

**C.K. DISPOSAL
PERMIT APPLICATION
NEW MEXICO OIL CONSERVATION COMMISSION
CASE NO. 15617**

**LOUISIANA ENERGY SERVICES, LLC'S
EXHIBITS FOR FEBRUARY 8 - 10, 2017 HEARING**

CASE FILE NOTEBOOK

**STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION**

**IN THE MATTER OF APPLICATION
OF C.K. DISPOSAL, LLC, FOR PERMIT
TO CONSTRUCT AND OPERATE A
COMMERCIAL SURFACE WASTE
MANAGEMENT FACILITY, PERMIT
NO. NM1-61**

CASE NO. 15617

LOUISIANA ENERGY SERVICES, LLC's EXHIBIT LIST

Louisiana Energy Services, LLC, may or will offer into evidence the following exhibits
at the January 9 – 11, 2017 hearing in this matter:

- A. C.K. Disposal Application excerpt – Attachment K.
- B. C.K. Disposal Application excerpt – NMAC 19.15.36.8 – 19.15.36.20.
- C. C.K. Disposal Application supplement – 09/9/16 Holder e-mail to Richardson.
with attached H2S modeling study.
- D. Aerial Photograph.
- E. Aerial Photograph.
- F. 2/18/11 M. Ritchie memorandum to Linda Gardner.
- G. 6/2/11 M. Ritchie memorandum to Linda Gardner.
- H. 10/19/15 M. Ritchie memorandum to Mark Peralta.
- I. 2/2/16 Purafil Environmental Corrosivity Report.
- J. Sundance Facility Video Clip (CD).

K. Section 5 Deeds:

K-1. 12/29/09 deed from Leo Sims, as PR of the Kennann Estate, to S&D Ranch.

K-2. 12/28/09 deed from Aline Sims, individually and as PR of the Sims Estate, to S&D Ranch.

K-3. 1/3/11 deed from S&D Ranch to Leo Sims, LLC.

K-4. 1/3/11 deed from Leo Sims, LLC, to EH & MC Clifford Living Trust.

K-5. 6/3/14 deed from Leo Sims, LLC, and EH & MC Clifford Living Trust deed to Davis et ux.

K-6. 4/27/15 Davis et ux. deed to Karger.

K-7. 5/27/15 Karger et ux. deed to Cope.

K-8. 6/19/15 Cope et ux. deed to CK Disposal.

K-9. 7/6/15 Karger et ux. deed to CK Disposal.

L. Section 32 Land Use Restriction or Condition Agreements:

L-1. 8/22/03 Land Use Restriction or Condition Agreement.

L-2. 8/3/10 First Amendment to Land Use Restriction or Condition Agreement.

M. Section 32 Business Leases:

M-1. 4/5/05 Business Lease BL-1689.

M-2. 11/15/05 Assignment of Business Lease BL-1689.

M-3. 9/26/07 Amendment to Business Lease BL-1689.

M-4. 4/5/10 Business Lease BL-1689-1.

M-5. 8/5/13 Business Lease BL-2051.

N. Section 32 (South of Highway 176) Easement Instruments:

N-1. 4/23/09 Easement No. R-30337.

N-2. 4/29/15 Assignment of Easement No. R-30337.

N-3. 4/30/15 Assignment of Easement No. R-30337.

N-4. 5/27/15 Assignment of Easement No. R-30337.

O. August 2003 Section 32 Easement (LES) .

P. December 13, 2016 Bisbey-Kuehn letter to Karger.

Q. Clayton Orwig Resume.

R. Clayton Orwig Report.

S. Jay Peters Resume.

T. Jay Peters Report.

U. Nadia Glucksberg Resume.

V. Nadia Glucksberg Reports.

V-1. Stormwater Issues.

V-2. Migratory Bird Protection.

W. Ron Bohannon Resume.

X. Ron Bohannon Report.

Y. Matthew S. McGovern, Ph.D. Resume.

Z. Matthew S. McGovern, Ph.D. Report.

AA. Wind Rose.

BB. 2016 Khan Report.

CC. 2010 USFWS Report.

DD. 2016 Engle Report.

- EE. 2004 Data Bulletin.
- FF. 2007 Tems Report.
- GG. 20.2.3 NMAC (Ambient Air Quality Standards).
- HH. 20.2.70 NMAC (Operating Permits).
- II. 20.2.72 NMAC (Construction Permits).
- JJ. 20.2.73 NMAC (Notice of Intent and Emissions Inventory Requirements).
- KK. 19.2.10.8, .9 and .17 NMAC (State Trust Land Easements and Rights of Way).
- LL. 20.6.2.3101 and .3103 (NMAC Ground Water Standards).
- MM. 18.3.6 NMAC (State Highway Access Management Requirements).
- NN. 6/2/16 Sexton letter to Griswold and Catanach.
- OO. 2012 Valdez Salas Report.

RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.

By: 
Henry M. Bohnhoff

Cynthia A. Loehr

Post Office Box 1888

Albuquerque, New Mexico 87103-1888

Telephone: (505) 765-5900

Hbohnhoff@rodey.com

CLoehr@rodey.com

Attorneys for Louisiana Energy Services, LLC,

d/b/a URENCO USA

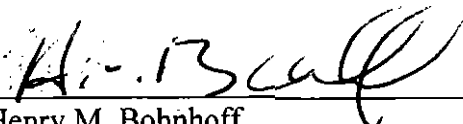
CERTIFICATE OF SERVICE:

We hereby certify that a copy of the foregoing pleading was e-mailed on February 2, 2017 to the following:

Michael L. Woodward
Wes McGuffey
Hance Scarborough, LLP
400 W. 5th Street, Suite 950
Austin, Texas 78701
Telephone: (512) 479-8888
mwoodward@hslawmail.com
wmcguffey@hslawmail.com
Attorneys for C.K. Disposal

David K. Brooks
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505
Telephone: (505) 476-3440
DavidK.Brooks@state.nm.us
Attorney for Oil Conservation Division

Perry D. Robinson
External General Counsel, URENCO – USA
13 Hunting Court
Bluffton, SC 29910
Telephone: (575) 691-9662
Perry.Robinson@urencocom
*Attorney for Louisiana Energy Services, LLC,
d/b/a URENCO USA*



Henry M. Bohnhoff

Permit Application

Lea County, New Mexico

C.K. Disposal E & P Landfill and
Processing Facility

Permit No. TBD

Attachment K

Site Operation Plan

NMAC 19.15.36



November 2015

PSC Project # 01058015



PARK HILL SMITH & COOPER

ATTACHMENT K - SITE OPERATION PLAN

1.0	INTRODUCTION	1
2.0	PERSONNEL, TRAINING, AND SITE EQUIPMENT	2
2.1	Personnel	2
2.2	Training and Experience	2
2.3	Equipment	3
3.0	GENERAL FACILITY INFORMATION AND OPERATIONAL REQUIREMENTS	4
3.1	Access Control	4
3.2	Site Security	4
3.3	Site Signs and Traffic	4
3.4	Noise Control	4
3.5	Odor Control	4
3.6	Dust Control	5
3.7	Minor Spills/Releases	5
4.0	C.K. FACILITY OPERATIONS	6
4.1	Landfill Phasing Plan	6
4.2	Waste Characteristics	7
4.3	Waste Acceptance	7
4.4	Prohibited Waste	8
4.5	Waste Capacity and Site Life	8
4.6	Gas Safety	8
4.7	Leachate Monitoring	9
4.8	Operating Hours	10
5.0	LIQUIDS PROCESSING	11
6.0	WATER TREATMENT AND REUSE	12
6.1	Stripping Tower	12
6.2	Greensand Filters	12
6.3	Reverse Osmosis	12
7.0	INSPECTION AND MAINTENANCE	14
7.1	Evaporative Spray System	15
7.2	Landfill	15
7.3	General Facility Operation	15
7.4	Liquid Processing Area	15
7.5	Pond Operations	16

APPENDICES

APPENDIX A – H₂S MANAGEMENT PLAN
APPENDIX B – CONTINGENCY PLAN
APPENDIX C – OCD FORMS
APPENDIX D – EVAPORATION CALCULATIONS

TABLES

- Table K.1 – Necessary Site Personnel
- Table K.2 – Landfill Facility Equipment List
- Table K.3 – Estimated Site Life
- Table K.4 – Facility Inspections

1.0 INTRODUCTION

This Site Operating Plan (SOP) has been prepared for the proposed facility consistent with NMAC 19.15.36 and includes provisions for site management and site operating personnel to meet the general and site-specific requirements consistent with NMAC 19.15.36. The SOP will remain onsite throughout the active life of the facility and throughout the post-closure care maintenance period.

2.0 PERSONNEL, TRAINING, AND SITE EQUIPMENT

2.1 Personnel

The proposed site will maintain qualified personnel with experience in waste disposal operations and earthmoving construction projects. Personnel will undergo training in H₂S and the contingency plan before beginning work. The following list is the expected site personnel and rank onsite. Table K.1 shows the number of employees needed for each site.

1. General Manager - Responsible for assuring adequate personnel and equipment are available to guarantee facility operations in accordance with the SOP. The landfill general manager is responsible for general facility management and designated as the contact person for regulatory compliance. The manager will have at least three (3) years of supervisory experience in landfill operations. The landfill general manager will obtain and maintain all applicable operator license.
2. Operations Manager - Under direction of landfill general manager and responsible for daily operations and emergency coordination. The landfill operations manager is responsible for coordinating with equipment operators regarding a waste disposal operation including active workface, excavation operations, and placement of intermediate cover. The landfill operations manager will obtain and maintain all applicable operator licenses.
3. Equipment Supervisor - Responsible for safe operation of site and operating facility equipment in a manner that achieves compliance with the SOP. The equipment supervisor must be on alert for any potentially dangerous conditions and careless or improper actions on the part of landfill patrons and visitors while on the premises. This employee will report any such observations directly to the landfill operations manager.
4. Laborer - Directs vehicles to the proper unloading area at the working face, observes unloading, looks for prohibited wastes, and directs vehicles as they maneuver near the active area. The landfill operations manager may assign additional responsibilities to employee(s) as necessary.
5. Other Supplemental Personnel - Onsite as necessary for duties such as cell construction, operation and maintenance of the leachate management system, groundwater monitoring, landfill gas monitoring, site maintenance, and litter cleanup.

Table K.1 - NECESSARY SITE PERSONNEL

Position	Number of Employees
General Manager	1
Operations Manager	1-2
Equipment Supervisor	4-6
Laborer	2-4

2.2 Training and Experience

All personnel will be familiar with the SOP and other permit documents. Annual training events will be conducted for facility personnel, which must include permit conditions;

emergencies, proper sampling methods, general operations, and identification of exempt and non-exempt waste and hazardous waste.

2.3 Equipment

Equipment requirements will vary in accordance with the method and scope of activities onsite at a given time. Additional or different units of equipment may be provided as necessary to enhance operational efficiency. Table K.2 lists the types and sizes of equipment provided at the facility.

Table K.2 - LANDFILL FACILITY EQUIPMENT LIST

Equipment Type	Function
Rubber-Tire Loader	Used for earthmoving activities and landfill unit construction, delivery and application of cover material, excavation of soil, and movement of waste.
Compactor	Used for the compaction and movement of waste, application of daily cover, and other workface related activities.
Dozer	Used to move waste and soil short distances, rework sideslope erosion rills, limited waste compaction, and daily cover operations.
Scrapers	Used to excavate future landfill units and daily cover material, transport material from longer distances, apply daily or intermediate cover
Water Truck	Used for dust control and firefighting support.
Motor Grader	Assists in roadway construction, maintenance, grading, and drainage improvements.

In addition to the list in Table K.2, miscellaneous pickups, vans, and other light utility vehicles as well as various pumps, instruments, and safety and training equipment will be onsite as necessary for facility operations. As operations evolve or because of significant volume increases of waste stream, an increase in the number of equipment or additional unspecified equipment may be required to meet the needs of the facility operations.

3.0 GENERAL FACILITY INFORMATION AND OPERATIONAL REQUIREMENTS

3.1 Access Control

Public access to the landfill is controlled by a perimeter fence located along the facility boundary. Access to the landfill is limited to the entrance road from Andrews Highway. All access must enter the site through one (1) of the scalehouse areas.

3.2 Site Security

Site security measures are designed to prevent unauthorized persons from entering the site, protect the facility and equipment from possible damage caused by trespassers, and prevent disruption of facility operations caused by unauthorized site entry. The perimeter fence, consisting of barbed wire, chain link, woven wire, pipe fencing or other suitable materials located along the facility boundary and entrance gate, will control unauthorized entry to the site. A gate constructed of suitable fencing materials will be located on the entrance road, remaining locked when the landfill is not accepting waste.

Site personnel will monitor the entrance during waste acceptance hours but outside of operating hours, the gate will be locked. Entry to the active portion of the site will be restricted to designated personnel, approved waste haulers, and properly identified persons whose entry is authorized by a site representative. Visitors may be allowed on the active area only when accompanied by a site representative.

3.3 Site Signs and Traffic

Once authorized vehicles are onsite, signage will be placed to efficiently direct the vehicles. Waste-hauling vehicles will be directed to the active fill area by the use of these signs. Private, commercial, or public solid waste vehicles are not allowed to access any other areas of the landfill. Roads not used for access to disposal areas will be blocked or marked for no entry. Once vehicles have unloaded the waste, they must depart the site. Site personnel will provide traffic directions if necessary to facilitate safe movement of vehicles.

3.4 Noise Control

Sounding land around the C.K. Facility is used for gas exploration, cattle grazing, industrial, or landfill activities. Noise nuisance will not be a concern for nearby residences or businesses. Due to high volume of gas, oil, industrial, and landfill activities, the proposed site will not greatly increase noise nuisance in the area.

3.5 Odor Control

Potential odor sources associated with the C.K. Facility include the wastes being delivered to the landfill, the open working face, ponded water, and landfill gas. Methods used to control odors include waste management procedures, the placement of cover materials, control of ponded water, leachate, and landfill gas control. H₂S gas is known for a foul odor which can be dangerous at high concentration levels. Loads with high levels of H₂S gas will be treated with calcium hypochlorite to lower H₂S concentrations. The surrounding land is used for gas,

oil, industrial, and landfill activities so the proposed site will not greatly increase an odor nuisance in the area. H₂S management plan is included in Appendix A.

3.6 Dust Control

Dust control will be maintained using at least one (1) water wagon. This truck will be used as needed to prevent excess dust release from C.K. Facility. A speed limit throughout C.K. Facility will be posted as 15-mph.

3.7 Minor Spills/Releases

Spills at the C.K. Facility will most commonly involve fuel or other vehicular fluids. C.K. Facility will be equipped with necessary equipment to control and clean fuel, E&P wastes, and other fluid spills. All spills will be controlled, cleaned, and documented immediately.

4.0 C.K. FACILITY OPERATIONS

4.1 Landfill Phasing Plan

C.K. Facility will develop the landfill units in accordance with Attachment B – Engineered Design Plans. The liquid processing area phasing of the C.K. Facility will consist of four (4) phases: Initial Landfill-Produced Water Processing Operation, Jet Out Pit Operation, Expanded Produced Water Processing Operations, and Ultimate Produced Water Processing Facility.

A. Phase I - Initial Landfill-Produced Water Processing Operation

- Initial landfill cell (23.6-acres).
- Four (4) produced water load-out points.
- Tank farm berm (complete).
- Boiler (75HP) running a heat transfer fluid tank farm.
- Four (4) produced water receiving tanks 1,000-barrel capacities each.
- Sixteen (16) settling tanks with 1,000-barrel capacities each.
- One (1) crude oil recovery tank with 1,000-barrel capacity.
- One (1) oil sale tank with 1,000-barrel capacity.
- The mechanical oil/water separation unit.
- Four (4) ponds capable of evaporating 3,000-barrels of liquid per day.

Six (6) barrels per day is the anticipated oil recovery output from Phase I. The oil will be pumped to the heated crude oil recovery tank for further processing and separated before pumped to the oil sales tank.

B. Phase 2 - Jet Out Pit Operation

- Six (6) jet out pits for handling basic sediment and water, tank bottoms, oily drilling muds, and tank wash outs.
- One (1) additional crude oil recovery tank with a 1,000-barrel capacity.
- Installation of the 5-acre stabilization and solidification area.

The oil recovered from the jet out pit will be pumped to a heated crude oil recovery tank installed in the tank farm for processing. Oil recovered from the produced water tanks will also be pumped to this tank. Water recovered from the pit will be pumped to the produced water tanks. Sediments from the pit will be bucket-loaded out of the pit and transferred to the stabilization and solidification area for processing prior to being taken to the landfill.

C. Phase 3 - Expanded Produced Water Processing Operation

- Four (4) produced water load-out points.
- Four (4) additional produced water receiving tanks with 1,000-barrel capacities each.
- Sixteen (16) additional settling tanks with 1,000-barrel capacities each.
- Three (3) additional crude oil recovery tanks with 1,000-barrel capacities each.

- Two (2) additional oil sales tanks with 1,000-barrel capacities each.
- Two (2) additional mechanical/oil water separation units.
- Four (4) additional ponds capable of evaporating 5,000-barrels of liquid per day.

Six (6) barrels per day is the anticipated oil recovery from the expanded produced water processing operation process. This will be pumped to the crude oil recovery tanks for further processing.

D. Phase 4 - Ultimate Produced Water Processing Facility

- Four (4) additional produced water receiving tanks with 1,000-barrel capacities each.
- Sixteen (16) additional settling tanks with 1,000-barrel capacities each.
- One (1) additional oil sales tank with 1,000-barrel capacity.
- One (1) additional mechanical/oil water separation unit.
- Four (4) additional ponds capable of evaporating 4,000-barrels of fluid per day.
- The additional oil recovered from the ultimate produced water processing facility will be pumped to the crude oil recovery tank for further processing.

The totals are eight (8) produced water load out points, sixteen (16) produced water receiving tanks, one (1) boiler, forty-eight (48) settling tanks, five (5) crude oil recovery tanks, four (4) oil sales tanks, four (4) mechanical oil/water separation units, twelve (12) evaporation ponds, six (6) jet out pits and one (1) solidification and stabilization area. Water treatment and reuse facility and saltwater disposal well may be added as necessary during any phase. The addition of these services will be dependent on market conditions and the actual amount of liquid waste being disposed.

The phase development may change based on the needs of the facility. The site development sequence is also subject to change and may be updated to reflect market conditions.

4.2 Waste Characteristics

Oil and gas exploration and production operation exempt oilfield waste will be accepted at the C.K. Facility. Neither hazardous nor non-exempt oilfield waste will not be accepted for processing or disposal. OCD Form C138 - Request for Approval to Accept Solid Waste will be required before any waste is accepted by the C.K. Facility. Wastes failing the paint filter test will be accepted in the liquids processing area on the site. The following are anticipated types of accepted waste:

- Contaminated soil.
- Drilling mud.
- Stabilized tank bottoms.
- Other oilfield activity waste.

4.3 Waste Acceptance

C.K. Facility requires a certification on form C138, signed by the generator or authorized agent, that represents and warrants the oilfield wastes are generated from oil and gas

exploration and production operations, are exempt waste and not mixed with non-exempt waste. The operator shall have the option to accept such certifications on a monthly, weekly or per-load basis. The operator shall maintain and make the certificates available for the division inspection. C.K. Facility requires the oilfield waste document, form C138, signed by the generator or authorized agent. This form shall be accompanied by acceptable documentation to determine the oilfield waste is non-hazardous. C.K. Facility requirements may accept non-hazardous, non-oilfield wastes in an emergency if ordered by the Department of Public Safety (DPS). C.K. Facility requires generators to complete form C138 describing the waste, accompanied by the DPS order. C.K. Facility will maintain records reflecting the generator, the location of origin, the location of disposal within the commercial facility, the volume and type of oilfield waste, the date of disposal, and the hauling company for each load or category of oilfield waste accepted at the commercial facility. C.K. Facility will maintain records for a period of not less than five (5) years after the commercial facility closure, subject to division inspection. Disposal at C.K. Facility shall occur only when an attendant is on duty unless loads can be monitored or otherwise isolated for inspection before disposal. C.K. Facility will be secured to prevent unauthorized disposal.

4.4 Prohibited Waste

Only exempt oilfield waste as stated in NMAC 19.15.36.13.F will be accepted at the C.K. Facility. The following wastes are prohibited at the site:

- Regulated non-exempt hazardous waste.
- Non-exempt Naturally Occurring Radioactive Materials (NORM) waste.

Any haulers or generators of the previously mentioned prohibited wastes will be referred to a U.S. EPA RCRA permitted facility.

4.5 Waste Capacity and Site Life

C.K. Facility has an approximate gross airspace of 24,585,056-cubic yards. A contingency of 15% was applied to the total airspace to account for daily and intermediate cover loss, variation in waste density, and other operational losses that may occur during the life of the facility. Approximately 20,897,298-cubic yards of waste capacity remains after the 15% contingency loss. An estimate of 500-cubic yards/day was used for an initial projected incoming waste volume. Table K.3 illustrates the estimated site life per 365-days/year:

Table K.3 – ESTIMATED SITE LIFE

500 cubic yards per day	115 years
1,000 cubic yards per day	57 years
1,500 cubic yards per day	38 years

4.6 Gas Safety

Typical landfill gas expected at municipal solid waste landfills is not normally produced in oilfield waste. C.K. Facility will not have dedicated gas-monitoring wells. Vadose zone monitoring will be conducted in accordance with Attachment H – Vadose Monitoring Plan. Methane and H₂S are both known to produce particular smells. If these are suspected to be in the proposed vadose zone monitoring wells, they will be tested for gas and appropriate measures will be taken.

4.7 Leachate Monitoring

Appendix B will describe the anticipated amount of leachate generated using weather data from Roswell, New Mexico. This was the closest available data for the site and is in a slightly wetter climate which will show a worse case scenario than to be expected per year.

Leachate piping system is at least 6-inches in diameter and sloped at a minimum of 2% to promote positive drainage to each unit sumps. Each unit will be constructed with perforated leachate pipes, textile enclosing the pipe to minimize fines intruding in the pipe. Leak detection layer will be constructed between two (2) HDPE liners monitored in the monthly inspection.

In accordance with NMAC 19.15.36.14.F, liners and leachate collection systems will be designed to ensure performance of the system does not allow for a leachate head accumulation to exceed 12-inches. Attachment E - HELP Model, has demonstrated the head on the proposed liner does not exceed 12-inches. Leachate levels on the floor will be pumped routinely and maintained so the liner head stays below the regulatory threshold. Leachate generation is projected to ultimately approach zero. Due to waste passing the paint filter test before disposal at the solid waste landfill, the leachate will be generated by rainfall. With the dry climate and high evaporation rates of the region, the leachate generation will be zero after the first lift of waste is placed on the liner system. The evaporation rate in the site region and field capacity of the waste offsets the volume of rainfall expected for the site. Leachate will continue to be monitored through the life and post-closure care of the facility to ensure the liner head does not exceed 12-inches.

Leachate sumps will be pumped with portable submersible pumps, vacuum trucks, or other approved equivalent device. Remote level sensors can be equipped to the dedicated submersible pumps for constant monitoring of leachate levels. At a minimum, leachate sumps will be monitored each month and extracted quarterly as protective measures to keep head less than 12-inches on liner.

Leachate will be disposed of in the produced water receiving tanks and processed through the evaporative pond process. If excess leachate is encountered and cannot be disposed of, C.K. Facility will seek alternative OCD-approved facilities for disposal. After closure of the C.K. Facility and following approval by the OCD, the leachate will be transported to the most effective treatment or disposal technology.

Leak detection monitoring of the units and evaporation ponds will be inspected monthly. Any liquids in the leak detection layer will be removed and treated or disposed as leachate. Based on "Leakage through Liners Constructed with Geomembranes, Part I - Geomembrane Liners" by J. P. Giroud and R. Bonaparte, the projected leakage rate for HDPE liner at the C.K. Facility will be roughly 10- to 140-gal/acre/day. The average of the projected leakage (75-gal/acre/day) will be anticipated for the site. If excess liquid is found in leak detectors, the OCD will be notified within 24-hours and the facility will start corrective measures including but not limited to:

- Increase liquid level monitoring and frequency of sumps and leak detection layer.
- Testing liquid collected in sump and leak detection layer to isolate a problem.

If excess liquids are found in the evaporative pond leak detection layer, the pond will be drained and site personnel will take action to find the source of the leak. Liquid testing of the liquids in the leak detection layer will be submitted to the OCD. If the source of the leak is found, repairs will be made by qualified liner installers. After repairs are made, monitoring of the leak detection layer will be completed bi-monthly until verified the leak is properly repaired.

4.8 Operating Hours

The C.K. Facility will accept waste 24-hours/day for 7-days/week. Signage will specify operating hours for the site. The site will operate under all weather conditions and the active working face may be relocated during inclement weather to allow for easier access for waste haulers. C.K. Facility may reduce operating hours based on reduction of waste stream. OCD will be notified if operating hours change.

5.0 LIQUIDS PROCESSING

The estimated acceptance rate expected at the C.K. Facility is 9,000-barrels/day. As market conditions and technology changes, the site anticipates the liquid waste acceptance rate to vary. C.K. Facility has been designed to process roughly 12,000-barrels/day. Liquids processing rate will rely on evaporation rates for the region. If evaporation ponds are near capacity, the C.K. Facility will stop collecting liquid waste until evaporation of produced water is reduced for extra capacity. The C.K. Facility shall also treat water for reuse in frack operations.

Produced water will be received in the produced water load-out stations. The produced water will then be transferred to the heated tanks to separate oil, water, and sediments. The separated oil will be transferred to the oil recovery tanks prior to storage in oil sales tanks. Sediments will be transferred to the solidification area until the paint filter test is passed. Once the paint filter test is passed, it can be placed in the solid waste disposal workspace area. Water from the site will either be transferred to the evaporation ponds or to the water treatment and reuse area.

6.0 WATER TREATMENT AND REUSE

An alternative to the evaporation of produced water is treatment and reuse of the water. After solids and oil separation activities, water will be diverted to a treatment plant. The end goal of treatment is water that can be sold for use in the oil and gas industry. The plant is expected to receive a peak flow of 12,000-barrels of water a day. Following treatment, 7,140-barrels of water are expected to be available for sale. The following are key constituents of concern for the water treatment facility: Volatiles remaining after oil-water separation, solids, iron and manganese, biological including algae, total dissolved solid, and chlorides. These constituents are known to adversely affect oil and gas operations and the minimization is paramount to the ability to sell the produced water. The proposed plant would utilize a 3-stage treatment process including a stripping tower, greensand filters, and reverse osmosis. As incoming and produced water quality information becomes more readily available, treatment units may adjust to fit the particular application requirements. Treated water will be stored in tanks and sold via a water loadout station.

6.1 Stripping Tower

Volatiles and dissolved gasses can be problematic in other treatment activities as well as oil and gas use. The treatment goal of the stripping tower is to minimize these harmful constituents in effluent water. The stripping tower would be 7-feet in diameter and of packed tower design. The water would enter the tower pressurized to be misted through nozzles at the top of the vessel. The water would then be deposited on packing material to allow maximum contact with the ambient air. Treated water would collect at the bottom of the stripper before continuing on to further treatment. Air would be pulled from the bottom of the stripper, through the packed media bed, and out the top of the stripper. At this time, expected air would simply be off-gassed to the ambient atmosphere. Further air treatment could be incorporated as necessary. Periodic cleansing of the stripping tower would be necessary to maintain an efficient level of treatment. Cleansing water would be deposited in the evaporation ponds onsite. After moving through the stripping tower, water would continue on to filtration.

6.2 Greensand Filters

Filtration of the water is an essential pre-treatment step for further treatment and minimization of solids. Water is expected to be free of readily settle-able solid material but fine solids may still persist. Greensand filtration is known to reduce suspended solids and other metal constituents. Iron and manganese can create other treatment issues as well as corrosion in oil and gas use. Greensand filtration is expected to significantly reduce iron and manganese in the water. Four (4) greensand filters with 8-foot diameters, requiring periodic backwashing, are proposed to treat the water. The system will be designed to operate with one (1) filter out of service for backwashing at a time. Backwash flow will be directed to the evaporation ponds for final disposal. After filtration, the water will be sent to the reverse osmosis (RO) units.

6.3 Reverse Osmosis

High chlorides and dissolved solids are expected in the feedwater. These constituents present corrosion and material degradation issues when used in oil and gas work. The control of

these constituents to acceptable levels will be required. RO can significantly reduce dissolved solids by utilizing spiral wound membranes and pressure. Pre-treatment with anti-scalant is required to maintain proper pressure on the membranes. The membranes will be cleaned with a clean, in-place system periodically. Expected recovery on the RO system is 60%. The concentrated water will be deposited in the onsite evaporation ponds. Post-treatment from the RO will be a biocide to reduce any biological growth in post-treatment storage tanks.

BS&W wastes will be separated after discharged in the jet out pit. Solids will settle over time and liquids will be removed and processed. Solids will be transferred to the stabilization and solidification area before ultimately being landfilled.

Drilling mud will be deposited in the stabilization and solidification area and combined with dry soil as needed to accelerate the solidification process. As all other waste in the stabilization and solidification area, the waste must pass the paint filter test before transported to be landfilled.

7.0 INSPECTION AND MAINTENANCE

C.K. Facility staff will conduct inspections of onsite facilities in accordance with Table K.4. If repairs are needed, they will be conducted as soon as is safe to proceed with repairs.

Table K.4 - FACILITY INSPECTIONS

Component	Frequency	Recording Form
Evaporation Spray System Weather Station Plume Height Overspray	Daily	Facility Inspection Form
Landfill Disposal Operations and Location Free Liquids Stormwater Controls Litter, Vectors, Odors Daily Cover	Daily	Facility Inspection Form
Overall Facility Operation Signs Security (fencing/gates) Stormwater Control Systems (run-on/run-off) Access Roads OCD Permit Compliance Construction Activity	Weekly	Facility Inspection Form
Treatment Plant, Tanks, and Sumps Containment Berm Tank Condition Tank Leak Test (annual) Signage Pipe and Valve Condition Sump Condition	Weekly	Facility Inspection Form
Tank Farm and Pump System (Process Area) Containment and Liner Tank Condition Tank Leak Test (annual) Signage Pipe and Valve Condition Sump Condition	Weekly	Facility Inspection Form

Table K.4 - FACILITY INSPECTIONS

Component	Frequency	Recording Form
Pit and Pond Operation Depth of Liquids in Sumps Pond Levees Piping Condition and Status	Weekly	Pond Integrity/Leak Detection Inspection Form
Solid Waste Disposal Landfill Leachate Collection Sump	Monthly	Facility Inspection Form
Pond Containment System Rainfall Wind Speed/Direction Damage Assessment	Quarterly	Pond Integrity/Leak Detection Inspection Form
Landfill and Process Area Vadose Zone Monitoring	Quarterly	Facility Inspection Form

7.1 Evaporative Spray System

Evaporative spray system consists of three (3) mechanical evaporators per evaporation pond. The mechanical evaporators will be inspected daily for plume height and overspray based on the weather station. Facility staff will continuously monitor each evaporator to ensure proper function and prevent overspray from landing outside of the pond area. Evaporators will be adjusted according to current conditions.

7.2 Landfill

Landfill area will be inspected daily by facility staff. Location and size of workface will be inspected by equipment operators and managers of landfill activities to ensure proper size. Staff will inspect for free liquids, storm water, litter, vectors, odors, and daily cover. Any deficiencies will be repaired in a safe and timely manner.

7.3 General Facility Operation

The facility will be inspected weekly including but is not limited to all liquid processing areas, sumps, and landfill. Inspection documentation will be kept in the scalehouse and made available to the OCD upon request.

7.4 Liquid Processing Area

Each week, delivery area, tanks, leak detection, and sumps will be inspected. All piping will be inspected to ensure proper liquid flow. Boiler will be inspected by trained personnel familiar with boiler operation. If issues are found that may endanger workers or the overall system, the liquid processing area shall be shut down until repairs are made. Tanks will be inspected for defects which may present safety hazards or environmental issues. If defects are found, the liquid processing area will be shut down until necessary repairs are made. Leak detection will be inspected weekly to ensure proper functions. If the sump integrity

fails, all sump contents and contaminated soils will be landfilled and necessary repairs made before operations can resume.

7.5 Pond Operations

Sump and leak detection systems will be inspected weekly. Liquids will be removed from the primary liner and leak detection system. As needed, the ponds will be cleaned and repaired to ensure proper functionality. If excessive leakage (ie 1.5-feet of water) is found in the leak detection system, the corresponding pond will be drained and the ODC will be notified within 24-hours. Prior to the pond being operational, the following corrective action shall be taken:

- Locate area(s) of leakage.
- Repair liner.
- Monitor sump liquid level on OCD-approved interval.
- Test liquids.

All areas of the site will be inspected after large rainfall event or at least monthly to address any erosion concerns.

**Lea County, New Mexico
C.K. Disposal E & P Landfill and Processing Facility
Permit No. TBD**

**Site Operation Plan
Attachment K
November 2015**

**APPENDIX A
H₂S MANAGEMENT PLAN**

1.0 INTRODUCTION

Hydrogen Sulfide (H_2S) is a colorless, flammable, and hazardous gas that emits a rotten egg smell. H_2S is heavier than air and can collect in lower and enclosed areas. The following sections describe measures to take at the facility securing safety for customers, visitors, workers, general public, and nearby landowners. Training of the personnel will ensue each year for all new and existing employees or if changes have been made to the plan. New employees shall have H_2S training sessions before they can begin working for the facility.

The facility will have designated local emergency contacts as shown in Table K.A.1. A meeting will be scheduled with the local agencies to discuss notification, emergency response procedures and evacuation plans. The H_2S monitoring program will be implemented during the active life of the facility.

Table K.A.1 - EMERGENCY CONTACTS

Agency/Organization	Emergency Number
1. Fire Eunice Fire Department	911 or (575) 394-3258
2. Police Eunice County Police Department Lea County Sheriff Department New Mexico State Police	911 or (575) 394-2112 911 or (575) 396-3611 911 or (575) 392-5580
3. Medical/Ambulance Eunice Fire Department Lea Regional Medical Center 5419 N. Lovington Highway Hobbs, NM 88240	911 or (575) 394-3258 (575) 492-5000
4. Response Firm Phoenix Environmental, LLC. 2113 French Drive Hobbs, NM 88240	(575) 391-9685
5. OCD Emergency Response Contacts Oil Conservation Division - District 1 1625 N. French Drive Hobbs, NM 88240 Oil Conservation Division - Main Office 1220 South St. Francis Drive Santa Fe, NM 87505	(575) 393-6161 (office) (575) 370-3186 (mobile) (505) 476-3440
6. State Emergency Response Contacts Environmental Emergency (24 hr) (NMED) New Mexico Environment Department Solid Waste Bureau, Santa Fe	(505) 827-9329 (505) 827-0197
7. Local Emergency Response Contacts Lea County Emergency Management	(575) 391-2983
8. Federal Emergency Response Contacts National Emergency Response Center (U.S. Coast Guard) Region VI Emergency Response Hotline (USEPA)	(800) 424-8800 (214) 665-2200

In accordance with NMAC 19.15.36.8.C.8, the prevention and contingency plan will comply with the provisions of NMAC 9.15.11 that apply to surface waste management facilities.

Table K.A.2 - API RECOMMENDED PRACTICE 55

IMMEDIATE ACTION PLAN
Each contingency plan should contain a condensed Immediate Action Plan followed by designated personnel any time they receive notice of a potentially hazardous hydrogen sulfide or sulfur dioxide discharge. For personnel protection (including the general public) and abatement of the discharge, the Immediate Action Plan should include but not be limited to the following provisions:
<ul style="list-style-type: none">a. Alert and account for facility personnel.<ul style="list-style-type: none">1. Move away from hydrogen sulfide or sulfur dioxide source and leave affected area.2. Equip personnel with proper breathing equipment.3. Alert other affected personnel.4. Assist personnel in distress.5. Proceed to designated emergency assembly area.6. Account for onsite personnel.b. Take immediate measure to control present or potential hydrogen sulfide or sulfur dioxide discharge and eliminate possible ignition sources. Emergency shutdown procedures should be initiated as necessary to correct or control specific situations. When required action cannot be accomplished in time to prevent exposing operating personnel or public to hazardous concentration of hydrogen sulfide or sulfur dioxide, proceed to the following steps as appropriate for the site specific conditions.<ul style="list-style-type: none">1. Alert the public (directly or through appropriate government agencies) subjected to an atmosphere exposure exceeding 30-ppm²¹ or 10-ppm²¹ of sulfur dioxide.2. Initiate evacuation operations.3. Contact the first available designated supervisor on the call list. Notify supervisor of circumstances and whether immediate assistance is needed. The supervisor should notify other supervisors and other appropriate personnel (including public officials) on call list.4. Make recommendations to public officials regarding blocking unauthorized access to the unsafe area and assist as needed.5. Make recommendations to public officials regarding evacuating the public and assist.6. Notify, as required, state and local officials and the National Response Center to comply with release reporting requirements (i.e., 40 Code of Federal Regulations Parts 302 and 355).7. Monitor the ambient air in the area of exposure (after following abatement measures) to determine when safe for re-entry.
Emergency Response Planning Guide Level 2 (ERPG-2), refer to Reference 27. ERPG-2 is defined as the maximum airborne concentration below believed that nearly all individuals could be exposed for up to 1-hr without experiencing or developing irreversible or other serious health effects or symptoms that could impair an individual's ability to take protective action.

Note: This sequence should be altered to fit the prevailing situation. Certain actions, especially those dealing with the public, should be coordinated with public officials.

1.1 Emergency Coordinators

In accordance with NMAC 19.15.36.13.N.3, the facility will have a specialist with the responsibility and authority to take responsive measures when an emergency threatens freshwater, public health, safety, or environment.

Table K.A.3 - LIST OF EMERGENCY COORDINATORS

Primary Emergency Coordinator			
Name:	TBD	Work Phone:	(575) TBD
Title:	Facility Manager	Mobile Phone:	(575) TBD
Alternate Emergency Coordinator			
Name:	TBD	Work Phone:	(575) TBD
Title:	Facility Operator	Mobile Phone:	(575) TBD
On-site Emergency Coordinator			
Name:	TBD	Work Phone:	(575) TBD
Title:	Facility Operator	Mobile Phone:	(575) TBD

These emergency contacts will be able to respond 24-hours/day, 7-days/week and the authority required for the implementation of this plan. A facility employee will attempt to contact all emergency contacts until contact is made. The first emergency contact to arrive onsite will assume responsibility for initiating response measures. The higher-ranking emergency contact will assume responsibility if more than one contact responds.

1.2 Monitoring

All oilfield waste loads will be monitored for H₂S upon arriving at the site. OCD Form 138 will be obtained and monitoring results be recorded. The form will be kept in the operating records. Employees will be equipped with monitors in case H₂S gas may be present. These monitors will sound off and light up when H₂S is detected at 10-ppm. If H₂S gas is detected at this concentration, the driver and generator of the waste will be notified and given the option to allow facility employees to treat the onsite load by adding calcium hypochlorite in accordance with Table K.A.4. Calcium hypochlorite will be mixed with the load and continually tested until the H₂S reading is below 1-part/million. After the testing of the load verifies the load is below 1-part/million H₂S, the load will be directed to the correct receiving area. If treatment by facility staff is not allowed, the load will not be accepted and the hauler will leave the facility.

Table K.A.4 - H₂S TREATMENT FOR VEHICLES

H ₂ S PPM	Ca(ClO) ₂ (34.5-ounces x number below)
<50	1
50-100	1.5
100-150	2
150-200	2.5
200-250	3
250-300	3.5
300-350	4
350-400	4.5
400-450	5
450-500	5.5
500-550	6
550-600	6.5
600-650	7
650-700	7.5
700-750	8
750-800	8.5
800-850	9
850-900	9.5
900-950	10
950-1000	10.5

1.3 Evaporation Pond Monitoring

H₂S monitors will be placed around evaporative ponds in accordance with Attachment B - Engineered Design Plans. These monitors will continuously monitor H₂S levels and wired to communicate with scalehouse personnel. Wind direction, speed, and H₂S concentrations will be recorded two (2) times a day and recorded on the Daily Air and Water Inspection Form. If monitors detect H₂S above 10-ppm, personnel will take a secondary reading downwind of the berm within one (1) hour if the sample can be taken in a safe manner. As soon as is safe, a dissolved oxygen and dissolved sulfides concentration test will be tested of the pond. H₂S readings will be taken at the property boundary downwind of the evaporation pond. If a second consecutive reading is taken over 10 parts per million, the OCD office in Hobbs shall be notified immediately. Monitoring will ensue hourly for the next 24-hours. Pond level will be lowered to achieve better circulation in the pond. If H₂S is detected at more than 20 parts per million at the downwind property boundary, the facility will be evacuated. New Mexico state police, Lea County Sherriff, Lea County Emergency Management, and the ODC will be notified. If mitigation of H₂S is needed, Phoenix Environmental will be contacted to provide response personnel, equipment and supplies. Logs of incidences will be maintained for at least five (5) years at the scalehouse or other secure location and made available to the OCD per request.

1.4 Dissolved Oxygen and pH Monitoring

Daily tests will be taken for pH and dissolved oxygen in all evaporation ponds. Dissolved oxygen and pH play key roles in the treatment and removal of H₂S during the aeration process provided by the mechanical evaporators. Optimum levels for the pH range from 8.2-9.0 and sodium hydroxide will be added as needed to ponds to ensure pH levels remain within the optimum range. As needed, the aeration will be increased to introduce more dissolved oxygen into the evaporation ponds. The optimum level of dissolved oxygen is above 0.5 parts per million.

1.5 H₂S Management Plan Coordination

Organizations listed in this plan will be provided a copy and will familiarize themselves with the plan. They are responsible for identifying the types of emergencies and responses that needed. All organizations are invited to visit the facility and assess the site operations, locations of processing areas, and provide insight on emergency response procedures.

Lea County, New Mexico

C.K. Disposal E & P Landfill and Processing Facility

Permit No. TBD

Site Operation Plan

Attachment K

November 2015

APPENDIX B
CONTINGENCY PLAN

1.0 INTRODUCTION

In accordance with NMAC 19.15.36.13.N, the following sections provide a contingency plan. The plan is designed to minimize hazards to fresh water, public health, safety, or the environment from fires, explosions, or an unplanned sudden or non-sudden release of contaminants or oilfield waste to air, soil, surface water, or ground water. The operator shall carry out plan provisions immediately whenever there is a fire, explosion, or release of contaminants or oilfield waste constituents that could threaten fresh water, public health, safety, or the environment; provided the emergency coordinator may deviate from the plan as necessary in an emergency situation. Emergency coordinators are provided in Table K.B.1 and will act as the contingency plan emergency coordinators. If no emergency contact can be reached, the employee who identified the situation shall follow the necessary steps until an emergency contact is available. Emergency contact may amend the plan during an emergency, as necessary, to protect fresh water, public health, safety, or the environment. Table K.B.2 lists the response agencies and contacts.

Table K.B.1 - LIST OF FACILITY EMERGENCY COORDINATORS

Primary Emergency Coordinator			
Name:	TBD	Work Phone:	(575) TBD
Title:	Facility Manager	Mobile Phone:	(575) TBD
Alternate Emergency Coordinator			
Name:	TBD	Work Phone:	(575) TBD
Title:	Facility Operator	Mobile Phone:	(575) TBD
Onsite Emergency Coordinator			
Name:	TBD	Work Phone:	(575) TBD
Title:	Facility Operator	Mobile Phone:	(575) TBD

Table K.B.2 - EMERGENCY RESPONSE AGENCIES AND CONTACTS

Agency/Organization	Emergency Number
1. Fire	
Eunice Fire Department	911 or (575) 394-3258
2. Police	
Lea County Sheriff Department	911 or (575) 396-8200
New Mexico State Police	911 or (505) 827-3394
3. Medical/Ambulance	
Lea County EMS	911
Lea Regional Medical Center	(575) 492-5000
5419 N. Lovington Highway	
Hobbs, NM 88240	
4. Response Firm	
Phoenix Environmental, LLC.	(575) 391-9685
2113 N French Drive	
Hobbs, NM 88240	
5. OCD Emergency Response Contacts	
Hobbs Oil Conservation Division	(575) 393-6161
1625 N. French Drive	(575) 371-3186 (mobile)
Hobbs, NM 88240	
Santa Fe Oil Conservation Division	(505) 476-3440
1220 South St. Francis Drive	
Santa Fe, NM 87505	
6. State Emergency Response Contacts	
Environmental Emergencies (24 hr) (NMED)	(505) 827-9329
New Mexico Environment Department	(505) 827-0197
Solid Waste Bureau, Santa Fe	
7. Local Emergency Response Contacts	
Lea County Emergency Management	(575) 391-2983
8. Federal Emergency Response Contacts	
National Emergency Response Center	
(U.S. Coast Guard)	(800) 424-8802
Region VI Emergency Response Hotline	
(USEPA)	(214) 665-2200

1.1 Emergency Response Team Coordination

Eunice Police Department, Eunice Fire Department, hospitals, contractor, and local response teams will be given copies of the contingency plan. It is encouraged that the listed organizations familiarize themselves with the contingency plan and make a site visit to become familiar with daily operations as well as provide input regarding the contingency plan.

1.2 Fire Prevention and Preparedness

Employees will be trained before working at the facility and annually thereafter to take preventative measures to avoid fires. This includes regular inspections of incoming waste and vehicles onto the site. Table K.B.3 includes a list of emergency equipment at the surface

waste management facility, such as fire-extinguishing systems, spill control equipment, communications and alarm systems, and decontamination equipment, containing a physical description of each item on the list and a brief outline of its capabilities.

Table K.B.3 - EMERGENCY RESPONSE EQUIPMENT LIST¹

Equipment Description	Quantity	Location	Use(s)
10-lb ABC rated fire extinguisher	2	Gatehouse/Scalehouse ²	Firefighting
10-lb ABC rated fire extinguisher	2	Trucks	Firefighting
10-lb ABC rated fire extinguisher	1	Heavy equipment	Firefighting
20-lb ABC rated fire extinguisher	1	Oil process tanks	Firefighting
20-lb ABC rated fire extinguisher	1	Oil sales tanks	Firefighting
20-lb ABC rated fire extinguisher	1	Produced water receiving tanks	Firefighting
20-lb ABC rated fire extinguisher	1	Diesel storage tank	Firefighting
Loader	1	Facility	Berm repair
Oil Booms	4	NE corner of pond	Oil containment
Self-contained breathing apparatus	1 per employee	Gatehouse/Scalehouse ²	Protective gear for employees
Pair leather gloves	1 per employee	Assigned to employee	Protective gear for employees
Nomex coveralls	7 per employee	Assigned to employee	Protective gear for employees
Pair safety glasses	1 per employee	All employee workstations	Protective gear for employees
Round-point wood handle shovels	2	Gatehouse/Scalehouse ²	Contain spillage, putting out fires
First aid kit	1	Gatehouse/Scalehouse ²	First aid
First aid kit	1 per vehicle	Facility vehicles	First aid
Eye wash station	1	Produced water receiving tanks	First aid
Portable 2-way radio	1 per employee	Basic unit at the gatehouse/scalehouse ²	Communications
Cell phones	min. 3	Facility manager Facility operator Facility operator	Communications
Office phone	2	Gatehouse/Scalehouse ²	Communications
Mobile pressure washer	1	Mobile	Decontaminating equipment

1.3 Implementation

In the event of a fire, explosion, or release of contaminants or oilfield waste constituents, Table K.B.4 shall be followed to assess the emergency. Table K.B.5 shall be followed for notification of the release or fire.

Table K.B.4 - IMPLEMENTATION, ASSESSMENT, AND NOTIFICATION
PROCEDURES FOR RELEASES
(BREAKS, LEAKS, SPILLS, RELEASES, FIRES, OR BLOWOUTS)

1. Notify the EC: The employee who first becomes aware of the emergency will immediately notify the Primary EC, Alternate EC, and Onsite EC, if necessary. Notification will be made in person, or via telephone, or radio. The responding EC will assume full authority over the situation.
2. Assess source, amount, and extent of release: The EC will assess the source, amount and extent of spill or release, or released material resulting from a fire or explosion and determine possible hazards to fresh water, public health, safety, or the environment.
3. Contain and prevent spread of release: The EC assessment of the emergency situation will be the basis for attempting to control the release or implementing an evacuation, as well as notifying appropriate state and local authorities if needed.
4. Notification of emergency authorities: If deemed safe by the EC, the appropriate C.K. Facility response equipment and personnel will be dispatched to the scene of the release. Personnel will initiate actions within their scope of training to contain the release and prevent the spread and/or windblown dispersion of the release. Depending on the type of release, appropriate equipment may include deployment of absorbents for spills, fire extinguishers, and/or earthmoving equipment.
5. Notification of emergency authorities: If the EC assessment indicates a need to notify appropriate state and local emergency authorities, notification will be initiated immediately. OCD will be notified as necessary.
6. Divert traffic and restrict persons from area: C.K. Facility personnel not actively involved in release control operations will be restricted from the area until the area is determined safe by the EC and, if appropriate, the on-scene senior emergency authority (i.e., fire, police, hazard, or other official). Vehicular traffic will be diverted away from release response activities until situation is abated.

Table K.B.5 - PART 29: RELEASE NOTIFICATION

19.15.29.7 DEFINITIONS:
A. "Major release" means:
(1) An unauthorized release of a volume, excluding gases, in excess of 25-barrels;
(2) An unauthorized release of a volume that:
(a) Results in a fire;
(b) Will reach a watercourse;
(c) May with reasonable probability endanger public health; or
(d) Results in substantial damage to property or the environment;
(3) An unauthorized release of gases in excess of 500-MCF; or
(4) Release of a volume that may with reasonable probability be detrimental to water or exceed the standards in Subsections A and B or C of NMAC 19.15.30.9.
B. "Minor release" means an unauthorized release of a volume, greater than 5-barrels but not more than 25-barrels; or greater than 50-MCF but less than 500-MCF of gases.

19.15.29.8	RELEASE NOTIFICATION:
A.	The emergency contact shall notify the division of unauthorized release occurring during the drilling, producing, storing, disposing, injecting, transporting, servicing or processing of oil, gases, produced water, condensate or oil field waste including regulated NORM, or other oilfield related chemicals, contaminants or mixture of the chemicals or contaminants, in accordance with the requirements of NMAC 19.15.29.
B.	The emergency contact shall notify the division in accordance with NMAC 19.15.29 with respect to a release from a facility of oil or other water contaminant, in such quantity as may with reasonable probability be detrimental to water or exceed the standards in Subsections A and B, or C of NMAC 19.15.30.9.
19.15.29.9	REPORTING REQUIREMENTS: The emergency contact shall provide notification of releases in NMAC 19.15.29.8 as follows:
A.	The person shall report a major release by giving both immediate verbal notice and timely written notice pursuant to Subsections A and B of NMAC 19.15.29.10.
B.	The person shall report a minor release by giving timely written notice pursuant to Subsection B.
19.15.29.10	CONTENTS OF NOTIFICATION:
A.	The emergency contact shall provide immediate verbal notification within 24-hrs of discovery to the division district office for the area within which the release takes place. In addition, the person shall provide immediate verbal notification of a release of a volume that may with reasonable probability be detrimental to water or exceed the standards in Subsections A and B or C of 19.15.30.9 NMAC to the division's environmental bureau chief. The notification shall provide the information required on form C-141.
B.	The emergency contact shall provide timely written notification within 15-days to the division district office for the area within which the release occurs by completing and filing form C-141. In addition, the person shall provide timely written notification of a release of a volume that may with reasonable probability be detrimental to water or exceed the standards in Subsections A and B or C of 19.15.30.9 NMAC to the division's environmental bureau chief within 15-days after the release is discovered. The written notification shall verify the prior verbal notification and provide appropriate additions or corrections to the information contained in the prior verbal notification.
19.15.29.11	CORRECTIVE ACTION: The emergency contact 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.

1.4 Evacuation Plan

A generalized fire or threat of fire/explosion or a spill or leak cannot be avoided due to the type of waste accepted at the facility. The following evacuation plan shall be followed for emergencies when site condition constitutes an evacuation of the site:

1. All facility personnel will be contacted by facility radios, cellular devices, or the facility telephone.
2. Any incoming waste loads and vehicles will be diverted away from the area where the emergency is occurring.

3. Incoming waste loads and vehicles will be routed toward facility exits in accordance with Figure A.13.
4. All site personnel will be directed to the liquids processing scalehouse or the landfill scalehouse where the emergency contact will do a headcount to identify any missing persons.
5. Once all personnel are accounted for and assembled, they will assist the emergency contact as needed or evacuate the site upon directions from the emergency contact.

1.5 Notification of Authorities

The emergency coordinator will immediately notify onsite personnel by use of onsite communication systems when there is imminent or an actual emergency situation. The following list of contacts will also be contacted by the emergency contact immediately when there is imminent or an actual emergency situation:

OCD

- Hobbs office (575) 393-6161
- Mobile phone (575) 370-3180
- Santa Fe office (575) 476-3440
- New Mexico State Police 911 or (575) 392-5580
- Lea County Sheriff Department 911 or (575) 396-3611
- Lea County Emergency Management 911 or (575) 391-2983

1.6 Control Procedures

The emergency contact will focus initial efforts on the safety and protection of the facility personnel and the persons using the facility. Control procedures shall only be implemented by the emergency contact once an assessment of situation and the possible hazards to fresh water, public health, safety, or the environment has been completed. No facility personnel or persons utilizing the site shall attempt to contain or control fires, explosions, spills, or leaks beyond their corresponding scope of safety, training, and available equipment.

1.7 Fire Control

Fire control shall not be implemented by facility staff until untrained personnel and customers are a safe distance from the fire. Table K.B.6 shows the control guidelines to be utilized.

Table K.B.6 - FIRE/EXPLOSION: CONTROL GUIDELINES

1. Initiate fire control: The EC and C.K. Facility personnel will initiate response actions within the scope of their training to control the spread of the fire.
2. P.A.S.S. Method: Fires will generally be controlled with ABC-type fire extinguishers using the P.A.S.S. method (Pull pin, Aim nozzle, Squeeze trigger, Sweep from side to side to extinguish).
3. Smother Method: Fires may also be smothered with cover materials (i.e., soil, caliche) when possible to extinguish.
4. Available water sources: Fires may be doused or hosed with available equipment, water truck, etc.
5. Evacuate and notify emergency authorities: If at any time the scope of the fire is beyond the capabilities of C.K. Facility personnel to contain and/or extinguish, the EC will contact the local Fire Department or the Lea County Emergency Management (Table K.B.2) for assistance. Personnel and visitors will be instructed to evacuate the area.
6. Monitor situation: The EC will monitor for leaks, pressure buildup, gas generation, or rupture in valves, pipes, or equipment as appropriate (NMAC 19.15.36.13.N(11)).
7. Recordkeeping/reporting: The EC will complete an Incident Report Form (Appendix C) and maintain a copy in the Facility Operating Record, readily accessible for OCD inspection.

The EC will meet with personnel and response agencies to assess the cause of the emergency as needed and document the incident. The identified causative agent shall be removed from the facility if re-ignition may occur. Personnel involved with the handling, transportation, and placement of materials will be informed of resultant actions. If needed, the EC will update this contingency plan to mitigate further issues.

1.8 Spills/Release Control

Site personnel will be trained to inspect incoming loads to intercept potential unauthorized wastes or loads of concern. Containment, control, and characterization of the release will be conducted by the EC after all untrained personnel and persons utilizing the site are at a safe distance. Immediately after the emergency situation, the EC will characterize the release to properly contain and control. The EC will then make necessary plans for the separation, storage, if needed, or disposal of wastes, water, or contaminated materials. An incident report will be completed to document the details of the emergency and the resulting action. Table K.B.7 lists the spill/release control guidelines to follow.

Table K.B.7 - SPILL/RELEASE: CONTROL GUIDELINES

1. Initiate control: The EC and C.K. Facility personnel will initiate response actions within the scope of their training to control the spill/release.
2. Removal or segregation: Determine if the material can be safely removed to a designated waste inspection/segregation area for further evaluation. If the materials cannot be safely relocated, contain them for investigation and sampling using the spill control list. If necessary, shut down operations until safe conditions are restored.
3. Contain release: Attempt to contain the release to the smallest area possible. Examples of equipment available for spill containment are non-reactive sorbent materials, oil booms, sand, shovels and heavy equipment. A third-party contractor is also available for emergency response to augment efforts by on-site personnel.
4. Sampling: After isolating the contaminants and contaminated media, inspect them to determine if sampling is appropriate. If appropriate, isolate contaminants in the waste inspection or segregation area, or in designated leak-proof containers, until characterization is complete.
5. Cleanup: After the release has been contained and necessary samples have been obtained, cleanup will be initiated by removing the spilled materials, sorbent materials, soils used for containment, etc.
6. Equipment monitoring: Liners and equipment in use, including valves and pipes, will be monitored for leaks, pressure buildup, gas generation or rupture as appropriate (NMAC 19.15.36.13.N(11)).
7. Verification sampling: Dependent on the type of material spilled, the EC will assess requirements for cleanup verification including the collection of samples for appropriate analytical testing.
8. Disposal or processing: When visual and/or laboratory characterization is complete, determine appropriate processing or disposal procedures for that waste type. Send residuals for disposal to a facility that is approved for managing that type of waste.
9. Evacuate and notify emergency authorities: If at any time the scope of the spill/release is beyond the capabilities of the on-site personnel to contain and/or extinguish it, the EC will contact the local Fire Department or Lea County Emergency Management (Table K.B.2) for assistance. Personnel and visitors will be instructed to evacuate the area.
10. Recordkeeping/reporting: The EC will complete an Incident Report Form (Appendix C) and maintain a copy in the Facility Operating Record, readily accessible for OCD inspection.

1.9 Equipment Maintenance

All equipment used for the emergency response will be inspected, decontaminated, cleaned, and made ready to use or replaced if necessary immediately following the incident. The EC will verify that equipment has been maintained after the emergency response and will be fit for reuse for the next emergency incident.

1.10 Storage and Treatment of Released Material

Spilled or contaminated material approved to be disposed of at the C.K. Facility may be disposed of following standard operating practices. Hazardous material(s) not approved for disposal at the site will be containerized and stored with the applicable local, state, and federal regulations. Phoenix Environmental may be called upon for 3rd party services as well. No oilfield waste, which may be compatible with the release material shall be treated, stored, or disposed of until all cleanup procedures are complete.

1.11 Plan Amendment

Amendments to the contingency plan will be made within five (5) working days in the event of the facility permit being revised or modified, the plan fails in the event of an emergency,

the surface waste management facility changes design, construction, operation, maintenance, or other circumstances in a way that increases the potential for fires, explosions, or releases of oilfield waste constituents that could threaten fresh water, public health, safety, or the environment or change the response necessary in an emergency, the list of emergency coordinators, or their contact information changes, or the list of emergency equipment changes.

Lea County, New Mexico
C.K. Disposal E & P Landfill and Processing Facility
Permit No. TBD

Site Operation Plan
Attachment K
November 2015

APPENDIX C

OCD FORMS



Lea County
C.K. Diposal EAP
Landfill and Processing Facility
Daily Air and Water Inspection form

DATE:

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Morning Ambient Air H.S.							
Sampler and Time							
H ₂ S Reading (ppm)							
Wind Speed (mph)							
Wind Direction							
Afternoon Ambient Air H.S.							
Sampler and Time							
H ₂ S Reading (ppm)							
Wind Speed (mph)							
Wind Direction							
Sump Levels							
Morning Sampler and Time							
Morning Pond Level (ft)							
Morning Loading Area							
Morning Cement Slab							
Morning Pump House Sump							
Afternoon Sampler and Time							
Afternoon Loading Area							
Afternoon Pump House							
Wind Direction							
Loading Sump Emptied							
Initials and Time							
Concrete Slab Emptied							
Initials and Time							
Pond Conditions							
Pond Level							
Overflow Color							
Pond Color							
Water Temperature							
pH							
Dissolved Oxygen							
Total chlorine							
Dissolved H ₂ S/Sulfides							
Chemicals Added							
Chemical							
Time							
Personnel							
Chemical							
Time							
Personnel							
Manager Signature							
Manager							

C.K. FACILITY LEACHATE MONITORING FORM

[illegible]

C.K. FACILITY

Pond Integrity/Leak Detection Inspection Form

Date: _____ Inspector(s): _____
 Time: _____

Weather:
 Temperature _____ deg. F Precipitation (last 24 hours) _____ inches

Skies _____
 Wind Speed _____ mph

Wind Direction _____

NOTES:

"D" indicated that a Deficiency has been noted. "P" indicated that a Photograph has been taken. "S" indicated that a Sample has been collected. Complete descriptions of Deficiencies, Photographs, and Samples are provided on attached pages. Items are referenced by Location.

Pond Condition

Location	Item			
	Erosion	Vegetation Establishment	Vectors	Sample

Leak Detection System

Riser #	Deficiency	
	Depth of H ₂ O	Structural Defect

Extra information or details: _____

**C.K. FACILITY
INCIDENT REPORT FORM**

Type of Incident and General Information

- | | |
|--|--|
| <input type="checkbox"/> Work Related injury/Illness | <input type="checkbox"/> Unsafe Act/Near Miss |
| <input type="checkbox"/> Property Damage | <input type="checkbox"/> Vandalism/Criminal Activity |
| <input type="checkbox"/> Vehicular Accident | <input type="checkbox"/> Other _____ |
- (i.e. spill, release, fire, explosion, hot load, etc.)

Employee Name: _____ Job Title: _____

Phone No.: _____ Date of Incident: _____ Time of Incident: _____ AM/PM

Location of Incident: _____ Weather: _____

Date and Time Reported to Management: Date: _____ Time: _____ AM/PM

Reported to: _____ Title: _____ Reported by: _____

What was the injury category of incident at the time it was first reported to management?

- ☐ N/A/ Employee does not claim an injury associated with this incident.
- ☐ Notice Only of Injury, Declined Medical Treatment at this time.
- ☐ First Aid done on site, Declined Medical Treatment at this time.
- ☐ Medical Treatment. Transported by _____ to _____
- ☐ Fatality, Employee

(Section below to be filled out by EMPLOYEE)

Employee's Description of Incident

Were you injured? ☐ yes ☐ no

Type of Injury: _____

Part of Body: _____

In your own words, explain the incident: _____

Employee Signature: _____

Date: _____

Lea County, New Mexico

C.K. Disposal E & P Landfill and Processing Facility

Permit No. TBD

Site Operation Plan

Attachment K

November 2015

APPENDIX D

EVAPORATION CALCULATIONS

HOBBBS LEA CO AP, NEW MEXICO

Period of Record General Climate Summary - Precipitation

Station:(294028) HOBBS FAA AIRPORT														
From Year=1941 To Year=2012														
	Precipitation											Total Snowfall		
	Mean	High	Year	Low	Year	1 Day Max.		≥ 0.01 in.	≥ 0.10 in.	≥ 0.50 in.	≥ 1.00 in.	Mean	High	Year
	in.	in.	-	in.	-	in.	dd/yyyy or yyyymmdd	# Days	# Days	# Days	# Days	in.	in.	-
January	0.36	2.09	1949	0.00	1953	0.68	04/1958	3	1	0	0	1.4	9.0	1958
February	0.31	1.02	1958	0.00	1942	0.68	21/1958	3	1	0	0	2.5	21.2	1956
March	0.29	1.41	1958	0.00	1954	0.52	20/1949	2	1	0	0	1.3	13.0	1958
April	0.83	2.26	1942	0.00	2011	1.40	12/1950	4	2	1	0	0.1	0.8	1949
May	1.76	5.02	1954	0.00	2011	1.72	17/1951	6	3	1	0	0.0	0.0	1942
June	0.74	3.19	1950	0.00	2011	1.68	20/1950	3	1	1	0	0.0	0.0	1948
July	1.47	3.49	1948	0.00	1954	1.98	22/1948	5	3	1	0	0.0	0.0	1948
August	1.61	4.08	1954	0.14	2011	2.28	18/1957	6	3	1	1	0.0	0.0	1948
September	2.27	5.84	1949	0.05	1951	2.13	09/1949	4	3	2	1	0.0	0.0	1941
October	1.70	3.81	1941	0.00	1952	1.73	04/1941	5	3	1	0	0.0	0.0	1941
November	0.18	1.07	1952	0.00	1948	0.68	04/1952	2	1	0	0	0.6	7.0	1957
December	0.19	0.89	2011	0.00	1950	0.72	24/2011	1	1	0	0	0.8	8.3	2011
Annual	11.72	18.66	1949	5.06	1956	2.28	19570818	43	22	8	3	6.7	21.2	1956
Winter	0.86	2.50	1949	0.02	2011	0.72	20111224	7	2	0	0	4.7	21.2	1956
Spring	2.89	6.32	1954	0.00	2011	1.72	19510517	11	6	2	1	1.4	13.0	1958
Summer	3.82	9.19	1950	0.36	2011	2.28	19570818	14	7	2	1	0.0	0.0	1948
Fall	4.15	6.25	1949	0.41	1951	2.13	19490909	11	7	3	1	0.6	7.0	1957

Table updated on Oct 31, 2012

For monthly and annual means, thresholds, and sums:

Months with 5 or more missing days are not considered

Years with 1 or more missing months are not considered

Seasons are climatological not calendar seasons

Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May

Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Western Regional Climate Center, wrcc@dri.edu

Evaporation Stations

Standard daily pan evaporation is measured using the four-foot diameter Class A evaporation pan. The pan water level reading is adjusted when precipitation is measure to obtain the actual evaporation. Most Class A pans are installed above ground, allowing effects such as radiation on the side walls and heat exchanges with the pan material. These effects tend to increase the evaporation totals. The amounts can then be adjusted by multiplying the totals b 0.70 or 0.80 to more closely estimate the evaporation from naturally existing urfaces such as a shallow lake, wet soil or other moist natural surfaces.

Many stations do not measure pan evaporation during winter months. A "0.00" total indicates no measurement is taken.

Stations marked with an asterisk (*) have estimated totals computed from meteorological measurements using a form of the Penman equation.

Click on a State: [Arizona](#), [California](#), [Colorado](#), [Hawaii & Pacific Islands](#), [Idaho](#), [Montana](#), [Nevada](#), [New Mexico](#), [Oregon](#), [Utah](#), [Washington](#), [Wyoming](#)

ALASKA

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
BROOKS RIVER	1967-1990	0.00	0.00	0.00	0.00	0.00	2.48	2.88	1.63	0.73	0.00	0.00	0.00	7.72
CENTRAL 2	1962-2005	0.00	0.00	0.00	0.00	0.00	3.97	4.00	2.43	2.19	0.00	0.00	0.00	12.59
COPPER CENTER	1961-1982	0.00	0.00	0.00	0.00	0.00	6.03	4.06	3.14	1.71	0.00	0.00	0.00	14.94
JUNEAU AP	1949-2005	0.00	0.00	0.00	0.00	3.33	3.29	3.82	3.14	1.02	0.00	0.00	0.00	14.60
MATANUSKA AES	1917-2005	0.00	0.00	0.00	0.00	4.22	4.44	3.92	3.05	1.83	0.00	0.00	0.00	17.46
MC GRATH WB AIRPORT	1939-2005	0.00	0.00	0.00	0.00	4.20	4.42	3.65	2.29	1.40	0.00	0.00	0.00	15.96
MCKINLEY PARK	1949-2005	0.00	0.00	0.00	0.00	0.00	2.96	2.55	1.75	0.53	0.00	0.00	0.00	7.79
OIL WELL ROAD E P	1967-1974	0.00	0.00	0.00	0.00	0.00	3.17	3.83	2.81	1.40	0.00	0.00	0.00	13.21
OLD EDGERTON	1970-1996	0.00	0.00	0.00	0.00	3.31	4.56	4.16	3.04	1.65	0.00	0.00	0.00	16.72
PALMER AES	1949-2005	0.00	0.00	0.00	0.00	4.44	4.71	4.12	2.96	1.75	0.00	0.00	0.00	17.98
RAMPART 2	1963-1978	0.00	0.00	0.00	0.00	4.23	4.56	3.79	2.56	1.54	0.00	0.00	0.00	16.68
COLLEGE UNIV EXP STN	1931-2005	0.00	0.00	0.00	0.00	4.25	5.04	4.56	2.82	1.38	0.00	0.00	0.00	18.05

ARIZONA

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
BARTLETT DAM	1939-2005	3.92	4.92	7.10	10.02	13.77	16.21	15.56	13.95	12.10	9.66	5.86	4.47	117.54
BLACK RIVER PUMPS	1948-2005	0.00	0.00	0.00	6.93	8.83	10.12	7.99	7.02	5.70	3.94	0.00	0.00	50.53
DAVIS DAM #2	1958-1977	7.49	7.46	9.75	12.78	16.71	19.48	19.87	17.91	14.64	12.03	8.40	7.80	154.32
DAVIS DAM	1948-1961	3.54	5.13	7.60	9.30	11.33	13.33	13.14	12.15	9.51	7.24	5.38	3.68	101.53
DOUGLAS	1948-2005	0.00	0.00	0.00	11.34	13.19	13.55	10.66	10.27	8.18	6.44	0.00	0.00	73.63
FORT VALLEY	1909-2005	0.00	0.00	0.00	0.00	5.86	7.37	6.03	4.91	3.35	0.00	0.00	0.00	27.52
GRAND CANYON NATL PARK	1957-1977	0.00	0.00	0.00	0.00	6.94	10.45	8.79	8.12	6.83	4.91	0.00	0.00	46.04
GRAND CANYON N P 2	1976-2005	0.00	0.00	0.00	0.00	7.46	9.80	8.94	7.29	6.10	4.45	0.00	0.00	44.04
HAWLEY LAKE	1967-1988	0.00	0.00	0.00	0.00	7.57	8.55	6.89	5.48	4.68	0.00	0.00	0.00	33.17
MANY FARMS SCHOOL	1951-1975	0.00	3.66	5.45	9.18	12.23	13.14	12.87	10.88	9.40	6.54	3.26	2.16	90.77
MC NARY 2 N	1933-2005	0.00	0.00	0.00	0.00	7.86	8.25	6.60	5.98	4.90	3.97	0.00	0.00	37.56
MESA	1896-2005	3.03	4.02	6.11	8.64	11.33	12.67	13.10	11.87	9.69	6.81	4.15	2.96	94.38
NOGALES 6 N	1952-2005	3.59	4.46	7.01	9.35	11.91	13.31	10.00	8.28	8.06	7.17	4.49	3.57	91.20
PAGE	1957-2005	0.00	2.60	5.84	8.27	10.72	12.86	13.06	11.38	8.42	5.13	2.29	0.00	80.57
ROOSEVELT 1 WNW	1905-2005	2.44	3.54	5.90	8.64	11.96	14.50	14.36	12.27	10.10	6.78	3.68	2.32	96.49
SACATON	1908-2005	3.83	5.15	7.51	10.06	13.56	14.89	13.69	12.05	10.20	7.91	4.94	3.63	107.42
SAFFORD AGRICULTURAL CTR	1948-2005	2.63	3.83	7.14	10.54	13.81	15.38	13.13	10.68	8.73	5.90	3.28	2.52	97.57
SAN CARLOS RESERVOIR	1948-2005	2.25	3.27	5.66	8.40	11.70	13.94	13.43	11.40	9.23	6.31	3.53	2.18	91.30
SIERRA ANCHA	1913-1979	2.19	2.93	4.58	6.42	8.97	10.94	10.39	8.88	8.00	6.22	3.50	2.37	75.39
SNOWFLAKE 15 N	1965-1998	0.00	0.00	0.00	0.00	11.03	14.38	11.29	9.12	7.96	6.45	3.40	0.00	63.63
STEWART MOUNTAIN	1948-2005	3.52	4.56	6.94	10.04	13.11	14.27	14.44	13.10	10.69	7.95	4.53	3.08	106.23
TEMPE A S U	1953-2005	1.56	2.93	4.79	7.04	9.44	10.85	10.99	9.92	7.63	5.14	2.56	1.44	74.29
TUCSON UNIV OF ARIZONA	1894-2005	3.25	4.57	6.95	9.88	12.87	14.91	13.17	11.65	10.35	7.81	4.73	3.37	103.51
TUCSON U OF ARIZ # 1	1982-2005	3.94	4.68	7.53	10.57	14.14	16.51	14.61	12.17	10.71	8.05	4.93	3.23	111.07
WARNEAP	1961-2005	1.95	2.77	6.30	9.42	12.82	14.94	15.26	13.31	10.06	7.06	3.69	2.60	100.18
WHITERIVER 1 SW	1900-2005	1.69	2.94	5.84	8.01	9.92	11.70	9.48	8.47	7.68	5.87	3.51	2.54	77.65
WINKELMAN 6 S	1942-1980	3.12	4.03	7.00	9.98	12.40	13.90	11.19	9.84	9.56	7.51	4.31	2.94	95.78
YUMA CITRUS STATION	1920-2005	3.58	4.36	6.81	9.17	11.75	13.19	13.85	12.28	9.51	6.91	4.43	3.37	99.21

CALIFORNIA

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
ANTIOCH PUMP PLANT 3	1955-2005	1.17	1.99	4.25	6.27	8.96	10.84	11.60	10.06	7.77	4.91	2.07	1.22	71.11
AUBURN DAM PROJECT	1972-1984	1.42	1.89	3.13	4.89	7.73	10.08	11.66	10.70	8.08	5.00	1.97	1.36	67.91

TIBER DAM	1952-2005	0.00	0.00	0.00	0.00	4.51	6.46	7.65	5.56	4.34	0.00	0.00	0.00	28.52
VALIER	1911-2005	0.00	0.00	0.00	0.00	5.37	6.49	7.33	5.62	4.72	0.00	0.00	0.00	29.53
WESTERN AG RESEARCH CNT	1965-2005	0.00	0.00	0.00	0.00	5.08	6.03	7.26	6.07	4.14	2.25	0.00	0.00	30.83
YELLOWTAIL DAM	1948-2005	0.00	0.00	0.00	0.00	6.94	8.84	10.60	9.74	6.58	4.86	0.00	0.00	47.56

NEVADA

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
BEOWAWE U OF N RANCH	1972-2005	0.00	0.00	0.00	3.98	7.17	8.68	10.42	9.52	6.97	4.43	0.00	0.00	51.17
BOULDER CITY	1931-2004	3.71	4.68	7.56	10.67	13.79	16.57	16.45	14.41	11.51	8.11	4.87	3.69	116.02
CALIENTE	1928-2005	0.00	0.00	3.97	6.82	8.57	10.58	11.13	9.41	6.89	4.35	1.91	0.00	63.63
CENTRAL NEVADA FIELD LA	1965-1986	0.00	0.00	2.98	5.95	8.69	10.49	12.24	11.31	8.08	4.88	1.73	0.00	66.35
FALLOW EXPERIMENT STN	1950-1992	1.34	2.23	4.39	6.15	7.70	8.91	9.87	8.63	6.10	3.90	1.91	1.37	62.50
LAHONTAN	1948-2005	0.00	0.00	0.00	7.18	9.64	11.58	13.75	12.23	7.83	4.51	2.09	0.00	68.81
LOGANDALE	1968-1992	2.55	3.61	5.26	8.96	12.44	14.20	14.38	12.07	8.67	7.66	3.86	2.89	96.55
RUBY LAKE	1948-2005	0.00	0.00	0.00	5.10	7.09	8.90	10.54	9.37	6.51	3.95	0.00	0.00	51.46
RYE PATCH DAM	1948-2005	0.00	0.00	3.71	5.83	7.38	9.23	11.15	10.06	6.95	4.30	0.77	0.00	59.38
SILVERPEAK	1967-2005	0.00	3.84	7.26	10.13	13.60	16.31	17.98	15.92	11.32	6.88	2.94	0.00	106.18
TOPAZ LAKE	1957-2005	0.00	0.00	0.00	7.15	9.11	10.94	12.68	11.56	8.80	5.95	2.79	0.00	68.98

NEW MEXICO

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
ABIQUIU DAM	1957-2005	0.00	0.00	6.06	7.43	9.95	11.39	10.52	8.90	7.23	5.30	3.13	2.22	72.13
AGRICULTURAL COLLEGE	1892-1959	3.01	4.00	7.89	10.20	8.65	13.99	12.33	11.16	8.31	6.28	4.35	2.89	93.06
ALAMOGORDO DAM	1939-1975	3.73	4.35	8.21	11.30	12.88	14.43	13.66	11.59	9.17	7.19	4.89	3.46	104.86
ANIMAS	1923-2005	3.87	4.91	8.29	10.78	12.36	14.25	11.60	11.07	8.54	6.71	4.69	3.61	100.68
ARTESIA 6 S	1914-2005	4.38	3.03	7.25	7.66	12.11	13.13	10.86	10.44	9.36	6.34	3.12	0.00	87.68
BITTER LAKES WL REFUGE	1950-2005	2.67	3.93	6.82	9.60	11.31	12.62	11.88	10.16	8.02	5.85	3.53	2.50	88.89
BOSQUE DEL APACHE	1914-2005	3.21	4.20	7.76	10.20	11.61	13.13	11.56	10.36	8.03	6.25	3.66	2.54	92.51
BRANTLEY DAM	1987-2005	4.65	0.00	8.62	11.77	14.61	15.46	14.19	12.22	9.88	7.97	5.77	4.34	109.48
CABALLO DAM	1938-2005	4.42	5.10	8.56	11.37	13.59	14.80	13.08	11.35	9.26	7.27	4.78	3.48	107.06
CAPULIN NATL MONUMENT	1966-1979	0.00	0.00	0.00	0.00	9.08	10.57	9.71	9.18	7.65	0.00	0.00	0.00	46.19
CLOVIS 13 N	1929-2005	3.83	4.12	6.63	8.72	10.15	11.45	11.65	9.55	7.64	5.78	3.95	3.21	86.68
COCHITI DAM	1975-2005	0.00	4.14	6.44	8.48	11.07	12.95	12.38	10.62	8.91	6.29	3.94	2.79	88.01
CONCHAS DAM	1938-2005	0.00	0.00	7.35	8.88	10.29	11.69	11.37	10.06	8.24	6.18	4.04	2.79	80.89
EAGLE NEST	1937-2005	0.00	0.00	0.00	4.91	7.67	7.83	7.07	5.87	5.30	4.31	0.00	0.00	42.96
EL VADO DAM	1923-2005	0.00	0.00	3.61	5.43	7.46	8.84	8.52	6.91	5.66	3.84	1.72	0.00	51.99
ELEPHANT BUTTE DAM	1917-2005	3.47	4.87	8.61	12.22	14.94	16.37	14.15	12.05	9.78	7.70	4.91	3.34	112.41
ESTANCIA	1914-2005	0.00	0.00	3.26	6.79	8.56	9.27	8.61	7.10	5.60	3.82	2.62	0.00	55.63
FARMINGTON AG SCIENCE C	1978-2005	0.00	0.00	0.00	7.97	10.06	12.00	12.52	10.70	8.15	5.41	0.00	0.00	66.81
FLORIDA	1939-1992	3.54	4.81	8.10	10.94	13.03	14.80	11.84	10.10	8.51	6.58	4.57	3.11	99.93
GALLUP RANGER STN	1966-1975	0.00	0.00	0.00	6.61	9.31	12.12	10.50	8.70	7.95	5.07	2.20	0.00	62.46
JEMEZ DAM	1953-2005	0.00	0.00	0.00	9.91	12.27	13.95	14.29	11.45	9.80	6.72	3.65	0.00	82.04
JORNADA EXP RANGE	1925-2005	2.50	4.18	7.24	10.06	11.94	12.85	10.88	9.53	7.82	5.71	3.61	2.50	88.82
LAGUNA	1914-2005	0.00	0.00	0.00	8.47	9.33	11.98	10.76	8.88	6.83	5.00	1.98	0.00	63.23
LAKE AVALON	1914-1979	4.49	5.33	9.42	12.36	14.31	15.16	14.14	12.33	9.25	7.26	4.68	4.20	112.93
LAKE MC MILLAN	1941-1949	0.00	0.00	0.00	13.78	8.14	14.26	13.38	13.45	10.35	6.15	0.00	0.00	79.51
LOS LUNAS 3 SSW	1923-2005	1.87	2.81	5.27	7.77	9.74	10.49	10.06	8.67	6.58	4.64	2.75	2.45	73.10
NARROWS	1948-1964	3.09	5.67	7.62	11.07	13.37	15.44	13.07	11.42	9.97	7.20	4.32	2.64	104.88
NAVAJO DAM	1963-2005	0.00	0.00	0.00	6.58	9.10	11.07	11.24	9.66	7.22	4.74	0.00	0.00	59.61
PORTALES 7 MNW	1934-1960	3.26	4.57	8.24	8.85	10.72	12.16	10.44	9.28	7.95	5.98	4.15	3.53	89.13
HOOD RANGER STN	1954-2005	0.00	0.00	0.00	7.84	9.02	10.81	8.25	6.87	6.12	5.14	2.65	0.00	56.70
ROSWELL WSO AIRPORT	1893-1972	0.00	0.00	0.00	11.29	0.00	15.87	12.11	12.63	7.92	6.97	4.66	4.51	75.96
SANTA FE	1867-1972	0.00	0.00	3.00	7.28	8.73	10.93	9.95	8.26	7.15	5.10	2.50	0.00	62.90
SANTA FE 2	1972-2005	0.00	0.00	0.00	7.10	9.76	11.31	10.36	9.20	7.41	5.08	0.00	0.00	60.22
SHIPROCK	1926-2005	0.00	0.00	0.00	7.84	10.57	14.44	13.17	10.80	9.80	6.54	0.00	0.00	73.16
SOCORRO	1914-2005	0.00	0.00	4.83	7.09	9.17	9.35	8.56	7.57	5.73	4.14	0.00	0.00	56.44
STATE UNIVERSITY	1959-2005	3.00	4.33	7.40	9.90	12.03	12.91	12.05	10.34	8.14	6.17	3.85	2.79	92.91
SUMNER LAKE	1921-2005	0.00	0.00	7.33	10.22	12.35	13.54	13.36	11.16	9.02	6.97	4.92	3.17	92.04
TUCUNCARI 4 NE	1904-2005	0.00	0.00	0.00	9.83	11.53	13.11	13.00	11.13	8.96	6.74	0.00	0.00	74.30
UTE DAM	1965-2005	4.38	4.91	7.53	8.78	10.75	10.49	10.92	9.42	7.56	6.68	4.98	3.04	89.44

OREGON

MONTHLY AVERAGE PAN EVAPORATION (INCHES)

	PERIOD OF RECORD	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
ASTOR EXPERIMENT STN	1948-1973	0.56	0.96	1.47	2.21	3.75	3.95	4.65	4.10	2.95	1.65	0.87	0.70	27.82
BEND 7 NE	1991-2005	0.00	0.00	0.00	4.25	6.14	6.69	8.66	7.91	5.42	0.00	0.00	0.00	39.07
CORVALLIS STATE UNIV	1889-2005	0.00	0.00	1.79	2.96	4.59	5.86	7.70	7.07	5.06	2.33	0.96	0.00	38.32
COTTAGE GROVE DAM	1943-2005	0.00	1.27	2.16	3.07	4.56	5.60	7.75	6.70	4.47	2.06	0.82	0.00	38.46
DETROIT DAM	1954-2005	0.19	1.16	1.69	2.51	4.38	5.90	7.68	6.64	4.24	2.05	0.88	0.46	37.78
DORENA DAM	1948-2005	0.00	1.01	1.94	2.95	4.98	6.11	8.19	7.15	4.66	2.01	0.00	0.00	39.00
FERN RIDGE DAM	1943-2005	0.39	0.79	1.92	3.17	5.03	6.21	8.12	7.09	4.76	2.21	0.67	0.34	40.70

Evaporator Water Balance
C.K. Disposal E&P Landfill and Processing Facility

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Rainfall (in.)	0.36	0.31	0.29	0.83	1.76	0.74	1.47	1.61	2.27	1.70	0.18	0.19	11.71
Pan Evaporation (in.)	4.49	5.33	9.42	12.36	14.31	15.16	14.14	12.33	9.25	7.26	4.68	4.20	112.93
Actual Evaporation (in.)	3.14	3.73	6.59	8.65	10.02	10.61	9.90	8.63	6.48	5.08	3.28	2.94	79.05
Net (in.)	-2.78	-3.42	-6.30	-7.82	-8.26	-9.87	-8.43	-7.02	-4.21	-4.10	-3.10	-2.75	-67.34
Net Evaporation (bbl/pond)	4,620	5,679	10,465	12,985	13,707	16,388	13,990	11,655	6,980	5,614	5,139	4,565	111,786

Notes:

1. Rainfall obtained from Hobbs FAA Airport and is average monthly rainfall from 1941-2012.
2. The input is the maximum monthly produced water than can be introduced to evaporation ponds based on water balance.
3. Evaporation rates obtained from Lake Avalon, New Mexico 1914-1979.
4. Actual evaporation rates represent 70% of reported pan evaporation rate.
5. Pond surface area 1.88 acres.
6. Based on the Hobbs Wind Rose, the wind speed in this area is below 14 mph 63% of the time.
7. The net evaporation is 306.26 bbl/pond per day based off the total for the year of 111,786 bbl/pond.

Mechanical Evaporation Analysis

Mechanical Evaporation Rate (GPM)	1-ME	2	3	4	5	6	7	8	9	12	18	24
10	343	686	1029	1371	1714	2057	2400	2743	3086	4114	6171	8229
20	686	1371	2057	2743	3429	4114	4800	5486	6171	8229	12343	16457
30	1029	2057	3086	4114	5143	6171	7200	8229	9257	12343	18514	24686
40	1371	2743	4114	5486	6857	8229	9600	10971	12343	16457	24686	32914
50	1714	3429	5143	6857	8571	10286	12000	13714	15429	20571	30857	41143
60	2057	4114	6171	8229	10286	12343	14400	16457	18514	24686	37029	49371

Notes:

1. Evaporation Rate per Mechanical Evaporator (ME) expressed in bbls per day
2. Wind speed <14 MPH 63% of the time.
3. US Barrel=42 Gallons

Minimum Anticipated Mechanical Evaporation Potential

Evaporation by month	January	February	March	April	May	June	July	August	September	October	November	December	Annual BBL	BBL/Day
2-ME@10GPM	21257	19200	21257	20571	21257	20571	21257	21257	20571	21257	20571	21257	250286	686
3-ME@10GPM	31886	28800	31886	30857	31886	30857	31886	31886	30857	31886	30857	31886	375429	1029
6-ME@10GPM	63771	57600	63771	61714	63771	61714	63771	63771	61714	63771	61714	63771	750857	2057
9-ME@10GPM	95657	86400	95657	92571	95657	92571	95657	95657	92571	95657	92571	95657	1126286	3086
12-ME@10GPM	127543	115200	127543	123429	127543	123429	127543	127543	123429	127543	123429	127543	1501714	4114
18-ME@10GPM	191314	172800	191314	185143	191314	185143	191314	191314	185143	191314	185143	191314	2252571	6171
24-ME@10GPM	255086	230400	255086	246857	255086	246857	255086	255086	246857	255086	246857	255086	3003429	8229

Permit Application

Lea County, New Mexico

C.K. Disposal E & P Landfill and
Processing Facility

Permit No. TBD

New Mexico Administration Code

19.15.36.8 through 19.15.36.20



November 2015

PSC Project # 01058015



PARKHILLSMITH&COOPER

1.0 NMAC 19.15.36.8 - INTRODUCTION

C.K. Disposal, LLC proposes to develop a surface waste management facility consisting of a landfill, liquid processing area, and deep well injection per NMAC 19.15.36. An approved permit will be issued by the Oil Conservation Division (OCD) of the New Mexico Energy, Minerals and Natural Resources Department. The proposed hereon known as "C.K. Facility", is located 0.05-miles south of State Highway 234, approximately 4.16-miles southeast of Eunice, New Mexico, in Lea County. The C.K. Facility will encompass a 316.97-acres broken down into individual sections as listed below in Table 1 - C.K. Facility.

Table 1 - C.K. FACILITY

Area	Acres
C.K. Disposal E&P Landfill and Processing Facility	316.97
Landfill	141.5
Liquid Processing	51.75
Saltwater Disposal	5.1

1.1 NMAC 19.15.36.8.A - Permit Required

Prior to construction and use of the proposed C.K. Facility, C.K. Disposal, LLC will submit a permit meeting requirements set forth in NMAC 19.15.36 and the Oil Conservation Division (OCD) of the New Mexico Energy, Minerals, and Natural Resource Department.

1.2 NMAC 19.15.36.8.B - Permitting Requirements

C.K. Disposal, LLC is requesting a permit per NMAC 19.15.36. The new commercial C.K. Facility permit will provide all information on facility design, volume capacity, and operational plans. All activities at the landfill will be pursuant to NMAC 19.15.36. To assist in the review of this permit, each subsection of NMAC 19.15.36 will be answered individually and attachments at the end of the permit will provide documentation backup.

1.3 NMAC 19.15.36.8.C - Application Requirements for New Facilities

OCD form C-137 has been included with the submission of the permit. All documentation requested in form C-137 is included in the permit write-up or as attachments at the end of the permit.

A NMAC 19.15.36.8.C(1) - Applicant Information

The principal owner of the facility is C.K. Disposal, LLC. There is no other owner that has more than 25% ownership of the site and/or permit. Below is the principal and mailing address for C.K. Disposal, LLC.

Principal Address:
3 Canjilon Court
Santa Fe, NM 87508

Mailing Address:
5909 86th Street
Lubbock, TX 79424

B NMAC 19.15.36.8.C(2) – Plat and Topographic Maps

The following maps are provided in Attachment A - General Facility Maps and Site Drawings. The maps show highways and roads providing access to the surface waste management facility site; watercourses; fresh water sources, including wells and springs; and inhabited buildings within one mile of the site's perimeter.

- Figure A.1 – Site Location Map
- Figure A.2 – Site Development Plan
- Figure A.3 – Topographic Map

Figure A.1 – Site Location Map provides the C.K. Facility and a 1-mile offset plotted on the most current United States Geological Survey (USGS) quadrangle map. Figure A.2 – Site Development Plan details the build out of the site and location of the landfill units, processing area, and stabilization and solidification area within the permitted boundary. Figure A.3 – Topographic Map is a detailed existing site topography, land description, easements, and boundary survey. The original survey is provided in Attachment A.

C NMAC 19.15.36.8.C(3) – Names and Address of Adjacent Land Owners

Table 2 provides a list of all land owners within 1-mile of the permitted boundary. Information was provided by the Lea County, NM Assessor's Office, New Mexico State Land Office, and Andrews County, TX Appraisal District. Figure A.4, located in Attachment A, provides an adjacent landowners map and list of owners.

TABLE 2 - Adjacent Landowners (1-Mile from Permit Boundary) and Notification List

Owner/Office	Mailing Address
Walco Ranch LLC ⁽¹⁾	P.O. Box 790 Hobbs, NM 88241
Paddock Buddy Metal ⁽¹⁾	1613 Clark Rd Crowley, TX 76036
Lea County Solid Waste Authority ⁽¹⁾	Lea County Courthouse Lovington, NM 88260
Waste Control Specialists LLC ⁽²⁾	PO Box 1129 Andrews, TX 79714
Lea County ⁽¹⁾	100 North Main Ste 4 Lovington, NM 88260
URENCO USA ⁽¹⁾	P.O. Box 1789 Eunice, NM 88231
Louisiana Energy Services LLC ⁽¹⁾	P.O. Box 1789 Eunice, NM 88231
Andrews County ⁽²⁾	201 N. Main Andrews, TX 79714

C.K. Disposal, LLC ⁽¹⁾	5909 86 th Street Lubbock, TX 79424
New Mexico State Land Office	P.O. Box 1148 Santa Fe, NM 87504-1148
New Mexico Bureau of Land Management	620 E. Greene Street Carlsbad, NM 88220
Lea County Commission	100 N. Main Street Lovington, NM 88260
Note: (1) Data for New Mexico properties provided by the Lea County Assessor's Office - http://emaps.emapsplus.com/standard/leaconm.html & the New Mexico State Land Office - http://landstatus.nmstatelands.org/LandStatus.aspx	
(2) Data for Texas properties provided by the Andrews County Central Appraisal District. https://propaccess.trueautomation.com/Map/View/Map/53	

D NMAC 19.15.36.8.C(4) – Surface Waste Management Facility Diagram

Figure A.2 - Site Development Plan provides a layout of the C.K. Facility. The figure includes the layouts for the scale and gate house, the location of roads, pipeline crossings, fences, gates, landfill units, liquid processing area, and stabilization and solidification area. Attachment B – Engineered Design Plans provides detailed construction and installation drawings for the C.K. Facility. Plans include details on grading, drainage, liner and leachate collection installation, and final cover.

E NMAC 19.15.36.8.C(5) – Engineering Designs

The engineered design plans included in Attachment B are provided to establish the engineered design criteria for the C.K. Facility. The engineer design plans provide a design for the landfill units, liquid processing area and stabilization and solidification areas. Full size (22-inch x 34-inch) drawings are included at the end of the permit and will be submitted along with the permit to OCD. The design plans have been signed and sealed by a Professional Engineer registered in the State of New Mexico.

Nicholas N. Ybarra, P.E.
New Mexico Professional Engineer #20683
Parkhill Smith & Cooper, Inc.
501 W. San Antonio
El Paso, Texas 79901
(915) 543-3357 Phone
(915) 544-2059 Fax

F NMAC 19.15.36.8.C(6) – Management Plan for Approved Oil Field Waste

An oil field waste management plan has been included in Attachment K - Site Operating Plan (SOP). The plan covers all requirements listed in NMAC 19.15.36.13, 14, 15, and 17. The plan provides details on-site operation hours, requirements for accepting waste,

prohibited wastes and inspection and management. In addition the oil field waste management plan provides the owner/operator a plan for dealing H₂S gas on incoming waste.

G NMAC 19.15.36.8.C(7) – Inspection and Maintenance Plan

Attachment K - Site Operating Plan covers the operations, inspection and maintenance plan for the C.K. Facility. The operations, inspection, and maintenance cover all requirements listed in NMAC 19.15.36.13.L.

H NMAC 19.15.36.8.C(8) – Hydrogen Sulfide Prevention and Contingency Plan

The Hydrogen Sulfide (H₂S) Prevention and Contingency Plan are included in Attachment K – Site Operating Plan. The plan provides the C.K. Facility operators information to inspect, monitor, and treat hydrogen sulfide on site. The contingency plan provides a plan to evacuate, notify, and treat for excessive levels of H₂S. Both plans ensure that requirements listed in NMAC 19.15.11 and 19.15.36 are met in Attachment K – Site Operating Plan.

I NMAC 19.15.36.8.C(9) – Closure and Post-Closure Plan

The closure and post-closure plan will be included in the permit as Attachment L. The closure plan includes drawings that depict the final cover details and final contour plan for the C.K. Facility. The closure plan includes the procedures to be taken for sequential closure of cells following final acceptance of waste. The plan will include:

- A description of the final cover design, including methods and procedures used to install the cover.
- An estimate of the largest area requiring final cover at any time during the active life of the landfill.
- A schedule for completing all activities
- A detailed, written estimate of the cost of hiring a third party to close the largest area of the landfill during its active life.

The closure plan meets all requirements listed in NMAC 19.15.36.18

J NMAC 19.15.36.8.C(10) – Contingency Plan

A contingency plan is included in Attachment K – Site Operating Plan. It follows the requirements listed in NMAC 19.15.36.13. The contingency plan provides the owner a plan to minimize the effects of fires, explosions, and unplanned release of contaminants if these occur. The contingency plan is supplemented with the hydrogen sulfide prevention and contingency plan.

K NMAC 19.15.36.8.C(11) – Drainage Study

This drainage study was prepared as a part of the permit application and is located in Attachment J. All drainage analysis and design is in accordance with NMAC regulations.

Existing and proposed hydrologic and hydraulic conditions of the site are detailed herein, as well as hydraulic structures design, erosion stability and the management of storm water run-on and run-off from the C. K. Facility site in the event of a 25-Year, 24-Hour storm event. All hydrologic computations were performed using United States Army Corps HEC-HMS software and SCS unit hydrograph hydrology.

L NMAC 19.15.36.8.C(12) – Leachate Management Plan

A leachate management plan is included in Attachment K – Site Operating Plan. It follows the requirements listed in NMAC 19.15.36.13. The leachate management plan provides details on anticipated leachate volumes, leachate collection, storage, treatment and disposal on site. The HELP model was used to determine the amount of leachate that would be generated on site. The HELP model shown in Attachment E supplements the leachate management plan.

M NMAC 19.15.36.8.C(13) – Gas Safety Management Plan

The gas safety management plan is provided in Attachment K – Site Operating Plan. The gas safety management plan complies with all requirements listed in NMAC 19.15.36.13. Due to the nature of waste, most gas that will be dealt with on-site will be Hydrogen Sulfide (H_2S). The gas safety management plan is supplemented with the hydrogen sulfide prevention and contingency plan.

N NMAC 19.15.36.8.C(14) – Best Management Practice Plan

Attachment B – Engineered Design Plans design plans provides the best management practice structures and construction methods to provide protection of fresh water, public health, safety, and the environment.

O NMAC 19.15.36.8.C(15) – Geological/Hydrological Data

A geology and hydrogeology study was performed for the C.K. Facility by Kevin T. Carel, P.G. The report is provided as Attachment G. The C.K. Facility was selected due to the absence of groundwater within 100-feet of the deepest excavation. In addition, the site rests on a red bed formation with acts as an aquitard minimizing the potential for groundwater contamination. Based on the finding of this report, a Vadose Monitoring Plan and Sampling and Analysis Plan are supplemental to this report and provided in Attachments H and I, respectively.

i NMAC 19.15.36.8.C(15)(a) – Water Courses Map

Figure IV.2.2 in Attachment G provides a map showing local streams, springs and water wells.

ii NMAC 19.15.36.8.C(15)(b) – Groundwater Laboratory Analysis

During initial site investigation five (5) soil bores were taken on site to a depth of 175-feet below ground surface. No groundwater was observed in the cuttings obtained, nor was there any observed in the bore holes after a 24-hour period. No groundwater is present within the upper 175-feet of the Ogallala Formation or Chinle Formation.

because they rise above the saturated zone of the Ogallala Formation. Therefore, no laboratory analysis was done on groundwater samples. Additional information on groundwater is located in Attachment G – Hydrogeology Report.

iii NMAC 19.15.36.8.C(15)(c) – Shallowest Fresh Water Aquifer

A well drilled for Waste Control Specialists in 2008 located approximately 580-feet northeast of the proposed Site encountered the Santa Rosa Formation at a depth of 1,092-feet below ground surface (bgs). The depth to which groundwater was first encountered is listed on the well log as 1,092-feet bgs. The well log indicates the Santa Rosa is 292-feet thick and describes it as a gray, fine sandstone with interbedded reddish brown and weak red siltstone and claystone. Additional information on local aquifers is located in Attachment G – Hydrogeology Report.

iv NMAC 19.15.36.8.C(15)(d) – Soil Types

A detailed description of soils obtained from the site borings is located in Attachment G – Hydrogeology Report. The soil laboratory testing was conducted in accordance with guidance provided by OCD. The hydrogeology report also includes lithologic descriptions of the soil borings drilled at the site.

v NMAC 19.15.36.8.C(15)(e) – Geologic Cross-Sections

Four (4) geologic cross-sections of the site are provided as Figures G.5, G.7, G.8, and G.9 in Attachment G. The cross sections are based on soil bores taken on site and local geologic research.

vi NMAC 19.15.36.8.C(15)(f) – Geologic Cross-Sections

The underlying geologic units and groundwater saturations in the vicinity of the C.K. Facility shown in the hydrogeology cross-sections in Attachment G – Hydrogeology Report.

vii NMAC 19.15.36.8.C(15)(g) – Geologic Cross-Sections

Hydraulic properties of regional aquifers located below or near the C.K. Facility are located in Table G.2.2 of Attachment G – Hydrogeology Report.

viii NMAC 19.15.36.8.C(16) – Certification of True, Accurate and Complete Information

By signing form C-137, the Engineer certifies that all information submitted in the application is true, accurate, and complete to the best of the applicant's knowledge.

ix NMAC 19.15.36.8.C(17) – Additional Information Per Request

C.K. Disposal, LLC will provide any applicable information requested by the OCD to demonstrate that the surface waste management facility operation will not adversely impact fresh water, public health, safety, or the environment. In addition, C.K. Disposal, LLC will comply with applicable Rules and Orders issued by OCD.

Lea County, New Mexico

C.K. Disposal E & P Landfill and Processing Facility

Permit No. TBD

NMAC 19.15.36.8

November 2015

1.4 NMAC 19.15.36.8.D – Application Requirements for Minor Modifications

C.K. Disposal, LLC will submit the C-137 form if a minor modification is ever required. Currently form C-137 is being submitted with this new permit application.

1.5 NMAC 19.15.36.8.E – Determination that Application is Administratively Complete

This is the initial submittal of the application. If any changes are required, they will be made per comments provided by OCD and submitted along with form C-137.

1.0 NMAC 19.15.36.9 - NOTICE REQUIREMENTS FOR NEW SURFACE WASTE MANAGEMENT FACILITIES, MAJOR MODIFICATIONS OR RENEWALS AND ISSUANCE OF A TENTATIVE DECISION

1.1 NMAC 19.15.36.9.A – Application for a New Surface Waste Management Facility Permit, Permit Renewal or Major Modification

Upon receipt of notification of the division's determination that the application is administratively complete, Parkhill, Smith & Cooper, Inc. (PSC) will send out written notice of the application and determination on behalf of C.K. Disposal, LLC to landowners and other members on the notification list. Table 1 below provides the list of landowners within 1/2-mile from the permit boundary and other entities to be notified. Information was provided by the Lea County, NM Assessor's Office, New Mexico State Land Office, and Andrews County, TX Appraisal District. Figure A.4, located in Attachment A, provides an adjacent landowners map and listed of owners.

TABLE 1 –Landowners (1/2-Mile from Permit Boundary) and Notification List

Owner/Office	Mailing Address
Walco Ranch LLC ⁽¹⁾	P.O. Box 790 Hobbs, NM 88241
Paddock Buddy Metal ⁽¹⁾	1613 Clark Rd Crowley, TX 76036
Lea County Solid Waste Authority ⁽¹⁾	Lea County Courthouse Lovington, NM 88260
Waste Control Specialists LLC ⁽²⁾	PO Box 1129 Andrews, TX 79714
URENCO USA ⁽¹⁾	P.O. Box 1789 Eunice, NM 88231
Louisiana Energy Services LLC ⁽¹⁾	P.O. Box 1789 Eunice, NM 88231
C.K. Disposal LLC ⁽¹⁾	5909 86th Street Lubbock, TX 79424
Lea County Commission	100 N. Main Street Lovington, NM 88260
Note: (1) Data for New Mexico properties provided by the Lea County Assessor's Office - http://emaps.emapsplus.com/standard/leaconm.html & the New Mexico State Land Office - http://landstatus.nmstatelands.org/LandStatus.aspx	

(2) Data for Texas properties provided by the Andrews County Central Appraisal District. <https://propaccess.trueautomation.com/Map/View/Map/53>

1.2 NMAC 19.15.36.9.B– Division Application Notice

No major modification, renewals or issuance of a tentative decision is submitted at this time, therefore no action is required.

1.3 NMAC 19.15.36.9.C – Application Comments

The facility is aware that a person wishing to comment on an application prior to the division's preliminary consideration of the application may file comments within 30 days, or at a later date when the applicant mails the notice.

1.4 NMAC 19.15.36.9.D – Tentative Decision After Comments

The facility is aware that a tentative decision will be made by the division, by the end of 60 days, and the decision will be made public.

1.5 NMAC 19.15.36.9.E – Notice of the Tentative Decision

PSC on behalf of C.K. Disposal, LLC will comply with the notification requirements identified in NMAC 19.15.36.9 upon receiving the division's tentative decision. PSC will coordinate with both the Albuquerque Journal and Hobbs News Sun to publish notification of OCD's tentative decision. Both the Albuquerque Journal and the Hobbs News Sun are in general circulation in the State of New Mexico and Lea County.

1.6 NMAC 19.15.36.9.F – Application Notice Requirements

PSC on behalf of C.K. Disposal, LLC will publish notification upon receiving OCD's tentative decision. Notification will have the following items listed.

1. Applicant's name and address;
2. Surface waste management facility's location, including a street address, and sufficient information to locate the surface waste management facility with reference to surrounding roads and landmarks;
3. Brief description of the proposed surface waste management facility;
4. Depth to and TDS concentration of the ground water in the shallowest aquifer beneath the surface waste management facility site;
5. Statement that the division's tentative decision is available on the division's website, or, upon request, from the division clerk, including the division clerk's name, address and telephone number;

6. Description of alternatives, exceptions, or waivers that may be under consideration in accordance with Subsection G of 19.15.36.18 NMAC or 19.15.36.19 NMAC;
7. Statement of the comment period and of the procedures for requesting a hearing on the application; and
8. Brief statement of the procedures the division shall follow in making a final decision.

1.0 NMAC 19.15.36.10 – COMMENTS AND HEARING ON APPLICATION

1.1 NMAC 19.15.36.10.A – File Comments or Requesting a Hearing

C.K. Disposal, LLC and Parkhill Smith & Cooper Inc. understand that a person may request a hearing within 30-days after the date public notice is issued on OCD's decision. The division will decide if a hearing is required based on criteria stated in 19.15.36.10.A(1) – (4).

1.2 NMAC 19.15.36.10.B – If Scheduled, Hearing Shall be Conducted According to 19.15.14.1206 through 19.15.14.1215 NMAC.

C.K. Disposal, LLC and Parkhill Smith & Cooper Inc. understand that if a hearing is scheduled it will be conducted according to 19.15.14.1206 through 19.15.14.1215.

1.0 NMAC 19.15.36.11 – FINANCIAL ASSURANCE REQUIREMENTS

1.1 NMAC 19.15.36.11.A – Financial Assurance Requirements for Centralized Facilities

The C.K. Facility is a proposed commercial facility as defined in NMAC 19.15.36.7.A(2). No response is required.

1.2 NMAC 19.15.36.11.B – Financial Assurance Requirements for New Commercial Facilities

Upon notification by the division that it has approved a permit for the C.K. Facility, C.K. Disposal, LLC shall submit financial assurance for \$2,311,912. This amount covers the estimated closure of one landfill unit, the entire liquid processing area and 30-years of post-closure care for the entire facility. A breakdown of costs is provided in Attachment L - Closure and Post-Closure Care Plan.

1.3 NMAC 19.15.36.11.C – Terms of Financial Assurance

C.K. Disposal, LLC provided the State of New Mexico financial assurance on the prescribed form and made payable to the state. C.K. Disposal, LLC shall notify the State of New Mexico and OCD within 30 days if there is to be a design change that will alter the financial assurance.

1.4 NMAC 19.15.36.11.D – Forfeiting Financial Assurance

C.K. Disposal, LLC understand that the division shall give them 20-days' notice and an opportunity for a hearing prior to forfeiting financial assurance.

1.5 NMAC 19.15.36.11.E – Forms of Financial Assurance

Once the Permit is approved, C.K. Disposal, LLC will select a financial assurance mechanism listed in NMAC 19.15.36.11.E. Financial assurance may be accepted in the following forms: surety bonds, letters of credit, and cash accounts. Documentation of financial insures will be attached to the approved permit. The financial assurance amount covers the estimated closure of one landfill unit, the entire liquid processing area and 30-years of post-closure care for the entire facility. A breakdown of costs is provided in Attachment L - Closure and Post-Closure Care Plan.

1.6 NMAC 19.15.36.11.F – Replacement of Financial Assurance

If C.K. Disposal, LLC decides to replace its financial assurance with another form listed in NMAC 19.15.36.11.E, it will comply with requirements listed in NMAC 19.15.36.11.E.

1.7 NMAC 19.15.36.11.G – Review of Adequacy of Financial Assurance

C.K. Disposal, LLC understands that the division may at any time after five years after initial acceptance review the adequacy of the C.K. Facility's financial assurance. C.K. Disposal, LLC will comply with all request made by the division per NMAC 19.15.36.11.F.

1.0 NMAC 19.15.36.12 - PERMIT APPROVAL, DENIAL, REVOCATION, SUSPENSION, MODIFICATION OR TRANSFER

1.1 NMAC 19.15.36.12.A - Granting of Permit

Prior to construction and use of the proposed C.K. Facility, C.K. Disposal, LLC will submit a permit meeting requirements set forth in NMAC 19.15.36 and per the Oil Conservation Division (OCD) of the New Mexico Energy, Minerals, and Natural Resource Department.

A NMAC 19.15.36.12.A(1) Permit Issuance for A New Surface Waste Management Facility or Major Modification

C.K. Disposal, LLC will adhere to all notice requirements for a new surface waste management facility per NMAC 19.15.36.9. Adjacent landfill owners and notification list recipients, shown in section 19.15.36.9, will be informed of the permit approval. In addition C.K. Disposal, LLC will submit appropriate financial assurance per requirements in NMAC 19.15.36.11. Backup documentation on closure and post-closure costs can be found in Attachment L. Both public notification and financial assurance must be completed and submitted to the division prior to final approval of the permit. The following permit provides Attachment B - Engineered Design Plan and Attachment K - Site Operation Plan, which discuss the protection of fresh water, public health, safety, and the environment.

B NMAC 19.15.36.12.A(2) Permit Effective Time of 10 Years

When approved, the permit will be effective for 10-years from the date of approval. If a major modification is approved for the C.K. Facility, the updated permit will be effective for 10-years from the major modification date of approval. Permit renewal will be submitted to OCD at least 120-days prior to the expiration date of the permit. Renewal will be completed in per NMAC 13.15.36.

I NMAC 19.15.36.12.A(2)(a) Permit Effective Time Addition for A Successive 10 Years

The C.K. Facility permit may be renewed for successive 10-year terms. C.K. Disposal, LLC shall submit the permit renewal at least 120-days before the permit expires and the owner/operator shall not be in violation during the renewal or date of expiration. If the facility or owner/operator is in violation, they may be in the process of diligently pursuing procedures to remedy the violation to continue the permit renewal procedure.

II NMAC 19.15.36.12.A(2)(b) - Application Renewal Information

If C.K. Disposal, LLC requests the renewal of its permit, it will provide accurate information requested in NMAC 19.15.36.8.

III NMAC 19.15.36.12.A(2)(c) – Permit Renewal Public Notice

If C.K. Disposal, LLC applies for permit renewal it shall comply with notification requirements set forth in NMAC 19.15.36.8 and financial assurance requirements set forth in NMAC 19.15.36.11. Once these two items are met and the permit has been approved, the C.K. Facility may continue operation and ensure fresh water, public health, safety, and the environment will be protected.

C NMAC 19.15.36.12.A(3) – Facility Permit 10-Year Review

C.K. Disposal, LLC will make available all necessary operational, compliance, financial assurance and other technical documents to OCD at any time during the 10 year permit period for the completion of a mid-term review. C.K. Disposal, LLC will respond to OCD requests for updates to address changes in regulatory standards.

1.2 NMAC 19.15.36.12.B – Denial of Permit

C.K. Disposal, LLC understand that the division may deny their permit renewal or major modification per 19.15.36.12.B.

1.3 NMAC 19.15.36.12.C – Additional Requirements

C.K. Disposal, LLC will comply with any additional requirements or conditions imposed by OCD during the permit renewal process.

1.4 NMAC 19.15.36.12.D – Revocation, Suspension or Modification of a Permit

C.K. Disposal, LLC understand that the division may revoke, suspend, or modify the permit at any time per 19.15.36.12.D.

1.5 NMAC 19.15.36.12.E – Transfer of a Permit

C.K. Disposal, LLC shall not transfer a permit without the division's prior written approval and review per 19.15.36.12.E.

**1.0 NMAC 19.15.36.13 - SITING AND OPERATIONAL
REQUIREMENTS APPLICABLE TO ALL PERMITTED
SURFACE WASTE MANAGEMENT FACILITIES: EXCEPT
AS OTHERWISE PROVIDED IN NMAC 19.15.36 -
INTRODUCTION**

Siting documentation is detailed to demonstrate that the operation of the Facility will protect public health and the environment. This section confirms the remote location, absence of any residential housing within 1-mile of the Facility boundary, absence of churches, schools, parks or other unrelated business in the area. With open pasture and oil field production facilities surrounding the C.K. Facility, the location is ideally suited for development as a surface waste management facility.

1.1 NMAC 19.15.36.13.A. Depth to Ground Water

Groundwater is demonstrated to be more than 100 -feet below the lowest elevation of the design depth of the landfill where oil field waste will be placed. Additional detail is provided in Attachment G.

A NMAC 19.15.36.13.(2) Landfarm Soil or Drill Cutting Requirements

Not Applicable. C.K. Disposal, LLC does not propose to operate a landfarm permitted under 19.15.36.15 NMAC.

B NMAC 19.15.36.13.(3) Landfarm Soil or Drill Cutting Requirements

Not Applicable. C.K. Disposal, LLC does not propose to operate a landfarm permitted under 19.15.36.15 NMAC.

C NMAC 19.15.36.13.(4) Landfarm Ground Water

Not Applicable.

D NMAC 19.15.36.13.(5) Waste Management Facility Groundwater

Groundwater is not located less than 50 ft below the lowest elevation of the processing area where oil field waste will be placed. Additional detail is provided in Attachment G.

1.2 NMAC 19.15.36.13.B. No Surface Waste Management Facility Shall be Located:

A NMAC 19.15.36.13.(1) within 200 feet of a watercourse, lakebed, sinkhole or playa lake;

The Facility is not located within 200-feet of a watercourse, lakebed, and sinkhole or playa lake.

Documentation regarding the locations of watercourses, lakebeds, sinkholes and playa lakes with respect to the C.K. Facility is provided in Attachment J.

B NMAC 19.15.36.13(2) within an existing wellhead protection area or 100-year floodplain;

The Facility is *not* located within an existing wellhead protection area or 100-year floodplain. Documentation regarding wellhead protection areas and 100-year floodplains is provided in Attachment J.

C NMAC 19.15.36.13(3) within, or within 500 feet of, a wetland;

The Facility is not located within 500-feet of a wetland. Documentation regarding wetlands in the vicinity of the Facility site is provided in Attachment A, Figure A.26.

D NMAC 19.15.36.13(4) within the area overlying a subsurface mine;

The Facility is not located in an area overlying a known subsurface mine. Documentation of mines, mills, and quarries is provided in Attachment A, Figure A.20.

E NMAC 19.15.36.13(5) within 500 feet from the nearest permanent residence, school, hospital, institution or church in existence at the time of initial application; or

The Facility is not located within 500-feet of the nearest permanent residence, school, hospital, institution, or church. Land use setback documentation is provided in Attachment A, Figure A.21.

F NMAC 19.15.36.13.(6) within an unstable area

Unstable area means a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity of some or all of the landfill structural components responsible for preventing releases from a landfill. Examples of unstable areas are poor foundation conditions, areas susceptible to mass movements, and Karst terrain areas where Karst topography, with its characteristic surface and subterranean features, is developed as a result of dissolution of limestone, dolomite, or other soluble rock. Characteristic physiographic features present in Karst terrains include, but are not limited to, sinkholes, sinking streams, caves, large springs, and blind valleys. Thin lenses or caliche material were encountered onsite, but due to the small nature of the caliche, it is not deemed an unstable area. Based on site visits and borings onsite, there is no evidence of any unstable area within the facility boundary.

1.3 NMAC 19.15.36.13.C. No Surface Waste Management Facility Shall Exceed 500 Acres

The C.K. Facility will not exceed 500-acres. Total acreage for the Facility site is 317 ± acres. A copy of the Boundary Survey for the C.K. Facility site, which describes the size of the site and the site boundary is provided in Attachment I.C. Note that the Survey Description included on the Boundary Survey provides the description for the 317 acre ± C.K. Facility. Table I.1 provides details regarding site facilities and acreages.

1.4 NMAC 19.15.36.13.D. The Operator Shall Not Accept Oil Field Wastes Transported by Motor Vehicle

C.K. Disposal, LLC will comply with this requirement. The Oil Field Waste Management Plan provided requires that, prior to acceptance of any liquid waste, the transporter must provide the Facility with a Division-approved Form C-138.

1.5 NMAC 19.15.36.13.E. The Operator Shall Not Place Oil Field Waste Containing Free Liquids in a Landfill or Landfarm Cell

C.K. Disposal, LLC will comply with this requirement. The Oil Field Waste Management requires that, prior to acceptance of any oil field waste in the landfill portion of the Facility, the material will pass the paint filter test. Solidification, if necessary, will be accomplished in the Mixing/Solidification Area located in the lined stabilization and solidification area and described in Operation, Inspection, and Maintenance Plan.

1.6 NMAC 19.15.36.13.F. Surface Waste Management Facilities Shall Accept Only Exempt or Non-Hazardous Waste

C.K. Disposal, LLC will comply with this requirement. The Oil Field Waste Management Plan provides a detailed description of oil field waste acceptance protocol. Included in this Plan are Form C-138 certification, certification frequency. C.K. Disposal, LLC will maintain and make documentation of this available for OCD inspection.

A NMAC 19.15.36.13(1) Exempt oil field wastes

C.K. Disposal, LLC will comply with this requirement. The Oil Field Waste Management provides a detailed description of oil field waste acceptance protocol. Included in this Plan is the Form C-138 certification and additional documentation that the oil field waste is Resource Conservation and Recovery Act (RCRA) exempt.

B NMAC 19.15.36.13(2) Non-exempt, non-hazardous, oil field wastes.

C.K. Disposal, LLC will comply with this requirement. The Oil Field Waste Management Plan provides a detailed description of oil field waste acceptance protocol. Included in this Plan is the Form C-138 certification and additional documentation that any non-exempt oil field waste is nonhazardous.

C NMAC 19.15.36.13(3) Emergency non-oil field wastes.

C.K. Disposal, LLC will comply with this requirement by following Section 4.3 in Attachment K.

1.7 NMAC 19.15.36.13.G. Operator of a Commercial Facility Records

C.K. Disposal, LLC will comply with this requirement. The Oil Field Waste Management provides a detailed description of oil field waste acceptance recordkeeping forms. The forms in this Plan include the information required in this subsection and will be maintained and retained for a period of not less than five years following Facility closure. C.K. Disposal, LLC will make these records available for OCD inspection upon request.

1.8 NMAC 19.15.36.13.H. Disposal at a Commercial Facility

Disposal operations at C.K. Disposal, LLC will only be conducted when an attendant is on duty. C.K. Disposal, LLC may conduct Facility operations 24-hours a day, 7-days a week. The Facility will be secured with barbed wire fencing, cattle guards, and locking gates to prevent any unauthorized access or disposal when an attendant is not on duty.

1.9 NMAC 19.15.36.13.I. Migratory Bird Projection

C.K. Disposal, LLC herein requests an exception to 19.15.36.13.I NMAC. The Migratory Bird Protection Plan presented as describes an alternate methodology to the screening requirement of the storage ponds. This Plan describes visual inspections and migratory bird retrieval and clean up procedures should bird(s) require decontamination. In addition, the Engineering Design provides a process design for produced waters and other liquids that will remove the oils present in these materials prior to discharge through the evaporation ponds. Plan can be found in Section NMAC 19.15.36.17, Section 1.3C of this permit application.

1.10 NMAC 19.15.36.13.J. Surface Waste Management Sign

The proposed Site Entrance Sign is provided as Figure I.4. The sign was designed in compliance with the requirements of 19.15.36.13.J NMAC. A 4-foot by 8-foot sign with 3-inch lettering will identify the Facility operator as C.K. Disposal, LLC and will include the Facility permit number, location and emergency phone numbers.

1.11 NMAC 19.15.36.13.K. The Operators Shall Comply with the Spill Reporting and Corrective Action Provisions of 19.15.30 NMAC or 19.15.29 NMAC.

The C.K. Facility is specifically designed to prevent pollutants from entering surface and groundwater, as demonstrated in Attachments A, B, and C. Successful implementation of the engineering design and operational programs will ensure compliance with 19.15.30 NMAC. The C.K. Disposal Contingency Plan (Appendix B in Attachment K) is designed to comply with the notification and corrective action as required in 19.15.29 NMAC.

1.12 NMAC 19.15.36.13.L. Operator Inspection and Maintenance Plan

The Operations, Inspection, and Maintenance Plan for the C.K. Facility is provided. The Plan describes in detail the methods and frequency for inspections, sampling, recordkeeping, and maintenance for the leak detection sumps, and containment berms.

1.13 NMAC 19.15.36.13.M. Operator Plan to Control Run-On Water onto the Site and Run-Off Water from the Site

Engineering Design and Calculations provides the design for berms, conveyance channels, and detention capacity to control run-on/run-off for at least the peak discharge from a 25-year 24-hour storm. C.K. Disposal, LLC will prevent discharge of pollutants to the waters of the State or United States in violation of state water quality standards through adherence to the Operations, Inspection, and Maintenance Plan in Attachment K, and construction of the detention ponds described in Attachment J. If required after consultation with New Mexico Environment Department (NMED), C.K. Disposal, LLC will obtain a permit under the Multi-Sector General Permit for Stormwater Discharges (promulgated September 29, 2008).

1.14 NMAC 19.15.36.13.N. Contingency Plan

The Contingency Plan included in Attachment K, Appendix B and provides detailed information in response to 19.15.36.13.N.1 through 14 NMAC.

1.15 NMAC 19.15.36.13.O. Gas Safety Management Plan

C.K. Disposal, LLC does not believe that this Section applies to the proposed Facility. Landfill Gas (LFG) is typically produced when there is a significant supply of readily putrescible organic material, moisture; and a lack of oxygen in the fill. Oil field wastes do not contain significant amounts of putrescible wastes and will not provide a suitable environment for LFG production. Typical oil field wastes will not generate significant quantities of LFG, nor the requisite pressure to promote migration. Conventional LFG monitoring and control systems would not be necessary or effective; and the waste matrix itself would inhibit migration or collection if it contained primarily soils and less than 5% degradable organics.

However, a gas monitoring program consisting of testing incoming vehicles during unloading will be utilized to ensure that hydrogen sulfide (H₂S) gas concentrations do not exceed 10 parts per million (ppm) on-site or at the property boundary. Areas around the landfill disposal cells, treating plant, liquid solidification, and evaporation ponds will utilize monitors that issues a visual and audible signal at 10-ppm H₂S to ensure compliance with regulatory alert levels.

Routine gas monitoring of the proposed vadose zone monitoring wells will also be conducted.

Monitoring points may be added or replaced as necessary. Gas safety management details are presented, and the H₂S Prevention and Contingency Plan.

1.16 NMAC 19.15.36.13.P. Training Program

C.K. Disposal, LLC will comply with this requirement. The Operation, Inspection, and Maintenance Plan describes in detail the training programs for site personnel. Training records will be maintained by C.K. Disposal, LLC for OCD inspection for a period of not less than five years.

1.0 NMAC 19.15.36.14 - INTRODUCTION

C.K. Disposal, LLC proposes to develop a commercial surface waste management facility consisting of a landfill, liquid processing area, and deep well injection per NMAC 19.15.36. This section provides the general design and operating requirements as provided in NMAC 19.15.36.14. The proposed C.K. Facility is located 0.05-miles south of State Highway 234, approximately 4.16-miles southeast of Eunice, New Mexico, in Lea County. The C.K. Facility will encompass a 316.97-acres broken down into individual sections as listed below in Table 1 - C.K. Facility.

Table 1 - C.K. FACILITY

Area	Acres
C.K. Disposal E&P Landfill and Processing Facility	316.97
Landfill	141.5
Liquid Processing	51.75
Saltwater Disposal	5.1
Buffer Areas, Site Structures and Access Roads	118.62

1.1 NMAC 19.15.36.14.A(1) - Working Face and Compaction

The C.K. Facility will keep its working face to the smallest practical areas while accepting waste on a daily basis. The working face will be minimized, provide a safe unloading area for trucks, and a safe working area for site equipment. To compact the waste to the smallest practical volume, the lifts will be spread in layers approximately 2-foot thick and worked by high ground-pressure bulldozer, compactor, or equivalent.

A minimum 2-foot thick protective cover will be placed over the geomembrane and act as a leachate collection system. The protective cover will be comprised of site soils. Protective cover does not require compaction control; however, it should be stable and capable of supporting site equipment and disposal traffic. Care will be exercised during placement so as not to shift, wrinkle, or damage the underlying geosynthetic layers, and placement methods will be documented. Protective cover will be placed such that the top surface, while spreading, is at least 2-feet above the geosynthetic layers at all times, unless low-ground pressure dozers are used (i.e. track pressure less than 5-psi). At least 1-foot should be retained between the low-ground pressure dozer and the geosynthetic layer. A greater thickness will be maintained to support loaded hauling trucks and trailers and for turning areas. Drivers will proceed with caution when on the overlying soil and prevent spinning of tires on sharp turns. Placement of protective cover is discussed in full detail in Attachment C - Soil Liner Quality Control Plan.

1.2 NMAC 19.15.36.14.A(2) - Access Control

The site employees will control access and monitor all vehicles entering and exiting the site. Access to the landfill is limited to the entrance road on the northeast corner of the facility that connects to State Highway 234. Unauthorized access to the landfill will be controlled by a perimeter fence located along the facility boundary and a gate at the access

road. The perimeter fence will consist of a 4-strand barbed wire fence. Although the facility will operate 24-hours a day, the gate will be locked when no landfill personnel are on site. A cattle guard will be placed at the entrance along with a gate to prevent animals from entering the site. All persons accessing the site, including customers, visitors, and employees will check-in at the scale house area or gate house.

1.3 NMAC 19.15.36.14.A(3) – Fire Prevention and Extinguishing

A Fire Prevention

If a fire occurs, the landfill manager will be notified immediately. The customer service representatives, inspectors, equipment operators, and spotter will be on alert for signs of hot loads, such as smoke, steam, or heat being released from incoming waste loads. Suspected hot loads will not be allowed at the active working face. The driver will be directed to discharge or unload in an area that is located away from waste, vegetation, other vehicles and structures. The hot load or fire will be quenched or extinguished using soil, extinguishers, water, or other appropriate means. If the fire cannot be extinguished by onsite personnel within 10 minutes of detection, the local fire department will be notified via 911. In addition to these hot load procedures, the following fire prevention measures shall be enforced on-site:

- Smoking on site is not permissible, and smoking cannot occur within 20-feet of an entrance to the C.K. Facility.
- Fuel spills will be contained and cleaned up immediately, regardless of their location.
- Open burning is not allowed.
- Proper compaction will be utilized at the working face.
- Proper cover application will be utilized to create firebreaks within the buried waste mass.
- No landfill equipment will remain on the immediate active area of the site overnight.
- Staff will be trained when hired, as well as annually thereafter, regarding the Fire Prevention, Fire Control, General Rules for Fires, Specific Fire Fighting Procedures, and Notification requirements.

Table 2 provides contact information for reference and use during an emergency.

Table 2 - Emergency Contacts	
Agency/Organization	Emergency Number
1. Fire Eunice Fire Department	911 or (575) 394-3258
2. Police Eunice County Police Department Lea County Sheriff's Department New Mexico State Police	911 or (575) 394-2112 911 or (575) 396-3611 911 or (575) 392-5580
3. Medical/Ambulance Eunice Fire Department Lea Regional Medical Center 5419. N. Lovington Highway Hobbs, NM 88240	911 or (575) 394-3258 (575) 492-5000
4. Response Firm Phoenix Environmental, LLC. 2113 French Drive Hobbs, NM 88240	(575) 391-9685
5. OCD Emergency Response Contacts Oil Conservation Division - District 1 1625 N. French Drive Hobbs, NM 88240 Oil Conservation Division - Main Office 1220 South St. Francis Drive Santa Fe, NM 87505	(575) 393-6161 (office) (575) 370-3186 (mobile) (505) 476-3440
6. State Emergency Response Contacts Environmental Emergency 24 hr. (NMED) New Mexico Environment Department Solid Waste Bureau, Santa Fe	(505) 827-9329 (505) 827-0197
7. Local Emergency Response Contacts Lea County Emergency Management	(575) 391-2983
8. Federal Emergency Response Contacts National Emergency Response Center (U.S. Coast Guard) Region VI Emergency Response Hotline (USEPA)	(800) 424-8800 (214) 665-2200

B Fire Control

The City of Eunice Fire Department will be contacted any time a fire occurs which onsite staff cannot extinguish within 10 minutes of detection. The following rules will be implemented in the event of a fire at the proposed facility.

- If fire cannot be extinguished in 10 minutes, call the Fire Department at 911.
- Do not attempt to fight fire alone.
- Be familiar with the use and limitations of firefighting equipment onsite.
- Alert other facility personnel.
- Do not attempt to fight fire without adequate personal protective equipment.
- Assess extent of fire and possibilities for the fire to spread.
- Attempt to contain or extinguish the fire until arrival of the Fire Department if it appears the fire can be safely fought with available firefighting devices.

C Specific Fire-Fighting Procedures

If fire occurs on or within a vehicle or piece of equipment, the equipment operator should bring the vehicle to a safe stop. The vehicle should be parked away from fuels, supplies, uncovered waste, and other vehicles, if safety of personnel will allow. The engine will be shut off and the brake engaged or other methods will be used to prevent subsequent movement of the vehicle. Firefighting methods for fires involving waste material include smothering with soil, separating burning material from other waste, and spraying with water from a water truck (if fire is not oil related). If detected soon enough, a small fire may be fought with an ABC rated hand-held extinguisher. If fire is in the working face, the burning area should be isolated or pushed away from the working face quickly before fire is spread throughout the working face. If this is not possible or unsafe, efforts to cover the working face with soil must be initiated immediately to smother the fire.

D Stockpiling Fire-Fighting Materials

I Earthen Material Coverage

Landfill fires normally will be extinguished by smothering with cover soil material spread by a dozer or other suitable equipment. A minimum of 667-cubic yards of soil or enough soil to cover the working face with at least six inches of compacted soil will be stockpiled within 2,500-feet of the working face for this purpose. Earthen material coverage calculations are included below.

Maximum size of working face= 30,000 square feet

Contingency=20 %

Volume of soil required for a six-inch cover on a 30,000 square foot maximum working face with a 20 percent contingency included is calculated as follows:

Maximum size of working face= 30,000 sq. ft.

Required stockpile= 30,000 sq. ft. x 0.5 ft. ÷ (27 cy/sf) * 1.2 (20% contingency) = 667-cubic yards

A daily log will be maintained to document the location of the stockpile, the distance of the stockpile from the working face, the volume of the stockpile, the use and replacement of soil for fire control, and demonstration of the amount of stockpiled soil will be adequate to cover the largest working face in use on that day. The operator will, at all times, maintain sufficient equipment for moving the soil stockpile and placing a six-inch soil cover over the working face within one hour of detecting a fire at the working face.

1.4 NMAC 19.15.36.14.A(4) – Litter and Odor Control

A Litter Control

Windblown waste and litter will be controlled through several methods, including proper unloading, compaction, and cover procedures. The placement of screening berms, stockpiles, and adequate staffing will also provide control of windblown waste and litter. Personnel will patrol the landfill site, including fences, access roads, and the entrance gate every operating day to pick up and return windblown waste and litter to the active working face and perform other litter control measures as necessary. Daily cover will be placed on top of the waste lift as soon as practical for any portion of the lift that reaches recommended lift height. The working face will be covered daily.

B Odor Control

Facility personnel will ensure the municipal solid waste facility does not violate any applicable air quality requirements per the NMAC. Odors will be controlled at the site, and if they occur, will be reduced in accordance with the Odor Management Plan. Sources of odor and potential odor sources associated with this landfill facility include wastes containing high levels of hydrogen sulfide (H_2S) gas, the open working face, and ponded water. All wastes which arrive onsite will undergo visual inspection and be screened for H_2S . If waste contains concentrations of 10-parts per million (ppm) or higher of H_2S , the load will be treated with calcium hypochlorite ($Ca(ClO)_2$), also referred to as bleach powder, until H_2S concentration is below 1-ppm. If the hauler refuses to comply with this treatment, the load will be rejected and taken offsite.

The size of the working face will be minimized thereby exposing as little waste as possible to open air. Waste transported to the facility for disposal will be spread and compacted promptly into the working face of the landfill. Waste will be covered on a daily basis with 6-inches of clean soil or an alternate daily cover. If landfill closes for more than 24 hours, the working face will be covered with a minimum of 6-inches of clean soil. Leachate generated by this landfill will be placed in the produced water tanks for separation and then evaporation ponds. If H_2S levels in the evaporation ponds exceed 10-ppm, bleach will be added until H_2S concentration is below 1-ppm. Leachate risers are constructed with caps to minimize exposure to open air and diffusion of gas.

1.5 NMAC 19.15.36.14.A(5) – Prohibited Excavation of Closed Cells

Closed cells onsite will remain closed and not excavated without approval from the Oil Conservation Division (OCD) of the Energy, Minerals and Natural Resources Department.

1.6 NMAC 19.15.36.14.A(6) – Daily Cover Requirements

The C.K. Facility will apply an alternate daily cover or 6-inches of well-compacted earthen material not previously mixed with rubbish or other solid waste at the end of each day to control dust, debris, odors, other nuisances, fires, windblown litter or waste, and scavenging, unless a more frequent interval is required.

1.7 NMAC 19.15.36.14.A(7) – Intermediate Cover Requirements

The C.K. Facility will cover all areas that have received waste but will be inactive for longer than 30-days, and have not reached the final waste elevation with intermediate or final cover. Intermediate cover will be placed over existing daily cover, and will include 6-inches of suitable earthen material capable of sustaining native plant growth and will be seeded or sodded following its application in order to control erosion. This intermediate cover will be graded to prevent ponding of water. Plant growth or other erosion control features will be inspected and maintained as needed. Placement of intermediate and final cover are discussed in Attachment C and Attachment D.

1.8 NMAC 19.15.36.14.A(8) – Closure Requirements

As each landfill unit reaches its final top of waste elevation, the unit will undergo the closure process. The operator shall notify the division's environmental bureau at least three working days prior to landfill unit closure. Closure plan is provided in the NMAC 19.15.36.18 section below. The plan provides detailed procedures for closure and post-closure care.

1.9 NMAC 19.15.36.14.B(1)&(2) – Vadose Monitoring Program

A Proposed Vadose Zone Monitoring System

During initial site investigation five (5) soil bores were taken onsite to a depth of 175-feet below ground surface. No groundwater was observed in the cuttings, nor in the bore holes after a 24-hour period. No groundwater was present within the upper 175-feet of the Ogallala Formation or Chinle Formation because they rise above the saturated zone of the Ogallala Formation. Therefore, a vadose monitoring system has been designed for the facility based on onsite specific technical information. The design considered the thickness, stratigraphy, lithology, and hydraulic characteristics of the geologic units, as well as the depth to groundwater, TDS concentration, critical receptors, and the contaminant migration pathway analysis.

The presence of groundwater in the vadose zone monitoring wells may not be the result of leakage from the facility. Other sources such as infiltration of surface water during excavation of the landfill cells or infiltration from proximal storm water detention ponds may cause temporary saturation and water to be detected in down-slope vadose zone wells. Chemical analysis of water samples and comparison to leachate samples and/or samples from a leak detection system will be used to determine if the water is a result of a release from the facility.

B Proposed Monitoring Well Locations

Nine (9) vadose zone monitoring wells have been designed and identified along a point of compliance on the site perimeter. The compliance monitoring well locations are generally located down-slope of the leachate collection sumps. In addition, two background (up-slope) monitoring wells have been designed along the north side of the facility. The background wells represent the quality of background or up-slope water not affected by leakage from a landfill.

During initial construction of the landfill unit, wells VW-1, VW-2 and VW-3 will be constructed. An initial sample of water, if present, will be collected prior to acceptance of any waste at the facility. Other vadose zone monitoring wells will be installed upon progression of the landfill units and samplings will be collected prior to acceptance of waste in these stated landfill units. The hydrogeology study, vadose monitoring plan and sampling and analysis plan can be found in Attachments D, E and F.

1.10 NMAC 19.15.36.14.C – Landfill Design Specifications

A Introduction

The C.K. Facility will encompass 316.97-acres, with a landfill footprint of 141.50-acres. The six (6) waste cells will have a combined disposal capacity of approximately 24,585,056-cubic yards. Volume and Site Life Calculations are provided in Attachment K. The landfill method will be below-grade fill with 4H:1V side slopes and aerial fill with 5H:1V final cover side slopes, with a maximum 3.5% final cover top slope. The drainage system as described in Attachment J – Drainage Study, will be designed to meet or exceed NMAC requirements for run-on and runoff.

Per NMAC 19.15.36.14.C(1), the landfill will have an alternate liner design due to no groundwater present within 100-feet of the deepest excavation. The site also has a red bed clay layer that acts like a barrier between the site and groundwater. The alternate liner system will consist of, from bottom to top.

- 6-inches of compacted subgrade
- A Geosynthetic Clay Liner (GCL)
- 60-mil High Density Polyethylene (HDPE) Geomembrane Liner
- 200-mil HDPE Geonet (floor)/200-mil HDPE Geocomposite (side slopes)
- 60-mil HDPE Geomembrane Liner
- 200-mil HDPE Geocomposite (floor/slope)
- 24-inches of Protective Soil Layer

Engineered site drawings and liner cross sections can be found in Attachment B – Engineering Design Plans.

1.11 NMAC 19.15.36.14.C(1) – Base Layer

The base layer of the landfill liner will consist of 6-inches of compacted subgrade overlain by a geosynthetic clay liner (GCL). The GCL will comprise of a uniform layer of granular sodium bentonite encapsulated between two geotextile layers. The GCL will have a maximum hydraulic conductivity of 5×10^{-9} cm/sec, which is below the 1×10^{-7} cm/sec allowed in the NMAC. The GCL shall be BENTOLINER products as produced by GSE Environmental or an equivalent pre-approved by the Geotechnical Professional. Details on quality control, storage, installation, and reporting can be found in Attachment C - Soil Liner Quality Control Plan.

1.12 NMAC 19.15.36.14.C(2) – Lower Geomembrane Liner

The lower geomembrane liner will consist of a 60-mil HDPE material.

1.13 NMAC 19.15.36.14.C(3) – Geonet/Geocomposite

A geonet (floor) and geocomposite (sideslopes) will comprise the leak detection of the liner system at the C.K. Facility. The geonet component will be used on the floor and the geocomposite will be placed on the side slopes. The geocomposite consists of a geonet heat laminated on both sides with an 8-ounce nonwoven geotextile. The geocomposite will be used on the side slopes to provide a higher interface friction with the textured HDPE liner. The geonet/geocomposite are designed to transfer fluid horizontally through the anticipated landfill loads. The geonet and geocomposite have a transmissivity of 2×10^{-3} -m/s and 1×10^{-2} -m/s, respectively. Since soil will not be used, leachate will be transported through the geonet/geocomposite layers at the rate listed above. The geonet and geocomposite materials shall be as manufactured by GSE Environmental or an equivalent pre-approved by the Geotechnical Professional. Additional information on installation, testing and reporting can be found in Attachment C - Soil Liner Quality Control Plan.

The geonet/geocomposite system will channel leachate directly to the sump and leak detection piping. The slope of the landfill sub-grade, drainage pipes and laterals will be at 2% as shown in Attachment B – Engineered Design Plans. The leachate collection system will be comprised of 6 & 24-inch SDR 11 pipe. The SDR 11 pipe has a larger wall thickness than the minimum schedule 80 pipe in the NMAC. The operator shall seal a solid drainage pipe to transport collected liquids to a corrosion-proof sump or sumps located outside the landfill's perimeter for observation, storage, treatment or disposal. The sump and pipe layout is shown in Attachment B – Engineering Design Plans.

1.14 NMAC 19.15.36.14.C(4) – Upper Geomembrane Liner

The upper geomembrane liner will consist of a 60-mil HDPE material.

1.15 NMAC 19.15.36.14.C(5) – Leachate Collection and Removal System

A leachate collection system (LCS) will be placed above the upper geomembrane liner. The LCS will consist of a heat bonded HDPE geonet/geotextile drainage composite (geocomposite) on the floor and side slopes with granular (gravel) embedded leachate collection pipes in the sump and pipe trench areas. The leachate collection pipes will consist of six-inch diameter pipe with 3/8-inch diameter holes on six-inch centers. To avoid gravel entering into the collection pipes, the granular drainage layer shall consist of rounded, river-run gravel meeting the requirements of ASTM C-33 for coarse aggregate.

Crushed material will not be acceptable. The gravel should meet gradation requirements of No. 6 (Nominal size $\frac{1}{4}$ inch to $\frac{3}{8}$ inch) or coarser. The maximum gravel size shall not exceed two-inches.

"Leachate chimneys" will be installed through the protective cover to allow a direct hydraulic conduit between the lowest waste layers and the LCS. A minimum 8-ounce geotextile will completely encase the pipe embedment gravel layer with a full-width geotextile overlap where the chimney daylights through the protective cover. The geotextile overlap will be covered by a maximum six-inch thick layer of the granular material used as the pipe embedment. Leachate pipes will be placed at a minimum slope of 2% to aid in leachate removal.

The geotextile materials will include an 8-ounce fabric around the leachate chimneys and a minimum 8-ounce nonwoven fabric on both sides of the geonet forming the geocomposite layer. The geotextile will be bonded on both sides of the geonet. Additional information on installation, testing and reporting is located in the Attachment C - Soil Liner Quality Control Plan.

Leachate will be pumped out of sumps into tanker trucks and transferred to the produced water receiving tanks and then evaporation ponds.

1.16 NMAC 19.15.36.14.C(6) - Protective Soil Layer

A minimum 2-foot thick protective cover will be placed above the LCS. The protective cover will consist of site soils in combination with the leachate chimneys described above. The maximum gravel size shall not exceed two inches. Pre-construction and conformance testing for the protective cover soils will include gradation analysis with a minimum conformance testing frequency of one grain-size analysis (ASTM D422) per 5,000-cubic yards (or fraction thereof) of in-place material. Protective cover does not require compaction control; however, it should be stable and capable of supporting site equipment and disposal traffic. A greater thickness will be maintained to support loaded hauling trucks and trailers, and for turning areas. Additional information on installation, testing and reporting is located in the Attachment C - Soil Liner Quality Control Plan.

1.17 NMAC 19.15.36.14.C(7) - Placement of Waste

Upon approval of construction of the landfill liner system, the Owner/Operator shall place oil field waste over the leachate collection and removal system protective layer.

1.18 NMAC 19.15.36.14.C(8) & (9) - Landfill Final Cover Design

As each cell progresses through aerial fill and reaches its final top of waste elevations, final cover will be applied, as shown in Attachment B - Engineered Design Plans. The final cover will be placed in phases as a cell reaches its designed top of waste elevation. Final cover application will generally consist of the following:

- Reach approved final waste elevation with solid waste, place 6-inches of daily cover and 6-inches of intermediate cover.
- Perform a baseline topographic survey to act as the control for thickness verification during the placement of the final cover.

- Construct the final cover layers, and perform testing in accordance with the Attachment D - Final Cover Quality Control Plan (FCQCP).
- Final cover evaluation report and as-built survey will be prepared by an independent licensed professional engineer in the State of New Mexico and will be maintained in the site operating records and the final cover log will be updated to reflect the area where the final cover has been placed.

The final cover system will be a combination two performance based liner systems. One design is for the top cap and the other for the side slopes.

The top cap design will follow the design outlined in the NMAC but will replace the drainage layer with a geocomposite drainage layer. Water collected by the geocomposite will be transported to articulated block channels which run around the perimeter of the cap diverting runoff from the side slopes. The perimeter channels will discharge to one (1) of four (4) articulated block channels of the landfill corner. Although collecting water from the geocomposite, the articulated blocks do not encroach into the overall thickness of final cover on either the cap or side slopes. Drainage design is shown in Attachment B - Engineered Design Plans and backup information in Attachment J - Drainage Study. The design for the cap is as follows from bottom to top:

- 12-inch Foundation Layer
- 60-mil High Density Polyethylene (HDPE) Geomembrane Liner
- Geocomposite Drainage Layer
- 24-inch Infiltration Layer
- 12-inch Soil Erosion Layer

The side slope final cover design will be a performance based water balance cover. With the assistance of 5 to 1 slopes, the majority of water will run off the side slopes to drainage channels around the perimeter of the landfill base. The design of the side slope final cover is as follows from bottom to top:

- 12-inch Foundation Layer
- 24-inch Infiltration Layer
- 12-inch Soil Erosion Layer

Both performance final covers have been modeled using the Hydrologic Evaluation of Landfill Performance (HELP) Model. The final covers demonstrate meeting permeability criteria listed in the NMAC. The two cap designs will not create a "bathtub effect" since the final cover has an equivalent or lower permeability than the liner system installed. The HELP model results can be found in Attachment E.

The final cover system will be maintained consistent with those defined in Attachment D - Final Cover Quality Control Plan. All soil placed on the final cap will be compacted to a minimum of 80 percent Standard Proctor Density. The Owner/Operator shall install the top landfill cover within one year of achieving the final landfill cell waste elevation. Prior to

installation of the final cover, the Owner/Operation will provide three (3) working days' notice to the division, to allow a member of the division to witness the final cover installation. Additional information on installation, testing and reporting is located in Attachment D - Final Cover Quality Control Plan.

1.19 NMAC 19.15.36.14.C(10) – External Piping

The C.K. Facility has been designed to use HDPE pipe based on its ability to resist chemical attack and degradation. The leachate collection and sump removal systems will not penetrate the liner but will run along the landfill side slopes placed against the geocomposite liner. The geotextile layer of the geocomposite along with the 2-foot protective cover will protect the pipes and liner system from accidental damage from landfill waste or landfilling activities.

The leak detection pipe will be the only pipe penetrating the liner system. The leak detection pipe will be placed between the upper geomembrane and leak detection geonet/geocomposite. An HDPE boot with pipe clamps will be placed around the pipe at the penetration. The HDPE boot will be welded to the upper geomembrane, to create a leak free seal. The location of the pipe in the sump allows inspection of the leak detection system by the Owner/Operator, while maintaining the integrity of the liner system. Design drawings of the pipe penetration can be found in Attachment B – Engineered Design Plans.

1.20 NMAC 19.15.36.14.D(1)(a)-(c) – Liner Specifications and Requirements

The 60-HDPE liner has a hydraulic conductivity less than the maximum 1×10^{-7} -cm/sec allowed in the NMAC. The HDPE material has chemical and ultraviolet resistance properties, listed in Attachment F, and is compatible with and resistant to chemical attack from the oil field waste and leachate. The 2-feet of protective cover will assist the HDPE liner to withstand the projected loading stresses, setting and disturbances from oil field waste, and cover material and equipment. The geomembrane liner (GML) materials shall be as manufactured by GSE Environmental or an equivalent pre-approved by the Geotechnical Professional. Details on quality control and storage can be found in Attachment C - Soil Liner Quality Control Plan.

When installed on the floor, the HDPE liner will be placed at a minimum of 2% slope to promote positive drainage for leachate collection and leak detection. The side slopes are designed at a 4 to 1 slope to minimize tensile stresses on the liner material. Interface friction test reports are provided in Attachment F, which provide a maximum friction angle of 19.4-degrees, well above the 4 to 1 slope being used on side slopes.

Field seams between sheets of GML material will be made using approved fusion welding systems, equipment, and techniques. Approved fusion welding systems include fillet welds using extrudate, lap welds using extrudate, and lap welds using single or double wedge (double track) welder. The welds will either be pressure or vacuum tested. Additional information on installation, testing, and reporting is located in Attachment C - Soil Liner Quality Control Plan.

1.21 NMAC 19.15.36.14.E – Requirements for the Soil Component

A NMAC 19.15.36.14.E(1) – (2) – Subgrade Placement

The subgrade shall be prepared in a manner consistent with proper subgrade preparation techniques for the installation of geosynthetic materials and as recommended by the GCL manufacturer. The subgrade shall be compacted to 90-percent standard proctor density or greater (if required by GCL manufacturer). The subgrade shall be properly compacted so as to prevent post construction settlement, causing excessive strains in the GCL or other synthetic liner materials. Prior to installation, ensure a surface free of debris, roots, or angular stones larger than ½-inch. The subgrade must be rolled with a smooth-wheeled roller. During installation, ensure rutting or raveling is not caused by installation equipment. Additional information on installation, testing and reporting is located in Attachment C - Soil Liner Quality Control Plan.

B NMAC 19.15.36.14.E(3) – Clay Soil Component Placement

The alternate liner designed for the C.K. Facility will use a GCL instead of compacted clay soil. The GCL has a uniform layer of sodium bentonite encase between two geotextile fabrics. The sodium bentonite clay utilized in the GCL is a naturally occurring clay mineral that swells as liquid enters between its clay platelets. During installation, the needle-punched fibers hold the bentonite in place and prevent the GCL from separating. The GCL, at minimum, will have 0.75-lb/ft² of sodium bentonite. Each GCL panel will have an overlay of 6-inches to create a uniform clay layer. Additional information on installation, testing, and reporting is located in the Attachment C - Soil Liner Quality Control Plan.

1.22 NMAC 19.15.36.14.F – Leachate Collection and Removal System Placement

The leachate collection and removal system is comprised of 2-foot protective cover overlaying a geocomposite. The protective soil layer is comprised of excavated onsite soils. Prior to placement, the soil will be screened to remove organic material. The geocomposite will consist of a heat bonded HDPE geonet/geotextile drainage composite. The geotextile fabric acts as a barrier between the soil and geonet to prevent clogging of the geonet. The geocomposite has a transmissivity of 1×10^{-2} -cm/s. This transmissivity will provide transport of the leachate to the sumps for removal. The geonet is made from the same HDPE material as the geomembrane liner and provides the same chemical resistivity properties. Chemical resistivity property documentation is provided in Attachment F.

Sumps will have high water level sensors which will inform the operator if leachate is reaching unauthorized levels. The operator will drain the sumps and transfer the leachate to the produced water tanks for disposal.

1.23 NMAC 19.15.36.14.G – Landfill Gas Control System

Typically landfill gas is generated during the natural process of bacterial decomposition of organic material. Numerous factors influence the quantity of gas generated at a landfill. The factors include types and age of waste, the quantity and types of organic compounds in the waste, moisture content and waste temperature. Organic wastes include food, garden waste, street sweepings, textiles, and wood and paper products. Oil field wastes do not contain significant amounts of organic compounds. Factoring the type of waste and the arid climate in the area, no landfill gas monitoring is proposed at the C.K. Facility.

The C.K. Facility will monitor gas by inspection of vehicles with incoming waste and evaporation ponds. Incoming loads will be inspected at either the scale or gate house. Loads will be monitored for hydrogen sulfide (H_2S). H_2S monitors will be placed throughout the site. This includes the scale and gate houses, landfill working face, evaporation ponds, liquid processing area, stabilization and solidification area, and the saltwater disposal area. Monitors will alarm staff if concentrations of H_2S exceed 10-parts per million (ppm). If H_2S levels exceed 10-ppm on incoming waste and evaporation ponds, loads will be treated with calcium hypochlorite ($Ca(ClO)_2$), aka chlorine or bleach powder, until H_2S concentration is below 1-ppm. A minimum of 1,000-gallons of calcium hypochlorite will be kept onsite for H_2S treatment.

Habitable onsite buildings and structures will be monitored at a minimum quarterly with either a portable combustible gas indicator or a continuous LFG monitor/alarm that will provide an audible alarm if methane concentration exceed 1.25 percent by volume. In the event allowable methane concentration limits are exceeded, the building will be immediately evacuated and ventilated by opening doors and windows. Immediate necessary steps to be taken include notifying the respective officials listed in Table 2.

1.24 NMAC 19.15.36.14.H(1)-(4) – Landfill Gas Response Plan

The purpose of the response plan is to address necessary procedures to be taken if methane concentrations exceed allowable concentrations in structures or facility boundary matrices, to ensure protection of fresh water, public health, safety and the environment. The response plan will include initial response measures and notification procedures. The emergency response differs between buildings and facility boundaries as will be discussed.

A Emergency Action

i Buildings/Structures

If the monitoring device in a facility structure is triggered and/or gas monitoring equipment indicates H_2S concentrations have exceeded allowable concentrations, the facility will be evacuated of all personnel immediately and the site manager notified. Personnel will not be allowed to reenter the affected structure until additional measures are taken. Only authorized monitoring personnel will be allowed reentry into the structure.

ii Facility Boundary

The site manager will be notified if H_2S concentrations exceed allowable concentrations. The immediate course of action for the site manager will be to determine if any nearby structures (including off-site) are at risk and if evacuation of the structures is required.

B Notification Procedures

When H_2S concentrations exceed allowable concentrations in monitoring points, or within any onsite structure, the monitoring personnel will notify the site manager who will immediately take all necessary steps to ensure the protection of human health. Notification will be made to New Mexico Environmental Department (NMED),

OCD district office and the appropriate city, county, and local government and emergency officials; and any residents, tenants and owners of the property within ¼-mile (1,320 feet) of the reading. Within seven days of detection, the site manager will place in the site operating record the concentration of H₂S levels detected and a description of the steps taken to protect human health. Also, within seven days, written notification will be sent to the OCD district office. Within 30 days of detection, the Owner/Operator will submit a remediation plan for the H₂S release(s), which is described below. Within 60 days of detection, implement a remediation plan for the H₂S release(s) as discussed in the Remediation Plan.

C Remediation Plan

If H₂S concentrations exceed allowable concentrations in monitoring points or within any onsite structures, remediation actions will be implemented within 60 days of detection. The Remediation Plan will begin by investigating the cause of these levels. Authorized personal will continue monitoring downstream of the exceedance. Once the source of the exceedance is determined, the affected area will be treated with calcium hypochlorite until H₂S concentrations are <1-ppm.

Lea County, New Mexico

C.K. Disposal E & P Landfill and Processing Facility

Permit No. TBD

NMAC 19.15.36.15

November 2015

**1.0 NMAC 19.15.36.15 – SPECIFIC REQUIREMENTS
APPLICABLE TO LANDFARMS**

The permit submitted by Parkhill, Smith & Cooper, Inc. on behalf of C.K. Disposal, LLC. does not propose to permit or operate a landfarm.

Lea County, New Mexico

C.K. Disposal E & P Landfill and Processing Facility

Permit No. TBD

NMAC 19.15.36.16

November 2015

1.0 NMAC 19.15.36.16 – SMALL LANDFARMS

The permit submitted by Parkhill, Smith & Cooper, Inc. on behalf of C.K. Disposal, LLC. does not propose to permit or operate a small landfarm.

1.0 NMAC 19.15.36.17 - INTRODUCTION

C.K. Disposal, LLC. proposes to develop a Commercial surface waste management facility consisting of a landfill, liquid processing area, and deep well injection per NMAC 19.15.36. This section provides the general design and operating requirements as provided in NMAC 19.15.36.14. The proposed C.K. Facility is located 0.05-miles south of State Highway 234, and approximately 4.16-miles southeast of Eunice, New Mexico, in Lea County. The C.K. Facility will encompass 316.97-acres broken down into individual sections as listed below in Table 1 – 19.15.36.14 – C.K. Facility Acreage.

Table 1 – 19.15.36.14: C.K. FACILITY ACREAGE

Area	Acres
C.K. Disposal E&P Landfill and Processing Facility	316.97
Landfill	141.50
Liquid Processing	51.75
Saltwater Disposal	5.10
Buffer Areas, Site Structures and Access Roads	118.62

1.1 NMAC 19.15.36.17.A – Engineered Design Plans

Plans for the C.K. Facility evaporation ponds, tank holding area, stabilization, and solidification area have been designed by Parkhill, Smith and Cooper, Inc. (PSC) under New Mexico Registered Professional Engineer, Nicholas Ybarra. The sections listed below provide backup documentation for design, operation, construction, and closure of the above mentioned structures designed per requirements listed in NMAC 19.15.36.17.

- Attachment B - Engineered Design Plans
- Attachment C - Soil Liner Quality Control Plan
- Attachment G - Hydrogeology Report
- Attachment H - Vadose Monitoring Plan
- Attachment K - Operating and Maintenance Procedures
- Attachment L - Closure and Post-Closure Plan

The site operating plan provides a plan to prevent the H₂S accumulation in the evaporation ponds and a contingency plan if the levels go above critical levels listed in the NMAC.

1.2 NMAC 19.15.36.17.B – Construction Standards

A. NMAC 19.15.36.17.B(1) – General Liner

The C.K. Facility will have evaporation ponds, receiving and processing tanks, containment areas, and a stabilization and solicitation area. Each has an individual liner design based on requirement listed in NMAC 19.15.36.17. Although each liner system is different, Attachment C – Soil Liner Quality Control Plan (SLQCP) provides construction details for each layer of the liner system. The SLQCP also provides

requirements for manufacture quality control testing and third party testing. Below are the liner systems for each area at the C.K. Facility.

The evaporation pond liner system will consist of (from bottom to top):

- 6-inch compacted soil subgrade.
- GCL under the leak detection sumps.
- 60-mil HDPE primary upper liner.
- 200-mil HDPE geonet leak detection layer.
- 60-mil HDPE secondary liner.

The receiving tank liner system will consist of (from bottom to top):

- 6-inches compacted soil subgrade.
- 60-mil HDPE liner.
- 6- to 12-inches of gravel.

The stabilization and solidification area liner system will consist of (from bottom to top):

- 6-inch compacted soil subgrade.
- GCL under the leak detection sumps.
- 60-mil HDPE secondary liner.
- 200-mil HDPE geonet leak detection layer.
- 60-mil HDPE primary liner.

B. NMAC 19.15.36.17.B(2) – Liner Requirements

The evaporation ponds and stabilization and solidification area liner system each have a lower and upper liners systems as required by NMAC 19.15.36.17.B(2). The lower and upper geomembrane liner will consist of a HDPE 60-mil liner.

C. NMAC 19.15.36.17.B(3) – Liner Specifications

The 60-HDPE liner has a hydraulic conductivity less than the maximum 1×10^{-9} -cm/sec allowed in the NMAC. The HDPE material has chemical and ultraviolet resistance properties, listed in Attachment F, and is compatible with and resistant to chemical attack from the oilfield waste and leachate. The 2-feet of protective cover will assist the HDPE liner to withstand the projected loading stresses, setting, and disturbances from oilfield waste, cover material, and equipment. The GML materials shall be as manufactured by GSE Environmental or an equivalent pre-approved by the Geotechnical Professional (GP). Details on quality control and storage can be found in the Attachment C - Soil Liner Quality Control Plan.

D. NMAC 19.15.36.17.B(4) – Alternate Liner Media

The C.K. Facility will only be permitted to use 60-mil HDPE geomembrane liner. The GML materials shall be as manufactured by GSE Environmental or an equivalent pre-approved by the GP. Details on quality control and storage can be found in the Attachment C - Soil Liner Quality Control Plan.

E. NMAC 19.15.36.17.B(5) – Pit Construction

The subgrade shall be prepared in a manner consistent with proper subgrade preparation techniques for the installation of geosynthetic materials and as recommended by the GCL manufacturer. The subgrade shall be compacted to 90% standard proctor density or greater (if required by GCL manufacturer). The subgrade shall be properly compacted so as to prevent post construction settlement, causing excessive strains in the GCL or other synthetic liner materials. Prior to installation, ensure a surface free of debris, roots, or angular stones larger than 0.5-inch. The subgrade must be rolled with a smooth-wheeled roller. During installation, ensure that rutting or raveling is not caused by installation equipment. Additional information on installation, testing and reporting is located in the Attachment C - Soil Liner Quality Control Plan.

The alternate liner designed for the C.K. Facility will use a GCL instead of compacted clay soil. The GCL has a uniform layer of sodium bentonite encase between two (2) geotextile fabrics. The sodium bentonite clay utilized in the GCL is a naturally occurring clay mineral that swells as liquid enters between its clay platelets. During installation, the needle-punched fibers hold the bentonite in place and prevent the GCL from separating. The GCL, at minimum, will have 0.75-lb/ft² of sodium bentonite. Each GCL panel will overlay each other 6-inches to create a uniform clay layer. Additional information on installation, testing and reporting is located in the Attachment C - Soil Liner Quality Control Plan.

The GML shall be placed to minimize seams during placement. Field seams between sheets of GML material will be made using approved fusion welding systems, equipment, and techniques. Approved fusion welding systems include fillet welds using extrudate, lap welds using extrudate, and lap welds using single or double wedge (double track) welder. The welds will either be pressure or vacuum tested. Additional information on installation, testing and reporting is located in the Attachment C - Soil Liner Quality Control Plan.

F. NMAC 19.15.36.17.B(6) – Point of Discharge

At a point of discharge or suction from the lined pit, the liner shall be protected from excessive hydrostatic force or mechanical damage, and external discharge lines shall not penetrate the liner.

G. NMAC 19.15.36.17.B(7) – Primary Liners

The C.K. Facility will only be permitted to use 60-mil HDPE geomembrane liner. The GML materials shall be as manufactured by GSE Environmental or an equivalent preapproved by the GP. Details on quality control and storage can be found in the Attachment C - Soil Liner Quality Control Plan.

H. NMAC 19.15.36.17.B(8) – Secondary Liners

The secondary liner will consist of a 60-mil HDPE liner. The GML materials shall be as manufactured by GSE Environmental or an equivalent preapproved by the GP. Details

on quality control and storage can be found in the Attachment C - Soil Liner Quality Control Plan.

The liner will be laid upon a GCL layer. The GCL acts as a compacted clay reducing the hydraulic conductivity at the base of the liner system. Both GML and GCL have a hydraulic conductivity less than 1×10^{-9} cm/s. Documentation for both materials is provided in Attachment F. Additional information on installation, testing and reporting is located in the Attachment C - Soil Liner Quality Control Plan.

I. NMAC 19.15.36.17.B(9) – Leak Detection System

A geonet will comprise the leak detection system of the liner system for the evaporation ponds and stabilization and solidification areas. The geonet component will be used on both floor and side slopes of the liner systems. The geonet is designed to transfer fluid horizontally though the anticipated site loads. The geonet has a transmissivity of 2×10^{-3} m/s. Since soil will not be used, leachate will be transported through the geonet at the rate listed above. The geonet material shall be as manufactured by GSE Environmental or an equivalent preapproved by the GP. Additional information on installation, testing and reporting is located in the Attachment C - Soil Liner Quality Control Plan.

The geonet will channel leachate directly to the sump and leak detection piping. The slope of the ponds and stabilization and solidification area will be a minimum of a 2% slope as shown in Attachment B – Engineered Design Plans. The leachate collection system be comprised of 6-inch HDPE SDR 11 pipe. The SDR 11 pipe has a larger wall thickness than the minimum schedule 80 pipe required in the NMAC. The operator shall seal a solid drainage pipe to convey collected liquids to a corrosion-proof sump or sumps located outside the landfill perimeter for observation, storage, treatment or disposal. The sump and pipe layout is shown in Attachment B – Engineering Design Plans.

J. NMAC 19.15.36.17.B(10) – Notification of Installation

The C.K. Facility will notify the division a minimum of three (3) days prior to the installation of the leak detection system. The division may inspect all installation procedures on the leak detection system.

K. NMAC 19.15.36.17.B(11) – Pond and Pit Freeboard

The ponds have been sized to maintain a minimum of 3-feet of freeboard at all times during operation. The owner/operator must remove excess water if water reaches above this level.

L. NMAC 19.15.36.17.B(12) – Pond Sizing

All evaporation ponds onsite have a minimum sizing of 9.73-acre/feet in capacity. Pond grading and cross sections are provided in Attachment B – Engineered Design Drawings.

1.3 NMAC 19.15.36.17.C – Operating Standards

A. NMAC 19.15.36.17.C(1) – Operating Standards

The operator at the C.K. Facility shall ensure that only produced water that has gone through the processing tanks is discharged in to the evaporation ponds. All oil should be removed during the separation process within the four (4) produced water tanks. Any visible oil in the evaporation pond tanks will be removed immediately and returned to either an oil recovery tank or produced water tank for treatment. Tank and evaporation pond inspection are provided in Attachment K – Site Operating Plan.

B. NMAC 19.15.36.17.C(2) – Leak Detection Monitoring

The operator at the C.K. Facility shall monitor the leak detection system per NMAC requirements. All monitoring records will be kept onsite and readily available for review by OCD. Monitoring and maintenance is outlined in Attachment K – Site Operating Plan. If leaks are detected in the system, the C.K. Facility operator will notify OCD of findings.

C. NMAC 19.15.36.17.C(3) – Fencing and Netting

The C.K. Facility will construct and maintain perimeter fencing around the site. The 4-strand barbed wire fencing will run along the permit boundary and keep prevent trespassers. In addition, a cattle guard and gate will be placed at the entrance to assist in managing animals from entering the site. The C.K. Facility requests an exemption to not place screening material over ponds for migratory bird protection. The C.K. Facility will inspect the evaporation ponds daily for birds and if a recurring problem, the C.K. Facility with either submit a migratory bird plan or place screening over the ponds.

D. NMAC 19.15.36.17.C(4) – Spray System

The C.K. Facility proposes installing a spray system to each of the evaporation ponds. The spray system will utilize mechanical evaporators to aid in the evaporation of liquids in the proposed ponds. The proposed mechanical evaporator system is designed to maintain spray-borne suspended and dissolved solids within the liner boundary of the ponds. The site maintenance plan will contain the inspection schedule for all evaporators. Documentation and evaporation calculations are provided in Attachment K, Appendix D.

E. NMAC 19.15.36.17.C(4) – Jet Out Pits and Tanks

The C.K. Facility is designed to use both jet out pits and settling tanks. The setting tanks will receive produced water, leachate, and oil containing excessive water. After arriving onsite, the liquid will be placed in a receiving tank which drains into a series of four (4) setting tanks. The liquid will have up to five (5) days to settle in the tanks with one (1) day having heat introduced to assist in settling. Oil removed from the setting tanks will be transferred to either the oil recovery tanks or oil sales tanks. Water will be transferred through a mechanical separator to the evaporation ponds.

The jet out pits will be used to collect waste from tanks and allow it to separate within the settling pits. Oil removed from the setting tanks will be transferred to either the oil

recovery tanks or oil sales tanks. Water will be transferred through a mechanical separator to the evaporation ponds.

The process diagram for tanks and pit is shown in Attachment A. The layout of the setting tanks and pit is shown in Attachment B – Engineered Design Plans.

1.4 NMAC 19.15.36.17.D – Below-grade Tanks and Sumps

The C.K. Facility does not propose to construct or operate below-grade tanks and sumps.

1.5 NMAC 19.15.36.17.E – Closure Required

The C.K. Facility shall properly close all pits, tanks, and ponds within six (6) months after cessation of use. Attachment L - Closure and Post-Closure Plan provides instructions and costs for closure of the operation.

1.0 NMAC 19.15.36.18 - INTRODUCTION

C.K. Disposal LLC., proposes to develop a commercial surface waste management facility consisting of a landfill, liquid processing area and deep well injection per NMAC 19.15.36. This section provides the general design and operating requirements as provided in NMAC 19.15.36.14. The proposed C.K. Facility is located 0.05-miles south of State Highway 234, approximately 4.16-miles southeast of Eunice, New Mexico, in Lea County. The C.K. Facility will encompass 316.97-acres broken down into individual sections as listed below in Table 1 – C.K. Facility.

TABLE 1 – C.K. Facility

Area	Acres
C.K. Disposal E&P Landfill and Processing Facility	316.97
Landfill	141.5
Liquid Processing	51.75
Saltwater Disposal	5.1
Buffer Areas, Site Structures and Access Roads	118.62

Based on the daily tonnage received, the C.K. Facility landfill will have an active life between 38 – 115-years. Table 2 –Site Life, below provides the expected site life based on three different daily tonnages.

TABLE 2 – Site Life

Estimated Incoming Waste	Years
500 cubic yards per day	115 years
1,000 cubic yards per day	57 years
1,500 cubic yards per day	38 years

Once the landfill has reached its maximum capacity closure procedures will commence per NMAC 19.15.36.18. A closure and post-closure plan is provided in Attachment L providing instructions on closure procedures for the site including the landfill, liquid processing area, and saltwater injection.

1.1 NMAC 19.15.36.18.A – Surface Waste Management Facility Closure by Operator

A NMAC 19.15.36.18.A(1) – Notification to the Division

C.K. Disposal, LLC will notify the division's environmental bureau a minimum of 60-days prior to the cessation of operations at the facility. Attached to the notification will be a schedule for closure activities. C.K. Disposal, LLC will not proceed with closure until 60-days after the division has received the notice for closure, allowing time for comments.

B NMAC 19.15.36.18.A(2) – Division's Notification to the Owner

The division's environmental bureau will notify the owner/operator, C.K. Disposal, LLC, within 60-days after it receives notice of cessation of operations with any additional requirements for closure of the facility. C.K. Disposal, LLC will proceed with closure if no notice or additional requirements are received within 60-days of notice to the division.

C NMAC 19.15.36.18.A(3) – No Additional Requirements or Notification

If the division's environmental bureau does not notify C.K. Disposal, LLC of additional requirements within 60-days of receiving notification, C.K. Disposal, LLC will proceed with closure activities.

D NMAC 19.15.36.18.A(4) – No Additional Requirements

C.K. Disposal, LLC acknowledges that it is entitled to a hearing concerning a modification to its closure plan or additional requirements the division is requesting. The owner/operator must submit the request within 10-days of receiving notice from the division.

E NMAC 19.15.36.18.A(5) – Closure by Approved Plan

C.K. Disposal, LLC will close the facility based on the approved closure plan to ensure the protection of fresh water, public health, safety and the environment.

F NMAC 19.15.36.18.A(6) – Site Revegetation

Upon closure the operator will revegetate the site, although vegetation does not affect the performance of our final cap. The cap will be seeded with native grasses and bushes.

1.2 NMAC 19.15.36.18.B – Release of Financial Assurance

A NMAC 19.15.36.18.B(1) – Release of Financial Assurance

The owner/operator understands that when the division deems the site closed per the closure plan, the division will release the financial assurance except for the amount needed to maintain post-closure activities.

B NMAC 19.15.36.18.B(2) – Release of Financial Assurance

After the applicable post-closure care period is completed the division will release the remainder financial assurance to the owner.

C NMAC 19.15.36.18.B(3) – Revegetation of Site

The owner understand that the division shall not release financial assurance until it determines the site has been successfully revegetated.

1.3 NMAC 19.15.36.18.C – Closure Initiated by Division & Forfeiture of Financial Assurance

A NMAC 19.15.36.18.C(1) – Closure Initiated by Division & Forfeiture of Financial Assurance

For good cause, the division may, after notice to the operator and an opportunity for a hearing, order immediate cessation of a surface waste management facility's operation when it appears that cessation is necessary to protect fresh water, public health, safety or the environment, or to assure compliance with statutes or division rules and orders. The division may order closure without notice and an opportunity for hearing in the event of an emergency, subject to NMSA 1978, Section 70-2-23, as amended.

B NMAC 19.15.36.18.C(2) – Closure Initiated by Division & Forfeiture of Financial Assurance

The C.K. Facility will be operated to maintain the protection of fresh water, public health, safety, and the environment. If any anytime the division has a concern on operations, the owner/operator will work with the division to improve their operations. The owner understands that the division can at any time cease operations at the facility.

C NMAC 19.15.36.18.C(3) – Division Allow Surety to Perform Closure

C.K. Facility is aware the division may allow a surety to perform closure if the surety can demonstrate the ability to timely complete the closure and post closure in accordance with the approved plan.

D NMAC 19.15.36.18.C(4) – Closure Initiated by Division & Forfeiture of Financial Assurance

The C.K. Facility will be operated to maintain the protection of fresh water, public health, safety, and the environment. The owner understands the rules listed in this section.

E NMAC 19.15.36.18.C(5) – Abandonment of Facility or Unable to Meet Operation Requirements

The C.K. Facility is aware that if it abandons or cannot fulfill the conditions and obligations of the surface waste management facility permit or division rules, the state of New Mexico, its agencies, officers, employees, agents, contractors, and other entities designated by the state shall have all rights of entry into, over, and upon the surface waste management facility property. This includes all necessary and convenient rights of ingress and egress with all materials and equipment to conduct operation, termination, and closure of the surface waste management facility, including but not limited to the temporary storage of equipment and materials, the right to borrow or dispose of materials, and all other rights necessary for surface waste management facilities operation, termination and closure in accordance with the surface waste management facility permit and to conduct post-closure monitoring.

1.4 NMAC 19.15.36.18.D – Cell Closure and Post-Closure

A NMAC 19.15.36.18.D(1)(a) – (c)– Oil Treatment Plant Closure

C.K. Disposal, LLC will perform closure and post-closure procedures provided in Attachment D – Final Cover Quality Control Plan and Attachment L – Closure and Post-Closure Plan. The plans follows all requirements listed in NMAC 19.15.36.

B NMAC 19.15.36.18.D(2)(a) – Closure of Landfill Units

C.K. Disposal, LLC will perform closure and post-closure procedures provided in Attachment D – Final Cover Quality Control Plan and Attachment L – Closure and Post-Closure Plan. The plans follows all requirements listed in NMAC 19.15.36. The closure system will be comprised of two final covers. The top cap grades will have a minimum slope of 2% with the maximum being approximately 4%. The top cap final cover will consist of the following:

- 12" Foundation Layer
- 60-mil High Density Polyethylene (HDPE) Liner
- Geocomposite Liner
- 24" Infiltration Layer
- 12" Soil Erosion Layer

The side slopes will have a maximum slope of 25% or 4H to 1V slopes. The side slope final cover will consist of the following:

- 12" Foundation Layer
- 24" Infiltration Layer
- 12" Soil Erosion Layer

C NMAC 19.15.36.18.D(2)(b) – Vegetation

C.K. Disposal, LLC will perform closure and post-closure procedures provided in Attachment D – Final Cover Quality Control Plan and Attachment L – Closure and Post-Closure Plan. The plans follows all requirements listed in NMAC 19.15.36. The site will be vegetated with native grasses and bushes. The post-closure costs included in the attachment provide funds to maintain grasses and reseeded if necessary.

D NMAC 19.15.36.18.D(3)(a) – (b) – Post-Closure Care

C.K. Disposal, LLC will perform closure and post-closure procedures provided in Attachment D – Final Cover Quality Control Plan and Attachment L – Closure and Post-Closure Plan. The plans follows all requirements listed in NMAC 19.15.36.

E NMAC 19.15.36.18.D(4) – Landfarm Closure

C.K. Disposal, LLC does not propose to have a landfarm on its facilities. These requirements are not applicable.

1.5 NMAC 19.15.36.18.E – Pond and Pit Closure

C.K. Disposal, LLC will perform closure and post-closure procedures provided in Attachment L – Closure and Post-Closure Plan. The plans follows all requirements listed in NMAC 19.15.36.

1.6 NMAC 19.15.36.18.F – Landfarm, Pond and Pit Post-Closure

C.K. Disposal, LLC will perform closure and post-closure procedures provided in Attachment L – Closure and Post-Closure Plan. The plans follows all requirements listed in NMAC 19.15.36.

1.7 NMAC 19.15.36.18.G – Alternates to Revegetation

C.K. Disposal, LLC will revegetate the site until vegetation is established to requirements listed in 19.15.36.18.

1.0 NMAC 19.15.36.19 - EXCEPTIONS AND WAIVERS

1.1 NMAC 19.15.36.19.A - Alternatives to Requirements

C.K. Disposal, LLC. requests alternatives to the requirements consistent with the flexibility provided for:

- LFG control requirements per NMAC 19.15.36.13.O.
- Groundwater monitoring per NMAC 19.15.36.14.B(1-2).
- Geonet detection and drainage layers per NMAC 19.15.36.14.C.
- Final cover per NMAC 19.15.36.14.C(9).
- Bird control alternatives per NMAC 19.15.36.19.

Demonstrations and justifications are provided in the referenced sections and associated technical documentation.

1.2 19.15.36.19.B - Exceptions to, Waivers of, or Approved Alternatives to Requirements in an Emergency without Notice or Hearing

C.K. Disposal, LLC. will comply and is aware the division may grant exceptions to, or waivers of, or approve alternatives to requirements of 19.15.36 NMAC in an emergency without notice or hearing. The operator requesting an exception or waiver, except in an emergency, shall apply for a surface waste management facility permit modification in accordance with Subsection C of 19.15.36.8 NMAC. If the requested modification is major, the operator shall provide notice of the request in accordance with 19.15.36.9 NMAC.

Lea County, New Mexico

C.K. Disposal E & P Landfill and Processing Facility

Permit No. TBD

NMAC 19.15.36.20

November 2015

1.0 NMAC 19.15.36.20 - TRANSITIONAL PROVISIONS

The C.K. Facility is a proposed new Surface Waste Management Facility. No response required.

Griswold, Jim, EMNRD

From: Griswold, Jim, EMNRD
Sent: Friday, September 9, 2016 4:00 PM
To: Clint Richardson
Subject: FW: Emailing - C K Disposal H2S Emissions Estimates.pdf
Attachments: C K Disposal H2S Emissions Estimates.pdf

Hi Clint,

Attached is the emissions modeling from CK Disposal. Let me know what you think. I will be reviewing as well. Thanks.

Jim Griswold
Environmental Bureau Chief
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505.476.3465
email: jim.griswold@state.nm.us

From: Holly Holder [mailto:hholder@TEAM-PSC.com]
Sent: Friday, September 9, 2016 3:30 PM
To: Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>
Subject: Emailing - C K Disposal H2S Emissions Estimates.pdf

Mr. Griswold, attached are the H2S emissions as you requested. Please call me if you have any questions.

R. Holly Holder, PE



Report

Lea County, New Mexico

C.K. Disposal E & P Landfill and
Processing Facility

Maximum H₂S Emissions Estimates

September 2016

01058015

PSC

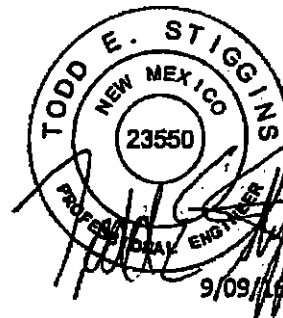
PARKHILLSMITH&COOPER

Report

Lea County, New Mexico

C.K. Disposal E & P Landfill and
Processing Facility

Maximum H₂S Emissions Estimates



September 2016

01058015



PARKHILLSMITH&COOPER

C. K. Disposal Facility
Maximum H₂S Emissions Estimates
September 2016

GIVEN

Incoming truckloads of exploration and production (E&P) liquids with a hydrogen sulfide (H₂S) concentration greater than or equal to 10 ppm must be treated with calcium hypochlorite (Ca(ClO)₂) to lower the H₂S concentration to below 1 ppm.

C. K. Disposal Facility
Maximum H₂S Emissions Estimates
September 2016

FIND

Estimate maximum downwind H₂S concentrations at receptor heights of 1 m, 2 m, and 10 m for fugitive H₂S emissions at the facility using EPA SCREEN3 for the following locations:

- 1) North C.K. Disposal property boundary
- 2) South straight-line URENCO property boundary
- 3) Southernmost straight-line URENCO building

ASSUMPTIONS

The critical emissions event occurs at loadout points when trucks are evacuated of E&P liquids. From there, E&P liquids are collected and pumped into enclosed tanks and evaporation ponds for processing, treatment, and stabilization, in accordance with the H₂S Management Plan (Attachment K, Appendix A) of the permit application.

Loadout point basins are treated as individual area sources. They measure 10' by 10' (3.048 m by 3.048 m).

Emissions release point is estimated at the top of the loadout point basin (4' (1.219 m) above existing ground level).

H₂S concentrations are measured on a parts per million volume (ppmv) basis.

Permit restrictions for CK Disposal Facility for H₂S maximum concentration allowed is 10 ppmv.

Henry's Law is used to estimate the equilibrium liquid phase concentration of H₂S in the truck based upon maximum H₂S vapor phase concentration of 10 ppmv. Assume atmospheric pressure equal to 1 atm.

All of the H₂S in the E&P liquids escape into the atmosphere during loadout.

Vapor phase H₂S remains in the truck during loadout as truck tanks are evacuated from the bottom.

According to Galyean, LP, manufacturer of tanker trucks in Henderson, TX, a 130-bbl truck tank can be evacuated in approximately six minutes. Assume 900 gallons per minute flow rate for E&P liquids into the loadout point.

EPA SCREEN3 is used to estimate the maximum downwind concentration based upon all stability classes and meteorological conditions.

SOLUTION

- A. Using Henry's Law, we estimate the equilibrium concentration of H₂S in the liquid phase in milligrams per liter.

$$p = \frac{H_D c}{P_T}$$

where: p = mol H₂S/mol air
 c = mg H₂S/L water
 H_D = atm-L/mg, $2.72 \times (10^{-4})$ atm-L/mg¹
 P_T = atm, assumed to be 1 atm

$$10 \times (10^{-6}) \frac{\text{mol H}_2\text{S}}{\text{mol air}} = \frac{2.72 \times (10^{-4}) \frac{\text{atm L}}{\text{mg}} \times c}{1 \text{ atm}}$$

$$c = \frac{10 \times (10^{-6}) \frac{\text{mol H}_2\text{S}}{\text{mol air}} \times 1 \text{ atm}}{2.72 \times (10^{-4}) \frac{\text{atm L}}{\text{mg}}}$$

$$c = 0.03676 \frac{\text{mg H}_2\text{S}}{\text{L H}_2\text{O}}$$

Notes:

¹Source: Davis, M. L. and D. A. Cornwell. (2008) Introduction to Environmental Engineering, Fourth Edition. New York, NY: McGraw-Hill.

- B. Calculate mass flow rate (M) of H₂S, in grams per second, based on 900 gpm of E&P liquids from the tanker truck.

$$M = 0.03676 \frac{\text{mg H}_2\text{S}}{\text{L H}_2\text{O}} \times \frac{3.8 \text{ L}}{\text{gallon}} \times \frac{900 \text{ gallons}}{\text{minute}} \times \frac{1 \text{ g}}{1000 \text{ mg}} \times \frac{1 \text{ minute}}{60 \text{ seconds}}$$

$$M = 0.002096 \frac{\text{g}}{\text{s}}$$

C. K. Disposal Facility
Maximum H₂S Emissions Estimates
September 2016

- C. Calculate area emission rate (Q) of H₂S in grams per second per square meter based on area of loadout point basin open to atmosphere for one loadout point.

$$Q = 0.002096 \frac{\text{g}}{\text{s}} \times \frac{1}{(3.048 \text{ m})^2}$$

$$Q = 2.26 \times 10^{-4} \frac{\text{g}}{\text{s} \cdot \text{m}^2}$$

- D. Use EPA SCREEN3 to estimate maximum downwind concentrations of H₂S in micrograms per cubic meter based on calculated area emission rate (Q) for one loadout point. See attached figure.

- North C.K. Disposal property boundary – 717 meters from source
- South straight-line URENCO property boundary – 945 meters from source
- Southernmost straight-line URENCO building – 1264 meters from source

C.K. Disposal H ₂ S Emissions Per Loadout Point (µg/m ³)				
		Receptor Height (m)		
Distance (M)		1	2	10
C.K. Property Boundary	717	2.377	2.348	1.599
URENCO Property Boundary	945	1.533	1.52	1.167
URENCO Building	1264	0.9776	0.972	0.81

- E. Convert downwind concentrations from micrograms per cubic meter to parts per million volume basis using Ideal Gas Law.

$$V = \frac{mRT}{MW \times P}$$

where:

P = atmospheric pressure, Pa

V = volume, m³

m = mass of gas, g

R = universal gas constant, 8.3145 m³-Pa/K-mol

T = temperature, K

MW = molecular weight, g/mol

Find volume of one microgram of H₂S:

$$V = \frac{1 \times 10^{-6} \text{ g} \times 8.3145 \frac{\text{m}^3 \cdot \text{Pa}}{\text{K} \cdot \text{mol}} \times (273.15 + 20) \text{ K}}{34.0809 \frac{\text{g}}{\text{mol}} \times 101,325 \text{ Pa}}$$

$$V = 7.0583 \times 10^{-10} \frac{\text{m}^3}{\mu\text{g}}$$

C. K. Disposal Facility
Maximum H₂S Emissions Estimates
September 2016

Convert micrograms per cubic meter to ppmv:

$$\text{ppmv} = \frac{\mu\text{g}}{\text{m}^3} \times 7.0583 \times 10^{-10} \frac{\text{m}^3}{\mu\text{g}} \times 10^6$$

Example

For a receptor height of 1 meter at the C.K. Disposal property boundary:

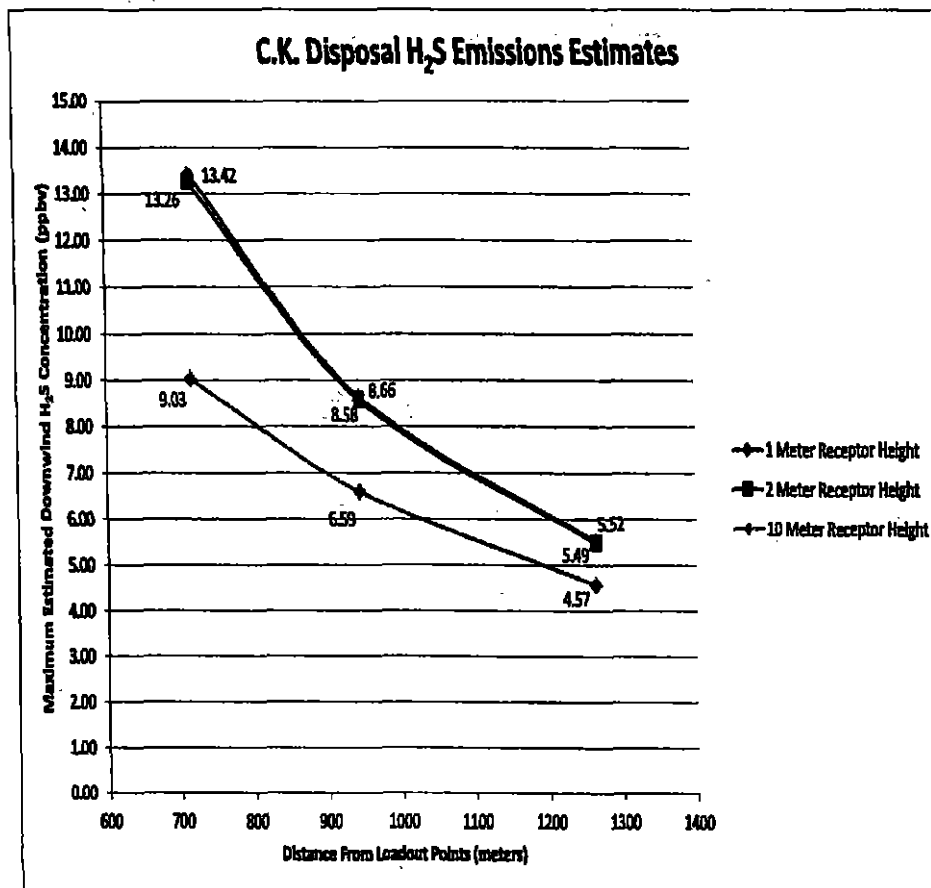
$$\text{ppmv} = 2.377 \frac{\mu\text{g}}{\text{m}^3} \times 7.0583 \times 10^{-10} \frac{\text{m}^3}{\mu\text{g}} \times 10^6 = 0.00168 \text{ ppmv}$$

C.K. Disposal H ₂ S Emissions Per Loadout Point (ppmv)				
		Receptor Height (m)		
Distance (M)		1	2	10
C.K. Property Boundary	717	0.00168	0.00166	0.00113
URENCO Property Boundary	945	0.00108	0.00107	0.00082
URENCO Building	1264	0.00069	0.00069	0.00057

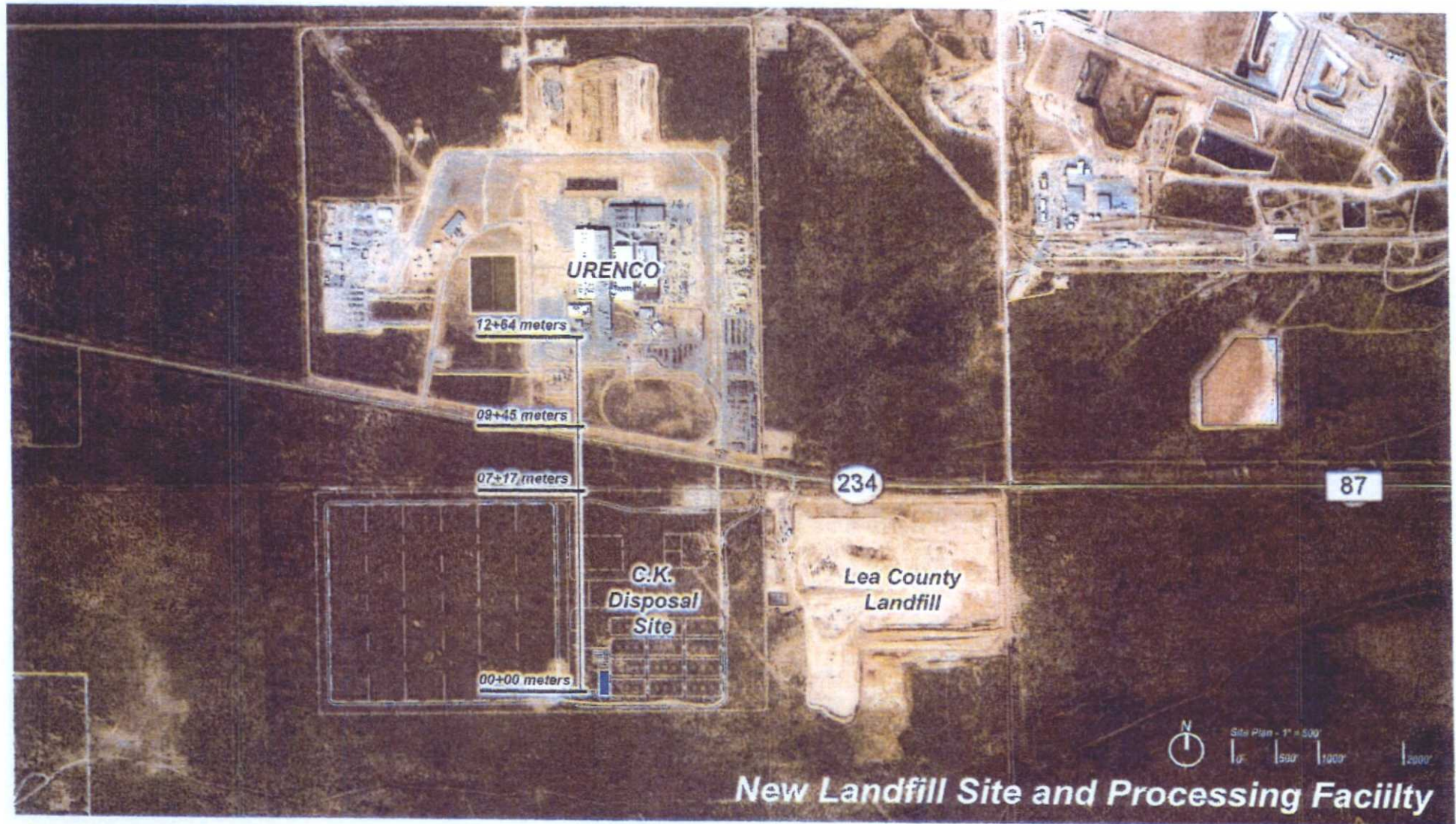
- F. In accordance with the Landfill Phasing Plan (Attachment K, Section 4.1) of the permit application, four loadout points will be constructed during Phase I and four additional loadout points will be constructed in Phase 3. Assuming a worst case scenario where tanker truck evacuation is occurring simultaneously at all eight loadout points, use EPA SCREEN3 to estimate downwind concentrations of H₂S in parts per billion volume (ppbv) basis.

C.K. Disposal H ₂ S Emissions for Eight Loadout Points (ppbv)				
		Receptor Height (m)		
Distance (M)		1	2	10
C.K. Property Boundary	717	13.42	13.26	9.03
URENCO Property Boundary	945	8.66	8.58	6.59
URENCO Building	1264	5.52	5.49	4.57

**C. K. Disposal Facility
Maximum H₂S Emissions Estimates
September 2016**



C.K. Disposal E & P Landfill & Processing Facility



Lea County, New Mexico

**APPENDIX A
EPA SCREEN 3 RESULTS**

09/08/16

17:03:54

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 13043 ***

C.K. Loadout Emissions - 1-M Receptor

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	AREA
EMISSION RATE (G/(S-M**2))	=	0.226000E-03
SOURCE HEIGHT (M)	=	1.2190
LENGTH OF LARGER SIDE (M)	=	3.0480
LENGTH OF SMALLER SIDE (M)	=	3.0480
RECEPTOR HEIGHT (M)	=	1.0000
URBAN/RURAL OPTION	=	RURAL

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS
ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**
2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR
FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
1.	310.4	5	1.0	1.0	10000.0	1.22	45.
100.	56.22	6	1.0	1.0	10000.0	1.22	45.
200.	19.53	6	1.0	1.0	10000.0	1.22	31.
300.	10.14	6	1.0	1.0	10000.0	1.22	31.
400.	6.301	6	1.0	1.0	10000.0	1.22	33.
500.	4.343	6	1.0	1.0	10000.0	1.22	32.
600.	3.199	6	1.0	1.0	10000.0	1.22	40.
700.	2.469	6	1.0	1.0	10000.0	1.22	38.
800.	1.997	6	1.0	1.0	10000.0	1.22	44.
900.	1.657	6	1.0	1.0	10000.0	1.22	40.
1000.	1.401	6	1.0	1.0	10000.0	1.22	33.
1100.	1.210	6	1.0	1.0	10000.0	1.22	38.
1200.	1.059	6	1.0	1.0	10000.0	1.22	41.

1300.	0.9363	6	1.0	1.0	10000.0	1.22	41.
1400.	0.8355	6	1.0	1.0	10000.0	1.22	38.
1500.	0.7514	6	1.0	1.0	10000.0	1.22	41.
1600.	0.6804	6	1.0	1.0	10000.0	1.22	38.
1700.	0.6199	6	1.0	1.0	10000.0	1.22	41.
1800.	0.5678	6	1.0	1.0	10000.0	1.22	41.
1900.	0.5225	6	1.0	1.0	10000.0	1.22	38.
2000.	0.4829	6	1.0	1.0	10000.0	1.22	37.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:
 6. 936.9 6 1.0 1.0 10000.0 1.22 45.

 *** SCREEN DISCRETE DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR
 FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
717.	2.377	6	1.0	1.0	10000.0	1.22	40.
945.	1.533	6	1.0	1.0	10000.0	1.22	44.
1264.	0.9776	6	1.0	1.0	10000.0	1.22	38.

09/08/16

17:13:44

*** SCREEN3 MODEL RUN ***

*** VERSION DATED 13043 ***

C.K. Loadout Emissions - 2-M Receptor

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	AREA
EMISSION RATE (G/(S-M**2))	=	0.226000E-03
SOURCE HEIGHT (M)	=	1.2190
LENGTH OF LARGER SIDE (M)	=	3.0480
LENGTH OF SMALLER SIDE (M)	=	3.0480
RECEPTOR HEIGHT (M)	=	2.0000
URBAN/RURAL OPTION	=	RURAL

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.

THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**
2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR
FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
1.	0.1682E-01	5	1.0	1.0	10000.0	1.22	45.
100.	45.83	6	1.0	1.0	10000.0	1.22	45.
200.	18.00	6	1.0	1.0	10000.0	1.22	31.
300.	9.689	6	1.0	1.0	10000.0	1.22	31.
400.	6.119	6	1.0	1.0	10000.0	1.22	33.
500.	4.254	6	1.0	1.0	10000.0	1.22	32.
600.	3.149	6	1.0	1.0	10000.0	1.22	40.
700.	2.438	6	1.0	1.0	10000.0	1.22	38.
800.	1.977	6	1.0	1.0	10000.0	1.22	38.
900.	1.642	6	1.0	1.0	10000.0	1.22	40.
1000.	1.391	6	1.0	1.0	10000.0	1.22	33.
1100.	1.202	6	1.0	1.0	10000.0	1.22	38.
1200.	1.052	6	1.0	1.0	10000.0	1.22	41.

1300.	0.9311	6	1.0	1.0	10000.0	1.22	41.
1400.	0.8313	6	1.0	1.0	10000.0	1.22	38.
1500.	0.7479	6	1.0	1.0	10000.0	1.22	41.
1600.	0.6776	6	1.0	1.0	10000.0	1.22	38.
1700.	0.6175	6	1.0	1.0	10000.0	1.22	41.
1800.	0.5657	6	1.0	1.0	10000.0	1.22	41.
1900.	0.5207	6	1.0	1.0	10000.0	1.22	38.
2000.	0.4814	6	1.0	1.0	10000.0	1.22	37.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:
 20. 189.3 6 1.0 1.0 10000.0 1.22 45.

 *** SCREEN DISCRETE DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR
 FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
717.	2.348	6	1.0	1.0	10000.0	1.22	42.
945.	1.520	6	1.0	1.0	10000.0	1.22	38.
1264.	0.9720	6	1.0	1.0	10000.0	1.22	38.

09/08/16

17:17:08

*** SCREEN3 MODEL RUN ***

*** VERSION DATED 13043 ***

C.K. Disposal Emissions - 10-M Receptor

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	AREA
EMISSION RATE (G/(S-M**2))	=	0.226000E-03
SOURCE HEIGHT (M)	=	1.2190
LENGTH OF LARGER SIDE (M)	=	3.0480
LENGTH OF SMALLER SIDE (M)	=	3.0480
RECEPTOR HEIGHT (M)	=	10.0000
URBAN/RURAL OPTION	=	RURAL

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS
ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**
2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR
FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
1.	0.000	5	1.0	1.0	10000.0	1.22	42.
100.	0.7970	5	1.0	1.0	10000.0	1.22	15.
200.	2.615	5	1.0	1.0	10000.0	1.22	29.
300.	2.350	5	1.0	1.0	10000.0	1.22	4.
400.	2.396	6	1.0	1.0	10000.0	1.22	33.
500.	2.184	6	1.0	1.0	10000.0	1.22	32.
600.	1.903	6	1.0	1.0	10000.0	1.22	40.
700.	1.640	6	1.0	1.0	10000.0	1.22	38.
800.	1.419	6	1.0	1.0	10000.0	1.22	44.
900.	1.238	6	1.0	1.0	10000.0	1.22	40.
1000.	1.089	6	1.0	1.0	10000.0	1.22	33.
1100.	0.9676	6	1.0	1.0	10000.0	1.22	38.
1200.	0.8663	6	1.0	1.0	10000.0	1.22	41.

1300.	0.7809	6	1.0	1.0	10000.0	1.22	41.
1400.	0.7082	6	1.0	1.0	10000.0	1.22	38.
1500.	0.6457	6	1.0	1.0	10000.0	1.22	41.
1600.	0.5917	6	1.0	1.0	10000.0	1.22	38.
1700.	0.5446	6	1.0	1.0	10000.0	1.22	41.
1800.	0.5033	6	1.0	1.0	10000.0	1.22	41.
1900.	0.4669	6	1.0	1.0	10000.0	1.22	38.
2000.	0.4346	6	1.0	1.0	10000.0	1.22	37.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:
 218. 2.642 5 1.0 1.0 10000.0 1.22 16.

 *** SCREEN DISCRETE DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR
 FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
717.	1.599	6	1.0	1.0	10000.0	1.22	40.
945.	1.167	6	1.0	1.0	10000.0	1.22	44.
1264.	0.8100	6	1.0	1.0	10000.0	1.22	38.



EXHIBIT

D

tabbles





Date: February 18th, 2011
To: Linda Gardner / Designed Power Associates
Cc: J. Cohen / Eaton Electrical, Area Service Manager
From: Mark H. Ritchie, Manager of Product Reliability & Support
Subject: Analysis of Eaton Powerware Model 9390 UPS Shutdowns at Louisiana Energy Services (Service Tickets #907148, #947988 and #977652)

Ms. Gardner;

Thank you in advance for your patience in this matter. This letter serves as Eaton's failure analysis report related to the Eaton Powerware Model 9390 UPS shutdown events which occurred at the Louisiana Energy Services facility in Eunice NM, between late September and mid December, 2010.

Event Details:

After each of these events, the local field Engineer performed an internal inspection, and in each case it was determined that the UPS had suffered considerable internal catastrophic damage to one or more of its Power Modules. The local Eaton Field Engineer would replace the damage Power Module(s), perform the standard restart and operational verification testing and then place the unit back on-line, only to have the event repeat itself at a later date.

After in initial discussion with Eaton Engineering a total of 15 Power Modules were to be collected and tagged with the incident date and the associated position / location from within the unit, and then be sent back to Eaton in Raleigh, NC for failure analysis. Note that not all of the 15 Power Modules samples contained visual damage, but rather, were replaced as a precautionary measure.

Event Analysis / Cause of Failure:

Eaton Technical Support and Engineering performed a comprehensive technical analysis of the shutdown events, which included a discussion with the Eaton CSEs who responded to the calls for service. The site wiring practice used for the UPS installation was closely reviewed, and later ruled out as a potential cause. Further, it was concluded that there were no indications that a site power anomaly could have triggered these events and the associated damage. Using that process of elimination the only remaining possible causes were a manufacturing problem within the suspect Power Modules or the environment, so the focus of the investigation turned to a comprehensive inspection of the returned Power Modules.



Out of the 15 Power Modules which were returned, 9 passed initial screening and were confirmed as fully operational. The remaining 6 were dis-assembled and analyzed at the component level, including inspections internal to the IGBT (Isolated Gate Bi-Polar Transistor) Power Semiconductors.

The figures below provide supporting evidence that the environment contains an element which is contaminating the IGBT and leading to the shutdowns and associated component damage. Note that no evidence of a manufacturing build error was found in any of the 6 Power Module samples returned from the site:

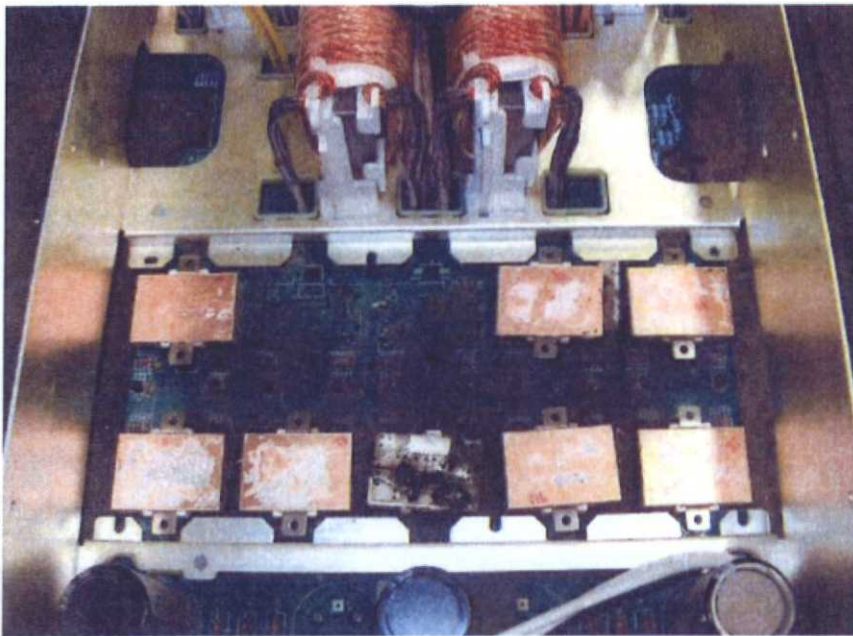


Figure #1: Example of Power Module IGBT damage and associated arc-flash to other nearby components and circuitry

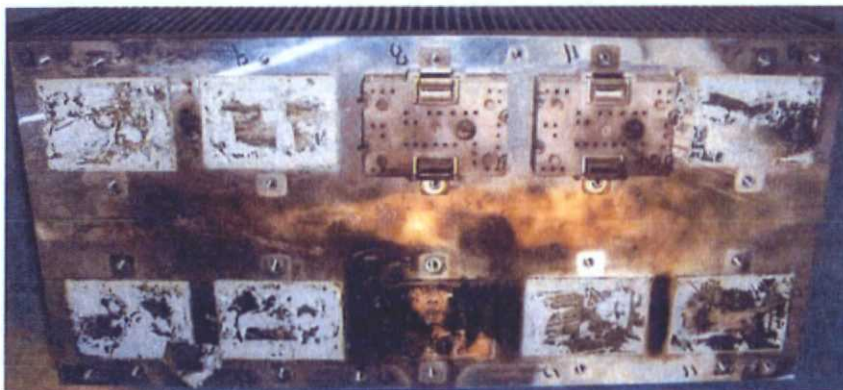


Figure #2: Example of Power Module IGBT Heatsink assembly removed from the Power Module circuit board; The bottom middle IGBT is removed and further analyzed internally in the next figures



Figure #3: Contamination found on a copper bus plate which is internal to the IGBT

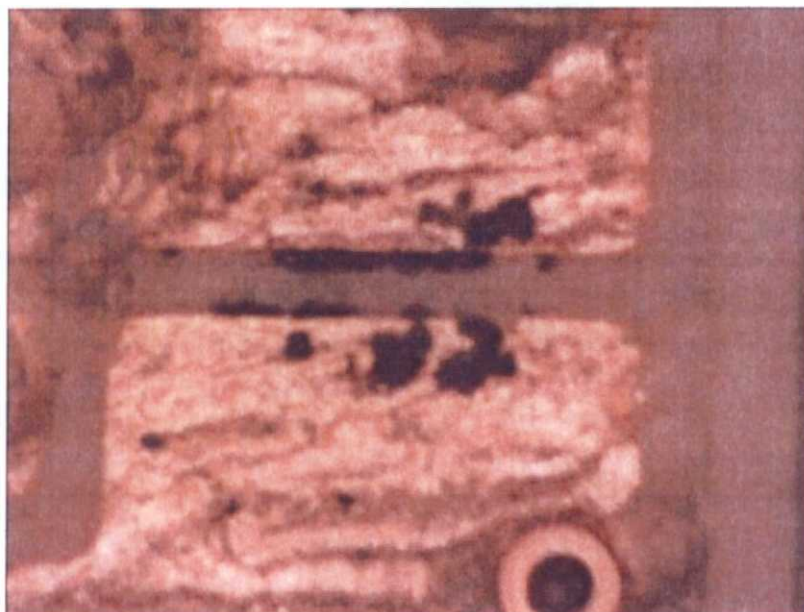


Figure #4: Example of contamination "build-up" on the top and edges of two separate copper plates within the IGBT; Note that these two plates are at different voltage potentials during live operation and should never be directly connected to each other

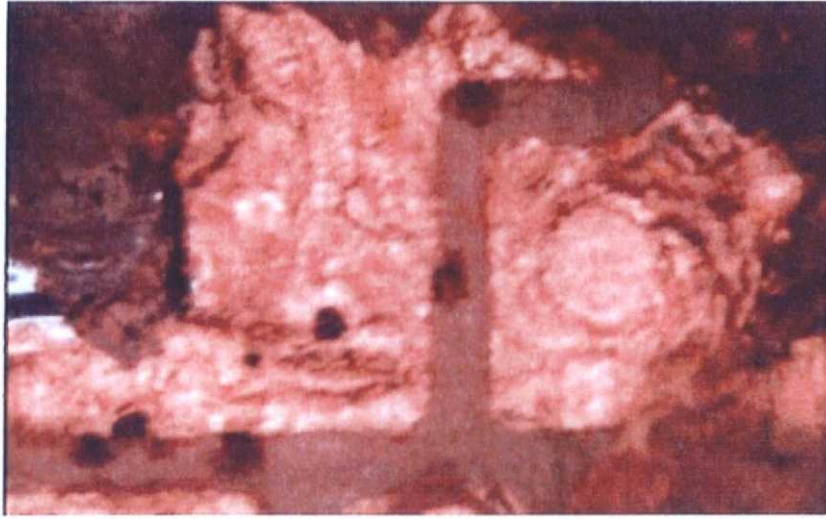


Figure #5: Close-up example of contamination “build-up” on the edges of two separate copper plates within the IGBT; The build-up has extended to a point that the various bus plates are nearly connected together



Figure #6: Additional close-up of contamination “build-up” on the edges of two separate copper plates within the IGBT and better detail of “spine growth” is now clearly evident

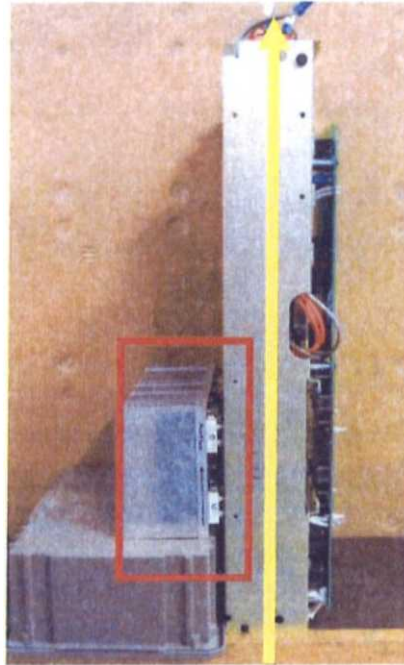


Figure #7; Location of IGBT power semiconductor damage location (in red) vs. air-flow design (in yellow)

Summary & Recommendations

The contamination as shown above is more formally known as “dendrite growth” and is a result of a concentrated level of sulfuric gas coming from the environment and being pulled into the Power Module IGBT section via the UPS air flow design. The dendrite growth is conductive in nature and eventually bridges the gap between two separate electrical planes / surfaces within the IGBT, which operate at two different potentials. Once the gap is bridged, a short circuit is created and the IGBT suffers catastrophic damage.

The Model 9390 UPS is not designed for operation in this environment and will continue to suffer intermittent internal catastrophic damage if left as is. Eaton advises moving the UPSs to a more controlled operating environment, per the Model 9390 installation manual, or for the site to take action to eliminate the source of the gas.

Eaton also offers to install sensing coupons near the air intake on the UPS to capture more information on the level of sulfuric gas concentration.

If you have any questions, feel free to call.

Regards,

Mark H. Ritchie
Manager of Product Reliability & Support
PH: 919-871-1807
FX: 919-878-2385
Email: MarkHRitchie@Eaton.com



Date: June 2nd, 2011
To: Linda Gardner / Designed Power Associates
Cc: M. Wilhelm / Eaton Electrical, Area Service Manager
From: Mark H. Ritchie, Manager of Product Reliability & Support
Subject: Analysis of Eaton Powerware Model 9390 UPS Shutdowns at Louisiana Energy Services (Service Tickets #907148, #947988 and #977652) ***Follow-up Report***

Ms. Gardner;

Thank you and our customer again, for your patience in this very complex matter. This letter serves as Eaton's follow-up report (initial analysis report dated February 18th) related to the Eaton Powerware Model 9390 UPS shutdown events which occurred at the Louisiana Energy Services facility in Eunice NM, between late September and mid December, 2010 on the "B" unit on site. It must be noted here that there has been yet another event on the replacement "B" unit after only six weeks of operation.

Previous Summary & Recommendations (from Feb. 18th Report)

The contamination as shown above is more formally known as "dendrite growth" and is a result of a concentrated level of sulfuric gas coming from the environment and being pulled into the Power Module IGBT section via the UPS air flow design. The dendrite growth is conductive in nature and eventually bridges the gap between two separate electrical planes / surfaces within the IGBT, which operate at two different potentials. Once the gap is bridged, a short circuit is created and the IGBT suffers catastrophic damage.

The Model 9390 UPS is not designed for operation in this environment and will continue to suffer intermittent internal catastrophic damage if left as is. Eaton advises moving the UPSs to a more controlled operating environment, per the Model 9390 installation manual, or for the site to take action to eliminate the source of the gas.

Eaton also offers to install sensing coupons near the air intake on the UPS to capture more information on the level of sulfuric gas concentration.

Updates on Technical Analysis:

Analysis of Additional Returned Parts, Original UPS Cabinet and Batteries

One of the new replacement Power Modules which was damaged during the February 2011 event was returned and inspected for dendrite growth, and again dendrites were found internal to the IGBT case. This is a clear indication that the environment still contained some content of sulfuric gas, and the original batteries could not have been the source, as they had been replaced prior to that incident having occurred. Note that the original batteries and original unit were both returned to Eaton Engineering in Raleigh for inspection. There were no indications that any of the batteries had vented, and the UPS cabinet contained only collateral damage from previous events.



Analysis of Sensing Coupons

Eaton has reviewed the attached reports with the vendor Purafil, and Purafil has re-confirmed that 1) these are the appropriate tools to be used for this investigation and 2) that the results do confirm the theory that there is enough Sulfuric gas in the environment to cause damage to electronic components. This statement is based upon an ISA standard which states that the environment for electronic equipment in data centers should be maintained at less a value less than "300 Ag" on the "Ag / silver scale" and the reports show evidence of the environment at LES exceeding that level.


While the presence of this contaminant was captured on both the A and B UPS installations it remains unclear as to why only UPS B has been affected thus far. What is shown through the coupon testing that was conducted is that there is a reaction to the silver coupons and not the copper ones. When we questioned Purafil about this they indicated the silver coupons are in place to detect contaminants in a dry environment. We also know that the dendrite growth inside the IGBTs is driven by sulfur and water vapor. It must also be noted that the Purafil reports confirm that UPS A is also at risk due to the dry sulfur found in the coupon testing. We believe the reason why the B side has failed but the A side has not is due to differences in humidity or water vapor present during short time durations that helps to drive the sulfur into the IGBTs.

May 23rd Shutdown Event of Replacement Unit and Recommendations

The most recent event which damaged the new "B" unit is now also under investigation. Eaton advises that unit not be put back into service until the environment is changed. Purafil advises that the site either installs filtering in the air system or that a stand alone "purification" unit is installed to remove the contaminant, or both.

If you have any questions, feel free to call.

Regards,



Mark H. Ritchie
Manager of Product Reliability & Support
PH: 919-871-1807
FX: 919-878-2385
Email: MarkHRitchie@Eaton.com

Date: October 19, 2015

To: Mark Peralta / Urenco

Cc: M. Janelle / Eaton Area Service Supervisor
B. Gaylord / Eaton Regional Sales Manager

From: Mark H. Ritchie, Manager of Product Reliability & Support

Subject: Analysis of Eaton Model 9390 UPS Shutdown at Urenco in Eunice, NM on August 9th, 2015
(Service Ticket #3772842)



Powering Business Worldwide

Mr. Peralta;

Thank you for your patience in this matter. This letter serves as Eaton's failure analysis report related to the incident as stated above.

Event Details:

A local Eaton Field Engineer performed an internal inspection of the unit and it was determined that the UPS had suffered considerable internal catastrophic damage to at least one of its Power Modules. The Field Engineer replaced all four (4) of the Power Modules as a precaution, performed the standard restart and operational verification testing, and then placed the unit back on-line.

After discussion with Eaton Engineering all four (4) Power Modules were to be collected and tagged with the incident date and the associated position / location from within the unit, and then be sent back to Eaton in Raleigh, NC for failure analysis.

Event Analysis / Cause of Failure:

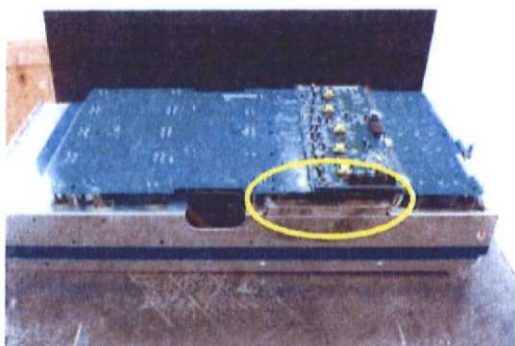
Eaton Technical Support and Engineering performed a comprehensive review of the incident, which included a discussion with the Eaton Field Engineer who responded to the call for service. The site wiring practice used for the UPS installation was reviewed and ruled out as a potential cause. It was concluded that there were no indications that a site power anomaly had triggered the event and associated damage. Using that process of elimination the only remaining possible causes were a manufacturing problem within the suspect Power Modules or the environment, so it was agreed that the investigation would focus on the Power Modules being returned for analysis.

After receipt and inspection it was confirmed that the trigger was from within one (1) of the four (4) Power Modules, Inverter #1. It sustained considerable component damage and the Power Module adjacent to it suffered only collateral flash-over. Inverter #1 was further dis-assembled and analyzed at the component level, including inspections internal to the IGBT (Isolated Gate Bi-Polar Transistor) Power Semiconductors.

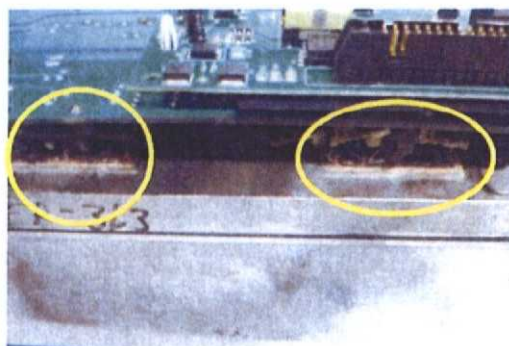
The figures below provide supporting evidence that the environment contains an element which is contaminating the IGBT which led to the shutdown and associated component damage. Note that no evidence of a manufacturing build error was found in this Power Module:

Eaton PQO Product Reliability & Support
Customer Report / Confidential to Urenco
Page 1 of 4



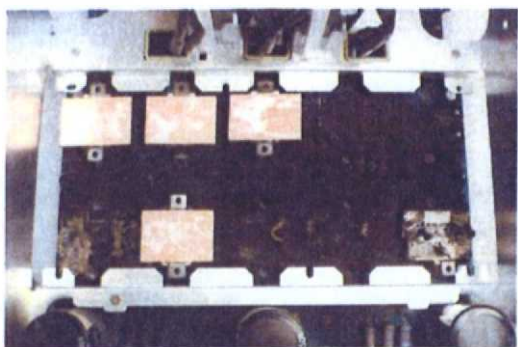


1A

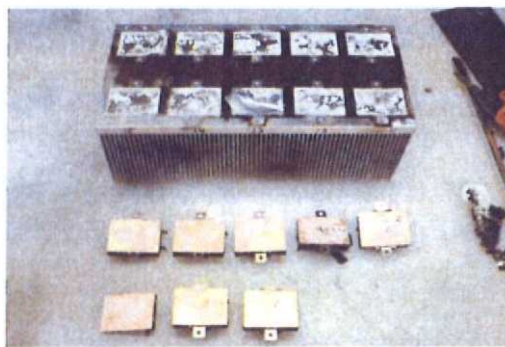


1B

Figure 1: Inverter #1 Power Module; IGBT damage and associated arc-flash to other nearby components and circuitry are highlighted in yellow



2A



2B

Figure 2: Inverter #1 IGBT Heat Sink assembly after removal; The IGBTs were removed where possible and further analyzed internally as shown in the figures below:

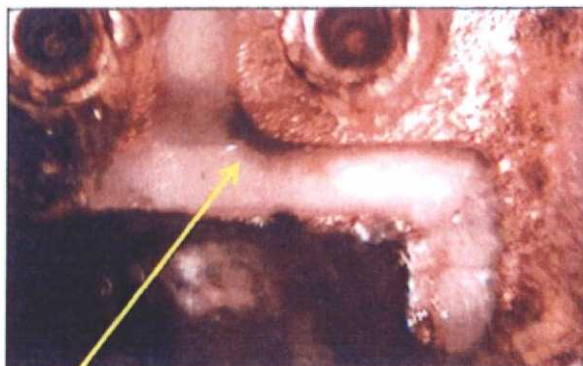
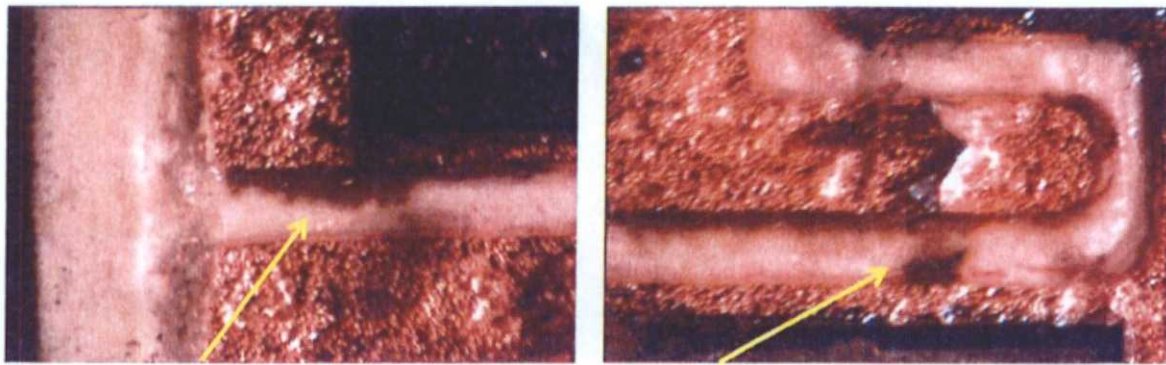


Figure 3: Contamination found on a copper bus plate which is internal to the IGBT



4A

4B

Figure 4: Contamination "build-up" on the edges of two separate but adjacent copper plates within the IGBT; Note that these two conductive plates are at different voltage potentials during live operation and can never be directly connected to each other and the build-up has extended to a point that they are nearly connected together

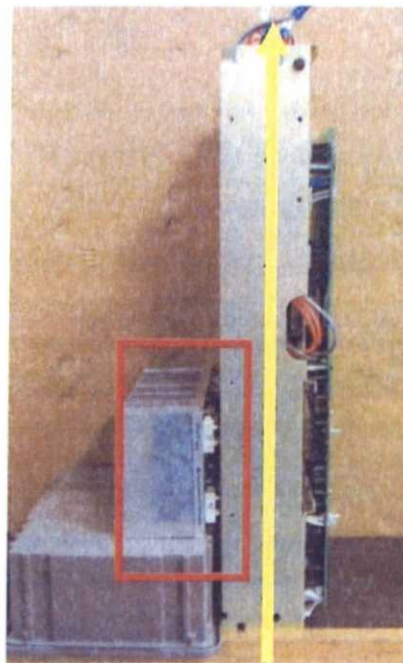


Figure 5: Location of IGBT power semiconductor damage location (in red) vs. air-flow design (in yellow); Example

Summary & Recommendations

The contamination as shown above is more formally known as "dendrite growth" and is a result of a concentrated level of sulfuric gas coming from the environment and being pulled into the Power Module IGBT section via the UPS air flow design as illustrated in Figure 5. The dendrite growth is conductive in nature and eventually bridges the gap between two separate conductive electrical planes / surfaces within the IGBT, which operate at two different potentials. Once the gap is bridged, a short circuit is created and the IGBT suffers catastrophic damage.

The Eaton Model 9390 UPS is not designed for operation in this environment and will continue to suffer intermittent internal catastrophic damage if left as is. Eaton advises moving the UPS(s) to a more controlled operating environment, per the Model 9390 installation manual, or for the site to take action to eliminate the source of the gas.

Eaton can install sensing coupons near the air intake on the UPS to capture more information on the level of sulfuric gas concentration. The local service office will be contacting you directly regarding this option.

If you have any questions, feel free to call.

Regards,



Mark H. Ritchie
Manager of Product Reliability & Support
PH: 919-871-1807
FX: 919-878-2385
Email: MarkHRitchie@Eaton.com

PURAFIL ENVIRONMENTAL CORROSIVITY REPORT

2/2/2016

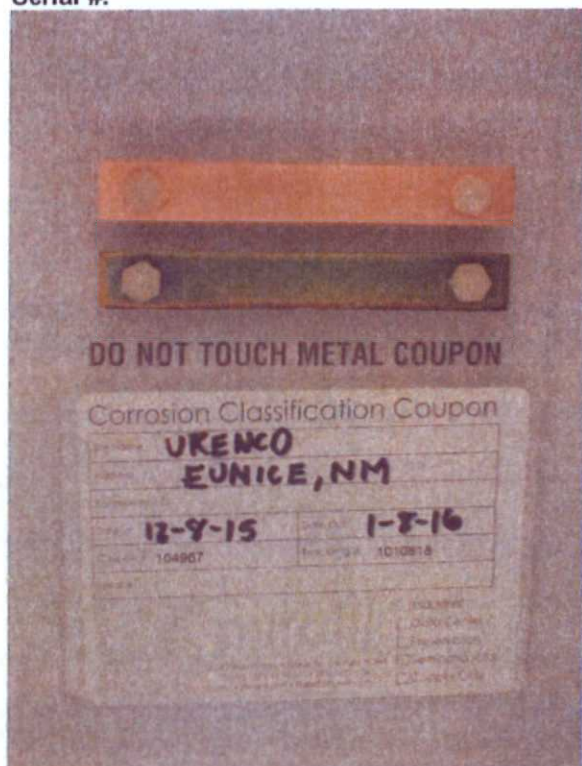
Company: Urenco
Eunice, NM

Sales Order #: 1010818
CCC Panel #: P104967
CCC Coupon #: 104967
Date In: 12/8/2015
Date Out: 1/8/2016
Days In Service: 31

Room Area ID:
Serial #:

CCC Panel # P104967

*ISA Standard 71.04-2013 Class
G2
Moderate



Copper Corrosion
152 Å/30 Days

Silver Corrosion
792 Å/30 Days

(see next page for complete analysis)

Summary for PURAFIL CCC # P104967

The electrolytic reduction analysis on Corrosion Classification Coupon # 104967 shows the presence of moderate concentrations of contaminants in the environment tested. The hydrogen sulfide level is expected to range between 3 and 10 ppb and the sulfur dioxide level between 10 and 100 ppb. The effects of corrosion are measurable and may be a factor in determining equipment reliability.

purafil

Your local representative for additional information and assistance is:

Super Tech Filter

1495 S. Platte River Drive, Denver CO
Super Tech Filter (jack@supertechfilter.com) 303-936-0500

Purafil / 2654 Weaver Way, Doraville GA 30340

Displaying Page 1

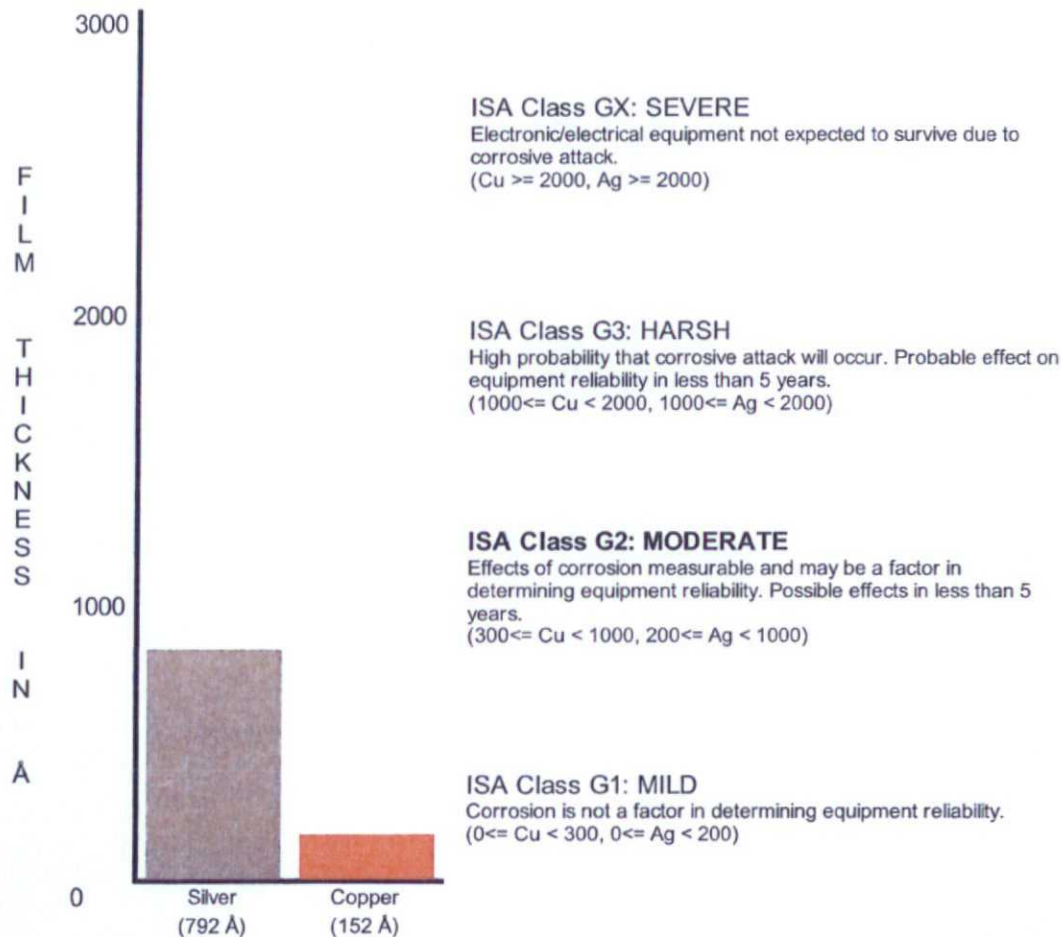
[Display Page 2](#)



PURAFIL CCC # P104967 Analysis Results

Corrosion Film Composition Projections				Gold Coupon - Magnified 20x
	<u>30 Days</u>	<u>1 Year</u>	<u>5 Year</u>	
Copper Films				
Cu ₂ S	0 Å	0 Å	0 Å	
Cu ₂ O	152 Å	232 Å	303 Å	
Unknowns	0 Å	0 Å	0 Å	
Totals	152 Å	232 Å	303 Å	
Silver Films				
AgCl	0 Å	0 Å	0 Å	
Ag ₂ S	756 Å	9202 Å	46010 Å	
Unknowns	36 Å	443 Å	2213 Å	
Totals	792 Å	9645 Å	48223 Å	
Gold Pore Corrosion:				
Note: ♦ 1000 Å = 0.1 micron				

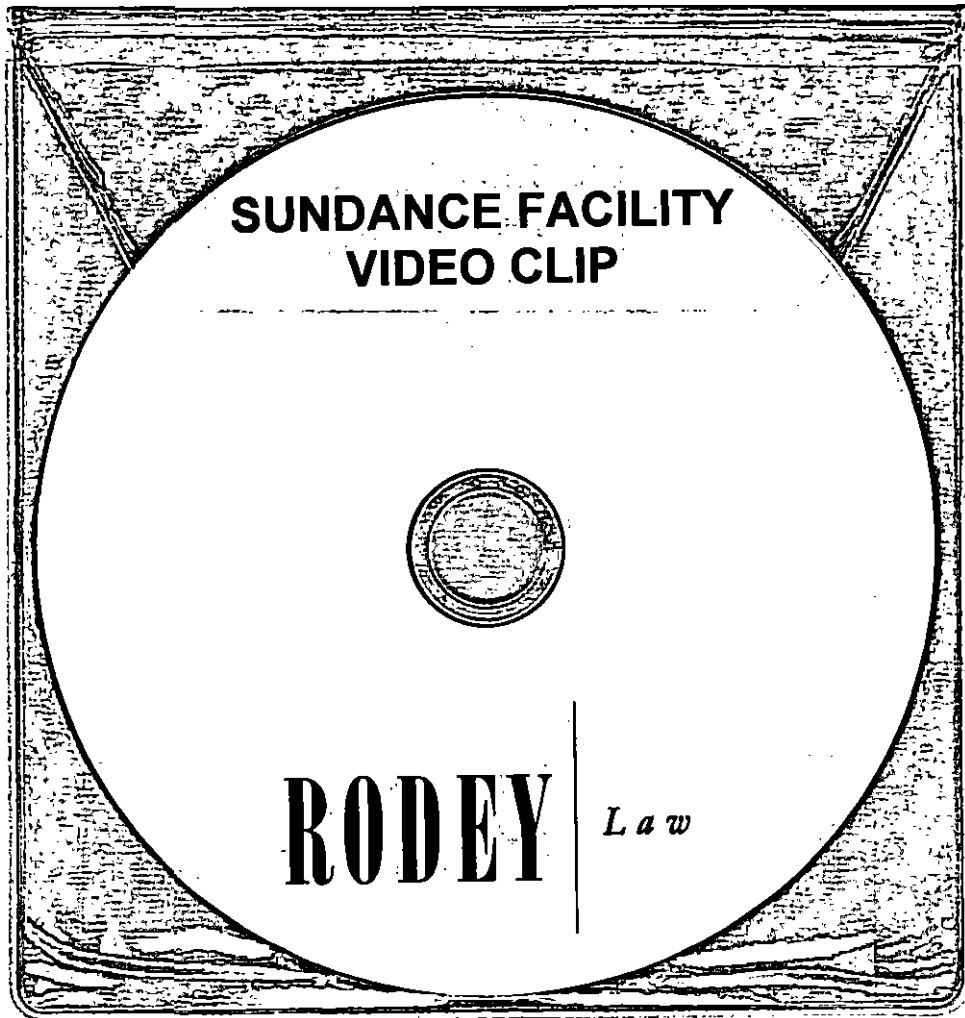
Equipment Reliability Correlation
(ISA Standard S71.04-2013 for Copper and Silver)



***ANSI/ISA 71.04-2013 requires the use of both copper and silver corrosion rates to determine the overall environmental severity level. Locations previously classified as G1 may now be classified as G2 or higher. Check electronic equipment manufacturers' warranty requirements to determine compliance.**

[Display Page 1](#)

Displaying Page 2



CANNOT SCAN A VIDEO CLIP



QUITCLAIM DEED

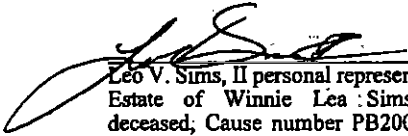
Leo V. Sims, II personal representative of the Estate of Winnie Lea Sims Kennann, deceased, Cause number PB2007-002 Fifth Judicial District Court of Lea County, New Mexico, and personal representative of the Estate of Thomas (Tom) Bernard Kennann, deceased, Cause number PB2007-003 Fifth Judicial District Court of Lea County, New Mexico for consideration paid, quitclaims to S & D Ranch, LLC, a New Mexico limited liability company, whose address is P. O. Box 186, Eunice, New Mexico 88231, the following described real estate in Lea County, New Mexico:

SURFACE ESTATE ONLY:

See Exhibit "A" attached hereto and incorporated herein by reference as if set out in full here.

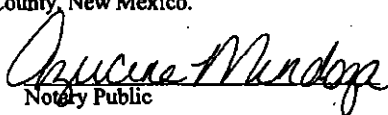
This Deed is exempt from the requirements of NMSA 1978 Section 7-38-12.1 by reason of the exemption under paragraph D (1) of such section. This deed transfers nonresidential property.

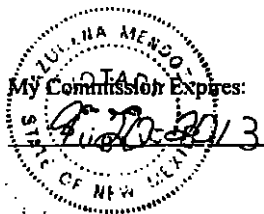
WITNESS my hand and seal this 29th day of December, 2009.


 Leo V. Sims, II personal representative of the Estate of Winnie Lea Sims Kennann, deceased, Cause number PB2007-002 Fifth Judicial District Court of Lea County, New Mexico, and personal representative of the Estate of Thomas (Tom) Bernard Kennann, deceased, Cause number PB2007-003 Fifth Judicial District Court of Lea County, New Mexico

STATE OF NEW MEXICO)
)SS.
 COUNTY OF LEA)

This instrument was acknowledged before me this 29th day of December, 2009 by Leo V. Sims, II personal representative of the Estate of Winnie Lea Sims Kennann, deceased, Cause number PB2007-002 Fifth Judicial District Court of Lea County, New Mexico, and personal representative of the Estate of Thomas (Tom) Bernard Kennann, deceased, Cause number PB2007-003 Fifth Judicial District Court of Lea County, New Mexico.


 Notary Public



BOOK 1661 PAGE 832



Kennann Estates
to
S&D

Township 22 South, Range 37 East, N.M.P.M., Lea County, New Mexico

Section 1: ALL
Section 12: NE/4NW/4, NE/4, W/2E/2SE/4, W/2SE/4, SW/4, S/2NW/4, NW/4NW/4,
E/2E/2SE/4
Section 13: ALL
Section 24: ALL
Section 25: NE/4, N/2NE/4NW/4, NW/4NW/4, SW/4NW/4, NW/4SW/4, SE/4, S/2SW/4,
NE/4SW/4, SE/4NW/4, S/2NE/4NW/4
Section 35: S/2

Township 22 South, Range 38 East, N.M.P.M., Lea County, New Mexico

Section 4: SW/4SW/4
Section 5: West 2/3rds of S/2, Lots 1, 2, 3, 4, S/2N/2
Section 6: ALL
Section 7: ALL
Section 8: S/2, West 2/3rds of NW/4, East 1/3 OF NW/4, West 1/3 of NE/4
Section 9: LOTS 3, 4, W/2SW/4
Section 16: LOTS 1, 2, 3, 4, W/2W/2
Section 17: E/2SW/4, W/2SE/4, N/2, W/2SW/4, E/2SE/4
Section 18: ALL
Section 19: ALL
Section 20: W/2NW/4, E/2NE/4, S/2, W/2NE/4, E/2NW/4
Section 21: LOTS 1, 2, 3, 4, W/2W/2
Section 30: ALL

Township 23 South, Range 37 East, N.M.P.M., Lea County, New Mexico

Section 1: S/2N/2, S/2
Section 2: NW/4NE/4, SE/4NE/4, SE/4, Lot 1, SW/4NE/4
Section 3: S/2SE/4, South 1/5 Acres of N/2SE/4
Section 10: NE/4
Section 11: NE/4, NW/4
Section 12: NW/4

Township 23 South, Range 38 East, N.M.P.M., Lea County, New Mexico

Section 6: S/2N/2, S/2

STATE OF NEW MEXICO
COUNTY OF LEA
FILED

DEC 30 2009

at 10:55 o'clock A M
and recorded in Book _____
Page _____
Pat Chappelle/Lea County Clerk
By Pat Chappelle Deputy



BOOK 1661 PAGE 833



ATTEST
Certified as true and correct copy
of the original on file in this office.

DEC 28 2016

PAT CHAPPELLE, LEA COUNTY CLERK

Christa Sandocal Deputy

12678

QUITCLAIM DEED

Aline Sims, a single woman, individually and as personal representative of the Estate of George P. Sims, aka G. P. Sims, Cause number PB77-138 Fifth Judicial District Court of Lea County, New Mexico, for consideration paid, quitclaims to S & D Ranch, LLC, a New Mexico limited liability company, whose address is P. O. Box 186, Eunice, New Mexico 88231, the following described real estate in Lea County, New Mexico:

SURFACE ESTATE ONLY:

See Exhibit "A" attached hereto and incorporated herein by reference as if set out in full here.

This Deed is exempt from the requirements of NMSA 1978 Section 7-38-12.1 by reason of the exemption under paragraph D (1) of such section. This deed transfers nonresidential property.

WITNESS my hand and seal this 28 day of December, 2009.

Aline Sims

Aline Sims, a single woman, individually and as personal representative of the Estate of George P. Sims, aka G. P. Sims, Cause number PB77-138 Fifth Judicial District Court of Lea County, New Mexico

STATE OF NEW MEXICO)
)SS.
COUNTY OF LEA)

This instrument was acknowledged before me this 29 day of December, 2009 by Aline Sims, a single woman, individually and as personal representative of the Estate of George P. Sims, aka G. P. Sims, Cause number PB77-138 Fifth Judicial District Court of Lea County, New Mexico.

Carl Coy
Notary Public

My Commission Expires:

2/28/2011



My commission expires: 2/28/2011

BOOK 1661 PAGE 819



Aline Sims, individually and PR of the Estate of George P. Sims
to
S&D

Township 22 South, Range 37 East, N.M.P.M., Lea County, New Mexico

Section 1: ALL
Section 12: NE/4NW/4, NE/4, W/2E/2SE/4, W/2SE/4, SW/4, S/2NW/4, NW/4NW/4,
E/2E/2SE/4
Section 13: ALL
Section 24: ALL
Section 25: NE/4, N/2NE/4NW/4, NW/4NW/4, SW/4NW/4, NW/4SW/4, SE/4, S/2SW/4,
NE/4SW/4, SE/4NW/4, S/2NE/4NW/4
Section 35: S/2

Township 22 South, Range 38 East, N.M.P.M., Lea County, New Mexico

Section 4: SW/4SW/4
Section 5: West 2/3rds of S/2
Section 6: ALL
Section 7: ALL
Section 8: S/2, West 2/3rds of NW/4, East 1/3 OF NW/4, West 1/3 of NE/4
Section 9: LOTS 3, 4, W/2SW/4
Section 16: LOTS 1, 2, 3, 4, W/2W/2
Section 17: E/2SW/4, W/2SE/4, N/2, W/2SW/4, E/2SE/4
Section 18: ALL
Section 19: ALL
Section 20: W/2NW/4, E/2NE/4, S/2, W/2NE/4, E/2NW/4
Section 21: LOTS 1, 2, 3, 4, W/2W/2
Section 30: ALL

Township 23 South, Range 37 East, N.M.P.M., Lea County, New Mexico

Section 1: S/2N/2, S/2
Section 2: NW/4NE/4, SE/4NE/4, SE/4, Lot 1, SW/4NE/4
Section 3: S/2SE/4, South 15 Acres of N/2SE/4
Section 10: NE/4
Section 11: NE/4, NW/4
Section 12: NW/4

Township 23 South, Range 38 East, N.M.P.M., Lea County, New Mexico

Section 6: S/2N/2, S/2

STATE OF NEW MEXICO
COUNTY OF LEA
FILED

DEC 30 2009

at 10:21 o'clock A M
was returned in Book
Page
Pat Chappelle, County Clerk
By: C. Spears Deputy



BOOK 1661 PAGE 820



ATTEST
Certified as true and correct copy
of the original on file in this office.

DEC 28 2016

PAT CHAPPELLE, LEA COUNTY CLERK

Cherie Sandoval Deputy

9.

S&D Ranch, LLC for consideration paid grants to Leo V. Sims, LLC, a New Mexico limited liability company, whose address is P.O. Box 2630, Hobbs, New Mexico, 88240, the following described real estate in Lea County, New Mexico:

Section 5: Lots 1, 2, 3, 4 and S/2N/2

This transfer is exempt from the provisions of NMSA 1978 Section 7-38-12.1 by reason that it is a transfer of nonresidential property and is therefore exempt under Section 7-38-12.1 D(1).

Dated this 3rd day of January, 2011.

By: Leo V. Sims, II
Leo V. Sims, II, Manager

STATE OF NEW MEXICO)
)SS.
COUNTY OF LEA)

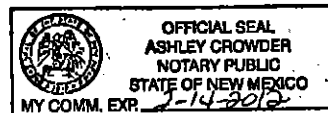
This instrument was acknowledged before me this 3rd day of January, 2011, by Leo V. Sims, II, Manager of S & D Ranch, LLC, a New Mexico limited liability company.

Notary Public

My commission expires:

2-14-2012

STATE OF NEW MEXICO
COUNTY OF LEA
FILED



26060

JAN 05 2011
 at 11:19 o'clock A
 and recorded in Book
 Page
 Per Charlene Lee County Clerk
 By [Signature] Deputy

(00024734)

BOOK 1711 PAGE 560

ATTEST
Certified as true and correct copy
of the original on file in this office.

DEC 28 2016

PAT CHAPPELLE, LEA COUNTY CLERK

Cassie Sandora Deputy



26511

SPECIAL WARRANTY DEED

Leo V. Sims, LLC for consideration paid grants to E. H. & M. C. Clifford Living Trust, whose address is 518 E. Zia Drive, Hobbs, New Mexico 88240 an undivided 1/2 interest in and to the following described real estate in Lea County, New Mexico:

SURFACE ESTATE ONLY:

Township 22 South, Range 38 East, NMPM
Section 5: Lots 1, 2, 3, 4 and S/2N/2

with special warranty covenants. Subject to reservations, easements and restrictions of record.

This transfer is exempt from the provisions of NMSA 1978 Section 7-38-12.1 by reason that it is a transfer of nonresidential property and is therefore exempt under Section 7-38-12.1 D(1).

Dated this 5th day of January, 2011.

Leo V. Sims, LLC

By: [Signature]
Leo V. Sims, II, Manager.

STATE OF NEW MEXICO)
)SS.
COUNTY OF LEA)

This instrument was acknowledged before me this 5th day of January, 2011, by Leo V. Sims, II, Manager of Leo V. Sims, LLC, a New Mexico limited liability company.

[Signature]
Notary Public

My commission expires:

2-14-2012

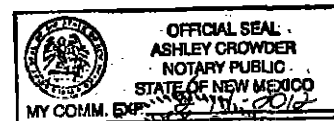
STATE OF NEW MEXICO
COUNTY OF LEA
FILED

JAN 18 2011

at 9:11 o'clock A M
and recorded in Book _____
Page _____
Pat Chappelle, Lea County Clerk
By CS Deputy

(00023444 2)

BOOK 1713 PAGE 187



ATTEST
Certified as true and correct copy
of the original on file in this office.

DEC 28 2016

PAT CHAPPELLE, LEA COUNTY CLERK
[Signature] Deputy



20393

WARRANTY DEED

Leo V. Sims, LLC, a New Mexico limited liability company as to undivided 1/2 interest AND Edsel H. Clifford and Martha C. Clifford, Trustees of the E. H. & M. C. Clifford Living Trust dated 1/20/98 as to undivided 1/2 interest

for consideration paid grants to

J. D. Davis and Joann Davis, husband and wife as joint tenants with rights of survivorship

whose address is P.O. BOX 394 EUNICE, NM 88231

the following described real estate in LEA county, New Mexico

FOR SURFACE TITLE ONLY:

Township 22 South, Range 38 East, N.M.P.M., Lea County, New Mexico

Section 5: Lots 1, 2, 3, 4 and S/2N/2

Subject to reservations, restrictions and easements appearing of record with warranty covenants.

Page 1 of 2

BOOK 1897 PAGE 186



WITNESS our hands and seals on 6/3/14

LEO V. SIMS, LLC, a New Mexico
limited liability company

Leo V. Sims, II
LEO V. SIMS, II, Managing Member

E. H. and M. C. Clifford Living Trust dtd.,
1/20/98

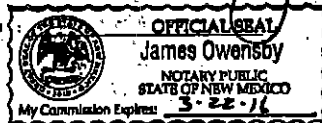
Edsel H. Clifford
Edsel H. Clifford, Trustee

Martha C. Clifford
Martha C. Clifford, Trustee

STATE OF NEW MEXICO)
) ss
COUNTY OF LEA)

This instrument was acknowledged before me on 6/3/14, by Leo V. Sims, II, Managing Member on behalf of Leo V. Sims, II, LLC, a New Mexico limited liability company AND Edsel H. Clifford and Martha C. Clifford, Trustees of the E. H. & M. C. Clifford Living Trust dtd. 1/20/98

My commission expires



James Owensby
Notary Public

STATE OF NEW MEXICO
COUNTY OF LEA
FILED

JUN 04 2014

at 11:30 o'clock A M
and recorded in Book _____
Page _____
Pat Chappella, Lea County Clerk
By Debra Salomon Deputy

20393



BOOK 1897 PAGE 187

ATTEST
Certified as true and correct copy
of the original on file in this office.

DEC 28 2016

PAT CHAPPELLE, LEA COUNTY CLERK

Christi Sandora Deputy

34630
WARRANTY DEED

J.D. Davis and Joann Davis, husband and wife

for consideration paid grants to

A. Bryce Karger, a married man

whose address is 5909 86th Street, Lubbock, TX 79424
the following described real estate in LEA county, New Mexico:

FOR SURFACE TITLE ONLY

Township 22 South, Range 38 East, N.M.P.M., Lea County, New Mexico

Section 5: Lots 1, 2, 3, 4 and S/2N/2

Together with all appurtenances thereto including any interest of Grantor in sand, gravel or caliche.
Subject to reservations, restrictions and easements appearing of record.

with warranty covenants.

WITNESS our hands and seals on 04/27/15

J.D. Davis
J.D. DAVIS

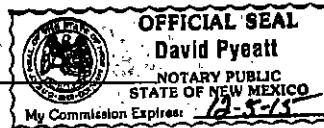
Joann Davis
JOANN DAVIS

STATE OF NEW MEXICO)
COUNTY OF LEA)

This instrument was acknowledged before me on 04/27/15 by J.D. Davis and Joann Davis, husband and wife

[Signature]
Notary Public

My commission expires :



34630
RETURN TO: GRANTEE
STATE OF NEW MEXICO
COUNTY OF LEA
FILED

APR 30 2015

at 10:43 o'clock A M
and recorded in Book _____
Page _____
Pat Chappelle, Lea County Clerk
By [Signature] Deputy

BOOK 1956 PAGE 831

ATTEST

Certified as true and correct copy
of the original on file in this office.

DEC 28 2016

PAT CHAPPELLE, LEA COUNTY CLERK

Christie Sandoval Deputy

EXHIBIT

K-6

35704

WARRANTY DEED

A. Bryce Karger and Adrian Karger, husband and wife

for consideration paid grants to

Johnny Cope, a married man

whose address is P.O. Box 905, Hobbs, NM 88241
the following described real estate in Lea County, New Mexico:

FOR SURFACE TITLE ONLY

An undivided 50% interest in and to;

Township 22 South, Range 38 East, N.M.P.M., Lea County, New Mexico

Section 8: Lots 1, 2, 3, 4 and 8/2N/2

Together with all appurtenances thereto including any interest of Grantor in sand, gravel or cobbles.
Subject to reservations, restrictions and easements appearing of record.

with warranty covenants.

WITNESS our hands and seals on 5/27/15

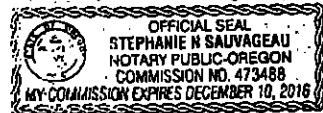
A. Bryce Karger
A. Bryce Karger
Adrian Karger
Adrian Karger

STATE OF Oregon }
COUNTY OF Clackamas }

This instrument was acknowledged before me on 5/27/15, by A. Bryce Karger and Adrian Karger, husband and wife

Stephanie N. Sauvageau
Notary Public

My commission expires: 12/10/2016



RETURN TO: GRANTEE
STATE OF NEW MEXICO
COUNTY OF LEA
FILED

35704

MAY 28 2015

at 2:35 o'clock P.M.
and recorded in Book _____
Page _____
Pat Chappelle, Lea County Clerk
By Carrie Sandoval Deputy

BOOK 1961 PAGE 265

ATTEST
Certified as true and correct copy
of the original on file in this office.

DEC 28 2016

PAT CHAPPELLE, LEA COUNTY CLERK

Carrie Sandoval Deputy



25-
1

36725

WARRANTY DEED

Johnny Cope and Marty Cope, husband and wife

for consideration paid grants to

C.K. Disposal, LLC, a Texas limited liability company

whose address is P.O. Box 905, Hobbs, New Mexico 88241
the following described real estate in LEA county, New Mexico:

FOR SURFACE TITLE ONLY

Township 22 South, Range 38 East, N.M.P.M., Lea County, New Mexico

Section 5: Lots 1, 2, 3, 4 and 9/2N/2

Together with all appurtenances thereto including any interest of Grantor in sand, gravel or caliche.
Subject to reservations, restrictions and easements appearing of record.

with warranty covenants.

WITNESS our hands and seals on 6/19/15

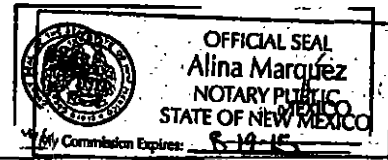
Johnny Cope
Johnny Cope
Marty Cope
Marty Cope

STATE OF NM)
COUNTY OF Lea) ss

This instrument was acknowledged before me on 6/19/15, by Johnny Cope and Marty Cope, husband and wife

Alina Marquez
Notary Public

My commission expires : 8-19-15



STATE OF NEW MEXICO
COUNTY OF LEA
FILED

36725

RETURN TO: GRANTEE

JUN 23 2015

at 10:22 o'clock AM
and recorded in Book _____
Page _____
Pat Chappelle, Lea County Clerk
By MC Deputy

BOOK 1965 PAGE 567



ATTEST
Certified as true and correct copy
of the original on file in this office.

DEC 28 2016

PAT CHAPPELLE, LEA COUNTY CLERK
Christie Santoral Deputy



23
2

38999

WARRANTY DEED

A. Bryce Karger and Adrian Karger, husband and wife

for consideration paid grants to

C.K. Disposal, LLC, a Texas limited liability company,

whose address is P.O. Box 905, Hobbs, New Mexico 88241
the following described real estate in Lea County, New Mexico:

FOR SURFACE TITLE ONLY

Township 22 South, Range 38 East, N.M.P.M., Lea County, New Mexico

Section 5: Lots 1, 2, 3, 4 and S/2N/2

Together with all appurtenances thereto including any interest of Grantor in sand, gravel or caliche.
Subject to reservations, restrictions and easements appearing of record.

with warranty covenants.

WITNESS our hands and seals on 7/6/15

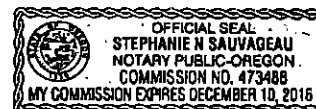
A. Bryce Karger
A. Bryce Karger
Adrian Karger
Adrian Karger

STATE OF Oregon)
COUNTY OF Clackamas) ss

This instrument was acknowledged before me on 7/6/15, by A. Bryce Karger and Adrian Karger, husband and wife.

Stephanie N Sauvageau
Notary Public

My commission expires: 12/10/2016



RETURN TO: GRANTEE

BOOK 1976 PAGE 266



WARRANTY DEED

A. Bryce Karger and Adrian Karger, husband and wife

for consideration paid grants to

C.K. Disposal, LLC, a Texas limited liability company

whose address is P.O. Box 905, Hobbs, New Mexico 88241
the following described real estate in LEA county, New Mexico:

FOR SURFACE TITLE ONLY

Township 22 South, Range 38 East, N.M.P.M., Lea County, New Mexico

Section 5: Lots 1, 2, 3, 4 and S/2N/2

Together with all appurtenances thereto including any interest of Grantor in sand, gravel or caliche.
Subject to reservations, restrictions and easements appearing of record.

with warranty covenants.

WITNESS our hands and seals on 7/6/15

A. Bryce Karger

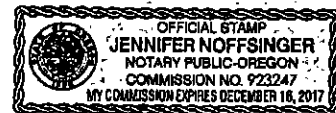
Adrian Karger

STATE OF Oregon)
COUNTY OF Clackamas) ss

This instrument was acknowledged before me on 7/6/15, by A. Bryce Karger and Adrian Karger, husband and wife

[Signature]
Notary Public

My commission expires: December 16, 2017



STATE OF NEW MEXICO
COUNTY OF LEA

38999 RETURN TO: GRANTEE

FILED

AUG 19 2015

at 9:51 o'clock A.M.
and recorded in Book _____
Page _____
Pat Chappelle, Lea County Clerk
By MAC Deputy

BOOK 1976 PAGE 267



ATTEST

Certified as true and correct copy
of the original on file in this office.

DEC 28 2016

PAT CHAPPELLE, LEA COUNTY CLERK

Chris Sandoval Deputy



1/9. 1 of 8

CERTIFICATION
I certify that the foregoing instrument
containing 8 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Anthony D. [Signature]
Commissioner of Public Lands

RECEIVED

LWCF-6
[Signature]

NEW MEXICO STATE
COMMISSIONER OF PUBLIC LANDS
AGREEMENT REGARDING LAND USE RESTRICTION OR CONDITION
STATE LAND OFFICE
2004 JAN 20 PM 3 22

This Agreement Regarding Land Use Restriction or Condition ("Agreement") is entered into effective August 22, 2003 by and between the New Mexico Commissioner of Public Lands (together with its successors and assigns, "Commissioner") and Louisiana Energy Services, L.P., a Delaware limited partnership (together with its successors and assigns, "LES") whose address is 1133 Connecticut Ave. NW, Suite 200, Washington, D.C. 20036.

RECITALS

A. On August 22, 2003, the Commissioner executed Grant of Easement and Right of Way No. 28583 pursuant to which the Commissioner granted to LES an easement and right-of-way over, on and to the land described in Exhibit A to this Agreement ("Land").

B. Paragraph 6.C of the Grant of Easement and Right of Way provides that, subject to certain terms and conditions, the Commissioner shall execute and record in the records of the State Land Office a Land Use Restriction or Condition that provides that, absent LES's prior written consent, (i) the Commissioner shall neither exercise the Commissioner's rights under Paragraph 6.B(1) of the Grant of Easement and Right of Way nor exercise the Commissioner's right to lease or otherwise dispose of or encumber the Land or any interest incident thereto, for any purpose, or grant additional easements, rights-of-way and grants across, under or over the Land, including without limitation, the development of any sand and gravel, coal, caliche, humate, oil and gas or other minerals and (ii) there shall be no surface disturbance of the Land and no right to explore for, mine, develop and/or produce oil, geothermal resources, gas and/or minerals during the term of the Grant of Easement and Right of Way.

C. The Commissioner and LES are entering into this Agreement pursuant to Paragraph 6.C of the Grant of Easement and Right of Way.

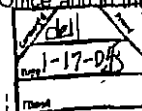
AGREEMENT

NOW, THEREFORE, FOR GOOD AND ADEQUATE CONSIDERATION, THE RECEIPT AND SUFFICIENCY OF WHICH IS ACKNOWLEDGED, THE COMMISSIONER AND LES AGREE:

1. Absent LES's prior written consent, (i) the Commissioner shall neither exercise the Commissioner's right to explore for, mine, develop and produce minerals such as sand and gravel, coal, caliche, humate, oil and gas or other minerals related to the Land nor exercise the Commissioner's right to lease or otherwise dispose of or encumber the Land or any interest incident thereto, for any purpose, or grant additional easements, rights-of-way and grants across, under or over the Land, including for the development of any sand and gravel, coal, caliche, humate, oil and gas or other minerals and (ii) there shall be no surface disturbance of the Land and no right to explore for, mine, develop and/or produce oil, geothermal resources, gas and/or minerals related to the Land during the term of the Grant of Easement and Right of Way.

2. As good and adequate consideration for this Agreement, LES shall pay to the Commissioner Five Thousand and no/100 Dollars (\$5,000.00) per year, beginning on August 22 of 2008 and continuing on August 22 of each year thereafter up to and including August 22 of 2037, or of each year in succession thereafter during which Grantee occupies and uses the Land, unless the Grant of Easement and Right of Way is earlier terminated or relinquished.

3. This Agreement shall be recorded in the records of the State Land Office and in the real property records of Lea County, New Mexico.





CERTIFICATION
I certify that the foregoing instrument
containing LURC 1-03 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Aubrey Dunn
Commissioner of Public Lands

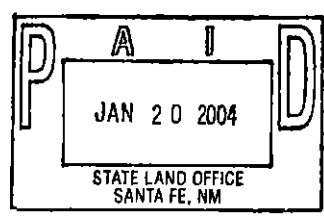
4. The term shall begin on the date on which the Commissioner executes this Agreement and shall end on August 22, 2038, or so long thereafter as LES occupies and uses the Land, unless the Grant of Easement and Right of Way is earlier terminated or relinquished; provided that if the Grant of Easement and Right of Way is terminated by a sale or exchange of the Land to LES or to Lea County, New Mexico, (a) both the restrictions and conditions in this Agreement and LES's obligation to pay the consideration therefor in the amount, and for the time, set forth in this Paragraph shall survive and (b) the instrument conveying the Land shall expressly recite the restrictions set forth in this Agreement.
5. If a court of competent jurisdiction determines that a provision or provisions of this Easement is or are invalid or illegal, such determination shall not invalidate or render unenforceable any other provision hereof; provided, however, that if enforcement of this Easement absent such invalid or unenforceable provision(s) would destroy an essential purpose of this Easement, then this Easement shall be deemed modified to the extent necessary to make this Easement valid or enforceable consistent with its true intent.
6. This Agreement shall be binding upon, and shall inure to the benefit of, the Commissioner and LES and their respective assigns and successors in interest.

Executed in duplicate.

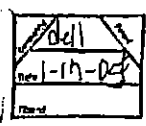
NEW MEXICO COMMISSIONER OF PUBLIC LANDS

By: Patrick H. Lyons
Patrick H. Lyons, Commissioner

THIS SPACE INTENTIONALLY LEFT BLANK



LURC #3
SS



pg. 3 of 8



CERTIFICATION
I certify that the foregoing instrument
LURC 1-03
containing 8 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Anthony Daniel
Commissioner of Public Lands

LES SIGNATURE PAGE FOR LURC

LOUISIANA ENERGY SERVICES, L.P.

By: [Signature]
E. James Ferland, President

DISTRICT OF COLUMBIA

)
) ss.
)

This instrument was acknowledged before me on November 19, 2003 by E. James Ferland, President of LOUISIANA ENERGY SERVICES, L.P. a Delaware limited partnership.

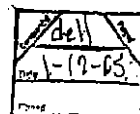
[Signature]
NOTARY PUBLIC

My commission expires:

February 28, 2008

Exhibit A

Land subject to this Agreement





CERTIFICATION
I certify that the foregoing instrument
containing 6 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Anthony Dura 1-4-2017
Commissioner of Public Lands

Exhibit A

In Lea County:

The surface estate only of a tract of Land situated in Section 32, Township 21S, Range 38E, New Mexico Principal Meridian, as follows:

NE1/4NE1/4
SE1/4NE1/4
SW1/4NE1/4
NW1/4NE1/4

NE1/4SE1/4
Portion of SE1/4SE1/4 containing 26.42± acres North of NM Highway 234
Portion of SW1/4SE1/4 containing 18.96± acres North of NM Highway 234
NW1/4SE1/4

NE1/4SW1/4
Portion of SE1/4SW1/4 containing 11.47± acres North of NM Highway 234
Portion of SW1/4SW1/4 containing 4.08± acres North of NM Highway 234
NW1/4SW1/4

NE1/4NW1/4
SE1/4NW1/4
SW1/4NW1/4
NW1/4NW1/4

The immediately above-described tract in Section 32 being and intended to be described in that survey by Daniel R Muth, NMLS No. 13239 dated 8-14-03 as follows:

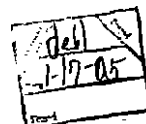
The surface estate only of and to a parcel of land within Section 32, Township 21 South, Range 38 East, New Mexico Principal Meridian, Lea County, New Mexico and containing 542.80 acres, more or less.

Being and intended to be the same property as described in the Confirming U.S. Patent #1202802 dated 12/31/59, according to the New Mexico State Land Records, as follows:

The surface estate only of a tract of Land situated in Section 32, Township 21S, Range 38E, New Mexico Principal Meridian, as follows:

NE1/4NE1/4
SE1/4NE1/4
SW1/4NE1/4
NW1/4NE1/4

NE1/4SE1/4
Portion of SE1/4SE1/4 containing 26.42± acres North of NM Highway 234
Portion of SW1/4SE1/4 containing 18.96± acres North of NM Highway 234





CERTIFICATION
I certify that the foregoing instrument
LRCC 1-03
containing 8 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Aubrey Dunn Date 1-4-2017
Commissioner of Public Lands

NW1/4SE1/4

NE1/4SW1/4

Portion of SE1/4SW1/4 containing 11.47± acres North of NM Highway 234

Portion of SW1/4SW1/4 containing 4.08± acres North of NM Highway 234

NW1/4SW1/4

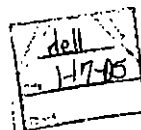
NE1/4NW1/4

SE1/4NW1/4

SW1/4NW1/4

NW1/4NW1/4

The surface estate only of and to a parcel of land within Section 32, Township 21 South,
Range 38 East, New Mexico Principal Meridian, Lea County, New Mexico.



Pg. 698



CERTIFICATION
I certify that the foregoing instrument
containing 8 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 4-4-2017
Cubrey Dunn
Commissioner of Public Lands

Page 5 of 9)

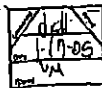
GL ENVIRONMENTAL INC.

APPLICATION

FOR STATE OF NEW MEXICO LAND

TOWNSHIP 21 SOUTH, RANGE 38 EAST, N.M.P.M.

SECTION 32
NE1/4-NE1/4
NW1/4-NE1/4
SW1/4-NE1/4
SE1/4-NE1/4
NE1/4-NW1/4
NW1/4-NW1/4
SW1/4-NW1/4
SE1/4-NW1/4
NE1/4-SE1/4
NW1/4-SE1/4
SW1/4-SE1/4
SE1/4-SE1/4
NE1/4-SW1/4
NW1/4-SW1/4
SW1/4-SW1/4
SE1/4-SW1/4



LEA COUNTY, NEW MEXICO

Exhibit A



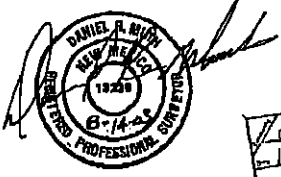
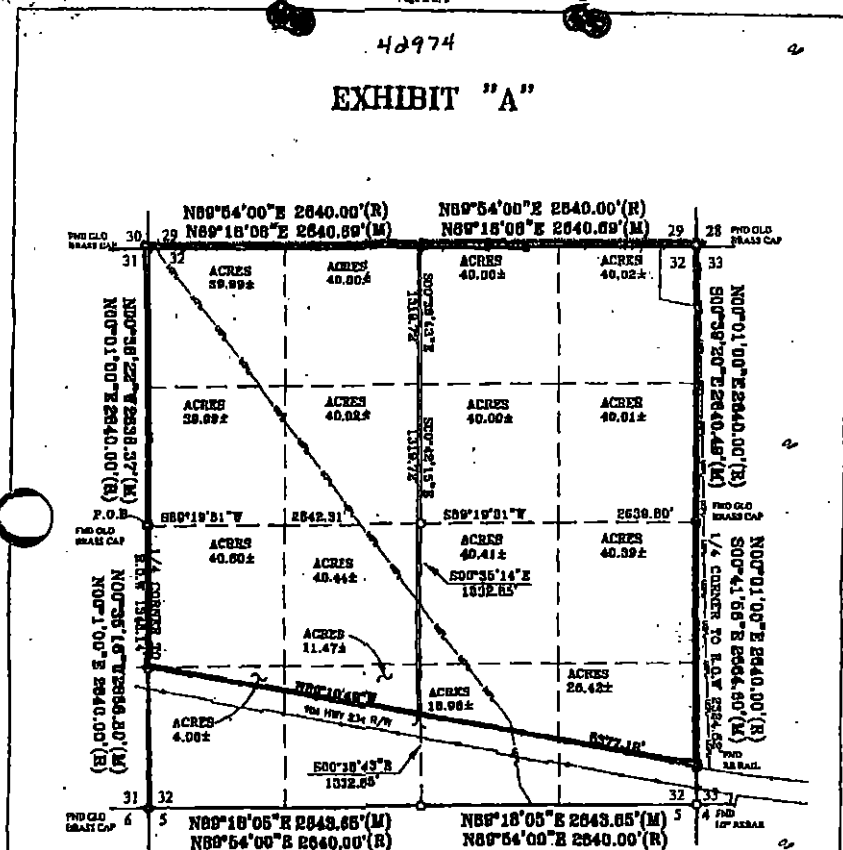
19.798



CERTIFICATION
I certify that the foregoing instrument
containing 8 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Anthony Deven 1-4-2017
Commissioner of Public Lands

Page 6 of 9)

EXHIBIT "A"



1-19-05
1-19-05

SCALE 1" = 1000
0' 500' 1000' 2000'

- LEGEND
- SET MONUMENT 18" REBAR WITH ALUM CAP MARKED WITH PLAS LIXID
- FOUND MONUMENT AS NOTED
- BARBED WIRE FENCE
- UNDEVELOPED FIVE LINE
- UNDEVELOPED TELECOM

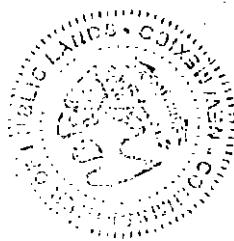
State of New Mexico, County of _____, I hereby certify that this instrument was
Glad for record on
This _____ Day of _____, 20____ A.D.
At _____ O'Clock _____ M.
Book _____ Page _____
By _____, County Clerk
By _____, Deputy

PREPARED BY PREPARED BY DATE OF SURVEY REV DATE DESCRIPTION		INDEXING INFORMATION FOR COUNTY CLERK OWNER: STATE OF NEW MEXICO LOC. REC. NO 7219 R312	PLAT OF BOUNDARY SURVEY FOR GL ENVIRONMENTAL INC. 4200 MEADOWLARK LANE RIO RANCHO, NEW MEXICO 87124 PROJ. NO. 12031026 DESIGNED BY: C. JOHNSON DRAWN BY: J. GARCIA CHECKED BY: J. GARCIA BOOK 12A CO. 81 SHEET 1 of 2
--	--	--	---

Exhibit A



19888



CERTIFICATION
I certify that the foregoing instrument
containing 8 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Clint Durr
Commissioner of Public Lands

Page 7 of 9

LEGAL DESCRIPTION

A PARCEL OF LAND WITHIN SECTION 32, TOWNSHIP 21 SOUTH, RANGE 38 EAST, NEW MEXICO PRINCIPAL MERIDIAN, LEA COUNTY, NEW MEXICO.

BEGINNING at the one-quarter corner between Sections 31 and 32, (a found GLO brass cap on a 2-inch iron pipe);

THENCE N00°38'22"W along the section line between Sections 31 and 32 a distance of 2638.37 feet to the corner of Sections 29, 32, 31 and 30, (a found GLO brass cap on a 2-inch iron pipe);

THENCE N89°18'08"E along the section line between sections 29 and 32 a distance of 2640.69 feet to a set 5/8-inch rebar with a 2-inch aluminum cap marked "MUTH PLS 13239";

THENCE N89°18'08"E along the section line between sections 29 and 32 a distance of 2640.69 feet to the corner of Sections 28, 33, 32 and 29, (a found GLO brass cap on a 2-inch iron pipe);

THENCE S00°39'20"E along the section line between Sections 32 and 33 a distance of 2640.49 feet to the one-quarter corner between Sections 32 and 33, (a found GLO brass cap on a 2-inch iron pipe);

THENCE S00°41'56"E along the section line between Sections 32 and 33 a distance of 2324.52 feet to a found railroad iron marking the right-of-way for New Mexico State Highway No. 234; from whence the corner of Sections 33 and 32 of Township 21 South, Range 38 East, and Sections 4 and 5 of Township 22 South, Range 38 East (a found 1/2-inch rebar) bears S00°41'56"E a distance of 340.08 feet;

THENCE N80°10'49"W along the observed northerly right-of-way line of New Mexico State Highway No. 234 a distance of to a point of intersection with the section line between Sections 31 and 32 (set 5/8-inch rebar with a 2-inch aluminum MUTH PLS 13239"); from whence the the corner of Sections 31 and 32 of Township 21 South, Range 38 East, and to and 5 of Township 22 South, Range 38 East (a found GLO brass cap on a 2-inch iron pipe) bears S00°33'16"E a distance of 1321.66 feet;

THENCE N00°35'16"W along the section line between Sections 31 and 32 a distance of 1345.14 to the POINT OF BEGINNING

Said Parcel CONTAINS 542.80 ACRES more or less

CERTIFICATE OF SURVEY-

"I, Daniel R. Muth, New Mexico Professional Surveyor, hereby certify that this Boundary Survey Plat was prepared from an actual ground survey performed by me or under my supervision, that this survey is true and correct to the best of my knowledge and belief, that this Boundary Survey Plat and the field survey upon which it is based meet the Minimum Standards for Surveying in New Mexico, and that this survey is not a land division or subdivision as defined in the New Mexico Subdivision Act. This is a Boundary Survey Plat of an existing tract or tracts.

Daniel R. Muth
Daniel R. Muth NMPS# 13239

14 Aug 2013
Date

del
1-14-05
Tom

(5521)

State of New Mexico, County of Lea, I here by certify that this instrument was
filed for record on:
The 14th Day of August, 2013 A.D.
At 9:55 O'Clock PM M.
Book 1 Page 566
By Delinda Hughes, County Clerk
By R. Dawson, Deputy

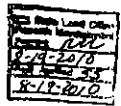
GREW AND ASSOCIATES J.M. GREW P.O. BOX 100 TUCSON, AZ 85710 (520) 393-7777		INDEXING INFORMATION FOR COUNTY CLERK OWNER: STATE OF NEW MEXICO LOC. REC. 32 T18 R38E	PLAT OF BOUNDARY SURVEY FOR GL ENVIRONMENTAL INC. 4200 MEADOWLARK LANE RIO RANCHO, NEW MEXICO 87124 PROJ. No. 12001.074 I. ENV. BY: T.C. JOHNSON DWG. Survey of Environment LDP031718318.dwg BOOK LEA CO. #1 (SHT.) 1 of 2
0	01/14/2003	PLOTTED	
00	01/17/2003	PRELIMINARY PLAT	
01/17/2003	01/17/2003	DATE OF SURVEY	
05/1	DATE	DESCRIPTION	

SCANNED

Pg. 1 of 2



CERTIFICATION
I certify that the foregoing instrument
LURC No. 1-03 First Amendment
containing 2 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
1-3-2017
Andrew D. ...
Commissioner of Public Lands



Commissioner of Public Lands
NEW MEXICO STATE LAND OFFICE
LURC NO. 1-03
FIRST AMENDMENT

By this First Amendment, LURC No. 1-03 is hereby amended as set out below. In all other respects, LURC No. 1-03 is hereby ratified and confirmed.

Exhibit A is amended to include the following additional land:

The surface estate only of a tract of land situated in Section 32, Township 21 South, Range 38 East, NMPM, as follows:

- Pt. SW $\frac{1}{4}$ SW $\frac{1}{4}$ (29.99/ac),
- Pt. SE $\frac{1}{4}$ SW $\frac{1}{4}$ (22.77/ac),
- SW $\frac{1}{4}$ SE $\frac{1}{4}$ (15.11/ac),
- Pt. SE $\frac{1}{4}$ SE $\frac{1}{4}$ (7.89/ac).

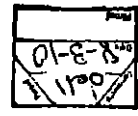
Due to the foregoing addition of land, the cost of LURC 1-03 will increase proportionately from \$5,000.00 to \$5,682.00 to be due and payable on the 22nd day of August 2010, and each year thereafter up to and including August 22, 2037, but only for as long as LES leases the foregoing addition of land.

NEW MEXICO COMMISSIONER OF PUBLIC LANDS

Patrick H. Lyons
Patrick H. Lyons

Dated: 8-3-10

S
E
A
L



2010 JUL 29 AM 10:23



CERTIFICATION
I certify that the foregoing instrument,
LURC No 1-03 First Amendment
containing 2 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-8-2016
Quincy Dunn
Commissioner of Public Lands

LES SIGNATURE PAGE FOR LURC

LOUISIANA ENERGY SERVICES, LLC.

By Paul Mason

STATE OF NEW MEXICO)
) SS
)

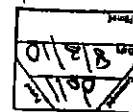
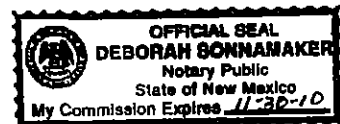
This instrument was acknowledged before me on July 27, 2010
by Paul Mason, CEO of LOUISIANA

ENERGY SERVICES, LLC., a Delaware Limited Liability Corporation,
successor in interest to Louisiana Energy Services, LP.

Deborah Sonnamaker
NOTARY PUBLIC

My commission expires:

11-30-10



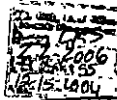


CERTIFICATION
I certify that the foregoing instrument
Lease No. BL-1689
containing 7 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Anthony Duran (Signature)
Commissioner of Public Lands



**NEW MEXICO
STATE LAND OFFICE
COMMERCIAL RESOURCES DIVISION
PO Box 1148, Santa Fe, NM 87504-1148**

BUSINESS LEASE



Lease No. BL-1689

THIS LEASE, dated April 5, 2005, is made and entered into by and between the Commissioner of Public Lands, hereinafter referred to as "Lessor", and Leo Sims II, whose address is 814 West Marlin, Hobbs, New Mexico 88240 (PO Box 2630, Hobbs, NM), hereinafter referred to as "Lessee".

Lessor and Lessee agree and covenant as follows:

1. **LEASE.** For and in consideration of and subject to the terms, conditions, covenants and reservations contained herein, Lessor leases to Lessee the following described tract of land, hereinafter referred to as the "leased premises":

See Attached Exhibit "A".

The rights granted herein are subject to all valid existing rights in the leased premises.

2. **WATER RIGHTS.** No water rights shall be used, placed or developed on the leased premises without the express, written consent of Lessor. All water appropriated shall be pursuant to state law and regulations. Any water rights used, placed or developed on the Lease Premises are herein and hereby deemed to belong to the Lessor, and all such rights shall be developed in the name of the Lessor.

3. **RESERVATIONS.** Lessor reserves the right to execute leases for the exploration, development and production of geothermal resources, oil and gas, sand, gravel, coal, shale, clay, rock, building stone or materials, potassium, sodium, phosphorus, salt or any other minerals or deposits of whatsoever kind located in, under or upon the leased premises and all rights of access, ingress and egress through or across the leased premises that are necessary or convenient to such exploration, development or production. Lessor further reserves the right to grant rights-of-way and easements over, upon, or across the leased premises for public highways, railroads, tramways, telephone, telegraph and power lines, irrigation works, sewer lines, drainage ditches, mining, logging, and for other purposes.



SLO SCAN
APR 12 2007

EXHIBIT

M-1



CERTIFICATION
I certify that the foregoing instrument
Lease No. BL 1689
containing 7 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Cubry Dunn
Commissioner of Public Lands

4. **TERM.** The term of this lease shall begin on the date of this lease and end at midnight on April 4, 2010, unless terminated or canceled earlier as herein provided. Nothing contained herein shall limit the right of Lessor to sell or exchange the leased premises during the lease term.

5. **RENT.** Lessee shall pay to Lessor as rent for the leased premises and for the rights and privileges granted hereunder \$500.00 per year, due and payable in advance on or before the 4th of April each year during the term of this lease. Time is of the essence in the performance of this agreement. Interest on delinquent rent payments shall accrue from the date the payment becomes due at the rate of one percent a month or any fraction of a month. Lessee shall also pay a late processing fee of \$50.00 for any delinquent payment of rent, in accordance with the Lessor's schedule of fees.

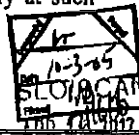
6. **PERMITTED USE.** Lessee shall use the leased premises for the sole and exclusive purpose of: Potential commercial and business activities.. No other uses shall be permitted.

7. **IMPROVEMENTS.** Lessee may place the following improvements on the leased premises:

No other improvements shall be placed on the leased premises without the prior amendment of this lease pursuant to Paragraph 19 hereof to permit such improvement placement. Lessee shall maintain and protect from waste and trespass all improvements placed on the leased premises. In the event improvements other than those authorized herein are placed on the leased premises, Lessor may either declare title to such improvements in Lessor without payment of compensation to Lessee or Lessor may order the removal of such improvements and the restoration of the leased premises to their condition existing prior to the placement of said improvements at Lessee's expense. The foregoing rights of Lessor shall be cumulative to Lessor's right to cancel this lease as herein provided.

8. **LIEN.** To secure the payment of any rent amount that becomes due, and to satisfy all reasonable costs incurred by Lessor in recovering said rent amount, Lessor shall have a first and prior lien on any and all improvements, fixtures and equipment placed on the leased premises.

9. **IMPROVEMENT REMOVAL AND RECLAMATION.** Before relinquishment or termination of this lease without re-lease to Lessee, or upon Lessor's cancellation of this lease as provided herein, Lessee shall remove all improvements placed on the leased premises and shall restore the leased premises to their condition existing prior to the placement of said improvements; provided, however, if any rent amount is due and unpaid at the time of lease cancellation or termination, Lessee shall remove improvements and restore the leased premises as herein provided only at such





CERTIFICATION
I certify that the foregoing instrument
Lease No. BL 1689
containing 7 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Ashley Dunn
Commissioner of Public Lands

time, in such manner and under such conditions as Lessor may in writing demand. Lessee hereby waives, and shall not assert, any right to compensation for improvements on the leased premises under Section 19-7-14, NMSA 1978. This paragraph shall survive termination of this lease.

10. **RELINQUISHMENT.** Lessee, if not in default under this lease, may at any time apply to relinquish the lease to Lessor and be relieved of further obligations under the lease, provided, however, such relinquishment shall not be valid or effective until approved in writing by Lessor. Lessee must file an application to relinquish the Lease at least 30 days prior to the date on which the Lessee requests the relinquishment to go into effect. Lessor may condition relinquishment on any terms he deems reasonable. Relinquishment shall be made on a form prescribed by Lessor and shall be accompanied by the required relinquishment fee as set forth in Lessor's schedule of fees. Upon relinquishment Lessee shall not be entitled to the refund of any rent previously paid.

11. **ASSIGNMENT.** Lessee shall not assign this lease, any part thereof, or assign any improvements located on the leased premises without the prior amendment of this lease pursuant to Paragraph 19 hereof to permit such assignment. Any lease assignment without lease amendment shall be null and void. Lessor may condition such lease amendment upon an increase in the rent amount and the modification or addition of other lease provisions.

12. **SUBLEASE.** Lessee shall not sublease the rights granted hereunder, any part thereof, any portion of the leased premises or any improvements located on the leased premises without the prior amendment of this lease pursuant to Paragraph 19 hereof to permit such sublease. Any sublease without lease amendment shall be null and void. Lessor may condition such lease amendment upon an increase in the rent amount and the modification or addition of other lease provisions.

13. **DEFAULT AND CANCELLATION.** Upon Lessee's violation of any of the terms, conditions or covenants contained herein, including the failure to pay the rent when due, Lessor may cancel this lease after providing Lessee thirty (30) days notice of the default by registered mail. The mailing of such notice as herein provided shall constitute notice of Lessor's intention to cancel the lease and no proof of receipt of such notice shall be necessary in order for Lessor to enter lease cancellation thirty days after the mailing of the notice if Lessee has not cured the default to Lessor's satisfaction within said thirty day period. Lessee agrees that if a court of competent jurisdiction determines that Lessee has breached any of the terms, conditions or covenants of this lease, Lessee shall pay the costs incurred by Lessor in litigating the default, including reasonable attorney fees. In the event of a breach of the terms of this Lease by the Lessee, the Lessor also shall have all remedies available at law or equity.

14. **WAIVER.** No employee or agent of Lessor has the power, right or authority to orally waive any of the terms, conditions, or covenants hereof and no waiver by Lessor of any of the terms, conditions or covenants hereof shall be effective unless in writing and executed by Lessor. Lessor's waiver of Lessee's breach or default of any of

SLO SCANM
10-3-05
100 1 2 2017



CERTIFICATION
I certify that the foregoing instrument
Lease No. BL 1689
containing 7 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Aubrey Dunn
Commissioner of Public Lands

the terms, conditions or covenants hereof shall not constitute or be construed as a waiver of any other or subsequent breach or default by Lessee. The failure of Lessor to enforce at any time any of the terms, conditions or covenants hereof or to exercise any option herein provided, or to require at any time performance by Lessee of any of the terms, conditions, or covenants hereof shall not constitute or be construed to be a waiver of such terms, conditions, or covenants, nor shall it affect the validity of this lease or any part thereof, or Lessor's right to thereafter enforce each and every such term, condition and covenant.

15. **COMPLIANCE WITH LAWS.** Lessee shall fully comply with all federal and state laws, regulations, rules, ordinances and requirements, applicable to the leased premises or to Lessee's operations thereon, including but not limited to all applicable laws governing water; endangered or threatened species; hazardous materials; environmental protection; land use; health and safety; cultural, historic or archeological / paleontological properties; waste; trespass; and all New Mexico State Land Office Rules and Regulations, including those that may be hereafter promulgated. Lessee's obligations under this paragraph include but are not limited to compliance with NMSA 1978 Section 19-6-5, requiring a lessee of State Trust Land to protect the leased premises from waste or trespass. Lessee's compliance with all laws, regulations and policy shall be at its own expense.

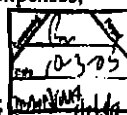
16. **WAIVER, RELEASE AND PROTECTION OF THE LEASED PREMISES.** Lessee is leasing the leased premises based on Lessee's own inspection and investigation of and judgment regarding the leased premises. Lessor makes no warranties or representations of any kind or nature with regard to the leased premises or with regard to this transaction.

If accidental discharge, release, spill, or fire or any other event having environmental consequence occurs, Lessee agrees to provide notice to Lessor at the same time and in the same manner as Lessee is required to provide to the federal, state or local agency having responsibility for enforcing compliance with environmental laws, regulations and policy. Lessee agrees that, upon request by Lessor, Lessor shall have access to all reports, documents, test data and all other materials provided by Lessee to or received by Lessee from a governmental agency having responsibility for enforcing compliance with environmental or other laws.

In the event Lessor is required to incur any cost or expense to enforce the provisions of this lease, including but not limited to consultants, engineers, soil, air or water sampling and attorney's fees and costs, Lessee shall be liable for and reimburse Lessor for said costs and expenses.

17. **INDEMNIFICATION; INSURANCE.**

A. Lessee shall hold harmless, indemnify and defend the State of New Mexico, Lessor and Lessor's employees, agents, and contractors, in both their official and individual capacities, from any and all liabilities, claims, losses, damages, or expenses,



SLO S

APR 19 2017



CERTIFICATION
I certify that the foregoing instrument
Lease No. BL 1649
containing 7 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Aubrey Dunn
Commissioner of Public Lands

including but not limited to reasonable attorneys' fees, loss of land value, third party claims, penalties or removal, remedial or restoration costs arising out of, alleged to arise out of or indirectly connected with a) the operations hereunder of Lessee or Lessee's employees, agents, contractors, or invitees, b) the activities of third parties on the leased premises, whether with or without Lessee's knowledge or consent. This provision, Lease Paragraph 17, shall survive the termination, cancellation or relinquishment of this Lease, and any cause of action of Lessor to enforce this provision shall not be deemed to accrue until Lessor's actual discovery of said liability, claim, loss, damage, or expense.

B. During the Term of this Lease, Lessee shall obtain and maintain at all times, at Lessee's cost and expense, broad form comprehensive general public liability insurance that names the Lessor as the insured or as an additional insured, protecting the Lessor against claims for personal injury, death and property damage. Such an insurance policy must specifically provide coverage for the Lessor and its employees and agents in minimum amounts of \$100,000 for damage to or destruction of property arising out of a single occurrence; \$300,000 for all past and future medical and medically-related expenses arising out of a single occurrence; \$ 400,000 to any person for any number of claims arising out of a single occurrence for all damages other than property damage and medical and medically-related expenses; and \$750,000 for all claims other than medical or medically-related expenses arising out of a single occurrence. Higher coverage for the Lessor may be reasonably required by the Lessor from time to time. In addition, the Lessee must obtain at its own expense, insurance coverage adequate to protect its operations, property, employees and agents in amounts Lessee finds sufficient. The Lessee shall provide to Lessor copies of the insurance policy or policies providing coverage to the Lessor and all amendments and renewals upon issuance, amendment, and renewal.

18. **SCOPE OF AGREEMENT.** This lease incorporates all the agreements, covenants and understandings between Lessor and Lessee concerning the subject matter hereof and all such agreements, covenants and understandings are merged into this written lease. No prior agreement or understanding between Lessor and Lessee shall be valid or enforceable unless expressly embodied in this lease.

19. **AMENDMENT.** This lease shall not be altered, changed or amended except by an instrument executed by both Lessor and Lessee.

20. **APPLICABLE LAW.** This lease shall be governed by the laws of the State of New Mexico.

21. **EXHAUSTION OF ADMINISTRATIVE REMEDIES.** In the event that Lessee is aggrieved by a decision of Lessor to cancel this Lease, Lessee shall within thirty (30) days after the date of such decision file an administrative contest pursuant to NMSA 1978, § 19-7-64 and State Land Office Rule 15 (19.2.15 NMAC). Lessee shall initiate no court action regarding this Lease except to appeal a final decision of the Commissioner of Public Lands rendered pursuant to such a contest proceeding, and as provided by NMSA 1978, § 19-7-64.

10305
SLO SCANM
11



CERTIFICATION
I certify that the foregoing instrument
containing 4 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Anthony D. [Signature]
Commissioner of Public Lands

22. **SUCCESSORS IN INTEREST; THIRD PARTIES.** All terms, conditions and covenants of this lease and all amendments thereto shall extend to and bind the heirs, successors and assigns of Lessee and Lessor. There are no third party beneficiaries of this Lease.

23. **RE-LEASE.** At the expiration of the term of this lease, Lessee may re-lease the leased premises provided Lessor has determined to offer the leased premises for the same uses as permitted herein, Lessee is not in default under this lease, Lessee agrees to the terms offered by Lessor, and Lessee has bettered any offer to lease the leased premises made by a third party.

24. **HOLDING OVER.** If Lessee enters upon the leased premises after the termination or cancellation of this lease for any purpose, or leaves any equipment, buildings, materials, property or debris on the leased premises after the termination or cancellation of this lease, the rent due Lessor for such entry or presence shall be \$10.00 for each day or any part of a day. Nothing contained herein shall be construed as the grant to Lessee of the right to enter the leased premises for any purpose after the termination or cancellation of this lease without the prior written consent of Lessor.

25. **LEASE ENTERED INTO UNDER STATE LAND OFFICE RULE 9.** This Lease is entered into pursuant to New Mexico State Land Office Rule 9, "Business Leasing" (19.2.9 NMAC), and the provisions of that rule control the interpretation and application of the terms of this Lease, except that in the event of a conflict between a provision of this Lease and a provision of Rule 9, the Lease provision controls.

Executed in duplicate.

LESSEE:

[Signature]

By: _____

Name: Leo U. [Signature]

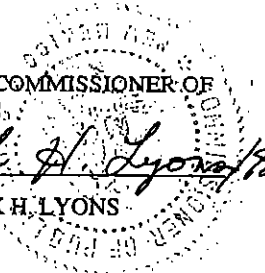
Title: Ind. [Signature]

LESSOR:

NEW MEXICO COMMISSIONER OF
PUBLIC LANDS

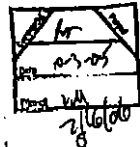
By: Patrick H. Lyons [Signature]

PATRICK H. LYONS



ACKNOWLEDGMENT IN AN INDIVIDUAL CAPACITY

State of New Mexico
County of Lea

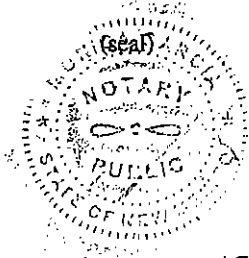


SLO SCAN



CERTIFICATION
I certify that the foregoing instrument
Page No. 66-1687
containing 7 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Aubrey Dixon
Commissioner of Public Lands

This instrument was acknowledged before on 13th (date) by
LEE L. PIAU (name).



Monica Garcia
(Signature of notarial officer)

My commission expires: 9/13/2006

ACKNOWLEDGMENT IN A REPRESENTATIVE CAPACITY

State of _____
County of _____

This instrument was acknowledged before on _____ (date) by
_____ (name) as _____ (title) of
_____ (name of party on behalf of whom instrument is
executed).

(seal)

(Signature of notarial officer)

My commission expires: _____



SLO SCAN 7

APR 17 2012



CERTIFICATION

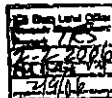
I certify that the foregoing instrument
Assignment BL 1689
containing 2 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.

Date 1-4-2017
Cathy Dunn
Commissioner of Public Lands



**NEW MEXICO
STATE LAND OFFICE
COMMERCIAL RESOURCES DIVISION
PO Box 1148, Santa Fe, NM 87504**

BL 1689



ASSIGNMENT OF STATE BUSINESS LEASE

KNOW ALL MEN BY THESE PRESENTS:

That Leo Sims II, hereinafter called the Assignor, for and in consideration of the sum of \$150,000.00, in hand paid, the receipt of which is hereby acknowledged, and Assignee's promise (to the extent that Assignee has legal authority to promise) not to grant an easement across the leasehold to property directly south of the leasehold, does hereby sell, assign, transfer and set over unto Louisiana Energy Services, L.P., 100 Sun Avenue NE, Suite 204, Albuquerque, NM 87109, (505) 944-0194, hereinafter called the Assignee, that certain business lease made and executed by the State of New Mexico, through its Commissioner of Public Lands as Lessor, unto Assignor as Lessee bearing the date April 5, 2005, being designated as Business Lease No. BL-1689, and being more particularly described as follows:

The portion of Section 32, T.21S., R.38E., N.M.P.M. that is south of New Mexico Highway 234.

The Assignee agrees to assume all obligations of the Assignor to the State of New Mexico insofar as said described lands are concerned and to pay such rentals and to perform such acts as are required by said lease, to the same extent and in the same manner as if the terms and provisions of said lease were fully set out herein. It is further agreed that the Assignee shall succeed to all rights, benefits and privileges granted the Lessee by the terms of said lease.

The Assignor further states and affirms that the consideration recited above is the true and sole consideration paid for the execution of this assignment. It is further understood and agreed that in case it is found that the consideration recited above is not the true and sole consideration or that a false statement has been made in the procurement and approval of this assignment, Business Lease No. BL-1689 that is sought to be assigned shall be subject to cancellation at the option of the Commissioner of Public Lands.

IN WITNESS WHEREOF, the Assignor has hereunto executed this assignment this 15th day of November, 2005.

STATE OF NEW MEXICO)

COUNTY OF LEA) ss.

Leo Sims II
Assignor

SUBSCRIBED AND SWORN TO BEFORE ME this 15th day of November, 2005, by Leo Sims II

(SEAL)

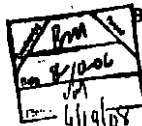
Angela B. Black
Notary Public

My Commission Expires 11/15/2005

IN WITNESS WHEREOF, the Assignee has hereunto executed this assignment this 14th day of Nov, 2005.

Assignee:

Louisiana Energy Services, L.P.



E. James Ferland
President and Chief Executive Officer

Fee: \$50.00

SLO SCAN

EXHIBIT

M-2



CERTIFICATION
I certify that the foregoing instrument
Assignment BL 1689
containing 2 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.

Date 1-4-2017
Anthony Dunn / BL
Commissioner of Public Lands

FOR A CORPORATION OR INCORPORATED ASSOCIATION

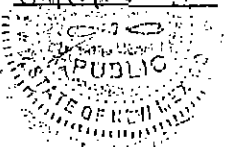
STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me this 14th day of
November, 2005, by E. James Ferland as President and Chief Executive Officer of
of Louisiana Energy Services, L.P., a Delaware limited partnership, on behalf of the limited partnership.

(SEAL) Gayle J. Louthen
Notary Public

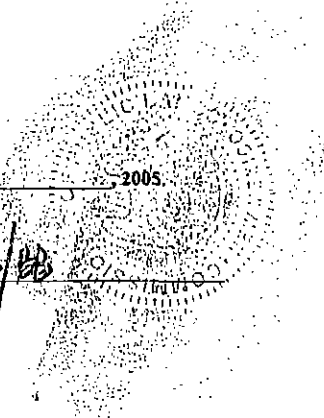
My Commission Expires:

6/9/08



APPROVED THIS 6 DAY OF December, 2005.

PATRICK H. LYONS / BL
Patrick H. Lyons
Commissioner of Public Lands





CERTIFICATION
I certify that the foregoing instrument
Amendment to BL-1689
containing 2 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Autrey Dunn
Commissioner of Public Lands

AMENDMENT TO BUSINESS LEASE NO. BL-1689

This Amendment (this "Amendment") to Business Lease No. BL-1689 (the "Lease"), between the New Mexico Commissioner of Public Lands (the "Commissioner"), as lessor, and Louisiana Energy Services, L.P. ("LES"), as lessee, is dated the date of execution of this Amendment by the Commissioner.

Recital

The original permitted uses of the Lease are "[p]otential commercial and business activities". The purpose of this Amendment is to modify these uses by adding a specific description of a particular business activity.

Agreement

1. Amendment of Paragraph 6 of the Lease. Paragraph 6 of the Lease is hereby replaced, in its entirety, by the following:

6. PERMITTED USE. Lessee shall use the leased premises for the sole and exclusive purpose of potential commercial and business activities, including without limitation the location of one or more soil monitoring sites, from each of which no more than five pounds of soil would be removed semi-annually. No other uses shall be permitted.

2. No Other Changes. This Amendment shall not affect any other provisions of the Lease.

Executed in duplicate.

LESSEE:

LOUISIANA ENERGY SERVICE, L.P.

By Reinhard Hinterreither
President

9/26/07

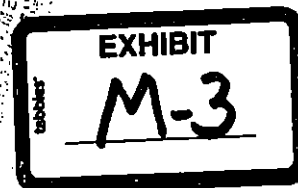
LESSOR:

NEW MEXICO COMMISSIONER OF
PUBLIC LANDS

By PATRICK H. LYONS/BB
Patrick H. Lyons

STATE LAND OFFICE
SANTA FE, N.M.

RECEIVED
OCT 18 2007





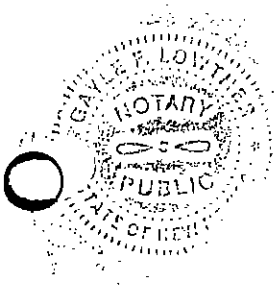
CERTIFICATION
I certify that the foregoing instrument
Amendment to BL-1687
containing 2 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Cubrey Davis, J.R.
Commissioner of Public Lands

STATE OF NEW MEXICO)
) ss.
COUNTY OF LEA)

This instrument was acknowledged before me on September 26, 2007 by Reinhard
Hinterreither as President of Louisiana Energy Services, L.P., a Delaware limited liability
company.

Gayle J. Lowther
Notary Public

My commission expires: 6/9/08



STATE LAND OFFICE
SANTA FE, N.M.

RECEIVED
2007 OCT 18 AM 10 36



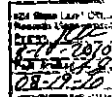
SLO SCAN
APR 12 2012



CERTIFICATION
I certify that the foregoing instrument
Lease No. BL-1689-1
containing 7 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Aubrey Dunn Date 1-4-2017
Commissioner of Public Lands



**NEW MEXICO
STATE LAND OFFICE
COMMERCIAL RESOURCES DIVISION**
PO Box 1148, Santa Fe, NM 87504-1148



RELINQUISHMENT
AS of 08/04/2013

BUSINESS LEASE

Lease No. BL-1689-1

THIS LEASE, dated April 5, 2010, is made and entered into by and between the Commissioner of Public Lands, hereinafter referred to as "Lessor", and Louisiana Energy Services, LLC ("LES"), whose address is P.O. Box 1739, Eunice, New Mexico 88231, hereinafter referred to as "Lessee".

Lessor and Lessee agree and covenant as follows:

1. **LEASE.** For and in consideration of and subject to the terms, conditions, covenants and reservations contained herein, Lessor leases to Lessee the following described tract of land, hereinafter referred to as the "leased premises":

Pt. SW $\frac{1}{4}$ SW $\frac{1}{4}$ (29.99/ac), Pt. SE $\frac{1}{4}$ SW $\frac{1}{4}$ (22.77/ac), SW $\frac{1}{4}$ SE $\frac{1}{4}$ (15.11/ac), Pt. SE $\frac{1}{4}$ SE $\frac{1}{4}$ (7.89/ac) of Section 32, Township 21 South, Range 38 East, N.M.P.M., Lea County, New Mexico, containing 75.76 acres, more or less.

The rights granted herein are subject to all valid existing rights in the leased premises.

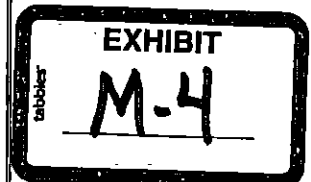
2. **WATER RIGHTS.** No water rights shall be used, placed or developed on the leased premises without the express, written consent of Lessor. All water appropriated shall be pursuant to state law and regulations. Any water rights used, placed or developed on the Lease Premises are herein and hereby deemed to belong to the Lessor, and all such rights shall be developed in the name of the Lessor.

3. **RESERVATIONS.** Lessor reserves the right to execute leases for the exploration, development and production of geothermal resources, oil and gas, sand, gravel, coal, shale, clay, rock, building stone or materials, potassium, sodium, phosphorus, salt or any other minerals or deposits of whatsoever kind located in, under or upon the leased premises and all rights of access, ingress and egress through or across the leased premises that are necessary or convenient to such exploration, development or production. Lessor further reserves the right to grant rights-of-way and easements over, upon, or across the leased premises for public highways, railroads, tramways, telephone, telegraph and power lines, irrigation works, sewer lines, drainage ditches, mining, logging, and for other purposes.



LAND SUSPENSE 3 HNSLO 001-00001
121 0 30-JUL-10 10:40 11000.00

FEE SLO SCAN
120 0 30-JUL-10 10:40 1 50.00
APR 4 11 50 AM 2010





CERTIFICATION
I certify that the foregoing instrument
Lease No. BL 1687-1
containing 7 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Anthony Davis Date 1-4-2017
Commissioner of Public Lands

4. **TERM.** The term of this lease shall begin on the date of this lease and end at midnight on **April 4, 2015**, unless terminated or canceled earlier as herein provided. Nothing contained herein shall limit the right of Lessor to sell or exchange the leased premises during the lease term.

5. **RENT.** Lessee shall pay to Lessor as rent for the leased premises and for the rights and privileges granted hereunder **\$11,000.00** per year, due and payable in advance on or before the 4th of April each year during the term of this lease. Time is of the essence in the performance of this agreement. Interest on delinquent rent payments shall accrue from the date the payment becomes due at the rate of one percent a month or any fraction of a month. Lessee shall also pay a late processing fee of \$50.00 for any delinquent payment of rent, in accordance with the Lessor's schedule of fees.

6. **PERMITTED USE.** Lessee shall use the leased premises for the sole and exclusive purpose of:

- 1) one or more soil monitoring sites, from each of which no more than five pounds of soil would be removed semi-annually
- 2) conduct studies on multiple alternative energy sources that may be commercially viable for the site including but not limited to wind generation, capturing methane gas from West Control Specialist facility located east of the LES facility.

No other uses shall be permitted.

7. **IMPROVEMENTS.** Lessee may place the following improvements on the leased premises:

Those improvements necessary for and incidental to monitoring sites, conducting studies and implementation of alternative energy projects in order to generate electricity for company use and for commercial use.

No other improvements shall be placed on the leased premises without the prior amendment of this lease pursuant to Paragraph 19 hereof to permit such improvement placement. Lessee shall maintain and protect from waste and trespass all improvements placed on the leased premises. In the event improvements other than those authorized herein are placed on the leased premises, Lessor may either declare title to such improvements in Lessor without payment of compensation to Lessee or Lessor may order the removal of such improvements and the restoration of the leased premises to their condition existing prior to the placement of said improvements at Lessee's expense. The foregoing rights of Lessor shall be cumulative to Lessor's right to cancel this lease as herein provided.



SLO SCAN
APR 12 2012



CERTIFICATION
I certify that the foregoing instrument
Lease No. PL 1687-1
containing 7 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Aubrey Dunn
Commissioner of Public Lands

8. **LIEN.** To secure the payment of any rent amount that becomes due, and to satisfy all reasonable costs incurred by Lessor in recovering said rent amount, Lessor shall have a first and prior lien on any and all improvements, fixtures and equipment placed on the leased premises.

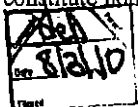
9. **IMPROVEMENT REMOVAL AND RECLAMATION.** Before relinquishment or termination of this lease without re-lease to Lessee, or upon Lessor's cancellation of this lease as provided herein, Lessee shall remove all improvements placed on the leased premises and shall restore the leased premises to their condition existing prior to the placement of said improvements; provided, however, if any rent amount is due and unpaid at the time of lease cancellation or termination, Lessee shall remove improvements and restore the leased premises as herein provided only at such time, in such manner and under such conditions as Lessor may in writing demand. Lessee hereby waives, and shall not assert, any right to compensation for improvements on the leased premises under Section 19-7-14, NMSA 1978. This paragraph shall survive termination of this lease.

10. **RELINQUISHMENT.** Lessee, if not in default under this lease, may at any time apply to relinquish the lease to Lessor and be relieved of further obligations under the lease, provided, however, such relinquishment shall not be valid or effective until approved in writing by Lessor. Lessee must file an application to relinquish the Lease at least 30 days prior to the date on which the Lessee requests the relinquishment to go into effect. Lessor may condition relinquishment on any terms he deems reasonable. Relinquishment shall be made on a form prescribed by Lessor and shall be accompanied by the required relinquishment fee as set forth in Lessor's schedule of fees. Upon relinquishment Lessee shall not be entitled to the refund of any rent previously paid.

11. **ASSIGNMENT.** Lessee shall not assign this lease, any part thereof, or assign any improvements located on the leased premises without the prior amendment of this lease pursuant to Paragraph 19 hereof to permit such assignment. Any lease assignment without lease amendment shall be null and void. Lessor may condition such lease amendment upon an increase in the rent amount and the modification or addition of other lease provisions.

12. **SUBLEASE.** Lessee shall not sublease the rights granted hereunder, any part thereof, any portion of the leased premises or any improvements located on the leased premises without the prior amendment of this lease pursuant to Paragraph 19 hereof to permit such sublease. Any sublease without lease amendment shall be null and void. Lessor may condition such lease amendment upon an increase in the rent amount and the modification or addition of other lease provisions.

13. **DEFAULT AND CANCELLATION.** Upon Lessee's violation of any of the terms, conditions or covenants contained herein, including the failure to pay the rent when due, Lessor may cancel this lease after providing Lessee thirty (30) days notice of the default by registered mail. The mailing of such notice as herein provided shall constitute notice of Lessor's intention to cancel the lease and no proof of receipt of such



SLO SCAN



CERTIFICATION
I certify that the foregoing instrument
Lease No. SL 1687-1
containing 7 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 4-4-2017
Ashley D. Smith
Commissioner of Public Lands

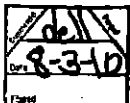
notice shall be necessary in order for Lessor to enter lease cancellation thirty days after the mailing of the notice if Lessee has not cured the default to Lessor's satisfaction within said thirty day period. Lessee agrees that if a court of competent jurisdiction determines that Lessee has breached any of the terms, conditions or covenants of this lease, Lessee shall pay the costs incurred by Lessor in litigating the default, including reasonable attorney fees. In the event of a breach of the terms of this Lease by the Lessee, the Lessor also shall have all remedies available at law or equity.

14. **WAIVER.** No employee or agent of Lessor has the power, right or authority to orally waive any of the terms, conditions, or covenants hereof and no waiver by Lessor of any of the terms, conditions or covenants hereof shall be effective unless in writing and executed by Lessor. Lessor's waiver of Lessee's breach or default of any of the terms, conditions or covenants hereof shall not constitute or be construed as a waiver of any other or subsequent breach or default by Lessee. The failure of Lessor to enforce at any time any of the terms, conditions or covenants hereof or to exercise any option herein provided, or to require at any time performance by Lessee of any of the terms, conditions, or covenants hereof shall not constitute or be construed to be a waiver of such terms, conditions, or covenants, nor shall it affect the validity of this lease or any part thereof, or Lessor's right to thereafter enforce each and every such term, condition and covenant.

15. **COMPLIANCE WITH LAWS.** Lessee shall fully comply with all federal and state laws, regulations, rules, ordinances and requirements, applicable to the leased premises or to Lessee's operations thereon, including but not limited to all applicable laws governing water; endangered or threatened species; hazardous materials; environmental protection; land use; health and safety; cultural, historic or archeological / paleontological properties; waste; trespass; and all New Mexico State Land Office Rules and Regulations, including those that may be hereafter promulgated. Lessee's obligations under this paragraph include but are not limited to compliance with NMSA 1978 Section 19-6-5, requiring a lessee of State Trust Land to protect the leased premises from waste or trespass. Lessee's compliance with all laws, regulations and policy shall be at its own expense.

16. **WAIVER, RELEASE AND PROTECTION OF THE LEASED PREMISES.** Lessee is leasing the leased premises based on Lessee's own inspection and investigation of and judgment regarding the leased premises. Lessor makes no warranties or representations of any kind or nature with regard to the leased premises or with regard to this transaction.

If accidental discharge, release, spill, or fire or any other event having environmental consequence occurs, Lessee agrees to provide notice to Lessor at the same time and in the same manner as Lessee is required to provide to the federal, state or local agency having responsibility for enforcing compliance with environmental laws, regulations and policy. Lessee agrees that, upon request by Lessor, Lessor shall have access to all reports, documents, test data and all other materials provided by Lessee to or



SLO SCAN
APR 17 2017

2017 JUL 29 AM 10:22



CERTIFICATION
I certify that the foregoing instrument
containing 2 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.

Date 1-4-2017
Aubrey Dunn
Commissioner of Public Lands

received by Lessee from a governmental agency having responsibility for enforcing compliance with environmental or other laws.

In the event Lessor is required to incur any cost or expense to enforce the provisions of this lease, including but not limited to consultants, engineers, soil, air or water sampling and attorney's fees and costs, Lessee shall be liable for and reimburse Lessor for said costs and expenses.

17. INDEMNIFICATION; INSURANCE.

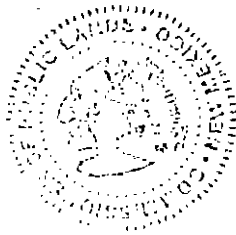
A. Lessee shall hold harmless, indemnify and defend the State of New Mexico, Lessor and Lessor's employees, agents, and contractors, in both their official and individual capacities, from any and all liabilities, claims, losses, damages, or expenses, including but not limited to reasonable attorneys' fees, loss of land value, third party claims, penalties or removal, remedial or restoration costs arising out of, alleged to arise out of or indirectly connected with a) the operations hereunder of Lessee or Lessee's employees, agents, contractors, or invitees, b) the activities of third parties on the leased premises, whether with or without Lessee's knowledge or consent. This provision, Lease Paragraph 17, shall survive the termination, cancellation or relinquishment of this Lease, and any cause of action of Lessor to enforce this provision shall not be deemed to accrue until Lessor's actual discovery of said liability, claim, loss, damage, or expense.

B. During the Term of this Lease, Lessee shall obtain and maintain at all times, at Lessee's cost and expense, broad form comprehensive general public liability insurance that names the Lessor as the insured or as an additional insured, protecting the Lessor against claims for personal injury, death and property damage. Such an insurance policy must specifically provide coverage for the Lessor and its employees and agents in minimum amounts of \$100,000 for damage to or destruction of property arising out of a single occurrence; \$300,000 for all past and future medical and medically-related expenses arising out of a single occurrence; \$ 400,000 to any person for any number of claims arising out of a single occurrence for all damages other than property damage and medical and medically-related expenses; and \$750,000 for all claims other than medical or medically-related expenses arising out of a single occurrence. Higher coverage for the Lessor may be reasonably required by the Lessor from time to time. In addition, the Lessee must obtain at its own expense, insurance coverage adequate to protect its operations, property, employees and agents in amounts Lessee finds sufficient. The Lessee shall provide to Lessor copies of the insurance policy or policies providing coverage to the Lessor and all amendments and renewals upon issuance, amendment, and renewal.

18. SCOPE OF AGREEMENT. This lease incorporates all the agreements, covenants and understandings between Lessor and Lessee concerning the subject matter hereof and all such agreements, covenants and understandings are merged into this written lease. No prior agreement or understanding between Lessor and Lessee shall be valid or enforceable unless expressly embodied in this lease.



SLO SCANS



CERTIFICATION
I certify that the foregoing instrument
Lease No. BL 1689-1
containing 2 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Aubrey Dunn Date 1-4-2017
Commissioner of Public Lands

19. **AMENDMENT.** This lease shall not be altered, changed or amended except by an instrument executed by both Lessor and Lessee.

20. **APPLICABLE LAW.** This lease shall be governed by the laws of the State of New Mexico.

21. **EXHAUSTION OF ADMINISTRATIVE REMEDIES.** In the event that Lessee is aggrieved by a decision of Lessor to cancel this Lease, Lessee shall within thirty (30) days after the date of such decision file an administrative contest pursuant to NMSA 1978, § 19-7-64 and State Land Office Rule 15 (19.2.15 NMAC). Lessee shall initiate no court action regarding this Lease except to appeal a final decision of the Commissioner of Public Lands rendered pursuant to such a contest proceeding, and as provided by NMSA 1978, § 19-7-64.

22. **SUCCESSORS IN INTEREST; THIRD PARTIES.** All terms, conditions and covenants of this lease and all amendments thereto shall extend to and bind the heirs, successors and assigns of Lessee and Lessor. There are no third party beneficiaries of this Lease.

23. **RE-LEASE.** At the expiration of the term of this lease, Lessee may re-lease the leased premises provided Lessor has determined to offer the leased premises for the same uses as permitted herein, Lessee is not in default under this lease, Lessee agrees to the terms offered by Lessor, and Lessee has bettered any offer to lease the leased premises made by a third party.

24. **HOLDING OVER.** If Lessee enters upon the leased premises after the termination or cancellation of this lease for any purpose, or leaves any equipment, buildings, materials, property or debris on the leased premises after the termination or cancellation of this lease, the rent due Lessor for such entry or presence shall be \$60.00 for each day or any part of a day. Nothing contained herein shall be construed as the grant to Lessee of the right to enter the leased premises for any purpose after the termination or cancellation of this lease without the prior written consent of Lessor.

25. **LEASE ENTERED INTO UNDER STATE LAND OFFICE RULE 9.** This Lease is entered into pursuant to New Mexico State Land Office Rule 9, "Business Leasing" (19.2.9 NMAC), and the provisions of that rule control the interpretation and application of the terms of this Lease, except that in the event of a conflict between a provision of this Lease and a provision of Rule 9, the Lease provision controls.

Executed in duplicate.



SLO SCAN
APR 12 2017

2017 JUL 29 AM 10:23



CERTIFICATION
I certify that the foregoing instrument
relate No. BL 1689-1
containing 7 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.

Date 1-4-2017
Cubrey Dunn DR
Commissioner of Public Lands

LESSEE:

LES

By: Paul Mason

Name: PAUL MASON

Title: CFO

LESSOR:

NEW MEXICO COMMISSIONER OF
PUBLIC LANDS

By: Patrick H. Lyons DR

PATRICK H. LYONS



ACKNOWLEDGMENT IN AN INDIVIDUAL CAPACITY

State of _____
County of _____

This instrument was acknowledged before on _____ (date) by
_____ (name).

(seal)

(Signature of notarial officer)

My commission expires: _____

ACKNOWLEDGMENT IN A REPRESENTATIVE CAPACITY

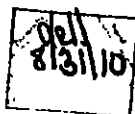
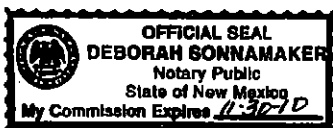
State of New Mexico
County of Lea

This instrument was acknowledged before on July 20, 2010 (date) by
Paul Mason (name) as CFO (title) of
LES (name of party on behalf of whom instrument is
executed).

(seal)

Deborah Sonnamaker
(Signature of notarial officer)

My commission expires: 11-30-10



SLO SCAN
APR 17 2017

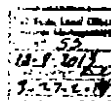
2010 JUL 29 AM 10:29



CERTIFICATION
I certify that the foregoing instrument
Lease No. BL-2051
containing 17 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
August 4, 2017
Cubry Dunn
Commissioner of Public Lands



**NEW MEXICO
STATE LAND OFFICE
COMMERCIAL RESOURCES DIVISION
PO Box 1148, Santa Fe, NM 87504-1148**



BUSINESS LEASE

Lease No. BL-2051

This ground lease (the "Lease") is entered into between the New Mexico Commissioner of Public Lands, the acting trustee for the Enabling Act Trust established in the Act of June 20, 1910, 36 Stat 557, ch. 310 (the "Lessor") and Louisiana Energy Services, LLC ("LES"), a Delaware Limited Liability Company duly authorized to do business in New Mexico (the "Lessee") (the Lessor and Lessee are each a "Party" and together they are the "Parties") and is effective as of the 5th day of August, 2013 (the "Effective Date"). In consideration of the payments and performance by the Parties of each of the provisions set forth herein, the Parties agree as follows:

1. **DEFINITIONS.** Definitions set forth in State Land Office Rule 9 (19.2.9.7 NMAC) are incorporated herein by reference unless otherwise modified or defined below, and should be referred to when reading this Lease. In the event of conflicts between State Land Office Rule 9 as enacted on the date of this Lease and the definitions below, the more restrictive will apply. Certain other terms are defined in context in the body of this Lease.

1.1. **Approval.** Express written consent given by the Lessor or an authorized representative on forms prescribed by the Lessor.

1.2. **Assignee.** An Assignee is any person or entity to whom a full or partial assignment of this Lease is made.

1.3. **Collateral Assignee.** A party who is granted a Collateral Assignment or Leasehold Mortgage by Lessee.

1.4. **Collateral Assignment/Leasehold Mortgage.** The conditional assignment to a Lender as security for a debt of Lessee's personal property interest in this Lease or Improvements.

1.5. **Force Majeure.** Fire, earthquake, flood, or other casualty or accident; war, civil strife or other violence; any law, order, proclamation, regulation, ordinance, action, demand or other requirement of any governmental agency or utility that could not be

BL-2051

LAND SUSPENSE 3 AUG 01 00002
158 0 26-JUN-13 11:41 1200D.00





CERTIFICATION
I certify that the foregoing instrument
Lease No. BL-2051
containing 17 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Aubrey D. Mann
Commissioner of Public Lands

reasonably anticipated as of the Effective Date; or any other act or condition beyond the reasonable control of a Party hereto.

1.6. Foreclosure. Any action or proceeding, judicial or non-judicial, to transfer Lessee's interest in this Lease as a result of or in connection with the enforcement, or threatened enforcement, of the rights of a Lender.

1.7. Government Approvals. Any authorization, approval, consent, waiver, exception, license, registration, ruling, permit, tariff, certification, exemption, and any other action or requirement by or with a governmental authority relating to Lessee's activities pursuant to this Lease.

1.8. Hazardous Material. Oil, petroleum products, explosives, inflammables, PCBs, asbestos, formaldehyde, radioactive materials or waste, or other hazardous, toxic, or contaminated materials, substances, pollutants or wastes, including, without limitation, any substance, waste, or material which is defined or listed as a "hazardous substance", "hazardous waste", "hazardous material", "toxic substance", "medical waste", "regulated substance", or which is otherwise controlled or regulated because of its toxicity, infectiousness, radioactivity, explosiveness, ignitability, corrosiveness or reactivity, under any federal, state, or local statute, regulations, or ordinances relating to landfills, medical waste, industrial hygiene, environmental protection or the manufacture, use, generation, presence, analysis, transportation, handling, storage, treatment or disposal of any such material, substance, or waste.

1.9. Improvement. Any non-mobile item of tangible property developed, placed, created or constructed on the Land, including but not limited to private buildings, structures, roadways, infrastructure, permanent equipment, and fixtures.

1.10. Lease Anniversary. Any anniversary of the Effective Date of this Lease.

1.11. Lender, Affiliate of Lender. Any financial institution or other person or entity that from time to time takes a Collateral Assignment. The term Lender includes any affiliate of Lender; and an "affiliate of Lender" means an entity that has or acquires control, is or becomes controlled by, or is or comes under control of Lender.

1.12. Local Government. Any New Mexico County, Municipality, Extra Territorial Authority or other non-state or federal governmental entity with regulatory authority over the Land.

1.13. Operations Date. The date upon which the Project becomes fully functioning and operational.

1.14. Project. Any lawful use, including but not limited to a business development site, renewable energy or similar use.



CERTIFICATION
I certify that the foregoing instrument
Lease No. BL-2051
containing 17 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Gubrey Duenkel
Commissioner of Public Lands

1.15. Project Plans. Final plans that govern the use and development of the Land to accomplish the Project including but not limited to: site and building plans; boundary and topographic surveys, and any other land use plans required to bring the Project into conformity, as may be required, with the requirements of Local Government; cultural properties survey; biological/habitat assessment; a Phase I Environmental Assessment; a remediation and restoration plan, a Hazardous Materials storage and handling plan; and any further surveys or assessments as Lessor may deem necessary to fully examine the proposed impact of the Project on the Land or any existing and potential environmental contamination liabilities.

1.16. Qualified Assignee. (a) any person or entity (i) having a net worth of at least [\$100,000,000] including the net worth of any entity's parent or parents, and (ii) (a) experience at least equivalent to the Lessee's in the successful management and operation of a project similar to the Project or (b) a Lender who has engaged a project manager meeting the qualifications of (a)(i) and (a)(ii).

1.17. Reclamation Bond. As described in Section 4.4 below.

1.18. Rent. As described in Section 3.1.3 below.

1.19. Rental Obligation Bond. As described in Section 3.1.4 below.

1.20. Term. As described in Section 2.2 below.

1.21. Termination. The cessation of the Lease granted herein due to the natural expiration of the Lease Term, Lessee's approved Relinquishment, Lessee's uncured default, or other termination event as described in this Lease.

2. DEMISE

2.1. Ground Lease. Lessor grants to Lessee the exclusive right to enter upon, cross, use, possess, and occupy ± 75.76 acres of state trust land located in Lea County, New Mexico, approximately four miles east of Eunice, New Mexico more particularly described as:

Pt. SW $\frac{1}{4}$ SW $\frac{1}{4}$ (29.99/ac), Pt. SE $\frac{1}{4}$ SW $\frac{1}{4}$ (22.77/ac), SW $\frac{1}{4}$ SE $\frac{1}{4}$ (15.11/ac),
Pt. SE $\frac{1}{4}$ SE $\frac{1}{4}$ (7.89/ac) of Section 32, Township 21 South, Range 38 East,
N.M.P.M., Lea County, New Mexico, containing 75.76 acres, more or
less.

(the "Leased Premises" or the "Land") for the purpose of planning, developing and operating the Project.

2.2. Term. The term of this Lease will begin on the Effective Date and end upon the earliest of (a) the 40th Lease Anniversary, or (b) the Lessee may opt to Terminate this



CERTIFICATION
I certify that the foregoing instrument
BL No. BL 2051
containing 17 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Gabry-Dann/BA
Commissioner of Public Lands

lease upon the 30th Lease Anniversary, and, if no so Terminated the Lease will continue to the 40th Lease Anniversary.

3. PERMITTED USES; RENT; PROJECT PLANS.

3.1.1. Permitted Uses & Activities. This Lease permits any lawful use, subject to all environmental requirements and restrictions and all other restrictions and reservations of record.

3.1.2. Rent. \$12,000 per year payable annually in advance, first upon the Effective Date and then upon every Lease Anniversary throughout the Term. Rent will adjust annually by the CPI-U for the prior twelve months (December to December).

3.1.3. Project Plans. Lessee shall provide Lessor with a copy of Lessee's Project Plans together with a State Land Office Application to Make Improvements form prior to the construction of any Improvements, and shall provide additions or amendments to the Project Plans as may be required throughout the Term.

3.2. Improvements. Only those Improvements approved pursuant to Rule 19.2.9.16(B) NMAC are permitted on the Leased Premises. Lessee shall maintain and protect from waste and trespass all Improvements placed on the Leased Premises. In the event Improvements other than those authorized herein are placed on the Leased Premises, Lessor may either declare title to such Improvements in Lessor without payment of compensation to Lessee, or Lessor may order the removal of such Improvements and the restoration of the Leased Premises to its condition existing prior to the placement of said Improvements at Lessee's expense.

3.2.1. Improvement Value Credit. Lessee is entitled to improvement value credit pursuant to Rule 19.2.9.18 NMAC.

4. COVENANTS, CONDITIONS, RESTRICTIONS, AND RESERVATIONS

4.1. General Reservation. Unless otherwise waived through separate instrument, Lessor reserves the right to execute leases for the exploration, development and production of geothermal resources, oil and gas, sand, gravel, coal, shale, clay, rock, building stone or materials, potassium, sodium, phosphorus, salt or any other minerals or deposits of whatsoever kind located in, under or upon the leased premises and all rights of access, ingress and egress through or across the leased premises that are necessary or convenient to such exploration, development or production. Lessor further reserves the right to grant rights-of-way and easements over, upon, or across the leased premises for public highways, railroads, tramways, telephone, telegraph and power lines, irrigation works, sewer lines, drainage ditches, mining, logging, and for other purposes.

4.2. Lien. To secure the payment of any rent amount that becomes due, and to satisfy all reasonable costs incurred by Lessor in recovering said rent amount, Lessor shall have



CERTIFICATION

I certify that the foregoing instrument
Lease No. BL-2051
containing 12 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.

Date 1-4-2017

Aubrey Dunn
Commissioner of Public Lands

a first and prior lien on any and all improvements, fixtures and equipment placed on the Leased Premises.

4.3. Reclamation Bond. One year prior to the expiration of the Lease, Lessee shall post a bond or letter of credit, or provide another form of security, acceptable to Lessor and for the benefit of Lessor, to guarantee Lessee's decommissioning obligations and completion of the restoration and remediation plan component of the Project Plans. Lessor will relinquish the bond, letter of credit or other security only upon Lessee's completion of all required reclamation and decommissioning. Such bond, letter of credit or other security must be in an amount at least equivalent to the rental obligation bond described in Section 3.1.3.1, or such additional amount approved by Lessor. To assist in determining the amount of the reclamation bond, Lessee shall obtain an estimate of the minimum restoration cost that will be required to complete the restoration and remediation. This estimate must be performed by a qualified entity licensed in New Mexico. Lessee shall notify the Lessor of the name and address of the entity which it has selected.

4.4. Condition of Land. Lessee leases the Land in "AS IS" condition with all faults, including the environmental condition of the Land, based on Lessee's own inspection of, and judgment regarding the Land. Lessor makes, and Lessee affirms that Lessor has made, no representations or warranties of any kind or nature whatsoever with regard to the condition of the Land or its fitness or suitability for any particular use. Lessee acknowledges that it is responsible for performing its own due diligence and for becoming fully familiar with the condition of the Land and any applicable restrictions, uses, or other conditions that might affect its development or use for a particular purpose.

4.5. Hazardous Material. Unless and except as otherwise approved by the Project Plans, Lessee covenants and agrees that (i) it shall not use, store, dispose of or release on the Land or (ii) cause or permit to exist or be used, stored, disposed of or released on the Land as a result of Lessee's operations, any Hazardous Materials, except in such quantities as may be required in its normal business operations and only if such use is not harmful to Lessor or its employees and is in full compliance with all applicable laws.

4.6. Responsible Use of the Land. All uses of the Land will be planned with due diligence to accomplish the Project in accordance with this Lease, and all other requirements of the Local Government which are reasonably required by Lessor to protect the Trust. Lessor, as a State of New Mexico government entity, is not subject to Local Government ordinances. Lessee shall nevertheless conform its Project Plans and amendments to applicable Local Government requirements as if the Project were occurring on private land unless otherwise required by Lessor.

4.7. Existing Encumbrances. This Lease is subject to all valid and existing leases, easements, restrictions, reservations, and other encumbrances. Lessee has conducted its own due diligence search of Land Office, County and other pertinent records to determine all existing encumbrances on the Leased Premises. Without warranting



CERTIFICATION
I certify that the foregoing instrument
containing 17 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Aubrey Dunn
Commissioner of Public Lands

accuracy, an informal search of Land Office records reveals the existence of the easements, rights of way, reservations, and encumbrances in the attached Exhibit "A".

5. ASSIGNMENT; SUBLEASE.

5.1. Assignments. Assignments made in violation of this Section 5 or 19.2.9.14 NMAC will be null and void as to Lessor, and deemed as a breach of this Lease by Lessee, and will entitle Lessor to seek any remedies at law or in equity for third-party trespass or such other actual damages as may derive from such acts. The assignee of an Assignment made in conformity with the requirements of 19.2.9.14 NMAC and this Section 6 will, to the extent of the assignment, assume the subsequent rights and obligations of Lessee upon such assignment Lessee will be relieved from liabilities occurring subsequent to the date of assignment, but Lessee shall remain liable for all liabilities and unfilled obligations existing at the time of the Assignment.

5.2. Pre-Approved Assignments. Pursuant to and subject to the requirements of 19.2.9.14A NMAC and 19.2.9.15A NMAC, Lessor hereby pre-approves the following assignments to an entity bound by the terms of this Lease provided that the assignment is made on forms as prescribed by the Lessor:

5.2.1. the assignment is to a Qualified Assignee; or

5.2.2. the assignment is to an entity which consists solely of a transfer to another person or entity of the management of all or part of the Project or Improvements located on the Land; or

5.2.3. the assignment is of some or all of the ownership interests in Lessee among any of its members or constituent owners; or,

5.2.4. the assignment is integral to an industrial revenue bond transaction; or

5.2.5. the assignment of the lease in whole or in part is to a subsidiary or affiliate of Lessee; or

5.2.6. the assignment is a Collateral Assignment to a Lender, as more particularly set forth in Section 5.4 below.

5.3. Sublease. Lessee shall be allowed to sub-lease the property with the Approval of Lessor which will not be unreasonably withheld, and Lessee shall provide Lessor with a copy of any Approved sub-lease(s). Lessor will base approval on whether the proposed sublease will have an adverse effect on the utility of the Land. Lessor shall be entitled to 25% of the gross amount of any sublease rent paid to Lessee, which will be payable on the same schedule as the sublease payments. Upon Lessor's written request, Lessee will provide a full accounting of all sublease rental receipts and any offsets or other deductions or credits.



CERTIFICATION
I certify that the foregoing instrument
lease No. BL-2051
containing 19 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
C. J. [Signature]
Commissioner of Public Lands

5.4. Collateral Assignments/Leasehold Mortgages. On one or more occasion, Lessee's interest in this Lease or Improvements may be collaterally assigned or leasehold mortgaged by Lessee upon the prescribed forms provided by Lessor. A Collateral Assignee set forth on such prescribed forms will have a lien on Lessee's interest in the Lease, as well as any Improvements covered by the Collateral Assignment or Leasehold Mortgage, but will not have a lien on Lessor's interest in the Lease and Improvements, or in Lessor's reversionary interest in the real and personal property subject to the Lease. Any attempt to collaterally assign or leasehold mortgage Lessee's interest in this Lease, or in any Improvements, not in accordance with the terms of this Section 5.4 is void and will not vest the purported Collateral Assignee with any right, title, interest, claim or privilege with respect to this Lease or Improvements.

5.4.1. A Lessee shall register its collateral assignment or leasehold mortgage in Lessee's interest in this Lease or any Improvements with Lessor in writing, under oath, and on such form as may be prescribed by Lessor. Lessee shall include a copy of the proposed Collateral Assignment agreement or Leasehold Mortgage and pay any applicable fees set out in the Land Office's schedule of fees.

5.4.2. Upon registration as set forth in Section 5.4.1 Lessor shall approve the Collateral Assignment or Leasehold Mortgage.

5.4.3. Lessor's approval of a Collateral Assignment or Leasehold Mortgage of Improvements does not change the status of any Improvements as authorized, unauthorized, removable or permanent, unless otherwise agreed by Lessor in writing.

5.4.4. A Collateral Assignee shall take its interest subject to the following terms and conditions, and Lessee is required to give notice of such terms and conditions to its Collateral Assignee upon making a Collateral Assignment or Leasehold Mortgage:

5.4.5. Any and all proceedings, judicial or non-judicial, to enforce or foreclose the Collateral Assignment or Leasehold Mortgage must be pursuant to law, and if judicial, will be filed in the judicial district in which the majority of Leased Premises is situated. Lender shall provide Lessor with prompt notice thereof.

5.4.6. Lender shall provide notice to Lessor of any release or satisfaction by Lessee of a Collateral Assignment or Leasehold Mortgage within thirty (30) days after such release or satisfaction, which notice can be in the form of a copy of a release recorded in the real property records of the county where the Land is located.

5.4.7. Any successor in interest to Lessee's interest in this Lease, or in any Improvements, that acquires an interest in such property as the result of the enforcement or foreclosure of a Collateral Assignment or Leasehold Mortgage, or an assignment or conveyance in lieu of such enforcement or foreclosure, will be deemed to be an assignee under section 19.2.9.14 NMAC, and will be subject to the approval of Lessor; provided that if the assignee is a Qualified Assignee, the assignment is deemed approved upon providing notice to the Lessor of meeting the qualifications of a Qualified Assignee.





CERTIFICATION
I certify that the foregoing instrument
Book No. BL 2051
containing 17 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Gubrey Davis
Commissioner of Public Lands

Such approval will not be unreasonably withheld; provided that if the successor would not qualify as a Qualified Assignee, then such successor shall thereafter either sell or convey the Leased Premises to a Qualified Assignee or engage a management company satisfying the requirements set forth in the definition of "Qualified Assignee" to manage and operate the Leased Premises. Except as specifically set forth in Section 5.2 no successor in interest will be approved by Lessor unless all sums due under the terms of this Lease have been paid in full, and all other pending duties discharged, or unless arrangements satisfactory to Lessor are made to fully pay such sums or discharge such duties.

5.4.8. Lessor acknowledges that Lessee's right to grant Collateral Assignments or Leasehold Mortgages as permitted pursuant to this Section is a valuable and important right to Lessee. Lessor further acknowledges that Collateral Assignments may require reasonable and customary amendments to certain terms and provisions of this Lease, certain additional customary terms and provisions required to protect the Lender's interests, and/or Lessor's execution of one or more additional customary documents or agreements, and approval of such will not be unreasonably withheld.

6. DEFAULT

6.1. Default. Any violation by either Party of any term of this Lease, including but not limited to any failure to pay sums when due or any violation of any condition or covenant, any failure by Lessee to observe or comply with the Project Plans as approved by Lessor, or the failure to observe any other obligation under this Lease or any applicable law, constitutes a default (a "Default").

6.2. Cure. In the event of any alleged Default or failure to perform any obligation under this Lease, the non-defaulting Party shall give the alleged defaulting Party written notice thereof, which notice will include the acts required to cure the same with reasonable specificity. If the Lessee fails to make any monetary payment when due it will have a period of thirty (30) days after such notice is given within which to cure such default. In the event of any other Default, the defaulting Party will have a period of thirty (30) days within which to cure such Default, which period will be extended to the extent reasonably necessary to complete such cure so long as the cure was commenced within thirty (30) days after such notice is given and thereafter prosecuted with due diligence.

6.3. Remedies. Upon any Default and failure to cure by Lessee, Lessor has all the remedies available at law or in equity in New Mexico, and as provided in the Lease, including, without limitation, terminating the lease, retaking possession of the Land with or without termination of the Lease, and proceeding to recover any damages, including damages for any unpaid or unperformed obligations of the Lessee. Without waiving any defenses or immunity of Lessor, upon any Default and failure to cure by Lessor, Lessee has all the remedies available at law or in equity in New Mexico, and as provided in this Lease, including without limitation, the right to seek specific performance of the terms of this Lease, terminating the lease, and proceeding to recover any damages.



CERTIFICATION
I certify that the foregoing instrument
containing 13 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Aubrey Davis
Commissioner of Public Lands

7. GENERAL PROVISIONS.

7.1. Condemnation. Lessor's Land is not normally subject to condemnation, but in the event of a condemnation the following provisions will apply:

7.1.1. Complete Taking. If title to the whole or substantially all of the Land is taken or condemned by any competent authority for any public or quasi-public use, the Lease shall cease and terminate, all rent and other obligations payable or to be performed by Lessee as provided in this Lease will be prorated as of the date of vesting title in the condemning authority. As damages, Lessor shall be entitled to claim the full market value of the Land, the value of Lessor's rights under this Lease, and any rights reserved to Lessor under this Lease that are taken or condemned; and Lessee shall be entitled to claim the value of the Leasehold Estate, including the value of its Improvements. Lessor and Lessee shall pursue and protect their various claims separately and solely against the condemning authority.

7.1.2. Partial Taking. If title to less than the whole or substantially all of the Land is taken or condemned by any competent authority for any public or quasi-public use, this Lease will not terminate, and the rent and the other obligations payable and performable by Lessee as provided in this Lease for the remainder of the Term will be reasonably and proportionately reduced by Lessor as of the next Lease Anniversary. Notwithstanding the foregoing, if the Partial Taking prevents the continued business of Lessee in the remainder of the Land in such a manner that Lessee, in Lessee's reasonable opinion, cannot earn a fair and reasonable proportionate net return from the continued business, Lessee will have the option to surrender and terminate this Lease by giving written notice of the election to Lessor within fifteen (15) days after the date of vesting of title in the condemnation action. If Lessee exercises the option of Lessee to surrender and terminate this Lease in accordance with this Section, all of the rent and other obligations payable or to be performed by Lessee will be prorated as of the date of vesting of title in the condemnation action. As damages for a partial taking, Lessor shall be entitled to claim the full market value of the taken portion of the Land, the value of Lessor's rights under this Lease, and any rights reserved to Lessor under this Lease that are taken or condemned; and Lessee shall be entitled to claim damages equal to the injury caused to the Leasehold Estate by the partial taking. Lessor and Lessee shall pursue their various claims separately and solely against the condemning authority.

7.2. Rental Interest and Late Fee. Interest on delinquent rent will accrue from the date the payment becomes due, at the rate of ten percent (10%) per calendar month or any fraction thereof until received by Lessor in full (the "Lease Interest Rate"). In addition, Lessee shall pay a late payment processing fee equal to One Hundred Dollars (\$100). All interest and late fees that become due under this Lease shall be considered additional Rent under this Lease.

7.3. Lessee Duty to Indemnify. Lessee shall save, hold harmless, indemnify and defend Lessor, the State Land Office, the State of New Mexico, and any of their officers, employees, or agents, in their official and individual capacities, of and from any and all





CERTIFICATION

I certify that the foregoing instrument
Lease No. BL 2051
containing 17 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.

Date 1-4-2017

Aubrey D. Dunn
Commissioner of Public Lands

liability, claims, losses, damages, costs, and fees (collectively, "Claims") arising out of, or alleged to arise out of, or connected with, any acts or wrongful omissions of Lessee or its agents, employees, contractors, guests, and invitees in connection with Lessee's operation of the Project; provided, however, the foregoing indemnity obligations of Lessee shall not apply to Claims resulting from Lessor or Lessor's agents, employees, representatives, invitees, licensees' or permittees' negligence or willful misconduct. This hold harmless and indemnification clause covers any claim, including any brought in any court or before any administrative agency, of any loss or alleged loss, and any damages or alleged damages asserted with respect to any violation or alleged violation of any state, federal, or local law or regulation, including but not limited to any environmental law or regulation, any cultural properties law (including the New Mexico Cultural Properties Act, cited above) or regulation, and any alleged damage to the property, rights or interests of any State Land Office lessee, right-of-way holder, or other lessee.

7.4. Lessee Duty to Insure. At all times during which Lessee is conducting any activities on the Land, and at all times during the Term of this Lease, Lessee shall, at its own cost and expense, obtain and maintain, (1) Commercial General Liability insurance, including bodily injury and property damage coverage with minimum limits of One Million Dollars (\$1,000,000) per occurrence and Two Million Dollars (\$2,000,000) aggregate and (2) Umbrella Liability Insurance with minimum limits of Five Million Dollars (\$5,000,000) per occurrence and Five Million Dollars (\$5,000,000) aggregate. Lessee shall annually provide a certificate of insurance showing the name(s) of the company providing coverage, policy number, limits of coverage, policy inception and expiration dates and exhibiting the name of the Lessor as an additional insured. In any event, said policy must provide coverage for Lessor in minimum amounts equal to the minimum liability amounts stated in NMSA 1978 § 41-4-19 as amended or the amount stated herein, whichever is greater.

7.5. Lessee Duty to Report. Lessee shall submit annual reports to the Land Office regarding the status of the Project or at such other intervals as Lessor may require from time to time, but in no event more often than semi-annually. Each report must include a short description of the status of the Project and progress since the prior report. In addition, Lessee shall immediately inform Lessor of any upcoming Local Government meetings or events of significance to the Project, as Lessee becomes aware of such meetings or events.

7.6. Lessee Duty to Comply with Laws; Duty to Protect against Waste and Trespass. Lessee shall fully comply with all applicable laws, whether statutory or court-made, regulations, rules, ordinances, and requirements, including but not limited to the Cultural Properties Act, NMSA 1978, §§ 18-6-1 et seq., those addressed to environmental and species protection, and all Land Office Rules. Lessee's compliance will be at its own expense and will not be an offset against the Rent. Lessee will not discriminate against any independent contractor, agent, employee, sublessee or applicant because of race, color, religion, national origin, sex, sexual preference, age or handicap. Lessee shall not permit any nuisance to be maintained on the Land and, pursuant to NMSA 1978, § 19-6-5, Lessee shall diligently maintain and protect the Land from waste and trespass.



CERTIFICATION
I certify that the foregoing instrument
Lease No. BL-2051
containing 17 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Aubrey Dunn
Commissioner of Public Lands

7.7. Taxes. The Parties acknowledge that Lessor is a governmental agency and the Land is not subject to the requirement to pay property taxes. In the event the Lessor sells or exchanges the Land and therefore ownership of the Land, subject to this Lease vests in a private party, Lessee shall pay any personal property taxes on its Improvements, and Lessor's successor in interest would then pay all other ad valorem or real property taxes and assessments levied against the Land. However, Lessee shall pay for any increase in the ad valorem taxes levied against the Land that are assessed for the period from and after the date of this Lease until the end of the Term hereof to the extent that such increase is caused solely by the Project operations; provided, however, such obligation will not include any recaptured taxes attributable to any period prior to the date of this Lease or any interest or penalties thereon or to any increases in taxes due to reassessment upon a transfer of the fee interest in the Land by Lessor, and Lessee shall have the right, at its own expense, to appeal or contest any such increases and to compromise and settle the same and Lessor shall execute such petitions and agreements and otherwise cooperate with Lessee to the extent reasonably necessary for Lessee to do so.

7.8. No waiver. No employee or agent of Lessor or Lessee has the power, right, or authority to orally waive any conditions, covenants or agreements of this Lease, and no waiver of them will be effective unless in writing and executed. Any waiver of a breach or default of any conditions, covenants or agreements hereof will not constitute or be construed as a waiver of any other or subsequent breach or default. The failure of either Party to enforce at anytime any condition, covenant, or agreement of this Lease, or to exercise any option herein provided, or to require at anytime performance of any condition, covenant, or agreement of this Lease will not constitute or construed to be a waiver of such condition, covenant, or agreements, nor will it affect the validity of this Lease or any part thereof, or the right to thereafter enforce each and every such condition, covenant or agreement. Lessor's approval to any Assignment, Collateral Assignment or sublease will not be construed as a waiver of his right, in his sole discretion, to refuse to give approval to any other Assignment, Collateral Assignment or sublease.

7.9. Scope of Agreement. This Lease incorporates all of the agreements, covenants and understandings between Lessor and Lessee concerning the subject matter hereof and such agreements, covenants, and understandings are merged into this Lease. No prior agreement or understanding between Lessor and Lessee is valid or enforceable unless expressly embodied in this Lease.

7.10. Amendment. This Lease will not be altered, changed or amended except by written instrument executed by both Lessor and Lessee. Lessor will consider proposed changes to the Lease, but will not deviate from the minimum rent or any provisions representing the statutory, constitutional, or other legal obligations of Lessor. Among other things, Lessor may agree to reasonable amendments to the Lease to improve financiality of the project, or to amend or change the scope of the project. Lessor reserves the right to impose reasonable additional rents or fees in consideration for any such amendments.



CERTIFICATION
I certify that the foregoing instrument
Lease No. BL-2051
containing 17 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Aubrey Drenth
Commissioner of Public Lands
APR 4-2017

7.11. Applicable Law and Venue. The laws of the State of New Mexico govern this Lease, without giving effect to the conflict of law provisions of New Mexico law. Any action arising from or related to this Lease shall be filed in the First Judicial District Court in Santa Fe County, New Mexico. Lessee consents to venue and jurisdiction in the First Judicial District Court and to service of process under the laws of New Mexico, in any action relating to this Lease or its subject matter.

7.12. Successors In Interest. All terms, conditions and covenants of this Lease and all amendments thereto will extend to and bind the permitted heirs, successors and assigns of Lessee and Lessor.

7.13. Memorandum; Documents Affecting Title And Interest. Lessor and Lessee have signed, acknowledged and delivered contemporaneously with the signing of this Lease, or may sign, acknowledge and deliver at any time in the future, a Memorandum of this Lease in such form as the Lessor may approve which either Lessor or Lessee may record in the records of the Local Government or the Land Office. Lessee will not do any act that may encumber the interest or title of Lessor in and to the Land.

7.14. Severability. In the event that any provision of this Lease is held invalid or unenforceable under applicable law, such provision will be deemed severed from this Lease, and this Lease will remain in full force and effect unless it's essential purpose is frustrated by such severance.

7.15. No Joint Venture. Lessor is not and will not be construed or held to be a partner, joint venturer, or associate of Lessee in the conduct of the business of Lessee. Lessor will not be liable for any debts incurred by Lessee in the conduct of Lessee's business. The relationship between Lessor and Lessee is, and remains, solely that of Lessor and Lessee.

7.16. Exhaustion of Administrative Remedies. Except as provided in Section 3.1.1, in the event Lessee is aggrieved by a decision of Lessor to cancel this Lease, or any other agency determination, as defined in Land Office Rule 15 (19.2.15 NMAC), Lessee may contest pursuant to NMSA 1978, § 19-7-64 and Land Office Rule 15 (19.2.15 NMAC). Lessee shall initiate no court action regarding an agency determination, except to appeal a final decision of the Commissioner of Public Lands rendered pursuant to such a contest proceeding, and as provided by NMSA 1978, § 19-7-64.

7.17. Notices. Notice requirements, unless otherwise stated, will refer to written notice by registered or certified U.S. Postal Service, return receipt requested, or delivered by reputable overnight courier, return receipt of tracking system, to the addresses of the party hereunder will constitute sufficient notice to comply with the terms of this Lease. Notice will be deemed effective upon delivery. Either Lessor or Lessee may change its respective address as provided in this Section effective three (3) business days after giving written notice of the change to the other as provided in this Lease. The Addresses for notice are:



CERTIFICATION

I certify that the foregoing instrument
containing 14 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.

Date 1-4-2017

Gubrey Dunn
Commissioner of Public Lands

Notice to Lessor:

New Mexico Commissioner of Public Lands
301 Old Santa Fe Trail
Santa Fe, NM 87501
Attn: Assistant Commissioner, Commercial Resources Management Division

And

New Mexico State Land Office
Office of the General Counsel
301 Old Santa Fe Trail
Santa Fe, NM 87501

Notice to Lessee:

LES, LLC
PO Box 1789
Eunice, NM 88231
Attn: Paul Mason, Chief Financial Officer
Phone: 575-394-5211 Facsimile: 575-394-4545

7.18. Calculation of Time. Any time period herein calculated by reference to "days" means calendar days unless expressly otherwise stated; provided, however, that if the last day for a given act falls on a Saturday, Sunday, or a holiday as observed by the State of New Mexico, the day for such act will be first day following that is not a Saturday, Sunday, or such observed holiday.

7.19. Incorporated Law and Regulations. The Enabling Act (Act of June 20, 1910, 36 Statutes at Large 557, Chapter 310), all current and future constitutional provisions, statutes, regulations and rules governing or pertaining to the Land, including those set out at NMAC 19.2, are incorporated into, and made a part of, this Lease by this reference. In the event of a conflict between this Lease and Rule 9 (as it exists at the Effective Date), the more restrictive provisions controls, except that if the conflict relates to a matter within the reasonable discretion of Lessor, the Lease provision controls.

7.20. Survival of Terms, Conditions, Restrictions Reservations, and Covenants. Any Term, condition, restriction, reservation or covenant that gives rise to any rights or claims of Lessor against Lessee will survive the Termination, Relinquishment, or abandonment of this Lease.

7.21. Force Majeure. In the event that Lessor or Lessee are delayed or prevented from performing any of their respective obligations during the term of this Lease because of Force Majeure, then the period of such delays will be deemed added to the time herein provided for the performance of any such obligation and the defaulting party shall not be liable for losses or damages caused by such delays.

21 8 12 AM 92 000 1102





CERTIFICATION

I certify that the foregoing instrument
lease No. BL 2051
containing 17 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.

Date 1-4-2017

Aubrey D. Smith
Commissioner of Public Lands

IN WITNESS WHEREOF, the Parties have executed this Lease as of the date set forth above.

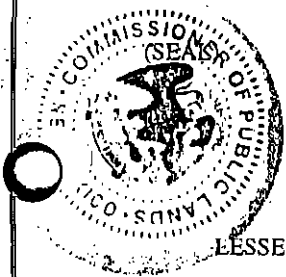
LESSOR:

New Mexico Commissioner of Public Lands

By: Ray Powell

Ray Powell, M.S., D.V.M.

New Mexico Commissioner of Public Lands



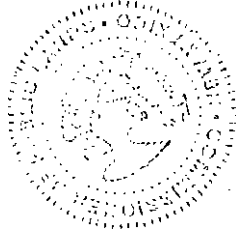
LESSEE:

Louisiana Energy Services, LLC ("LES")

By: Paul Mason

Printed Name: Paul Mason

Title: Chief Financial Officer



CERTIFICATION
I certify that the foregoing instrument
containing 14 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Gregory D. Mann
Commissioner of Public Lands

ACKNOWLEDGMENT IN AN INDIVIDUAL CAPACITY

State of _____
County of _____

This instrument was acknowledged before on _____ (date) by
_____ (name).

(seal)

(Signature of notarial officer)

My commission expires: _____

ACKNOWLEDGMENT IN A REPRESENTATIVE CAPACITY

State of New Mexico
County of Ala

This instrument was acknowledged before on Aug. 27, 2013 (date) by
Paul Meador (name) as Chief Financial Officer (title) of
MB Energy Louisiana Energy Services (name of party on behalf of whom instrument is
executed).

(seal)

Marsha K. Burris
(Signature of notarial officer)

My commission expires: March 19, 2015



OFFICIAL SEAL
Marsha K. Burris
NOTARY PUBLIC - STATE OF NEW MEXICO

My commission expires: March 19, 2015

2013 AUG 29 PM 8 12



CERTIFICATION
I certify that the foregoing instrument
Lease No. BL-2051
containing 17 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Adrienne Dumas
Commissioner of Public Lands

Exhibit A

Business Lease BL-1689-1

Holder: Louisiana Energy Services, LLC
Legal Desc.: Pt. SW $\frac{1}{4}$ SW $\frac{1}{4}$ (29.99/ac), Pt. SE $\frac{1}{4}$ SW $\frac{1}{4}$ (22.77/ac), SW $\frac{1}{4}$ SE $\frac{1}{4}$ (15.11/ac), Pt. SE $\frac{1}{4}$ SE $\frac{1}{4}$ (7.89/ac) of Section 32, Township 21 South, Range 38 East, N.M.P.M., Lea County, New Mexico, containing 75.76 acres, more or less.
Expires: 04/04/2015 (to be relinquished upon issuance of a long-term lease)

Right-of-Way RW-30200

Holder: Southwestern Public Service Company of Amarillo, TX
Legal Desc.: Pt. SW $\frac{1}{4}$ SW $\frac{1}{4}$ of Sec. 32, T21S, R38E, Pt. SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Sec. 32, T21S, R38E, Pt. SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Sec. 32, T21S, R38E, containing \pm 5.46 acres.
Purpose: Overhead Electric Transmission Lines
Expires: 03/13/2042

Right-of-Way RW-31633

Holder: Southwestern Public Service Company of Amarillo, TX
Legal Desc.: Pt. SW $\frac{1}{4}$ SW $\frac{1}{4}$ of Sec. 32, T21S, R38E, Pt. SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Sec. 32, T21S, R38E, Pt. SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Sec. 32, T21S, R38E, SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Sec. 32, T21S, R38E, containing \pm 3.65 acres.
Purpose: Overhead Electric Transmission Lines
Expires: 9/29/2044

Negative Easement LURC-1-03

Holder: Louisiana Energy Services, LLC.
Legal Desc.: Pt. SW $\frac{1}{4}$ SW $\frac{1}{4}$, Pt. SE $\frac{1}{4}$ SW $\frac{1}{4}$, Pt. SW $\frac{1}{4}$ SE $\frac{1}{4}$, Pt. SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Sec. 32, T21S, R38E, containing \pm 75.76 acres.
Purpose: Negative Easement
Expires: 8/22/2038 or upon lease to anyone other than its holder

Right-of-Way RW-30337

Holder: Leo V. Sims II, Hobbs, NM
Legal Desc.: Pt. SE $\frac{1}{4}$ SE $\frac{1}{4}$, Sec. 32, T21S, R38E, containing \pm 0.21 acres. Purpose: Road Easement
Expires: 4/23/2044

Right-of-Way RW-30158

Holder: Trinity Pipeline L.P., of Midland, TX
Legal Desc.: Pt. SW $\frac{1}{4}$ SW $\frac{1}{4}$ of Sec. 32, T21S, R38E, Pt. SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Sec. 32, T21S, R38E, Pt. SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Sec. 32, T21S, R38E, containing \pm 5.09 acres.
Purpose: Pipeline Easement
Expires: 8/7/2041



CERTIFICATION

I certify that the foregoing instrument
containing 14 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.

Date 1-4-2017

Aubrey Duna
Commissioner of Public Lands

Right-of-Way RW-30480

Holder: U.S. Cable of Coastal Texas, LP, Hobbs, NM
Legal Desc: SW4SW4 of Sec. 32, T21S, R38E, containing ± 0.025 acres.
Purpose: Fiber Optic Cable Line Easement
Expires: 5/18/2042

Right-of-Way RW-15449

Holder: Lea County Commissioners, Lovington, NM
Legal Desc: Pt. SW4SW4 of Sec. 32, T21S, R38E, Pt. SE4SW4 of Sec. 32, T21S, R38E, Pt. SW4SE4 of Sec. 32, T21S, R38E, Pt. SE4SE4 of Sec. 32, T21S, R38E, containing ± 25.118 acres
Purpose: Highway Easement
Expires: 5/23/62 Dated

Right-of-Way M-2873

Holder: Leapartners, L.P. of Fort Worth, TX
Legal Desc: Pt. SW4SW4, Pt. SE4SW4, Pt. SW4SE4, SE4SE4 of Sec. 32, T21S, R38E, containing ± 3.611 acres.
Purpose: Gas pipeline easement
Expires: Perpetuity

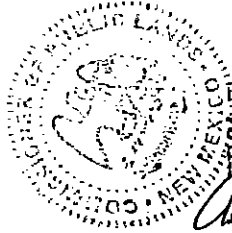
Right-of-Way M-2273

Holder: Leapartners, L.P. of Fort Worth, TX
Legal Desc: Pt. SW4SW4, Pt. SE4SW4, Pt. SW4SE4, SE4SE4 of Sec. 32, T21S, R38E, containing ± 7.23 acres.
Purpose: Gas pipeline easement
Expires: Perpetuity

2T 8 W4 62 9NW E102



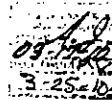
18.188



CERTIFICATION
I certify that the foregoing instrument
R-30337 Easement
containing 8 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-4-2017
Anthony Dunn
Commissioner of Public Lands

STATE OF NEW MEXICO
COMMISSIONER OF PUBLIC LANDS
ROADWAY RIGHT-OF-WAY

Right-of-Way Easement No. R-30337



This indenture made this 23rd day of April, 2009 by and between the State of New Mexico, acting by and through its Commissioner of Public Lands, "Grantor", Leo V. Sims II whose address is 814 W. Marland Blvd., Hobbs, NM 88240 Grantee;

WITNESSETH:

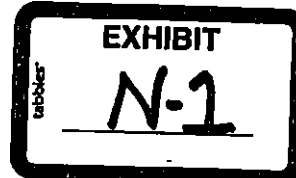
That Grantor, for and in consideration of the sum of \$851.28-----Eight Hundred and Fifty One Dollars and 28/100-----, receipt of which is hereby acknowledged, and other good and valuable consideration, conveys to Grantee a personal right-of-way for the sole and exclusive purpose of gaining ingress to and egress from Grantee's land described. The right-of-way granted herein does not run with any land of Grantee. This grant includes the right to enter upon the real estate hereinafter described at any time that it may become reasonably necessary to construct, maintain and repair the right-of-way, together with the right to remove trees, brush, undergrowth, and other obstructions interfering with the location, construction, and maintenance of said right-of-way.

The right-of-way hereby granted covers a strip of land 40 feet in width in Lea County (ies), as more particularly described by the attached centerline description and survey plats, which are incorporated herein as Exhibit A. It is expressly agreed that the location of this personal right-of-way may be re-located by Grantor from time to time to accommodate the development of Grantor's property, upon reasonable notice to Grantee; and Grantor may, by providing alternate ingress and egress to Grantee on roadways to be developed on Grantor's property, terminate the personal right-of-way granted herein upon reasonable notice to Grantee.

This grant is made upon the following express terms and conditions:

1. This right-of-way is granted for a term of 35 years. The grant may be renewed for additional periods upon application to Grantor. Any such renewals are subject to such terms and conditions as the Grantor may require, and payment of compensation.
2. Grantor reserves the right to authorize or grant rights-of-way or other easements to third parties, which may be over, parallel to, or across this right-of-way. In such cases, the subsequent grantee may, at the discretion of the Grantor, be required to post a bond guaranteeing payment for damages to the installations and improvements of Grantee herein. In crossing any right-of-way for a highway, road, telephone, telegraph, transmission line, etc. Grantee herein will exercise due care so as not to interfere with said rights-of-way and will comply with all applicable laws, rules, and regulations in connection with the making of such crossings.
3. The right to grant additional rights-of-way or easements within this right-of-way belongs exclusively to Grantor
4. GRANTEE EXPRESSLY AGREES THAT PRIOR TO THE CONSTRUCTION OR INSTALLATION OF ANY FACILITIES WITHIN THE RIGHT-OF-WAY GRANTED HEREIN, GRANTEE WILL DETERMINE WHETHER THE RIGHT-OF-WAY IS WITHIN A PREVIOUSLY

ULO SCAN
SEP 27 2011





CERTIFICATION
 I certify that the foregoing instrument
R-30337 Easement
 containing 2 page(s) is a true and exact
 photocopy of the copy in my custody and on
 file in the State Land Office.
Aubrey Dunn / R Date 1-4-2017
 Commissioner of Public Lands

Right-of-Way Easement No. R-30337

ESTABLISHED NEW MEXICO STATE HIGHWAY AND TRANSPORTATION DEPARTMENT RIGHT-OF-WAY, AND IF IT IS, GRANTEE WILL OBTAIN FROM THE DEPARTMENT A PERMIT THAT PRESCRIBES THE CONDITIONS UNDER WHICH FACILITIES MAY BE PLACED WITHIN THE RIGHT-OF-WAY IN ACCORDANCE WITH THE DEPARTMENT'S APPLICABLE RULES AND REGULATIONS. GRANTEE FURTHER UNDERSTANDS AND AGREES THAT THE FAILURE TO OBTAIN SUCH PERMIT SHALL RESULT IN THE FORCIBLE REMOVAL BY THE DEPARTMENT OF ANY FACILITIES THAT MAY BE CONSTRUCTED OR INSTALLED WITHIN THE RIGHT-OF-WAY.

5. In clearing the right-of-way, Grantee agrees to dispose of brush and other debris so as not to interfere with the movement of livestock of state agriculture lessees, and so as not to obstruct or interfere with any development of Grantor's adjacent lands.
6. Grantee hereby agrees to carefully avoid destruction or injury to any improvements or livestock lawfully upon the premises described herein, to close all gates immediately upon passing through same, and to pay promptly the reasonable and just damages for any injury or destruction arising from construction or maintenance of this right-of way.
7. Grantee shall not sell, assign, or in any way transfer or cause to be transferred, directly or indirectly, any interest in this right-of-way to any person or entity without the prior written approval of Grantor. Such approval may be conditioned upon the agreement by Grantee's assignee to additional conditions and covenants and may require payment of additional compensation to Grantor. This right-of-way is for the sole purpose of providing personal ingress and egress to Grantee, and for no other purpose.
8. The rights granted herein are subject to valid existing rights.
9. Grantor reserves the right to execute leases for oil and gas, coal, and minerals of whatsoever kind and for geothermal resources development and operation, the right to sell or dispose of same and the right to grant rights-of-way and easements related to such leasing.
10. In all matters affecting the premises described herein or operations thereon, Grantee, its employees, agents and contractors shall, at their own expense, fully comply with all laws, regulations, rules, ordinances, and requirements of any governmental authority or agency, which may be enacted or promulgated, including, but not limited to, requirements or enactment's pertaining to conservation, sanitation, aesthetics, pollution, cultural properties, fire, or ecology, including those provisions of the New Mexico Cultural Properties Act, §§18-6-1 through 17, NMSA 1978, that attach criminal penalties to the appropriation, excavation, injury or destruction of any site or object of historical, archaeological, architectural, or scientific value located on state lands. In addition, Grantee, its employees, agents and contractors must comply with the provisions of the Pipeline Safety Act, §§ 70-3-11 through 20, NMSA 1978, and rules enacted pursuant to the Act, and agree to provide the Public Regulation Commission access to records of compliance.
11. Non-use of the right-of-way granted herein for any period in excess of one (1) year without the prior written consent of Grantor shall be conclusive proof of abandonment of the right-of-way, and shall cause the right-of-way to lapse *ipso facto* and revert to Grantor without further action or notice required of Grantor; and non-use for shorter periods shall place upon grantee the burden of proving that there was no intent to abandon. Grantee's abandonment cannot be waived by any action or inaction of Grantor or by Grantor's failure to discover such abandonment. The resumption of use by Grantee after abandonment shall be deemed a trespass.
12. Grantee, if other than a governmental entity that is provided immunity from suit by the New Mexico Tort Claims Act, agrees to save and hold harmless, defend and indemnify the State of New Mexico, the Commissioner of Public Lands, and his agents or employees, in their official and individual capacities,

SLO SCAN

SEP 27 2011



CERTIFICATION
I certify that the foregoing instrument
containing R-30337 Easement page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.

Anthony Danner Date 1-4-2017
Commissioner of Public Lands

Right-of-Way Easement No. R-30337

of and from any and all liability, claims, losses, or damages arising out of or alleged to arise out of or indirectly connected with the operations of Grantee, its employees, agents, or contractors hereunder.

13. Notwithstanding anything contained herein, Grantor may cancel this grant for violation of any of the covenants of this agreement; provided, however, that before any such cancellation shall become effective, Grantor shall mail to grantee or any approved assignee, by certified mail addressed to the post office address of Grantee or such assignee shown by Land Office records, a thirty (30) day notice of intention to cancel, specifying the default for which the grant is subject to cancellation. No proof of receipt of notice shall be necessary and thirty (30) days after such mailing, Grantor may enter cancellation unless Grantee shall have sooner remedied the default to the satisfaction of Grantor.
14. Grantee agrees to preserve and protect the natural environmental conditions of the land encompassed in this grant, and to take those reclamation or corrective actions that are accepted soil and water conservation practices and that are deemed necessary by Grantor to protect the land from pollution, erosion, or other environmental degradation.
15. Grantee agrees to reclaim by grading, leveling, or terracing all areas disturbed by the construction or maintenance of the right-of-way or operations thereon and to landscape such areas at its own cost and expense. Landscaping shall include the planting of native grasses, shrubs, or other vegetation so as to return disturbed areas to their natural state and prevent water and wind erosion.
16. This grant shall become effective upon its execution by Grantor.

STIPULATION:



CERTIFICATION
I certify that the foregoing instrument
R-30337 Easement
containing 2 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 6-4-2014
Anthony Dunn
Commissioner of Public Lands

Right of Way Easement No. R-30337

BY: [Signature]

ACKNOWLEDGMENT FOR CORPORATIONS

STATE OF _____)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this _____ day of _____, 20____,
y _____ of _____ corporation, on behalf of said corporation.

My Commission Expires:

NOTARY PUBLIC

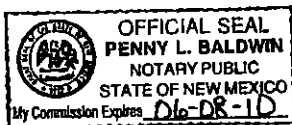
ACKNOWLEDGMENT FOR NATURAL PERSONS

STATE OF New Mexico)
) ss.
COUNTY OF Santa Fe)

The foregoing instrument was acknowledged before me this 17th day of April, 2009,
by Leo V. Luna of _____.

My Commission Expires:

06-08-10



Penny L. Baldwin
NOTARY PUBLIC

STATE OF NEW MEXICO

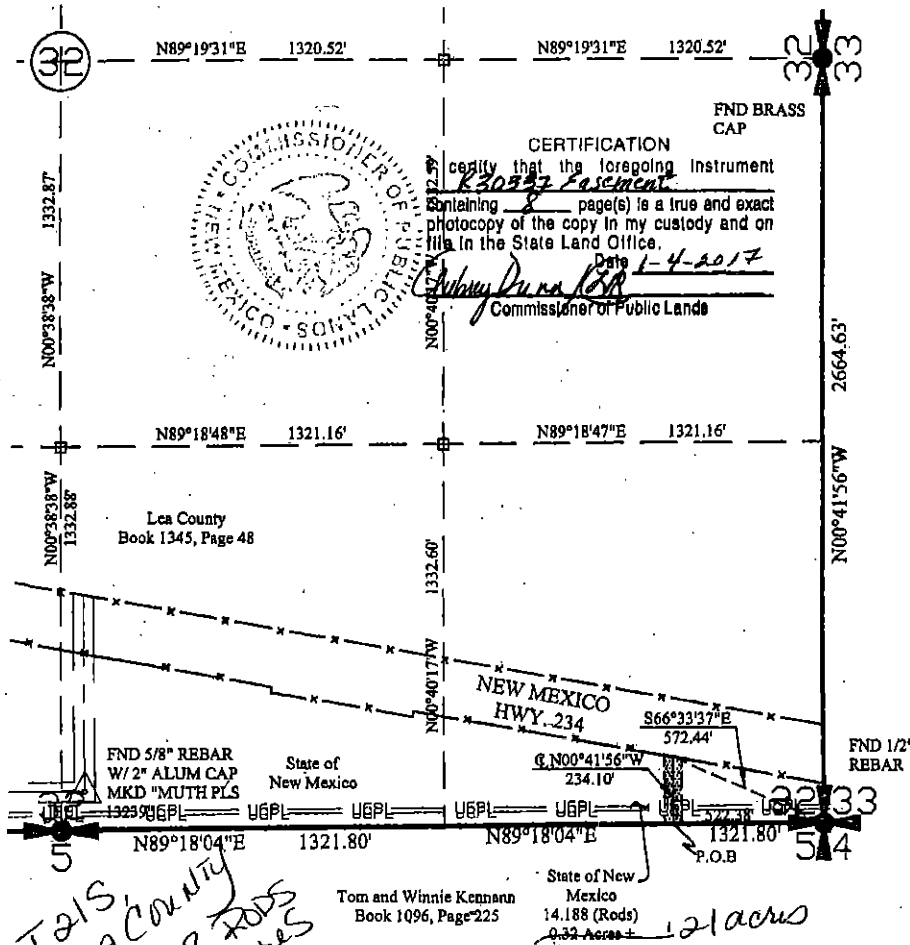
BY: [Signature]

COMMISSIONER OF PUBLIC LANDS

DATE: 4/29/09

R-30337 2.508

EXHIBIT "A"



SEC 32, T21S, R38E
LEA COUNTY
SE 1/4 - 14.188 RODS
40' wide
11/11



Basis of Bearing

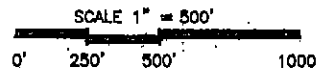
The Basis of Bearing for this Survey is Global Positioning System real time Differentially Corrected observations made from the U.S. Geological Survey Benchmark 12DD a 3" Brass Disk in concrete having a derived horizontal and vertical position of N32°25'49.52009" Latitude, W103°04'56.32607" Longitude and a height of 3328.33 feet; from a Control Survey tied to Continuously Operating Reference Station System. Bearings are referenced to the NMSPC-Zone 300° angles are ground.

DEGREW AND ASSOCIATES		
1110 N. GRIMES HOBBS, N.M. 88240		
(505) 393-9827		
0	09/22/2006	PLOTTED
00	06/21/2006	PRELIMINARY PLAT
REV	DATE	DESCRIPTION

INDEXING INFORMATION FOR COUNTY CLERK

OWNER: State of New Mexico
LOC: S1/2, Sec. 32, T21S, R38E,
N.M.P.M.

SEP 27 2011



LEGEND

- MONUMENT-FOUND AS DESCRIBED (SECTION CORNER)
- MONUMENT-FOUND AS DESCRIBED (QUARTER SECTION CORNER)
- MONUMENT-SET 5/8" REBAR W/ ALUM CAP MKD "WM HICKS NMPS 12348" (SECTION CORNER)
- MONUMENT-SET 5/8" REBAR W/ ALUM CAP MKD "WM HICKS NMPS 12348" (QUARTER SECTION CORNER)
- SECTION CENTER
- CALCULATED LOCATION

CENTER LINE EASEMENT

PLAT OF EASEMENT SURVEY FOR

LEO V. SIMS II

PROJ. No.	2005.1148	DRN BY:	C.J.
DWG	Acad Tap-NEFDwgSims Road.dwg		
BOOK		SHT.	1 of 2

LEGAL DESCRIPTION

DESCRIPTION OF RIGHT-OF-WAY THROUGH THE SOUTH PART OF SECTION 32, TOWNSHIP 21 SOUTH, RANGE 38 EAST, NEW MEXICO PRINCIPAL MERIDIAN, LEA COUNTY, NEW MEXICO.

RIGHT-OF-WAY OF LAND traversing that portion of said Section 32, owned by the State of New Mexico, being ^{40'} 60.00 feet wide and extending at right angles 30.00 feet on each side of the centerline herein described with the right-of-way lines lengthening and shortening to eliminate gaps and overlaps at angle points and points where the centerline intersects section lines, property boundaries, easement boundaries, and other right-of-way lines said centerline being more particularly described as follows:

BEGINNING at a point in the south line of said Section 32, from whence the southeast corner of said Section 32, monumented with a found 1/2" rebar, bears N89°18'04"E, 522.38 feet;

THENCE N00°41'56"W, along said centerline, parallel to the east line of said Section 32, a distance of 234.10 feet to a point in the southerly right-of-way line of State Route 234 (S-1218(2)) from whence the southeast corner of said Section 32, monumented with a found 1/2" rebar, bears S66°33'37"E, 572.44 feet.

Said Right-of-Way has a **TOTAL LENGTH OF 14.188 RODS CONTAINING 0.32 ACRES** more or less, all being within Section 32, Township 21 South, Range 38 East, N.M.P.M. and allocated by quarter-quarter sections as follows:

SE 1/4 SE 1/4 ~~0.32 Acres~~ 14.188 Rods
1.21 acres

CERTIFICATE OF SURVEY

I hereby certify this plat to be a true copy of a survey made in the field under my supervision, and meets the requirements of the Minimum Standards for Surveying in New Mexico as approved by the State Board of Licensure for Professional Engineers and Surveyors.

William M. Hicks III
William M. Hicks, III, NMPS No. 12348



SEPTEMBER 22, 2006



CERTIFICATION
I certify that the foregoing instrument containing 2 page(s) is a true and exact photocopy of the copy in my custody and on file in the State Land Office.

Clayton Dunn
Clayton Dunn
Commissioner of Public Lands

TIGREW AND ASSOCIATES
1110 N. ORDOS
HOBBS, N.M. 88240
(505) 293-9827

INDEXING INFORMATION
FOR COUNTY CLERK

PLAT OF EASEMENT SURVEY FOR

LEO V. SIMS II

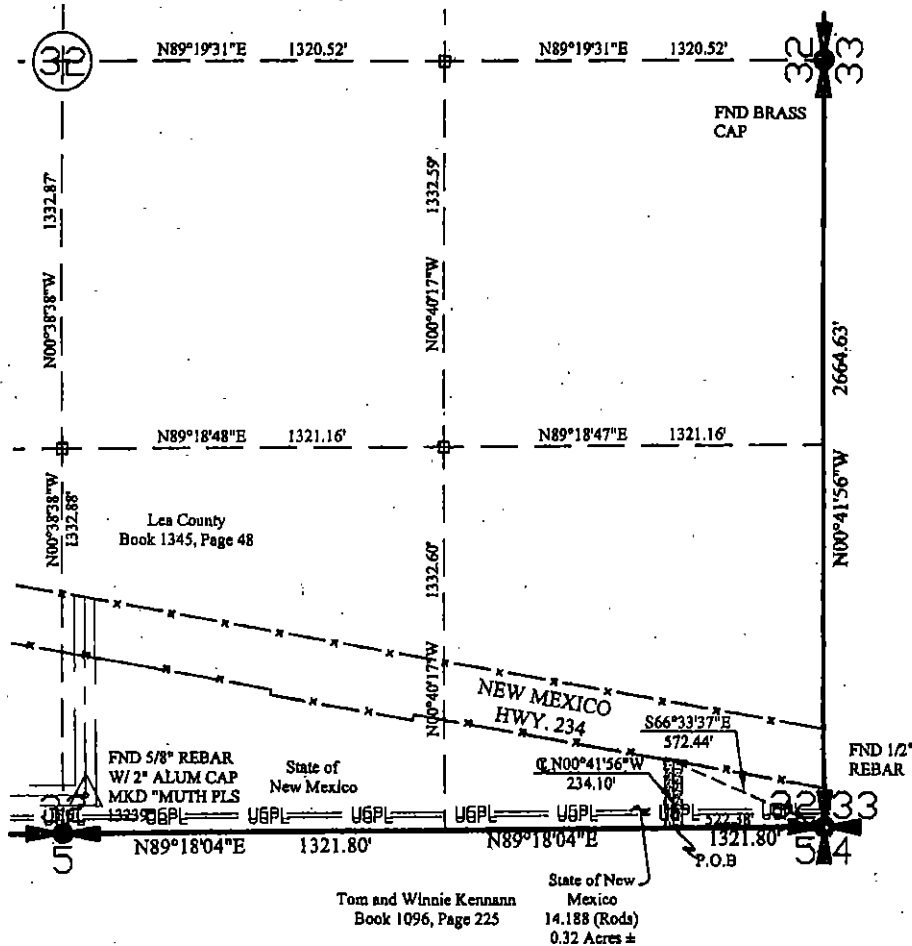
0	09/22/2006	PLOTTED
00	06/21/2006	PRELIMINARY PLAT
		DATE OF SURVEY
REV	DATE	DESCRIPTION

OWNER: State of New Mexico
LOC: S1/2, Sec. 32, T21S, R38E,
N.M.P.M. SLO SCAN

PROJ. No.	2005.1148	DRN BY:	C.J.
DWG	Acad Top-NEH.dwg	Sims Road.dwg	
BOOK		SHT.	2 of 2

SEP 27 2011

EXHIBIT "A"



CERTIFICATION
 I certify that the foregoing instrument
 containing 8 page(s) is a true and exact
 photocopy of the copy in my custody and on
 file in the State Land Office.
1-4-2017
 Commissioner of Public Lands

SCALE 1" = 800'
 0' 250' 500' 1000'

LEGEND

- ✚ MONUMENT-FOUND AS DESCRIBED (SECTION CORNER)
- ✚ MONUMENT-FOUND AS DESCRIBED (QUARTER SECTION CORNER)
- ✚ MONUMENT-SET 5/8" REBAR W/ ALUM CAP MKD "WM HICKS NMPS 12348" (SECTION CORNER)
- ✚ MONUMENT-SET 5/8" REBAR W/ ALUM CAP MKD "WM HICKS NMPS 12348" (QUARTER SECTION CORNER)
- SECTION CENTER
- CALCULATED LOCATION

CENTER LINE BASEMENT

PLAT OF EASEMENT SURVEY FOR

LEO V. SIMS II



Basis of Bearing

The Basis of Bearing for this Survey is Global Positioning System real time Differentially Corrected observations made from the U.S. Geological Survey Benchmark 12DD a 3" Brass Disk in concrete having a derived horizontal and vertical position of N32°25'49.52009" Latitude, W103°04'56.32607" Longitude and a height of 3328.33 feet; from a Control Survey tied to Continuously Operating Reference Station System. Bearings are referenced to the NMSPC-Zone 3C stances are ground.

ATTIGREW AND ASSOCIATES
 1110 N. GRADEN HOBBS, N.M. 88240
 (505) 393-9827

INDEXING INFORMATION FOR COUNTY CLERK

OWNER: State of New Mexico
 LOC: S1/2, Sec. 32, T21S, R38E,
 N.M.P.M. SLO SCAL

REV	DATE	DESCRIPTION
0.	09/22/2006	PLOTTED
00	06/21/2006	PRELIMINARY PLAT
		DATE OF SURVEY

PROJ. No.	2005.1148	DRN BY:	C.J.
DWG	Acad Top-NEF.dwg	Sims Road.dwg	
BOOK		SHT.	1 of 2

LEGAL DESCRIPTION

DESCRIPTION OF RIGHT-OF-WAY THROUGH THE SOUTH PART OF SECTION 32, TOWNSHIP 21 SOUTH, RANGE 38 EAST, NEW MEXICO PRINCIPAL MERIDIAN, LEA COUNTY, NEW MEXICO.

RIP OF LAND traversing that portion of said Section 32, owned by the State of New Mexico, being 60.00 feet wide and extending at right angles 30.00 feet on each side of the centerline herein described with the right-of-way lines lengthening and shortening to eliminate gaps and overlaps at angle points and points where the centerline intersects section lines, property boundaries, easement boundaries, and other right-of-way lines said centerline being more particularly described as follows:

BEGINNING at a point in the south line of said Section 32, from whence the southeast corner of said Section 32, monumented with a found 1/2" rebar, bears N89°18'04"E, 522.38 feet;

THENCE N00°41'56"W, along said centerline, parallel to the east line of said Section 32, a distance of 234.10 feet to a point in the southerly right-of-way line of State Route 234 (S-1218(2)) from whence the southeast corner of said Section 32, monumented with a found 1/2" rebar, bears S66°33'37"E, 572.44 feet.

Said Right-of-Way has a **TOTAL LENGTH OF 14.188 RODS CONTAINING 0.32 ACRES** more or less, all being within Section 32, Township 21 South, Range 38 East, N.M.P.M. and allocated by quarter-quarter sections as follows:

SE 1/4 SE 1/4 0.32 Acres 14.188 Rods

CERTIFICATE OF SURVEY

I hereby certify this plat to be a true copy of a survey made in the field under my supervision, and meets the requirements of the Minimum Standards for Surveying in New Mexico as approved by the State Board of Licensure for Professional Engineers and Surveyors.

William M. Hicks III
William M. Hicks, III, NMPS No. 12348

SEPTEMBER 22, 2006



CERTIFICATION

I certify that the foregoing instrument containing 8 page(s) is a true and exact photocopy of the copy in my custody and on file in the State Land Office.

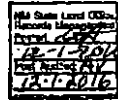
Anthony Denny
Commissioner of Public Lands

SETTIGREW AND ASSOCIATES 1119 N. GRIMES HOBBS, N.M. 88240 (505) 393-9427		INDEXING INFORMATION FOR COUNTY CLERK		PLAT OF EASEMENT SURVEY FOR LEO V. SIMS II	
0	09/22/2006	OWNER: State of New Mexico LOC: S1/2, Sec. 32, T21S, R38E, N.M.P.M.		PROJ. No.	2005.1148
00	06/21/2006	DATE OF SURVEY		DRN BY:	CJ
REV	DATE	DESCRIPTION		DWG	Acad Tap-NE Fwdg Sims Road.dwg
				BOOK	SHT. 2 of 2

pg. 1 of 4



CERTIFICATION
I certify that the foregoing instrument
Assignment R-30337 dated 4/29/2015
containing 4 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
1-4-2017
Robyn Dunn
Commissioner of Public Lands



NEW MEXICO STATE LAND OFFICE
ASSIGNMENT OF RIGHT-OF-WAY AND EASEMENT
Type of Assignment: Full

KNOW ALL MEN BY THESE PRESENTS:

This agreement is entered into this 29 day of April, 2015, between

Leo V. Sims, II as Assignor and

J.D. Davis and Joann Davis of P.O. Box 394, Eunice, NM 88231 as Assignee.
(Address)

Assignor is holder of right-of-way and easement from the New Mexico State Land Office, by its Commissioner of Public Lands, designated as No. R-30337 dated 4-23-2009.
(Original Approval Date)

The amount of \$10.00 and other consideration, the receipt of which is hereby acknowledged, Assignor does hereby convey all / partial (circle one) rights, title and interest in and to R-30337 (Attach description or exhibit if applicable.)

Assignor and Assignee acknowledge and agree that, unless agreed to by the Commissioner of Public Lands, Assignor shall remain fully liable for all damage to the subject trust lands arising from or in conjunction with Assignor use of the subject right-of-way; and that Assignee assumes all subsequent liability from the date of this assignment forward, and agrees to be strictly bound by all the terms of the assigned right-of-way as though those terms were set out herein.

EXECUTED THIS 29th day of April, 2015.

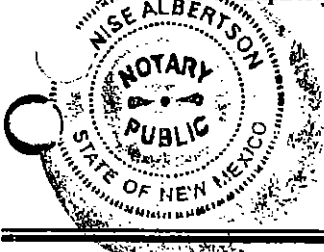
Leo V. Sims, II
(Assignor)

STATE OF New Mexico
COUNTY OF Lea

The foregoing instrument was acknowledged before me this 29th day of April, 2015 by Leo V. Sims, II

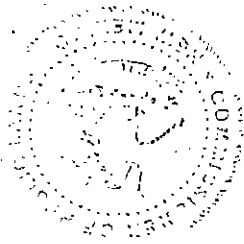
My Commission Expires: Aug 01, 2018

Dennie Albertson
Notary Public



2015 APR 30 AM 10 14





CERTIFICATION

I certify that the foregoing instrument Assignment B-50232 dated 4/29/2015 containing 4 page(s) is a true and exact photocopy of the copy in my custody and on file in the State Land Office.

Date 1-4-2017
Gabriel Duran / B.A.
Commissioner of Public Lands

LEGAL DESCRIPTION

DESCRIPTION OF RIGHT-OF-WAY THROUGH THE SOUTH PART OF SECTION 32, TOWNSHIP 21 SOUTH, RANGE 18 EAST, NEW MEXICO PRINCIPAL MERIDIAN, LEA COUNTY, NEW MEXICO.

A STRIP OF LAND traversing that portion of said Section 32, owned by the State of New Mexico, being 60.00 feet wide and extending at right angles 30.00 feet on each side of the centerline herein described with the right-of-way lines lengthening and shortening to eliminate gaps and overlaps at angle points and points where the centerline intersects section lines, property boundaries, easement boundaries, and other right-of-way lines said centerline being more particularly described as follows:

BEGINNING at a point in the south line of said Section 32, from whence the southeast corner of said Section 32, monumented with a found 1/2" rebar, bears N89°18'04"E, 522.38 feet;

THENCE N00°41'56"W, along said centerline, parallel to the east line of said Section 32, a distance of 234.10 feet to a point in the southerly right-of-way line of State Route 234 (S-1218(2)) from whence the southeast corner of said Section 32, monumented with a found 1/2" rebar, bears S66°33'37"E, 572.44 feet.

Said Right-of-Way has a TOTAL LENGTH OF 14.188 RODS CONTAINING 0.32 ACRES more or less, all being within Section 32, Township 21 South, Range 18 East, N.M.P.M. and allocated by quarter-quarter sections as follows:

SE 1/4 SE 1/4 0.32 Acres 14.188 Rods
12 Acres

40' wide
MSA

CERTIFICATE OF SURVEY

This plat to be a true copy of a survey made in the field under my supervision, and meets the requirements of the standards for Surveying in New Mexico as approved by the State Board of Licensure for Professional Engineers and Surveyors.

William M. Hicks, III
William M. Hicks, III, NMPS No. 12348

September 22, 2006



CREW AND ASSOCIATES 1000 N. 10th St., Suite 100 Albuquerque, NM 87102 (505) 261-1111		INDEXING INFORMATION FOR COUNTY CLERK	PLAT OF BASEMENT SURVEY FOR LEO Y. SIMS II
DATE: 09/22/2006 D: 09/22/2006 DATE OF SURVEY: 09/22/2006 BY: DATE: DESCRIPTION:	OWNER: State of New Mexico LOC: S1/2, Sec. 32, T21S, R18E, N.M.P.M.	PROJ. No. 120051142 DWG. Also See NMP drawing 120051142 BOOK: 1 SHEET: 2 of 2	





CERTIFICATION
I certify that the foregoing instrument
Assignment R-30397 dated 4/29/2015
containing 4 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
April 1-4-2017
Commissioner of Public Lands

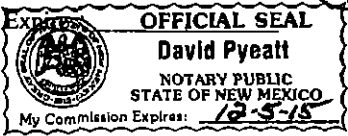
J.D. Davis
J.D. Davis
Joann Davis
Joann Davis

(Assignee)

STATE OF NM
COUNTY OF San

The foregoing instrument was acknowledged before me this 29 day of April
20 15 by J.D. Davis and Joann Davis, husband and wife

My Commission Expires



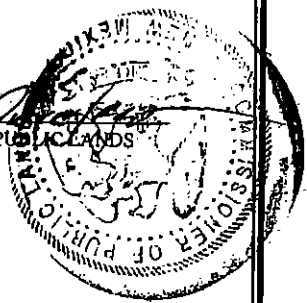
[Signature]
Notary Public

Approved by me on April 30, 20 15.

FULL ASSIGNMENT \$50.00
PARTIAL ASSIGNMENT \$75.00

S-31 (Revised 03/2007)

[Signature]
COMMISSIONER OF PUBLIC LANDS



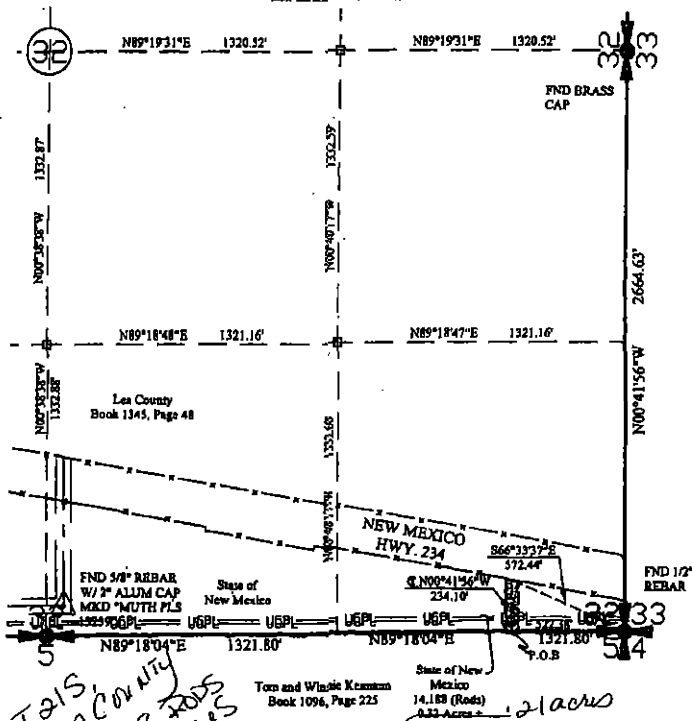


CERTIFICATION

I certify that the foregoing instrument
Assignment R-30337 dated 4/29/2015
containing 4 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.

Anthony Dunn
Commissioner of Public Lands

EXHIBIT "A"



Sec 32, T21S,
38E LEA County
SE4SE4 - 14.188 rods
40' wide
REA

Tom and Wanda Kamm
Book 1096, Page 225

State of New Mexico
14.188 (Rods)
0.33 Acres

SCALE 1" = 500'
0' 250' 500' 1000'

LEGEND

- ⊕ MONUMENT-FOUND AS DESCRIBED (SECTION CORNER)
- ⊕ MONUMENT-FOUND AS DESCRIBED (QUARTER SECTION CORNER)
- ⊕ MONUMENT-SET 5/8" REBAR W/ ALUM CAP MKD "WM HICKS NMP'S 12348" (SECTION CORNER)
- ⊕ MONUMENT-SET 5/8" REBAR W/ ALUM CAP MKD "WM HICKS NMP'S 12348" (QUARTER SECTION CORNER)
- SECTION CENTER
- CALCULATED LOCATION

CENTER LINE EASEMENT

PLAT OF BASEMENT SURVEY FOR

LEO V. SIMS II

is of Bearing
Basis of Bearing for this Survey is Global Positioning System real time
centrality Corrected observations made from the U.S. Geological Survey
mark 12DD a 3" Brass Disk in concrete having a derived horizontal and
cal position of N32°25'49.52009" Latitude, W103°04'56.32607" Longitude
height of 1328.33 feet; from a Control Survey tied to Continuously
ating Station System. Bearings are referenced to the NMSPC-Zone
dist ground.

PREPARED BY AND ASSOCIATES

INDEXING INFORMATION FOR COUNTY CLERK

DATE	DESCRIPTION	OWNER: State of New Mexico LOC: S1/2, Sec. 32, T21S, R38E, N.M.P.M.
04/22/2004	PLOTTED	
04/21/2004	PRELIMINARY PLAT	
	DATE OF SURVEY	

PROJ. No. 12003.1142	DRN BY: J.C.
DWG. Acad Top-NEP Survey Line Roadway	
BOOK	SHT. 1 of 2



19.184



CERTIFICATION
I certify that the foregoing instrument
Assignment R-30337 dated 4/20/2015
containing 4 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
Date 1-3-2017
Cheryl Dunn / L.R.
Commissioner of Public Lands



NEW MEXICO STATE LAND OFFICE
ASSIGNMENT OF RIGHT-OF-WAY AND EASEMENT
Type of Assignment: Full

KNOW ALL MEN BY THESE PRESENTS:

This agreement is entered into this 30 day of April, 2015, between

J.D. Davis and Joann Davis, husband wife as Assignor and

A. Bryce Karger of 5909 86th Street, Lubbock, TX as Assignee.
(Address) 79424

Assignor is holder of right-of-way and easement from the New Mexico State Land Office, by its Commissioner of Public Lands, designated as No. R-30337 dated 4-23-2009.
(Original Approval Date)

The amount of \$10.00 and other consideration, the receipt of which is hereby acknowledged, Assignor does hereby convey all / partial (circle one) rights, title and interest in and to R-30337 (Attach description or exhibit if applicable.)

Assignor and Assignee acknowledge and agree that, unless agreed to by the Commissioner of Public Lands, Assignor shall remain fully liable for all damage to the subject trust lands arising from or in conjunction with Assignor use of the subject right-of-way; and that Assignee assumes all subsequent liability from the date of this assignment forward, and agrees to be strictly bound by all the terms of the assigned right-of-way as though those terms were set out herein.

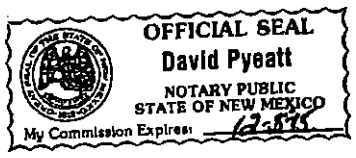
EXECUTED THIS 30 day of April, 2015.

J.D. Davis
Joann Davis
(Assignor)

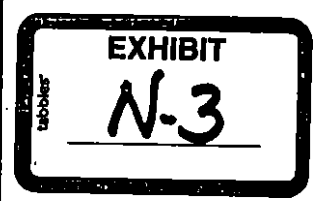
STATE OF NM
COUNTY OF Lea

The foregoing instrument was acknowledged before me this 30 day of April, 2015 by J.D. Davis and Joann Davis, husband and wife
My Commission Expires: 12-5-15

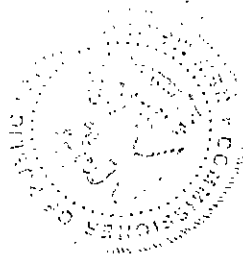
[Signature]
Notary Public



25 8 W 8 N 8 57



pg. 284



CERTIFICATION

I certify that the foregoing instrument Assignment R 30337 dated 4/20/2015 containing 4 page(s) is a true and exact photocopy of the copy in my custody and on file in the State Land Office.

Aubrey Dunn 1-3-2017
Commissioner of Public Lands

X A Bryce Karger
(Assignee)

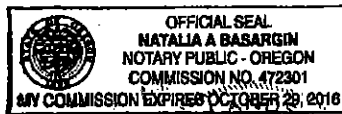
STATE OF Oregon
COUNTY OF Clatsop

The foregoing instrument was acknowledged before me this 25th day of April, 2015, by A. Bryce Karger

My Commission Expires: October 29, 2016

[Signature]

Notary Public



Approved by me on 6/10, 2015

FULL ASSIGNMENT \$50.00
PARTIAL ASSIGNMENT \$75.00

S-31 (Revised 03/2007)



2015 JUN 8 AM 8 57



14 394

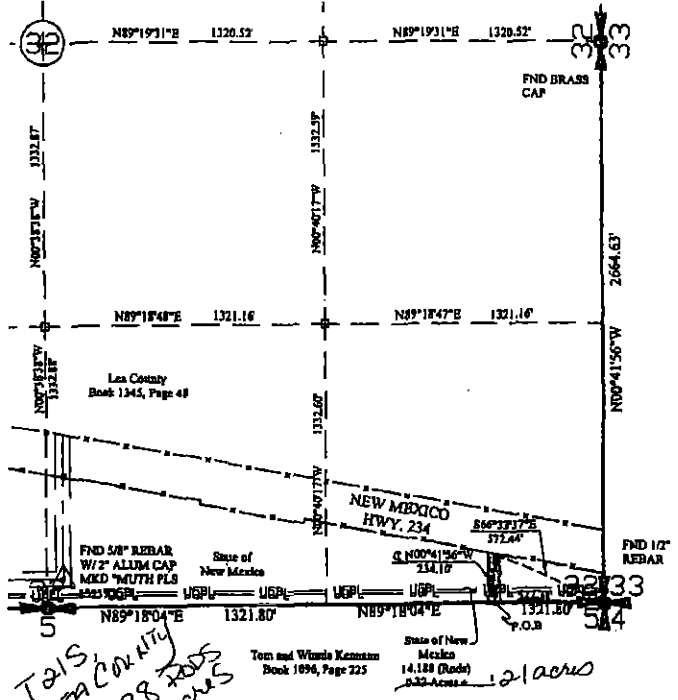


CERTIFICATION
I certify that the foregoing instrument
Assignment R-30337 dated 4/20/2015
containing 4 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.

Cathy Davis 1-3-2017
Commissioner of Public Lands

EXHIBIT "A"

R-30337



Sec 32, T21S
38E, R14E
S4SE4 - 14.188 acres
40' wide
RFA



Basis of Bearing.....
The Basis of Bearing for this Survey is Global Positioning System real time
Differentially Corrected observations made from the U.S. Geological Survey
Benchmark 12DD a 3" Brass Disk in concrete having a derived horizontal and
vertical position of N32°25'49.52009" Latitude, W103°04'56.32607" Longitude
and a height of 3328.33 feet from a Control Survey tied to Continuously
Operating Reference Station System. Bearings are referenced to the NMSPC-Zone
3001, are ground.

PETTERSON AND ASSOCIATES
PETERSON, WILLIAM M. HICKS
12243

INDEXING INFORMATION
FOR COUNTY CLERK
OWNER: State of New Mexico
LOC: S1/2, Sec. 32, T21S, R14E,
N.M.P.M.

SCALE 1" = 500'

0' 250' 500' 1000'

LEGEND

- MONUMENT-FOUND AS DESCRIBED (SECTION CORNER)
- MONUMENT-FOUND AS DESCRIBED (QUARTER SECTION CORNER)
- MONUMENT-SET 3/8" REBAR W/ ALUM CAP MKD "WM HICKS NMPB 12348" (SECTION CORNER)
- MONUMENT-SET 3/8" REBAR W/ ALUM CAP MKD "WM HICKS NMPB 12348" (QUARTER SECTION CORNER)
- SECTION CENTER
- CALCULATED LOCATION

CENTER LINE EASEMENT

PLAT OF EASEMENT SURVEY FOR

LEO V. SIMS II

PROJ. No. 12051148 DRAWN BY: J.C.I.
DWG. 1 Area Type: NEP (N) (S) (M) (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z) (AA) (AB) (AC) (AD) (AE) (AF) (AG) (AH) (AI) (AJ) (AK) (AL) (AM) (AN) (AO) (AP) (AQ) (AR) (AS) (AT) (AU) (AV) (AW) (AX) (AY) (AZ) (BA) (BB) (BC) (BD) (BE) (BF) (BG) (BH) (BI) (BJ) (BK) (BL) (BM) (BN) (BO) (BP) (BQ) (BR) (BS) (BT) (BU) (BV) (BW) (BX) (BY) (BZ) (CA) (CB) (CC) (CD) (CE) (CF) (CG) (CH) (CI) (CJ) (CK) (CL) (CM) (CN) (CO) (CP) (CQ) (CR) (CS) (CT) (CU) (CV) (CW) (CX) (CY) (CZ) (DA) (DB) (DC) (DD) (DE) (DF) (DG) (DH) (DI) (DJ) (DK) (DL) (DM) (DN) (DO) (DP) (DQ) (DR) (DS) (DT) (DU) (DV) (DW) (DX) (DY) (DZ) (EA) (EB) (EC) (ED) (EE) (EF) (EG) (EH) (EI) (EJ) (EK) (EL) (EM) (EN) (EO) (EP) (EQ) (ER) (ES) (ET) (EU) (EV) (EW) (EX) (EY) (EZ) (FA) (FB) (FC) (FD) (FE) (FF) (FG) (FH) (FI) (FJ) (FK) (FL) (FM) (FN) (FO) (FP) (FQ) (FR) (FS) (FT) (FU) (FV) (FW) (FX) (FY) (FZ) (GA) (GB) (GC) (GD) (GE) (GF) (GG) (GH) (GI) (GJ) (GK) (GL) (GM) (GN) (GO) (GP) (GQ) (GR) (GS) (GT) (GU) (GV) (GW) (GX) (GY) (GZ) (HA) (HB) (HC) (HD) (HE) (HF) (HG) (HH) (HI) (HJ) (HK) (HL) (HM) (HN) (HO) (HP) (HQ) (HR) (HS) (HT) (HU) (HV) (HW) (HX) (HY) (HZ) (IA) (IB) (IC) (ID) (IE) (IF) (IG) (IH) (II) (IJ) (IK) (IL) (IM) (IN) (IO) (IP) (IQ) (IR) (IS) (IT) (IU) (IV) (IW) (IX) (IY) (IZ) (JA) (JB) (JC) (JD) (JE) (JF) (JG) (JH) (JI) (JJ) (JK) (JL) (JM) (JN) (JO) (JP) (JQ) (JR) (JS) (JT) (JU) (JV) (JW) (JX) (JY) (JZ) (KA) (KB) (KC) (KD) (KE) (KF) (KG) (KH) (KI) (KJ) (KK) (KL) (KM) (KN) (KO) (KP) (KQ) (KR) (KS) (KT) (KU) (KV) (KW) (KX) (KY) (KZ) (LA) (LB) (LC) (LD) (LE) (LF) (LG) (LH) (LI) (LJ) (LK) (LL) (LM) (LN) (LO) (LP) (LQ) (LR) (LS) (LT) (LU) (LV) (LW) (LX) (LY) (LZ) (MA) (MB) (MC) (MD) (ME) (MF) (MG) (MH) (MI) (MJ) (MK) (ML) (MM) (MN) (MO) (MP) (MQ) (MR) (MS) (MT) (MU) (MV) (MW) (MX) (MY) (MZ) (NA) (NB) (NC) (ND) (NE) (NF) (NG) (NH) (NI) (NJ) (NK) (NL) (NM) (NN) (NO) (NP) (NQ) (NR) (NS) (NT) (NU) (NV) (NW) (NX) (NY) (NZ) (OA) (OB) (OC) (OD) (OE) (OF) (OG) (OH) (OI) (OJ) (OK) (OL) (OM) (ON) (OO) (OP) (OQ) (OR) (OS) (OT) (OU) (OV) (OW) (OX) (OY) (OZ) (PA) (PB) (PC) (PD) (PE) (PF) (PG) (PH) (PI) (PJ) (PK) (PL) (PM) (PN) (PO) (PP) (PQ) (PR) (PS) (PT) (PU) (PV) (PW) (PX) (PY) (PZ) (QA) (QB) (QC) (QD) (QE) (QF) (QG) (QH) (QI) (QJ) (QK) (QL) (QM) (QN) (QO) (QP) (QQ) (QR) (QS) (QT) (QU) (QV) (QW) (QX) (QY) (QZ) (RA) (RB) (RC) (RD) (RE) (RF) (RG) (RH) (RI) (RJ) (RK) (RL) (RM) (RN) (RO) (RP) (RQ) (RR) (RS) (RT) (RU) (RV) (RW) (RX) (RY) (RZ) (SA) (SB) (SC) (SD) (SE) (SF) (SG) (SH) (SI) (SJ) (SK) (SL) (SM) (SN) (SO) (SP) (SQ) (SR) (SS) (ST) (SU) (SV) (SW) (SX) (SY) (SZ) (TA) (TB) (TC) (TD) (TE) (TF) (TG) (TH) (TI) (TJ) (TK) (TL) (TM) (TN) (TO) (TP) (TQ) (TR) (TS) (TT) (TU) (TV) (TW) (TX) (TY) (TZ) (UA) (UB) (UC) (UD) (UE) (UF) (UG) (UH) (UI) (UJ) (UK) (UL) (UM) (UN) (UO) (UP) (UQ) (UR) (US) (UT) (UU) (UV) (UW) (UX) (UY) (UZ) (VA) (VB) (VC) (VD) (VE) (VF) (VG) (VH) (VI) (VJ) (VK) (VL) (VM) (VN) (VO) (VP) (VQ) (VR) (VS) (VT) (VU) (VV) (VW) (VX) (VY) (VZ) (WA) (WB) (WC) (WD) (WE) (WF) (WG) (WH) (WI) (WJ) (WK) (WL) (WM) (WN) (WO) (WP) (WQ) (WR) (WS) (WT) (WU) (WV) (WW) (WX) (WY) (WZ) (XA) (XB) (XC) (XD) (XE) (XF) (XG) (XH) (XI) (XJ) (XK) (XL) (XM) (XN) (XO) (XP) (XQ) (XR) (XS) (XT) (XU) (XV) (XW) (XX) (XY) (XZ) (YA) (YB) (YC) (YD) (YE) (YF) (YG) (YH) (YI) (YJ) (YK) (YL) (YM) (YN) (YO) (YP) (YQ) (YR) (YS) (YT) (YU) (YV) (YW) (YX) (YY) (YZ) (ZA) (ZB) (ZC) (ZD) (ZE) (ZF) (ZG) (ZH) (ZI) (ZJ) (ZK) (ZL) (ZM) (ZN) (ZO) (ZP) (ZQ) (ZR) (ZS) (ZT) (ZU) (ZV) (ZW) (ZX) (ZY) (ZZ)

2015 JUN 8 AM 8 57





8. 424

CERTIFICATION
I certify that the foregoing instrument
containing 4 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.
William M. Hicks, III
Commissioner of Public Lands
Date 8-3-2017

LEGAL DESCRIPTION

DESCRIPTION OF RIGHT-OF-WAY THROUGH THE SOUTH PART OF SECTION 32, TOWNSHIP 21 SOUTH, RANGE 38 EAST, NEW MEXICO PRINCIPAL MERIDIAN, LEA COUNTY, NEW MEXICO.

A STRIP OF LAND covering that portion of said Section 32, owned by the State of New Mexico, being 66.00 feet wide and extending at right angles 30.00 feet on each side of the centerline herein described with the right-of-way lines lengthening and shortening to eliminate gaps and overlaps at angle points and points where the centerlines intersect section lines, property boundaries, easement boundaries, and other right-of-way lines said centerline being more particularly described as follows:

BEGINNING at a point in the south line of said Section 32, from whence the southeast corner of said Section 32, monumented with a found 1/2" rebar, bears N89°18'04"E, 522.38 feet;

THENCE N00°41'56"W, along said centerline, parallel to the east line of said Section 32, a distance of 234.10 feet to a point in the southerly right-of-way line of State Route 234 (S-1218(2)) from whence the southeast corner of said Section 32, monumented with a found 1/2" rebar, bears S66°33'37"E, 572.44 feet.

Said Right-of-Way has a **TOTAL LENGTH OF 14.188 RODS CONTAINING 0.32 ACRES** more or less, all being within Section 32, Township 21 South, Range 38 East, N.M.P.M. and allocated by quarter-quarter sections as follows:

SE 1/4, SW 1/4
0.32 Acres 14.188 Rods
0.32 Acres

TE OF SURVEY

I certify this plan to be a true copy of a survey made in the field under my supervision, and meets the requirements of the Standards for Surveying in New Mexico as approved by the State Board of Licensure for Professional Engineers and Surveyors.

William M. Hicks, III
William M. Hicks, III, NMPS No. 12348



September 22, 2006

2015 JUN 8 AM 8 57

LAUREW AND ASSOCIATES 1110 N. GARDEN PHOENIX, AZ 85007		INDEXING INFORMATION FOR COUNTY CLERK		FLAT OF EASEMENT SURVEY FOR LEO V. SIMS II	
PROJECT: CALIFORNIA	PROPERTY: FEDERAL LAND	OWNER: State of New Mexico LOCALITY: Box 32, T21S, R38E, N.M.P.M.		PROJ. NO.: 12348	
DATE:	DESCRIPTION:			DWG. / And No. N.M.P.M. (State Land Office)	
				BOOK: 1897 2 of 2	





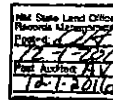
CERTIFICATION

I certify that the foregoing instrument
Assignment R-30337 dated 5/27/2015
containing 5 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.

Cubby Dean
Date 1-3-2017
Commissioner of Public Lands



NEW MEXICO STATE LAND OFFICE
ASSIGNMENT OF RIGHT-OF-WAY AND EASEMENT
Type of Assignment: Full



KNOW ALL MEN BY THESE PRESENTS:

This agreement is entered into this 27th day of May, 2015, between

A. Bryce Karger and Adrian Karger, husband and wife as Assignor and

A. Bryce Karger and Johnny Cope of P.O. Box 905 Hobbs, NM 88241 as
Assignee.
(Address)

Assignor is holder of right-of-way and easement from the New Mexico State Land Office, by its Commissioner of Public Lands, designated as No. R-30337 dated 4-23-2009.
(Original Approval Date)

The amount of \$10.00 and other consideration, the receipt of which is hereby acknowledged, Assignor does hereby convey all / partial (circle one) rights, title and interest in and to R-30337 (Attach description or exhibit if applicable.)

Assignor and Assignee acknowledge and agree that, unless agreed to by the Commissioner of Public Lands, Assignor shall remain fully liable for all damage to the subject trust lands arising from or in conjunction with Assignor use of the subject right-of-way; and that Assignee assumes all subsequent liability from the date of this assignment forward, and agrees to be strictly bound by all the terms of the assigned right-of-way as though those terms were set out herein.

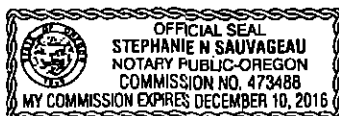
EXECUTED THIS 27th day of May, 2015.

A. Bryce Karger
Adrian Karger
A. Bryce Karger
Adrian Karger
(Assignor)

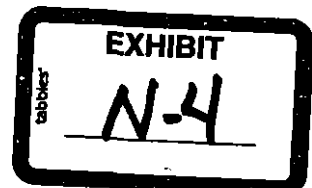
STATE OF Oregon
COUNTY OF Clatsop

The foregoing instrument was acknowledged before me this 27th day of May, 2015
by A. Bryce Karger and Adrian Karger, husband and wife
My Commission Expires: 12/10/2016

Stephanie N. Sauvageau
Notary Public



2015 JUN 8 AM 8 57





CERTIFICATION
 I certify that the foregoing instrument
Assignment R 4997 dated 5/27/2015
 containing 5 page(s) is a true and exact
 photocopy of the copy in my custody and on
 file in the State Land Office.
Anthony Dunn Date 1-3-2017
 Commissioner of Public Lands

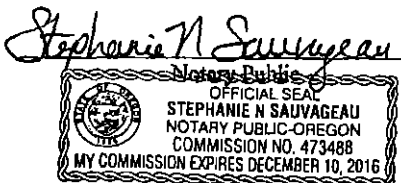
A. Bryce Karger
 A. Bryce Karger

Johnny Cope
 (Assignee)

STATE OF Oregon
 COUNTY OF Clackamas

The foregoing instrument was acknowledged before me this 27th day of May,
 2015, by A. Bryce Karger

My Commission Expires: 12/10/2016



STATE OF _____
 COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____,
 20____, by Johnny Cope

My Commission Expires: _____

Notary Public

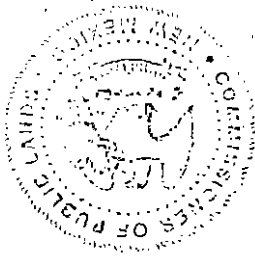
Approved by me on June 10, 2015

Anthony Dunn
 COMMISSIONER OF PUBLIC LANDS

FULL ASSIGNMENT \$50.00
 PARTIAL ASSIGNMENT \$75.00

S-31 (Revised 03/2007)





CERTIFICATION

I certify that the foregoing instrument
Assignment R 80393 dated 5/27/2015
containing 5 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.

Date 1-3-2017
Christy Davis, Notary
Commissioner of Public Lands

A. Bryce Karger

Johnny Cope
Johnny Cope

(Assignee)

STATE OF _____
COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____,
20____, by A. Bryce Karger

My Commission Expires: _____

Notary Public

STATE OF NM
COUNTY OF Lea

The foregoing instrument was acknowledged before me this 28 day of May,
2015, by Johnny Cope

My Commission Expires: 8-19-15

Alina Marquez
Notary Public

Approved by me on June 10, 2015.

OFFICIAL SEAL
Alina Marquez
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires: 8-19-15

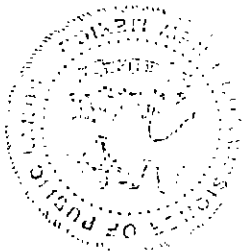
Christy Davis
COMMISSIONER OF PUBLIC LANDS

FULL ASSIGNMENT \$50.00
PARTIAL ASSIGNMENT \$75.00

S-31 (Revised 03/2007)

2015 JUN 8 AM 8 57

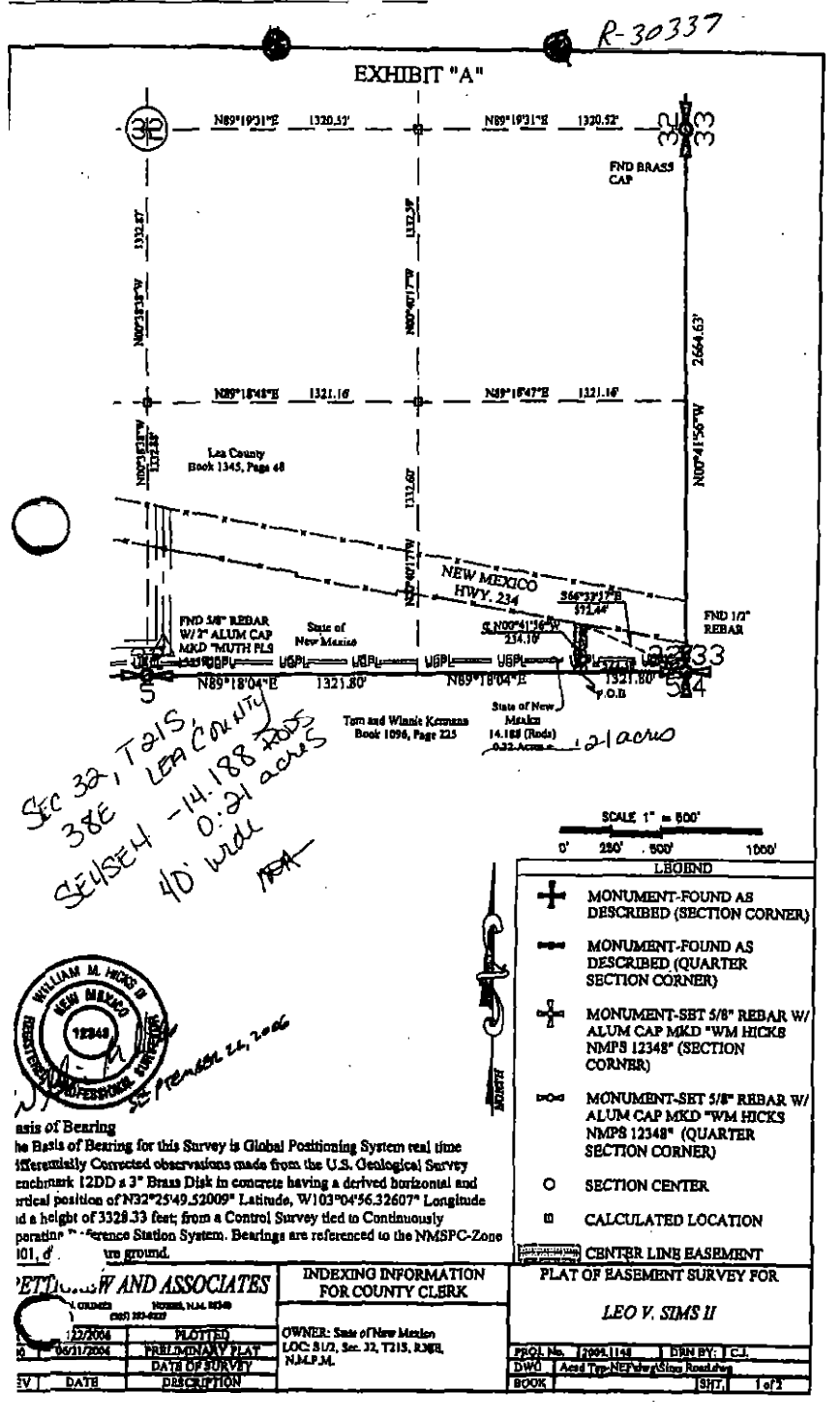




CERTIFICATION

I certify that the foregoing instrument
Assignment R-30337 dated 5/27/2015
containing 5 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.

Aubrey Dunn
Commissioner of Public Lands



2015 JUN 8 AM 8 57





CERTIFICATION

I certify that the foregoing instrument
Assignment R 90339 dated 5/27/2015
containing 5 page(s) is a true and exact
photocopy of the copy in my custody and on
file in the State Land Office.

Date 1-3-2017

Commissioner of Public Lands

LEGAL DESCRIPTION

DESCRIPTION OF RIGHT-OF-WAY THROUGH THE SOUTH PART OF SECTION 32, TOWNSHIP 21 SOUTH, RANGE 38 EAST, NEW MEXICO PRINCIPAL MERIDIAN, LEA COUNTY, NEW MEXICO.

A STRIP OF LAND traversing that portion of said Section 32, owned by the State of New Mexico, being 66.00 feet wide and extending at right angles 30.00 feet on each side of the centerline herein described with the right-of-way lines lengthening and shortening to eliminate gaps and overlaps at angle points and points where the centerline intersects section lines, property boundaries, easement boundaries, and other right-of-way lines said centerline being more particularly described as follows:

BEGINNING at a point in the south line of said Section 32, from whence the southeast corner of said Section 32, monumented with a found 1/2" rebar, bears N89°18'04"E, 522.38 feet;

THENCE N00°41'56"W, along said centerline, parallel to the east line of said Section 32, a distance of 234.10 feet to a point in the southerly right-of-way line of State Route 234 (S-1218(2)) from whence the southeast corner of said Section 32, monumented with a found 1/2" rebar, bears S66°23'37"E, 572.44 feet.

Said Right-of-Way has a TOTAL LENGTH OF 14.188 RODS CONTAINING 0.32 ACRES more or less, all being within Section 32, Township 21 South, Range 38 East, N.M.P.M. and allocated by quarter-quarter sections as follows:

SE 1/4 SE 1/4 0.32 Acres 14.188 Rods
12 Acres

CERTIFICATE OF SURVEY

I certify this plat to be a true copy of a survey made in the field under my supervision, and meets the requirements of the Standards for Surveying in New Mexico as approved by the State Board of Licensure for Professional Engineers and Surveyors.

William M. Hicks, III, N.M.P.S. No. 12348

September 22, 2006



40' wide
MSA

2015 JUN 8 AM 8 57

PETITIONER AND ASSOCIATES W. M. Hicks, III, N.M.P.S. No. 12348 (206) 293-4027		INDEXING INFORMATION FOR COUNTY CLERK OWNED: State of New Mexico LOC. 81/2, Sec. 32, T. 21 S., R. 38 E., N.M.P.M.		PLAT OF EASEMENT SURVEY FOR LEO V. SIMS II	
PREPARED BY DATE OF SURVEY DATE	CHECKED BY DATE OF REVIEW DATE	VOL. No. 1206-124 DTD (Approved by State Board of Licensure) BOOK	DRAWN BY DATE	2 of 2	



50770

**STATE OF NEW MEXICO
COMMISSIONER OF PUBLIC LANDS
GRANT OF EASEMENT AND RIGHT OF WAY**

Subject to the terms, conditions and limitations set out herein below, the New Mexico Commissioner of Public Lands (together with successors and assigns, "Grantor"), in his capacity as trustee of the land trust established by the Enabling Act (Act of June 20, 1910, 36 Statutes at Large 557, Chapter 310) and that trust's assets (the land trust and its assets, collectively, the "Trust"), hereby Grants to Louisiana Energy Services, L.P., a Delaware limited partnership (together with its successors and assigns, "Grantee"), whose address is 1133 Connecticut Ave, NW, Suite 200, Washington, DC 20036, an easement and right of way ("Easement"), in and to the Land (defined below).

1. **Land:** This Easement covers the State of New Mexico ("State") trust land ("Land") depicted in the attached Exhibit A.

2. **Term:** This Easement is for a term ("Term") of thirty-five (35) years, commencing on the day on which the Grantor executes this Easement ("Effective Date") and ending at 11:59 p.m. on the thirty-fifth (35th) annual anniversary of the Effective Date, or upon earlier termination or relinquishment of this Easement.

3. **Consideration:** As consideration ("Consideration") for this Easement, Grantee shall pay to Grantor:

(1) One hundred twenty thousand and no/100 Dollars (\$120,000) ("Initial Payment"), payable on the Effective Date. The Initial Payment is nonrefundable.

(2) Thirty thousand and no/100 Dollars (\$30,000) on the fifth (5th) anniversary of the Effective Date, and on each anniversary of the Effective Date thereafter up to and including the thirty-fourth (34th) anniversary of the Effective Date unless this Easement is earlier terminated or relinquished.

Grantor and Grantee acknowledge and agree that the Consideration is good and sufficient consideration for the grant of this Easement and for the other agreements contained in this instrument.

RECEIVED
2008 APR 22 PM 3:48
STATE LAND OFFICE
SANTA FE, N.M.

BOOK 1279 PAGE 388



4. Uses of the Land; Improvements and Equipment:

A. This Easement authorizes Grantee to use and improve the Land in any manner that may be necessary or convenient to support and facilitate a gas centrifuge uranium enrichment facility ("Facility") in accordance with an operating license from the United States Nuclear Regulatory Commission ("NRC") or any other successor agency with jurisdiction, as the same may be renewed, revised, amended, supplemented, assigned, modified and/or renumbered from time to time in accordance with law and applicable regulations ("NRC License") and all applicable federal licensing or regulatory requirements ("Federal Requirements") and, subject to Paragraph 26 of this Easement, applicable state licensing or regulatory requirements ("State Requirements").

B. This Easement shall be liberally construed to assure that Grantee and its agents have sufficient legal rights to use and improve the Land as necessary to (i) support and facilitate the Facility; (ii) decommission the Facility in accordance with Federal Requirements and, subject to Paragraph 26 of this Easement, State Requirements, including but not limited to NRC requirements as specified in Title 10 of the Code of Federal Regulations (i.e., 10 CFR), Parts 70, "Special nuclear material," and 40, "Source material," sections 70.38 and 40.42, "Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas" (i.e., 10 CFR 70.38 and 10 CFR 40.42); and (iii) fully reclaim the Land in accordance with Federal Requirements, State Requirements and this Easement, subject to Paragraph 26 of this Easement. Subject to Paragraph 4.C below, Grantee's rights under this Easement shall include, *but are not limited to*, the right to use and improve the Land for the following purposes: (a) constructing and operating the Facility; (b) providing power, water, waste disposal and other utility services to the Facility; (c) providing access to the Facility; (d) limiting access to the Facility and the Land in proximity thereto as required by the NRC License or other Federal Requirements; (e) constructing, operating and maintaining primary and support buildings and facilities; (f) constructing facilities for uranium byproduct storage in accordance with Federal Requirements, including but not limited to the regulatory standards of NRC and, subject to Paragraph 26 of this Easement, State Requirements; (g) storing uranium byproduct in accordance with Federal Requirements, including but not limited to the regulatory standards of NRC and, subject to Paragraph 26 of this Easement, State Requirements; (h) constructing and

RECEIVED
JAN 31 1988
OFFICE
OF THE
ATTORNEY GENERAL
STATE OF
MASSACHUSETTS

maintaining access and maintenance roads; (l) decommissioning the Facility as required by Federal Requirements, including but not limited to the regulatory standards of NRC and, subject to Paragraph 26 of this Easement, State Requirements; (j) reclaiming the Land and removing improvements and equipment as provided in Paragraph 5.B-E of this Easement; and (k) housing furnishings, fixtures, equipment and vehicles related to the operations at the Facility; provided, however, that all uses and improvements under this Easement shall be in accordance with all Federal Requirements, including but not limited to the regulatory standards of NRC and, subject to Paragraph 26 of this Easement, State Requirements, and only as necessary or convenient to support and facilitate the Facility.

C. Grantee may use and operate such equipment on the Land, and may construct, operate, maintain and replace improvements on the Land, as may be reasonably necessary to carry out the purposes of this Easement, as set forth in Paragraph 4.A above. As of the Effective Date, Grantee anticipates that it will construct, operate, maintain and replace, as necessary, the following improvements and equipment on the Land:

(1) The buildings, administrative facilities, access roads, storage facilities, electrical lines and poles, pipelines, fencing, security apparatus, ponding areas and other improvements depicted on Exhibit B to this Easement;

(2) A septic tank and leaching field; and

(3) Such other improvements, personal property and fixtures as may be necessary or desirable to carry out the purpose of this Easement, as set forth in Paragraph 4.A above.

The foregoing description of improvements and equipment is not intended to be an exhaustive list.

D. Grantor understands and agrees that access to the Facility and to the Land in proximity thereto will be limited in accordance with Federal Requirements, including but not limited to NRC requirements specified in 10 CFR 73, "Physical protection of plants and materials," as directed by 10 CFR 70.22, "Contents of licenses," paragraph (h)(1), and, subject to Paragraph 26 of this Easement, State Requirements.

E. Except as limited by Paragraph 17, (i) documents related to substantial improvements on the Land shall be kept at the operations office for the Facility; (ii) Grantor shall have the right to inspect such records and improvements provided that Grantor shall request

such inspection by giving Grantee reasonable notice thereof and provided that Grantee is able to permit access to the Facility at the time requested by Grantor; and (iii) Grantee shall provide Grantor with copies of documents that it provides to NRC, the New Mexico Environmental Department and any other federal or state agency with jurisdiction, showing the location and/or type of the improvements and equipment located on the Land. If Grantee is unable to provide access to the Facility at the specific time requested by Grantor, such access will be available to Grantor at such other time as is mutually agreeable to Grantor and Grantee.

5. Reclamation and Removal of Improvement and Equipment.

A. Prior to termination of this Easement, Grantee shall decommission the Facility as required by, and in accordance with, Federal Requirements, including but not limited to NRC regulatory requirements in 10 CFR 70.38 and 10 CFR 40.42, and subject to Paragraph 26 of this Easement, State Requirements. Grantee also shall provide assurances that adequate funding will be available to decommission the Facility in accordance with Federal Requirements, including but not limited to NRC requirements in 10 CFR 70.25 and 10 CFR 40.36, "Financial assurance and recordkeeping for decommissioning" and, subject to Paragraph 26 of this Easement, State Requirements. Documentation thereof shall be delivered to Grantor as and when it is delivered to NRC.

B. Grantee shall reclaim the land in accordance with Federal Requirements and State Requirements. Grantee shall submit a proposed reclamation plan ("Reclamation Plan") to Grantor for Grantor's approval, which approval Grantor shall not unreasonably withhold. The Reclamation Plan shall be submitted to Grantor concurrently with Grantee's submission to NRC of its plan for decommissioning the Facility ("Decommissioning Plan") as required by Federal Requirements, including but not limited to 10 CFR 70.38 and 10 CFR 40.42, and, subject to Paragraph 26 of this Easement, State Requirements. Grantor agrees that the Reclamation Plan may provide that reclamation required by Section 19.2.10.27, N.M.A.C. and removal of improvements and equipment shall commence after completion of the activities required by the Decommissioning Plan. Grantee shall reclaim the Land in accordance with the Reclamation Plan approved by Grantor.

C. Prior to relinquishment or termination of this Easement, Grantee shall remove all improvements and equipment on the Land except as otherwise provided herein, or

- 4 -

BOOK 1279 PAGE 391

RECEIVED
JUN 22 PM 3
STATE LAND OFF
SANTA FE, N.M.

except as required by the Reclamation Plan approved by Grantor, or in a written agreement between Grantor and Grantee.

D. If Grantee fails to remove improvements and equipment on Land as required in Paragraph 5.C, Grantor may, at Grantor's discretion, declare that all or any such remaining improvements and equipment are forfeited to Grantor. Any such declaration shall be in writing and shall be sent to Grantee in the manner contemplated for giving notice under this Easement. In the event of forfeiture, Grantee shall execute such bills of sale, assignments, or such other instruments as Grantor may request to acknowledge the transfer of title to Grantor.

E. If Grantee fails to remove any non-forfeited improvements and equipment as required herein, Grantee shall be deemed a holdover tenant and shall pay Grantor monthly rent, in advance, equal to three (3) times the then current rental value of the Land on which the improvements and/or equipment is located. Such rental value shall be calculated assuming the Land's highest and best use, as determined solely by the Grantor, and shall be based on no fewer than 10 acres. This provision shall not be deemed liquidated damages, shall not constitute a penalty and shall not entitle Grantee to continued use or possession of the Land.

F. Paragraphs 5.A through 5.E shall survive termination of this Easement.

6. Rights Reserved to Grantor:

A. This Easement conveys only the rights and interest in the Land expressly described. This Easement conveys no right, title or interest in the Land by implication.

B. Subject to the limitations set forth in Paragraph 6.C, Grantor hereby expressly reserves from this Easement:

(1) all subsurface and mineral rights, including the right to explore for, mine, develop and produce minerals such as sand and gravel, coal, caliche and humate and to issue oil; gas; geothermal resources and any other minerals related to the Land, provided that such rights, issues and leases shall be subject to this Easement;

(2) the right to sell or exchange the Land, provided that (i) Grantor shall give Grantee such notice as required by law, rules and regulations of its intent to sell or exchange and (ii) such sale or exchange (if not to Grantee) shall be subject to this Easement; and

(3) the right to use and possession of the Land free of this Easement after relinquishment or termination of this Easement, subject only to Grantee's right and duty to remove improvements and equipment and reclaim the Land.

C. Grantor shall execute and record in the records of the State Land Office a Land Use Restriction or Condition ("LURC") that provides that, absent Grantee's prior written consent, (i) Grantor shall neither exercise Grantor's rights under Paragraph 6.B(1) nor exercise Grantor's right to lease or otherwise dispose of or encumber the Land or any interest incident thereto, for any purpose, or grant additional easements, rights-of-way and grants across, under or over the Land, including the development of any sand and gravel, coal, caliche, humate, oil and gas or other minerals and (ii) there shall be no surface disturbance of the Land and no right to explore for, mine, develop and/or produce oil, geothermal resources, gas and/or minerals during the Term of this Easement. As good and adequate consideration for the LURC, Grantee shall pay to Grantor Five Thousand and no/100 Dollars (\$5,000.00) per year, beginning on the fifth (5th) anniversary of the Effective Date and on each anniversary of the Effective Date thereafter up to and including the thirty-fourth (34th) anniversary of the Effective Date, or so long thereafter as Grantee occupies and uses the Land, unless this Easement is earlier terminated or relinquished; provided that if the Easement is terminated by a sale or exchange of the Land to Grantee or to Lea County, New Mexico, (a) both the restrictions and conditions in the LURC and Grantee's obligation to pay the consideration therefor in the amount, and for the time, set forth in this Paragraph shall survive and (b) the instrument conveying the Land shall expressly recite the restrictions set forth in the LURC. Grantee may record the LURC in the real property records of Lea County, New Mexico.

D. If Grantor offers the land for sale or exchange, Grantee agrees to participate in the sale or exchange process and submit and offer to purchase or exchange the land directly or through an intermediary with a bid of at least the fair market value of the unimproved land and the fair market value of third party improvements and comply with Grantor's rules and regulations on land sales or exchanges.

7. **Compliance with Law:** Grantee shall comply with all laws, whether statutory or court-made, regulations, rules, ordinances, and requirements, including, but not limited to, those addressed to environmental protection and all State Land Office Rules applicable to the Land or

to Grantee's use of the Land and improvements thereon. Grantee's compliance obligations include, but are not limited to:

A. Grantee agrees not to discriminate against any person on the basis of race, color, religion, national origin, sex, sexual preference, age or handicap.

B. Grantee shall not permit any nuisance to be maintained on the Land, provided that no use of the Land permitted by this Easement shall be deemed to constitute, or cause, a nuisance.

C. Grantee shall comply with applicable environmental laws in Chapter 74, NMSA 1978, and regulations promulgated pursuant thereto.

D. Grantee shall diligently maintain and protect the Land and improvements thereon from waste and trespass, provided that no use of the Land permitted by this Easement shall be deemed to constitute, or cause, waste of the Land.

8. **No Warranty.** Grantor makes no warranties as to Grantor's title, fitness of the Land for a particular purpose or as to any other matter. Grantee shall use, improve and accept the Land "as is." The rights granted hereby are subject to existing rights. Grantee agrees that it is solely responsible for determining whether any third party has or claims any prior and superior right, title or interest in or to the Land that may conflict with this Easement. Grantee shall at Grantee's sole expense resolve any such conflicting claims and, in the event of litigation, Grantor shall not be an indispensable or necessary party.

9. **Existing Rights.** Except as may be required by the NRC License or with applicable NRC requirements, Grantee shall not interfere with any leases, rights-of-way, Grants or other rights or interests in or to the Land that were granted by the State of New Mexico in existence on the Effective Date ("Existing Rights"). Grantee specifically agrees to use its best efforts to (i) avoid destruction or injury to any improvements or livestock on the Land pursuant to Existing Rights; (ii) close all gates immediately upon passing through same; and (iii) pay promptly the reasonable and just damages for injury or destruction arising from Grantee's use of the Land. Notwithstanding the foregoing, Grantee shall have the right to negotiate with the Grantor and the grantee of that certain Grant of Right of Way No. RW-22780 to relocate the carbon dioxide pipeline permitted thereby.

10. **Pipelines.** Unless otherwise expressly agreed by Grantor in writing, Grantee shall bury at least twenty inches (20") below the surface all pipelines that are installed by

Grantee on the Land except temporary pipelines, or pipelines whose sole purpose is to support a construction project.

11. Assignment. Except as otherwise provided in this Paragraph, Grantee shall not assign this Easement, either in whole or in part, without the prior written consent of Grantor. Grantor's consent may be conditioned upon the agreement by Grantee's assignee to additional conditions and covenants and may require payment of additional consideration to Grantor; provided that, for any authorized assignment occurring on or before January 1, 2009, no additional covenants and conditions and no additional payment shall be required. Grantor hereby consents to (i) Grantee's assignment of this Easement, or a leasehold or other interest in this easement, to Lea County, New Mexico ("County") and to the County's grant to Grantee, or its designee, of a lease, license, permit or other authorization to use the Easement, or such interest in the Easement, for the purposes authorized in this Easement and pursuant to both the County Industrial Bond Revenue Act, Chapter 4, Article 59 N.M.S.A. 1978, as amended, and other applicable law, if any; provided, that such assignment shall not diminish, alter or affect Grantee's duties, liability or responsibilities under this Easement; and (ii) the grant of mortgage or other encumbrance on or against this Easement to secure obligations incurred in financing for the Facility. Additionally, notwithstanding any other provision in this Easement, Grantee may, without Grantor's consent, grant licenses, permits or other authorizations to third parties to carry out the purposes of this Easement; provided, however, that such licenses, permits or other authorizations by Grantee shall not constitute an assignment of this Easement and shall not diminish, alter or affect Grantee's duties, liability or responsibilities under this Easement.

12. Abandonment. Grantor may deem that Grantee has abandoned its rights and interest under this Easement if after January 1, 2009, Grantee fails for a continuous period in excess of twelve (12) consecutive months to use the Land, or some portion thereof, for at least one of the purposes authorized by this Easement. In such event, at Grantor's discretion, this Easement shall be subject to termination pursuant to Paragraph 15 below *unless* Grantee's non-use is the result of a court or administrative order or is otherwise involuntary, as set forth in an affidavit provided to Grantor by Grantee. Furthermore, no abandonment shall be deemed to have occurred as to any disturbed portion of Land that has not been fully reclaimed in accordance with this Easement.

13. Relinquishment.

A. Grantee may request relinquishment of this Easement, in whole or in part, by requesting such relinquishment in writing. Grantee shall not, by relinquishment, avoid or be released from any liability arising from or related to Grantee's use of the Land, including the duty to remove improvements and equipment and reclaim the Land. Upon relinquishment, Grantee shall not be entitled to any refund of money previously paid as Consideration under this Easement.

B. Notwithstanding the foregoing Paragraph 13.A, a relinquishment by Grantee of the Easement shall not be effective, and Grantor shall not have a right to possession or control of the Land and the improvements and equipment thereon, until the Facility has been decommissioned and all applicable federal and state licenses, including but not limited to the NRC License, have been terminated.

14. Indemnity. Grantee shall save and hold harmless, defend and indemnify the State of New Mexico, the Commissioner of Public Lands, and his agents or employees (collectively, "indemnitees"), in their official and individual capacities, from and against any and all liability, claims, losses, or damages arising out of or alleged to arise out of this Easement or the use and occupation of the Land by Grantee or Grantee's agents, licensees, permittees, employees, contractors (including subcontractors), and invitees; provided, however, that Grantee shall be under no obligation to indemnify or hold indemnitees harmless from: (i) liability, claims, losses or damages based on a third party claim that this Easement is invalid or void; and Grantee specifically waives any claims or damages against the Grantor arising out of or directly or indirectly related to third party claims that the Easement is invalid or void; or (ii) liability, claims, losses, or damages caused by the sole negligence or willful or intentional act(s) of indemnitees, or any of them. This Paragraph shall survive termination of this Easement.

15. Termination.

A. Grantor may terminate this Easement for material violation of any of the terms and conditions of this Easement ("default"); provided, however, that before any such termination shall become effective, Grantor shall mail to Grantee (or any approved assignee), by certified or registered mail addressed to the post office address of Grantee or such assignee shown by Land Office records, a sixty (60) day notice of default, specifying the default for which the Easement is subject to termination. No proof of receipt or further notice shall be necessary, and sixty (60) days after such mailing, this Easement shall terminate unless Grantee cures the

default within the sixty-day period; or, if the default cannot reasonably be remedied within sixty (60) days, Grantee submits for Grantor's approval within thirty (30) days of the default notice a plan for cure, including a schedule for expeditiously implementing such plan in order to cure the default as soon as reasonably possible. Grantor shall not unreasonably withhold approval of such plan. In the event of early termination of this Easement for any reason, Grantee shall not be entitled to any refund of money previously paid as consideration under this Easement, nor shall Grantee be relieved of its duty hereunder to remove its improvements and equipment and reclaim the Land in accordance with Paragraph 5 of this Easement.

B. Notwithstanding the foregoing Paragraph 15.A, a termination of this Easement shall not be effective, and Grantor shall not have a right to possession or control of the Land and the improvements and equipment thereon, until the Facility has been decommissioned and all applicable federal and state licenses, including but not limited to the NRC License, have been terminated.

16. **Amendment.** Any amendment of this Easement shall be in writing and shall be executed by each of Grantor and Grantee.

17. **Limitation on Disclosure.** Notwithstanding any other provision in this Easement, to the extent any obligation of Grantee under this Easement to disclose or otherwise tender to Grantor information or documents of any kind or to any other person ("Disclosure Obligation"), in Grantee's good faith judgment, based on written opinion of counsel, conflicts with, or is contrary to, Grantee's obligation under any Federal or state statute, regulation, policy, directive or order regarding safety, safeguards, security, national security or secrecy related to the Facility or otherwise to Grantee's activities on the Land ("Security Obligation"), the Security Obligation shall control; and Grantee shall not be required to comply with the Disclosure Obligation.

18. **Existing Leases and Rights of Way Not Affected.** This Easement does not modify or amend or change in any way those rights and obligations now or hereafter obtained by Grantee under separate instruments, including but not limited to (i) that certain Oil and Gas Lease No. B-4467 from Grantor to Gypsy Oil Company, to be assigned in part from Chevron U.S.A. Inc., successor in interest to Gypsy Oil Company, to Grantee; (ii) that certain Agricultural Lease No. GR-1855 from Grantor to Wallach Ranch, LLC, to be assigned in part to Grantee; and (iii) any other existing grants from Grantor or Grantee in the Land.

19. **Reporting.** Subject to the provisions in Paragraph 17 of this Easement, Grantee shall provide to Grantor copies of periodic reports made to NRC.

20. **Enforcement.** Venue for any court action brought by either party relating to this Easement shall be exclusively in New Mexico State Court, First Judicial District, Santa Fe County, New Mexico, after all administrative remedies are exhausted.

21. **Governing Law.** The provisions of this Easement shall be construed and enforced in accordance with New Mexico law.

22. **No Third Party Beneficiaries.** There are no third-party beneficiaries of any provision of this Easement.

23. **Exhibits.** All Exhibits attached to this Easement are incorporated herein by reference.

24. **Costs.** Grantee's performance of its obligations under this Easement shall be at Grantee's sole cost and expense.

25. **Severability.** If a court of competent jurisdiction determines that a provision or provisions of this Easement is or are invalid or illegal, such determination shall not invalidate or render unenforceable any other provision hereof; provided, however, that if enforcement of this Easement absent such invalid or unenforceable provision(s) would destroy an essential purpose of this Easement, then this Easement shall be deemed modified to the extent necessary to make this Easement valid or enforceable consistent with its true intent.

26. **Conflict between Federal and State Law.** If there is a conflict between Federal Requirements or other federal law and State Requirements or other state law applicable to the Land and/or the Facility, or Grantee's use of them, such that Grantee cannot reasonably comply with both Federal Requirements or other federal law and State Requirements or other state law, Grantee shall not be deemed to be in "default" under this Easement (as defined in Paragraph 15.A hereof) if Grantee does not comply with State Requirements or other state law until a resolution of the conflict is, and Grantee's obligations are, finally determined by negotiation or agreement among Grantee and the relevant agencies or by a court of competent jurisdiction and last resort; provided that Grantee shall comply with rulings of a court of competent jurisdiction during the pendency of such conflict, unless such ruling(s) is appealed to, stayed by or otherwise abated by a court of competent jurisdiction or by operation of law.

If there is a dispute over whether Federal Requirements or other federal law or State Requirements or other state law apply to the to the Land and/or the Facility, or Grantee's use of them, Grantee shall not be in "default" under this Easement (as defined in Paragraph 15.A hereof) if Grantee does not comply with State Requirements or other state law during the pendency of the dispute, provided that Grantee shall comply with rulings of a court of competent jurisdiction during the pendency of such conflict, unless such ruling(s) is appealed to, stayed by or otherwise abated by a court of competent jurisdiction or by operation of law.

Grantee shall pay the costs and expenses, and shall bear any liability related to, resolution of conflicts between, and disputes regarding the applicability of, Federal Requirements or other federal law and State Requirements or other state law.

GRANTOR:

NEW MEXICO COMMISSIONER OF PUBLIC LANDS

By: Patrick H. Lyons
Patrick H. Lyons, Commissioner



GRANTEE:

LOUISIANA ENERGY SERVICES, L.P.

By: SEE ATTACHED SIGNATURE AND
ACKNOWLEDGMENT PAGE

Exhibits

Exhibit A = Land subject to this Easement
Exhibit B = Improvements

SIGNATURE PAGE - EASEMENT

LOUISIANA ENERGY SERVICES, L.P.

By: [Signature]
Its: E. James Ferland, President

District of Columbia
STATE OF

COUNTY OF

) ss.
)

The foregoing instrument was acknowledged before me this 20th day of August, 2003, by E. James Ferland, President of LOUISIANA ENERGY SERVICES, L.P., a Delaware limited partnership, on behalf of said limited partnership.

My Commission Expires:

12/14/2007



[Signature]
NOTARY PUBLIC
ROXANNE B. RIKER
Notary Public
District of Columbia
My Commission Expires December 14, 2007

GL ENVIRONMENTAL INC.

APPLICATION

FOR STATE OF NEW MEXICO LAND

TOWNSHIP 21 SOUTH, RANGE 38 EAST, N.M.P.M.

SECTION 32

NE1/4-NE1/4

NW1/4-NE1/4

SW1/4-NE1/4

SE1/4-NE1/4

NE1/4-NW1/4

NW1/4-NW1/4

SW1/4-NW1/4

SE1/4-NW1/4

NE1/4-SE1/4

NW1/4-SE1/4

SW1/4-SE1/4

SE1/4-SE1/4

NE1/4-SW1/4

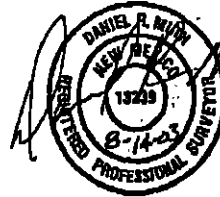
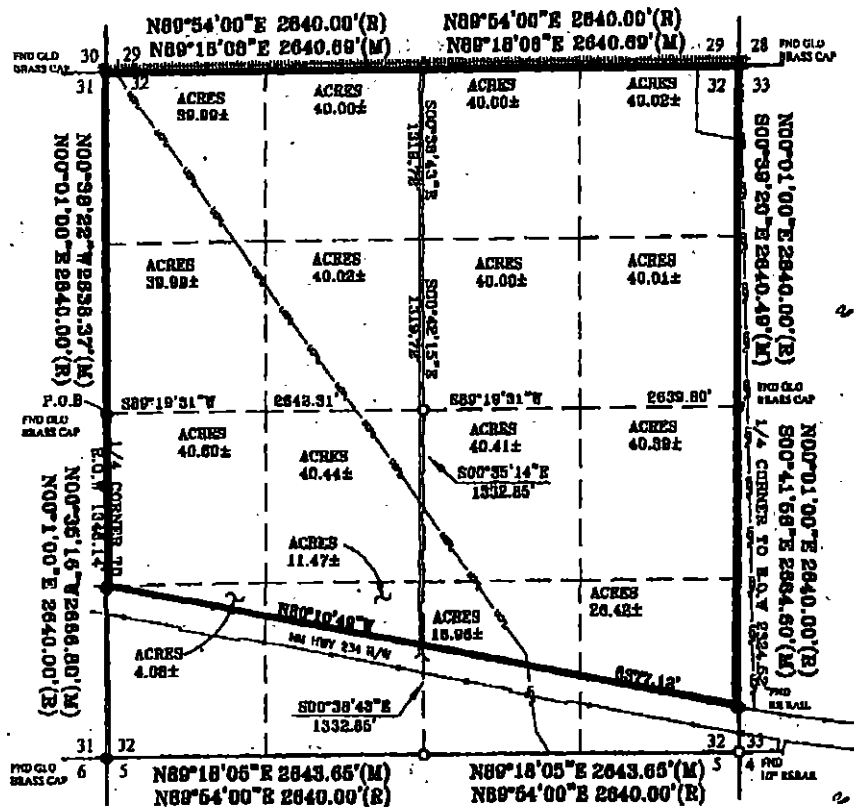
NW1/4-SW1/4

SW1/4-SW1/4

SE1/4-SW1/4

LEA COUNTY, NEW MEXICO

RECEIVED
2013 AUG 22 PM 3:48
STATE LAND OFFICE
SANTA FE, N.M.

42974
EXHIBIT "A"

SCALE 1" = 1000

0' 500 1000 2000

LEGEND	
	SET MONUMENT BY ALLEN W. T. ALLEN CAP MARKED "MUTR" FILE 13219
	FOUND MONUMENT AS NOTED
	BARBED WIRE FENCE
	RAILROAD
	UNDERGROUND PIPE LINE
	UNDERGROUND TELECOM

State of New Mexico, County of _____, I herby certify that this instrument was filed for record on:

This _____ Day of _____, 20 _____ A.D.

At _____ O'Clock _____ M.

Book _____ Page _____

By _____, County Clerk

By _____, Deputy

PETTIGREW AND ASSOCIATES

1110 N. ORCHARD, ALBUQUERQUE, N.M. 87104
(505) 872-9977INDEXING INFORMATION
FOR COUNTY CLERKOWNER: STATE OF NEW MEXICO
LOC: SEC. 32 T21N R33EPLAT OF BOUNDARY SURVEY FOR
GL ENVIRONMENTAL INC.

4200 MEADOWLARK LANE

RIO RANCHO, NEW MEXICO 87124

PROJ. No. 1202.1076 DRN BY: C. JOHNSON

DWG. Survey of Environmental DDNS1721R302.dwg

BOOK 1279 CO. #1

SHEET 1 of 2

REV	DATE	DESCRIPTION
0	08/14/2003	PLOTTED
00	08/13/2003	PRELIMINARY PLAT
08/11/2003-08/12/2003		DATE OF SURVEY

Exhibit A
Page 2 of 3

BOOK 1279 PAGE 403

LEGAL DESCRIPTION

A PARCEL OF LAND WITHIN SECTION 32, TOWNSHIP 21 SOUTH, RANGE 38 EAST, NEW MEXICO PRINCIPAL MERIDIAN, LEA COUNTY, NEW MEXICO.

BEGINNIG at the one-quarter corner between Sections 31 and 32, (a found GLO brass cap on a 2-inch iron pipe);

THENCE N00°38'22"W along the section line between Sections 31 and 32 a distance of 2638.37 feet to the corner of Sections 29, 32, 31 and 30, (a found GLO brass cap on a 2-inch iron pipe);

THENCE N89°18'08"E along the section line between sections 29 and 32 a distance of 2640.69 feet to a set 5/8-inch rebar with a 2-inch aluminum cap marked "MUTH PLS 13239";

THENCE N89°18'08"E along the section line between sections 29 and 32 a distance of 2640.69 feet to the corner of Sections 28, 33, 32 and 29, (a found GLO brass cap on a 2-inch iron pipe);

THENCE S00°39'20"E along the section line between Sections 32 and 33 a distance of 2640.49 feet to the one-quarter corner between Sections 32 and 33, (a found GLO brass cap on a 1-inch iron pipe);

THENCE S00°41'56"E along the section line between Sections 32 and 33 a distance of 2324.52 feet to a found railroad iron marking the right-of-way for New Mexico State Highway No. 234; from whence the corner of Sections 33 and 32 of Township 21 South, Range 38 East, and Sections 4 and 5 of Township 22 South, Range 38 East (a found 1/2-inch rebar) bears S00°41'56"E a distance of 340.08 feet;

THENCE N80°10'49"W along the observed northerly right-of-way line of New Mexico State Highway No. 234 a distance of 5377.12 feet to a point of intersection with the section line between Sections 31 and 32 (set 5/8-inch rebar with a 2-inch aluminum cap marked "MUTH PLS 13239"); from whence the the corner of Sections 31 and 32 of Township 21 South, Range 38 East, and Sections 6 and 5 of Township 22 South, Range 38 East (a found GLO brass cap on a 2-inch iron pipe) bears S00°35'16"E a distance of 1321.66 feet;

THENCE N00°35'16"W along the section line between Sections 31 and 32 a distance of 1345.14 to the POINT OF BEGINNING

Said Parcel CONTAINS 542.80 ACRES more or less

CERTIFICATE OF SURVEY-

"I, Daniel R. Muth, New Mexico Professional Surveyor, hereby certify that this Boundary Survey Plat was prepared from an actual ground survey performed by me or under my supervision, that this survey is true and correct to the best of my knowledge and belief, that this Boundary Survey Plat and the field survey upon which it is based meet the Minimum Standards for Surveying in New Mexico, and that this survey is not a land division or subdivision as defined in the New Mexico Subdivision Act. This is a Boundary Survey Plat of an existing tract or tracts.

Daniel R. Muth NMPS# 13239



14 Aug 2003
Date

State of New Mexico, County of San, I here by certify that this instrument was filed for record on:

This 14th Day of August, 20 03 A.D.

At 8:55 O'clock A M.

Book 1 Page 566

By Melinda Tucker, County Clerk

By R. Newman Deputy

PETTIGREW AND ASSOCIATES

1110 N. GAYLEY GODEL, R.M. 60210
(800) 332-3337

Q	08/14/2003	PLOTTED
00	02/13/2003	PRELIMINARY PLAT
08/11/2003-08/12/2003		DATE OF SURVEY
REV	DATE	DESCRIPTION

**INDEXING INFORMATION
FOR COUNTY CLERK**

OWNER: STATE OF NEW MEXICO
LOC: SEC. 32 T21S R31E

PLAT OF BOUNDARY SURVEY FOR
GL ENVIRONMENTAL INC.

4200 MEADOWLARK LANE
RIO RANCHO, NEW MEXICO 87124

PROJ. No.	2001.1076	DRN BY:	C. JOHNSON
DWG	Survey of Eav. system in BUDDUS32771R3RE.dwg		
BOOK	1 EA CD. #1	SHT	2 of 2

50770

STATE OF NEW MEXICO
COUNTY OF LEA
FILED

JAN 22 2004
11:46 a'clock A.M.
at and recorded in Book _____
Page _____
Melinda Hughes, Deputy Clerk
By *[Signature]* Deputy



ATTEST

Certified as true and correct copy
of the original on file in this office.

JAN 13 2017

KEITH MANES, LEA COUNTY CLERK

Cheri Long Deputy



SUSANA MARTINEZ
GOVERNOR

JOHN A. SANCHEZ
LIEUTENANT GOVERNOR

New Mexico
ENVIRONMENT DEPARTMENT

525 Camino de los Marquez Suite 1
Santa Fe, NM 87505-1816
Phone (505) 476-4300
Fax (505) 476-4375
www.nmenv.state.nm.us



BUTCH TONGATE
CABINET SECRETARY DESIGNATE

JC BORRERO
DEPUTY SECRETARY

December 13, 2016

CERTIFIED MAIL NO. 7005 1820 0001 5773 6163

Bryce Karger
CK Disposal, LLC
5909 86th Street
Lubbock, Texas 79424


Re: Potential Applicability of Air Quality Permit or Notice of Intent (NOI) Requirements to the Proposed
C.K. Disposal E&P Landfill and Processing Facility

Dear Mr. Karger:

In November 2016, the New Mexico Environment Department (NMED) Air Quality Bureau (Bureau) was contacted by members of the public regarding whether the proposed referenced facility was subject to air quality requirements and, if so, whether it had submitted an air quality permit or NOI application to the Bureau. The Department has researched the above facility and determined NMED has not received any air quality permit or NOI application regarding this facility to date. The NMED regulates the emissions from oil and gas related facilities if the uncontrolled potential emission rate exceeds certain regulatory thresholds under the construction permitting and NOI regulation, 20.2.72 and 20.2.73 NMAC.

Based on the Department's understanding of the proposed facility process, the potential emission rate from the facility may exceed permitting thresholds under 20.2.72 NMAC or NOI thresholds under 20.2.73 NMAC. However, since the Department has not received air emission estimates and other technical information from the company necessary to make a conclusive determination, the Department cannot determine whether or not this facility would trigger any requirements under these regulations. Based on the above, the Department urges the applicant to request a formal determination regarding permit or NOI applicability from the Air Quality Bureau prior to constructing this source, as it is possible an air quality permit or, at a minimum, a NOI will be required prior to construction.

If you have any questions, please feel free to call me directly at 505-466-4338.


Elizabeth Bisbey-Kuehn
Minor Source Manager
Air Quality Bureau
New Mexico Environment Department



HALEY ALDRICH

CLAYTON M. ORWIG, P.E.

Technical Specialist

EDUCATION

M.S., Civil Engineering, Georgia Institute of Technology, 1993

B.S., Civil Engineering, Georgia Institute of Technology, 1992

PROFESSIONAL REGISTRATION

1998/ GA: Professional Engineer (Reg. No. 24190)

PROFESSIONAL SOCIETIES

Air & Waste Management Association, past Chapter President

SPECIAL STUDIES AND COURSES

Multidisciplinary Certificate in Geohydrology, Georgia Institute of Technology

Mr. Orwig has extensive experience in addressing multi-disciplinary, environmental issues. He is skilled in handling all facets of environmental management, such as strategy development, negotiations, and program development. He is very adept in working with multiple stakeholders including facility owners, legal counsel and regulatory agencies. His understanding of air quality issues is a particular strength and has been applied to Prevention of Significant Deterioration (PSD) permit applications, air toxics analyses, Title V permit applications, and in assessing and implementing specific regulations, such as New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants, and associated control technology assessments (MACT, RACT, BACT, LAER). His air quality modeling expertise includes hands-on technical experience as well as interpretation of regulatory guidance. Prior to joining Haley & Aldrich, he was the group leader and QA officer of the air practice for a fifty person consulting firm. Mr. Orwig also has experience developing Resource Conservation and Recovery Act site investigation work plans, including site characterization, data evaluation, groundwater modeling, general strategy planning, and subsequent reporting and regulatory interactions.

RELEVANT PROJECT EXPERIENCE

Air Quality and Dispersion Modeling Subject Matter Expert, Urenco USA, New Mexico. Prepared detailed response to Nuclear Regulatory Commission (NRC) comments on a Supplemental ER that relied on a previous EIS that was required by NEPA regulations. Previous air quality assessment and modeling demonstrations utilized EPA's ISCST3 instead of the current AERMOD model. The one-hour air quality standards had been revised and implemented during the time since the initial EIS. States were struggling with the new Federal air standards at the time which added to the complexity of the comment and response. A satisfactory response to the NRC allowed modifications to the facility to proceed on schedule.

CERCLA RI/FS Air Program, Primary Copper Smelter, Arizona. As senior technical engineer, successfully negotiated with EPA Region IX and Arizona DEQ work plan revisions to the air portion of the program. The revisions allowed the client to save over \$2 million during the first two years of the program. The project included the installation and operation of nine ambient monitoring stations, fugitive and point source sampling, a risk assessment and source apportionment modeling.

General Environmental Assistance, Confidential Agricultural Consumer Product Client, Louisville, KY. As client service manager, directed and managed all services provided to the U.S. operations of a Fortune Global 500 company. Services included Emergency Planning and Community Right-to-Know, stormwater, wastewater, air, and hazardous waste permitting, and associated reporting. Provided and directed on-site assistance, database development and support, environmental training of personnel, and environmental management system and ISO 14000 support. Participated as an integral member to the client's environmental strategy team.



PSD Permitting, Confidential Client, Georgia. As project manager/engineer, developed a PSD permit application that included generating an emissions inventory and extensive air dispersion modeling for a 200-source particulate-emitting facility. Assessed and documented the Best Available Control Technology (BACT) for VOCs and particulates including the condensable fraction. Played a lead engineering role in project strategy sessions with internal and external counsel and negotiations with regulatory agencies.

Comprehensive Performance Testing, Cement Manufacturer, Indiana. Conducted oversight of Hazardous Waste Combustor, NESHAP Comprehensive Performance Testing (CPT) and Continuous Monitoring Systems (CMS) performance evaluations. Responsibilities included coordinating the simultaneous sampling of hazardous waste derived fuel, clinker, ash, kiln feed slurry during the testing. The material feed and spiking included liquid and solid hazardous waste streams, with the latter being fed mid-kiln. Spiking of lead, organics and chromium liquids during stack testing was conducted to determine the system's destruction and removal efficiencies of organics, semi-volatile metals and low-volatile metals. Emissions of dioxins, hydrochloric acid, particulate matter and metals were also evaluated. This required a complex coordination of optimum kiln operation and sampling at multiple simultaneous locations in the exhaust stack. Upon completion, conducted QA/QC of the CMS, stack test results, spiking and process samples. Subsequently authored and submitted the Notice of Compliance (NOC) summarizing all of the CPT results.

State Regulatory Relationship, Animal Rendering Client, Mississippi. Played key role as client leader in re-establishing healthy regulatory relations after years of mutual animosity between the State permitting agency and an industrial facility. The agency was pressured by routine odor and nuisance complaints by new adjacent residential development. I facilitated the resolution of years of alleged permit violations, expired permits, stale applications, and bad relations.

PSD Avoidance Permitting, Shipbuilding Facility, Pascagoula, MS. As senior project manager, successfully negotiated with agency to obtain fast-track Title V air permit revisions. The permits allowed the facility to avoid the lengthy PSD process for modifications that were under construction and nearing completion.

Historic Prevention of Significant Deterioration Analysis and Title V Permitting, Shipbuilding Facility, Pascagoula, MS. As senior project manager, prepared a State-required analysis of over 800 historic modifications conducted at the facility over a 12-year timeframe. Defined potential penalties and strategies for resolution of unpermitted modifications.

PSD New Source Review Air Permitting, Metals Industry, Midwest. As senior technical engineer, leading a team preparing all required permitting application documents including BACT determinations, air dispersion modeling for particulate matter and products of combustion for the siting and construction of a new facility.

Nonattainment New Source Review - Ozone Transport Region, Confidential, Northeast. As senior technical engineer, leading the permitting effort for the siting and construction of a new major source of VOC emissions. The permitting requires assessing LAER, obtaining emission offsets, NOx budget impacts, and state air toxics analysis including air dispersion modeling.

Volatile Organic Compound (VOC) Stack Testing Method Development, Confidential Client, Georgia, North Carolina, and Virginia. As project engineer, coordinated and participated in the development of a stack testing method and analytical techniques for a multiple compound-specific moist exhaust stream. Participated in extensive quality assurance/quality control procedure implementation and documentation with client's research and development staff and subcontracted laboratories. Initial pilot studies were performed using a simulated exhaust stream. Field studies included side-by-side simultaneous comparison between two methods.

State Construction Permitting and Toxics Modeling, Battery Manufacturer, Dallas, TX. As project manager/engineer, obtained an air permit amendment for a significant expansion at a battery manufacturing facility. The successful permit negotiation included air toxics analysis, air dispersion modeling and extensive public review. The facility installed and operated two fence line ambient lead monitors.



www.haleyaldrich.com

**EXPERT REPORT ON AIR PERMITTING
AND MODELING ISSUES
C.K. DISPOSAL PERMIT APPLICATION
EUNICE, NEW MEXICO**

by Haley & Aldrich, Inc.
Tucson, Arizona

for Rodey Law
Albuquerque, New Mexico

File No. 37262-231
January 2017



Table of Contents

	Page
1. INTRODUCTION	1
2. BACKGROUND	1
3. OPINIONS	1
References	6

1. INTRODUCTION

Parkhill, Smith and Cooper has prepared a permit application titled: Lea County, New Mexico, C.K. Disposal E&P Landfill and Processing Facility to construct a waste recycling facility in Eunice, New Mexico. The C.K. Disposal (CKD) facility has been proposed to be located directly across the State Highway from URENCO USA and presents operational risks to the facility and to the public.

This report and the opinions expressed herein have been prepared by Mr. Clayton Orwig, Senior Air Specialist of Haley & Aldrich, Inc. (Haley & Aldrich). His resume is contained in Appendix A. The scope of these services are as follows:

1. Review the permit application to evaluate the regulatory and environmental impacts of hydrogen sulfide (H₂S) to the environment
 - a. Are the current models appropriate and protective of public health?
 - b. Does the current model account for all sources and compounds?
 - c. Is the proposed monitoring plan appropriate and sufficient?
2. Review and comment on the regulatory and environmental impacts of anticipated air emissions from the proposed facility, primarily Volatile Organic Compounds (VOCs).

2. BACKGROUND

New Mexico Administrative Code (NMAC) 20.2.72 addresses Statewide Air Quality Construction Permitting requirements and NMAC 20.2.73 addresses Notice of Intent and Emissions Inventory Requirements. Both regulations require the quantification of hourly and annual emissions of regulated air pollutants including Nitrogen Oxides (NO_x), Carbon Monoxide (CO), Volatile Organic Compounds (VOCs), Sulfur Oxides (SO_x), Particulate Matter less than 10 microns (PM₁₀), Particulate Matter less than 2.5 microns (PM_{2.5}), Hydrogen Sulfide (H₂S), and Lead.

We have reviewed the permit application for the proposed Facility, along with the supplemental materials provided under the New Mexico Inspection of Public Records Act ("IPRA") request. With respect to air emissions, the permit application does not quantify potential or expected actual emissions of regulated air pollutants. The construction and operation of an industrial facility in the State of New Mexico requires an evaluation of whether an air permit is applicable and required for the intended operation.

3. OPINIONS

Opinion 1: The current CK Disposal (CK) application to New Mexico Oil Conservation Division (OCD) does not adequately address air emissions from the proposed facility. An air emissions inventory including the identification of individual sources of emissions and quantification of the potential level of emissions is not provided. State air permitting requirements are based upon the anticipated quantity of emissions from the facility. Based upon the information included in the application along with publicly available data characterizing the constituents included in the materials being processed, I believe this facility is required to apply for an air permit.

My opinion is based on the following:

1. The application indicates that the facility is designed to treat and remove organic and corrosive constituents from Produced Water (PW) to make it marketable for reuse. The removal process includes evaporation ponds with mechanical aeration and a stripping tower. The application states that hydrogen sulfide and organic compounds will be emitted from multiple sources including the waste delivery, the open working face of the landfill, and ponded water. The mechanical aeration and stripping tower is utilized to remove volatiles and dissolved gasses from the water into the ambient atmosphere. However, the potential VOC, particulates, HAPs and NMTAPs emissions from each of these sources are not quantified in the application.
2. Air permitting applicability is based on maximum potential emissions from individual emission sources and facility-wide annual emissions.
3. Although individual source throughputs are not included in the application, the application specifies a facility-wide production level of 12,000 barrels per day. This production level is utilized in the calculations below. The calculations do not account for other VOC containing wastes which are generated by E&P operations and will be received by the facility. Some of these wastes will have significantly higher concentrations of VOCs. Nonetheless, PW is the largest waste stream generated during oil and gas production (USEPA, 2002) and the focus of the analysis below.

- a. There is a recently published study which analyzes VOCs from PW in the Permian Basin. The University of New Mexico and the US Geological Survey (2016) analyzed 8 samples of PW which contained Total Organic Carbon (TOC) ranging from 86.25 mg/L to 184.21 mg/L, with a mean value of 138.13 mg/L and Dissolved Organic Carbon (DOC) ranging from 63.45 mg/L to 145.71 mg/L with a mean value of 108.62 mg/L.

A production level of 12,000 barrels per day, would result in the processing of 106 tons per year (tpy) of TOC and 83 tpy of DOC. Although the efficiency of this operation is not presented in the application, it is reasonable to expect that the air emissions from the evaporation of this average PW will result in VOC emissions above the construction permitting threshold of 10 tpy. (NMAC 20.2.72).

- b. The same study analyzed benzene, toluene, ethylbenzene, and xylene (BTEX) in PW from the Permian Basin. Benzene ranged from 1.50 mg/L to 778.51 mg/L with a mean concentration of 107 mg/L. Toluene averaged 1.56 mg/L, ethylbenzene averaged 72.61 mg/L, and p-xylene averaged 0.15 mg/L. Even excluding the single sample with highest BTEX value results in processing and potentially emitting more than 10 tpy of a single Hazardous Air Pollutant (HAP) ethylbenzene and more than 25 tpy of BTEX at 12,000 barrels per day. Potential emissions at these levels would necessitate applying for and obtaining an air quality operating permit from the NMED. 20.2.70.7.R(1)(a), 20.2.70.200.A NMAC.
- c. As the pollutants arrive at the facility in containers (i.e. tanker trucks), subsequent emissions do not meet the definition of a fugitive emission. "Fugitive emissions" means those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening. (NMAC 20.2.72.7.L)

- d. If daily production increases above 12,000 bbl/day (equivalent to 93 tanker trucks of 130bbl each) then the estimated emissions will increase. Also, emissions from wastes received and processed at the facility in addition to PW should be accounted for in the facility's emission inventory.

Opinion 2: The air dispersion modeling analysis, which was performed supplemental to the permit application (Parkhill, Smith & Cooper, September 2016) indicates exceedances of New Mexico's ambient air standard of hydrogen sulfide (100 parts per billion [ppb]; half hour average NMAC 20.2.3.110(B)2). In addition to predicting noncompliance with the standard, the dispersion modeling analysis is insufficient and flawed.

My opinion is based on the following:

1. The modeling analysis results indicate exceedances of New Mexico's ambient air standard of hydrogen sulfide (100 ppb NMAC 20.2.3.110(B)2) at distances further than the nearest fence line. The analysis focused on the predicted concentrations at a fence line location of 717 meters to the north rather than the closest fence line of approximately 60 meters to the south of the modeled source. The submitted modeling results indicate an hourly hydrogen sulfide concentration of 317 ppb at 100 meters which exceeds the standard and is beyond the southern boundary of CK's property. In summary, the output of the SCREEN3 model indicates noncompliance but the report text represented the analysis as compliant at 717 meters.
2. "Ambient air" means the outdoor atmosphere, but does not include the area entirely within the boundaries of the industrial or manufacturing property within which the air contaminants are or may be emitted and public access is restricted within such boundaries. (NMAC 20.2.72.7.D). New Mexico's ambient standard for hydrogen sulfide is 10 ppb statewide except in the Pecos-Permian Basin where the ambient air standard is 100 ppb (and 30 ppb within municipalities) NMAC 20.2.3.110. These standards are based on measurements averaged over a half an hour. Dispersion modeling tools are only capable of predicting one hour average concentrations and therefore underestimate the half hour concentrations. These are state regulatory standards which are higher than protective levels for the general public as discussed in the Expert Report on Air Standards, C.K. Disposal Permit Application, Eunice, New Mexico dated December 2016.
3. The analysis was performed using SCREEN3 instead of EPA's preferred screening model AERSCREEN. (EPA Memorandum April 11, 2011; Tyler Fox, Leader Air Quality Modeling Group).
4. Haley & Aldrich reran the screening model using the methodology outlined in the September 2016 report utilizing both SCREEN3 and AERSCREEN models. The only modification to the model input was in the receptor locations. Haley & Aldrich's model runs included a fence line receptor distance of 61 meters to predict concentrations at the nearest ambient air location. These model results predicted hourly concentrations of hydrogen sulfide 5 to 6 times above the ambient air standard of 100 ppb. Screening models utilize default meteorological data. A review of local wind data confirmed that wind speed and direction is well distributed, although the prevailing direction is from the south. If the local wind was dominant in one direction or another (as in a valley or along the coast) then screening models would not be appropriate. A more sophisticated model can better account for local terrain and meteorological conditions.
5. The analysis presented in the application underrepresents the worst-case emissions scenario from a modeling perspective. It is my opinion that hydrogen sulfide will be emitted from multiple sources at the facility and not just from the loadout area. In any given half hour period,

the maximum emission rates from all sources of hydrogen sulfide should be included in the model. It is typical for regulatory air dispersion modeling protocol for short term standards (i.e. less than three hour averages) to indicate emissions at rates that could not be maintained for periods of 24 hours or annually. The accumulative impact from multiple sources at their peak short-term emission rates would better represent a worst-case scenario. Having not shown compliant results in the screening analysis, a more detailed modeling analysis (i.e. AERMOD) should be performed. AERMOD can account for contributions from multiple emission sources at the facility at their maximum hourly rates. The modeling analysis submitted in September infers that all of the hydrogen sulfide is always emitted completely during loadout and not emitted by other sources at the facility which I believe underrepresents 'maximum' emissions. Sources not currently accounted for in the hydrogen sulfide model include the evacuated headspace of the delivery trucks, heated oil-water separator, mechanical aeration of the evaporation ponds, stripping tower, ponded water and the working face of the landfill.

6. The modeling analysis does not account for existing nearby sources of hydrogen sulfide. Onsite corrosion studies performed at Urenco (ISA Standard 71.04-2013) during the last five years indicate long-term ambient concentrations of hydrogen sulfide ranging from 3 ppb-50 ppb and sulfur dioxide concentrations ranging from <10 ppb - 300 ppb. These studies are based on the measured corrosion on copper, silver and gold coupons located at the Urenco facility. The monthly studies are part of an ongoing operations and maintenance program to protect sensitive electronics at the facility. These corrosion results and knowledge of hydrogen sulfide emitting sources in the immediate vicinity need to be accounted for in the modeling analysis. The presence of hydrogen sulfide in the ambient air is further documented in a 2010 U.S. Department of the Interior Fish & Wildlife Service report which included monitoring results near oil and gas production facilities in southeastern New Mexico. The long-term monitoring study results indicated an average concentration of hydrogen sulfide at 'undisturbed' locations (greater than 250 meters away from oil and gas activities) at 200 ppb. New Mexico's hydrogen sulfide modeling protocol guidance states "Model the entire facility and any nearby sources and compare the high 1-hour concentration to the standard for that region." In CK's case, the "entire facility" should include all possible sources (not just loadout) at their maximum hourly emission rates and any nearby sources at their maximum hourly emission rates.

Opinion 3: The proposed hydrogen sulfide ambient monitoring plan is inadequate. The action level concentration is too high and the recording frequency is too short.

My opinion is based on the following:

1. The application states in "Attachment K Site Operation Plan" that:
H2S monitors will be placed around evaporative ponds in accordance with Attachment B - Engineered Design Plans. These monitors will continuously monitor H2S levels and wired to communicate with scalehouse personnel. Wind direction, speed, and H2S concentrations will be recorded two (2) times a day and recorded on the Daily Air and Water Inspection Form. If monitors detect H2S above 10-ppm, personnel will take a secondary reading downwind of the berm within one (1) hour if the sample can be taken in a safe manner.
2. The action level of 10 ppm measured in the ambient air is not protective of the state's ambient air standard of 0.1 ppm. The action level is 100 times above the highest allowable concentration in ambient air in the Pecos-Permian Basin.

3. The recording frequency of twice daily is not adequate to ensure that unsafe conditions are not occurring and that noncompliant concentrations are not travelling off site. Waiting one hour for a standard that is based on 30 minute averaging period is too long to be protective.
4. The operating plan does not provide monitoring or recordkeeping methodology typical in an operating air permit to ensure the protection of ambient air.

References

1. https://www3.epa.gov/ttn/scram/models/screen/20110411_AERSCREEN_Release_Memo.pdf
2. Khan et al. 2016. Volatile Organic Matter Characterization of Shale-Oil Produced Water From the Permian Basin. Naima A. Khan, Mark Engle, Barry Dungan, F. Omar Holguin, Pei Xu, and Kenneth C. Carroll. Chemosphere 148 (2016) 126e136.
3. US Environmental Protection Agency (USEPA), 2002. Office of Solid Waste. EPA530-K-01-004, Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations. October 2002.
4. Haley & Aldrich, Inc., 2017. Expert Report on Air Standards, C.K. Disposal Permit Application, Eunice, New Mexico January 2017.
5. Parkhill, Smith & Cooper (2015). Lea County, New Mexico C.K. Disposal E & P Landfill and Processing Facility Permit No. TBD. November 2015.
6. Parkhill, Smith & Cooper (2016). Lea County, New Mexico C.K. Disposal E & P Landfill and Processing Facility. Maximum H₂S Emission Estimates. September 2016.
7. US Department of the Interior Fish & Wildlife Service (USFWS), 2010. Environmental Contaminants Program. FFS 2F41-200220006.1, Hydrogen Sulfide Monitoring Near Oil and Gas Production Facilities in Southeastern New Mexico and Potential Effects of Hydrogen Sulfide to Migratory Birds and Other Wildlife. December 2010

\\por\common\PROJECTS\37262 - URENCO USA\231 - Consulting & Expert Testimony CKD Permit Application\Deliverables\Expert Reports\Final\2017_0124_Air Modeling Expert Report_FINAL.docx

APPENDIX A

Resume

HALEY ALDRICH

CLAYTON M. ORWIG, P.E.

Technical Specialist

EDUCATION

M.S., Civil Engineering, Georgia Institute of Technology, 1993

B.S., Civil Engineering, Georgia Institute of Technology, 1992

PROFESSIONAL REGISTRATION

1998/ GA: Professional Engineer (Reg. No. 24190)

PROFESSIONAL SOCIETIES

Air & Waste Management Association, past Chapter President

SPECIAL STUDIES AND COURSES

Multidisciplinary Certificate in Geohydrology, Georgia Institute of Technology

Mr. Orwig has extensive experience in addressing multi-disciplinary, environmental issues. He is skilled in handling all facets of environmental management, such as strategy development, negotiations, and program development. He is very adept in working with multiple stakeholders including facility owners, legal counsel and regulatory agencies. His understanding of air quality issues is a particular strength and has been applied to Prevention of Significant Deterioration (PSD) permit applications, air toxics analyses, Title V permit applications, and in assessing and implementing specific regulations, such as New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants, and associated control technology assessments (MACT, RACT, BACT, LAER). His air quality modeling expertise includes hands-on technical experience as well as interpretation of regulatory guidance. Prior to joining Haley & Aldrich, he was the group leader and QA officer of the air practice for a fifty person consulting firm. Mr. Orwig also has experience developing Resource Conservation and Recovery Act site investigation work plans, including site characterization, data evaluation, groundwater modeling, general strategy planning, and subsequent reporting and regulatory interactions.

RELEVANT PROJECT EXPERIENCE

Air Quality and Dispersion Modeling Subject Matter Expert, Urenco USA, New Mexico. Prepared detailed response to Nuclear Regulatory Commission (NRC) comments on a Supplemental ER that relied on a previous EIS that was required by NEPA regulations. Previous air quality assessment and modeling demonstrations utilized EPA's ISCST3 instead of the current AERMOD model. The one-hour air quality standards had been revised and implemented during the time since the initial EIS. States were struggling with the new Federal air standards at the time which added to the complexity of the comment and response. A satisfactory response to the NRC allowed modifications to the facility to proceed on schedule.

CERCLA RI/FS Air Program, Primary Copper Smelter, Arizona. As senior technical engineer, successfully negotiated with EPA Region IX and Arizona DEQ work plan revisions to the air portion of the program. The revisions allowed the client to save over \$2 million during the first two years of the program. The project included the installation and operation of nine ambient monitoring stations, fugitive and point source sampling, a risk assessment and source apportionment modeling.

General Environmental Assistance, Confidential Agricultural Consumer Product Client, Louisville, KY. As client service manager, directed and managed all services provided to the U.S. operations of a Fortune Global 500 company. Services included Emergency Planning and Community Right-to-Know, stormwater, wastewater, air, and hazardous waste permitting, and associated reporting. Provided and directed on-site assistance, database development and support, environmental training of personnel, and environmental management system and ISO 14000 support. Participated as an integral member to the client's environmental strategy team.

PSD Permitting, Confidential Client, Georgia. As project manager/engineer, developed a PSD permit application that included generating an emissions inventory and extensive air dispersion modeling for a 200-source particulate-emitting facility. Assessed and documented the Best Available Control Technology (BACT) for VOCs and particulates including the condensable fraction. Played a lead engineering role in project strategy sessions with internal and external counsel and negotiations with regulatory agencies.

Comprehensive Performance Testing, Cement Manufacturer, Indiana. Conducted oversight of Hazardous Waste Combustor NESHAP Comprehensive Performance Testing (CPT) and Continuous Monitoring Systems (CMS) performance evaluations. Responsibilities included coordinating the simultaneous sampling of hazardous waste derived fuel, clinker, ash, kiln feed slurry during the testing. The material feed and spiking included liquid and solid hazardous waste streams, with the latter being fed mid-kiln. Spiking of lead, organics and chromium liquids during stack testing was conducted to determine the system's destruction and removal efficiencies of organics, semi-volatile metals and low-volatile metals. Emissions of dioxins, hydrochloric acid, particulate matter and metals were also evaluated. This required a complex coordination of optimum kiln operation and sampling at multiple simultaneous locations in the exhaust stack. Upon completion, conducted QA/QC of the CMS, stack test results, spiking and process samples. Subsequently authored and submitted the Notice of Compliance (NOC) summarizing all of the CPT results.

State Regulatory Relationship, Animal Rendering Client, Mississippi. Played key role as client leader in re-establishing healthy regulatory relations after years of mutual animosity between the State permitting agency and an industrial facility. The agency was pressured by routine odor and nuisance complaints by new adjacent residential development. I facilitated the resolution of years of alleged permit violations, expired permits, stale applications, and bad relations.

PSD Avoidance Permitting, Shipbuilding Facility, Pascagoula, MS. As senior project manager, successfully negotiated with agency to obtain fast-track Title V air permit revisions. The permits allowed the facility to avoid the lengthy PSD process for modifications that were under construction and nearing completion.

Historic Prevention of Significant Deterioration Analysis and Title V Permitting, Shipbuilding Facility, Pascagoula, MS. As senior project manager, prepared a State-required analysis of over 800 historic modifications conducted at the facility over a 12-year timeframe. Defined potential penalties and strategies for resolution of unpermitted modifications.

PSD New Source Review Air Permitting, Metals Industry, Midwest. As senior technical engineer, leading a team preparing all required permitting application documents including BACT determinations, air dispersion modeling for particulate matter and products of combustion for the siting and construction of a new facility.

Nonattainment New Source Review – Ozone Transport Region, Confidential, Northeast. As senior technical engineer, leading the permitting effort for the siting and construction of a new major source of VOC emissions. The permitting requires assessing LAER, obtaining emission offsets, NOx budget impacts, and state air toxics analysis including air dispersion modeling.

Volatile Organic Compound (VOC) Stack Testing Method Development, Confidential Client, Georgia, North Carolina, and Virginia. As project engineer, coordinated and participated in the development of a stack testing method and analytical techniques for a multiple compound-specific moist exhaust stream. Participated in extensive quality assurance/quality control procedure implementation and documentation with client's research and development staff and subcontracted laboratories. Initial pilot studies were performed using a simulated exhaust stream. Field studies included side-by-side simultaneous comparison between two methods.

State Construction Permitting and Toxics Modeling, Battery Manufacturer, Dallas, TX. As project manager/engineer, obtained an air permit amendment for a significant expansion at a battery manufacturing facility. The successful permit negotiation included air toxics analysis, air dispersion modeling and extensive public review. The facility installed and operated two fence line ambient lead monitors.

HALEY ALDRICH



JAY PETERS

Risk Assessment Practice Leader

EDUCATION

M.S., Environmental Engineering, Tufts University, 1998

B.S., Toxicology, Northeastern University, 1993

PROFESSIONAL SOCIETIES

American Nuclear Society, DESD Executive Committee & Past Chair

Mr. Peters develops strategic risk-based strategies for commercial and industrial clients, as well as legal professionals. With 24 years of experience as a risk assessor, he has successfully managed large and complex risk assessment projects for State and Federal Superfund and Resource Conservation and Recovery Act (RCRA) sites, as well as brownfield redevelopment and property transfer sites under the regulatory frameworks of more than twenty state cleanup programs and seven Environmental Protection Agency (EPA) regions.

Mr. Peters' extensive cross-regional experience conducting risk assessments allows his clients to take advantage of risk-based strategies that stem from an in-depth insight into the latitude that can be afforded by EPA and state risk assessment procedures and the directions that agencies are taking on various initiatives. He has used this experience to leverage risk-based strategies that achieve his clients' end vision goals while also gaining approval by regulators, thereby substantially reducing his client's remedial liabilities.

Mr. Peters' specialized areas of risk assessment expertise include radiological risk and dose assessments, application of bioavailability assessments, and developing risk-based site investigation and closure strategies that contribute to the cost-benefit analysis of remedial alternatives. Mr. Peters' areas of project experience include mixed chemical/radiological sites, mining sites, petroleum sites, vapor intrusion sites, chemical manufacturing sites and manufactured gas plant (MGP) sites, as well as polychlorinated biphenyl (PCB) sites and heavy metals sites (including firing ranges). Mr. Peters has performed peer reviews for clients and their counsel for technical oversight and in support of litigation.

RELEVANT PROJECT EXPERIENCE

Development of Risk-Based Action Levels for Hydrogen Sulfide. Developed action levels for use in monitoring hydrogen sulfide concentrations in air at a university campus. The action levels were required because excavation of soil containing elevated levels of naturally occurring hydrogen sulfide was to occur at a location directly next to the campus day care center. Action levels were developed to be protective of day care children, university staff, and campus residential populations. Communicated the action levels to university and day care staff, as well as a parental group associated with the day care.

Expert Opinion, Vapor Intrusion, Industrial Facility, Cleveland, OH. Provided an expert opinion in support of litigation concerning assessment of health risks to employees from vapor intrusion of tetrahydrofuran, benzene, and trimethylbenzene compounds at an industrial facility.

URENCO USA; Uranium Enrichment Facility, New Mexico. Developed framework of risk- and statistically-based background criteria for use in evaluating environmental monitoring data.



Toxicity-Based Cost Allocation. Developed a cost-recovery strategy that accounted for contributions of low- and high-enriched uranium, cobalt-60, and thorium-232 to total toxicity as measured by cancer risk and radiation dose. Approach was used as the primary basis of cost recovery in a \$120M claim.

Technical Review, Lower Willamette River RI/FS, Portland, OR. Performed critical review of remedial investigation and risk assessment conducted by a third party. Identified methodologies and technical approaches that could increase liability for our client and framed those into comments for use by counsel in support of cost recovery.

Nuclear Metals, Inc. Superfund Site, EPA Region 1 CERCLA RI/FS, Concord, MA. Lead risk assessor for this 50-acre former specialty metals manufacturing facility with comingled depleted uranium, thorium, PCB, and metals contamination in soil, surface water, sediment, and comingled plumes of chlorinated solvent, 1,4-dioxane, nitrate (nitric acid), depleted uranium and natural uranium in groundwater. Developing risk assessment and matrix of cleanup goals for multiple land use options, accounting for additive risks among comingled PCBs, uranium, and thorium. Used background incremental risk analysis to focus remedial decision-making on Site-related risk contribution from PCBs and depleted uranium. Negotiates comments with regulatory agency and routinely communicates risk assessment methods and results to two community groups.

Combustion Engineering, Windsor CT. Completed risk assessment to support Environmental Indicator 'Current Human Exposures Under Control' determination and Corrective Measures Study of this 600-acre site with chlorinated solvent, metals, semi-volatile, uranium, cobalt, and thorium contamination in soil, surface water, sediment, and groundwater. Harmonized exposure assessments that were used as foundation of risk- and dose-based cleanup levels; integral participant in the team that developed the Derived Concentration Guideline Level (DCGL) for the Site. Developed Remediation Standard Regulations (RSR) Additional Polluting Substances Criteria for 19 chemicals. Completed third party review of CERCLA RI and risk assessment performed for Formerly Utilized Sites Remedial Action Program portion of site.

Watertown GSA Site, Watertown, MA. Developed risk assessment process that integrated MCP, Massachusetts Department of Public Health (MassDPH), and Nuclear Regulatory Commission (NRC) requirements into a single succinct regulatory closure strategy. Co-chaired DCGL steering group and co-developed DCGL. DCGL was the first site-specific DCGL approved by NRC Region 1. Completed Method 3 risk characterization for this 12-acre property with depleted uranium, metals, petroleum, and PCB contamination. Presented risk assessment methods and results routinely to public group.

PUBLICATIONS

"Risk Management Strategies for a PCB and Depleted Uranium Site" Presented at the Battelle Chlorinated Solvents and Recalcitrant Compounds Conference, Monterey, CA. May 2012

"ARARs are Worse than ALARA" Presented at the American Nuclear Society Annual Meeting. Atlanta, GA. June 2009. (with E. Iorio).

"Introduction to Risk-Based Cleanup Levels for Petroleum" Presented at the Maine DEP Brownfield Grantees Conference. Auburn, ME. June 2009.

"How to Complicate a Uranium Cleanup – Add PCBs and Make it Superfund" Presented at the American Nuclear Society Fall Meeting. Reno, NV. November 2008 (with T. Majer).

"Joint Regulation of Radionuclides at Connecticut Yankee Haddam Neck Plant – Finding Common Ground and Lessons Learned". Presented at the Waste Management Symposia 2006, Tucson AZ. March 2006. (with N.S. Glucksberg, A.L. Fogg, and B. Couture).

"Finding Harmony: Developing Cleanup Criteria to Address Multiagency Requirements" with J.W. Lively and W. Nelson, Radwaste Solutions. July/August 2005. p.36-46.



www.haleyaldrich.com

**EXPERT REPORT ON AIR STANDARDS
C.K. DISPOSAL PERMIT APPLICATION
EUNICE NEW MEXICO**

by Haley & Aldrich, Inc.
Tucson, Arizona

for Rodey Law
Albuquerque, New Mexico

File No. 37262-231
January 2017

EXHIBIT

T

tabbies

Table of Contents

Page

1. INTRODUCTION

1

2. BACKGROUND

1

3. OPINIONS

2

References

6

Exhibit

Exhibit 1 – Exposure Thresholds for Hydrogen Sulfide

Appendix A – Resume

1. INTRODUCTION

Parkhill, Smith and Cooper has prepared a permit application (Application) titled: Lea County, New Mexico, C.K. Disposal E&P Landfill and Processing Facility to construct a waste recycling facility in Eunice, New Mexico. The C.K. Disposal (CKD) facility has been proposed to be located directly across the State Highway from URENCO USA and presents operational risks to the facility and to the public.

This report and the opinions expressed herein have been prepared by Mr. John Peters, Risk Assessment Practice Lead, of Haley & Aldrich, Inc. Mr. Peters' resume is contained in Appendix A. The scope of Mr. Peters' services are as follows:

1. Review the Application to evaluate hydrogen sulfide (H₂S) emissions that will be released from the proposed CKD operations to determine the following:
 - a. Is the H₂S management level in air that is proposed for use by CKD protective of public health?
 - b. Is the H₂S management level in air that is proposed for use by CKD protective of offensive odors?

2. BACKGROUND

Hydrogen sulfide is a poisonous, colorless gas with a characteristic odor of rotten eggs (ATSDR, 2014). At H₂S concentrations above 300 parts per million (ppm), short-term exposures of an hour or less can cause loss of consciousness, resulting in permanent neurological impairment (ATSDR, 2014; Kilburn, et al., 2010). The Occupational Safety and Health Administration (OSHA) stipulates that a concentration of 100-ppm is immediately dangerous to life and health (USDH, 2016). Short-term exposure to 20-ppm can be associated with fatigue, loss of appetite, headache, irritability, poor memory, and dizziness (USDH, 2016). Prolonged exposure to H₂S levels in excess of 10-ppm are associated with impaired neurobehavioral functions (Kilburn, et al., 2010). Prolonged exposure to H₂S concentrations in the 2 to 5-ppm range can cause nausea, tearing of the eyes, headaches, loss of sleep and airway problems (bronchial constriction) in some asthma patients (USDH, 2016). Numerous studies have demonstrated a greater prevalence of adverse effects on respiratory health – including wheezing, shortness of breath, coughing, worsening of asthma symptoms, nose and throat irritation, and alterations in lung function – in communities near a source of H₂S pollution where air concentrations of H₂S were above 0.02-ppm (ATSDR, 2014).

I have reviewed the permit application for the Facility, along with the supplemental materials provided under the New Mexico Inspection of Public Records Act ("IPRA") request. The Application states that an H₂S management level of 10-ppm in air will be used to trigger response actions that will, in turn, decrease H₂S concentrations. Specifically:

- Section 1.15 of the Application states: "a gas monitoring program consisting of testing incoming vehicles during unloading will be utilized to ensure that hydrogen sulfide (H₂S) gas concentrations do not exceed 10 parts per million (ppm) on-site or at the property boundary. Areas around the landfill disposal cells, treating plant, liquid solidification, and evaporation

ponds will utilize monitors that issues a visual and audible signal at 10-ppm H2S to ensure compliance with regulatory alert levels."

Attachment K of the Application contains an H2S Management Plan (Appendix A to Attachment K). The H2S Management Plan indicates that oil field waste loads and evaporation ponds will be monitored for H2S, and if H2S is detected at concentrations above 10-ppm, response actions will be taken to reduce H2S concentrations in air. The H2S Management Plan further states that if H2S is detected at more than 20-ppm at the downwind property boundary, the facility will be evacuated.

3. OPINIONS

Opinion 1: The current proposed management limit for H2S in air of 10-ppm is not protective of public health, and would create an unacceptable health risk for workers and the general public at locations outside of the fence line.

This opinion is based on the following:

1. Regulatory levels for H2S exposure include those that are designated for workplace exposures (occupational exposure limits), and those that are designated for the general public (non-occupational exposure limits). Workplace air exposure limits are applicable to individuals who work with H2S as part of their employment, and who have been informed of H2S hazards as part of the workplace right to know regulations. For individuals that are not working with H2S as a component of their occupation, non-occupational exposure limits apply. Non-occupational exposure limits are derived to be protective for the general public, including sensitive human populations such as children, elderly, and people with compromised immune systems.

Within occupational and non-occupational exposure limits, levels have been derived to be protective of both acute and chronic exposures. Acute exposures refer to short-term exposures lasting 10-minutes to 30-minutes. Episodes of acute exposures can occur multiple times per day, providing that a period without exposure occurs between episodes. Chronic exposures refer to exposures that are continuous (several hours per day to an entire day, day after day) over a period of years. Non-occupational exposure levels are also sometimes published for sub-chronic exposures. Sub-chronic exposures refer to exposures that are continuous for a period of a few weeks up to one year.

Occupational and non-occupational exposure limits for both acute and chronic exposures are shown in Exhibit 1. The acute occupational exposure limits include:

- OSHA Ceiling (29 CFR 1910.1000 Table Z-2) (20-ppm; concentration not to be exceeded for more than 10-minutes);
- National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit (REL) (10-ppm; concentration not to be exceeded for more than 10-minutes) (CDC, 2016); and,
- American Conference of Government Industrial Hygienists (ACGIH) Short-Term Exposure Limit (STEL) (5-ppm; 15-minute exposure, up to 4-times per day) (USDH, 2016).

The chronic occupational exposure limits include:

- OSHA 8-hour time-weighted average (TWA) Permissible Exposure Level (PEL) (10-ppm; 8-hour) (29 CFR 1926.55)¹
- ACGIH threshold limit value (TLV) (1-ppm; 8-hour) (USDL, 2016)

The acute non-occupational exposure limits provided in Exhibit 1 include:

- New Mexico Ambient Air Standard (NMAC 20.2.3.110(B)2) (0.1-ppm; 30-minute average);
- Agency for Toxic Substances and Disease Registry (ATSDR) acute Minimal Risk Level (MRL) (0.07-ppm; 24-hour average)

The chronic non-occupational exposure limits provided in Exhibit 1 include:

- New Mexico Ambient Air Standard (NMAC 20.2.3.110(B)1) (0.01-ppm; 1-hour average not to be exceeded more than once annually);
- U.S. Environmental Protection Agency (EPA) Regional Screening Level (RSL) for composite worker ambient air (USEPA, 2016a) (0.006-ppm; 8-hour TWA)

The H2S management value of 10-ppm proposed in the Application is equal to the H2S OSHA 8-hour TWA work place air standard in construction and shipbuilding industries. As shown in Exhibit 1, this is the highest of the available occupational exposure limits for chronic exposures.

By comparison, the ACGIH stipulates a continuous occupational exposure (8 hour TWA) TLV for H2S of 1-ppm, a value 10-times lower than the OSHA value. The NIOSH stipulates that any exposure above the 10-ppm level is only safe for a 10-minute occupational acute exposure, after which exposure mitigation is recommended (CDC, 2016). ACGIH goes a step further and stipulates an occupational STEL of half this value - 5-ppm - for a 15-minute continuous exposure, after which exposure mitigation is recommended (USDL, 2016). The comparable occupational short-term exposure limit for H2S set by OSHA (the ceiling value) is 20 ppm; or 2 to 4-times higher than the levels set by NIOSH and ACGIH, respectively. Short-term exposure to 20 ppm of H2S is associated with possible fatigue, loss of appetite, headache, irritability, poor memory, and dizziness (USDL, 2016).

Based on this information, the use of 10-ppm as a continuous exposure H2S management level (i.e., no action will be taken to mitigate H2S if levels are not above 10-ppm) is inconsistent with exposure standards set by other government agencies and, by comparison to exposure limits set by those agencies, would endanger worker safety.

2. The applicability of non-occupational air standards that are protective of public health are stipulated in New Mexico Administrative Code (NMAC). Specifically:

- 19.15.36.12(A) NMAC stipulates that new permits must be constructed to ensure and operate in a such a manner that does not endanger public health:

¹ OSHA publishes an H2S 8-hour TWA PEL for the construction and ship building work places, but not for general industry.

"The division may issue a permit for a new surface waste management facility or major modification upon finding that an acceptable application has been filed, that the conditions of 19.15.36.9 NMAC and 19.15.36.11 NMAC have been met and that the surface waste management facility or modification can be constructed and operated in compliance with applicable statutes and rules and without endangering fresh water, public health, safety or the environment."

- 19.15.36.12(C) NMAC further states that:
"The division may impose conditions or requirements, in addition to the operational requirements set forth in 19.15.36 NMAC, that it determines are necessary and proper for the protection of fresh water, public health, safety or the environment."
- Finally, 19.15.36.17(B) states that:
"The operator shall ensure each pit, pond and below-grade tank is designed, constructed and operated so as to contain liquids and solids in a manner that will protect fresh water, public health, safety and the environment."

These regulations clearly stipulate that operators must ensure that designs are protective of public health, and that the Division may impose requirements to ensure that public health is protected. Consequently, as a matter of logic as well as the OCD's own regulations, standards that are protective of the general public, rather than occupational exposure limits, are applicable to locations outside of the C.K. property.

3. The proposed H2S management level of 10-ppm is significantly above the New Mexico Ambient Air Standard of 0.1-ppm (30-minute average concentration) for the Pecos-Permian Basin Intrastate Air Quality Control Region. The air standard is protective for acute exposures and is similar in concentration to the ATSDR acute MRL of 0.07-ppm (24-hour average concentration), which is based on the threshold concentration that causes people with asthma to have asthma symptoms (e.g., airway restriction) (ATSDR, 2014). This indicates that H2S would exist in ambient air at the C.K. property line continuously (chronically) at a level 100-times higher than the non-occupational acute exposure limit. Therefore, managing H2S at 10-ppm at the C.K. property fence line poses an unacceptable acute exposure health risk for the general public.
4. The New Mexico Ambient Air Quality standard for the State, in areas outside of the Pecos-Permian Basin Intrastate Air Quality Control Region, is 0.01-ppm, measured as a one-hour average and not to be exceeded more than once per year. This value is a non-occupational chronic exposure limit. It is similar in concentration to the chronic non-occupational exposure level of 0.006-ppm that is recommended by EPA, based on protection against adverse effects to the nervous and respiratory systems (USEPA, 2016b). Although the New Mexico Ambient Air standard of 0.01-ppm is not an enforceable standard at the C.K. property because the property is within the Pecos-Permian Basin Intrastate Air Quality Control Region, the level nonetheless represents a concentration that the State has identified as being protective for chronic non-occupational exposures. The proposed H2S management level of 10-ppm is 1000-times higher than this level. Because people can be present continuously at locations outside of the fence line, experience chronic exposures, the non-occupational chronic exposure limits are applicable outside of the C.K. property fence line. Therefore, managing H2S at 10-ppm at the C.K. property fence line poses an unacceptable chronic exposure health risk for the general public.

5. The Application does not provide any modeling estimates of H₂S liberation or downwind migration. However, air dispersion modeling performed supplemental to the permit application (Parkhill, Smith & Cooper, September 2016) shows that H₂S concentrations will be 0.009 to 0.0134 ppm at the northern C.K. property boundary. This estimate is based on the assumption that H₂S source concentrations are the loadout points and are moved to the southern portion of the C.K. property. As discussed in the Expert Report on Air Emissions, these modeling estimates ignore other sources of H₂S at the proposed facility. Further, as discussed in the Expert Report on Air Emissions, modelled H₂S concentrations at the fence line nearest to the southern fence line would be 0.5-ppm to 0.6-ppm. Regardless, even with other H₂S sources at the facility not accounted for and without considering expected higher concentrations at the south and east fence lines, the modelled concentrations at the northern property boundary do not meet chronic exposure limits that are protective of the general public. As a result, C.K.'s proposed facility would endanger public health and safety.

Opinion 2: The current proposed management limit for hydrogen sulfide (H₂S) in air of 10-ppm is not protective of foul odors at locations outside of the fence line.

This opinion is based on the following:

1. The odor threshold for H₂S is 0.01 to 1.5-ppm; this is the range of concentrations where people can detect a rotten egg smell from H₂S (USDHHS, 2016). The odor becomes offensive in the 3 to 5 ppm range (USDHHS, 2016). As discussed above and illustrated in Exhibit 1, odors in the offensive range are also associated with the potential for adverse health effects. Based on this information, an air management level of 10-ppm H₂S would create an offensive odor as well as endanger public health.

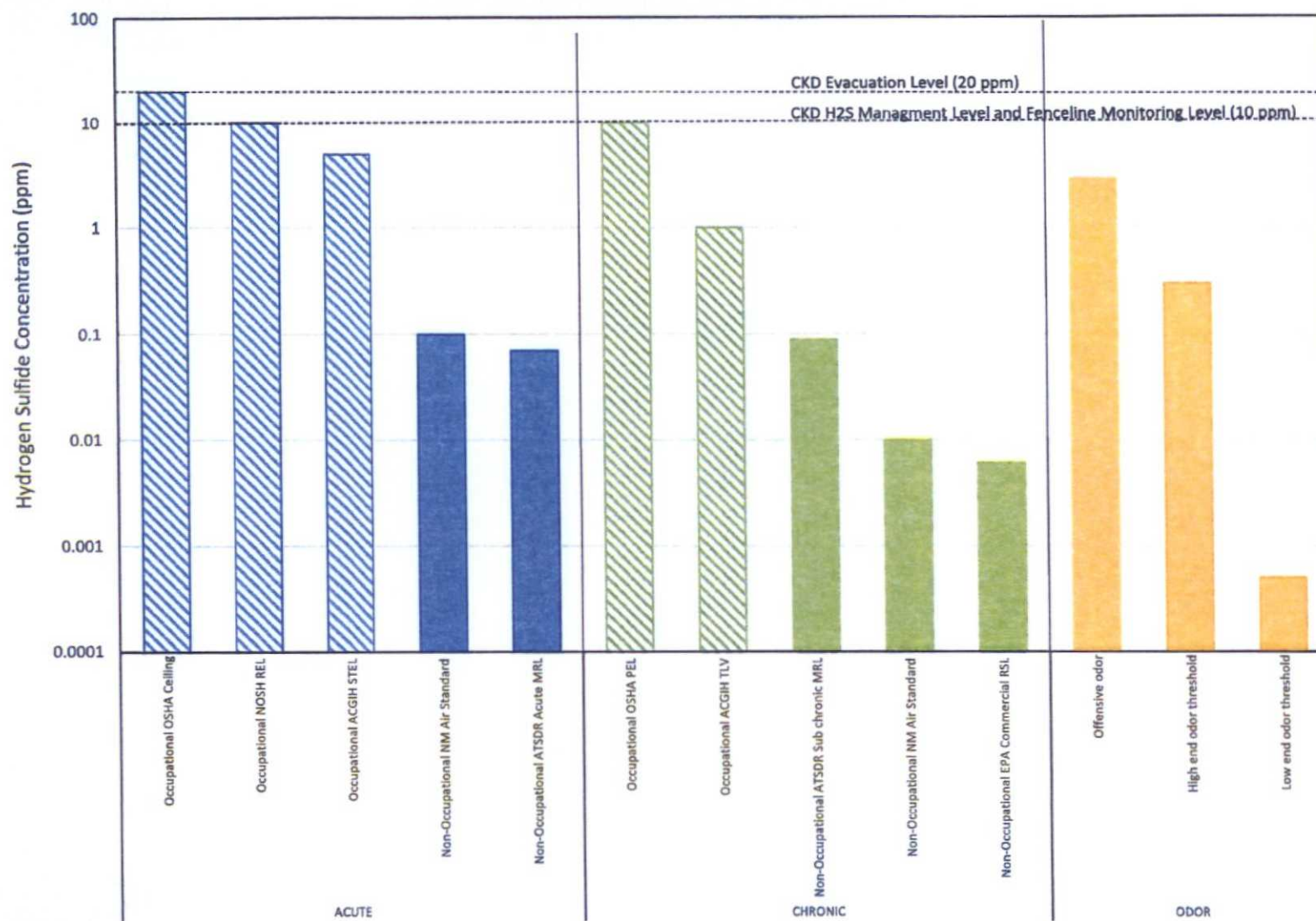
References

1. Agency for Toxic Substances and Disease Registry (ATSDR), 2014. Draft Toxicological Profile for Hydrogen Sulfide and Carbonyl Sulfide. October, 2014.
2. Centers for Disease Control and Prevention (CDC), 2016. The National Institute for Occupational Safety and Health (NIOSH). Hydrogen Sulfide. www.cdc.gov/niosh/npg/npgd0337.html. Accessed 12/29/2016.
3. Kilburn KH, Thrasher JD, Gray MR. 2010. Low-level hydrogen sulfide and central nervous system dysfunction. *Toxicology and Industrial Health* 26(7):387-405.
4. Parkhill, Smith & Cooper (2015). Lea County, New Mexico C.K. Disposal E & P Landfill and Processing Facility Permit No. TBD. November 2015.
5. Parkhill, Smith & Cooper (2016). Lea County, New Mexico C.K. Disposal E & P Landfill and Processing Facility. Maximum H₂S Emission Estimates. September 2016.
6. US Department of Labor (USDL), 2016. Occupational Safety and Health Administration. Safety and Health Topics: Hydrogen Sulfide. www.osha.gov/SLTC/hydrogensulfide/hazards.html. Accessed 12/29/2016.
7. US Environmental Protection Agency (USEPA), 2016a. USEPA Regional Screening Levels. May 2016. U.S. Environmental Protection Agency. Available at: www.epa.gov/risk/regional-screening-table
8. USEPA, 2016b. Integrated Risk Information System (IRIS). Hydrogen Sulfide. cfpub.epa.gov/ncea/iris2/chemicalLanding.cfm?substance_nmbr=61. Accessed 12/29/2016.

\\port\common\PROJECTS\37262 - URENCO USA\231 - Consulting & Expert Testimony CKD Permit Application\Deliverables\Expert Reports\Final\2017_0122_Air Standards Report_FINAL.docx

EXHIBIT 1

Exposure Thresholds for Hydrogen Sulfide



APPENDIX A

Resume



JAY PETERS

Risk Assessment Practice Leader

EDUCATION

M.S., Environmental Engineering, Tufts University, 1998

B.S., Toxicology, Northeastern University, 1993

PROFESSIONAL SOCIETIES

American Nuclear Society, DESD Executive Committee & Past Chair

Mr. Peters develops strategic risk-based strategies for commercial and industrial clients, as well as legal professionals. With 24 years of experience as a risk assessor, he has successfully managed large and complex risk assessment projects for State and Federal Superfund and Resource Conservation and Recovery Act (RCRA) sites, as well as brownfield redevelopment and property transfer sites under the regulatory frameworks of more than twenty state cleanup programs and seven Environmental Protection Agency (EPA) regions.

Mr. Peters' extensive cross-regional experience conducting risk assessments allows his clients to take advantage of risk-based strategies that stem from an in-depth insight into the latitude that can be afforded by EPA and state risk assessment procedures and the directions that agencies are taking on various initiatives. He has used this experience to leverage risk-based strategies that achieve his clients' end vision goals while also gaining approval by regulators, thereby substantially reducing his client's remedial liabilities.

Mr. Peters' specialized areas of risk assessment expertise include radiological risk and dose assessments, application of bioavailability assessments, and developing risk-based site investigation and closure strategies that contribute to the cost-benefit analysis of remedial alternatives. Mr. Peters' areas of project experience include mixed chemical/radiological sites, mining sites, petroleum sites, vapor intrusion sites, chemical manufacturing sites and manufactured gas plant (MGP) sites, as well as polychlorinated biphenyl (PCB) sites and heavy metals sites (including firing ranges). Mr. Peters has performed peer reviews for clients and their counsel for technical oversight and in support of litigation.

RELEVANT PROJECT EXPERIENCE

Development of Risk-Based Action Levels for Hydrogen Sulfide. Developed action levels for use in monitoring hydrogen sulfide concentrations in air at a university campus. The action levels were required because excavation of soil containing elevated levels of naturally occurring hydrogen sulfide was to occur at a location directly next to the campus day care center. Action levels were developed to be protective of day care children, university staff, and campus residential populations. Communicated the action levels to university and day care staff, as well as a parental group associated with the day care.

Indoor Air Risk Characterization for Hydrogen Sulfide, South Sioux City, NE. Retained by counsel to provide an expert opinion concerning potential health risks posed by hydrogen sulfide in residential homes potentially affected by discharge of sewer gases.

Expert Opinion, Vapor Intrusion, Industrial Facility, Cleveland, OH. Provided an expert opinion in support of litigation concerning assessment of health risks to employees from vapor intrusion of tetrahydrofuran, benzene, and trimethylbenzene compounds at an industrial facility.

URENCO USA, Uranium Enrichment Facility, New Mexico. Developed framework of risk- and statistically-based background criteria for use in evaluating environmental monitoring data.

Toxicity-Based Cost Allocation. Developed a cost-recovery strategy that accounted for contributions of low- and high-enriched uranium, cobalt-60, and thorium-232 to total toxicity as measured by cancer risk and radiation dose. Approach was used as the primary basis of cost recovery in a \$120M claim.

Technical Review, Lower Willamette River RI/FS, Portland, OR. Performed critical review of remedial investigation and risk assessment conducted by a third party. Identified methodologies and technical approaches that could increase liability for our client and framed those into comments for use by counsel in support of cost recovery.

Nuclear Metals, Inc. Superfund Site, EPA Region 1 CERCLA RI/FS, Concord, MA. Lead risk assessor for this 50-acre former specialty metals manufacturing facility with comingled depleted uranium, thorium, PCB, and metals contamination in soil, surface water, sediment, and comingled plumes of chlorinated solvent, 1,4-dioxane, nitrate (nitric acid), depleted uranium and natural uranium in groundwater. Developing risk assessment and matrix of cleanup goals for multiple land use options, accounting for additive risks among comingled PCBs, uranium, and thorium. Used background Incremental risk analysis to focus remedial decision-making on Site-related risk contribution from PCBs and depleted uranium. Negotiates comments with regulatory agency and routinely communicates risk assessment methods and results to two community groups.

Combustion Engineering, Windsor CT. Completed risk assessment to support Environmental Indicator 'Current Human Exposures Under Control' determination and Corrective Measures Study of this 600-acre site with chlorinated solvent, metals, semi-volatile, uranium, cobalt, and thorium contamination in soil, surface water, sediment, and groundwater. Harmonized exposure assessments that were used as foundation of risk- and dose-based cleanup levels; integral participant in the team that developed the Derived Concentration Guideline Level (DCGL) for the Site. Developed Remediation Standard Regulations (RSR) Additional Polluting Substances Criteria for 19 chemicals. Completed third party review of CERCLA RI and risk assessment performed for Formerly Utilized Sites Remedial Action Program portion of site.

Watertown GSA Site, Watertown, MA. Developed risk assessment process that integrated MCP, Massachusetts Department of Public Health (MassDPH), and Nuclear Regulatory Commission (NRC) requirements into a single succinct regulatory closure strategy. Co-chaired DCGL steering group and co-developed DCGL. DCGL was the first site-specific DCGL approved by NRC Region 1. Completed Method 3 risk characterization for this 12-acre property with depleted uranium, metals, petroleum, and PCB contamination. Presented risk assessment methods and results routinely to public group.

PUBLICATIONS

"Risk Management Strategies for a PCB and Depleted Uranium Site" Presented at the Battelle Chlorinated Solvents and Recalcitrant Compounds Conference, Monterey, CA. May 2012

"Introduction to Risk-Based Cleanup Levels for Petroleum" Presented at the Maine DEP Brownfield Grantees Conference. Auburn, ME. June 2009.

"How to Complicate a Uranium Cleanup – Add PCBs and Make it Superfund" Presented at the American Nuclear Society Fall Meeting. Reno, NV. November 2008 (with T. Majer).

"Joint Regulation of Radionuclides at Connecticut Yankee Haddam Neck Plant – Finding Common Ground and Lessons Learned". Presented at the Waste Management Symposia 2006, Tucson AZ. March 2006. (with N.S. Glucksberg, A.L. Fogg, and B. Couture).

"Finding Harmony: Developing Cleanup Criteria to Address Multiagency Requirements" with J.W. Lively and W. Nelson, Radwaste Solutions. July/August 2005. p.36-46.



NADIA GLUCKSBERG, PG, LEP

Senior Associate | Hydrogeologist

EDUCATION

M.S., Environmental Science and Engineering, Oregon Graduate Institute, 1992

B.A., Geological Sciences, Cornell University, 1989

PROFESSIONAL REGISTRATION

1995/ME: Certified Geologist (Reg. No. 393)

2001/CT: Licensed Environmental Professional (Reg. No. 361)

2010/GA: Registered Geologists (Reg. No. 2034)

2012/WI: Professional Geologist (Reg. No. 1300)

2015/IL: Professional Geologist (Reg. No. 196.001424)

PROFESSIONAL SOCIETIES

American Nuclear Society: Decommissioning and Environmental Sciences

Division, Chair 2011 through 2014. Vice Chairman, New England Section

Environmental Professionals of Connecticut

Connecticut RCRA Owners' Group, Executive Director

Engineers Without Borders, Portland, ME Chapter President and Prof. Mentor

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste Operations Training

8-Hour OSHA Supervisor

RadWorker Training

Adult CPR/First Aide

Nadia Glucksberg is a Lead Hydrogeologist with experience managing a wide range of hydrogeological and environmental investigations under the EPA (both RCRA and CERCLA), NRC, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), and other state agencies. As a Technical Lead for environmental investigations, her responsibilities include identifying areas of concern, characterizing both the geology and hydrogeology of complex systems, investigating the extent of chemical and radiological constituents released to the environment, and developing strategies to meet site closure. Several of the larger sites include community outreach programs. Her specialized skill areas include hydrogeologic evaluation, RCRA, CERCLA, and TSCA-regulations, conceptual site models, nuclear and chemical investigations, contaminant transport, public outreach and stakeholder communication.

RELEVANT PROJECT EXPERIENCE

Program Manager: URENCO USA, Uranium Enrichment Facility, New Mexico. Interim Environmental Compliance Officer for the NRC licensed facility. Responsible to ensure that environmental procedures and environmental monitoring programs meet federal and state requirements. Develop programs to coordinate data collection programs and support the NEPA and EIS revisions associated with plant expansion.

Technical Expert: Shpack Superfund Site: Confidential Client. Represented one of the 27 PRPs to ensure that the cost allocation was defensible. This site was contaminated with PCBs, metals, solvents, dioxins, thorium and radium. AS a technical expert, accomplishments included oversight of investigation and remediation techniques to separate out the incremental costs for working with the comingled radiological materials. The client saved over \$1M.

RCRA Specialist: Expert Testimony, Miami, Florida. Provided expert testimony for a maritime case to explain the criteria required to define a hazardous substance and classify RCRA regulated wastes. Testimony also included explaining the analytical methods and approaches used to classify waste materials.



Program Manager/Technical Lead: Graves Mountain Site, Lincolnton GA. Registered Professional Geologist for the mine reclamation efforts for a former kyanite mine. Responsibilities include public outreach, regulatory support and ongoing technical consulting for the installation of constructed wetlands to passively treat the acid mine runoff. Recent work included the rehabilitation of a failing slope (approx. \$4M) including obtaining USACE approvals and county and GA EPD approval for construction within wetlands.

Lead Hydrogeologist: LACBWR, Dairyland Power Cooperative, LaCrosse, WI Completed the Historical Site Assessment under Multi-Agency Radiation Site Survey and Investigation Manual (MARSSIM) as well as complete an investigation to characterize groundwater. Additional tasks included support to develop and review the License Termination Plan and to revised the Environmental Report and other License Based documents.

Principal Hydrogeologist/Technical Lead: Groundwater Review for Combined License (COL) Application, South Texas Project Nuclear Operating Company, Wadsworth, TX. Responsible/team lead of the review of Sections 2.4.12, Groundwater, and 2.4.13, Accidental Release of Radionuclide to Groundwater and Surface Waters for the Final Safety Analysis Report (FSAR) for Units 3 and 4, submitted as part of the COL Application. Review and revisions to all supporting calculation packages including the groundwater model, hydraulic conductivity, hydraulic gradients and subsequent revisions to the Final Safety Analysis Report.

Principal Hydrogeologist: Nuclear Power Plant, Early Site Permit Application (ESPA) Salem, NJ. Principal hydrogeologist for groundwater evaluation for the early site application for both the site safety analysis report (SAR) as well as the environmental report for a new nuclear plant. Managed surface water (hydrology) for the environmental report, developing the field effort and presenting groundwater results to the Nuclear Regulatory Commission (NRC).

Principal Hydrogeologist/Project Manager: Connecticut Yankee Atomic Power Company, Haddam Neck Plant Closure D&D RCRA Corrective Action Program, East Hampton, CT. Responsible for completing the RCRA Voluntary Corrective Action at the site and to reach closure on a 5-year schedule. The site included 24 Areas of Concern (AOCs) with over 300 potential contaminant sources (PCSs) and verified impacts from PCBs, fuels oils and gasoline (i.e. BTEX) with much of the chemical and radiological contaminant sources being release from buried piping. The scope of work included managing multiple-stage field programs and a Baseline Ecological Risk Assessment completed in coordination with the ongoing D&D of the plant followed by Interim Corrective Measures and groundwater remediation for radionuclides. Additional work included oversight of combined chemical and radiological investigation, and permitting and regulatory support.

PUBLICATIONS

Characterization and Remediation of PCBs in Paints and Coatings on Porous Surfaces; Using the EPA Guidance for Vessels to Support a Risk-Based Statistical Sampling Program. Nadia Glucksberg and Miles VanNoordennen, (H&A) Accepted for American Nuclear Society Annual Meeting. To be presented June 2016.

Consistent Messages, Transparent Communication, and Protected Data; Using GIS to Support CSMs for all stages of Nuclear Plants Nadia Glucksberg, CG, LEP, Brian Peters, Will Grimes. September 2009.

PCB Soil Remediation Following Demolition of the Reactor Containment Building: Lesson's Learned from CYAPCO's Haddam Neck Plant. Nadia Glucksberg, CG, LEP, Jay Peters, and Miles van Noordennen (Haley & Aldrich) and Gerard van Noordennen (CYAPCO). June 2008.

Integrating RCRA Closure with D&D; Case Study of Chemical Investigations and Remediations Coordinated with D&D Activities at a Nuclear Power Plant, Nadia Glucksberg, Nelson Breton, and Brian Couture. July 2005.

The Natural Occurrence of Arsenic in Groundwater at the Combustion Engineering Site in Windsor, Connecticut. Nadia Glucksberg and Nelson Breton, Hank Andolsek, and Elaine Hammick. June 2003.



www.haleyaldrich.com

**EXPERT REPORT ON STORMWATER ISSUES
C.K. DISPOSAL PERMIT APPLICATION
EUNICE, NEW MEXICO**

by Haley & Aldrich, Inc.
Tucson, Arizona

for Rodey Law
Albuquerque, New Mexico

File No. 37262-231
January 2017



Table of Contents

	Page
1. INTRODUCTION	1
2. BACKGROUND	1
3. OPINIONS	1
References	3

Exhibits - Exhibit 1 - URENCO USA Discharge Permit.DP-1481

Appendix A – Resume

1. INTRODUCTION

Parkhill, Smith and Cooper has prepared a permit application titled: Lea County, New Mexico, C.K. Disposal E&P Landfill and Processing Facility to construct a waste recycling facility in Eunice, New Mexico. The C.K. Disposal (CKD) facility has been proposed to be located directly across the State Highway from URENCO USA and presents operational risks to the facility and to the public.

This report and the opinions expressed herein have been prepared by Ms. Nadia Glucksberg, a Senior Associate and Lead Hydrogeologist at Haley & Aldrich. Her resume is presented in Appendix A. The scope of these services are as follows:

1. Review the permit application to evaluate the potential impacts of potential CKD operations on the sampling requirements under URENCO USA's New Mexico Environmental Division Groundwater Protection Permit DP-1481.
 - a. What constituents could be present on the CKD property that would be subject to Aeolian or wind-blown transport and thereby impact the analytical results of required sampling for the UUSA Storm Water Basin?
 - b. What are the transport mechanisms that could cross-contaminate the URENCO USA property?

2. BACKGROUND

The recycled wastes that will be treated at the proposed CKD facility include drilling/fracking waste waters that are known to include volatile organic compounds (VOCs) (including benzene, toluene, ethylbenzene, and xylenes [BTEX]), semivolatile organic compounds (SVOCs) (including polycyclic aromatic hydrocarbons [PAHs]); inorganics and metals are also commonly detected in these waste waters (Kahn et al, 2015; Thacker et al, 2016, USEPA, 2016).

As noted in the Expert Report on Air Monitoring and Permitting Issues, the VOCs will be released to the atmosphere via evaporation. However, based on their physical and chemical properties, the SVOCs and metals will remain in the sludge. In consideration of the winds and resulting sand storms that are common to the Permian Basin, it is likely that these compounds may then be transported via windstorms (i.e. aeolian transport) and deposited down gradient on URENCO USA's property. These contaminants may then impact the stormwater runoff to such levels that they are detected in URENCO USA's monitoring program.

3. OPINIONS

Opinion 1: With the typical chemical constituents associated with the site operations, there is potential for aeolian transport to deposit contaminated sediments to URENCO USA's property, potentially impacting the results of URENCO USA's required sampling program under NMED permit DP-1481.

My opinion is based on the following:

1. Chemicals common to waste oils and oily wastewaters include BTEX, PAHs, and some metals. Although the BTEX compounds would likely discharge or evaporate to the atmosphere, the less volatile SVOCs and metals will remain and precipitate out both in the sludge and sorbed to sediments along the evaporation pond 'shorelines' and potentially within the CKD stormwater basins. Sediment, when it is dry, can be liberated in wind storms, transported down-wind, and then re-deposited on the ground surface (e.g., on vegetation, soil, and surface water). Contaminants that are sorbed to the sediments will be transported with the sediments and will be deposited on down-wind land surfaces¹.
 2. Section 20 of URENCO USA's Discharge Permit 1481 requires the semiannual sampling of surface soils, vegetation and stormwater sampling for organics for the following:
 - a. Field parameters: temperature, pH, and specific conductance.
 - b. Indicator parameters: Isotopic Uranium (234U, 235U, 238U), fluoride, chloride, and total dissolved solids (percent moisture for vegetation, soil and sediment).
 - c. Comprehensive Inorganic parameters: bicarbonate (excluding vegetation, soil and sediment), calcium, magnesium, sodium, potassium, alkalinity (excluding vegetation, soil and sediment), aluminum, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury (total concentration only), molybdenum, nickel, selenium, silver, and zinc.
 - d. Organics: Oil and Grease, Total Petroleum Hydrocarbons (TPH).
 - e. Pond Suite: total suspended solids, total phosphorus, total kjeldahl nitrogen (TKN), NO3-NO2, and sulfate
 - f. Other parameters: any other parameters as identified during ongoing investigations of potential source areas and as required by NMED [20.6.2.3107 NMAC].
- A copy of the Discharge Permit DP-1481 is provided in Exhibit 1.
3. Several of the constituents noted in items A, B, C, and D area also common to the associated CKD activities and as noted above will likely impact URENCO USAs property via aeolian transport. These deposits would then adversely affect the stormwater and shallow soil quality of the site, potentially requiring action on behalf of URENCO USA to mitigate the contamination and comply with DP-1481.

¹ Prevailing winds are discussed in the Haley & Aldrich Expert Report on Air Permitting and Modeling Issues C.K. Disposal Permit Application, Eunice, New Mexico.

References

1. Haley & Aldrich, 2016. Expert Report on Air Permitting and Modeling Issues. C.K. Disposal Permit Application, Eunice, New Mexico. December 2016
2. Khan et al. 2016. Volatile Organic Matter Characterization of Shale-Oil Produced Water From the Permian Basin. Naima A. Khan, Mark Engle, Barry Dungan, F. Omar Holguin, Pei Xu, and Kenneth C. Carroll. Chemosphere 148 (2016) 126e136
3. Parkhill, Smith & Cooper (2015). Lea County, New Mexico C.K. Disposal E & P Landfill and Processing Facility Permit No. TBD. November 2015.
4. Thacker et al, 2015. Chemical Analysis of Wastewater from Unconventional Drilling Operations, Jonathan B. Thacker, Doug D. Carlton, Jr., Zacariah L. Hildenbrand, Akinde F. Kadjo 1 and Kevin A. Schug. Water 2015, 7, 1568-1579; doi:10.3390/w7041568
5. USEPA. 2016. Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States: Executive Summary. From: <https://www.epa.gov/hfstudy>

G:\PROJECTS\37262 - URENCO USA\231 - Consulting & Expert Testimony CKD Permit Application\Deliverables\Expert Reports\Final\2017_0118_Storm Water Expert Report_FINAL Rev 2.docx

EXHIBIT 1

URENCO USA Discharge Permit DP-1481



NEW MEXICO
ENVIRONMENT DEPARTMENT
Ground Water Quality Bureau



SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

Harold Runnels Building
1190 St. Francis Drive

P.O. Box 5469, Santa Fe, NM 87502-5469
Phone (505) 827-2918 Fax (505) 827-2965
www.nmenv.state.nm.us

RYAN FLYNN
Secretary

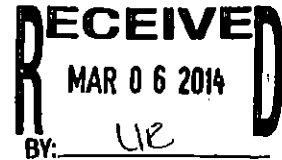
BUTCH TONGATE
Deputy Secretary

IN-14-00013-NMED

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

January 28, 2014

Jay Laughlin, Chief Nuclear Officer and Head of Operations
URENCO USA
P.O. Box 1789
Eunice, New Mexico 88231



RE: Discharge Permit Amendments for DP-1481

Dear Mr. Laughlin:

The Ground Water Quality Bureau of the New Mexico Environment Department (NMED) has reviewed the letter from URENCO USA (permittee) titled, *Ground Water Discharge Permit DP-1481: Permit Amendment Request* (Letter), received by NMED on November 26, 2013 as well as additional material which was subsequently submitted. In the Letter, the permittee requests to amend Discharge Permit, DP-1481, to:

1. Re-direct the cooling tower blowdown and backwash water from reporting to Pond 2 (lined impoundment) to reporting to Pond 1 (unlined impoundment);
2. Revise the required storage capacity volume of Pond 2 from blowdown water discharge volume plus twice the runoff volume equal to that generated by a 24-hour, 100-year return frequency storm to one time the runoff volume equal to that generated by a 24-hour, 100-year return frequency storm; and
3. Consolidate the separate process flows to Pond 2 into a single metered flow.

The facilities covered under DP-1481 are located approximately 4.5 miles east of Eunice along Highway 176 in Section 32, T21S, R38E in Lea County.

NMED issues this Discharge Permit Amendment pursuant to the New Mexico Water Quality Act (WQA), NMSA 1978 §§74-6-1 through 74-6-17, and the New Mexico Water Quality Control Commission (WQCC) Regulations, 20.6.2 NMAC. This Discharge Permit Amendment does not result in significant changes in the quantity or quality of effluent or the location of the discharge. This Discharge Permit Amendment changes specific terms and/or conditions contained in the

Discharge Permit Renewal, DP-1481, issued to the permittee on February 26, 2013. In issuing this Discharge Permit Amendment, NMED has determined that the requirements of Subsection C of 20.6.2.3109 NMAC have been met.

Background

Pond 1 is the Site Storm Water Detention Basin. Storm water runoff from roads, parking areas and building roofs is collected in the unlined Pond 1. The area drained is approximately 96 acres. The maximum design runoff volume is approximately 16 million gallons in one day. The storage capacity of Pond 1 is approximately 32.6 million gallons and its surface area is approximately 17 acres.

Pond 2 is the UBC Storage Pad Storm Water Retention Basin and is comprised of two side-by-side treatment cells. Pond 2 functions as an evaporative basin and is synthetically lined with 60-mil high density polyethylene placed over compacted clay bedding layers. Discharges to Pond 2 include storm water from the UBC storage area, cooling tower blowdown and back wash water, and various non-uranic process waters produced at the facility. The discharges are evaporated and leave residual solids or salts. The storage capacity was designed to contain the blowdown water discharge volume plus twice the runoff volume equal to that generated by a 24-hour, 100-year return frequency storm (6.45-inch rainfall). The area drained is approximately 23 acres and the cells of Pond 2 have a combined storage volume of 10.4 million gallons and a surface area of approximately 5 acres. Based on average operational flows, the discharge to Pond 2 is estimated to less than 17,000 gallons per day. The maximum daily discharge, including storm water, is 3.7 million gallons per day.

Currently, discharges into Pond 2 are comprised of non-metered separate streams (storm water from the UBC storage area, cooling tower blowdown and back wash water, and various non-uranic process waters) that fluctuate based on the season. These discharges (except storm water and cooling tower discharges) are directed into a single lift station (lift station 4). The individual discharges are not metered separately; however, the flow from lift station 4 is metered.

Amendment Description

The purpose of this Discharge Permit Amendment is to:

1. Authorize disposal of cooling tower blowdown and backwash water from Pond 2 to Pond 1:
 - Analytical data of the blowdown water indicates concentrations of contaminants well below constituent concentrations listed in 20.6.2.3103 NMAC and therefore can be permitted to be disposed of in Pond 1.
 - Ground water monitoring will continue under Conditions 9-16 to ensure ground water protection.
2. To revise the storage capacity volume of Pond 2 from blowdown water discharge volume plus twice the runoff volume equal to that generated by a 24-hour, 100-year return frequency storm to one time the runoff volume equal to that generated by a 24-hour, 100-year return frequency storm:

- Condition # 22 which requires two feet of freeboard to be preserved in impoundments, shall still apply.
3. Consolidate the separate process flows to Pond 2 into a single metered flow.
- The flow from lift station 4 will continue to be metered and shall comply with the maximum discharge stated in DP-1481.

Permit Conditions

This Discharge Permit Amendment applies to Discharge Permit, DP-1481, which is still in effect pursuant to 20.6.3106.F NMAC. Condition #20 will be revised in the effective DP-1481 and continued upon renewal. The permittee shall comply with this condition, which is enforceable by NMED.

1. Currently, Condition # 20 requires the permittee to implement a contingency plan in the event that ground water monitoring indicates both an exceedence of a ground water quality standard identified in Section 20.6.2.3103 NMAC and an existing condition concentration as identified in Table 3. The existing concentrations listed in Table 3 are based on maximum concentrations recorded in monitoring wells.

Pursuant to 20.6.2.4104.B NMAC, permittees are required to abate ground water pollution to background concentrations if they exceed numeric standards listed in 20.6.2.3103 NMAC. Therefore, the first paragraph of Condition #20 shall be revised to read: "In the event that ground water monitoring indicates an exceedence of the greater of the ground water quality standard identified in Section 20.6.2.3103 NMAC or the NMED approved background concentration, the permittee shall enact the following contingency plan".

Other Requirements

The permittee shall provide a demonstration of background concentrations for NMED approval within 120 days of the effective date of this Amendment or May 27, 2014. Once approved, Table 3 in the permit shall be replaced by these background concentrations.

The permittee shall comply with the terms and conditions contained herein and those in DP-1481 that remain unchanged which are enforceable by NMED pursuant to Section 20.6.2.3104 NMAC and NMSA 1978 §74-6-5 and §75-6-10. Please be advised that this Discharge Permit Amendment does not relieve the permittee of liability should its operation result in actual pollution of surface or ground water which may be actionable under other laws and/or regulations.

Period of Approval

Pursuant to 20.6.2.3109.H.4 NMAC, the term of this Discharge Permit Amendment for the DP-1481 shall be the same as the term of DP-1481.

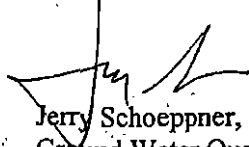
Jay Laughlin, DP-1481 Amendment
January 28, 2014
Page 4

Issuance of this Discharge Permit Amendment does not relieve the permittee of the responsibility to comply with the WQA, WQCC Regulations, and any other applicable federal, state and/or local laws and regulations, such as zoning requirements and nuisance ordinances.

If at any time in the future the permittee intends to change the disposition of any discharge relating to this amendment, the permittee is required to notify NMED prior to changing the discharge.

Please contact me at 505-827-2919 with any questions.

Sincerely,



Jerry Schoeppner, Chief
Ground Water Quality Bureau

cc: Timothy Knowles, URENCO USA
DP-1481 File



SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

Harold Runnels Building

1190 St. Francis Drive

P.O. Box 5469, Santa Fe, NM 87502-5469

Phone (505) 827-2918 Fax (505) 827-2965

www.nmenv.state.nm.us



DAVE MARTIN
Secretary

BUTCH TONGATE
Deputy Secretary

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

February 26, 2013

Harrison Orr, Environmental Compliance Officer
URENCO USA
P.O. Box 1789
Eunice, New Mexico 88231

RE: Discharge Permit Renewal, DP-1481, URENCO USA Site

Dear Mr. Orr:

The New Mexico Environment Department (NMED) issues the enclosed Discharge Permit Renewal, DP-148, to URENCO, USA (permittee) pursuant to the New Mexico Water Quality Act (WQA), NMSA 1978 §§74-6-1 through 74-6-17, and the New Mexico Water Quality Control Commission (WQCC) Regulations, 20.6.2 NMAC.

The Discharge Permit contains terms and conditions that shall be complied with by the permittee and are enforceable by NMED pursuant to Section 20.6.2.3104 NMAC, WQA, NMSA 1978 §74-6-5 and §74-6-10. Please be aware that this Discharge Permit may contain conditions that require the permittee to implement operational, monitoring or closure actions by a specified deadline. Such conditions are listed at the beginning of the operational, monitoring and closure plans of this Discharge Permit.

Issuance of this Discharge Permit does not relieve the permittee of the responsibility to comply with the WQA, WQCC Regulations, and any other applicable federal, state and/or local laws and regulations, such as zoning requirements and nuisance ordinances.

Harrison Orr, DP-1481
February 26, 2013
Page 2

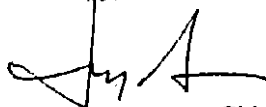
Pursuant to Paragraph (4) of Subsection H of 20.6.2.3109 NMAC, the term of the Discharge Permit shall be five years from the effective date. The term of this Discharge Permit will end on February 26, 2018.

NMED requests that the permittee submit an application for renewal (or renewal and modification) at least 180 days prior to the date the Discharge Permit term ends.

An invoice for the Discharge Permit Fee of \$10,350 is being sent under separate cover. Payment of the Discharge Permit Fee must be received by NMED within 30 days of the date the Discharge Permit is issued.

If you have any questions, please contact Clint Marshall at (505) 827-0027. Thank you for your cooperation during this Discharge Permit review.

Sincerely,



Jerry Schoeppner, Chief
Ground Water Quality Bureau

JS:CM

Encs: Discharge Permit Renewal, DP-1481

cc: Michael Kesler, Acting District Manager, NMED District III (permit – electronic copy)
NMED Hobbs Field Office (permit)
John Romero, Office of the State Engineer (permit – electronic copy)

**DISCHARGE PERMIT RENEWAL
URENCO USA, DP-1481
URENCO USA SITE
February 26, 2013**

I. INTRODUCTION

The New Mexico Environment Department (NMED) issues this Discharge Permit Renewal, DP-1481, to URENCO USA (UUSA, permittee) pursuant to the New Mexico Water Quality Act (WQA), NMSA 1978 §§ 74-6-1 through 74-6-17, and the New Mexico Water Quality Control Commission (WQCC) Regulations, 20.6.2 NMAC.

NMED's purpose in issuing this Discharge Permit, and in imposing the requirements and conditions specified herein, is to control discharges of water contaminants from the UUSA Site (facility) into ground and surface water, so as to protect ground and surface water for actual and potential future use as a domestic and agricultural water supply and other uses; and to protect public health. In issuing this Discharge Permit, NMED has determined that the requirements of 20.6.2.3109.C NMAC have been met.

The activities that produce the discharge, the location of the discharge and the quantity, quality and flow characteristics of the discharge are briefly described as follows.

The UUSA Site is an industrial facility that enriches uranium using centrifuges. A federal license (Materials License No. SNM-2010, docket #70-3103) covers the operation of the uranium enrichment facility as well as the financial assurance for the decommissioning and disposition of the depleted uranium that is temporarily stored in uranium by-product cylinders (UBC). DP-1481 addresses industrial and storm water discharges to two ponds.

Pond 1 is the Site Storm Water Detention Basin. Storm water runoff from roads, parking areas and building roofs is collected in the unlined Pond 1. The area to be drained is approximately 96 acres. Pond 1 is designed to contain a runoff volume equal to that generated by a 24-hour, 100-year return frequency storm (6.45-inch rainfall). The maximum design runoff volume is approximately 16 million gallons in one day. The storage capacity of Pond 1 is approximately 32.6 million gallons and its surface area is approximately 17 acres.

Pond 2 is the UBC Storage Pad Storm Water Retention Basin and is comprised of two side-by-side treatment cells. Pond 2 functions as an evaporative basin and is synthetically lined with 60-mil high density polyethylene (HDPE) placed over compacted clay bedding layers. Discharges to Pond 2 include the storm water from the UBC storage area, cooling tower blowdown and back wash water, and various non-uranic process waters produced at the facility. The discharges are evaporated and leave residual solids or salts. The storage capacity was designed to contain the blowdown water discharge volume plus twice the runoff volume equal to that generated by a 24-hour, 100-year return frequency storm (6.45-inch rainfall). The area to be drained is approximately 23 acres. The cells of Pond 2 have a combined storage volume of 10.4 million gallons and a surface area of approximately 5 acres. Based on average operational flows, the

discharge to Pond 2 is estimated to be less than 17,000 gallons per day. The maximum daily discharge, including storm water, is 3.7 million gallons per day.

Domestic wastewater generated at the UUSA USA Site is currently discharged through Lift Station 1 via pipeline to the Eunice Wastewater Treatment Plant (WWTP).

The discharges at this facility contain water contaminants which may be elevated above standards of 20.6.2.3103 NMAC and /or the presence of toxic pollutants as defined in Subsection WW of 20.6.2.7 NMAC. Ponds 1 and 2 may contain dissolved contaminants that may concentrate through evaporation such that the water may exceed WQCC Ground Water Standards.

The UUSA facility is located approximately 4.5 miles east of Eunice along Highway 176 in Section 32, T21S, R38E in Lea County. Ground water most likely to be affected ranges from approximately 90 to 240 feet below ground surface and has a total dissolved solids (TDS) concentration ranging from approximately 3,370 to 11,600 milligrams per liter (mg/L).

The original Discharge Permit was issued on February 28, 2007. The permittee's renewal application consists of the materials submitted by UUSA on October 28, 2011 and materials contained in the administrative record prior to issuance of this Discharge Permit. The discharge shall be managed in accordance with all conditions and requirements of this Discharge Permit.

Pursuant to 20.6.2.3109.E NMAC, NMED reserves the right to require a Discharge Permit Modification in the event that NMED determines that the requirements of 20.6.2 NMAC are being, or may be, violated or the standards of 20.6.2.3103 NMAC are being, or may be, violated. This may include a determination by NMED that structural controls and/or management practices approved under this Discharge Permit are not protective of ground water quality, and that more stringent requirements to protect ground water quality may be required by NMED. The permittee may be required to implement abatement of water pollution and remediate ground water quality.

Issuance of this Discharge Permit does not relieve UUSA of its responsibility to comply with all conditions or requirements of the WQA, WQCC Regulations, and any other applicable federal, state and/or local laws and regulations, such as zoning requirements and nuisance ordinances.

The following acronyms and abbreviations may be used in this permit:

Abbreviation	Explanation	Abbreviation	Explanation
gpd	gallons per day	NRC	Nuclear Regulatory Commission
HDPE	high density polyethylene	WQA	Water Quality Act
NMAC	New Mexico Administrative Code	WQCC	Water Quality Control Commission
NMED	New Mexico Environment Department	UBC	Uranium By-product Cylinder
NMSA	New Mexico Statutes Annotated	UUSA	URENCO USA

II. FINDINGS

In issuing this Discharge Permit, NMED finds:

1. UUSA will be discharging effluent or leachate from the facility so that such effluent or leachate may move directly or indirectly into ground water within the meaning of 20.6.2.3104 NMAC.
2. UUSA will be discharging effluent or leachate from the facility so that such effluent or leachate may move into ground water of the State of New Mexico which has an existing concentration of 10,000 mg/L or less of total dissolved solids within the meaning of 20.6.2.3101.A NMAC.
3. The discharges from the facility are not subject to any of the exemptions of 20.6.2.3105 NMAC.

III. AUTHORIZATION TO DISCHARGE

UUSA is authorized to discharge up to 16 million gallons per day of storm water or other non-regulated, non-process waters to the unlined impoundment, Pond 1 for retention purposes.

UUSA is authorized to discharge the following volumes of storm water and process waters to the synthetically lined impoundment, Pond 2:

- a. up to 3.7 million gpd of storm water from the UBC storage pad,
- b. up to 3,750 gpd of cooling tower blow down water,
- c. up to 2,800 gpd of cooling tower back wash water,
- d. up to 75 gpd of sump water from the central utilities building (CUB),
- e. up to 1,700 gpd of sump water from the Security Diesel Generator Building,
- f. up to 1,000 gpd of water from the Fire Water Pump House,
- g. up to 200 gpd of UBC pad equipment wash water,
- h. up to 350 gpd of Centrifuge Assemble Building (CAB) side loader wash water,
- i. up to 600 gpd of CRDB and SBM floor wash water,
- j. up to 120 gpd of CAB floor wash water, and
- k. up to 1,000 gpd of miscellaneous non-hazardous, non-storm water generated at the facility.

[20.6.2.3104 NMAC, Subsection C of 20.6.2.3106 NMAC, Subsection C of 20.6.2.3109 NMAC]

IV. CONDITIONS

NMED issues this Discharge Permit for the discharge of water contaminants subject to the following conditions.

A. OPERATIONAL PLAN

1. UUSA shall implement the following operational plan to ensure compliance with Title 20, Chapter 6, Parts 1 and 2 NMAC. [Subsection C of 20.6.2.3109 NMAC]

2. UUSA shall operate in a manner such that standards and requirements of Sections 20.6.2.3101 and 20.6.2.3103 NMAC are not violated. [20.6.2.3101 NMAC, 20.6.2.3103 NMAC, Subsection C of 20.6.2.3109 NMAC]
3. UUSA shall maintain a minimum of two feet of freeboard in Ponds 1 and 2 at all times. In the event that a minimum of two feet of freeboard cannot be maintained, the permittee shall enact the contingency plan in this discharge permit. [20.6.2.3107 NMAC, 20.6.2.3109 NMAC]
4. UUSA shall measure the thickness of the sludge blanket in Ponds 1 and 2 annually. If sludge/sediment accumulation exceeds one-third of the maximum liquid depth of a lagoon, UUSA shall remove the sludge/sediment in a manner that is protective of the lagoon liner. Removed sludge shall be contained, transported, and disposed of in accordance with all local, state, and federal regulations. A report detailing the sludge/sediment depth measurement and disposal of excess accumulated solids (if any disposal occurs) shall be submitted to NMED in the next semi-annual monitoring reports. [20.6.2.3109 NMAC]
5. UUSA shall install and maintain fences around Pond 2. The fences shall be constructed in a manner that prevents access by wildlife, livestock or unauthorized humans (e.g., chain link, field/woven fencing) and shall be maintained throughout the term of this Discharge Permit. UUSA shall construct and maintain a site perimeter fence which will preclude unauthorized human access to Pond 1. [20.6.2.3109 NMAC]
6. UUSA shall post and maintain, where public contact is possible, signs indicating that the water is not potable at Ponds 1 and 2 at least 30 days prior to discharge. All signs shall remain visible and legible for the term of this Discharge Permit. [20.6.2.3109 NMAC]
7. UUSA shall visually inspect Ponds 1 and 2, and surrounding berms on a monthly basis to ensure proper maintenance. Any conditions that could damage the pond liner or affect the structural integrity of the pond shall be corrected. Such conditions include but are not limited to erosion damage, berm subsidence, animal activity/damage, the presence of potentially harmful vegetation such as woody shrubs or uncontrolled weeds, evidence of seepage, or the presence of large pieces or quantities of debris. UUSA shall keep a record of the inspection findings and repairs made. In the event that inspection findings reveal significant damage likely to affect the ability of the lagoon to contain contaminants, UUSA shall submit a corrective action plan to NMED for approval. [20.6.2.3107 NMAC]
8. UUSA shall inspect the domestic wastewater Lift Station 1, and clean as needed. The inspection and cleaning records shall be submitted to NMED in the semi-annual monitoring reports required in this Discharge Permit. [20.6.2.3109 NMAC]

B. MONITORING AND REPORTING

9. The permittee shall conduct the following monitoring, reporting, and other requirements listed below in accordance with the monitoring requirements of this Discharge Permit. Summaries of

monitoring requirements are attached as Tables 1 and 2. [Subsection A of 20.6.2.3107 NMAC, Subsection C of 20.6.2.3109 NMAC] [20.6.2.3107 NMAC]

10. **METHODOLOGY** – Unless otherwise approved in writing by NMED, UUSA shall conduct sampling and analysis in accordance with the most recent edition of the following documents. [Subsection B of 20.6.2.3107 NMAC]
- a) American Public Health Association, Standard Methods for the Examination of Water and Wastewater (18th, 19th or current)
 - b) U.S. Environmental Protection Agency, Methods for Chemical Analysis of Water and Waste
 - c) U.S. Geological Survey, Techniques for Water Resources Investigations of the U.S. Geological Survey
 - d) American Society for Testing and Materials, Annual Book of ASTM Standards, Part 31. Water
 - e) U.S. Geological Survey, et al., National Handbook of Recommended Methods for Water Data Acquisition
 - f) Federal Register, latest methods published for monitoring pursuant to Resource Conservation and Recovery Act regulations
 - g) Methods of Soil Analysis: Part 1. Physical and Mineralogical Methods; Part 2. Microbiological and Biochemical Properties; Part 3. Chemical Methods, American Society of Agronomy
 - h) Puls, Robert W., and Michael J. Barcelona, 1996. "Low-Flow (Minimal Drawdown) Ground-water Sampling Procedures." USEPA Ground Water Issue EPA/540/S-95/504. April 1996.
11. **PARAMETERS** – UUSA shall analyze samples of surface water and ground water for the parameters listed below as shown in Table 2. Samples collected for metals analysis shall be analyzed for dissolved concentrations unless noted below.
- A. Field parameters (analysis to be performed in the field): temperature, pH, and specific conductance.
 - B. Indicator parameters: Isotopic Uranium (²³⁴U, ²³⁵U, ²³⁸U), fluoride, chloride, and total dissolved solids (percent moisture for vegetation, soil and sediment).
 - C. Comprehensive Inorganic parameters: bicarbonate (excluding vegetation, soil and sediment), calcium, magnesium, sodium, potassium, alkalinity (excluding vegetation, soil and sediment), aluminum, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury (total concentration only), molybdenum, nickel, selenium, silver, and zinc.
 - D. Organics: Oil and Grease, Total Petroleum Hydrocarbons (TPH).
 - E. Pond Suite: total suspended solids, sulfate, Suite A, Suite B, Suite C and Suite D.
 - F. Ground Water Suite: Suite A, Suite B and sulfate.

Other parameters: any other parameters as identified during ongoing investigations of potential source areas and as required by NMED [20.6.2.3107 NMAC]

12. UUSA shall submit semi-annual monitoring reports to NMED for the most recently completed 6 month period by the 1st of May and November of each year. [Subsection A of 20.6.2.3107 NMAC]

Semi-annual monitoring shall be performed during the following periods and submitted as follows.

- October 1st through March 31st – due by May 1st
- April 1st through September 30th – due by November 1st

The semi-annual monitoring reports shall include the following information.

- A. Tables in a paper and electronic format (EXCEL spreadsheet) of water quality data with only those constituents analyzed and water levels measured during a single event shown in columns. Tabulated electrical conductivity will include the measured field values and corrected values to 25 degrees Celsius. Monitor sites will be shown in rows. Values exceeding standards and existing concentrations listed as action levels in this permit shall be bolded. Any constituent not analyzed for a particular site will be shown as "NA", and any site not sampled shall be shown as "NS" with an associated reason and any site not measured for water levels will be shown as "NM" with an associated reason. The report shall include a table showing water level data for all applicable monitoring wells and surface impoundments for the sample period. The report shall include figures showing the sample locations. The analytical results obtained for the sample period with exceedances of applicable water quality standards shall be presented in bold text in the tables.
- B. Copies of the original laboratory data sheets submitted electronically.
- C. A brief written summary of all activities related to the discharge conducted during the preceding six months. This may include operational activities, average monthly flow volumes, meter readings, spills, maintenance, repairs, well drilling, water management, construction or demolition of structures, water quality trends, daily precipitation, trends in water levels, lift station inspection, pond inspections, leak detection measurements, pumping records, solids removal and disposal records, and analytical results from soil sediments and plant tissue analysis. These requirements are summarized in Tables 1 and 2. Any inadvertent omissions from this summary of a required action, monitoring or reporting requirement shall not relieve UUSA of responsibility for compliance with that requirement.

In addition to the above information, the monitoring reports submitted by November 1st of each year shall contain the following information:

- D. An annual summary of precipitation, by month;
- E. A table showing water level data for all applicable monitoring wells collected over the

entire year;

- F. A potentiometric surface map of the DP-1481 area shall be prepared that includes water level data from the most recent sampling event. Wells from adjacent properties may be necessary to determine the ground water flow direction.
 - G. Time series graphs for each well for the constituents Uranium, TDS, Sulfate and Chloride. Each graph shall contain analytical data for the previous five years. Only those constituents detected above ground water standards and regional conditions as summarized in Table 3 shall be included on the graphs.
 - H. Hydrographs of water level elevation data versus time for all wells except dry wells. Data for the last five years shall be included.
13. Once prior to the date that the term of this Discharge Permit ends, NMED shall have the option to perform down-hole inspections of all monitoring wells identified in this Discharge Permit. NMED shall establish the inspection date and provide at least 60 days notice to UUSA by certified mail. UUSA shall have any existing dedicated pumps removed at least 48 hours prior to NMED inspection to allow adequate settling time of sediment agitated from pump removal.
- Should the facility not have existing dedicated pumps, but decide to install pumps in any of the monitoring wells, NMED shall be notified at least 90 days prior to pump installation so that a down-hole well inspection(s) can be scheduled prior to pump placement. [Subsections A and D of 20.6.2.3107 NMAC]
14. In the event that UUSA proposes to abandon any well installed prior to the submittal of the discharge permit application, UUSA shall provide NMED written notice at least 30 days prior to the well abandonment. Well abandonment shall be consistent with the Office of the State Engineer Regulations and NMED Monitoring Well Construction and Abandonment Guidelines. Well abandonment details including volumes of materials used, composition of plugging material and methods shall be submitted to NMED within in 30 days of well abandonment. [20.6.2.3107 NMAC]
15. UUSA shall perform quarterly ground water sampling, when sufficient water is present, in the alluvial monitoring wells MW-21, MW-23, MW-24 and MW-26 and analyze the samples for the parameters listed in Condition 11.F.

Ground water sample collection, preservation, transport and analysis for alluvial monitoring wells MW-21, MW-23, MW-24 and MW-26, shall be performed according to the following procedure:

- a) Measure the depth-to-most-shallow ground water from the top of the well casing to the nearest hundredth of a foot.
- b) Purge three well volumes of water from the well prior to sample collection, or sample the wells using low-flow techniques, or use grab sample techniques if low water levels warrant such methods.

- c) Obtain samples from the well for analysis.
- d) Properly prepare, preserve and transport samples.
- e) Analyze samples in accordance with the methods authorized in this Discharge Permit.

Depth-to-most-shallow ground water measurements, analytical results, including the laboratory QA/QC summary report, and a facility layout map showing the location and number of each well shall be submitted to NMED for the corresponding semi-annual monitoring reports due by May 1st, and the second two quarters by November 1st of each year.

16. UUSA shall perform semi-annual ground water sampling when sufficient water is present in the Chinle (Cooper Canyon) monitoring wells MW-4, MW-10, MW-20 and MW-25 and analyze the samples for the parameters listed in Condition 11.F.

Ground water sample collection, preservation, transport and analysis for monitoring wells MW-4, MW-10, MW-20 and MW-25 shall be performed according to the following procedure:

- a) Measure the depth-to-most-shallow ground water from the top of the well casing to the nearest hundredth of a foot.
- b) Purge three well volumes of water from the well prior to sample collection or sample the wells using low-flow techniques.
- c) Obtain samples from the well for analysis.
- d) Properly prepare, preserve and transport samples.
- e) Analyze samples in accordance with the methods authorized in this Discharge Permit.

Depth-to-most-shallow ground water measurements, analytical results, including the laboratory QA/QC summary report, and a facility layout map showing the location and number of each well shall be submitted to NMED in the semi-annual monitoring reports due by May 1st and November 1st of each year.

17. UUSA shall sample Ponds 1 and 2 semi-annually when sufficient water is present for the parameters listed in Condition 11.B. UUSA shall sample pond sediments semi-annually when new sediments have been deposited for the parameters listed in Conditions 11.B. Analytical results shall be reported in the semi-annual monitoring report as required in this Discharge Permit. [20.6.2.3107 NMAC]
18. UUSA shall sample eight locations as given in Table 2 of soil and plant tissue samples on a semi-annual basis and analyze the samples for the parameters listed in Condition 11.B. Analytical results shall be submitted to NMED in the semi-annual monitoring reports required in this Discharge Permit. [20.6.2.3107 NMAC]
19. Using totalizing flow meters, UUSA shall measure process water and wastewater inflows to Pond 2. Total monthly discharge volumes and meter readings shall be reported in semi-annual monitoring reports required in this Discharge Permit. [20.6.2.3107 NMAC]

C. CONTINGENCY PLANS

20. In the event that ground water monitoring indicates both an exceedance of a ground water quality standard identified in Section 20.6.2.3103 NMAC and an existing condition concentration as identified in Table 3, the permittee shall enact the following contingency plan. Existing conditions in accordance with Section 20.6.2.3103 NMAC as established for this facility in Table 3 are for the term of this Discharge Permit only.

UUSA shall collect a confirmation sample from the monitoring well(s) within 30 days to confirm the initial sampling results that indicate an exceedance. Within 60 days of the sample analysis date confirming the exceedance, the permittee shall propose measures to ensure that the exceedance of the standard or the presence of a toxic pollutant will be mitigated by submitting a corrective action plan to NMED for approval. The corrective action plan shall include a description of the proposed actions to control the source and an associated completion schedule. The plan shall be enacted as approved by NMED.

Once invoked (whether during the term of this Discharge Permit; or after the term of this Discharge Permit and prior to the completion of the Discharge Permit closure plan requirements), this condition shall apply until the permittee has fulfilled the requirements of this condition and ground water monitoring confirms for a minimum of two years of consecutive ground water sampling events that the standards of Section 20.6.2.3103 NMAC or existing conditions, whichever is greater, are not exceeded and toxic pollutants are not present in ground water.

The permittee may be required to abate water pollution pursuant to Sections 20.6.2.4000 through 20.6.2.4115 NMAC, should the corrective action plan not result in compliance with the standards and requirements set forth in Section 20.6.2.4103 NMAC within 180 days of confirmed ground water contamination. [Subsection A of 20.6.2.3107 NMAC, Subsection E of 20.6.2.3109 NMAC]

21. In the event that inspection findings reveal significant damage likely to affect the structural integrity of the lined impoundment(s) or its ability to contain contaminants, the permittee shall propose the repair or replacement of the impoundment liner(s) by submitting a corrective action plan to NMED for approval. The plan shall be submitted to NMED within 30 days after discovery by the permittee or following notification from NMED that significant liner damage is evident. The corrective action plan shall include a schedule for completion of corrective actions and the permittee shall initiate implementation of the plan following approval by NMED. [Subsection A of 20.6.2.3107 NMAC, Subsection C of 20.6.2.3109 NMAC]
22. In the event that a minimum of two feet of freeboard cannot be preserved in the impoundment(s), the permittee shall take actions authorized by this Discharge Permit and all applicable local, state, and federal regulations to restore the required freeboard.

In the event that two feet of freeboard cannot be restored within a period of 72 hours following discovery, the permittee shall propose actions to be immediately implemented to restore two feet of freeboard by submitting a short-term corrective action plan to NMED for approval.

Examples of short-term corrective actions include: removing excess wastewater from the impoundment through pumping and hauling; or reducing the volume of wastewater discharged to the impoundment. The plan shall include a schedule for completion of corrective actions and shall be submitted within 15 days following the date when the two feet of freeboard limit was initially discovered. The permittee shall initiate implementation of the plan following approval by NMED.

In the event that the short-term corrective actions failed to restore two feet of freeboard, the permittee shall propose permanent corrective actions in a long-term corrective action plan submitted to NMED within 90 days following failure of the short-term corrective action plan. Examples include: the installation of an additional storage impoundment, or a significant/permanent reduction in the volume of wastewater discharged to the impoundment. The plan shall include a schedule for completion of corrective actions and implementation of the plan shall be initiated following approval by NMED. [Subsection A of 20.6.2.3107 NMAC]

23. In the event that a release of a water contaminant occurs that is not authorized under this Discharge Permit, the permittee shall take measures to mitigate damage from the unauthorized discharge and initiate the notifications and corrective actions required in Section 20.6.2.1203 NMAC and summarized below.

Within 24 hours following discovery of the unauthorized discharge, the permittee shall verbally notify NMED and provide the following information:

- a) The name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility.
- b) The name and address of the facility.
- c) The date, time, location, and duration of the unauthorized discharge.
- d) The source and cause of unauthorized discharge.
- e) A description of the unauthorized discharge, including its estimated chemical composition.
- f) The estimated volume of the unauthorized discharge.
- g) Any actions taken to mitigate immediate damage from the unauthorized discharge.

Within one week following discovery of the unauthorized discharge, the permittee shall submit written notification to NMED with the information listed above and any pertinent updates.

Within 15 days following discovery of the unauthorized discharge, the permittee shall submit a corrective action report/plan to NMED describing any corrective actions taken and/or to be taken relative to the unauthorized discharge that includes the following:

- a) A description of proposed actions to mitigate damage from the unauthorized discharge.
- b) A description of proposed actions to prevent future unauthorized discharges of this nature.
- c) A schedule for completion of proposed actions.

In the event that the unauthorized discharge causes or may with reasonable probability cause water pollution in excess of the standards and requirements of Section 20.6.2.4103 NMAC, and the water pollution will not be abated within 180 days after notice is required to be given pursuant to Paragraph (1) of Subsection A of 20.6.2.1203 NMAC, the permittee may be

required to abate water pollution pursuant to Sections 20.6.2.4000 through 20.6.2.4115 NMAC.

Nothing in this condition shall be construed as relieving the permittee of the obligation to comply with all requirements of Section 20.6.2.1203 NMAC. [20.6.2.1203 NMAC]

24. In the event that NMED or the permittee identifies any failures of the discharge plan or this Discharge Permit not specifically noted herein, NMED may require the permittee to submit a corrective action plan and a schedule for completion of corrective actions to address the failure(s). Additionally, NMED may require a Discharge Permit modification to achieve compliance with 20.6.2 NMAC. [Subsection A of 20.6.2.3107 NMAC, Subsection E of 20.6.2.3109 NMAC]

D. CLOSURE

25. Upon closure of the facility, UUSA shall perform the following closure measures for the Pond 1 and Pond 2:

- a) Remove or plug all lines leading to the ponds so that a discharge can no longer occur.
- b) Drain and/or evaporate all liquids from all ponds, and dispose of all sludge in accordance with all local, state, and federal regulations and NRC requirements.
- c) Perforate or remove the holding pond liner(s) and re-grade the ponds with clean fill to blend with surface topography and prevent ponding.
- d) Continue ground water monitoring as required by this Discharge Permit for two years after closure to confirm the absence of ground water contamination. If monitoring results show that the ground water standards in 20.6.2.3103 NMAC including the existing concentrations identified in Table 3 are being violated, UUSA shall implement the contingency plan required by Condition 20 of this Discharge Permit.
- e) Following notification from NMED that post-closure monitoring may cease, the UUSA shall plug and abandon the monitoring well(s) in accordance with *NMED Guidelines for Monitoring Well Construction and Abandonment*, Revision 1.1, March 2011 (copy enclosed).
- f) UUSA shall submit a completion report that documents the closure activities performed.
- g) When all post-closure requirements have been met, UUSA may request to terminate the Discharge Permit. [20.6.2.3107(A)11 NMAC]

E. FINANCIAL ASSURANCE

26. Closure financial assurance and recordkeeping will be maintained in accordance with Nuclear Regulatory Requirements set forth in 10 CFR Part 70.25 and supporting NRC guidance in NUREG-1757, Volume 3.

F. GENERAL TERMS AND CONDITIONS

26. RECORD KEEPING - The permittee shall maintain a written record of the following information:
- a) Information and data used to complete the application for this Discharge Permit.

- b) Records of any releases not authorized under this Discharge Permit and reports submitted pursuant to 20.6.2.1203 NMAC.
- c) Records of the operation, maintenance, and repair of all facilities/equipment used to treat, store or dispose of wastewater.
- d) Facility record drawings (plans and specifications) showing the actual construction of the facility and bear the seal and signature of a licensed New Mexico professional engineer.
- e) Copies of monitoring reports completed and/or submitted to NMED pursuant to this Discharge Permit.
- f) The volume of wastewater or other wastes discharged pursuant to this Discharge Permit.
- g) Ground water quality and wastewater quality data collected pursuant to this Discharge Permit.
- h) Copies of construction records (well log) for all ground water monitoring wells required to be sampled pursuant to this Discharge Permit.
- i) Records of the maintenance, repair, replacement or calibration of any monitoring equipment or flow measurement devices required by this Discharge Permit.
- j) Data and information related to field measurements, sampling, and analysis conducted pursuant to this Discharge Permit. The following information shall be recorded and shall be made available to NMED upon request:
 - i) The dates, location and times of sampling or field measurements;
 - ii) The name and job title of the individuals who performed each sample collection or *field measurement*;
 - iii) The sample analysis date of each sample;
 - iv) The name and address of the laboratory, and the name of the signatory authority for the laboratory analysis;
 - v) The analytical technique or method used to analyze each sample or collect each field measurement;
 - vi) The results of each analysis or field measurement, including raw data;
 - vii) The results of any split, spiked, duplicate or repeat sample; and
 - viii) A copy of the laboratory analysis chain-of-custody as well as a description of the quality assurance and quality control procedures used.

The written record shall be maintained by the permittee at a location accessible during a facility inspection by NMED for a period of at least five years from the date of application, report, collection or measurement and shall be made available to the department upon request. [Subsections A and D of 20.6.2.3107 NMAC]

27. INSPECTION and ENTRY – The permittee shall allow inspection by NMED of the facility and its operations which are subject to this Discharge Permit and the WQCC regulations. NMED may upon presentation of proper credentials, enter at reasonable times upon or through any premises in which a water contaminant source is located or in which are located any records required to be maintained by regulations of the federal government or the WQCC.

The permittee shall allow NMED to have access to and reproduce for their use any copy of the records, and to perform assessments, sampling or monitoring during an inspection for the purpose of evaluating compliance with this Discharge Permit and the WQCC regulations.

Nothing in this Discharge Permit shall be construed as limiting in any way the inspection and entry authority of NMED under the WQA, the WQCC Regulations, or any other local, state or federal regulations. [Subsection D of 20.6.2.3107 NMAC, NMSA 1978, §§ 74-6-9.B and 74-6-9.E]

28. DUTY to PROVIDE INFORMATION - The permittee shall, upon NMED's request, allow NMED's inspection/duplication of records required by this Discharge Permit and/or furnish to NMED copies of such records. [Subsection D of 20.6.2.3107 NMAC]

29. MODIFICATIONS and/or AMENDMENTS - In the event the permittee proposes a change to the facility or the facility's discharge that would result in a change in the volume discharged; the location of the discharge; or in the amount or character of water contaminants received; treated or discharged by the facility, the permittee shall notify NMED prior to implementing such changes. The permittee shall obtain approval (which may require modification of this Discharge Permit) by NMED prior to implementing such changes. [Subsection C of 20.6.2.3107 NMAC, Subsections E and G of 20.6.2.3109 NMAC]

30. PLANS and SPECIFICATIONS - In the event the permittee is proposing to construct a wastewater system or change a process unit of an existing system such that the quantity or quality of the discharge will change substantially from that authorized by this Discharge Permit, the permittee shall submit construction plans and specifications to NMED for the proposed system or process unit prior to the commencement of construction.

In the event the permittee implements changes to the wastewater system authorized by this Discharge Permit which result in only a minor effect on the character of the discharge, the permittee shall report such changes (including the submission of record drawings, where applicable) as of January 1 and June 30 of each year to NMED. [Subsections A and C of 20.6.2.1202 NMAC, NMSA 1978, §§ 61-23-1 through 61-23-32]

31. CIVIL PENALTIES - Any violation of the requirements and conditions of this Discharge Permit, including any failure to allow NMED staff to enter and inspect records or facilities, or any refusal or failure to provide NMED with records or information, may subject the permittee to a civil enforcement action. Pursuant to WQA 74-6-10(A) and (B), such action may include a compliance order requiring compliance immediately or in a specified time, assessing a civil penalty, modifying or terminating the Discharge Permit, or any combination of the foregoing; or an action in district court seeking injunctive relief, civil penalties, or both. Pursuant to WQA 74-6-10(C) and 74-6-10.1, civil penalties of up to \$15,000 per day of noncompliance may be assessed for each violation of the WQA 74-6-5, the WQCC Regulations, or this Discharge Permit, and civil penalties of up to \$10,000 per day of noncompliance may be assessed for each violation of any other provision of the WQA, or any regulation, standard, or order adopted pursuant to such other provision. In any action to enforce this Discharge Permit, the permittee waives any objection to the admissibility as evidence of any data generated pursuant to this Discharge Permit. [20.6.2.1220 NMAC, NMSA 1978, §§ 74-6-10 and 74-6-10.1]

32. CRIMINAL PENALTIES - No person shall:

- 1) make any false material statement, representation, certification or omission of material fact in an application, record, report, plan or other document filed, submitted or required to be maintained under the WQA;
- 2) falsify, tamper with or render inaccurate any monitoring device, method or record required to be maintained under the WQA; or
- 3) fail to monitor, sample or report as required by a permit issued pursuant to a state or federal law or regulation.

Any person who knowingly violates or knowingly causes or allows another person to violate the requirements of this condition is guilty of a fourth degree felony and shall be sentenced in accordance with the provisions of NMSA 1978, § 31-18-15. Any person who is convicted of a second or subsequent violation of the requirements of this condition is guilty of a third degree felony and shall be sentenced in accordance with the provisions of NMSA 1978, § 31-18-15. Any person who knowingly violates the requirements of this condition or knowingly causes another person to violate the requirements of this condition and thereby causes a substantial adverse environmental impact is guilty of a third degree felony and shall be sentenced in accordance with the provisions of NMSA 1978, § 31-18-15. Any person who knowingly violates the requirements of this condition and knows at the time of the violation that he is creating a substantial danger of death or serious bodily injury to any other person is guilty of a second degree felony and shall be sentenced in accordance with the provisions of NMSA 1978, § 31-18-15. [20.6.2.1220 NMAC, NMSA 1978, §§ 74-6-10.2.A through 74-6-10.2.F]

33. COMPLIANCE with OTHER LAWS - Nothing in this Discharge Permit shall be construed in any way as relieving the permittee of the obligation to comply with all applicable federal, state, and local laws, regulations, permits or orders. [NMSA 1978, § 74-6-5.L]
34. RIGHT to APPEAL - The permittee may file a petition for review before the WQCC on this Discharge Permit. Such petition shall be in writing to the WQCC within thirty days of the receipt of postal notice of this Discharge Permit and shall include a statement of the issues to be raised and the relief sought. Unless a timely petition for review is made, the decision of NMED shall be final and not subject to judicial review. [20.6.2.3112 NMAC, NMSA 1978, § 74-6-5.O]
35. TRANSFER of DISCHARGE PERMIT - Prior to the transfer of any ownership, control, or possession of this facility or any portion thereof, the permittee shall:
 - 1) notify the proposed transferee in writing of the existence of this Discharge Permit;
 - 2) include a copy of this Discharge Permit with the notice; and
 - 3) deliver or send by certified mail to NMED a copy of the notification and proof that such notification has been received by the proposed transferee.

Until both ownership and possession of the facility have been transferred to the transferee, the permittee shall continue to be responsible for any discharge from the facility. [20.6.2.3111 NMAC]
36. PERMIT FEES - Payment of permit fees is due at the time of Discharge Permit approval. Permit fees shall be paid in a single payment or shall be paid in equal installments on a yearly

basis over the term of the Discharge Permit. Single payments shall be remitted to NMED no later than 30 days after the Discharge Permit effective date. Initial installment payments shall be remitted to NMED no later than 30 days after the Discharge Permit effective date; subsequent installment payments shall be remitted to NMED no later than the anniversary of the Discharge Permit effective date.

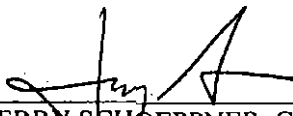
Permit fees are associated with issuance of this Discharge Permit. Nothing in this Discharge Permit shall be construed as relieving the permittee of the obligation to pay all permit fees assessed by NMED. A permittee that ceases discharging or does not commence discharging from the facility during the term of the Discharge Permit shall pay all permit fees assessed by NMED. An approved Discharge Permit shall be suspended or terminated if the facility fails to remit an installment payment by its due date. [Subsection F of 20.6.2.3114 NMAC, NMSA 1978, § 74-6-5.K]

V. PERMIT TERM & SIGNATURE

EFFECTIVE DATE: February 26, 2013

TERM ENDS: February 26, 2018

[Subsection H of 20.6.2.3109 NMAC, NMSA 1978, § 74-6-5.I]



JERRY SCHOEPNER, Chief
Ground Water Quality Bureau
New Mexico Environment Department

Table 1: Reporting Summary

Annual Sampling Frequency	Annual Reporting Frequency	Number of Sites	Sampling Description
4	2	4	Water levels quarterly in shallow alluvial wells
2	2	4	Water levels semiannually in deep wells
2	12	2	Water levels in surface impoundments
4	2	4	Water quality parameters for shallow alluvial wells ¹
2	2	4	Water quality parameters for deep wells ¹
2	2	2	Water quality parameters in ponds ¹
2	2	10	Tabulated data and electronic copies of signed lab sheets for water quality for wells, ponds
12	2	2	Visual inspection of Ponds 1, and 2
4	2	1	Visual inspection of Lift Station 1
1	1	8	Hydrographs and water quality trends.
2	2	2	Sediment sampling in ponds
1	1	2	Pond sludge/sediment depth measurement and disposal of excess accumulated solids (if any).
2	2	8	Soil Sampling and plant tissue analysis
365	2	1	Daily precipitation data
2	2	1	Activities Report site wide

¹ Samples will be taken if sufficient water is present.

Table 2: Monitoring Schedule

Type Name	Location/Description	Sampling						Notes
		type	Q1	Q2	Q3	Q4	other	
Pond 1	Storm Water	sw	E		E			Samples taken if sufficient water is present.
Pond 2	UBC Pad Storm Water; Cooling and Process Waters	sw	E		E			
MW-10	North of UBC pad	mw	FW		FW		Chinle Fm.	
MW-20	South of UBC pad	mw	FW		FW		Chinle Fm.	
MW-25	South of Pond 2	mw	FW		FW		Chinle Fm.	
MW-4	East of Pond 1	mw	FW		FW		Chinle Fm.	
MW-21	South of UBC pad	mw	FW	FW	FW	FW	Alluvium	Samples taken if sufficient water is present.
MW-23	South of UBC pad	mw	FW	FW	FW	FW	Alluvium	
MW-24	South of Pond 2	mw	FW	FW	FW	FW	Alluvium	
MW-26	South of Pond 2	mw	FW	FW	FW	FW	Alluvium	
Pond 1 Sediment	32°25'52" 103°4'35"	so	B		B			
Pond 2 Sediment	32°26'7" 103°5'2"	so	B		B			
Soil/Sediment & Plant Tissue	32°25'56" 103°5'26"	so	B		B			Approximate locations.
	32°25'50" 103°4'55"	so	B		B			
	32°25'47" 103°4'32"	so	B		B			
	32°25'49" 103°4'45"	so	B		B			
	32°26'8" 103°4'27"	so	B		B			
	32°26'33" 103°4'35"	so	B		B			
	32°26'32" 103°4'58"	so	B		B			
	32°26'20" 103°5'26"	so	B		B			

Explanation to Abbreviations and Symbols for Table 2

Type: mw = monitoring well sw = surface water or process pond water so = soil or sediment	Sampling Quarter: Q1 = Oct-Dec Q2 = Jan-Mar Q3 = Apr-Jun Q4 = Jul-Sep
Sampling Analytical Suites: A = Field parameters: Temperature, pH, specific conductance B = Isotopic Uranium (^{234}U , ^{235}U , ^{238}U), Cl, F and TDS for water samples and percent moisture for vegetation, soil and sediment. C = Comprehensive inorganic suite: alk-HCO ₃ , alk-CO ₃ , Ca, Mg, Na, K; (Al, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Hg (total), Mo, Mn, Ni, Se, Ag and Zn. (alk-HCO ₃ and alk-CO ₃ are to be excluded from vegetation, soil and sediment sample analyses). D = Organics: Oil and Grease, Total Petroleum Hydrocarbons (TPH) E = Pond Suite: TDS, SO ₄ , Suite A, Suite B, Suite C, Suite D F = Ground Water Suite: Suite A, Suite B, SO ₄ W = Depth to water measurement to the nearest 0.01 foot.	

Table 3: Existing Concentrations in Ground Water for the Cooper Canyon Formation¹

Analyte ³	Maximum Detected Concentrations ² in Groundwater Samples Collected from Monitor Wells, Chinle (Cooper Canyon) Formation
Uranium	0.062
Chloride	3750
Fluoride	11
Iron	1.8
Lead	0.051
Manganese	1.7
Nitrate	64
Selenium	0.21
Sulfate	3650
TDS	11600
pH	5.5 - 11.9

Explanation to Abbreviations and Symbols for Table 3

- 1 = In the event that ground water monitoring indicates both an exceedance of a ground water quality standard identified in Section 20.6.2.3103 NMAC and an existing condition concentration as identified above the permittee shall enact the contingency plan specified in Condition 20.
- 2 = Existing Conditions are based site-specific groundwater sample analyses collected through April 2011.
- 3 = Concentration reported in milligrams per liter, with the exception of pH.

**NEW MEXICO ENVIRONMENT DEPARTMENT
GROUND WATER QUALITY BUREAU
MONITORING WELL CONSTRUCTION AND ABANDONMENT GUIDELINES**

Purpose: These guidelines identify minimum construction and abandonment details for installation of water table monitoring wells under ground water Discharge Permits issued by the NMED's Ground Water Quality Bureau (GWQB) and Abatement Plans approved by the GWQB. Proposed locations of monitoring wells required under Discharge Permits and Abatement Plans and requests to use alternate installation and/or construction methods for water table monitoring wells or other types of monitoring wells (e.g., deep monitoring wells for delineation of vertical extent of contaminants) must be submitted to the GWQB for approval prior to drilling and construction.

General Drilling Specifications:

1. All well drilling activities must be performed by an individual with a current and valid well driller license issued by the State of New Mexico in accordance with 19.27.4 NMAC. Use of drillers with environmental well drilling experience and expertise is highly recommended.
2. Drilling methods that allow for accurate determinations of water table locations must be employed. All drill bits, drill rods, and down-hole tools must be thoroughly cleaned immediately prior to the start of drilling. The borehole diameter must be drilled a minimum of 4 inches larger than the casing diameter to allow for the emplacement of sand and sealant.
3. After completion, the well should be allowed to stabilize for a minimum of 12 hours before development is initiated.
4. The well must be developed so that formation water flows freely through the screen and is not turbid, and all sediment and drilling disturbances are removed from the well.

Well Specifications (see attached monitoring well schematic):

5. Schedule 40 (or heavier) polyvinyl chloride (PVC) pipe, stainless steel pipe, carbon steel pipe, or pipe of an alternate appropriate material that has been approved for use by NMED must be used as casing. The casing must have an inside diameter not less than 2 inches. The casing material selected for use must be compatible with the anticipated chemistry of the ground water and appropriate for the contaminants of interest at the facility. The casing material and thickness selected for use must have sufficient collapse strength to withstand the pressure exerted by grouts used as annular seals and thermal properties sufficient to withstand the heat generated by the hydration of cement-based grouts. Casing sections may be joined using welded, threaded, or mechanically locking joints; the method selected must provide sufficient joint strength for the specific well installation. The casing must extend from the top of the screen to at least one foot above ground surface. The top of the casing must be fitted with a removable cap, and the exposed casing must be protected by a locking steel well shroud. The shroud must be large enough in diameter to allow easy access for removal of the cap. Alternatively, monitoring wells may be completed below grade. In this case, the casing must extend from the top of the screen to 6 to 12 inches below the ground surface; the monitoring wells must be sealed with locking, expandable well plugs; a flush-mount, watertight well vault that is rated to withstand traffic loads must be emplaced around the wellhead; and the cover must be secured with at least one bolt. The vault cover must indicate that the wellhead of a monitoring well is contained within the vault.
6. A 20-foot section (maximum) of continuous-slot, machine slotted, or other manufactured PVC or stainless steel well screen or well screen of an alternate appropriate material that has been approved for use by NMED must be installed across the water table. Screens created by cutting slots into solid casing with saws or other tools must not be used. The screen material selected for use must be compatible with the anticipated chemistry of the ground water and appropriate for the contaminants of interest at the facility. Screen sections may be joined using welded, threaded, or mechanically

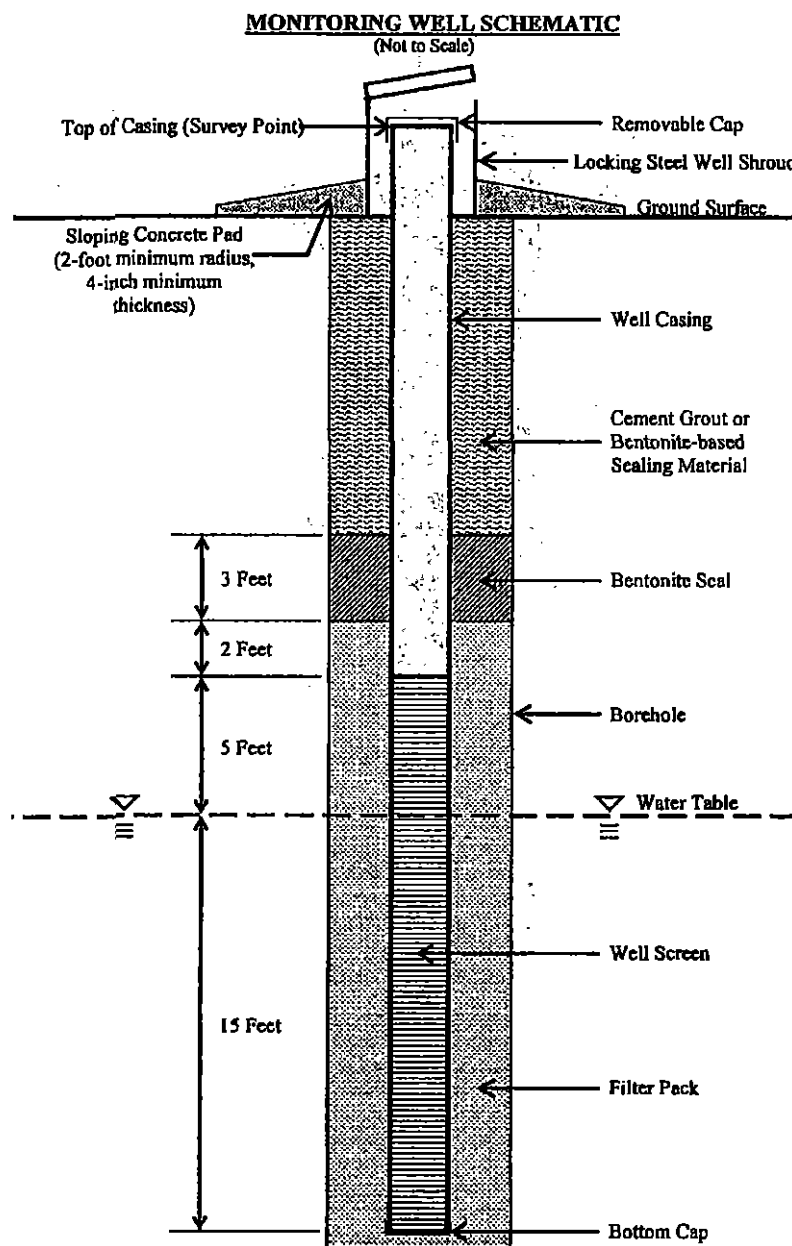
locking joints; the method selected must provide sufficient joint strength for the specific well installation and must not introduce constituents that may reasonably be considered contaminants of interest at the facility. A cap must be attached to the bottom of the well screen; sumps (i.e., casing attached to the bottom of a well screen) should not be installed. The bottom of the screen must be installed no more than 15 feet below the water table; the top of the well screen must be positioned not less than 5 feet above the water table. The well screen slots must be appropriately sized for the formation materials and should be selected to retain 90 percent of the filter pack. A slot size of 0.010 inches is generally adequate for most installations.

7. Casing and well screen must be centered in the borehole by placing centralizers near the top and bottom of the well screen.
8. A filter pack must be installed around the screen by filling the annular space from the bottom of the screen to 2 feet above the top of the screen with clean silica sand. The filter pack must be properly sized to prevent fine particles in the formation from entering the well; clean medium to coarse silica sand is generally adequate as filter pack material for 0.010-inch slotted well screen. For wells deeper than 30 feet, the sand must be emplaced by a tremmie pipe. The well should be surged or bailed to settle the filter pack and additional sand added, if necessary, before the bentonite seal is emplaced.
9. A bentonite seal must be constructed immediately above the filter pack by emplacing bentonite chips or pellets (3/8-inch in size or smaller) in a manner that prevents bridging of the chips/pellets in the annular space. The bentonite seal must be 3 feet in thickness and hydrated with clean water. Adequate time should be allowed for expansion of the bentonite seal before installation of the annular space seal.
10. The annular space above the bentonite seal must be sealed with cement grout or a bentonite-based sealing material acceptable to the State Engineer pursuant to 19.27.4 NMAC. A tremmie pipe must be used when placing sealing materials at depths greater than 20 feet below the ground surface. Annular space seals must extend from the top of the bentonite seal to the ground surface (for wells completed above grade) or to a level 3 to 6 inches below the top of casing (for wells completed below grade).
11. For monitoring wells finished above grade, a concrete pad (2-foot minimum radius, 4-inch minimum thickness) must be poured around the shroud and wellhead. The concrete and surrounding soil must be sloped to direct rainfall and runoff away from the wellhead. The installation of steel posts around the well shroud and wellhead is recommended for monitoring wells finished above grade to protect the wellhead from damage by vehicles or equipment. For monitoring wells finished below grade, a concrete pad (2-foot minimum radius, 4-inch minimum thickness) must be poured around the well vault and wellhead. The concrete and surrounding soil must be sloped to direct rainfall and runoff away from the well vault.

Abandonment:

12. Approval for abandonment of monitoring wells used for ground water monitoring in accordance with Discharge Permit and Abatement Plan requirements must be obtained from NMED prior to abandonment.
13. Well abandonment must be accomplished by removing the well casing and placing neat cement grout, bentonite-based plugging material, or other sealing material approved by the State Engineer for wells that encounter water pursuant to 19.27.4 NMAC from the bottom of the borehole to the ground surface using a tremmie pipe. If the casing cannot be removed, neat cement grout, bentonite-based plugging material, or other sealing material approved by the State Engineer must be placed in the well using a tremmie pipe from the bottom of the well to the ground surface.
14. After abandonment, written notification describing the well abandonment must be submitted to the NMED. Written notification of well abandonment must consist of a copy of the well plugging record submitted to the State Engineer in accordance with 19.27.4 NMAC, or alternate documentation containing the information to be provided in a well plugging record required by the State Engineer as specified in 19.27.4 NMAC.

Deviation from Monitoring Well Construction and Abandonment Requirements: Requests to construct water table monitoring wells or other types of monitoring wells for ground water monitoring under ground water Discharge Permits or Abatement Plans in a manner that deviates from the specified requirements must be submitted in writing to the GWQB. Each request must state the rationale for the proposed deviation from these requirements and provide detailed evidence supporting the request. The GWQB will approve or deny requests to deviate from these requirements in writing.



ATTACHMENT A

Resume

HALEY ALDRICH



NADIA GLUCKSBERG, PG, LEP

Senior Associate | Lead Hydrogeologist

EDUCATION

M.S., Environmental Science and Engineering, Oregon Graduate Institute, 1992

B.A., Geological Sciences, Cornell University, 1989

PROFESSIONAL REGISTRATION

1995/ME: Certified Geologist (Reg. No. 393)

2001/CT: Licensed Environmental Professional (Reg. No. 361)

2010/GA: Registered Geologists (Reg. No. 2034)

2012/WI: Professional Geologist (Reg. No. 1300)

2015/IL: Professional Geologist (Reg. No. 196.001424)

PROFESSIONAL SOCIETIES

American Nuclear Society: Decommissioning and Environmental Sciences

Division, Chair 2011 through 2014. Vice Chairman, New England Section

Environmental Professionals of Connecticut

Connecticut RCRA Owners' Group, Executive Director

Engineers Without Borders, Portland, ME Chapter President and Prof. Mentor

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste Operations Training

8-Hour OSHA Supervisor

RadWorker Training

Adult CPR/First Aide

Nadia Glucksberg is a Lead Hydrogeologist with experience managing a wide range of hydrogeological and environmental investigations under the EPA (both RCRA and CERCLA), NRC, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), and other state agencies. As a Technical Lead for environmental investigations, her responsibilities include identifying areas of concern, characterizing both the geology and hydrogeology of complex systems, investigating the extent of chemical and radiological constituents released to the environment, and developing strategies to meet site closure. Several of the larger sites include community outreach programs. Her specialized skill areas include hydrogeologic evaluation, RCRA-, CERCLA- and TSCA-regulations, conceptual site models, nuclear and chemical investigations, contaminant transport, public outreach and stakeholder communication.

RELEVANT PROJECT EXPERIENCE

Program Manager: URENCO USA, Uranium Enrichment Facility, New Mexico. Interim Environmental Compliance Officer for the NRC licensed facility. Responsible to ensure that environmental procedures and environmental monitoring programs meet federal and state requirements. Program include compliance with the NMED Discharge Permit 1481 and environmental compliance. Her team also developed programs to coordinate data collection programs and support the NEPA and EIS revisions associated with plant expansion.

Technical Expert: Shpack Superfund Site: Confidential Client. Represented one of the 27 PRPs to ensure that the cost allocation was defensible. This site was contaminated with PCBs, metals, solvents, dioxins, thorium and radium. AS a technical expert, accomplishments included oversight of investigation and remediation techniques to separate out the incremental costs for working with the comingled radiological materials. The client saved over \$1M.

RCRA Specialist: Expert Testimony, Miami, Florida. Provided expert testimony for a maritime case to explain the criteria required to define a hazardous substance and classify RCRA regulated wastes. Testimony also included explaining the analytical methods and approaches used to classify waste materials.

Program Manager/Technical Lead: Graves Mountain Site, Lincolnton GA. Registered Professional Geologist for the Mine Reclamation Efforts of a Former Kyanite Mine. Responsibilities include public outreach, regulatory support and ongoing technical consulting for the installation of constructed wetlands to passively treat the acid mine runoff including storm water controls. Recent work included the rehabilitation of a failing slope (approx. \$4M) including obtaining USACE approvals and county and GA EPD approval for construction within wetlands. Additional responsibilities included the oversight of ecological studies to ensure protection of sensitive receptors.

Lead Hydrogeologist: LACBWR, Dairyland Power Cooperative, LaCrosse, WI Completed the Historical Site Assessment under Multi-Agency Radiation Site Survey and Investigation Manual (MARSSIM) as well as complete an investigation to characterize groundwater. Additional tasks included support to develop and review the License Termination Plan and to revise the Environmental Report and other License Based documents.

Principal Hydrogeologist/Technical Lead: Groundwater Review for Combined License (COL) Application, South Texas Project Nuclear Operating Company, Wadsworth, TX. Responsible/team lead of the review of Sections 2.4.12, Groundwater, and 2.4.13, Accidental Release of Radionuclide to Groundwater and Surface Waters for the Final Safety Analysis Report (FSAR) for Units 3 and 4, submitted as part of the COL Application. Review and revisions to all supporting calculation packages including the groundwater model, hydraulic conductivity, hydraulic gradients and subsequent revisions to the Final Safety Analysis Report.

Principal Hydrogeologist: Nuclear Power Plant, Early Site Permit Application (ESPA) Salem, NJ. Principal hydrogeologist for groundwater evaluation for the early site application for both the site safety analysis report (SAR) as well as the environmental report for a new nuclear plant. Managed surface water (hydrology) for the environmental report, developing the field effort and presenting groundwater results to the Nuclear Regulatory Commission (NRC). Work also included an evaluation of ecological receptors including migratory bird protection.

Principal Hydrogeologist/Project Manager: Connecticut Yankee Atomic Power Company, Haddam Neck Plant Closure D&D RCRA Corrective Action Program, East Hampton, CT. Responsible for completing the RCRA Voluntary Corrective Action at the site and to reach closure on a 5-year schedule. The site included 24 Areas of Concern (AOCs) with over 300 potential contaminant sources (PCSs) and verified impacts from PCBs, fuels oils and gasoline (i.e. BTEX) with much of the chemical and radiological contaminant sources being release from buried piping. The scope of work included managing multiple-stage field programs and a Baseline Ecological Risk Assessment completed in coordination with the ongoing D&D of the plant followed by Interim Corrective Measures and groundwater remediation for radionuclides. Additional work included oversight of combined chemical and radiological investigation, and permitting and regulatory support.

PUBLICATIONS

Characterization and Remediation of PCBs in Paints and Coatings on Porous Surfaces; Using the EPA Guidance for Vessels to Support a Risk-Based Statistical Sampling Program. Nadia Glucksberg and Miles VanNoordennen, (H&A) Accepted for American Nuclear Society Annual Meeting. To be presented June 2016.

Consistent Messages, Transparent Communication, and Protected Data; Using GIS to Support CSMs for all stages of Nuclear Plants Nadia Glucksberg, CG, LEP, Brian Peters, Will Grimes. September 2009.

PCB Soil Remediation Following Demolition of the Reactor Containment Building: Lesson's Learned from CYAPCO's Haddam Neck Plant. Nadia Glucksberg, CG, LEP, Jay Peters, and Miles van Noordennen (Haley & Aldrich) and Gerard van Noordennen (CYAPCO). June 2008.

Integrating RCRA Closure with D&D; Case Study of Chemical Investigations and Remediations Coordinated with D&D Activities at a Nuclear Power Plant, Nadia Glucksberg, Nelson Breton, and Brian Couture. July 2005.

The Natural Occurrence of Arsenic in Groundwater at the Combustion Engineering Site in Windsor, Connecticut. Nadia Glucksberg and Nelson Breton, Hank Andolsek, and Elaine Hammick. June 2003.

**HALEY
ALDRICH**

RECEIVED 010

www.haleyaldrich.com

2017 FEB -6 AM 10:17

**EXPERT REPORT ON MIGRATORY BIRD PROTECTION
C.K. DISPOSAL PERMIT APPLICATION
EUNICE NEW MEXICO**

by Haley & Aldrich, Inc.
Tucson, Arizona

for Rodey Law
Albuquerque, New Mexico

File No. 37262-231
January 2017

EXHIBIT

V-2

Table of Contents

	Page
1. INTRODUCTION	1
2. BACKGROUND	1
3. OPINIONS	1
References	1
Appendix A - Resume	

1. INTRODUCTION

Parkhill, Smith and Cooper has prepared a permit application titled: Lea County, New Mexico, C.K. Disposal E&P Landfill and Processing Facility to construct waste recycling facilities in Eunice, New Mexico. The C.K. Disposal (CKD) facility has been proposed to be located directly across the State Highway from URENCO USA and presents operational risks to the facility and to the public.

This report and the opinions expressed herein have been prepared by Ms. Nadia Glucksberg, Senior Associate of Haley & Aldrich. Her resume is contained in Appendix A. The scope of these services are as follows:

1. Review the permit application to evaluate the regulatory requirements to protect migratory birds:
 - a. Are the mitigation methods realistic and protective of migratory birds?
 - b. Does this approach comply with state and federal regulatory requirements?
 - c. Can they be reasonably executed and be protective of wildlife?

2. BACKGROUND

Waterfowl and other migratory birds must be protected under the Migratory Bird Treaty Act (MBTA) (Title 16 of the United States Code 703 -712; 40 Stat. 755, as amended), which prohibits the take¹ of any migratory bird without authorization from the U.S. Fish and Wildlife Service (USFWS). The MBTA states that "unless and except as permitted by regulations. . . It shall be unlawful at any time, by any means or in any manner, to. . . take, capture, kill, possess. . . any migratory bird, any part, nest, or eggs of any such bird. . .".

C.K. Disposal LLC is proposing to construct twelve large surface water impoundments that will likely attract migratory waterfowl. Section 1.9 of the application states that "*...the Engineering Design provides a process designed for produced waters and other liquids that will remove the oils present in these materials prior to discharge through the evaporation ponds.*" Oil-water separators are designed to remove free-phase oils and not the dissolved oil fraction within the waste or process waters. The evaporation ponds have the purpose of treating process water that will contain oil-related compounds which will concentrate as the water evaporates and may cause injury to or kill waterfowl and/or wildlife.

The site is located in the southeastern region of New Mexico, which is an important component of the "Central Flyway" along the migration routes for waterfowl. The twelve significantly large evaporation ponds (~22 acres in total) will attract migrating waterfowl that have been observed in southeastern New Mexico including ducks, geese, herons, pelicans and swans.

3. OPINIONS

Opinion 1: C.K. Disposal LLC (CKD) is proposing to construct twelve large evaporation ponds (1.84 acres/pond or ~22 acres of open water) for the purposes of treating process water. Although the ponds

¹ Under the Endangered Species Act of 1973 definition, take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

will be constructed in sequence, with one open at a time, as currently designed, these ponds may pose a significant physical or chemical risk to migratory waterfowl.

My opinion is based on the following:

1. The southeastern region of New Mexico is an important component of the "Central Flyway" which is a widely-recognized passageway for migrating birds. Any open water will undoubtedly attract waterfowl that have been observed in southeastern New Mexico including ducks, geese, herons, pelicans, cranes and swans. Several of these species have been observed in the URENCO USA storm water pond, when the pond holds standing water.
2. Given the nature of the materials to be processed, any birds landing in the evaporation ponds at the disposal facility will likely be exposed to environmental contaminants that could affect individuals by reducing reproduction or survival. The uptake of persistent contaminants (e.g. metals, polycyclic aromatic hydrocarbons) from ponded environments is of particular concern. Contaminants in soils may also erode and become concentrated within ponds. Metallic and organic compounds accumulate in aquatic sediments and may accumulate or biomagnify in the tissues of aquatic organisms.
3. Evidence presented by the United States Fish and Wildlife Service suggests that migratory birds may be uniquely sensitive to hydrogen sulfide (Lusk and Kraft, 2010). This study shows that areas with higher hydrogen sulfide concentrations result in a lower average number of bird species, suggesting that the acute exposure to the volatile toxicant negatively impacts the population. A hazard evaluation of the probable effects of hydrogen sulfide also suggests concentrations greater than 5 ppm would "pose a risk to wildlife" and that concentrations less than 1 ppm would "appear not to pose a risk to birds when they are active or flying". However, studies have not been conducted on these species when they land or reside in ponds and are continuously exposed to hydrogen sulfide at 1 ppm for longer periods of time.
4. In Section 1.9 (p. 18) of the CKD Permit Application, they state:
"C.K. Disposal LLC herein requests an exception to 19.15.36.13.1 NMAC. The Migratory Bird Protection Plan presented as describes an alternate methodology to the screening requirement of the storage ponds. This Plan describes visual inspections and migratory bird retrieval and clean up procedures should bird(s) require decontamination."
Their permit application, however, does not provide a Migratory Bird Protection Plan, nor has a field/biological survey been conducted to inventory species within the area that may be a concern. They later state that *"The C.K. Facility will inspect the evaporation ponds daily for birds and if a recurring problem, the C.K. Facility will either submit a migratory bird plan or place screening over the ponds."*
5. There is a reasonable likelihood for a migratory bird "take" due to harm to the migratory species from contact with contaminants present in the evaporation ponds, and more so if there is a process "upset" (e.g. an oil spill, elevated H₂S). Implementing a post incident inspection following a take would not meet the intent of the MBTA.

References

1. Parkhill, Smith & Cooper (2015). Lea County, New Mexico C.K. Disposal E & P Landfill and Processing Facility Permit No. TBD. November 2015.
2. Lusk, Joel D, and Kraft, Erik A. "Hydrogen Sulfide Monitoring near Oil and Gas Production Facilities in Southeastern New Mexico and Potential Effects of Hydrogen Sulfide to Migratory Birds and Other Wildlife". United States Fish and Wildlife Service, December, 2010.
3. United States Code Annotated. Title 16. Conservation. Chapter 7. Protection of Migratory Game and Insectivorous Birds. Subchapter II. Migratory Bird Treaty. USC 703 – 712.

\\por\common\PROJECTS\37262 - URENCO USA\231 - Consulting & Expert Testimony CKD Permit Application\Deliverables\Expert Reports\Final\2017_0118_Migratory Bird Protection Expert Report_FINAL.docx

APPENDIX A

Resume

HALEY ALDRICH



NADIA GLUCKSBERG, PG, LEP

Senior Associate | Lead Hydrogeologist

EDUCATION

M.S., Environmental Science and Engineering, Oregon Graduate Institute, 1992

B.A., Geological Sciences, Cornell University, 1989

PROFESSIONAL REGISTRATION

1995/ME: Certified Geologist (Reg. No. 393)

2001/CT: Licensed Environmental Professional (Reg. No. 361)

2010/GA: Registered Geologists (Reg. No. 2034)

2012/WI: Professional Geologist (Reg. No. 1300)

2015/IL: Professional Geologist (Reg. No. 196.001424)

PROFESSIONAL SOCIETIES

American Nuclear Society: Decommissioning and Environmental Sciences

Division, Chair 2011 through 2014. Vice Chairman, New England Section

Environmental Professionals of Connecticut

Connecticut RCRA Owners' Group, Executive Director

Engineers Without Borders, Portland, ME Chapter President and Prof. Mentor

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste Operations Training

8-Hour OSHA Supervisor

RadWorker Training

Adult CPR/First Aide

Nadia Glucksberg is a Lead Hydrogeologist with experience managing a wide range of hydrogeological and environmental investigations under the EPA (both RCRA and CERCLA), NRC, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), and other state agencies. As a Technical Lead for environmental investigations, her responsibilities include identifying areas of concern, characterizing both the geology and hydrogeology of complex systems, investigating the extent of chemical and radiological constituents released to the environment, and developing strategies to meet site closure. Several of the larger sites include community outreach programs. Her specialized skill areas include hydrogeologic evaluation, RCRA-, CERCLA- and TSCA-regulations, conceptual site models, nuclear and chemical investigations, contaminant transport, public outreach and stakeholder communication.

RELEVANT PROJECT EXPERIENCE

Program Manager: URENCO USA, Uranium Enrichment Facility, New Mexico. Interim Environmental Compliance Officer for the NRC licensed facility. Responsible to ensure that environmental procedures and environmental monitoring programs meet federal and state requirements. Program include compliance with the NMED Discharge Permit 1481 and environmental compliance. Her team also developed programs to coordinate data collection programs and support the NEPA and EIS revisions associated with plant expansion.

Technical Expert: Shpack Superfund Site: Confidential Client. Represented one of the 27 PRPs to ensure that the cost allocation was defensible. This site was contaminated with PCBs, metals, solvents, dioxins, thorium and radium. As a technical expert, accomplishments included oversight of investigation and remediation techniques to separate out the incremental costs for working with the comingled radiological materials. The client saved over \$1M.

RCRA Specialist: Expert Testimony, Miami, Florida. Provided expert testimony for a maritime case to explain the criteria required to define a hazardous substance and classify RCRA regulated wastes. Testimony also included explaining the analytical methods and approaches used to classify waste materials.

Program Manager/Technical Lead: Graves Mountain Site, Lincolnton GA. Registered Professional Geologist for the Mine Reclamation Efforts of a Former Kyanite Mine. Responsibilities include public outreach, regulatory support and ongoing technical consulting for the installation of constructed wetlands to passively treat the acid mine runoff including storm water controls. Recent work included the rehabilitation of a failing slope (approx. \$4M) including obtaining USACE approvals and county and GA EPD approval for construction within wetlands. Additional responsibilities included the oversight of ecological studies to ensure protection of sensitive receptors.

Lead Hydrogeologist: LACBWR, Dairyland Power Cooperative, LaCrosse, WI Completed the Historical Site Assessment under Multi-Agency Radiation Site Survey and Investigation Manual (MARSSIM) as well as complete an investigation to characterize groundwater. Additional tasks included support to develop and review the License Termination Plan and to revised the Environmental Report and other License Based documents.

Principal Hydrogeologist/Technical Lead: Groundwater Review for Combined License (COL) Application, South Texas Project Nuclear Operating Company, Wadsworth, TX. Responsible/team lead of the review of Sections 2.4.12, Groundwater, and 2.4.13, Accidental Release of Radionuclide to Groundwater and Surface Waters for the Final Safety Analysis Report (FSAR) for Units 3 and 4, submitted as part of the COL Application. Review and revisions to all supporting calculation packages including the groundwater model, hydraulic conductivity, hydraulic gradients and subsequent revisions to the Final Safety Analysis Report.

Principal Hydrogeologist: Nuclear Power Plant, Early Site Permit Application (ESPA) Salem, NJ. Principal hydrogeologist for groundwater evaluation for the early site application for both the site safety analysis report (SAR) as well as the environmental report for a new nuclear plant. Managed surface water (hydrology) for the environmental report, developing the field effort and presenting groundwater results to the Nuclear Regulatory Commission (NRC). Work also included an evaluation of ecological receptors including migratory bird protection.

Principal Hydrogeologist/Project Manager: Connecticut Yankee Atomic Power Company, Haddam Neck Plant Closure D&D RCRA Corrective Action Program, East Hampton, CT. Responsible for completing the RCRA Voluntary Corrective Action at the site and to reach closure on a 5-year schedule. The site included 24 Areas of Concern (AOCs) with over 300 potential contaminant sources (PCSs) and verified impacts from PCBs, fuels oils and gasoline (i.e. BTEX) with much of the chemical and radiological contaminant sources being release from buried piping. The scope of work included managing multiple-stage field programs and a Baseline Ecological Risk Assessment completed in coordination with the ongoing D&D of the plant followed by Interim Corrective Measures and groundwater remediation for radionuclides. Additional work included oversight of combined chemical and radiological investigation, and permitting and regulatory support.

PUBLICATIONS

Characterization and Remediation of PCBs in Paints and Coatings on Porous Surfaces; Using the EPA Guidance for Vessels to Support a Risk-Based Statistical Sampling Program. Nadia Glucksberg and Miles VanNoordennen, (H&A) Accepted for American Nuclear Society Annual Meeting. To be presented June 2016.

Consistent Messages, Transparent Communication, and Protected Data; Using GIS to Support CSMs for all stages of Nuclear Plants Nadia Glucksberg, CG, LEP, Brian Peters, Will Grimes. September 2009.

PCB Soil Remediation Following Demolition of the Reactor Containment Building: Lesson's Learned from CYAPCO's Haddam Neck Plant. Nadia Glucksberg, CG, LEP, Jay Peters, and Miles van Noordennen (Haley & Aldrich) and Gerard van Noordennen (CYAPCO). June 2008.

Integrating RCRA Closure with D&D; Case Study of Chemical Investigations and Remediations Coordinated with D&D Activities at a Nuclear Power Plant, Nadia Glucksberg, Nelson Breton, and Brian Couture. July 2005.

The Natural Occurrence of Arsenic in Groundwater at the Combustion Engineering Site in Windsor, Connecticut. Nadia Glucksberg and Nelson Breton, Hank Andolsek, and Elaine Hammick. June 2003.

RONALD R. BOHANNAN, P.E.

AND

TIERRA WEST, LLC

Ronald R. Bohannon, PE along with Donna Bohannon started Tierra West, LLC in 1986. Tierra West, LLC is a land use planning, civil engineering, and development management company located in Albuquerque, New Mexico and has provided services throughout Albuquerque and New Mexico. Tierra West, LLC's projects have include a variety of developments from small in-fill developments to the planning and design of large new community subdivisions, planned unit development projects with regional impacts, as well as commercial and industrial projects.

Tierra West, LLC offers a variety of services including civil engineering, project design, computer aided drafting, site selection, site planning, traffic control, utility design, grading & paving, zoning, regulatory processing, drainage master planning, development & implementation of comprehensive and general plans, density impact studies, obtaining governmental approvals, bank inspections, project management, bid/proposal review, contractor selection, obtaining building permits and work orders, construction/contract management & administration and construction inspection.

Ronald R. Bohannon is currently registered in New Mexico, Texas, Arizona, Colorado, Nevada, Illinois, Tennessee, and Oklahoma. Ronald R. Bohannon received his Bachelor of Science from the University of New Mexico (UNM) in 1977 and was first registered in the State of New Mexico in 1981.

Ronald R. Bohannon is an active member of NAIOP and has served as Chairman in 1991 and sat on the board for approximately six years, he currently sits on the National NAIOP Board representing New Mexico. He is also a member of ASCE, and a member of NMSPE. In 2013 Ron was appointed to the Professional Engineers & Surveyors License Board for a term of five years. He has been on numerous task forces and development boards related to development and engineering.

The following are cases where Mr. Bohannon was qualified or testified as an Expert Witness with the case numbers.

Tierra West Job # and Name		Lawyer / Client	Case #	Presiding Judge
JN: 880003	City of Albuquerque (Defendant) vs Hensley (Plaintiff)	Susan McKee	CV-85-1325	Philip R. Ashby
JN: 880013	Sutin, Thayer, Brown / Expert Testimony	Jay Hertz		
JN: 900040	Expert Witness / County of Bernalillo (Petitioners) vs Martin Brothers Partnership	Joe Fritz	CV-88-05767	
JN: 900047	Expert Witness	Jim Fitzgerald		
JN: 900051	Expert Testimony United New Mexico vs. Atonie Predock	Jay Hertz	CV-96-048-SIE	Neil P. Mertz
JN: 910048	Land Use Plan / Andre Baca & Alfred	Lands of AJ	SD-90-031-CV.	Byron Caton

	Baca vs Sutin, Thayer, Browne & Mary McDonald	Baca		
JN: 920012	Expert Witness Advansystems vs Holmes	James Chavez	CV-89-10102	
JN: 940030	La Cueva Tierra – Alex & Rachel Hendren vs Helmick Spradlin Development	Gerald Dixon	CV-2000-02727	
JN: 960013	Expert Witness (Ben Ruiz) City of ABQ vs Ben Ruiz – Coors Plaza SC	Ben Ruiz	CV-9503201	
JN: 980053	Expert Witness Wyoming Terrace MHP	James Chavez		
JN: 200092	Expert Witness / Buena Vista Land Development Corporation vs Southwest Surveying	Dan Lewis	CV-98-09946	
JN: 200098	Sun Village Apartments Evaluation (Expert Witness on the condemnation)	Jack Love		
JN: 21068	Expert Witness – Land Evaluation / City of ABQ (Petitioner) vs Baca Fourth Power, LP (Jackson-Williams Tract, Marchman Tract)	Scott Oliver	CV-98-0003210	Honorable Wendy York
JN: 21090	Expert Witness / Engineering Grade Case / Onesimo Vigil & Naomi Martinez vs Fuller Homes	Scott Oliver	Case #10464-00	
JN: 24022	Expert Witness / Mountain Run Partners, LTD vs Furr's 2, LLC and Smith's Food and Drug Centers, Inc.	Catherine Davis	CV-2002-06378	Honorable Wendy York
JN: 25016	Expert Witness / Marion Law Suit – Fraternal Order of Police	Joseph Wernitz	CV-202-2007-05818	
JN: 28058	Expert Witness / Eagle Ranch Storm Drain Fountain Hills Plaza, LLC ("Fountain Hills")	Joseph Wernitz	C150277	
JN: 29057	Expert Witness Depippo and Howe – Santa Fe Legal	Ellen Casey	D-101-CV-200903053	
JN: 2010003	Expert Witness / Lydick Engineering Harley, et al. vs Lydick Engineers & Surveyors, Inc.	Gerald G. Dixon	D-0905-CV-0200900702	
JN: 2010025	Expert Witness / Drainage Case Clovis, NM	Albert Pitts	D-0905 CV-200900702	
JN: 2010034	Calibers Legal Testimony	Campbell & Wells, P.A.		
JN: 2010045	Bokay Construction v. Atreus NM Expert Witness	Bokay Construction	D-202 CV-200813325	
JN: 2010063	Carriage House Subdivision	Keleher & McLeod	D-0132 CV-2006-00102	
JN: 2011052	General Mills	Keleher & McLeod	I:11-CV-00185- ACT-WDS	
JN: 2011095	Sapir Trust vs. Home Depot Suit	Steve Roland		
JN: 2012028	Valle Del Sol	Felicia Winegartner	CV-200505603	
JN: 2012051	Expert Witness Toth v Otero	Jack Campbell	CV-2012-285-1	