

June , 2011



**Arco Federal Battery
Southwest Royalties
T17S, R30E, Section 17, Unit K**

Surface Remedy

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Exhibit No. 5
Submitted by:
SOUTHWEST ROYALTIES, INC.
Hearing Date: September 29, 2011

R.T. Hicks Consultants, Ltd.

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June 20, 2011

Mr. Glenn Von Gonten
NMOCD
1220 South St. Francis Drive
Santa Fe, NM 87505
Via Email

RE: Southwest Royalties Arco Federal Battery
T17S, R30E, Section 17, Unit K

Dear Glenn:

R.T. Hicks Consultants, Ltd. is pleased to submit the attached documents which constitute a voluntary corrective action under Part 29 of NMOCD Rules. As discussed in previous submissions, the Arco Federal Battery site does not meet the reporting requirements of Part 29. However, the proposed action appears to meet the requirement to obtain division approval of a corrective action for releases that endanger "the environment", as outlined below.

19.15.29.11 CORRECTIVE ACTION: The responsible person shall complete division-approved corrective action for releases that endanger public health *or the environment*. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC.

We ask for an expeditious review of the submission in the hope that Southwest Royalties can implement the proposed voluntary remedy of historic practices prior to the monsoon rains. The surface remedy was developed in a meeting with the surface owner, BLM. Below is the step-by-step protocol, which we believe is consistent with our agreements at the meeting.

- I. Pre-Construction
 - a. Stake location of burial trench for one-call before
 - b. Stake location of proposed excavation footprint, which is based upon the "likely extent of impact" shown in Figure 1
 - c. Call BLM after staking to allow for inspection
 - d. Conduct one-call
- II. Proposed Construction
 - a. Remove caliche from road "turn out" and place on west side of lease road to allow for excavation/removal of part of lease road within excavation footprint
 - b. Stockpile any residual caliche from turn out
 - c. Remove the 0.5-foot layer of caliche from excavation footprint to a stockpile
 - d. Excavate the burial trench to accommodate 30,000 cubic feet of compacted salt impacted soil (see Figure 2). The trench will be about 12-feet deep, 100 feet long and about 26 feet wide. One end of the trench will have a steep ramp to provide an escape route for any small wildlife.
 - e. Excavation of the burial trench will create two stockpiles

- i. sandy loam on the northeast side of the trench and
 - ii. caliche on the south side of the trench
 - f. Fence the trench for safety when construction ceases each day
 - g. Excavate and remove to the trench the top 1-foot of the footprint while testing the soil (titration) to determine the horizontal extent of impacted soil.
 - h. Repeat excavation and field sampling at 2 and 4 feet below grade within the original 1-foot excavation. There should be about 30,000 cubic feet of impacted soil (>1,500 mg/kg) removed from the excavation footprint (see Figure 2) and placed in the Burial Trench. Hard caliche will not be excavated from the footprint; although in most locations the caliche horizon is below 4-feet deep (see Figure 3).
 - i. Call BLM and NMOCD about 24 hours before excavation of footprint is complete to allow for site inspection during sampling.
 - j. Collect four samples from edges of excavation for submission to the laboratory to demonstrate capture of horizontal extent of salt-impaired soil.
 - k. Place about 1-foot of caliche gravel from the burial trench stockpile over the caliche surface exposed in the excavation footprint (see Figure 3). Placing clean gravel above the impacted caliche can create a capillary break, minimizing any upward migration of salt.
 - l. Place clean sandy-loam from the burial trench stockpile into the footprint excavation mixing in organic material (e.g. rotted hay). If more soil is required to meet natural grade, find some nearby dunes with mesquite and **no oak**, and take that topsoil - mesquite roots and all - and place it in excavation.
 - m. Put a liner over the impacted soil in the burial trench then cover the liner with at least 4-feet of soil - mix in organic matter if practical.
 - n. Install perimeter fence to prevent intrusion by grazers.
- III. Post construction
- a. Seed the excavation footprint, burial trench footprint and other areas disturbed by installation of the remedy with BLM-recommended mixture
 - b. Pray for rain
 - c. Monitor re-vegetation
 - d. Kill any mesquite that grows within the fence

Thanks for your help in moving this project forward.

Sincerely,



Randall Hicks
Principal

Copy: Copy: Terry Gregston, Bureau of Land Management, Carlsbad District
Luis Gonzalez, Southwest Royalties
Mike Bratcher, NMOCD Artesia

Figure 1
Southwest Royalties
Arco Federal Battery
T-17-S, R-30-E, Sec 17 (K)
Eddy County, New Mexico

N

Likely Extent of Impact
Based on Historic Water
Pit, Site Visit, and 2005
Aerial Photo
(10,500 sq ft)

Trench #5 / F		
Depth (feet)	Sample Date	Chloride (mg/kg)
0-1	5-6-11	1,160
1	1-18-11	757
2	1-18-11	787
3	5-6-11	1,970
4	12-17-10	4,160
4	1-18-11	885
6	5-6-11	972
9	5-6-11	1,640
12	5-6-11	1,170
14	5-6-11	1,720

Trench C		
Depth (feet)	Sample Date	Chloride (mg/kg)
0-1	5-4-11	2,060

Trench D		
Depth (feet)	Sample Date	Chloride (mg/kg)
0-1	5-4-11	23.1
3	5-4-11	36.4
6	5-4-11	39.7
9	5-6-11	60.1
12	5-6-11	47.1

Trench B		
Depth (feet)	Sample Date	Chloride (mg/kg)
0-1	5-4-11	74.9

Trench A		
Depth (feet)	Sample Date	Chloride (mg/kg)
0-1	5-4-11	74.9

Trench #1		
Depth (feet)	Sample Date	Chloride (mg/kg)
2	12-17-10	1,180

No. 1

Area of Historic Water Pit

Trench #2 / E		
Depth (feet)	Sample Date	Chloride (mg/kg)
0-1	5-4-11	3,590
1	1-18-11	2,359
2	1-18-11	3,646
3	5-4-11	4,640
6	5-6-11	5,370
9	5-6-11	4,920
10	1-18-11	6,750
12	5-6-11	760
15	5-6-11	475

Trench #3		
Depth (feet)	Sample Date	Chloride (mg/kg)
2	1-18-11	3,160

Trench #6		
Depth (feet)	Sample Date	Chloride (mg/kg)
1	1-18-11	ND

Trench #4 / G		
Depth (feet)	Sample Date	Chloride (mg/kg)
0-1	5-6-11	3,990
3	5-6-11	8,410
6	5-6-11	7,420
8	12-17-10	5,200
9	5-6-11	4,650
12	5-6-11	898
13	5-6-11	315

Sept. 2010
Spill Area
(2,680 sq ft)

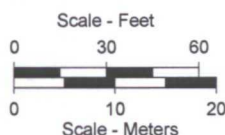


Figure 2

Southwest Royalties
Arco Federal Battery
T-17-S, R-30-E, Sec 17 (K)
Eddy County, New Mexico



Burial Trench: 2,583 sq ft x 12 = 31,000 cu. ft.

Burial Trench

No. 1

No. 2

No. 5

No. 3

No. 6

No. 4

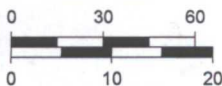
1 Ft Excavation: $(10,432 - 3,843) \times 1 = 6,589$ cu. ft.

2 Ft Excavation: $(3,843 - 1,235) \times 2 = 5,214$ cu. ft.

4 Ft Excavation: $1,235 \times 4 = 4,940$ cu. ft.

Total Excavation: $6,589 + 5,214 + 4,940 = 16,743$ cu. ft.

Scale - Feet



Scale - Meters

