

24321 - NMOCD



## MEMORANDUM

To: Sandra Miller  
John Lambdin  
Nancy Prince

Date: January 12, 1996

From: Ann Allen

Place: EPFS Compliance Engineering

Subject: NMOCD Approved Remediation Plan for Groundwater Encountered During  
Pit Closure Activities

Enclosed are the following three documents which together constitute the subject plan approved by NMOCD.

1. NMOCD approval letter dated 11/30/95 with conditions
2. EPFS original plan submitted to NMOCD 9/16/95
3. EPFS amendment to original plan submitted to NMOCD 11/29/95

  
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Leslie Ann Allen

XC: J. Lambdin 4-25-97

## NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

## OIL CONSERVATION DIVISION

2040 S. Pacheco  
Santa Fe, New Mexico 87505

November 30, 1995

CERTIFIED MAILRETURN RECEIPT NO. Z-765-962-517

Ms. Leslie Ann Allen  
El Paso Field Services  
P.O. Box 1492  
El Paso, Texas 79978

RE: SAN JUAN BASIN GROUND WATER INVESTIGATION WORK PLAN

Dear Ms. Allen:

The New Mexico Oil Conservation Division (OCD) has completed a review of El Paso Field Service's (EPFS) November 29, 1995 "REMEDIATION PLAN FOR GROUNDWATER ENCOUNTERED DURING PIT CLOSURE ACTIVITIES/EL PASO NATURAL GAS COMPANY-EL PASO FIELD SERVICES COMPANY" and September 16, 1995 "REMEDIATION PLAN FOR GROUNDWATER ENCOUNTERED DURING PIT CLOSURE ACTIVITIES/EL PASO NATURAL GAS COMPANY-EL PASO FIELD SERVICES COMPANY". These documents contain EPFS's generic work plan for investigation and remediation of contaminated ground related to the former use of unlined pits in the San Juan Basin of Northwestern New Mexico.

The above referenced work plan is approved with the following conditions:

1. EPFS will conduct all sampling and analysis activities using EPA approved procedures.
2. The OCD will not consider ground water actions at a site to be terminated unless all ground water contaminant concentrations (including cations/anions related to disposal practices) are either below WQCC standards or below background levels.
3. All wastes generated will be disposed of at an OCD approved facility or in an OCD approved manner.

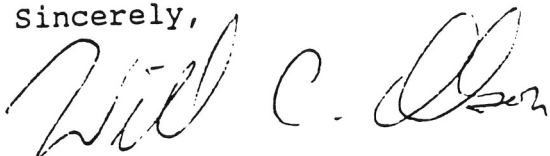
Ms. Leslie Ann Allen  
November 30, 1995  
Page 2

4. EPFS will submit semi-annual reports on investigation/remedial activities to the OCD by April 1 and October 1 of each respective year. The reports will present the information on each site as a separate case. Each case will contain:
  - a. A description of all activities which occurred during the investigation, conclusions and recommendations.
  - b. The laboratory analytic results of soil and water sampling.
  - c. A site map and a water table elevation map using the water table elevation of the ground water in all monitor wells.
  - d. A geologic log and completion diagram for each well.
  - e. The disposition of all wastes generated.
5. EPFS will notify the OCD at least 48 hours in advance of all scheduled activities such that the OCD has the opportunity to witness the events and/or split samples.
6. All documents submitted for approval will be submitted to the OCD Santa Fe Office with copies provided to the OCD Aztec Office.

Please be advised that OCD approval does not relieve EPFS of liability if contamination exists which is beyond the scope of the work plan, if the activities fail to adequately determine the extent of contamination or if the activities fail to adequately remediate contamination related to EPFS's activities. In addition, OCD approval does not relieve EPFS of responsibility for compliance with any other federal, state or local laws and/or regulations.

If you have any questions, please call me at (505) 827-7154.

Sincerely,



William C. Olson  
Hydrogeologist  
Environmental Bureau

cc: Denny Foust, OCD Aztec District Office  
Ray Powell, NM State Land Commissioner  
Bill Liess, BLM Farmington District

**El Paso  
Field Services**

P. O. BOX 1492  
EL PASO, TEXAS 79978  
PHONE: 915-541-2600

September 16, 1995

Mr. William Olsen  
New Mexico Oil Conservation Division  
2040 South Pacheco  
Santa Fe, New Mexico 87505

**Subject: Remediation Plan for Groundwater Encountered During Pit Closure Activities/El Paso Natural Gas Company-El Paso Field Services Company**

Dear Mr. Olsen:

El Paso Field Services (EPFS) submits the enclosed proposed remediation plan for closure of pits where groundwater is encountered. Included with the plan is a list of pit closure sites where El Paso has encountered groundwater. The list is current as of August 31, 1995. The proposed remediation plan will apply to all pit closure sites where groundwater is encountered, including future sites not presently shown on the attached list.

Sandra Miller, Nancy Prince, and I would like to meet with you late this month or early in November to discuss the proposed remediation plan. I will be contacting you in the next few days to schedule a meeting.

I enjoyed meeting you last week at the NMOGA meeting in Santa Fe and look forward to working with you on the enclosed plan. I can be reached at 915-541-2524 if you have any questions.

Sincerely,



Leslie Ann Allen  
Senior Environmental Scientist  
El Paso Field Services

Enclosures (2)

cc: Denny Foust, NMOCD, Aztec

via e-mail: Sandra D. Miller  
Nancy K. Prince

file: NMOCD1.doc



**EL PASO NATURAL GAS COMPANY  
EL PASO FIELD SERVICES COMPANY**

**REMEDATION PLAN  
FOR GROUNDWATER ENCOUNTERED  
DURING PIT CLOSURE ACTIVITIES**

El Paso Natural Gas Company (EPNG) is closing all pits in the San Juan Basin in accordance with the Pit Closure Plan submitted to NMOCD on July 28, 1993. These closures include sampling pit soils and removing contaminated soil in groundwater vulnerable areas. In some locations groundwater was encountered during the closure activities. In addition, at locations inside the groundwater vulnerable zone (GVZ) where soil samples failed the criteria established in the NMOCD Pit Closure Guidance, a single boring has been advanced to determine potential impact on groundwater.

This Remediation Plan addresses cases where groundwater was encountered either during the initial closure activities (Phase I) or during the followup investigations inside the GVZ (Phase II). All pits where groundwater is encountered will be assessed and remediated according to options outlined below.

**1.0 Investigation**

- 1.1 Pits where groundwater was encountered during Phase I closure activities.  
A preliminary investigation has been conducted with a RECON ® soil vapor survey. Further investigation will be recommended as needed according to the procedures outlined below.

- 1.2 Pits inside vulnerable zone where soil samples failed NMOCD criteria (Phase II).

**1.2.1 Preliminary Investigation**

A preliminary investigation will be conducted with soil boring and temporary monitoring well installation according to NMOCD Pit Closure Guidance after removal of source. The purpose is to determine if groundwater has been impacted.

If it is obvious during the boring operation that a source of contamination still remains and groundwater is less than 20', then no temporary monitoring well will be installed. The stained soil will be removed according to the approved Pit Closure Plan. Fertilizer will be added prior to backfill to enhance the natural attenuation process. Groundwater quality will then be assessed either through soil vapor surveys or monitoring well installation.

If groundwater is encountered, a soil sample will be collected from immediately above the water table and submitted for analysis. A temporary monitoring well will also be completed, developed, and sampled for BTEX and TDS. Wells will be 4-inch diameter PVC set with 5 feet of screen above the water table and 10 feet of screen beneath the water table. Sand pack, bentonite seal, and grout will be used to complete the wells which will be fitted with locking caps and padlocks.

The boring will be advanced and soil samples collected at five foot intervals until either field screening indicates that the soil is clean, groundwater is encountered, or auger refusal is reached.

If auger refusal is due to cobbles at shallow depths, and there is reason to believe that groundwater exists at less than 20 feet below the surface at the site, then groundwater quality will be assessed by soil vapor surveys or trenching with a backhoe.

If auger refusal due to cobbles encountered at greater depths, and contamination appears at the refusal depth, groundwater quality will be assessed on a site by site basis.

#### 1.2.2 If Groundwater is Clean

If the groundwater sample collected contains levels of BTEX less than the standards presently set forth in paragraph 3-103 of Water Quality Control Commission regulations ("WQCC standards"), then the well will be abandoned according to NMED guidance documents as soon as practical..

#### 1.2.3 If Groundwater Exceeds WQCC Standards

If the sample is above WQCC standards, further investigation and/or remediation will be conducted. The vertical and horizontal extent of contaminated groundwater will be investigated by soil vapor surveys and/or monitoring well installation. If continued monitoring of the temporarily installed well is required, concrete pads, bumpers etc. will be added as needed to secure the well location. Surface and top of casing elevations will be surveyed as necessary to determine groundwater flow direction.

## 2.0 Risk assessment

At pits near residential areas when WQCC standards have been exceeded, a water well survey will be conducted. If this survey indicates that a water supply well is within 1000 feet, then the flow direction will be determined, and the extent of contamination in the direction of that receptor will be determined.

If potential receptors are not present, and if concentrations of dissolved phase hydrocarbons are low, EPNG may petition for closure by natural attenuation on a site by site basis. Such a petition might include an evaluation of risk demonstrating that the remaining contaminants do not pose a threat to fresh water supplies, public health and the environment in accordance with NMOCD Pit Closure Guidance.

## 3.0 Remedial Design

An individual remedial plan will be developed for each location. This plan will include the remedial method selected, schedule of activities, and future monitoring requirements. Boring logs from nearby wells will be used to support remedial design as appropriate. These plans will be submitted with semi-annual reports (see Section 6.0 below), and will not be submitted for



individual approval. NMOCD District and State offices will be notified prior to initiation of any significant activities.

The following methods will be considered during the remedial design:

- 3.1 Separate light non-aqueous phase liquid (LNAPL) hydrocarbons  
LNAPL removal will be implemented if LNAPLs appear as a measurable layer. Removal will be achieved by way of skimmer pumps (either automatic or manual). Other methods may be proposed on a site by site basis. Some proposed alternatives are listed on the attached table. Any recovered LNAPL will be considered to be exploration and production waste exempt from regulation under subtitle C of RCRA. Recovered LNAPL will be either retained for future use or disposed of in accordance with NMOCD requirements.
- 3.2 Dissolved phase hydrocarbons  
EPNG proposes to treat groundwater contaminated with dissolved phase hydrocarbons with fertilizer, hydrogen peroxide, natural air, or other in-situ method to enhance the natural attenuation process. Other methods may be proposed on a site by site basis. Table 1 lists some proposed alternatives.

#### **4.0 Remediation**

Remedial activities at groundwater sites will be conducted on an on-going basis, in conjunction with pit closure activities as appropriate. Potential remedial alternatives are listed in the attached table "San Juan Basin Pits Groundwater Remedial Alternatives".

#### **5.0 Groundwater Monitoring**

EPNG will monitor any well which exhibits contamination quarterly for at least one year. LNAPL removal will be implemented again if LNAPLs reappear as a measurable layer during the monitoring period. When WQCC standards have been met, or when concentrations have leveled off (an asymptotic limit has been reached) for four consecutive quarters, the pit will be considered closed and the wells will be abandoned.

#### **6.0 Reporting**

Notification will continue to be made to NMOCD when groundwater is encountered during pit remediation as per the approved Pit Closure Plan.

Twice a year, a summary of groundwater remediation activities will be submitted to District and Santa Fe offices. This summary will include soil boring logs, monitoring well completion diagrams, analytical data, groundwater elevation data, any risk analysis, and type of remediation method used if remediation is required for each location at which contaminated groundwater has been encountered.

## **7.0 Schedule**

Groundwater investigation and remediation activities will begin as soon as practical at each site. Priorities will be assigned based upon the results of risk assessment and field considerations.



## SAN JUAN BASIN PITS GROUNDWATER REMEDIAL ALTERNATIVES

TIME FOR IMPLEMENTATION												
TECHNOLOGY	POWER	LENGTH	PROS	CONS			EFFECTIVENESS	COSTS	O&M LABOR	COMMENTS		
WATER REMOVAL												
PUMP AND TREAT	ELECTRIC	YEARS	NO DISPOSAL	TIME/MAINTENANCE/WEATHER	PARTIAL	MEDIUM	HIGH	LONG	Removal of the water and treat in various ways This would be used in conjunction with pump and treat to speed the process up and allow an the soil.			
VACUUM ASST. PUMPING	ELECTRIC	MEDIUM	CLEAN SOILS AND GW	MAINTENANCE/WEATHER	GOOD	HIGH	HIGH	LONG				
WATER TREATMENT AFTER REMOVAL												
AIR STRIPPING	ELECTRIC	YEARS	CLEAN WATER	AIR TREATMENT/WEATHER	GOOD	HIGH	HIGH	LONG	This may be a treatment method used in conjunction with pump and treat This is another form of water treatment for water not product used in conjunction with pump and treat			
CARBON ADSORPTION	ELECTRIC	LONG	CLEAN WATER	MAINTENANCE/WEATHER	GOOD	MEDIUM	MEDIUM	LONG	This is a water only treatment process and would need to be used with pump and treat technology.			
ULTRAVIOLET OXIDIZATION	ELECTRIC	MEDIUM	NO DISPOSAL	CHEMICAL HANDLING	GOOD	MEDIUM	HIGH	LONG				
WATER TREATMENT WITHOUT REMOVAL												
IN-SITU BIOREMEDIATION	NONE	MEDIUM	NO DISPOSAL	DOESNT ALWAYS WORK	GOOD	MEDIUM	LOW	MEDIUM	This would entail adding microbes to the water through the well.			
PRODUCT REMOVAL												
PASSIVE PRODUCT REMOVAL	NONE	LONG	LOW COST	LABOR INTENSIVE	LOW	LOW	MEDIUM	SHORT	These would be product traps for product only removal			
ACTIVE PRODUCT REMOVAL	ELECTRIC	LONG	AUTOMATED	EXPENSIVE	GOOD	HIGH	HIGH	LONG	As opposed to the passive this would involve the use of a skimmer pump for product only.			
BELT SKIMMERS	ELECTRIC	LONG	NO GW DISPOSAL	MAINTENANCE	GOOD	MEDIUM	HIGH	MEDIUM	These would be used only for product removal			
OTHER												

**El Paso Natural Gas Co.**  
**Pit Closure and Remediation Project**  
**Groundwater Sites Update as of 8/31/95**

Meter #	Location/Line Name	Project Phase	Action due to GW Encountered	Unit	Sec.	T.	R.
93296	Gallegos Canyon Unit 188E	Phase I	RECON Soil/Gas and Water Survey	B	30	29	12
93357	Johnson #1E	Phase I	RECON Soil/Gas and Water Survey	P	21	31	13
71676	Turner #1A	Phase I	RECON Soil/Gas and Water Survey	K	34	31	11
94984	Anderson Gas Com A#1 PC	Phase I	RECON Soil/Gas and Water Survey	C	28	29	10
95136	Trujillo Gas Com A#1	Phase I	RECON Soil/Gas and Water Survey	C	28	29	10
94879	Sanchez Gas Com C#1	Phase I	RECON Soil/Gas and Water Survey	A	28	29	10
75220	Sanchez Gas Com B#1	Phase I	RECON Soil/Gas and Water Survey	G	28	29	10
95210	Anderson Gas Com A#1 CH	Phase I	RECON Soil/Gas and Water Survey	C	28	29	10
95726	Candelaria Gas Com C #1	Phase I	RECON Soil/Gas and Water Survey	C	27	29	10
72387	Grace Pearce #1	Phase I	RECON Soil/Gas and Water Survey	O	22	29	11
75323	Green Com #1	Phase I	RECON Soil/Gas and Water Survey	E	36	29	9
93196	Candado 23 CH & MV	Phase I	RECON Soil/Gas and Water Survey	B	9	26	7
LD153	Trunk 2B Drip X-1	Phase I	RECON Soil/Gas and Water Survey	J	1	27	11
93790	Chacon Amigos #6	Phase I	RECON survey to be performed.	C	11	22	3
73003	Ona McGee #1	Phase I	RECON survey to be performed.	P	4	30	11
93793	Canyon Largo Unit #302	Phase II	Excavate additional soil & resample.	J	3	24	6
94768	Federal 6 #32	Phase II	Excavate additional soil & resample.	G	6	26	7
89039	Marshall 'B' #1J	Phase II	Excavate additional soil & resample.	O	14	27	9
94495	Miles Federal #1E	Phase II	Excavate additional soil & resample.	N	5	26	7
94967	Lindrith B#24	Phase II	Excavate additional soil & resample.	N	9	24	3
70079	Harrington #1	Phase II	Excavate additional soil & resample.	M	31	27	7
95156	Canyon Largo Unit #336	Phase II	Excavate additional soil & resample.	C	24	25	6
70327	Gartner LS#7	Phase II	Excavate additional soil & resample.	K	26	30	8
94298	Valdez Gas Unit A1E	Phase II	Excavate additional soil & resample.	G	24	29	11
74692	Lindrith Unit #23	Phase II	Excavate additional soil & resample.	D	9	24	3
72265	San Juan 28-6 #79 MV	Phase II	Excavate additional soil & resample.	M	11	27	6
LD104	2C-22 #3 Line Drip	Phase II	Excavate additional soil & resample.	G	13	24	6
90862	Hammond #92	Phase II	Excavate additional soil & resample.	O	25	27	8
93828	Jacques 3 PC	Phase II	Excavate additional soil & resample.	E	25	30	9

Jicarilla site



Meter #	Location/Line Name	Project Phase	Action due to GW Encountered	Unit	Sec.	T.	R.
LD019	Howell #3 (Line Drip)	Phase II	Excavate additional soil & resample.	C	3	27	8
74289	Cutler #2	Phase II	Excavate additional soil & resample.	A	14	24	6
93788	Canyon Largo Unit 304	Phase II	Excavate additional soil & resample.	C	11	24	6
93590	Canyon Largo Unit #298	Phase II	Excavate additional soil & resample.	A	3	24	6
70613	Burroughs Com #1	Phase II	Excavate additional soil & resample.	H	36	27	8
72405	Hammond #7	Phase II	Excavate additional soil & resample.	G	26	27	8
74943	New Mexico Com G1	Phase II	Excavate additional soil & resample.	P	36	30	10
LD094	K 17 Line Drip	Phase II	Excavate additional soil & resample.	C	26	27	8
94899	Valdes #2	Phase II	Excavate additional soil & resample.	G	24	29	11
75212	Graham # 53	Phase II	Monitor Well Set	L	10	27	8
94925	Federal R #2	Phase II	Monitor Well Set	P	15	27	8
70595	Hammond Fed. #1	Phase II	Monitor Well Set	L	25	27	8
89232	Johnston Federal #6A	Phase II	Monitor Well Set	F	35	31	9
LD077	Lat. 2C-55 Line Drip	Phase II	Monitor Well Set	F	17	25	7
94180	Salazar "G" 34-1	Phase II	Monitor Well Set	K	34	25	6
93388	Horton 1-E	Phase II	Monitor Well Set	H	28	31	9
97213	Hamner #9	Phase II	Monitor Well Set	A	20	29	9
70753	Usselman Gas Com No. 1	Phase II	Monitor Well Set	B	4	31	10
87640	Canada Mesa #2	Phase II	Monitor Well Set	I	24	24	6
87493	W. D. Heath B #5	Phase II	Monitor Well Set	M	31	30	9
89620	Sandoval A1A	Phase II	Monitor Well Set	C	35	30	9
LD102	2C-22 #1 Line Drip	Phase II	Monitor Well Set	N	35	24	6
70286	Sheets Well No. 2	Phase II	Monitor Well Set	H	28	31	9
70194	Johnston Federal #4	Phase II	Excavate additional soil & resample.	H	33	31	9
93780	Argo #1E	Phase II	Excavate additional soil & resample.	N	18	27	10
93262	Krause WN Federal #1E	Phase II	Excavate additional soil & resample.	C	32	28	11

## Notes:

1. Phase II sites are those in which soil samples failed remediation criteria. A borehole was then drilled in order to prove no impact to groundwater.
2. On sites where groundwater was encountered during the drilling of the borehole the following practice is implemented: 1) groundwater > 20', monitor wells to be installed, developed, and sampled;  
2) groundwater < 20', return to site to excavate additional soil.

**El Paso  
Field Services**

P. O. BOX 1492  
EL PASO, TEXAS 79978  
PHONE: 915-541-2600

**Via Facsimile**

November 29, 1995

Mr. William Olsen  
New Mexico Oil Conservation Division  
2040 South Pacheco  
Santa Fe, New Mexico 87505

**Subject: Remediation Plan for Groundwater Encountered During Pit Closure Activities/El Paso Natural Gas Company-El Paso Field Services Company**

Dear Mr. Olsen:

El Paso Field Services (EPFS) submits the enclosed amendment to the previously proposed remediation plan for closure of pits where groundwater is encountered. The previously proposed plan was submitted by letter dated September 16, 1995. The enclosed amendment modifies the September 16 plan and becomes part of that plan.

The enclosed amendment reflects the conclusions reached during our telephone conversation November 7, 1995. It is our understanding that the enclosed amendment will allow our proposed plan to be approved.

Thank you for your assistance in reviewing our proposed plan. If you have any questions regarding the amendment, please contact me at 915-541-2524.

Sincerely,



Leslie Ann Allen  
Senior Environmental Scientist  
El Paso Field Services Company

Enclosure (1)

cc: Denny Foust, NMOCD, Aztec

via e-mail: John A. Lambdin  
Sandra D. Miller  
Nancy K. Prince

file: NMOCD2.doc



**AMENDMENT NO. 1****EL PASO NATURAL GAS COMPANY  
EL PASO FIELD SERVICES COMPANY****REMEDIATION PLAN  
FOR GROUNDWATER ENCOUNTERED  
DURING PIT CLOSURE ACTIVITIES**

El Paso Natural Gas Company amends the original remediation plan submitted to NMOCD September 16, 1995 with the following:

Section 1.2.1 Preliminary Investigation of the plan is amended to specify that:

- Groundwater quality will be assessed either through use of a temporary well point (i.e. RECON) or installation of a monitoring well.
- Groundwater sampling locations will either be within the pit or directly adjacent and downgradient to the pit.
- If necessary, additional wells will be placed as appropriate on a case-by-case basis to determine extent of contamination.
- Groundwater will be sampled for the following analytical parameters:
  1. **Major Cations and Major Anions:** Analysis for major cations and major anions will not be conducted if El Paso is able to demonstrate that groundwater impact by major cations and major anions, presently listed in the WQCC standards, is unlikely at a location. Analysis of major cations and major anions, presently listed in the WQCC standards, will only be conducted at locations where El Paso is unable to demonstrate contamination to be unlikely and where TDS exceeds 1,000 mg./l.
  2. **Benzene, Toluene, Ethyl Benzene, Total Xylenes (BTEX)**
  3. **Polyaromatic Hydrocarbons (PAH):** A water sample will only be analyzed for PAH if evidence of a sheen or free phase is noted.
  4. **Metals:** Metals analysis will not be conducted if El Paso is able to demonstrate that groundwater impact by metals is unlikely using site specific soils analysis, gas production data, historical analytical data, or other means. Analysis for arsenic, barium, cadmium, chromium, lead, total mercury, selenium, and silver will only be conducted at locations where El Paso is unable to demonstrate that metals contamination is unlikely.

Section 1.2.2 If Groundwater is Clean of the plan is revised to read: "If the groundwater sample collected can be demonstrated to have levels of BTEX, and/or levels of PAH and/or levels of metals, when analyzed according to Section 1.2.1, less than the standards set forth in paragraph 3-103 of Water Quality Control Commission regulations ("WQCC standards"), then the well will be abandoned according to NMED guidance documents as soon as practical."

Section 5 Groundwater Monitoring is revised to read: "EPNG will monitor any well which exhibits contamination quarterly for at least one year. LNAPL removal will be implemented again if LNAPLs reappear as a measurable layer during the monitoring period. When WQCC standards have been met as described in Section 1.2.2 for four consecutive quarters, the pit will be considered closed and the wells will be abandoned. At any site where concentrations have leveled off for four consecutive quarters, but WQCC standards have not been met, closure of the pit will be handled on a case-by-case basis with NMOCD."

Sante Fe Main Office  
Phone: (505) 476-3441

General Information  
Phone: (505) 629-6116

Online Phone Directory  
<https://www.emnrd.nm.gov/oed/contact-us>

State of New Mexico  
Energy, Minerals and Natural Resources  
Oil Conservation Division  
1220 S. St Francis Dr.  
Santa Fe, NM 87505

CONDITIONS

Action 385756

CONDITIONS

Operator: El Paso Natural Gas Company, L.L.C 1001 Louisiana Street Houston, TX 77002	OGRID: 7046
	Action Number: 385756
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	NMOCD approval with conditions for groundwater encountered in pits for closure. Accepted for record.	11/19/2024