Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

	WELL API NO. 30-045-28653
	5. Indicate Type of Lease STATE ☐ FEE ☒
	6. State Oil & Gas Lease No.
SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)	7. Lease Name or Unit Agreement Name Sunco Disposal
1. Type of Well: Oil Well ☐ Gas Well ☐ Other SWD Class I	8. Well Number #1
2. Name of Operator Agua Moss, LLC	9. OGRID Number 247130
3. Address of Operator PO Box 600 Farmington, NM 87499	10. Pool name or Wildcat SWD-MV
4. Well Location Unit Letter__E__:___1595____feet from the _____North___ line and ___1005___feet from the _West_____line Section 2 Township 29N Range 12W NMPM County San Juan	
	11. Elevation *(Show whether DR, RKB, RT, GR, etc.)* 5859'

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
DOWNHOLE COMMINGLE ☐			
CLOSED-LOOP SYSTEM ☐			
OTHER: FOT ☒		OTHER: ☐	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Agua Moss, LLC proposes to perform a FOT as outlined in the attached procedure.

Spud Date: | Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE__Philana Thompson_____ TITLE_____HSE & Regulatory Compliance Specialist_____DATE__6/3/2022_____

Type or print name __Philana Thompson_____ E-mail address: __pthompson@merrion.bz_____ PHONE: _505-486-1171____

For State Use Only

APPROVED BY: Carl J. Chavez TITLE Environmental Engineer DATE 7/19/2022

Conditions of Approval (if any): Please refer to Conditions of Approval.

AGUA MOSS, LLC PLAN FOR PRESSURE FALL-OFF TEST (FOT)

Well Information			
Well:	**Sunco Disposal 1**	**Field:**	Mesaverde SWD
Location:	1595' fnl &1005' fwl S2, T29N, R12W San Juan Co. New Mexico	**Elevations:**	5859' GL 5872' RKB
		Depths:	4706' KB PBTD 4760' KB TD
		Engineer:	Shacie Murray (505.330.7605)
API:	30-045-28653	**Date:**	May 19, 2022
Surface Casing:	8- 5/8" @ 209' KB w/ 150sx; Circ to surface	**Production Casing:**	5-1/2" @ 4750' KB w/ 230 sx stage 1, 515 sx stage 2, circ 25 sx to surf, DV tool @ 2244' KB
Tubulars:	2- 7/8" 6.5# EUE (Epoxy Coated) @ 4282' KB	**Packer:**	Arrow XL-W retrievable seal bore @ 4282' KB.
Perforations (MV)	4350-4460' KB 2 spf (2000 gals 15% HCL, Frac w/ 100,000# 20/40)		
Additional Perforations			
Perforations (MV)	None		

Version 1: Procedure subject to change based on changing well conditions.

Proposed Test Schedule:

Date	Event	Remarks
Tuesday, July 12, 2022	Check conditions, Perform MIT and Begin injection (72 hrs)	TD, Fill, Restrictions, begin injection at 9am
Friday, July 15, 2022	End Injection and Begin FOT	Shut-In and monitor 9am
Sunday, July 24, 2022	216 hrs	Conclude test at 9am

Test Considerations:

V.1 The triplex pump at the facility is capable of maintaining a constant rate of 1600 bpd against the anticipated injection pressures.

V.2 The injection rate of 1600 bpd (46.7 gpm) will be sufficient to produce valid test data. (After the 2018 FOT, reservoir modeling was performed to minimize the fluid volume to pump. An extra 24 hrs of injection is being proposed as well as an additional 48 hours of falloff)

V.3 The normal waste liquid will be used during the FOT due to the cost effectiveness and availability.

V.4 The total volume of fluid needed for the FOT is 4800 bbls.

a) A total of 3600 bbls will be onsite prior to starting the injection for the FOT and water will continue to be hauled to facility in the case that more fluid is needed during the injection period.
b) City water will be purchased for the FOT if it becomes necessary to make up the volume required for the test.

V.5 The pressure acquisition will be performed with pressure gauges at the surface and the injection period will be a minimum of 72 hrs to ensure radial flow and stabilization. A total of 15 hrs was calculated using the EPA Region 6 UIC Pressure Falloff Testing Guideline design calculations found on pg A-4.

V.6 There will be adequate storage capacity for waste water for the duration of the FOT.

V.7 There is one offset well completed in the Point Lookout disposal formation. The McGrath #4 is a class II disposal operated by ConocoPhillips approx. 1.25 miles to the north west of the Sunco #1. The well has been P&A'd, so there will not be any injection activity from offset wells during the FOT.

V.8 Crown valve is currently in-place on the Sunco #1 wellhead. The slickline work will be performed through a lubricator prior to the injection period.

V.9 A shut-in valve is located on the injection riser approx. 3-feet from the wellhead. This valve can be shut quickly to reduce erratic pressure response and minimize the wellbore storage.

V.10 Prior to the FOT a gauge ring will be run through the tubing to ensure no restrictions in the tubing and slickline will also be used to tag up and determine wellbore fill. Test parameters will be adjusted accordingly or the needed the repairs will be made to remedy the situation.

V.11 Bottomhole pressure will not be collected directly but calculated from the surface pressure collected using the appropriate gradient. The use of surface pressure for the FOT is justified by the fact that the well will maintain a positive pressure at the surface during the entire test (injection and pressure falloff).

V.12 A test log will be kept during the test and submitted with the FOT results. The log will include key events with date and times.

- Gauge ring run
- Tag depth
- Injection start
- Injection stop
- Well isolation
- Pressure stabilization
- End of Fall Off

V.13 The continuous data recording consists of a HOBO UX120-006M data logger with a Foxboro IGP10S industrial pressure transducer. The data logger features 4MB memory capable of keeping 1.9 million measurements, 1-year batter life (at 1-minute logging and 15 second sampling interval), and an accuracy of +/- 0.2%. Data will be recorded every 15 seconds. The pressure transducer has an accuracy of +/-0.05% and operating pressure range of 0-6,000 psi.

V.14 In addition surface pressures will be recorded continuously using a chart recorder during the FOT. If any abnormal surface pressure change occurs the test validity will be questioned and the test will be aborted if deemed invalid.

V.15 The tri-plex injection pump at the facility that is normally used for injection will be used for the FOT. It is a positive displacement pump running at a constant RPM which will ensure constant injection rate during the FOT. A constant injection rate of approximately 1600 bpd will be sufficient to create a minimum of 100 psi differential between final injection pressure and shut-in pressure. The rate will be carefully monitored prior to shut down to ensure a steady state injection is maintained prior to beginning the fall-off portion of the test.

Fall Off Test Procedure:

Prepare Well for Fall Off Test

1. Arrange for adequate injection fluid storage
2. Accumulate 1600 bbls of produced water
3. Perform MIT
4. MIRU slickline
5. RIH w/ Gauge ring to SN
6. POOH w/ Gauge ring and PU impression block (or something to run thru SN)
7. RIH tag and record fill depth
8. If no restrictions exist and fill is below the perfs continue on to FOT. Otherwise remediate problem or adjust FOT procedure before continuing. *Note: (2018-9-12 Amendment-* ***Tagged fill with wireline at 4387'.*** *Contacted NMOCD Jim G. who then directed us to Will Jones. Will gave permission to conduct the FOT with the additional fill covering perfs. FOT will be executed once C103 is approved.)*

Conduct Fall Off Test

9. Ensure surface gauges are configured properly
    a. Sufficient memory available
    b. Adequate power available
10. Begin injection, (66.7 bph) 1600 bwpd. Record time.
11. Inject for 72 hrs, total of 4800 bbls. Record start and stop time.
    a. Ensure injection pressures have stabilized before proceeding.
12. S/D injection pump and close valve @ wellhead. Record time.
    a. Once surface pressure stabilizes record start time of fall off.
13. Record pressure data for 216 hrs. Record start and stop time.
14. Put well back into service for normal operation.

New Mexico Oil Conservation Division
UIC Class I Well Fall-Off Test Guidance

(December 3, 2007)

New Mexico Oil Conservation Division
UIC Class I Well Fall-Off Test Guidance

Why does a fall-off test need to be performed?

Fall-off testing is a pressure transient test conducted on injection well formations to assess individual well conditions. The test provides the state regulatory agency with the necessary information to assess the validity of requested or existing injection well permit conditions and satisfy the permitting objective of protecting underground sources of drinking water (USDW). The test may also provide information about reservoir and completion characteristics such as transmissibility, skin factor, bottomhole injection pressure, reservoir static pressure, and geologic boundaries.

In addition to the state UIC regulatory requirements, Federal UIC regulations in 40 CFR Part 146 have monitoring requirements applying to both Class I hazardous and nonhazardous injection wells that include annual fall-off testing. Specifically, Part 146 regulations state "the Director shall require monitoring of the pressure buildup in the injection zone annually, including at a minimum, a shutdown of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve" (§146.13 (Non-hazardous)/§146.68 (Hazardous)). In the case of Class II wells, the regulations may not directly require that a fall-off test be conducted, but under 40 CFR 146.8(f), EPA or the state agency delegated UIC Class II program primacy can require additional testing such as a fall-off test on individual injection wells to ensure protection of USDWs.

Essentials of Fall-off Testing

A fall-off test is a pressure transient test involving shutting in an injection well and measuring the wellbore pressure decline versus time after radial flow conditions are achieved and well established in the preceding injection period. It is analyzed using the same pressure transient techniques for oil and gas well pressure buildup and drawdown tests. The fall-off period is a replay of the preceding injection period, but is typically less noisy since no injection occurs while the well's pressure change is measured, similar to the pressure buildup period in a production well.

Fall-off test data analysis can provide valuable information about both the condition of the wellbore itself and the nature of the reservoir the well injects into. For example, the skin factor parameter obtained from a fall-off test analysis can indicate whether completion damage exists and provide justification for a well stimulation or remedial treatment. The signature of the derivative may also provide insight into the well's completion, for example a negative half slope indicating spherical flow may be caused from wellbore fill or the well's completion. A properly designed fall-off may also provide information about natural fractures or geologic boundaries in the reservoir. The test analysis provides a determination of reservoir transmissibility which can be utilized to predict the relationship between reservoir pressure and injection rate, critical to designing appropriate UIC permit conditions. Recommended published technical references on fall-off testing methodology include Society of Petroleum Engineers (SPE) Monographs Volumes 1 and 5 as well as SPE Textbook Series Volumes 1 and 9.

For more detailed information about the basis, recommended calculations, and procedures for fall-off tests, the reader is referred to the US EPA internet URLs provided below:

USEPA Fall-Off Test Course
http://www.epa.gov/safewater/dwa/electronic/presentations/uic/2003nutsbolts-notebook.pdf

EPA Region 6 Fall-off Guidelines
http://www.epa.gov/region6/water/swp/uic/guideline.pdf

OCD UIC FALL-OFF TEST GUIDANCE

SECTION I. Purpose

The purpose of a fall-off test is to identify injection interval or wellbore problems and injection interval characteristics. The permittee is responsible for developing a testing procedure which will generate adequate data for a meaningful analysis.

SECTION II. Regulatory Citation

Pursuant to all applicable parts of the Water Quality Control Commission (WQCC) Regulations 20.6.2 NMAC and more specifically 20.6.2.3104 - 20.6.2.3999 discharge permit, and 20.6.2.5000-.5299 Underground Injection Control, the Oil Conservation Division (OCD), the OCD UIC Permit requires monitoring of the pressure buildup in the injection zone at least annually, including at a minimum, shut down of the well for a time sufficient to conduct a valid observation of the pressure fall-off. This test is known as the formation pressure fall-off test.

SECTION III. Developing a Test Plan

A plan for conducting the test shall be submitted to OCD for review and approval prior to conducting the test. Plan approval shall be obtained from OCD prior to commencing the test. The plan shall include a proposed schedule. The test plan must address all items listed in the Sections V through IX of this document.

SECTION IV. Scheduling of Test and Report

The schedule for the test must be mutually agreed upon between OCD and the permittee so that OCD has the opportunity to witness the test. The operator should submit a summary report to OCD within 30 days of test completion.

SECTION V. General Test Operational Considerations

A successful fall-off test involves consideration of numerous factors of which most are under the control of the permittee. These include but are not limited to the following:

1. Confirmation a constant injection rate can be maintained into the test well during the injectivity portion of the test.
2. The injection rate is sufficient to produce a measurable pressure buildup that will result in valid test data.
3. Consideration for using the normal waste liquid during the injectivity portion of the test unless the waste will be corrosive to the downhole pressure gauge.
4. Calculating the total volume of injection fluid needed for the injectivity portion of the test.

   a. Arrange for additional fluids and storage of such fluid
   b. Reduce the injection rate to reduce the total fluid requirement
5. Sustaining a constant injection rate after installing the pressure gauges to allow stabilization of the gauges prior to initiating the fall-off test. A three day period is recommended, but adjustments may be made because rates have previously been stabilized or historical test results indicate a lesser time is adequate.
6. Ensuring adequate waste storage is available for the duration of the fall-off test.
7. Shutting in offset wells completed in the same formation as the test well prior to the test. If impractical, then maintaining stable measured injection rates into the offset injection wells prior to and during the fall-off test.
8. Installing a crown valve on the well prior to starting the injectivity portion of the test so the well does not have to be shut-in to install the pressure gauges. Running both memory gauges in the hole through a lubricator installed into the crown valve for safety.
9. Locating the shut-in valve ceasing flow to the well at or near the wellhead to minimize the wellbore storage in the well. Shut-in must be accomplished as instantaneously as possible to prevent erratic pressure behavior during the shut-in caused by the rate fluctuations.
10. Evaluating the condition of the well, including wellbore fill, junk in the hole or wellbore damage, which may increase the length of shut-in time needed for the well to obtain a valid fall-off test and therefore also necessitate a longer injectivity period.
11. Using a surface readout downhole pressure gauge. Utilizing tandem downhole memory electronic pressure gauges, one of which is surface readout capable, with a pressure resolution level of 0.0002% of the gauge's full pressure range. Gauge pressure range should exceed the maximum pressure expected during the testing with the larger the percentage of the gauge pressure range utilized, the better.
12. Maintaining a test operations log throughout the fall-off test and submitting the log as part of the test report. The log should list all key test events, dates, and times. For example, the time the gauges were activated, run in the well and placed on bottom as well their setting depths. Synchronization of times and events is especially important in tests involving multiple wells.
13. If available, monitoring test progress with appropriate plots at the wellsite to insure valid test data is obtained and problematic tests can be identified and aborted.
14. Configuring the test gauges to obtain pressure data more frequently in the early portion of the test when the rate of pressure decline is greater if the memory capacity of the gauge is limited. Memory capacity of the gauge should allow for a 10-day total recording time interval unless a shorter test time is sufficient based on prior testing or appropriate test design calculations. Larger time increments may be used to obtain data later in the test when the rate of pressure decline is less. The recording frequency of the gauges and overall length of test should be set based on results of previous tests or test design calculations.
15. Using the injection facility pump if capable of maintaining a constant injection rate at the desired pre-fall-off test rate. If an alternate pump is needed, design the pump to operate as smoothly as possible at the desired constant rate. If feasible, design the test for a constant injection rate to cause a minimum of 100 psi differential pressure between the final injection and shut-in pressures.

SECTION VI. Background Information

Acquisition of the following information is recommended for the planning, design, and analysis of the fall-off test.

1. Current wellbore schematic
    a. Size and type of injection tubing (include type of internal coating, if applicable)
    b. Packer depth
    c. Tubing length including the depth of any seating or profile nipples, and the last date tubing was run
    d. Size, type, and depth of casings
    e. Cement tops with method of determining the top of cement
    f. Top and bottom perforation/completion depths including the size of perforation holes and date perforated
    g. Total depth, plug back depth, and the most recent depth to wellbore fill and date measured
    h. Location of the pressure measuring tool during the test
2. Copy of an electric log encompassing the completed interval
3. Copy of relevant portions of any porosity log used to estimate formation porosity
4. PVT data
    a. Estimation of formation fluid and reservoir rock compressibilities
    b. Formation fluid viscosity with reference temperature
    c. Formation fluid specific gravity/density with reference temperature
5. Injection fluids
    a. Description of fluids injected
    b. Injection fluid specific gravity/density with reference temperature
    c. Injection fluid compressibility
    d. Injection fluid viscosity with reference temperature
6. Daily rate history data for a minimum of one month preceding the fall-off test
7. Cumulative injection into the formation from test well and offset wells
8. Pressure gauges
    a. Description of the downhole surface pressure readout or memory gauge
    b. List the full range, accuracy and resolution of the gauges
    c. A calibration certificate showing date the gauges were last calibrated
9. One mile Area of Review (AOR)
    a. Identification of wells located within the one mile AOR
    b. Ascertaining the status of wells within the one mile AOR
    c. Providing details on any offset producers and injectors completed in the same injection interval
10. Geology
    a. Description of the geologic environment of the injection interval
    b. Discussion on the presence of pinchouts, channels, and faults, if applicable
    c. Providing a portion of a relevant structure map, if necessary

SECTION VII. Conducting the Fall-off Test

The following are recommended procedures for conducting the fall-off test. Alternative procedures that will produce valid test results and satisfy the requirements of OCD and the regulations will be considered by the OCD.

1. Install a digital surface recorder, connected to a rate meter and a digital surface transducer, capable of adequately measuring surface injection rates and wellhead injection pressures during the test.
2. Confirm the constant pre-fall-off test injection rate is maintained prior to the fall-off.
3. Confirm pressure gauges have stabilized prior to shutting in the well for the fall-off test.
4. Following installation of the bottom hole pressure gauges and surface recorders, regulate injection to the stabilized designated pre-fall-off test injection rate that will result in a sufficiently sized pressure increase (above shut-in pressure) on the wellhead. If the injection rate was stabilized prior to running the downhole gauges and the gauge installation did not disrupt the injection rate, monitoring the gauge for a minimum of one hour may be sufficient for verifying that the bottom hole pressure is stabilized prior to initiating the fall-off test.
5. The injection rate shall be high enough and continuous for a period of time sufficient to produce a pressure buildup that will result in valid test data. The injection rate shall result in a pressure buildup such that a semi-log straight line can be determined from the Horner plot or other appropriate semi-log plot. The injection rate shall be the maximum injection rate that can be feasibly maintained constant in order to maximize pressure changes in the formation and provide valid test results, but not exceeding the daily injection pressure and volume limit of the UIC Permit.
6. Confirm the liquid injection density is held relatively constant during the injectivity portion of the test by periodically measuring one or more of the following:
    a. Density
    b. Chloride concentration
    c. Total dissolved solids concentration
    d. Conductivity
    e. pH
7. The surface readout downhole pressure gauge must be located at or near the top of the injection interval unless previous testing indicates a more appropriate location.
8. ***If the stabilization injection period is interrupted, for any reason and for any length of time, the stabilization injection period must be restarted unless superposition analysis can be applied and valid test results obtained.***
9. The well must be shut-in at the wellhead or as near as feasible to the wellhead to minimize wellbore storage and after flow.
10. The well shut-in must be accomplished as instantaneously as possible to prevent erratic pressure behavior during the test.
11. Following shut-in at the well, shut-in relevant tubing valves to ensure complete shut-in of the well. Bottom-hole shut-in is preferred to surface shut-in, but not required. Shut-in the well with no disturbances for at least seven days or other approved time period as determined from previous tests results or the test design.
12. Upon completion of the test, tag fill depth with gauges, pull out bottom hole gauges making stops every 1000 feet for 5 minutes to obtain gradient data, rig down, and resume normal injection into the well as needed.
13. The fall-off portion of the test must be conducted for a length of time sufficient to reach radial flow, i.e., the pressure is no longer influenced by wellbore storage or skin effects and enough data points lie within the infinite acting period that the semi-log straight line

is well developed. A log-log with derivative plot should be prepared during the fall-off to verify that radial flow is occurring.

SECTION VIII. Evaluation of the Test Results

A licensed professional who is knowledgeable in the methods of pressure transient test analysis, must evaluate and summarize the test results. The following information and evaluations shall be provided in the test report:

1. A log-log plot with a derivative diagnostic plot shall be used to identify flow regimes.
2. The wellbore storage portion and infinite acting portion of the test shall be identified on the plot. Type curves shall be used to verify results.
3. A Horner plot or other appropriate semi-log plot must be used to calculate the kh/μ product and to determine P*. The wellbore storage and infinite acting portions of the test should be identified on the plot. An expanded semi-log plot containing the entire infinite acting portion must be reproduced to permit a closer inspection of the semi-log slope and any data fluctuations. The slope used to calculate the transmissibility (kh/μ) and to determine P* must be drawn on both semi-log plots.
4. The "h" value (injection interval thickness) used in the analysis must be agreed upon between OCD and the permittee. For formations with characteristics such as fracture-controlled karst reservoirs with porosity and permeability influenced by basement structural patterns and subaerial exposure, the entire thickness of the injection interval should be considered. A reliable literature value can be used if site specific data is not available.
5. The viscosity used in analyzing the test shall be that of the liquid through which the pressure transient was propagating during the infinite acting portion of the test. The information used to determine the viscosity shall be provided. Distance estimates to the waste front may also be needed.
6. Any test that was not shut-in long enough to develop an infinite acting period, or cannot be properly analyzed for transmissibility (kh/μ) from the semi-log plot, should be rerun using a procedure that will result in valid test results, unless other arrangements have been made with OCD.
7. All equations and assumptions used in the analysis shall be provided with the appropriate parameters substituted into the equations.
8. A plot of the temperature data shall be provided for review. Any temperature anomalies shall be noted to determine if they correspond to pressure anomalies since the temperature compensation mechanism of the pressure gauge may be influenced by temperature fluctuations.
9. Explain any anomalous pressure data responses. Investigate any potential physical causes for the anomaly in addition to potential reservoir response characteristics.

SECTION IX. Report Components

Include the following information in the report to the OCD in Santa Fe - Attention Environmental Bureau of the Division (see address under OCD contacts listed in the Contacts Section). The information in the report includes general information, an overview of the test, analysis of the test data, summary of the results and a comparison of the results with previous test results and UIC permit parameters. Submit the report to OCD within 30 days of test completion.

1. Facility information
    a. Name
    b. Location
    c. Operator's OGRD number
2. Well information:
    a. OCD UIC Permit number authorizing injection
    b. Well classification
    c. Well name and number
    d. API number
    e. Legal location
3. Current wellbore schematic as described in Section VI
4. Copy of an electric log encompassing the completed interval
5. Copy of relevant portions of any porosity log used to estimate formation porosity
6. PVT data of the formation and injection fluid as described in Section VI
7. Daily rate history data for a minimum of one month preceding the fall-off test
8. Cumulative injection into the formation from test well and offset wells
9. Pressure gauges
    a. Describe the type of downhole surface pressure readout gauge used including manufacturer and type
    b. List the full range, accuracy and resolution of the gauge
    c. Provide the manufacturer's recommended frequency of calibration and a calibration certificate showing date the gauge was last calibrated
10. One mile Area of Review (AOR)
    a. Identify wells located within the one mile AOR
    b. Ascertain the status of wells within the one-mile AOR
    c. Provide details on any offset producers and injectors completed in the same injection interval
11. Geology
    a. Describe geologic environment of the injection interval
    b. Discuss the presence of geologic features, i.e., pinchouts, channels, and faults, if applicable
    c. Provide a portion of a relevant structure map, if necessary
12. Offset wells
    a. Identify the distance between the test well and any offset wells completed in the same injection interval
    b. Report the status of the offset wells during both the injection and shut-in portions of the test
    c. Describe the impact, if any, the offset wells had on the test
13. Chronological listing of the daily testing activities (operations log)
    a. Date of the test
    b. Time of the injection period
    c. Type of injection fluid
    d. Final injection pressure and temperature prior to shutting in the well
    e. Total shut-in time
    f. Final static pressure and temperature at the end of the fall-off portion of the test

14. Describe the location of the shut-in valve used to cease flow to the well for the shut-in portion of the test.
15. Provide each of the following; including the equations used to calculate each, the equations with the appropriate parameters substituted in them, description of parameters used in calculations with references as to how the values were derived:
    a. Radius of test investigation
    b. Time to beginning of the infinite acting portion of the test
    c. Slope or slopes determined from the semi-log plot
    d. The value for transmissibility (kh/μ)
    e. Permeability (k)
    f. Skin factor (s)
    g. Pressure drop due to skin (ΔP_{skin})
    h. Flow efficiency ((Pwf-ΔP_{skin}-Pstatic)/(Pwf-Pstatic))
    i. Flow capacity (kh)
    j. P_{1hr} (extrapolated pressure at one hour)
16. Explain any pressure or temperature anomaly
17. Describe the test results
    a. Discuss if the test reached radial flow or if it was dominated by wellbore storage or another type of flow regime.
    b. Describe the reservoir results as homogeneous or heterogeneous explaining how this was determined.
18. Provide the following graphs:
    a. Cartesian plot of pressure and temperature versus time
    b. Cartesian plot of injection rate versus time
    c. Log-log and derivative plots with the flow regions identified
        i. Identify the wellbore storage period
        ii. Identify the radial flow period
        iii. Identify any other relevant flow regimes
    d. Semi-log plot and expanded semi-log plot (typically Horner plots)
        i. Identify the flow regions on each
        ii. Draw the semi-log straight line
        iii. Identify the P* (false extrapolated pressure)
        iv. Calculate P_{1hr} (extrapolated pressure at one hour)
    e. Plot of the digital surface rates and pressures from the surface pressure gauge
    f. Plot of digital pressures and times from the bottom hole gauges
    g. Complete injection rate history plot (injection rate and wellhead pressure vs. calendar time)
    h. Current Hall plot with explanation for any changes to the slope of this plot
19. Comparison of permeability (k), transmissibility (kh/μ), skin (s), false extrapolated pressure (P*), and depth to fill with the same values determined from fall-off tests previously conducted in the well.
20. A statement that the raw test data generated by the test will be kept on file by the permittee for a period of not less than 3 years and will be made available to OCD upon request during this time period. The raw test data need not be submitted to OCD unless requested.

SECTION X. Contacts

OCD Contacts:

Mr. Carl Chavez
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, NM 87505
Phone: 505-476-3491
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Mr. Wayne Price
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Phone: 505-476-3490
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Mr. William Jones
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, NM 87505
Phone: 505-476-3448
E-mail: william.jones@state.nm.us

USEPA Contacts:

Mr. Ken Johnson
USEPA Region 6 (6WQ-SG)
1445 Ross Avenue
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Phone: 214-665-8473
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Ms. Susan Lopez McKenzie
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811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

COMMENTS

Action 113528

COMMENTS

Operator: AGUA MOSS, LLC P.O. Box 600 Farmington, NM 87499	OGRID: 247130
	Action Number: 113528
	Action Type: [C-103] NOI General Sundry (C-103X)

COMMENTS

Created By	Comment	Comment Date
cchavez	Fall-Off Test 2022	7/19/2022

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
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CONDITIONS

Action 113528

CONDITIONS

Operator:	OGRID:
AGUA MOSS, LLC P.O. Box 600 Farmington, NM 87499	247130
	Action Number: 113528
	Action Type: [C-103] NOI General Sundry (C-103X)

CONDITIONS

Created By	Condition	Condition Date
cchavez	Test Plan is revised to require the following: 1) Bottom Hole Gauge Installation (Notification to OCD Aztec Office to Witness Bottom Hole Gauge Install). 2) Notification to OCD Aztec Office to Witness Steady State Injection Before Moment Valve is Closed to Start FOT Monitoring and observe pressure fall off at wellhead. 3) Include elements of attached FOT Report in final C-103Z FOT to OCD.	7/19/2022