

WINDFALL OIL & GAS, INC
CONTROL & DISPOSAL PLAN

FOR ZELMAN #1 INJECTION WELL
BRADY TOWNSHIP, CLEARFIELD COUNTY
PENNSYLVANIA

AUGUST 14, 2015

PREPARED BY
FOX AND FOX, INC.
RONALD L. FOX
PROFESSIONAL LAND SURVEYOR

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INTRODUCTION

This document has been prepared and revised to help provide effective and efficient response to emergencies and accidents for any situation dealing with public health, safety and the environment. As stated in the Commonwealth's water regulations Chapter 87.55, the Department of Environmental Protection requires firms engaged in industrial activities that include plans for the control and disposal methods and practices utilized by the operators for the disposal of fluids and waste water, transportation, storage, use application or disposal of pollutants to take necessary measures to prevent the substance from directly or indirectly reaching the waters of the Commonwealth, through accident, carelessness, maliciousness, hazards of weather or from another cause. The Department may require the firm to submit a report or plan for the activities described.

PREPARER'S EXPERIENCE

The preparer of this plan, Ronald L. Fox, is a Professional Land Surveyor licensed in the state of Pennsylvania. He is a graduate of the Educational Institute of Pittsburgh and has had past experience preparing various permit plans for gas and oil drilling operations throughout western Pennsylvania over the past 25 years.

DESCRIPTION OF THE OPERATIONS

The facility will be permitted as a Class II Type D injection well and is located in Brady Township, Clearfield County. The well will be used to dispose of produced gas well fluids into the Chert/Oriskany formation at a depth of 7306 feet below ground level.

The business is named Windfall Oil & Gas, Inc.

The principal business address is 63 Hill Street, Falls Creek, PA 15840

All of the following phone numbers could be contacted on a 24 hour basis. The office is open on a normal work day – five days a week.

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Michael G. Hoover(Em. Coordinator) 814-771-9686 cell
Karen Hoover (Alternate) 814-771-8318 cell

The existing sites are located on the east side of SR Route 4009 in Brady Township. Gas and oil leases are developed slowly over a number of years as producing wells lose their production and new wells are systematically brought online. The new wells are usually drilled at an approximate spacing of 500 feet from other wells with the new collection lines usually connected to the existing network to reach the storage tank batteries or pipelines accessible from the existing roadways and highways. Maps of the wells and tanks will be provided when needed.

POLLUTION PREVENTION MEASURES

1. The well location construction for drilling purposes will be in accordance with a site specific Erosion and Sediment control plan designed by Environmental Wells Development.
2. Produced fluids stored for disposal will be in epoxy-lined steel tanks. All operations will be conducted on a concrete pad with retaining walls to serve as secondary containment. The dike will be designed to contain a minimum of 1.5 times to stored fluid volume.
3. The discharge manifold for unload for unloading of the vacuuu trucks will be designed so any discharge from hoses will be contained in a concrete sump and pumped to tanks battery.
4. All piping will be pressure tested prior to operation.
5. A high/low pressure kick out switch will be installed on the injection pump.
6. A relief valve on the pump discharge will be piped to the stored fluids containment.
7. A back pressure valve will install at the well head,
8. A fence will be erected around the facility to protect from third party acts.
9. A visual inspection of the site will be made daily to insure no environmental problems exist.
10. A quarterly inspection will be made of the tanks, filters, pumps, piping and wellhead to verify integrity.

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The chemicals or additives used by the drilling operation are covered under the PPC plan of the well service hired to assist the drilling operations. The known chemicals will be used in the pretreatment phase of the operation:

Oxygen Scavenger	Fe Ox Clear
Surfactant/Corrosion Inhibitor	Alpha 3207
Corrosion Inhibitor	Alpha 2278W

See the final Appendix pages at the end of this report for the Material Safety Data Sheets for these three products.

Common chemical absorbent materials are kept on stock on site as needed to cover spills and could be used in similar situations in the field. Containers are also available for larger volume fluid containment and storage including extra storage tanks and pipelines and hoses. Most of the product flows in the field could quickly be controlled by shutting down the electric pumps that are usually used to transport the fluids. Hand valves are installed in most of the pipelines and the ones at the well sites can be padlocked.

PERSONNEL TRAINING

Training in the normal operations of the production is an ongoing process where the work tasks are often being accomplished with a two-man crew with constant interaction or communication between the employees and by their managers by cell phones. The responsible officials shall be trained in implementation of the Sediment Control plans, construction techniques for high pressure piping and emergency procedures in case of spillage of pollutants.

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WASTE DISPOSAL / REUSE METHODS

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“List the method of disposal or reuse for each waste generated, including produced fluids, drill cuttings or residual wastes. Include the name and address of the off-site disposal facility(ies) where applicable.”

Waste products of the drilling operation are the drill cuttings that are collected with the drilling fluids returning up the well hole during the period

when the wells are drilled. The drilling fluids are directed to the cuttings pits that are excavated and the lined with an approved plastic liner before the drilling starts. After the drilling is completed or if the pit is filled to capacity, the fluids portion of the mix is pumped to tank trucks and hauled to the treatment facility. The remaining drill cuttings are sealed and then covered with the backfilling process.

The main waste product also transported to the injection operation is the salt brine water that is usually separated from the crude oil mixture and gas produced with each well site. The salt water is removed by a separator unit usually installed at each well site with a separate line running to a storage tank set in place for that purpose. The water levels in each tank are checked regularly and are then transported to an offsite injection facility by hired tank trucks.

POLLUTION INCIDENT RESPONSE

All company-owned equipment is available for cleanup operations and usually parked at the drilling sites. The construction is moved around the local well sites and would always be available when needed. The response times would depend on the location of the equipment and usually take an hour to respond. The employees are familiar with the operation of the mobile equipment and usually available or have made their whereabouts known when not available on an as-needed basis.

Appendix III at the end of this plan includes an extensive list of equipment often needed quickly in an emergency situation. These pieces should be kept in good repair for the next incident.

Commercial cleanup contractors are available on a call-as-needed basis with a quick response of less than one day's time. The company names are kept on file with Windfall Oil & Gas, Inc., and are listed below.

The short list of necessary phone numbers are listed below.

Michael Hoover (Em. Coordinator)
Karen Hoover (Alternate)

814-771-9686 cell
814-771-8318 cell

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Southwest Regional Office (Pittsburgh) after-hours	412-442-4000
EPA Emergency Response Center	800-424-8802
Fish & Boat Comm. Regional Office (Bellfonte)	412-359-5250
(Lamar)	717-726-6056
State Emergency Management Agency	800-424-7352
State Emergency Response Commission	717-651-2001
Clearfield County Emergency Management Agency	814-765-5357

IMPLEMENTATION

A permanent identification sign will be installed at the entrance to the facility. The sign shall include the facility name, company name, permit number and the 24 hour emergency number.

Although all employees are much a part of the general preparedness necessary for any emergency response to the events covered by this plan, one or two individuals have been designated with the responsibility for developing and implementing this plan.

Appendix I and II at the end of this plan includes a list of the emergency coordinator's duties, responsibilities and prevention practices often needed quickly in an emergency situation.

In the event of an imminent or actual emergency, the emergency coordinator should activate alarm systems, notify emergency response agencies listed in this plan, identify the problems, assess the health or environmental hazards and take all reasonable measures to stabilize the situation. The emergency coordinator should also be responsible for follow-up activities after the incident such as treating, storing or disposing of residues and contaminated soil, decontamination and maintenance of emergency equipment and submission of any reports.

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LAW ENFORCEMENT

Clearfield Borough
Chief Jeff Rhone
14 South Front Street
Clearfield, PA 16830
Bus: (814) 765-7819
Bus Fax: (814) 765-9507

Clearfield County Constables Association
President Lou Radzysinski
PO Box 124
Beccaria, PA 16616
Bus: (814) 378-6019

Clearfield County Sheriff
Sheriff: Chester Hawkins
230 East Market Street
Clearfield, PA 16830
Bus: (814) 765-2641
Bus Fax: (814) 765-5915

Curwensville Borough
Chief: Robert Deluccia
900 Susquehanna Avenue
Curwensville, PA 16833
Bus: (814) 236-3858
Bus Fax: (814) 236-3379

Decatur Township
Chief: Randy Killion
575 Fairview Road
Osceola Mills, PA 16666
Bus: (814) 339-6772
Bus Fax: (814) 339-6820

DuBois City Police
Assistant Chief: Ronald LaRontonda
PO Box 408
16 West Scribner Avenue
DuBois, PA 15801
Bus: (814) 375-2702
Bus Fax: (814) 375-2702

Houtzdale Regional
706 Brisbin Street
Houtzdale, PA 16651
Bus: (814) 378-7676
Fax: (814) 378-7911

Lawrence Township
Chief Eric Quigley
PO Box 250
1215 Hall Street
Hyde, PA 16843
Bus: (814) 765-1648
Bus Fax: (814) 765-3675

Morris-Cooper Regional
Chief Todd Lombardo
PO Box 186
1183 Oak Grove Road
Allport, PA 16921
Bus: (814) 342-5621
Bus Fax: (814) 342-5810

Pennsylvania State Police-Clarion
209 Commerc
Clarion, PA 16214
Bus: (814) 226-1710

Pennsylvania State Police-Clearfield
147 Doe Hill Road
Woodland, PA 16881
Bus: (814) 857-3800

Pennsylvania State Police-DuBois
101 Preston Way
Falls Creek, PA 15840
Bus: (814) 371-4652

Pennsylvania State Police-Philipsburg
Philipsburg, PA 16866
Bus: (814) 342-3370

Pennsylvania State Police-Punxsutawney
445 North Findley
PO Box 445
Punxsutawney, PA 15767
Bus: (814) 938-0516

Pennsylvania State Police-Ridgeway
HCR 1 Box 106
Ridgeway, PA 15853
Bus: (814) 776-6136

Sandy Township
Assistant Chief: Ron Fairman
1094 Chestnut Avenue Ext.
DuBois, PA 15801
Bus: (814) 371-4220
Bus Fax: (814) 371-2573

Treasure Lake Security Department
Chief: James Jeffers
13 Treasure Lake
DuBois, PA 15801
Bus: (814) 371-0711
Bus Fax: (814) 375-9072

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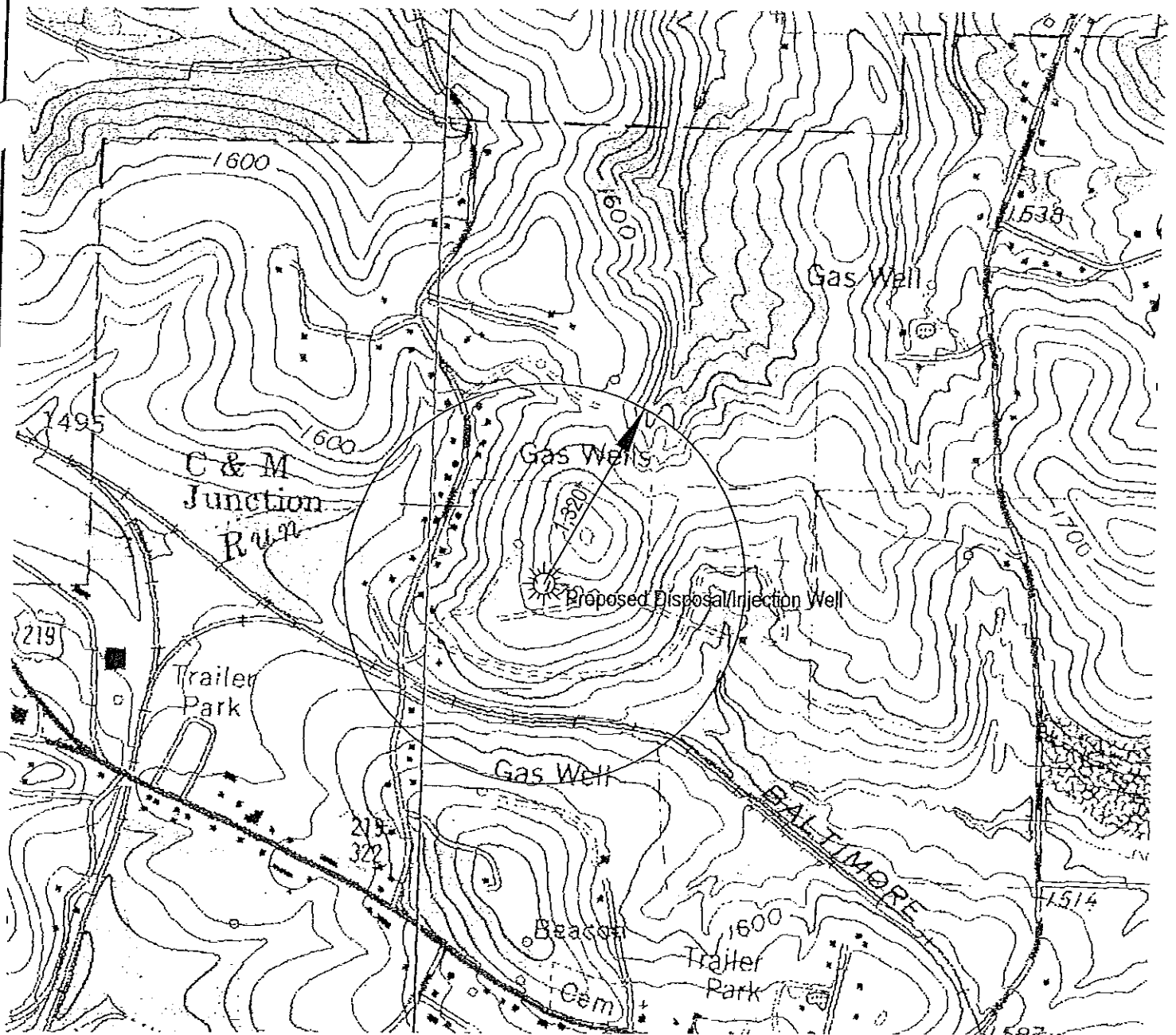
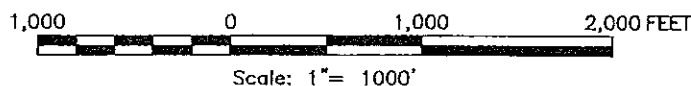


Exhibit #1
Disposal Well Location Map
With 1,320' Offset Radius Noted
USGS Luthersburg & Dubois Quadrangles

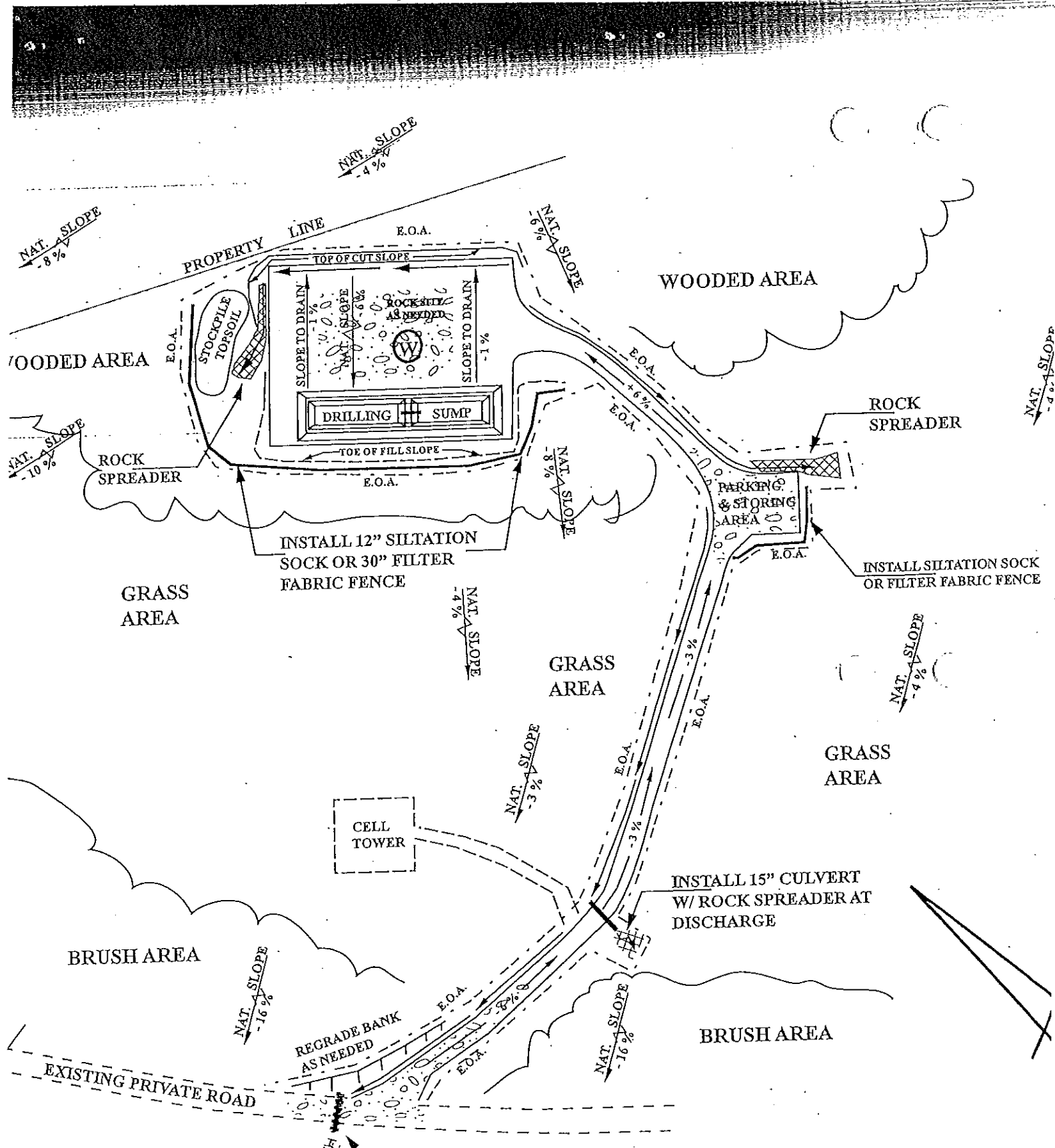
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RESOURCE MANAGEMENT SERVICES, INC.
 ENVIRONMENTAL ENGINEERING and GPS/GIS SERVICES
 65 FENTON ROAD
 INDIANA, PENNSYLVANIA 15701
 724-465-8556

DRAWN BY	JBG	DATE	09/21/11
APPROVED BY	RFB		09/21/11
SCALE:	1"=1000'		
DRAWING FILE:			
GPS FILE:			

ZELMAN DISPOSAL WELL
 Windfall Oil and Gas
 Brady Twp., Clearfield Co., Pennsylvania



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APPENDIX I
EXAMPLES OF AN EMERGENCY COORDINATOR'S DUTIES
AND RESPONSIBILITIES

Whenever there is an imminent or actual emergency situation, the emergency coordinator must immediately:

1. Activate facility alarms or communications systems, where applicable, to notify facility personnel; and
2. Notify local emergency response agencies including the Department.

Whenever there is an emission or discharge, fire, or explosion, the emergency coordinator must immediately identify the character, exact source, amount, and areal extent of emitted or discharged materials. He may do this by observation or review of records and, if necessary, by chemical analysis.

Concurrently, the emergency coordinator must assess possible hazards to human health or the environment that may result from the emission or discharge, fire, or explosion. This assessment must consider both direct and indirect effects of the emission, discharge, fire, or explosion.

If the emergency coordinator determines that the installation has had an emission, discharge, fire, or explosion which would threaten human health or the environment, he must immediately notify the applicable local authorities including the county emergency management agency and indicate if evacuation of local areas may be advisable; and immediately notify the Department in accordance with Appendix IV; the National Response Center; and the Pennsylvania Emergency Management Agency; and report the following:

- a. Name of the person reporting the incident
- b. Name and location of the installation
- c. Phone number where the person reporting the spill can be reached
- d. Date, time, and location of the incident
- e. A brief description of the incident, nature of the materials or wastes involved, extent of any injuries, and possible hazards to human health or the environment
- f. The estimated quantity of the materials or wastes spilled, and
- g. The extent of contamination of land, water, or air, if known.

When there is a release from an aboveground storage tank which threatens the water supply of downstream users, these downstream users (on the Downstream Notification List) must be notified within 2 hours of the release. Priority for notification is by closest proximity to the release site.

During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fire, explosion, emission, or discharge do not occur, reoccur, or spread to other materials or wastes at the installation. These measures shall include where applicable, stopping manufacturing processes and operations, collecting and containing released materials or wastes, and removing or isolating containers.

If the installation stops operations in response to a fire, explosion, emission, or discharge, the emergency coordinator must ensure that adequate monitoring is conducted for leaks, pressure

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buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

Immediately after an emergency, the emergency coordinator, with Departmental approval, must provide for treating, storing, or disposing of residues, contaminated soil, etc., from an emission, discharge, fire, or explosion at the installation.

The emergency coordinator must insure that in the affected areas of the installation, no material or waste incompatible with the emitted or discharged residues is processed, stored, treated, or disposed of until cleanup procedures are completed; and, all emergency equipment listed in the plan is cleaned and fit for its intended use before operations are resumed.

Within 15 days after the incident, the installation must submit a written report on the incident to the Department. The report must include the following:

- a. Name, address, and telephone number of the individual filing the report
- b. Name, address, and telephone number of the installation
- c. Date, time, and location of the incident
- d. A brief description of the circumstances causing the incident
- e. Description and estimated quantity by weight or volume of materials or wastes involved
- f. An assessment of any contamination of land, water, or air that has occurred due to the incident
- g. Estimated quantity and disposition of recovered materials or wastes that resulted from the incident, and
- h. A description of what actions the installation intends to take to prevent a similar occurrence in the future.

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**APPENDIX II
POLLUTION INCIDENT PREVENTION PRACTICES**

Pollution incident prevention practices can be divided into the following four categories: prevention, containment, mitigation and ultimate disposition. The listings below provide specific examples of each category.

1. PREVENTION

Visual Observations of:

- Storage facilities
- Transfer pipelines
- Loading and unloading areas
- Waste handling and storage areas

Detailed Inspections of:

- Pipes, pumps, valves, and fittings for leaks
- Tanks for corrosion (internal and external)
- Dry material or waste stockpiles for windblowing
- Tanks supports or foundations for deterioration
- Walls for stains
- Drainage ditches and areas around old tanks for evidence of spilled materials
- Primary or secondary containment for deterioration
- Housekeeping practices
- Shipping containers for damage
- Material or waste conveyance systems for leaks, spills, or overflows
- Integrity of stormwater collection systems
- Waste storage, treatment, or disposal sites for leaks, seeps, and overflows

Monitoring

- Liquid-level detectors
- Alarm systems
- Pressure and temperature gauges
- Analytical testing instrumentation
- Pressure drop shut-off devices
- Flow meters
- Valve positioning indicators
- Equipment operational lights
- Excess-flow valves
- Automatic runoff diversion devices
- Routine sample collection (including groundwater and monitoring wells)
- Redundant instrumentation
- Records (all monitoring results/findings)

Nondestructive Testing

- Hydrostatic pressure tests
- Acoustical emission tests
- Radiographic tests
- Magnetic particle tests
- Liquid Penetration
- Records of tank wall thicknesses and results of all testing

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2. CONTAINMENT

Secondary Containment

- Dikes
- Curbs
- Depressed areas
- Storage basins
- Sumps
- Drip pans
- Liners
- Double piping
- Sewer collection systems

Flow Diversion

- Trenches
- Drains
- Graded pavement
- Grating
- Overflow structures
- Sewers
- Culverts

Vapor Control

- Water spray
- Vapor space
- Vacuum exhaust

Dust Control

- Hoods
- Cyclone collectors
- Bag-type collectors
- Filters
- Negative-pressure systems
- Water spraying

Sealing

- Foamed plastic compounds used for plugging leaks in tanks

3. MITIGATION

Physical Clean-up

- Brooms
- Shovels
- Plows

Labeling

- U.S. DOT or National Fire Protection Association's (NFPA) designation on tanks and pipelines
- Color coding of tanks and pipelines
- Warning signs

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Vehicle Positioning

Physical barriers (e.g., wheel chocks)
Underlying drains
Designated loading and unloading areas

Covering

Tarpaulins over outdoor dry waste or material stockpiles
Buildings or roofs over outside processes or stockpiles
Vegetation, rock, or synthetic covering on surface impoundments

Pneumatic and Vacuum Conveying

Loading and unloading by air pressure or vacuum
Safety relief valves
Dust collectors
Air slide trucks and rail cars

Preventive Maintenance

Periodic inspections
Periodic testing to determine soundness of system
Identification of equipment and systems that need to be upgraded, repaired, or replaced
Appropriate adjustment, repair, or replacement of parts
Complete recordkeeping of all repairs, upgrading, replacements, and adjustments; and all testing findings/results after system modifications were made

Good Housekeeping

Neat and orderly storage of chemicals
Prompt removal of small spillage
Regular garbage pickup and disposal
Maintenance of dry, clean floors by use of brooms, vacuum cleaners, etc.
Maintenance of proper spacing for pathways and walkways between containers and drums
Stimulation of employee interest in good housekeeping

Employee Training Programs

Materials Inventory Systems
Material Safety Data Sheets

Mechanical Clean up

Vacuum systems
Pumps
Pump/bag system

Chemical Clean up

Sorbents

activated carbon
polyurethane and polyolefin spheres, beads, and foam belts
amorphous silicate glass foam
clay
sawdust

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Gelling agents

polyelectrolytes
polyacrylamide
butylstyrene copolymers
polyacrylonitrile
polyethylene oxide

Foams

rockwood alcohol
protein
fluoroprotein
aqueous film-forming foam
polar liquid foam
surfactant-based foam

Volatilization

distillation
stripping
evaporation

Carbon absorption
Coagulation/precipitation
Neutralization
Ion exchange
Chemical oxidation
Biological treatment

4. **ULTIMATE DISPOSITION**

Thermal oxidation
Land disposal
Recycle
Recover
Reuse
Detoxification

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**APPENDIX III
EXAMPLES OF EMERGENCY EQUIPMENT**

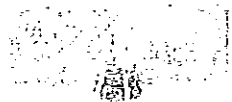
Special equipment is often required and may be needed quickly in an emergency. Examples include the following:

Aerial ladder	Forklift
Absorbant materials	Fuel Supply
Accident investigation kit	Geiger counter
Air compressor	Generator trailer
Air supply, for breathing equipment	Heaters, portable
Backhoe	Helicopter
Basket stretchers	Hydraulic spreader jacks
Bulldozer	Inhalator
Bullhorn	Jack hammer
Camera/photo equipment	Jacks
Cellar pump	Ladder Truck
Chain hoist	Lighting equipment, portable
Chain saw	Medical supplies
Chemical neutralizers	Metal saw (power)
Crane	Public address system
Cutters (power)	Radio
Decontamination equipment with a clean Resuscitator water supply (70-80°F)	Resuscitator
Ejector - smoke	Sand supply
Elevated platform truck	Self-contained breathing apparatus (SCBA)
Explosimeters	Self-contained underwater breathing apparatus (SCUBA)
Fans	Submersible pump
Firefighting equipment	Tank truck
First aid supplies	Tool box
Foam concentrate supply	Welding/cutting equipment
Foam generators	Water pump

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CLEARWATER™
Engineered Chemistry™

Engineered Chemistry™

Material Safety Data Sheet

ALPHA 2278W

HEALTH	2
FLAMMABILITY	1
REACTIVITY	0
PHYSICAL HAZARD	B

1. Product and Company Identification

Material name	ALPHA 2278W
Patent Number	Not available
Revision date	July-10-2008
Version No.	1
CAS #	Mixture
Product use	Corrosion Inhibitor
Manufacturer information	Weatherford Engineered Chemistry 4420 South Flores Road Elmendorf, TX 78112 US CHEMTREC 1-800-424-9300/703-527-3887
Emergency Supplier information	CHEMTREC 1-800-424-9300/703-527-3887 Clearwater International L.L.C. 4420 South Flores Rd. Elmendorf, TX 78112 US

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2. Hazards Identification

Emergency overview	WARNING May be ignited by heat, sparks or flames. Prolonged exposure may cause chronic effects. This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. Components of the product may be absorbed into the body by inhalation, ingestion and through the skin.
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Eyes	Do not get this material in contact with eyes.
Skin	Do not get this material in contact with skin.
Inhalation	Prolonged Inhalation may be harmful. Do not breathe dust/fume/gas/mist/vapors/spray.
Ingestion	May cause delayed lung damage. Do not ingest. Components of the product may be absorbed into the body by ingestion.
Target organs	Central nervous system. Eyes. Lungs. Respiratory system. Skin.
Chronic effects	Shortness of breath. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. May cause delayed lung damage.
Signs and symptoms	Discomfort in the chest. Shortness of breath. Narcosis. Decrease in motor functions. Behavioral changes. Cough.
Potential environmental effects	May cause long-term adverse effects in the environment.



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3. Composition / Information on Ingredients

Components	CAS #	Percent
Ethylene Glycol	107-21-1	30 - 60

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists.
Skin contact	Immediately flush skin with plenty of water. Get medical attention if irritation develops or persists. Wash clothing separately before reuse.
Inhalation	Move to fresh air. Do not use mouth-to-mouth method if victim inhaled the substance. Call a physician if symptoms develop or persist.
Ingestion	Rinse mouth. Do not induce vomiting without medical advice. Do not use mouth-to-mouth method if victim ingested the substance. Get medical attention immediately.

Notes to physician

Symptoms may be delayed.

General advice

Call a physician if symptoms develop or persist. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media Water, Water spray, Water fog, Alcohol foam, Polymer foam, Dry chemical powder, Carbon dioxide (CO₂).

Unsuitable extinguishing media Do not use a solid water stream as it may scatter and spread fire.

Protection of firefighters

Protective equipment and precautions for firefighters

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Move containers from fire area if you can do it without risk. Do not scatter spilled material with high pressure water streams. Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out.

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6. Accidental Release Measures

Personal precautions

Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering. Keep unnecessary personnel away. Stay upwind. Keep out of low areas.

Methods for containment

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use water spray to reduce vapors or divert vapor cloud drift. Prevent entry into waterways, sewers, basements or confined areas.



Methods for cleaning up

Should not be released into the environment.

Large Spills: Dike far ahead of liquid spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. After removal flush contaminated area thoroughly with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean contaminated surface thoroughly.

Never return spills in original containers for re-use.

7. Handling and Storage

Handling

Do not handle or store near an open flame, heat or other sources of ignition. Do not breathe vapors or spray mist. Avoid release to the environment. Avoid prolonged exposure.

Storage

Keep tightly closed in a dry, cool and well-ventilated place. Store in accordance with local/regional/national/international regulation.

8. Exposure Controls / Personal Protection

Exposure limits

ACGIH

Components

CAS #

TWA

STEL

Ceiling

Ethylene Glycol

107-21-1

Not established

Not established

100 mg/m3

Engineering controls

Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye / face protection

Wear chemical goggles.

Skin protection

Wear chemical protective equipment that is specifically recommended by the manufacturer. It may provide little or no thermal protection. Protective gloves. Impervious gloves.

Respiratory protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever work place conditions warrant a respirator's use.

General hygiene considerations

When using do not eat or drink. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.

9. Physical & Chemical Properties

Appearance

Cloudy,

Color

brown

Odor

Not available.

Odor threshold

Not available

Physical state

Liquid.

Form

Liquid.

pH

7 - 9

Melting point

24.8 °F (-4.06 °C) estimated

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12. Ecological Information

Ecotoxicity Components of this product have been identified as having potential environmental concerns.

Ecotoxicity - Freshwater Algae Data

Ethylene Glycol 107-21-1 96 Hr EC50 *Selenastrum capricornutum*: 6500-1300 mg/L

Ecotoxicity - Freshwater Fish Species Data

Ethylene Glycol 107-21-1 96 Hr LC50 *Oncorhynchus mykiss*: 41000 mg/L; 96 Hr LC50 *Lepomis macrochirus*: 27500 mg/L; 96 Hr LC50 *Oncorhynchus mykiss*: 40761 mg/L [static]; 96 Hr LC50 *Pimephales promelas*: 49000 mg/L [static]; 96 Hr LC50 *Poecilia reticulata*: 16000 mg/L [static]

Ecotoxicity - Microtox Data

Ethylene Glycol 107-21-1 30 min EC50 *Photobacterium phosphoreum*: 620.0 mg/L; 30 min EC50 *Photobacterium phosphoreum*: 620 mg/L; 16 Hr EC50 *Pseudomonas putida*: 10000 mg/L

Ecotoxicity - Water Flea Data

Ethylene Glycol 107-21-1 48 Hr EC50 water flea: 46300 mg/L

Environmental effects

Ecotoxicity - Freshwater Algae Data

Ethylene Glycol 107-21-1 96 Hr EC50 *Selenastrum capricornutum*: 6500-1300 mg/L

Ecotoxicity - Freshwater Fish Species Data

Ethylene Glycol 107-21-1 96 Hr LC50 *Oncorhynchus mykiss*: 41000 mg/L; 96 Hr LC50 *Lepomis macrochirus*: 27500 mg/L; 96 Hr LC50 *Oncorhynchus mykiss*: 40761 mg/L [static]; 96 Hr LC50 *Pimephales promelas*: 49000 mg/L [static]; 96 Hr LC50 *Poecilia reticulata*: 16000 mg/L [static]

Ecotoxicity - Microtox Data

Ethylene Glycol 107-21-1 30 min EC50 *Photobacterium phosphoreum*: 620.0 mg/L; 30 min EC50 *Photobacterium phosphoreum*: 620 mg/L; 16 Hr EC50 *Pseudomonas putida*: 10000 mg/L

Ecotoxicity - Water Flea Data

Ethylene Glycol 107-21-1 48 Hr EC50 water flea: 46300 mg/L

13. Disposal Considerations

Disposal instructions

Do not allow this material to drain into sewers/water supplies. This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations.

14. Transport Information

Department of Transportation (DOT) Requirements

Not regulated as hazardous goods.

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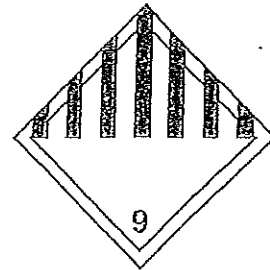


Department of Transportation (DOT) Requirements

Bulk

Basic shipping requirements:

Proper shipping name	Environmentally hazardous substances, liquid, n.o.s. (ETHYLENE GLYCOL)
Hazard class	9
UN number	UN3082
Packing group	III
Additional information:	
Special provisions	8, 146, IB3, T4, TP1, TP29
Packaging exceptions	155
Packaging non bulk	203
Packaging bulk	241



Canadian Transportation of Dangerous Goods (TDG) Requirements

Not regulated as hazardous goods.

IMDG

Not regulated as dangerous goods.

IATA

Not regulated as hazardous goods.

15. Regulatory Information

Labelling

Contains: Ethylene Glycol

US federal regulations: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

Ethylene Glycol 107-21-1 1.0 % de minimis concentration

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical Yes

CERCLA (Superfund) reportable quantity

Ethylene Glycol: 5000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories: Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

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Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
Europe	European Inventory of New and Existing Chemicals (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

International regulations

Canada - WHMIS - Ingredient Disclosure List

Ethylene Glycol 107-21-1 1 %

State regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

U.S. - Massachusetts - Right To Know List

Ethylene Glycol 107-21-1 Present

U.S. - Minnesota - Hazardous Substance List

Ethylene Glycol 107-21-1 Present (particulate and vapor)

U.S. - New Jersey - Right to Know Hazardous Substance List

Ethylene Glycol 107-21-1 sn 0878

U.S. - Pennsylvania - RTK (Right to Know) List

Ethylene Glycol 107-21-1 Environmental hazard

U.S. - Rhode Island - Hazardous Substance List

Ethylene Glycol 107-21-1 Toxic; Flammable

U.S. - Texas - Effects Screening Levels - Long Term

Ethylene Glycol 107-21-1 10 ppb ESL (46% Ethylene glycol); 26 µg/m3 ESL (46% Ethylene glycol)

U.S. - Texas - Effects Screening Levels - Short Term

Ethylene Glycol 107-21-1 100 ppb ESL (46% ethylene glycol); 260 µg/m3 ESL (46% ethylene glycol)

16. Other Information

HMIS® ratings

Health: 2
Flammability: 1
Physical hazard: 0
Personal protection: B

NFPA ratings

Health: 2
Flammability: 1
Instability: 0

Prepared by

Naser S. Hussaini
515 Post Oak Blvd
+1-713-693-7706

Disclaimer

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Alpha 3207

Packer Fluid Corrosion Inhibitor

DESCRIPTION

Alpha 3207 is a 23-27% active synergistic blend of organic acid-amine salts in isopropanol and water. It is used as a base for formulating water-soluble corrosion preventives for packer fluids.

APPLICATION

Alpha 3207 can be used to prepare surfactants, corrosion preventives, anti-foulants, and water clarifiers for water flood injection and disposal systems. Alpha 3207 can be used in hydrogen sulfide containing waters to reduce fouling.

Alpha 3207 can be used in concentrated form or diluted with water or alcohol for application purposes.

ADVANTAGES

- Highly cationic amine
- Minimizes corrosion rates
- Functions as a surfactant, water clarifier, & anti-foulant
- Can be used in concentrated form or diluted

USEAGE

Optimum treatment concentration will vary depending upon the specific application. Normal concentration ranges from 100 to 200 ppm.

PHYSICAL PROPERTIES

Appearance.....Light Amber to Amber-Orange Liquid
Activity.....23-27%
Specific Gravity @ 25°C.....0.94-1.00
Density @ 25°C.....7.83-8.33lbs/gal
pH (5% solution in water).....5.0-6.0
Flash Point, TCC.....14.4°C (58°F)

Solubility, 10% in:
Fresh Water.....Soluble
Xylene.....Dispersible
Isopropanol.....Soluble
Kerosene.....Insoluble

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Material Safety Data Sheet

ALPHA 3207

HEALTH	2
FLAMMABILITY	4
REACTIVITY	0
PERSONAL PROTECTION	G

24 hr. Emergency Contact (CHEMTREC) US Tel: 1- 800 - 424-9300 - Int'l. Tel. 703 - 527 - 3887

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

SUPPLIER: AQUA-CLEAR INC.
608 VIRGINIA St. EAST
CHARLESTON W.V. 25301

PRODUCT NAME: ALPHA 3207

PRODUCT USE/CLASS: CORROSION INHIBITOR

MSDS REVISION DATE: 06/15/04

PHONE: 304-343-4792

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	EXPOSURE LIMITS	CAS#	% BY WEIGHT
ISOPROPANOL	ACGIH TLV – 400 ppm TWA , 500 ppm STEL OSHA PEL – 400 ppm TWA,	67-63-0	10-30 %

3. HAZARD IDENTIFICATION

EYE: Liquid, aerosols and vapors of this product may be irritating and can cause pain, tearing, reddening and swelling accompanied by a stinging sensation and/or a feeling like that of fine dust in the eyes.

SKIN: May cause skin irritation. Allergic reactions are possible.

INGESTION: This material may be harmful if swallowed. May be irritating to mouth, throat, and stomach. .

INHALATION: Prolonged inhalation may be harmful and can cause headaches, dizziness, nausea, anesthesia, narcosis, decreased blood pressure, changes in heart rate and cyanosis. May be irritating to mucous membranes and lung tissue.

CHRONIC INFORMATION: None Known

PRIMARY ROUTE(S) OF ENTRY: Inhalation, Ingestion

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4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Get medical attention, if irritation persists.

SKIN CONTACT: Wash with soap and water. Get medical attention if irritation develops or persist.

INHALATION: Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention.

INGESTION: Place victim on left side with head down to prevent aspiration into lungs. Induce vomiting as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

5. FIRE FIGHTING MEASURES

FLASH POINT: 70 F
(TAGLIABUE CLOSED CUP)

LOWER EXPLOSIVE LIMIT: N.D.
UPPER EXPLOSIVE LIMIT: N.D.

Material Safety Data Sheet

ALPHA 3207

AUTOIGNITION TEMPERATURE: N.D.

EXTINGUISHING MEDIA: ALCOHOL FOAM CO2 DRY CHEMICAL

UNUSUAL FIRE AND EXPLOSION HAZARDS: Can release vapors that form explosive mixtures at temperatures at or above the flash point. Empty containers retain product residue (liquid and/or vapor) and can be dangerous.

SPECIAL FIRE FIGHTING PROCEDURES: Containers can build up pressure if exposed to heat (fire). As in any fire, wear a self-contained breathing apparatus pressure-demand (MSHA/NIOSH approved or equivalent) and full protective gear. Apply alcohol-type foam or all purpose foam by manufacturers recommended techniques for large fires. Use carbon dioxide or dry chemical for small fires. Use water spray to keep containers cool.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Extinguish any possible ignition source until the area is determined to be free from fire or explosion hazard. Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. (See exposure controls / personal protection section) Spilled material should be disposed of according to applicable regulations.

7. HANDLING AND STORAGE

HANDLING: Handle all chemicals with care. Ground and bond containers when transferring materials.

STORAGE: Keep away from heat, sparks, and flames. Keep container closed when not in use. Store in a cool, dry, well ventilated place away from incompatible materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Local exhaust ventilation may be necessary to control any air contaminants to within their exposure limits.

RESPIRATORY PROTECTION: No protection needed under normal use and conditions. Use a NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge when airborne concentrations are expected to exceed exposure limits. Protection by air purifying respirators is limited.

SKIN PROTECTION: When contact is likely wear chemical resistant gloves and boots.

EYE PROTECTION: Wear safety glasses with side shields or goggles.

OTHER PROTECTIVE EQUIPMENT: Emergency eye wash stations and deluge showers should be available in the work area.

HYGIENIC PRACTICES: Wash hands before eating. Use only with adequate ventilation. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Dark amber
ODOR: Sl alcohol
BOILING POINT (RANGE): N.D.
FREEZE POINT: N.D.
VAPOR DENSITY: Heavier than air
VAPOR PRESSURE: N.D.
PHYSICAL STATE: Liquid
SOLUBILITY IN WATER: Soluble
PH (AS IS): 4.5-6.0
SPECIFIC GRAVITY: 0.94-1.00

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10. STABILITY AND REACTIVITY DATA

CONDITIONS TO AVOID: Avoid temperature extremes. Excessive heat causes the vapor pressure to increase rapidly.

INCOMPATIBILITY: Avoid contact with strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Oxides of carbon and nitrogen.

Material Safety Data Sheet
ALPHA 3207

COMPONENT	CAS#	% BY WEIGHT
-----------	------	-------------

TSCA STATUS:

All components of this product are listed on the Toxic Substance Control Act Inventory or are excluded from the listing requirements.

INTERNATIONAL REGULATIONS:

CANADIAN WHMIS: This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

CANADIAN WHMIS CLASS: B-2, D-2B

CANADIAN ENVIRONMENTAL PROTECTION ACT:

All components of this product are listed on the Canadian Domestic Substance List (DSL).

16. OTHER INFORMATION

HMIS RATING - HEALTH: 2 FLAMMABILITY: 4 REACTIVITY: 0 PERSONAL PROTECTIVE RATING: G

LEGEND: N.A. - NOT APPLICABLE, N.E. - NOT ESTABLISHED, N.D. - NOT DETERMINED

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Fe-Oxclear

Iron and Oxygen Control

DESCRIPTION

Fe-Oxclear chemically reacts with dissolved oxygen in water. It is a unique oxygen scavenger, being highly active and freeze-proofed. Unlike other oxygen scavengers, Fe-Oxclear rapidly reacts with dissolved oxygen in oilfield waters, regardless of temperature.

PURPOSE

Fe-Oxclear controls two common injection well problems: iron and oxygen corrosion. Produced waters contain high concentrations of dissolved (ferrous) iron. Oxygen combines with the iron to form a new compound (ferric iron) that does not remain in solution above pH 3.0. Ferric iron turns water orange and permeability-damaging fines drop out of solution. Unfortunately, any handling of oilfield waters puts dissolved oxygen into the water. Filtration and de-aerators take out some of the iron; however, far more goes through the filters as dissolved iron. It combines with the dissolved oxygen to produce formation-plugging ferric iron fines. Eliminating dissolved oxygen keeps iron in solution, and with no damage to the formation. Injecting Fe-Oxclear before the filters improves filter life, because less ferric iron fines will be in the water.

Corrosion is an electro-chemical process. Oxygen is a key component in the chemical equation. Moving water accelerates corrosion; however, eliminating dissolved oxygen greatly slows the corrosion process.

ADVANTAGES

- Rapidly reacts with dissolved oxygen.
- Effectively scavenges at low temperatures.
- Easy to feed.
- Easy to test and control.
- End product of reaction is non-scaling and non-damaging.
- Freeze-proofed.
- Can be fed directly from shipping drum.

- Residual provides oxygen-consuming reserve.

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FEED REQUIREMENTS

Fe-Oxclear may be fed separately or with other water treatment chemicals not affected by a reducing agent. Approximately 5 lbs. (0.5 gallons) of Fe-Oxclear is required for each ppm dissolved oxygen present in each 1,000 barrels of water treated, or 1.0 gallon of Fe-Oxclear will combine with and remove about 2 ppm dissolved oxygen per 1,000 barrels of water.

METHOD OF FEEDING

Fe-Oxclear can be batch treated or fed continuously with a chemical proportioning pump.

SPECIFICATIONS

Physical Form.....clear, yellow liquid
SG @ 25°C.....1.3
Weight/gallon.....10.9 lbs.
pH @ 25°C.....4.5-6.0
Flash Point.....>200°F
Freeze Point.....-25°F

CONTROL

Control is easily maintained by measuring dissolved oxygen content in the injection fluid. Treatment can also be controlled by determining sulfite residual in treated waters. Using a sulfite test kit, multiply the results obtained as ppm sodium sulfite by a factor of 1.5 to obtain the Fe-Oxclear residual.

SAFETY

WARNING! Fe-Oxclear contains ammonium bisulfite. It is mildly acidic and may cause irritation. Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling. Keep container closed when not in use. First Aid: Eyes - In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If irritation develops, call a physician.

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Material Safety Data Sheet

FE OXCLEAR

HEALTH	2
FLAMMABILITY	0
PHYSICAL HAZARD	0
ENVIRONMENTAL HAZARD	

1. Product and Company Identification

Material name	FE OXCLEAR
Patent Number	Not available
Revision date	September-01-2009
Version No.	2
CAS #	Mixture
Product use	Scavenger
Manufacturer information	WEATHERFORD® ENGINEERED CHEMISTRY® 4420 South Flores Road Elmendorf, TX 78112 US CHEMTREC 1-800-424-9300 CHEMTREC INT'L 001-703-527-3887
Emergency	CHEMTREC 1-800-424-9300 CHEMTREC INT'L 001-703-527-3887
Supplier information	WEATHERFORD® ENGINEERED CHEMISTRY® 515 Post Oak Blvd. Houston, TX 77027 US
Supplier emergency telephone number(s)	Chemtrec 800-424-9300 Int'l 703-527-3887

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2. Hazards Identification

Emergency overview

WARNING

Causes skin and eye burns. Corrosive material. Harmful by Inhalation, in contact with skin and if swallowed. Vapors may be irritating to eyes, nose, throat, and lungs. Vapors may cause dizziness or suffocation. May cause breathing disorders and lung damage. Harmful to aquatic organisms. This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA regulatory status

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Potential health effects

Routes of exposure

Inhalation. Skin contact. Eye contact. Ingestion.

Eyes

Do not get this material in contact with eyes. This product causes eye burns. Risk of serious damage to eyes.

Skin

Do not get this material in contact with skin. Causes skin burns. Irritating to skin.



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Methods for cleaning up

Should not be released into the environment.

Large Spills: Dike far ahead of liquid spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. After removal flush contaminated area thoroughly with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean contaminated surface thoroughly.

Never return spills in original containers for re-use.

7. Handling and Storage

Handling

Use only with adequate ventilation. Avoid release to the environment. Wash thoroughly after handling. Avoid prolonged exposure.

Storage

Store in a closed container away from incompatible materials. Store in accordance with local/regional/national/international regulation.

8. Exposure Controls / Personal Protection

Engineering controls

Ensure adequate ventilation, especially in confined areas. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower nearby.

Personal protective equipment

Eye / face protection

Do not get this material in contact with eyes. Wear chemical goggles. Face-shield.

Skin protection

Do not get this material in your eyes, on your skin, or on your clothing. Wear appropriate chemical resistant clothing. Wear appropriate chemical resistant gloves. Use chemical splash goggles and face shield (ANSI Z87.1 or approved equivalent). Impervious gloves.

Respiratory protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. A NIOSH- approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

General hygiene considerations

Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not get this material on clothing. When using do not eat or drink. Keep away from food and drink. Handle in accordance with good Industrial hygiene and safety practice.

9. Physical & Chemical Properties

Appearance

Liquid.

Color

Yellow

Odor

Sulfur dioxide

Odor threshold

Not available

Physical state

Liquid.

Form

Liquid.

pH

Not available

Melting point

Not available

Freezing point

Not available

Boiling point

180 °F (82.2 °C)

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14. Transport Information

Department of Transportation (DOT) Requirements

Basic shipping requirements:

Proper shipping name	BISULFITES, AQUEOUS SOLUTION, N.O.S. (Ammonium bisulfite)
Hazard class	8
UN number	UN2693
Packing group	III
Additional information:	
Special provisions	IB3, T7, TP1, TP28
Packaging exceptions	154
Packaging non bulk	203
Packaging bulk	241
ERG number	154



Department of Transportation (DOT) Requirements

Bulk

Basic shipping requirements:

Proper shipping name	BISULFITES, AQUEOUS SOLUTION, N.O.S. (Ammonium bisulfite)
Hazard class	8
UN number	UN2693
Packing group	III
Additional information:	
Special provisions	IB3, T7, TP1, TP28
Packaging exceptions	154
Packaging non bulk	203
Packaging bulk	241
ERG number	154



Canadian Transportation of Dangerous Goods (TDG) Requirements

Basic shipping requirements:

Proper shipping name	BISULFITES, AQUEOUS SOLUTION, N.O.S. (Ammonium bisulfite)
Hazard class	8
UN number	UN2693
Packing group	III
Additional information:	
Special provisions	16
ERG number	154



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Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
Europe	European Inventory of New and Existing Chemicals (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

International regulations

Canada - WHMIS - Ingredient Disclosure List

Ammonium bisulfite 10192-30-0 1 %

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

U.S. - Massachusetts - Right To Know List

Ammonium bisulfite 10192-30-0 Present

U.S. - New Jersey - Right to Know Hazardous Substance List

Ammonium bisulfite 10192-30-0 sn 0090

U.S. - Pennsylvania - RTK (Right to Know) List

Ammonium bisulfite 10192-30-0 Environmental hazard

16. Other Information

HMIS® ratings

Health: 2
Flammability: 0
Physical hazard: 0

NFPA ratings

Health: 2
Flammability: 0
Instability: 0

Prepared by

Product Stewardship
515 Post Oak Blvd
Suite 142-C
Houston, TX 77027
+1-713-693-7706

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Issue date

September-01-2009

MSDS sections updated

This document has undergone significant changes and should be reviewed in its entirety.

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HALLIBURTON

MATERIAL SAFETY DATA SHEET

Product Trade Name: CLA-STA XP ADDITIVE

Revision Date: 04-Jan-2011

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Statement of Hazardous Nature Hazardous according to the criteria of NOHSC, Non-Dangerous Goods according to the criteria of ADG.

Manufacturer/Supplier Halliburton Australia Pty. Ltd.
53-55 Bannister Road
Canning Vale
WA 6155
Australia

ACN Number: 009 000 775
Telephone Number: 61 (08) 9455 8300
Fax Number: 61 (08) 9455 5300

Product Emergency Telephone
Australia: 08-64244950
Papua New Guinea: 05 1 281 575 5000
NewZealand: 06-7559274

Fire, Police & Ambulance - Emergency Telephone
Australia: 000
Papua New Guinea: 000
New Zealand: 111

Identification of Substances or Preparation

Product Trade Name: CLA-STA XP ADDITIVE
Synonyms: None
Chemical Family: Blend
UN Number: None
Dangerous Goods Class: None
Subsidiary Risk: None
Hazchem Code: None
Poisons Schedule: None
Application: Clay Stabilizer

Prepared By Chemical Compliance
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT	Australia NOHSC	ACGIH TLV-TWA
Polyepichlorohydrin, trimethyl amine quaternized	51838-31-4	30 - 60%	Not applicable	Not applicable

Total to 100%

3. HAZARDS IDENTIFICATION

Hazard Overview May cause eye, skin, and respiratory irritation. May be harmful if swallowed.

Hazard Ratings

Flammability:	1
Toxicity:	0
Body Contact:	0
Reactivity:	0
Chronic:	0

Scale: Min/Nil=0 Low=1 Moderate=2 High=3 Extreme=4

4. FIRST AID MEASURES

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Skin	Wash with soap and water. Get medical attention if irritation persists.
Eyes	In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.
Ingestion	Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.
Notes to Physician	Not Applicable

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media	Water fog, carbon dioxide, foam, dry chemical.
Extinguishing media which must not be used for safety reasons	None known.
Special Exposure Hazards	Product is not expected to burn unless all the water is boiled away. Decomposition in fire may produce toxic gases.
Special Protective Equipment for Fire-Fighters	Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures	Use appropriate protective equipment.
Environmental Precautionary Measures	Prevent from entering sewers, waterways, or low areas.
Procedure for Cleaning / Absorption	Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions	Avoid contact with eyes, skin, or clothing. Avoid breathing vapors.
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Storage Information Store away from oxidizers. Store in a cool well ventilated area. Keep container closed when not in use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

Respiratory Protection Organic vapor respirator with a dust/mist filter.

Hand Protection Impervious rubber gloves.

Skin Protection Rubber apron.

Eye Protection Chemical goggles; also wear a face shield if splashing hazard exists.

Other Precautions Eyewash fountains and safety showers must be easily accessible.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	Clear amber
Odor:	Amine
pH:	4-8
Specific Gravity @ 20 C (Water=1):	1.13
Density @ 20 C (kg/l):	1.13
Bulk Density @ 20 C (kg/m³):	Not Determined
Boiling Point/Range (C):	Not Determined
Freezing Point/Range (C):	Not Determined
Pour Point/Range (C):	Not Determined
Flash Point/Range (C):	Not Determined Min: > 93
Flash Point Method:	PMCC
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (g/m³):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (g/m³):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined
Vapor Pressure @ 20 C (mmHg):	Not Determined
Vapor Density (Air=1):	Not Determined
Percent Volatiles:	Not Determined
Evaporation Rate (Butyl Acetate=1):	Not Determined
Solubility in Water (g/100ml):	Soluble
Solubility in Solvents (g/100ml):	Not Determined
VOCs (g/l):	Not Determined
Viscosity, Dynamic @ 20 C (centipoise):	40-55
Viscosity, Kinematic @ 20 C (centistrokes):	Not Determined
Partition Coefficient/n-Octanol/Water:	Not Determined
Molecular Weight (g/mole):	Not Determined
Decomposition Temperature (C):	Not Determined

10. STABILITY AND REACTIVITY

Stability Data: Stable

Hazardous Polymerization: Will Not Occur

Conditions to Avoid None anticipated

Incompatibility (Materials to Avoid) Strong oxidizers.

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Hazardous Decomposition Products Oxides of nitrogen. Carbon monoxide and carbon dioxide.

Additional Guidelines Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure Eye or skin contact, inhalation.

Inhalation May cause respiratory irritation.

Skin Contact May cause skin irritation.

Eye Contact May cause severe eye irritation.

Ingestion Irritation of the mouth, throat, and stomach. May cause abdominal pain, vomiting, nausea, and diarrhea.

Aggravated Medical Conditions None known.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 1% are chronic health hazards.

Other Information None known.

Toxicity Tests

Oral Toxicity: Not determined

Dermal Toxicity: Not determined

Inhalation Toxicity: Not determined

Primary Irritation Effect: Not determined

Carcinogenicity Not determined

Genotoxicity: Not determined

Reproductive / Developmental Toxicity: Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air) Not determined

Persistence/Degradability Not determined

Bio-accumulation Not determined

Ecotoxicological Information

Acute Fish Toxicity: Not determined

Acute Crustaceans Toxicity: TLM96: 300 ppm (Mysidopsis Bahia)

Acute Algae Toxicity: Not determined

Chemical Fate Information Not determined

Other Information Not applicable

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13. DISPOSAL CONSIDERATIONS

Disposal Method Disposal should be made in accordance with federal, state, and local regulations.
Contaminated Packaging Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

ADR
Not restricted

Air Transportation

ICAO/IATA
Not restricted

Sea Transportation

IMDG
Not restricted

Other Shipping Information

Labels: None

15. REGULATORY INFORMATION

Chemical Inventories

Australian AICS Inventory Product contains one or more components not listed on inventory.
US TSCA Inventory All components listed on inventory or are exempt.
EINECS Inventory This product, and all its components, complies with EINECS

Classification Xi - Irritant.

Risk Phrases R41 Risk of serious damage to eyes.

Safety Phrases S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S29 Do not empty into drains.
S35 This material and its container must be disposed of in a safe way.

16. OTHER INFORMATION

The following sections have been revised since the last issue of this MSDS
Not applicable

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Contact

Australian Poisons Information Centre

24 Hour Service: - 13 11 26

Police or Fire Brigade: - 000 (exchange): - 1100

New Zealand National Poisons Centre

0800 764 766

Additional Information

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

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