

Form 3160-3  
(June 2015)FORM APPROVED  
OMB No. 1004-0137  
Expires: January 31, 2018

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
**APPLICATION FOR PERMIT TO DRILL OR REENTER**

1a. Type of work:	<input type="checkbox"/> DRILL	<input type="checkbox"/> REENTER	7. If Unit or CA Agreement, Name and No.
1b. Type of Well:	<input type="checkbox"/> Oil Well	<input type="checkbox"/> Gas Well	8. Lease Name and Well No.
1c. Type of Completion:	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Single Zone	<input type="checkbox"/> Multiple Zone
2. Name of Operator			9. API Well No. <b>30-025-55800</b>
3a. Address	3b. Phone No. (include area code)		10. Field and Pool, or Exploratory
4. Location of Well (Report location clearly and in accordance with any State requirements. *)  At surface  At proposed prod. zone			11. Sec., T. R. M. or Blk. and Survey or Area
14. Distance in miles and direction from nearest town or post office*		12. County or Parish	13. State
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file	
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration	
24. Attachments			

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.	4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
2. A Drilling Plan.	5. Operator certification.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).	6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature	Name (Printed/Typed)	Date
Title		
Approved by (Signature)	Name (Printed/Typed)	Date
Title		

Application approval 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.

Conditions of approval, if any, are attached.

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.

**APPROVED WITH CONDITIONS**

(Continued on page 2)

\*(Instructions on page 2)

## INSTRUCTIONS

**GENERAL:** This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

**ITEM I:** If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

**ITEM 4:** Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

**ITEM 14:** Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

**ITEMS 15 AND 18:** If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

**ITEM 22:** Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

**ITEM 24:** If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

## NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

**AUTHORITY:** 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

**PRINCIPAL PURPOSES:** The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

**ROUTINE USE:** Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

**EFFECT OF NOT PROVIDING INFORMATION:** Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM collects this information to allow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

**BURDEN HOURS STATEMENT:** Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Connection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

## Additional Operator Remarks

### Location of Well

0. SHL: TR P / 857 FSL / 228 FEL / TWSP: 20S / RANGE: 32E / SECTION: 14 / LAT: 32.5682817 / LONG: -103.7290894 ( TVD: 0 feet, MD: 0 feet )  
BHL: TR P / 857 FSL / 228 FEL / TWSP: 20S / RANGE: 32W / SECTION: 14 / LAT: 32.5682817 / LONG: -103.7290894 ( TVD: 0 feet, MD: 0 feet )

### BLM Point of Contact

Name: CANDY VIGIL  
Title: LLE  
Phone: (575) 234-5982  
Email: CVIGIL@BLM.GOV

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### **Review and Appeal Rights**

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

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Santa Fe Main Office  
Phone: (505) 476-3441 Fax: (55) 476-3462  
General Information  
Phone: (505) 629-6116

Online Phone Directory Visit:  
<https://www.emrnr.nm.gov/ocd/contact-us/>

State of New Mexico  
Energy, Minerals & Natural Resources  
Department  
OIL CONSERVATION DIVISION

Revised July 9, 2024  
Submit Electronically  
via OCD Permitting

Submittal Type:  
 Initial Submittal  
 Amended Report  
 As Drilled

**WELL LOCATION INFORMATION**

API Number <b>30-025-55800</b>	Pool Code <b>97869</b>	Pool Name <b>SWD; DEVONIAN-SILURIAN</b>
Property Code <b>338390</b>	Property Name <b>RAGIN RUTLEY SWD</b>	Well Number <b>#1</b>
OGRID No. <b>371643</b>	Operator Name <b>SOLARIS WATER MIDSTREAM, LLC.</b>	Ground Level Elevation <b>3531'</b>
Surface Owner: <input type="checkbox"/> State <input type="checkbox"/> Fee <input type="checkbox"/> Tribal <input checked="" type="checkbox"/> Federal		Mineral Owner: <input type="checkbox"/> State <input type="checkbox"/> Fee <input type="checkbox"/> Tribal <input checked="" type="checkbox"/> Federal

**Surface Location**

UL <b>P</b>	Section <b>14</b>	Township <b>20-S</b>	Range <b>32-E</b>	Lot	Ft. from N/S <b>857 FSL</b>	Ft. from E/W <b>228 FEL</b>	Latitude <b>32.56828178°N</b>	Longitude <b>103.72908949°W</b>	County <b>LEA</b>
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**Bottom Hole Location**

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
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Dedicated Acres	Infill or Defining Well	Defining Well API	Overlapping Spacing Unit (Y/N)	Consolidation Code	
Order Numbers: <b>SWD-2347</b>		Well setbacks are under Common Ownership: <input type="checkbox"/> Yes <input type="checkbox"/> No			

**Kick Off Point (KOP)**

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
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**First Take Point (FTP)**

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
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**Last Take Point (LTP)**

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
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Unitized Area or Area of Uniform Interest	Spacing Unit Type <input type="checkbox"/> Horizontal <input type="checkbox"/> Vertical	Ground Floor Elevation:
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**OPERATOR CERTIFICATIONS**

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and, if the well is a vertical or directional well, that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of a working interest or unleased mineral interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

If this well is a horizontal well, I further certify that this organization has received the consent of at least one lessee or owner of a working interest or unleased mineral interest in each tract (in the target pool or formation) in which any part of the well's completed interval will be located or obtained a compulsory pooling order from the division.

May 8 2025

Signature Date

Faith Malton

Printed Name

[faith.malton@ariswater.com](mailto:faith.malton@ariswater.com)

Email Address

**SURVEYOR CERTIFICATIONS**

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.



Signature and Seal of Professional Surveyor

Certificate Number

29786

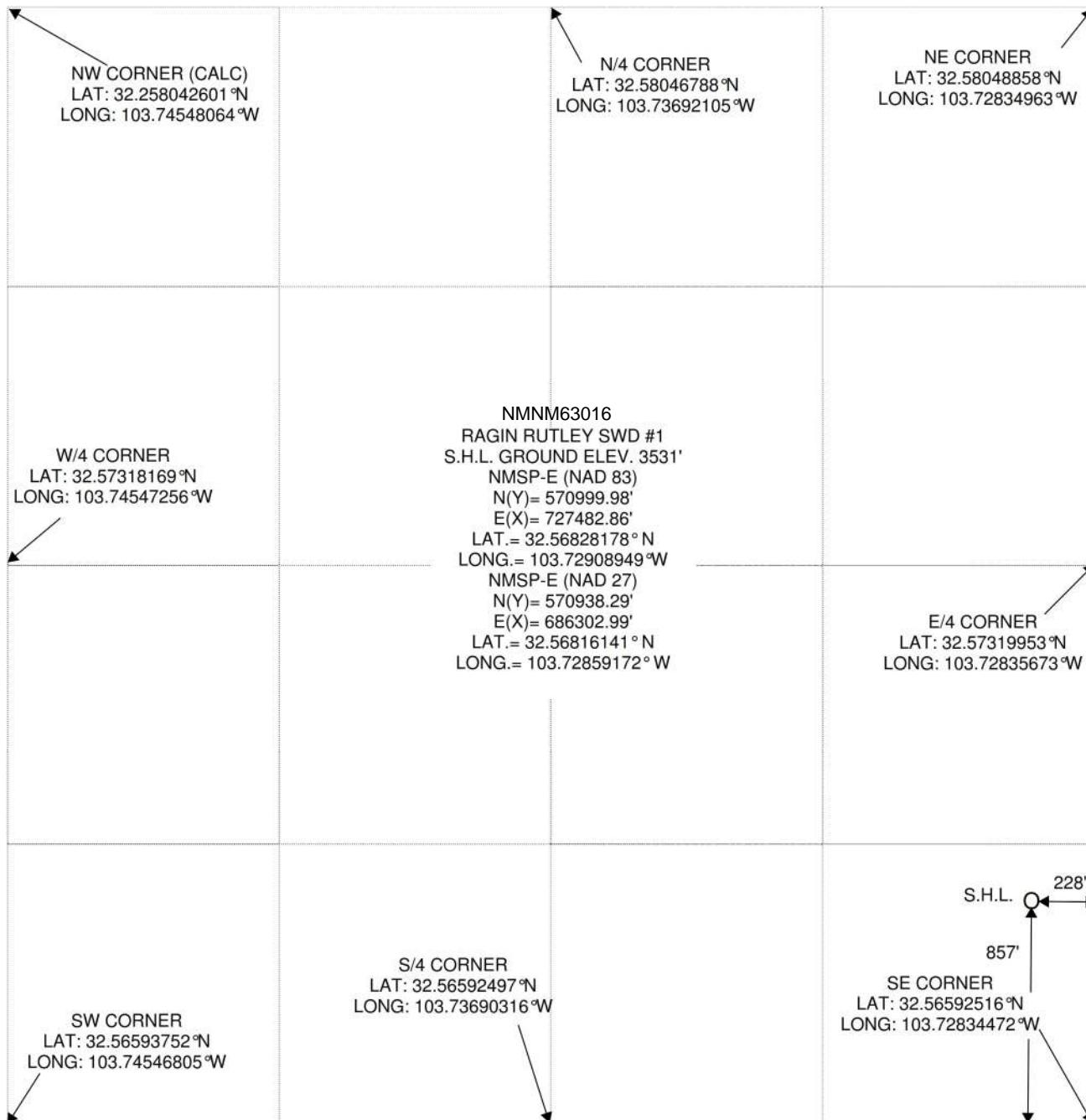
Date of Survey

4-07-2025

*Note: No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.*

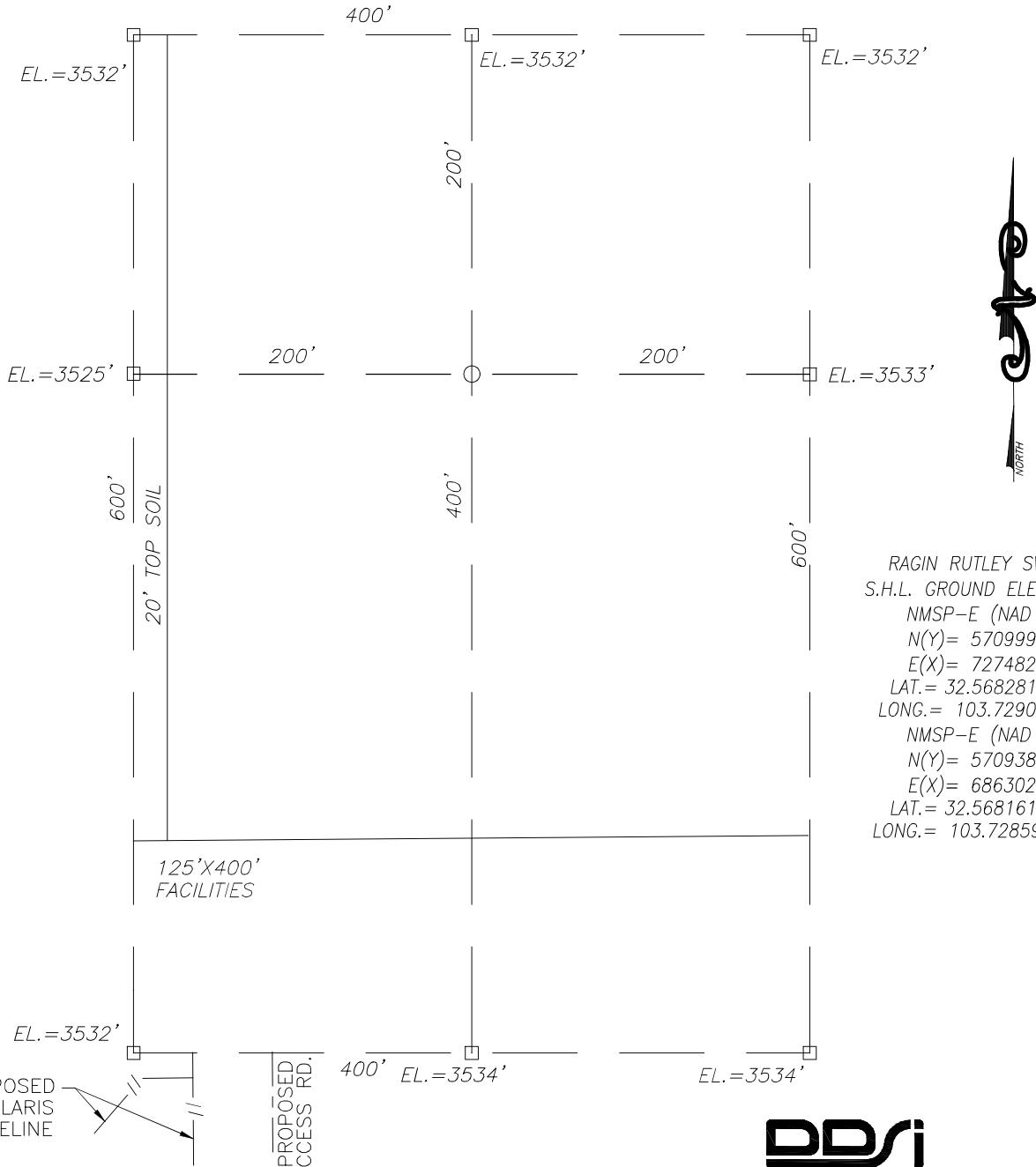
This grid represents a standard section. You may superimpose a non-standard section, or larger area, over this grid. Operators must outline the dedicated acreage in a red box, clearly show the well surface location and bottom hole location, if it is directionally drilled, with the dimensions from the section lines in the cardinal directions. If this is a horizontal wellbore show on this plat the location of the First Take Point and Last Take Point, and the point within the Completed interval (other than the First Take Point or Last Take Point) that is closest to any outer boundary of the tract.

Surveyors shall use the latest United States government survey or dependent resurvey. Well locations will be in reference to the New Mexico Principal Meridian. If the land is not surveyed, contact the OCD Engineering Bureau. Independent subdivision surveys will not be acceptable.



SECTION 14, TOWNSHIP 20 SOUTH, RANGE 32 EAST, N.M.P.M.,  
LEA COUNTY

NEW MEXICO



## DIRECTIONS TO LOCATION:

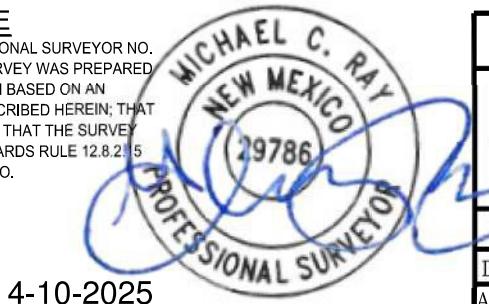
BEGINNING IN CARLSBAD, NEW MEXICO AT THE INTERSECTION OF U.S. HWY. 62 AND U.S. HWY. 285. HEAD EAST ON U.S. HWY. 62  $\pm$ 32.3 MILES. TURN LEFT AND HEAD NORTH ON STATE HWY. 176/243  $\pm$ 0.8 MILES. TURN RIGHT AND HEAD NORTHEAST ON ACCESS ROAD  $\pm$ 1800 FEET. THE WELL STAKED LOCATION FLAG IS NORTH  $\pm$ 1320 FEET.

ELEVATIONS SHOWN WERE DERIVED FROM STATIC GPS AND ARE IN N.A.V.D.  
1988 DATUM.

## SURVEYOR'S CERTIFICATE

I, MICHAEL C. RAY, NEW MEXICO PROFESSIONAL SURVEYOR NO. 29786, DO HEREBY CERTIFY THAT THIS SURVEY WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION BASED ON AN ACTUAL SURVEY ON THE GROUND AS DESCRIBED HEREIN; THAT I AM RESPONSIBLE FOR THIS SURVEY; AND THAT THE SURVEY AND REPORT MEETS THE MINIMUM STANDARDS RULE 12.8.215 FOR UNCLASSIFIED SURVEY IN NEW MEXICO.

MICHAEL C. RAY N.M.P.S. NO. 29786



4-10-2025

DOWNTOWN DESIGN SERVICES, INC.  
16 EAST 16th STREET, SUITE 400  
TULSA, OK 74119  
Tel: 918-592-3374 Fax: 918-221-3940  
[www.ddsglobal.com](http://www.ddsglobal.com)

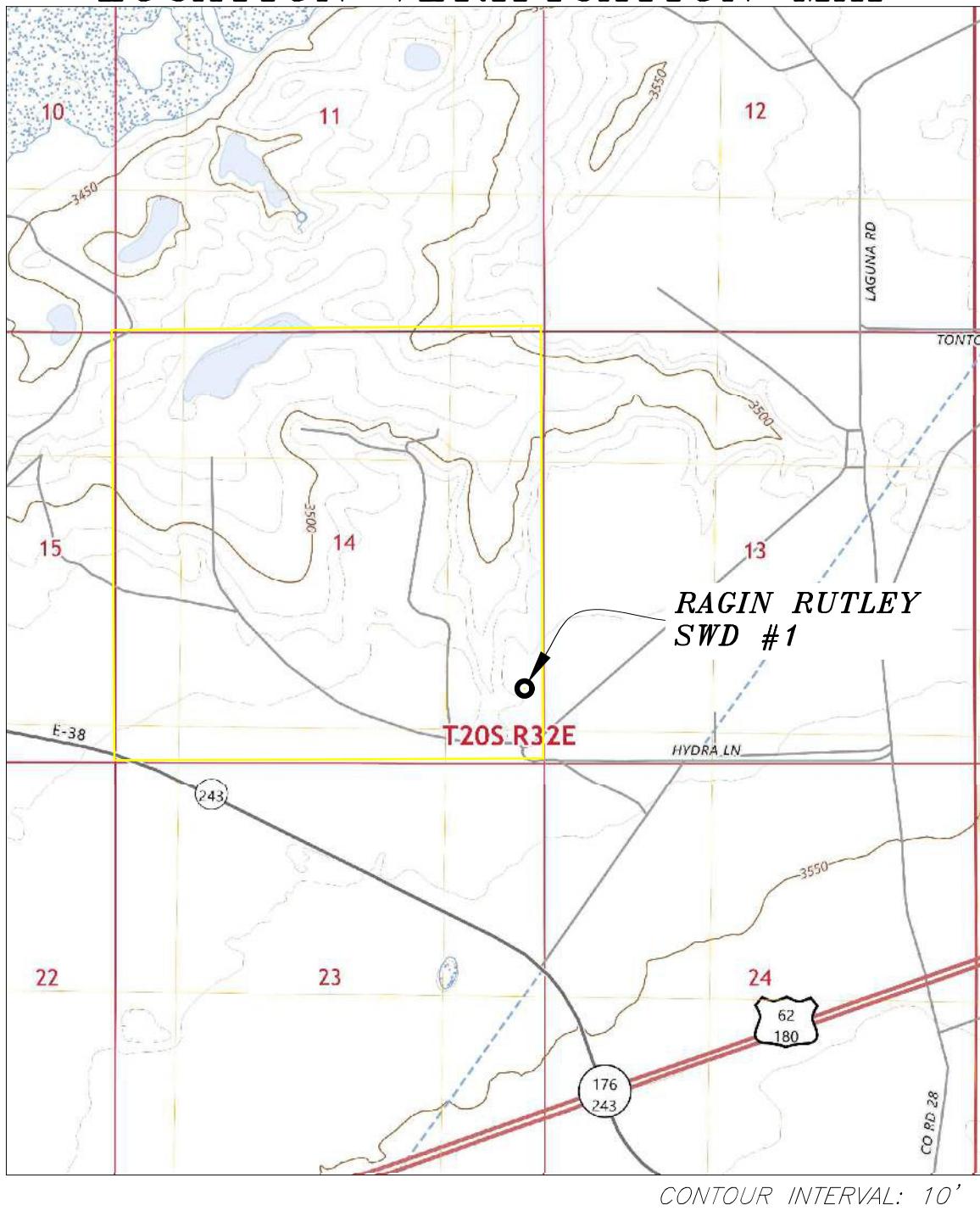
100 0 100 200 Feet  
Scale: 1" = 100'

## SOLARIS WATER MIDSTREAM, LLC.

RAGIN RUTLEY SWD #1  
LOCATED 857 FEET FROM THE SOUTH LINE  
AND 228 FEET FROM THE EAST LINE OF SECTION 14,  
TOWNSHIP 20 SOUTH, RANGE 32 EAST, N.M.P.M.,  
LEA COUNTY, NEW MEXICO

SURVEY DATE: APR. 7, 2025	PAGE: 1 OF 1	
DRAFTING DATE: APR. 8, 2025		
APPROVED BY: MCR	DRAWN BY: TJA	FILE: RAGIN RUTLEY SWD #1

## LOCATION VERIFICATION MAP



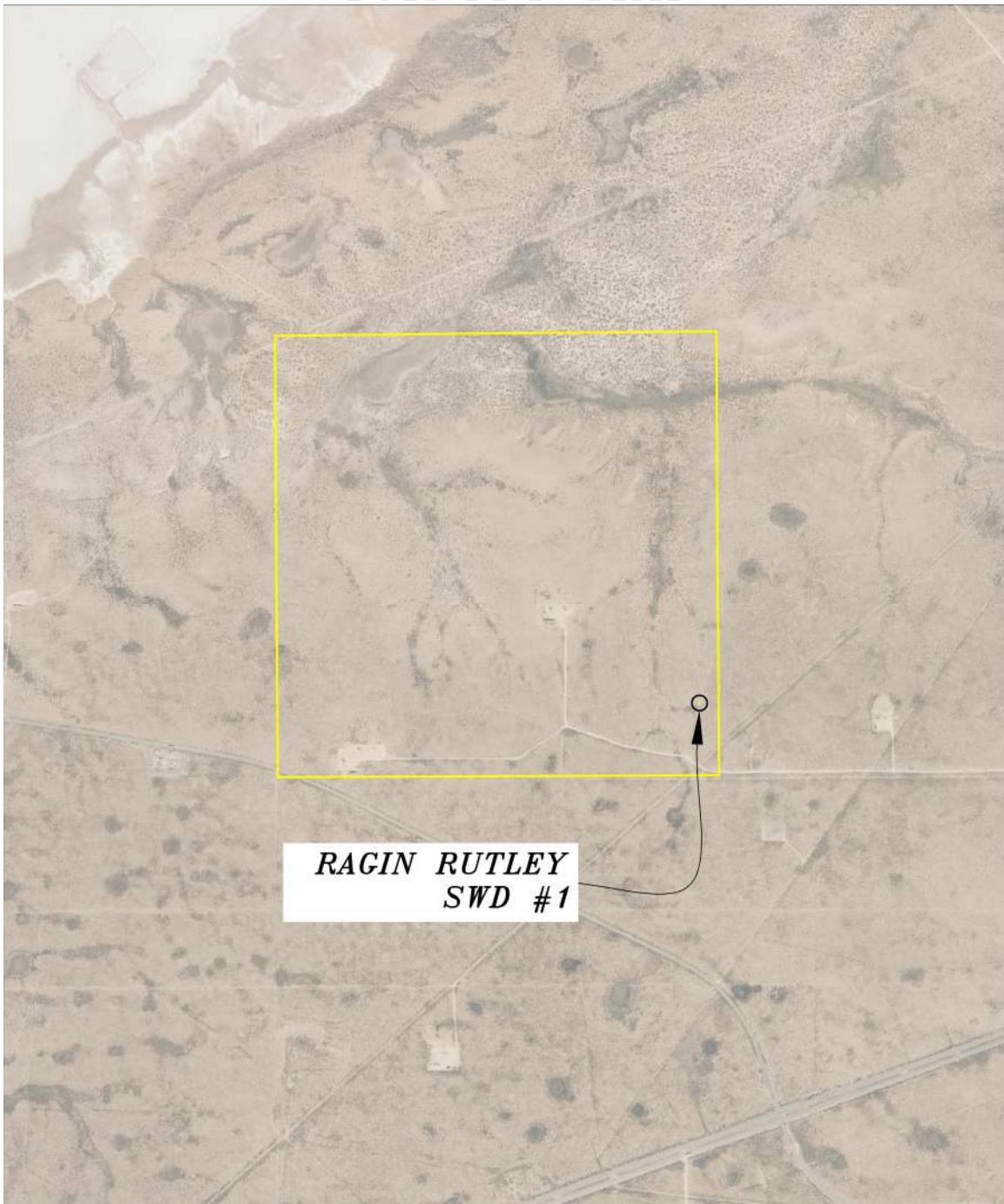
SEC. 14 TWP. 20-S RGE. 32-E  
 SURVEY N.M.P.M.  
 COUNTY LEA STATE NEW MEXICO  
 DESCRIPTION 857 F.S.L. & 228' F.E.L.  
 N.A.V.D. 88 ELEVATION 3531  
 OPERATOR SOLARIS WATER MIDSTREAM, LLC.  
 LEASE RAGIN RUTLEY SWD #1  
 U.S.G.S. TOPOGRAPHIC MAP  
 LEA, N.M.

ELEVATIONS SHOWN WERE DERIVED FROM  
STATIC GPS AND ARE IN N.A.V.D 1988 DATUM.

**SOLARIS WATER MIDSTREAM, LLC.**

SURVEY DATE: APR. 7, 2025	PAGE: 1 OF 1
DRAFTING DATE: APR. 8, 2025	
APPROVED BY: MCR	DRAWN BY: TJA

## VICINITY MAP



SEC. 14 TWP. 20-S RGE. 32-E  
 SURVEY N.M.P.M.  
 COUNTY LEA STATE NEW MEXICO  
 DESCRIPTION 857 F.S.L. & 228' F.E.L.  
 N.A.V.D. 88 ELEVATION 3531  
 OPERATOR SOLARIS WATER MIDSTREAM, LLC.  
 LEASE RAGIN RUTLEY SWD #1  
 U.S.G.S. TOPOGRAPHIC MAP  
LEA, N.M.

SCALE: 1" = 2000'

ELEVATIONS SHOWN WERE DERIVED FROM  
STATIC GPS AND ARE IN N.A.V.D 1988 DATUM.

Released to Imaging: 1/14/2026 8:10:16 AM

**SOLARIS WATER MIDSTREAM, LLC.**

SURVEY DATE: APR. 7, 2025	PAGE: 1 OF 1
DRAFTING DATE: APR. 8, 2025	
APPROVED BY: MCR	DRAWN BY: TJA

FILE: RAGIN RUTLEY SWD#1



# H<sub>2</sub>S Contingency Plan

Developed by  
**SOS Consulting, LLC**  
September 21, 2017



This plan was developed exclusively for Solaris Water Midstream, LLC  
Use of this document by its employees including  
contractors, is at the discretion of Solaris management.

No part of the content may be copied or used for  
other purposes by any other entity without the consent of  
SOS Consulting, LLC | 903-488-9850 | [info@sosconsulting.us](mailto:info@sosconsulting.us)

# **HYDROGEN SULFIDE CONTINGENCY PLAN**

## **POLICY OF**

## **SOLARIS WATER MIDSTREAM, LLC**

**MUST BE REVIEWED BY ALL PERSONNEL  
PRIOR TO COMMENCEMENT OF OPERATIONS**

### **PREFACE / OVERVIEW**

#### **PLAN ACTIVATION**

AT A MINIMUM, THE PLAN MUST BE ACTIVATED WHENEVER A RELEASE MAY CREATE A CONCENTRATION OF H<sub>2</sub>S OF MORE THAN 100 PPM IN ANY PUBLIC AREA, 500 PPM AT ANY PUBLIC ROAD OR 100 PPM 3,000 FEET FROM THE SITE OF RELEASE.

#### **OPERATIONAL DISTINCTION OF CONDITION**

FOR ALL OPERATIONS, SOLARIS WATER MIDSTREAM, LLC WILL APPLY THESE CRITERIA TO DETERMINE THE OPERATIONAL CONDITION:

**A. NORMAL / LOW CONDITIONS: KNOWN H<sub>2</sub>S IS AT OR LESS THAN 10 PPM.**

PURSUANT TO NMOCD RULES AND REGULATIONS, SOLARIS WATER MIDSTREAM, LLC MAY PETITION THE NEW MEXICO OIL CONSERVATION DIVISION DIRECTOR FOR AN EXEMPTION TO ANY REQUIREMENT OF THIS SECTION.

**FOR NORMAL / LOW CONDITION OPERATIONS, OTHER THAN AN AWARENESS OF THIS PLAN AND BASIC MONITORING AND WIND DIRECTION INDICATORS, AN EXEMPTION WILL BE REQUESTED AND DETAILED INFORMATION NOT OTHERWISE PROVIDED FOR IN THE NORMAL REGULATORY PERMITTING PROCESS MAY BE OMITTED.**

**B. HIGH RISK CONDITIONS: KNOWN H<sub>2</sub>S MAY APPROACH OR BE MORE THAN 100 PPM.**

#### **IMPLEMENTATION**

THIS PLAN DETAILS PROCEDURES AND ACTIVITIES PARTICULARLY GEARED TOWARDS HIGH RISK OPERATIONAL CONDITIONS .

ADDITIONAL INFORMATION SHALL BE FURHISHED IN THE FORM OF SITE SPECIFICS AND MAPS WHEN THE OPERATIONAL CONDITION IS DERTIMINED TO BE HIGH RISK.

## **PREFACE / OVERVIEW (continued)**

### **A. NOTIFICATION / COORDINATION OF EMERGENCY SERVICES**

PRIOR TO COMMENCING ACTIVITIES AT A HIGH-RISK SITE, THE APPROPRIATE EMERGENCY PERSONNEL FOR THE AREA WILL BE ALERTED TO THE ACTIVITY INCLUDING DATES, ANTICIPATED WORK TIMES, A COPY OF THIS PLAN AND THE FOLLOWING ITEMS SUCH THAT EMERGENCY PERSONNEL IS FULLY APPRISED OF THE OPERATION AND POTENTIAL OCURRENCES NO MATTER HOW UNLIKELY. (REFER TO EMERGENCY TELEPHONE LIST IN SECTION 5 OF THE PLAN, PAGES 8-9.)

### **B. SITE SPECIFIC PLANS SHALL INCLUDE\*:**

WELL OR FACILITY NAME, LOCATION (INCLUDING GIS COORDINATES) TYPE, DEPTH, ANTICIPATED OR MEASURED H2S CONCENTRATION, WELL OR LINE PRESSURES, PRESSURE AND FLOW CONTROL EQUIPMENT AND A SCHEMATIC DIAGRAM.

### **C. MAPS SHALL INDICATE:**

1. LOCATION OF WELL OR FACILITY WITH LOCATION IN RELATION TO ROADS, PUBLIC AREAS AND TOWNS AS APPLICABLE.
2. DIRECTION AND SPEED OF PREVAILING WINDS AT THE SITE, AS CURRENT AS POSSIBLE.
3. INGRESS / EGRESS TO THE SITE AS WELL AS TYPICAL ACCESS ROUTES FROM THE NEAREST TOWN WITH EMERGENCY SERVICES.
4. POTENTIAL ROAD CLOSURE AREAS SHALL BE COORDINATED WITH EMERGENCY PERSONNEL AND MAPPED BASED ON CRITERIA ABOVE.

**\* NOTE: THIS PLAN SATISFIES NORMAL OPERATING ENVIRONMENTS. WHEN SOLARIS WATER MISTREAM, LLC PLANS DRILLING OR OTHER ACTIVITIES IN A KNOWN H2S AREA (REASONABLY EXPECTED TO APPROACH 100 PPM AND HIGHER VOLUMES), THE PLAN SHOULD BE AUGMENTED FOR THAT SPECIFIC SITE - SEE SITE SPECIFIC CHECK LIST IN APPENDIX 'B' OF THE MAIN PLAN.**

### **PLAN DEVELOPMENT**

THIS PLAN HAS BEEN DEVELOPED IN ACCORDANCE WITH TITLE 19 NATURAL RESOURCES AND WILDLIFE CHAPTER 15, OIL AND GAS PART II, HYDROGEN SULFIDE GAS AND ALL PARTS CONTAINED THEREIN.

IT FURTHER MEETS AS APPLICABLE, OSHA REQUIREMENTS AND API H2S PUBLICATIONS:

- 'RECOMMENDED PRACTICE FOR OIL AND GAS WELL SERVICING AND WORKOVER OPERATIONS INVOLVING HYDROGEN SULFIDE', RP-68 (API);
- 'RECOMMENDED PRACTICES FOR DRILLING AND WELL SERVICING OPERATIONS INVOLVING WELLS CONTAINING HYDROGEN SULFIDE', RP-49 (API);
- 'H2S AT CRUDE OIL PUMP STATIONS, PRODUCING WELLS, TANK BATTERIES AND ASSOCIATED PRODUCTION FACILITIES, PIPELINES, REFINERIES, GAS PLANTS AND COMPRESSOR STATIONS', RP-55 (API)

# **HYDROGEN SULFIDE CONTINGENCY PLAN**

POLICY OF

**SOLARIS WATER MIDSTREAM, LLC**

## **PLEASE NOTICE**

### **APPLICABILITY OF PLAN**

#### **NORMAL OPERATIONS**

THIS PLAN IS GENERALLY APPLICABLE TO ALL OPERATIONS IN NORMAL CONDITIONS IN SOUTHEAST NEW MEXICO WHERE KNOWN H<sub>2</sub>S IS AT OR LESS THAN 10 PPM.

#### **HIGH RISK / KNOWN H<sub>2</sub>S AREAS**

**SITE SPECIFIC PLANS** WILL BE DEVELOPED FOR WORK PLANNED IN HIGH RISK AREA. THESE ARE AREAS WHERE KNOWN H<sub>2</sub>S CONCENTRATION MAY REASONABLY BE EXPECTED TO **APPROACH OR EXCEED 100 PPM** AND AT SIGNIFICANT VOLUMES.

TO MEET THE REQUIREMENTS FOR SITE SPECIFIC PLANS, THIS PLAN WILL BE AMENDED OR AUGMENTED TO INCLUDE MAPS, DIAGRAMS AND DRAWINGS AND DETAIL THE COORDINATION BETWEEN COMPANY PERSONNEL AND COUNTY EMERGENCY AGENCIES INCLUDING LAW ENFORCEMENT.

THE CHECKLIST ON THE FOLLOWING PAGE SHOWS THE ADDITIONAL ITEMS REQUIRED TO MEET NEW MEXICO OIL CONSERVATION DIVISION RULES AND REGULATIONS.

**OIL CONSERVATION DIVISION**  
**H2S CONTINGENCY PLAN REQUIRED BY OCD RULE 19.15.11 NMAC**

**Operator Name: SOLARIS WATER MIDSTREAM, LLC**  
**Date: Implemented/ Adopted September 2017**

<b>Contingency Plan Requirements Checklist</b>				
<b>19.15.11.9.B NMAC Requirement</b>	<b>Included?</b>	<b>Page in Document?</b>	<b>Notes</b>	
<b>Emergency Procedures</b>				
Responsibilities & duties of personnel during emergency	YES	2, 3		
Immediate action plan	YES	4, 5		
Evacuation and shelter in place plans	YES	9, 10	Applicable to site specific - Shelter in Place.	
Telephone numbers of emergency responders	YES	8, 9		
Telephone numbers of public agencies	YES	8, 9		
Telephone numbers of local government	YES	8, 9		
Telephone numbers of appropriate public authorities	YES	8, 9		
Location of potentially affected public areas Also see 19.15.11.12.B & D	n/a		Applicable to site specific.	
Location of potentially affected public roads	n/a		Applicable to site specific.	
Proposed evacuation routes, with locations of road blocks	n/a		Applicable to site specific.	
Procedures for notifying the public	YES	10		
Availability and location of safety equipment and supplies Also see 19.15.11.12.C	n/a	7, 13	Applicable to site specific. H2S Safety Trailer on location. Equipment list pg.13	
<b>Characteristics of hydrogen sulfide and sulfur dioxide</b>				
Discussion of characteristics	YES	16, 17, 18		
<b>Maps and Drawings</b>				
Area of exposure	n/a		Applicable to site specific.	
Public areas within area of exposure	n/a		Applicable to site specific.	
Public roads within area of exposure	n/a		Applicable to site specific.	
<b>Training and Drills</b>				
Training of personnel to include responsibilities, duties, hazards, detection, personal protection and contingency procedure	YES	11	Solaris Water Midsteam, LLC personnel and all contractors will be certified in H2S Safety. Training requirements are listed in plan.	
Periodic drills or exercises that simulate a release	n/a		Applicable to site specific.	
Documentation of training, drills, & attendance	n/a		Applicable to site specific.	
Training of residents on protective measures	n/a		Applicable to site specific.	
Briefing of public officials on evacuation or shelter-in-place plans	n/a		Applicable to site specific.	
<b>Coordination with state emergency plans</b>				
How emergency response actions will coordinate with OCD and the state police response plans	Perhaps	10, 20	[Mostly] Applicable to site specific.	
<b>Activation Levels</b>				
Activation Levels and description of events which may lead to a release in excess of activation level	YES	4, 5		
<b>Plan Activation</b>				
Commitment to activate contingency plan whenever H2S concentration of more than 100 ppm in a public area or 500 ppm at a public road	YES	15		
Commitment to activate contingency plan whenever H2S concentration of more than 100 ppm 3000 feet from the site of release	YES	15		

# **HYDROGEN SULFIDE CONTINGENCY PLAN**

POLICY OF

**SOLARIS WATER MIDSTREAM, LLC**

**MUST BE REVIEWED BY ALL PERSONNEL  
PRIOR TO COMMENCEMENT OF OPERATIONS**

## **SCOPE**

THIS CONTINGENCY PLAN ESTABLISHES GUIDELINES FOR ALL COMPANY AND CONTRACTOR PERSONNEL WHO'S WORK ACTIVITIES MAY INVOLVE EXPOSURE TO HYDROGEN SULFIDE (H<sub>2</sub>S) GAS. GUIDELINES ADDRESSING PUBLIC SAFETY ARE INCLUDED.

## **OBJECTIVE**

1. PREVENT ANY AND ALL ACCIDENTS, AND PREVENT THE UNCONTROLLED RELEASE OF HYDROGEN SULFIDE INTO THE ATMOSPHERE.
2. PROVIDE PROPER PROCEDURES TO HANDLE EMERGENCIES AND POSSIBLE EVACUATION.
3. PROVIDE IMMEDIATE AND ADEQUATE MEDICAL ATTENTION SHOULD AN INJURY OCCUR.

## **IMPLEMENTATION**

THIS PLAN WITH ALL DETAILS IS TO BE FULLY IMPLEMENTED BEFORE OPERATIONS COMMENCE PURSUANT TO THE CONDITION BEING:

**NORMAL / LOW CONDITIONS: KNOWN H<sub>2</sub>S IS AT OR LESS THAN 10 PPM.**

**HIGH RISK CONDITIONS: KNOWN H<sub>2</sub>S MAY APPROACH OR BE MORE THAN 100 PPM.**

## **OVERVIEW OF PLAN**

- I. PERSONNEL RESPONSIBILITY  
(PAGES 2-3)
2. NORMAL /  
LOW H<sub>2</sub>S CONDITIONS  
(PAGES 3-4)

THIS SECTION SHOWS SPECIFIC RESPONSIBILITIES FOR ALL PERSONNEL PRESENT - BY TITLE OR JOB DUTIES.

THIS SECTION OUTLINES PROCEDURES DURING NORMAL OPERATIONS WHEN EXPECTATIONS OF AN H<sub>2</sub>S ENVIRONMENT ARE REASONABLY LOW.

H<sub>2</sub>S Contingency Plan (continued)

3. EMERGENCY RESPONSE PROCEDURES <b>(PAGES 4-6)</b>	THIS SECTION OUTLINES THE CONDITIONS PROCEDURE AND DENOTES STEPS TO BE TAKEN IN THE EVENT OF AN EMERGENCY OR HIGH RISK LEVELS OF H <sub>2</sub> S ARE IMMINENT.
4. HIGH RISK / EMERGENCY EQUIPMENT <b>(PAGES 6-7)</b>	THIS SECTION OUTLINES THE USE OF EMERGENCY EQUIPMENT THAT WILL BE REQUIRED FOR THE DRILLING OR WORKOVER OF THIS WELL.
5. EMERGENCY TELEPHONE NUMBERS <b>(PAGES 8-9)</b>	ALL PARTIES TO BE CONTACTED SHOULD AN EMERGENCY EXIST.
6. SAFETY BRIEFING <b>(PAGE 9)</b>	THIS SECTION DEALS WITH THE BRIEFING OF ALL PEOPLE INVOLVED IN THE DRILLING OPERATION.
7. EVACUATION / PUBLIC SAFETY <b>(PAGES 9-10)</b>	THIS SECTION DEALS WITH THE EVACUATION OF PERSONNEL AND PUBLIC SAFETY IN THE EVENT OF AN EMERGENCY.

**APPENDICES**

A. TRAINING REQUIREMENTS AND FIRST AIDE <b>(PAGE 11-12)</b>	ALL COMPANIES WILL INSURE THAT ALL PERSONNEL AT THE WELL SITE WILL HAVE HAD ADEQUATE TRAINING IN H <sub>2</sub> S SAFETY PROCEDURES. FIRST AIDE FOR H <sub>2</sub> S.
B. CHECK LISTS <b>(PAGES 13-15)</b>	A STATUS CHECK LIST, PROCEDURAL CHECK LIST AND SITE SPECIFIC PLAN CHECK LIST HAVE BEEN INCLUDED TO INSURE ADHERENCE TO THE PLAN.
C. EFFECTS, LEVELS, RADIUS OF EXPOSURE, THRESHOLDS <b>(PAGES 16-19)</b>	A GENERAL INFORMATION SECTION HAS BEEN INCLUDED TO SUPPLY SUPPORT INFORMATION INCLUDING EFFECTS OF H <sub>2</sub> S, LEVELS AND RADIUS OF EXPOSURE & REGULATORY THRESHOLDS.
D. INCIDENT RESPONSE PROTOCOL <b>(PAGE 20)</b>	<b>IN THE EVENT OF AN ACTUAL EMERGENCY INCIDENT, THIS STEP-BY-STEP PROCEDURE CAN BE TURNED TO QUICKLY AT THE BACK OF THE DOCUMENT.</b>

**I. PERSONNEL RESPONSIBILITY**

<b>COMPANY FOREMAN /</b>	SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION OF THIS PLAN.
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H<sub>2</sub>S Contingency Plan (continued)DESIGNATEDPERSONNEL

SHALL BE IN COMPLETE COMMAND DURING ANY EMERGENCY. (**INCIDENT COMMANDER**)

SHALL DESIGNATE A BACK-UP.

ALL PERSONNEL

1. ON ALARM, DON ESCAPE UNIT AND REPORT IN UP WIND BRIEFING AREA.
2. CHECK STATUS OF PERSONNEL (BUDDY SYSTEM).
3. SECURE BREATHING EQUIPMENT.
4. AWAIT ORDERS FROM SUPERVISOR.

DRILLING FOREMAN /  
RIG OPERATOR

1. REPORT TO UP WIND BRIEFING AREA.
2. DON BREATHING EQUIPMENT AND RETURN TO POINT OF RELEASE WITH TOOL PUSHER OR DRILLER (BUDDY SYSTEM).
3. DETERMINE H<sub>2</sub>S CONCENTRATIONS.
4. ASSESS SITUATION AND TAKE CONTROL MEASURES.

TOOL PUSHER

1. REPORT TO UP WIND SAFETY BRIEFING AREA.
2. DON BREATHING EQUIPMENT AND RETURN TO POINT OF RELEASE WITH DRILLING FOREMAN OR DRILLER (BUDDY SYSTEM).
3. DETERMINE H<sub>2</sub>S CONCENTRATION.
4. ASSESS SITUATION AND TAKE CONTROL MEASURES.

DRILLER

1. DON ESCAPE UNIT.
2. CHECK MONITOR FOR POINT OF RELEASE.
3. REPORT TO BRIEFING AREA.
4. CHECK STATUS OF PERSONNEL (IN AN ATTEMPT TO RESCUE, USE THE BUDDY SYSTEM).
5. ASSIGNS LEAST ESSENTIAL PERSON TO NOTIFY DRILLING FOREMAN AND TOOL PUSHER BY QUICKEST MEANS IN CASE OF THEIR ABSENCE.
6. ASSUMES THE RESPONSIBILITIES OF THE DRILLING FORMAN AND TOOL PUSHER UNTIL THEY ARRIVE SHOULD THEY BE ABSENT.

DERRICK MANFLOOR MAN #1FLOOR MAN #2VISITORS

REPORT TO AND REMAIN IN SAFETY BRIEFING AREA UNTIL INSTRUCTED BY SUPERVISOR.

MUD ENGINEER

1. REPORT TO BRIEFING AREA.
2. WHEN INSTRUCTED, BEGIN CHECK OF MUD FOR PH AND H<sub>2</sub>S LEVEL.

SAFETY PERSONNEL

MASK UP AND CHECK STATUS OF ALL PERSONNEL AND SECURE OPERATIONS AS INSTRUCTED BY DRILLING FOREMAN AND REPORT TO BRIEFING AREA.

## H<sub>2</sub>S Contingency Plan (continued)

### **2. NORMAL / LOW H<sub>2</sub>S CONDITION**

CONDITIONS ARE CONSIDERED NORMAL WHEN THERE ARE REASONABLE EXPECTATIONS THAT NONE OR LOW CONCENTRATIONS OF H<sub>2</sub>S WILL BE ENCOUNTERED DURING ALL PHASES OF THE CURRENT OPERATIONS. (SEE APPENDIX 'C', THRESHOLDS, PRGPH.3)

- I. LOW H<sub>2</sub>S - LEVELS ARE KNOWN TO CONSISTENTLY BE AT OR **BELOW 10 PPM**.
2. NORMAL CONDITION EXPECTATIONS ARE BASED ON HISTORICAL EVIDENCE OF THE AREA, GEOLOGIC FORMATIONS AND TYPE OF OPERATIONS WITH REGARD TO FLUIDS BEING UTILIZED FOR DRILLING AND/OR WORKOVER TASKS.
3. OPERATING IN A NORMAL CONDITION DOES NOT RELIEVE ANY PERSONNEL OF THEIR RESPONSIBILITY, NOR SHOULD IT LESSEN THEIR ATTENTION TO KNOWING THE SAFETY PROCEDURES THAT WILL IMMEDIATELY BE IMPLEMENTED UPON ANY EVIDENCE OF CHANGING H<sub>2</sub>S LEVELS.
4. ALL PERSONNEL WORKING ON SITE WILL DON PERSONAL H<sub>2</sub>S DETECTORS.
5. A WINDSOCK OR OTHER WIND DIRECTION INDICATOR WILL BE ON LOCATION AND EASILY VISIBLE FROM ALL AREAS.
6. ALL PERSONNEL WILL HAVE A CURRENT H<sub>2</sub>S TRAINING CARD.
7. ALL PERSONNEL WILL HAVE VIEWED THIS H<sub>2</sub>S CONTINGENCY PLAN.

### **3. EMERGENCY RESPONSE PROCEDURES (SEE ALSO APPENDIX 'D')**

NOTICE: FOR ALL SITES AND OPERATIONS WHERE REASONABLE EXPECTATIONS ARE THAT H<sub>2</sub>S LEVELS MAY BE **ABOVE 100 PPM**, ALL SERVICE COMPANY PERSONNEL HAVE READ THIS H<sub>2</sub>S CONTINGENCY PLAN AND WILL VERBALLY INDICATE STRICT ADHERENCE TO WITH ALL PROCEDURES ESPECIALLY WITH REGARD TO THEIR JOB TITLE AND DUTIES ON THIS LOCATION.

#### **IMMEDIATE PROCEDURES**

- A. IN THE EVENT OF ANY EVIDENCE OF H<sub>2</sub>S LEVEL **ABOVE 100 PPM**, (OR IS APPROACHING 100 PPM) TAKE THE FOLLOWING STEPS:
  - I. SECURE BREATHING EQUIPMENT.
  2. ORDER NON-ESSENTIAL PERSONNEL OUT OF DANGER ZONE.
  3. TAKE STEPS TO DETERMINE IF THE H<sub>2</sub>S LEVEL CAN BE CORRECTED OR SUPPRESSED AND, IF SO, PROCEED IN NORMAL OPERATION.
- B. IF UNCONTROLLABLE CONDITIONS OCCUR: (SEE ALSO APPENDIX 'D')
  - I. TAKE STEPS TO PROTECT AND/OR REMOVE ANY PUBLIC IN THE DOWN-WIND AREA FROM THE RIG - PARTIAL EVACUATION AND ISOLATION. NOTIFY NECESSARY

## H<sub>2</sub>S Contingency Plan (continued)

PUBLIC SAFETY PERSONNEL EMERGENCY RESPONDERS OF THE SITUATION, E.G. STATE POLICE, COUNTY EMERGENCY MANAGEMENT, SHERIFF, MEDICAL IF REQUIRED.

2. REMOVE ALL PERSONNEL TO SAFE BREATHING AREA.
3. NOTIFY PUBLIC SAFETY PERSONNEL TO SAFE BREATHING AREA.
4. PROCEED WITH BEST PLAN (AT THE TIME) TO REGAIN CONTROL OF THE WELL. MAINTAIN TIGHT SECURITY AND SAFETY PROCEDURES.

## EMERGENCY ACTIONS

### **WELL BLOWOUT - IF EMERGENCY**

- I. EVACUATE ALL PERSONNEL IF POSSIBLE.
2. IF SOUR GAS - EVACUATE RIG PERSONNEL.
3. IF SOUR GAS - EVACUATE PUBLIC WITHIN 3000 FT RADIUS OF EXPOSURE.
4. DON SCBA AND RESCUE.
5. CALL 911 FOR EMERGENCY HELP (FIREDEPT AND AMBULANCE) AND NOTIFY COMPANY FOREMAN / DESIGNATED PERSONNEL.
6. GIVE FIRST AID.

### **PERSON DOWN LOCATION / FACILITY**

- I. IF IMMEDIATELY POSSIBLE, CONTACT 911. GIVE LOCATION AND WAIT FOR CONFIRMATION.
2. DON SCBA AND RESCUE - BUDDY SYSTEM ONLY.

### **AS APPLICABLE FOR TODAY'S CURRENT OPERATIONS / EVENTS**

#### **TAKING A KICK**

WHEN TAKING A KICK DURING AN H<sub>2</sub>S EMERGENCY, ALL PERSONNEL WILL FOLLOW STANDARD BOP PROCEDURES AFTER REPORTING TO BRIEFING AREA AND MASKING UP.

#### **OPEN-HOLE LOGGING**

ALL UNNECESSARY PERSONNEL OFF FLOOR. DRILLING FOREMAN AND SAFETY PERSONNEL SHOULD MONITOR CONDITION, ADVISE STATUS AND DETERMINE NEED FOR USE OF AID EQUIPMENT.

#### **RUNNING CASING OR PLUGGING**

FOLLOWING THE SAME "TRIPPING" PROCEDURE AS ABOVE. DRILLING FOREMAN AND SAFETY PERSONNEL SHOULD DETERMINE IF ALL PERSONNEL HAVE ACCESS TO PROTECTIVE EQUIPMENT.

## H<sub>2</sub>S Contingency Plan (continued)

### **WELL OUT OF CONTROL**

**THE DECISION TO IGNITE THE WELL IS THE RESPONSIBILITY OF COMPANY FOREMAN. IN THE EVENT HE IS INCAPACITATED, IT BECOMES THE RESPONSIBILITY OF THE CONTRACT RIG TOOL PUSHER. THE DECISION SHOULD BE MADE ONLY AS A LAST RESORT AND IN A SITUATION WHERE IT IS CLEAR THAT:**

1. HUMAN LIFE AND PROPERTY ARE ENDANGERED.
2. THERE IS NO HOPE OF CONTROLLING THE BLOWOUT UNDER THE PREVAILING CONDITIONS AT THE WELL.

**NOTIFY EMERGENCY AUTHORITIES IF TIME PERMITS,  
BUT DO NOT DELAY IF HUMAN LIFE IS IN DANGER.**

**INITIATE EVACUATION PLAN.**

### **IGNITION PROCEDURES**

#### **INSTRUCTIONS FOR IGNITING THE WELL**

1. TWO PEOPLE ARE REQUIRED FOR THE ACTUAL IGNITING OPERATION. THEY MUST WEAR SELF-CONTAINED BREATHING APPARATUS (SCBA) UNITS AND HAVE SAFETY ROPE ATTACHED. ONE MAN (TOOL PUSHER OR SAFETY ENGINEER) WILL CHECK THE ATMOSPHERE FOR EXPLOSIVE GASES WITH THE EXPLOSIMETER. THE OTHER MAN (DRILLING FOREMAN) IS RESPONSIBLE FOR IGNITING THE WELL.
2. PRIMARY METHOD TO IGNITE: 2S MM FLARE GUN WITH RANGE OF APPROXIMATELY 500 FEET.
3. IGNITE UP WIND AND DO NOT APPROACH ANY CLOSER THAN IS WARRANTED.
4. SELECT THE IGNITION SITE BEST FOR PROTECTION, AND WHICH OFFERS AN EASY ESCAPE ROUTE.
5. BEFORE FIRING, CHECK FOR PRESENCE OF COMBUSTIBLE GAS.
6. AFTER LIGHTING, CONTINUE EMERGENCY ACTION AND PROCEDURE AS BEFORE.
7. ALL UNASSIGNED PERSONNEL WILL LIMIT THEIR ACTIONS TO THOSE DIRECTED BY THE DRILLING FOREMAN.

**REMEMBER: AFTER WELL IS IGNITED, BURNING HYDROGEN SULFIDE WILL CONVERT TO SULFUR DIOXIDE, WHICH IS ALSO HIGHLY TOXIC.  
DO NOT ASSUME THE AREA IS SAFE AFTER THE WELL IS IGNITED.**

H<sub>2</sub>S Contingency Plan (continued)**4. HIGH RISK / EMERGENCY EQUIPMENT REQUIREMENTS**

## A. SIGNS (ANSI STANDARD ZS3S.I-2002; SAFETY COLOR CODE)

- I. ONE SIGN LOCATED AT LOCATION ENTRANCE WITH THE FOLLOWING LANGUAGE:

**(LEASE) CAUTION - POTENTIAL POISON GAS HYDROGEN SULFIDE  
NO ADMITTANCE WITHOUT AUTHORIZATION**

## B. WINDSOCK- WIND STREAMERS

- I. ONE 36" (IN LENGTH) WINDSOCK LOCATED AT PROTECTION CENTER, AT HEIGHT VISIBLE FROM RIG FLOOR.
2. ONE 36" (IN LENGTH) WINDSOCK LOCATED AT HEIGHT VISIBLE FROM PIT AREAS.

## C. HYDROGEN SULFIDE DETECTOR AND ALARMS

- I. H<sub>2</sub>S MONITORS WITH ALARMS WILL BE LOCATED ON THE RIG FLOOR, AT THE BELL NIPPLE, AND AT THE FLOW LINE. **THESE MONITORS WILL BE SET TO ALARM AT 15 PPM WITH RED LIGHT, AND TO ALARM AT 20 PPM WITH RED LIGHT AND AUDIBLE ALARM.**

2. HAND OPERATED DETECTORS WITH TUBES.

3. H<sub>2</sub>S MONITOR TESTER.

## D. CONDITION FLAGS

- I. ONE EACH OF ORANGE, YELLOW, AND RED CONDITION FLAGS TO BE DISPLAYED TO DENOTE CONDITIONS:

**GREEN - NORMAL CONDITIONS (POTENTIAL)  
YELLOW - POTENTIAL DANGER (MODERATE)  
RED - DANGER, H<sub>2</sub>S PRESENT (EXTREME)**

2. CONDITION FLAG SHALL BE POSTED AT LOCATION SIGN ENTRANCE.

## E. AUXILIARY RESCUE EQUIPMENT

- I. STRETCHER

2. 100' LENGTH OF S/8" NYLON ROPE.

## F. MUD INSPECTION DEVICES - GARRETT GAS TRAIN OR HACH TESTER FOR INSPECTION OF SULFIDE CONCENTRATION IN MUD SYSTEM.

## G. FIRE EXTINGUISHER - ADEQUATE FIRE EXTINGUISHERS SHALL BE LOCATED AT STRATEGIC LOCATIONS.

## H. BLOW OUT PREVENTION EQUIPMENT - THE WELL SHALL HAVE HYDRAULIC BOP EQUIPMENT FOR THE ANTICIPATED BOTTOM HOLE PRESSURE. EQUIPMENT IS TO BE TESTED ON INSTALLATION.

H<sub>2</sub>S Contingency Plan (continued)

I. COMBUSTIBLE GAS DETECTOR - THERE SHALL BE ONE COMBUSTIBLE GAS DETECTOR ON LOCATION AT ALL TIMES.

J. BOP TESTING - BOP AND CHOKE LINE AND KILL LINE WILL BE TESTED.

K. AUDIO SYSTEM - RADIO COMMUNICATION WILL BE AVAILABLE AT THE **RIG, RIG FLOOR OR TRAILER AND VEHICLES**.

L. SPECIAL CONTROL EQUIPMENT - MAKE SURE OF HYDRAULIC BOP EQUIPMENT WITH REMOTE CONTROL ON GROUND AND ROTATING HEAD.

## 5. EMERGENCY TELEPHONE NUMBERS

<u>CONTACT PARTY</u>	<u>OFFICE</u>
 <b><u>SOLARIS WATER MIDSTREAM EMERGENCY</u></b>	
1) <b>Jason Fajakus</b> HSE Manager	<b>CELL: (512)750-2723</b>
2) <b>Jon Ricker</b> SR. VP- Operations and Engineering	<b>CELL: (432)217-5108</b>
3) <b>Chris Rodriguez</b> Senior Operations Manager	<b>CELL: (575)300-5261</b>
 <b><u>STATE POLICE</u></b>	
EDDY COUNTY	<b>575-748-9718</b>
LEA COUNTY	<b>575-392-5588</b>
 <b><u>SHERIFF</u></b>	
EDDY COUNTY	<b>575-887-1888</b>
Substation - ARTESIA: 575-748-2323	
LEA COUNTY	<b>575-396-3611</b>
Substations - EUNICE: 575-394-2020; HOBBS: 575 393-2515; JAL: 575-394-2121	
 <b><u>EMERGENCY MEDICAL</u></b>	
EDDY COUNTY	<b>911 OR 575-746-2701</b>
LEA COUNTY	<b>911 OR 575-394-3258</b>
AIRLIFT - AeroCare (Lubbock): 800-823-1991; AirMed (El Paso): 800-527-2767	
 <b><u>EMERGENCY RESPONSE</u></b>	
EDDY COUNTY	<b>575-616-7155</b>
LEA COUNTY	<b>575-391-2961</b>

H<sub>2</sub>S Contingency Plan (continued)

<u>CONTACT PARTY</u>	<u>OFFICE</u>
<input checked="" type="checkbox"/> <b><u>FIRE DEPARTMENTS</u></b>	
ARTESIA	<b>575-746-5051</b>
CARLSBAD	<b>575-885-3125</b>
HOBBS	<b>575-397-9308</b>
EUNICE	<b>575-394-3258</b>
JAL	<b>575-395-2221</b>
<input checked="" type="checkbox"/> <b><u>POLICE DEPARTMENTS</u></b>	
ARTESIA	<b>575-746-5000</b>
CARLSBAD	<b>575-885-2111</b>
HOBBS	<b>575-397-9265</b>
EUNICE	<b>575-394-2112</b>
JAL	<b>575-395-2501</b>
<input checked="" type="checkbox"/> <b><u>TOTAL SAFETY</u></b>	
<b>EDDY &amp; LEA COUNTIES</b>	<b>575-392-2973</b>
<input checked="" type="checkbox"/> <b><u>AMERICAN SAFETY SERVICES</u></b>	
<b>EDDY &amp; LEA COUNTIES</b>	<b>575-746-1096</b>
<input checked="" type="checkbox"/> <b><u>WILD WELL CONTROL</u></b>	
<b>MIDLAND, TX</b>	<b>281-784-4700</b>
<input checked="" type="checkbox"/> <b><u>NM OIL CONSERVATION DIVISION</u></b>	
ARTESIA DIST.2 (EDDY) 575-748-1283	HOBBS DIST.1 (LEA) 575-393-6161

**6. SAFETY BRIEFING****SERVICE COMPANY AND VISITING PERSONNEL**

- A. EACH SERVICE COMPANY THAT WILL BE ON THIS WELL WILL BE NOTIFIED IF THE ZONE CONTAINS H<sub>2</sub>S.
- B. EACH SERVICE COMPANY MUST PROVIDE FOR THE TRAINING AND EQUIPMENT OF THEIR EMPLOYEES BEFORE THEY ARRIVE AT THE WELL SITE.
- C. EACH SERVICE COMPANY WILL BE EXPECTED TO ATTEND A SAFETY BRIEFING.

**7. EVACUATION PLAN****GENERAL REQUIREMENTS**

EVACUATION ROUTES SHOULD BE ESTABLISHED PRIOR TO SPUDDING EACH WELL AND DISCUSSED WITH ALL RIG PERSONNEL.

## H<sub>2</sub>S Contingency Plan (continued)

### **I. DESIGNATED AREA**

- A. PARKING AND VISITOR AREA: ALL VEHICLES ARE TO BE PARKED AT A PRE-DETERMINED AND SAFE DISTANCE FROM THE WELLHEAD. THIS WILL BE THE DESIGNATED SMOKING AREA.
- B. TWO BRIEFING AREAS ON EITHER SIDE OF THE LOCATION AT THE MAXIMUM ALLOWABLE DISTANCE FROM THE WELL BORE SO THEY OFFSET PREVAILING WINDS PERPENDICULARLY, OR AT A 45-DEGREE ANGLE IF WIND DIRECTION TENDS TO SHIFT IN THE AREA.
- C. IF A MOBILE H<sub>2</sub>S SAFETY TRAILER IS USED, IT SHOULD BE KEPT UPWIND OF EXISTING OR PREVAILING WIND DIRECTION. WHEN WIND IS FROM THE PREVAILING DIRECTION, BOTH PROTECTION CENTERS SHOULD BE ACCESSIBLE.

### **2. EVACUATION IMPLEMENTATION AND PUBLIC SAFETY**

TO PROTECT THE PUBLIC FROM HAZARDOUS GAS SITUATIONS ARE AS FOLLOWS:  
(NOTE: REFER ALSO TO APPENDIX 'C', POTENTIALLY HAZARDOUS VOLUMES.)

- I. WHEN THE COMPANY APPROVED SUPERVISOR (DESIGNATED PERSONNEL, I.E., DRILLING FOREMAN, CONSULTANT, RIG PUSHER, OR DRILLER) DETERMINES THE H<sub>2</sub>S GAS CANNOT BE LIMITED TO THE WELL LOCATION AND THE PUBLIC WILL BE INVOLVED, HE WILL ACTIVATE THE EVACUATION PLAN. ESCAPE ROUTES ARE NOTED ON AREA MAP.
2. COMPANY FOREMAN OR DESIGNATED PERSONNEL WILL NOTIFY LOCAL GOVERNMENT AGENCIES AND STATE POLICE THAT A HAZARDOUS CONDITION EXISTS AND EVACUATION NEEDS TO BE IMPLEMENTED.
3. COMPANY SAFETY PERSONNEL THAT HAVE BEEN TRAINED IN THE USE OF H<sub>2</sub>S DETECTION EQUIPMENT AND SELF-CONTAINED BREATHING EQUIPMENT WILL MONITOR H<sub>2</sub>S CONCENTRATIONS, WIND DIRECTIONS, AND AREA OF EXPOSURE. THEY WILL DELINEATE THE OUTER PERIMETER OF THE HAZARDOUS GAS AREA. EXTENSION TO THE EVACUATION AREA WILL BE DETERMINED FROM INFORMATION GATHERED.
4. LAW ENFORCEMENT PERSONNEL (STATE POLICE, LOCAL POLICE, FIRE DEPARTMENT AND SHERIFF) WILL BE CALLED TO AID IN SETTING UP AND MAINTAINING ROAD BLOCKS. ALSO, THEY WILL AID IN EVACUATION OF THE PUBLIC IF NECESSARY.

**IMPORTANT: LAW ENFORCEMENT PERSONNEL WILL NOT BE ASKED TO COME INTO A CONTAMINATED AREA. THEIR ASSISTANCE WILL BE LIMITED TO UNCONTAMINATED AREAS. CONSTANT RADIO CONTACT WILL BE MAINTAINED WITH THEM.**

- S. AFTER THE DISCHARGE OF GAS HAS BEEN CONTROLLED, COMPANY SAFETY PERSONNEL WILL DETERMINE WHEN THE AREA IS SAFE FOR RE-ENTRY.

**IT IS THE RESPONSIBILITY OF EVERY CONTRACTOR EMPLOYED BY SOLARIS WATER MIDSTREAM, LLC TO HAVE ALL THEIR EMPLOYEES CERTIFIED IN H<sub>2</sub>S SAFETY.**

**ALL PERSONNEL ON A SOLARIS WATER MIDSTREAM, LLC SITE WILL BE REQUIRED TO HAVE ON THEIR PERSON (OR ON SITE) AN H<sub>2</sub>S TRAINING CERTIFICATE CARD THAT IS VALID FOR THE CURRENT DATE.**

H<sub>2</sub>S Contingency Plan (continued)**APPENDIX 'A'****TRAINING REQUIREMENTS**

WHEN WORKING IN AN AREA WHERE **ANY LEVEL** OF HYDROGEN SULFIDE GAS (H<sub>2</sub>S) MIGHT BE ENCOUNTERED, DEFINITE TRAINING REQUIREMENTS MUST BE CARRIED OUT. ALL COMPANIES WILL INSURE THAT ALL PERSONNEL AT THE WELL SITE WILL HAVE HAD ADEQUATE TRAINING IN THE FOLLOWING:

1. HAZARDS AND CHARACTERISTICS OF H<sub>2</sub>S.
2. PHYSICAL EFFECTS OF HYDROGEN SULFIDE ON THE HUMAN BODY.
3. TOXICITY OF HYDROGEN SULFIDE AND SULFUR DIOXIDE.
4. H<sub>2</sub>S DETECTION.
5. EMERGENCY RESCUE.
6. RESUSCITATORS.
7. FIRST AID AND ARTIFICIAL RESPIRATION.
8. EFFECTS OF H<sub>2</sub>S ON METALS.
9. LOCATION SAFETY.

**IT IS THE RESPONSIBILITY OF EVERY CONTRACTOR EMPLOYED BY  
SOLARIS WATER MIDSTREAM OPERATING, LLC  
TO HAVE ALL THIER EMPLOYEES CERTIFIED IN H<sub>2</sub>S SAFETY.**

**ALL PERSONNEL ON A SOLARIS WATER MIDSTREAM, LLC SITE  
WILL BE REQUIRED TO HAVE ON THEIR PERSON AN H<sub>2</sub>S TRAINING  
CERTIFICATE CARD THAT IS VALID FOR THE CURRENT DATE.**

This plan was developed exclusively for Solaris Water Midstream, LLC

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## H<sub>2</sub>S Contingency Plan (continued)

### **APPENDIX 'A' (continued)**

#### **FIRST AID FOR H<sub>2</sub>S POISONING**

#### **DO NOT PANIC - REMAIN CALM - THINK!**

1. HOLD YOUR BREATH. (DO NOT INHALE FIRST - JUST STOP BREATHING.)
2. PUT ON BREATHING APPARATUS.
3. REMOVE VICTIM(S) TO FRESH AIR AS QUICKLY AS POSSIBLE. (GO UP-WIND FROM SOURCE OR AT RIGHT ANGLE TO THE WIND - NOT DOWNWIND.)
4. YELL (!) "SOMEONE CALL 911". YELL!!
5. BRIEFLY APPLY CHEST PRESSURE - ARM LIFT METHOD OF ARTIFICIAL RESPIRATION TO CLEAN THE VICTIM'S LUNGS AND TO AVOID INHALING ANY TOXIC GAS DIRECTLY FROM THE VICTIM'S LUNGS.
6. PROVIDE FOR PROMPT TRANSPORTATION TO THE HOSPITAL, AND CONTINUE GIVING ARTIFICIAL RESPIRATION IF NEEDED.
7. HOSPITAL(S) OR MEDICAL FACILITIES NEED TO BE INFORMED, BEFORE-HAND, OF THE POSSIBILITY OF H<sub>2</sub>S GAS POISONING - NO MATTER HOW REMOTE THE POSSIBILITY IS.
8. NOTIFY EMERGENCY ROOM PERSONNEL THAT THE VICTIM(S) HAS BEEN EXPOSED TO H<sub>2</sub>S GAS.

**BESIDES BASIC FIRST AID, EVERYONE ON LOCATION SHOULD HAVE A GOOD WORKING KNOWLEDGE OF ARTIFICIAL RESPIRATION, AS WELL AS FIRST AID FOR EYES AND SKIN CONTACT WITH H<sub>2</sub>S AND S<sub>2</sub>O GAS OR SULFURIC ACID.**

**EVERYONE NEEDS TO MASTER THESE NECESSARY SKILLS.**

H<sub>2</sub>S Contingency Plan (continued)**APPENDIX 'B'****STATUS CHECK LIST**

**APPLICABLE TO ALL OPERATIONS WHEN LEVELS ARE EXPECTED THAT APPROACH OR ARE ABOVE 100 PPM H<sub>2</sub>S.**

NOTE: ALL ITEMS ON THIS LIST MUST BE COMPLETED BEFORE DRILLING TO PRODUCTION CASING POINT.

- I. SIGN AT LOCATION ENTRANCE.
2. TWO (2) WINDSOCKS LOCATED AS REQUIRED.
3. TWO (2) 30-MINUTE PRESSURE DEMAND AIR PACKS ON LOCATION FOR ALL RIG PERSONNEL AND MUD LOGGERS.
4. AIR PACK INSPECTED FOR READY USE.
5. CASCADE SYSTEM AND HOSE LINE HOOK-UP.
6. CASCADE SYSTEM FOR REFILLING AIR BOTTLES.
7. SAFE BREATHING AREAS SETUP.
8. CONDITION FLAG ON LOCATION AND READY FOR USE.
9. H<sub>2</sub>S DETECTION SYSTEM HOOKED UP.
10. H<sub>2</sub>S ALARM SYSTEM HOOKED UP AND READY.
- II. OXYGEN RESUSCITATOR ON LOCATION AND TESTED FOR USE.
12. STRETCHER ON LOCATION AT SAFETY TRAILER.
13. 1 - 100' LENGTH OF S/8" NYLON ROPE ON LOCATION.
14. ALL RIG CREW AND SUPERVISORS TRAINED AS REQUIRED.
15. ALL OUTSIDE SERVICE CONTRACTORS ADVISED OF POTENTIAL H<sub>2</sub>S HAZARD ON WELL.
16. NO SMOKING SIGN POSTED.
17. HAND OPERATED H<sub>2</sub>S DETECTOR WITH TUBES ON LOCATION AND CHECKED BY DATE IS WITHIN CURRENT TIME FRAME.

## H<sub>2</sub>S Contingency Plan (continued)

### **APPENDIX 'B' (continued)**

#### **PROCEDURAL CHECK LIST**

PERFORM DURING EACH TOUR:

1. CHECK FIRE EXTINGUISHERS TO SEE THAT THEY HAVE THE PROPER CHARGE.
2. CHECK BREATHING EQUIPMENT TO ENSURE THAT IT HAS NOT BEEN TAMPERED WITH.
3. MAKE SURE ALL THE H<sub>2</sub>S DETECTION SYSTEM IS OPERATIVE. PERFORM EACH WEEK:
4. CHECK EACH PIECE OF BREATHING EQUIPMENT TO MAKE SURE THAT DEMAND REGULATOR IS WORKING. THIS REQUIRES THAT THE BOTTLE BE OPENED AND THE MASK ASSEMBLY BE PUT ON TIGHT ENOUGH SO THAT WHEN YOU INHALE, YOU RECEIVE AIR.
5. BLOW OUT PREVENTER SKILLS ARE APPROPRIATELY COVERED BY CREW.
6. CHECK SUPPLY PRESSURE ON BOP ACCUMULATOR STAND BY SOURCE.
7. CHECK ALL SCBA UNITS FOR OPERATION:

#### **DEMAND REGULATOR**

#### **ESCAPE BOTTLE AIR VOLUMES**

#### **SUPPLY BOTTLE OF AIR VOLUME**

8. CHECK BREATHING EQUIPMENT MASK ASSEMBLY TO SEE THAT STRAPS ARE LOOSENERED AND TURNED BACK, READY TO PUT ON.
9. CHECK PRESSURE ON BREATHING EQUIPMENT AIR BOTTLES TO MAKE SURE THEY ARE CHARGED TO FULL VOLUME.
10. CONFIRM PRESSURE ON ALL SUPPLY AIR BOTTLES.
11. PERFORM BREATHING EQUIPMENT DRILLS WITH ON-SITE PERSONNEL.
12. CHECK THE FOLLOWING FOR AVAILABILITY:

#### **EMERGENCY TELEPHONE LIST (PAGES 8 & 9)**

#### **HAND OPERATED H<sub>2</sub>S DETECTORS AND TUBES**

H<sub>2</sub>S Contingency Plan (continued)**APPENDIX 'B' (continued)****SITE SPECIFIC PLAN CHECK LIST (NEW PLAN)**

IF A WELL, FACILITY OR OPERATION IS REASONABLY EXPECTED TO INVOLVE A POTENTIALLY HAZARDOUS VOLUME OF H<sub>2</sub>S WITH CONCENTRATIONS APPROACHING 100 PPM, THE PERSON SHALL DEVELOP A H<sub>2</sub>S CONTINGENCY PLAN THAT THE PERSON WILL USE TO ALERT AND PROTECT THE PUBLIC IN ACCORDANCE WITH THE SUBSECTIONS B THROUGH I OF 19.IS.II.9 NMAC.

- I. A SITE SPECIFIC PLAN WILL BE DEVELOPED AND SUBMITTED TO THE NMOCD OR OTHER APPLICABLE AGENCIES AND TO THE APPLICABLE COUNTY EMERGENCY COORDINATOR.
2. THIS PLAN AND ALL PARTS INCLUDING APPENDICES SHALL BE THE BASIS OF SUCH SITE SPECIFIC PLAN AND BEYOND THAT, ADDITIONAL REQUIREMENTS INCLUDE:
  - A. **SITE IDENTIFICATION** INCLUDING API NUMBER IF APPLICABLE AND LOCATION INCLUDING LAT / LONG COORDINATES.
  - B. **MAPS AND DRAWINGS** TO DEPICT THE AREA OF EXPOSURE AND PUBLIC AREAS AND PUBLIC ROADS WITHIN AREA OF EXPOSURE. MAPS SHALL INCLUDE POTENTIAL LEVEL 2 (500 PPM) AND LEVEL 3 (100 PPM) AREA OF EXPOSURE RADII BY CALCULATION. (APPENDIX 'C', PG.19.) IF ROADS ARE INVOLVED, ROAD BLOCKS SHOULD BE DESIGNATED ON MAPS. (COORDINATE WITH LAW ENFORCEMENT AGENCIES.)
  - C. **TRAINING AND DRILLS** INCLUDING TRAINING IN THE RESPONSIBILITIES AND DUTIES OF ESSENTIAL PERSONNEL AND PERIODIC ON-SITE OR CLASSROOM DRILLS OR EXERCISES THAT SIMULATE A RELEASE, AND SHALL DESCRIBE HOW THE PERSON WILL DOCUMENT THE TRAINING, DRILLS AND ATTENDANCE.
  - D. **RESIDENT TRAINING.** WHEN APPLICABLE, THE H<sub>2</sub>S CONTINGENCY PLAN SHALL ALSO PROVIDE FOR TRAINING OF RESIDENTS AS APPROPRIATE ON THE PROPER PROTECTIVE MEASURES TO BE TAKEN IN THE EVENT OF A RELEASE, AND SHALL PROVIDE FOR BRIEFING OF PUBLIC OFFICIALS ON ISSUES SUCH AS EVACUATION OR SHELTER-IN-PLACE PLANS.
  - E. **COORDINATION WITH STATE EMERGENCY PLANS.** THE H<sub>2</sub>S CONTINGENCY PLAN SHALL DESCRIBE HOW THE PERSON WILL COORDINATE EMERGENCY RESPONSE ACTIONS UNDER THE PLAN WITH THE DIVISION AND THE NEW MEXICO STATE POLICE CONSISTENT WITH THE NEW MEXICO HAZARDOUS MATERIALS EMERGENCY RESPONSE PLAN.
  - F. **PLAN ACTIVATION.** THE PERSON SHALL ACTIVATE THE H<sub>2</sub>S CONTINGENCY PLAN WHEN A RELEASE CREATES A H<sub>2</sub>S CONCENTRATION GREATER THAN THE ACTIVATION LEVEL SET FORTH IN THE H<sub>2</sub>S CONTINGENCY PLAN. AT A MINIMUM, THE PERSON SHALL ACTIVATE THE PLAN WHENEVER A RELEASE MAY CREATE A H<sub>2</sub>S CONCENTRATION OF MORE THAN 100 PPM IN A PUBLIC AREA, 500 PPM AT A PUBLIC ROAD OR 100 PPM 3000 FEET FROM THE SITE OF RELEASE.

H<sub>2</sub>S Contingency Plan (continued)**APPENDIX 'C'****GENERAL INFORMATION****TOXIC EFFECTS OF HYDROGEN SULFIDE**

HYDROGEN SULFIDE IS EXTREMELY TOXIC. THE ACCEPTABLE CEILING CONCENTRATION FOR EIGHT-HOUR EXPOSURE IS 10 PPM, WHICH IS .001% BY VOLUME.

HYDROGEN SULFIDE IS HEAVIER THAN AIR (SPECIFIC GRAVITY - 1.192) AND COLORLESS. IT FORMS AN EXPLOSIVE MIXTURE WITH AIR BETWEEN 4.3 AND 46.0 PERCENT BY VOLUME.

HYDROGEN SULFIDE IS ALMOST AS TOXIC AS HYDROGEN CYANIDE AND IS BETWEEN FIVE AND SIX TIMES MORE TOXIC THAN CARBON MONOXIDE.

TOXICITY DATA FOR HYDROGEN SULFIDE AND VARIOUS OTHER GASES ARE COMPARED IN TABLE I.

PHYSICAL EFFECTS AT VARIOUS HYDROGEN SULFIDE EXPOSURE LEVELS ARE SHOWN IN TABLE II.

**TABLE I****TOXICITY OF VARIOUS GASES**

COMMON NAME	CHEMICAL FORMULA	SPECIFIC GRAVITY	THRESHOLD LIMIT (1)	HAZARDOUS LIMIT (2)	LETHAL CONCENTRATION (3)
HYDROGEN SULFIDE	H <sub>2</sub> S	1.19	10 PPM	100 PPM/HR	600 PPM
HYDROGEN CYANIDE	HCN	0.94	10 PPM	150 PPM/HR	300 PPM
SULFUR DIOXIDE	SO <sub>2</sub>	2.21	2 PPM	N/A	1000 PPM
CHLORINE	Cl <sub>2</sub>	2.45	1 PPM	150 PPM/HR	1000 PPM
CARBON MONOXIDE	CO	0.97	50 PPM	150 PPM/HR	1000 PPM
CARBON DIOXIDE	CO <sub>2</sub>	1.52	5000 PPM	5%	10%
METHANE	CH <sub>4</sub>	0.55	90,000 PPM	COMBUSTIBLE @ 5% IN AIR	N/A

(1) THRESHOLD LIMIT - CONCENTRATION AT WHICH IT IS BELIEVED THAT ALL WORKERS MAY BE REPEATEDLY EXPOSED DAY AFTER DAY WITHOUT ADVERSE EFFECTS.

(2) HAZARDOUS LIMIT - CONCENTRATION THAT MAY CAUSE DEATH WITH PROLONGED EXPOSURE.

(3) LETHAL CONCENTRATION - CONCENTRATION THAT WILL CAUSE DEATH WITH SHORT-TERM EXPOSURE.

H<sub>2</sub>S Contingency Plan (continued)**APPENDIX 'C' (continued)****TABLE II****PHYSICAL EFFECTS OF HYDROGEN SULFIDE**

CONCENTRATION	PHYSICAL EFFECTS
0.001 or 10 PPM	OBVIOUS AND UNPLEASANT ODOR. SAFE FOR 8 HOURS OF EXPOSURE.
0.002 or 20 PPM	MAY STING EYES AND THROAT. MAY CAUSE FLU-LIKE SYMPTOMS.
0.010 or 100 PPM	KILLS SMELL IN 3 - 15 MINUTES. STINGS EYES AND THROAT. MAY HAVE SOME DIZZINESS AFTER PROLONGED EXPOSURE.
0.050 or 500 PPM	DIZZINESS; BREATHING CEASES IN A FEW MINUTES; NEEDS PROMPT RESUSCITATION. MAY CAUSE LUNG DAMAGE OR DEATH AFTER 4 HOURS EXPOSURE.
0.070 or 700 PPM	UNCONSCIOUS QUICKLY; DEATH WILL RESULT IF NOT RESCUED PROMPTLY.
0.100 or 1000 ppm	UNCONSCIOUS AT ONCE; FOLLOWED BY DEATH WITHIN MINUTES.

**SCBA'S SHOULD BE WORN WHEN...**

1. ANY EMPLOYEE WORKS NEAR THE TOP OR ON TOP OF ANY TANK UNLESS TESTS REVEAL LESS THAN 10 PPM OF H<sub>2</sub>S.
2. WHEN BREAKING OUT ANY LINE WHERE H<sub>2</sub>S CAN REASONABLY BE EXPECTED.
3. WHEN SAMPLING AIR IN AREAS TO DETERMINE IF TOXIC CONCENTRATIONS OF H<sub>2</sub>S EXISTS.
4. WHEN WORKING IN AREAS WHERE OVER 100 PPM H<sub>2</sub>S HAS BEEN DETECTED.
5. AT ANY TIME THERE IS A DOUBT AS TO THE H<sub>2</sub>S LEVEL IN THE AREA TO BE ENTERED.

H<sub>2</sub>S Contingency Plan (continued)**APPENDIX 'C' (continued)****POTENTIALLY HAZARDOUS VOLUMES**

THIS IS THE VOLUME OF H<sub>2</sub>S GAS OF SUCH CONCENTRATION THAT:

- I. THE 100-PPM (LEVEL 3) RADIUS OF EXPOSURE INCLUDES A PUBLIC AREA;
2. THE 500-PPM (LEVEL 2) RADIUS OF EXPOSURE INCLUDES A PUBLIC ROAD;
3. THE 100-PPM RADIUS OF EXPOSURE EXCEEDS 3000 FEET.

(1) RADIUS OF EXPOSURE MEANS THE RADIUS CONSTRUCTED WITH THE POINT OF ESCAPE AS ITS STARTING POINT AND ITS LENGTH.

(2) PUBLIC AREA IS A BUILDING OR STRUCTURE THAT IS NOT ASSOCIATED WITH THE WELL, FACILITY OR OPERATION FOR WHICH THE RADIUS OF EXPOSURE IS BEING CALCULATED AND THAT IS USED AS A DWELLING, OFFICE, PLACE OF BUSINESS, CHURCH, SCHOOL, HOSPITAL OR GOVERNMENT BUILDING, OR A PORTION OF A PARK, CITY, TOWN, VILLAGE OR DESIGNATED SCHOOL BUS STOP OR OTHER SIMILAR AREA WHERE MEMBERS OF THE PUBLIC MAY REASONABLY BE EXPECTED TO BE PRESENT.

(3) PUBLIC ROAD MEANS A FEDERAL, STATE, MUNICIPAL OR COUNTY ROAD OR HIGHWAY.

**RADIUS OF EXPOSURE**

THE RADIUS OF EXPOSURE IS CALCULATED USING THE FOLLOWING PASQUILL-GIFFORD DERIVED EQUATION (OR BY OTHER SUCH METHOD) AS FOLLOWS:

**A. FOR DETERMINING THE 100-PPM (LEVEL 3) RADIUS OF EXPOSURE:**

$$X = [(1.89)(H_2S \text{ CONCENTRATION})(Q)]^{(0.6258)}$$

WHERE "X" IS THE RADIUS OF EXPOSURE IN FEET, THE H<sub>2</sub>S CONCENTRATION IS THE DECIMAL EQUIVALENT OF THE MOLE OR VOLUME FRACTION OF H<sub>2</sub>S IN THE GASEOUS MIXTURE;

AND "Q" IS THE ESCAPE RATE EXPRESSED IN CUBIC FEET PER DAY (CORRECTED FOR STANDARD CONDITIONS OF 14.73 PSI ABSOLUTE AND 60 DEGREES FAHRENHEIT)

**B. FOR DETERMINING THE 500-PPM (LEVEL 2) RADIUS OF EXPOSURE:**

$$X = [(0.4546)(H_2S \text{ CONCENTRATION})(Q)]^{(0.6258)}$$

WHERE "X" IS THE RADIUS OF EXPOSURE IN FEET, THE H<sub>2</sub>S CONCENTRATION IS THE DECIMAL EQUIVALENT OF THE MOLE OR VOLUME FRACTION OF H<sub>2</sub>S IN THE GASEOUS MIXTURE;

AND "Q" IS THE ESCAPE RATE EXPRESSED IN CUBIC FEET PER DAY (CORRECTED FOR STANDARD CONDITIONS OF 14.73 PSI ABSOLUTE AND 60 DEGREES FAHRENHEIT)

**C. FOR A WELL BEING DRILLED, COMPLETED, RECOMPLETED, WORKED OVER OR SERVICED IN AN AREA WHERE INSUFFICIENT DATA EXISTS TO CALCULATE A RADIUS OF EXPOSURE BUT WHERE H<sub>2</sub>S COULD REASONABLY BE EXPECTED TO BE PRESENT IN CONCENTRATIONS IN EXCESS OF 100 PPM IN THE GASEOUS MIXTURE, A 100 PPM RADIUS OF EXPOSURE EQUAL TO 3000 FEET IS ASSUMED.**

H<sub>2</sub>S Contingency Plan (continued)**APPENDIX 'C' (continued)****REGULATORY THRESHOLD****A. DETERMINATION OF H<sub>2</sub>S CONCENTRATION**

1. THE H<sub>2</sub>S CONCENTRATION IN THE GASEOUS MIXTURE WITHIN WELLS, FACILITIES OR OPERATIONS SHALL BE DETERMINED EITHER BY TESTING, TESTING A REPRESENTATIVE SAMPLE OR USING PROCESS KNOWLEDGE IN LIEU OF TESTING. IF THE PERSON USES A REPRESENTATIVE SAMPLE OR PROCESS KNOWLEDGE, THE CONCENTRATION DERIVED FROM THE REPRESENTATIVE SAMPLE OR PROCESS KNOWLEDGE SHALL BE REASONABLY REPRESENTATIVE OF THE H<sub>2</sub>S CONCENTRATION WITHIN THE WELL OR FACILITY.
2. THE TESTS USED TO MAKE THE DETERMINATION SHALL BE CONDUCTED IN ACCORDANCE WITH APPLICABLE ASTM OR GPA STANDARDS OR BY STANDARDLY ACCEPTED METHOD.
3. IF A CHANGE OR ALTERATION MAY MATERIALLY INCREASE THE H<sub>2</sub>S CONCENTRATION IN A WELL, FACILITY OR OPERATION, TESTING SHALL BE CONDUCTED TO MAKE A NEW DETERMINATION.

**B. CONCENTRATIONS DETERMINED TO BE BELOW 100 PPM** - IF THE H<sub>2</sub>S CONCENTRATION IN A GIVEN WELL, FACILITY OR OPERATION IS LESS THAN 100 PPM, NO FURTHER ACTIONS SHALL BE REQUIRED **EXCEPT AS PROVIDED IN THIS H<sub>2</sub>S CONTINGENCY PLAN CONCERNING "NORMAL / LOW H<sub>2</sub>S CONDITIONS".****C. CONCENTRATIONS DETERMINED TO BE ABOVE 100 PPM**

1. IF THE H<sub>2</sub>S CONCENTRATION IN A GIVEN WELL, FACILITY OR OPERATION IS DETERMINED TO BE 100 PPM OR GREATER, THEN THE RADIUS OF EXPOSURE SHALL BE CALCULATED TO COMPLY WITH APPLICABLE REQUIREMENTS OF STATE AND FEDERAL LAW.
2. IF CALCULATION OF THE RADIUS OF EXPOSURE REVEALS THAT A POTENTIALLY HAZARDOUS VOLUME IS PRESENT, THE RESULTS OF THE H<sub>2</sub>S CONCENTRATION DETERMINATION AND THE CALCULATION OF THE RADIUS OF EXPOSURE SHALL BE PROVIDED TO NMOCD AND BLM. FOR A WELL, FACILITY OR OPERATION, THE ACCOMPLISH THE DETERMINATIONS, CALCULATIONS AND SUBMISSIONS WILL BE MADE BEFORE OPERATIONS BEGIN.

**D. RECALCULATION** - OF THE RADIUS OF EXPOSURE SHALL BE PERFORMED IF:

1. THE H<sub>2</sub>S CONCENTRATION IN A WELL, FACILITY OR OPERATION INCREASES TO 100 PPM OR GREATER.
2. THE CONCENTRATION OF H<sub>2</sub>S INCREASES BY A FACTOR OF 2% IN AN AREA THAT PREVIOUSLY HAD A H<sub>2</sub>S CONCENTRATION OF 100 PPM OR GREATER.

IF A POTENTIALLY HAZARDOUS VOLUME IS PRESENT, THE RESULTS SHALL BE PROVIDED TO THE NMOCD AND BLM (IF APPLICABLE) WITHIN 60 DAYS.

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H<sub>2</sub>S Contingency Plan (continued)**APPENDIX 'D'****INCIDENT RESPONSE PROTOCOL**

FOLLOW THE PLAN

**! ! ! AN EMERGENCY HAS OCCURRED ! ! !**

1. **IMPLEMENT PLAN** - COMPANY FOREMAN OR DESIGNATED PERSON IS IMMEDIATE INCIDENT COMMANDER. (SAFETY CONSULTANT IF ON SITE.)
2. **ASSESS SITUATION** - DIRECT ALL PERSONNEL TO REPORT TO SAFETY BRIEFING AREA. NOTIFY TO EVACUATE PUBLIC IF APPLICABLE.
3. **CONTROL SITUATION IF POSSIBLE** - DON BREATHING AND SAFETY APPATUS; SHUT DOWN OPERATIONS AND WELL.

**BACK-UP DESIGNEE SHOULD: (EMERGENCY NUMBERS PAGES 8 & 9)**

- A. REPORT INCIDENT TO COUNTY EMERGENCY RESPONSE & STATE POLICE.
- B. CALL 911 OR MEDICAL IF NECESSARY. (GIVE FIRST AID, PAGE 12)
- C. CALL COUNTY SHERIFF, OTHER EMERGENCY AGENCIES.
- D. CALL SAFETY COMPANY, COMPANY REPS IF NOT ALREADY ON SITE.
- E. ESTABLISH RADIO COMMUNICATION WITH EMERGENCY RESPONDERS.

4. **ATTEMPT RESCUE IF REQUIRED** - QUALIFIED PERSONNEL MUST BE MASKED UP AND BUDDY SYSTEM ONLY. (PER TRAINING AND CERTIFICATION.)
5. **CONTROL OR PARTIAL CONTROL**
  - A. MAKE DECISION TO IGNITE WELL IF REQUIRED. (PAGE 6)
  - B. BRIEF PERSONNEL ASSEMBLY IN SAFETY AREA - GIVE INSTRUCTIONS TO EVACUATE NON-ESSENTIAL PERSONNEL.
6. **BRIEF LAW ENFORCEMENT AND COUNTY EMERGENCY RESPONDERS.**
  - A. STATE POLICE WILL BE IN CONTROL OF INCIDENT BEYOND LOCATION.
  - B. COMPANY PERSONNEL WILL FOLLOW INSTRUCTIONS OF STATE POLICE, LOCAL EMERGENCY PERSONNEL AND COOPERATE WITH ALL PARTIES TO ENSURE SAFE OPERATIONS MOVING FORWARD.
  - C. IF WELL IS OUT OF CONTROL (BLOWOUT), A NEW INCIDENT COMMANDER MAY BE DESIGNATED FOR THE DURATION OF THE EVENT.
7. **INCIDENT IS CONTROLLED** AND SHUT DOWN OR, INCIDENT OPERATIONS WILL CONTINUE UNTIL RESOLVED.
8. **REGULATORY REPORTING & PAPERWORK** IS COMPLETED AS APPLICABLE - DETERMINE CAUSE OF FAILURE, VOLUMES, ETC. EVENT IS TERMINATED.

**Operator Name:** SOLARIS WATER MIDSTREAM LLC**Well Name:** RAGIN RUTLEY SWD**Well Number:** 1

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formation
16300788	MORROW	-9366	12917	12917	LIMESTONE, SANDSTONE, SHALE	NATURAL GAS	N
16300789	MISSISSIPPINIAN	-10207	13758	13758	LIMESTONE	NATURAL GAS	N
16300787	WOODFORD	-10767	14318	14318	SHALE	NATURAL GAS	N
16300778	DEVONIAN	-10912	14463	14463	DOLOMITE	NONE	N
16300779	FUSSELMAN	-11764	15315	15315	DOLOMITE	NONE	Y

## Section 2 - Blowout Prevention

**Pressure Rating (PSI):** 10M**Rating Depth:** 10000**Equipment:** All required equipment per Federal Regulations to be in place prior to drilling out the surface casing.**Requesting Variance? NO****Variance request:**

**Testing Procedure:** The BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure as per 43 CFR 3172. Pipe Rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These check will be noted on the daily tour sheets. Other accessories to the BOP equipment will include an upper and lower Kelly cock, floor safety valve (inside BOP), wellhead wear bushing, press gauges, remote choke, choke lines, choke manifold, and all items as per 43 CFR 3172. Mud logging unit (2 Man) below 16" casing. Open hole and cased hole logging may be conducted in intermediate and production hole sections. Logs that may be run include triple combo, sonic, and cement bond log.

**Choke Diagram Attachment:**

BOP\_Closed\_Loop\_Diagram\_V2\_9.4.2024\_20240911081046\_20250611113350.pdf

**BOP Diagram Attachment:**

10M\_BOP\_Diagram\_3\_Ram\_V2\_20240911081031\_20250519084556.pdf

## Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	32	OTHE R - 26	NEW	API	N	0	1300	0	1300	3531	2231	1300	OTH ER - X- 3	202.	OTHER - Frank DDS	1.96	1.98	BUOY	7.2	BUOY	15.7

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: RAGIN RUTLEY SWD

Well Number: 1

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set TVD	Top Set TVD	Bottom Set MSL	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
														60								
2	INTERMEDIATE	24	20.0	NEW	API	N	0	3162	0	3162	3531	369	3162	J-55	133	OTHER - BTC	1.63	1.73	DRY	6	DRY	6.01
3	INTERMEDIATE	17.5	13.375	NEW	API	N	0	4819	0	4819	3531	-1288	4819	J-55	68	OTHER - BTC	1.54	1.34	DRY	4.02	DRY	3.77
4	PRODUCTION	12.2	9.625	NEW	API	N	0	10825	0	10825	3531	-7294	10825	HCP -110	53.5	OTHER - BTC	2.87	1.89	DRY	3.47	DRY	3.45
5	LINER	8.75	7.625	NEW	API	N	10605	14463	10605	14463	-7074	-10932	3858	P-110	39	OTHER - USS Liberty FJM	2.59	1.61	DRY	5.96	DRY	10.02

## Casing Attachments

Casing ID: 1      String      SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Ragin\_Rutley\_SWD\_1\_OCD\_R\_111\_Q\_Exception\_and\_Well\_Cement\_Plan\_Approval\_20250604092032.pdf

Ragin\_Rutley\_Casing\_SF\_Calcs\_A\_20250718\_20250730134105.pdf

Ragin\_Rutley\_SWD\_1\_Drilling\_Plan\_07.28.2025\_20250730134113.pdf

**Operator Name:** SOLARIS WATER MIDSTREAM LLC**Well Name:** RAGIN RUTLEY SWD**Well Number:** 1**Casing Attachments****Casing ID:** 2      **String**      INTERMEDIATE**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**

Ragin\_Rutley\_SWD\_\_1\_\_OCD\_R\_111\_Q\_Exception\_and\_Well\_Cement\_Plan\_Approval\_20250604092041.pdf

Ragin\_Rutley\_SWD\_\_1\_\_Drilling\_Plan\_\_07.28.2025\_\_20250730134123.pdf

Ragin\_Rutely\_Casing\_SF\_Calcs\_A\_20250718\_20250730134130.pdf

**Casing ID:** 3      **String**      INTERMEDIATE**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**

Ragin\_Rutley\_SWD\_\_1\_\_OCD\_R\_111\_Q\_Exception\_and\_Well\_Cement\_Plan\_Approval\_20250604092050.pdf

Ragin\_Rutely\_Casing\_SF\_Calcs\_A\_20250718\_20250730134147.pdf

Ragin\_Rutley\_SWD\_\_1\_\_Drilling\_Plan\_\_07.28.2025\_\_20250730134152.pdf

**Operator Name:** SOLARIS WATER MIDSTREAM LLC**Well Name:** RAGIN RUTLEY SWD**Well Number:** 1**Casing Attachments****Casing ID:** 4      **String**      PRODUCTION**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**

Ragin\_Rutley\_SWD\_1\_OCD\_R\_111\_Q\_Exception\_and\_Well\_Cement\_Plan\_Approval\_20250604092058.pdf

Ragin\_Rutley\_SWD\_1\_Drilling\_Plan\_07.28.2025\_20250730134201.pdf

Ragin\_Rutley\_Casing\_SF\_Calcs\_A\_20250718\_20250730134206.pdf

**Casing ID:** 5      **String**      LINER**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**

Ragin\_Rutley\_SWD\_1\_OCD\_R\_111\_Q\_Exception\_and\_Well\_Cement\_Plan\_Approval\_20250604092107.pdf

Ragin\_Rutley\_SWD\_1\_Drilling\_Plan\_07.28.2025\_20250730134215.pdf

Ragin\_Rutley\_Casing\_SF\_Calcs\_A\_20250718\_20250730134224.pdf

**Section 4 - Cement**

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	925	1880	1.72	13.5	3234	100	100% Class C Premium	Premium Gel, C-51, Kol Seal, CaCl2, Phenoseal
SURFACE	Tail		925	1300	803	1.33	14.8	1068	50	100% Class C Premium	C-45, CaCl2

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: RAGIN RUTLEY SWD

Well Number: 1

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
INTERMEDIATE	Lead		0	1707	1551	3.27	12.7	5072	100	85:15% Class C Premium:CPO-18	Premium Gel, C-45, STE, CSA-1000, Kol Seal, Gyp Seal, Phenoseal
INTERMEDIATE	Tail		1707	3162	704	1.33	14.8	936	50	100% Class C Premium	C-51, C-45
INTERMEDIATE	Lead		0	3832	901	2.13	10.6	1919	100	65:10:25% Class C Premium: Compass Poz-Mix: CPO-18	Premium Gel, Salt, Citric Acid, CSA-1000, Kol Seal, Phenoseal
INTERMEDIATE	Tail		3832	4819	869	1.2	15	1043	50	50:50% Class C Premium: Compass Poz-Mix	Salt, C-51, STE, C-23
PRODUCTION	Lead		0	4494	719	2.26	15	1625	10	85:15% Class C Premium: Compass Poz-Mix	Premium Gel, Salt, C-45, Citric Acid, CSA-1000, CFL-1
PRODUCTION	Tail		4494	4794	162	1.14	12.4	185	10	100% HSLD 82 Cement	Salt, C-51, STE, C-23, CFL-1, C-49
PRODUCTION	Lead		0	4794	1101	3.66	10.6	4030	100	100% HSLD 9420 Cement	Salt, C-45, Citric Acid, CSA-1000, C-49
PRODUCTION	Tail		1030 5	1080 5	178	1.32	15	235	50	100% Class H Premium	C-45 Econolite, STE, CSA-1000, CFL-1, C-49
LINER	Lead		1060 5	1446 3	397	1.45	15.6	575	50	100% Class H Premium	STE, CSA-1000, CFL-1, C-23, C-49, C-24, 100 Mesh Sand



**Operator Name:** SOLARIS WATER MIDSTREAM LLC

**Well Name:** RAGIN RUTLEY SWD

**Well Number:** 1

**Access road engineering design?** N

**Access road engineering design**

**Turnout?** N

**Access surfacing type:** GRAVEL

**Access topsoil source:** ONSITE

**Access surfacing type description:**

**Access onsite topsoil source depth:** 6

**Offsite topsoil source description:**

**Onsite topsoil removal process:** As required per BLM requirements.

**Access other construction information:**

**Access miscellaneous information:**

**Number of access turnouts:**

**Access turnout map:**

### Drainage Control

**New road drainage crossing:** OTHER

**Other Description:** a. Proposed Well Site Location: See form C-102 (Survey Plat). b. Existing Roads: Insert directions from nearest hwy. c. Existing Road Maintenance or Improvement Plan: Existing roads will be maintained and kept in the same or better condition than before operations began. See the well pad layout and topo map of the Survey Plat Package. 2: NEW PLANNED ACCESS ROUTE a. Route Location: There will be 717 of new road built. See the well pad layout and topo map of the Survey Plat Package. b. Width: 14 wide c. Maximum Grade: Grade to match existing topography or as BLM requires. d. Turnout Ditches: As required by BLM stipulations. e. Culverts, Cattle Guards and Surfacing Equipment: If required, culverts and cattle guards will be set per BLM specs.

**Drainage Control comments:** As required per BLM requirements.

**Road Drainage Control Structures (DCS) description:** As required per BLM requirements.

**Road Drainage Control Structures (DCS) attachment:**

### Access Additional Attachments

## Section 3 - Location of Existing Wells

**Existing Wells Map?** YES

**Existing Well map Attachment:**

191209\_Ragin\_Rutley\_SWD\_1\_inj\_permit\_Water\_Well\_Locations\_20240822124059.pdf

191209\_Ragin\_Rutley\_SWD\_1\_inj\_permit\_application\_20240822124101.pdf

**Operator Name:** SOLARIS WATER MIDSTREAM LLC**Well Name:** RAGIN RUTLEY SWD**Well Number:** 1

## Section 4 - Location of Existing and/or Proposed Production Facilities

**Submit or defer a Proposed Production Facilities plan? SUBMIT**

**Production Facilities description:** The Ragin Rutley SWD #1 facility is located within Section 14, Township 20 South, Range 32 East, N.M.P.M., Lea County, New Mexico. The well is specifically positioned 857 feet from the south line and 228 feet from the east line of the section. The facility is centrally situated on the pad and includes the following primary components: Tank Containment Area Pump Pad Electrical Pad Wellhead Injection Line Pipeline Connection Spoils and Topsoil Areas The overall pad boundary encompasses an area approximately 600 feet by 400 feet, with key infrastructure like the tank containment and equipment pads arranged efficiently within that footprint. The injection well is clearly marked, along with the injection line and connection to the proposed Solaris pipeline.

**Production Facilities map:**

J0\_XXXX\_100\_RA\_\_RAGIN\_RUTLEY\_SWD\_\_1\_\_20250515141450.pdf

## Section 5 - Location and Types of Water Supply

### Water Source Table

**Water source type:** OTHER**Describe type:** Fresh Water**Water source use type:** SURFACE CASING**Source latitude:****Source longitude:****Source datum:****City:****Water source permit type:** PRIVATE CONTRACT**Water source transport method:** TRUCKING**Source land ownership:** PRIVATE**Source transportation land ownership:** PRIVATE**Water source volume (barrels):** 2000**Source volume (acre-feet):** 0.25778619**Source volume (gal):** 84000**Water source type:** OTHER**Describe type:** Brine Water**Water source use type:** INTERMEDIATE/PRODUCTION CASING**Source latitude:****Source longitude:****Source datum:** NAD83**City:**



**Operator Name:** SOLARIS WATER MIDSTREAM LLC**Well Name:** RAGIN RUTLEY SWD**Well Number:** 1**Additional information attachment:**

## Section 6 - Construction Materials

**Using any construction materials:** YES

**Construction Materials description:** d. On-site caliche will be used. If this is not sufficient, caliche will be hauled from a BLM approved pit. e. It will be necessary to run electric power to the facility. Power will be provided by Xcel Energy and ROW for powerlines for powerlines to well location is requested. f. If completion of well is successful, rehabilitation plans will include the following: The original topsoil from the well site will be returned to the location, and the side will be re-contoured as close as possible to the original site.

**Construction Materials source location**

Ragin\_Rutley\_SWD\_1\_Construction\_Material\_Map\_20250515141723.pdf

## Section 7 - Methods for Handling

**Waste type:** SEWAGE**Waste content description:** Human waste and grey water.**Amount of waste:** 500 pounds**Waste disposal frequency :** Weekly

**Safe containment description:** a. Cuttings: Will be contained in the roll off bins and disposed at R360 Environmental located in Lea County, NM. b. Drilling Fluids: Will be contained in the steel pits, frac tanks and disposed at licensed disposal sites. c. Produced Fluids: Water production will be contained in the steel pits. This is a commercial SWD, therefore no water will be produced from this well. d. Sewage: Current laws and regulations pertaining to the disposal of human waste will be complied with. e. Garbage: Portable containers will be utilized for garbage disposal during the drilling of this well. f. Clean up of Well Site: Reasonable cleanup will be preformed prior to the final restoration of the site.

**Safe containmant attachment:****Waste disposal type:** HAUL TO COMMERCIAL **Disposal location ownership:** COMMERCIAL FACILITY**Disposal type description:****Disposal location description:** rucked to an approved disposal facility.

## Reserve Pit

**Reserve Pit being used?** NO**Temporary disposal of produced water into reserve pit?** NO**Reserve pit length (ft.)** **Reserve pit width (ft.)****Reserve pit depth (ft.)** **Reserve pit volume (cu. yd.)****Is at least 50% of the reserve pit in cut?****Reserve pit liner****Reserve pit liner specifications and installation description**

**Operator Name:** SOLARIS WATER MIDSTREAM LLC

**Well Name:** RAGIN RUTLEY SWD

**Well Number:** 1

## Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? N

Description of cuttings location

Cuttings area length (ft.)

Cuttings area width (ft.)

Cuttings area depth (ft.)

Cuttings area volume (cu. yd.)

Is at least 50% of the cuttings area in cut?

Cuttings area liner

Cuttings area liner specifications and installation description

## Section 8 - Ancillary

Are you requesting any Ancillary Facilities?: N

Ancillary Facilities

Comments:

## Section 9 - Well Site

Well Site Layout Diagram:

RAGIN\_RUTLEY\_SWD\_\_1\_Well\_Package\_Rev1\_20250515141833.pdf

RRW\_1\_Ragin\_Rutley\_Well\_Pad\_20250515141833.pdf

Comments:

## Section 10 - Plans for Surface

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name:

Multiple Well Pad Number:

Recontouring

**Drainage/Erosion control construction:** As required per BLM requirements proper erosion control methods will be used to control erosion, runoff and siltation of the surrounding area.

**Drainage/Erosion control reclamation:** As required per BLM requirements proper erosion control methods will be used to control erosion, runoff and siltation of the surrounding area.

**Operator Name:** SOLARIS WATER MIDSTREAM LLC**Well Name:** RAGIN RUTLEY SWD**Well Number:** 1

<b>Well pad proposed disturbance (acres):</b> 5.51	<b>Well pad interim reclamation (acres):</b> 0	<b>Well pad long term disturbance (acres):</b> 0
<b>Road proposed disturbance (acres):</b> 1	<b>Road interim reclamation (acres):</b> 0	<b>Road long term disturbance (acres):</b> 0
<b>Powerline proposed disturbance (acres):</b> 1	<b>Powerline interim reclamation (acres):</b> 0	<b>Powerline long term disturbance (acres):</b> 0
<b>Pipeline proposed disturbance (acres):</b>	<b>Pipeline interim reclamation (acres):</b> 0	<b>Pipeline long term disturbance (acres):</b> 0
<b>Other proposed disturbance (acres):</b> 0	<b>Other interim reclamation (acres):</b> 0	<b>Other long term disturbance (acres):</b> 0
<b>Total proposed disturbance:</b> 7.51	<b>Total interim reclamation:</b> 0	<b>Total long term disturbance:</b> 0

**Disturbance Comments:**

**Reconstruction method:** The areas planned for interim reclamation will then be re contoured to the original contour if feasible. If not feasible the interim contour will blend with the surrounding topography as much as possible.

**Topsoil redistribution:** As required per BLM requirements, topsoil will be evenly re spread and aggressively re vegetated over the entire disturbed area needed.

**Soil treatment:** As required per BLM requirements, proper seed mixture, free of noxious weeds will be used.

**Existing Vegetation at the well pad:** N/A

**Existing Vegetation at the well pad**

**Existing Vegetation Community at the road:** N/A

**Existing Vegetation Community at the road**

**Existing Vegetation Community at the pipeline:** N/A

**Existing Vegetation Community at the pipeline**

**Existing Vegetation Community at other disturbances:** N/A

**Existing Vegetation Community at other disturbances**

**Non native seed used?**

**Non native seed description:**

**Seedling transplant description:**

**Will seedlings be transplanted for this project?**

**Seedling transplant description attachment:**

**Will seed be harvested for use in site reclamation?**

**Seed harvest description:**

**Seed harvest description attachment:**

**Operator Name:** SOLARIS WATER MIDSTREAM LLC**Well Name:** RAGIN RUTLEY SWD**Well Number:** 1**Seed****Seed Table****Seed Summary****Total pounds/Acre:**

<b>Seed Type</b>	<b>Pounds/Acre</b>
------------------	--------------------

**Seed reclamation****Operator Contact/Responsible Official****First Name:****Last Name:****Phone:****Email:****Seedbed prep:****Seed BMP:****Seed method:****Existing invasive species?** N**Existing invasive species treatment description:****Existing invasive species treatment****Weed treatment plan description:** As required per BLM requirements, standard regular maintenance to maintain a clear location and road.**Weed treatment plan****Monitoring plan description:** As required per BLM requirements, standard regular maintenance to maintain a clear location and road.**Monitoring plan****Success standards:** To maintain all disturbed areas as required per BLM requirements.**Pit closure description:** N/A**Pit closure attachment:****Section 11 - Surface****Disturbance type:** NEW ACCESS ROAD**Describe:****Surface Owner:** BUREAU OF LAND MANAGEMENT**Other surface owner description:****BIA Local Office:****BOR Local Office:**

**Operator Name:** SOLARIS WATER MIDSTREAM LLC

**Well Name:** RAGIN RUTLEY SWD

**Well Number:** 1

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Operator Name:** SOLARIS WATER MIDSTREAM LLC

**Well Name:** RAGIN RUTLEY SWD

**Well Number:** 1

### Section 12 - Other

**Right of Way needed?** N

**Use APD as ROW?**

**ROW Type(s):**

**ROW**

**SUPO Additional Information:**

**Use a previously conducted onsite?** Y

**Previous Onsite information:** NOS 10400047854

**Other SUPO**



**APD ID:** 10400095414

**Submission Date:** 02/26/2024

**Operator Name:** SOLARIS WATER MIDSTREAM LLC

**Well Name:** RAGIN RUTLEY SWD

**Well Number:** 1

**Well Type:** INJECTION - DISPOSAL

**Well Work Type:** Drill

## Section 1 - General

Would you like to address long-term produced water disposal? NO

## Section 2 - Lined

Would you like to utilize Lined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD Surface Owner Description:

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit

Pit liner description:

Pit liner manufacturers

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule

Lined pit reclamation description:

Lined pit reclamation

Leak detection system description:

Leak detection system



**Operator Name:** SOLARIS WATER MIDSTREAM LLC

**Well Name:** RAGIN RUTLEY SWD

**Well Number:** 1

## State

### Unlined Produced Water Pit Estimated

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information

## Section 4 -

Would you like to utilize Injection PWD options? N

### Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD Surface Owner Description:

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Injection well name:

Assigned injection well API number?

Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection

Underground Injection Control (UIC) Permit?

UIC Permit

## Section 5 - Surface

Would you like to utilize Surface Discharge PWD options? N

### Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD Surface Owner Description :

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

**Operator Name:** SOLARIS WATER MIDSTREAM LLC

**Well Name:** RAGIN RUTLEY SWD

**Well Number:** 1

## Section 6 -

Would you like to utilize Other PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

PWD Surface Owner Description:

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type

Have other regulatory requirements been met?

Other regulatory requirements

**APD ID:** 10400095414**Submission Date:** 02/26/2024Highlighted data  
reflects the most  
recent changes  
[Show Final Text](#)**Operator Name:** SOLARIS WATER MIDSTREAM LLC**Well Number:** 1**Well Name:** RAGIN RUTLEY SWD**Well Work Type:** Drill**Well Type:** INJECTION - DISPOSAL

## Bond

**Federal/Indian APD:** FED**BLM Bond number:** NMB106698142**BIA Bond number:****Do you have a reclamation bond?** NO**Is the reclamation bond a rider under the BLM bond?****Is the reclamation bond BLM or Forest Service?****BLM reclamation bond number:****Forest Service reclamation bond number:****Forest Service reclamation bond attachment:****Reclamation bond amount:****Reclamation bond rider amount:****Additional reclamation bond information attachment:**



APD ID: 10400095414

Submission Date: 02/26/2024

Highlighted data  
reflects the most  
recent changes

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Number: 1

Well Name: RAGIN RUTLEY SWD

Well Work Type: Drill

Well Type: INJECTION - DISPOSAL

[Show Final Text](#)

## Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formation
16300781	QUATERNARY	3551	0	0	ALLUVIUM	USEABLE WATER	N
16300780	RUSTLER	2452	1099	1099	ANHYDRITE	NONE	N
16300782	TOP OF SALT	2070	1481	1481	SALT	POTASH	N
16300768	BASE OF SALT	489	3062	3062	DOLOMITE	NONE	N
16300769	YATES	313	3238	3238	DOLOMITE, SANDSTONE	NATURAL GAS, OIL	N
16300777	CAPITAN REEF	-109	3660	3660	DOLOMITE, LIMESTONE	USEABLE WATER	N
16300783	DELAWARE	-1368	4919	4919	LIMESTONE, SANDSTONE	NATURAL GAS, OIL	N
16300770	BRUSHY CANYON	-2580	6131	6131	SANDSTONE	NATURAL GAS, OIL	N
16300771	BONE SPRING	-4265	7816	7816	LIMESTONE, SHALE	NATURAL GAS, OIL	N
16300772	BONE SPRING 1ST	-5284	8835	8835	SANDSTONE	NATURAL GAS, OIL	N
16300773	BONE SPRING 2ND	-5579	9130	9130	LIMESTONE	NATURAL GAS, OIL	N
16300774	BONE SPRING 2ND	-5878	9429	9429	SANDSTONE	NATURAL GAS, OIL	N
16300775	BONE SPRING 3RD	-6367	9918	9918	LIMESTONE	NATURAL GAS, OIL	N
16300776	BONE SPRING 3RD	-6929	10480	10480	SANDSTONE	NATURAL GAS, OIL	N
16300784	WOLFCAMP	-7154	10705	10705	LIMESTONE, SANDSTONE, SHALE	NATURAL GAS, OIL	N
16300785	STRAWN	-8367	11918	11918	LIMESTONE	NATURAL GAS, OIL	N
16300786	ATOKA	-8739	12290	12290	LIMESTONE, SHALE	NATURAL GAS, OIL	N

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: RAGIN RUTLEY SWD

Well Number: 1

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formation
16300788	MORROW	-9366	12917	12917	LIMESTONE, SANDSTONE, SHALE	NATURAL GAS	N
16300789	MISSISSIPPINIAN	-10207	13758	13758	LIMESTONE	NATURAL GAS	N
16300787	WOODFORD	-10767	14318	14318	SHALE	NATURAL GAS	N
16300778	DEVONIAN	-10912	14463	14463	DOLOMITE	NONE	N
16300779	FUSSELMAN	-11764	15315	15315	DOLOMITE	NONE	Y

## Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M

Rating Depth: 10000

Equipment: All required equipment per Federal Regulations to be in place prior to drilling out the surface casing.

Requesting Variance? NO

Variance request:

**Testing Procedure:** The BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure as per 43 CFR 3172. Pipe Rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These check will be noted on the daily tour sheets. Other accessories to the BOP equipment will include an upper and lower Kelly cock, floor safety valve (inside BOP), wellhead wear bushing, press gauges, remote choke, choke lines, choke manifold, and all items as per 43 CFR 3172. Mud logging unit (2 Man) below 16" casing. Open hole and cased hole logging may be conducted in intermediate and production hole sections. Logs that may be run include triple combo, sonic, and cement bond log.

Choke Diagram Attachment:

BOP\_Closed\_Loop\_Diagram\_V2\_9.4.2024\_20240911081046\_20250611113350.pdf

BOP Diagram Attachment:

10M\_BOP\_Diagram\_3\_Ram\_V2\_20240911081031\_20250519084556.pdf

## Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	32	OTHE R - 26	NEW	API	N	0	1300	0	1300	3531	2231	1300	OTH ER - X- 3	202.	OTHER - Frank DDS	1.96	1.98	BUOY	7.2	BUOY	15.7

**Operator Name:** SOLARIS WATER MIDSTREAM LLC**Well Name:** RAGIN RUTLEY SWD**Well Number:** 1

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formation
16300788	MORROW	-9366	12917	12917	LIMESTONE, SANDSTONE, SHALE	NATURAL GAS	N
16300789	MISSISSIPPINIAN	-10207	13758	13758	LIMESTONE	NATURAL GAS	N
16300787	WOODFORD	-10767	14318	14318	SHALE	NATURAL GAS	N
16300778	DEVONIAN	-10912	14463	14463	DOLOMITE	NONE	N
16300779	FUSSELMAN	-11764	15315	15315	DOLOMITE	NONE	Y

## Section 2 - Blowout Prevention

**Pressure Rating (PSI):** 10M**Rating Depth:** 10000**Equipment:** All required equipment per Federal Regulations to be in place prior to drilling out the surface casing.**Requesting Variance? NO****Variance request:**

**Testing Procedure:** The BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure as per 43 CFR 3172. Pipe Rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These check will be noted on the daily tour sheets. Other accessories to the BOP equipment will include an upper and lower Kelly cock, floor safety valve (inside BOP), wellhead wear bushing, press gauges, remote choke, choke lines, choke manifold, and all items as per 43 CFR 3172. Mud logging unit (2 Man) below 16" casing. Open hole and cased hole logging may be conducted in intermediate and production hole sections. Logs that may be run include triple combo, sonic, and cement bond log.

**Choke Diagram Attachment:**

BOP\_Closed\_Loop\_Diagram\_V2\_9.4.2024\_20240911081046\_20250611113350.pdf

**BOP Diagram Attachment:**

10M\_BOP\_Diagram\_3\_Ram\_V2\_20240911081031\_20250519084556.pdf

## Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	32	OTHE R - 26	NEW	API	N	0	1300	0	1300	3531	2231	1300	OTH ER - X- 3	202.	OTHER - Frank DDS	1.96	1.98	BUOY	7.2	BUOY	15.7

Sante Fe Main Office  
Phone: (505) 476-3441

General Information  
Phone: (505) 629-6116

Online Phone Directory  
<https://www.emnrd.nm.gov/ocd/contact-us>

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

ACKNOWLEDGMENTS

Action 509427

**ACKNOWLEDGMENTS**

Operator:	OGRID:
SOLARIS WATER MIDSTREAM, LLC 9950 WOODLOCH FOREST DR THE WOODLANDS, TX 77380	371643
	Action Number:
	509427

Action Type:  
[C-101] BLM - Federal/Indian Land Lease (Form 3160-3)**ACKNOWLEDGMENTS**

<input checked="" type="checkbox"/>	I hereby certify that no additives containing PFAS chemicals will be added to the completion or recompletion of this well.
-------------------------------------	--

Sante Fe Main Office  
Phone: (505) 476-3441

General Information  
Phone: (505) 629-6116

Online Phone Directory  
<https://www.emnrd.nm.gov/ocd/contact-us>

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

CONDITIONS

Action 509427

**CONDITIONS**

Operator:  SOLARIS WATER MIDSTREAM, LLC 9950 WOODLOCH FOREST DR THE WOODLANDS, TX 77380	OGRID: 371643
	Action Number: 509427
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

**CONDITIONS**

Created By	Condition	Condition Date
fmalton	Cement is required to circulate on both surface and intermediate1 strings of casing.	9/25/2025
fmalton	If cement does not circulate on any string, a Cement Bond Log (CBL) is required for that string of casing.	9/25/2025
jeffrey.harrison	File As Drilled C-102 and a directional Survey with C-104 completion packet.	12/12/2025
jeffrey.harrison	Notify the OCD 24 hours prior to casing & cement.	12/12/2025
jeffrey.harrison	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string.	12/12/2025
jeffrey.harrison	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.	12/12/2025
jeffrey.harrison	Ensure that the tubing size that is stated in the UIC permit is used.	1/14/2026
jeffrey.harrison	Well must be constructed with dedicated casings for the Salado Formation and the Capitan Reef. A CBL is required to be run for the intermediate casing dedicated to protect the Salado Formation and the intermediate casing dedicated to protect the Capitan Reef and must cover the entire length of the casing. Permittee shall submit copies to the Engineering Bureau (using E-permitting EP Well Log Submission) prior to setting the next casing.	1/14/2026