Form 3160-5
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Hobbs

FORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2014

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE *– Other instructions on page 2*

HOBBS OCD
MAY 26 2015
RECEIVED

5. Lease Serial No.
NMNM18306

6. If Indian, Allottee or Tribe Name

7. If Unit of CA/Agreement, Name and/or No.

1. Type of Well
☑ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
Stratocaster 20 Federal 4H

2. Name of Operator
Endurance Resources LLC

9. API Well No.
30-025-27051

3a. Address
203 West Wall Street Suite 1000 Midland TX 79701

3b. Phone No. *(include area code)*
432-242-4680

10. Field and Pool or Exploratory Area
Antelope Ridge Bone Spring West

4. Location of Well *(Footage, Sec., T.,R.,M., or Survey Description)*
1980 FSL & 660 FEL UL I Sec. 20 T23S R34E

11. County or Parish, State
Lea County, New Mexico

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☑ Subsequent Report	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other _____
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
☐ Final Abandonment Notice	☐ Convert to Injection	☐ Plug Back	☑ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

Water is being produced from the Bone Spring formation and is producing approximately 43.13 BWPD. This produced water is being transferred via flowline to the Federal 19 No. 1 SWD (SWD-1067) API No. 30-025-24676 located in NE/4 Sec. 19-T23S-R34E, Lea County, New Mexico.

See attached Administrative Order SWD-1067. Water Analysis

14. I hereby certify that the foregoing is true and correct. Name *(Printed/Typed)*
M. A. Sirgo, III

Title Engineer

Signature M. A. Sirgo III

Date 03/12/2015

ACCEPTED FOR RECORD

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title KZ

Date MAY 19 2015

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

MAY 27 2015

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Mark E. Fesmire, P.E.
Director
Oil Conservation Division

ADMINISTRATIVE ORDER SWD-1067

APPLICATION OF RAY WESTALL FOR PRODUCED WATER DISPOSAL, LEA COUNTY, NEW MEXICO

ADMINISTRATIVE ORDER
OF THE OIL CONSERVATION DIVISION

Under the provisions of Rule 701(B), RAY WESTALL made application to the New Mexico Oil Conservation Division for permission to utilize for produced water disposal its Federal 19 Well No. 1 (API No. 30-025-24676) located 660 feet from the North line and 660 feet from the East line of Section 19, Township 23 South, Range 34 East, NMPM, Lea County, New Mexico.

THE DIVISION DIRECTOR FINDS THAT:

(1) The application has been duly filed under the provisions of Rule 701(B) of the Division Rules and Regulations;

(2) Satisfactory information has been provided that all offset operators and surface owners have been duly notified;

(3) The applicant has presented satisfactory evidence that all requirements prescribed in Rule 701 will be met; and

(4) No objections have been received within the waiting period prescribed by said rule.

IT IS THEREFORE ORDERED THAT:

The applicant is hereby authorized to utilize its Federal 19 Well No. 1 (API No. 30-025-24676) located 660 feet from the North line and 660 feet from the East line of Section 19, Township 23 South, Range 34 East, NMPM, Lea County, New Mexico, in such manner as to permit the injection of produced water for disposal purposes into the Cherry Canyon member of the Delaware Mountain Group through perforations from 6670 feet to 6883 feet and through plastic-lined tubing set with a packer located within 100 feet of the top of the injection interval.

IT IS FURTHER ORDERED THAT:

The operator shall take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

As preparation for injection, the operator shall plug back the well with cement and cast iron bridge plug to within 200 feet of the bottom permitted injection interval.

The casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge or an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

After installing injection tubing, the casing shall be pressure tested from the surface to the packer setting depth to assure casing integrity.

The wellhead injection pressure on the well shall be limited to **no more than 1334 psi.** In addition, the injection well or system shall be equipped with a pressure limiting device in workable condition which shall, at all times, limit surface injection pressure to the maximum allowable pressure for this well.

The Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the injected fluid from the injection formation. Such proper showing shall consist of a valid step-rate test run in accordance with and acceptable to this office.

The operator shall notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment and of any mechanical integrity test so that the same may be inspected and witnessed.

The operator shall immediately notify the supervisor of the Hobbs district office of the Division of the failure of the tubing, casing, or packer in said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

PROVIDED FURTHER THAT, jurisdiction is retained by the Division 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 water or (2) consistent with the requirements in this order, whereupon the Division may, after notice and hearing, terminate the injection authority granted herein.

The operator shall provide written notice of the date of commencement of injection to the Hobbs district office of the Division.

The operator shall submit monthly reports of the disposal operations on Division Form C-115, in accordance with Rule Nos. 706 and 1120 of the Division Rules and Regulations.

The injection authority granted herein shall terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject well, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

Approved at Santa Fe, New Mexico, on February 6, 2007.

MARK E. FESMIRE, P.E.
Director

MEF/wvjj

cc: Oil Conservation Division – Hobbs
Bureau of Land Management – Carlsbad

Permian Basin Area Laboratory
2101 S Market Street
Bldg. B

Report Date: 3/20/2015

Complete Water Analysis Report SSP v.8

Customer:	ENDURANCE RESOURCES LLC	**Sample Point Name**	Stratocaster 20 Federal 4 H
District:	New Mexico	**Sample ID:**	201501009583
Sales Rep:	Wayne C Peterson	**Sample Date:**	2/25/2015
Lease:	DELEWARE BASIN	**Log Out Date:**	3/20/2015
Site Type:	Well Sites	**Analyst:**	Samuel Newman
Sample Point Description:	HEATER TREATER OUTLET		

ENDURANCE RESOURCES LLC, DELEWARE BASIN, Stratocaster 20 Federal 4 H

Field Data	
Initial Temperature (°F):	250
Final Temperature (°F):	80
Initial Pressure (psi):	100
Final Pressure (psi):	15
pH:	
pH at time of sampling:	7.0

Alkalinity by Titration:	mg/L	meq/L
Bicarbonate (HCO_3^-):	610.0	10.0
Carbonate (CO_3^{2-}):	ND	
Hydroxide (OH^-):	ND	
aqueous CO_2 (ppm):		400.0
aqueous H_2S (ppm):		51.0
aqueous O_2 (ppb):		ND
Calculated TDS (mg/L):		80823
Density/Specific Gravity (g/cm³):		1.0507
Measured Density/Specific Gravity		1.0577
Conductivity (mmhos):		ND
Resistivity:		ND
MCF/D:		No Data
BOPD:		No Data
BWPD:		No Data

Analysis of Sample — Anions:	mg/L	meq/L
Chloride (Cl^-):	47439.2	1338.2
Sulfate (SO_4^{2-}):	2412.0	50.2
Borate (H_3BO_3):	163.9	2.7
Fluoride (F^-):	ND	
Bromide (Br^-):	ND	
Nitrite (NO_2^-):	ND	
Nitrate (NO_3^-):	ND	
Phosphate (PO_4^{3-}):	ND	
Silica (SiO_2):	ND	

Organic Acids:	mg/L	meq/L
Formic Acid:	ND	
Acetic Acid:	ND	
Propionic Acid:	ND	
Butyric Acid:	ND	
Valeric Acid:	ND	
Anion/Cation Ratio:		1.07

Cations:	mg/L	meq/L
Sodium (Na^+):	28564.6	1243.0
Potassium (K^+):	517.2	13.2
Magnesium (Mg^{2+}):	145.4	12.0
Calcium (Ca^{2+}):	892.4	44.5
Strontium (Sr^{2+}):	61.7	1.4
Barium (Ba^{2+}):	0.0	0.0
Iron (Fe^{2+}):	16.3	0.6
Manganese (Mn^{2+}):	0.3	0.0
Lead (Pb^{2+}):	ND	
Zinc (Zn^{2+}):	0.4	0.0
Aluminum (Al^{3+}):	ND	
Chromium (Cr^{3+}):	ND	
Cobalt (Co^{2+}):	ND	
Copper (Cu^{2+}):	ND	
Molybdenum (Mo^{2+}):	ND	
Nickel (Ni^{2+}):	ND	
Tin (Sn^{2+}):	ND	
Titanium (Ti^{2+}):	ND	
Vanadium (V^{2+}):	ND	
Zirconium (Zr^{2+}):	ND	
Total Hardness:	2900	N/A

ND = Not Determined

Conditions		Barite ($BaSO_4$)		Calcite ($CaCO_3$)		Gypsum ($CaSO_4 \cdot 2H_2O$)		Anhydrite ($CaSO_4$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi		0.000	0.73	76.842	-0.52	0.000	-0.73	0.000
99°F	24 psi		0.000	0.77	80.518	-0.51	0.000	-0.64	0.000
118°F	34 psi		0.000	0.84	86.192	-0.50	0.000	-0.55	0.000
137°F	43 psi		0.000	0.92	92.328	-0.50	0.000	-0.45	0.000
156°F	53 psi		0.000	1.00	98.463	-0.49	0.000	-0.35	0.000
174°F	62 psi		0.000	1.09	104.432	-0.47	0.000	-0.24	0.000
193°F	72 psi		0.000	1.19	110.170	-0.46	0.000	-0.13	0.000
212°F	81 psi		0.000	1.30	116.005	-0.45	0.000	-0.01	0.000
231°F	91 psi		0.000	1.40	121.652	-0.43	0.000	0.11	131.129
250°F	100 psi		0.000	1.52	126.947	-0.42	0.000	0.23	258.779

Conditions		Celestite ($SrSO_4$)		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate ($FeCO_3$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	0.02	1.736	-1.71	0.000	3.28	8.971	0.66	8.878
99°F	24 psi	0.02	1.980	-1.72	0.000	3.17	8.969	0.76	9.433
118°F	34 psi	0.03	2.472	-1.74	0.000	3.11	8.968	0.87	9.950
137°F	43 psi	0.03	3.335	-1.74	0.000	3.08	8.967	0.97	10.353
156°F	53 psi	0.05	4.634	-1.75	0.000	3.07	8.967	1.08	10.656
174°F	62 psi	0.07	6.376	-1.75	0.000	3.08	8.967	1.17	10.881
193°F	72 psi	0.09	8.518	-1.75	0.000	3.10	8.968	1.25	11.049
212°F	81 psi	0.12	10.980	-1.75	0.000	3.14	8.969	1.34	11.186
231°F	91 psi	0.16	13.658	-1.74	0.000	3.19	8.970	1.42	11.290
250°F	100 psi	0.20	16.435	-1.74	0.000	3.24	8.971	1.48	11.368

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the eight (8) scales.

Note 3: Saturation Index predictions on this sheet use pH and alkalinity; $\%CO_2$ is not included in the calculations.

Calculate

ScaleSoftPitzer™ SSP 2010

Comments: _____

Permian Basin Area Laboratory
2101 S Market Street
Bldg. B

Report Date: 3/20/2015

Complete Water Analysis Report SSP v.8

Customer:	ENDURANCE RESOURCES LLC	Sample Point Name	Federal 19 # 1 SWD
District:	New Mexico	Sample ID:	201501009579
Sales Rep:	Wayne C Peterson	Sample Date:	2/25/2015
Lease:	DELEWARE BASIN	Log Out Date:	3/20/2015
Site Type:	Facility	Analyst:	Samuel Newman
Sample Point Description:	TRANSFER PUMP		

ENDURANCE RESOURCES LLC, DELEWARE BASIN, Federal 19 # 1 SWD

Field Data

Initial Temperature (°F):	250
Final Temperature (°F):	80
Initial Pressure (psi):	100
Final Pressure (psi):	15

pH:

pH at time of sampling:	7.0

Alkalinity by Titration:	mg/L	meq/L
Bicarbonate (HCO_3^-):	488.0	8.0
Carbonate (CO_3^{2-}):	ND	
Hydroxide (OH^-):	ND	

aqueous CO_2 (ppm):	400.0
aqueous H_2S (ppm):	68.0
aqueous O_2 (ppb):	ND
Calculated TDS (mg/L):	123803
Density/Specific Gravity (g/cm^3):	1.0805
Measured Density/Specific Gravity	1.0877
Conductivity (mmhos):	ND
Resistivity:	ND
MCF/D:	No Data
BOPD:	No Data
BWPD:	No Data

Analysis of Sample

Anions:	mg/L	meq/L
Chloride (Cl^-):	72820.3	2054.2
Sulfate (SO_4^{2-}):	1783.0	37.1
Borate (H_3BO_3):	234.0	3.8
Fluoride (F^-):	ND	
Bromide (Br^-):	ND	
Nitrite (NO_2^-):	ND	
Nitrate (NO_3^-):	ND	
Phosphate (PO_4^{3-}):	ND	
Silica (SiO_2):	ND	

Organic Acids:	mg/L	meq/L
Formic Acid:	ND	
Acetic Acid:	ND	
Propionic Acid:	ND	
Butyric Acid:	ND	
Valeric Acid:	ND	

Anion/Cation Ratio:	0.97

Cations:	mg/L	meq/L
Sodium (Na^+):	40648.5	1768.9
Potassium (K^+):	722.4	18.5
Magnesium (Mg^{2+}):	897.9	73.9
Calcium (Ca^{2+}):	5839.0	291.4
Strontium (Sr^{2+}):	304.2	6.9
Barium (Ba^{2+}):	0.0	0.0
Iron (Fe^{2+}):	64.7	2.3
Manganese (Mn^{2+}):	1.1	0.0
Lead (Pb^{2+}):	ND	
Zinc (Zn^{2+}):	0.0	0.0
Aluminum (Al^{3+}):	ND	
Chromium (Cr^{3+}):	ND	
Cobalt (Co^{2+}):	ND	
Copper (Cu^{2+}):	ND	
Molybdenum (Mo^{2+}):	ND	
Nickel (Ni^{2+}):	ND	
Tin (Sn^{2+}):	ND	
Titanium (Ti^{2+}):	ND	
Vanadium (V^{2+}):	ND	
Zirconium (Zr^{2+}):	ND	
Total Hardness:	18643	N/A

ND = Not Determined

Conditions		Barite ($BaSO_4$)		Calcite ($CaCO_3$)		Gypsum ($CaSO_4 \cdot 2H_2O$)		Anhydrite ($CaSO_4$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi		0.000	1.49	106.196	-0.03	0.000	-0.21	0.000
99°F	24 psi		0.000	1.51	106.669	-0.01	0.000	-0.12	0.000
118°F	34 psi		0.000	1.56	107.754	0.00	0.000	-0.02	0.000
137°F	43 psi		0.000	1.61	108.961	0.01	25.047	0.08	135.473
156°F	53 psi		0.000	1.67	110.192	0.02	49.911	0.19	282.401
174°F	62 psi		0.000	1.74	111.443	0.03	74.606	0.29	405.899
193°F	72 psi		0.000	1.81	112.729	0.04	98.558	0.40	507.573
212°F	81 psi		0.000	1.88	114.165	0.06	120.664	0.52	589.633
231°F	91 psi		0.000	1.96	115.692	0.06	139.477	0.63	654.685
250°F	100 psi		0.000	2.04	117.245	0.07	153.306	0.74	705.459

Conditions		Celestite ($SrSO_4$)		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate ($FeCO_3$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	0.41	125.399	-1.31	0.000	4.01	35.659	1.18	40.238
99°F	24 psi	0.42	127.780	-1.33	0.000	3.86	35.654	1.26	41.175
118°F	34 psi	0.43	129.921	-1.34	0.000	3.77	35.651	1.35	42.105
137°F	43 psi	0.44	132.244	-1.35	0.000	3.72	35.650	1.43	42.869
156°F	53 psi	0.46	135.010	-1.35	0.000	3.68	35.649	1.51	43.468
174°F	62 psi	0.47	138.335	-1.36	0.000	3.66	35.649	1.58	43.930
193°F	72 psi	0.50	142.220	-1.36	0.000	3.66	35.649	1.64	44.283
212°F	81 psi	0.52	146.576	-1.36	0.000	3.67	35.651	1.69	44.581
231°F	91 psi	0.55	151.252	-1.36	0.000	3.69	35.653	1.74	44.817
250°F	100 psi	0.58	156.061	-1.36	0.000	3.72	35.655	1.77	44.992

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the eight (8) scales.

Note 3: Saturation Index predictions on this sheet use pH and alkalinity; $\%CO_2$ is not included in the calculations.

Calculate

Comments: _____