

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

**IN THE MATTER OF THE HEARING CALLED BY
THE OIL CONSERVATION DIVISION FOR THE
PURPOSE OF CONSIDERING:**

**APPLICATION OF SOLARIS WATER MIDSTREAM, LLC FOR APPROVAL OF A
SALT WATER DISPOSAL WELL, EDDY COUNTY, NEW MEXICO.**

**CASE NO. 20587
ORDER NO. R-20874**

ORDER OF THE DIVISION

This case came in for hearing before the Oil Conservation Division (“OCD”) at 8:15 a.m. on July 11, 2019, in Santa Fe, New Mexico.

The OCD Director, having considered the testimony, the record, the recommendations of Hearing Examiner William V. Jones, these findings of fact, and conclusions of law issues this Order.

FINDINGS OF FACT

1. Due public notice has been given, and the Oil Conservation Division (“OCD”) has jurisdiction of this case and the subject matter.
2. Solaris Water Midstream, LLC (OGRID 371643) [“Applicant” or “Solaris”] seeks authority to utilize its Capt Call SWD Well No. 1 (API No. 30-015-Pending; the “subject well”), to be located 820 feet from the South line and 300 feet from the West line (Unit M) of Section 2, Township 20 South, Range 28 East, NMPM, Eddy County, New Mexico, for disposal of produced water into the Devonian and Silurian formations through an open hole interval from approximately 12510 feet to 14310 feet below surface.
3. Solaris had previously submitted an administrative application to the Division for approval of the subject well for disposal of produced water (application number pMAM 1908145818 was logged in March 22, 2019.) NGL Water Solutions Permian, LLC (“NGL”) filed a protest of the administrative application. Solaris entered a case for hearing and NGL entered an appearance in the case. No other party appeared or otherwise opposed this application.
4. Prior to the hearing, Solaris moved to dismiss the NGL objection to the administrative application as untimely and remand the matter back to the administrative process. NGL responded to the motion and Solaris responded to the NGL response. The matter was already set for hearing

and the Division did not react or respond to the motion to dismiss. The timing of the protest, the motion, and the response by NGL were discussed at the hearing.

5. Applicant modified the proposed casing design between the time of administrative submittal to the submittal of the hearing case. The modification was to add another protective intermediate casing to further protect the Capitan Reef complex.

6. The well design includes surface pipe at 400 feet (top of the Salado formation) protecting fresh waters, an intermediate pipe set at 840 feet (top of the Tansill formation), and an intermediate pipe set across the Capitan Reef down to 3120 feet.

7. The next intermediate pipe will be set from surface to 9060 feet in the upper Wolfcamp formation, covering the Delaware and Bone Spring formations. The liner will cover the higher pressures in the Pennsylvanian gas sands and the Wolfcamp formation.

8. Applicant researched the literature on location of faulting, then analyzed for probability of induced seismic events and has concluded the probability of such events is very low.

9. Applicant stated that the disposal operation will not harm oil and gas, correlative rights, or shallow fresh water sources.

10. The Applicant provided evidence of notification of the administrative application to all "affected persons" within a one-mile radius of the Subject Well and with publication in a newspaper of general circulation in the county.

11. Applicant proposed the construction of the Well with the following casing strings and liner system: 16-inch surface casing set at 830 feet; 13 $\frac{3}{8}$ inch intermediate casing set at 2,635 feet; 9 $\frac{5}{8}$ -inch Intermediate casing set at 10,040 feet; and a 7 $\frac{5}{8}$ -inch liner (with a weight of 39 pounds per foot) set from 9,840 feet to a total depth of 12,510 feet.

12. Applicant did not identify any wells that penetrate the proposed injection interval within the one-mile Area of Review of the surface location of the Well.

The OCD concludes as follows:

14. Applicant provided the information required by 19.15.26 NMAC and the Form C-108 for an application to inject produced water into a Class II UIC well.

15. Applicant complied with the notice requirements of 19.15.4 NMAC.

16. Applicant affirmed in a sworn statement by a qualified person that it examined the available geologic and engineering data and found no evidence of open faults or other hydrologic connections between the approved injection interval and any underground sources of drinking water.

17. The proposed construction of the Well will adequately isolate the Salado formation, protect fresh waters, and protect any oil and gas producing formations. The uppermost casings will protect fresh waters and the Capitan Reef Complex; and the lowermost casings will protect producing formations.

18. Applicant is in compliance with 19.15.5.9 NMAC.

19. Approval of disposal in the Well will enable Applicant to support existing production and future exploration in this area, thereby preventing waste while not impairing correlative rights and protecting fresh water or underground sources of drinking water.

IT IS THEREFORE ORDERED THAT:

1. Solaris Water Midstream, LLC is hereby authorized by **SWD-2490** to utilize its Capt Call SWD No. 1, located in Unit M of Section 2, Township 20 South, Range 28 East, NMPM, Eddy County, New Mexico, for the commercial disposal of UIC Class II fluids into the Devonian/Silurian formation.

2. Jurisdiction is retained by the OCD for the entry of such further orders as may be necessary for the prevention of waste and/or protection of correlative rights or upon failure of the operator to conduct operations (1) to protect fresh or protectable waters or (2) consistent with the requirements in this order; whereupon the OCD may, after notice and hearing or prior to notice and hearing in event of an emergency, terminate the disposal authority granted herein.



ADRIENNE E. SANDOVAL
DIVISION DIRECTOR

Date: 7/01/2022

AES/jat

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

UIC CLASS II PERMIT SWD-2490

APPENDIX A – AUTHORIZED INJECTION

Permittee: Solaris Water Midstream, LLC

OGRID No.: 371643

Well name: Capt Call SWD No. 1

Surface location: Lat: N 32.597796; Long: W -104.155427; NAD83
820 feet from the South line and 300 feet from the West line (Unit M) of
Section 2, Township 20 South, Range 28 East, NMPM, Eddy County,
New Mexico.

Bottom hole location (if different): NA

Type of completion: Open Hole

Type of injection: Commercial

Injection fluid: Produced water from production wells completed in the Artesia, Bone Spring,
Morrow, and Wolfcamp formations.

Injection interval: Devonian/Silurian Formation

Injection interval thickness (feet): 12,510 to 14,310

Confining layer(s): Upper confining: base of Woodford Formation

Lower confining: upper contact of Montoya Formation

Prohibited injection interval(s): Any formation above or below the permitted injection interval
including lost circulation intervals.

Liner, tubing, and packer set: 7-inch; 5.5-inch lined tubing with packer set within 100 feet of the
top of the open-hole injection interval.

Maximum daily injection rate: 40,000 barrels of water.

Maximum surface injection pressure: 2,502 psi

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UIC CLASS II PERMIT SWD-2490

Pursuant to the Oil and Gas Act, NMSA 1978, §§70-2-1 *et seq.*, (“Act”) and its implementing regulations, 19.15.1 *et seq.* NMAC, (“Rules”) and the federal Safe Drinking Water Act, 42 U.S.C. 300f *et seq.*, and its implementing regulations, 40 CFR 144 *et seq.*, the Oil Conservation Division (“OCD”) issues this Permit to Solaris Water Midstream, LLC (“Permittee”) to authorize the construction and operation of a well to inject produced water at the location and under the terms and conditions specified in this Permit and Appendix A.

I. GENERAL CONDITIONS

A. AUTHORIZATION

1. Scope of Permit. This Permit authorizes the injection of produced water into the well described on Appendix A (“Well”). Any injection not specifically authorized by this Permit is prohibited. Permittee shall be the “operator” of the Well as defined in 19.15.2.7(O)(5) NMAC.

a. Injection is limited to the approved injection interval described in Appendix A. Permittee shall not allow the movement of fluid containing any contaminant into an underground source of drinking water (“USDW”) if the presence of that contaminant may cause a violation of a Primary Drinking Water Regulation adopted pursuant to 40 CFR Part 142 or that may adversely affect the health of any person. [40 CFR 144.12(a)]

b. The wellhead injection pressure for the Well shall not exceed the value identified in Appendix A.

c. Permittee shall not commence to drill, convert, or recomple the Well until receiving this approval and until OCD approves a Form C-101 Application for Permit to Drill (“APD”) pursuant to 19.15.14 NMAC or receives an approved federal Form 3160-3 APD for the Well. [40 CFR 144.11; 19.15.14.8 and 19.15.26.8 NMAC]

d. Permittee shall not commence injection into the Well until the Permittee complies with the conditions in Section I. C. of this Permit.

e. This Permit authorizes injection of any UIC Class II fluid or oil field waste defined in 19.15.2.7(E)(6) NMAC.

f. This Permit does not authorize injection for an enhanced oil recovery project as defined in 19.15.2.7(E)(2) NMAC.

2. Notice of Commencement. Permittee shall provide written notice on Form C-103 to OCD E-Permitting and notify OCD Engineering Bureau by email of the submittal no later than two (2) business days following the date on which injection commenced into the Well. [19.15.26.12(B) NMAC]

3. Termination. Unless terminated sooner, this Permit shall remain in effect for a term of twenty (20) years beginning on the date of issuance. Permittee may submit an application for a new permit prior to the expiration of this Permit. If Permittee submits an application for a new permit, then the terms and conditions of this Permit shall remain in effect until OCD denies the application or grants a new permit.

a. This Permit shall terminate one (1) year after the date of issuance if Permittee has not commenced injection into the Well, provided, however, that OCD may grant a single extension of no longer than one (1) year for good cause shown. Permittee shall submit a written request for an extension to OCD Engineering Bureau no later than thirty (30) days prior to the deadline for commencing injection.

b. One (1) year after the last date of reported injection into the Well, OCD shall consider the Well abandoned, the authority to inject pursuant to this Permit shall terminate automatically, and Permittee shall plug and abandon the Well as provided in Section I. E. of this Permit. Upon receipt of a written request by the Permittee no later than one year after the last date of reported injection into the Well, OCD may grant an extension for good cause. [19.15.26.12(C) NMAC]

B. DUTIES AND REQUIREMENTS

1. Duty to Comply with Permit. Permittee shall comply with the terms and conditions of this Permit. Any noncompliance with the terms and conditions of this Permit, or of any provision of the Act, Rules or an Order issued by OCD or the Oil Conservation Commission, shall constitute a violation of law and is grounds for an enforcement action, including revocation of this Permit and civil and criminal penalties. Compliance with this Permit does not relieve Permittee of the obligation to comply with any other applicable law, or to exercise due care for the protection of fresh water, public health and safety and the environment. The contents of the Application and Appendix A shall be enforceable terms and conditions of this Permit. [40 CFR 144.51(a); 19.15.5 NMAC]

2. Duty to Halt or Reduce Activity to Avoid Permit Violations. Permittee shall halt or reduce injection to avoid a violation of this Permit or other applicable law. It shall not be a defense in an enforcement action for Permittee to assert that it would have been necessary to halt or reduce injection in order to maintain compliance with this Permit. [40 CFR 144.51(c)]

3. Duty to Mitigate Adverse Effects. Permittee shall take all reasonable steps to minimize, mitigate and correct any waste or effect on correlative rights, public health, or the environment resulting from noncompliance with the terms and conditions of this Permit. [40 CFR 144.51(d)]

4. Duty to Operate and Maintain Well and Facilities. Permittee shall operate and maintain the Well and associated facilities in compliance with the terms and conditions of this Permit. [40 CFR 144.51(e)]

5. Duty to Provide Information. In addition to any other applicable requirement, Permittee shall provide to OCD by the date and on the terms specified by OCD any information which OCD requests for the purpose of determining whether Permittee is complying with the terms and conditions of this Permit. [40 CFR 144.51(h)]

6. Private Property. This Permit does not convey a property right or authorize an injury to any person or property, an invasion of private rights, or an infringement of state or local law or regulations. [40 CFR 144.51(g)]

7. Inspection and Entry. Permittee shall allow OCD's authorized representative(s) to enter upon the Permittee's premises where the Well is located and where records are kept for the purposes of this Permit at reasonable times and upon the presentation of credentials to:

- a. Inspect the Well and associated facilities;
- b. Have access to and copy any record required by this Permit;
- c. Observe any action, test, practice, sampling, measurement or operation of the Well and associated facilities; and
- d. Obtain a sample, measure, and monitor any fluid, material or parameter as necessary to determine compliance with the terms and conditions of this Permit. [40 CFR 144.51(i)]

8. Certification Requirement. Permittee shall sign and certify the truth and accuracy of all reports, records, and documents required by this Permit or requested by OCD. [40 CFR 144.51(k)]

9. Financial Assurance. Permittee shall provide and maintain financial assurance for the Well in the amount specified by OCD until the Well has been plugged and abandoned and the financial assurance has been released by OCD. [40 CFR 144.52; 19.15.8.12 NMAC]

C. PRIOR TO COMMENCING INJECTION

1. Construction Requirements.

- a. Permittee shall construct the Well as described in the Application, Appendix A and as required by the Special Conditions.

b. Permittee shall construct and operate the Well in a manner that ensures the injected fluid enters only the approved injection interval and is not permitted to escape to other formations or onto the surface.

2. Tests and Reports. Permittee shall complete the following actions prior to commencing injection in the Well.

a. Permittee shall obtain and comply with the terms and conditions of an approved APD prior to commencing drilling of the Well, or other OCD approval, as applicable, prior to converting or recompleting the Well. If the APD is approved by the OCD, the Well shall be subject to the construction, testing, and reporting requirements of 19.15.16 NMAC.

b. Permittee shall circulate to surface the cement for the surface and intermediate casings. If cement does not circulate on any casing string, Permittee shall run a cement bond log ("CBL") to determine the top of cement, then notify the OCD Engineering Bureau and the appropriate OCD Inspection Supervisor and submit the CBL prior to continuing with any further cementing on the Well. If the cement did not tie back into next higher casing shoe, Permittee shall perform remedial cement action to bring the cement to a minimum of two hundred (200) feet above the next higher casing shoe.

c. If a liner is approved for the construction of the Well, Permittee shall run and submit to OCD E-Permitting and notify the OCD Engineering Bureau by email, a CBL for the liner to demonstrate placement cement and the cement bond with the tie-in for the casing string.

d. Permittee shall submit to the appropriate OCD Engineering Bureau the mudlog, geophysical logs, and a summary of depths (picks) for the contacts of the formations demonstrating that only the permitted formation is open for injection. OCD may amend this Permit to specify the depth of the approved injection interval within the stratigraphic interval requested in the application. If Permittee detects a hydrocarbon show during the drilling of the Well, it shall notify OCD Engineering Bureau by email and obtain written approval prior to commencing injection into the Well.

e. Permittee shall obtain and submit to the OCD E-permitting on a Form C-103 a calculated or measured static bottom-hole pressure measurement representative of the completion in the approved injection interval.

f. Permittee shall conduct an initial mechanical integrity test ("MIT") on the Well in compliance with the terms and conditions of this Permit and 19.15.26 NMAC, and shall not commence injection into the Well until the results of the initial MIT have been approved by the appropriate OCD Inspection Supervisor. [19.15.26.11(A) NMAC]

g. OCD retains authority to require a wireline verification of the completion and packer setting depths in this Well. [19.15.26.11(A) NMAC]

D. OPERATION

1. Operation and Maintenance.

a. Permittee shall equip, operate, monitor and maintain the Well to facilitate periodic testing, assure mechanical integrity, and prevent significant leaks in the tubular goods and packing materials used and significant fluid movements through vertical channels adjacent to the well bore. [19.15.26.10(A) NMAC]

b. Permittee shall operate and maintain the Well and associated facilities in a manner that confines the injected fluid to the approved injection interval and prevents surface damage and pollution by leaks, breaks and spills. [19.15.26.10(B) NMAC]

c. OCD may authorize an increase in the maximum surface injection pressure upon a showing by the Permittee that such higher pressure will not result in the migration of the disposed fluid from the approved injection interval or induced seismicity. Such proper showing shall be demonstrated by sufficient evidence, including an acceptable step-rate test.

d. If OCD has reason to believe that operation of the Well may have caused or determined to be contributing to seismic activity, Permittee shall, upon OCD's written request:

i. Take immediate corrective action, which could include testing and evaluating of the injection interval and confining layers; suspending or reducing of the rate of injection or maximum surface injection pressure, or both; and providing increased monitoring of the Well's operation; and

ii. Submit a remedial work plan or an application to modify the Permit to implement the corrective action, plug back the injection interval, or incorporate another modification required by OCD.

OCD may approve the remedial work plan, modify the Permit or issue an emergency order or temporary cessation order as it deems necessary.

2. Pressure Limiting Device.

a. The Well shall be equipped with a pressure limiting device, which is in workable condition and can be tested for proper calibration at the well site, that shall limit surface tubing pressure to the maximum surface injection pressure specified in Appendix A.

b. Permittee shall test the pressure limiting device and all gauges and other metering requirement to ensure their accuracy and proper function no less than every five (5) years.

3. Mechanical Integrity. Permittee shall conduct a MIT prior to commencing injection, at least every five (5) years after the date of the previous MIT, and whenever the tubing is removed or replaced, the packer is reset, mechanical integrity is lost, Permittee proposes to transfer the Well, or requested by OCD.

a. MITs shall be conducted in accordance with 19.15.26 NMAC.

b. Permittee shall submit a sundry notice on Form C-103 of intent to install or replace injection equipment or conduct a MIT no later than three (3) business days prior to the event.

c. Permittee shall report the result of a MIT no later than two (2) business days after the test.

d. Permittee shall cease injection and shut-in the Well no later than twenty-four (24) hours after discovery if:

i. The Well fails a MIT; or

ii. Permittee observes conditions at the Well that indicate the mechanical failure of tubing, casing, or packer.

e. Permittee shall take all necessary actions to address the effects resulting from the loss of mechanical integrity in accordance with 19.15.26.10 NMAC.

f. Permittee shall conduct a successful MIT pursuant to 19.15.26.11 NMAC, including written approval from OCD prior to recommencing injection and the requirements contained in Section I G.3.

4. Additional Tests. Permittee shall conduct any additional test requested by OCD, including but not limited to step-rate tests, tracer surveys, injection surveys, noise logs, temperature logs, and casing integrity logs [19.15.26.11(A)(3) NMAC]

5. Records.

a. Permittee shall retain a copy of each record required by this Permit for a period of at least five (5) years and shall furnish a copy to OCD upon request. [40 CFR 144.51(h)]

b. Permittee shall retain a record of each test, sample, measurement, and certification of accuracy and function collected for the Well, including:

i. Date, location, and time of sample, measurement or calibration;

ii. Person who conducted the sample event, -measurement or calibration;

iii. Calibration of gauge or other equipment in accordance with the manufacturer's specifications;

iv. Description of method and procedures;

v. Description of handling and custody procedures; and

vi. Result of the analysis.

E. PLUGGING AND ABANDONMENT

1. Upon the termination of this Permit, Permittee shall plug and abandon the Well and restore and remediate the location in accordance with 19.15.25 NMAC.

2. If Permittee has received an extension pursuant to Section I. A. 2. b., Permittee shall apply for approved temporary abandonment pursuant to 19.15.25 NMAC.

3. If this Permit expires pursuant to 19.15.26.12 NMAC and OCD has not issued a new permit, then Permittee shall plug and abandon the Well and restore and remediate the location in accordance with 19.15.25 NMAC.

4. Permittee's temporary abandonment of the Well shall not toll the abandonment of injection in accordance with 19.15.26.12(C) NMAC.

F. REPORTING

1. **Monthly Reports.** Permittee shall submit a report using Form C-115 using the OCD's web-based online application on or before the 15th day of the second month following the month of injection, or if such day falls on a weekend or holiday, the first workday following the 15th, with the number of days of operation, injection volume, and injection pressure. [19.15.26.13 NMAC; 19.15.7.24 NMAC]

2. Corrections. Permittee shall promptly disclose to OCD any incorrect information in the Application or any record required by this Permit and submit corrected information. [40 CFR 144.51(h)(8)]

G. CORRECTIVE ACTION

1. Releases. Permittee shall report any unauthorized release of injection fluid at the Well or associated facilities in accordance with 19.15.29 and 19.15.30 NMAC.

2. Failures and Noncompliance. Permittee shall report the following incidents to appropriate OCD Inspection Supervisor and OCD Engineering Bureau verbally and by e-mail no later than 24 hours after such incident:

a. Any mechanical integrity failures identified in Section I. D. 3. d;

b. The migration of injection fluid from the injection interval [19.15.26.10 NMAC]; or

c. A malfunction of the Well or associated facilities that may cause waste or affect the public health or environment, including: (a) monitoring or other information which indicates that a contaminant may affect a USDW; or (b) noncompliance or malfunction which may cause the migration of injection fluid into or between USDWs. [40 CFR 144.51(l)(6)]

3. Corrective Action. Permittee shall submit a written report describing the incident in Sections I.G.1 or I.G.2, including a corrective active plan, no later than five (5) calendar days after discovery of the incident. [40 CFR 144.51(l)(6)] For an unauthorized release, Permittee also shall comply with the site assessment, characterization and remediation requirements of 19.15.29 and 19.15.30 NMAC.

4. Restriction or Shut-In. OCD may restrict the injected volume and pressure or shut-in the Well if OCD determines that the Well has failed or may fail to confine the injected fluid to the approved injection interval or has caused induced seismicity until OCD determines that Permittee has identified and corrected the failure. [19.15.26.10(E) NMAC]

H. PERMIT CHANGES

1. Transfer. This Permit shall not be transferred without the prior written approval of OCD. Permittee shall file Form C-145 for a proposed transfer of the Well. OCD may require, as a condition of approving the transfer, that this Permit be amended to ensure compliance and consistency with applicable law. If the Well has not been spud prior to the transfer, the OCD may require that the new operator reapply and submit to the OCD a new Form C-108 prior to constructing and injecting into the well. [19.15.26.15 NMAC; 19.15.9.9 NMAC]

2. Insolvency. Permittee shall notify OCD Engineering Bureau of the commencement of a voluntary or involuntary proceeding in bankruptcy which names Permittee or

an entity which operates the Well on behalf of Permittee as a debtor no later than ten (10) business days after the commencement of the proceeding.

3. OCD Authority to Modify Permit and Issue Orders

a. The OCD may amend, suspend, or revoke this Permit after notice and an opportunity for hearing if it determines that:

- i. The Permit contains a material mistake;
- ii. Permittee made an incorrect statement on which OCD relied to establish a term or condition of the Permit or grant this Permit;
- iii. this Permit must be amended to ensure compliance and consistency with applicable law, including a change to the financial assurance requirements;
- iv. The Well's operation may affect the water quality of fresh water;
- v. Injected fluid is escaping from the approved injection interval;
- vi. Injection may be caused or contributed to seismic activity:
or
- vii. Injection may cause or contribute to the waste of oil, gas or potash resources or affect correlative rights, public health, or the environment.

b. OCD retains jurisdiction to enter such orders as it deems necessary to prevent waste and to protect correlative rights, protect public health, and the environment.

c. OCD retains jurisdiction to review this Permit as necessary and no less than once every five (5) years, and may determine whether this Permit should be modified, revoked and reissued, or terminated. [40 CFR 144.36(a)]

4. Permittee Request to Modify Permit. Permittee may apply to modify the terms of this Permit.

a. **Minor Modifications.** OCD may make a minor modification to this Permit without notice and an opportunity for hearing for:

- i. Non-substantive changes such as correction of typographical errors;

- ii. Requirements for more frequent monitoring or reporting;
- iii. Changes to the Well construction requirements provided that any alteration shall comply with the conditions of the Permit and does not change the Area of Review considered in the application for the Permit;
- iv. Amendments to the plugging and abandonment plan;
- v. Changes in the types of fluids injected which are consistent with sources listed in the application for the Permit and do not change the classification of the Well;
- vi. Corrections of the actual injection interval if within the approved formation; or
- vii. Transfer of a Permit for a Well that has been spud. [40 CFR 144.41]

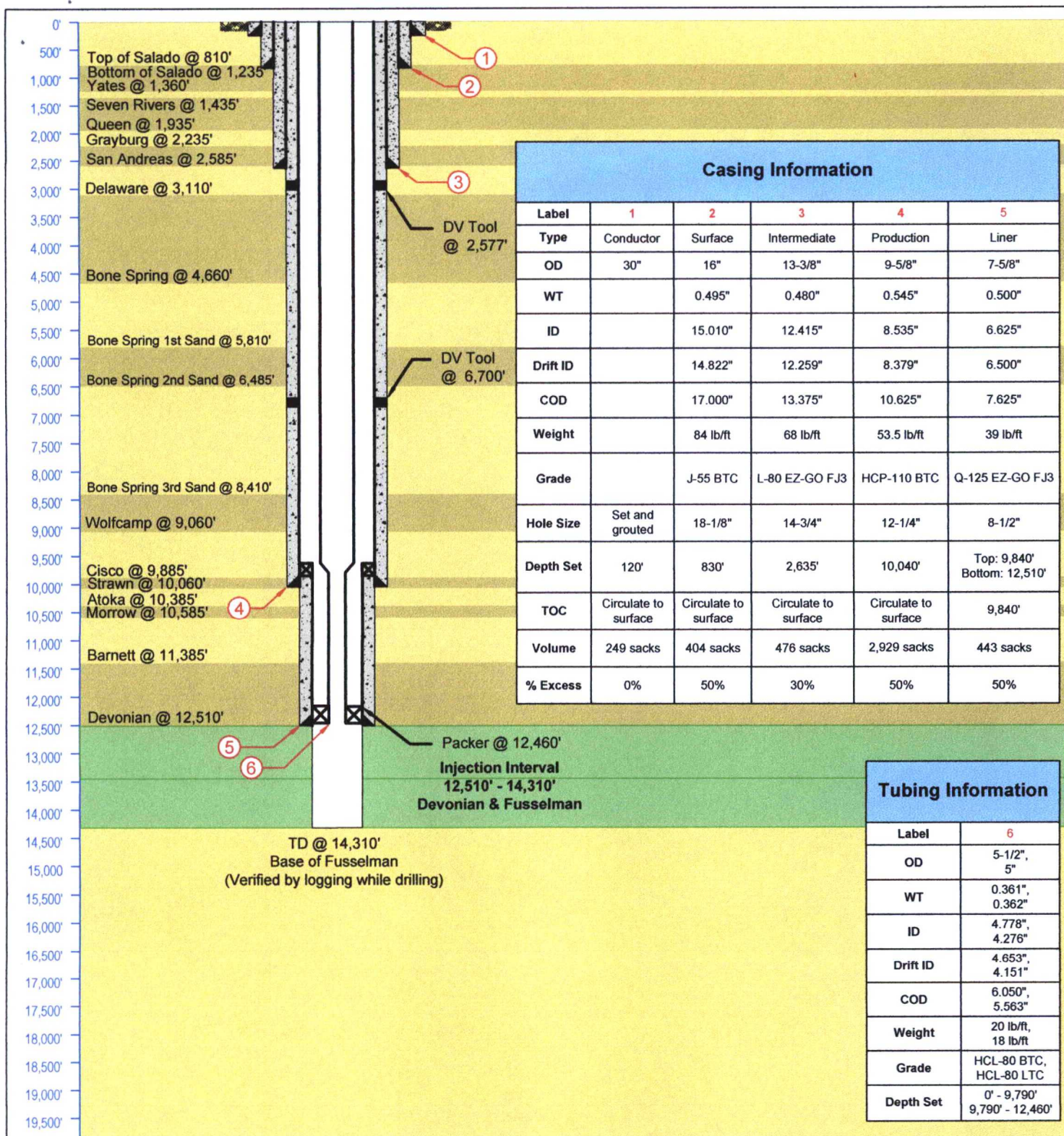
b. **Major Modifications.** OCD shall require notice and an opportunity for hearing for any modification that is not minor. For such modifications, Permittee shall submit Form C-108 and comply with the notice requirements of 19.15.26 NMAC.

II. SPECIAL CONDITIONS

Permittee shall comply with the following special conditions: No special conditions.

III. ATTACHMENT

Well Completion Diagram as Provided in the C-108 Application for Case No. 20587.



Casing Information					
Label	1	2	3	4	5
Type	Conductor	Surface	Intermediate	Production	Liner
OD	30"	16"	13-3/8"	9-5/8"	7-5/8"
WT		0.495"	0.480"	0.545"	0.500"
ID		15.010"	12.415"	8.535"	6.625"
Drift ID		14.822"	12.259"	8.379"	6.500"
COD		17.000"	13.375"	10.625"	7.625"
Weight		84 lb/ft	68 lb/ft	53.5 lb/ft	39 lb/ft
Grade		J-55 BTC	L-80 EZ-GO FJ3	HCP-110 BTC	Q-125 EZ-GO FJ3
Hole Size	Set and grouted	18-1/8"	14-3/4"	12-1/4"	8-1/2"
Depth Set	120'	830'	2,635'	10,040'	Top: 9,840' Bottom: 12,510'
TOC	Circulate to surface	Circulate to surface	Circulate to surface	Circulate to surface	9,840'
Volume	249 sacks	404 sacks	476 sacks	2,929 sacks	443 sacks
% Excess	0%	50%	30%	50%	50%

Tubing Information	
Label	6
OD	5-1/2", 5"
WT	0.361", 0.362"
ID	4.778", 4.276"
Drift ID	4.653", 4.151"
COD	6.050", 5.563"
Weight	20 lb/ft, 18 lb/ft
Grade	HCL-80 BTC, HCL-80 LTC
Depth Set	0' - 9,790' 9,790' - 12,460'

LONGQUIST & CO. LLC PETROLEUM ENGINEERS ENERGY ADVISORS HOUSTON CALGARY AUSTIN WICHITA DENVER Texas License F-9147 12912 Hill Country Blvd. Ste F-200 Austin, Texas 78738 Tel: 512.732.9812 Fax: 512.732.9816	Solaris Water Midstream, LLC		Capt Call SWD No. 1	
	Country: USA	State/Province: New Mexico	County/Parish: Eddy	
	Location:	Site: 820' FSL & 300' FWL	Survey: S2-T20S-R28E	
	API No: NA	Field: Devonian-Silurian (Code: 97869)	Well Type/Status: SWD	
	NMOC District No: 2	Project No: 1918	Date: 3/20/2019	
	Drawn: TFM	Reviewed:	Approved:	
	Rev No: 1	Notes:		