. 1950 West, Salt Lake City, Utah, 84116 for review according to the Utah Air Quality Rule R307-401. Permit: Notice of Intent and Approval Order. A copy of the rules is found at [www.rules.utah.gov/publicat/code/r307/r307.htm](http://www.rules.utah.gov/publicat/code/r307/r307.htm) .

The proposed project is also subject to Utah Air Quality Rule R307-205-5, Fugitive Dust, due to the fugitive dust that is generated during the excavating phases of the project. These rules apply to construction activities that disturb an area greater than 1/4 acre in size. A permit, known as an Approval Order, is not required from the Executive Secretary of the Air Quality Board, but steps need to be taken to minimize fugitive dust, such as watering and/or chemical stabilization, providing vegetative or synthetic cover or windbreaks. A copy of the rules may be found at [www.rules.utah.gov/publicat/code/r307/r307.htm](http://www.rules.utah.gov/publicat/code/r307/r307.htm) . **Comments end.**

**RDCC#7969, Comments begin:** The Berry Petroleum Company proposal to drill the LC Fee 1-12D-57 wildcat well, in Duchesne County, may require a permit, known as an Approval Order, from the Executive Secretary of the Air Quality Board. If any compressor or pump stations are constructed at the site, a permit application, known as a Notice of Intent (NOI), should be submitted to the Executive Secretary at the Utah Division of Air Quality at 150 N. 1950 West, Salt Lake City, Utah, 84116 for review according to the Utah Air Quality Rule R307-401. Permit: Notice of Intent and Approval Order. A copy of the rules is found at [www.rules.utah.gov/publicat/code/r307/r307.htm](http://www.rules.utah.gov/publicat/code/r307/r307.htm) .

The proposed project is also subject to Utah Air Quality Rule R307-205-5, Fugitive Dust, due to the fugitive dust that is generated during the excavating phases of the project. These rules apply to construction activities that disturb an area greater than 1/4 acre in size. A permit, known as an Approval Order, is not required from the Executive Secretary of the Air Quality Board, but steps need to be taken to minimize fugitive dust, such as watering and/or chemical stabilization, providing vegetative or synthetic cover or windbreaks. A copy of the rules may be found at [www.rules.utah.gov/publicat/code/r307/r307.htm](http://www.rules.utah.gov/publicat/code/r307/r307.htm) . **Comments end.**

Robert Clark  
Division of Air Quality  
801-536-4435

43-013-33656

MEMORANDUM

DATE: May 21, 2007  
TO: Utah Division of Oil, Gas and Mining  
FROM: Utah Geological Survey, Ground Water and Paleontology Program  
CC: Resource Development Coordinating Committee  
SUBJECT: UGS comments on RDCC short-turn-around items 7968, 7969, and item 7978

7968. Division of Oil, Gas and Mining  
Short Turn Around Drilling Permit  
Sec. 36, T22S, R15E, Emery County  
Application for Permit to Drill - Lonewolf Exploration and Production proposal to drill a wildcat well the State 36-14 on State lease ML-50652

There are known significant vertebrate fossil localities recorded in our files in or near this project area, and the Jurassic Morrison Formation that is exposed here has the potential for yielding additional significant vertebrate fossil localities. The office of the State Paleontologist therefore recommends that a paleontological survey be conducted for this project and its easements by a paleontologist with a valid permit.

7969. Division of Oil, Gas and Mining  
Short Turn Around Drilling Permit  
Sec. 12, T5S, R7W, Duchesne County  
Application for Permit to Drill - Berry Petroleum Company proposal to drill a wildcat well the LC Fee 1-12D-57 on a Fee lease

Although there are no paleontological localities recorded in our files for this project area, the Eocene Uinta Formation that is exposed here has the potential for yielding significant vertebrate fossil localities. The office of the State Paleontologist therefore recommends that a paleontological evaluation be conducted for this project and its easements by a paleontologist with a valid permit.

7978. Division of Oil, Gas and Mining  
Tony M. Mine - Mining Permit, Garfield County, Utah

There are known significant vertebrate fossil localities recorded in our files in or near this project area, and the Jurassic Morrison Formation that is exposed here has the potential for yielding additional significant vertebrate fossil localities. The office of the State Paleontologist therefore recommends that a paleontological survey be conducted for this project and its easements by a paleontologist with a valid permit.

2007-05 Berry LC Fee 1-12D-57

Casing Schematic

Surface

BHP  $0.052(4848)8.6 = 2168 \text{ psi}$   
anticipate  $< 3000$

8-5/8"  
MW 8.6  
Frac 19.3

Gas  $.12(4848) = 582$   
 $2168 - 582 = 1586 \text{ psi, MASA}$

BOPE 2M ✓

Burst 2950  
70% 2065

Max P@ csg. shoe  
 $.22(4528) = 996$   
 $2168 - 996 = 1172 \text{ psi}$

Test to 1172 psi ✓

Stop surf. cont. ✓

✓ Adequate  
DAD 6/25/07

5-1/2"  
MW 8.6

Production  
4892. MD  
4848. TVD

1225  
182

TOC @ 0. TOC @ 67. *Uinta*  
to surf w/10% w/o ✓  
\*stop

362' Surface Green River  
320. MD  
320. TVD

785' Green River Upper Marker

1446' Mahogany

2466' Tgr 3 Marker

3242' Douglas Creek

3877' Black Shale

4131' Castle Peak

4513' Ufeland Butte Ls.

4748' Wasatch

- 6600 ± BMSW

Well name:

**2007-05 Berry LC Fee 1-12D-57**

Operator: **Berry Petroleum Company**

String type: Surface

Project ID:

43-013-33656

Location: Duchesne County

**Design parameters:**

**Collapse**

Mud weight: 8.600 ppg  
Design is based on evacuated pipe.

**Minimum design factors:**

**Collapse:**

Design factor 1.125

**Burst:**

Design factor 1.00

**Environment:**

H2S considered? No  
Surface temperature: 65 °F  
Bottom hole temperature: 69 °F  
Temperature gradient: 1.40 °F/100ft  
Minimum section length: 200 ft

Cement top: 67 ft

**Burst**

Max anticipated surface pressure: 282 psi  
Internal gradient: 0.120 psi/ft  
Calculated BHP 320 psi

No backup mud specified.

**Tension:**

8 Round STC: 1.80 (J)  
8 Round LTC: 1.80 (J)  
Buttress: 1.60 (J)  
Premium: 1.50 (J)  
Body yield: 1.50 (B)

Tension is based on air weight.  
Neutral point: 279 ft

**Non-directional string.**

**Re subsequent strings:**

Next setting depth: 4,848 ft  
Next mud weight: 8.600 ppg  
Next setting BHP: 2,166 psi  
Fracture mud wt: 19.250 ppg  
Fracture depth: 320 ft  
Injection pressure: 320 psi

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Internal Capacity (ft³)
1	320	8.625	24.00	J-55	ST&C	320	320	7.972	114.4
Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (Kips)	Tension Strength (Kips)	Tension Design Factor
1	143	1370	9.583	320	2950	9.22	8	244	31.77 J

Prepared Helen Sadik-Macdonald  
by: Div of Oil, Gas & Minerals

Phone: 801-538-5357  
FAX: 801-359-3940

Date: May 30, 2007  
Salt Lake City, Utah

Remarks:

Collapse is based on a vertical depth of 320 ft, a mud weight of 8.6 ppg. The casing is considered to be evacuated for collapse purposes. Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Well name:	<b>2007-05 Berry LC Fee 1-12D-57</b>	
Operator:	<b>Berry Petroleum Company</b>	Project ID:
String type:	Production	43-013-33656
Location:	Duchesne County	

**Design parameters:**

**Collapse**

Mud weight: 8.600 ppg  
 Design is based on evacuated pipe.

**Burst**

Max anticipated surface pressure: 1,099 psi  
 Internal gradient: 0.220 psi/ft  
 Calculated BHP: 2,166 psi

No backup mud specified.

**Minimum design factors:**

**Collapse:**

Design factor: 1.125

**Burst:**

Design factor: 1.00

**Tension:**

8 Round STC: 1.80 (J)  
 8 Round LTC: 1.80 (J)  
 Buttress: 1.60 (J)  
 Premium: 1.50 (J)  
 Body yield: 1.50 (B)

Tension is based on air weight.  
 Neutral point: 4,255 ft

**Environment:**

H2S considered? No  
 Surface temperature: 65 °F  
 Bottom hole temperature: 133 °F  
 Temperature gradient: 1.40 °F/100ft  
 Minimum section length: 368 ft

Cement top: Surface

**Directional well information:**

Kick-off point: 500 ft  
 Departure at shoe: 613 ft  
 Maximum dogleg: 2.5 °/100ft  
 Inclination at shoe: 8.34 °

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Internal Capacity (ft³)
1	4892	5.5	15.50	J-55	LT&C	4848	4892	4.825	653.8
Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (Kips)	Tension Strength (Kips)	Tension Design Factor
1	2166	4040	1.865	2166	4810	2.22	75	217	2.89 J

Prepared by: Helen Sadik-Macdonald  
 Div of Oil, Gas & Minerals

Phone: 801-538-5357  
 FAX: 801-359-3940

Date: May 30, 2007  
 Salt Lake City, Utah

**Remarks:**

Collapse is based on a vertical depth of 4848 ft, a mud weight of 8.6 ppg. The casing is considered to be evacuated for collapse purposes. Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Collapse strength is (biaxially) derated for doglegs in directional wells by multiplying the tensile stress by the cross section area to calculate a

*Engineering responsibility for use of this design will be that of the purchaser.*

**From:** "Shelley Crozier" <SEC@bry.com>  
**To:** "Diana Mason" <dianawhitney@utah.gov>  
**Date:** 8/2/2007 2:35 PM  
**Subject:** RE: Notice to release a number of Berry Petroleum Company's well applications on DWR surface

Diana, the LC Fee 1-12D-57 & LC Tribal 10-26D-56 are included in the wells listed below by Bill James and Brad Hill to be release for approval back in May. Do you still need me to send you a hard copy of this, or is this e-mail ok as it was with all of the other wells listed below. Let me know.

Thanks,

Shelley E. Crozier  
Regulatory & Permitting Specialist  
Berry Petroleum Company  
4000 South 4028 West  
Rt. 2 Box 7735  
Roosevelt, Utah 84066  
(435) 722-1325 Office  
(435) 725-1877 Direct  
(435) 823-1808 Cellular  
(435) 722-1321 Fax  
sec@bry.com

-----Original Message-----

**From:** Diana Mason [mailto:dianawhitney@utah.gov]  
**Sent:** Wednesday, May 16, 2007 9:29 AM  
**To:** Shelley Crozier  
**Subject:** Fwd: Notice to release a number of Berry Petroleum Company's well applications on DWR surface

FYI:

>>> Brad Hill 5/16/2007 9:28 AM >>>  
Diana,

If you would put a copy of this e-mail in the referenced well files I would say this is good enough for the surface agreement requirement.

Brad

>>> William James 5/10/2007 2:50 PM >>>  
Diana:

As we discussed today, DWR has been working for a while with Berry Petroleum Co. (Jeff Crozier) to review their applications for rights-of-way on Division of Wildlife Resources (DWR) surface. The roads, pipelines, and well pads for wells #11-27R-46, 4-27-46, 15-6-56, 12-34-46, 14-34-46, 1-9-56, 14-4-56, 10-9-56, 6-12-57, 9-6-56, 3-5-56, 1-12-57, 1-26-46, 3-18-56, 5-4-56, 8-4-56, 8-7-56, 10-26-56, 2-15-54, 4-15-54, 6-15-54, 8-15-54 are now being authorized under surface operating agreements which have been signed by Berry Petroleum Company, and notarized.

We have received payment of the applicable fees to DWR. The approved right-of-way leases and easements are now entering the Division of Finance for issuance of contract numbers. Please consider this message as DWR's formal request that, from the surface owner's viewpoint, you can "release" Berry Petroleum to pursue the named wells. We are satisfied they have met DWR standards. If you have questions, please call or drop by my office.

NOTE -- I will be unavailable May 12-22, 2007 on annual leave. If there detail questions or follow-up needs in the interim these wells can be referenced within three agreements which we named DUC-0609-EA-060, DUC-0702-EA-004, and DUC-0702-EA-008. Stephen "Steve" Hansen would be the best contact until I return.

Bill James  
Energy Development / NEPA Coordinator  
Utah Division of Wildlife Resources  
Salt Lake City, Utah  
(801) 538-4752 office  
(801) 230-1778 mobile



JON M. HUNTSMAN, JR.  
Governor

GARY R. HERBERT  
Lieutenant Governor

# State of Utah

## DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER  
Executive Director

### Division of Oil Gas and Mining

JOHN R. BAZA  
Division Director

August 2, 2007

Berry Petroleum Company  
Rt. 2, Box 7735  
Roosevelt, UT 84066

Re: L C Fee 1-12D-57 Well, 1060' FNL, 380' FEL, NE NE, Sec. 12, T. 5 South,  
R. 7 West, Bottom Location 559' FNL, 733' FEL, NE NE, Sec. 12, T. 5 South,  
R. 7 West, Duchesne County, Utah

Gentlemen:

Pursuant to the provisions and requirements of Utah Code Ann. § 40-6-1 *et seq.*, Utah Administrative Code R649-3-1 *et seq.*, and the attached Conditions of Approval, approval to drill the referenced well is granted.

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date. The API identification number assigned to this well is 43-013-33656.

Sincerely,

Gil Hunt  
Associate Director

pab  
Enclosures

cc: Duchesne County Assessor



Operator: Berry Petroleum Company  
Well Name & Number L C Fee 1-12D-57  
API Number: 43-013-33656  
Lease: fee

Location: NE NE Sec. 12 T. 5 South R. 7 West  
Bottom Location: NE NE Sec. 12 T. 5 South R. 7 West

### Conditions of Approval

#### 1. General

Compliance with the requirements of Utah Admin. R. 649-1 *et seq.*, the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for permit to drill.

#### 2. Notification Requirements

The operator is required to notify the Division of Oil, Gas and Mining of the following action during drilling of this well:

- 24 hours prior to cementing or testing casing – contact Dan Jarvis
- 24 hours prior to testing blowout prevention equipment – contact Dan Jarvis
- 24 hours prior to spudding the well – contact Carol Daniels
- Within 24 hours of any emergency changes made to the approved drilling program – contact Dustin Doucet
- Prior to commencing operations to plug and abandon the well – contact Dan Jarvis

The operator is required to get approval from the Division of Oil, Gas and Mining before performing any of the following actions during the drilling of this well:

- Plugging and abandonment or significant plug back of this well – contact Dustin Doucet
- Any changes to the approved drilling plan – contact Dustin Doucet

The following are Division of Oil, Gas and Mining contacts and their telephone numbers (please leave a voice mail message if the person is not available to take the call):

- Dan Jarvis at: (801) 538-5338 office (801) 942-0873 home
- Carol Daniels at: (801) 538-5284 office
- Dustin Doucet at: (801) 538-5281 office (801) 733-0983 home

#### 3. Reporting Requirements:

All required reports, forms and submittals will be promptly filed with the Division, including but not limited to the Entity Action Form (Form 6), Report of Water Encountered During Drilling (Form 7), Weekly Progress Reports for drilling and completion operations, and Sundry Notices and Reports on Wells requesting approval of change of plans or other operational actions.

Page 2

43-013-33656

August 2, 2007

4. Compliance with the Conditions of Approval/Application for Permit to Drill outlined in the Statement of Basis. (Copy Attached)
5. In accordance with Utah Admin. R.649-3-11, Directional Drilling, the operator shall submit a complete angular deviation and directional survey report to the Division within 30 days following completion of the well.
6. This proposed well is located in an area for which drilling units (well spacing patterns) have not been established through an order of the Board of Oil, Gas and Mining (the "Board"). In order to avoid the possibility of waste or injury to correlative rights, the operator is requested, once the well has been drilled, completed, and has produced, to analyze geological and engineering data generated therefrom, as well as any similar data from surrounding areas if available. As soon as is practicable after completion of its analysis, and if the analysis suggests an area larger than the quarter-quarter section upon which the well is located is being drained, the operator is requested to seek an appropriate order from the Board establishing drilling and spacing units in conformance with such analysis by filing a Request for Agency Action with the Board.
7. Surface casing shall be cemented to surface.
8. The Application for Permit to Drill has been forwarded to the Resource Development Coordinating Committee for review of this action. You will be required to comply with any applicable recommendations resulting from this review.

STATE OF UTAH  
DIVISION OF OIL, GAS, AND MINING

**SUNDRY NOTICES AND REPORTS ON WELLS**

Do not use this form for proposals to drill new wells, deepen existing wells, or to re-enter plugged and abandoned wells.  
Use APPLICATION FOR PERMIT TO DRILL OR DEEPEN form for such proposals.

5. Lease Designation and Serial Number:

FEE

6. If Indian, Allottee or Tribe Name:

7. Unit Agreement Name:

8. Well Name and Number:

LC FEE 1-12D-57

9. API Well Number:

43-013-33656

10. Field and Pool, or Wildcat:

LAKE CANYON

1. Type of Well: OIL  GAS  OTHER:

2. Name of Operator:

BERRY PETROLEUM COMPANY

3. Address and Telephone Number:

4000 SOUTH 4028 WEST, RT. 2 BOX 7735 ROOSEVELT, UTAH 84066 (435) 722-1325

4. Location of Well:

Footages: 1060' FNL, 380' FEL BHL: 559' FNL, 733' FEL

County: DUCHESNE,

QQ, Sec., T., R., M.: NE/NE SEC. 12, T5S, R7W USB&M

State: UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

NOTICE OF INTENT

(Submit in Duplicate)

- Abandon
- Repair Casing
- Change of Plans
- Convert to Injection
- Fracture Treat or Acidize
- Multiple Completion
- Other ONE YEAR EXTENSION
- New Construction
- Pull or Alter Casing
- Recomplete
- Reperforate
- Vent or Flare
- Water Shut-Off

Approximate date work will start \_\_\_\_\_

SUBSEQUENT REPORT

(Submit Original Form Only)

- Abandon
- Repair Casing
- Change of Plans
- Convert to Injection
- Fracture Treat or Acidize
- Other \_\_\_\_\_
- New Construction
- Pull or Alter Casing
- Reperforate
- Vent or Flare
- Water Shut-Off

Date of work completion \_\_\_\_\_

Report results of Multiple Completions and Recompletions to different reservoirs on WELL COMPLETION OR RECOMPLETION REPORT AND LOG form.

\* Must be accompanied by a cement verification report.

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

BERRY PETROEUM COMPANY RESPECTFULLY REQUESTS THAT THE APPROVED APPLICATION TO DRILL FOR THE ABOVE SUBJECT WELL BE EXTENDED FOR A PERIOD OF ONE (1) YEAR.

STATE BOND #RLB0005651

Approved by the  
Utah Division of  
Oil, Gas and Mining

Date: 08-04-08  
By: [Signature]

COPY SENT TO OPERATOR

Date: 8.5.2008  
Initials: KS

13

Name & Signature:

SHELLEY E. CROZIER

[Signature]

Title:

REGULATORY & PERMITTING SPECIALIST

Date:

07/30/08

(This space for Federal or State office use)

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JUL 31 2008

RES-1

**Application for Permit to Drill  
Request for Permit Extension  
Validation**

(this form should accompany the Sundry Notice requesting permit extension)

**API:** 43-013-33656  
**Well Name:** LC FEE 1-12D-57  
**Location:** (NE/NE) 1060' FNL, 380' FEL, SEC. 12-T5S-R7W  
**Company Permit Issued to:** BERRY PETROLEUM COMPANY  
**Date Original Permit Issued:** 8/2/2007

The undersigned as owner with legal rights to drill on the property as permitted above, hereby verifies that the information as submitted in the previously approved application to drill, remains valid and does not require revision.

Following is a checklist of some items related to the application, which should be verified.

If located on private land, has the ownership changed, if so, has the surface agreement been updated? Yes  No

Have any wells been drilled in the vicinity of the proposed well which would affect the spacing or siting requirements for this location? Yes  No

Has there been any unit or other agreements put in place that could affect the permitting or operation of this proposed well? Yes  No

Have there been any changes to the access route including ownership, or right-of-way, which could affect the proposed location? Yes  No

Has the approved source of water for drilling changed? Yes  No

Have there been any physical changes to the surface location or access route which will require a change in plans from what was discussed at the onsite evaluation? Yes  No

Is bonding still in place, which covers this proposed well? Yes  No

Shelley Crozier  
Signature

7/30/2008  
Date

Title: Regulatory & Permitting Specialist

Representing: Berry Petroleum Company

**RECEIVED**  
**JUL 31 2008**  
DIV. OF OIL, GAS & MINING

**STATE OF UTAH**  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

FORM 9

**SUNDRY NOTICES AND REPORTS ON WELLS**

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

		5. LEASE DESIGNATION AND SERIAL NUMBER: <b>FEE</b>
		6. IF INDIAN, ALLOTTEE OR TRIBE NAME:
		7. UNIT or CA AGREEMENT NAME:
1. TYPE OF WELL OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER _____		8. WELL NAME and NUMBER: <b>LC FEE 1-12D-57</b>
2. NAME OF OPERATOR: <b>BERRY PETROLEUM COMPANY</b>		9. API NUMBER: <b>4301333656</b>
3. ADDRESS OF OPERATOR: 4000 S. 4028 W. CITY <b>Roosevelt</b> STATE <b>UT</b> ZIP <b>84066</b>		10. FIELD AND POOL, OR WILDCAT: <b>LAKE CANYON</b>
4. LOCATION OF WELL FOOTAGES AT SURFACE: <b>1060' FNL, 380' FEL BHL: 559' FNL, 733' FEL</b> COUNTY: <b>DUCHESNE</b>		
QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: <b>NENE 12 T5S R7W</b> STATE: <b>UTAH</b>		

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> NOTICE OF INTENT (Submit in Duplicate) Approximate date work will start: _____	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> REPERFORATE CURRENT FORMATION
	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> SIDETRACK TO REPAIR WELL
<input type="checkbox"/> SUBSEQUENT REPORT (Submit Original Form Only) Date of work completion: _____	<input type="checkbox"/> CASING REPAIR	<input type="checkbox"/> NEW CONSTRUCTION	<input type="checkbox"/> TEMPORARILY ABANDON
	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> TUBING REPAIR
	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> VENT OR FLARE
	<input type="checkbox"/> CHANGE WELL NAME	<input type="checkbox"/> PLUG BACK	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> PRODUCTION (START/RESUME)	<input type="checkbox"/> WATER SHUT-OFF
	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input checked="" type="checkbox"/> OTHER: <b>1 YR. EXTENSION</b>
	<input type="checkbox"/> CONVERT WELL TYPE	<input type="checkbox"/> RECOMPLETE - DIFFERENT FORMATION	

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

BERRY PETROLEUM COMPANY RESPECTFULLY REQUESTS THAT THE APPROVED APPLICATION TO DRILL FOR THE ABOVE SUBJECT WELL BE EXTENDED FOR A PERIOD OF ONE (1) YEAR.

Approved by the  
Utah Division of  
Oil, Gas and Mining

STATE BOND #RLB0005651

Date: 08-12-09  
By: [Signature]

COPY SENT TO OPERATOR

Date: 8.12.2009  
Initials: KS

NAME (PLEASE PRINT) <u>SHELLEY E. CROZIER</u>	TITLE <u>REGULATORY &amp; PERMITTING SPECIALIST</u>
SIGNATURE <u>Shelley E. Crozier</u>	DATE <u>8/4/2009</u>

(This space for State use only)

**RECEIVED**  
**AUG 11 2009**



**Application for Permit to Drill  
Request for Permit Extension  
Validation**

(this form should accompany the Sundry Notice requesting permit extension)

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Shelley E. Crozja  
Signature

8/4/2009  
Date

**Title:** Regulatory & Permitting Specialist

**Representing:** Berry Petroleum Company

**RECEIVED**  
**AUG 11 2009**  
**DIV. OF OIL, GAS & MINING**



GARY R. HERBERT  
*Governor*

GREGORY S. BELL  
*Lieutenant Governor*

# State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER  
*Executive Director*

Division of Oil, Gas and Mining

JOHN R. BAZA  
*Division Director*

August 17, 2010

Berry Petroleum Company  
Rt. 2, Box 7735  
Roosevelt, UT 84066

Re: APD Rescinded – LC FEE 1-12D-57, Sec. 12, T. 5S, R. 7W  
Duchesne County, Utah API No. 43-013-33656

Ms. Garrett:

The Application for Permit to Drill (APD) for the subject well was approved by the Division of Oil, Gas and Mining (Division) on August 2, 2007. On August 4, 2008 and August 12, 2009, the Division granted a one-year APD extension. No drilling activity at this location has been reported to the division. Therefore, approval to drill the well is hereby rescinded, effective August 17, 2010.

A new APD must be filed with this office for approval prior to the commencement of any future work on the subject location.

If any previously unreported operations have been performed on this well location, it is imperative that you notify the Division immediately.

Sincerely,

  
Diana Mason  
Environmental Scientist

cc: Well File  
Brad Hill, Technical Service Manager