GW - __33__

H2S CONTINGENCY PLAN
(Gas Plant Only)

APPROVED

Sept. 17, 2009

New Mexico Energy, Minerals and Natural Resources Department

Bill Richardson
Governor

Joanna Prukop
Cabinet Secretary

Mark Fesmire
Division Director
Oil Conservation Division

September 21, 2009

Ms. Kris Dixon
P.O. Box 6575
Farmington, New Mexico 87499

RE: Anadarko San Juan River Gas Plant (GW- 33) Contingency Plan
Anadarko Petroleum Corporation
Location: N/2 Section 1, Township 29 North, Range 15 West, NMPM
San Juan County, New Mexico

Dear Ms. Dixon:

The Oil Conservation Division (OCD) appreciates the concerns expressed in your email, dated September 17, 2009, to Mr. Glenn von Gonten of our Division. In response, the OCD wishes to inform you that it has completed a review of Anadarko Petroleum Corporation's (Anadarko) revised San Juan River Gas Plant Hydrogen Sulfide (H_2S) Contingency Plan, dated September 17, 2009, and has determined it to be adequate for the existing gas plant. Anadarko has submitted a H_2S contingency plan that demonstrates compliance with the applicable provisions of 19.15.11 NMAC. An electronic copy of the contingency plan and a hardcopy of the applicable rule (19.15.11 NMAC) are provided in this packet.

The OCD is awaiting a second submittal (an amendment) from Anadarko that will address the operation of the proposed acid gas injection well. The anticipated amendment should include recalculated radius of exposures, identification of the potentially impacted parties within the determined radii, amendments regarding additional notices, and the re-establishment of assembly and road block areas. The OCD will forward a copy of the amendment to you upon the completion of our review, if you wish.

If there are any questions regarding this matter, please do not hesitate to contact me at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,

Brad A. Jones
Environmental Engineer

BAJ/baj

Attachments: Electronic copy of contingency plan (dated September 17, 2009)
Hardcopy of 19.15.11 NMAC
Email Correspondence (dated September 17, 2009)

cc: OCD District III Office, Aztec

Jones, Brad A., EMNRD

From: VonGonten, Glenn, EMNRD
Sent: Monday, September 21, 2009 9:55 AM
To: Jones, Brad A., EMNRD
Subject: FW: Kirtland injection well... and "BLM opposes two injection wells"

From: KDIX@aol.com [mailto:KDIX@aol.com]
Sent: Thursday, September 17, 2009 2:15 PM
To: VonGonten, Glenn, EMNRD
Subject: Re: Kirtland injection well... and "BLM opposes two injection wells"

Glenn,
Thank you for the quick reply. I would like to see the revised plan.
My mailing address is
K Dixon, PO Box 6575, Farmington, NM 87499
Thanks so much.
Kris

In a message dated 9/17/2009 2:08:12 P.M. Mountain Daylight Time, Glenn.VonGonten@state.nm.us writes:

> Ms. Dixon,
>
> Case 14329 has been continued (postponed) until October 15, 2009. OCD has worked with Anadarko to ensure that its H2S Contingency Plan, as revised, will meet all the regulatory requirements. OCD does not plan to opposed the revised plan at the hearing. The revised plan is too large to email; however, I will send you a copy on a CD-ROM if you send me your mailing address.
>
> Glenn

From: KDIX@aol.com [mailto:KDIX@aol.com]
Sent: Thursday, September 17, 2009 1:56 PM
To: VonGonten, Glenn, EMNRD
Subject: Kirtland injection well... and "BLM opposes two injection wells"

Dear Mr. von Gonten,

I saw too late that Case 14329 is on today's docket. I hope that the Kirtland injection well will not be authorized.

The Kirtland installation is already deficient with no contingency plan on file since the plant was built.

This installation should be required to process the H2S onsite to reduce it to less hazardous elements or compounds so as not to endanger either the residents or add pollution to the ground by injecting it. I understand that a surface located process of reduction has not even been seriously considered. Shameful.

I don't understand why planning for the health and safety of the surrounding residents is not being addressed. The draft plan clearly lays out the exposure danger for workers. Eight hours at a very minimum exposure of 10 ppm is apparently considered a limit for workers. Higher levels are deadly, of course. This plant should probably not even be operating in this area at all.

The contingency draft you sent me for the injection well reads only to protect the company and employees. Very little is directed at protecting the area residents, even to the extent that only a few local people will be on the local notify list. But there is no indication in the plan that "immediate notification" of the area needs to be done. That location is just waiting for a disaster to happen. A catastrophic, especially nighttime, release would endanger the residents all the way down the slope to the river several miles away.

The draft contingency plan only addressed releases that were assumed would stay within or near the plant boundaries and not reach the residential areas that are very close to the plant ...and downhill ...and downwind. The plan also used only one point of release as the center. There are several points of potential release and I believe the calculations should have been based on a cumulative "cloud"area... or bubble plot... to draw the 100 ppm and 500 ppm radii around each of those potential release points. The discussion on the "Estimate of Atmospheric Dispersion" contains many points of reservation on the concentration estimation results. For instance: "Slight errors in the estimation of wind direction, especially under stable conditions when pollutant plumes are relatively narrow, can result in tremendous errors of concentration at specific locations. This is also the principal reason why so many hour-to-hour field concentration measurements relate rather poorly with concentration estimates." And, there is also the issue of "plume trapping" which with H2S is likely to be real since it is heavier than air and has a propensity to travel along the ground and would therefore not necessarily mix easily with the upper air layer.

Everything I read in the plan seemed to be calculated to minimize the potential problems instead of realistically stating and addressing a potential major release.

There is no area-wide alert procedure in the draft plan to inform or warn the residents immediately. The obvious intent of the plan was to keep knowledge of any releases private within the company and any required but delayed official state notification. In the event of a serious release, people could die and/or be injured unnecessarily purely as a result of this weak plan and lack of immediate notification.

Below is an article showing that even BLM is getting skittish about some types of injection wells.

If it is not too late for the hearing officers to receive information, I would appreciate it if you would forward these comments to them.

Thank you.

Kris Dixon

http://telluridenews.com/articles/2009/09/17/news/doc4ab1a0a09434e522049306.txt

BLM opposes two injection wells in west end

EnCana had hoped to inject some of its wastewater

By Matthew Beaudin

Published: Thursday, September 17, 2009 8:12 AM CDT

In the West, it always comes back to water. In this case, it's waste water from natural gas fields that's drawn some concern from regulators.

The Bureau of Land Management recently declined requests from EnCana Oil and Gas, Inc. that sought to allow the company to inject its wastewater — mostly saltwater — into the geologic formations in the Dry Creek Basin, near Basin, Colo.

EnCana is the premier operator in the region, with two oil and gas fields between here and Utah.

The BLM declined because the tests and operations could damage

groundwater resources, according to letters and an official.

Injection wells are a commonly used method to dispose of water from oil and gas operations. When companies mine for oil and natural gas, water is created as a waste product. In some situations, the companies will then "inject" the water back into the geologic formation it came from at a high pressure. The water is usually pushed 4,000 feet below ground level, and the rocks then take the water back and disperse it throughout the formation.

The fluid is mostly saltwater, according to the BLM, but can have trace amounts of metals from the rock formations below.

The wells, the BLM said, could affect aquifers in the Dry Creek Basin, which is anything but dry. "It is not dry. It's amazing," said Pamela Leschak, the San Juan Public Lands Center BLM fluids geologist. "There's a lot of good water resources."

In one case, EnCana wanted to run a test to see if injection would be effective and in another, they wanted to raise the level of injection from 4,000 to 2,000 feet because the rock they were currently using wasn't taking enough of the waste.

That, though, drew the concern of the BLM: even though there were no aquifers in the immediate area, the forced water could, they said, forge channels in the rocks and potentially contaminate water that is, at least now, used for livestock watering.

The formation in discussion is the Navajo Formation; it is, essentially, the rock that looks like a slickrock sea around Moab, Utah.

"It's a big, white sandstone formation all over the Four Corners that represents a big desert that was once here," Leschak said. "That formation probably would take the water, but it's shallow, and we're not comfortable with that."

EnCana, she said, may resubmit an application with more data.

"If the rock is weak... you could start to fracture that rock and fluids start moving... And that's our concern," she said. "That's everybody's concern."

Dave Schneck, San Miguel County's environmental health director, said the county had "great concerns" about the wells. "I'm happy they made that decision," he said of the BLM.

ANADARKO PETROLEUM CORPORATION

TEL. 832/ 636-1000
P.O. BOX 1330 • HOUSTON, TEXAS 77251-1330

September 17, 2009

Mr. Brad Jones
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: H_2S Contingency Plan

Dear Mr. Jones:

Pursuant to NMAC 19.15.11, Western Gas Resources Asset Holding Company LLC, a wholly owned subsidiary of Anadarko Petroleum Corporation respectfully submits the H_2S Contingency Plan (revision 3) for the San Juan River Gas Plant located in Section 1, Township 29 North, Range 15 West, San Juan County New Mexico. The plan, submitted on the enclosed CD, reflects current operations at the San Juan River Gas Plant. Draft amendment(s) to the plan in regard to the installation of an acid gas injection well and the anticipated increase in radius of exposure will be submitted on a timely basis for OCD review.

If you have any questions or require additional information, please contact me at (832) 636-2609.

Sincerely,

Julie Betik
Sr. Staff Environmental Analyst

Anadarko
Petroleum Corporation

H_2S CONTINGENCY PLAN

San Juan River Gas Plant
Kirtland, New Mexico

WESTERN GAS RESOURCES ASSET HOLDING COMPANY, LLC, a wholly owned subsidiary of Anadarko Petroleum Corporation

(SEPTEMBER 2009)

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I. INTRODUCTION

The San Juan River Gas Plant (hereinafter the "Plant") is a natural gas processing plant which handles and/or generates hydrogen sulfide and/or sulfur dioxide; therefore this Hydrogen Sulfide Contingency Plan (the "H_2S Plan" or "the Plan") has been developed: 1) to satisfy the New Mexico Oil Conservation Division Rule 11, 2) to conform with API "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide," RP 55, and 3) to create a site-specific hydrogen sulfide contingency plan that outlines the emergency response procedures that will implemented to ensure a coordinated, efficient and immediate action plan for alerting and protecting operating personnel and the public as well as to prevent or minimize environmental hazards and damage to property. The terms used in this Plan are to be used in the same manner as defined in Title 19 Chapter 15 Part II of the New Mexico Administrative code (19.15.11.7- Definitions) unless otherwise defined herein.

A. PLANT DESCRIPTION & MAP (Figure 1)

The Plant is located in Kirtland, San Juan County, New Mexico and encompasses 300+ acres. It is owned and operated by Western Gas Resources Asset Holding Company LLC, which is a wholly owned subsidiary of Anadarko Petroleum Corporation (hereinafter collectively referred to as the Company).

More specifically, the Plant is located in Section 1, Township 29N, Range 15 W in Kirtland, San Juan County, New Mexico.

1. Its coordinates are:
   Latitude: 36.453 N **Longitude: 108.220 W**

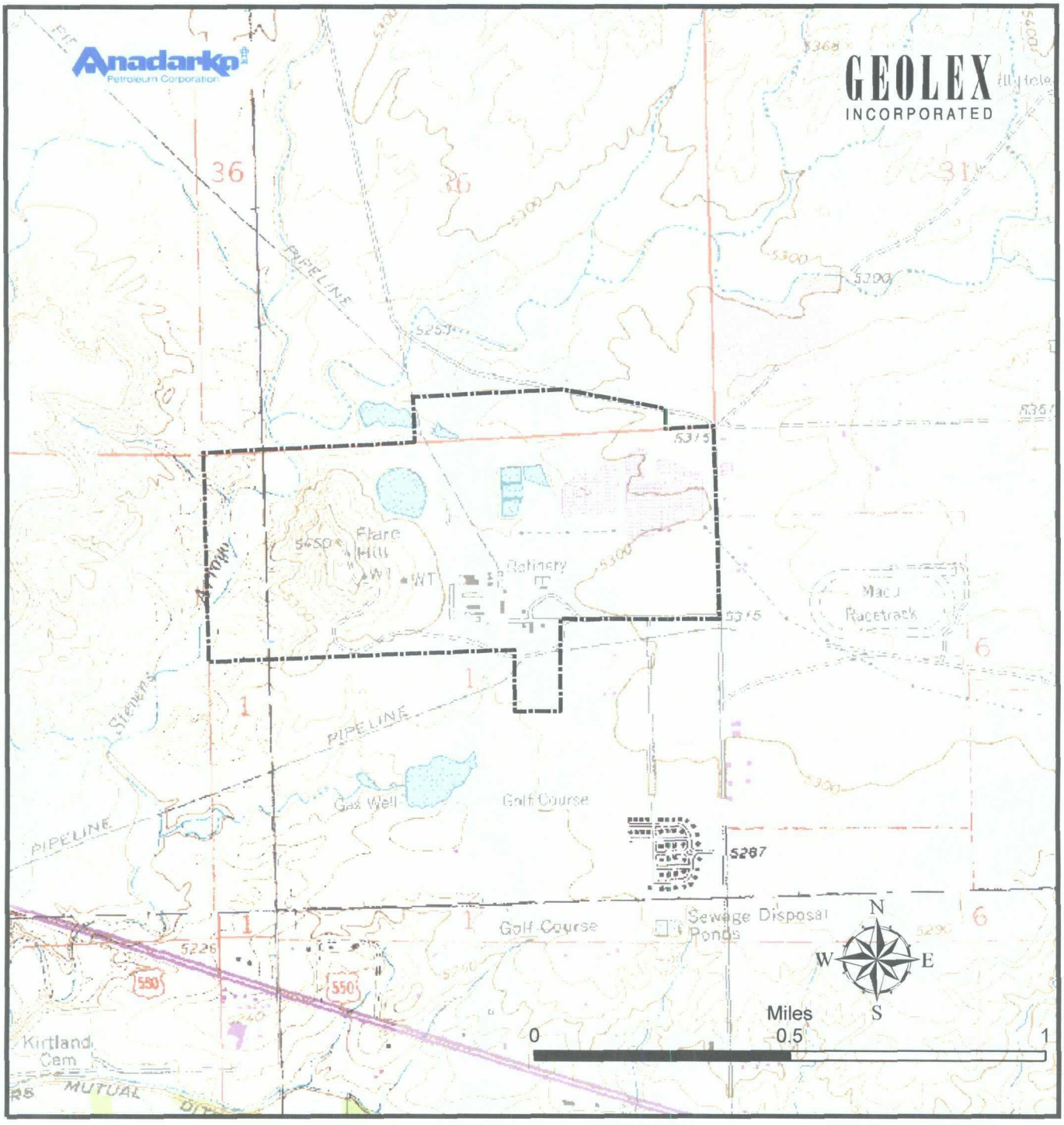
2. Its physical address is:
   99 County Road 6500, Kirtland, New Mexico 87417

3. Its mailing address is:
   P. O. Box 70, Kirtland, New Mexico 87417

4. Driving Directions from Farmington, New Mexico to the Plant:

   From the intersection of US Highway 64 and the LaPlata Highway (New Mexico Highway 170), travel west on US Highway 64 approximately 6.2 miles to the intersection of US Hwy 64 and County Road 6500 in Kirtland, New Mexico. Turn right on County Road 6500 and travel north approximately 1.7 mile to the entrance to the San Juan River Gas Plant.

The location of the Plant is illustrated herein on Figure 1.



Approximate Boundaries of Western Gas Resources Property
Anadarko San Juan River Natural Gas Processing Plant

Anadarko
Petroleum Corporation

GEOLEX®
INCORPORATED

B. DESCRIPTION OF OPERATIONS

1. The Plant operations include gas processing, conditioning and compression, as well as flow lines and storage tanks. The Plant gathers produced natural gas from San Juan County, New Mexico, as well as, from Southwestern Colorado, Northeastern Arizona, and Southeastern Utah. Once gathered at the Plant, the produced natural gas is compressed; treated in an amine process for the removal of carbon dioxide and hydrogen sulfide; and dehydrated to remove the water content. The processed natural gas is then sold and shipped to various customers.

2. Because the natural gas that gathered at the Plant contains hydrogen sulfide ("sour gas"), it must be treated or processed to remove these and other impurities. The carbon dioxide and hydrogen sulfide (H_2S) stream that is removed from the natural gas in the amine treating process is then sent to the Claus sulfur recovery unit whereby sulfur is removed, which results in the generation of molten elemental sulfur. Any residual H_2S is routed to an incinerator where it is combusted into sulfur dioxide.

II. THE PLAN

A. RESPONSIBILITY FOR CONFORMANCE WITH THE H_2S PLAN

It is the responsibility of all personnel on-site to follow the safety and emergency procedures outlined in the Hydrogen Sulfide Contingency Plan (the H_2S Plan) as well as the following documents:

- Anadarko Petroleum Corporation Safety & Health Manual
- Anadarko Petroleum Corporation Emergency Response & Oil Spill Contingency Plan; and
- Anadarko Petroleum Corporation Environmental Policies and Programs.

B. REVISIONS TO THE PLAN

The H_2S Plan will be reviewed annually and revised at this time as necessary to address changes to the Plant facilities, operations, or training requirements, contact information and the public areas including roads, businesses, or residents potentially affected by the operations of the Plant, specifically those areas within the radii-of-exposure.

C. AVAILABILITY OF THE H_2S PLAN

The H_2S Plan shall be available to all personnel responsible for implementation, regardless of their normal location assignment. A copy of the Plan will be maintained at the Plant in the Plant Superintendent's office and at the Anadarko Corporate Headquarters in The Woodlands, Texas. **See Appendix H for the H_2S Distribution List,** which lists all the additional entities that have been provided a copy of the H_2S Plan.

D. CONTENT OF THE PLAN

At a minimum, the H_2S Plan will contain information regarding: 1) the emergency procedures to be followed in the event of an H_2S or SO_2 release that may pose a threat to the Plant, public or public areas, 2) the characteristics of H_2S and SO_2, 3) a facility description, map and/or drawings, and 4) information regarding training and drills to be conducted related to this Plan.

III. PLAN DESIGN CONSIDERATIONS

A. CHARACTERISTICS OF H_2S, SO_2 AND CARBON DIOXIDE

1. Hydrogen Sulfide (H_2S)

The current inlet gas streams into the Plant contain approximately 3,500 ppm (or 0.35 mole percent) of hydrogen sulfide based on data generated from the sampling of the inlet gas at least three times daily.

Hydrogen sulfide is a colorless, toxic and flammable gas, and has the odor of rotten eggs. Hydrogen sulfide gas is heavier than air.

Hydrogen sulfide presents a significant health hazard by paralyzing the respiratory system resulting in serious injury or death.

Hydrogen Sulfide Properties & Characteristics	
CAS No.	7783-06-4
Molecular Formula	H_2S
Molecular Weight	34.082
TWA	10 ppm
STEL	15 ppm
IDLH	100 ppm
Specific Gravity (air = 1.0)	1.189
Boiling Point	-76.5°F
Freezing Point	-121.8°F
Vapor Pressure	396 psia
Autoignition Temperature	518°F
Lower Flammability Limit	4.3%
Upper Flammability Limit	46.0%
Stability	Stable
pH in water	3
Corrosivity	Reacts with metals, plastics, tissues & nerves

Physical Effects of Hydrogen Sulfide		
Concentration		
ppm	**%**	**Physical Effect**
1	.00010	Can be smelled (rotten egg odor)
10	0.0010	Obvious & unpleasant odor; Permissible Exposure Limit; Safe for 8-hour exposure
15	0.0015	Short Term Exposure Limit (STEL); Safe for 15 minutes of exposure without respirator
50	0.0050	Loss of sense of smell in 15 minutes
100	0.0100	Immediately Dangerous to Life & 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
1,000	0.1000	Instant unconsciousness; followed by death within minutes

2. Sulfur Dioxide ($S0_2$)

Sulfur dioxide is produced as a by-product of H_2S combustion at the incinerator. The incinerator unit receives the residual hydrogen sulfide and carbon dioxide stream that is routed from the amine unit.

It is colorless, transparent, and is non-flammable, with a pungent odor associated with burning sulfur.

Sulfur dioxide is heavier than air, but will be picked up by a breeze and carried downwind at elevated temperatures. Sulfur dioxide 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
TWA	2 ppm
STEL	5 ppm
IDLH	100 ppm
Specific Gravity (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.

3. Carbon Dioxide

The current inlet gas streams to the Plant contain approximately 3% carbon dioxide based on continuous inlet gas monitoring readings.

Carbon dioxide gas is colorless, odorless, and non-flammable. Carbon dioxide is heavier than air.

Carbon Dioxide Properties & Characteristics	
CAS No.	124-38-9
Molecular Formula	CO_2
Molecular Weight	44.010
TWA	5,000 ppm
STEL	30,000 ppm
IDLH	40,000 ppm
Specific Gravity (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

B. RADII OF EXPOSURE (ROE)

For the existing operations, the "Radius of Exposure" for both 500-ppm and 100-ppm of H_2S gas was determined using the "escape rate", which is calculated using the maximum daily rate of the gaseous mixture that is handled by the Plant. The rates and other variables used to calculate the ROE is discussed in greater detail in **Appendix B - ROE calculations. Also refer to Appendix C - map showing 500-ppm ROE and the 100-ppm ROE.**

500-ppm ROE	**933 feet**
100-ppm ROE	**2,042 feet**

IV. EMERGENCY ACTION PROCEDURES

A. EMERGENCY RESPONSE ORGANIZATION

The Plant uses the Incident Command System (ICS) for emergency response. The ICS structure used is based on the National Interagency Incident Management System (NIIMS), and is consistent with the National Contingency Plan (NCP).

In the event of an accidental release that results in the activation of the H_2S Plan and all personnel have been evacuated out of the affected area, the Plant Superintendent, or his designee, will be the On-Scene Incident Commander (IC in this Plan). The IC will contact and coordinate with Anadarko's management in corporate office. If the severity of the response requires activation of the Emergency Response Center in The Woodlands, Texas office, the ICS structure will be staffed per the Anadarko Southern Region Emergency Response & Oil Spill Contingency Plan Manual. The staffing will not change the H_2S Plan contained herein.

The Plant Superintendent or his designee shall determine:

1) Plant Shutdowns
2) Isolation of pipeline segments
3) Repairs, tests or restarts as required

If an emergency occurs, the Plant Superintendent, or his designee, shall be notified first. The Plant Superintendent, or his designee, shall notify Anadarko's Office in The Woodlands, Texas

B. EMERGENCY RESPONSE

This section explains the procedures and decision to be used in the event of an H_2S release; much of which has been pre-determined to ensure a coordinated, efficient and

immediate action plan for alerting and protecting operating personnel and the public as well as to prevent or minimize environmental hazards and damage to property.

1. OBJECTIVE

All Plant employees shall be prepared to respond to an H_2S or SO_2 emergency at the Plant. Emergency response actions may be taken for a variety of situations that may occur in the Plant. The Plan is activated in progressive levels based on the concentration of H_2S that has been released. The Plant has three (3) activation levels that are described below and in detail in the Response Flow diagram in Appendix F.

Level 1 – Intermittent alarm sounded and/or flashing red beacons activated for H_2S greater than 10 ppm

Level 2 – Continuous alarm sounded and/or flashing red beacons activated for H_2S greater than 20 ppm

Level 3 – Catastrophic release; fire; explosion; a continuous release of maximum volume for 24 hours; or Rule 11 Mandatory Activation for 100 ppm in any defined public area; 500 ppm at any public road; or 100 ppm at a distance greater than 3000 feet from the site or the release

As soon as the Plan has been activated based on the criteria above, the Plant Superintendent, or his designee, should be notified.

2. PLANT EVACUATION AND EMERGENCY ASSEMBLY AREAS

A. Plant evacuation for all visitors and Plant personnel that are not operators begins at the 10 ppm H_2S intermittent alarm and/or flashing red beacon. The Plant operators are to put on the 30-min SCBA and first determine if any personnel are in distress and assist any distressed personnel evacuate to Emergency Assembly Area 1. Emergency services (911) will be contacted if there are injuries or as otherwise deemed necessary. BHP Mines and Praxair are also to be notified. The operators will then, wearing the SCBA, investigate the cause of the release. At the sound of the alarm and/or flashing red beacons, all other personnel in the Plant are to stop work, check the prevailing wind direction and immediately proceed along designated evacuation routes and/or upwind to the pre-designated Emergency Assembly Area(s) that are described in **Appendix F**.

Prevailing winds for the area are from the east and evacuation along the designated routes should be upwind. If the designated evacuation route is downwind of the release (based on the windsock), then all evacuees should proceed upwind to the Emergency Assembly Areas

The Plant evacuation diagram showing evacuation routes and Emergency Assembly Areas is attached in **Appendix D.**

The Emergency Assembly Area 1 is: **Parking Area on the eastside of the Plant Superintendent Office Building (see Appendix C & D)**

The Emergency Assembly Area 2 is: **Area at Plant Rd and Hwy 6500 (see Appendix C)**

The Emergency Assembly Area 3 is: **Kirtland Elementary School Parking Lot , 30 Road 6446 (see Appendix C)**

B. Roll call shall be conducted at the Emergency Assembly Area to assure all personnel have evacuated safely. This facility is a PSM facility and requires all visitors check in before entering the Plant, thus the check-in sheet will be used at the Emergency Assembly Areas to make a full accounting of all personnel and visitors.

3. IMMEDIATE ACTION PLAN/ INITIAL RESPONSE

The following outlines the immediate action plan that is illustrated by flow diagram in **Appendix F**. This is to be used when responding to an H_2S release. Additional or long term response actions will be determined on a case-by-case basis, if needed, once the Incident Command Center and System is established following the immediate response.

LEVEL 1 RESPONSE

1. The audible signal for a Plant emergency and evacuation is an intermittent horn (repeating off/on) activated when levels of H_2S of 10 ppm are detected. The frequency of this intermittent alarm will increase as the concentration of the H_2S increases. In addition, a flashing red light or beacon will be activated at 10 ppm H_2S. At the initial sound of the intermittent alarm or the flashing red beacon, each operator (2 per shift) will put on a 30 minute SCBA and all other personnel in the Plant complex shall immediately evacuate the Plant using the evacuation routes to the Emergency Assembly Area 1 (see **Appendix D**). The operators, upon suit up with the SCBA, will first help any persons in distress evacuate to the

Emergency Assembly Area. If deemed necessary by the Senior Operator, local emergency response service providers will be contacted by Plant personnel designated by the Senior Operator.

2. BHP Mines and Praxair will be notified of a release by personnel designated by the Plant Superintendent or his designee. The nature of the release and status of containment will be conveyed. Both will be advised to report the incident to employees working near the Plant and to alert any third party contractors or service companies working in the Plant vicinity or imminently scheduled to work in the Plant vicinity, of the release. All should be instructed to leave the area and not to enter/re-enter area until further notice.

3. Wearing the SCBA, the operator(s) will attempt to fix the cause of the release. OSHA guidelines allow operators to work in areas with 10ppm for up to 8 hours. The H_2S levels at the Emergency Assembly Area 1 will be monitored with a hand held or personal monitor.

4. The Senior Operator will set up secondary re-entry team(s) with 30 min. SCBA to re-enter and resolve the situation. Re-entry will occur in 15 minute shifts at the direction of the IC until the problem is resolved or the ESD activated. If H_2S levels in Emergency Assembly Area 1 exceed 10 ppm, evacuate to Emergency Assembly Area 2 and continue to monitor Assembly Area H_2S level. If release is resolved and monitored levels in the Plant are less than 10 ppm, personnel may re-enter to Plant. BHP and Praxair will be notified once release is contained and monitored H_2S levels are less than 10 ppm. The OCD shall be notified within one hour of any release that activates the Plan. If the release is not resolved and H_2S levels continue to increase, Level 2 Response is indicated.

LEVEL 2 RESPONSE

1. The continuous alarm and indicates the detection of H_2S greater than 20 PPM. Flashing red beacons indicate a H_2S release of 10 ppm or greater and they will continue for a release of 20 ppm or greater. At the initial sound of the continuous alarm or observance of the flashing red beacons, the operators will immediately put on a 30 minute SCBA and all other personnel in the Plant complex will put on emergency escape packs if they are wearing them and evacuate along with all other personnel using the evacuation routes to the Emergency Assembly Area 2 (see **Appendix D**). The operators, upon suit up with the SCBA, will first help any persons in distress evacuate to the Emergency Assembly Area. If deemed necessary by the Senior Operator, local emergency response service providers will be contacted by Plant personnel as designated by the Senior Operator.

2. Praxair is trained to evacuate at continuous alarm sounds. Praxair, BHP Mines and other non-manned businesses will be contacted by phone and notified of release and asked to evacuate, if they have not already. All entities within the 100 ppm ROE will be contacted by phone and notified of release. The nature of the

release and status of containment will be conveyed. Notifications will include but are not limited to the following:

- Praxair, BHP and all unmanned businesses will be instructed to alert all company personnel, third party contractors and/or services companies working in the area and those imminently scheduled to work in the area, of the release and evacuation status of the Plant. They should be instructed to immediately leave and/or not enter/re-enter the Plant vicinity until further instruction.
- BHP will be advised to check ventilation shaft status within the Plant vicinity and take internal company pre-emptive safety action(s) as deemed appropriate.
- Riverview Golf Course will be instructed to clear the course of both employees and golfers until further notice.
- San Juan College will be notified of the release though not within the 100 ppm ROE.

The LEPC and law enforcement will be contacted by phone and notified of the release. The Plant Superintendent or his designee will assign personnel notification responsibility.

3. Operator(s) with 30 minute SCBA to assess and attempt to resolve. After 15 minutes and no resolution, the operator(s) will activate the ESD and will evacuate to Emergency Assembly Area 2.

4. If monitored H_2S levels at Emergency Assembly Area 2 exceed 10 ppm, evacuate to Emergency Assembly Area 3, Kirtland Elementary School parking lot. If deemed necessary, local emergency response service providers will be contacted by the operator.

   a) Re-entry will occur in full SCBA and in 15 minute shifts at the direction of the IC until IC determines problem has been resolved or additional ESD (pipeline) activated.

   b) If release is resolved and monitored levels of H_2S in the Plant are less than 10 ppm, personnel may return to Plant. The OCD shall be notified within one hour of any release that activates the Plan. All businesses previously notified will be informed that the release has been resolved and advised of the current monitored H_2S levels at the Plant.

   c) No resolution requires activation of full H_2S Plan with notifications and reporting as per Plan. If the release is not resolved and/or H_2S levels continue to increase, Level 3 Response is indicated.

LEVEL 3 RESPONSE

1. For H_2S at 20 ppm or greater at Assembly Area 2, repair efforts at Level 2 unsuccessful , worst case scenario, and/or catastrophic release have occurred then implement a Level 3 response.

2. All personnel shall have evacuated to Emergency Assembly Area 3, Kirtland Elementary School. Evacuation of Praxair has been confirmed. Implement full H_2S plan with all notifications and public agency involvement. Notifications to area businesses, both manned and unmanned will include the nature of the release and status of containment. Notifications will include but are not limited to the following:

   - Praxair, BHP and all unmanned businesses will be instructed to immediately alert all company personnel, third party contractors and/or services companies working in the area and those imminently scheduled to work in the area, of the release and evacuation status of the Plant. They should be instructed to immediately leave and/or not enter/reenter the Plant vicinity until further instruction. All shall be informed of the road block on County Road 6500.
   - BHP will be advised to check ventilation shaft status within the Plant vicinity and take internal company pre-emptive safety action(s) as deemed appropriate.
   - Riverview Golf Course will be instructed to immediately clear the course of both employees and golfers and shelter in-place at the club house until otherwise advised.
   - San Juan College will be notified of the release and advised to shelter in place until otherwise advised.

3. If escaping vapors have been ignited, the vapors should be allowed to continue to burn unless the fire endangers personnel, other property, or other equipment.

4. When applicable: Maintain communication with the Plant Superintendent, or his designee, to keep him up-to-date of the situation and the action taken prior to his arrival at the location.

5. Initiate and maintain a Chronological Record of Events log.

6. Within one hour after the activation of the H_2S Plan, begin agency notifications by calling OCD and NRC.

7. Establish media staging area adjacent to Assembly Area 3 and direct all media to it.

8. Once resolved and monitored levels in the Plant are less than 10 ppm, return to Plant. All businesses previously notified will be informed that the release had been resolved and advised of the current monitored H_2S levels at the Plant.

9. Agency reports to be submitted as required.

4. EMERGENCY SHUTDOWN SYSTEM

The Plant has an extensive Emergency Shut Down (ESD) system that is located within the Plant and in various locations along the pipelines that feed the Plant. The ESD is designed to prevent a Level 3 response. See **Appendix E** for a more detailed description of the ESD.

5. 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 well as state and federal spill reporting obligations. In addition to the regulatory obligations noted above, Plant personnel also have internal and external notification and reporting obligations associated with the activation of this Plan.

A. DISCOVERY AND INTERNAL REPORTING

1. All Plant personnel who perform maintenance and/or repair work within the Plant wear H_2S monitoring devices to assist them in detecting the presence of unsafe levels of H_2S. When any Plant personnel while performing such work discovers a leak or emission release they are to attempt to resolve the issue as long as H_2S levels remain below 10 ppm. The personal monitoring devices they wear will give off an audible alarm at 10 ppm. These devises are to be worn as low on the body as possible since H_2S is heavier than air and will tend to stand or accumulate in low lying areas. If the response action needed to resolve the issue is more than simply closing a value or stopping a small leak, the Plant personnel shall notify the Plant Superintendent, or his designee and convey, at a minimum, the following information:

    - Name, telephone number, and location of person reporting the situation; and
    - Type and severity of the emergency; and
    - Location of the emergency (area/block, mile markers, latitude & longitude, or building), and the distance to surrounding equipment and/or structures; and

- The cause of the spill or leak, name and quantity of material released, and extent of the affected area including the degree of environmental hazard; and
- Description of injuries and report of damage to property and structures; and
- Initiate and maintain a Chronological Record of Events log. This record should record the time, date, and a summary of the event.

2. If the Plant personnel detects H_2S levels greater than 10 ppm either as a result of his/her personal monitoring device or the Plant intermittent alarm and/or red flashing beacon, Plant operators are to contact their immediate supervisor for assistance and put on the 30-min SCBA so they can attempt to resolve the issue. All non essential persons shall be notified of the release and evacuated from the area. Operators wearing the SCBAs are to first assist any persons requiring assistance during the evacuation, then attempt to resolve the issue. The immediate supervisor is then responsible for notifying the Plant Superintendent or his designee so that the IC system can be implemented and H_2S Plan activated if necessary.

3. Once the Plant Superintendent is contacted, he or his designee is to notify the appropriate Corporate management, EHS personnel, Plant emergency response personnel, and advise them of the existing emergency situation. Corporate management will then conduct the reporting up that is necessary based on the situation.

4. Plant personnel are to advise any contractor, service company, and all others on-site or attempting to enter the Plant that the H_2S Plan has been activated.

B. PUBLIC AWARENESS AND COMMUNICATION

Public awareness and communication is a primary function of the H_2S Plan. Company has compiled a list of various public, private, state, local contacts that are to be notified at various phases during the activation of the Plan. Refer to the Response Flow diagram in **Appendix F** that indicates when certain entities are to be contacted in event of activation of this Plan. **Appendix G** is a listing of the entities to be contacted and **Appendix H** is a list of community organizations that have received a copy of the Plan. Company will inform all state and local response organizations on its Plan as well as those businesses that fall within its 500-ppm and 100-ppm ROE as illustrated in **Appendix C**.

C. PUBLIC AREAS, NEARBY BUSINESSES AND RESIDENTS

The contact information for all residents, businesses and public areas is contained in **Appendix G**. **All** businesses and public places within the 500 ppm and 100 ppm radius of exposure will be contacted by Plant personnel as designated by Plant

Superintendent if the Plan is activated and based on response level as described in the Immediate Action Plan and advised of the following:

- The nature and extent of the release/emergency at the Plant and recommendations for protective actions, such as evacuation or shelter-in-place
- Any other event specific information that is necessary to protect the public
- Updates as to the status of the release and continued safety measures to be taken, including but not limited to when to evacuate and/or when it is safe to return to the area.

1. Residences or Public roads:

There are no residences or public roads located within 500 ppm or the 100 ppm radius of exposures.

2. Businesses or Other Public Areas:

All businesses on this list will be provided with a copy of the H_2S Plan and will be contacted about participation when local emergency response training events or drills occur.

Within the 100 ppm ROE:
There is **one** public area (a portion of the Riverview Golf Course) that is located within the 100 ppm radius of exposure.

BHP will be contacted when the Plan is activated to ensure that the out of service vent pipes have not been activated. Currently, no operating BHP Mining ventilation pipe ducts are within the 100 ppm ROE; however, out of service ventilation pipe ducts do exist and have been closed by manual valve.

Three unmanned businesses are located within the 100 ppm ROE (XTO, El Paso Natural Gas and Mapco Enterprises). Their corporate offices will be notified if the Plan is activated as per the immediate action plan.

Within the 500 ppm ROE:
There is one additional manned business (Praxair) within the 500-ppm ROE. Praxair is to be notified if the Plan is activated.

6. SITE SECURITY

A. In order to have an accurate listing of all personnel on-site in the event of an emergency, a daily sign-in log sheet shall be utilized. The sign-in log sheet shall include at a minimum the person's name, the company name, the time of arrival, and the time of departure.

B. The Incident Commander shall be responsible to assure that all personnel sign-in upon arrival and sign-out upon departure from the job site.

C. The Incident Commander may at his discretion assign the responsibilities for the daily sign-in log sheet to the individual designated as the Record Keeper or another designee.

D. At the discretion of the Incident Commander, a security coordinator and/or a security team may be established, and the access to the job site restricted.

E. For a Level 3 release a road block would be set up at the entrance to the Plant at County Road 6500.

7. SIGNS & MARKERS

The Plant has warning signs indicating the presence of H_2S/Poisonous Gas and high pressure gas at the entrance to the Plant. Emergency response phone numbers are posted at the entrance to the Plant. Signs are located at the Plant gate entrance indicating that all visitors are to sign in.

8. FIRST-AID STATION

The first aid station will be located at the Emergency Assembly Area.

FIRST AID KITS are located:

- **Plant Superintendent Office Building,**
- **Maintenance/Safety Office Building, and**
- **Each company vehicle**

9. MEDIA SITE

A. If a Level 2 or 3 Response occurs, the Media Site will be located adjacent to Emergency Assembly Area 2, except for Level 3 response in which case it will be located adjacent to Emergency Assembly Area 3.

B. At no time shall any unescorted representative from the media be allowed any closer to the Plant than the Media Site location, unless approved by the Incident Commander, the Safety Officer, and the Media Relations Officer.

10. EMERGENCY AND SAFETY EQUIPMENT

Refer to **Appendix E** for information pertaining to the Plant's emergency and Safety equipment.

IV. TRAINING AND DRILLS

A. TRAINING

1. Training on the H_2S Plan
   - Inclusion of local officials and LEPC
   - Public areas and businesses (within the ROE)
   - Those on the Plan distribution list

2. Other Emergency Response Related Training

Anadarko/Western has an extensive safety training program and addresses various aspects of job related hazards. All training records for the Plant are maintained at the Plant. The following is a limited list and summary of the training programs that relate to the H2S Plan and Emergency Response:

- Plant Orientation Training - All Plant personnel, visitors, and contractors must attend a Plant overview orientation prior to obtaining permission to enter the Plant. A refresher course on this training is required annually for all persons. This training also complies with the requirements of the Anadarko and Plant's Process Safety Management Program and Procedures Manuals.

- Hydrogen Sulfide and Sulfur Dioxide Training – All Plant personnel receive annual refresher training on hydrogen sulfide and sulfur dioxide, which is conducted by Anadarko personnel. If an individual is unable to attend, they may be required to attend a third party training session. Hydrogen sulfide training cards are issued as documentation of this training. All contract employees and visitors are required to have had hydrogen sulfide training and to provide the Plant a copy of their certification card prior to obtaining permission to enter the Plant.

- Respirators - All Plant personnel, with the exception of the Plant Operations Specialist, are trained annually on the proper use of respirators. In addition to the annual training, all Plant personnel with the exception noted above are fit tested annually on the respirators. Except for the Plant Operations Specialist, all Plant personnel must have medical clearance to work in the Plant. Medical clearance is mandatory for H_2S certification. Medical clearance review for work in a H_2S environment is conducted on a bi-annual basis unless the individual has experienced medical problems within that two year interval that requires updating the medical clearance.

- Hazard Communication - All Plant personnel are trained annually on Hazard Communication and SARA Title III Right-to-Know information. The annual training includes, at a minimum, a review of material safety data sheets (MSDS) for those materials that are present at the Plant and labeling.

- Personal Protective Equipment (PPE) - All Plant personnel are trained annually on the Anadarko requirements for personal protective equipment (PPE). The training includes, at a minimum, a review of all the types and levels of personal protective equipment and how to select the correct equipment for the job.

B. EMERGENCY RESPONSE DRILLS

1. The Plant will conduct, at least, a tabletop drill annually. Multiple drills during the year may be scheduled at the discretion of the Plant Superintendent or as part of the Emergency Response Center in The Woodlands.

2. The annual drill will exercise this Plan and include, at a minimum, contacting the entities that are identified as being within the 500-ppm ROE and the Local Emergency Response contacts identified on **Appendix G**. The drills will also include briefing of public officials on issues such as evacuation or shelter-in-place plans even though the current ROE will not require evacuations or shelter in place.

3. Drill training will be documented and those records will be maintained at the Plant. The documentation shall include at a minimum the following:

    a. Description or scope of the drill, including date and time
    b. Attendees and Participant to the drill
    c. Summary of activities and responses
    d. Post drill de-brief and reviews

APPENDIX A

WORST CASE SCENARIO

The basis for worst case calculations is 3500 parts per million (ppm) or 0.35 mole percent of hydrogen sulfide in the inlet gas to the San Juan River Gas Plant and a maximum daily (24 hour) processing volume of 35,000 Mscf. The ROE assumes an uncontrolled instantaneous release from the area around the amine contact towers of the referenced volume and concentration. Calculations using the ROE formula pursuant to NMAC 19.15.11 are provided in **Appendix B**.

It should be noted that this rate, though used as worst case, would unlikely be released due to the Plant emergency shut down (ESD) systems that when activated shuts down the Plant. ESD valves on the inlet receivers to the Plant act as secondary control to prevent gas from entering the Plant. In addition, each inlet pipeline (Aneth and Barker) have ESD valves 2 miles from the Plant as well as ESD valves another 6 and 8 miles down respectively.

APPENDIX B

RADIUS OF EXPOSURE CALCULATIONS

The formulas for calculating the two ROEs (as specified by the regulations) are as follows:

500-ppm RADIUS OF EXPOSURE CACULATION

$$X=[(0.4546)(\text{hydrogen sulfide conc.})(Q)]^{(0.6258)}$$

Where:
X = Radius of exposure in feet
Hydrogen Sulfide Conc = Decimal equivalent of 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)

a) For existing facilities or operations, the escape rate (Q) is the maximum daily rate of the gaseous mixture produced or handled or the best estimate thereof. For the San Juan River Gas Plant the Company is using for contingency planning purposes an "escape rate" equal to the inlet gas volume of 35,000 MCFD. The inlet gas volume at the Plant is somewhat variable and is continuously metered. The Plant records daily inlet gas volumes and prepares a daily volume report. 35,000 MCFD has been selected as the escape rate since it is the highest volume that the Plant would handle under its current operations and is considered worst case interpretation of the volume of gas.

As to hydrogen sulfide concentration of the inlet gas, daily monitoring data indicates variable concentrations, however 3500 ppm (0.35 mole percent) is a worst case scenario. Thus, the Plant has used a hydrogen sulfide concentration of 3500 ppm for its contingency planning purposes.
Using:
Q = 35,000,000
H_2S conc = 3500 ppm or 0.35 mole%

$$[(0.4546)*(H_2S \text{ concentration})*(\text{gas volume } (Q))]^{0.6258}$$
$$[(0.4546)*(3500*.000001)*(35,000,000)]^{0.6258}$$

500-ppm ROE = 933 feet

100-ppm RADIUS OF EXPOSURE CALCULATION

$$[(1.589)*(H_2S \text{ concentration})*(\text{gas volume})]^{0.6258}$$
$$[(1.589)*(3500*.000001)*(35{,}000{,}000)]^{0.6258}$$

100-ppm ROE = 2,042 feet

APPENDIX C

100-PPM AND 500-PPM RADIUS OF EXPOSURE MAP

0 550 1,100 2,200 Feet

N
W E
S

San Juan River Gas Plant
Hydrogen Sulfide Contingency Plan
Radius of Exposure

CURRENT OPERATIONS

- Amine Tower *

Radius of Exposure

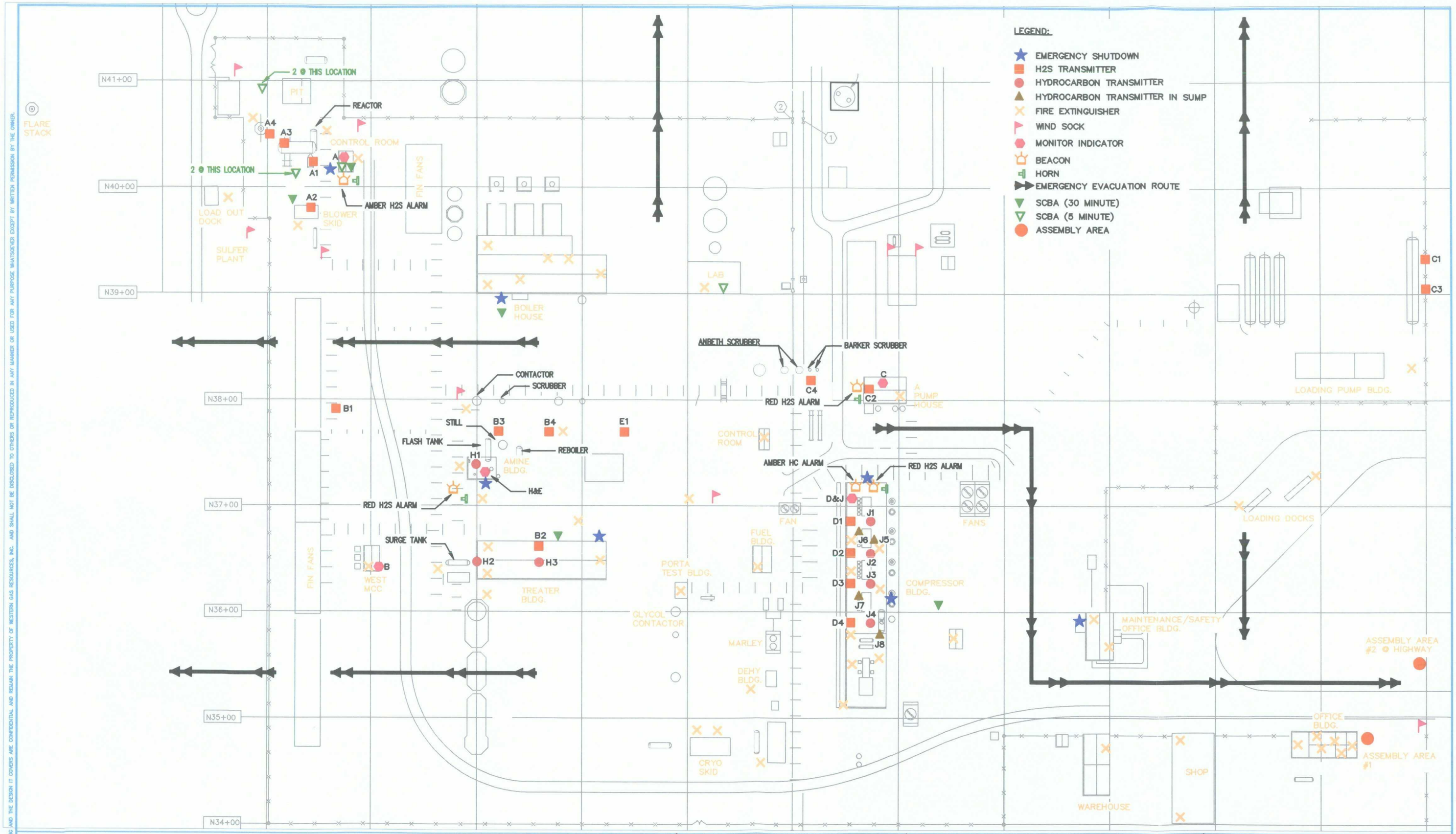
- 933 ft (500 ppm)
- 2042 ft (100 ppm)
- Assembly Area
- Business

*Based on 35 MMscfd @ 3500 ppm H_2S

Anadarko
Petroleum Corporation

APPENDIX D

PLANT DIAGRAM WITH EVACUATION ROUTES & EMERGENCY EQUIPMENT LOCATIONS



NOTES:

XXFD0000 FOUNDATION LOCATION PLAN

REFERENCE DRAWINGS			REVISIONS					
DWG. NO.	TITLE		NO.	DESCRIPTION	BY	DATE	CHK.	DATE	APPR.	DATE
			0	ISSUED FOR INFORMATION	SID	07/10/09	DD	07/10/09	MB	07/10/09

Western Gas Resources, Inc.
1099 18th St, Suite 1200 – Denver, CO 80202–1955 (303)–452–5603

SCALE: 1"=40'-0" | DRAWING CREATION: P.EDGERS 7/13/93 | EDIT DATE: MB 8/17/09 | PLOT DATE: Diederich, Scott 8/18/09

SAN JUAN RIVER PLANT
EMERGENCY ITEMS AND PLACEMENT

SAN JUAN RIVER PLANT
P.O. BOX 70 – KIRTLAND, NM 87417 – (505) 598–6210

FILE NAME: SJPPH2S0200

APE NO. –

DRAWING NUMBER: **SJPP-H2S0200**

REV. 0

8/17/2009 Diederich, Scott

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APPENDIX E

DESCRIPTION OF H_2S MONITORING & ALARM SYSTEMS

A. EMERGENCY SHUTDOWN SYSTEM

There are (8) ESD manual stations located at various points in the facility (Appendix D). **The Plant ESD can be activated at any time at the direction of the Plant Superintendent or Incident Commander and is to be activated based on this Plan after 20 ppm H_2S has been detected in the Plant and efforts to resolve the issue for 15 minutes have failed.**

When anyone of the eight (8) manual stations are activated, the system will be shutdown and the natural gas inlets and outlets will be blocked. The operators are also able to auto close the two (2) main blocks on the incoming gas lines to the Plant. Activating these should allow the Plant to avoid a Level 3 response. Two miles north of the Plant on the Barker Dome line and the Aneth line, there are isolating block valves (manual) that can prevent further gas flow into the Plant pipeline system. Also, further upstream on the Barker and Aneth lines there are additional isolating block valves at 6 miles and 8 miles upstream on their respective lines. These block values furthest upstream, isolate the entire system from the field gathering lines coming into the Plant.

B. PLANT ALARMS, VISIBLE BEACONS & WIND INDICATORS

1. Colored beacons, horns, and wind directions indicators are located in various locations throughout the Plant and are indicated on **Appendix D**.

2. The audible signal for an emergency response and Plant evacuation is a repeating intermittent alarm that sounds at 10 ppm H_2S. The frequency of this intermittent alarm will increase as the concentration of the H_2S release increases. The alarm will become continuous when the concentration of the H_2S release is 20 ppm or higher. At the initial sound of this intermittent alarm, the Plant operator will put on a SCBA and all personnel in the Plant complex shall immediately proceed in a safe manner to the Emergency Assembly Areas as prescribed by the Emergency Action Plan on page 19 of this Plan.

3. A flashing red beacon signifies an H_2S release of 10 ppm and all personnel in the Plant complex shall immediately proceed in a safe manner to the Emergency Assembly Area 1 located east of the main office. If this area is not determined to be safe all will move to Assembly Area 2 which is on road 6500 at the main gate on the east side of the facility. Evacuation routes and Assembly Area 1 are indicated on **Appendix D**.

4. A routine process alarm will cause a horn to sound. This horn is a wavering siren sound that is used to alert the Plant Operator to return to the Control Room. No emergency response or evacuation is required when this siren sounds. Flashing beacons are located throughout the Plant and are utilized to assist the Plant Operator in identifying the location of the Plant alarm or Plant upset. Any beacon colors other than red do not identify an emergency response or evacuation.

5. Wind direction indicators are installed throughout the Plant and at the Plant Superintendent Office Building. At least one wind direction indicator can be seen at any location within the Plant complex, as well as, from any point on the perimeter of the Plant. There are 10 windsocks located in the Plant.

C. GAS DETECTION EQUIPMENT

1. The Plant uses the Industrial Scientific Corporation 4200 Series Remote H_2S Sensors. These sensors are a fixed point monitor to detect the presence of hydrogen sulfide in ambient air. The sensors are connected to Allan Bradley/SLC-500 Rockwell Logic Controllers with an output to Moore Micro-Advantage controllers and from here to the operators PLC. The red flashing beacon is activated at 10 ppm. The horn is activated with an intermittent alarm at 10 ppm and changes to a steady alarm at 20 ppm.

2. The fixed hydrogen sulfide monitors are strategically located throughout the Plant to detect an uncontrolled released of hydrogen sulfide. The SRU has 4 sensors labeled A-1 through A-4. The treating plant area has 4 sensors labeled B-1 through B-4. There are two sensors at the east side of the Plant labeled C-1 and C-3. There is one sensors located at the liquid stabilizer skid labeled E-1. This is the center of the process area. The compressor building has eight methane sensors, these shut the compressors down at 50% LEL. The compressor building also is equipped with fire eyes that will also shut the units down. The Plant operators are able to monitor the ppm level of H_2S of all the Plant sensors on their control/monitor PLC located in the operators building. These sensors are all located on the plot plan on **Appendix D**. These sensors all have to be acknowledged and will not clear themselves. This requires immediate action for any occurrence or malfunction. The Plant sensors are calibrated quarterly.

3. Hand held gas detection monitors are available to plant personnel to check specific areas and equipment prior to initiating maintenance or work on the process or equipment. There are 2 handheld and 9 personal monitors that are used by individuals for special projects and field work. The hand held gas detection devices are BW Technologies 4-gas detectors. The detectors have sensors for oxygen, LEL (explosive hydrocarbon atmospheres), hydrogen sulfide, and carbon dioxide. They indicate the presence 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 hand held and personal monitors have digital read outs of H_2S ppm concentration.

D. RESPIRATORS

1. The Plant has 30 minute Self-Contained Breathing Apparatus (SCBA) respirators and 5 minute escape packs strategically located throughout the Plant.

2. The respirator containers are identified in the process area and the locations are identified on **Appendix D.**

3. All Plant personnel with the exception of the Plant Operations Specialist are certified to use the SCBA respirators.

E. FIRE FIGHTING EQUIPMENT

1. The Plant personnel are trained only for insipient stage fire fighting.

2. The fire extinguishers located in the Plant process areas, compressor buildings, process buildings, and company vehicles are typically a 20# Ansul dry chemical fire extinguisher. **See Appendix D.**

3. The Plant does not have a fire water system, but only a utility water system that is not designed for fire fighting.

APPENDIX F

H_2S CONTINGENCY PLAN FLOW DIAGRAM

LEVEL 1 RESPONSE

H_2S DETECTED GREATER THAN 10 PPM
&/OR INTERMITTENT ALARM SOUNDS/FLASHING RED BEACONS ACTIVATED

- **OPERATORS PUT ON RESPIRATORS (30 minute SCBA) TO ASSESS & RESOLVE PROBLEM**
  (Operators are allowed under OSHA to work for up to 8 hours in 10ppm H2S environment)
- **ALL OTHERS EVACUATE TO ASSEMBLY AREA 1**
- **NOTIFY PRAXAIR & BHP MINES**

AT ASSEMBLY AREA 1

- **MONITOR H_2S LEVELS AT ASSEMBLY AREA**
- **OPERATORS WILL SET UP SECONDARY ENTRY TEAMS W/ 30-MIN SCBA TO TRY TO RE-ENTER AND RESOLVE**
- **RE-ENTRY WITH SCBA WILL OCCUR IN 15 MINUTE SHIFTS AT THE DIRECTION OF THE IC UNTIL IC DETERMINES PROBLEM HAS BEEN RESOLVED OR ESD IS ACTIVATED)**

CALL 911
IF INJURY OR DEATH
FOR EMERGENCY ASSISTANCE

ONCE RESOLVED & MONITORED LEVELS IN PLANT ARE LESS THAN 10 PPM RETURN TO PLANT

IF H_2S LEVELS AT ASSEMBLY AREA 1 EXCEED 10PPM

EVACUATE TO ASSEMBLY AREA 2

NOTIFY NMOCD WITHIN ONE HOUR MAKE AGENCY REPORTS AS NECESSARY

AT ASSEMBLY AREA 2

- **MONITOR H_2S LEVELS AT ASSEMBLY AREA**
- **FOLLOW LEVEL 2 RESPONSE ACTIONS**

NOTIFY LEPC AND OTHER PUBLIC OFFICIALS AND EMERGENCY SUPPORT SERVICES

LEVEL 2 RESPONSE

H_2S LEAK DETECTED GREATER THAN 20 PPM &/ CONTINUOUS ALARM SOUNDS/FLASHING RED BEACONS ACTIVATED

- **OPERATORS PUT ON RESPIRATORS (30-MIN SCBA) TO ASSESS & RESOLVE PROBLEM**

(Operators have 15 minutes to resolve after which they must evacuate to Assembly Area #2 and begin rotational entry to Plant)

- **ALL OTHERS EVACUATE TO ASSEMBLY AREA 2**
- **EVACUATE PRAXAIRE**
- **NOTIFY BHP MINES, ALL OTHER BUSINESSES IN THE 100 & 500 PPM ROE.**

AT ASSEMBLY AREA #2

- **MONITOR H_2S LEVELS AT ASSEMBLY AREA**
- **IF MONITORED LEVELS EXCEED 10 PPM EVACUATE TO ASSEMBLY AREA 3 (KIRTLAND ELEMENTARY SCHOOL PARKING LOT)**
- **RE-ENTRY WITH SCBA WILL OCCUR IN 15 MINUTE SHIFTS AT THE DIRECTION OF THE IC UNTIL IC DETERMINES PROBLEM HAS BEEN RESOLVED OR ESD IS ACTIVATED)**

CALL 911
IF INJURY OR DEATH
FOR EMERGENCY ASSISTANCE

ONCE RESOLVED & MONITORED LEVELS IN PLANT ARE LESS THAN 10 PPM RETURN TO PLANT

IF CONSTANT ALARM SOUNDS FOR 15 MINUTES

- **ACTIVATE PLANT EMERGENCY SHUT DOWN (ESD)**
- **ACTIVATE FULL H_2S PLAN WITH NOTIFICATIONS & REPORTING (FOLLOW LEVEL 3 RESPONSE)**

NOTIFY NMOCD WITHIN <u>ONE HOUR</u>
MAKE OTHER AGENCY REPORTS AS PER H_2S PLAN

LEVEL 3 RESPONSE

WORST CASE SCENERIO AND/OR CATASTROPHIC RELEASE FROM FIRE AND/OR EXPLOSION

- **ALL PERSONNEL EVACUATE TO ASSEMBLY AREA 2 IF MONITORED LEVELS ARE LESS THAN 10 PPM**
- **EVACUATE PRAXAIR**
- **IF MONITORED LEVELS AT ASSEMBLY AREA 2 ARE GREATER THAN 10 PPM; EVACUATE TO ASSEMBLY AREA 3 (ELEMENTARY SCHOOL PARKING LOT)**
- **IMPLEMENT FULL H_2S PLAN WITH ALL NOTIFICATIONS**
- **NOTIFY LOCAL FIRE, POLICE AND EMERGENCY SERVICES**

ONCE RESOLVED & MONITORED LEVELS IN PLANT ARE LESS THAN 10 PPM RETURN TO PLANT

IF CONSTANT ALARM SOUNDS FOR 15 MINUTES

- **ACTIVATE PLANT EMERGENCY SHUT DOWN (ESD)**
- **RE-ENTRY WITH SCBA WILL OCCUR IN 15 MINUTE SHIFTS AT THE DIRECTION OF THE INCIDENT COMMANDER (IC) UNTIL IC DETERMINES PROBLEM HAS BEEN IDENTIFIED OR REPAIRED**

APPENDIX G

EMERGENCY CALL LIST

SAN JUAN GAS PLANT EMERGENCY CALL LIST

ENTITIES WITH IN THE 100- PPM ROE

Name	Address	**Contact Person**	Phone Number
Riverview Golf Course	583 County Rd 6100 Kirtland, NM 87417		505-598-0140
BHP Mining	16 Miles West of Farmington, NM San Juan County Road RD6800	Dave Hales, Safety Manager	505-598-2311 505-486-1612
El Paso Natural Gas	81 County Road 4900 Bloomfield, NM 87413		800-334-8047 (24 hr)
Mid-America Pipeline Co. (Enterprise)	3621 East Main Farmington, NM 87402		505-599-3276 505-599-3277 800-546-3482 (24 hr)
Praxair	101 County Road 6500 Bloomfield, NM 87417		505-598-0549 800-598-0549 (24 hr)
XTO Energy	2700 Farmington Ave. Farmington, NM 87401		505-324-1090
San Juan College West*	69 County Road 6500 Kirtland, NM 87417		505-598-5897

*Note: The San Juan College West is not within the 100-ppm ROE but is approximately 468 ft outside the 100-ppm radius of exposure. Due to the near proximity, the San Juan College West will be included in this contingency plan.

ENTITIES WITH IN THE 500- PPM ROE

Name	Address	**Contact Person**	Phone Number
Praxair	101 County Rd 6500 Bloomfield, NM 87417		505-598-0549 800-598-0549 (24 hr)

A. COMPANY INTERNAL NOTIFICATIONS
SAN JUAN RIVER PLANT PERSONNEL

NAME	TITLE	OFFICE No.	CELLULAR No.	HOME No.
Kent McEvers	Plant Superintendent	505-598-5601 ext. 15523	505-860-7208	505-326-4054
Rick Fetch	Plant Foreman	505-598-5601 ext. 15522	505-947-2416	505-324-6441
Arlyn Thorson	Maintenance Foreman	505-598-5601 ext. 15524	505-947-2417	505-326-6718
Bob McClain	Plant Operator	505-598-5601 ext. 15542	505-330-1966	505-325-8715
Brenda Wilson	Sr. Operations Specialist	505-598-5601 ext. 15521		505-325-6525
Andrew Adame	Plant Operator			505-360-7051
Chee Anderson	Plant Operator			505-326-1397
Glen Daniell	Plant Operator		505-860-7483	505-632-9705
Curtis Day	Plant Operator			505-801-4404
Johnny Foster	Plant Operator			505-801-5062
Frank Hale	Plant Operator		505-860-5897	505-598-9091
Bobby James	Plant Operator			505-598-5314
Melvin Jim	Plant Operator			505-368-4733
Charlie Barr	Mechanic		505-324-1100	505-330-2614
Jerry Darnell	Fieldman			505-632-2722
Ted Francis	Fieldman			505-564-2999
Kent Galyon	Fieldman		505-860-1875	970-565-1006
William Golbe	Mechanic		505-215-2517	505-598-9716
Charlie Medders	Mechanic		505-947-7039	505-598-5573
Corwyn Yazzie	Mechanic		505-793-2567	505-327-3286

B. COMPANY INTERNAL NOTIFICATIONS
CORPORATE PERSONNEL – THE WOODLANDS, TEXAS

NAME	TITLE	OFFICE No.	CELLULAR No.	HOME No.
Mario Reyes	Operations Mgr	832-636-3234	713-816-5006	281-360-1084
Mike Ross	General Mgr	832-636-3431	832-381-0923	281-296-0385
Tony Marques	Engineering Mgr	832-636-7368		
Chuck Johnson	Commercial Develop. Mgr	832-636-7119		

David Ponikvar	S&H Mgr	832-636-3414	281-732-7887	281-374-8334
Julie Betik	Env & Reg Anal	832-636-2609	281-793-7705	281-320-2066
Eric Weaver	EHS Analyst	432-684-2808	432-413-2494	432-756-3493
Jerry Adams	EHS Mgr	832-636-8304	281-731-5931	281-363-4693
Mike Gray	EHS Director	832-636-2454	281-415-6964	936-271-9869

C. COUNTY & LOCAL LAW ENFORCEMENT

AGENCY	DAYTIME / 24 HR. PHONE No.
Law Enforcement Dispatch	**911**
San Juan County Sheriff	505-334-6622
Farmington Police	505-327-0222
Navajo Tribal Police	505-368-4333
Ute Mountain BIA	303-565-8471
New Mexico Highway Patrol	505-325-7547
New Mexico FBI	505-325-8631
San Juan County LEPC	505-334-1180
BLM Farmington Office	505-599-8900

D. MEDICAL SERVICES

AGENCY	EMERGENCY SERVICE	PHONE No.
Emergency Dispatch	Fire & Ambulance	**911**
San Juan County Fire Marshall	Fire Department	505-334-9431
San Juan Regional Medical Center	Hospital	505-325-5011
Emergency Trauma Lifeline Service - Farmington		505-325-5602
Dr. Robert C. Rhein	Doctor	505-327-4867
Dr. Ken Crider	Doctor	505-327-4439
San Juan Air Care Farmington	Air Ambulance	800-452-9990

E. FEDERAL NOTIFICATIONS

AGENCY	DAYTIME / 24 HR. PHONE No.
National Response Center	800-424-8802
EPA Region 8	800-227-8917
OSHA	800-321-6742
OSHA Area Office New Mexico	505-827-4230
DOT	800-424-8802
BLM Farmington	505-599-8900

F. NEW MEXICO STATE NOTIFICATIONS

AGENCY	DAYTIME / 24 HR. PHONE No.
New Mexico One Call	800-321-2537
New Mexico Oil Conservation Division	505-334-6178
New Mexico Environmental Department	505-476-4300
New Mexico Emergency Response Commission	505-476-9681
New Mexico Public Utilities Commission	505-490-2375
New Mexico State Patrol	505-325-7547

G. CONTRACTORS

CONTRACTOR	CONTACT	OFFICE No.	CELLULAR No.
Contractors - General			
IMI Construction		505-325-5005	
Weeminuche Construction	Benton Dean	970-565-7430	

Service Companies Supplies			
Noels Inc		505-327-3375	
ESSO Pipe & Supply		505-325-7568	
Air Gas		505-325-6660	
DXP	Steve Martinez	505-326-3333	
DeWees Tool & Supply		505-326-5491	
Emergency Response & Safety Services			
ChemTrec		800-424-9300	
Hands On Safety Service		505-325-4218	
Electrical Services			
Four Corners Electric		505-325-1459	
B&G Electric		505-325-7511	

H. OTHER PRODUCERS

COMPANY	CONTACT	OFFICE No.	CELLULAR No.
Burr Oil & Gas	Deana	505-325-1701	
Conoco/Burlington	Jerry Lodermilk		505-320-0452
	Renae	505-330-2946	
DJ Simmons Company	John Byrom	505-326-3753	
Elm Ridge Resources	Office	505-334-3476 ext 210	
	Terry Lindeman	972-749-6941	
El Paso Natural Gas		505-632-6000	
	Emergency Number	800-334-8047	
Nacogdoches Oil & Gas	Aaron	936-697-3750	
Resolute Natural Resources	Office	970-564-5200	
	Montezuma Creek	435-651-3682	
	Roger Atcitty		435-444-0001
Rim Southwest Corporation	Thelma Dee	435-651-4391	
XTO Energy Inc.	Office	505-324-1090	

	John Weaver		505-330-3278

I. OTHER RESOURCES

COMPANY	OFFICE No.	Website
National Weather Service Albuquerque, New Mexico	505-243-0702	
Farmington Four Corners Regional Airport – National Weather Service		*http://weather.noaa.gov/weather/current/KFMN.html*
Additional Weather Sites		www.accuweather.com www.wunderground.com www.weather.com

APPENDIX H

H_2S PLAN DISTRIBUTION LIST

New Mexico Oil & Gas Conservation Division

New Mexico Environment Department

New Mexico Department of Public Safety (Farmington Office)

New Mexico Department of Public Safety (State Office)

Farmington Fire Department

San Juan County Fire Department

San Juan County Sheriff Department

San Juan County Emergency Manager

San Juan County LEPC

Farmington Police

San Juan Regional Medical Center

San Juan Plant Office

Anadarko Petroleum Corporate Office