H2S – 044

FRONTIER MALJAMAR GP AGI Wells H2S CP

2015

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

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OCTOBER 6, 2015

Julie W. Gutiérrez
Geolex, Inc®
500 Marquette Avenue, NW Suite 1350
Albuquerque, NM 87102

RE: Frontier Field Services, LLC Maljamar Gas Processing Plant and Maljamar AGI Facility (H2S-044): H2S Contingency Plan (Revised October 2015) Section 21, Township 17 South, Range 32 East in Lea County, New Mexico

Dear Mrs. Gutiérrez:

The Oil Conservation Division (OCD) is in receipt of Frontier Field Services, LLC's "Maljamar Gas Processing Plant and Maljamar AGI Facility" H2S Contingency Plan" (revised plan) dated August 2015.

OCD has completed its review of the revised plan and finds that it appears to meet the intent of the OCD Hydrogen Sulfide Gas Regulations (19.15.11 NMAC). Therefore, OCD hereby **accepts** the plan for record.

Please be advised that OCD approval of this plan does not relieve Frontier Field Services, LLC of responsibility should its operations fail to adequately detect, investigate, and/or undertake corrective actions to prevent or stop a hydrogen sulfide release(s) that may pose a threat to groundwater, surface water, human health, public safety or the environment. In addition, OCD approval does not relieve Frontier Field Services, LLC of responsibility for compliance with any other federal, state, or local laws and/or regulations.

If you have any questions, please contact Carl Chavez of my staff at (505) 476-3490, mail at the address below, or email at CarlJ.Chavez@state.nm.us. Thank you.

Sincerely,

Jim Griswold
Environmental Bureau Chief

JG/cjc

cc: OCD Hobbs District Office

H_2S Contingency Plan

Frontier Maljamar Gas Processing Plant
and
Maljamar AGI Facility
1001 Conoco Road
PO Box 7
Maljamar, NM 88264

Revised October 2015

GEOLEX
INCORPORATED

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LOCATION OF FACILITY

Frontier Field Services, LLC, Maljamar Gas Processing Plant, Maljamar Acid Gas Injection (AGI) Facility

The physical location of the Plant and existing AGI Well (AGI #1) and associated AGI Facility is in Section 21, Township 17S, Range 32E, Lea County, NM. The Plant and associated facilities are located approximately three miles south of the town of Maljamar, NM in a very isolated area. Driving directions to the plant from the north are as follows: At the Junction of Highway 82 and County Road 126 (State Road 33) go south 2.6 miles and turn right onto Conoco Road and take first paved road south to the office. Driving directions to the Plant from the south are: at the Junction of Highway 529 and County Road 126 go north 1.9 miles and turn left onto Conoco Road and take first paved road south to the office (see Figure 1).

The mailing address of the plant is:
1001 Conoco Road
P.O. Box 7
Maljamar, NM 88264

Maljamar AGI #1, API # 30-025-40420
The existing AGI well is named the **Maljamar AGI #1** and it is located 130 FSL, 1,813 FEL in Section 21, Township 17 South, Range 32 East in Lea County, NM (see Figures 2 and 2a).

Maljamar AGI #2, API # 30-025-42628
Frontier has received authorization from the NMOCC to drill and complete an alternate/backup AGI well (**Maljamar AGI #2**) just adjacent to AGI #1 (see Figures 2 and 3). This new well has not yet been drilled, but Frontier anticipates that the well will be drilled and completed sometime during the fall/winter of 2015/2016. The surface location of this well will be 400' FSL, 2100' FEL, Section 21, Township 17 South, Range 32 East in Lea County NM (see Figure 2 and 2a).

GLOSSARY OF ACRONYMS UTILIZED IN THE PLAN

ACGIH	American Conference of Governmental Industrial Hygienists
AGI	Acid Gas Injection
ANSI	American National Standards Institute
APD	Application for Permit to Drill (BLM Document)
API	American Petroleum Institute
CO_2	Carbon Dioxide
DCS	Distributed Control System
DOT	Department of Transportation
ERO	Emergency Response Officer
ESD	Emergency Shut-Down
H_2S	Hydrogen Sulfide
IDLH	Immediately Dangerous to Life or Health
LEL	Lower Explosive Limit
LEPC	Local Emergency Planning Committee
MSDS	Materials Safety Data Sheets
NACE	National Association of Corrosion Engineers
NCP	National Contingency Plan
NIIMS	National Interagency Incident Management System
NIOSH	National Institute for Occupational Safety and Health
NGL	Natural Gas Liquid
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMOCC	New Mexico Oil Conservation Commission
OCD	Oil Conservation Division
OSHA	Occupational Safety and Health Administration
PLC	Programmable Logic Controller
PPE	Personal Protective Equipment
PPM	Parts Per Million
ROE	Radius of Exposure
SCBA	Self-Contained Breathing Apparatus
SERC	State Emergency Response Commission
SO_2	Sulfur Dioxide
SSSV	Subsurface Safety Valve
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weighted Average

I. INTRODUCTION [NMAC 19.15.11 ET.SEQ] [API RP-55 7.1]

The Frontier Field Services Maljamar Processing Plant is a natural gas processing plant which process field gas containing hydrogen sulfide (H_2S) and handles and/or generates sulfur dioxide (SO_2). Frontier has an existing Acid Gas Injection (AGI) well and associated compression facilities which were completed in 2012. Frontier is currently in the process of installing a new AGI (Maljamar AGI #2) which will serve as a back-up well to AGI #1 and will be utilized when AGI #1 is out of service for maintenance or is closed down for any other reason.

This revised safety plan is being submitted to include that new AGI well and also because irrespective of whether they have one well or two at the Maljamar Plant, Frontier is increasing the amount of acid gas processed at the Plant, and that acid gas has a higher concentration of H_2S than was described in the Plan that was submitted in 2012. This revised H_2S Contingency Plan (the "H_2S Plan" or the "Plan") is created to document procedures that are to be followed in the event of an H_2S release that occurs at any location on the Plant or the AGI Facility. The Plan and operation of the Maljamar Plant also conform to standards set forth in API RP-55 "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide" as well as API RP 49 "Recommended Practice for Drilling and Well Servicing Operations Involving Hydrogen Sulfide", API RP 68 "Oil and Gas Well Servicing and Workover Operations Involving Hydrogen Sulfide", applicable National Association of Corrosion Engineers (NACE) standards for sour gas service and current best management practices. The Maljamar Plant does not have any storage tanks in which hydrogen sulfide or other gas or gas products are stored, and thus, API regulations and OCD regulations (specifically 19.15.11.12.E NMAC) relative to those types of storage are not applicable for this plant or the AGI Facility. Drilling and completion of the Maljamar AGI #2 will be accomplished in compliance with NMAC 19.15.11.11, 19.15.11.7 K.(3) and in compliance with the approved BLM Application for Permit to Drill (APD) which includes an H_2S contingency plan for drilling and completion operations.

The terms used in this Plan are used as defined in Title 19 Chapter 15 Part 11 of the New Mexico Administrative Code (19.15.11.7 – Definitions), unless otherwise defined herein. For the purposes of this Plan the term "shelter-in-place" means that individuals should go inside, turn off heating and air conditioning systems, close windows and put towels or tape around doors and/or windows that are not sealed and wait for further instruction.

II. SCOPE [API RP-55 7.2]

This contingency plan is specific to the Frontier Maljamar Gas Processing Plant and Maljamar AGI Facility. It contains procedures to provide an organized response to an unplanned release from the Plant or the AGI Facility and documents procedures that would be followed to alert and protect any members of the public and/or contractors working on or around the plant in the event of an unplanned release. This H_2S Contingency Plan has been prepared to minimize the hazard resulting from an H_2S release. It will be used to inform company personnel, local emergency responders and the public of actions to be taken before, during and after an H_2S release. All operations shall be performed with safety as the primary goal. The primary concern of Frontier Field Services Maljamar Gas Plant, during an H_2S release, is to protect company employees, contractors and the public; the secondary concern is to minimize the damage and other adverse effects of the emergency. At any time during such an emergency, any part of the operation that might compromise the safety of individuals will cease until the operation can be reevaluated and the proper engineering controls to assure safety can be implemented. No individual should place the protection of the Plant property above his or her own personal safety.

In a serious situation involving an H_2S release, not only Frontier Field Services personnel are involved, but local Fire Departments, Law Enforcement, County and even State of New Mexico agencies may be interested parties. Cooperation will expedite all decisions. In any emergency situation involving a H_2S release, delegation of duties will be made to appropriate employees and groups. These duties will be reviewed on an annual basis to ensure complete understanding and facilitate a well-coordinated response by all involved personnel to the emergency situation.

III. PLAN AVAILABILITY [API RP-55 7.3]

This H_2S Plan shall be available to all personnel responsible for implementing any portion of the Plan (see Appendix E for distribution list). Frontier Field Services or their designee will distribute copies of the approved plan to the following agencies: OCD; New Mexico Department of Public Safety (DPS); Local Emergency Planning Committees (LEPCs) for both Lea and Eddy County; Maljamar, Lovington, Artesia, Hobbs and Loco Hills, Fire Departments; New Mexico State Police District 3 Office, Roswell, NM; Lea County Sheriff's Department and the Bureau of Land Management (BLM) Carlsbad Field Office. The Plan will be available at the following Frontier Field Services, LLC locations: Maljamar Processing Plant, Maljamar, NM; Frontier Field Services Main Office, 4200 Skelly Drive, Suite 700, Tulsa, OK 74135; AKA Energy Corporate Headquarters, 65 Mercado Street, Suite 250, Durango, CO 81301.

IV. EMERGENCY PROCEDURES [NMAC 19.15.11.9.B(2)(a)] [API RP-55 7.4 a] [29CFR1910.1200]

SITE SECURITY [NMAC 19.15.11.12.B]

This facility requires that all visitors check-in before entering the Plant or AGI Facility, and thus the check-in sheet will be used at the Emergency Assembly Areas to make a full accounting of all personnel, contractors and visitors. In compliance with 19.15.11.12.B NMAC the Plant and AGI Wells are contained within a secure fenced areas with locking gates.

RESPONSIBILITIES AND DUTIES OF PERSONNEL DURING AN EMERGENCY

If the event that a 10 ppm H_2S intermittent alarm and/or flashing blue beacon is activated, all company personnel working in the area of the alarm will proceed to the Plant Control Room. All visitors and contractors will proceed to the Plant Muster Area (see Figure 4). Any person in distress will be assisted from the area, as long as doing so does not pose a danger to others. The Plant operator(s) will verify that the alarm is not false and will make initial determinations of the cause of the alarm. If the alarm is not immediately resolved, then Level 1 H_2S Contingency Plan will be activated. The following is a description of key personnel responsibilities during an Incident Response. Depending on the specific circumstances surrounding the release, a single individual may serve in multiple roles for key personnel outlined below.

Plant Supervisor or Lead Operator
The Plant Supervisor will be responsible for insuring that the objectives of the Plan are met. If the Plant Supervisor is not on-site at the Plant when an incident necessitating the activation of the H_2S Plan occurs, then the Lead Operator will be in charge until the Plant Supervisor arrives on-scene. This individual will bear the overall responsibility to see that objectives of the Plan are met and to insure the safety of the public and all personnel involved in the response and will monitor all activities being carried out. This individual will notify or delegate responsibility for notification of all Frontier or contract personnel and any civil authorities needed to respond to the incident and will assign any additional personnel to support

roles as needed. Upon notification or discovery of an H_2S release, the following steps will be initiated by the Plant Supervisor or Lead Operator.

- Establish response priorities.
- Insure the safety of all personnel involved in the response.
- Assess the incident/situation and develop appropriate strategies. Conduct site investigations as needed.
- Alert other emergency response personnel of the potential hazard.
- Arrange for support personnel to be sent to the location of the release.
- Proceed to the site to assess emergency response actions needed.
- Keep Frontier Field Services line and senior management informed of response situation.
- Remain on site until relieved or the incident is under control.

Field Office Administrator
The Field Office Administrator (FOA) works only during normal business hours (Monday – Friday, 7:30 AM to 3:30 PM). The FOA is responsible for management of the Plant Muster Area where visitors and contractors will assemble during a Level 1 response. (The number of visitors/contractors who would be at the Plant after normal working hours is so few, that those individuals would be instructed to report to the Plant Control Room in the event of Level 1 response that occurs outside normal business hours.) During a Level 1 response, the FOA will:

- Proceed to the Plant Muster Area (see Figure 4) with a radio, cell phone and H_2S monitor and conduct roll call for visitors/contractors.
- Monitor air quality at the Plant Muster Area for H_2S concentrations.
- If the muster area becomes untenable (H_2S >10 ppm) the FOA will communicate to personnel at the Plant Muster Area that they need to move to the NE Assembly Area (see Figure 4).
- Maintain the Chronologic Record of Events Log (see Appendix F).

Other Employees and Contractors
All employees on duty should be on standby awaiting instructions from Plant Supervisor or Lead Operator. They may be called on to provide support contacting vendors for supplies, contacting local support groups for assistance, provide onsite logistical support to the responders, blocking roads, assisting with evacuations, etc.

No employee or contractor will be asked to provide incident scene support that they are not comfortable in their ability to perform or have not been specifically trained to perform.

IMMEDIATE ACTION PLANS

Appendix A contains the Immediate Action Plans which details the procedures to be used when responding to an unanticipated release of H_2S at the Plant or AGI Facility. The Immediate Action Plans are divided into two levels which are activated in response to increased severity of an unanticipated release. See Appendix B for Response Flow Diagrams that correspond to the two levels of response detailed in Appendix A.

In the event of activation of an H_2S alarm the Plant Supervisor or Lead Operator will assess the situation and determine the appropriate level of response consistent with the Immediate Action Plan. Additional or long-term response actions will be determined on a case-by-case basis, if needed.

TELEPHONE NUMBERS, COMMUNICATION METHODS AND MEDIA SITE

Telephone Numbers and Communication Methods

In the event of activation of the Plan, emergency responders, public agencies, local government and other appropriate public authorities must be contacted per the Immediate Action Plan (see Appendix A). Telephone contact information for those entities in included in Appendix C.

Communication Method/Internal Communications

Frontier Field Services, LLC will use 2-way radios and telephones to communicate internally. Telephones will be used for external communication. Land lines and high speed internet access are available at the Plant office.

Media Site

If a Level 2 Response occurs, Frontier will designate a Media Site at or adjacent to the Emergency Staging Area (see Figure 4). Frontier will also designate a Media Liaison Officer. Under no circumstances will media personnel be allowed inside the warm or hot zone (road blocked area). Media personnel will only be allowed inside the road blocked area once the area has been monitored and restored to a cold zone (less than 10 ppm H_2S) and Frontier has approved their entry. Media personnel shall be escorted by Frontier personnel at all times.

LOCATION OF NEARBY RESIDENCES, ROADS, BUSINESS, OPERATORS AND MEDICAL FACILITIES

Residences

There are no residences are located within the ROE of the Plant.

Roads

Roads located within the ROE include:

- Various lease roads.
- Conoco Phillips Field Warehouse service roads
- Mid America Pipeline Meter Station service roads
- Chaparral Pipeline Company Meter Station service roads

Businesses

Businesses located within the ROE include:

- Mid America Pipeline Meter Station
- Conoco Philips Field Warehouse
- Chaparral Pipeline Company Meter Station

Note: The Mid America Meter Station is an unmanned facility. The Conoco Philips Field Warehouse has no employees who regularly work at that facility, and the Chaparral Pipeline Company has an unmanned meter station in the area. In the event of an H_2S release, these businesses will be contacted by Frontier personnel, and if any of their personnel are working in the area, they will be advised to evacuate or shelter in place as deemed appropriate as described in Appendix A. They will also be told to advise any of their contractors working or planning to work in the area that they should leave and not enter the area until further notice.

Operators:

There are numerous active wells and other wells that are currently being drilled but have not yet been completed within 100 ppm ROE of the Plant. In the event of an emergency, the operators of those wells

will be contacted and advised of the status of the release and, depending on wind conditions, magnitude of the release, etc., any personnel working in the area will be advised to evacuate the area and not return until further notice. A list of these operators is contained in Appendix C.

Medical Facilities
There are no medical facilities located within the ROE.

Other
In addition to notifying the facilities listed above, Frontier personnel will make a visual inspection of the ROE area to insure that no individuals are seen inside the ROE, and if any are observed, they will be advised to immediately evacuate to one of the designated Emergency Evacuation Area described below.

EVACUATION ROUTES, EMERGENCY ASSEMBLY AREAS AND ROAD BLOCK LOCATIONS

Evacuation Routes and Emergency Assembly Areas
Evacuation Routes and Emergency Assembly Areas are shown on Figure 4. The plant Muster Area is located in the parking area near the front doors of the Plant Measurement Office. Two Emergency Assembly Areas have been designated, one in the road at the Southwest corner of the Plant (hereafter named "SW Assembly Area") and one near the pump jack located northeast of the Plant (hereafter named "NE Assembly Area"). In the event of a catastrophic release, one alternate Emergency Assembly Area (hereafter named "Emergency Staging Area") will be located farther from the Plant, just outside the 100 ppm ROE at the intersection of Maljamar Road and SR 126A (see Figure 4). Depending on wind direction, magnitude of release, etc. the "Secondary Staging Area" (see Figure 4) may be utilized.

Road Block Locations
Road blocks (as shown in Figure 4) will be established as specified in Appendix A utilizing portable barriers and flashing lights. Frontier will designate representatives to staff each of the roadblocks, as deemed necessary. State or Local Police may be asked to assist with maintaining the roadblocks.

MONITORING EQUIPMENT, ALARM SYSTEMS, SAFETY EQUIPMENT AND SUPPLIES

Emergency Shutdown System (ESD)
There are 16 ESD manual stations in various locations: 14 are located in the Plant and 2 in the AGI Facility. Figure 3 shows the location of the ESD stations. The Plant Amine Unit and AGI Facility ESD can be activated at any time by any employee or at the direction of the Plant Supervisor or Lead Operator. If a Level 2 Response is initiated the Plant ESD will immediately be activated.

When any one of the Plant or AGI Facility manual stations is activated, the system will be shut-down and the natural gas inlets and outlets will be blocked. The operators are also able to auto close the one main isolation/block valve on the incoming gas line to the Plant and the treated acid gas (TAG) block valves or automatic safety valves upstream and downstream of the compression facility (See Figures 3 and 6). Activating these should allow the plant to avoid a Level 2 response. If deemed necessary, Frontier can also send trained personnel to activate designated off-site manual block valves. There are also various methods to shut down gas flow at the various wellheads and incoming gathering lines. These can and would be evaluated on a case by case basis. Designated employees will have remote access to the plant controls including ESD capabilities.

Plant Alarms, Visible Beacons and Wind Indicators
An audible alarm system along with a visual alarm system provides warning for H_2S releases. These systems exist for specific areas of the plant. The audible and visual alarms are redundant systems which

function independently of one another so that should one system fail, the other would remain active. These systems incorporate back-up battery capabilities as recommended in API RP 55 which insure their operation in the event of a power failure. A computer in the control room and in the Plant Operator's Office establishes which H_2S monitor has activated the alarm and/or flashing blue beacon. Colored beacons, horns, and wind direction indicators are situated in various locations throughout the Plant and are shown in Figure 3. At least one wind direction indicator can be seen day and night at any location within the Plant and AGI Facility complexes, as well as from any point on the perimeter of the plant and AGI Facility.

Gas Detection Equipment

The Plant and AGI Facility use RAE Guard EC, FGM-1300 fixed H_2S sensors. These sensors are part of a fixed point monitoring system used to detect the presence of H_2S in ambient air. The blue flashing beacon is activated at H_2S concentrations of 10 ppm or greater. The horn is also activated with a continuous alarm at H_2S concentrations of 10 ppm or greater. The fixed H_2S monitors are strategically located throughout the Plant to detect an uncontrolled released of H_2S. Four continuous read H_2S monitors are located immediately around the wellhead and are monitored continuously, connected and linked electronically through the Programmable Logic Controller (PLC) to the ESD system of the plant. These monitors will immediately ESD the AGI Facility in the event that H_2S at 20 ppm is detected. The Automatic Subsurface Safety Valve (SSV) which is also linked to the PLC is designed to prevent any backflow from the level of the SSV (295 ft.), and it allows access for servicing the well or taking corrective actions as needed.

The Plant operators are able to monitor the H_2S levels of all the Plant sensors on the control monitor located in the control room. In addition, select employees can access this information remotely. These sensors are shown on Figure 3. These sensors all have to be acknowledged and will not clear themselves. This requires immediate action for any occurrence or malfunction. The sensors have battery backup systems and are calibrated monthly. Audible alarm systems are also calibrated monthly. Handheld gas detection monitors are available to plant personnel to check specific areas and equipment prior to initiating maintenance or working on equipment. There are 4 handheld monitors, and each individual is assigned a personal H_2S monitor. The handheld gas detection devices are RKI GSX-2900 4-way monitors. The detectors have sensors for oxygen, LEL (lower explosive limit hydrocarbon atmospheres), H_2S, and carbon monoxide. They indicate the presence of H_2S with a beeping sound at 10 ppm. The beeps change in tone as H_2S increases to 20 ppm. The personal monitors are set to alarm (beep) at 10 ppm with the beeps becoming closer together as the H_2S concentration increases to 20 ppm. Both the handheld and personal monitors have digital readouts of H_2S ppm concentration. The Plant compressor building has two methane sensors; one sends a call out at the 30% lower explosive limit (LEL); the second shuts the compressors down at 50% LEL. The methane sensors are visual and audible alarms. The compressor building also is equipped with fire eyes that will also shut the units down. The four product pumps also have LEL sensors.

Respirators

The facility has 14 Drager 30-minute self-contained breathing apparatus (SCBA) respirators and 8 Scott 5-minute escape packs strategically located throughout the Plant and AGI Facility. There are also 5 work packs with supplied air lines distributed throughout the plant. Plant personnel medically cleared for inclusion in the company Respiratory Protection Program are certified to use the SCBAs respirators and work packs.

Fire Fighting Equipment

The Plant personnel are trained only for insipient stage fire-fighting. The fire extinguishers located in the Plant and AGI Facility process areas, compressor buildings, process buildings, and company vehicles are

typically an Ansul 30# ABC dry chemical fire extinguisher. The Plant does not have a fire water system, only a utility water system that is not designed for fire-fighting.

Traffic Control Kit
The Plant has a Traffic Control Kit located in the Plant Office which contains the necessary equipment to initiate and maintain traffic control.

First Aid Equipment Locations
First Aid Kits are located at the following in: Control Room and Plant Office. Eye Wash stations are located in the Lab, Plant Office, Engine Buildings, Maintenance Shop and Welding Shop.

Personal H_2S Monitors
All Frontier personnel assigned to the Plant and associated field personnel are issued and required to use personal H_2S monitors while on duty.

SIGNS AND MARKERS [NMAC 19.15.11.10]

Pursuant to NMSA 19.15.11.10, the Plant and AGI Facility have readily readable warning, caution and notice signs which conform with the current ANSI standard Z535.1-2002 (Safety Color Code) indicating the presence of "H_2S/Poisonous Gas" and "High Pressure Gas" at the entrance to the Plant and at the AGI Wellhead, in order to warn the public that a potential danger exists. Emergency response phone numbers are posted at the entrance to the Plant, and signs are located at the Plant gate entrance indicating that all visitors must sign in. Signs to warn the public of potential danger have also been placed where the Plant access road intersects Conoco Road and where Conoco and Maljamar Roads intersect with the 500 ppm ROE of the Plant (see Figure 4). These signs are easily readable from the road and contain the language "Caution Poisonous Gas May Be Present". Please see Figure 8 for a representative photograph of one of these signs.

V. CHARACTERISTICS OF HYDROGEN SULFIDE (H_2S), SULFUR DIOXIDE (SO_2) AND CARBON DIOXIDE (CO_2) [NMAC 19.15.11.9.B(2)(b)] [API RP-55 7.4 b.]

HYDROGEN SULFIDE

The Inlet Gas stream to the Plant will contain an average of .35 mole percent of H_2S based on data generated from the sampling of the inlet stream at least daily. The TAG stream will contain approximately 22 mole percent of H_2S. H_2S is a colorless, toxic and flammable gas, and has the odor of rotten eggs. H_2S gas is heavier than air and presents a significant health hazard by paralyzing the respiratory system resulting in serious injury or death.

Hydrogen Sulfide Properties and Characteristics		
CAS No.		7783-06-4
Molecular Formula		H_2S
Molecular Weight		34.082 g/mol
Ceiling Concentration		20 ppm (OSHA)
Ceiling Peak Concentration		50 ppm (OSHA)
Threshold Limit Value (TLV)		15 ppm (ACGIH)
Time Weighted Average (TWA)		10 ppm (NIOSH)
Short Term Exposure Level (STEL)		15 ppm (ACGIH)
Immediately Dangerous to Life or Health (IDLH)		100 ppm
Specific Gravity Relative to Air (Air=1.0)		1.189
Boiling Point		-76.5F
Freezing Point		-121.8F
Vapor Pressure		396 psia
Autoignition Temperature		518F
Lower Flammability Limit		4.3%
Upper Flammability Limit		46.0%
Stability		Stable
pH in water		3
Corrosivity		Reacts with metals, plastics, tissues and nerves
Physical Effects of Hydrogen Sulfide		
Concentration		
Ppm	%	Physical Effects
1	0.00010	Can be smelled (rotten egg odor)
10	0.0010	Obvious & unpleasant odor; Permissible exposure level; safe for 8 hour exposure
20	0.0020	Acceptable ceiling concentration
50	0.0050	Loss of sense of smell in 15 minutes
100	0.0100	Immediately dangerous to life and health(IDLH) loss of sense of smell in 3-15 minutes; stinging in eyes & throat; Altered breathing
200	0.0200	Kills smell rapidly; stinging in eyes & throat
500	0.0500	Dizziness; Unconscious after short exposure; Need artificial respiration
700	0.0700	Unconscious quickly; death will result if not rescued promptly
1000	0.1000	Instant unconsciousness; followed by death within minutes

SULFUR DIOXIDE (SO_2)

Sulfur dioxide is produced as a by-product of H_2S combustion at the flare. The compression facility and the well will be connected to the acid gas flare in order to allow for purging of any acid gas trapped between the Plant and the SSV or for temporary flaring of TAG at the AGI Facility in the event of an emergency. SO_2 is colorless, transparent, and is non-flammable, with a pungent odor associated with burning sulfur. It is heavier than air, but will be picked up by a breeze and carried down-wind at elevated temperatures and can be extremely irritating to the eyes and mucous membranes of the upper respiratory tract.

Sulfur Dioxide Properties & Characteristics	
CAS No.	7446-09-5
Molecular Formula	SO_2
Molecular Weight	64.07 g/mol
Permissible Exposure Limit (PEL)	5 ppm(OSHA)
Time Weighted Average (TWA)	2 ppm(ACGIH)
Short Term Exposure Level (STEL)	5 ppm(ACGIH)
Immediately Dangerous to Life and Health (IDLH)	100 ppm
Specific Gravity Relative to Air (Air = 1.0)	2.26
Boiling Point	14°F
Freezing Point	-103.9°F
Vapor Pressure	49.1 psia
Autoignition Temperature	N/A
Lower Flammability Limit	N/A
Upper Flammability Limit	N/A
Stability	Stable
Corrosivity	Could form an acid rain in aqueous solutions

Physical Effects of Sulfur Dioxide	
Concentration	**Effect**
1 ppm	Pungent odor, may cause respiratory changes
2 ppm	Permissible exposure limit; Safe for an 8 hour exposure
3-5 ppm	Pungent odor; normally a person can detect sulfur dioxide in this range
5 ppm	Short Term Exposure Limit (STEL); Safe for 15 minutes of exposure
12 ppm	Throat irritation, coughing, chest constriction, eyes tear and burn
100 ppm	Immediately Dangerous To Life & Health (IDLH)
150 ppm	So irritating that it can only be endured for a few minutes
500 ppm	Causes a sense of suffocation, even with first breath
1,000 ppm	Death may result unless rescued promptly.

CARBON DIOXIDE (CO_2)

The proposed TAG stream to the AGI Facility will contain approximately 78 mole percent of CO_2 based on data generated from the daily sampling of inlet gas. CO_2 is colorless, odorless, non-flammable and heavier than air.

Carbon Dioxide Properties & Characteristics	
CAS No.	124-38-9
Molecular Formula	CO_2
Molecular Weight	44.010 g/mol
Time Weighted Average (TWA)	5,000 ppm
Short Term Exposure Level (STEL)	30,000 ppm
Immediately Dangerous to Life and Health (IDLH)	40,000 ppm
Specific Gravity Relative to Air (Air = 1.0)	1.5197
Boiling Point	-109.12°F
Freezing Point	-69.81°F
Vapor Pressure	830 psia
Autoignition Temperature	N/A
Lower Flammability Limit	N/A
Upper Flammability Limit	N/A
Stability	Stable
pH in Saturated Solution	3.7
Corrosivity	dry gas is relatively inert & not corrosive; can be corrosive to mild steels in aqueous solutions

Physical Effects of Carbon Dioxide	
Concentration	**Effect**
1.0 %	Breathing rate increases slightly
2.0 %	Breathing rate increases to 50% above normal level. Prolonged exposure can cause headache, tiredness
3.0 %	Breathing rate increases to twice normal rate and becomes labored. Weak narcotic effect. Impaired hearing, headache, increased blood pressure and pulse rate
4 – 5 %	Breathing increases to approximately four times normal rate, symptoms of intoxication become evident, and slight choking may be felt
5 – 10 %	Characteristic sharp odor noticeable. Very labored breathing, headache, visual impairment, and ringing in the ears. Judgment may be impaired, followed within minutes by loss of consciousness
10 – 100 %	Unconsciousness occurs more rapidly above 10% level. Prolonged exposure to high concentrations may eventually result in death from asphyxiation

VI. RADII OF EXPOSURE [NMAC 19.15.11.7.K]

- See Appendix D for Worst Case Scenario and ROE calculations.
- See Figure 4 for Map showing 500 ppm and 100 ppm ROE areas.

VII. FACILITY DESCRIPTIONS, MAPS AND DRAWINGS [NMAC 19.15.11.9.B(2)(c)] [API RP-55 7.4 c.]

DESCRIPTION OF PLANT AND OPERATION

The primary function of the Plant is to remove acid gas (H_2S and CO_2) from sour field gas so that the gas can meet pipeline specifications. The gas is treated to remove acid gas components, dehydrated to remove water and processed to remove heavy (liquid) hydrocarbons from the gas stream. Several Plant systems are involved in performing these functions. The amine unit is designed to remove acid gas components from the natural gas stream. These components are removed from the natural gas because they are corrosive, hazardous to health, and reduce the heating value of the natural gas stream. This process is known as the gas sweetening process. Prior to the installation of the Maljamar AGI Facility, the H_2S gas removed by the amine unit was routed to the flare for incineration, and the CO_2 was released to the atmosphere. With the installation of the Maljamar AGI Facility the H_2S and CO_2 removed during the sweetening process are compressed at the AGI Facility and then injected into one of the AGI wells.

DESCRIPTION OF AGI FACILITY AND OPERATION

The lines that convey the TAG to the wells from the compression facilities are three-inch, stainless-steel, corrosion-resistant pipes (compliant with NACE standards). The pipes between the compressors and the AGI Wells are contained totally within the boundaries of the Plant and AGI Facility and do not cross any public road. H_2S sensors are located at critical junctions along the pipes which are run on overhead pipe racks. The pressure in the pipes is monitored continuously so the acid gas injection process could be stopped should there be any unusual variations in pressure. The designs for the injection wells are shown in Figures 5a and 5b, and the schematic of the AGI facility and tie-in to the Frontier Plant are shown in Figure 6.

The Maljamar AGI #1 is located 130' FSL, 1,813' FEL in Section 21, Township 17 South, Range 32 East and has been assigned API # 30-025-40420. It is a vertical well, completed on property leased by Frontier from the BLM and will a provide access to the primary injection zone (Wolfcamp Formation). The well was drilled to a final total depth of approximately 10,183 feet.

The Maljamar AGI #2 will be located 400' FSL and 2,100' FEL in Section 21, Township 17 South, Range 32 East and has been assigned API # 30-025-42628. This is a deviated well, which will be completed on property leased by Frontier from the BLM and will provide access to the primary injection zone (Wolfcamp Formation).

Each well has a string of telescoping casing cemented to the surface and includes a "downhole" SSV on the production tubing to assure that fluid cannot flow back out of the well during an injection equipment failure event. This valve is designed to isolate and automatically shut in the injection well if a leak occurs. The injection string within the well is also constructed with multiple safety features which include L80 ULTRA FJ 2-7/8" corrosion resistant tubing stabbed into a Halliburton BWD Perma-Series permanent packer, made of Incoloy® 925 with fluorel elements and an automated Halliburton SSV also made of Incoloy® 925. Incoloy® 925 is a nickel-iron chromium alloy that is resistant to corrosion and pitting and conforms to NACE specifications for sour gas service. In addition, the annular space between the projection tubing and the well bore is filled with corrosion-inhibited diesel as a further safety measure and is designed to allow the pressure in the annular space to be monitored and recorded continuously. If a pressure excursion outside the narrow predetermined operating range occurs, the acid gas compressor is

shut down and the automatic safety valves at the wellhead are automatically closed to prevent any escape of acid gas. The acid gas stream would then be routed to the flare until the problem with the well could be corrected and the system safely re-started. These redundant systems are compliant with API RP 55 and API RP 49, various applicable NACE standards for sour gas service and current best management practices. All downhole equipment includes necessary features which will allow for safe workover of a well in the event of a major equipment failure.

The Christmas tree of each well is made of standard carbon steel components and outfitted with annular pressure gauges that remotely report operating pressure conditions in real time to a gas control center. Pursuant to NMAC 19.15.11.12.D(2), in the case of abnormal pressures or any other situation requiring immediate action, the acid gas injection process can be stopped at the compressor, and the wellhead can be shut in using a hydraulically operated wing valve on the Christmas tree. The Plant operator may also shut the SSV. In addition, the well has profile nipples which provide the ability to insert a blanking plug into the base of the well below the packer which would allow for the safe reentry of the well. These safety devices provide for downhole accessibility and reentry under pressure for permanent well control. The SSV provides a redundant safety feature to shut in the wells in case the wing valves do not close properly. (See Figures 5a, 5b and 6 for location of these downhole safety features).

MAPS OF PLANT AND AGI FACILITY

Figure 1 shows the location of the Maljamar Plant and associated AGI Facility; Figure 2 shows the locations of Maljamar AGI #1 and Maljamar AGI #2; Figure 2a is a 7.5 min USGS topo map showing the location, name, and API number for of Maljamar AGI #1 and Maljamar AGI #2. Figure 3 shows the location of alarms, monitors and safety equipment; Figure 4 shows the 500 and 100 ppm ROE of the Plant and the location of roadblocks, evacuation routes and emergency assembly areas that would be utilized in the event a H_2S release that requires activation of this Plan. Figures 5a and 5b show the schematics of the design of AGI #1 and #2, respectively; Figure 6 is a schematic of the Maljamar AGI Facility, and Figures 7a and 7b show the gathering systems that supply the Maljamar Plant.

VIII. TRAINING AND DRILLS [NMAC 19.15.11.9.B(2)(d)] [API RP-55 7.4 d]

RESPONSIBILITIES AND DUTIES OF ESSENTIAL PERSONNEL

Please See Section IV "Emergency Procedures" for a detailed listing of responsibilities of essential personnel during a response. Personnel responsible for implementing this plan shall be trained on their duties and responsibilities related to this plan during the annual on-site or table top training exercises. All Plant and AGI Facility personnel, visitors, and contractors must attend an overview orientation prior to obtaining permission to enter the Plant or AGI Facility. A refresher course on this training is required annually for all persons. This training also complies with the requirements of the Aka Energy Group, LLC Corporate Safety Program. (Aka is the parent company of Frontier Field Services, LLC.)

ON-SITE OR CLASSROOM DRILLS

Frontier Field Services, LLC may use table top exercises as well as hands-on emergency response training methods. Training and drills in emergency response procedures help ensure personnel are adequately prepared to handle most emergency situations. Frontier personnel will be trained on the H_2S Contingency Plan and procedures annually. Everyone's role and responsibilities will be covered. The need for emergency preparedness will be emphasized through the use of drills and other exercises that simulate an emergency in which personnel perform or demonstrate their roles in the emergency. These drills can be either "table-top" discussions or realistic drills in which equipment will be deployed and contractors will participate. Frontier Field Services, LLC shall conduct a table top exercise annually at a minimum.

NOTIFICATION AND TRAINING OF OTHERS ON PROTECTIVE MEASURES IN EMERGENCY SITUATIONS

At the time of submission of this plan there are no residences within the 100 ppm ROE. However, in the event of a release, Frontier personnel will make a visual inspection of the ROE area to insure that no individuals are seen inside the ROE, and if any are observed, they will be advised to immediately evacuate to the designated Emergency Evacuation Area.

The only businesses located within the 100 ppm ROE are unmanned meter stations owned by Enterprise/Chaparral Pipeline Company and Chevron Pipeline Company and an unmanned ConocoPhillips Production Office. In the event of an H_2S release that cannot be immediately resolved, these companies will be contacted by Frontier personnel (see Appendix C for contact information). If anyone is present at those location, they would be instructed either to evacuate to an Emergency Assembly or Emergency Staging Area or to shelter-in-place, depending on prevailing wind conditions, magnitude of the release, etc. They will also be instructed to immediately alert all company personnel, third party contractors and/or service companies working in the area and those imminently scheduled to work in the area of the release of evacuation status of the Plant and AGI Facility. They will be trained not to enter/reenter the area within the roadblocks until they are given the "all clear" by Frontier personnel. The ConocoPhillips facility has no employees who regularly work at the facility, however, Conoco-Phillips personnel will be invited to participate in and/or observe annual drills where they will be briefed on notification, evacuation and shelter-in-place plans.

There are a number of producing wells or new wells in the process of being completed within the 100 ppm ROE of the Plant (see Appendix C). In the event of an H_2S release that cannot be immediately resolved, these producers will be contacted by designated Frontier personnel, advised of the status of the release and instructed to immediately alert all company personnel, third party contractors and/or service companies working in the area and those imminently scheduled to work in the area of the release and to be on stand-by for possible evacuation. If evacuated, they will be instructed not to enter/re-enter the area within the roadblocks until further notice.

TRAINING AND ATTENDANCE DOCUMENTATION

All training and drills will be documented. Documentation of the training, drills and reviews will be on file at the Frontier Field Services office at the Maljamar Plant Documentation shall include sign in sheets, synopsis of the training conducted, and an after action review of the training.

Annual training a will also include making contact with the entities including any that are identified as being within the 500 ppm and 100 ppm ROE (see Appendix C). To make sure contact information is current, Appendix C will be verified and updated annually to be sure any changes of occupancy, ownership or new commercial and/or residential buildings are reflected, and all owners/occupants receive training on protective measures.

BRIEFING OF PUBLIC OFFICIALS ON EVACUATION AND SHELTER IN PLACE PLANS

Local law enforcement, first responders, and fire personnel will also be invited to participate and/or observe annual drills, as well as being briefed on notification, evacuation, and shelter-in-place plans.

IX. COORDINATION WITH STATE EMERGENCY PLANS [NMAC 19.15.11.9.B(2)(e)] NOTIFICATIONS AND REPORTS

The Plant has various notification and reporting obligations. Some are related to its State Air Quality Permit that is overseen by NMED as well as State and Federal spill reporting obligations. In addition to these regulatory obligations Plant personnel also have internal and external notification and reporting obligations associated with the activation of this plan. External reporting obligations are as follows:

NATIONAL RESPONSE CENTER (NRC)
Within one hour after activation of the Plan, Frontier will begin agency notifications by calling the National Response Center (see Appendix C for phone numbers).

NEW MEXICO OIL CONSERVATON DIVISION (OCD) [NMAC 19.15.11.16]
As soon as possible, but no later than four hours after plan activation, (recognizing that a prompt response should supersede notification), OCD will be notified by the IC or the IC's designee via email or fax to the District 1 Office of the activation of the H_2S Contingency Plan. In the event of a power failure, a phone call will be made within four hours. A full report of the incident to the OCD, utilizing Form C-141 (see Appendix G) shall be made no later than 15 days following the release. As stated in Section IX. of this Plan and per requirements of [NMAC 19.15.11.9C] plan activation will take place when a release creates an H_2S concentration greater than the activation levels set forth in the Plan itself.

NEW MEXICO STATE POLICE/HAZARDOUS MATERIALS EMERGENCY RESPONSE PLAN
The New Mexico State Police are responsible for overall scene management and coordination of all resources. Law enforcement-related activities will be coordinated by State Police.

BUREAU OF LAND MANAGEMENT (BLM)
The BLM will also be contacted (See Appendix C for phone number) in the event of activation of the Plan since the AGI Facility is located on land leased from BLM by Frontier.

LOCAL EMERGENCY PLANNING COMMITTEE (LEPC)
Both Eddy and Lea County LEPCs will be given a copy of this plan. Although the Plant is located in Lea County, the Eddy County LEPC, located in Carlsbad, NM is closer to the Plant than is the Lea County LEPC which is located in Lovington and they both coordinate planning for Maljamar. Both offices will be notified in the event of activation of the Plan.

X. PLAN ACTIVATION AND EVENTS THAT COULD LEAD TO A RELEASE [NMAC 19.15.11.9.C] [API RP-55 7.4 d]

The plan will be activated when a release creates an H_2S concentration greater than the activation levels set forth in the Plan itself. At a minimum, the Plan shall be activated at Level 2 whenever a release may create a hydrogen sulfide concentration of more than 100 ppm in a public area, 500 ppm at a public road or 100 ppm 3,000 feet from the site of release.

ACTIVATION LEVELS

Level 1
Continuous audible alarm sounded and/or flashing blue beacons activated for H_2S greater than or equal to 10 ppm. (See Appendix A for Immediate Action Plan and Appendix B for Response Flow Diagram.)

Level 2
Catastrophic release; fire; explosion; a continuous release of maximum volume for 24 hours; or pas per NMAC 19.15.11 there is indication of 100 ppm at any defined public area; 500 ppm at any public road or 100 ppm at a distance greater than 3,000 feet from the site of the release. If H_2S is at 20 ppm or greater and repair efforts at Level 1 have been unsuccessful. (See Appendix A for Immediate Action Plan and Appendix B for Response Flow Diagrams.)

FIGURES

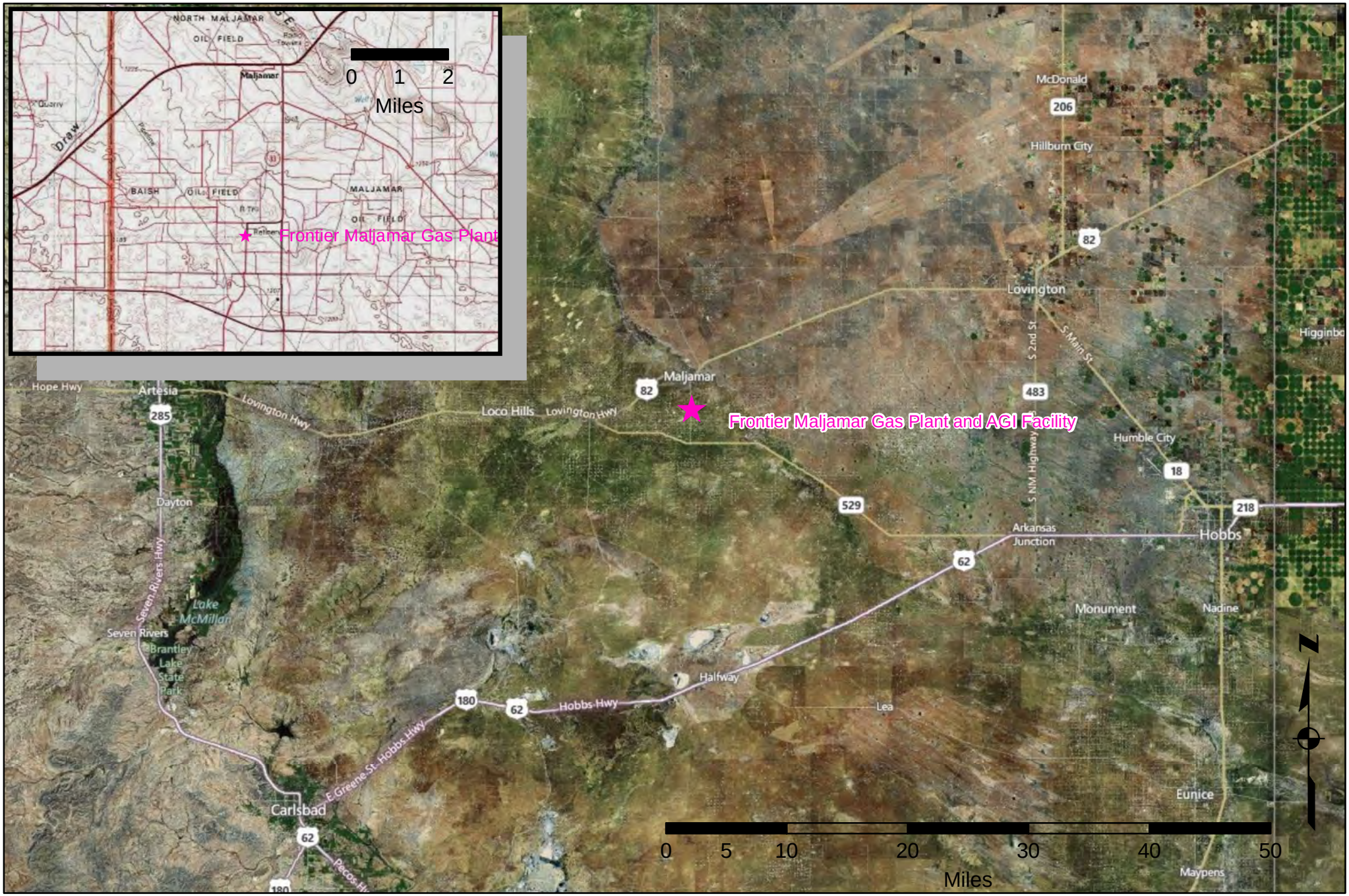
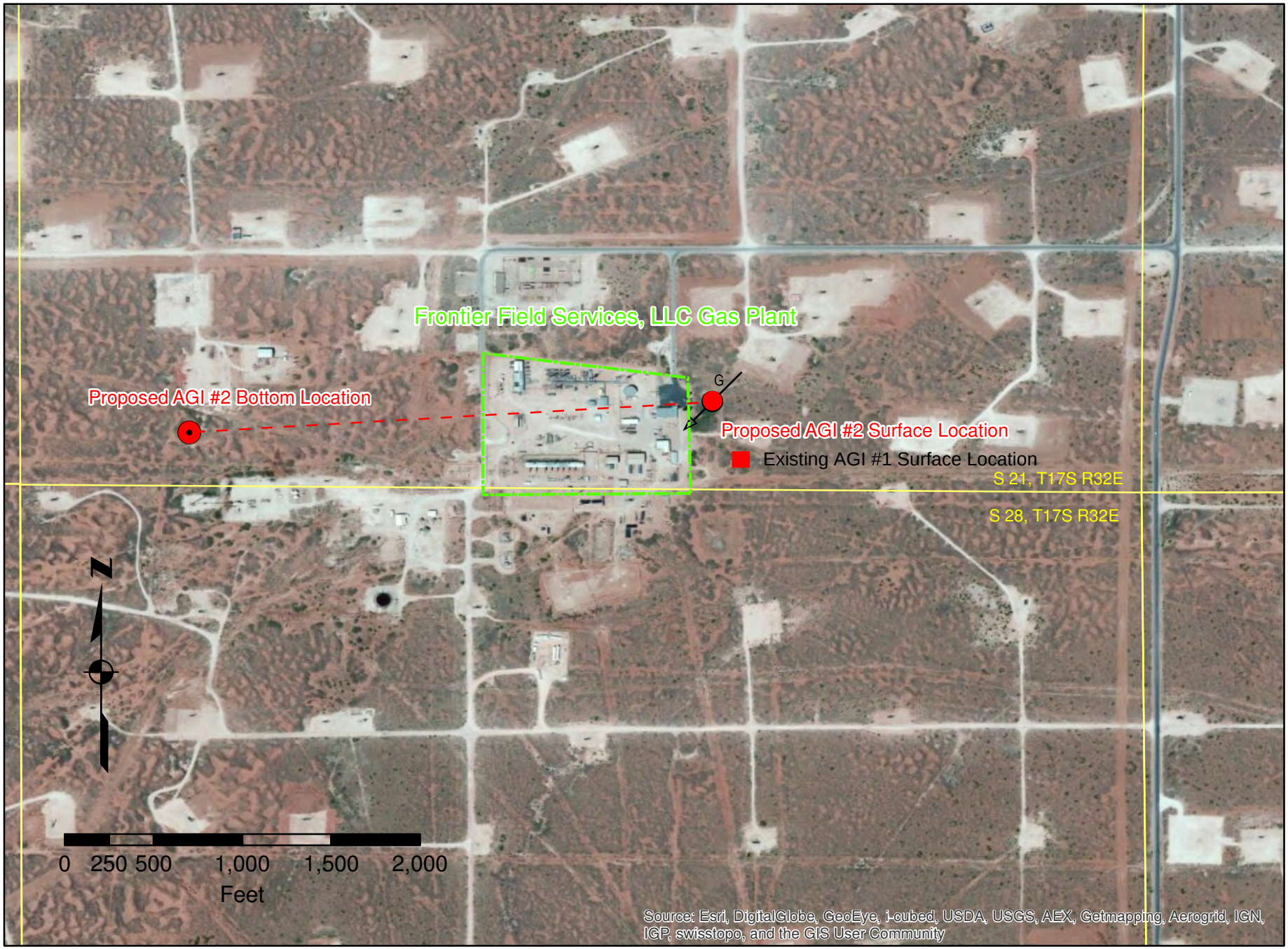
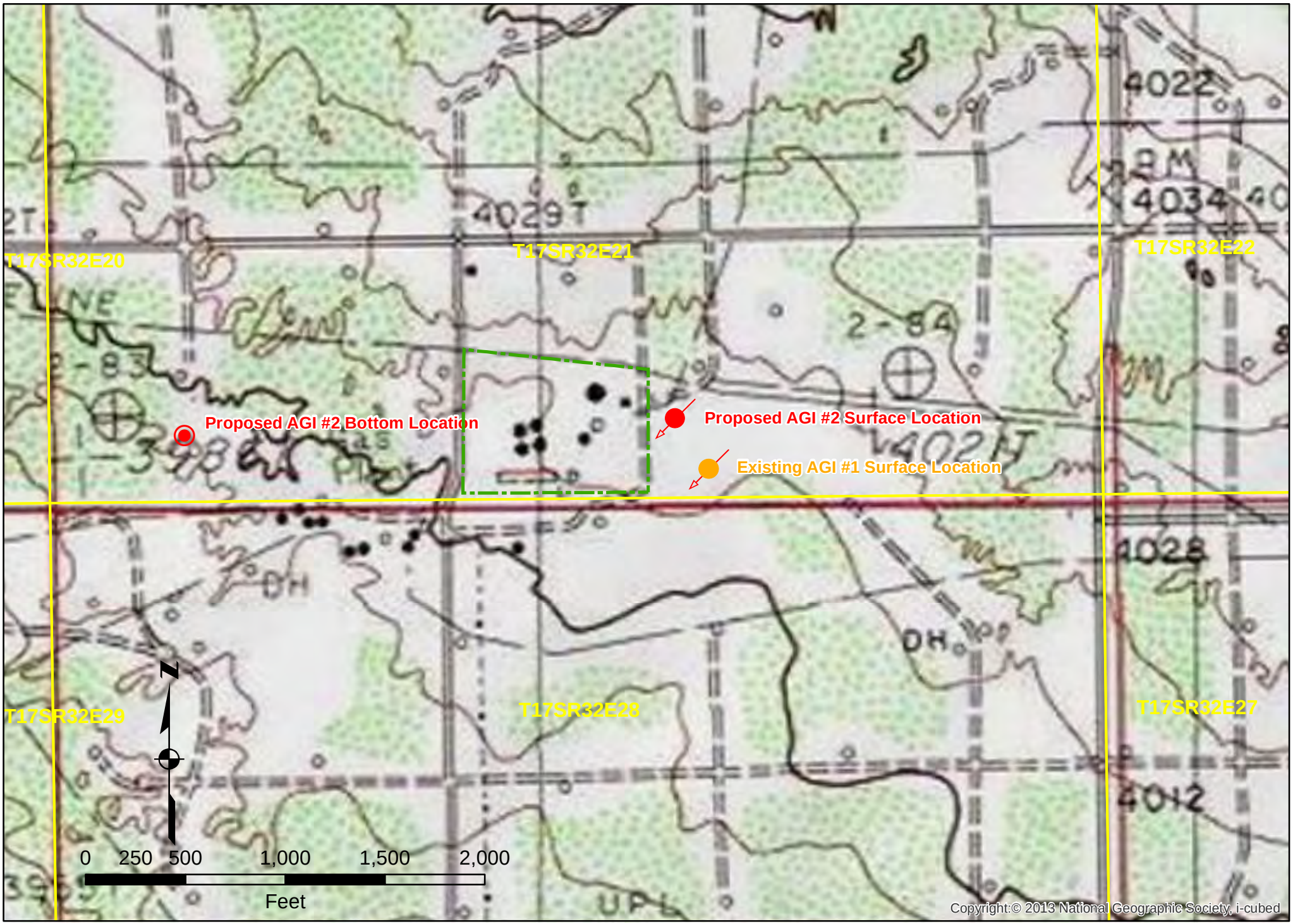


Figure 1 Location of Frontier Maljamar Gas Plant and AGI Facility



AGI #1: 130' FSL, 1813' FEL, S21-T17S-R32E
AGI #2: 400' FSL, 2100' FEL, S21-T17S-R32E

Figure 2a
Locations of Maljamar AGI #1 and AGI #2



AGI #1: 130' FSL, 1818' FEL, S21 - T17S-R32E
AGI #2: 400' FSL, 2100' FEL, S21 - T17S-R32E

Figure 2b

Locations of Maljamar AGI #1 and AGI #2

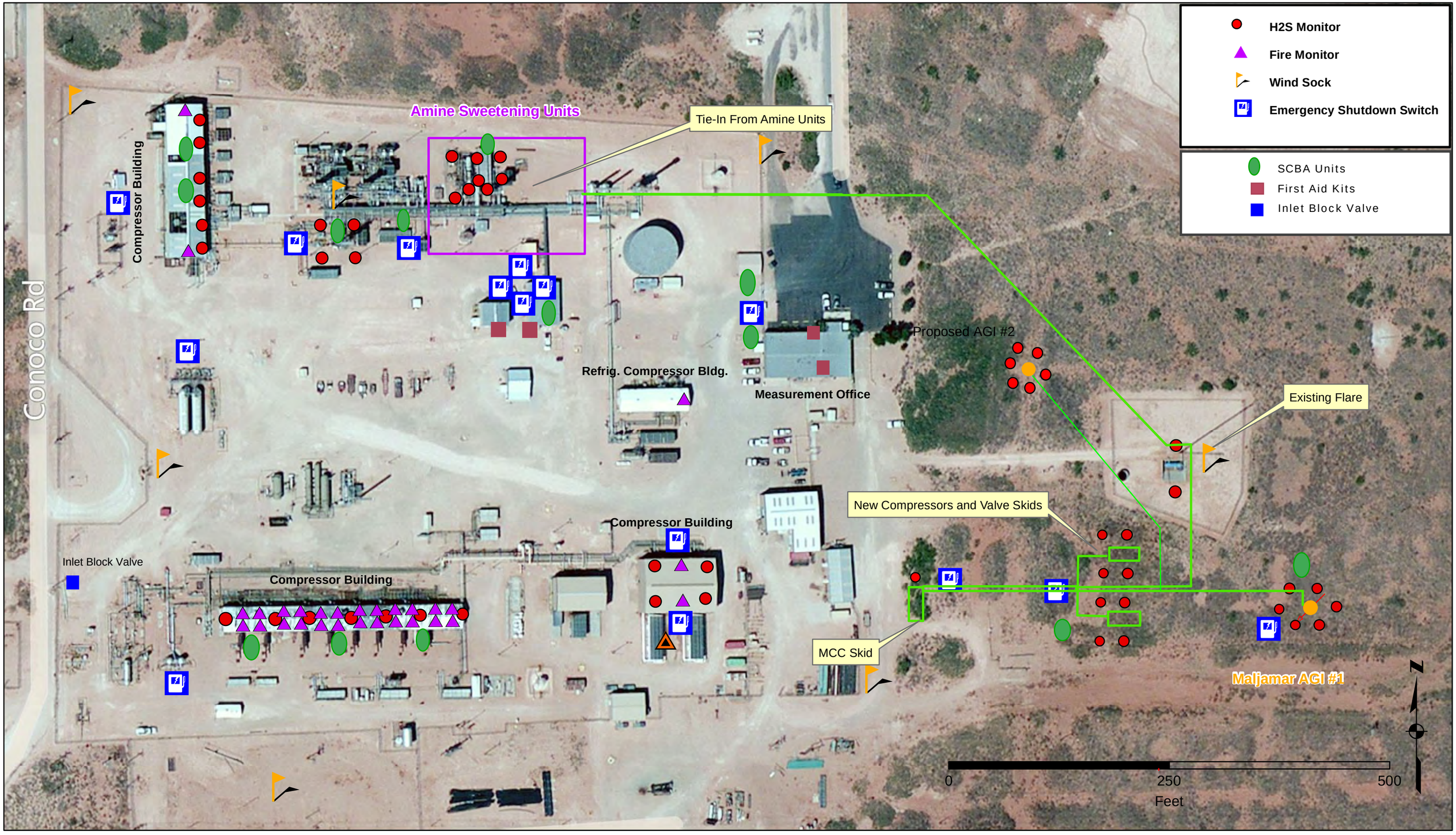


Figure 3: Alarms, Monitors and Safety Equipment

GEOLEX® INCORPORATED

FRONTIER field services, llc
southern ute indian tribe

Radius of Exposure

500 ppm ROE (0.35 Miles from Sources)

100 ppm ROE (0.77 miles from Sources)

Evacuation Routes

Primary

Secondary

Emergency Staging Area

EICC

Level 2 Roadblock

STOP

Level 1 Roadblock

Conoco Road

Amine Sweetening Units

N E Assembly Area

AGI #2

AGI #1

Compressor Facility

SW Assembly Area

Plant Muster Area: parking lot north of plant office building

Maljamar Road (126A)

X H2S Warning Signs

bing

Image courtesy of USGS Image courtesy of ImagePatch.com © 2015 Microsoft Corporation

Author: Ed McCasland; Modified by: Michael Mixter

Path: H:\Projects\GIS\Projects\150727_MalEmergencyRoutes_Coufal\Mal_H2S_ROE_150700_BL.mxd

Coordinate System: NAD 1983 UTM Zone 13N
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 500.000.0000
False Northing: 0.0000
Central Meridian: -105.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

0 250 500 1,000 1,500 Feet

1 inch = 1,083 feet

Date: 7/28/2015

Figure 4: 500 and 100 ppm H2S ROE Map Roadblocks, Evacuation Routes and Emergency Assembly Areas

N

Chaves County

New Mexico

Lea County

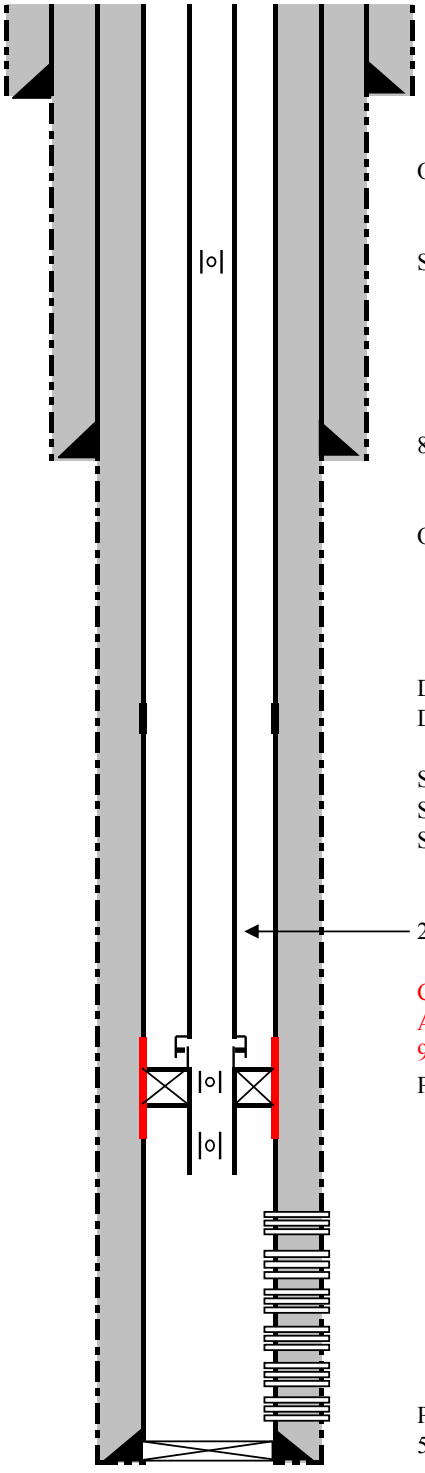
Eddy County

GEOLEX INCORPORATED

FIGURE 5a: Schematic of Frontier AGI #1 WELL DESIGN

FRONTIER field services llc

Location: 130' FSL & 1831' FEL
STR S22-T17S-R32E
County, St.: LEA COUNTY, NEW MEXICO



CONDUCTOR CASING
20", 94#/ft, J55, STC at 80 ft (Augered and set)

SURFACE CASING:
13 3/8", 48.00#/ft, H40, STC at 890'

INTERMEDIATE CASING:
8 5/8", 24.0 #/ft, J55, STC at 4,230'

PRODUCTION CASING:
5 1/2", 17 #/ft, L80, STC at ~10,183'

ANNULAR FLUID:
Corrosion-inhibited diesel fuel from top of packer to surface.

DEVIATION:
Stuck string at ~5,200' required cmt plug at 5,157' to ~5,800', redrilll w/total deviation ~ 17 feet from original track, returned to track 6,000' for a total deviation at base of hole of less than 50'.

TUBING:
Subsurface Safety Valve at 295 ft
2 7/8", 6.5#/ft, L80, Premium thread at ~9,452'

PACKER:
Permanent Production Packer

PERFORATIONS:

Primary Targets	Perforation Intervals
Upper Wolfcamp (W6)	9,579'-9,632'
Middle Wolfcamp (W5)	9,768'-9,821'
Middle Wolfcamp (W3,W4)	9,850'-9,917'
Middle Wolfcamp (W2)	9,979'-9,997'
Lower Wolfcamp (W1)	10,009'-10,025'
Lower Wolfcamp (W0)	10,090'-10,130'

All zones perforated with 4 spf @ 90 degrees

Note:
Christmas tree and SSSV provide redundant safety features to control the well under pressure and provide accessibility to safely bring the well under control in the event of any mechanical problem.

Figure 5b
Schematic of AGI #2 Well Design

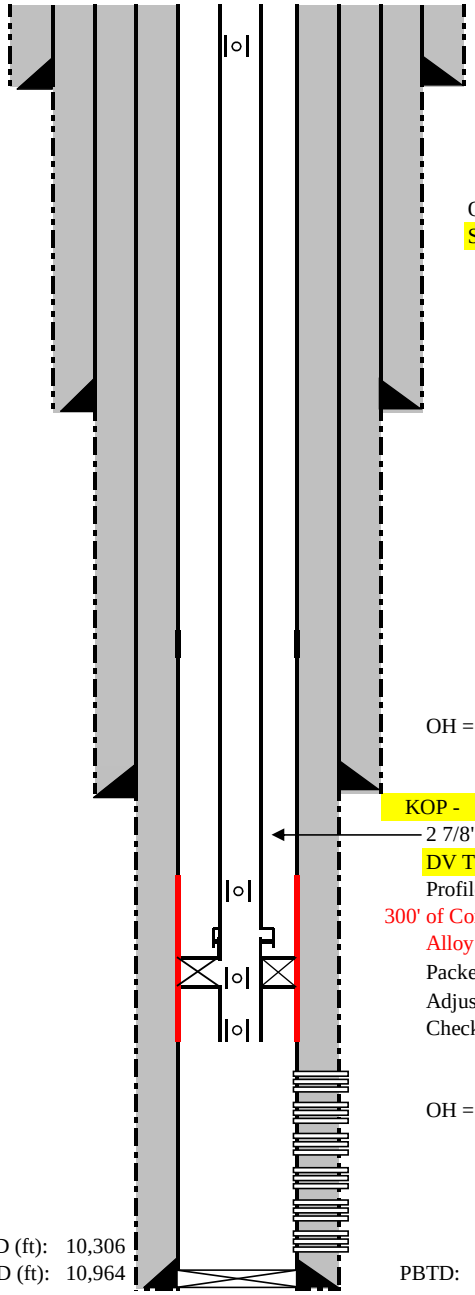
Frontier Field Services Maljamar Gas Plant

Location: 3 miles south of Maljamar, NM

STR Section 21, T17S, R32E

County, St.: LEA COUNTY, NEW MEXICO

29.30 ° INCLINE



CONDUCTOR CASING	TVD (ft)	MD (ft)
20" Conductor	20	20

SURFACE CASING	TVD (ft)	MD (ft)
13 3/8", 48.00#/ft, H40, STC	890	890
Cemented to Surface		

INTERMEDIATE CASING:	TVD (ft)	MD (ft)
9 5/8", 40.0 #/ft, J55, LTC	5,700	5,700
Cemented to Surface; verified w/CBL		

PRODUCTION CASING:	TVD (ft)	MD (ft)
7", 26 #/ft, HCL-80, LTC	9,400	9,925
7", 26 #/ft, CRA, SM2535 Prem	9,662	10,226
7", 26 #/ft, HCL-80, LTC	10,306	10,964
Cemented to Surface; verified w/CBL		

ANNULAR FLUID:
Diesel Fuel from top of packer to surface

TUBING:	TVD (ft)	MD (ft)
SSSV at 295 ft		
2 7/8", 6.5#/ft, L-80, Prem	9,625	10,183
(internally coated)		

PACKER:
Permanent Injection Packer @ 10,183 ft MD
Adj. Choke (if needed, placed in nipple below packer)
Check valve (if needed, placed in nipple below packer)

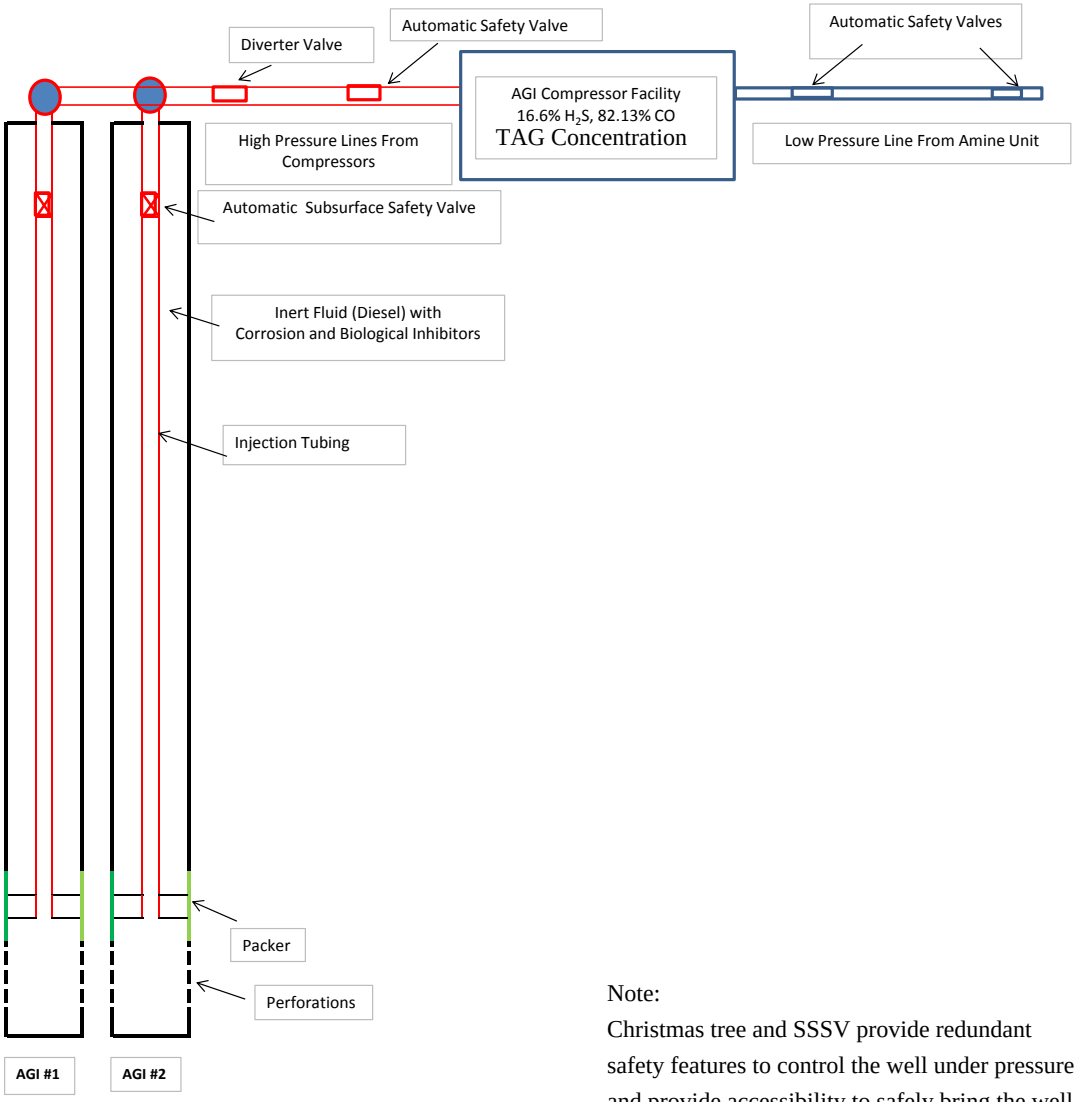
PERFORATIONS:
6 Shots per foot at 60 degrees

	TVD (ft)	TMD (ft)
Calculated Injection Zone Top in WC	9,673	10,238
Calculated Injection Zone Bottom in WC	10,238	10,886
Specific sections of the inj.zone will be perforated based on elogs		

Bottom Location: 350 FSL 650 FWL Sec 21, T17S, R32E

Note:
Christmas tree and SSSV provide redundant safety features to control the well under pressure and provide accessibility to safely bring the well under control in the event of any mechanical problem.

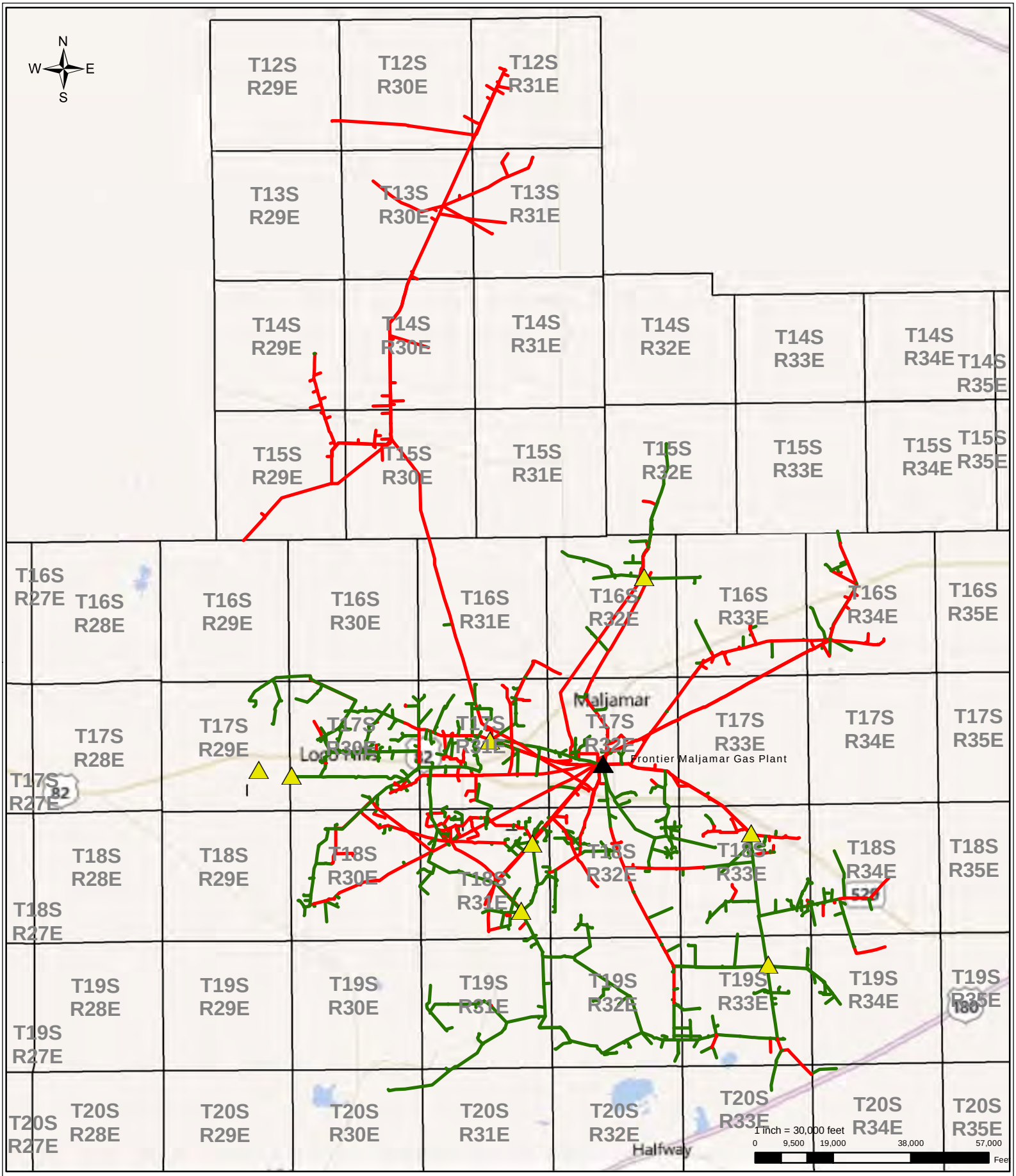
FIGURE 6
FRONTIER MALJAMAR PLANT
SCHEMATIC OF AGI FACILITY



Maljamar AGI #1 API #30-025-40420
Maljamar AGI #2 API #30-025-42628

NOTE: THIS DRAWING IS NOT TO SCALE

Note:
Christmas tree and SSSV provide redundant safety features to control the well under pressure and provide accessibility to safely bring the well under control in the event of any mechanical problem.



Date: 11/14/2012

Figure 7a Gathering System for Frontier Maljamar Plant

Coordinate System: NAD 1983 UTM Zone 13N
Projection: Transverse Mercator
Datum: North American 1983
false easting: 500,000.0000
false northing: 0.0000
central meridian: -105.0000
scale factor: 0.9996
latitude of origin: 0.0000
Units: Meter

FRONTIER

Legend

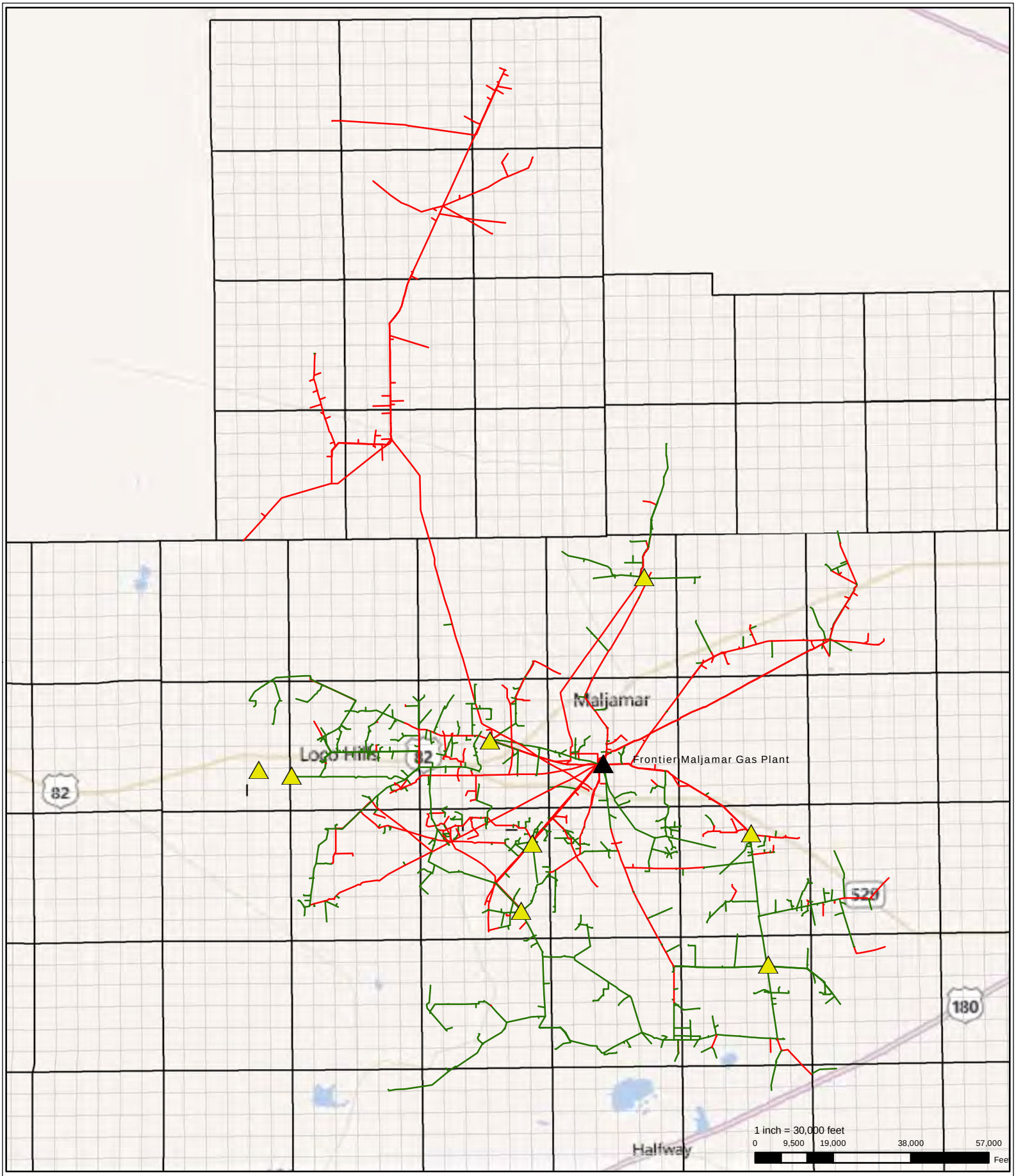
Compressors/Boosters

Maljamar Pipeline

Type

POLYETHELYNE

STEEL



Date: 11/14/2012

Author:

Coordinate System: NAD 1983 UTM Zone 13N
Projection: Transverse Mercator
Datum: North American 1983
false easting: 500,000.0000
false northing: 0.0000
central meridian: -105.0000
scale factor: 0.9996
latitude of origin: 0.0000
Units: Meter

Figure 7b Gathering System for Frontier Maljamar Plant

Legend

Compressors/Boosters

Maljamar Pipeline

Type

POLYETHELYNE

STEEL

Figure 8

APPENDICES

APPENDIX A
IMMEDIATE ACTION PLANS

Level 1 Response – IMMEDIATE ACTION PLAN

Alarm:
Continuous audible alarm sounded and flashing blue lights activated for H_2S at 10 ppm or greater.

Preliminary Actions:
1. At the initial sound of the alarm all company personnel working in the area of the alarm will proceed to the Plant Control Room. All visitors/contractors proceed to the Plant Muster Area (see Figure 4). Any person in distress will be assisted from the area, so long as doing so does not pose a danger to others.
2. Plant Supervisor or Lead Operator verifies that alarm is not false and makes initial determination of cause. If alarm is not immediately resolved, activate H_2S Contingency Plan Level 1 Response.

Level 1 Response Actions:
1. Plant Supervisor or Lead Operator verifies that alarm is not false and determines magnitude of the release and attempts to correct the situation from the Control Room.
    a. Field Office Administrator (FOA) will take a radio, cell phone and H_2S monitor to the Plant Muster Area (see Figure 4) and conduct roll call for visitors/contractors.
    b. FOA or designated plant personnel will monitor air quality at the Plant Muster Area for H_2S concentrations.
    c. If the muster area becomes untenable (H_2S % >10 ppm) personnel will proceed to the NE Assembly Area (see Figure 4).
    d. The Plant Supervisor or Lead Operator may direct visitors/contractors gathered at Plant Muster Area to move to NE Emergency Assembly Area (see Figure 4) or to leave the area and not return until further notice on the basis of wind directions, magnitude of release, etc.
2. Plant Supervisor or Lead Operator will call to request back-up if after hours.
3. Plant Supervisor or Lead Operator will designate teams with 30 minute SCBA to take corrective action in the area of the release, and if necessary, initiate AGI or Amine Unit shutdown to resolve the release.
4. Plant Supervisor or Lead Operator will notify local emergency responders if deemed necessary.
5. Designated personnel will continue to monitor H_2S levels
6. If H_2S increases to $\geq$ 20 ppm, at the direction of the Plant Supervisor or Lead Operator, the Plant will be evacuated. The Lead Operator will designate necessary operations personnel to remain to assist with plant shutdown.
7. The Plant Supervisor or Lead Operator will activate the evacuation horn. Depending on prevailing wind conditions all personnel will proceed to either the NE Assembly Area or the SW Assembly Area (see Figure 4).
    a. FOA will use plant sign in sheet and radio to communicate with those at the SW Assembly area to account for personal.
    b. Designated personnel will monitor air quality at Assembly Area for H_2S Concentrations.
    c. If either Assembly Area becomes untenable (H_2S % >10 ppm) personnel will proceed to the appropriate Emergency Staging Area (see Figure 4).
    d. Roadblocks will be established by designated personnel in order to prevent anyone from entering the 500 ppm ROE (see Figure 4).
    e. Personnel designated by the Plant Supervisor or Lead Operator will notify all entities and individuals within 500 ppm ROE and advise to standby for further instructions. They may be asked to shelter-in-place or evacuate, depending on prevailing wind direction and magnitude of the release. They will also be directed to advise any of their personnel planning to work in the area not to enter until further notice.
    f. Designated personnel will Contact Mid-America Pipeline Company and Enterprise/Chaparral Pipeline Company unmanned meter station and the unmanned Conoco-Phillips Field Warehouse, and if individuals are present advise them that the plant is being evacuated and to shelter-in-place or evacuate, depending on prevailing wind direction and magnitude of the release. They will also be instructed to advise any of their personnel planning to work in the area not to enter the area until further notice.
    g. Designated personnel will make a visual inspection of the 500 ppm ROE and relocate any individuals observed there to the NE or SW Assembly Area.

8. When personnel are clear of the Plant, the Plant Supervisor or Lead Operator will activate Plant ESD and with any remaining personnel choose to either shelter in place or evacuate to an Assembly Area or Staging Area, depending on conditions on site including wind direction, status of the release, etc.
9. The LEPC and law enforcement will be contacted by phone and notified of the release and status of containment. Communications with arriving emergency responders will be established, and the plant manager, plant supervisor or their designee will participate in their Unified Incident Command Structure as requested. A situation report will be delivered to Incident Command.
10. The OCD shall be notified within four hours of any release that activated this Plan. **Per 19.15.11.16 NMAC, notification of Contingency Plan implementation will be submitted to the OCD via form C-141 within 15 days of the release. A copy of Form C-141 is contained in Appendix G.**
11. Maintain Chronologic Record of Events Log.
12. If situation is resolved and monitored levels of H_2S at the Plant and AGI Facility are less than 10 ppm personnel may re-enter. If H_2S levels continue to increase and release cannot be controlled: Activate Level 2 response.

Level 2 Response – IMMEDIATE ACTION PLAN

Alarm: Continuous plant-wide audible alarm and flashing blue lights.

Activating Conditions:

- **Corrective actions at Level 1 are unsuccessful.**
- **H_2S of > 20 ppm detected on any fixed or hand-held monitor.**
- **A catastrophic release, fire or explosion.**
- **A continuous release of maximum volume for 24 hours occurs.**
- **As per NMAC 19.15.11 activate the plan whenever a release may create a hydrogen sulfide 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.**

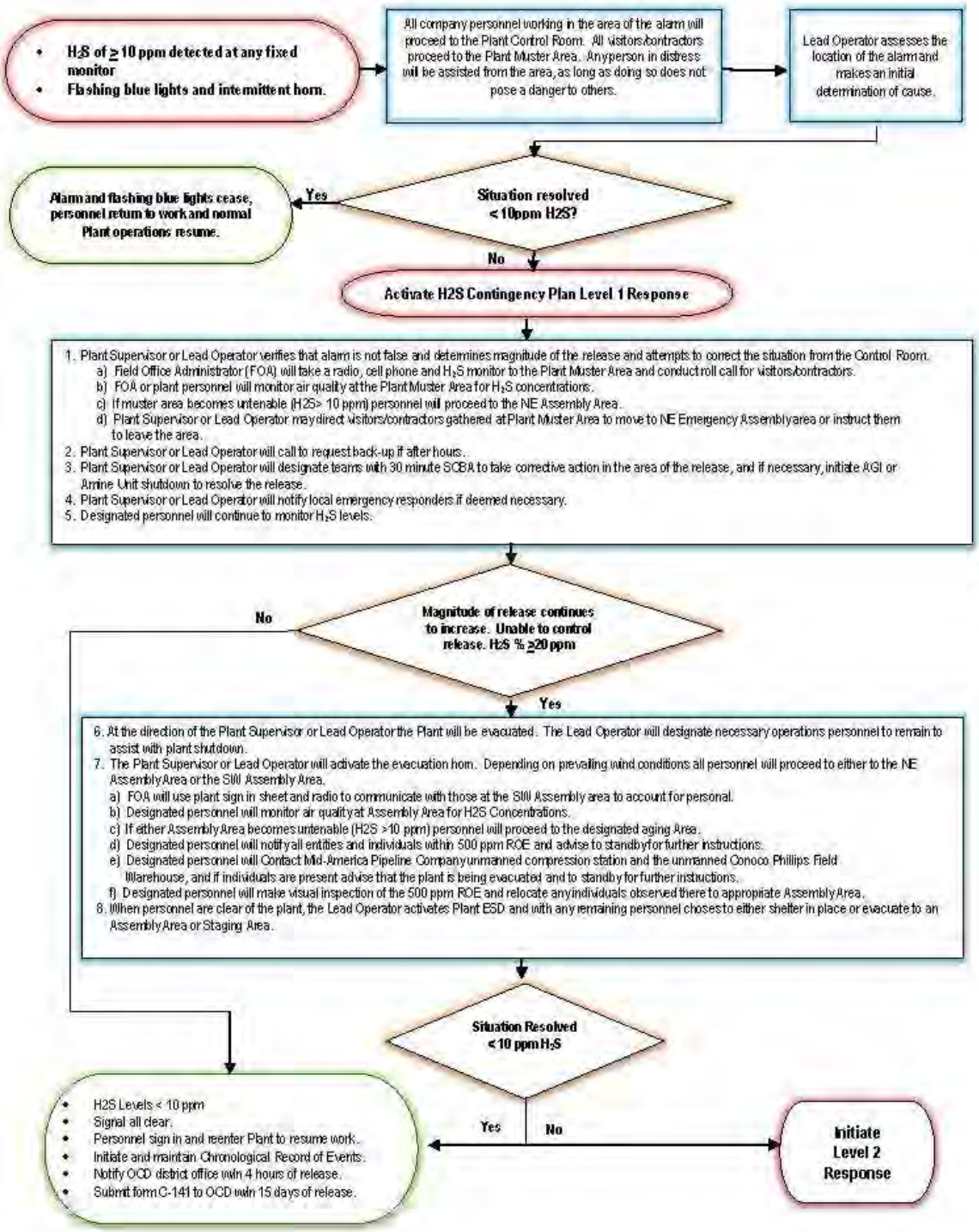
Level 2 Response Actions:

1. Plant Supervisor or Lead Operator will immediately activate, or verify activation of Plant ESD.
2. The Plant Supervisor or Lead Operator will activate the Plant evacuation horn. Immediately evacuate or verify evacuation of all company personnel and third party contractors to Emergency Staging Area (see Figure 4). Assist any persons in distress to the Emergency Staging Area, so long as doing so does not pose a danger to others.
3. Field Administrative Officer will account for all personnel using Plant sign-in sheet.
4. Plant Supervisor or Lead Operator will call to request back-up if after hours.
5. Plant Supervisor or Lead Operator will dispatch personnel to establish designated roadblocks, blocking entry to 100 ppm ROE (see Figure 4).
6. Designated personnel will monitor H_2S at roadblocks.
7. Designated personnel will notify the following and advise them of release and status of containment:
    a. Local emergency responders, if deemed necessary,
    b. Local law enforcement (LEPC) and state agencies, including OCD District office,
    c. Entities and individuals within the 100 and 500 ROE.
8. Designated personnel will advise all entities within the 500 and 100 ROE either to evacuate or shelter in place, closing windows and shutting off any air conditioning/heating until further notice. Decision whether to evacuate or shelter-in-place will be made on the basis of wind direction, magnitude of release, etc. They will also be directed to advise all of their personnel or third parties scheduled to work in the area not to enter/re-enter until further notice.
9. Designated personnel will establish roadblocks to prevent entry into the 100 ppm ROE (see Figure 4).
10. Designated personnel Contact Mid-America Pipeline Company and Enterprise Chaparral Pipeline company unmanned meter station and the unmanned ConocoPhillips field warehouse and if individuals are present, advise to either evacuate to Emergency Staging Area or shelter-in-place, closing windows and shutting off any air conditioning/heating until further notice. The decision to evacuate or shelter-in-place will be made on the basis of wind direction, magnitude of release, etc. They will be instructed to advise any of their personnel scheduled to work in the area not to enter/re-enter until further notice.
11. Designated personnel will make visual inspection of the 500 ppm ROE, and relocate any individual(s) observed in that area to the Emergency Staging Area.
12. Designated personnel will establish Media Staging Area adjacent to Emergency Staging Area, and direct all media to it.
13. Designated personnel will Monitor H_2S at Emergency Staging Area.
14. Plant Supervisor, Lead Operator or designee will establish communication with emergency responders and participate in their Unified Incident Command structure as requested.
15. Situation report will be delivered to Incident Command by Plant Supervisor or designee.

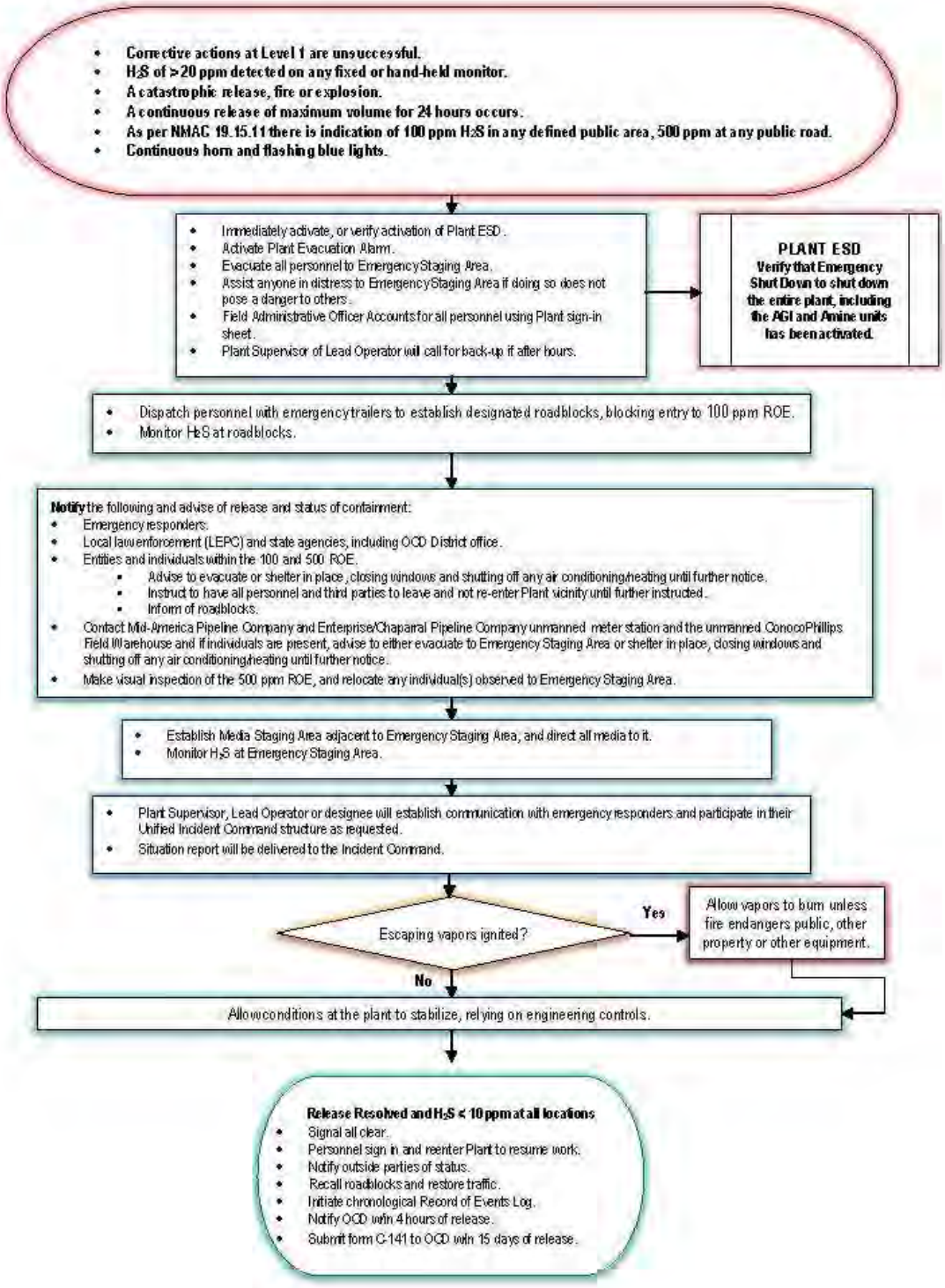
16. If escaping vapors have been ignited, allow to burn unless fire poses danger to the public, other property or equipment.
17. Allow conditions at the plant to stabilize, relying on engineering controls.
18. Once the release is resolved and H_2S <10 ppm at all locations on Plant.
    a. Signal all clear.
    b. Personnel sign in and reenter Plant to resume work.
    c. Notify outside parties of status.
    d. Recall roadblocks and restore traffic.
    e. Initiate chronologic Record of Events Log
    f. Begin making appropriate external notifications.
    g. Notify OCD within 4 hours of release.
    h. Submit Form C-141 to OCD within 15 days of release. A copy of Form C-141 is contained in Appendix G.

APPENDIX B
RESPONSE FLOW DIAGRAMS

LEVEL 1 RESPONSE



Level 2 RESPONSE



APPENDIX C
TELEPHONE NUMBERS
EMERGENCY CALL LIST

Emergency Services

Lovington Fire Department		575- 369-2359
Maljamar Fire Department		575-676-4100
Artesia Fire Department		575-746-5050
Hobbs Fire Department		575-397-9308
Loco Hills Fire Department		575-677-2349
Ambulance Services	Hobbs	575-397-9308
	Artesia	575-746-5050
	Carlsbad	575-885-2111
	Lovington	575-396-2359
Hospitals	Artesia General	575-748-3333
	Carlsbad Medical Center	575-887-4100
	Lovington-Nor Lea	575-396-6611
	Hobbs- Lea Regional	575-392-6581
	Lubbock University Medical Center (UMC) Level I Trauma Center	806-775-8200
State Police (HMER) Eddy County		575-885-3137
Poison Control (Albuquerque)		800-222-1222
Helicopter Services	Air Ambulance (Artesia)	800-550-1025
	Lifeguard (Albuquerque)	888-633-5438
	Southwest Medivac (Hobbs)	800-669-4851
	AeroCare (Lubbock)	800-823-1991
	Air Med (El Paso)	915-772-9292

Government Agencies

Oil Conservation Division, Santa Fe, NM (OCD) Oil Conservation District Office (Hobbs) Air Quality Bureau, Santa Fe, NM	505-476-3440 575-370-3186 505-827-1494
US BLM (Carlsbad District Office)	575-887-6544
Local Emergency Planning Committee (LEPC) Eddy County Local Emergency Planning Committee (LEPC) Lea County	575-887-9511 575-396-8602
National Response Center (NRC)	800-424-8802

Businesses within the 100 ppm ROE

COMPANY	CONTACT	PHONE
ConocoPhillips Company	Highway 62 180 Hobbs, NM 88241	575-393-5826
Chevron Pipeline Company	2827 N Dal Paso St Hobbs, NM	575- 738-0218
Enterprise/Chaparral Pipeline Company		888-883-6308

Producers with Wells within the 100 ppm ROE

COMPANY	CONTACT	PHONE
ConocoPhillips Company	Highway 62 180 Hobbs, NM 88241	575-393-5826
COG Operating, LLC	2208 West Main St Artesia, NM	575-748-6940
Cimarex Energy Company of Colorado	2020 W Bender Blvd Hobbs, NM 88240	575-393-1020

Public N/A There are no residences within the 100 ppm ROE.

Frontier Internal Call List

NAME	TITLE	Office #	Cell #	Home #
	Maljamar Plant Control Room	575-676-2400		
	24 Hour Emergency Number	800-503-5545		
Tom Williams	Executive Vice President of Operations	918-388-8417	918-740-6198	
John Prentiss	Area Manager	575-676-3528	575-706-6983	575-885-1265
Joe Ysusi	Manager, Compliance Safety Officer	575-676-3505	575-706-9670	575-746-2213
Rudy Quiroz	Assistant Area Manager	575-676-3520	575-942-4104	575-396-1748
Rudy Lizardo	Maintenance Foreman	575-676-3504	575-361-0135	575-396-3771
Ed McCasland	Measurement Technician, Information Officer	575-676-3503	575-706-9671	
Joe Calderon	Field Foreman, Logistics Section Chief	575-676-3506	575-361-0148	575-885-3504

APPENDIX D
RADII OF EXPOSURE

WORST CASE SCENARIOS: The basis for worst case scenario calculations is as follows:

- The worst case ROE for this Plan has been calculated utilizing the current inlet flow rates (24-hour rate) for this Plant which is 106 MMSCFD and the H_2S concentration for inlet gas of .35 mole percent.
- The worst case scenario ROE assumes an uncontrolled instantaneous release of a 24-hour volume of gas at the Plant. Because the Plant is a throughput process plant, it is impossible that the entire 24-hour throughput volume of the Plant could be released instantaneously as is assumed in the worst case scenario calculations of the ROE. Further, the Plant's ESD systems would be activated in the event of a catastrophic emergency and would prevent the flow of gas into the Plant and would isolate the AGI compressors and equipment and route the acid gas safely to the Plant acid gas flare. To comply with NMAC 19.15.11, the worst case scenario calculations (assuming an instantaneous release of the 24-hour processing and/or TAG volume) are utilized here.

The formulas for calculating the radius of exposure (ROE) are as follows:

100 ppm ROE Calculation (as per 19 NMAC 15.11.7.K.1):
X=[(1.589)(hydrogen sulfide concentration)(Q)](0.6258)

500 ppm ROE Calculation (as per 19 NMAC 15.11.7.K.2):
X=[(0.4546)(hydrogen sulfide concentration)(Q)](0.6258)

Where:
X = radius of exposure in feet
"hydrogen sulfide concentration" = the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture
Q = Escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psi absolute and 60 degrees Fahrenheit)

ROE FOR MALJAMAR PLANT WORST CASE SCENARIO

500-ppm ROE 1,867 feet (.35 mile)
100-ppm ROE 4,085 feet (.77 mile)

Both the 500 ppm and the 100 ppm radii of exposure for the Plant and the AGI Facility are shown on Figure 4. This ROE pattern is designed to include the 100 and 500 ppm radii for a potential worst case failure. The actual calculation of the 500 and 100 ppm ROE for this Plant an AGI Facility are shown on the following page.

FRONTIER FIELD SERVICES	MALJAMAR PLANT INLET STREAM	ROE CALCULATIONS PURSUANT TO RULE 11

If data is provided in mole% use calculator below for getting ppm

Enter Mole % in cell C5	Mole %	ppm
Convert mole% to ppm	0.35	3500

If data is provided in mole fraction use calculator below for getting ppm

Enter Mole Fraction in cell C10	Mole Fraction	ppm
Convert mole fraction to ppm		0

Use ppm derived from either of above calculations to input data below

Input Data Here		H_2S Concentration (ppm)	3500
		24 Hour Throughput (MMCFD)	106

The radius of exposure is calculated using the following equations:

100 ppm ROE calculation (as per 19 NMAC 15.11.7.K.1)

$$X_{100ppm} = [(1.589)(Conc_{H2S})(Q)]^{(0.6258)}$$

500 ppm ROE calculation (as per 19 NMAC 15.11.7.K.2)

$$X_{500ppm} = [(0.4546)(Conc_{H2S})(Q)]^{(0.6258)}$$

Where:

X = radius of exposure (ft)

$Conc_{H2S}$ = the decimal equivalent of the mole or volume fraction of H_2S in the gas

Q = daily plant throughput corrected to standard conditions (SCFD)

Plant parameters

Q =	106	MMSCFD =	106000000	SCFD			
$Conc_{H2S}$ =	3500	ppm =	0.35	Mole %=	0.0035	Mole Fraction	

ROE calculation:

X_{100ppm} = [(1.589)*(0.0035)*(106000000)]^(0.6258)

X_{100ppm} = 4085 ft = 0.77 miles

X_{500ppm} = [(0.4546)*(0.0035)*(106000000)]^(0.6258)

X_{500ppm} = 1867 ft = 0.35 miles

FRONTIER FIELD SERVICES

MALJAMAR
TAG
STREAM

ROE CALCULATIONS PURSUANT TO RULE 11

If data is provided in mole% use calculator below for getting ppm

Enter Mole % in cell C5	Mole %	ppm
Convert mole% to ppm	22	220000

If data is provided in mole fraction use calculator below for getting ppm

Enter Mole Fraction in cell C10	Mole Fraction	ppm
Convert mole fraction to ppm		0

Use ppm derived from either of above calculations to input data below

Input Data Here		H_2S Concentration (ppm)	220000
		24 Hour Throughput (MMCFD)	1.69

The radius of exposure is calculated using the following equations:

100 ppm ROE calculation (as per 19 NMAC 15.11.7.K.1)

$$X_{100ppm} = [(1.589)(Conc_{H2S})(Q)]^{(0.6258)}$$

500 ppm ROE calculation (as per 19 NMAC 15.11.7.K.2)

$$X_{500ppm} = [(0.4546)(Conc_{H2S})(Q)]^{(0.6258)}$$

Where:

X = radius of exposure (ft)

$Conc_{H2S}$ = the decimal equivalent of the mole or volume fraction of H_2S in the gas

Q = daily plant throughput corrected to standard conditions (SCFD)

Plant parameters

Q =	1.69	MMSCFD =	1690000	SCFD		
$Conc_{H2S}$ =	220000	ppm =	22	Mole %=	0.22	Mole Fraction

ROE calculation:

X_{100ppm} = [(1.589)*(0.22)*(1690000)]^(0.6258)

X_{100ppm} = 4090 ft = 0.77 miles

X_{500ppm} = [(0.4546)*(0.22)*(1690000)]^(0.6258)

X_{500ppm} = 1869 ft = 0.35 miles

APPENDIX E
H_2S Contingency Plan Distribution List

New Mexico Oil Conservation Division
1625 N. French Drive
Hobbs, NM 88240

New Mexico Department of Public Safety
5100 Jack Gomez Blvd.
Hobbs, NM 88240

Lea Co. Local Emergency Planning Committee
100 North Main
Lovington, NM 88260

Bureau of Land Management Hobbs Field Office
Carlsbad Field Office
620 E. Greene Street
Carlsbad, NM 88220

Maljamar Fire Department
U.S. Highway 82 and 126
Maljamar, NM 88264

Lovington Fire Department
213 S Love ST
Lovington, NM 88260

Artesia Fire Department
309 North 7th Street
Artesia, NM 88210-1913

Hobbs Fire Department
301 E White Street
Hobbs, NM 88240

Loco Hills Fire Department
132706 Lovington HWY
Loco Hills, NM 88255

New Mexico State Police, District 3 Office
4207 West 2nd Street
Roswell, NM 88201

Lea County Sheriff's Department
1417 South Commercial Street
Lovington, NM 88260

Maljamar Gas Plant
1001 Conoco Rd.
Maljamar, NM 88264

Frontier Field Services LLC Main Office
4200 Skelly Drive, Suite 700
Tulsa, OK 74135

AKA Energy Corporate Headquarters
65 Mercado Street, Suite 250
Durango, CO 81301

Conoco Phillips Lovington Office for Conoco Phillips Field Warehouse
29 Vacuum Complex Lane
Lovington, NM 88260

APPENDIX F
CHRONOLOGIC RECORD OF EVENTS LOG

1. Incident Name	2. Operational Period (Date/Time) From: To:	UNIT /ACTIVITY LOG ICS 214

3. Individual Name	4. ICS Section	5. Assignment/Location

6. Activity Log	Page	of

TIME	MAJOR EVENTS

7. Prepared by:	Date/Time

UNIT/ACTIVITY LOG		ICS 214

APPENDIX G

NEW MEXICO OIL CONSERVATION DIVISION
FORM C-141

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

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☐ Final Report

Name of Company	Contact
Address	Telephone No.
Facility Name	Facility Type

Surface Owner	Mineral Owner	API No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County

Latitude_____ **Longitude**_____

NATURE OF RELEASE

Type of Release	Volume of Release	Volume Recovered
Source of Release	Date and Hour of Occurrence	Date and Hour of Discovery
Was Immediate Notice Given? ☐ Yes ☐ No ☐ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☐ No	If YES, Volume Impacting the Watercourse.	
If a Watercourse was Impacted, Describe Fully *		
Describe Cause of Problem and Remedial Action Taken *		
Describe Area Affected and Cleanup Action Taken *		

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature:	OIL CONSERVATION DIVISION	
Printed Name:	Approved by Environmental Specialist:	
Title:	Approval Date:	Expiration Date:
E-mail Address:	Conditions of Approval:	Attached ☐
Date: Phone:		

* Attach Additional Sheets If Necessary