

District I
1625 N French Dr, Hobbs, NM 88240
District II
1301 W Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S St Francis Dr, Santa Fe, NM 87505

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

Form C-144
June 16, 2008

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office
For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

Pit, Closed-Loop System, Below-Grade Tank, or
Proposed Alternative Method Permit or Closure Plan Application

Type of action: ☒ Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method
☐ Closure of a pit, closed-loop system, below-grade tank, or proposed alternative method

Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, below-grade tank or alternative request

Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

Operator: <u>Dugan Production Corp.</u>	OGRID #: <u>006515</u>	RCVD AUG 8 '08
Address: <u>709 East Murray Drive, Farmington, New Mexico 87401</u>		OIL CONS. DIV.
Facility or well name: <u>Emerald City #1</u>		DIST. 3
API Number: <u>30-045-26405</u>	OCD Permit Number: _____	
U/L or Qtr/Qtr <u>F</u> Section <u>15</u> Township <u>31N</u> Range <u>13W</u> County: <u>San Juan</u>		
Center of Proposed Design: Latitude <u>36.90236</u> North Longitude <u>108.19331</u> West NAD: <input checked="" type="checkbox"/> 1927 <input type="checkbox"/> 1983		
Surface Owner: <input type="checkbox"/> Federal <input type="checkbox"/> State <input checked="" type="checkbox"/> Private <input type="checkbox"/> Tribal Trust or Indian Allotment		

<input type="checkbox"/> Pit: Subsection F or G of 19.15.17.11 NMAC Temporary: <input type="checkbox"/> Drilling <input type="checkbox"/> Workover <input type="checkbox"/> Permanent <input type="checkbox"/> Emergency <input type="checkbox"/> Cavitation <input type="checkbox"/> Lined <input type="checkbox"/> Unlined Liner type: Thickness _____ mil <input type="checkbox"/> LLDPE <input type="checkbox"/> HDPE <input type="checkbox"/> PVC <input type="checkbox"/> Other _____ <input type="checkbox"/> String-Reinforced Seams: <input type="checkbox"/> Welded <input type="checkbox"/> Factory <input type="checkbox"/> Other _____ Volume: _____ bbl Dimensions: L _____ x W _____ x D _____	<input type="checkbox"/> Closed-loop System: Subsection H of 19.15.17.11 NMAC <input type="checkbox"/> Drying Pad <input type="checkbox"/> Tanks <input type="checkbox"/> Haul-off Bins <input type="checkbox"/> Other _____ <input type="checkbox"/> Lined <input type="checkbox"/> Unlined Liner type: Thickness _____ mil <input type="checkbox"/> LLDPE <input type="checkbox"/> HDPE <input type="checkbox"/> PVC <input type="checkbox"/> Other _____ Seams: <input type="checkbox"/> Welded <input type="checkbox"/> Factory <input type="checkbox"/> Other _____ Volume: _____ bbl _____ yd ³ Dimensions: Length _____ x Width _____
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<input checked="" type="checkbox"/> Below-grade tank: Subsection I of 19.15.17.11 NMAC Volume: <u>45</u> bbl Type of fluid: <u>Produced H2O</u> Tank Construction material: <u>Steel</u> <input type="checkbox"/> Secondary containment with leak detection <input type="checkbox"/> Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off <input type="checkbox"/> Visible sidewalls and liner <input type="checkbox"/> Visible sidewalls only <i>See Closure Report Plan</i> <input checked="" type="checkbox"/> Other <u>No visible sidewalls, Leak detection</u> Liner type: Thickness _____ mil <input type="checkbox"/> HDPE <input type="checkbox"/> PVC <input type="checkbox"/> Other _____	Fencing: Subsection D of 19.15.17.11 NMAC <input checked="" type="checkbox"/> Chain link, six feet in height, two strands of barbed wire at top <input type="checkbox"/> Four foot height, four strands of barbed wire evenly spaced between one and four feet Other Fencing _____ Netting: Subsection E of 19.15.17.11 NMAC <input checked="" type="checkbox"/> Screen <input type="checkbox"/> Netting <input type="checkbox"/> Other _____ <input checked="" type="checkbox"/> Monthly inspections Signs: Subsection C of 19.15.17.11 NMAC <input checked="" type="checkbox"/> 12"x24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers <input type="checkbox"/> Signed in compliance with 19.15.3.103 NMAC
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<input type="checkbox"/> Alternative Method: Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.	Administrative Approvals and Exceptions: Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance. Please check a box if one or more of the following is requested, if not leave blank: <input type="checkbox"/> Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau office for consideration of approval. <input type="checkbox"/> Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.
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Siting Criteria (regarding permitting): 19.15.17.10 NMAC

Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to drying pads or above-grade tanks associated with a closed-loop system.

Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank.

- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells

☐ Yes ☒ No

Within 300 feet of a continuously flowing watercourse, or 200 feet of any other watercourse, lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).

- Topographic map; Visual inspection (certification) of the proposed site

☐ Yes ☒ No

Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (Applies to temporary, emergency, or cavitation pits and below-grade tanks)

- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image

☐ Yes ☒ No
☐ NA

Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (Applies to permanent pits)

- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image

☐ Yes ☐ No
☒ NA

Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.

- NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site

☐ Yes ☒ No

Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.

- Written confirmation or verification from the municipality; Written approval obtained from the municipality

☐ Yes ☒ No

Within 500 feet of a wetland.

- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site

☐ Yes ☒ No

Within the area overlying a subsurface mine.

- Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division

☐ Yes ☒ No

Within an unstable area.

- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map

☐ Yes ☒ No

Within a 100-year floodplain.

- FEMA map

☐ Yes ☒ No

Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC

Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☒ Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.15 NMAC
☐ Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.15 NMAC
☒ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
☒ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
☒ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
☒ Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

☐ Previously Approved Design (attach copy of design) API Number: 30-045- or Permit Number: _____

Closed-loop Systems Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC

Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Geologic and Hydrogeologic Data (required for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19.15.17.15 NMAC
☐ Siting Criteria Compliance Demonstrations (required for on-site closure) - based upon the appropriate requirements of 19.15.17.10 NMAC
☐ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
☐ Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

NMAC

☐ Previously Approved Design (attach copy of design) API Number: _____

Permanent Pits Permit Application Checklist: Subsection B of 19.15.17.9 NMAC

Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.15 NMAC
- ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☐ Climatological Factors Assessment
- ☐ Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Quality Control/Quality Assurance Construction and Installation Plan
- ☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- ☐ Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Nuisance or Hazardous Odors, including H₂S, Prevention Plan
- ☐ Emergency Response Plan
- ☐ Oil Field Waste Stream Characterization
- ☐ Monitoring and Inspection Plan
- ☐ Erosion Control Plan
- ☐ Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

Proposed Closure: 19.15.17.13 NMAC

Type: ☐ Drilling ☐ Workover ☐ Emergency ☐ Cavitation ☐ Permanent Pit ☒ Below-grade Tank ☐ Closed-loop System ☐ Alternative

Proposed Closure Method: ☒ Waste Excavation and Removal

☐ On-site Closure Method (only for temporary pits and closed-loop systems)

☐ In-place Burial ☐ On-site Trench Burial

☐ Alternative Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)

Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC

Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance.

Ground water is less than 50 feet below the bottom of the buried waste.

☐ Yes ☐ No

☐ NA

- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells

Ground water is between 50 and 100 feet below the bottom of the buried waste

☐ Yes ☐ No

☐ NA

- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells

Ground water is more than 100 feet below the bottom of the buried waste.

☐ Yes ☐ No

☐ NA

- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells

Within 300 feet of a continuously flowing watercourse, or 200 feet of any other watercourse, lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).

☐ Yes ☐ No

- Topographic map; Visual inspection (certification) of the proposed site

Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.

☐ Yes ☐ No

- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image

Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.

☐ Yes ☐ No

- NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site

Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.

☐ Yes ☐ No

- Written confirmation or verification from the municipality; Written approval obtained from the municipality

Within 500 feet of a wetland.

☐ Yes ☐ No

- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site

Within the area overlying a subsurface mine.

☐ Yes ☐ No

- Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division

Within an unstable area.

☐ Yes ☐ No

- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources, USGS; NM Geological Society; Topographic map

Within a 100-year floodplain.

☐ Yes ☐ No

- FEMA map

Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) *Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.*

- ☒ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
- ☒ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
- ☒ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)
- ☒ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- ☒ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
- ☒ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

Waste Removal Closure For Closed-loop Systems That Utilize Haul-off Bins Only: (19.15.17.13.D NMAC) *Instructions: Please identify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings.*

Disposal Facility Name: _____ Disposal Facility Permit Number: _____

On-Site Closure Plan Checklist: (19.15.17.13 NMAC) *Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.*

- ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☐ Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
- ☐ Construction and Design of Burial Trench (if applicable) based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
- ☐ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
- ☐ Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC
- ☐ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved)
- ☐ Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- ☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
- ☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

Operator Application Certification:

I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.

Name (Print): Kurt Fagrelus Title: Vice President, Exploration

Signature: _____ Date: _____

e-mail address: kfagrelus@duganproduction.com Telephone: 505-325-1821 (O), 505-320-8248 (C)

OCD Approval: ☒ Permit Application (including closure plan) ☐ Closure Plan (only)

OCD Representative Signature: B. J. B. B. Approval Date: 8-18-08

Title: Enviro Spec OCD Permit Number: _____

Closure Report (required within 60 days of closure completion): Subsection K of 19.15.17.13 NMAC

☐ Closure Completion Date: _____

Closure Method:

- ☐ Waste Excavation and Removal ☐ On-Site Closure Method ☐ Alternative Closure Method
- ☐ If different from approved plan, please explain.

Closure Report Attachment Checklist: *Instructions: Each of the following items must be attached to the closure report. Please indicate, by a check mark in the box, that the documents are attached.*

- ☐ Proof of Closure Notice
- ☐ Proof of Deed Notice (if applicable)
- ☐ Plot Plan
- ☐ Confirmation Sampling Analytical Results
- ☐ Waste Material Sampling Analytical Results
- ☐ Disposal Facility Name and Permit Number
- ☐ Soil Backfilling and Cover Installation
- ☐ Re-vegetation Application Rates and Seeding Technique
- ☐ Site Reclamation (Photo Documentation)

On-site Closure Location: Latitude _____ Longitude _____ NAD. ☐ 1927 ☐ 1983

Operator Closure Certification:

I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and belief. I also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan.

Name (Print): Kurt Fagrelus Title: Vice President, Exploration

Signature: _____ Date: _____

e-mail address: kfagrelus@duganproduction.com Telephone: 505-325-1821

Emerald City #1 Hydrogeologic Report

The Emerald City #1 is located on Private land on the northwest rim of the San Juan Basin, in San Juan County, New Mexico. The area is characterized as an arid, north trending strip of dry land bordered by NM State Highway 170 and the La Plata River to the east and flat farmland to the west. The proposed location is on the Nacimiento Formation, above the La Plata River valley-fill and alluvium deposits that surround the uplifted strip of dry land. The strip of dry land is bordered on the west by irrigated farmland. The dry land extends east across Highway 170 for approximately ½ mile to the irrigated farmland of the La Plata River valley below.

A records search of the NM Office of the State Engineer –iWATERS database was conducted on a three square mile area centered on the Emerald City #1 location (Exhibit 2). Twenty-seven water wells were located north and south of the proposed below grade tank. The wells were drilled to a depth of between 11 and 325 feet. The depth to ground water was reported from 4 to 180 feet. The wells are located on the west side of the La Plata River valley, an area with numerous irrigation ditches, stock ponds and a few springs. The results of the search are shown on Exhibit 1. The water wells are privately owned and provide water for domestic, livestock and agricultural use.

The main source of water for irrigation and livestock in the region is from water that is taken from the La Plata River and transported in unlined ditches to fields east and west of the proposed tank. Private water wells have been drilled in the valley-fill deposits or existing arroyos. Also, stock tanks and reservoirs for storage have been built on surface shale in the upper ends of arroyos and in low lying areas to impound rainwater and excess irrigation water. The proposed location is not in an arroyo or irrigation ditch, the nearest irrigation ditch is 950 feet east. The proposed below grade tank is located on a narrow strip of dry land (1/2-3/4 miles wide and 4-miles long), west of the La Plata River and east of Highland Park.

The closest water well is 660 feet south of the location (total depth 40 feet, depth to ground water 10 feet) and produces ground water from valley-fill deposits (alluvium). The proposed location is upslope and out of the alluvium deposits this water well is producing from. Water from this well is used for lawn irrigation only.

The Nacimiento Formation extends from the surface down to a depth of approximately 995 feet. At the location of the proposed below grade tank the Nacimiento is comprised of only mudstone / shale without any sand stringers. Shale content in the Nacimiento increases to the west toward the outcrop and recharge area.

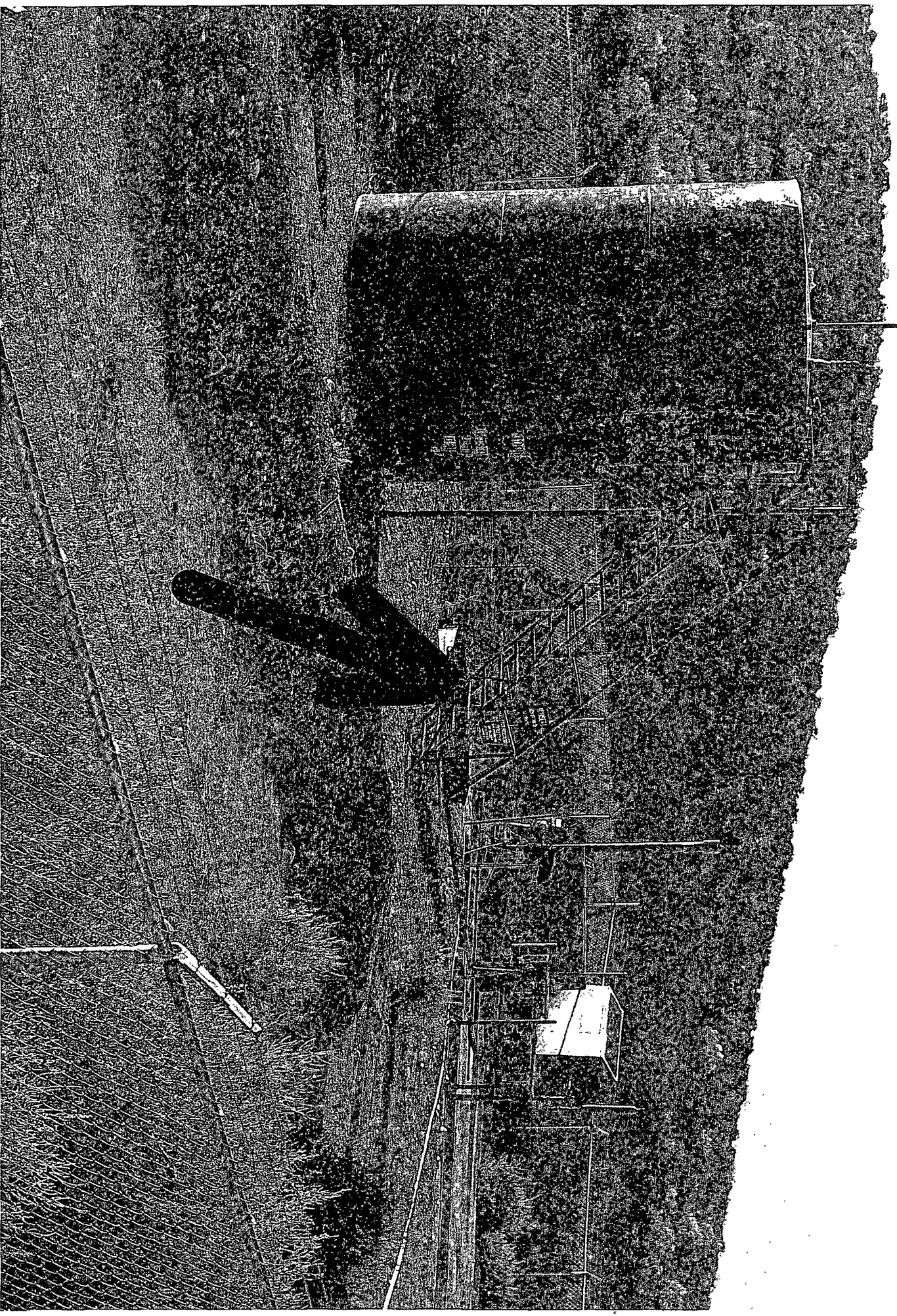
The Nacimiento can be a source of ground water for livestock purposes and more rarely domestic use in some areas near the outcrop. But at the subject location there are not any sand layers in the section. The Nacimiento is not expected to contain significant quantities of ground water in the area of the proposed below grade tank.

The underlying Ojo Alamo Sandstone ranges from approximately 995 feet down to a depth of 1070 feet, is poorly developed and is comprised of a coarse grained alluvial sandstone inter-bedded with lenses of mudstone and occasional conglomeratic sandstone. The Ojo Alamo may yield additional quantities of groundwater; however, the water quality is typically greater than 1,000 ppm total dissolved solids and high in sulfate.

Based on electric open hole logs, the iWATERS database, literature reviewed and field examination of outcrops, the depth to ground water ranges from 55 - 65 feet below the surface in alluvium deposits of the La Plata River valley. These groundwater bearing deposits do not extend to or underlie the proposed below grade tank location. At the proposed location, ground water may be encountered at a depth of 995 feet from the Ojo Alamo.

- Stone, W.J., Lyford, F.P., Frenzel, P.F., Mizell, N.H., and Padgett, E.T., 1983, Hydrogeology and water resources of San Juan Basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Hydrologic Report 6, 70 p.
- Brown, D.R., and Stone, W.J., 1979, Hydrogeology of Aztec quadrangle, San Juan County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Hydrogeologic Sheet 1.
- Levings, G.W., Craig, S.D., Dam, W.L., Kernodle, J.M., and Thorn, C.R., 1990, Hydrogeology of the San Jose, Nacimiento, and Animas Formations in the San Juan Structural Basin, New Mexico, Colorado, Arizona and Utah: U.S. Geological Survey, Atlas HA-720-A, Sheet 1 and 2.
- Thorn, C.R., Levings, G.W., Craig, S.D., Dam, W.L., and Kernodle, J.M., 1990, Hydrogeology of the Ojo Alamo Sandstone in the San Juan Structural Basin, New Mexico, Colorado, Arizona and Utah: U.S.G.S, Atlas HA-720-B, Sheet 1 and 2.

Emerald City #1 Below Grade Tank



**New Mexico Office of the State Engineer
POD Reports and Downloads**

Township: 31N Range: 13W Sections: 9,10,11,14,15,16,21,22,23

NAD27 X: Y: Zone:  Search Radius:

County:  Basin:  Number: Suffix:

Owner Name: (First) (Last) ☐ Non-Domestic ☐ Domestic ☒ All

POD / Surface Data Report

Avg Depth to Water Report

Water Column Report

Clear Form

iWATERS Menu

Help

WATER COLUMN REPORT 07/31/2008

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are biggest to smallest)

POD Number	Tws	Rng	Sec	q	q	q	Zone	X	Y	Depth Well	Depth Water	Water (in feet) Column
SJ 01295	31N	13W	09	2	1	1				230	180	50
SJ 02977	31N	13W	09	2	1	3				325	124	201
SJ 02920	31N	13W	09	2	3	3				85		
SJ 02755	31N	13W	09	2	3	4				60	40	20
SJ 02987	31N	13W	09	4	1	3				250	87	163
SJ 03382	31N	13W	09	4	3	2				50		
SJ 02717	31N	13W	10	1	3					42	22	20
SJ 01094	31N	13W	10	2						130	60	70
SJ 00798	31N	13W	10	2						125	65	60
SJ 00089	31N	13W	10	2	1	1				80	18	62
SJ 01952	31N	13W	10	2	4					16	6	10
SJ 01944	31N	13W	10	2	4					20	4	16
SJ 02276	31N	13W	10	3						24	19	5
SJ 01945	31N	13W	10	3	3					31	16	15
SJ 01950	31N	13W	10	4	1					21	11	10
SJ 00729	31N	13W	10	4	1					43	10	33
SJ 02637	31N	13W	10	4	2	2				20	6	14
SJ 03734 POD1	31N	13W	15	1	4	3				40	10	30
SJ 02048	31N	13W	15	3	2	4				54	24	30
SJ 00398	31N	13W	21							104	6	98
SJ 00965	31N	13W	22	1						115	30	85
SJ 03197	31N	13W	22	1	1	3				11	5	6
SJ 01820	31N	13W	22	3	1					50	20	30
SJ 02737	31N	13W	22	3	3					78	40	38
SJ 02836	31N	13W	22	3	3	1				100	30	70
SJ 03797 POD1	31N	13W	22	3	3	3				220	20	200
SJ 03611	31N	13W	23	1	3	1				24	14	10

Record Count: 27

EXHIBIT 1.

Siting Criteria for the Emerald City #1

1. Ground water is not less than 50-feet below the bottom of the below grade tank. Ground water is greater than 100-feet below the bottom of the below grade tank.
2. The below grade tank is not within 300-feet of a continuously flowing water course, or 200 feet of any other watercourse, lakebed, sinkhole, or playa lake (measured from ordinary high water mark). See the attached Topographic map (Exhibit 2) and Visual Inspection Certification of the location and area around the subject below grade tank.
3. The below grade tank is not within 300-feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. See the attached Satellite Image (Exhibit 3) and Visual Inspection certification of the location and area around the subject below grade tank.
4. The below grade tank is not within 500-feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application. See the attached NM Office of the State Engineer iWATERS database search (Exhibit 4) and Visual Inspection certification of the location and area around the subject below grade tank.
5. The below grade tank is not located within the incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978 Section 3-27-3, as amended. See the attached Topographic map of the location and area around the subject below grade tank,
6. The below grade tank is not located within 500-feet of a wetland. See the attached Topographic map and Visual Inspection Certification of the location and area around the subject below grade tank.
7. The below grade tank is not located within the area overlying a subsurface mine. See the attached Mine, Mills and Quarry Map of New Mexico (New Mexico, EMND 2008) (Exhibit 5) showing the location and area around the subject pit.
8. The below grade tank is not located within an unstable area. See the attached Topographic map of the location and area around the subject below grade tank.
9. The below grade tank is not located within a 100-year floodplain area. See the attached FEMA map (Exhibit 6) of the 100 year floodplain showing the location and area around the subject pit.

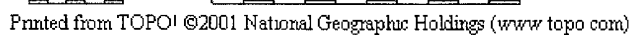
Emerald City #1 Visual Inspection Certification

I, Kurt Fagrelus, Vice President of Exploration for Dugan Production Corp. 709 East Murray Drive, Farmington, New Mexico hereby certify that I or persons under my direct supervision, prepared the attached exhibits and conducted a Visual Inspection of the location and area around the Emerald City #1 below grade tank (July 21, 2008 and August 5, 2008). This application is in full compliance with all siting criteria and standards for below grade tanks established by the State of New Mexico, Energy Minerals and Natural Resources Department 19.15.17.10 NMAC.

Kurt Fagrelus
Kurt Fagrelus

August 6, 2008
Date

36°53.000' N



TN★/MN
11°



**New Mexico Office of the State Engineer
POD Reports and Downloads**

Township: 31N Range: 13W Sections: 15

NAD27 X: Y: Zone: ☐ Search Radius:

County: ☐ Basin: ☐ Number: Suffix:

Owner Name: (First) (Last) ☐ Non-Domestic ☐ Domestic ☒ All

POD / Surface Data Report

Avg Depth to Water Report

Water Column Report

Clear Form

iWATERS Menu

Help

WATER COLUMN REPORT 07/31/2008

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are biggest to smallest)

POD Number	Tws	Rng	Sec	q	q	q	Zone	X	Y	Depth Well	Depth Water	Water (in feet) Column
SJ 03734 POD1	31N	13W	15	1	4	3				40	10	30
SJ 02048	31N	13W	15	3	2	4				54	24	30

Record Count: 2

EXHIBIT 4.

**APPLICATION TO APPROPRIATE UNDERGROUND WATERS
IN ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES**

1. Name and mailing address of applicant: File No. SJ-3734

Danielle Nichols

P. O. Box 541

La Plata, NM 87418

2. Describe well location under one of the following subheadings:

a. SW 1/4 SE 1/4 NW 1/4 of Sec. 15 Twp. 31N Rge. 13W NMPN,
in San Juan County.

b. X = _____ feet, Y = _____ feet, New Mexico Coordinate System
Zone in the _____ Grant.

3. Approximate depth (if known) _____ feet; outside diameter of casing _____ inches.
Name of driller (if known) Unknown

4. Use of water (check use applied for):

☒ X One household, non-commercial trees, lawn and garden not to exceed one acre.

☐ Livestock watering.

☐ More than one household, non-commercial trees, lawns and gardens not to exceed a total of one acre.

☐ Drill and test a well intended to be used for domestic, drinking and sanitary or stock water purposes in conjunction with the building or dwelling unit.

☐ Drinking and sanitary purposes and the irrigation of non-commercial trees, shrubs and lawns in conjunction with a commercial operation.

☐ Prospecting, mining or drilling operations to discover or develop natural resources.

☐ Construction of public works, highways and roads.

If any of the last three items were marked, give name and nature of business under Remarks (Item 5).

5. Remarks: Physical address is 6 County Road 1419, La Plata.
Lot 4, Block 4 La Plata Ranch Subdivision.

1. Danielle Nichols, affirms that the foregoing statements are true to the best of my knowledge and belief and that development shall not commence until approval of the permit has been obtained.

Danielle Nichols, Applicant

By: _____ Date: June 27, 2006

2006 JUN 27 AM 8 32
 STATE ENGINEER'S OFFICE
 ALBUQUERQUE, NEW MEXICO

ACTION OF STATE ENGINEER

This application is approved for the use indicated, subject to all general conditions and to specific conditions numbered 1a & 4 on the reverse side hereof. This permit will automatically expire unless this well is drilled or driven and the well record filed on or before June 27, 2007.

JOHN R. D'ANTONIO, JR., P.E., STATE ENGINEER

By: Robert B. Genualdi
Robert B. Genualdi, P.E.

Date: June 27, 2006

File No. SJ-3734

31-4079

OFFICIAL RECEIPT NUMBER: 5-3153 DATE: June 27, 2016 FILE NO.: 53-1724
TOTAL: 125.00 RECEIVED: national inheritance tax DOLLARS CHECK NO.: 11 CASH:
PAYOR: James E. Miller ADDRESS: 20 Boylston CITY: Cambridge STATE: MA
ZIP: 02116 RECEIVED BY: [Signature]

A. Ground Water Rights Filing Fees

- ### B. Surface Water Rights Filing Fees

- ### C. Miscellaneous Fees

- #### D. Reproduction of Documents

E. Certification \$_____

F. Other (Specify-not for filing fees) \$_____

Comments:

lv/t

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Danielle Nichols Owner's Well No. SJ-3734
 Street or Post Office Address PO BOX 541
 City and State La Plata, NM 87418

Abstractor Note:
See Remarks

Well was drilled under Permit No. SJ-3734 and is located in the:

a. $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 15 Township 31 N Range 13W N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. 4 of Block No. 4 of the La Plata Ranch Subdivision
 Subdivision, recorded in san juan County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in
 the _____ Grant.

(B) Drilling Contractor William Hargis License No. WD-799

Address # 156 CR 350 Aztec NM 87410

Drilling Began 03/02/07 Completed 03/05/07 Type tools cable Size of hole 6" in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 40 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 10 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			
30	40	10	small boulders & Gravel, coarse sand	15

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet		Length (feet)	Type of Shoe	Perforations	
			Top	Bottom			From	To
30	40	10	0	40	10	none	35	40

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet		Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement
From	To				

200 APR 19 AM 8 32
 STATE ENGINEER OFFICE
 AZTEC, NEW MEXICO

Section 5. PLUGGING RECORD

Plugging Contractor _____
 Address _____
 Plugging Method _____
 Date Well Plugged _____
 Plugging approved by: _____

No.	Depth in Feet		Cubic Feet of Cement
	Top	Bottom	
1			
2			
3			
4			

TRN# 364079 State Engineer Representative

FOR USE OF STATE ENGINEER ONLY

Date Received April 19, 2007

File No. SJ-3734

Use T M 10

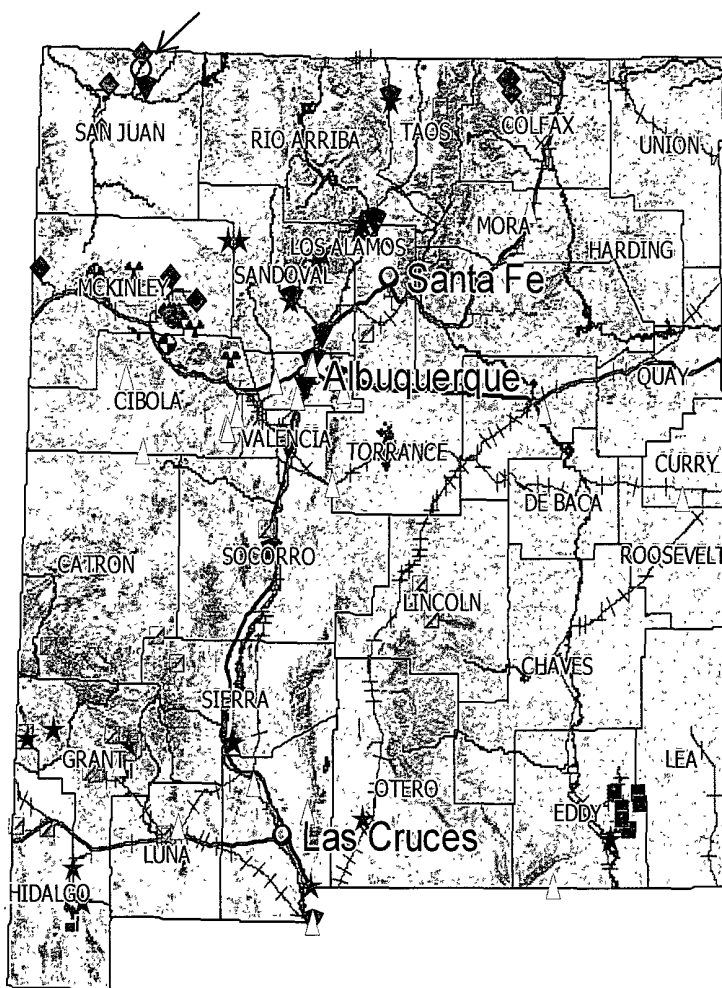
Location No. 31N.13W.15.143

[illegible]

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the described hole.

Driller

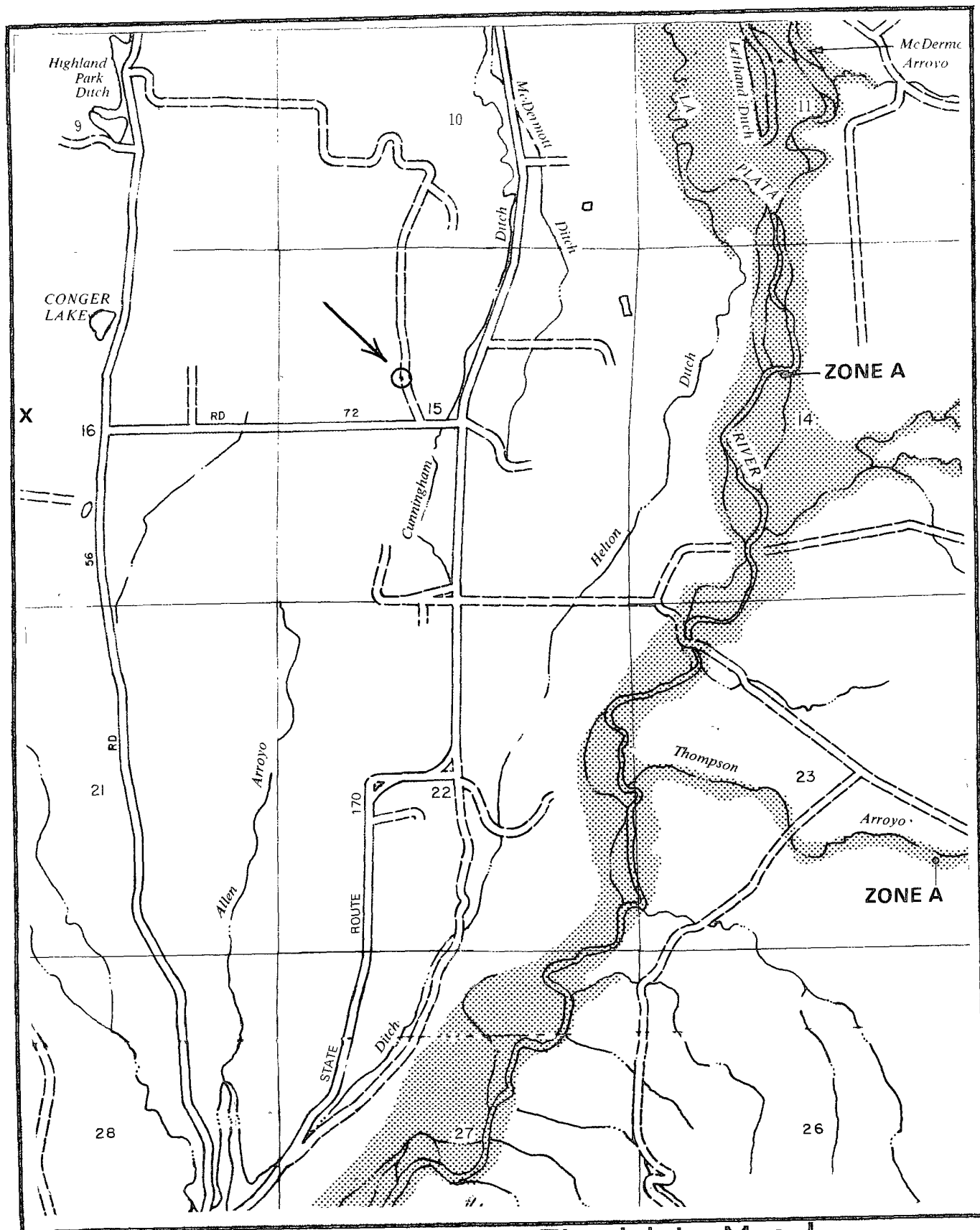
INSTRUCTIONS: This form should be executed in triplicate, ~~manually~~ typewritten, and submitted to the appropriate district



Mine, Mills and Quarry Map of New Mexico

Dugan Production Corp.
Emerald City #1

Taken from the New Mexico Energy, Minerals and Natural Resources Department.
Mining and Minerals Division.



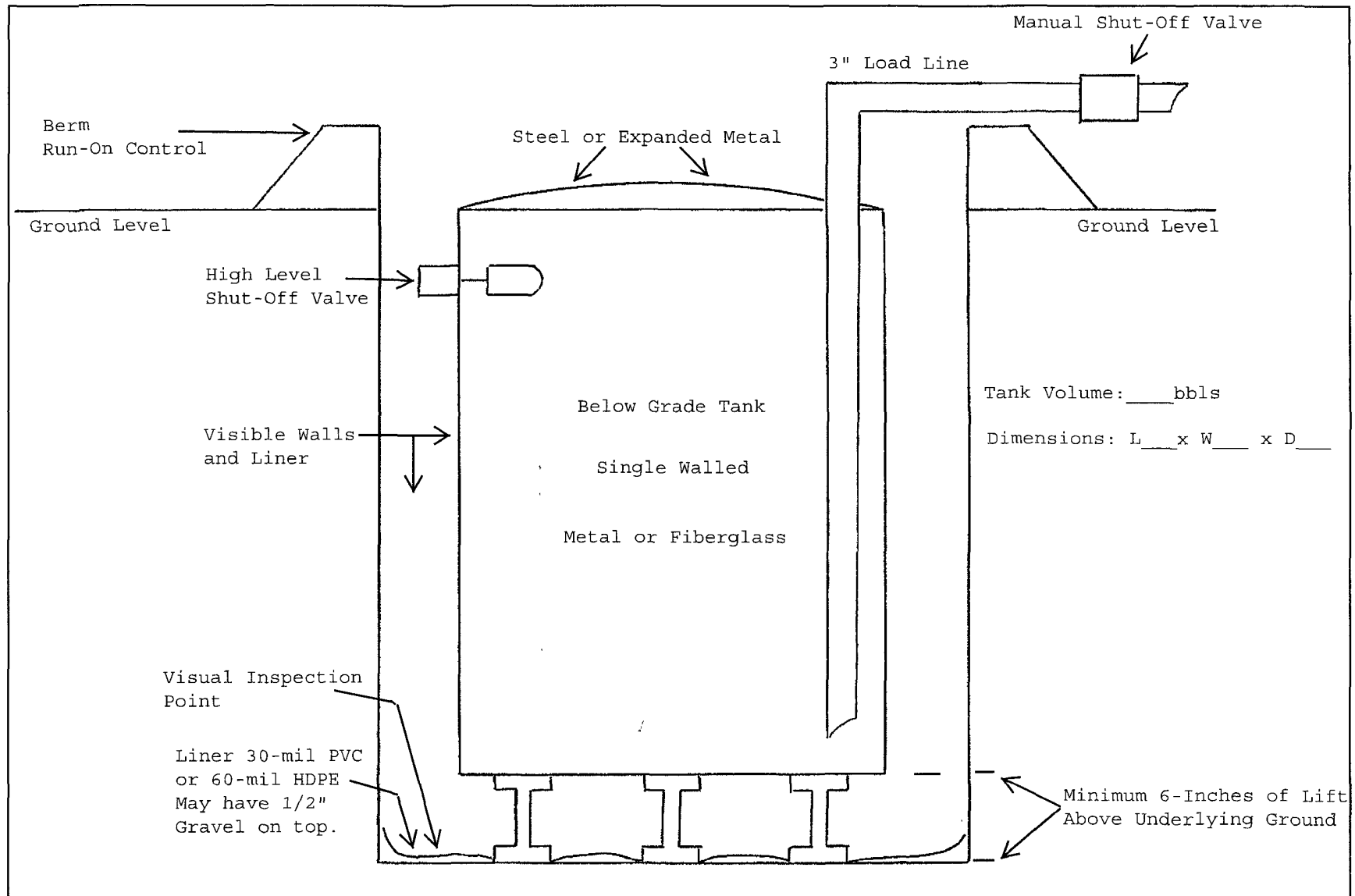
FEMA 100-Year Floodplain Map
Emerald City #1

Emerald City #1 Design and Construction Plan

The Emerald City #1 below grade tank will be designed and constructed in accordance with the following requirements:

1. Below grade tank will be designed and constructed to contain liquids and solids, prevent contamination of fresh water and protect the public health and environment (Exhibit 7).
2. Stockpile topsoil prior to digging pit, keep separate from subsoil and use as final cover and fill when closing pit.
3. Sign-12" by 24" with operator name, lease name, well #, location (unit letter, qtr/qtr, Sect., Twp., and Rge.) and emergency phone #'s will be posted on location. Sign will be posted in a location where it can be easily read.
4. Fencing around the Emerald City #1 below grade tank will be constructed and operated in a manner that prevents unauthorized access and shall be maintained in good condition to protect the public and wildlife. Fencing will include a 4-foot hog wire fencing with two strands of barbed wire or top rail of re-bar or pipe on top. See the attached request for Administrative Approval. The Emerald City #1 below grade tank is not located within 1000 feet of a house, school, hospital or church.
5. The Emerald City #1 below grade tank will be covered with expanded metal, chicken-wire or a metal lid on top of the tank.
6. Emerald City #1 below grade tank will be designed and constructed to ensure the confinement of liquids and prevent unauthorized releases. Pit will be constructed with a firm foundation and interior slopes, smooth and free of rocks or sharp edges to prevent punctures, cracks or indentations of the liner or tank bottom.
7. Emerald City #1 below grade tank will be constructed of materials resistant to the tank's particular contents and resistant to damage from sunlight.
8. Liner will be 30-mil flexible PVC or 60-mil HDPE, string reinforced, impervious material, resistant to UV light, hydrocarbons, salt, acidic or basic liquids. The liner will have a hydraulic conductivity less than 1×10^{-9} cm/sec. Liner compatibility will comply with EPA SW-846.
9. The Emerald City #1 below grade tank will be constructed with single walled sides and bottom which will be open for visual inspection for leaks. The below grade tank will be elevated a minimum of 6-inches above the underlying ground surface. The below grade tank will be underlain with a geo-membrane liner designed to divert any leaked fluid to a visual inspection point. Liner may be covered with gravel.
10. The Emerald City #1 below grade tank will be equipped with a properly operating automatic high-level shut-off control device and manual controls to prevent overflows.
11. Diversionary berms, ditches or sloping will be constructed as necessary to prevent overflow and the collection of surface water entrapment.

Design Plan For Below Grade Tank



Dugan Production Corp.
Emerald City #1

Emerald City #1 Operational Requirements

The Emerald City #1 below grade tank will be maintained and operated in accordance with the following requirements:

1. The Emerald City #1 below grade tank will be operated and maintained to contain liquids and solids and maintain the integrity of the tank / liner system or secondary containment system to prevent contamination of fresh water and protect public health and environment.
2. All fluids will be recycled, reused, reclaimed or disposed of in a manner approved by NMOCD rules.
3. Do not dispose of solid waste, trash, debris or hazardous material into the pit.
4. If the Emerald City #1 below grade tank develops a leak or if a penetration occurs below the liquids surface, all liquid will be removed above the damage or leak line within 48-hours. The NMOCD office will be notified within 48-hours of the discovery. The below grade tank / liner system or secondary containment system will then be either replaced or repaired.
5. Below grade tank will be constructed and operated in a manner that prevents the tank from over flow and prevents surface water from entering the pit. Diversion berms will be constructed around the sides of pit and an automatic high level shut-off will be installed.
6. Any measurable oil will be continuously removed from the Emerald City #1 below grade tank to prevent a significant accumulation of oil overtime.
7. The Emerald City #1 below grade tank will be inspected at least monthly and records of each inspection will be maintained for five years.
8. Adequate freeboard will be maintained to prevent overtopping of the Emerald City #1 below grade tank.

Emerald City #1 Closure Plan—Methods, Procedures and Protocols

1. Comply with deadlines for closure of a pit or below grade tank established by the State of New Mexico, Energy Minerals and Natural Resources Department 19.15.17.13 NMAC, or an earlier date if required by the NMOCD in the case of imminent danger to fresh water, public health or the environment.

Existing On June 16, 2008	Permit Applic Submittal or Modification Request	File Closure Plan By	Stop Use By	Close By
Temporary Pit - Unlined	Not Permt'd under 19 15.17	7/16/2008	Upon drlg rig release	9/16/2008
Permanent Pit - Unlined or Lined	Not permitted with NMOCD	7/16/2008	6-16-2008	12/16/2008
Permanent Pit - Unlined	Permitted or with NMOCD	12-16-2008	6-16-2010	6-16-2011
BGT-Aprvd Design	Not Permt'd under 19 15.17 Applc. by 9-16-2008	12/16/2008	failed integrity replc w/apprvd design	
BGT-Not Aprvd Design Nor Retrofit to Comply w/19.15.17	Not Permt'd under 19.15 17 Mod. Rqst by 9-16-2008	12/16/2008	6/16/2013	6-16-2013
BGT-Not Aprvd Design Nor Retrofit to comply w/19.15 17	NA	12/16/2008	6/16/2013	6/16/2013
Permanent Pit-Design and Constr Does not comply w/19.15 17 permitted and lined	Mod Rqst by 12-16-2008 Comply w/in 18-mos of aprvl	12/16/2008 submit w/mod request	failed integrity replc w/apprvd design	60-days after cessation
Permanent Pit-Design and Constr Does not comply w/19.15.17 Registered and Lined	Permit Applc by 12-16-2008 Comply w/in 18-mos of aprvl	12/16/2008 submit w/permit Applc		60-days after cessation
Permanent Pit	Permitted under 19.15.17	60-Days prior to close		
Temporary Pit	Permitted under 19 15.17	Prior to closure	Upon drlg rig release	6-mos after rig release
BGT	Permitted under 19.15 17	12/16/2013 or prior to closure	failed integrity replc w/apprvd design	60-days after cessation

2. The Emerald City #1 below grade tank was registered under rule 50; however, it is not an approved design under rule 19.15.17. Upon approval of this application, the existing below grade tank will be closed and a new below grade tank that meets the design requirements of rule 19.15.17 will be constructed.
3. Below grade tank will be closed within 60-days after cessation of use.
4. Proof of closure notice will be provided by certified mail to surface owner after closure. Proof of notice will be attached to final closure report.

5. Remove all liquid from below grade tank prior to closure and dispose of at the Dugan Production operated Sanchez O'Brien #1 SWD (permit SWD-694) located 1650 feet from the South line and 990 feet from the West line (Unit L) of Section 6, Township 24 North, Range 9 West.
6. All solids from the below grade tank and all solids removed from the containment pit will be excavated, hauled to and disposed of at either the Envirotech facility (permit #NM-01-0011) facility located in Section 6, Township 26 North, Range 10 West or the IEI facility (permit NM-01-0010B) located in Section 2, Township 29 North, Range 12 West.
7. Remove below grade tank and dispose of in a NMOCD approved facility, or recycle, reuse, or reclaim it in a manner that the NMOCD approves.
8. On site equipment associated with the below grade tank will be removed unless it is needed for some other purpose.
9. Collect a five point, composite sample of the soils beneath the below grade tank (any area that is wet, discolored or shows evidence of a release) to demonstrate that Benzene, BTEX, TPH and chlorides do not exceed the standards as specified in 19.15.17.13.E or the background concentration, whichever is greater.

Components	Test Method	Limit (mg/kg)
Benzene	EPA SW-846 8021B or 8260B	0.2
BTEX	EPA SW-846 8021B or 8260B	50
TPH	EPA SW-846 418.1	100
GRO/DRO	EPA SW-846 8015M	NS
Chlorides	EPA 300.1	250 or Background

10. The NMOCD will be notified of the testing results on form C-141.
11. If it is determined that a release has occurred, rule 19.15.3.116 NMAC and 19.15.1.19 NMAC will be complied with as required.
12. If the sampling results demonstrate that a release has not occurred, or that any release does not exceed the concentrations specified above or background concentrations, the pit will be backfilled with compacted, non-waste containing, earthen material.
13. Stockpiled sub-surface soil will be used to backfill pit and re-contour (to a final or intermediate cover that blends with the surrounding topography). A minimum of four feet of compacted, non-waste containing, earthen material will be used as backfill.
14. Stockpiled surface soil will be used as a cover over the backfilled pit and disturbed area no longer needed for production operations. The soil cover will include either the background thickness of top soil or one foot of suitable material to establish vegetation at the site whichever is greater.
15. The area will be re-seeded as per BLM guidelines. Re-seeding will be repeated until 70% of the native natural cover is achieved and maintained for two successive growing seasons. The first growing season after the pit is closed the disturbed area will be re-seeded. The seeding method will be to drill on contour whenever possible.

16. The NMOCD will be notified within 60-days of closure of the below grade tank. The closure report will be filed on form C-144 and will document all closure activities, sampling results, a plot plan, and details on backfilling and capping where applicable.
17. The NMOCD will be notified once successful re-vegetation has been achieved.