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**State of Colorado**  
**Oil and Gas Conservation Commission**

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



FOR OGCC USE ONLY

**RECEIVED**

JUN 26 2011

COGCC/Rifle Office

**EARTHEN PIT REPORT/PERMIT**

This form is to be used for both reporting and permitting pits. Rule 903 describes when a Permit with prior approval, or a Report within 30 days, is required for pits. Submit required attachments and forms.

**Complete the**  
**Attachment Checklist**

Oper OGCC

Detailed Site Plan	✓	
Topo Map w/ Pit Location	✓	
Water Analysis (Form 25)	✓	
Source Wells (Form 26)	✓	
Pit Design/Plan & Cross Sect	✓	
Design Calculations	✓	
Sensitive Area Determ.	✓	
Mud Program	✓	
Form 2A	✓	

**FORM SUBMITTED FOR:**☒ **Pit Report**☒ **Pit Permit**

OGCC Operator Number: 10091

Name of Operator: Berry Petroleum CompanyAddress: 1999 Broadway, Suite 3700City: Denver State: CO Zip: 80202Contact Name and Telephone:  
Bryan BurnsNo: 303-999-4245Fax: 303-999-4345API Number (of associated well): 05-045-17233OGCC Facility ID (of other associated facility): 335887 Chevron F-06 696 PadPit Location (QtrQtr, Sec, Twp, Rng, Meridian): SENW, Sec. 6, T6S, R96W 6th PMLatitude: 39.556251 Longitude: -108.153012 County: GarfieldPit Use: ☒ Production ☐ Drilling (Attach mud program) ☒ Special Purpose (Describe Use): Multi-Well Completions/StoragePit Type: ☒ Lined ☐ Unlined Surface Discharge Permit: ☐ Yes ☐ NoOffsite disposal of pit contents: ☐ Injection ☐ Commercial Pit/Facility Name: Chevron F-06 Pit/Facility No: F-06**Attach Form 26 to identify Source Wells and Form 25 to provide Produced Water Analysis results.****Existing Site Conditions**Is the location in a "Sensitive Area?" ☒ Yes ☐ No **Attach data used for determination.**Distance (in feet) to nearest surface water: 1,874' ground water: 300' water wells: 8,350'**LAND USE (or attach copy of Form 2A if previously submitted for associated well) Select one which best describes land use:**Crop Land: ☐ Irrigated ☐ Dry Land ☐ Improved Pasture ☐ Hay Meadow ☐ CRPNon-Crop Land: ☒ Rangeland ☐ Timber ☐ Recreational ☐ Other (describe): \_\_\_\_\_Subdivided: ☐ Industrial ☐ Commercial ☐ Residential**SOILS (or attach copy of Form 2A if previously submitted for associated well)**Soil map units form USNRCS survey: Sheet No: CO682 Soil Complex/Series No: 56Soils Series Name: Parachute-Irigul-Rhone association/ 25-50% Slopes Horizon thickness (in inches): A: N/A ; B: N/A ; C: N/A

Soils Series Name: \_\_\_\_\_ Horizon thickness (in inches): A: \_\_\_\_\_ ; B: \_\_\_\_\_ ; C: \_\_\_\_\_

**Attach detailed site plan and topo map with pit location.****Pit Design and Construction**Size of pit (feet): Length: 370' Width: 70' Depth: 10'Calculated pit volume (bbls): 28,000 Daily inflow rate (bbls/day): approx. 83

Daily disposal rates (attach calculations): Evaporation: \_\_\_\_\_ bbls/day Percolation: \_\_\_\_\_ bbls/day

Type of liner material: Polyethylene Plastic Thickness: 2 liners - 24 mil. and 60 mil.**Attach description of proposed design and construction (include sketches and calculations).**Method of treatment of produced water prior to discharge into pit (separator, heater treater, other): SeparatorsIs pit fenced? ☒ Yes ☐ No Is pit netted? ☒ Yes ☐ No

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Bryan BurnsSigned: [Signature]Title: Environmental SpecialistDate: 6/2/2011OGCC Approved: [Signature]Title: Location Assessment Specialist Date: 7-28-11CONDITIONS OF APPROVAL, IF ANY: See Attached**FACILITY NUMBER: 423847**

JAP

**Berry Petroleum, Chevron F-06 696 Pad, SENW Sec 6 T6S R96W, Garfield County, Form 15 Pit Permit (Pit ID#423847) Conditions of Approval**

**COA 21** - Operator must comply with all provisions of the June 12, 2008 Notice to Operators (NTO) Drilling Wells Within  $\frac{3}{4}$  Mile of the Rim of the Roan Plateau in Garfield County – Pit Design, Construction, and Monitoring Requirements.

**COA 22** - After installation of the uppermost liner and prior to operating the pit, the synthetic liner(s) shall be tested by filling the pit with at least 4 feet of water, measured from the base of the pit (not to exceed the 2-foot freeboard requirement). The operator shall monitor the pit for leaks for a period of 72 hours prior to draining the pit and commencing operations. Operator shall notify the COGCC Oil and Gas Location Assessment (OGLA) Specialist for Western Colorado (Dave Kubeczko; email [dave.kubeczko@state.co.us](mailto:dave.kubeczko@state.co.us)) 48 hours prior to start of the hydrotest. Hydrotest monitoring results must be maintained by the operator for the life of the pit and provided to COGCC prior to using the pit.

**COA 23** - Operator must ensure 110 percent secondary containment for any volume of fluids contained at the water handling facility site during natural gas development activities and operations; including, but not limited to, construction of a berm or diversion dike, diversion/collection trenches within and/or outside of berms/dikes, site grading, or other comparable measures (i.e., best management practices (BMPs) associated with stormwater management) sufficiently protective of nearby surface water. Any berm constructed at the well pad location will be stabilized, inspected at regular intervals (at least every 14 days), and maintained in good condition.

**COA 5** - Operator must implement best management practices to contain any unintentional release of fluids, including any fluids conveyed via buried or temporary surface pipelines.

**COA 90** - Notify COGCC Oil and Gas Location Assessment (OGLA) Specialist for Western Colorado (Dave Kubeczko; email [dave.kubeczko@state.co.us](mailto:dave.kubeczko@state.co.us)) and the COGCC Field Inspection Supervisor for Northwest Colorado (Shaun Kellerby; email [shaun.kellerby@state.co.us](mailto:shaun.kellerby@state.co.us)) 48 hours prior to use of existing pit.

**COA 47** - The pit will require a leak detection system (Rule 904.e).

**COA 41** - The nearby hillside must be monitored for any day-lighting of fluids throughout pit operations.

**COA 49** - The operator must maintain the fencing and netting until the pit is closed in accordance with Rule 905. Closure of Pits, and Buried or Partially Buried Produced Water Vessels.

**COA 25** - The area where flowback fluids will be stored/reused must be constructed to be sufficiently impervious to contain any spilled or released material.

**COA 20** - Surface water samples from Sheep Kill Gulch (at the previously sampled [November 2010] location) shall be collected prior to pit use and every 12 months to evaluate potential impacts from pit operations. At a minimum, the surface water samples will be analyzed for the following parameters: major cations/anions (chloride, fluoride, sulfate, sodium); total dissolved solids (TDS); and BTEX/DRO.

**COA 91** - At the time of pit closure, operator must submit disposal information via a Form 4 Sundry Notice to the COGCC Location Specialist for Western Colorado (Dave Kubeczko; email [dave.kubeczko@state.co.us](mailto:dave.kubeczko@state.co.us)). The disposal method will need to be approved prior to operator starting pit closure. In addition, operator will collect a pit water sample and, at a minimum, analyze for the following parameters: pH; alkalinity; specific conductance; major cations/anions (chloride, fluoride, sulfate, sodium); total dissolved solids (TDS); BTEX/DRO; TPH; PAH's (including benzo[a]pyrene); and metals (arsenic, barium, calcium, chromium, iron, magnesium, selenium). At the time of closure/disposal of pit water, COGCC may require additional analytes, as appropriate.

**Supplemental Information**  
**Form 15 – Chevron F-06 Production Pit**  
**COGCC Facility Id. *Pending***

**1. Historic and Intended Use of Chevron F-06 Pit**

Construction of the original Chevron F-06 drilling pit was completed in 2008. Since that time, one producing well was drilled and completed at that location. In February 2010, the original pit was emptied and reconstructed per COGCC Rule 904 with a double synthetic liner (24-mil and 60-mil) and other required features. The pit was hydrotested prior to placement in service. Well completions and flowback occurred in the summer of 2010.

The following is a chronology for the pit, including construction activity and pit uses:

Chevron F-06 696 Pad History

- May 3, 2007 - Surveyed & Plat-ed well pad location.
- Jan. 8 - March 19, 2008 - Built access road & well pad.
- April 18, 2008 - Drilled and blasted pit.
- April 20 - May 10, 2008 - Dug pit and completed well pad construction.
- June 2 - 13, 2008 - Lengthened pit and prepared pit for liner.
- June 19 - 20, 2008 - Prepared pit for liner.
- June 23 - 25, 2008 - Installed felt & 24 mil liner.
- Feb. 1 - 6, 2010 - Removed snow and ice from pit and installed 60 mil liner.
- April 26, 2010 - Installed fence around pit.
- April 29 - May 6, 2010 - Hauled water for liner hydrotest.
- May 10, 2010 - Hydrotested liner.
- July 1 - Aug. 14, 2010 - Processed drilling water & mud on site.
- Sep. 9 - 30, 2010 - Installed cables for bird net & wildlife fence.
- October 11 - 19, 2010 - Installed bird net on pit.

Going forward, the intended use of the Chevron F-06 pit will be for storage of produced water, prior to its beneficial re-use for well completion activities elsewhere on Berry's leases. Berry would like to temporarily utilize this pit for storage of produced water until planned centralized E&P waste management facilities are permitted and constructed elsewhere on Berry's leasehold. These facilities are expected to be brought online in the summer of 2012. Once these centralized facilities are brought online, the Chevron F-06 production pit will be closed and reclaimed per the COGCC 1000 series rules.

**2. Location Information**

Producing well associated with the Chevron F-06 pit and the designated API number:

- **CHEVRON #6-25D - 05-045-17233**

The latitude/longitude coordinates of the pit are 39.556251, -108.153012

### **3. Produced Water Disposal Method**

The vast majority of produced water to be stored in this pit will be put to beneficial re-use for completions on other well locations. There may be circumstances where produced water from this pit may need to be sent to disposal. At the present time, Berry utilizes the Danish Flats evaporation pit facility near Cisco, Utah for disposal.

A Form 26 containing additional information on produced water is attached with this submittal packet.

### **4. Sensitive Area Determination**

The following sensitive area determination was made utilizing Appendix Part B of the COGCC Rules, dated April 1, 2009.

**Box 1:** Does the produced water to be placed in the pit meet WQCC standards for groundwater for the following contaminants of concern?

Answer: No. A laboratory analysis of produced water from source well on the Chevron F-06 pad indicated TDS is 15,000 mg/l, and chloride is 8,500 mg/l. Similarly, BTEX compounds in the produced water are above the standards listed in Appendix Part B.

**Box 2:** Is the pit location underlain by an unconfined aquifer or recharge zone?

Answer: Yes. Bedrock in the project area is highly fractured Uinta sandstone that may be hydrologically connected to nearby surface waters. While site-specific data do not exist to confirm the presence or absence of fractures in the vicinity of the pit, Sheep Kill Creek, a perennial stream, runs approximately 1,874 feet to the north of the location. This stream is fed by discharge from shallow aquifers and springs in the area.

**Conclusion:** The pit is located in a sensitive area. However, since the pit is double lined with both 24-mil and 60-mil liners, the pit will be hydrotested before being placed in service and pit level monitoring will occur on a daily basis, the risk to water resources from use of this pit would be very low.

### **5. Design Basis**

At present, the well on the Chevron F-06 pad is producing approximately 2,480 barrels of water per month. Given the proposed pit has a capacity of 28,000 barrels, it can store roughly 11 months of water production.

If the proposed production pit were permitted, water would be placed in the pit at the rate of about 52 barrels per day. Water would accumulate in the pit over a period of weeks or months until it would be piped to other locations for well completions. During an active well completion, water could be withdrawn from the pit at the rate of up to 10,000 barrels per day (about 2 days to empty).

Assuming the pit was full and no water was needed for completions elsewhere; it would be removed by vacuum trucks at the rate of about 100 barrels per load and hauled off-site for disposal.

Prior to placement in the pit, produced water is stored in a tank battery on location where liquid hydrocarbons separate from the water by gravity. Virtually no condensate or other hydrocarbons are



placed in the pit. If floating hydrocarbons are observed on the pit, they are skimmed immediately per COGCC rules.

## **6. Attachments**

### **Site Plan**

An as-built drawing for the Chevron F-06 is attached to this submittal, which provides the dimensions and depth of the pit as it was constructed, and the locations of wellheads, separators, production tanks, and the access road. The as-built also provides pit cross sections (longitudinal and transverse) and a design view cross section illustrating the liner foundation and liner specifications.

### **Leak Detection and Pit Level Monitoring System**

Berry proposes to install a pressure transducer in the Chevron F-06 pit to monitor fluid levels. The instrument will provide continuous data on the pit level and can be programmed to provide an alarm if the fluid level is too high, or if there is a sudden loss of fluid. In terms of leak detection, the fluid level will be monitored continuously, and if there is an unexplained loss of fluid, Berry operations personnel will immediately inspect the pit to assess whether or not there is a leak. Any leaks will be repaired at once.

### **Liner Inspection and Hydrotest**

Following the installation of the double liner in February 2010, the liner was inspected by Thomas Hogelin, Berry's construction foreman for any defects. No problems were identified. A hydrostatic test was then performed on May 10, 2010 to verify the liner was tight. Following the successful liner test, the pit was placed in service for well completions. No fluid losses were observed during completion and flowback operations.

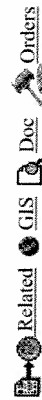
## **7. Surface Water Quality Sampling Data**

To assess baseline water quality conditions and to monitor potential impacts associated with drilling to surface waters in the area, a sample was collected on November 9th, 2010. The sample was collected from Sheep Kill Gulch and analyzed by a laboratory.

Sample results confirmed that no impacts to surface waters were occurring as a result of Berry's drilling activities at the Chevron F-06 location as observed TDS and chloride levels in the creek were in the normal range. Volatile organic (BTEX) compounds were non-detect in both samples taken.

The laboratory results for the surface water sample collected near the Chevron F-06 well pad are attached.

## COGIS - LOCATION Information



## Chevron - #335887 Information

Status: XX

Location ID: 335887

Location Name/No: Chevron /F06 696

Location Status: XX

Status Date: 4/14/2009

Operator Name: BERRY PETROLEUM COMPANY

Operator Number: 10091

County: GARFIELD - #045

Location: Lot 11 6 6S 96W

Facility Type: LOCATION

Lat/Long: 39.556817/-108.153079

Form 2A Document #: 400114163

Form 2A Expiration: 12/30/2013

## Location Inventory

Special Purpose Pits: Drilling Pits:

Wells: 13

Condensate Tanks: 7

Separators: 4

Gas or Diesel Motors: Cavity Pumps:

LACT Unit:

Electric Generators: Gas Pipeline: 1

Oil Pipeline:

Gas Compressors: VOC Combustor:

Oil Tanks:

Multi-Well Pits: Pigging Station:

Flare:

Separators used 3 quads, 1 single. Drilling rig, temporary office and temporary housing on location for approximately 10 days per well. 1

Fuel Tanks:

## Facility Well(s)

API Number:

05-045-15123

Operator Name:

BERRY PETROLEUM COMPANY # 10091

Well Status:

XX

Well Name: Chevron # 6-22D

Location: Lot 116 6S 96W

API Number:

05-045-15289

Operator Name:

BERRY PETROLEUM COMPANY # 10091

Well Status:

XX

Well Name: Chevron # 6-37D

Location: Lot 116 6S 96W

API Number:

05-045-15290

Operator Name:

BERRY PETROLEUM COMPANY # 10091

Well Status:

XX

Well Name: Chevron # 6-38D

Location: Lot 116 6S 96W

API Number:

05-045-15291

Operator Name:

BERRY PETROLEUM COMPANY # 10091

Well Status:

XX

Well Name: Chevron # 6-35D

Location: Lot 116 6S 96W

API Number:

05-045-15292

Operator Name:

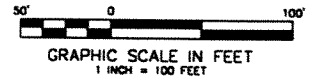
BERRY PETROLEUM COMPANY # 10091

Well Name: Chevron # 6-36D

Well Status:	XX				Location: Lot 116 6S 96W
API Number: Well Status:	<u>05-045-15293</u> XX	Operator Name:	BERRY PETROLEUM COMPANY # 10091	Well Name: <b>Chevron # 6-19D</b> Location: Lot 116 6S 96W	
API Number: Well Status:	<u>05-045-15294</u> XX	Operator Name:	BERRY PETROLEUM COMPANY # 10091	Well Name: <b>Chevron # 6-23D</b> Location: Lot 116 6S 96W	
API Number: Well Status:	<u>05-045-15295</u> XX	Operator Name:	BERRY PETROLEUM COMPANY # 10091	Well Name: <b>Chevron # 6-20D</b> Location: Lot 116 6S 96W	
API Number: Well Status:	<u>05-045-17231</u> XX	Operator Name:	BERRY PETROLEUM COMPANY # 10091	Well Name: <b>Chevron # 6-32D</b> Location: Lot 116 6S 96W	
API Number: Well Status:	<u>05-045-17232</u> XX	Operator Name:	BERRY PETROLEUM COMPANY # 10091	Well Name: <b>Chevron # 6-21D</b> Location: Lot 116 6S 96W	
API Number: Well Status:	<u>05-045-17233</u> PR	Operator Name:	BERRY PETROLEUM COMPANY # 10091	Well Name: <b>CHEVRON # 6-25D</b> Location: LOT 116 6S 96W	
API Number: Well Status:	<u>05-045-17234</u> XX	Operator Name:	BERRY PETROLEUM COMPANY # 10091	Well Name: <b>Chevron # 6-34D</b> Location: Lot 116 6S 96W	
API Number: Well Status:	<u>05-045-17235</u> XX	Operator Name:	BERRY PETROLEUM COMPANY # 10091	Well Name: <b>Chevron # 6-33D</b> Location: Lot 116 6S 96W	

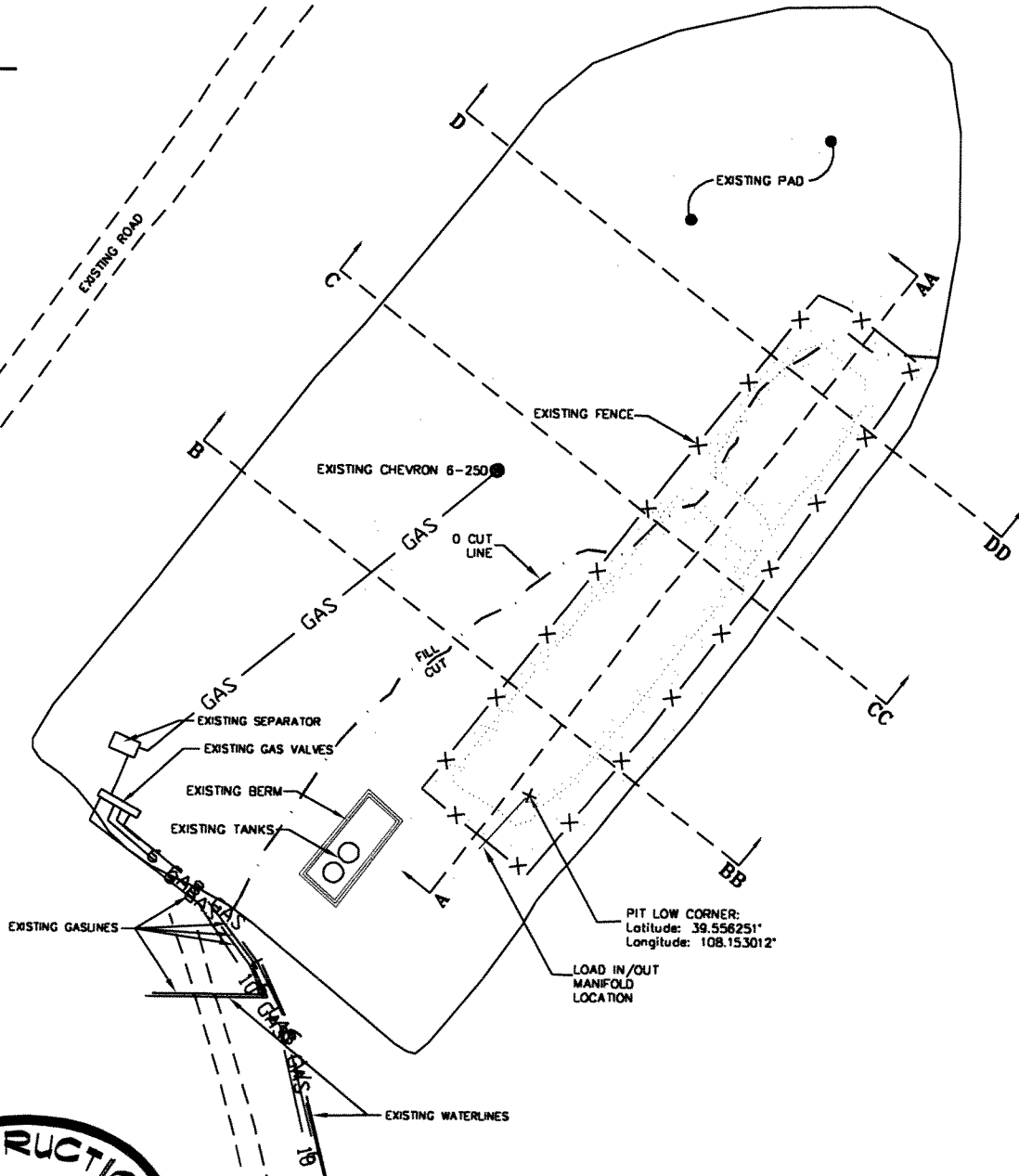
NOTE:  
THE RECOMMENDATIONS PRESENTED WERE  
PREPARED IN ACCORDANCE WITH GENERALLY  
ACCEPTED PROFESSIONAL OPINIONS AND  
ENGINEERING PRINCIPLES AND PRACTICES.  
WE MAKE NO OTHER WARRANTY, EITHER  
EXPRESSED OR IMPLIED.

# AS-BUILT PRODUCTION PIT PLAN VIEW



## AS-BUILT PIT INFO:

APPROX. PIT DIMENSIONS: 370' x 70'  
APPROX. PIT DEPTH: 10'  
APPROX. PIT CAPACITY: 28,000 bbl  
(w/ 2' FREEBOARD)



CONSTRUCTION SURVEYS, INC.  
0012 SUNRISE BLVD.  
SILT, CO 81652  
(970)876-5753

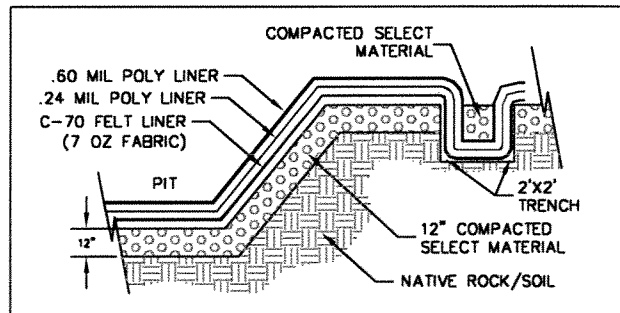
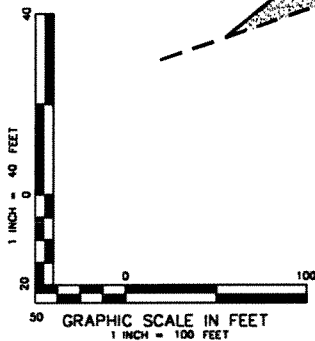
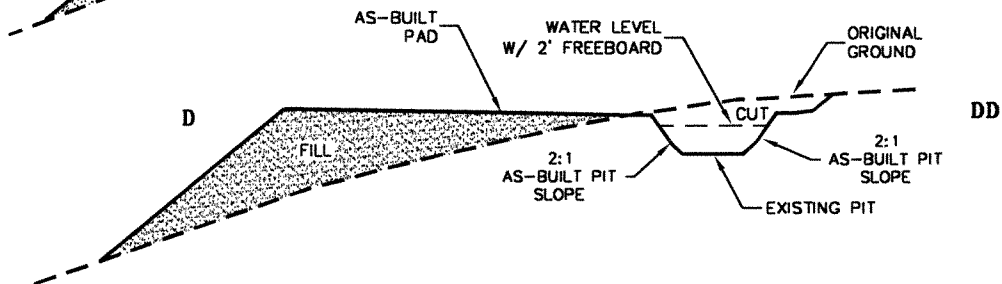
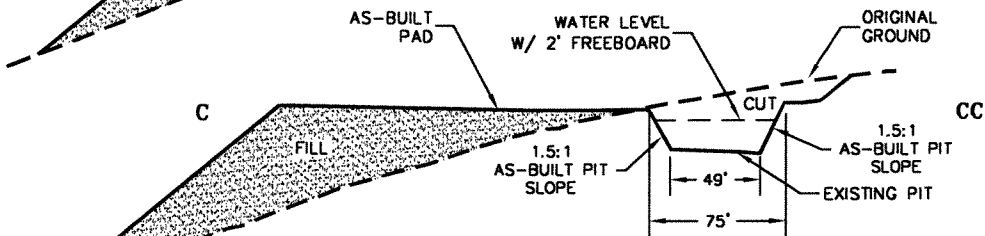
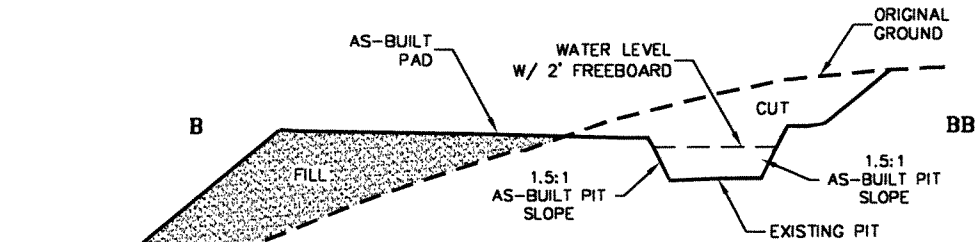
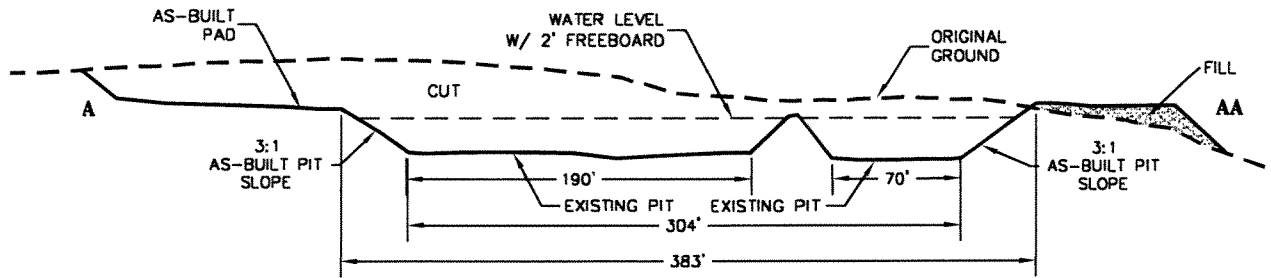
CHEVRON F-06-696  
LOT 11 OF SECTION 6, T. 6 S., R. 96 W.  
BERRY PETROLEUM COMPANY

DATE: 05/31/11

SHEET: 1 OF 2



# AS-BUILT PRODUCTION PIT X-SECTIONS



N.T.S.

CLOSE UP X-SECTION VIEW OF BERRY TYPICAL DESIGN



CONSTRUCTION SURVEYS, INC.  
0012 SUNRISE BLVD.  
SILT, CO 81652  
(970)876-5753

CHEVRON F-06-696  
LOT 11 OF SECTION 6, T. 6 S., R. 26 W.  
BERRY PETROLEUM COMPANY

DATE: 05/31/11

SHEET: 2 OF 2

**Berry Petroleum Company  
Surface Water Sampling Data From Sheep Kill Creek  
Near Chevron F-06 Well Pad**



12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Dave Nicholson  
Berry Petroleum Company - Denver, CO  
1999 Broadway, Suite 3700  
Denver, CO 80202

### Report Summary

Sunday November 21, 2010

Report Number: L488284

Samples Received: 11/10/10

Client Project: 407-32

Description: Berry Petroleum Water Sampling

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Mark W. Beasley, ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487  
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140  
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233  
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,  
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

This report may not be reproduced, except in full, without written approval from ESC Lab Sciences. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

# REPORT OF ANALYSIS

Dave Nicholson  
Berry Petroleum Company - Denver, C  
1999 Broadway, Suite 3700  
Denver, CO 80202

November 21, 2010

Date Received : November 10, 2010  
Description : Berry Petroleum Water Sampling  
Sample ID : SKG1  
Collected By : Derek Veazey  
Collection Date : 11/09/10 13:30

ESC Sample # : L488284-02

Site ID :

Project # : 407-32

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Bromide	BDL	1.0	mg/l	9056	11/11/10	1
Chloride	23.	1.0	mg/l	9056	11/11/10	1
Fluoride	BDL	0.10	mg/l	9056	11/11/10	1
Nitrate	BDL	0.10	mg/l	9056	11/11/10	1
Nitrite	BDL	0.10	mg/l	9056	11/11/10	1
Sulfate	62.	5.0	mg/l	9056	11/11/10	1
Alkalinity	270	20.	mg/l	2320B	11/17/10	1
Alkalinity, Bicarbonate	270	20.	mg/l	2320B	11/18/10	1
Alkalinity, Carbonate	BDL	20.	mg/l	2320B	11/18/10	1
Methane	BDL	0.010	mg/l	RSK175	11/12/10	1
Ethane	BDL	0.013	mg/l	RSK175	11/12/10	1
Ethene	BDL	0.013	mg/l	RSK175	11/12/10	1
Ammonia Nitrogen	BDL	0.10	mg/l	350.1	11/16/10	1
Sulfide	BDL	0.050	mg/l	4500-S2 D	11/13/10	1
Dissolved Solids	370	10.	mg/l	2540C	11/17/10	1
Suspended Solids	21.	1.0	mg/l	2540D	11/14/10	1
Arsenic, Dissolved	0.0030	0.0010	mg/l	6020	11/16/10	1
Chromium, Dissolved	BDL	0.0020	mg/l	6020	11/16/10	1
Copper, Dissolved	0.0026	0.0020	mg/l	6020	11/16/10	1
Lead, Dissolved	BDL	0.0010	mg/l	6020	11/16/10	1
Nickel, Dissolved	0.0019	0.0010	mg/l	6020	11/16/10	1
Selenium, Dissolved	0.0011	0.0010	mg/l	6020	11/16/10	1
Zinc, Dissolved	BDL	0.010	mg/l	6020	11/16/10	1
Aluminum, Dissolved	BDL	0.10	mg/l	6010B	11/21/10	1
Barium, Dissolved	0.081	0.0050	mg/l	6010B	11/21/10	1
Boron, Dissolved	BDL	0.20	mg/l	6010B	11/21/10	1
Calcium, Dissolved	62.	0.50	mg/l	6010B	11/21/10	1
Iron, Dissolved	BDL	0.10	mg/l	6010B	11/21/10	1
Magnesium, Dissolved	28.	0.10	mg/l	6010B	11/21/10	1
Manganese, Dissolved	0.011	0.010	mg/l	6010B	11/21/10	1
Potassium, Dissolved	BDL	0.50	mg/l	6010B	11/21/10	1
Sodium, Dissolved	39.	0.50	mg/l	6010B	11/21/10	1
Benzene	BDL	0.00050	mg/l	8021B	11/12/10	1
Toluene	BDL	0.0050	mg/l	8021B	11/12/10	1
Ethylbenzene	BDL	0.00050	mg/l	8021B	11/12/10	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)



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Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859  
Tax I.D. 62-0814289  
Est. 1970

# REPORT OF ANALYSIS

Dave Nicholson  
Berry Petroleum Company - Denver, C  
1999 Broadway, Suite 3700  
Denver, CO 80202

November 21, 2010

Date Received : November 10, 2010  
Description : Berry Petroleum Water Sampling  
Sample ID : SKG1  
Collected By : Derek Veazey  
Collection Date : 11/09/10 13:30

ESC Sample # : L488284-02  
Site ID :  
Project # : 407-32

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Total Xylene	BDL	0.0015	mg/l	8021B	11/12/10	1
Surrogate Recovery(%)						
a,a,a-Trifluorotoluene (PID)	102.		% Rec.	8021B	11/12/10	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 11/21/10 13:13 Printed: 11/21/10 13:13

**State of Colorado**  
**Oil and Gas Conservation Commission**

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



FOR OGCC USE ONLY

**SOURCE OF PRODUCED WATER FOR DISPOSAL**

This form must be completed for any new disposal site and for any change in sources of produced water for an existing disposal site.

**Complete the  
Attachment Checklist**

OGCC Operator Number: <u>10091</u>	Contact Name and Telephone:
Name of Operator: <u>Berry Petroleum Company</u>	<u>Bryan Burns</u>
Address: <u>1999 Broadway, Suite 3700</u>	No: <u>303-999-4245</u>
City: <u>Denver</u> State: <u>CO</u> Zip: <u>80202</u>	Fax: <u>303-999-4345</u>

Oper OGCC	
Chemical Analysis of fluid	

OGCC Disposal Facility Number: _____
Operator's Disposal Facility Name: <u>Chevron</u> Operator's Disposal Facility Number: <u>F-06</u>
Location (QtrQtr, Sec, Twp, Rng, Meridian): <u>SENW, Sec. 6, T6S, R96W 6th PM</u>
Address: <u>N/A</u>
City: <u>N/A</u> State: <u>CO</u> Zip: <u>N/A</u> County: <u>Garfield</u>

If more space is required,  
attach additional sheet.

<b>Add Source:</b>	OGCC Lease No: <u>335887</u> API No: <u>05-045-17233</u> Well Name & No: <u>Chevron 6-25D</u>
<input checked="" type="checkbox"/>	Operator Name: <u>Berry Petroleum Company</u> Operator No: <u>10091</u>
<b>Delete Source:</b>	Location: QtrQtr: <u>SENW</u> Section: <u>6</u> Township: <u>6S</u> Range: <u>96W</u> Producing Formation: <u>Williams Fork</u>
<input type="checkbox"/>	Analysis Attached? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Transported to disposal site via: <input checked="" type="checkbox"/> Pipeline <input checked="" type="checkbox"/> Truck TDS: <u>15,000 mg/l</u>
<hr/>	
<b>Add Source:</b>	OGCC Lease No: _____ API No: _____ Well Name & No: _____
<input type="checkbox"/>	Operator Name: _____ Operator No: _____
<b>Delete Source:</b>	Location: QtrQtr: _____ Section: _____ Township: _____ Range: _____ Producing Formation: _____
<input type="checkbox"/>	Analysis Attached? <input type="checkbox"/> Yes <input type="checkbox"/> No Transported to disposal site via: <input type="checkbox"/> Pipeline <input type="checkbox"/> Truck TDS: _____
<hr/>	
<b>Add Source:</b>	OGCC Lease No: _____ API No: _____ Well Name & No: _____
<input type="checkbox"/>	Operator Name: _____ Operator No: _____
<b>Delete Source:</b>	Location: QtrQtr: _____ Section: _____ Township: _____ Range: _____ Producing Formation: _____
<input type="checkbox"/>	Analysis Attached? <input type="checkbox"/> Yes <input type="checkbox"/> No Transported to disposal site via: <input type="checkbox"/> Pipeline <input type="checkbox"/> Truck TDS: _____
<hr/>	
<b>Add Source:</b>	OGCC Lease No: _____ API No: _____ Well Name & No: _____
<input type="checkbox"/>	Operator Name: _____ Operator No: _____
<b>Delete Source:</b>	Location: QtrQtr: _____ Section: _____ Township: _____ Range: _____ Producing Formation: _____
<input type="checkbox"/>	Analysis Attached? <input type="checkbox"/> Yes <input type="checkbox"/> No Transported to disposal site via: <input type="checkbox"/> Pipeline <input type="checkbox"/> Truck TDS: _____
<hr/>	
<b>Add Source:</b>	OGCC Lease No: _____ API No: _____ Well Name & No: _____
<input type="checkbox"/>	Operator Name: _____ Operator No: _____
<b>Delete Source:</b>	Location: QtrQtr: _____ Section: _____ Township: _____ Range: _____ Producing Formation: _____
<input type="checkbox"/>	Analysis Attached? <input type="checkbox"/> Yes <input type="checkbox"/> No Transported to disposal site via: <input type="checkbox"/> Pipeline <input type="checkbox"/> Truck TDS: _____
<hr/>	
<b>Add Source:</b>	OGCC Lease No: _____ API No: _____ Well Name & No: _____
<input type="checkbox"/>	Operator Name: _____ Operator No: _____
<b>Delete Source:</b>	Location: QtrQtr: _____ Section: _____ Township: _____ Range: _____ Producing Formation: _____
<input type="checkbox"/>	Analysis Attached? <input type="checkbox"/> Yes <input type="checkbox"/> No Transported to disposal site via: <input type="checkbox"/> Pipeline <input type="checkbox"/> Truck TDS: _____

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Bryan Burns Signed: [Signature]  
Title: Environmental Specialist Date: 6-2-11

OGCC Approved: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

**CONDITIONS OF APPROVAL, IF ANY:**





12065 Lebanon Rd.  
Mt. Juliet, TN 37122  
(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Dave Nicholson  
Berry Petroleum Company - Denver, CO  
1999 Broadway, Suite 3700  
Denver, CO 80202

### Report Summary

Thursday May 12, 2011

Report Number: L514659

Samples Received: 05/06/11

Client Project: 202-01

Description: Berry Pit Permitting

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Mark W. Beasley, ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487  
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140  
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233  
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,  
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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1-800-767-5859  
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Est. 1970

# REPORT OF ANALYSIS

May 12, 2011

Dave Nicholson  
Berry Petroleum Company - Denver, C  
1999 Broadway, Suite 3700  
Denver, CO 80202

ESC Sample # : L514659-05

Date Received : May 06, 2011  
Description : Berry Pit Permitting

Site ID :

Sample ID : F-06 PW

Project # : 202-01

Collected By : D. Nicholson  
Collection Date : 05/05/11 15:05

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Bromide	76.	1.0	mg/l	300.0	05/06/11	1
Chloride	8500	100	mg/l	300.0	05/07/11	100
Fluoride	0.67	0.50	mg/l	300.0	05/07/11	5
Nitrate	BDL	0.10	mg/l	300.0	05/07/11	1
Nitrite	BDL	0.10	mg/l	300.0	05/06/11	1
Sulfate	BDL	5.0	mg/l	300.0	05/06/11	1
Alkalinity	1100	20.	mg/l	2320B	05/06/11	1
pH	6.6		su	4500H-B	05/10/11	1
Phosphate, Ortho	BDL	1.2	mg/l	4500P-E	05/07/11	50
Specific Conductance	2400		umhos/cm	120.1	05/11/11	1
Dissolved Solids	15000	10.	mg/l	2540C	05/12/11	1
Selenium, Dissolved	0.11	0.010	mg/l	200.8	05/09/11	10
Calcium, Dissolved	120	0.50	mg/l	200.7	05/08/11	1
Iron, Dissolved	87.	0.10	mg/l	200.7	05/08/11	1
Magnesium, Dissolved	16.	0.10	mg/l	200.7	05/08/11	1
Manganese, Dissolved	0.84	0.010	mg/l	200.7	05/08/11	1
Potassium, Dissolved	76.	0.50	mg/l	200.7	05/08/11	1
Sodium, Dissolved	5400	2.5	mg/l	200.7	05/09/11	5
Benzene	25.	0.10	mg/l	602	05/09/11	200
Toluene	36.	1.0	mg/l	602	05/09/11	200
Ethylbenzene	0.94	0.025	mg/l	602	05/07/11	50
Total Xylene	13.	0.075	mg/l	602	05/07/11	50
Surrogate Recovery(%) a,a,a-Trifluorotoluene (PID)	94.2		% Rec.	602	05/07/11	50

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 05/12/11 13:31 Printed: 05/12/11 13:31

L514659-05 (PH) - 6.6@22.0c

L514659-05 (PORTHO) - diluted due to turbidity interference

**State of Colorado**  
**Oil and Gas Conservation Commission**

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



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**SITE INVESTIGATION AND REMEDIATION WORKPLAN**

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

**CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED**

☐ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☒ Site/Facility Closure ☐ Other (describe): \_\_\_\_\_

OGCC Employee:

☐ Spill ☐ Complaint  
☐ Inspection ☐ NOAV

Tracking No:

OGCC Operator Number: 10091

Name of Operator: Berry Petroleum Company

Address: 1999 Broadway, Suite 3700

City: Denver State: CO Zip: 80202

Contact Name and Telephone:

Bryan Burns

No: 3039994245

Fax: 3039994345

API Number: Environmental Specialist

County: Garfield / 045

Facility Name: Chevron

Facility Number: F-06

Well Name: Chevron

Well Number: 6-25D

Location: (QtrQtr, Sec, Twp, Rng, Meridian): SENW, Sec. 6, T6S, R96W 6th PM Latitude: 39.556251 Longitude: -108.153012

**TECHNICAL CONDITIONS**

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Drilling fluids, produced water - No Impacts Identified

**Site Conditions:** Is location within a sensitive area (according to Rule 901e)? ☒ Y ☐ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Rangeland

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Parachute-Irigul-Rhone association, 25-50% slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Sheep Kill Creek

**Description of Impact** (if previously provided, refer to that form or document):

Impacted Media (check):

☐

Soils

Extent of Impact:

N/A

How Determined:

☐

Vegetation

N/A

☐

Groundwater

N/A

☐

Surface Water

N/A

**REMEDIAL WORKPLAN**

**Describe initial action taken** (if previously provided, refer to that form or document):

This Form 27 is intended to notify the COGCC of closure of the Chevron F-06 drilling pit. There were no known spills or releases of any kind to the environment, so no remedial actions have been taken, apart from removal of drilling solids from the pit for land treatment on the well location.

**Describe how source is to be removed:**

N/A

**Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:**

When the pit was closed, drilling fluids were recovered by trucks for beneficial reuse at other drilling locations. Pit solids, such as cuttings, were blended with amendments and piled on the location for land treatment prior to eventual beneficial reuse.



**REMEDIATION WORKPLAN (Cont.)**

Tracking Number: \_\_\_\_\_  
Name of Operator: \_\_\_\_\_  
OGCC Operator No: \_\_\_\_\_  
Received Date: \_\_\_\_\_  
Well Name & No: \_\_\_\_\_  
Facility Name & No: \_\_\_\_\_

OGCC Employee: \_\_\_\_\_

**If groundwater has been impacted, describe proposed monitoring plan** (# of wells or sample points, sampling schedule, analytical methods, etc.):

No impacts to groundwater have been identified.

**Describe reclamation plan.** Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

Berry is proposing to convert the Chevron F-06 drilling pit to a production pit. Reclamation of the pit is proposed after the use of the production pit is complete. A subsequent Form 27 describing the final closure of the production pit will include reclamation details.

**Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.**

**Is further site investigation required?** ☐ Y ☒ N If yes, describe:

Since no impacts have occurred, no sampling or remediation activities have been carried out.

**Final disposition of E&P waste** (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

Drilling pit solids are presently undergoing land treatment on the Chevron F-06 location. Those solids will be tested for compliance with Table 910-1. Once the solids achieve the 910-1 limits, they will be put to beneficial reuse or backfilled into the pit excavation at the time of final pit reclamation.

**IMPLEMENTATION SCHEDULE**

Date Site Investigation Began: \_\_\_\_\_ Date Site Investigation Completed: \_\_\_\_\_ Date Remediation Plan Submitted: \_\_\_\_\_  
Remediation Start Date: \_\_\_\_\_ Anticipated Completion Date: \_\_\_\_\_ Actual Completion Date: \_\_\_\_\_

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Bryan Burns Signed: [Signature]  
Title: Environmental Specialist Date: 6-2-2011

OGCC Approved: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_