NM1 - 6

GENERAL CORRESPONDENCE

YEAR(S): 2003

Professional Opinion:

Hydrogen Sulfide Monitoring Levels
Controlled Recovery, Inc.
Disposal Facility
Lea County, New Mexico

December 15, 2003

RECEIVED
DEC 16 2003
Environmental Bureau
Oil Conservation Division

Prepared for:

Controlled Recovery, Inc.
P.O. Box 388
Hobbs, New Mexico 88240

By:

Safety & Environmental Solutions, Inc.
703 E. Clinton Suite 103
Hobbs, New Mexico 88240
(505) 397-0510

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I. Background

Safety & Environmental Solutions, Inc. (SESI) was asked by Controlled Recovery, Inc. (CRI) of Hobbs, New Mexico for a professional opinion regarding an appropriate monitoring level for Hydrogen Sulfide (H_2S) at their facility located approximately halfway between Hobbs and Carlsbad, New Mexico. The physical location of the property is adjacent to US Highway 62-180 in Section 27, Township 20 South, Range 32 East, Lea County, New Mexico. (Exhibit A) This facility is a Rule 711 facility and the New Mexico Oil Conservation Division (NMOCD) has required CRI to develop a monitoring program for Hydrogen Sulfide with triggering levels of 1 ppm and 10 ppm. Detection of 1 ppm H_2S triggers the notification of the Hobbs NMOCD office immediately and commencement of mitigation operations. Detection of 10 ppm H_2S will trigger additional notifications, area evacuation, public evacuations as well as mitigation operations.

II. Facility and Process Description

The facility configuration is detailed in Exhibit B. Evaporation ponds "B" and "C" are the center of the monitoring issue and are shown in more detail in Exhibit C. The Ponds "B" and "C" measure 290' by 160' and 240' by 160' respectively. Pond "B" is 9' in depth and Pond "C" is 6' in depth. The volumes of the ponds are 69,786 bbls and 38,502 bbls respectively. Produced water is unloaded from trucks into a closed 750 bbl tank # 1 and gravity flows through a second and third closed 750 bbl tanks #2 and #3 into open top 250 bbl tanks #3 and #4 and finally in to the pits for evaporation.

III. Hydrogen Sulfide Regulatory Limits

10 ppm is the OSHA Permissible Exposure Limit. Workers can be exposed to this level for five consecutive 8-hour workdays.

100 ppm is the NIOSH Immediately Dangerous to Life and Health Level.

100 ppm is the NMOCD Rule 118 Action Level.

300 ppm is the OSHA Immediately Dangerous to Life and Health Level.

IV. Worker and Public Protection from Hydrogen Sulfide Exposure

Worker and Public Protection from Hydrogen Sulfide exposure is the primary purpose of NMOCD Rule 118 (Exhibit D) and the Action Limits set forth in Rule 711. Rule 118 establishes a 100-ppm action level for wells, facilities and operations and does not exempt 711 facilities from more stringent requirements.

The facility in question is permitted under Rule 711 and the process in question does not operate under any pressure other than atmospheric pressure. On the other hand, wells, non-Rule 711 facilities, and operations generally have processes that operate under much higher pressures and thus have the potential to release greater volumes of Hydrogen Sulfide over a much larger area. Rule 118 is applied to the wells, facilities, and operations under high pressure. This application enforces the 100-ppm action level, which is more in line with industry practices.

Rule 118 speaks of the Pasquill-Gifford equation (Exhibit E) as a method for the determination of the radius of exposure (ROE) for a specified hydrogen concentration. This equation is used to produce a nomograph, which is commonly used by the industry to determine radius of exposure. Using the nomograph alone for a determination of the 100-ppm radius of exposure at a release volume of 0.01 Mcfd, it yields a ROE of approximately 1.5 feet from the source. This release volume most closely correlates with the expected volumes released from an evaporation pond. In contrast, a release volume of 10 Mcfd yields a 100-ppm ROE of approximately 100 feet. The latter correlates more closely with wells and non-711 facility operations.

Therefore it may be said that a release of Hydrogen Sulfide that is under pressure will cause the ROE that is greater than one that is not under pressure.

It is generally agreed that exposure to 100 ppm of Hydrogen Sulfide by workers or members of the public would cause mild to moderate symptoms of exposure. The symptoms of exposure to 100 ppm for less than one hour are eye, nose and throat irritation. This level of exposure is an excellent action level for notification and mitigation operations as is required by Rule 118. This level of exposure is also most appropriate as an action level for Rule 711 facilities since the primary purpose of the monitoring requirements is the protection of workers and the general public.

V. Sandia National Laboratories Review

In a letter dated October 31, 2003, SESI requested Sandia National Laboratories review the dispersion question of Hydrogen Sulfide at this facility. (Exhibit F) Mr. Mike Hightower of Sandia National Laboratories responded to this request in a letter dated December 10, 2003. (Exhibit G) In his letter, Mr. Hightower details calculations performed employing Gaussian dispersion models using variables most consistent with conditions at the facility in question. The calculations were performed using produced water of saturation of 100% and 50%. In all cases, the calculations were not able to establish a 100-ppm or even 30-ppm ROE beyond the edge of the pond.

VI. Conclusions

The use of the Pasquill-Gifford equation nomograph and the calculations performed by Sandia National Laboratories clearly indicate that the risk of exposure to elevated levels of Hydrogen Sulfide for workers and the general public is minimal. CRI currently monitors the immediate pond area using calibrated hand-held monitors on a daily basis. At no time has any measurable concentrations of Hydrogen Sulfide been detected.

Analysis of the water in the evaporation ponds on October 14, 2003 indicate the water contain a near neutral pH, very high chlorides and TDS, and 243 ppm sulfates. The water sampled is not highly saturated with Hydrogen Sulfide.

It may be concluded that a 100-ppm concentration of Hydrogen Sulfide may be an acceptable action level for this facility. The current 1-ppm action level is very restrictive and compliance is difficult due to the cost of monitoring equipment sufficiently sensitive and reliable to measure such low concentrations. Equipment is readily available that will accurately and reliably detect 100-ppm concentrations.

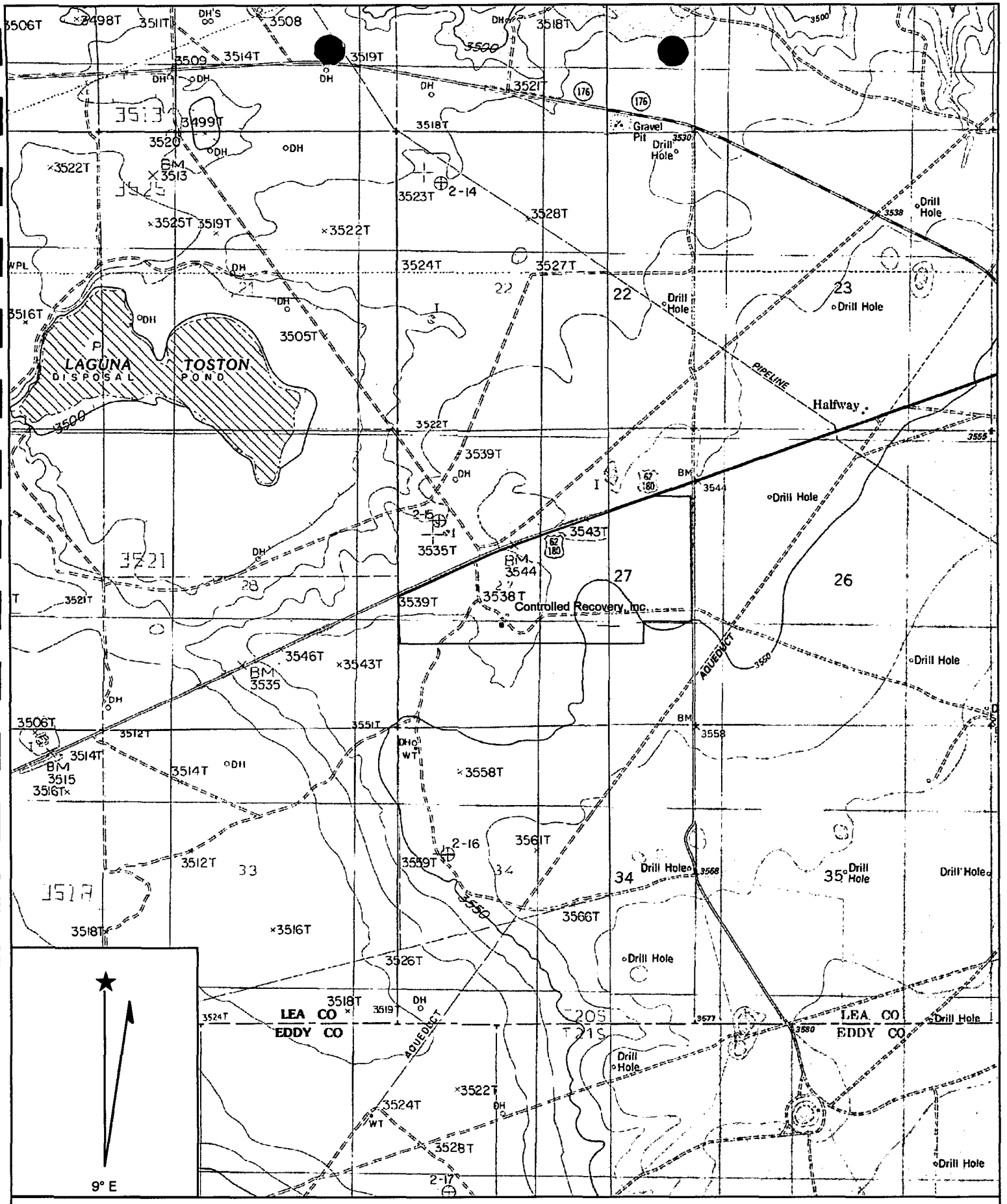
The ponds are located approximately 600' from Highway 62/180, 1166' from the Halfway Bar, 856' to the nearest residence (which houses the facility care takers), and 173' from

the nearest property line. The Pasquill-Gifford equation nomograph and the calculations performed by Sandia National Laboratories clearly indicate that 30-ppm and 100-ppm ROE will not exist beyond the boundaries of the property. Therefore, I feel that a 100-ppm action level for this facility is adequately protective of workers and the public. The risk of a Hydrogen Sulfide release of any consequence from the ponds in question is minimal and the facility should not be held to more restrictive requirements that Rule 118 facilities.

VII. Exhibits

Exhibit A - Vicinity Map
Exhibit B - Site Plan
Exhibit C - Process Map
Exhibit D - NMOCD Rule 118
Exhibit E - Pasquill-Gifford equation and nomograph
Exhibit F - Letter to Sandia National Laboratories
Exhibit G - Sandia National Laboratories Review
Exhibit H - Laboratory Analysis of Produced Water
Exhibit I - Qualifications and Credentials

Exhibit A
Vicinity Map

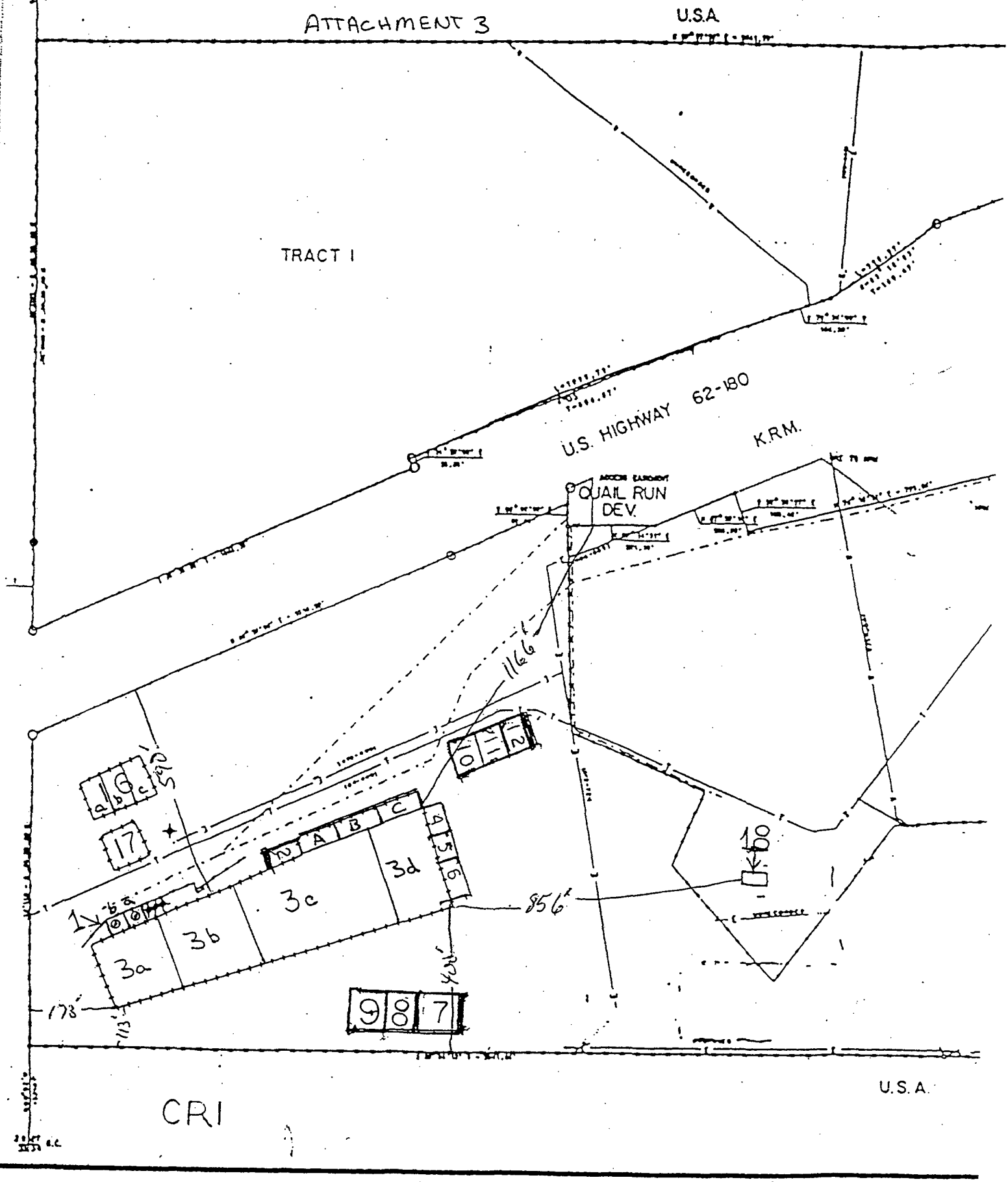


Name: WILLIAMS SINK
Date: 12/15/2003
Scale: 1 inch equals 2222 feet

Location: 032° 32' 34.6" N 103° 45' 22.0" W
Caption: Exhibit A-Vicinity Map
Controlled Recovery, Inc.
Lea County, New Mexico

Exhibit B
Site Plan

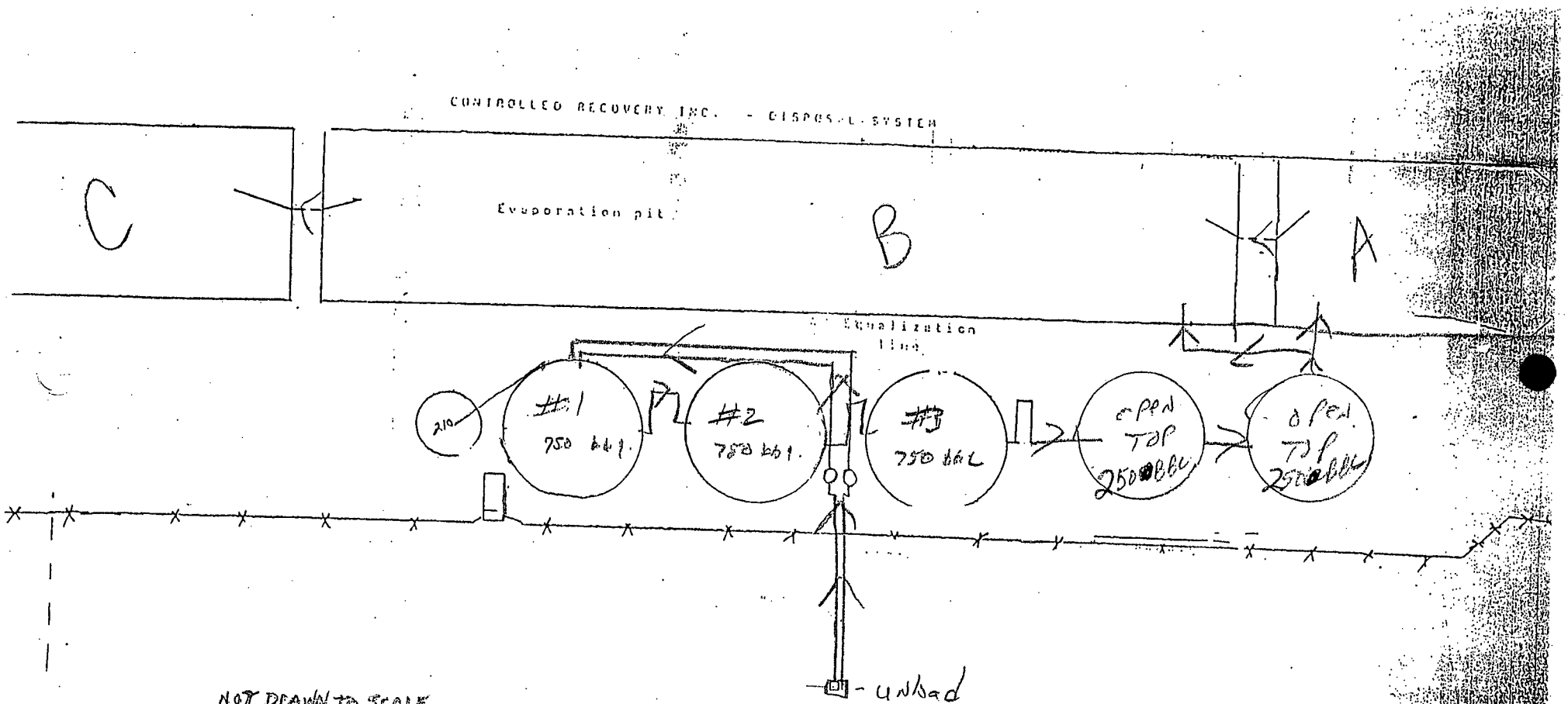
ATTACHMENT 3



CR1

2 contains 193.808 acres, more or less. The South 30 feet being reserved as a ut

Exhibit C
Process Map



10-27-03

P.W. is unloaded through 4" lines into #1. Gravity flows through 2, 3 & two open tops before being discharged into pit A or B for evaporation.

Exhibit D
NMOCD Rule 118

118 HYDROGEN SULFIDE GAS - PUBLIC SAFETY

118.A. The intent of this rule is to provide for the protection of the public's safety in areas where hydrogen sulfide (H_2S) gas in concentrations greater than 100 parts per million (PPM) may be encountered. [1-1-87...2-1-96]

118.B. Producing operations should be conducted with due consideration and guidance from American Petroleum Institute (API) publication "Conducting Oil and Gas Production Operations Involving Hydrogen Sulfide" (RP-55). The operator of a lease producing, or a gas processing plant handling H_2S or any other related facility where H_2S gas is present in concentrations of 100 PPM or more shall take reasonable measures to forewarn and safeguard persons having occasion to be on or near the property. In addition to training operator's employees in H_2S safety such measures may include, but are not necessarily limited to, posting of warning signs, fencing of surface installations, installation of safety devices and wind direction indicators, and maintaining tanks, thief hatches and gaskets, valves and piping in condition so as to prevent avoidable loss of vapors. Where release of hydrogen sulfide is unavoidable, the operator shall burn or vent the gas stream in such a manner as to avoid endangering human life. [1-1-87...2-1-96]

118.C. Wells drilled in known H_2S gas producing areas, or where there is substantial probability of encountering H_2S gas in concentrations of 100 PPM or more, should be planned and drilled with due regard to and guidance from API RP-49 "Recommended Practices for Safe Drilling of Wells Containing Hydrogen Sulfide", latest edition. Wells completed and serviced by well servicing units where there is substantial probability of encountering H_2S gas in concentrations of 100 PPM or more should be worked on with due regard to the latest industry accepted practices. These practices may include, but are not necessarily limited to, the proper training of personnel in H_2S safety and the use of H_2S safety equipment as listed for safe operations by the American Petroleum Institute draft report for "Land, Oil and Gas Well Servicing and Workover Operations Involving Hydrogen Sulfide."* [1-1-87...2-1-96]

118.D. Within ninety (90) days after completion of the first well on a lease, or within ninety (90) days after H_2S is discovered in a gas stream, each operator shall submit in writing to the Division's district office having jurisdiction, on a form acceptable to the Division, for each lease in each pool in production at that time, the H_2S concentration from an analysis of a representative sample of the gas stream. The analysis shall be performed by an industry-recognized method and procedure. The measurement report shall specify the name of the operator, lease or facility name, pool, testing point, tester, test method, and the measured

H_2S concentration. Tests within the past three (3) years and which are still representative may be utilized for submittal from previously producing leases. NOTE: Owners or operators of existing wells and facilities shall have until July 1, 1987, to come into compliance with this paragraph of these rules. [1-1-87...2-1-96]

118.E. Any well, lease, processing plant or related facility handling H_2S gas with concentration of 500 PPM (0.05%) or more shall have a warning sign at the entrance. The sign, as a minimum, shall be legible from at least fifty (50) feet, and contain the words "poison gas." The use of existing signs will meet the requirements of this section providing they convey the intended safety message. [1-1-87...2-1-96]

(1) Any lease producing gas or related facility having storage tanks containing gas with a H_2S concentration of 1,000 PPM (0.1%) or more shall have, in addition to the sign required in subparagraph E. (1), a sign at the foot of the battery stairway that shall accomplish the requirements of E. (1), plus specify any protective measures that may be necessary. This paragraph does not apply to gas processing plants. [1-1-87...2-1-96]

(2) Any well, lease or processing plant handling gas with H_2S concentration and volume such that the H_2S fraction equates to 10 MCF per day or more of H_2S and which is located within one-fourth (1/4) mile of a dwelling, public place or highway shall install safety devices and maintain them in operable condition or shall establish safety procedures designed to prevent the undetected continuing escape of H_2S. Wind direction indicators shall be installed at least one strategic location at or near the site and shall be readily visible throughout the site. Also, unattended surface facilities or plants within one-fourth (1/4) mile of a dwelling or public meeting place shall be protected from public access by fencing and locking, or other equivalent security means. In addition, the operator shall prepare a contingency plan to be carried out should the public be threatened by a release. The plan shall provide for notification of endangered parties, as well as public safety personnel, for evacuation of threatened parties as warranted, and institution of measures for closing in the flow of gas. Contingency plans shall be available for Division inspection and shall be retained at the location which lends itself best to activation of any such plan. The operator, as an alternative, may utilize Figure 4.1 of API (RP-55) Revised March, 1983 and if the 100 PPM radius of exposure includes a dwelling, public place or highway, the operator must meet the public safety requirements as specified in this section. [1-1-87...2-1-96]

(3) The provisions of this section shall be applicable within 30 days after the filing of sample data showing the existence and concentration of H_2S gas described in Paragraphs E. (1) through E. (3) above. In unusual circumstances guidance on placement and content of signs may be obtained from the supervisor of the appropriate Division District Office. [1-1-87...2-1-96]

118.F. The Director of the Division may administratively grant exceptions or extensions to the requirements of this rule for good cause shown and where such exception will not result in a threat to human life. [1-1-87...2-1-96]

*At such time as the American Petroleum Institute adopts the "Recommended Practice for Land Oil and Gas Well Servicing and Workover Operations on Involving Hydrogen Sulfide", it shall take the place of any previous draft reports. [1-1-87...2-1-96]

Exhibit E
Pasquill-Gifford equation and nomograph

H_2S RELEASE DISPERSION MODELS

When considering application of an H_2S dispersion model, the user should examine the type of H_2S release which might be expected; i.e., will the gas be dense or buoyant; will it be dry or wet; etc. Application of a dispersion model must consider if the release may have a vertical or horizontal plume configuration. The prevailing wind and environmental factors such as humidity and temperature variables will influence the dispersion. Engineering calculations to determine H_2S absolute open-flow rates based on pressure and hole size are necessary to ensure relative accuracy of the dispersion radius of exposure and travel distance.

Historical incidents of H_2S accidental releases have led to the development of computer models to simulate the dispersion of the gas or vapor cloud over a given area. The importance of such modeling becomes apparent in planning for emergency evacuation of the affected population.

The Pasquill-Gifford equation is wide used by the Texas Railroad Commission in the Statewide Rule 36 to address the protection of the general public. This equation can be found in the Texas Rule 36 under Section (c)(2)(A) and (B) and corresponds to a nomograph contained in the Rule to identify a radius-of-exposure for 100 ppm and 500 ppm of H_2S. It is pointed out that for the Rule, public protection begins at 100 ppm.

To utilize the Pasquill-Gifford equation, a computer is not required, but for determining a number of calculations, it is preferred to a calculator. After programming, the radius for different cases may be entered using the H_2S concentration in parts per million (ppm) and the escape rate for a system or facility expressed in cubic feet per day. The oil and gas industry applies this equation to pipelines or facilities within gas processing plants.

The Texas Railroad Commission Rule 36 also requires the use of the Pasquill-Gifford equation during oil and gas well drilling in H_2S producing areas of the state. The "Q" in the equation is the escape rate for a gas well. It should be either the well's adjusted open-flow potential, or if the operator feels this is too high, the well's capacity to flow against a zero back-pressure is acceptable for the calculation. The equation requires the mole fraction of H_2S be used. This is expressed as a percent of the H_2S per 100 standard cubic feet of mixture.

The H_2S concentration will have to be converted to a mole fraction if it is expressed in parts per million or in grains per 100 cubic feet. The "X" in the Pasquill-Gifford equation is the radius of exposure expressed in feet.

The equation as originally formulated, is a three-plane coordinate system. The X axis is that direction in which the wind would be blowing at a continuous rate. The Y axis is the vertical coordinate and the Z axis is the horizontal coordinate. The equation assumes that the emission will be constant such that some distance downstream there is a point at which the 100 ppm concentration will also be constant over the 24-hour period. Normal Gaussian distribution of the Y and Z planes are assumed; that is, there is less concentration in ppm of H_2S on the sides of the release and the highest concentration is in the center. It is also assumed that the emission point will be at or near the ground level. It eliminates a very complex component that is used to determine effective stack height. The Environmental Protection Agency, as well as the Texas Natural Resources Conservation Commission use this equation.

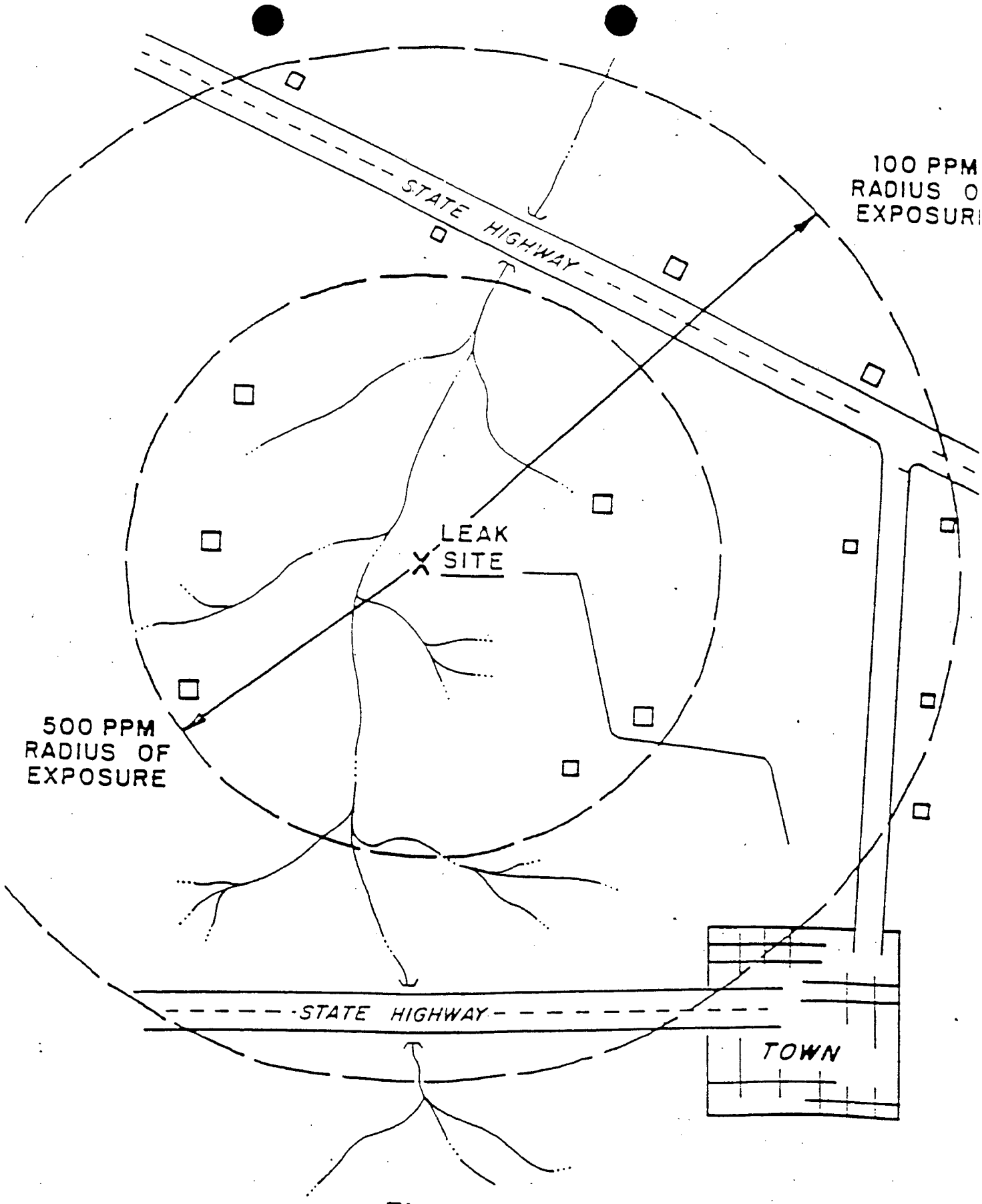
The original Pasquill-Gifford equation took several meteorological parameters into consideration. These parameters are classed into categories A, B, C, D, E and F. Class "A" is the most unstable condition, with stronger wind velocity, more radiation, unlevel terrain, etc. Class "F" is the most stable and is used in the equation to represent the most conservative stability condition. A one mile per hour wind velocity is assumed to represent the least amount of air mixing. This accounts for the equation providing the largest radius of exposure, thus the more conservative approach. The equation is not so accurate that if you calculated a radius of exposure of 1,500 feet, that the gas will not go beyond it; there remains the possibility that it well may do exactly that.

The Pasquill-Gifford method of calculating radius
not infallible. The field data collected by the
Commission on a 10-minute sampling time indicate
level H_2S concentrations, a safety factor of 2 or
The calculation is based on worse-case scenario
maximum radius of exposure. This approach was sele
oil and gas operators with a uniform method of c
should be noted that most states consider this me
and some have adopted it or variations thereof.
population areas, where the radius of exposure i
area, a more sophisticated model that takes into ac
defined parameters should be considered. Approval
state regulatory agencies may be required to appr
of exposure that result from more technically deve
models.

$$100 \text{ ppm ROE} = \left[(1.589)(\text{mole fraction } H_2S)(Q)\right]$$

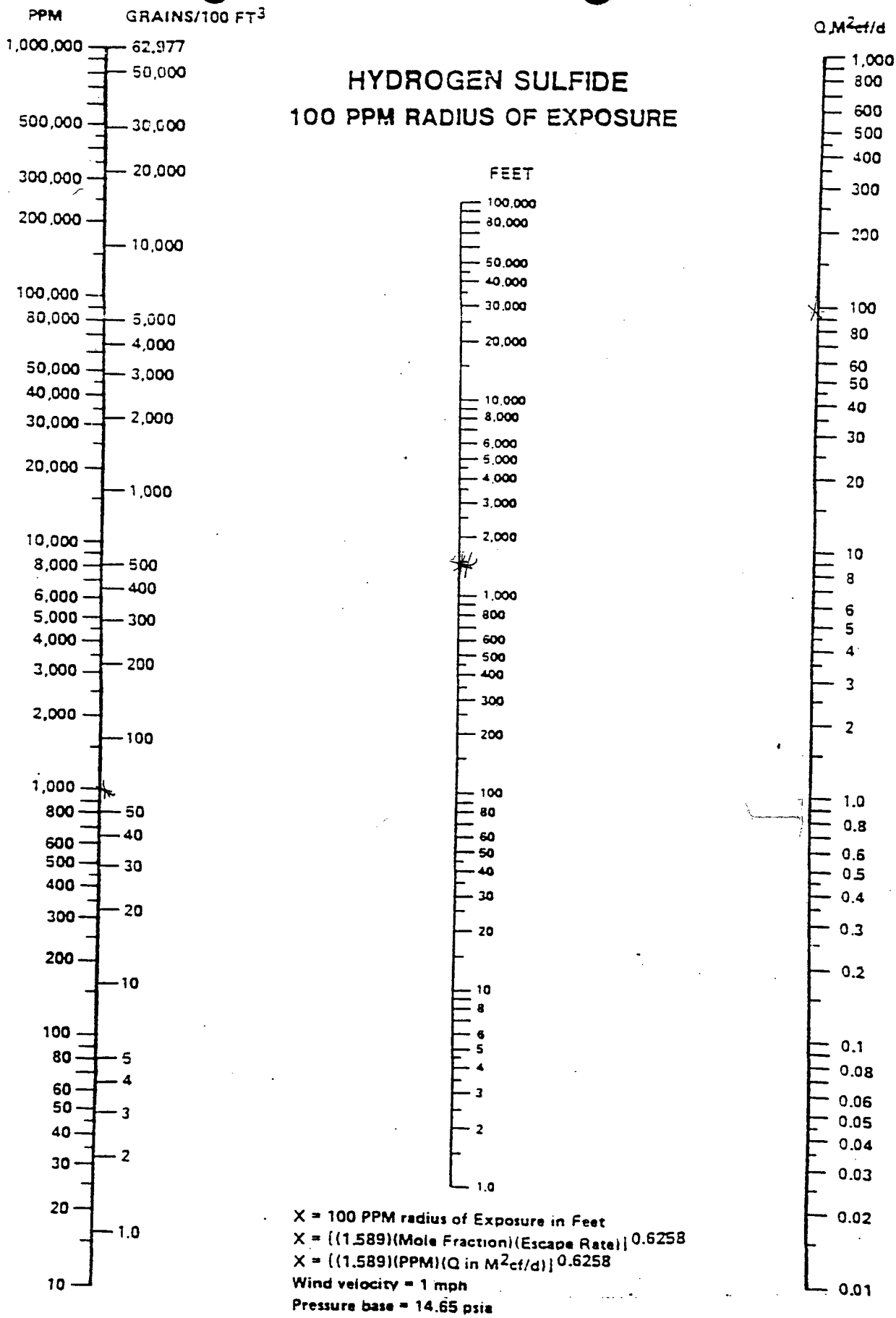
$$500 \text{ ppm ROE} = \left[(0.4546)(\text{mole fraction } H_2S)(Q)\right]^{0.6258}$$

Where: X = radius of exposure in feet
Q = maximum volume determined to be available for escape in cubic feet per day
H_2S = mole fraction of H_2S in the gaseous mixture



EXAMPLES OF
DISPERSION PROBLEMS

HYDROGEN SULFIDE
100 PPM RADIUS OF EXPOSURE



X = 100 PPM radius of Exposure in Feet

$X = [(1.589)(\text{Mole Fraction})(\text{Escape Rate})]^{0.6258}$

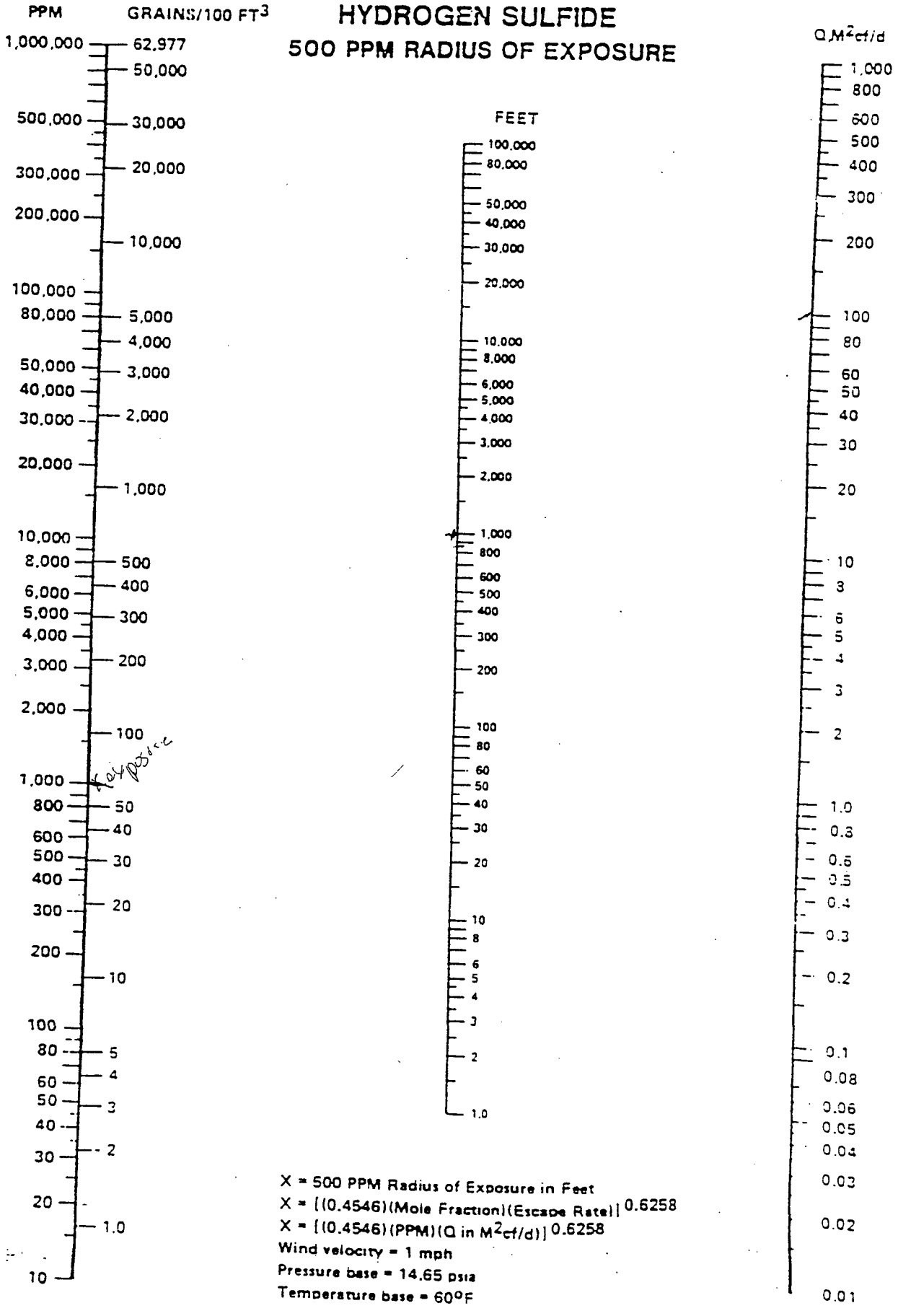
$X = [(1.589)(\text{PPM})(Q \text{ in } M^2\text{cf/d})]^{0.6258}$

Wind velocity = 1 mph

Pressure base = 14.65 psia

Temperature base = 60°F

HYDROGEN SULFIDE
500 PPM RADIUS OF EXPOSURE



X = 500 PPM Radius of Exposure in Feet

$X = [(0.4546)(\text{Mole Fraction})(\text{Escape Rate})]^{0.6258}$

$X = [(0.4546)(\text{PPM})(Q \text{ in } M^2\text{cf/d})]^{0.6258}$

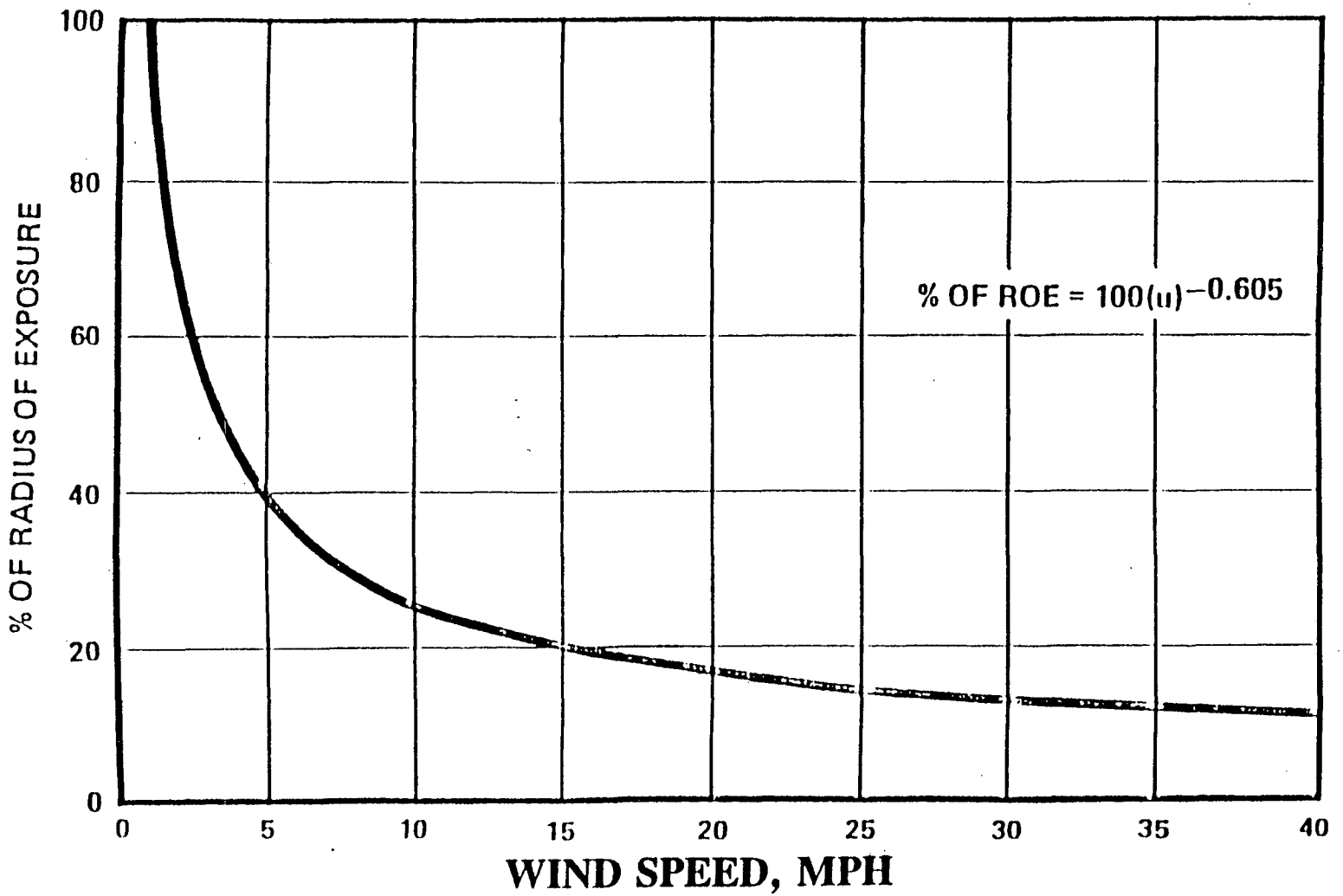
Wind velocity = 1 mph

Pressure base = 14.65 psia

Temperature base = 60°F

% OF RADIUS OF EXPOSURE VS. WIND SPEED

FOR H_2S DISPERSION



The dispersion equations represented by the Radius of Exposure nomographs assume "no wind" conditions. Actually, the effect of wind is to reduce the radius of exposure as the above graph illustrates. The purpose of the graph is to help, in the event of an emergency, to evaluate the potential hazard by enabling an estimate of the effects of the wind. **DO NOT** use the graph for any other purpose.

Exhibit F
Letter to Sandia National Laboratories

P.O. Box 1613
703 E. Clinton Suite 102
Hobbs, New Mexico 88240
505/397-0510
Fax 505/393-4388
www.sesi-nm.com

Safety & Environmental Solutions, Inc.

October 31, 2003

Mr. Mike Hightower
Sandia National Laboratories
P.O. Box 5800, MS 0755
Albuquerque, New Mexico 87185-0755

Dear Mike:

Thank you for taking time to assist me with the H_2S in produced water project, which we discussed on the telephone. As you know, the goal of this project is to provide scientific information supporting the reduction in the H_2S monitoring requirements at my client's disposal facility.

Here are a few facts regarding the process and physical configuration of the facility.

1. Open top pits B and C on the site plan will hold approximately 108,288 barrels of fluid.

2. The Produced water is unloaded from trucks into a closed 750 bbl tank # 1 and gravity flows through a second and third closed 750 bbl tanks #2 and #3 into open top 250 bbl tanks #3 and #4 and finally in to the pits for evaporation.

I have enclosed a recent general water analysis of the fluid in the pits for your information.

The problem statements for this project would be:

1. Given produced water in the pits that is saturated with H_2S, what is the 100 ppm Radius of Exposure?"

2. What saturation level would produce a 100 ppm ROI of 200', 600', 1000', and 1200'?

If you should require further information for your calculations, please let me know and I will do my best to provide it promptly.

Thank you for your assistance in this matter.

Sincerely,

Bob Allen
President

BA/jra

Exhibit G
Sandia National Laboratories Review

Sandia National Laboratories
Operated for the U.S. Department of Energy by
Sandia Corporation

Mike Hightower
Distinguished Member Technical Staff

P.O. Box 5800
Albuquerque, NM 87185-0755

Phone: (505) 844-5499
Fax: (505) 844-0968
Internet: mmhight@sandia.gov

December 10, 2003

Bob Allen
Safety and Environmental Solutions
703 E. Clinton, Suite 102
Hobbs, New Mexico 88240

Dear Bob:

I have completed a short review of the issues we discussed related to the monitoring of hydrogen sulfide emissions from a produced water disposal facility. The disposal facility includes a series of holding tanks, two of which have open tops, and a series of large evaporation ponds. There are three closed tanks each holding about 750 barrels (bbls) of water and the two open tanks each holding about 250 bbls of water. The two major evaporation ponds hold a total of approximately 108,000 bbls of water. The produced water for disposal is trucked to the site and pumped into the holding tanks, where it is held until the holding tanks overflow into the evaporation ponds. Based on our discussions, the size of the evaporation ponds, and the evaporation rate in the Hobbs area, I based my H2S diffusion and dispersion calculations on the assumed ability of the facility to receive approximately 200-400 bbls of produced water a day.

In cooperation with Wayne Einfeld, one of my coworkers at Sandia who has extensive experience in emission studies, I was able to conduct scoping calculations in an attempt to bound the expected range of hydrogen sulfide emissions at the disposal facility for a common range of operating and atmospheric conditions as well as for some worst case extremes. Hopefully in this way the analysis will provide a concept of the common expected values as well as what might be worst case conditions relative to expected hydrogen sulfide levels at the facility. Table 1 identifies some of the parameters and assumptions used in the analyses.

Table 1. General Parameters used in the Hydrogen Sulfide Dispersion Calculations

Parameter	General Value	Max.Value Used
H2S Solubility	437 ml/100 ml H2O @10° C 186 ml/100ml H2O @30° C	400 ml/100 ml H2O =29 gms/gal H2O =.22 moles/liter of H2O = 8000 ppm
H2S molecular weight	34 gms/mol	Same
H2S density	1.539 gm/l	Same
H2S Diffusion rate from H2O	0.14×10^{-4} cm^2/s	Same

In general, delivery of about 17,000 gal /day (400 bbls/day of produced water) will cause most of the water in the two open 250 bbl storage tanks to drain into the evaporation ponds. This is an average rate of 12 gal/min. This daily volume would fill one of the pits to a depth of only about half an inch. In calculating the diffusion of H2S from the storage tanks, depending on the concentration gradient assumed, about one fourth of the H2S in the water will diffuse from the open tanks each day for the maximum produced water delivery. This of course assumes that all the water delivered for multiple days has the maximum H2S concentration since it takes almost one week for the delivered water to make it to the open holding tanks. Since there is a large holding capacity, it would be more likely that the average produced water H2S concentration as it gets to the final holding tanks and evaporation ponds should be lower because of dilution with other produced water and that the H2S concentration would be less than the maximum saturation. Average saturations of 10-30% in the holding tanks would probably be more likely due to mixing of the produced water from different areas.

For the delivery of 400 bbls/day, much of the H2S dispersion will take place in the evaporation pond. Because of the large surface area of the pond, there is more than enough diffusion and dispersion capacity for all of the H2S delivered each day. Actually the one-acre size ponds provide such a large surface area for diffusion that diffusion is essentially instantaneous from the area around the discharge point. At a rate of 12 gal/min, and assuming the maximum H2S saturation, the produced water going into the ponds will create an average air concentration around the discharge point of approximately 30 ppmv. At an air flow of as little as 0.1 m/s, this concentration would not be expected to be exceeded anywhere outside the pond. If the discharge point includes a water diffuser located near the middle of the evaporation pond, the maximum air concentration at the edge of the pond with a 0.1 m/s wind was calculated to be about 1 ppmv. This assumes that the dispersion takes place during the day where the atmospheric conditions are most beneficial. Because of the high rates of diffusion from the evaporation ponds it is not expected that any major diffusion and dispersion would take place at night. The calculations for these parameters and for dispersion of the H2S for several different saturation levels are presented in Table 2.

In operations where less than the 400 bbls per day are delivered, up to 50% of the diffusion and dispersion of the H2S could take place in the open holding tanks. These tanks therefore could be modeled as a point source with an equivalent stack height equal to the height of the tanks. This minimizes surface concentrations near the facility and provides an effective dispersion mechanism. At this rate of produced water disposal, only half of the H2S is dispersed from the pond and the near surface concentrations are significantly reduced as can be seen in Table 2.

You had asked that we provide contours of 100 ppmv H2S concentrations as a function of saturation. As you can see from Table 2, I do not expect that any concentrations this high would be determined, even at the maximum saturation conditions, except maybe directly at a discharge point within the evaporation pond.

Table 2. General H2S Evaporation Pond Concentration Calculations

H2S Saturation	H2S Concentration in H2O gms/gal	Produced Water Volume gal/day	Flow into Evaporation Ponds gal/min	Max. H2S Air Concentration at Pond Discharge Point ppmv	Estimated* H2S Air Concentration At the Pond Boundary ppmv
100%	29	17,000	12	30	1
50%	14.5	17,000	12	15	0.5
10%	2.9	17,000	12	3	0.1
100%	29	8500	6	10	0.3
50%	14.5	8500	6	5	0.1
10%	2.9	8500	6	1	<0.1

* Uses Gaussian dispersion model and assumes discharge point is in the middle of the evaporation ponds with a diffuser, wind speed of 0.1 m/s, and daytime(high solar radiation) atmospheric conditions.

These analyses were based on a quick evaluation of the expected site facility and operations management as described in your letter. More detailed calculations and assessments can be done to better define the analyses provided here. This would include better incorporation of atmospheric data and validation of the calculated H2S levels with actual produced water concentration data and air concentration data. There are several atmospheric modeling consultants in New Mexico that could help support you with these more detailed calculations and modeling validation. Wayne has worked with several o these companies and has provided a couple of names of well know companies that could expand our preliminary analyses. They include:

Class One Technical Services
3500 G Comanche Rd NE
Albuquerque, NM
505-830-9680

Tetra Tech
6121 Indina School Rd NE
Albuquerque, NM
505-881-3188

I hope this provides the information you needed. If you have any questions, would like to discuss the results or the analytical techniques, or if I can be of help in any other way please give me a call at 505-844-5499.

Sincerely,

Mike Hightower

Exhibit H
Laboratory Analysis of Produced Water

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
SAFETY & ENVIRONMENTAL SOLUTIONS, INC.
ATTN: BOB ALLEN
703 E. CLINTON, #103
HOBBS, NM 88240
FAX TO: (505) 393-4388

Receiving Date: 10/14/03
Reporting Date: 10/17/03
Project Number: NOT GIVEN
Project Name: CRI
Project Location: NOT GIVEN

Sampling Date: 10/14/03
Sample Type: WASTEWATER
Sample Condition: COOL & INTACT
Sample Received By: GP
Analyzed By: AH

LAB NUMBER SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (mS/cm)	T-Alkalinity ($mgCaCO_3/L$)
ANALYSIS DATE:	10/15/03	10/15/03	10/15/03	10/15/03	10/15/03	10/15/03
H8085-1 PW PIT	45204	11679	3426	727	267924	32
Quality Control	NR	56	59	5.17	1322	NR
True Value QC	NR	50	50	5.00	1413	NR
% Recovery	NR	112	118	103	93.6	NR
Relative Percent Difference	NR	0	0	1	0.7	NR
METHODS:		SM3500-Ca-D	3500-Mg E	8049	120.1	310.1

LAB NUMBER SAMPLE ID	Cl^- (mg/L)	SO_4 (mg/L)	CO_3 (mg/L)	HCO_3 (mg/L)	pH (s.u.)	TDS (mg/L)
ANALYSIS DATE:	10/15/03	10/15/03	10/15/03	10/15/03	10/15/03	10/15/03
H8085-1 PW PIT	100969	243	0	39	6.93	201700
Quality Control	1040	53.65	NR	996	6.99	NR
True Value QC	1000	50.00	NR	1000	7.00	NR
% Recovery	104	107	NR	99.6	99.9	NR
Relative Percent Difference	1.0	1.5	NR	0	0.7	12.1
METHODS:	SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1

Amy Hill
Chemist

10/17/03
Date

H8085

CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: SESI	BILL TO PO #:
Project Manager:	Company: SAME
Address: 703 E. CLINTON, #103	Attn:
City: HOBBS State: NM Zip: 88240	Address:
Phone #: (505) 397-0510	City:
Fax #: (505) 393-4388	State: Zip:
Project #: Project Owner:	Phone #:
Project Name: CRD	Fax #:
Project Location:	

FOR LAB USE ONLY				MATRIX						PRES.			SAMPLING		ANALYSIS REQUEST
LAB I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID:	ICE / COOL	OTHER:	DATE	TIME	CATIONS / ANIONS
H8085-1	PW Pit	C			X								10-14	10:30	✓

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

Sampler Relinquished: DAVID PARSONS	Date:	Received By:	Phone Result ☐ Yes ☐ No Additional Fax #:
	Time:		Fax Result: ☐ Yes ☐ No
Relinquished By:	Date: 10/14/2003	Received By: (Lab Staff)	REMARKS:
	Time: 3:37P		
Delivered By: (Circle One)	Sample Condition Cool: ☒ Yes ☐ No Intact: ☒ Yes ☐ No	CHECKED BY: (Initials)	
Sampler - UPS - Bus - Other:			

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020

Exhibit I
Qualifications and Credentials

QUALIFICATIONS AND CREDENTIALS
James R. (Bob) Allen ASP, CHMM, REM, CET, CES

Qualifications Summary

James R. (Bob) Allen is a Safety and Environmental Professional with more than 17 years of experience relating to occupational safety and health, hazardous materials, and environmental cleanup and 13 years of experience in finance and management industries.

Mr. Allen enjoyed a successful career as a bank president, and management and safety consultant prior to founding Safety & Environmental Solutions, Inc. in 1995. He continually draws from his finance, management, and regulatory compliance experience in his current position as President of SESI, Inc. Mr. Allen is responsible for the development and implementation of safety and environmental programs for a wide variety of industries such as oil & gas production, petrochemical, and refineries. Mr. Allen has delivered a broad curriculum of safety and environmental training for industrial clients as well as serving as an adjunct professor at New Mexico Junior College, Hobbs, New Mexico. Mr. Allen has served as the senior environmental principal for numerous environmental remedial projects in West Texas and Southeastern New Mexico.

Mr. Allen has many years of practical experience in safety related aspects oilfield operations such as Lock out/Tag out, confined spaces, H_2S operations, excavation, welding and cutting, hoisting and rigging, and job safety analysis.

Mr. Allen has prepared emergency response plans for major oil and gas and service company facilities throughout the Southwest. He prepared the Flood Mitigation Plan for the City of Hobbs, New Mexico to meet the requirements of the Federal Emergency Management Agency's (FEMA) Community Rating System (CRS) in 1999. He is currently engaged in the preparation of the Lea County All Hazard Mitigation Plan as required by the Disaster Mitigation Act of 2000.

Education

B.B.A., New Mexico State University, Las Cruces, New Mexico

Registrations and Affiliations

- Associate Safety Professional- Board of Certified Safety Professionals – A 11841 -2003
- Certified Hazardous Materials Manager, Master Level CHMM #10551 – *Institute of Hazardous Materials Management*
- Registered Environmental Manager REM #7773 - *National Registry of Environmental Professionals*
- Certified Environmental Trainer #94-209 in Occupational Safety and Health and Management and Transportation of Hazardous Materials and Waste -*Natl. Environmental Training Association*
- Registered Environmental Professional, *Texas Registry of Environmental Professionals* - #611
- Certified Environmental Compliance Manager - *Columbia Southern University*
- Certified Environmental Specialist #10583 - *Environmental Assessment Association*
- Professional Member, *American Society of Safety Engineers (ASSE)*
- Past Chairman, SE New Mexico Section, Permian Basin Chapter, *ASSE*

- Member, *International Registry of Environmental Engineers and Compliance Professionals*
- Past Member, Board of Directors, *West Texas Safety Training Center*
- Instructor, Medic First Aid (Basic) - International Registry # 17942, *EMP America*
- Instructor, Medic First Aid (BLS/PRO) - International Registry # 17942, *EMP America*
- Incident Commander, 29 CFR 1910.120
- Licensed Radiation Safety Consultant, *State of New Mexico* #398-6
- Defensive Driving Instructor #45671 - *National Safety Council*
- Judge, International Intercollegiate Environmental Design Contest 2000, *Waste Education Research Consortium (WERC)*

CAMPBELL, CARR, BERGE
& SHERIDAN, P.A.
LAWYERS

MICHAEL B. CAMPBELL
WILLIAM F. CARR
BRADFORD C. BERGE
MARK F. SHERIDAN
MICHAEL H. FELDEWERT
TANYA M. TRUJILLO

JACK M. CAMPBELL
1916-1999

JEFFERSON PLACE
SUITE 1 - 110 NORTH GUADALUPE
POST OFFICE BOX 2208
SANTA FE, NEW MEXICO 87504-2208
TELEPHONE: (505) 988-4421
FACSIMILE: (505) 983-6043
E-MAIL: law@westofpecos.com

September 15, 2000

FOR SETTLEMENT PURPOSES ONLY

HAND-DELIVERED

Ms. Marilyn S. Hebert
New Mexico Department of Energy, Minerals and Natural Resources
Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87505

Re: Controlled Recovery, Inc.

Dear Lynn:

In furtherance of the settlement discussions which began at our August 8th meeting, enclosed please find a revised closure plan dated September 1, 2000, along with supporting letters from David Boyer (hydrogeologist), James R. Woods (geological engineer), and Mark Turnbough (Ph.D., Environmental Policy). Please note that CRI has put together this September 1st closure plan for settlement discussion only and that it is not intended to supercede or supplement the 1997 plan previously accepted by the Division.

If the Division finds this plan acceptable, CRI will obtain and furnish costs estimates from third party contractors pursuant to Rule 711.B(1)(i).

Sincerely,

Michael H. Feldewert

MHF/ras
Enclosures
cc. w/ enclosures:
Roger Anderson
Ken Marsh

Office

From: Kieling, Martyne [MKieling@state.nm.us]
Sent: Thursday, June 19, 2003 4:25 PM
To: 'crihobbs@leaco.net'
Cc: Anderson, Roger
Subject: Closure cost questions

Cost Estimate April May 2003.j...

Ken,

Attached please find a document prepared by Randy Bayliss. The items under 5.0 Misc may answer the first question that you had for me this afternoon.
<<Cost Estimate April May 2003.jpg>>

I am researching your second question regarding the Basin Disposal Court order on H2S levels. I should have something for you tomorrow. Please let me know if you are unable to open or access the attachment.

Sincerely,

Martyne J. Kieling
Martyne J. Kieling
Environmental Geologist

Summary

CRI Closure Cost Estimate – Revised April/May 2003

Site Changes since July 2002:

Pits 3a and 3d now drained, scraped clean
Pit 16a contents recovered, berms removed, bottom scraped clean
13,000 cy of clean cover material now stockpiled adjacent to pits 3a and 3b
Landfill area now mostly covered and capped
Contents in Pits 13 and 16 have shown appreciable signs of weathering, can be handled as solids rather than being pumped, do not need treatment prior to burial

Modified approach for this cleanup estimate:

BS&W will be mixed with berm material, windrowed, dried, and buried at Area 15 rather than fertilized, blended, and tilled three times in Pit 3ab

1.0	**BS&W** (Pits 13 and 16, tank contents)			
	Pump out treatment and storage tanks, haul to Area 15	1,030 cy	$6,520	
	Clean tanks, 4 crew, 3 days, SCBA	--	$3,500	
	Dig up Pit 13, mix w/ berm mat'l, haul 0.2 mi to Area 15	2,560 cy	$7,040	
	Dig up Pit 16, mix w/ berm mat'l, haul 0.8 mi to Area 15	1,270 cy	$4,560	
	Windrow, dry, bury, and cap at Area 15	4,520 cy	$9,270	
				$30,890
2.0	**Pit 3b, 3c Residue**			
	Scrape 12" from bottoms of pits, load and haul to Pit 3d	2,850 cy	$5,870	
				$5,870
3.0	**Berm Material**			
	Pits 2,4,5,6 bulldozed into Pit 3d by D-6	4,690 cy	$1,200	
	Pits 7-9, 10-12 loaded and trucked 600 ft to Pit 3d	4,140 cy	$11,380	
	Spread out and compact in Pit 3d to 10 ft depth by D-6	11,680 cy	$2,990	
	Cap w/ caliche/red bed, compact (3,600 sq yd)	1,800 cy	$5,440	
				$21,010
4.0	**Landfill**			
	Cap 0.5 acres w/ caliche/red bed, compact (2,420 sq yd)	1,210 cy	$4,500	
	(includes 1 D-6 day for misc fill and compaction of waste)			$4,500
5.0	**Misc**			
	Runon Control (diversion ditches @ Pit 3)		$1,750	
	Site Cleanup, gen'l, D-6, loader, truck (30 hrs)		$2,640	
	Mob/demob, 1 day for dozer, loader, low boys		$2,350	
	Soil samples, 8 ea, report		$4,800	
	Solid waste, liner and net scrap to landfill		$2,500	
	Reports, admin, site specific Health and Safety Plan		$7,020	
				$21,060
	Total			$83,330

Assumptions

- BS&W treated on-site: haul to Area 15, windrow for ~10 days, burial
- Caliche and red bed cap material sources ripped on-site at 1,500 cy per D-6 day
- Cap w/ red bed (6") and caliche (12"), no protectable GW
- Use 0.5 acres of landfill to be covered, area found on 4/21/03
- 12 cy trucks @ $60/hr; D-6 @ $96/hr; loader @ $78/hr; vacuum truck @ $70/hr
- No reveg, tanks left clean and in place

Bayliss 5/16/03

KEY ENERGY SERVICES, INC.
720 S. TEXACO ROAD
HOBBS, N.M. 88240
PHONE: 505-393-3180
FAX: 505-391-9895

FEBRUARY 11, 2003
CONTROLLED RECOVERY, INC.
HOBBS, NEW MEXICO

ATTN: KEN MARSH

RE: HALFWAY DISPOSAL SITE
S/2 N/2 OF
SEC 27 T-20S R-32E
LEA COUNTY, NEW MEXICO

CLOSURE PLANS:

WE WISH TO SUBMIT OUR BID TO FURNISH EQUIPMENT, LABOR AND MATERIALS TO PERFORM WORK AS FOLLOWS ON SUBJECT LOCATION:

TASK 6: MOVE SUMP MATERIAL, DRILLING MUD, DRILL CUTTINGS, WORK OVER SOLIDS, AND OTHER NON-HAZARDOUS OILFIELD WASTES FROM PITS 2A, B, C, 4, 5, AND 6 TO PIT 3D. SCRAPE RESIDUE FROM FROM PITS 3A, 3B, AND 3C AND HAUL TO PIT 3D. ALL LIQUIDS OR VISCOUS MATERIALS WILL BE MIXED WITH DRY SOLIDS BEFORE HAULING. PITS WILL THEN BE PUSHED IN AND COVERED WITH 12 " CALICHE AND COURSE NATIVE MATERIAL AND CONTOURED TO PREVENT WIND AND WATER EROSION.

BID PRICE (TAX EXCLUDED) $ 10, 231.00

TASK 7: MOVE LINER AND MATERIAL FROM PIT 16 TO PIT 3D, APPROX. 4036 CUBIC YARDS OF SEDIMENT AND PARIFIN.

BID PRICE (TAX EXCLUDED $ 4, 122.80

TASK 8: MOVE LINER AND MATERIALS FROM PITS 1A AND 1B TO PIT 3D.

BID PRICE (TAX EXCLUDED) $ 4, 655.00

TASK 9: MOVE MATERIAL FROM PITS 7, 8, 9, 10, 11, AND 12 CONTAINING SUMP MATERIAL, DRILLING MUD, DRILL CUTTINGS, WORK OVER SOLIDS, AND OTHER NON-HAZARDOUS OILFIELD WASTES TO PIT 3D. ALL LIQUIDS AND VISCOUS MATERIAL WILL BE MIXED WITH DRY SOLIDS BEFORE HAULING.

BID PRICE (TAX INCLUDED) $ 22, 756.00

TASK 10: COVER PIT 3D WITH 12" CALICHE AND NATIVE MATERIALS. CONTOUR AREA TO PREVENT WIND AND WATER EROSION.

BID PRICE (TAX EXCLUDED)	$ 2, 872.55

TASK 11: MOVE MATERIALS, LINER, AND NET FROM PIT 13 TO AREA 15. CAP SOLIDS AREA 15 WITH 12'' CALICHE AND NATIVE MATERIAL. CONTOUR AREA TO PREVENT WIND AND WATER EROSION.

BID PRICE (EXCLUDING TAX)	$ 21, 182.65

BID PRICE FOR ALL TASKS	$ 65, 820.00
TAX	4, 031.48
TOTAL	$ 69, 851.48

SINCERELY,

Bill Dyer

BILL DYER
MANAGER
KEY ENERGY SERVICES, INC.

BD/sp

THANK YOU FOR THE OPPORTUNITY TO BID ON THE ABOVE PROJECT

OCD was asked to approve Closure Plan. CRI has not received any comments concerning the Plan.

CLOSURE

CRI has submitted Closure Plan and 3rd party Closure cost. OCD has prepared summary of Closure cost estimate.

OCD	Key	Difference
83,330	65,820	17,510

5.0 Misc

Item 1
There is no need for diversion ditches at pit 3. $1750.

Item 2
General site cleanup is included in Key bid. $2640.

Item 3
Mob/Demob included in Key bid. $2350.

Item 4
Soil sample BTEX and TPH $65.00 x 8= $520.00,
includes lab report, $4800.00 - $520.00= $4280.

Item 5
Waste liner to land fill included in Key bid. $2500.

Item 6
Reports not applicable to Closure Plan. $7020.
$20,540.

Revise OCD estimate

Miscellaneous		
Diversion	$ 1,750.00	
Site Cleanup	2,640.00	
Mob/Demob	2,350.00	
Soil samples (4800-520) =	4,280.00	
Liner net	2,500.00	83,330.00
Reports	7,020.00	-20,540.00
	$20,540.00	62,790.00

ASSAIGAI
ANALYTICAL LABORATORIES, INC. • 4301 Masthead NE • Albuquerque, New Mexico 87109
3332 Wedgewood, Suite N • El Paso, Texas 79925

QUOTATION

ASSAIGAI ANALYTICAL LABORATORIES, INC.
Environmental Lab Division

Quote #	07-Nov-03 S. Tabor
Client	Controlled Recovery Inc.
Contact	David Parsons
Date	07-N0V-03
Prepared By:	ST
Valid Until	31-Dec-03

PROJECT: **Controlled Recovery Inc.**
P O Box 388
Hobbs, NM 88241 (505) 393-1079
Project: Current Analytical Pricing

ITEM	Item Description	Method	Quantity	Unit Price	Unit	Sub-Total
1	TCLP(metals, volatiles and semi volatiles)	EPA 1311/8260/8270	1	550.00	each	550.00
2	GRO/DRO(TPH)	EPA 8015	1	40.00	each	40.00
3	RCI	various	1	70.00	each	70.00
4	Chlorides	EPA 300.0	1	10.00	each	10.00
5	BTEX	EPA8021/8260	1	25.00	each	25.00

Sub-Total	695.00
NM Gross Receipts Tax @ 5.8125%	40.40
Grand Total	735.40

ITEM	Comment
TBD	TAT is normally 10 working days.
TAT	Assaigai Labs will provide sample containers, coolers, ice paks and prepaid shipping via TNM&O bus on analysis over $500.00.
Invoice	

Standard Terms
Net 30 days

4301 Masthead NE, Albuquerque, NM 87109

ACCREDITED

Closure of surface storage #16 and #13

Per OCD estimate		
		$ 7,040.00
		4,560.00
		9,270.00
		$20,870.00
	Tax	1,356.00
		$22,226.00
Per Key Bid		$ 4,122.00
		21,182.00
		$ 25,304.00
	Tax	1,644.00
		$ 26,948.00

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

October 31, 2003

Mr. Ken Marsh
Controlled Recovery, Inc.
P.O. Box 388
Hobbs, NM 88241-0388

Dear Mr. Marsh:

We have been considering your telephone conversation concerning an OCD review of CRI dated March 14, 2003.

I call your attention to paragraph 3, page 12, concerning waste containing mercaptans (thiols).

We have several questions regarding this paragraph, namely as follows:

1. We need to know the analytical method OCD used to determine the mercaptans at your facility.
2. We would like to see a copy of the analysis so that we can know which mercaptans were found at your facility. There are a number of mercaptans, and it would make the analytical process much simpler if we knew which mercaptans were found.
3. What was the matrix in which the mercaptans were found?
4. Due to the strong odor of mercaptans, it is essential to know the concentration level at which the vapors become hazardous.

CARDINAL
LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

In September of 1998, we did a series of tests for Mississippi Potash. We were looking for mercaptans at their facilities and at your facility. In 110 tests, we detected no mercaptans. Perhaps if you contact Mississippi Potash they will share with you the data from our tests.

Please let me know what we can do to be of assistance to you.

Thank you.

Sincerely,

Gayle A. Potter
Chemist
Cardinal Laboratories, Inc.

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

MR. KEN MARSH
CONTROLLED RECOVERY, INC.
HOBBS, NM 88240

NOVEMBER 7, 2003

DEAR MR. MARSH:

IN RESPONSE TO YOUR INQURY REGARDING OUR QUALIFICATIONS, I SUBMIT THE FOLLOWING INFORMATION.

I RECEIVED A BACHELOR OF ARTS DEGREE FROM NEBRASKA STATE IN MAY 1957.
I COMPLETED A MAJOR IN CHEMISTRY, ANOTHER MAJOR IN BIOLOGY, AND A MINOR IN PHYSICS.
EMPLOYED BY CHEMICAL AND GEOLOGICAL LABORATORIES IN CASPER, WYOMING, FEBRUARY 1958 THROUGH JUNE 1971 I WAS A LABORATORY MANAGER FOR ELEVEN OF THOSE YEARS..

WE STARTED CARDINAL LABORATORIES IN NOVEMBER 1989 IN ABILENE TEXAS. CARDINAL LABORATORIES OPENED OUR HOBBS FACILITY IN THE SUMMER 0F 1992. WE CAME TO HOBBS AT THE INVITATION OF THE LEA COUNTY INDUSTRIAL DEVELOPMENT CORPORATION.

I HAVE BEEN THE PRESIDENT OF CARDINAL LABORATORIES SINCE IT'S BEGINNING, WHICH INCLUDES BEING DIRECTOR OF LABORATORIES, AND A STAFF CHEMIST.

DURING A TWO YEAR PERIOD, 1995 AND 1996, I WAS THE DIRECTOR OF THE INSTITUTE OF WATER RESEARCH, LUBBOCK CHRISTIAN UNIVERSITY, IN LUBBOCK, TEXAS.

OTHER PERSONEL AT CARDINAL LABORATORIES INCLUDE:
BURGESS J. A. COOKE, PHD. HIS DOCTORATE IS IN ORGANIC CHEMISTRY FROM THE UNIVERSITY OF GEORGIA.

JIM ARMSTRONG HAS A BACHELOR OF SCIENCE DEGREE FROM HARDIN SIMMONS UNIVERSITY, AND WILL SOON HAVE HIS MASTERS, ALSO IN CHEMISTRY.

AMY HILL GRADUATED FROM THE COLLEGE OF THE SOUTHWEST WITH A BACHELORS DEGREE IN PHYSICAL SCIENCE.

SANDRA SMITH RECEIVED A BACHELOR OF SCIENCE IN EDUCATION FROM ABILENE CHRISTIAN UNIVERSITY.

THANK YOU FOR REQUEST. PLEASE LET ME KNOW IF YOU HAVE OTHER QUESTIONS, OR IF YOU WOULD LIKE MORE DETAILS.

SINCERELY,

GAYLE A. POTTER

CARDINAL LABORATORIES
2111 BEECHWOOD, ABILENE, TEXAS 79603 | (915)673-7001 | Fax: (915)673-7020
101 EAST MARLAND, HOBBS, NEW MEXICO 88240 | (505)393-2326 | Fax (505)393-2476

TO: KEN MARSH
COMPANY: CRI
DATE: 11/5/03
FAX #:
FROM: Amy Hill
MESSAGE: Ken - here is the analytical from 1998. that we ran for Mississippi Potash on mercaptans.

If you have any questions in regards to the following facsimile, please feel free to contact us at the number listed above.

Thank you.

NUMBER OF PAGES INCLUDING THIS PAGE: 8

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
MISSISSIPPI POTASH, INC.
ATTN: JEFF CAMPBELL
P.O. BOX 101
CARLSBAD, NM 88220
FAX TO: (505) 887-0929

Receiving Date: 09/23/98 - 09/24/98
Reporting Date: 09/25/98
Project Number: NOT GIVEN
Project Name: TESTING FOR MERCAPTANS
Project Location: CARLSBAD, NM

Analysis Date: 09/23/98 - 09/24/98
Sampling Date: 09/23/98 - 09/24/98
Sample Type: AIR
Sample Condition: COOL & INTACT
Sample Received By: GP

COPY

LAB NO	TIME	LOCATION	MERCAPTANS	WIND VELOCITY mph	TEMP F°
H3858-1	12:30PM	NM	ND	12.6	85.2
H3858-2	12:50PM	RR	ND	11.5	86.3
H3858-3	1:06PM	AI	ND	11.0	86.9
H3858-4	1:14PM	OA	ND	7.7	86.3
H3858-5	1:29PM	NM	ND	13.8	84.2
H3858-6	1:35PM	RR	ND	11.7	87.1
H3858-7	1:45PM	1/2	ND	11.2	85.0
H3858-8	1:56PM	AI	ND	4.8	85.4
H3858-9	1:59PM	OA	ND	8.3	85.3
H3858-10	2:30PM	NM	ND	12.6	86.5
H3858-11	2:35PM	RR	ND	12.8	86.4
H3858-12*	2:44PM	1/2	ND	19.6	86.4
H3858-13	3:03PM	AI	ND	4.4	85.8
H3858-14	3:08PM	OA	ND	11.7	86.2
H3858-15	3:31PM	NM	ND	12.9	87.2
H3858-16	3:39PM	RR	ND	12.8	86.2
H3858-17	3:52PM	1/2	ND	15.2	86.3
H3858-18	4:09PM	AI	ND	4.9	89.5
H3858-19	4:13PM	OA	ND	11.6	88.9
H3858-20	4:29PM	NM	ND	13.3	87.4
H3858-21	4:36PM	RR	ND	15.1	87.2
H3858-22	5:00PM	AI	ND	4.1	87.2
H3858-23	5:06PM	OA	ND	4.7	87.9
H3858-24	5:26PM	NM	ND	13.9	87.1
H3858-25	5:33PM	RR	ND	13.2	85.7
H3858-26	5:44PM	1/2	ND	14.5	84.8
H3858-27	6:00PM	AI	ND	5.2	84.6
H3858-28	6:04PM	OA	ND	14.4	85.7
H3858-29	6:31PM	NM	ND	12.1	83.8

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

LAB NO	TIME	LOCATION	MERCAPTANS	WIND VELOCITY mph	TEMP F°
H3858-73	4:07AM	OA	ND	1.6	73.7
H3858-72	4:02AM	AI	ND	6.0	72.6
H3858-73	4:07AM	OA	ND	1.6	73.7
H3858-74	4:29AM	NM	ND	4.5	73.3
H3858-75	4:36AM	RR	ND	5.3	72.2
H3858-76	5:00AM	AI	ND	5.5	72.5
H3858-77	5:05AM	OA	ND	6.7	73.6
H3858-78	5:31AM	NM	ND	0.7	79.5
H3858-79	5:38AM	RR	ND	2.6	78.9
H3858-80	5:49AM	1/2	ND	7.5	73.7
H3858-81	6:02AM	AI	ND	3.0	71.7
H3858-82	6:06AM	OA	ND	1.8	72.0
H3858-83	6:30AM	NM	ND	0.2	74.7
H3858-84	6:37AM	RR	ND	1.0	74.3
H3858-85	6:48AM	1/2	ND	0.2	72.7
H3858-86	7:00AM	AI	ND	3.6	74.9
H3858-87	7:05AM	OA	ND	0.2	74.4
H3858-88	7:31AM	NM	ND	6.1	70.3
H3858-89	7:37AM	RR	ND	8.3	71.9
H3858-90	8:00AM	AI	ND	6.0	72.8
H3858-91	8:04AM	OA	ND	6.1	72.4
H3858-92	8:32AM	NM	ND	12.8	75.7
H3858-93	8:39AM	RR	ND	10.5	76.1
H3858-94	8:49AM	1/2	ND	11.8	79.9
H3858-95	9:00AM	AI	ND	6.1	77.2
H3858-96	9:05AM	OA	ND	7.5	79.6
H3858-97	9:30AM	NM	ND	15.1	82.9
H3858-98	9:39AM	RR	ND	9.9	82.8
H3858-99	10:00AM	AI	ND	6.3	80.8
H3858-100	10:05AM	OA	ND	3.6	82.5
H3858-101	10:30AM	NM	ND	4.3	88.8
H3858-102	10:40AM	RR	ND	12.5	84.9
H3858-103	10:50AM	1/2	ND	5.9	89.2
H3858-104	11:00AM	AI	ND	8.2	84.1
H3858-105	11:05AM	OA	ND	2.2	87.6
H3858-106	11:28AM	NM	ND	14.7	88.6
H3858-107	11:36AM	RR	ND	15.8	89.2

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

LAB NO	TIME	LOCATION	MERCAPTANS	WIND VELOCITY mph	TEMP F°
H3858-108	12:00PM	AI	ND	4.7	89.1
H3858-109	12:04PM	OA	ND	6.8	88.6
H3858-110	12:28PM	1/2	ND	8.5	86.5

* Air sample collected and transported to Hobbs lab for gc/ms analysis

KEY

AI = AIR INLET AT EAST MINE. NM = NORTH MINE
RR = RAILROAD TRACKS SOUTHWEST OF NORTH MINE.
OA = OFFICE AREA AT EAST MINE 1/2 = HALF WAY BAR

Gayle A. Potter/BC
Chemist

4/25/03
Date

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
MISSISSIPPI POTASH, INC.
ATTN: JEFF CAMPBELL
P.O. BOX 101
CARLSBAD, NM 88220
FAX TO: (505) 887-0929

Receiving Date: 09/23/98-09/24/98
Reporting Date: 09/28/98
Project Number: NOT GIVEN
Project Name: TESTING FOR MERCAPTANS
Project Location: CARLSBAD, NM
Lab Number: H3858-12
Sample ID: 1/2 WAY

Analysis Date: 09/24/98
Sampling Date: 09/23/98
Sample Type: AIR (TEDLAR BAG)
Sample Condition: INTACT
Sample Received By: GP
Analyzed By: BC

COPY

VOLATILE MERCAPTANS (mg/M^3)	Sample Result	Method Blank
Methyl Mercaptan	<1.0	<1.0
Ethyl Mercaptan	<1.0	<1.0
1-Propyl Mercaptan	<1.0	<1.0
2-Propyl Mercaptan	<1.0	<1.0
1-Butyl Mercaptan	<1.0	<1.0
2-Butyl Mercaptan	<1.0	<1.0
2-Methyl-1-propyl Mercaptan	<1.0	<1.0
2-Methyl-2-propyl Mercaptan	<1.0	<1.0

	% RECOVERY
Dibromofluoromethane	91
Toluene-d8	80
Bromofluorobenzene	85

METHODS: EPA SW 846-8260

Burgess J. A. Cooke, Ph. D.

9/28/98
Date

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
MISSISSIPPI POTASH, INC.
ATTN: JEFF CAMPBELL
P.O. BOX 101
CARLSBAD, NM 88220
FAX TO: (505) 887-0929

Receiving Date: 09/23/98-09/24/98
Reporting Date: 09/28/98
Project Number: NOT GIVEN
Project Name: TESTING FOR MERCAPTANS
Project Location: CARLSBAD, NM
Lab Number: H3858-53
Sample ID: 1/2 WAY, 11:52 PM

Analysis Date: 09/24/98
Sampling Date: 09/23/98
Sample Type: AIR (TEDLAR BAG)
Sample Condition: INTACT
Sample Received By: GP
Analyzed By: BC

COPY

VOLATILE MERCAPTANS (mg/M^3)	Sample Result	Method Blank
Methyl Mercaptan	<1.0	<1.0
Ethyl Mercaptan	<1.0	<1.0
1-Propyl Mercaptan	<1.0	<1.0
2-Propyl Mercaptan	<1.0	<1.0
1-Butyl Mercaptan	<1.0	<1.0
2-Butyl Mercaptan	<1.0	<1.0
2-Methyl-1-propyl Mercaptan	<1.0	<1.0
2-Methyl-2-propyl Mercaptan	<1.0	<1.0

	% RECOVERY
Dibromofluoromethane	MI(22)
Toluene-d8	109
Bromofluorobenzene	109

METHODS: EPA SW 846-8260
MI = Matrix Interference

Burgess J. A. Cooke, Ph. D.

9/28/98
Date

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
MISSISSIPPI POTASH, INC.
ATTN: JEFF CAMPBELL
P.O. BOX 101
CARLSBAD, NM 88220
FAX TO: (505) 887-0929

Receiving Date: 09/23/98-09/24/98
Reporting Date: 09/28/98
Project Number: NOT GIVEN
Project Name: TESTING FOR MERCAPTANS
Project Location: CARLSBAD, NM
Lab Number: H3858-71
Sample ID: 1/2 WAY, 3:48 AM

Analysis Date: 09/24/98
Sampling Date: 09/24/98
Sample Type: AIR (TEDLAR BAG)
Sample Condition: INTACT
Sample Received By: GP
Analyzed By: BC

COPY

VOLATILE MERCAPTANS (mg/M^3)	Sample Result	Method Blank
Methyl Mercaptan	<1.0	<1.0
Ethyl Mercaptan	<1.0	<1.0
1-Propyl Mercaptan	<1.0	<1.0
2-Propyl Mercaptan	<1.0	<1.0
1-Butyl Mercaptan	<1.0	<1.0
2-Butyl Mercaptan	<1.0	<1.0
2-Methyl-1-propyl Mercaptan	<1.0	<1.0
2-Methyl-2-propyl Mercaptan	<1.0	<1.0

	% RECOVERY
Dibromofluoromethane	103
Toluene-d8	100
Bromofluorobenzene	100

METHODS: EPA SW 846-8260

Burgess J. A. Cooke, Ph. D.

9/29/98
Date

3229 Industrial Drive
P.O. Box 2336
Hobbs, New Mexico 88240
Telephone (505) 392-2973
FAX (505) 392-4990

Callaway Safety Equipment Co., Inc.

8-28-03

Mr. Ken Marsh
CONTROLLED Recovery Inc.
1 Lea County Airport
Hobbs, N.M. 88240

Mr. Marsh:

After many months of discussion with you regarding CRI and State of New Mexico OCD Review of CRI's March 14, 2003 submittal, I have the following conclusions.

As we interpret rule 118, one of it's principles is designed to protect the public from toxic or harmful effects of fugitive emissions generated from our industry. It seems the rule predominantly targets oil and gas producers, refineries, and systems operations. The rule sets standards for toxic gas emissions from the producers that may encroach on the public. As the rule applies to producers and such, I have not found a scientific method to apply the rule to CRI. The rule singles out facilities such as CRI and Basin Disposal (San Juan County) and sets some very stringent standards for monitoring toxic gases (primarily Hydrogen Sulfide gas) and implementation of Emergency Action Plans. In my professional opinion this is unwarranted. The basis for my opinion are the following:

- Historical data: CRI has had no prior history of any Hydrogen Sulfide emissions from its facility
- Under rule 118 a potentially hazardous concentration of H2S for a public area is 100 ppm, and 500 ppm for public roads, if the concentration of H2S is below 100 ppm, NO FURTHER ACTION IS TAKEN.
- There are no pipelines into CRI, all water is hauled by truck
- The acceptable NIOSH concentration is 10 ppm for 10 minutes
- The acceptable OSHA concentration is 20 ppm for 10 minutes
- The facility is hand monitored daily from employees wearing calibrated H2S monitors
- Recent tests from CRI fluid pit documented very low soluble sulfides present
- Soluble sulfides may be present in fluids, but are not airborne and there is no indication or history that the sulfides present will "convert" to airborne gas
- The conversion of soluble sulfides to H2S gas would require one or more of the following
    - Significant lowering of the ph
    - Significant elevation of the temperature
    - Agitation of the fluid
    - Decrease of the pressure (Not applicable)

- The current technology for H2S monitoring does not exist for monitoring 0.1ppm at the perimeter
- There are no detectable odors from H2S at the facility
- CRI is in compliance with State of New Mexico Air Quality Control Regulation 201 dated June 15, 1981
- The distance from the fluid pit to the public roads provide a safe-zone, due to the extreme distance
- No Radius of Exposure can be determined due to the non-existence of a measurable concentration of H2S gas, and more importantly, there is **NO VOLUME** of gas to measure

While we acknowledge the NIOSH and OSHA standards are designed for occupational guidelines, they are based on experience and science. With the experience of CRI (noted above), the science that is applicable, and the extreme distances to public areas and roads I feel very confident that CRI's proposed H2S contingency plan is adequate to protect the public, and exceeds NMOCD standards for other Oil and Gas operations.

Rule 118 has merit and its intention is clear, but I believe the application of the rule to CRI is invalid. The rule clearly is intended for producers of systems that handle gases that when the system is breached and gases could involve the public a protocol is developed and followed to protect the public. The producers have volumes and concentrations to work with and can calculate their Radius of Exposure. CRI has no measurable concentrations, and certainly no volumes of gases.

I will remain available for consultation and do not hesitate to call me at 505-392-2973.

Yours in Safety

Sam Callaway

Samuel D. Callaway

Resume

Personal Information

- DOB: 01-27-52
- Place Orange, Texas

Experience

- 1981 to present CALLAWAY SAFETY EQUIPMENT CO.,INC. Hobbs, N.M.
  Company President and Industry Specialist
  - Qualified repair of most brands of PPE
  - Expert on critical situations in refinery/plant safety operations
  - Qualified Expert Witness
  - Accident Investigator
  - Incident Commander for Hazardous Materials Team
  - Qualified Member of High Angle Rescue Team

- 1979 to 1981 SECORP INDUSTRIES, INC., Lafayette, Louisana
  Offshore Safety Consultant/Regional Manager
  - Hydrogen Sulfide Safety Operations of Offshore Drilling and Production Platforms
  - Duties included, design and installation of H2S monitors and alarms, calibrations, inspection of SCBA's, training of all employees, evacuation drills, and operational functions of emergency/critical situations

- 1976 to 1979 TEXACO INC., HOBBS, NEW MEXICO
  Relief Foreman/Safety Chairman
  - New Employee Orientation
  - Red Cross First Aid trainer, conduct safety meetings

- 1972 to 1976 UNITED STATES NAVY
  Petty Officer 2nd Class, Hospital Corpsman
  - Held sick-bay aboard ship
  - Implement radiation protection program for 350 men
  - Training of crew members in first aid, damage control, and fire

Education

- Eunice High School, Eunice, New Mexico Graduated 1970
- New Mexico Junior College, Hobbs, New Mexico 64hours 1978
- College of the Southwest, Hobbs, New Mexico attended
- USN Hospital Corps School San Diego, Ca (16 weeks)

Continuing Education

- Train the Trainer (H2S) 3 day course
- Hazardous Waste Operations and Emergency Response (40 hour) Technician Level, Odessa College, Odessa, Texas
- Hazardous Waste Operations and Emergency Response (40 hour) Incident Commander Level, Odessa College, Odessa Texas
- Bioremediation Basics (8 hour) NMJC, Hobbs, New Mexico
- EMP America Medic First Aid
- OSHA500 Course (40 hour) Hobbs, NM
- OSHA 501 Course (40 hour) Hobbs, N.M.
- Environmental Assessment Association Certified Lead Inspector (40 hour) Chicago, Il
- Naturally Occurring Radioactive Material (NORM) training (8 hour)
- National Drager, Inc. Service Certification
- Biosystems, Inc. Service Certification
- MST, Inc. Service Certification
- Certified Environmental Specialist (EAA)
- Member EAA

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OCT 16 2003
Environmental Bureau
Oil Conservation Division

EXHIBIT "D"

Compliance Services

1220 N. Grimes · PO Box 2734 · Hobbs NM 88240 · Phone: (505) 391-7797
Dyke Cell Phone # (505) 370-5924 · Wade Cell Phone # (505) 370-5024

Re: New Mexico Oil Conservation Division letter dated July 3, 2000

The action level specified in the letter to *Controlled Recovery Inc.* received from the OCD for sampling is 1.0 ppm H_2S. That level is extremely low. In fact, there is no governmental or industrial hygiene agency (to my knowledge) which has ever required monitoring of H_2S for health reasons at less than 10 ppm. The *accepted industry standard for monitoring and controlling H_2S in the workplace in our industry is 10 ppm* (See attachment #1 - ANSI H_2S Instructor Training Manual, page 3), whereas ANSI (American National Standards Institute) recommends a level for the protection of health of workers for an 8 hour day, 5 day week of less than 15 ppm (See above attachment). NIOSH (National Institute for Occupational Safety and Health) Pocket Guide to Chemical Hazards currently lists an exposure limit of 10 ppm (ceiling) (See attachment #4). Nonetheless the *actual OSHA acceptable ceiling concentration is 20 ppm, or 50 ppm for a single exposure of 10 minutes or less.* (See attachment #2 - OSHA Z Table) Throughout our industry, workers are taught that it is safe to work for 40 hours per week in levels of H_2S below 10 ppm.

H_2S is not considered Carcinogenic (National Toxicology Program 9th Annual report on Carcinogens 5/15/2000) or even suspected as causing Cancer. The hazard category listed for H_2S is acute (immediately hazardous) and the first action level is listed at 50 ppm. (See attachment #3)

In the NIOSH Criteria Document "Occupational Exposure to Hydrogen Sulfide" (See attachment #6) it is stated that "conclusive evidence of adverse health effects from repeated, long-term exposure to hydrogen sulfide at low concentrations was not found." (p.1) It is further recommended that in the workplace "Exposure to hydrogen sulfide shall be controlled so that no employee is exposed to hydrogen sulfide at a ceiling concentration greater than 15 mg/m^3." Both of these statements tend to support the hypothesis that low level monitoring such as that suggested by the NMOCD at your facility is unwarranted.

NMOCD rule 118 requires that any "well, lease, or related facility handling H_2S gas with concentration of 500 ppm or more shall have a warning sign at the entrance." Further, it specifies that any well, lease, or related facility with "H_2S concentration and volume such that the H_2S fraction equates to 10 MCF per day or more of H_2S and which is located within one-fourth mile of a dwelling, public place or highway shall install safety devices and maintain them in operable condition or shall establish safety procedures designed to prevent the undetected continuing escape of H_2S." (See attachment #5) There is no possibility that your facility will ever emit H_2S in those concentrations at that volume and yet the requirements for public protection in these circumstances are much less than those proposed in the letter sent to *Controlled Recovery Inc.*

Compliance Services

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Dyke Cell Phone # (505) 370-5924 · Wade Cell Phone # (505) 370-5024

The specific guidelines that the NMOCD sent in the letter are not found in OCD Rule 711 on their web site. Neither was it found in the 7/97 revision of that rule. The OCD also referenced the guidelines for Rule 711 (Arabic number 13). Both of the rule and the guidelines require H_2S Contingency planning, but only the guidelines mention monitoring. The guidelines are not specific as to how the monitoring is to be performed and at what levels actions are required.

As I could not find the specifics mentioned in the letter (after searching NMOCD's entire web site), I still have some question as to whether these requirements apply to an existing facility (such as *Controlled Recovery Inc.*), a new facility, or as part of a closure plan. Nowhere did I find the proposed 1.0 ppm monitoring guidelines as part of any Rule, proposed Rule, or elsewhere.

The OCD letter also requires dissolved Oxygen and dissolved Sulfide testing of the pond if 1.0 or greater H_2S levels are encountered. I am puzzled by why they would require these tests. These tests are not particularly good indicators of potential H_2S release. There are far better methods. A simple titrimetric method will determine the actual H_2S concentration of the water, and thus the maximum potential release. (EPA 600/4-020 376.2)

On 07/14/00, I sampled the produced water evaporation pond at *Controlled Recovery Inc.* The sample was immediately iced, placed under chain of custody, and taken to a laboratory for analysis of hydrogen sulfide content in the water. The results (taken at the very end of a normal business week) show that there is little or no potential for harmful H_2S exposure from this source. (See attachment #7) The results show 6.8 ppm H_2S in the water, indicating that the maximum potential release at 0" from the pit is below all permissible and recommended exposure limits to protect public health and safety.

The regulation exercised by the NMOCD over waste water that *Controlled Recovery Inc.* is receiving is another consideration. Are the companies that are hauling this waste placarding it as a "poison gas"? I suspect not. If these wastes are not dangerous in transportation, then they would not, by definition, be dangerous during evaporation or disposal. And taking this line of reasoning back a step further, are the generating companies handling this produced water as if it contains dangerous quantities of poisonous gases? Are they monitoring their produced water tanks to determine whether they contain the 1 ppm of H_2S that the NMOCD is requiring *Controlled Recovery Inc* to monitor for? Oil producers and transporters which are within the city limits and adjacent to populated areas are not required to monitor at 1 ppm. They are not even required to perform continuous monitoring at the 10 ppm level. They are only required to restrict access and to provide signs warning of danger.

Compliance Services

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It is my professional opinion that the 1.0 ppm level of monitoring that the NMOCD is asking for is unnecessary and overly burdensome. This monitoring level does not compare equitably with requirements placed upon other facilities with a far greater potential for H_2S release. Since the evaporation pond which *Controlled Recovery Inc.* maintains is not stratified, nor is it deep enough or stagnant enough to ever become stratified, there is no potential for anaerobic conditions to exist, and therefore no potential for the creation of H_2S such as might exist in a landfill or another facility. The only H_2S which could be released from the evaporation pond is that which is brought into the facility in solution (in the waste water). This H_2S would naturally seek equilibrium with the atmosphere, and thus be released slowly over time. For all of the above listed reasons, I see no necessity to monitor H_2S levels at the evaporation pond at *Controlled Recovery Inc.* And finally, given *Controlled Recovery Inc.*'s remote location and the negligible potential radius of exposure, I can see no public safety reason to perform any monitoring at all beyond routine personnel monitoring of your employees as they work directly with the waste water. It is my professional opinion that such monitoring is not necessary to protect public health and the environment.

It would certainly not be out of order to send a letter to the New Mexico Oil Conservation Division asking for a substantiation of these specific requirements and a detailed explanation as to what health concerns generated such rigid sampling levels.

If I can be of further service, please do not hesitate to call.

Thanks,

Dyke Browning - Registered Environmental Manager #7771
Certified Environmental Inspector #12441

Compliance Services

Phone (505) 391-7797 **Fax (505) 391-7954**
1220 N. Grimes, Hobbs, NM 88240 **Cell (505) 370-5924**

Dyke A. Browning is a Safety and Environmental Professional with over 15 years of experience in hazardous materials handling, chemical hygiene, occupational safety and health, hazardous waste operations, hazardous waste disposal, environmental cleanup and stewardship. He is a Registered Environmental Manager, and a Certified Environmental Inspector. Mr. Browning has an extensive background in the chemistry of hazardous materials, having served as a petrochemical service company laboratory manager for 7 years. Mr. Browning holds certifications in RCRA hazardous waste management, Land Ban, HAZWOPER (Level 5), First Aid and CPR, Substance Abuse, Radiation Safety, Continuous Improvement of Process, and others. Mr. Browning's academic and field experience have enabled him become a respected Safety, Health, and Environmental Trainer and consultant.

Education

Baylor University – Environmental Science Major
College of the Southwest – Bachelor of General Studies – (Biology,Business)

Registrations and Affiliations

- Trainer, Medic First Aid - International Registry # 17943, EMP America
- Member, National Environmental Training Association
- Member, Environmental Assessment Association
- Registered Environmental Manager #7771
- National Registry of Environmental Professionals
- Certified Environmental Inspector #12441 - Environmental Assessment Association
- Licensed Radiation Safety Consultant, State of New Mexico #399-6
- Corporate Representative, American Trucking Association
- Corporate Representative, National Fire Protection Association
- Corporate Representative, International Association of Drilling Contractors
- Corporate Representative, Association of Oilwell Service Contractor
- Professional Member - American Society of Safety Engineers
- Defensive Driving Instructor #45672 - National Safety Council

Experience

June 1999-Present	Compliance Services
1995-1999	Co-Owner, Safety & Environmental Solutions, Inc.
1993-1995	Environmental Specialist – Callaway Safety Equipment Co., Inc.
1985-1992	Laboratory Manager, Emergency Response Team - Unichem
1987-1992	Safety & Environmental Coordinator – Unichem International

Email = compliance@cleanweb.net
Website = http://members.cleanweb.net/compliance

III. Effects of H_2S

A. .13 p.p.m. -- minimum level for odor to be detected

B. 4.6 p.p.m. -- easily detectable

C. 100 p.p.m. -- begins to cause throat and eye irritation, odor will be undetectable after 2-15 minutes

D. 200-300 p.p.m. -- eye inflammation with extended (1 hour) exposure: dizziness, headaches, nausea

E. 300 p.p.m. -- threshold that can cause death--IDLH (Immediate Danger to Life and Health)

F. 500-700 p.p.m. -- can cause unconsciousness and death in 30 minutes to one hour

G. 700-1000 p.p.m. -- rapid unconsciousness, breathing stops and death occurs quickly.

H. 1000-2000 p.p.m. -- immediate unconsciousness, death in a few minutes. Death can occur even if removed to fresh air at once.

IV. Acceptable Working Limits

A. **Acceptable Ceiling Concentration.** The acceptable concentration for protection of health for an eight-hour, five day week shall be 15 p.p.m. Fluctuations are to occur below this concentration.

B. **Acceptable Eight-Hour Time-Weighted Average.** To avoid discomfort, the time-weighted average concentration of hydrogen sulfide shall not exceed 10 p.p.m.

C. P.P.M. = parts of gas per million-parts of air by volume. How little is 1 ppm of any gas?
   1. If one inch would represent one p.p.m. of gas, this would be like comparing one inch in 15 1/2 miles in distance.
   2. If one second would represent one p.p.m. of gas, this would be like comparing one second in 11 1/2 days.

D. H_2S disables breathing mechanisms.

D. If the oxidizing ability of the blood is reduced, H_2S will accumulate to dangerous levels. (This is why it is dangerous even at fairly low concentrations with time.)

E. Some time (24 hours) is needed to completely remove H_2S from your system.

F. Physiological effects depend upon four factors.
   a. Duration of Exposure
   b. Frequency -- Time of previous exposures, effects residual in blood.
   c. Intensity -- Can cause peak blood concentrations above acceptable limits.
   d. Individual Susceptibility -- Blood breakdown rate of individuals may vary. "Outside" factors such as alcohol or drugs can drastically reduce tolerance to H_2S. Breathing problems such as asthma reduce available blood oxygen. Other health problems such as epilepsy, coronary diseases, and emphysema can limit ability to cope with H_2S exposure.

Attachment #1

Federal Regulations - OSHA
29 CFR 1910.1000 Table Z-2 (excerpt 07/18/00)

TABLE Z-2

Substance	8-hour time weighted average	Acceptable ceiling concentration	Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift	
			Concentration	Maximum duration
Hydrogen sulfide (Z37.2-1966)	.....	20 ppm.....	50 ppm...	10 mins. once only if no other meas. exp. occurs.

Attachment #2

Attachment #3

National Toxicology Program Report on Carcinogens

- What is the Report on Carcinogens (RoC)?
- Q's & A's on the RoC
- 9th Report on Carcinogens
  - Factsheet - 9th Report on Carcinogens
  - Factsheet - Listing of Tamoxifen as a known human carcinogen in the 9th Report on Carcinogens
  - Reviews of Chemicals for the RoC, 9th Edition
- What is under consideration for the RoC, 10th Edition
- Listing and Delisting Procedures
- Listing Criteria
- Call for Nominations to the NTP Report on Carcinogens
- The Report on Carcinogens Board Members & Meeting Minutes
- Ongoing Review of Process & Procedures:
  - Notice: DHHS/PHS; National Institute of Environmental Health Sciences, National Toxicology Program; RE-SCHEDULED MEETING ON REPORT ON CARCINOGENS (RoC) -- National Toxicology Program Public Meeting to receive comment on the review procedures and listing criteria used in the preparation of the DHHS Report on Carcinogens (RoC); is re-scheduled from September 15 (see 64 FR 37992 or pdfversion*) to October 21 and 22, 1999, DoubleTree Hotel Rockville, 1750 Rockville Pike, Rockville, Maryland, beginning at 9 am.
    Dated: October 6, 1999 [Volume 64, Number 193]) (pdf version*)

    Transcripts from Public Meeting

  - NTP's Response to Public Comments and Discussion on the Preparation and Review of the RoC

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Chemical name, structure/formula, CAS and RTECS Nos., and DOT ID and guide Nos.	Synonyms, trade names, and conversion factors	Exposure limits (TWA unless noted otherwise)	IDLH	Physical description	Chemical and physical properties: MW, BP, SOL, Fl.P, IP, Sp. Gr, flammability	VP, FRZ, UEL, LEL	Incompatibilities and reactivities	Measurement method (See Table 1)
Hydrogen sulfide H_2S 7783-06-4 MX1225000 1053 117	Hydrosulfuric acid, Sewer gas, Sulfuretted hydrogen 1 ppm = 1.40 mg/m³	NIOSH C 10 ppm (15 mg/m³) [10-min] OSHA† C 20 ppm 50 ppm (10-min max peak)	100 ppm	Colorless gas with a strong odor of rotten eggs. [Note: Sense of smell becomes rapidly fatigued & [illegible] can NOT be relied upon to warn of the continuous presence of H_2S. Shipped as a liquefied compressed gas.]	MW: 34.1 BP: -77°F Sol: 0.4% Fl.P: NA (Gas) IP: 10.46 eV RGasD: 1.19 Flammable Gas	VP: 17.6 atm FRZ: -122°F UEL: 44.0% LEL: 4.0%	Strong oxidizers, strong nitric acid, metals	Char; NH_4OH/H_2O_2; [illegible]
Hydroquinone $C_6H_4(OH)_2$ 123-31-9 MX3500000 2662 153	p-Benzenediol; 1,4-Benzenediol; Dihydroxybenzene; 1,4-Dihydroxybenzene; Quinol	NIOSH C 2 mg/m³ [15-min] OSHA 2 mg/m³	50 mg/m³	Light-tan, light-gray, or colorless crystals.	MW: 110.1 BP: 545°F Sol: 7% Fl.P: 329°F (Molten) IP: 7.95 eV Sp.Gr: 1.33 Combustible Solid; dust cloud may explode if ignited in an enclosed area	VP: 0.00001 mm MLT: 338°F UEL: ? LEL: ?	Strong oxidizers, alkalis	Filter; CH_3COOH; HPLC/UVD; IV [#5004]
2-Hydroxypropyl acrylate $CH_2{=}CHCOOCH_2CHOHCH_3$ 999-61-1 AT1925000	HPA; β-Hydroxypropyl acrylate, Propylene glycol monoacrylate 1 ppm = 5.33 mg/m³	NIOSH 0.5 ppm (3 mg/m³) [skin] OSHA† none	N.D.	Clear to light-yellow liquid with a sweetish, solvent odor.	MW: 130.2 BP: 376°F Sol: ? Fl.P: 149°F IP: ? Sp.Gr: 1.05 Class IIIA Combustible Liquid	VP: ? FRZ: ? UEL: ? LEL: 1.8%	Water [Note: Can become unstable at high temperatures & pressures or may react with water with some release of energy, but not violently.]	None available
Indene C_9H_8 95-13-6 NK8225000	Indonaphthene 1 ppm = 4.75 mg/m³	NIOSH 10 ppm (45 mg/m³) OSHA† none	N.D.	Colorless liquid. [Note: A solid below 29°F.]	MW: 116.2 BP: 359°F Sol: Insoluble Fl.P: 173°F IP: 8.81 eV Sp.Gr: 0.997 Class IIIA Combustible Liquid	VP: ? FRZ: 29°F UEL: ? LEL: ?	None reported [Note: Polymerizes & oxidizes on standing. It has exploded during nitration with (H_2SO_4 + HNO_3).]	None available

Personal protection and sanitation (See Table 3)	Recommendations for respirator selection — maximum concentration for use (MUC) (See Table 4)	Route	Symptoms (See Table 5)	First aid (See Table 6)	Target organs (See Table 5)
[illegible] [Hydrogen sulfide]	[illegible] PAPRS/GMFS/SA*/SCBAF [illegible] PD,PP/SAF:PD,PP:ASCBA [illegible] GMFS/SCBAE	Inh Con	Irrit eyes, resp sys; apnea, coma, convuls; conj, eye pain; lac, photo, corn [illegible]; dizz; head; [illegible] irrity, insom; GI dist	Eye: Frostbite; Skin: Frostbite; Breath: [illegible]	Eyes, resp sys, CNS
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: Daily Provide: Eyewash (>7%) [Hydroquinone]	NIOSH/OSHA 50 mg/m³: APRD*/HiEF/SAT:CF*/SCBAF/SAF §: SCBAF:PD,PP/SAF:PD,PP:ASCBA Escape: HiEF/SCBAE	Inh Ing Con	Irrit eyes, conj, kera; CNS excitement; colored urine, nau, dizz, suffocation, rapid breath; musc twitch, delirium; collapse; skin irrit, sens, derm	Eye: Irr immed Skin: Water flush Breath: Resp support Swallow: Medical attention immed	Eyes, skin, resp sys, CNS
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: N.R. Provide: Eyewash, Quick drench [2-Hydroxypropyl acrylate]	TBAL	Inh Abs Ing Con	Irrit eyes, skin, resp sys; eye, skin burns; cough, dysp	Eye: Irr immed Skin: Soap flush immed Breath: Resp support Swallow: Medical attention immed	Eyes, skin, resp sys
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: Daily Remove: When wet or contam Change: N.R. [Indene]	TBAL	Inh Ing Con	In animals: irrit eyes, skin, muc memb; derm, skin sens; chemical pneu (aspir liq); liver, kidney, spleen inj	Eye: Irr immed Skin: Soap wash Breath: Resp support Swallow: Medical attention immed	Eyes, skin, resp sys, liver, kidneys, spleen

NIOSH Pocket Guide to Chemical Hazards (June 1997)
U.S. Department of Health and Human Services
Public Health Service
Center for Disease Control and Prevention
National Institute for Occupational Safety and Health

Attachment #4

Attachment #5

RULE 118. - HYDROGEN SULFIDE GAS - PUBLIC SAFETY (as of 3-1-91)

A. The intent of this rule is to provide for the protection of the public's safety in areas where hydrogen sulfide (H_2S) gas in concentrations greater than 100 parts per million (PPM) may be encountered.

B. Producing operations should be conducted with due consideration and guidance from American Petroleum Institute (API) publication "Conducting Oil and Gas Production Operations Involving Hydrogen Sulfide" (RP-55). The operator of a lease producing, or a gas processing plant handling H_2S or any other related facility where H_2S gas is present in concentrations of 100 PPM or more shall take reasonable measures to forewarn and safeguard persons having occasion to be on or near the property. In addition to training operator's employees in H_2S safety such measures may include, but are not necessarily limited to, posting of warning signs, fencing of surface installations, installation of safety devices and wind direction indicators, and maintaining tanks, thief hatches and gaskets, valves and piping in condition so as to prevent avoidable loss of vapors. Where release of hydrogen sulfide is unavoidable, the operator shall burn or vent the gas stream in such a manner as to avoid endangering human life.

C. Wells drilled in known H_2S gas producing areas, or where there is substantial probability of encountering H_2S gas in concentrations of 100 PPM or more, should be planned and drilled with due regard to and guidance from API RP-49 "Recommended Practices for Safe Drilling of Wells Containing Hydrogen Sulfide", latest edition. Wells completed and serviced by well servicing units where there is substantial probability of encountering H_2S gas in concentrations of 100 PPM or more should be worked on with due regard to the latest industry accepted practices. These practices may include, but are not necessarily limited to, the proper training of personnel in H_2S safety and the use of H_2S safety equipment as listed for safe operations by the American Petroleum Institute draft report for "Land, Oil and Gas Well Servicing and Workover Operations Involving Hydrogen Sulfide."*

D. Within ninety (90) days after completion of the first well on a lease, or within ninety (90) days after H_2S is discovered in a gas stream, each operator shall submit in writing to the Division's district office having jurisdiction, on a form acceptable to the Division, for each lease in each pool in production at that time, the H_2S concentration from an analysis of a representative sample of the gas stream. The analysis shall be performed by an industry-recognized method and procedure. The measurement report shall specify the name of the operator, lease or facility name, pool, testing point, tester, test method, and the measured H_2S concentration. Tests within the past three (3) years and which are still representative may be utilized for submittal from previously producing leases. NOTE: Owners or operators of existing wells and facilities shall have until July 1, 1987, to come into compliance with this paragraph of these rules.

E. (1) Any well, lease, processing plant or related facility handling H_2S gas with concentration of 500 PPM (0.05%) or more shall have a warning sign at the entrance. The sign, as a minimum, shall be legible from at least fifty (50) feet, and contain the words "poison gas." The use of existing signs will meet the requirements of this section providing they convey the intended safety message.

(2) Any lease producing gas or related facility having storage tanks containing gas with a H_2S concentration of 1,000 PPM (0.1%) or more shall have, in addition to the sign required in subparagraph E. (1), a sign at the foot of the battery stairway that shall accomplish the requirements of E. (1), plus specify any protective measures that may be necessary. This paragraph does not apply to gas processing plants.

(3) Any well, lease or processing plant handling gas with H_2S concentration and volume such that the H_2S fraction equates to 10 MCF per day or more of H_2S and which is located within one-fourth (1/4) mile of a dwelling, public place or highway shall install safety devices and maintain them in operable condition or shall establish safety procedures designed to prevent the unprotected continuing escape of H_2S. Wind direction indicators shall be installed at at least one strategic location at or near the site and shall be readily visible throughout the site. Also, unattended surface facilities or plants within one-fourth (1/4) mile of a dwelling or public meeting place shall be protected from public access by fencing and locking, or other equivalent security means. In addition, the operator shall prepare a contingency plan to be carried out should the public be threatened by a release. The plan shall provide for notification of endangered parties, as well as public safety personnel, for evacuation of threatened parties as warranted, and institution of measures for curbing the flow of gas. Contingency plans shall be available for Division inspection and shall be retained at the location which lends itself best to activation of any such plan. The operator, as an alternative, may utilize Figure 4.1 of API (RP-55) Revised March, 1983 and if the 100 PPM radius of exposure includes a dwelling, public place or highway, the operator must meet the public safety requirements as specified in this section.

(4) The provisions of this section shall be applicable within 30 days after the filing of sample data showing the existence and concentration of H_2S gas described in Paragraphs E. (1) through E. (3) above. In unusual circumstances guidance on placement and content of signs may be obtained from the supervisor of the appropriate Division District Office.

F. The Director of the Division may administratively grant exceptions or extensions to the requirements of this rule for good cause shown and where such exception will not result in a threat to human life.

*At such time as the American Petroleum Institute adopts the "Recommended Practice for Land Oil and Gas Well Servicing and Workover Operations Involving Hydrogen Sulfide", it shall take the place of any previous draft reports.

I. RECOMMENDATIONS FOR A HYDROGEN SULFIDE STANDARD

The National Institute for Occupational Safety and Health (NIOSH) recommends that worker exposure to hydrogen sulfide in the workplace be controlled by adherence to the following sections. The standard is designed to protect the health and to provide for the safety of employees for up to a 10-hour work shift, 40-hour workweek, over a working lifetime. Compliance with all sections of the standard should prevent adverse effects of hydrogen sulfide on the health and safety of workers. Techniques recommended in the standard are valid, reproducible, and available to industry and government agencies. Sufficient technology exists to permit compliance with the recommended standard. The criteria and standard will be subject to review and revision as necessary.

Hydrogen sulfide is a nearly ubiquitous, acute acting toxic substance. It is a leading cause of sudden death in the workplace. Brief exposures to hydrogen sulfide at high concentrations have caused conjunctivitis and keratitis, and exposures at very high concentrations, have caused unconsciousness, respiratory paralysis, and death. Conclusive evidence of adverse health effects from repeated, long-term exposure to hydrogen sulfide at low concentrations was not found. However, there is some evidence that hydrogen sulfide alone at low concentrations or in combination with other chemical substances (eg, hydrocarbons or carbon disulfide) has caused nervous-system, cardiovascular, and gastrointestinal disorders, and effects on the eyes.

Hydrogen sulfide is especially dangerous when it occurs in low-lying areas or confined workspaces or when it exists in high concentrations under

Attachment #6

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
CONTROLLED RECOVERY, INC.
ATTN: DYKE BROWNING
1220 N. GRIMES
HOBBS, NM 88240
FAX TO: (505) 391-7954

Receiving Date: 07/14/00
Reporting Date: 07/18/00
Project Owner: KEN MARSH
Project Name: PRODUCED WATER EVAP. PIT
Project Location: 40 MILES W. OF HOBBS

Analysis Date: 07/14/00
Sampling Date: 07/14/00
Sample Type: WASTEWATER
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: GP

LAB NUMBER	SAMPLE ID	SULFIDE (mg/L)
H5008-1	PRODUCED WATER PIT	6.8
Quality Control		NR
True Value QC		NR
% Accuracy		NR
Relative Percent Difference		NR

METHOD: EPA 600/4-020 376.2

Chemist

07/18/2000
Date

Attachment #7

CHARACTERISTICS OF H_2S

1. Colorless Gas at Room Temperature
2. Boiling Point = -76° F (-60° C)
3. Soluble in Liquid
   Dissolves in water to form acid-ph of 3
4. Density = 1.19 X Air (Heavier Than Air)
5. Ignition Temperature = 500° F (260° C)
6. Flame is Practically invisible
7. One Combustion By-Product is SO_2 which is Also Toxic
   Sulfur Dioxide is also a colorless gas but, has an irritating, pungent odor. It's TLB is 2 ppm for an 8 hour day. This gas causes irritation to the eyes nose and throat and causes bronchioconstriction.
8. Explosive at Mixtures Between 4.3% and 46%
9. Noxious at Low concentrations (Smells Similar to Rotten Eggs)
10. Corrosive to High Carbon Steel
    Sulfide Stress cracking
    (A) HIGHER GRADES OF METALS ARE MORE SUSCEPTIBLE TO H_2S STRESS CRACKING.
    (B) HIGHER TEMPERATURES REDUCE CORROSIVE EFFECT.
    (C) HIGHER PRESSURES INCREASE CORROSIVE EFFECT.
    (D) H_2S STRESS CRACKING NORMALLY DOES NOT OCCUR AT PRESSURES BELOW 65 PSI.
    (E) METALS WITH A ROCKWELL HARDNESS OF 22 OR LESS ARE NORMALLY NOT SUSCEPTIBLE TO H_2S STRESS CRACKING.
    (F) DRILL PIPE WITH A YIELD STRENGTH OF 95,000 PSI OR LESS ARE NORMALLY NOT SUSCEPTIBLE TO H_2S STRESS CRACKING.

EFFECTS OF SHORT-TERM (acute) EXPOSURE

The way H_2S affects you depends on three (3) things;

(1) How much (dosage or concentration) you are exposed to

(2) How long you are exposed to it

(3) How much you can take (tolerate)

INHALATION:
AT CONCENTRATIONS OF:
Less than 10 ppm - can be safely worked in for 8 hours.
0.13 to 30 ppm - the odor is obvious and unpleasant, begins eye irritation.
50 ppm - marked dryness and irritation of the nose and throat. Prolonged exposure may cause a runny nose, cough, hoarseness, shortness of breath and pneumonia.
100 to 150 ppm - there is a temporary loss of smell.
200 to 250 ppm - severe irritation as well as symptoms such as headache, nausea, vomiting and dizziness. Prolonged exposure may cause lung damage (build up of fluids in the lungs). Exposure for 4 to 8 hours can cause death.
300 to 500 ppm - causes these same effects sooner and more severely.
500 ppm - and above - rapid unconsciousness and death.

NOTE: Severe exposures which do not result in death may cause long-term symptoms such as memory loss, paralysis of facial muscles or nerve tissue damage.

SYMPTOMS tend to disappear shortly after removal from area exposed to low to moderate concentrations.

H_2S kills by respiratory paralysis - can't hold breath

LONG TERM EXPOSURE:
Whether or not long-term poisoning by H_2S occurs is controversial. The disagreement centers on the nature of the symptoms, which include fatigue, headache, dizziness, hoarseness, cough and irritability. These symptoms are not specific to H_2S exposure and could be due to a number of other causes.

Carcinogenicity;
No data

19.15.3.118 HYDROGEN SULFIDE GAS (HYDROGEN SULFIDE)

A. Applicability. This section applies to any person, operator or facility subject to the jurisdiction of the Division, including, but not limited to, any person, operator or facility engaged in drilling, stimulating, injecting into, completing, working over or producing any oil, natural gas or carbon dioxide well or any person, operator or facility engaged in gathering, transporting, storing, processing or refining of crude oil, natural gas or carbon dioxide (referred to herein as "person, operator or facility" or "well, facility or operation"). This section shall not act to exempt or otherwise excuse surface waste management facilities permitted by the division pursuant to 19.15.9.711 NMAC from more stringent conditions on the handling of hydrogen sulfide required of such facilities by 19.15.9.711 NMAC or more stringent conditions in permits issued thereunder, nor shall such facilities be exempt or otherwise excused from the requirements set forth in this section by virtue of permitting under 19.15.9.711 NMAC.

B. Definitions (specific to this section).

(1) ANSI. The acronym "ANSI" means the american national standards institute.

(2) API. The acronym "API" means the american petroleum institute.

(3) Area of Exposure. The phrase "area of exposure" means the area within a circle constructed with a point of escape at its center and the radius of exposure as its radius.

(4) ASTM. The acronym "ASTM" means the american society for testing and materials.

(5) Dispersion Technique. A "dispersion technique" is a mathematical representation of the physical and chemical transportation characteristics, dilution characteristics and transformation characteristics of hydrogen sulfide gas in the atmosphere.

(6) Escape Rate. The "escape rate" is the maximum volume (Q) that is used to designate the possible rate of escape of a gaseous mixture containing hydrogen sulfide, as set forth herein.

(a) For existing gas facilities or operations, the escape rate shall be calculated using the maximum daily rate of the gaseous mixture produced or handled or the best estimate thereof. For an existing gas well, the escape rate shall be calculated using the current daily absolute open flow rate against atmospheric pressure or the best estimate of that rate.

(b) For new gas operations or facilities, the escape rate shall be calculated as the maximum anticipated flow rate through the system. For a new gas well, the escape rate shall be calculated using the maximum open-flow rate of offset wells in the pool or reservoir, or the pool or reservoir average of maximum open-flow rates.

(c) For existing oil wells, the escape rate shall be calculated by multiplying the producing gas/oil ratio by the maximum daily production rate or the best estimate thereof.

(d) For new oil wells, the escape rate shall be calculated by multiplying the producing gas/oil ratio by the maximum daily production rate of offset wells in the pool or reservoir, or the pool or reservoir average of the producing gas/oil ratio multiplied by the maximum daily production rate.

(e) For facilities or operations not mentioned, the escape rate shall be calculated using the actual flow of the gaseous mixture through the system or the best estimate thereof.

(7) GPA. The acronym "GPA" means the gas processors association.

(8) LEPC. The acronym "LEPC" means the local emergency planning committee established pursuant to the emergency planning and community right-to-know act, 42 U.S.C. Section 11001.

(9) NACE. The acronym "NACE" refers to the national association of corrosion engineers.

(10) PPM. The acronym "ppm" means "parts per million" by volume.

(11) Potentially Hazardous Volume means the volume of hydrogen sulfide gas of such concentration that:

(a) the 100-ppm radius of exposure includes any public area;

(b) the 500-ppm radius of exposure includes any public road; or

(c) the 100-ppm radius of exposure exceeds 3,000 feet.

(12) Public Area. A "public area" is any building or structure that is not associated with the well, facility or operation for which the radius of exposure is being calculated and that is used as a dwelling, office, place of business, church, school, hospital, or government building, or any portion of a park, city, town, village or designated school bus stop or other similar area where members of the public may reasonably be expected to be present.

(13) Public Road. A "public road" is any federal, state, municipal or county road or highway.

(14) Radius of Exposure. The radius of exposure is that radius constructed with the point of escape as its starting point and its length calculated using the following Pasquill-Gifford derived equation,

or by such other method as may be approved by the division:

(a) For determining the 100-ppm radius of exposure: $X= [(1.589)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$, where "X" is the radius of exposure in feet, the "hydrogen sulfide concentration" is the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture, and "Q" is the escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psia and 60 degrees F).

(b) For determining the 500-ppm radius of exposure: $X=[(0.4546)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$, where "X" is the radius of exposure in feet, the "hydrogen sulfide concentration" is the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture, and "Q" is the escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psia and 60 degrees F).

(c) For a well being drilled, completed, recompleted, worked over or serviced in an area where insufficient data exists to calculate a radius of exposure but where hydrogen sulfide could reasonably be expected to be present in concentrations in excess of 100 ppm in the gaseous mixture, a 100-ppm radius of exposure equal to 3,000 feet shall be assumed.

C. Regulatory Threshold.

(1) Determination of Hydrogen Sulfide Concentration.

(a) Each person, operator or facility shall determine the hydrogen sulfide concentration in the gaseous mixture within each of its wells, facilities or operations either by testing (using a sample from each well, facility or operation), testing a representative sample, or using process knowledge in lieu of testing. If a representative sample or process knowledge is used, the concentration derived from the representative sample or process knowledge must be reasonably representative of the hydrogen sulfide concentration within the well, facility or operation.

(b) The tests used to make the determination referred to in the previous subparagraph shall be conducted in accordance with applicable ASTM or GPA standards or by another method approved by the division.

(c) If a test was conducted prior to the effective date of this section that otherwise meets the requirements of the previous subparagraphs, new testing shall not be required.

(d) If any change or alteration may materially increase the concentration of hydrogen sulfide in a well, facility or operation, a new determination shall be required in accordance with this section.

(2) Concentrations Determined to be Below 100 ppm. If the concentration of hydrogen sulfide in a given well, facility or operation is less than 100 ppm, no further actions shall be required pursuant to this section.

(3) Concentrations Determined to be Above 100 ppm.

(a) If the concentration of hydrogen sulfide in a given well, facility or operation is determined to be 100 ppm or greater, then the person, operator or facility must calculate the radius of exposure and comply with applicable requirements of this section.

(b) If calculation of the radius of exposure reveals that a potentially hazardous volume is present, the results of the determination of the hydrogen sulfide concentration and the calculation of the radius of exposure shall be provided to the division. For a well, facility or operation existing on the effective date of this section, the determination, calculation and submission required herein shall be accomplished within 180 days of the effective date of this section; for any well, facility or operation that commences operations after the effective date of this section, the determination, calculation and submission required herein shall be accomplished before operations begin.

(4) Recalculation. The person, operator or facility shall calculate the radius of exposure if the hydrogen sulfide concentration in a well, facility or operation increases to 100 ppm or greater. The person, operator or facility shall also recalculate the radius of exposure if the actual volume fraction of hydrogen sulfide increases by a factor of twenty-five percent in a well, facility or operation that previously had a hydrogen sulfide concentration of 100 ppm or greater. If calculation or recalculation of the radius of exposure reveals that a potentially hazardous volume is present, the results shall be provided to the division within sixty (60) days.

D. Hydrogen Sulfide Contingency Plan.

(1) When Required. If a well, facility or operation involves a potentially hazardous volume of hydrogen sulfide, a hydrogen sulfide contingency plan that will be used to alert and protect the public must be developed in accordance with the following paragraphs.

(2) Plan Contents.

(a) API Guidelines. The hydrogen sulfide contingency plan shall be developed with due consideration of paragraph 7.6 of the guidelines published by the API in its publication entitled "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide," RP-55, most recent edition, or with due consideration to another standard approved by the division.

(b) Required Contents. The hydrogen sulfide contingency plan shall contain, but shall not be limited to, information on the following subjects, as appropriate to the well, facility or operation to which it applies:

(i) Emergency procedures. The hydrogen sulfide contingency plan shall contain information on emergency procedures to be followed in the event of a release and shall include, at a minimum, information concerning the responsibilities and duties of personnel during the emergency, an immediate action plan as described in the API document referenced in the previous subsubparagraph, and telephone numbers of emergency responders, public agencies, local government and other appropriate public authorities. The plan shall also include the locations of potentially affected public areas and public roads and shall describe proposed evacuation routes, locations of any road blocks and procedures for notifying the public, either through direct telephone notification using telephone number lists or by means of mass notification and reaction plans. The plan shall include information on the availability and location of necessary safety equipment and supplies.

(ii) Characteristics of hydrogen sulfide and sulfur dioxide. The hydrogen sulfide contingency plan shall include a discussion of the characteristics of hydrogen sulfide and sulfur dioxide.

(iii) Maps and drawings. The hydrogen sulfide contingency plan shall include maps and drawings that depict the area of exposure and public areas and public roads within the area of exposure.

(iv) Training and Drills. The hydrogen sulfide contingency plan shall provide for training and drills, including training in the responsibilities and duties of essential personnel and periodic on-site or classroom drills or exercises that simulate a release, and shall describe how the training, drills and attendance will be documented. The hydrogen sulfide contingency plan shall also provide for training of residents as appropriate on the proper protective measures to be taken in the event of a release, and shall provide for briefing of public officials on issues such as evacuation or shelter-in-place plans.

(v) Coordination with State Emergency Plans. The hydrogen sulfide contingency plan shall describe how emergency response actions under the plan will be coordinated with the division and with the New Mexico state police consistent with the New Mexico hazardous materials emergency response plan (HMER).

(vi) Activation Levels. The hydrogen sulfide contingency plan shall include the activation level and a description of events that could lead to a release of hydrogen sulfide sufficient to create a concentration in excess of the activation level.

(3) Plan Activation. The hydrogen sulfide contingency plan shall be activated when a release creates a concentration of hydrogen sulfide greater than the activation level set forth in the hydrogen sulfide contingency plan. At a minimum, the plan must be activated whenever a release may create a concentration of hydrogen sulfide of more than 100 ppm in any public area, 500 ppm at any public road or 100 ppm 3,000 feet from the site of release.

(4) Submission.

(a) Where Submitted. The hydrogen sulfide contingency plan shall be submitted to the division.

(b) When Submitted. A hydrogen sulfide contingency plan for a well, facility or operation existing on the effective date of this section shall be submitted within one year of the effective date of this section. A hydrogen sulfide contingency plan for a new well, facility or operation shall be submitted before operations commence. The hydrogen sulfide contingency plan for a drilling, completion, workover or well servicing operation must be on file with the division before operations commence and may be submitted separately or along with the application for permit to drill (APD) or may be on file from a previous submission. A hydrogen sulfide contingency plan shall also be submitted within 180 days after the person, operator or facility becomes aware or should have become aware that a public area or public road is established that creates a potentially hazardous volume where none previously existed.

(c) Electronic Submission. Any filer who operates more than one hundred wells or who operates a crude oil pump station, compressor station, refinery or gas plant must submit each hydrogen

sulfide contingency plan in electronic format. The hydrogen sulfide contingency plan may be submitted through electronic mail, through an Internet filing or by delivering electronic media to the division, so long as the electronic submission is compatible with the division's systems.

(5) Failure to Submit Plan. Failure to submit a hydrogen sulfide contingency plan when required may result in denial of an application for permit to drill, cancellation of an allowable for the subject well or other enforcement action appropriate to the well, facility or operation.

(6) Review, Amendment. The person, operator or facility shall review the hydrogen sulfide contingency plan any time a subject addressed in the plan materially changes and make appropriate amendments. If the division determines that a hydrogen sulfide contingency plan is inadequate to protect public safety, the division may require the person, operator or facility to add provisions to the plan or amend the plan as necessary to protect public safety.

(7) Retention and Inspection. The hydrogen sulfide contingency plan shall be reasonably accessible in the event of a release, maintained on file at all times, and available for inspection by the division.

(8) Annual Inventory of Contingency Plans. On an annual basis, each person, operator or facility required to prepare one or more hydrogen sulfide contingency plans pursuant to this section shall file with the appropriate local emergency planning committee and the state emergency response commission an inventory of the wells, facilities and operations for which plans are on file with the division and the name, address and telephone number of a point of contact.

(9) Plans Required by Other Jurisdictions. A hydrogen sulfide contingency plan required by the Bureau of Land Management or other jurisdiction that meets the requirements of this subsection may be submitted to the division in satisfaction of this subsection.

E. Signage, Markers. For each well, facility or operation involving a concentration of hydrogen sulfide of 100 ppm or greater, signs and/or markers shall be installed and maintained. Each sign or marker shall conform with the current ANSI standard Z535.1-2002 ("Safety Color Code"), or some other standard approved by the division, shall be readily readable, and shall contain the words "poison gas" and other information sufficient to warn the public that a potential danger exists. Signs or markers shall be prominently posted at locations, including but not limited to entrance points and road crossings, sufficient to alert the public that a potential danger exists. Signs and/or markers that conform with this subsection shall be installed no later than one year from the effective date of this section.

F. Protection from Hydrogen Sulfide During Drilling, Completion, Workover, and Well Servicing Operations.

(1) API Standards. All drilling, completion, workover and well servicing operations involving a hydrogen sulfide concentration of 100 ppm or greater shall be conducted with due consideration to the guidelines published by the API entitled "Recommended Practice for Oil and Gas Well Servicing and Workover Operations Involving Hydrogen Sulfide," RP-68, and "Recommended Practices for Drilling and Well Servicing Operations Involving Wells Containing Hydrogen Sulfide," RP-49, most recent editions, or some other standard approved by the division.

(2) Detection and Monitoring Equipment. Drilling, completion, workover and well servicing operations involving a hydrogen sulfide concentration of 100 ppm or greater shall include hydrogen sulfide detection and monitoring equipment as follows:

(a) Each drilling and completion site shall have an accurate and precise hydrogen sulfide detection and monitoring system that will automatically activate visible and audible alarms when the ambient air concentration of hydrogen sulfide reaches a predetermined value set by the operator, not to exceed 20 ppm. There shall be a sensing point located at the shale shaker, rig floor and bell nipple for a drilling site and the cellar, rig floor and circulating tanks or shale shaker for a completion site.

(b) For workover and well servicing operations, one operational sensing point shall be located as close to the well bore as practical. Additional sensing points may be necessary for large or long-term operations.

(c) Hydrogen sulfide detection and monitoring equipment must be provided and must be made operational during drilling when drilling is within 500 feet of a zone anticipated to contain hydrogen sulfide and continuously thereafter through all subsequent drilling.

(3) Wind Indicators. All drilling, completion, workover and well servicing operations involving a hydrogen sulfide concentration of 100 ppm or greater shall include wind indicators. Equipment to indicate wind direction shall be present and visible at all times. At least two devices to indicate wind direction shall be installed at separate elevations and visible from all principal working areas at all times.

When a sustained concentration of hydrogen sulfide is detected in excess of 20 ppm at any detection point, red flags shall be displayed.

(4) Flare System. For drilling and completion operations in an area where it is reasonably expected that a potentially hazardous volume of hydrogen sulfide will be encountered, the person, operator or facility shall install a flare system to safely gather and burn hydrogen-sulfide-bearing gas. Flare outlets shall be located at least 150 feet from the well bore. Flare lines shall be as straight as practical. The flare system shall be equipped with a suitable and safe means of ignition. Where noncombustible gas is to be flared, the system shall provide supplemental fuel to maintain ignition.

(5) Well Control Equipment. When the 100 ppm radius of exposure includes a public area, the following well control equipment shall be required:

(a) Drilling. A remote-controlled well control system shall be installed and operational at all times beginning when drilling is within 500 feet of the formation believed to contain hydrogen sulfide and continuously thereafter during drilling. The well control system must include, at a minimum, a pressure and hydrogen-sulfide-rated well control choke and kill system including manifold and blowout preventer that meets or exceeds the specifications API-16C and API-RP 53 or other specifications approved by the division. Mud-gas separators shall be used. These systems shall be tested and maintained pursuant to the specifications referenced, according to the requirements of this part, or otherwise as approved by the division.

(b) Completion, Workover and Well Servicing. A remote controlled pressure and hydrogen-sulfide-rated well control system that meets or exceeds API specifications or other specifications approved by the division shall be installed and shall be operational at all times during completion, workover and servicing of a well.

(6) Mud Program. All drilling, completion, workover and well servicing operations involving a hydrogen sulfide concentration of 100 ppm or greater shall use a hydrogen sulfide mud program capable of handling hydrogen sulfide conditions and well control, including de-gassing.

(7) Well Testing. Except with prior approval of the division, drill-stem testing of a zone that contains hydrogen sulfide in a concentration of 100 ppm or greater shall be conducted only during daylight hours and formation fluids shall not be permitted to flow to the surface.

(8) If Hydrogen Sulfide Encountered During Operations. If hydrogen sulfide was not anticipated at the time the division issued a permit to drill but is encountered during drilling in a concentration of 100 ppm or greater, the operator must satisfy the requirements of this section before continuing drilling operations. The operator shall notify the division of the event and the mitigating steps that have been or are being taken as soon as possible, but no later than 24 hours following discovery. The division may grant verbal approval to continue drilling operations pending preparation of any required hydrogen sulfide contingency plan.

G. Protection from Hydrogen Sulfide at Crude Oil Pump Stations, Producing Wells, Tank Batteries and Associated Production Facilities, Pipelines, Refineries, Gas Plants and Compressor Stations.

(1) API Standards. Operations at crude oil pump stations and producing wells, tank batteries and associated production facilities, refineries, gas plants and compressor stations involving a concentration of hydrogen sulfide of 100 ppm or greater shall be conducted with due consideration to the guidelines published by the API in its publication entitled "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide," RP-55, latest edition or some other standard approved by the division.

(2) Security. Well sites and other unattended, fixed surface facilities involving a concentration of hydrogen sulfide of 100 ppm or greater shall be protected from public access by fencing with locking gates when the location is within 1/4 mile of a public area. A surface pipeline shall not be considered a fixed surface facility for purposes of this paragraph.

(3) Wind Direction Indicators. All crude oil pump stations, producing wells, tank batteries and associated production facilities, pipelines, refineries, gas plants and compressor stations involving a concentration of hydrogen sulfide of 100 ppm or greater shall have equipment to indicate wind direction. The wind direction equipment shall be installed and visible from all principal working areas at all times.

(4) Control Equipment. When the 100 ppm radius of exposure includes a public area, the following additional measures are required:

(a) Safety devices, such as automatic shut-down devices, shall be installed and maintained in good operating condition to prevent the escape of hydrogen sulfide. Alternatively, safety procedures shall be established to achieve the same purpose.

(b) Any well shall possess a secondary means of immediate well control through the use of an appropriate christmas tree or downhole completion equipment. Such equipment shall allow downhole accessibility (reentry) under pressure for permanent well control.

(5) Tanks or vessels. Each stair or ladder leading to the top of any tank or vessel containing 300 ppm or more of hydrogen sulfide in the gaseous mixture shall be chained or marked to restrict entry.

(6) Compliance Schedule. Each existing crude oil pump station, producing well, tank battery and associated production facility, pipeline, refinery, gas plant and compressor station not currently meeting the requirements of this subsection shall be brought into compliance within one year of the effective date of this section.

H. Personnel Protection and Training. All persons responsible for the implementation of any hydrogen sulfide contingency plan shall be provided training in hydrogen sulfide hazards, detection, personal protection and contingency procedures.

I. Standards for Equipment That May Be Exposed to Hydrogen Sulfide. Whenever a well, facility or operation involves a potentially hazardous volume of hydrogen sulfide, equipment shall be selected with consideration for both the hydrogen sulfide working environment and anticipated stresses and NACE Standard MR0175 (latest edition) or some other standard approved by the division shall be used for selection of metallic equipment or, if applicable, adequate protection by chemical inhibition or other methods that control or limit the corrosive effects of hydrogen sulfide shall be used.

J. Exemptions. Any person, operator or facility may petition the director or the director's designee for an exemption to any requirement of this section. Any such petition shall provide specific information as to the circumstances that warrant approval of the exemption requested and how the public safety will be protected. The director or the director's designee, after considering all relevant factors, may approve an exemption if the circumstances warrant and so long as the public safety will be protected.

K. Notification of the Division. The person, operator or facility shall notify the division upon a release of hydrogen sulfide requiring activation of the hydrogen sulfide contingency plan as soon as possible, but no more than four hours after plan activation, recognizing that a prompt response should supercede notification. The person, operator or facility shall submit a full report of the incident to the division on Form C-141 no later than fifteen (15) days following the release.

[5-22-73...1-1-87...2-1-96; A 3-15-97; 19.15.3.118 NMAC - Rn, 19 NMAC 15.C.118, 11-15-2001; A, 01-31-03]

ATTACHMENT

Summary of Emergency Response Planning Guideline (ERPG) Values for Hydrogen Sulfide*

Classification	1-Hour
ERPG-3 (Life -Threatening)	100 ppm (140 mg/m^3)
ERPG-2 (Serious)	30 ppm (42 mg/m^3)
ERPG-1 (Mild)	0.1 ppm (0.14 mg/m^3)

***American Industrial Hygiene Association, 1991**

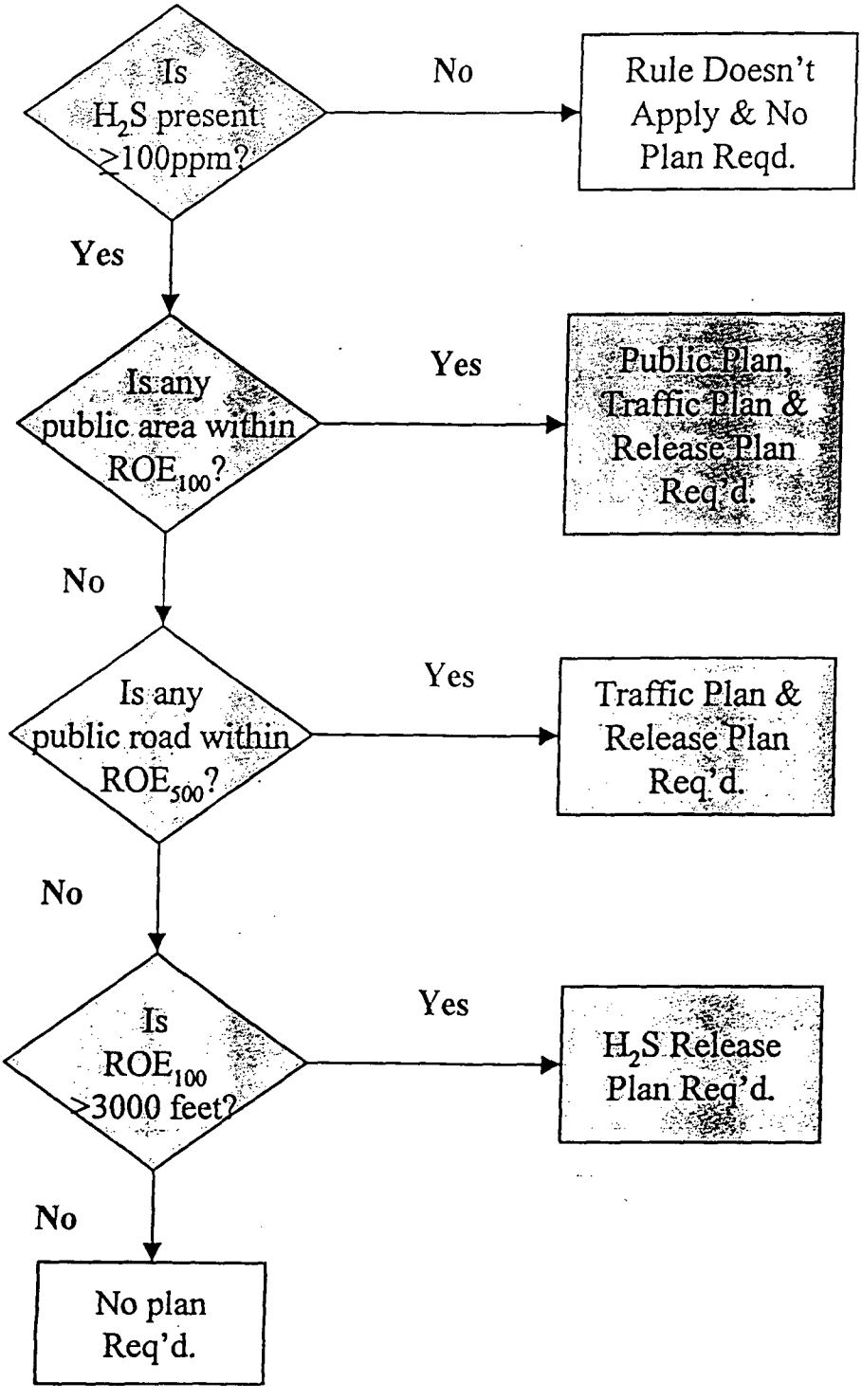
ERPG-3: The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing life-threatening health effects.

ERPG-2: The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action.

ERPG-1: The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing other than mild, transient adverse health effects or without perceiving a clearly defined objectionable odor.

Hydrogen Sulfide (H_2S) Contingency Planning Flowchart

The H_2S Contingency Plan can be part of a locations Emergency Response Plan



H_2S Contingency Plan Elements

RECEIVED
DEC 16 2003
Environmental Bureau
Oil Conservation Division

WEEKLY H2S MONITORING REPORT

DATE: 5-21-03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) 0 (B) 0 (C) 0 (D) 0

Pits North of SWD (A) 0 (B) 0 (C) N/A

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE D. Thomas

WEEKLY H2S MONITORING REPORT

DATE: 5-29-03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) 0 (B) 0 (C) 0 (D) 0

Pits North of SWD (A) 0 (B) 0 (C) N/A

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE [signature]

CRI
CONTROLLED RECOVERY INC.

P.O. BOX 388, HOBBS, NM 88241
(505) 393-1079 • FAX (505) 393-3615

WEEKLY H2S MONITORING REPORT

DATE: 6-4-03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) 0 (B) 0 (C) 0 (D) 0

Pits North of SWD (A) 0 (B) 0 (C) Gone

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE Jack Weatherford

CRI

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(505) 393-1079 • FAX (505) 393-3615

WEEKLY H2S MONITORING REPORT

DATE: 6-4-05

Treating Plant:

Storage Pit 0 ppm

SWD 1

Pit (A) 0 ppm (B) 0 ppm (C) 0 ppm (D) 0 ppm

Pits North of SWD (A) 0 ppm (B) 0 ppm (C) 0 ppm

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE Dave Cox

CRI

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WEEKLY H2S MONITORING REPORT

DATE: 6 9 03

Treating Plant:

Storage Pit Ø

SWD 1

Pit (A) Ø (B) Ø (C) Ø (D) Ø

Pits North of SWD (A) Ø (B) Ø (C) GONE

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

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WEEKLY H2S MONITORING REPORT

DATE: 6 10 03

Treating Plant:

Storage Pit Ø

SWD 1

Pit (A) Ø DRY (B) Ø (C) Ø (D) Ø DRY

Pits North of SWD (A) Ø (B) Ø (C) GONE

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

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WEEKLY H2S MONITORING REPORT

DATE: 6-11-03

Treating Plant:

Storage Pit 0 ppm

SWD 1

Pit (A) 0 ppm (B) 0 ppm (C) 0 ppm (D) 0 ppm

Pits North of SWD (A) 0 ppm (B) 0 ppm (C) 0 ppm

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE [signature]

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WEEKLY H2S MONITORING REPORT

DATE: 6-18-03

Treating Plant:

Storage Pit 0 ppm

SWD 1

Pit (A) 0 ppm (B) 0 ppm (C) 0 ppm (D) 0 ppm

Pits North of SWD (A) 0 ppm (B) 0 ppm (C) 0 ppm

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE [signature]

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WEEKLY H2S MONITORING REPORT

DATE: 6-25-03

Treating Plant:

Storage Pit 0 ppm

SWD 1

Pit (A) 0 ppm (B) 0 ppm (C) 0 ppm (D) 0 ppm

Pits North of SWD (A) 0 ppm (B) 0 ppm (C) 0 ppm

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE Dawn Roman

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WEEKLY H2S MONITORING REPORT

DATE: 7-08-03

Treating Plant:

Storage Pit 0 ppm

SWD 1

Pit (A) 0 ppm (B) 0 ppm (C) 0 ppm (D) 0 ppm

Pits North of SWD (A) 0 ppm (B) 0 ppm (C) 0 ppm

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE Dennis Fowler

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(505) 393-1079 • FAX (505) 393-3615

WEEKLY H2S MONITORING REPORT

DATE: 7 14 03

Treating Plant:

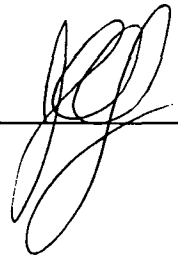
Storage Pit Ø

SWD 1

Pit (A) DRY (B) Ø (C) Ø (D) DRY

Pits North of SWD (A) Ø (B) Ø (C) GONE

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE 

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(505) 393-1079 • FAX (505) 393-3615

WEEKLY H2S MONITORING REPORT

DATE: 7 15 03

Treating Plant:

Storage Pit Ø

SWD 1

Pit (A) DRY (B) Ø (C) Ø (D) DRY

Pits North of SWD (A) Ø (B) Ø (C) GONE

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

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(505) 393-1079 • FAX (505) 393-3615

WEEKLY H2S MONITORING REPORT

DATE: 7-16-03

Treating Plant:

Storage Pit 0 ppm

SWD 1

Pit (A) 0 ppm (B) 0 ppm (C) 0 ppm (D) 0 ppm

Pits North of SWD (A) 0 ppm (B) 0 ppm (C) 0 ppm

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE Drew Parker

WEEKLY H2S MONITORING REPORT

DATE: 7 16 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) DRY (B) 0 (C) 0 (D) DRY

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 7 17 07

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 7 18 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 7 21 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE

WEEKLY H2S MONITORING REPORT

DATE: 7 22 03

Treating Plant:

Storage Pit Q

SWD 1

Pit (A) X (B) Q (C) Q (D) X

Pits North of SWD (A) Q (B) Q (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 7 23 03

Treating Plant:

Storage Pit Ø

SWD 1

Pit (A) X (B) Ø (C) Ø (D) X

Pits North of SWD (A) © (B) © (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 7 24 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 7 25 03

Treating Plant:

Storage Pit Ø

SWD 1

Pit (A) X (B) Ø (C) Ø (D) X

Pits North of SWD (A) Ø (B) Ø (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 7 28 03

Treating Plant:

Storage Pit ___ 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE ___

WEEKLY H2S MONITORING REPORT

DATE: 7 29 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 7 30 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 7 31 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 8 1 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE 8 4 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 8 5 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 8 6 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 8 7 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 8 8 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE 8 11 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 8 12 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 8 13 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 8 14 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE 8 15 03

Treating Plant:

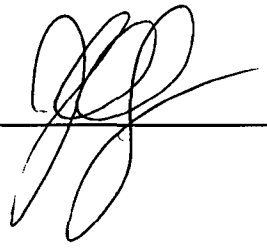
Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE 

WEEKLY H2S MONITORING REPORT

DATE: 8 18 07

Treating Plant:

Storage Pit X

SWD 1

Pit (A) X (B) O (C) O (D) X

Pits North of SWD (A) O (B) O (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 8 19 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 8 20 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 8 21 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 8 22 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 8 25 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE 8 26 03

Treating Plant:

Storage Pit O

SWD 1

Pit (A) X (B) O (C) O (D) X

Pits North of SWD (A) O (B) O (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 8 27 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 8 28 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 8 29 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 2 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 3 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 4 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 5 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 8 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 9 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 10 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 11 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 12 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 15 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 16 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 17 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 18 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 19 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 22 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 23 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 24 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 25 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 26 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 29 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 9 30 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 1 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 2 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) 2 (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 3 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 6 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 7 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 8 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 9 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 10 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 13 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 14 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 15 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 16 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 17 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 20 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) 0 (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) 0

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 21 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 22 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) ∝ (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 23 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 24 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 27 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 28 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) 0 (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) 0

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 29 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 30 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 10 31 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 11 3 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 11 4 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 11 5 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) 0 (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 11 6 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) ∝ (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 11 7 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 11 10 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 11 11 03

Treating Plant:

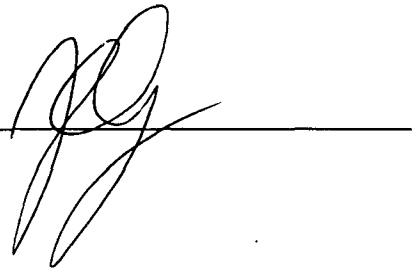
Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE 

WEEKLY H2S MONITORING REPORT

DATE: 11 12 03

Treating Plant:

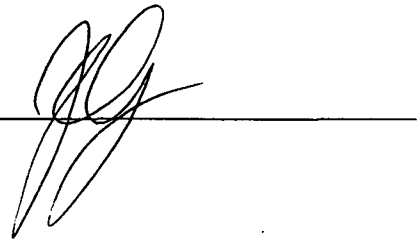
Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE 

WEEKLY H2S MONITORING REPORT

DATE: 11 13 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 11 14 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 11 17 07

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 11 18 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 11/9/03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 11 20 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 11 21 03

Treating Plant:

Storage Pit O

SWD 1

Pit (A) X (B) O (C) O (D) X

Pits North of SWD (A) O (B) O (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 11 24 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 11 25 03

Treating Plant:

Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE _____

WEEKLY H2S MONITORING REPORT

DATE: 11 26 03

Treating Plant:

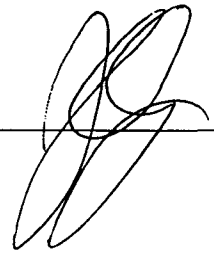
Storage Pit 0

SWD 1

Pit (A) X (B) 0 (C) 0 (D) X

Pits North of SWD (A) 0 (B) 0 (C) X

ALL READINGS TAKEN 4' DOWNWIND FROM PIT.

SIGNATURE 

Summary

CRI Closure Cost Estimate – Revised April/May 2003

Site Changes since July 2002:

Pits 3a and 3d now drained, scraped clean
Pit 16a contents recovered, berms removed, bottom scraped clean
13,000 cy of clean cover material now stockpiled adjacent to pits 3a and 3b
Landfill area now mostly covered and capped
Contents in Pits 13 and 16 have shown appreciable signs of weathering, can be handled as solids rather than being pumped, do not need treatment prior to burial

Modified approach for this cleanup estimate:

BS&W will be mixed with berm material, windrowed, dried, and buried at Area 15 rather than fertilized, blended, and tilled three times in Pit 3ab

1.0	**BS&W** (Pits 13 and 16, tank contents)			
	Pump out treatment and storage tanks, haul to Area 15	1,030 cy	$6,520	
	Clean tanks, 4 crew, 3 days, SCBA	--	$3,500	
	Dig up Pit 13, mix w/ berm mat'l, haul 0.2 mi to Area 15	2,560 cy	$7,040	
	Dig up Pit 16, mix w/ berm mat'l, haul 0.8 mi to Area 15	1,270 cy	$4,560	
	Windrow, dry, bury, and cap at Area 15	4,520 cy	$9,270	
				$30,890
2.0	**Pit 3b, 3c Residue**			
	Scrape 12" from bottoms of pits, load and haul to Pit 3d	2,850 cy	$5,870	
				$5,870
3.0	**Berm Material**			
	Pits 2,4,5,6 bulldozed into Pit 3d by D-6	4,690 cy	$1,200	
	Pits 7-9, 10-12 loaded and trucked 600 ft to Pit 3d	4,140 cy	$11,380	
	Spread out and compact in Pit 3d to 10 ft depth by D-6	11,680 cy	$2,990	
	Cap w/ caliche/red bed, compact (3,600 sq yd)	1,800 cy	$5,440	
				$21,010
4.0	**Landfill**			
	Cap 0.5 acres w/ caliche/red bed, compact (2,420 sq yd) (includes 1 D-6 day for misc fill and compaction of waste)	1,210 cy	$4,500	$4,500
5.0	**Misc**			
	Runon Control (diversion ditches @ Pit 3)		$1,750	
	Site Cleanup, gen'l, D-6, loader, truck (30 hrs)		$2,640	
	Mob/demob, 1 day for dozer, loader, low boys		$2,350	
	Soil samples, 8 ea, report		$4,800	
	Solid waste, liner and net scrap to landfill		$2,500	
	Reports, admin, site specific Health and Safety Plan		$7,020	
				$21,060
	Total			**$83,330**

Assumptions

- BS&W treated on-site: haul to Area 15, windrow for ~10 days, burial
- Caliche and red bed cap material sources ripped on-site at 1,500 cy per D-6 day
- Cap w/ red bed (6") and caliche (12"), no protectable GW
- Use 0.5 acres of landfill to be covered, area found on 4/21/03
- 12 cy trucks @ $60/hr; D-6 @ $96/hr; loader @ $78/hr; vacuum truck @ $70/hr
- No reveg, tanks left clean and in place

FINANCIAL ASSURANCE

On March 25, 2003 the OCD committed to a simultaneous site walk of CRI with Key Energy Services, Inc. (Key). The Site walk was performed in April 2003. The object of this site walk was to compare the 1) closure methods, 2) tasks items, and 3) the costs of each closure task item, and to reach agreement on these aspects of the permit and the closure plan.

Key provided a closure price quote dated February 11, 3003. This was included within the March 14, 2003 submittal from CRI. Key provided a price quote based on some of the tasks that were outlined in CRI's closure plan submitted September 1, 2000. The following is the price quote from Key and the revised closure cost estimate from the OCD following the April 2003 site walk.

KEY ENERGY ESTIMATES		OCD ESTIMATES	
	$ 65,820.		$ 83,330.
Tax	$ 4,032.	Tax	$ 5,104.
	$ 69,852		**$ 88,434.**

There is a $18,582 difference in the two estimates. The OCD has some additional items that are essential that Key did not figure into their costs. These essential OCD costs represent $21,060 of the OCD total $88,434. The items are as follows:

1. Storm water runon control to include construction of diversion ditches at Pit 3.
2. General site cleanup to include labor, D-6, loader, truck (30 hours).
3. Mob/demobilization costs to include labor, dozer, loader, lowboys (1 day).
4. Soil samples 8 each and a report.
5. Solid waste, liner and net scrap to landfill.
6. Closure report preparation.
7. Site specific health and safety plan

The following OCD Permit Item was not included in CRI's submittal.

2. **The facility is subject to periodic inspections by the OCD. The conditions of this permit and the facility will be reviewed no later than five (5) years from the date of this approval. In addition, the closure cost estimate will be reviewed according to prices and remedial work estimates at the time of review. The financial assurance may be adjusted to incorporate any closure cost changes.**
   OCD notes that this is standard language in all permits.

CLOSURE

A closure plan has been submitted.

The following are OCD Permit Items under Closure.

FINANCIAL ASSURANCE

The following tasks were addressed in a quote from Key Energy Services, Inc. dated February 11, 3003 and included within the March 14, 2003 submittal from CRI. Tasks are as outlined in CRI's closure plan submitted September 1, 2000. A comparison is made with the estimates from an OCD inspection performed July 25, 2002. Some items cannot be strictly compared, because of 1) missing information about assumptions used in Key's estimates; 2) different approaches to cleanup (such as Key's burial verses OCD's treatment of BS&W); 3) how items are broken out according to various tasks; and 4) tasks not mentioned in Key's estimates (such as cleaning tanks, capping the two-acre landfill, soil sampling, reports, and runoff protection measures).

	Description	KEY ENERGY ESTIMATES	OCD ESTIMATES
Task 6	Pits 2, 3abc, 4-6 to 3d	$10,231.00	$10,900
Task 7	Pit 16 to 3d	$ 4,122.80	$6,760
Task 8	Pit 1ab to 3d, liner, net	$ 4,655.00	$2,850
Task 9	Pits 7-12 to 3d	$22,756.00	$3,680
Task 10	Cover 3d w/ 12" caliche	$ 2,872.55	$5,990
Task 11	Pit 13 to burial/treatment	$21,182.65	$40,700
		$65,820.00	$70,900
	5.25% tax	$ 3,455.55	$ 3,720
		$69,275.55	$ 74,620

The following tasks are not addressed in the cost estimate provided by Key Energy Services, Inc.

		OCD ESTIMATES
Task 1	Security, locks, signs	0
Task 2	Drain water from 1ab and 2ab	to be determined in site walk
Task 3	Remove oil from treating plant, drain lines	see Cleaning Tanks below
Task 4	Allow fluids to dry	cannot be compared to OCD task
Task 5	Return fuel to supplier	cannot be compared to OCD task
Task 12	NORM survey	see Misc. below
Task 13	Recording a notice with the Lea County clerk	0
Task 14	OCD inspection	0

Additional task items that were not included in Key Energy's quote or in CRI's closure plan submitted September 1, 2000 are listed below. These items arise because of different approaches to cleanup made by OCD.

	OCD ESTIMATE (9/13/02)
Spreading and compaction costs for Pit 3d	$ 5,000
Runon/runoff control	$ 1,750
Cleaning tanks	$10,200
Cap on two-acre landfill	$ 20,200
Misc. (mob, admin, NORM, cleanup, sample, report)	$ 5,900
	$ 53,050
5.25% tax	$ 2,785
	$ 55,835
	OCD total $130,455

Summary

CRI Closure Cost Estimate

Based on Volume of BS&W on Site on 25 July 2002

1.0	**BS&W**			
	Pump out storage tanks, haul to Pit 3ab	515 cy	$3,260	
	Clean tanks, 4 crew, 3 days, SCBA		$3,500	
	Pump out Pit 13, haul to Pit 3ab	1,810 cy	$11,400	
	Pump out Pit 16, haul to Pit 3ab	215 cy	$1,360	
	Blend, fertilize, and spread 18" deep	3,000 cy	$5,000	
	Till, fertilize twice in one year	3,000 cy	$12,400	
				$36,920
2.0	**Berm Material**			
	Pits 1,2,4,5,6 bulldozed into Pit 3d	2,200 cy	$3,500	
	Pits 7-9, 10-12, 16 loaded and trucked to Pit 3d	3,200 cy	$5,280	
	Pit 13 loaded and trucked to Pit 3d	750 cy	$1,340	
	Spread out and compact in Pit 3d to 6 ft depth	6,150 cy	$9,840	
	Cap w/ 12" caliche and red bed, compact	1,540 cy	$8,000	
				$27,960
3.0	**Landfill**			
	Cap 2 acres w/ caliche and red bed, compact	4,840 cy	$20,200	
				$20,200
4.0	**Misc**			
	Runon Control (diversion ditches @ Pit 3)		$1,750	
	Site Cleanup, gen'l, D-6, loader, truck (30 hrs)		$2,640	
	Mob/demob, 1 day for dozer, loader, low boys		$2,350	
	Soil samples, 8 ea, report		$4,800	
	Solid waste, liner and net scrap to landfill		$2,500	
	Reports, admin		$4,520	
				$18,560
	Total =			**$103,640**

Assumptions

- BS&W treated on-site, haul to Pits 3ab, blend, spread, fertilize, till
- For volume of BS&W at treatment plant, use 50% of tankage volume
- For volume of BS&W in Pits 13 and 16, use actual volume found on 7/25/02
- Use 3,000 cy of BS&W after blending some soil and some loss from evaporation
- Caliche and red bed cap material sources ripped on-site at 1,500 cy per D-6 day
- Cap w/ red bed and caliche (start w/ 18" compact to 12"), no protectable GW
- Use 2 acres of landfill to be covered, area found on 7/25/02 also normal SOP
- 12 cy trucks @ $60/hr; D-6 @ $96/hr; loader @ $78/hr; vacuum truck @ $70/hr
- No reveg, tanks left clean and in place

PRB

Summary

CRI Closure Cost Estimate

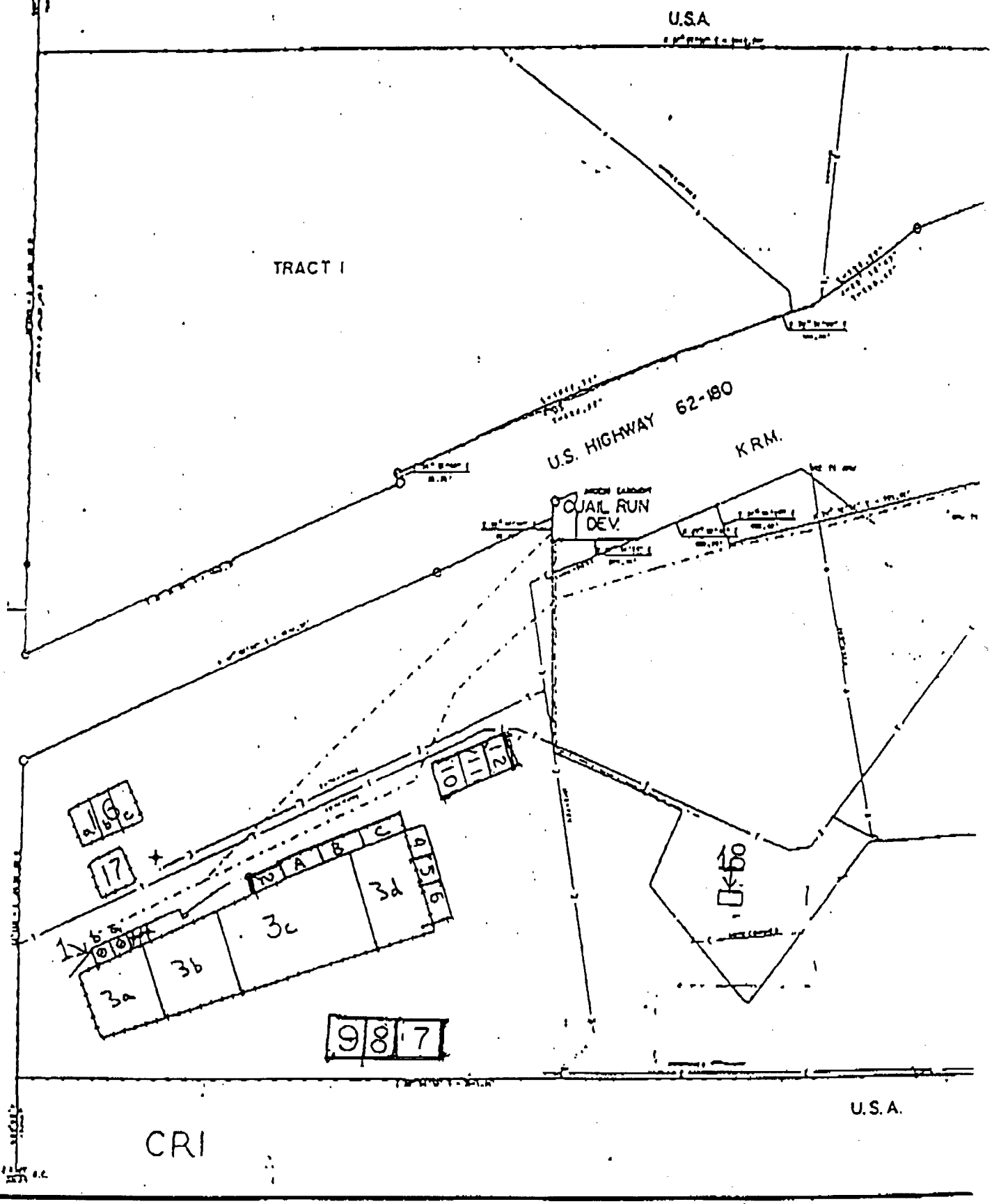
Maximum Allowed BS&W = 100 % of Pits 13 and 16 and Treatment Plant Tankage

1.0	**BS&W**			
	Pump out storage tanks, haul to Pit 3ab	1,030 cy	$6,520	
	Clean tanks, 4 crew, 3 days, SCBA		$3,500	
	Pump out Pit 13, haul to Pit 3ab	1,810 cy	$11,400	
	Pump out Pit 16, haul to Pit 3ab	860 cy	$5,440	
	Blend, fertilize, and spread 18" deep	5,000 cy	$8,330	
	Till, fertilize twice in one year	5,000 cy	$20,670	
				$55,860
2.0	**Berm Material**			
	Pits 1,2,4,5,6 bulldozed into Pit 3d	2,200 cy	$3,500	
	Pits 7-9, 10-12, 16 loaded and trucked to Pit 3d	3,200 cy	$5,280	
	Pit 13 loaded and trucked to Pit 3d	750 cy	$1,340	
	Spread out and compact in Pit 3d to 6 ft depth	6,150 cy	$9,840	
	Cap w/ 12" caliche and red bed, compact	1,540 cy	$8,000	
				$27,960
3.0	**Landfill**			
	Cap 2 acres w/ caliche and red bed, compact	4,840 cy	$20,200	
				$20,200
4.0	**Misc**			
	Runon Control (diversion ditches @ Pit 3)		$1,750	
	Site Cleanup, gen'l, D-6, loader, truck (30 hrs)		$2,640	
	Mob/demob, 1 day for dozer, loader, low boys		$2,350	
	Soil samples, 8 ea, report		$4,800	
	Solid waste, liner and net scrap to landfill		$2,500	
	Reports, admin		$4,520	
				$18,560
	Total =			**$122,580**

Assumptions

- BS&W treated on-site, haul to Pits 3ab, blend, spread, fertilize, till
- Use 5,000 cy of BS&W after blending some soil and some loss from evaporation
- Caliche and red bed cap material sources ripped on-site at 1,500 cy per D-6 day
- Cap w/ red bed and caliche (start w/ 18" compact to 12"), no protectable GW
- Use 2 acres of landfill to be covered, area found on 7/25/02 also normal SOP
- 12 cy trucks @ $60/hr; D-6 @ $96/hr; loader @ $78/hr; vacuum truck @ $70/hr
- No reveg, tanks left clean and in place

[illegible] 19.501 acres, more or less. South 30 feet being reserved as a [illegible]



CRI

		EW	NS	
P.T	10	80	60	
	11	65	55	
	12	50	50	
		Σ195		
		(239)	(83)	

P.t	16	EW	NS	Depth	
	A	35	100	4' Dia	1555 yd³
	B	35	100	4	
	C	35	100	4	
		Σ105			
		(138)	(106)		

P.t	13	EW	NS	Depth
		120	110	5'
		(129)	(120)	

P.t	4	EW	NS	Depth
	4	45	80	2½
(4A)	5	40	65	2½
	6	35	55	2½
		(64)	Σ200	(248)

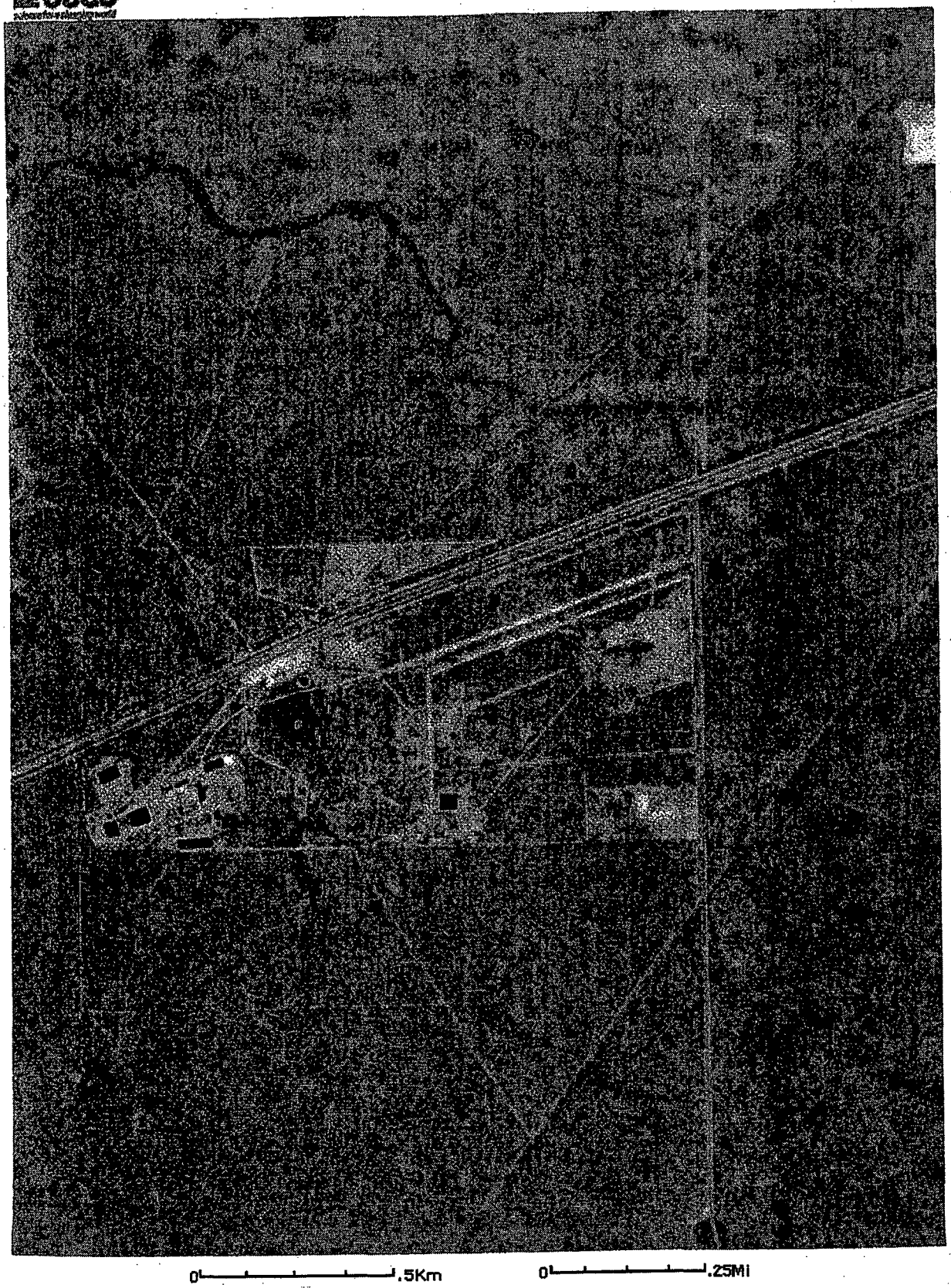
		EW	NS	Depth	
P.t	14	~~35~~ 25	~~30~~ 28	Isolib	4 Fluid
	16	~~25~~ 25	~~30~~ 28	Isolib	4 Fluid

		EW	NS	Depth
	7	93	68	2
(5A)	8	89	68	2½
	9	73	68	(3)
		Σ255 vs	(82)	

assume fluid dimensions

47 km E of Carlsbad, New Mexico, United States 22 Oct 1996

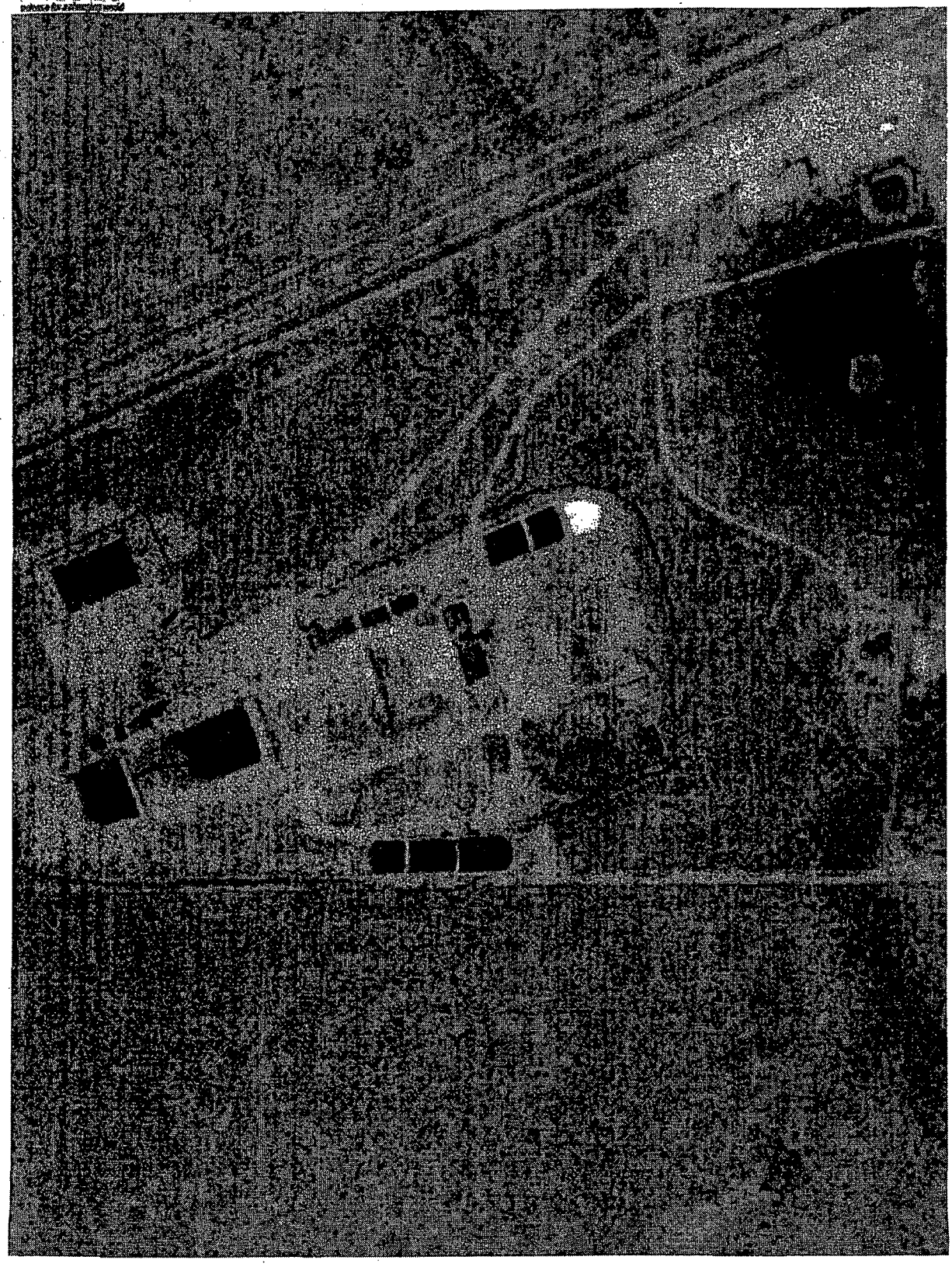
USGS

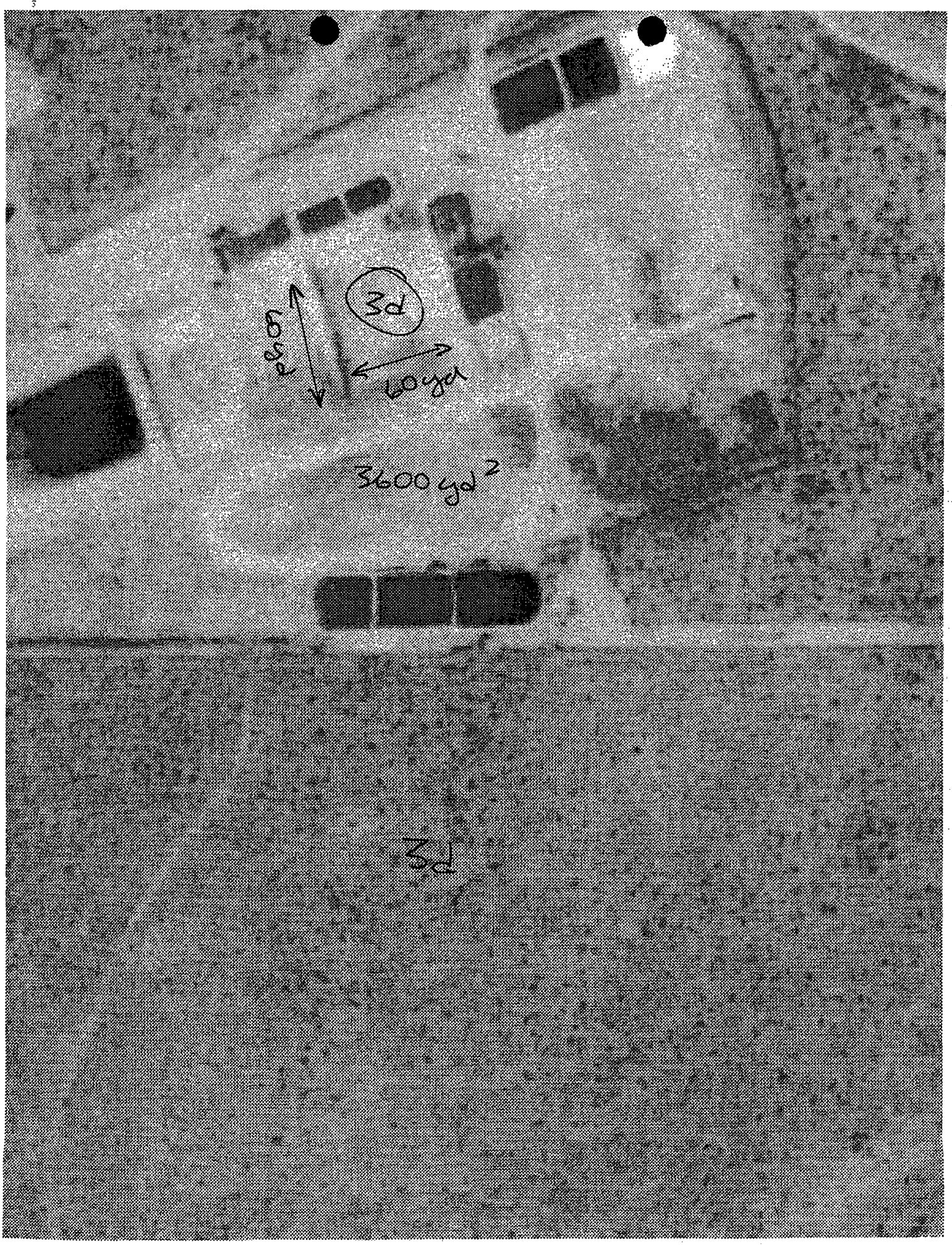


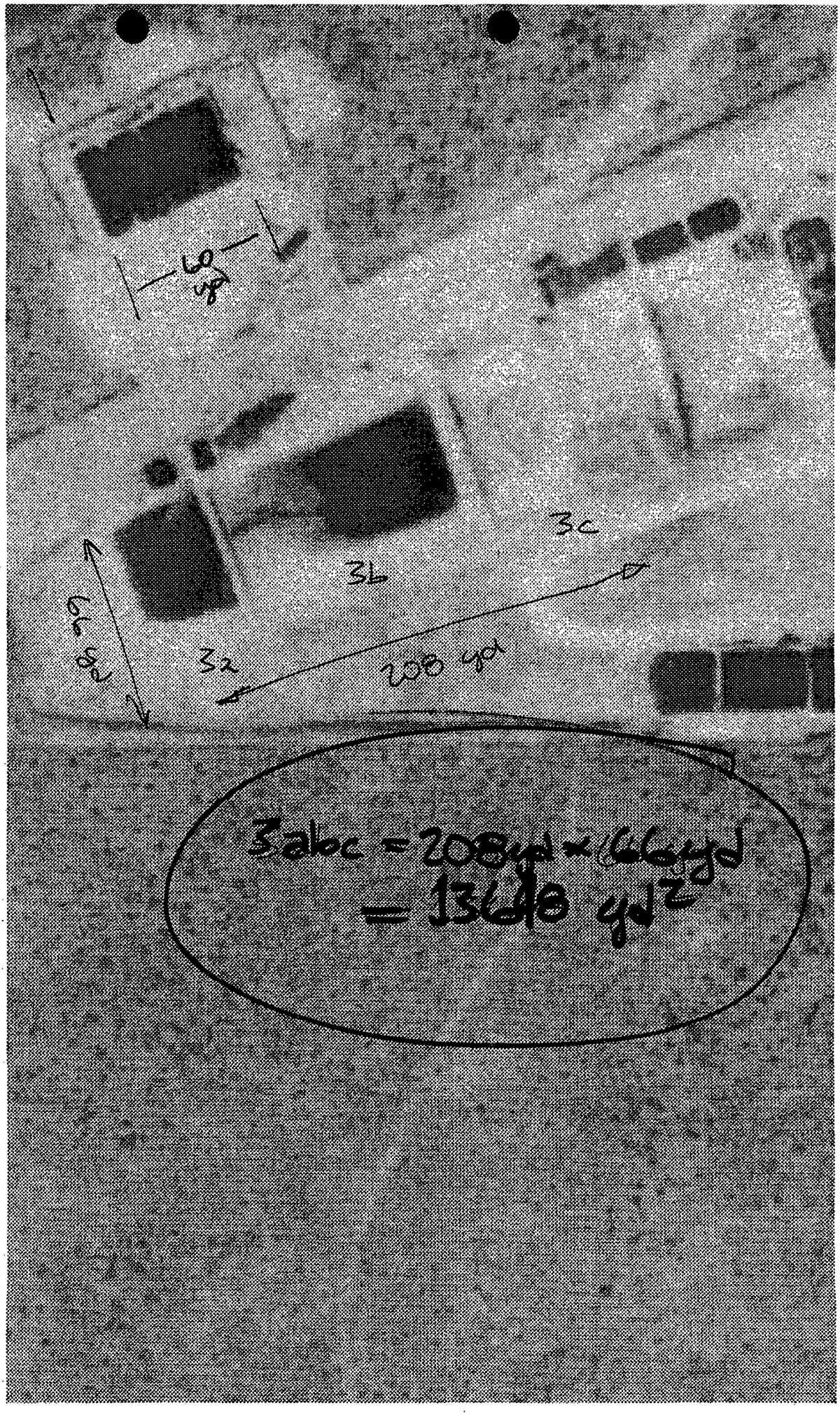
Microsoft TerraServer Display Image USGS Aerial Photograph

46 km E of Carlsbad, New Mexico, United States 22 Oct 1996

USGS




3d
60 yds
3600 yd²
3d
0
100M
0
100yd



If 4ft deep
Pit 16 = 2800 yd^3

$\frac{1}{4}$?

$3abc = 208yd \times 66yd$
$= 13648\ yd^2$

$3abc =$

$190m \times 60m$
$208yd \times 66yd$
$13648\ yd^2$
If 1A deep
$= 4549\ yd^3$

24

Ken Marsan 1430 7/25/02

① Temp Bottom Pit 140' × 130' × 5'
(lined) (net) (full)

② filters mole sieve
centrifuge solids oily soil
17 ft, lifts, cap caliche
red bed visible @ 15'-20' bgs

1989 Jerry S - no GW
800-1200' red bed Permian
covers weekly, daily if
wind blown
2 acres uncovered

③ dry pits muds fract fluids
7,8,9 water = R_x dry — cuttings
remove liquids, — 3 cells
no oil no bioRx, evap
landfill mix 90' × 325' × 5'
82 299

④ evap ponds
(3a-d) produced waters in 1/2 tanks
skim scum prevents
evap FeS = black color
see aerial photos for dimen PB

25

no H_2S — 100 salty for bw

⑤ Temp Bottom Pit (liner)
cell # = 3 115' × 180' × 4'
tract bottoms, 2/3 R_x'd none!
106 138

⑥ wash pit 3 cells
235' × 50' × 6'
216 46
berm slopes

⑦ 3 cells cuttings
10,11,12 90' × 260' × 4' 10-12
82 239

⑧ cuttings 3 cells
4,5,6 70' × 270' × 4'
64 248 (E of O/W separator)

⑨ treatment plant
clean tanks, R_x bottoms

fee land, bmp ok, site
in good shape

Jack Ford
57 ft (actual) = 62 ft (paced) [393 3615]

RB EOD 1600 7/25

16 2-c

12

57/62 = 0.92

BS & W — Rx on site, spreading
yd³ calculated stock on hand 7/25/02 (no accumulation since)
vol in Rx Plant = ½ tank vol

Pit 3d cap — 12" caliche no clay

Landfill — 2 acres = area open 7/25/02 (common practice)
no clay in cap - no GW to protect 12" caliche

Treat Plant — leave steel in place (no recycle

Reves — not req'd on fee land

Fill Pits? — not req'd, site secure

Caliche ripped on site

Security — resident @ ranch house
H_2S — not a problem w/ BS & W spread out
Sampling — not clearance but status
Solid Waste — 5 trucks of liner scrap to onsite landfill $10/yd³ (haul drop compact cover)

CLI # ● | Summary | ● 9/12/02

B$ & W onhand (~ 50% water) — Treating Plant 516 yd³; Pit 13 1310 yd³; Pit 16 215 yd³

pump & haul to Pit 3c 2540 yd³ $ 16,020
Spread & blend w/ mat'l from 3d $ 4,660
$ 20,080

Clean Plant $2880

Berm Material 5450 yd³
(1, 2, 4-6, 7-9, 10-12, 13, 16)

$/yd³
1.65 bulldoze in 3d (1, 2, 4-6) 2200 yd³ $ 3520
1.65 load & haul to 3d (7-9, 10-12, 16) 3200 yd³ $ 5280
1.80 load & haul (13) 750 yd³ $ 1340
spread to 2 yd depth $ 8800
3.85 cap w/ 12" cellulose 1375 yd³ $ 5360
$ 24,300

Landfill
2 acres w/ 12" cellulose
rip 4840 yd³ $ 2,420
haul $ 8,000
spread $ 7,740
$ 18,200

Soil Samples 8 ea
Pits 3a 5c 3
Pits 13, 16 2
Pits 7-9 1
Pits 10-12 1
Field Dupe 1

TPH 8015 $600 ea
BTEX (incl report)
(test pits)
$4,800

Mob Demob (dozer & loader) $2350

Treat BS & W (bioRx full 3000 yd³ twice) ... $12,440

Solid Waste (5 trucks 12 yd³ $10/yd) ... ~~$600~~ $ 2500

Reports contingencies (15%) — ⊗ $4,520

SWPPP $1750 Gen'l Rx $2640

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

RF [illegible] 9/12/02 | OCD | [illegible] = 4.0 bbl

$\frac{yd^3}{}$ $\frac{27 ft^3}{yd^3}$ $\frac{7.48 gal}{ft^3}$ $\frac{bbl}{42 gal}$

Unit Costs (MK - Task 6)

transport BS&W $\frac{\$25000}{5500 bbl}$ = \$4.55/bbl = (\$21.84/yd³)

Scrape & push $\frac{\$10206}{3958 yd^3}$ = \$2.58/yd³

push 2, 4-6 into 3d $\frac{\$3264}{1434 yd^3}$ = \$2.28/yd³

Put 16 BS&W to 3d $\frac{\$44,390}{1481 yd^3}$ = \$29.97/yd³ (\$6.24/bbl)

transport BS&W (Task 3) (MK) to = $\frac{\$32237}{1111 yd^3}$ = $\frac{\$29.02}{yd^3}$

Move Mat'ls (Task 9) (7-9 10-12 to 3d) $\frac{\$4468}{1721 yd^3}$ = \$2.59/yd³

Cap (Task 10) 12" rock 18" clay 6" soil (3ft) $\frac{\$12485}{4685 yd^3}$ = \$2.65/yd³

(3600 yd²?) ~~4685 yd~~

Cap (Task 11) Land fill 3ft cap $\frac{\$64300}{27000 yd^3}$ = \$2.38/yd³

area = 27000 yd² = 243000 ft² = 5.6 acres

(1) mob demob

Bull Dozer Operator Pickup

95^{80} hr

Soft 10 yd³/10 min

(2)

2 trucks 5 loads/hrs 120 yd³/hr

3 days

2 truck $40 + 20^{20} \cdot 60^{20} \times 2 \times 30$

($3600)

Loader $\frac{77^{80}}{hr} \times 30$ ($2334)

Opr pickup

(3) BS & W

Vacuum $70/hr 120 bbls

nearest Rt belt Eu & Hobb

1 hr 1 hr

Rt pumpoff 2 hrs en route round trip

disposal $0.50/bbl produced water

$3^{25} - 3^{75}$/bbl BS & W

(3) one loader busy full time

5 min to load 12 yd³/truck

5 loads/hr 3 trucks → $\frac{1}{2}$ mile

— same — → 1 mile

20 Loads/hr 12 loads/hr

④ 12" caliche

compacts 1/3 rd   18" before compaction

sand inflate 20% expansion

(I) dozer/ripper ~ push up   D6 $\frac{1500\ yd^3}{day}$

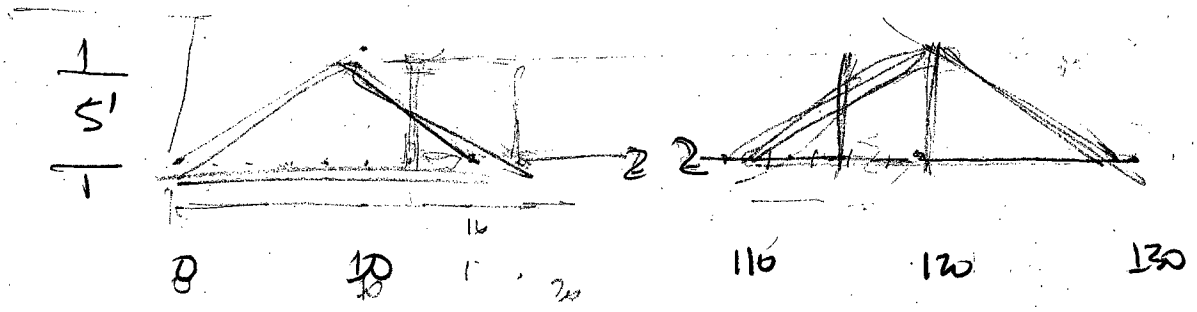
(II) loader + trucks

(III) dozer spreads piles

SF = 3/2

① Temp Bottom Pit (2nd Treat Plant)

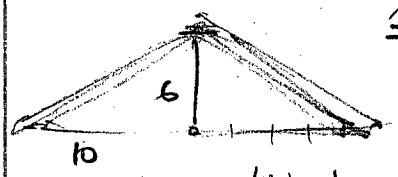
paced	140	130	S	freeboard = 3'
actual	129	120	S	



116 − 12 = 104

pit volume = 104 × 94 × 5 = 48880 ft³ (130 − 104 = 26; 120 − 26 = 94)
= 48,900 ft³
= 1,810 yd³

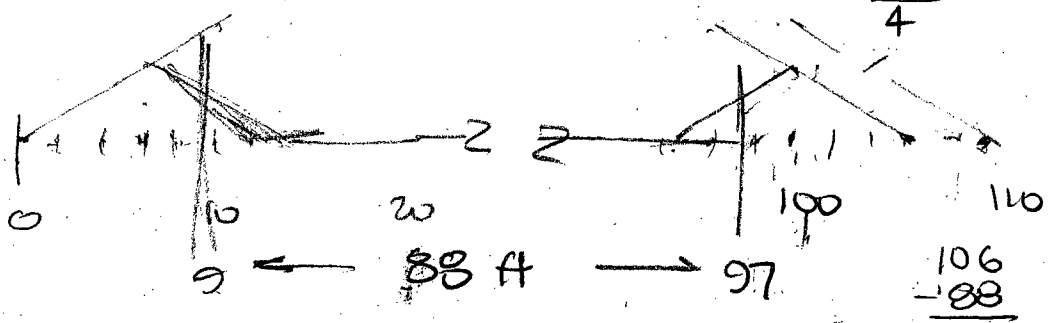
berm volume = L × Δ − ≅ 2(129 + 120) 40 = 19,900 ft³
= 737 yd³



$\Delta = \frac{1}{2} b h = 16 \times 5 \times \frac{1}{2} = 40 ft^2$

② volume BS&W in Pit 162

$106 \times \frac{138}{4} \times 4$ (34.5)



106 − 88 = 18

345 − 18 = 165 ft

$88 ft \times 16\frac{1}{2} ft \times 4 ft = 5808 ft^3 = 215 yd^3$

Σ BS&W onsite = 2025 yd³
(7/25/02)

BS&W

$2025\ yd^3 \frac{22\ A^3}{yd^3} \frac{7.48\ gal}{A^3} \frac{bbl}{42\ gal} = 9737\ bbl$

1) haul

120 bbl/truck = 81 truck loads

round trip CRI ⇄ Sundance

2 hrs transit
1 hr load
1 hr unload
} 4 hrs @ $70/hr
$280/truck

Disposal $3.50 bbl = $420

$64,800 $800/truck

$32/yd³

If 50% H_2O ?

2) can be blended & spread onsite

use Pit 3abc

Pump Truck from Pit 13 to 3abc
Pit 16

$6.32/cy

81 truck loads

1 hr load
1 hr unload
0.25 hr transit
} 2.25 hrs $70/hr =

$81\ loads \left(\frac{2.25\ hrs}{load}\right) \frac{\$70}{hr} = \$12,800$

use berm matl for blending

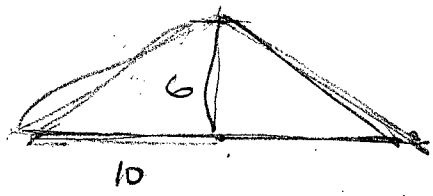
use dozer to spread

$\Delta yd^3 = 2025\ yd^3$

dozer $2025\ yd^3 \frac{hr}{60\ yd^3} \frac{\$95.00}{hr} = \$3240$

some of spread $ already incorporated in previous costs

Area (XC) of Berm 6:10 slope



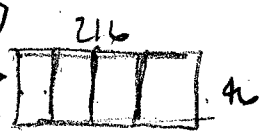
h.	b	$\frac{1}{2}hb(A^2)$	$\frac{1}{2}hb(yd^2)$
4	13.3	26.7	2.97
5	16.7	41.7	4.63
6	20.0	60.0	6.67

Volume of Berm Material

Distance to 3C (4×2) 3d

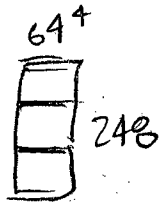
1 2 — 28×28 ≅ 37 yd
1 b — 25×28 = 35 yd
} 72 yd — 214 yd³ — 150 yd

2 / 2a / 2b / 2c



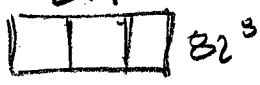
216×2 + 46×5
432 + 230
662 ft
221 yd × 6.67 yd²
1470 yd³ — n.a.

4 / 5 / 6



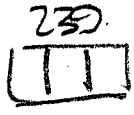
248×2 + 64 4/8 × 4
496 + 258
754 ft
251 yd × 2.97 yd²
746 yd³ — n.a.

7 / 8 / 9



299×2 + 82 8/8 × 4
598 + 331
929 ft
310 yd × 4.63 yd²
1430 yd³ — 100 yd

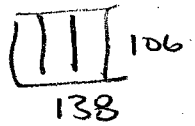
10 / 11 / 12



239×2 + 82 8/8 × 4
478 + 331
809 ft
270 yd × 2.97 yd²
801 yd³ — 140 yd

13 — 737 yd³ — 880 yd

16a / 16b / 16c



138×2 + 106×4
276 + 424
700 ft
267 yd × 2.97 yd²
793 yd³ — 230 yd

17

Σ yd³ to Put 3C = 5454 yd³

Move berms into 3d

① 2200 yd^3 bulldozed 50 ft

$$2200\,yd^3 \left(\frac{1\,hr}{60\,yd^3}\right) \frac{\$96}{hr} = \$3520$$

② 3200 yd^3 loaded & hauled 200 yds

1 frontend loader $78/hr
2 trucks @ 60 ea $120/hr
$198/hr

5 loads/hr/truck
12 yd^3/truck

$$\frac{yd^3}{hr} = \frac{5\,loads}{truck\,hr} \; 2\,trucks \; \frac{12\,yd^3}{load}$$

$$= 120\,yd^3/hr$$

$$3200\,yd^3 \left(\frac{hr}{120\,yd^3}\right) \frac{\$198}{hr} = \$5280$$

③ 750 yd^3 $\frac{1}{2}$ mile
Pit 13

load truck in 5 min = 12 loads/hr

1 front end loader $78/hr
3 trucks @ 4 loads/hr $180/hr
$258/hr

$$\frac{yd^3}{hr} = 3\,trucks \; \frac{4\,loads}{hr} \; \frac{12\,yd^3}{truck} = 144\,\frac{yd^3}{hr}$$

$$750\,yd^3 \left(\frac{hr}{144\,yd^3}\right) \frac{\$258}{hr} = \$1340$$

$\Sigma = \$10,100$

Spread & Cap Mat'l in Pit 3d

Spread ~~5500~~ 6150 yd^3 (to 2 yd depth)

2200
3200
750
6150

Dozer 60 yd^3/hr @ $95.80/hr

$$6150\,yd^3 \frac{hr}{60\,yd^3} \frac{\$95.80}{hr} = \$9340$$

Cap

- haul 18" over ~~2750~~ 3075 yd^2 = ~~1375~~ 1537 yd^3 (will compact to 12")

source landfill area ~ 3/4 mile away

a) dozer rips 1375 yd^3 $\frac{day}{1500\,yd^3}$ $\frac{8\,hrs}{day}$

= 7.3 hrs

= $~~700~~ 782

b) 1 dozer 78 } $258/hr @ 144 yd^3/hr
3 trucks 180 }

$$1375\,yd^3 \left(\frac{hr}{144\,yd^3}\right) \frac{\$258}{hr} = \$2460$$

2750

c) spread & compact w/ dozer

$$1375\,yd^3 \frac{hr}{60\,yd^3} \frac{\$95.80}{hr} = \$2200$$

2460

Σ = $6000

700
2460
2200
$5360

$5360 / 1375 yd^3 } $3.90/$yd^3$

Cap Landfill

2 acres need cover

18" caliche before compaction = 12" after

$$\text{cover needed} = 2\,\text{acres} \times \frac{43560\,ft^2}{\text{acre}} \times 1.5\,ft \times \frac{yd^3}{27\,ft^3}$$

$$= 4840\,yd^3$$

a) dozer rips caliche @ 1500 yd^3/day

$$4840\,yd^3 \times \frac{1\,day}{1500\,yd^3} \times \frac{8\,hrs}{day} \times \frac{\$95}{hr} = \$2480$$

b) haul caliche ~ 250 yds

1 front end loader \$78/hr
2 trucks \$120/hr
} \$198/hr

120 yd^3/hr

$$4840\,yd^3 \times \frac{hr}{120\,yd^3} \times \frac{\$198}{hr} = \$8000$$

c) spread & compact

dozer

$$4840\,yd^3 \left(\frac{hr}{60\,yd^3}\right) \frac{\$95}{hr} = \$7740$$

$\Sigma = \$18{,}200$

CRI #1 | Mob Demob | Misc 9/13/02

AMPAD 22-141 50 SHEETS 22-142 100 SHEETS 22-144 200 SHEETS

Dozer / Low Boy 1 day 96 + 60 = $156/hr
$1250

Trucks na

Loader / Low Boy 1 day 78 + 60 = $138/hr
$1100

Clean Tanks

9 ang = 4 + truck ≤ $100/hr
(incl SCBA)

3 days clean lokit permit $2880
+ 20% misc

3 days (8 hrs / day) $100 / hr $2400

6×750 } 4500
3×150 } 450

4950 bbl = 1030 yd³
if 50% → 515 yd³ BS&W in Px Tanks

BS&W bio Rx in Pit 3ab
turn soil 2 ~~4~~×/yr for 1 yr
add fertilizer $150/ea

6200×2 } $12,400

mobdemob dozer $1280
turn ~ 3000 yd³ (hr / 60 yd³) ($96 / hr) = $4800
$6080

3000 yd³ / 18" deep = 6000 yd² = 60×100
ok for 3a & b)

Vol = 275 yd × 70 yds = 19250 yd²

3a-d 200 100

3d ≅ 60 yd × 60 yds = 3,600 yd²

add 6150 + 1540 cy = 7690 yd³

Δ height = 2.13 yd

3a&b 120 yds × 50 yds = 6000 yd²

add BS & W 3000 yd³

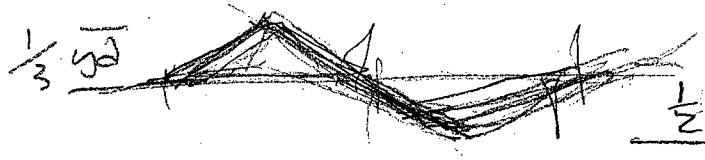
Δh = 0.5 yd

Δ Gen'l work
1 dozer day to work perimeter of Pit 3

Gen'l work
contour
scrape
grade
D6 96
truck 60
loader 78
$234/hr
8 hrs
$1870
770
2690

Surface Water Run on Run off
Protect Pits, diversion ditch

300 yds 4 yds



Δ = (1/2)1/2(4) = 1 yd²

Vol = 300 yds (1 yd²) = 300 yd³

$ = 300 yd³ (hr / (yd)³) $96/hr ≅ $500

$1,750 erosion control

NEW MEXICO OIL CONSERVATION DIVISION
1220 SOUTH ST FRANCIS DR
SANTA FE, NEW MEXICO 87505

Controlled Recovery, Inc.
P.O. Box 388
Hobbs, NM 88241

RE: R9166
S/2 N/2 and the N/2 S/2 Section 27, Township 20 South, Range 32 East, NMPM

Dear Sirs

NMOCD has reviewed your files and operations and hereby finds that CRI is in compliance with all rules and orders of NMOCD and has no history of violations or compliance issues.

An exception to screening, netting or covering has been granted for the facility.

The following operational conditions are required of CRI.

-- -- -- --- -- -- -- -- -- -- -- -- -- -- -- --- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --

Please sign the agreement for operational conditions and return to NMOCD, Santa Fe, New Mexico.

By NMOCD

SAMPLE

CONTROLLED RECOVERY, INC.
SURFACE WASTE MANAGEMENT FACILITY
S/2 N/2 and the N/2 S/2 Section 27, Township 20 South, Range 32 East, NMPM

OVERALL FACILITY OPERATION

1. The facility must be fenced and have a sign at the entrance. The sign must be legible from at least fifty (50) feet and contain the following information: a) name of the facility; b) location by section, township and range; and c) emergency phone number.

2. Disposal may occur only when an attendant is on duty unless loads can be monitored or otherwise isolated for inspection before disposal. The facility must be secured to prevent unauthorized disposal when no attendant is present.

3. The facility will be maintained, contoured, and bermed to prevent runoff and runon of the portion of the facility containing contaminated solids and liquids.

4. All above ground tanks will be bermed and labeled as to contents.

5. Below grade sumps and tanks without leak detection system shall have their mechanical integrity demonstrated annually.

6. Below grade sumps and tanks will be inspected weekly.

7. All fuel tanks will be bermed.

8. The OCD shall be notified prior to installation of any pipelines or wells or other construction with in the boundaries of the facility that are not associated with the operation of the facility.

POND AND PIT OPERATION

1. No produced water may be received at the facility unless the transporter has a valid Form C-133, Authorization to Move Produced Water, on file with the Division.

2. All produced water must be unloaded into tanks. The produced water must reside in the tank and skim pit system long enough to allow for oil separation. Oil recovered must be stored in above-ground storage tanks.

3. All pits and ponds that contain liquids must have a minimum freeboard of (1) one foot.

4. Free oil within the ponds and pits must be removed weekly.

5. Ponds and pits will be inspected on a weekly basis.

6. A sign or other such marker with the pit/pond number must be clearly posted at each pit/pond location.

TREATING PLANT OPERATION

1. The treating plant will be inspected weekly, if any defect is noted repairs will be made as soon as possible. If the defect will jeopardize the integrity of the plant, the plant will be shut down until repairs have been completed.

2. The treating plant may use diesel and gasoline from storage tanks that are to be pulled, repaired or replaced. This material may only be used in the treating plant as a product to aid in the chemical treatment and blending of crude oil.

SOLID WASTE DISPOSAL AREA

1. Solid waste disposal area #50 will be excavated and filled in accordance with industry standards for facilities accepting the same or similar materials and match the surrounding topography.

2. Mechanical stabilization of liquids may be used prior to disposal.

3. Free liquids will not be disposed of in the solid waste disposal pits.

4. Solid waste disposal area will be inspected and maintained on a weekly basis.

5. Solid waste disposal area will be bermed to prevent runon and runoff of rain and storm water.

6. NMOCD will be notified before new cells or expansion of cells in solid waste disposal area are constructed.

WASTE ACCEPTANCE CRITERIA

Waste acceptance criteria will be in accordance with Rule 711

REPORTING AND RECORD KEEPING

Reporting and record keeping will be in accordance with Rule 711

CLOSURE

A closure plan has been submitted.

BONDING

The bonding requirements on well bores (oil, gas and injection) are $25,000.00 for single well bore and $50,000.00 maximum for any number of wells operated by one operator (Blanket Bond).

This amount was set by the NM Legislature and Governor under the Oil and Gas Act.

One consideration in this process was the amount of investment required to explore for and produce oil and gas in New Mexico.

The only other bond required by the NMOCD is for Commercial Rule 711 facilities (which are very few in number). Centralized facilities are exempt from bonding requirements. This information was furnished by NMOCD staff and should be verified.

The NMOCD determined in order R9166 that $25,000.00 was an appropriate amount for CRI's facility. This amount was influenced by the Oil and Gas Act.

The staff of NMOCD decided to add their version of Financial Assurance Bonding to Rule 711.

Please note that order R9166 indicates that the $25,000.00 is a bond and does not refer to "closure".

CRI is operated under an order and CRI was advised by NMOCD personnel to use the order process as opposed to administrative approval.

Orders address specific concerns and are site specific, rules apply state wide (see attached).

Orders shall prevail against rules if in conflict with them (19.15.1.11 attached).

CRI's business plan, investment, construction and operations were predicated on the issuance of order R9166 and the netting exemption.

CRI has submitted evidence to confirm no material changes have occurred which would be in conflict with order R9166 and reinforce NMOCD original findings and decision.

Compare the liability to the state of CRI facility bond and plugging bond of $50,000.00 for a company with 2000 wells.

As a fairness and equitable issue will NMOCD staff seek to increase bonding requirements on well bores?

Rule 711 B (1)(i) indicates estimates by " third party contractor" not by NMOCD staff who have no education, training, or experience in these areas.

CRI will close pit #16 (lined storage pit) by October, 2004.

CRI will close storage pond #13 (lined storage pond) by October, 2004.

CRI will explore the introduction of mechanical stabilization of liquids which will reduce if not eliminate the settling and drying ponds now in use. This will further reduce the closure cost.

CRI will provide financial assurance of $50,000.00 by April 15, 2003.

ORDERS

Orders issued by the Oil Conservation Commission address specific concerns and only apply to the areas specified in the order. OCD Rules and Regulations, on the other hand, apply state wide. The following tabs (8a-d) contain specific OCC Orders which address environmental concerns related to OCD regulated facilities.

The OCD Rules and Regulations contains several state rules pertaining to pits including Rule 8, Rule 710, and Rule 711. The OCD Rules and Regulations may be purchased through the OCD Santa Fe Office by contacting (505) 827-5819.

From: EM&NRD
Oil Conservation Division
Environmental Regulations

chemical, biological or radiological qualities of water. "Water contaminant" does not mean source, special nuclear or by-product material as defined by the Atomic Energy Act of 1954.

(4) Watercourse shall mean any lake bed, or gully, draw, stream bed, wash, arroyo, or natural or human-made channel through which water flows or has flowed.

(5) Water Pollution shall mean introducing or permitting the introduction into water, either directly or indirectly, of one or more water contaminants in such quantity and of such duration as may with reasonable probability injure human health, animal or plant life or property, or to unreasonably interfere with the public welfare or the use of property.

(6) Well Blowout shall mean a loss of control over and subsequent eruption of any drilling or workover well or the rupture of the casing, casinghead, or wellhead or any oil or gas well or injection or disposal well, whether active or inactive, accompanied by the sudden emission of fluids, gaseous or liquids, from the well.

(7) Working Interest Owners are the owners of the operating interest under an oil and gas lease who have the exclusive right to exploit the oil & gas minerals. Working interests are cost bearing.

[1-5-50...2-1-96; A, 7-15-96; Rn, 19 NMAC 15.A.7.1 through 7.84, 3-15-97; A, 7-15-99; 19.15.1.7 NMAC - Rn, 19 NMAC 15.A.7, 5-15-01]

19.15.1.8-10 [RESERVED]

19.15.1.11 SCOPE OF RULES

A. The following rules of statewide application have been adopted by the Commission to conserve the natural resources of the State of New Mexico, to prevent waste, to protect correlative rights, to protect public health and the environment and to otherwise implement the Oil and Gas Act, NMSA 1978, Section 70-2-1 through 70-2-38.

B. Orders, including special pool orders (formerly referred to as "Special Pool Rules and Regulations"), of the Division or the Commission may be issued when required and shall prevail against rules if in conflict with them.

[1-1-50...2-1-96; A, 7-15-99; 19.15.1.11 NMAC - Rn, 19 NMAC 15.A.11, 5-15-01]

19.15.1.12 ENFORCEMENT OF STATUTES AND RULES:

The Division is charged with the duty and obligation of enforcing all rules and statutes of the State of New Mexico relating to the conservation of oil and gas including the protection of public health and the environment. However, it shall be the responsibility of all the owners or operators to obtain information pertaining to the regulation of oil and gas before operations begin. [1-1-50...2-1-96; A, 7-15-99; 19.15.1.12 NMAC - Rn, 19 NMAC 15.A.12, 5-15-01]

19.15.1.13 GENERAL OPERATIONS/WASTE PROHIBITED

A. The production or handling of crude petroleum oil or natural gas of any type or in any form, or the handling of products thereof, in such a manner or under such conditions or in such amount as to constitute or result in waste is hereby prohibited.

B. All operators, contractors, drillers, carriers, gas distributors, service companies, pipe pulling and salvaging contractors, treating plant operators or other persons shall at all times conduct their operations in or related to the drilling, equipping, operating, producing, plugging and abandonment of oil, gas, injection, disposal, and storage wells or other facilities in a manner that will prevent waste of oil and gas, the contamination of fresh waters and shall not wastefully utilize oil or gas, or allow either to leak or escape from a natural reservoir, or from wells, tanks, containers, pipe or other storage, conduit or operating equipment.

Law reviews. — For comment on Continental Oil Co. v. Oil Conservation Comm'n, 70 N.M. 310, 373 P.2d 809 (1962), see 3 Nat. Resources J. 178 (1963).

Am. Jur. 2d, A.L.R. and C.J.S. references. — 38 Am. Jur. 2d Gas and Oil §§ 145 to 148, 157. 58 C.J.S. Mines and Minerals §§ 229, 234.

70-2-12. Enumeration of powers.

A. Included in the power given to the oil conservation division is the authority to collect data; to make investigations and inspections; to examine properties, leases, papers, books and records; to examine, check, test and gauge oil and gas wells, tanks, plants, refineries and all means and modes of transportation and equipment; to hold hearings; to provide for the keeping of records and the making of reports and for the checking of the accuracy of the records and reports; to limit and prorate production of crude petroleum oil or natural gas or both as provided in the Oil and Gas Act [this article]; to require either generally or in particular areas certificates of clearance or tenders in connection with the transportation of crude petroleum oil or natural gas or any products of either or both oil and products or both natural gas and products.

B. Apart from any authority, express or implied, elsewhere given to or existing in the oil conservation division by virtue of the Oil and Gas Act or the statutes of this state, the division is authorized to make rules, regulations and orders for the purposes and with respect to the subject matter stated in this subsection:

(1) to require dry or abandoned wells to be plugged in a way to confine the crude petroleum oil, natural gas or water in the strata in which it is found and to prevent it from escaping into other strata; the division shall require a cash or surety bond in a sum not to exceed fifty thousand dollars ($50,000) conditioned for the performance of such regulations;

(2) to prevent crude petroleum oil, natural gas or water from escaping from strata in which it is found into other strata;

(3) to require reports showing locations of all oil or gas wells and for the filing of logs and drilling records or reports;

(4) to prevent the drowning by water of any stratum or part thereof capable of producing oil or gas or both oil and gas in paying quantities and to prevent the premature and irregular encroachment of water or any other kind of water encroachment which reduces or tends to reduce the total ultimate recovery of crude petroleum oil or gas or both oil and gas from any pool;

(5) to prevent fires;

(6) to prevent "blow-ups" and "caving" in the sense that the conditions indicated by such terms are generally understood in the oil and gas business;

(7) to require wells to be drilled, operated and produced in such manner as to prevent injury to neighboring leases or properties;

(8) to identify the ownership of oil or gas producing leases, properties, wells, tanks, refineries, pipelines, plants, structures and all transportation equipment and facilities;

(9) to require the operation of wells with efficient gas-oil ratios and to fix such ratios;

(10) to fix the spacing of wells;

(11) to determine whether a particular well or pool is a gas or oil well or a gas or oil pool, as the case may be, and from time to time to classify and reclassify wells and pools accordingly;

(12) to determine the limits of any pool producing crude petroleum oil or natural gas or both and from time to time redetermine the limits;

(13) to regulate the methods and devices employed for storage in this state of oil or natural gas or any product of either, including subsurface storage;

(14) to permit the injection of natural gas or of any other substance into any pool in this state for the purpose of repressuring, cycling, pressure maintenance, secondary or any other enhanced recovery operations;

(15) to regulate the disposition of water produced or used in connection with the drilling for or producing of oil or gas or both and to direct surface or subsurface disposal of the water in a manner that will afford reasonable protection against contamination of fresh water supplies designated by the state engineer;

(16) to determine the limits of any area containing commercial potash deposits and from time to time redetermine the limits;

(17) to regulate and, where necessary, prohibit drilling or producing operations for oil or gas within any area containing commercial deposits of potash where the operations would have the effect unduly to reduce the total quantity of the commercial deposits of potash which may reasonably be recovered in commercial quantities or where the operations would interfere unduly with the orderly commercial development of the potash deposits;

(18) to spend the oil and gas reclamation fund and do all acts necessary and proper to plug dry and abandoned oil and gas wells in accordance with the provisions of the Oil and Gas Act and the Procurement Code, including disposing of salvageable equipment and material removed from oil and gas wells being plugged by the state;

(19) to make well price category determinations pursuant to the provisions of the Natural Gas Policy Act of 1978 or any successor act and, by regulation, to adopt fees for such determinations, which fees shall not exceed twenty-five dollars ($25.00) per filing. Such fees shall be credited to the account of the oil conservation division by the state treasurer and may be expended as authorized by the legislature;

(20) to regulate the construction and operation of oil treating plants and to require the posting of bonds for the reclamation of treating plant sites after cessation of operations;

(21) to regulate the disposition of nondomestic wastes resulting from the exploration, development, production or storage of crude oil or natural gas to protect public health and the environment; and

(22) to regulate the disposition of nondomestic wastes resulting from the oil field service industry, the transportation of crude oil or natural gas, the treatment of natural gas or the refinement of crude oil to protect public health and the environment including administering the Water Quality Act [Chapter 74, Article 6 NMSA 1978] as provided in Subsection E of Section 74-6-4 NMSA 1978.

History: 1953 Comp., § 65-3-11, enacted by Laws 1978, ch. 71, § 1; 1986, ch. 76, § 1; 1987, ch. 234, § 61; 1989, ch. 289, § 1.

Cross references. — For filing rules and regulations, see 14-4-3 NMSA 1978. For public utilities commission's lack of power to regulate sale price at wellhead, see 62-6-4 NMSA 1978.

Repeals and reenactments. — Laws 1978, ch. 71, § 1, repealed 65-3-11, 1953 Comp. (former 70-2-12 NMSA 1978), relating to enumeration of powers, and enacted a new 70-2-12 NMSA 1978.

The 1986 amendment, effective May 21, 1986, substituted "oil conservation division" for "division" in Subsection A and in the introductory paragraph of Subsection B; substituted "provided in the Oil and Gas Act" for "in this act provided" in Subsection A; substituted "the Oil and Gas Act" for "this act" in the introductory paragraph of Subsection B; substituted "cash or surety bond" for "corporate surety bond" in Subsection B(1); added Subsection B(19), and made minor stylistic changes throughout the section.

The 1987 amendment, effective July 1, 1987, in Subsection B(18), substituted "Procurement Code" for "Public Purchases Act"; added Subsection B(20); and made minor changes in language and punctuation throughout the section.

The 1989 amendment, effective June 16, 1989, added Subsections B(21) and B(22).

Procurement Code. — See 13-1-28 NMSA 1978 and notes thereto.

Natural Gas Policy Act. — The federal Natural Gas Policy Act of 1978, referred to in Paragraph B(19), appears as 15 U.S.C. § 3301 et seq.

Powers pertaining to oil well fires. — The lawmakers intended commission not only to seek fire prevention to conserve oil, but also to conserve other property and lives of persons peculiarly subject to hazard of oil well fires. Continental Oil Co. v. Brack, 381 F.2d 682 (10th Cir. 1967).

The terms "spacing unit" and "proration unit" are not synonymous and commission has power to fix spacing units without first creating proration units. Rutter & Wilbanks Corp. v. Oil Conservation Comm'n, 87 N.M. 286, 532 P.2d 582 (1975).

Am. Jur. 2d, A.L.R. and C.J.S. references. — 38 Am. Jur. 2d Gas and Oil §§ 145 to 163.

58 C.J.S. Mines and Minerals §§ 229 to 243.

70-2-13. Additional powers of commission or division; hearings before examiner; hearings de novo.

In addition to the powers and authority, either express or implied, granted to the oil conservation commission or division by virtue of the statutes of the state of New Mexico, the division is hereby authorized and empowered in prescribing its rules of order or procedure in connection with hearings or other proceedings before the division to provide for the appointment of one or more examiners to be members of the staff of the division to conduct hearings with respect to matters properly coming before the division and to make reports

COMMERCIAL & CENTALIZED SURFACE DISPOSAL FACILITIES

A commercial surface waste disposal facility is a facility that receives compensation for collection, disposal, evaporation, treatment, and/or storage of oil field related wastes. A centralized surface waste disposal facility is a facility that is owned by a single company/proprietor and only receives wastes from operations owned by that same company/proprietor.

Attachment I is a current list of the commercial surface disposal facilities in the state of New Mexico. To construct and operate a commercial surface disposal facility an application must be filed with the OCD Santa Fe Office as specified under OCD Rule 711 (Attachment II). Centralized surface disposal facilities must also file an application under OCD Rule 711. A $25,00 bond is required prior to construction of a commercial facility, while no bond is required for a centralized facility. The Division will issue public notice for commercial facilities and allow 30 days for comments; no public notice is required for centalized facilities.

Tab 4a contains the Guidelines for Permit Application, Design, and Construction of Waste Storage/Disposal Facilities and the accompanying application. Tab 4b contains the Engineering Design Guidelines for Construction of Waste Storage Disposal Ponds included to help design disposal ponds for both OCD 711 facilities and for other sites where oil and gas related wastes are disposed.

Oil and gas wastes which are exempt from RCRA Subtitle C do not need OCD approval to be disposed of at an OCD authorized disposal facility. Oil and gas wastes which are not exempt from RCRA Subtitle C, but which do not exhibit hazardous waste characteristics must receive OCD approval prior to disposal at a commercial facility. Either the disposal facility or the waste generator may request OCD approval to dispose of the wastes at the facility. A blanket approval to dispose of non-exempt, non-hazardous OCD regulated oil and gas waste may be obtained if incorporated into an OCD discharge plan.

Wastes which are not regulated by the OCD but which are either exempt from RCRA Subtitle C or are characteristically non-hazardous may be accepted on a case-by-case basis. Approval must be requested by the disposal facility after providing the required information (Attachment III). OCD regulated surface disposal facilities may accept wastes from out-of-state on a case-by-case basis. Approval must be requested by the disposal facility and received prior to disposal.

Under no circumstance will an OCD regulated surface disposal facility accept hazardous wastes.

H2S Prevention and Contingency Plan to Protect Public Health

CRI personnel will wear H2S personnel monitors in areas where H2S may be present. The monitors issue a visual and audible signal at 10ppm of H2S in ambient air, and a visual digital readout of ppm. The signal becomes rapid at 20ppm.

In the event of 10ppm CRI personnel will evacuate the area and monitor H2S levels. In the event of 20ppm CRI personnel will monitor H2S at the downwind boundary of the facility. If H2S levels exceed 20ppm for 2 hours or rise above 100ppm the facility will be closed, and notification will be given to the following.

New Mexico State Police
Lea County Sheriff
Hobbs Office NMOCD

CRI personnel will notify Callaway Safety, Hobbs, NM, to provide personnel, equipment, and supplies to mitigate the source.

NEW MEXICO OIL CONSERVATION DIVISION
1220 SOUTH ST FRANCIS DR
SANTA FE, NEW MEXICO 87505

Controlled Recovery, Inc.
P.O. Box 388
Hobbs, NM 88241

RE: R9166
S/2 N/2 and the N/2 S/2 Section 27, Township 20 South, Range 32 East, NMPM

Dear Sirs

NMOCD has reviewed your files and operations and hereby finds that CRI is in compliance with all rules and orders of NMOCD and has no history of violations or compliance issues.

An exception to screening, netting or covering has been granted for the facility.

The following operational conditions are required of CRI.

-- -- -- --- -- -- -- -- -- -- -- -- -- -- --- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --

Please sign the agreement for operational conditions and return to NMOCD, Santa Fe, New Mexico.

_____
By NMOCD

SAMPLE

Compliance Services

1220 N. Grimes · PO Box 2734 · Hobbs NM 88240 · Phone: (505) 391-7797
Dyke Cell Phone # (505) 370-5924 · Wade Cell Phone # (505) 370-5024

EXHIBIT "D"

Re: New Mexico Oil Conservation Division letter dated July 3, 2000

The action level specified in the letter to *Controlled Recovery Inc.* received from the OCD for sampling is 1.0 ppm H_2S. That level is extremely low. In fact, there is no governmental or industrial hygiene agency (to my knowledge) which has ever required monitoring of H_2S for health reasons at less than 10 ppm. The *accepted industry standard for monitoring and controlling H_2S in the workplace in our industry is 10 ppm* (See attachment #1 - ANSI H_2S Instructor Training Manual, page 3), whereas ANSI (American National Standards Institute) recommends a level for the protection of health of workers for an 8 hour day, 5 day week of less than 15 ppm (See above attachment). NIOSH (National Institute for Occupational Safety and Health) Pocket Guide to Chemical Hazards currently lists an exposure limit of 10 ppm (ceiling) (See attachment #4). Nonetheless the *actual OSHA acceptable ceiling concentration is 20 ppm, or 50 ppm for a single exposure of 10 minutes or less.* (See attachment #2 - OSHA Z Table) Throughout our industry, workers are taught that it is safe to work for 40 hours per week in levels of H_2S below 10 ppm.

H_2S is not considered Carcinogenic (National Toxicology Program 9th Annual report on Carcinogens 5/15/2000) or even suspected as causing Cancer. The hazard category listed for H_2S is acute (immediately hazardous) and the first action level is listed at 50 ppm. (See attachment #3)

In the NIOSH Criteria Document "Occupational Exposure to Hydrogen Sulfide" (See attachment #6) it is stated that "conclusive evidence of adverse health effects from repeated, long-term exposure to hydrogen sulfide at low concentrations was not found." (p.1) It is further recommended that in the workplace "Exposure to hydrogen sulfide shall be controlled so that no employee is exposed to hydrogen sulfide at a ceiling concentration greater than 15 mg/m^3." Both of these statements tend to support the hypothesis that low level monitoring such as that suggested by the NMOCD at your facility is unwarranted.

NMOCD rule 118 requires that any "well, lease, or related facility handling H_2S gas with concentration of 500 ppm or more shall have a warning sign at the entrance." Further, it specifies that any well, lease, or related facility with "H_2S concentration and volume such that the H_2S fraction equates to 10 MCF per day or more of H_2S and which is located within one-fourth mile of a dwelling, public place or highway shall install safety devices and maintain them in operable condition or shall establish safety procedures designed to prevent the undetected continuing escape of H_2S." (See attachment #5) There is no possibility that your facility will ever emit H_2S in those concentrations at that volume and yet the requirements for public protection in these circumstances are much less than those proposed in the letter sent to *Controlled Recovery Inc.*

Compliance Services

1220 N. Grimes · PO Box 2734 · Hobbs NM 88240 · Phone: (505) 391-7797
Dyke Cell Phone # (505) 370-5924 · Wade Cell Phone # (505) 370-5024

The specific guidelines that the NMOCD sent in the letter are not found in OCD Rule 711 on their web site. Neither was it found in the 7/97 revision of that rule. The OCD also referenced the guidelines for Rule 711 (Arabic number 13). Both of the rule and the guidelines require H_2S Contingency planning, but only the guidelines mention monitoring. The guidelines are not specific as to how the monitoring is to be performed and at what levels actions are required.

As I could not find the specifics mentioned in the letter (after searching NMOCD's entire web site), I still have some question as to whether these requirements apply to an existing facility (such as *Controlled Recovery Inc.*), a new facility, or as part of a closure plan. Nowhere did I find the proposed 1.0 ppm monitoring guidelines as part of any Rule, proposed Rule, or elsewhere.

The OCD letter also requires dissolved Oxygen and dissolved Sulfide testing of the pond if 1.0 or greater H_2S levels are encountered. I am puzzled by why they would require these tests. These tests are not particularly good indicators of potential H_2S release. There are far better methods. A simple titrimetric method will determine the actual H_2S concentration of the water, and thus the maximum potential release. (EPA 600/4-020 376.2)

On 07/14/00, I sampled the produced water evaporation pond at *Controlled Recovery Inc.* The sample was immediately iced, placed under chain of custody, and taken to a laboratory for analysis of hydrogen sulfide content in the water. The results (taken at the very end of a normal business week) show that there is little or no potential for harmful H_2S exposure from this source. (See attachment #7) The results show 6.8 ppm H_2S in the water, indicating that the maximum potential release at 0" from the pit is below all permissible and recommended exposure limits to protect public health and safety.

The regulation exercised by the NMOCD over waste water that *Controlled Recovery Inc.* is receiving is another consideration. Are the companies that are hauling this waste placarding it as a "poison gas"? I suspect not. If these wastes are not dangerous in transportation, then they would not, by definition, be dangerous during evaporation or disposal. And taking this line of reasoning back a step further, are the generating companies handling this produced water as if it contains dangerous quantities of poisonous gases? Are they monitoring their produced water tanks to determine whether they contain the 1 ppm of H_2S that the NMOCD is requiring *Controlled Recovery Inc* to monitor for? Oil producers and transporters which are within the city limits and adjacent to populated areas are not required to monitor at 1 ppm. They are not even required to perform continuous monitoring at the 10 ppm level. They are only required to restrict access and to provide signs warning of danger.

Compliance Services

1220 N. Grimes · PO Box 2734 · Hobbs NM 88240 · Phone: (505) 391-7797
Dyke Cell Phone # (505) 370-5924 · Wade Cell Phone # (505) 370-5024

It is my professional opinion that the 1.0 ppm level of monitoring that the NMOCD is asking for is unnecessary and overly burdensome. This monitoring level does not compare equitably with requirements placed upon other facilities with a far greater potential for H_2S release. Since the evaporation pond which *Controlled Recovery Inc.* maintains is not stratified, nor is it deep enough or stagnant enough to ever become stratified, there is no potential for anaerobic conditions to exist, and therefore no potential for the creation of H_2S such as might exist in a landfill or another facility. The only H_2S which could be released from the evaporation pond is that which is brought into the facility in solution (in the waste water). This H_2S would naturally seek equilibrium with the atmosphere, and thus be released slowly over time. For all of the above listed reasons, I see no necessity to monitor H_2S levels at the evaporation pond at *Controlled Recovery Inc.* And finally, given *Controlled Recovery Inc.*'s remote location and the negligible potential radius of exposure, I can see no public safety reason to perform any monitoring at all beyond routine personnel monitoring of your employees as they work directly with the waste water. It is my professional opinion that such monitoring is not necessary to protect public health and the environment.

It would certainly not be out of order to send a letter to the New Mexico Oil Conservation Division asking for a substantiation of these specific requirements and a detailed explanation as to what health concerns generated such rigid sampling levels.

If I can be of further service, please do not hesitate to call.

Thanks,

Dyke Browning - Registered Environmental Manager #7771
Certified Environmental Inspector #12441

Compliance Services

Phone (505) 391-7797 **Fax (505) 391-7954**
1220 N. Grimes, Hobbs, NM 88240 **Cell (505) 370-5924**

Dyke A. Browning is a Safety and Environmental Professional with over 15 years of experience in hazardous materials handling, chemical hygiene, occupational safety and health, hazardous waste operations, hazardous waste disposal, environmental cleanup and stewardship. He is a Registered Environmental Manager, and a Certified Environmental Inspector. Mr. Browning has an extensive background in the chemistry of hazardous materials, having served as a petrochemical service company laboratory manager for 7 years. Mr. Browning holds certifications in RCRA hazardous waste management, Land Ban, HAZWOPER (Level 5), First Aid and CPR, Substance Abuse, Radiation Safety, Continuous Improvement of Process, and others. Mr. Browning's academic and field experience have enabled him become a respected Safety, Health, and Environmental Trainer and consultant.

Education

Baylor University – Environmental Science Major
College of the Southwest – Bachelor of General Studies – (Biology,Business)

Registrations and Affiliations

- Trainer, Medic First Aid - International Registry # 17943, EMP America
- Member, National Environmental Training Association
- Member, Environmental Assessment Association
- Registered Environmental Manager #7771
- National Registry of Environmental Professionals
- Certified Environmental Inspector #12441 - Environmental Assessment Association
- Licensed Radiation Safety Consultant, State of New Mexico #399-6
- Corporate Representative, American Trucking Association
- Corporate Representative, National Fire Protection Association
- Corporate Representative, International Association of Drilling Contractors
- Corporate Representative, Association of Oilwell Service Contractor
- Professional Member - American Society of Safety Engineers
- Defensive Driving Instructor #45672 - National Safety Council

Experience

June 1999-Present	Compliance Services
1995-1999	Co-Owner, Safety & Environmental Solutions, Inc.
1993-1995	Environmental Specialist – Callaway Safety Equipment Co., Inc.
1985-1992	Laboratory Manager, Emergency Response Team - Unichem
1987-1992	Safety & Environmental Coordinator – Unichem International

Email = compliance@cleanweb.net
Website = http://members.cleanweb.net/compliance

III. Effects of H_2S

A. .13 p.p.m. -- minimum level for odor to be detected

B. 4.6 p.p.m. -- easily detectable

C. 100 p.p.m. -- begins to cause throat and eye irritation, odor will be undetectable after 2-15 minutes

D. 200-300 p.p.m. -- eye inflammation with extended (1 hour) exposure: dizziness, headaches, nausea

E. 300 p.p.m. -- threshold that can cause death--IDLH (Immediate Danger to Life and Health)

F. 500-700 p.p.m. -- can cause unconsciousness and death in 30 minutes to one hour

G. 700-1000 p.p.m. -- rapid unconsciousness, breathing stops and death occurs quickly.

H. 1000-2000 p.p.m. -- immediate unconsciousness, death in a few minutes. Death can occur even if removed to fresh air at once.

IV. Acceptable Working Limits

A. **Acceptable Ceiling Concentration.** The acceptable concentration for protection of health for an eight-hour, five day week shall be 15 p.p.m. Fluctuations are to occur below this concentration.

B. **Acceptable Eight-Hour Time-Weighted Average.** To avoid discomfort, the time-weighted average concentration of hydrogen sulfide shall not exceed 10 p.p.m.

C. P.P.M. = parts of gas per million-parts of air by volume. How little is 1 ppm of any gas?
   1. If one inch would represent one p.p.m. of gas, this would be like comparing one inch in 15 1/2 miles in distance.
   2. If one second would represent one p.p.m. of gas, this would be like comparing one second in 11 1/2 days.

D. H_2S disables breathing mechanisms.

D. If the oxidizing ability of the blood is reduced, H_2S will accumulate to dangerous levels. (This is why it is dangerous even at fairly low concentrations with time.)

E. Some time (24 hours) is needed to completely remove H_2S from your system.

F. Physiological effects depend upon four factors.
   a. Duration of Exposure
   b. Frequency -- Time of previous exposures, effects residual in blood.
   c. Intensity -- Can cause peak blood concentrations above acceptable limits.
   d. Individual Susceptibility -- Blood breakdown rate of individuals may vary. "Outside" factors such as alcohol or drugs can drastically reduce tolerance to H_2S. Breathing problems such as asthma reduce available blood oxygen. Other health problems such as epilepsy, coronary diseases, and emphysema can limit ability to cope with H_2S exposure.

Attachment #1

Federal Regulations - OSHA
29 CFR 1910.1000 Table Z-2 (excerpt 07/18/00)

TABLE Z-2

Substance	8-hour time weighted average	Acceptable ceiling concentration	Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift	
			Concentration	Maximum duration
Hydrogen sulfide (Z37.2-1966)	.....	20 ppm	50 ppm	10 mins. once only if no other meas. exp. occurs.

Attachment #2

Attachment #3

National Toxicology Program Report on Carcinogens

- What is the Report on Carcinogens (RoC)?
- Q's & A's on the RoC
- 9th Report on Carcinogens
  - Factsheet - 9th Report on Carcinogens
  - Factsheet - Listing of Tamoxifen as a known human carcinogen in the 9th Report on Carcinogens
  - Reviews of Chemicals for the RoC, 9th Edition
- What is under consideration for the RoC, 10th Edition
- Listing and Delisting Procedures
- Listing Criteria
- Call for Nominations to the NTP Report on Carcinogens
- The Report on Carcinogens Board Members & Meeting Minutes
- Ongoing Review of Process & Procedures:
  - Notice: DHHS/PHS; National Institute of Environmental Health Sciences, National Toxicology Program; RE-SCHEDULED MEETING ON REPORT ON CARCINOGENS (RoC) -- National Toxicology Program Public Meeting to receive comment on the review procedures and listing criteria used in the preparation of the DHHS Report on Carcinogens (RoC); is re-scheduled from September 15 (see 64 FR 37992 or pdfversion*) to October 21 and 22, 1999, DoubleTree Hotel Rockville, 1750 Rockville Pike, Rockville, Maryland, beginning at 9 am.
    Dated: October 6, 1999 [Volume 64, Number 193]) (pdf version*)

    Transcripts from Public Meeting

  - NTP's Response to Public Comments and Discussion on the Preparation and Review of the RoC

Chemical name, structure/formula, CAS and RTECS Nos., and DOT ID and guide Nos.	Synonyms, trade names, and conversion factors	Exposure limits (TWA unless noted otherwise)	IDLH	Physical description	Chemical and physical properties: MW, BP, SOL, Fl.P, IP, Sp. Gr, flammability	Chemical and physical properties: VP, FRZ, UEL, LEL	Incompatibilities and reactivities	Measurement method (See Table 1)
Hydrogen sulfide H_2S 7783-06-4 MX1225000 1053 117	Hydrosulfuric acid, Sewer gas, Sulfuretted hydrogen 1 ppm = 1.40 mg/m³	NIOSH C 10 ppm (15 mg/m³) [10-min] OSHA† C 20 ppm 50 ppm (10-min max peak)	100 ppm	Colorless gas with a strong odor of rotten eggs. [Note: Sense of smell becomes rapidly fatigued & cannot be relied upon to warn of the continuous presence of H_2S.] Shipped as a liquefied compressed gas.	MW: 34.1 BP: -77°F Sol: 0.4% Fl.P: NA (Gas) IP: 10.46 eV Sp.Gr: 1.19 Flammable Gas	VP: 17.6 atm FRZ: -122°F UEL: 44.0% LEL: 4.0%	Strong oxidizers, strong nitric acid, metals	Char; NIOSH 6013; IC
Hydroquinone $C_6H_4(OH)_2$ 123-31-9 MX3500000 2862 153	p-Benzenediol; 1,4-Benzenediol; Dihydroxybenzene; 1,4-Dihydroxybenzene; Quinol	NIOSH C 2 mg/m³ [15-min] OSHA 2 mg/m³	50 mg/m³	Light-tan, light-gray, or colorless crystals.	MW: 110.1 BP: 545°F Sol: 7% Fl.P: 329°F (Molten) IP: 7.95 eV Sp.Gr: 1.33 Combustible Solid; dust cloud may explode if ignited in an enclosed area.	VP: 0.00001 mm MLT: 338°F UEL: ? LEL: ?	Strong oxidizers, alkalis	Filter; CH_3COOH; HPLC/UVD; IV [#5004]
2-Hydroxypropyl acrylate CH_2=$CHCOOCH_2CHOHCH_3$ 999-61-1 AT1925000	HPA, β-Hydroxypropyl acrylate, Propylene glycol monoacrylate 1 ppm = 5.33 mg/m³	NIOSH 0.5 ppm (3 mg/m³) [skin] OSHA† none	N.D.	Clear to light-yellow liquid with a sweetish, solvent odor.	MW: 130.2 BP: 376°F Sol: ? Fl.P: 149°F IP: ? Sp.Gr: 1.05 Class IIIA Combustible Liquid	VP: ? FRZ: ? UEL: ? LEL: 1.8%	Water [Note: Can become unstable at high temperatures & pressures or may react with water with some release of energy, but not violently.]	None available
Indene C_9H_8 95-13-6 NK8225000	Indonaphthene 1 ppm = 4.75 mg/m³	NIOSH 10 ppm 45 mg/m³ OSHA† none	N.D.	Colorless liquid. [Note: A solid below 29°F.]	MW: 116.2 BP: 359°F Sol: Insoluble Fl.P: 173°F IP: 8.81 eV Sp.Gr: 0.997 Class IIIA Combustible Liquid	VP: ? FRZ: 29°F UEL: ? LEL: ?	None reported [Note: Polymerizes & oxidizes on standing. It has exploded during nitration with (H_2SO_4 + HNO_3).]	None available

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Personal protection and sanitation (See Table 2)	Recommendations for respirator selection — maximum concentration for use (MUC) (See Table 4)	Health hazards: Route	Symptoms (See Table 5)	First aid (See Table 6)	Target organs (See Table 5)
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: Daily Provide: Eyewash (>7%)	MSHA/NIOSH 50 ppm: APRD*/HiEF/SAT CF*/SCBAF/SAF >50 ppm: SCBAF:PD,PP/SAF:PD,PP/ASCBA Escape: HiEF/SCBAE	Inh Ing Con	Irrit eyes, conj, kera; CNS excitement; colored urine, nau, dizz, suffocation, rapid breath; musc twitch, delirium; collapse; skin irrit, sens. derm	Eye: Skin: Breath: Swallow:	Eyes, skin, resp sys, CNS; CVS
[Hydroquinone]					
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contam Remove: When wet or contam Change: N.R. Provide: Eyewash, Quick drench	TBAL	Inh Abs Ing Con	Irrit eyes, skin, resp sys; eye, skin burns; cough, dyso	Eye: Irr immed (2) Skin: Soap flush immed Breath: Resp support Swallow: Medical attention immed	Eyes, skin, resp sys
[2-Hydroxypropyl acrylate]					
Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: Daily Remove: When wet or contam Change: N.R.	TBAL	Inh Ing Con	In animals: irrit eyes, skin, muc memb; derm, skin sens; chemical pneu (aspir liq), liver, kidney, spleen inj	Eye: Irr immed Skin: Soap wash Breath: Resp support Swallow: Medical attention immed	Eyes, skin, resp sys, liver, kidneys, spleen
[Indene]					

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NIOSH Pocket Guide to Chemical Hazards (June 1997)
U.S. Department of Health and Human Services
Public Health Service
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

Attachment #4

Attachment #5

RULE 118. - HYDROGEN SULFIDE GAS - PUBLIC SAFETY (as of 3-1-91)

A. The intent of this rule is to provide for the protection of the public's safety in areas where hydrogen sulfide (H_2S) gas in concentrations greater than 100 parts per million (PPM) may be encountered.

B. Producing operations should be conducted with due consideration and guidance from American Petroleum Institute (API) publication "Conducting Oil and Gas Production Operations Involving Hydrogen Sulfide" (RP-55). The operator of a lease producing, or a gas processing plant handling H_2S or any other related facility where H_2S gas is present in concentrations of 100 PPM or more shall take reasonable measures to forewarn and safeguard persons having occasion to be on or near the property. In addition to training operator's employees in H_2S safety such measures may include, but are not necessarily limited to, posting of warning signs, fencing of surface installations, installation of safety devices and wind direction indicators, and maintaining tanks, thief hatches and gaskets, valves and piping in condition so as to prevent avoidable loss of vapors. Where release of hydrogen sulfide is unavoidable, the operator shall burn or vent the gas stream in such a manner as to avoid endangering human life.

C. Wells drilled in known H_2S gas producing areas, or where there is substantial probability of encountering H_2S gas in concentrations of 100 PPM or more, should be planned and drilled with due regard to and guidance from API RP-49 "Recommended Practices for Safe Drilling of Wells Containing Hydrogen Sulfide", latest edition. Wells completed and serviced by well servicing units where there is substantial probability of encountering H_2S gas in concentrations of 100 PPM or more should be worked on with due regard to the latest industry accepted practices. These practices may include, but are not necessarily limited to, the proper training of personnel in H_2S safety and the use of H_2S safety equipment as listed for safe operations by the American Petroleum Institute draft report for "Land, Oil and Gas Well Servicing and Workover Operations Involving Hydrogen Sulfide."*

D. Within ninety (90) days after completion of the first well on a lease, or within ninety (90) days after H_2S is discovered in a gas stream, each operator shall submit in writing to the Division's district office having jurisdiction, on a form acceptable to the Division, for each lease in each pool in production at that time, the H_2S concentration from an analysis of a representative sample of the gas stream. The analysis shall be performed by an industry-recognized method and procedure. The measurement report shall specify the name of the operator, lease or facility name, pool, testing point, tester, test method, and the measured H_2S concentration. Tests within the past three (3) years and which are still representative may be utilized for submittal from previously producing leases. NOTE: Owners or operators of existing wells and facilities shall have until July 1, 1987, to come into compliance with this paragraph of these rules.

E. (1) Any well, lease, processing plant or related facility handling H_2S gas with concentration of 500 PPM (0.05%) or more shall have a warning sign at the entrance. The sign, as a minimum, shall be legible from at least fifty (50) feet, and contain the words "poison gas." The use of existing signs will meet the requirements of this section providing they convey the intended safety message.

(2) Any lease producing gas or related facility having storage tanks containing gas with a H_2S concentration of 1,000 PPM (0.1%) or more shall have, in addition to the sign required in subparagraph E. (1), a sign at the foot of the battery stairway that shall accomplish the requirements of E. (1), plus specify any protective measures that may be necessary. This paragraph does not apply to gas processing plants.

(3) Any well, lease or processing plant handling gas with H_2S concentration and volume such that the H_2S fraction equates to 10 MCF per day or more of H_2S and which is located within one-fourth (1/4) mile of a dwelling, public place or highway shall install safety devices and maintain them in operable condition or shall establish safety procedures designed to prevent the unprotected continuing escape of H_2S. Wind direction indicators shall be installed at at least one strategic location at or near the site and shall be readily visible throughout the site. Also, unattended surface facilities or plants within one-fourth (1/4) mile of a dwelling or public meeting place shall be protected from public access by fencing and locking, or other equivalent security means. In addition, the operator shall prepare a contingency plan to be carried out should the public be threatened by a release. The plan shall provide for notification of endangered parties, as well as public safety personnel, for evacuation of threatened parties as warranted, and institution of measures for closing in the flow of gas. Contingency plans shall be available for Division inspection and shall be retained at the location which lends itself best to activation of any such plan. The operator, as an alternative, may utilize Figure 4.1 of API (RP-55) Revised March, 1983 and if the 100 PPM radius of exposure includes a dwelling, public place or highway, the operator must meet the public safety requirements as specified in this section.

(4) The provisions of this section shall be applicable within 30 days after the filing of sample data showing the existence and concentration of H_2S gas described in paragraphs E. (1) through E. (3) above. In unusual circumstances guidance on placement and content of signs may be obtained from the supervisor of the appropriate Division District Office.

F. The Director of the Division may administratively grant exceptions or extensions to the requirements of this rule for good cause shown and where such exception will not result in a threat to human life.

*At such time as the American Petroleum Institute adopts the "Recommended Practice for Land Oil and Gas Well Servicing and Workover Operations Involving Hydrogen Sulfide", it shall take the place of any previous draft reports.

I. RECOMMENDATIONS FOR A HYDROGEN SULFIDE STANDARD

The National Institute for Occupational Safety and Health (NIOSH) recommends that worker exposure to hydrogen sulfide in the workplace be controlled by adherence to the following sections. The standard is designed to protect the health and to provide for the safety of employees for up to a 10-hour work shift, 40-hour workweek, over a working lifetime. Compliance with all sections of the standard should prevent adverse effects of hydrogen sulfide on the health and safety of workers. Techniques recommended in the standard are valid, reproducible, and available to industry and government agencies. Sufficient technology exists to permit compliance with the recommended standard. The criteria and standard will be subject to review and revision as necessary.

Hydrogen sulfide is a nearly ubiquitous, acute acting toxic substance. It is a leading cause of sudden death in the workplace. Brief exposures to hydrogen sulfide at high concentrations have caused conjunctivitis and keratitis, and exposures at very high concentrations, have caused unconsciousness, respiratory paralysis, and death. Conclusive evidence of adverse health effects from repeated, long-term exposure to hydrogen sulfide at low concentrations was not found. However, there is some evidence that hydrogen sulfide alone at low concentrations or in combination with other chemical substances (eg, hydrocarbons or carbon disulfide) has caused nervous-system, cardiovascular, and gastrointestinal disorders, and effects on the eyes.

Hydrogen sulfide is especially dangerous when it occurs in low-lying areas or confined workspaces or when it exists in high concentrations under

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
CONTROLLED RECOVERY, INC.
ATTN: DYKE BROWNING
1220 N. GRIMES
HOBBS, NM 88240
FAX TO: (505) 391-7954

Receiving Date: 07/14/00
Reporting Date: 07/18/00
Project Owner: KEN MARSH
Project Name: PRODUCED WATER EVAP. PIT
Project Location: 40 MILES W. OF HOBBS

Analysis Date: 07/14/00
Sampling Date: 07/14/00
Sample Type: WASTEWATER
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: GP

LAB NUMBER	SAMPLE ID	SULFIDE (mg/L)
H5008-1	PRODUCED WATER PIT	8.8
Quality Control		NR
True Value QC		NR
% Accuracy		NR
Relative Percent Difference		NR

METHOD: EPA 600/4-020 376.2

Chemist

07/18/2000
Date

Attachment #7

EXHIBIT A

19.15.2.52 HYDROGEN SULFIDE GAS (HYDROGEN SULFIDE)

A. Applicability. This section applies to any person, operator or facility subject to the jurisdiction of the Division, including, but not limited to, any person, operator or facility engaged in drilling, stimulating, injecting into, completing, working over or producing any oil, natural gas or carbon dioxide well or any person, operator or facility engaged in gathering, transporting, storing, processing or refining of crude oil, natural gas or carbon dioxide (referred to herein as "person, operator or facility" or "well, facility or operation"). This section shall not act to exempt or otherwise excuse surface waste management facilities permitted by the division pursuant to 19.15.9.711 NMAC from more stringent conditions on the handling of hydrogen sulfide required of such facilities by 19.15.9.711 NMAC or more stringent conditions in permits issued thereunder, nor shall such facilities be exempt or otherwise excused from the requirements set forth in this section by virtue of permitting under 19.15.9.711 NMAC.

B. Definitions (specific to this section).

(1) ANSI. The acronym "ANSI" means the american national standards institute.

(2) API. The acronym "API" means the american petroleum institute.

(3) Area of Exposure. The phrase "area of exposure" means the area within a circle constructed with a point of escape at its center and the radius of exposure as its radius.

(4) ASTM. The acronym "ASTM" means the american society for testing and materials.

(5) Dispersion Technique. A "dispersion technique" is a mathematical representation of the physical and chemical transportation characteristics, dilution characteristics and transformation characteristics of hydrogen sulfide gas in the atmosphere.

(6) Escape Rate. The "escape rate" is the maximum volume (Q) that is used to designate the possible rate of escape of a gaseous mixture containing hydrogen sulfide, as set forth herein.

(a) For existing gas facilities or operations, the escape rate shall be calculated using the maximum daily rate of the gaseous mixture produced or handled or the best estimate thereof. For an existing gas well, the escape rate shall be calculated using the current daily absolute open flow rate against atmospheric pressure or the best estimate of that rate.

(b) For new gas operations or facilities, the escape rate shall be calculated as the maximum anticipated flow rate through the system. For a new gas well, the escape rate shall be calculated using the maximum open-flow rate of offset wells in the pool or reservoir, or the pool or reservoir average of maximum open-flow rates.

(c) For existing oil wells, the escape rate shall be calculated by multiplying the producing gas/oil ratio by the maximum daily production rate or the best estimate thereof.

(d) For new oil wells, the escape rate shall be calculated by multiplying the producing gas/oil ratio by the maximum daily production rate of offset wells in the pool or reservoir, or the pool or reservoir average of the producing gas/oil ratio multiplied by the maximum daily production rate.

(e) For facilities or operations not mentioned, the escape rate shall be calculated using the actual flow of the gaseous mixture through the system or the best estimate thereof.

(7) GPA. The acronym "GPA" means the gas processors association.

(8) LEPC. The acronym "LEPC" means the local emergency planning committee established pursuant to the emergency planning and community right-to-know act, 42 U.S. C. § 11001.

(9) NACE. The acronym "NACE" refers to the national association of corrosion engineers.

(10) PPM. The acronym "ppm" means "parts per million" by volume.

(11) Potentially Hazardous Volume means the volume of hydrogen sulfide gas of such concentration that:

(a) the 100-ppm radius of exposure includes any public area;

(b) the 500-ppm radius of exposure includes any public road; or

(c) the 100-ppm radius of exposure exceeds 3,000 feet.

(12) Public Area. A "public area" is any building or structure that is not associated with the well, facility or operation for which the radius of exposure is being calculated and that is used as a dwelling, office, place of business, church, school, hospital, or government building, or any portion of a park, city, town, village or designated school bus stop or other similar area where members of the public may reasonably be expected to be present.

(13) Public Road. A "public road" is any federal, state, municipal or county road or highway.

(14) Radius of Exposure. The radius of exposure is that radius constructed with the point of escape as its starting point and its length calculated using the following Pasquill-Gifford derived equation, or by such other method as may be approved by the division:

(a) For determining the 100-ppm radius of exposure: $X=[(1.589)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$, where "X" is the radius of exposure in feet, the "hydrogen sulfide concentration" is the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture, and "Q" is the escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psia and 60°F).

(b) For determining the 500-ppm radius of exposure: $X=[(0.4546)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$, where "X" is the radius of exposure in feet, the "hydrogen sulfide concentration" is the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture, and "Q" is the escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psia and 60°F).

(c) For a well being drilled, completed, recompleted, worked over or serviced in an area where insufficient data exists to calculate a radius of exposure but where hydrogen sulfide could reasonably be expected to be present in concentrations in excess of 100 ppm in the gaseous mixture, a 100-ppm radius of exposure equal to 3,000 feet shall be assumed.

C. Regulatory Threshold.

(1) Determination of Hydrogen Sulfide Concentration.

(a) Each person, operator or facility shall determine the hydrogen sulfide concentration in the gaseous mixture within each of its wells, facilities or operations either by testing (using a sample from each well, facility or operation), testing a representative sample, or using process knowledge in lieu of testing. If a representative sample or process knowledge is used, the concentration derived from the representative sample or process knowledge must be reasonably representative of the hydrogen sulfide concentration within the well, facility or operation.

(b) The tests used to make the determination referred to in the previous subparagraph shall be conducted in accordance with applicable ASTM or GPA standards or by another method approved by the division.

(c) If a test was conducted prior to the effective date of this section that otherwise meets the requirements of the previous subparagraphs, new testing shall not be required.

(d) If any change or alteration may materially increase the concentration of hydrogen sulfide in a well, facility or operation, a new determination shall be required in accordance with this section.

(2) Concentrations Determined to be Below 100 ppm. If the concentration of hydrogen sulfide in a given well, facility or operation is less than 100 ppm, no further actions shall be required pursuant to this section.

(3) Concentrations Determined to be Above 100 ppm.

(a) If the concentration of hydrogen sulfide in a given well, facility or operation is determined to be 100 ppm or greater, then the person, operator or facility must calculate the radius of exposure and comply with applicable requirements of this section.

(b) If calculation of the radius of exposure reveals that a potentially hazardous volume is present, the results of the determination of the hydrogen sulfide concentration and the calculation of the radius of exposure shall be provided to the division. For a well, facility or operation existing on the effective date of this section, the determination, calculation and submission required herein shall be accomplished within 180 days of the effective date of this section; for any well, facility or operation that commences operations after the effective date of this section, the determination, calculation and submission required herein shall be accomplished before operations begin.

(4) Recalculation. The person, operator or facility shall calculate the radius of exposure if the hydrogen sulfide concentration in a well, facility or operation increases to 100 ppm or greater. The person, operator or facility shall also recalculate the radius of exposure if the actual volume fraction of hydrogen sulfide increases by a factor of twenty-five percent in a well, facility or operation that previously had a hydrogen sulfide concentration of 100 ppm or greater. If calculation or recalculation of the radius of exposure reveals that a potentially hazardous volume is present, the results shall be provided to the division within sixty (60) days.

D. Hydrogen Sulfide Contingency Plan.

(1) When Required. If a well, facility or operation involves a potentially hazardous volume of hydrogen sulfide, a hydrogen sulfide contingency plan that will be used to alert and protect the public must be developed in accordance with the following paragraphs.

(2) Plan Contents.

(a) API Guidelines. The hydrogen sulfide contingency plan shall be developed with due consideration of paragraph 7.6 of the guidelines published by the API in its publication entitled "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide," RP-55, most recent edition, or with due consideration to another standard approved by the division.

(b) Required Contents. The hydrogen sulfide contingency plan shall contain, but shall not be limited to, information on the following subjects, as appropriate to the well, facility or operation to which it applies:

(i) Emergency procedures. The hydrogen sulfide contingency plan shall contain information on emergency procedures to be followed in the event of a release and shall include, at a minimum, information concerning the responsibilities and duties of

personnel during the emergency, an immediate action plan as described in the API document referenced in the previous subsubparagraph, and telephone numbers of emergency responders, public agencies, local government and other appropriate public authorities. The plan shall also include the locations of potentially affected public areas and public roads and shall describe proposed evacuation routes, locations of any road blocks and procedures for notifying the public, either through direct telephone notification using telephone number lists or by means of mass notification and reaction plans. The plan shall include information on the availability and location of necessary safety equipment and supplies.

(ii) Characteristics of hydrogen sulfide and sulfur dioxide. The hydrogen sulfide contingency plan shall include a discussion of the characteristics of hydrogen sulfide and sulfur dioxide.

(iii) Maps and drawings. The hydrogen sulfide contingency plan shall include maps and drawings that depict the area of exposure and public areas and public roads within the area of exposure.

(iv) Training and Drills. The hydrogen sulfide contingency plan shall provide for training and drills, including training in the responsibilities and duties of essential personnel and periodic on-site or classroom drills or exercises that simulate a release, and shall describe how the training, drills and attendance will be documented. The hydrogen sulfide contingency plan shall also provide for training of residents as appropriate on the proper protective measures to be taken in the event of a release, and shall provide for briefing of public officials on issues such as evacuation or shelter-in-place plans.

(v) Coordination with State Emergency Plans. The hydrogen sulfide contingency plan shall describe how emergency response actions under the plan will be coordinated with the division and with the New Mexico state police consistent with the New Mexico hazardous materials emergency response plan (HMER).

(vi) Activation Levels. The hydrogen sulfide contingency plan shall include the activation level and a description of events that could lead to a release of hydrogen sulfide sufficient to create a concentration in excess of the activation level.

(3) Plan Activation. The hydrogen sulfide contingency plan shall be activated when a release creates a concentration of hydrogen sulfide greater than the activation level set forth in the hydrogen sulfide contingency plan. At a minimum, the plan must be activated whenever a release may create a concentration of hydrogen sulfide of more than 100 ppm in any public area, 500 ppm at any public road or 100 ppm 3,000 feet from the site of release.

(4) Submission.

(a) Where Submitted. The hydrogen sulfide contingency plan shall be submitted to the division.

(b) When Submitted. A hydrogen sulfide contingency plan for a well, facility or operation existing on the effective date of this section shall be submitted within one year of the effective date of this section. A hydrogen sulfide contingency plan for a new well, facility or operation shall be submitted before operations commence. The hydrogen sulfide contingency plan for a drilling, completion, workover or well servicing operation must be on file with the division before operations commence and may be submitted separately or along with the application for permit to drill (APD) or may be on file from a previous submission. A hydrogen sulfide contingency plan shall also be submitted within 180 days after the person, operator or facility becomes aware or should have become aware that a public area or public road is established that creates a potentially hazardous volume where none previously existed.

(c) Electronic Submission. Any filer who operates more than one hundred wells or who operates a crude oil pump station, compressor station, refinery or gas plant must submit each hydrogen sulfide contingency plan in electronic format. The hydrogen sulfide contingency plan may be submitted through electronic mail, through an Internet filing or by delivering electronic media to the division, so long as the electronic submission is compatible with the division's systems.

(5) Failure to Submit Plan. Failure to submit a hydrogen sulfide contingency plan when required may result in denial of an application for permit to drill, cancellation of an allowable for the subject well or other enforcement action appropriate to the well, facility or operation.

(6) Review, Amendment. The person, operator or facility shall review the hydrogen sulfide contingency plan any time a subject addressed in the plan materially changes and make appropriate amendments. If the division determines that a hydrogen sulfide contingency plan is inadequate to protect public safety, the division may require the person, operator or facility to add provisions to the plan or amend the plan as necessary to protect public safety.

(7) Retention and Inspection. The hydrogen sulfide contingency plan shall be reasonably accessible in the event of a release, maintained on file at all times, and available for inspection by the division.

(8) Annual Inventory of Contingency Plans. On an annual basis, each person, operator or facility required to prepare one or more hydrogen sulfide contingency plans pursuant to this section shall file with the appropriate local emergency planning committee and the state emergency response commission an inventory of the wells, facilities and operations for which plans are on file with the division and the name, address and telephone number of a point of contact.

(9) Plans Required by Other Jurisdictions. A hydrogen sulfide contingency plan required by the Bureau of Land Management or other jurisdiction that meets the requirements of this subsection may be submitted to the division in satisfaction of this subsection.

E. Signage, Markers. For each well, facility or operation involving a concentration of hydrogen sulfide of 100 ppm or greater, signs and/or markers shall be installed and maintained. Each sign or marker shall conform with the current ANSI standard Z53.1 or some other standard approved by the division, shall be readily readable, and shall contain the words "poison gas" and other information sufficient to warn the public that a potential danger exists. Signs or markers shall be prominently posted at locations, including but not limited to entrance points and road crossings, sufficient to alert the public that a potential danger exists. Signs and/or markers that conform with this subsection shall be installed no later than one year from the effective date of this section.

F. Protection from Hydrogen Sulfide During Drilling, Completion, Workover, and Well Servicing Operations.

(1) API Standards. All drilling, completion, workover and well servicing operations involving a hydrogen sulfide concentration of 100 ppm or greater shall be conducted with due consideration to the guidelines published by the API entitled "Recommended Practice for Oil and Gas Well Servicing and Workover Operations Involving Hydrogen Sulfide," RP-68, and "Recommended Practices for Drilling and Well Servicing Operations Involving Wells Containing Hydrogen Sulfide," RP-49, most recent editions, or some other standard approved by the division.

(2) Detection and Monitoring Equipment. Drilling, completion, workover and well servicing operations involving a hydrogen sulfide concentration of 100 ppm or greater shall include hydrogen sulfide detection and monitoring equipment as follows:

(a) Each drilling and completion site shall have an accurate and precise hydrogen sulfide detection and monitoring system that will automatically activate visible and audible alarms when the ambient air concentration of hydrogen sulfide reaches a predetermined value set by the operator, not to exceed 20 ppm. There shall be a sensing point located at the shale shaker, rig floor and bell nipple for a drilling site and the cellar, rig floor and circulating tanks or shale shaker for a completion site.

(b) For workover and well servicing operations, one operational sensing point shall be located as close to the well bore as practical. Additional sensing points may be necessary for large or long-term operations.

(c) Hydrogen sulfide detection and monitoring equipment must be provided and must be made operational during drilling when drilling is within 500 feet of a zone anticipated to contain hydrogen sulfide and continuously thereafter through all subsequent drilling.

(3) Wind Indicators. All drilling, completion, workover and well servicing operations involving a hydrogen sulfide concentration of 100 ppm or greater shall include wind indicators. Equipment to indicate wind direction shall be present and visible at all times. At least two devices to indicate wind direction shall be installed at separate elevations and visible from all principal working areas at all times. When a sustained concentration of hydrogen sulfide is detected in excess of 20 ppm at any detection point, red flags shall be displayed.

(4) Flare System. For drilling and completion operations in an area where it is reasonably expected that a potentially hazardous volume of hydrogen sulfide will be encountered, the person, operator or facility shall install a flare system to safely gather and burn hydrogen-sulfide-bearing gas. Flare outlets shall be located at least 150 feet from the well bore. Flare lines shall be as straight as practical. The flare system shall be equipped with a suitable and safe means of ignition. Where noncombustible gas is to be flared, the system shall provide supplemental fuel to maintain ignition.

(5) Well Control Equipment. When the 100 ppm radius of exposure includes a public area, the following well control equipment shall be required:

(a) Drilling. A remote-controlled well control system shall be installed and operational at all times beginning when drilling is within 500 feet of the formation believed to contain hydrogen sulfide and continuously thereafter during drilling. The well control system must include, at a minimum, a pressure and hydrogen-sulfide-rated well control choke and kill system including manifold and blowout preventer that meets or exceeds the specifications API-16C and API-RP 53 or other specifications approved by the division. Mud-gas separators shall be used. These systems shall be tested and maintained pursuant to the specifications referenced, according to the requirements of this part, or otherwise as approved by the division.

(b) Completion, Workover and Well Servicing. A remote controlled pressure and hydrogen-sulfide-rated well control system that meets or exceeds API specifications or other specifications approved by the division shall be installed and shall be operational at all times during completion, workover and servicing of a well.

(6) Mud Program. All drilling, completion, workover and well servicing operations involving a hydrogen sulfide concentration of 100 ppm or greater shall use a hydrogen sulfide mud program capable of handling hydrogen sulfide conditions and well control, including de-gassing.

(7) Well Testing. Except with prior approval of the division, drill-stem testing of a zone that contains hydrogen sulfide in a concentration of 100 ppm or greater shall be conducted only during daylight hours and formation fluids shall not be permitted to flow to the surface.

(8) If Hydrogen Sulfide Encountered During Operations. If hydrogen sulfide was not anticipated at the time the division issued a permit to drill but is encountered during drilling in a concentration of 100 ppm or greater, the operator must satisfy the requirements of this section before continuing drilling operations. The operator shall notify the division of the event and the mitigating steps that have been or are being taken as soon as possible, but no later than 24 hours following discovery. The division may grant verbal approval to continue drilling operations pending preparation of any required hydrogen sulfide contingency plan.

G. Protection from Hydrogen Sulfide at Crude Oil Pump Stations, Producing Wells, Tank Batteries and Associated Production Facilities, Pipelines, Refineries, Gas Plants and Compressor Stations.

(1) API Standards. Operations at crude oil pump stations and producing wells, tank batteries and associated production facilities, refineries, gas plants and compressor stations involving a concentration of hydrogen sulfide of 100 ppm or greater shall be conducted with due consideration to the guidelines published by the API in its publication entitled "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide," RP-55, latest edition or some other standard approved by the division.

(2) Security. Well sites and other unattended, fixed surface facilities involving a concentration of hydrogen sulfide of 100 ppm or greater shall be protected from public access by fencing with locking gates when the location is within 1/4 mile of a public area. A surface pipeline shall not be considered a fixed surface facility for purposes of this paragraph.

(3) Wind Direction Indicators. All crude oil pump stations, producing wells, tank batteries and associated production facilities, pipelines, refineries, gas plants and compressor stations involving a concentration of hydrogen sulfide of 100 ppm or greater shall have equipment to indicate wind direction. The wind direction equipment shall be installed and visible from all principal working areas at all times.

(4) Well Control Equipment. When the 100 ppm radius of exposure includes a public area, the following additional measures are required:

(a) Safety devices, such as automatic shut-down devices, shall be installed and maintained in good operating condition to prevent the escape of hydrogen sulfide. Alternatively, safety procedures shall be established to achieve the same purpose.

(b) Any well shall possess a secondary means of immediate well control through the use of an appropriate christmas tree or downhole completion equipment. Such equipment shall allow downhole accessibility (reentry) under pressure for permanent well control.

(5) Tanks or vessels. Each stair or ladder leading to the top of any tank or vessel containing 300 ppm or more of hydrogen sulfide in the gaseous mixture shall be chained or marked to restrict entry.

(6) Compliance Schedule. Each existing crude oil pump station, producing well, tank battery and associated production facility, pipeline, refinery, gas plant and compressor station not currently meeting the requirements of this subsection shall be brought into compliance within one year of the effective date of this section.

H. Personnel Protection and Training. All persons responsible for the implementation of any hydrogen sulfide contingency plan shall be provided training in hydrogen sulfide hazards, detection, personal protection and contingency procedures.

I. Standards for Equipment That May Be Exposed to Hydrogen Sulfide. Whenever a well, facility or operation involves a potentially hazardous volume of hydrogen sulfide, equipment shall be selected with consideration for both the hydrogen sulfide working environment and anticipated stresses and NACE Standard MR0175 (latest edition) or some other standard approved by the division shall be used for selection of metallic equipment or, if applicable, adequate protection by chemical inhibition or other methods that control or limit the corrosive effects of hydrogen sulfide shall be used.

J. Exemptions. Any person, operator or facility may petition the director or the director's designee for an exemption to any requirement of this section. Any such petition shall provide specific information as to the circumstances that warrant approval of the exemption requested and how the public safety will be protected. The director or the director's designee, after considering all relevant factors, may approve an exemption if the circumstances warrant and so long as the public safety will be protected.

K. Notification of the Division. The person, operator or facility shall notify the division upon a release of hydrogen sulfide requiring activation of the hydrogen sulfide contingency plan as soon as possible, but no more than four hours after plan activation, recognizing that a prompt response should supercede notification. The person, operator or facility shall submit a full report of the incident to the division on Form C-141 no later than fifteen (15) days following the release.

NMOCD Hydrogen Sulfide Rule 118
Deadline Summary
Production Wells, Production Facilities, Pump Stations, Etc.
Effective Date March 2, 2003

Action	New Facilities	Existing Facilities
1) Determination of Hydrogen Sulfide Concentration	Before commencing operations	180 days – September 2, 2003
2) Calculate Radius of Exposure if H_2S concentration equals or exceeds 100 ppm	Before commencing operations	180 days – September 2, 2003
3) Develop and implement contingency plan if a PHV is determined to exist	Before commencing operations	1 year – March 2, 2004
4) Post Signs	Before commencing operations	1 year – March 2, 2004
5) Install Wind Indicators	Before commencing operations	1 year – March 2, 2004
6) Install control equipment if 100 ppm ROE contains a public area	Before commencing operations	1 year – March 2, 2004
7) Install security fencing if well, facility or operation contains H_2S equal or above 100 ppm and is located within ¼ mile of public area	Before commencing operations	1 year – March 2, 2004
8) Provide training to workers who will implement contingency plan	Before commencing operations	1 year – March 2, 2004
9) Notification of OCD - H_2S concentrations and ROE if a PHV exists - Activation of contingency plan	Before commencing operations ASAP but within 4 hours	180 days – September 2, 2003 ASAP but within 4 hours

NMOCD Hydrogen Sulfide Rule 118
Deadline Summary
Drilling, Completions, Workovers, & Well Servicing

Action	New Facilities
1) Determination of Hydrogen Sulfide Concentration	Before commencing operations
2) Calculate Radius of Exposure if H_2S concentration equals or exceeds 100 ppm	Before commencing operations
3) Develop and implement contingency plan if a PHV is determined to be possible; note that for a wildcat well in new formation, the 100 ppm ROE is arbitrarily set at 3000 feet	Before commencing operations
4) Detection and monitoring system	Install and have operational upon reaching 500 feet of H_2S zone for drilling; install and have operational at all times for workovers, completions, and well servicing
5) Install Wind Indicators	Before commencing operations
6) Install flare system if a PHV is determined to be possible for drilling and completion operations	Before commencing operations
7) A mud system must be installed and implemented if the H_2S concentration equals or exceeds 100 ppm.	Before commencing operations
8) Provide training to workers who will implement contingency plan	Before commencing operations
9) Drill stem well testing must only be done during daylight hours unless approved by OCD	
10) Notification of OCD - H_2S concentrations and ROE if a PHV exists - Activation of contingency plan	Before commencing operations ASAP but within 4 hours

PERMIT FOR OIL TREATING PLANT AND SURFACE WASTE DISPOSAL

STATE OF NEW MEXICO
ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 9882
Order No. R-9166

APPLICATION OF CONTROLLED RECOVERY INC.
FOR AN OIL TREATING PLANT PERMIT, SURFACE
WASTE DISPOSAL AND AN EXCEPTION TO ORDER
NO. R-3221, LEA COUNTY, NEW MEXICO

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on April 4, 1990, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 27th day of April, 1990, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) Decretory Paragraph No. (3) of Division Order No. R-3221, as amended, prohibits in that area encompassed by Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico, the disposal, subject to minor exceptions, of water produced in conjunction with the production of oil or gas, or both, on the surface of the ground, or in any pit, pond, lake, depression, draw, streambed, or arroyo, or in any water course, or in any other place or in any manner which would constitute a hazard to any fresh water supplies.

(3) The aforesaid Order No. R-3221 was issued in order to afford reasonable protection against contamination of fresh water supplies designated by the State Engineer through disposal of water produced in conjunction with the production of oil or gas, or both, in unlined surface pits.

(4) The State Engineer has designated all underground water in the State of New Mexico containing 10,000 parts per million or less of dissolved solids as fresh water supplies to be afforded reasonable protection against contamination; except that said designation does not include any water for which there is no present or reasonably foreseeable beneficial use that would be impaired by contamination.

(5) The applicant, Controlled Recovery Inc., seeks authority to construct and operate a surface waste disposal facility and an oil treating plant for the purpose of treating and reclaiming sediment oil and for the collection, disposal, evaporation, or storage of produced water, drilling fluids, drill cuttings, completion fluids and other non-hazardous oilfield related waste in unlined surface pits at a site in the S/2 N/2 and the N/2 S/2 of Section 27, Township 20 South, Range 32 East, NMPM, Lea County, New Mexico.

(6) The applicant proposes to install and operate an effective system, consisting of separating tanks, a water disposal pit, a solids disposal pit, and associated skimming, heat, and/or chemical separating equipment for the removal and reclamation of oil and basic sediments from the produced water to be disposed of, and a settling area to separate other solid waste.

(7) The proposed plant and method of processing will efficiently process, treat, and reclaim the aforementioned waste oil, thereby salvaging oil which would otherwise be unrecoverable.

(8) No interested party appeared at the hearing in opposition to the application.

(9) A naturally occurring salt lake (Laguna Toston) is located in the S/2 of Section 21 and the N/2 of Section 28, Township 20 South, Range 32 East, NMPM, Lea County, New Mexico, and is approximately three-quarters of a mile from the proposed disposal area.

(10) The hydrogeologic evidence presented in this case establishes that:

a) Triassic redbeds, comprised of the Chinle Shale, Santa Rosa sandstone, and the Dewey Lake formation, underlies both Laguna Toston and the proposed water disposal site;

b) Shales within the Triassic redbeds underlying the proposed waste disposal site and Laguna Toston are virtually impermeable and therefore prevent vertical seepage of the waters from the site and Laguna Toston into sand stringers with the redbeds which may contain fresh water;

c) The surface of the Triassic redbeds is depressed in the vicinity of the waste disposal site and Laguna Toston thus creating a "collapse feature";

d) The major flow of surface and subsurface water within the boundaries of the "collapse feature" is toward Laguna Toston;

e) Seepage from the Impoundments at the proposed waste disposal site will infiltrate into the subsurface and migrate toward Laguna Toston;

f) After the seepage reaches Laguna Toston, practically all of the seepage will evaporate;

g) There is no present or reasonably foreseeable beneficial use of the waters of Laguna Toston;

h) There are no known sources of potable groundwater in sediments underlying the Triassic redbeds at Laguna Toston;

i) The utilization of the proposed disposal site adjacent to Laguna Toston for the disposal of water produced in conjunction with the production of oil or gas, or both, and other non-hazardous oilfield waste products, including drill cuttings and drilling muds should not constitute a hazard to any fresh water supplies.

(11) The applicant should be authorized to utilize the unlined pits described in Finding Paragraph Nos. (5) and (6) above, for the disposal of water produced in conjunction with the production of oil or gas, or both, and other non-hazardous oilfield waste products, including drill cuttings and drilling muds.

(12) The maximum fill level in both of the above-described pits should be limited to a plane below the crest of the dikes surrounding the pits in order to preclude over-tapping of the dikes.

(13) The proposed oil treating plant and disposal facility should be constructed in accordance with the engineering plat and topographic map presented as evidence in this case and in accordance with such additional conditions and requirements as may be directed by the Division Director, and should be operated and maintained in such a manner as to preclude spills and fires, and protect persons and livestock.

(14) Prior to initiating operations, the facility should be inspected by a representative of the Hobbs district office of the Division in order to determine the adequacy of fences, gates and cattleguards necessary to preclude livestock and unauthorized persons from entering and/or utilizing said facility, and also to determine the adequacy of dikes and berms needed to assure safe plant operation.

(15) The Director of the Division should be authorized to administratively grant approval for the expansion or modification of the proposed treating plant.

(16) Authority for operation of the treating plant and disposal facility should be suspended or rescinded whenever such suspension or rescission should appear necessary to protect human health or property, to protect fresh water supplies from contamination, to prevent waste, or for non-compliance with the terms and conditions of this order or Division Rules and Regulations.

(17) Prior to constructing said facility, the applicant should be required to submit to the Santa Fe office of the Division a surety or cash bond in the amount of $25,000 in a form approved by the Division.

(18) Authority for operation of the treating plant and disposal facility should be transferrable only upon written application and approval by the Division Director.

(19) The granting of this application should not endanger designated fresh water supplies, and will prevent waste by allowing the recovery of otherwise unrecoverable oil.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Controlled Recovery Inc., is hereby authorized to construct and operate a surface waste disposal facility complete with unlined surface pits and an oil treating plant at a site in the S/2 N/2 and the N/2 S/2 of Section 27, Township 20 South, Range 32 East, NMPM, Lea County, New Mexico, for the purpose of treating and reclaiming sediment oil and for the collection, disposal, evaporation, or storage of produced water, drilling fluids, drill cuttings, completion fluids and other non-hazardous oilfield related waste.

PROVIDED HOWEVER THAT, the proposed oil treating plant and disposal facility shall be constructed in accordance with the engineering plat and topographic map presented as evidence in this case and in accordance with such additional conditions and requirements as may be directed by the Division Director, and shall be operated and maintained in such manner as to preclude spills and fires, and protect persons and livestock.

PROVIDED FURTHER THAT, prior to initiating operations, the facility shall be inspected by a representative of the Hobbs district office of the Division in order to determine the adequacy of fences, gates and cattleguards necessary to preclude livestock and unauthorized persons from entering and/or utilizing said facility, and also to determine the adequacy of dikes and berms needed to assure safe plant operation.

(2) The maximum fill level in both of the proposed unlined surface pits shall be limited to a plane below the crest of the dikes surrounding the pits in order to preclude over-tapping of the dikes.

(3) The Director of the Division shall be authorized to administratively grant approval for the expansion or modification of the proposed treating plant.

(4) Authority for operation of the treating plant and disposal facility shall be suspended or rescinded whenever such suspension or rescission should appear necessary to protect human health or property, to protect fresh water supplies from contamination, to prevent waste, or for non-compliance with the terms and conditions of this order or Division Rules and Regulations.

(5) Prior to constructing said facility, the applicant shall submit, to the Santa Fe office of the Division, a surety or cash bond in the amount of $25,000 in a form approved by the Division.

(6) Authority for operation of the treating plant and disposal facility shall be transferrable only upon written application and approval by the Division Director.

(7) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

Original on file
Santa Fe, New Mexico

WILLIAM J. LEMAY
Director

LANDFARM APPROVAL

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 20
STATE LAND OFFICE BU
SANTA FE, NEW MEXICO
(505) 827-5800

September 13, 1990

CERTIFIED MAIL
RETURN RECEIPT NO. P-918-402-355

Mr. Ken Marsh, President
Controlled Recovery, Inc.
P. O. Box 369
Hobbs, New Mexico 88241

RE: Landfarm Operation
Controlled Recovery Disposal Facility
Lea County, New Mexico

Dear Mr. Marsh:

The Oil Conservation Division (OCD) has reviewed your application for operation of an oilfield waste landfarm at your previously approved disposal facility located in Section 27, Township 20 South, Range 32 East, NMPM, Lea County, New Mexico.

Pursuant to OCD Rule 711 the landfarm operation is hereby approved. The landfarm will be constructed and operated pursuant to the terms and conditions contained in your application dated August 2, 1990 and in your information dated September 12, 1990 submitted as a supplement to the application.

Please be advised approval of this landfarm does not relieve you of liability should your operation result in actual pollution of surface or ground water or the environment actionable under other laws and/or regulations.

If you have any questions, please contact Roger Anderson at (505) 827-5884.

Sincerely,

William J. LeMay, Director

WJL/RCA/sl

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION FOR THE PURPOSE OF CONSIDERING:

CASE 11143 - (REHEARING)
ORDER NO. R-10411-B

APPLICATION OF THE OIL CONSERVATION DIVISION FOR AN ORDER AMENDING RULE 711 OF ITS GENERAL RULES AND REGULATIONS PERTAINING TO THE PERMITTING OF SURFACE WASTE DISPOSAL FACILITIES.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on September 28, 1995, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission".

NOW, on this 14th day of December, 1995, the Commission, a quorum being present, having considered the record and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) On July 10, 1995, the Commission entered Order R-10411 adopting a "Revised Rule 711" which substantially revised Oil Conservation Division General Rule 711.

(3) On July 10, 1995, two of the interested parties of record in this case, the New Mexico Oil & Gas Association ("NMOGA") and Controlled Recovery, Incorporated ("CRI") filed an application for rehearing asking the Commission to reconsider Revised Rule 711 as to ten substantive issues and two procedural issues.

(4) On August 10, 1995, the Commission granted this application for rehearing and on September 28, 1995, held a public hearing to consider the issues raised in the application for rehearing at which time additional evidence and arguments were presented by NMOGA, CRI, the Oil Conservation Division and others.

(5) Based upon the evidence and record presented at the rehearing of this matter, the Commission finds that Revised Rule 711 as adopted by Order R-10411 should be withdrawn and replaced by Replacement Rule 711 as adopted by this order.

(6) Substantantive Findings.

The ten substantive issues raised in the application for rehearing can be consolidated into five major issues for which the Commission finds:

(A) Commercial and Centralized Facilities

1. Surface waste management facilities pose different degrees of risk to public health and the environment which can be divided into two categories: "commercial facilities" which have a higher degree of risk and "centralized facilities" which have a lesser degree of risk;

2. While the Commission concludes that a commercial facility has a higher degree of environmental and public health risk associated with its operations because it receives large volumes of waste material from unrelated parties for compensation, the definition of commercial facility adopted by the Commission in Order R-10411 is ambiguous.

3. While the Commission concludes that a centralized facility has a lesser degree of environmental and public health risk associated with its operations because waste materials it receives are generally smaller in volume from fewer unrelated sources and are generated by the same or related generators from commonly or jointly owned operations, the definition of centralized facility adopted by the Commission in Order R-10411 is ambiguous.

4. The Commission recognizes that a surface waste management facility should still be a centralized facility even if the costs of disposal were allocated to different wells under conventional Joint Operating Agreements even if that results in payment from some companies to others--i.e."compensation"--for what should in all other respects be a centralized facility.

5. The Commission intends that centralized facility be defined as either: (a) receiving no compensation, (b) used exclusively by one generator even for compensation provided the generator accepts only waste generated from production subject to the Oil & Gas Conservation Tax; or (c) used by multiple generators under an operating agreement and which receives New Mexico generated waste from two or more production units from a set of commonly owned or operated leases.

6. The Commission further intends that a "commercial facility" be defined as any surface waste management facility which does not satisfy the definition of a "centralized facility".

7. The definitions of centralized and commercial as set forth in Replacement Rule 711, attached to this order, adequately express the intent of the Commission and should be adopted.

(B) Underground Injection Control Facilities and WQCC Regulated Facilities

1. Rule 711 as adopted by Order R-10411 contains a definition for commercial facility which unless amended classifies (a) all above grade tank waste facilities; (b) all salt water disposal ("SWD") wells with related above grade surface facilities and (c) facilities subject to the Water Quality Control Commission Regulations as "commercial facilities". The Commission intends to exclude these three types of facilities from Rule 711.

2. The Commission finds that Order R-10411 incorrectly included types of waste disposal facilities that are adequately regulated either under NMOCD rules or regulations of the WQCC, and that Replacement Rule 711 adequately corrects Rule 711 to properly indicate the intentions of the Commission.

(C) Exemptions of Certain Types of Centralized Facilities Rule 711.A.3. (exemptions)

1. The Commission finds that there are certain types of centralized facilities which should be exempt from permitting because such facilities pose little risk to public health or the environment. The following centralized facilities exempt from permitting should be: (a) facilities that receive wastes from a single well; (b) emergency pits that are designed to capture fluids during an emergency upset period, provided such fluids are removed from the pit within 24 hours from introduction; (c) such other facilities that are demonstrated to present little risk to public health and the environment, and (d) facilities that receive less than 50 barrels of RCRA exempt liquid wastes per day and have a capacity to hold 500 barrels of liquids or less or 1400 cubic yards of solids or less and when a showing can be made to the satisfaction of the Division that no harm to fresh water, public health or the environment will occur.

2. Replacement Rule 711 properly defines centralized facilities that should be exempt from permitting requirements of Rule 711.

(D) Financial Assurance and Implementation Schedule

1. The Commission finds that because of the different degrees of risk and costs of closure associated with centralized facilities, existing commercial facilities and future commercial facilities, each should be subject to different financial assurance rules and implementation schedules.

2. Revised Rule 711.B.3 as adopted in Order R-10411 requires all commercial and all centralized facilities to have financial assurances (cash, letters of credit or bonds) in an amount equal to the estimated costs to have a third party close the facility. There is a four year phasing in of the financial assurance in increments of twenty-five (25%) percent regardless of the type of facility.

3. Order R-10411 adopted a cost of closure criteria for financial assurances and an implementation schedule which would significantly increase the bonding amounts and correspondingly make the costs of obtaining and paying premiums onerous for that coverage to a portion of the oil and gas industry in excess of the levels necessary for the protection of public health and the environment.

4. The Commission finds that adequate financial assurance can be established which will not cause an onerous burden on the regulated industry and still protect public health and the environment as follows:

(a) That financial assurance on centralized facilities be a flat $25,000 for an individual facility or a $50,000 statewide bond and that the financial assurance for an existing commercial facility be capped at actual closure costs or $250,000 whichever is less; and

(b) That new commercial waste management facilities or major modifications or major expansions of existing commercial facilities will require financial assurances based upon actual closure costs and are not eligible for the $250,000 maximum limit.

5. The Commission finds that an implementation schedule for each type of facility as set forth in Replacement Rule 711 will provide for an orderly and timely means of implementation which is adequate assurance for the protection of public health and the environment while preventing waste and protecting correlative rights.

(E) Reporting of Exempt E&P Wastes

1. The New Mexico oil and gas industry has already voluntarily adopted adequate methods for documenting oil and gas exempt wastes which are effectively and efficiently protecting public health, safety and the environment.

2. The adoption of rules and regulations mandating "waste tracking" for E&P exempt wastes in New Mexico are not necessary at this time.

3. The Division is now using Form C-138 which can be interpreted to require Division approval prior to or after receipt by the facility of waste materials.

4. The Commission does not intend by Rule 711 to require the Division to issue Form C-138 for exempt waste or make approval a requirement.

5. Rule 711 C 4 a. adopted by Order R-10411 needs to be clarified and should be amended as set forth in Replacement Rule 711.

(7) Procedural Findings.

As to the two procedural issues raised in the application for rehearing, the Commission finds:

(a) the adoption of Replacement Rule 711 will adequately protect public health and the environment while correspondingly not impose an undue regulatory burden upon the regulated parties thereby protecting correlative rights;

(b) the Commission's ultimate findings set forth in this order summarize its reasons for its adoption of Replacement Rule 711;

(c) the withdrawal of Revised Rule 711 and the adoption of Replacement Rule 711 will provide for workable, fair and efficient regulation of surface waste management facilities while protecting public health and the environment and preventing waste of valuable hydrocarbons and the protection of the correlative rights of the owners of that production.

IT IS THEREFORE ORDERED THAT:

(1) Division Revised Rule 711 as adopted by Order R-10411 is hereby withdrawn.

(2) Division Rule 711 is hereby amended by what has been described herein as "Replacement Rule 711" as set forth on Exhibit "A" attached hereto and made part of this order.

(3) Replacement Rule 711 shall be effective January 1, 1996.

(4) Jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinafter designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JAMI BAILEY, Member

WILLIAM W. WEISS, Member

WILLIAM J. LEMAY, Chairman

S E A L

EXHIBIT "A"
CASE NO. 11143
ORDER NO. R-10411-B

RULE 711 - APPLICABLE TO SURFACE WASTE MANAGEMENT FACILITIES ONLY

A. A surface waste management facility is defined as any facility that receives for collection, disposal, evaporation, remediation, reclamation, treatment or storage any produced water, drilling fluids, drill cuttings, completion fluids, contaminated soils, bottom sediment and water (BS&W), tank bottoms, waste oil or, upon written approval by the Division, other oilfield related waste. Provided, however, if (a) a facility performing these functions utilizes underground injection wells subject to regulation by the Division pursuant to the federal Safe Drinking Water Act, and does not manage oilfield wastes on the ground in pits, ponds, below grade tanks or land application units, (b) if a facility, such as a tank only facility, does not manage oilfield wastes on the ground in pits, ponds below grade tanks or land application units or (c) if a facility performing these functions is subject to Water Quality Control Commission Regulations, then the facility shall not be subject to this rule.

(1) A commercial facility is defined as any surface waste management facility that does not meet the definition of centralized facility.

(2) A centralized facility is defined as a surface waste management facility that accepts only waste generated in New Mexico and that:

(a) does not receive compensation for waste management;

(b) is used exclusively by one generator subject to New Mexico's "Oil and Gas Conservation Tax Act" Section 7-30-1 NMSA-1978 as amended; or

(c) is used by more than one generator subject to New Mexico's "Oil and Gas Conservation Tax Act" Section 7-30-1 NMSA-1978 as amended under an operating agreement and which receives wastes that are generated from two or more production units or areas or from a set of jointly owned or operated leases.

(3) Centralized facilities exempt from permitting requirements are:

(a) facilities that receive wastes from a single well;

(b) facilities that receive less than 50 barrels of RCRA exempt liquid waste per day and have a capacity to hold 500 barrels of liquids or less or 1400 cubic yards of solids or less and when a showing can be made to the satisfaction of the Division that the facility will not harm fresh water, public health or the environment;

(c) emergency pits that are designed to capture fluids during an emergency upset period only and provided such fluids will be removed from the pit within twenty-four (24) hours from introduction;

(d) facilities that do not meet the requirements of the foregoing exemptions in Section A.3, but that are shown by the facility operator to the satisfaction of the Division to not present a risk to public health and the environment.

B. Unless exempt from this Rule, all commercial and centralized facilities including facilities in operation on the effective date of this rule, new facilities prior to construction and all existing facilities prior to major modification or major expansion shall be permitted by the Division in accordance with the following requirements:

(1) Application Requirements:

An application, Form C-137, for a permit for a new facility or to modify an existing facility shall be filed in DUPLICATE with the Santa Fe Office of the Division and ONE COPY with the appropriate Division district office. The application shall comply with Division guidelines and shall include:

(a) The names and addresses of the applicant and all principal officers of the business if different from the applicant;

(b) A plat and topographic map showing the location of the facility in relation to governmental surveys (1/4 1/4 section, township, and range), highways or roads giving access to the facility site, watercourses, water sources, and dwellings within one (1) mile of the site;

(c) The names and addresses of the surface owners of the real property on which the management facility is sited and surface owners of the real property of record within one (1) mile of the site;

(d) A description of the facility with a diagram indicating location of fences and cattle guards, and detailed construction/installation diagrams of any pits, liners, dikes, piping, sprayers, and tanks on the facility;

(e) A plan for management of approved wastes.

(f) A contingency plan for reporting and cleanup of spills or releases;

(g) A routine inspection and maintenance plan to ensure permit compliance;

(h) A Hydrogen Sulfide (H_2S) Prevention and Contingency Plan to protect public health;

(i) A closure plan including a cost estimate sufficient to close the facility to protect public health and the environment; said estimate to be based upon the use of equipment normally available to a third party contractor;

(j) Geological/hydrological evidence, including depth to and quality of groundwater beneath the site, demonstrating that disposal of oilfield wastes will not adversely impact fresh water;

(k) Proof that the notice requirements of this Rule have been met;

(l) Certification by an authorized representative of the applicant that information submitted in the application is true, accurate, and complete to the best of the applicant's knowledge.

(m) Such other information as is necessary to demonstrate that the operation of the facility will not adversely impact public health or the environment and that the facility will be in compliance with OCD rules and orders.

(2) Notice Requirements:

(a) Prior to public notice, the applicant shall give written notice of application to the surface owners of record within one (1) mile of the facility, the county commission where the facility is located or is proposed to be located, and the appropriate city official(s) if the facility is located or proposed to be located within city limits or within one (1) mile of the city limits. The distance requirements for notice may be extended by the Director if the Director determines the proposed facility has the potential to adversely impact public health or the environment at a distance greater than one (1) mile. The Director may require additional notice as needed. A copy and proof of such notice will be furnished to the Division.

(b) The applicant will issue public notice in a form approved by the Division in a newspaper of general circulation in the county in which the facility is to be located. For permit modifications, the Division may require the applicant to issue public notice and give written notice as above.

(c) Any person seeking to comment or request a public hearing on such application must file comments or hearing requests with the Division within 30 days of the date of public notice. Requests for a public hearing must be in writing to the Director and shall set forth the reasons why a hearing should be held. A public hearing shall be held if the Director determines there is significant public interest.

(d) The Division will distribute notice of the filing of an application for a new facility or major modifications with the next OCD and OCC hearing docket following receipt of the application.

(3) Financial Assurance Requirements:

(a) Centralized Facilities: Upon determination by the Director that the permit can be approved, any applicant of a centralized facility shall submit acceptable financial assurance in the amount of $25,000 per facility or a statewide "blanket" financial assurance in the amount of $50,000 to cover all of that applicant's facilities in a form approved by the Director.

(b) New Commercial Facilities or major expansions or major modification of Existing Facilities: Upon determination by the Director that a permit for a commercial facility to commence operation after the effective date of this rule can be approved, or upon determination by the Director that a major modification or major expansion of an existing facility can be approved, any applicant of such a commercial facility shall submit acceptable financial assurance in the amount of the closure cost estimated in B.1.i (above) in a form approved by the Director according to the following schedule:

- within one (1) year of commencing operations or when the facility is filled to 25% of the permitted capacity, whichever comes first, the financial assurance must be increased to 25% of the estimated closure cost;

- within two (2) years of commencing operations or when the facility is filled to 50% of the permitted capacity, whichever comes first, the financial assurance must be increased to 50% of the estimated closure cost;

- within three (3) years of commencing operations or when the facility is filled to 75% of the permitted capacity, whichever comes first, the financial assurance must be increased to 75% of the estimated closure cost;

- within four (4) years of commencing operations or when the facility is filled to 100% of the permitted capacity, whichever comes first, the financial assurance must be increased to the estimated closure cost.

(c) Existing Commercial Facilities: All permittees of commercial facilities approved for operation at the time this rule becomes effective shall have submitted financial assurance in the amount of the closure cost estimated pursuant to B.1.i (above) but not less than $25,000 nor more than $250,000 per facility in a form approved by the Director.

- within one (1) year of the effective date of this Rule the financial assurance amount must be increased to 25% of the estimated closure costs or $62,500.00, whichever is less;

- within two (2) years of the effective date of this Rule the financial assurance amounts must be increased to 50% of the estimated closure costs or $125,000.00, whichever is less;

- within three (3) years of the effective date of this Rule the financial assurance amounts must be increased to 75% of the estimated closure costs or $187,000.00, whichever is less;

- within four (4) years of the effective date of this Rule the financial assurance amounts must be increased to the estimated closure cost or $250,000.00, whichever is less..

(d) The financial assurance required in subsection a, b or c, above shall be payable to the State of New Mexico and conditioned upon compliance with statutes of the State of New Mexico and rules of the Division, and acceptable closure of the site upon cessation of operation, in accordance with Part B.1.i. of this Rule. If adequate financial assurance is posted by the applicant with a federal or state agency and the financial assurance otherwise fulfills the requirements of this rule, the Division may consider the financial assurance as satisfying the requirement of this rule. The applicant must notify the Division of any material change affecting the financial assurance within 30 days of discovery of such change.

(4) The Director may accept the following forms of financial assurance:

(a) Surety Bonds

(i) A surety bond shall be executed by the permittee and a corporate surety licensed to do business in the State.

(ii) Surety bonds shall be noncancellable during their terms.

(b) Letter of Credit

(iii) Letter of credit shall be subject to the following conditions:

1. The letter may be issued only by a bank organized or authorized to do business in the United States;

2. Letters of credit shall be irrevocable for a term of not less than five (5) years. A letter of credit used as security in areas requiring continuous financial assurance coverage shall be forfeited and shall be collected by the State of New Mexico if not replaced by other suitable financial assurance or letter of credit at least 90 days before its expiration date.

3. The letter of credit shall be payable to the State of New Mexico upon demand, in part or in full, upon receipt from the Director of a notice of forfeiture.

(c) Cash Accounts

Cash accounts shall be subject to the following conditions:

(i) The Director may authorize the permittee to supplement the financial assurance through the establishment of a cash account in one or more federally insured or equivalently protected accounts made payable upon demand to, or deposited directly with, the State of New Mexico.

(ii) Any interest paid on a cash account shall not be retained in the account and applied to the account unless the Director has required such action as a permit requirement.

(iii) Certificates of deposit may be substituted for a cash account with the approval of the Director.

(d) Replacement of Financial Assurances

(i) The Director may allow a permittee to replace existing financial assurances with other financial assurances that provide equivalent coverage.

(ii) The Director shall not release existing financial assurances until the permittee has submitted, and the Director has approved, acceptable replacements.

(5) A permit may be denied, revoked or additional requirements imposed by a written finding by the Director that a permittee has a history of failure to comply with Division rules and orders and state or federal environmental laws.

(6) The Director may, for protection of public health and the environment, impose additional requirements such as setbacks from an existing occupied structure.

(7) The Director may issue a permit upon a finding that an acceptable application has been filed and that the conditions of part 2 and 3 above have been met. All permits are revocable upon showing of good cause after notice and, if requested, hearing. Permits shall be reviewed a minimum of once every five (5) years for compliance with state statutes, Division rules and permit requirements and conditions.

C. Operational Requirements

(1) All surface waste management facility permittees shall file forms C-117-A, C-118, and C-120-A as required by OCD rules.

(2) Facilities permitted as treating plants will not accept sediment oil, tank bottoms and other miscellaneous hydrocarbons for processing unless accompanied by an approved Form C-117A or C-138.

(3) Facilities will only accept oilfield related wastes except as provided in C.4.c. below. Wastes which are determined to be RCRA Subtitle C hazardous wastes by either listing or characteristic testing will not be accepted at a permitted facility.

(4) The permittee shall require the following documentation for accepting wastes, other than wastes returned from the wellbore in the normal course of well operations such as produced water and spent treating fluids, at commercial waste management facilities:

(a) Exempt Oilfield Wastes: As a condition to acceptance of the materials shipped, a generator, or his authorized agent, shall sign a certificate which represents and warrants that the wastes are: generated from oil and gas exploration and production operations; exempt from Resource Conservation and Recovery Act (RCRA) Subtitle C regulations; and not mixed with non-exempt wastes. The permittee shall have the option to accept on a monthly, weekly, or per load basis a load certificate in a form of its choice. While the acceptance of such exempt oilfield waste materials does not require the prior approval of the Division, both the generator and permittee shall maintain and shall make said certificates available for inspection by the Division for compliance and enforcement purposes.

(b) Non-exempt, Non-hazardous Oilfield Wastes: Prior to acceptance, a "Request For Approval To Accept Solid Waste", OCD Form C-138, accompanied by acceptable documentation to determine that the waste is non-hazardous shall be submitted to the appropriate District office. Acceptance will be on a case-by-case basis after approval from the Division's Santa Fe office.

(c) Non-oilfield Wastes: Non-oilfield wastes may be accepted in an emergency if ordered by the Department of Public Safety. Prior to acceptance, a "Request To Accept Solid Waste", OCD Form C-138 accompanied by the Department of Public Safety order will be submitted to the appropriate District office and the Division's Santa Fe office.

(5) The permittee of a commercial facility shall maintain for inspection the records for each calendar month on the generator, location, volume and type of waste, date of disposal, and hauling company that disposes of fluids or material in the facility. Records shall be maintained in appropriate books and records for a period of not less than five years, covering their operations in New Mexico.

(6) Disposal at a facility shall occur only when an attendant is on duty unless loads can be monitored or otherwise isolated for inspection before disposal . The facility shall be secured to prevent unauthorized disposal when no attendant is present.

(7) No produced water shall be received at the facility from motor vehicles unless the transporter has a valid Form C-133, Authorization to Move Produced Water, on file with the Division.

(8) To protect migratory birds, all tanks exceeding 16 feet in diameter, and exposed pits and ponds shall be screened, netted or covered. Upon written application by the permittee, an exception to screening, netting or covering of a facility may be granted by the district supervisor upon a showing that an alternative method will protect migratory birds or that the facility is not hazardous to migratory birds.

(9) All facilities will be fenced in a manner approved by the Director.

(10) A permit may not be transferred without the prior written approval of the Director. Until such transfer is approved by the Director and the required financial assurance is in place, the transferor's financial assurance will not be released.

D. Facility Closure

(1) The permittee shall notify the Division thirty (30) days prior to its intent to cease accepting wastes and close the facility. The permittee shall then begin closure operations unless an extension of time is granted by the Director. If disposal operations have ceased and there has been no significant activity at the facility for six (6) months and the permittee has not responded to written notice as defined in D.2a., then the facility shall be considered abandoned and shall be closed utilizing the financial assurance pledged to the facility. Closure shall be in accordance with the approved closure plan and any modifications or additional requirements imposed by the Director to protect public health and the environment. At all times the permittee must maintain the facility to protect public health and the environment. Prior to release of the financial assurance covering the facility, the Division will inspect the site to determine that closure is complete.

(2) If a permittee refuses or is unable to conduct operations at the facility in a manner that protects public health or the environment or refuses or is unable to conduct or complete the closure plan, the terms of the permit are not met, or the permittee defaults on the conditions under which the financial assurance was accepted, the Director shall take the following actions to forfeit all or part of the financial assurance:

(a) Send written notice by certified mail, return receipt requested, to the permittee and the surety informing them of the decision to close the facility and to forfeit all or part of the financial assurance, including the reasons for the forfeiture and the amount to be forfeited and notifying the permittee and surety that a hearing request must be made within ten (10) days of receipt of the notice.

(b) Advise the permittee and surety of the conditions under which the forfeiture may be avoided. Such conditions may include but are not limited to:

(i) An agreement by the permittee or another party to perform closure operations in accordance with the conditions of the permit, the closure plan and these Rules, and that such party has the ability to satisfy the conditions.

(ii) The Director may allow a surety to complete closure if the surety can demonstrate an ability to complete the closure in accordance with the approved plan. No surety liability shall be released until successful completion of closure.

(c) In the event forfeiture of the financial assurance is required by this rule, the Director shall proceed to collect the forfeited amount and use the funds collected from the forfeiture to complete the closure. In the event the amount forfeited is insufficient for closure, the permittee shall be liable for the deficiency. The Director may complete or authorize completion of closure and may recover from the permittee all reasonably incurred costs of closure and forfeiture in excess of the amount forfeited. In the event the amount forfeited was more than the amount necessary to complete closure and all costs of forfeiture, the excess shall be returned to the party from whom it was collected.

(d) Upon showing of good cause, the Director may order immediate cessation of operations of the facility when it appears that such cessation is necessary to protect public health or the environment, or to assure compliance with Division rules and orders.

(e) In the event the permittee cannot fulfill the conditions and obligations of the permit, the State of New Mexico, its agencies, officers, employees, agents, contractors and other entities designated by the State shall have all rights of entry into, over and upon the facility property, including all necessary and convenient rights of ingress and egress with all materials and equipment to conduct operation, termination and closure of the facility, including but not limited to the temporary storage of equipment and materials, the right to borrow or dispose of materials, and all other rights necessary for operation, termination and closure of the facility in accordance with the permit.

E. Waste management facilities in operation at the time this Rule becomes effective shall:

(1) within one (1) year after the effective date permitted facilities submit the information required in B.1.a, h, i and l not already on file with the Division;

(2) within one (1) year after the effective date unpermitted facilities submit the information required in B.1.a through j and B.1.l;

(3) comply with sections C and D unless the Director grants an exemption from a requirement in these sections based upon a demonstration by the operator that such requirement is not necessary to protect public health and the environment.

CRI
CONTROLLED RECOVERY INC.
P.O. BOX 388, HOBBS, NM 88241 (505) 393-1079

IT IS APPROPRIATE TO COMPARE THE REQUIREMENTS THAT NMOCD IS PROPOSING TO IMPOSE ON CRI TO THOSE ACTIONS OR PRACTICES ALLOWED BY NMOCD IN OTHER PLACES WHERE THERE IS NO CERTAINTY THEY ARE PROTECTIVE OF PUBLIC HEALTH AND THE ENVIRONMENT. (PLEASE SEE PHOTO LOG B)

PHOTO LOG B

OCD
ENFORCEMENT GUIDELINES

State of New Mexico
Oil Conservation Division
1220 S. St. Francis Dr.
Santa Fe, New Mexico 87505
(505) 476-3440

OCD
ENFORCEMENT GUIDELINES

This document is intended to collect in one document enforcement tools employed by the New Mexico Oil Conservation Division (hereinafter referred to as "OCD"). It is hoped this document will assist OCD Districts and Bureaus to improve enforcement of the statutes, rules and orders which govern oil and gas operations in New Mexico. It is also hoped that this document will assist the regulated industries to understand OCD's enforcement procedures and rationale and thereby increase voluntary compliance with the statutory and regulatory scheme.

I. THE NEW MEXICO REGULATORY SCHEME.

A. The Regulatory Basis for Enforcement Activities.

Many aspects of oil and gas operations in New Mexico are regulated. The Oil and Gas Act, NMSA 1978, § 70-2-1 *et seq.* and the Water Quality Act, NMSA 1978, § 74-6-1 *et seq.* (hereinafter referred to collectively as "the Acts") require certain drilling, production, processing, transporting and production practices and delegate authority to OCD and the Oil Conservation Commission (hereinafter referred to as "the Commission") to regulate these activities. The Commission has promulgated Rules (19 NMAC) and numerous orders which regulate in the aforementioned areas.

B. Examples of Violations.

Failure to adhere to the statutes, rules or orders referred to in the previous paragraph may result in enforcement action. It is not within the scope of this document to enumerate all possible violations of the Acts, Rules and orders. However, by way of introduction to the enforcement processes, examples of common violations that may result in enforcement may be useful. Common violations include failure to file production or other required reports, failure to properly plug or temporarily abandon a well, failure to report or remediate spills or leaks, improper disposal of oil field waste, failure to follow an approved discharge plan, failure to submit or follow an abatement plan, failure to properly place signage or failure to test when required.

II. VOLUNTARY COMPLIANCE.

An important goal of the Energy, Minerals and Natural Resources Department and its OCD is to assist the regulated industries to voluntarily comply with the statutes, rules and orders. Therefore, this document must be interpreted flexibly; field personnel should work with the regulated industry when appropriate to resolve compliance issues that arise.

III. INTRODUCTION TO THE ENFORCEMENT GUIDELINES.

The enforcement guidelines are in two main sections - a section on enforcement techniques that can be employed to achieve compliance, and a section on violations in need of immediate response. The enforcement tools are set out in a step-by-step manner; however, District and Bureau personnel should exercise judgment in the selection of a process that is appropriate to the situation. Not all violations should be enforced in a step-by-step manner; for example, when a violation is repeated or is intentional, nothing in the statutes, rules or orders require handling the violation in a step-by-step manner. Personnel should consult with the District Supervisor, Bureau Chief, the Director of the Oil Conservation Division (hereinafter referred to as "the Director") and OCD Legal as appropriate to select the most appropriate process for the situation.

IV. PROGRESSIVE ENFORCEMENT.

A. Discovery of a Violation.

A violation may be discovered during a field inspection, during a review of documents (such as a well file), during computerized tracking (ONGARD)(RBDMS) or when reported by a third party. Once a violation is discovered, enforcement action may be taken.

B. *Step 1* - Evaluate Circumstances.

Upon discovery, the circumstances of the violation should be investigated and evaluated. The applicable statute or rule of OCD or the Water Quality Control Commission (hereinafter referred to as "WQCC") should be identified to aid in thorough and accurate investigation. If the circumstances dictate that immediate action should be taken (such as a spill, pipeline rupture or blowout), immediate enforcement action may be needed, and some options in this regard are discussed in section V below. If the circumstances dictate that a step-by-step approach is appropriate, the violation may instead be addressed pursuant to the enforcement procedures described in the following paragraphs. In general, field personnel of a District or Bureau shall make the initial evaluation of the threat the violation poses, in consultation with the District Supervisor or Bureau Chief as necessary.

C. *Step 2* - Verbal or Written Directive.

Once the threat is evaluated pursuant to the previous paragraph and found not to be immediate, enforcement may commence. Step 2 involves delivery of a verbal or written directive to the violator(s). The directive should identify the statute, rule or order violated. The directive may also order correction or cessation of the activity at issue and provide a

reasonable time to correct the problem. The directive may refer to the Oil and Gas Act or Water Quality Act or rules of the OCD or WQCC and possible consequences of the violation, such as civil or criminal penalties. Field personnel of a District or Bureau should, in most cases, issue the directive.

D. *Step 3* - Document the Directive.

The fact that a directive was issued, even if issued orally, should be documented. For example, the violation and the verbal/written directive may be documented as appropriate in RBDMS, field/phone notes and well files. E-mail may be used to document the violation so long as a copy of the E-mail is placed in the relevant file. All evidence pertinent to the violation should be gathered, documented and stored (e.g. photographs, documents, samples and written statements).

E. *Step 4* - Repeat Directive.

If no response is received to the directive, a second directive may be issued, if appropriate. If the first directive was oral, the second should be in writing. If the first directive was in writing, the second should clearly state it is a second notice. Certified mail may be used to focus attention on the seriousness of the situation.

F. *Step 5* - Evaluate Response/Select Remedy.

F.1. Inadequate or No Response

The District Supervisor or Bureau Chief should, in most cases, determine whether a response received to the directive is adequate. If no response is received, or if a response is received which is inadequate, a Notice of Violation should immediately be issued and further enforcement action considered.

F.2. Adequate Response

If the response is adequate, a corrective action plan may be agreed upon. A corrective action plan may be oral, but even if oral should be documented. If written, the assistance of OCD Legal may be sought to prepare an appropriate document to memorialize the plan. If a corrective action plan is agreed upon, the matter shall remain at the District or Bureau unless the corrective action plan is not performed fully.

G. *Step 6* - **Issuance of Notice of Violation ("NOV").**

If no response is received to the directive, or if the response received is inadequate, or if the person fails to follow an agreed-upon corrective action plan, a letter setting forth a Notice of Violation ("NOV") may be sent, certified mail, and a copy of the NOV posted at the well or site, if practicable. The NOV shall identify the statute, rule or order violated, order correction or cessation of the activity at issue, and order immediate compliance. The NOV may include a notice of intent to issue an order to shut-in production, cancel an allowable, temporarily cancel oil and gas transport authority, order temporary abandonment or permanent abandonment, or other appropriate action. A copy of the NOV should be forwarded to OCD Legal.

H. *Step 7* - **Follow-up of NOV.**

If no response is received to the NOV or if an inadequate response is received, the District or Bureau may make additional follow-up efforts to obtain voluntary compliance. These efforts may be in writing or oral, but all such efforts should be documented in the appropriate file. These efforts may be supported by OCD Legal as necessary. If appropriate to the situation, the violator may be informed of subsequent enforcement steps that may be considered, as well as possible penalties of continued non-compliance. In addition, an order may be issued shutting-in production of a particular well, unit or project, temporarily canceling oil and gas transport authority, ordering temporary abandonment, ordering permanent abandonment or suspending action on pending applications. The Director and OCD Legal should be consulted in appropriate circumstances.

I. *Step 8* - **Decision on Further Enforcement.**

If the measures described previously fail to result in compliance, the District Supervisor or Bureau Chief, in consultation with the Director and OCD Legal, should make a decision on further enforcement action from among the alternatives described below.

J. **Orders to Show Cause.**

J.1. When Issued.

An Order to Show Cause may be issued in instances where a violation is committed by a person under the regulatory authority of OCD (*e.g.* current operator or a holder of a discharge plan approved by OCD). An Order to Show Cause requires the regulated person to show OCD, in the context of a formal hearing

before a hearing examiner, or, as appropriate, before the Oil Conservation Commission, why the authority granted by OCD should not be revoked, why subsequent orders should not be issued which require correction of the problem, why penalties should not be imposed or why other appropriate action should not be taken.

J.2. ***Step 9*** **- Application for Show Cause Order.**

District or Bureau field personnel may apply to the Director for an Order to Show Cause concerning the violation. The application must be in writing, must be in the form described in Rule 1203, and must be prepared with the assistance of OCD Legal. The Director will, in most cases, direct the application to an examiner for hearing. In other cases, the Director may direct the application to the Oil Conservation Commission for hearing.

J.3. ***Step 10*** **- Preparation for Hearing.**

Once the application is made and a hearing has been scheduled, a copy of the District or Bureau file should be sent to OCD Legal. The file should include copies of any advisory or NOV that was issued. Notice pursuant to Rule 1207 should be served on the person and on other persons affected by the order (*e.g.*, surety companies/banks for bonds or letters of credit, transporters, etc.). If the violating party desires to negotiate concerning the NOV and pending hearing, a continuance may be granted by the hearing examiner or the Oil Conservation Commission, as appropriate, until the issues are resolved. OCD Legal may initiate settlement negotiations with the violating party at any time in an attempt to resolve the matter prior to the hearing. OCD Legal shall inform the District or Bureau of evidence (witness statements, photos, documents, trip reports, analyses) and witnesses needed for the hearing. In most cases, the District or Bureau should have a pre-hearing meeting with OCD Legal to review testimony and discuss the evidentiary needs.

J.4. ***Step 11*** **- Hearing/Issuance of Order to Show Cause.**

A hearing on the Order to Show Cause shall be held before an examiner (or the Oil Conservation Commission, as appropriate). During the hearing, the person to whom the Order to Show Cause was issued shall appear and show cause why the authority granted by OCD should not be revoked, why subsequent orders should not issue, why penalties should not be imposed or other appropriate action taken. The District or Bureau witnesses shall testify to the

violation and subsequent course of events and, within a reasonable time following the hearing, an appropriate order shall be issued.

J.5. ***Step 12*** **- Compliance Monitoring.**

After an order has been issued and served, District or Bureau field personnel should monitor compliance with the terms of the order. If monitoring indicates that further action is needed, the District Supervisor or Bureau Chief will consult with the Director and OCD Legal on an appropriate course of action.

J.6. ***Step 13*** **- Appeal *de novo*.**

If the matter was heard before a hearing examiner, the person to whom the order pertains may file a request for a hearing *de novo* before the Oil Conservation Commission.

J.7. ***Step 14*** **- Appeal, District Court.**

After an order resulting from the hearing before the Oil Conservation Commission has been issued and rehearing has been conducted or denied, the order may be appealed to the District Court. The District Court may, upon application, stay further enforcement action pending its decision on the record. An appeal to appellate court(s) may follow.

J.8. ***Step 15*** **- Appeal - Department Secretary.**

After an Order has been issued by the Oil Conservation Commission and rehearing has been conducted or denied, the Order may be appealed to the Secretary of the Department of Energy, Minerals and Natural Resources. The Secretary may conduct a hearing concerning whether the order or decision of the Oil Conservation Commission contravenes the public interest.

K. Compliance Orders.

K.1. When Issued.

The Director may issue a Compliance Order (hereinafter referred to as "CO") to address violations of the Water Quality Act, the Oil and Gas Act or rules or orders of the Commission. A CO may address issues that arise, for example, from violations of Rules 18, 19, 116, 310 and 711 or other rules of the OCD or WQCC, as appropriate.

K.2. *Step 9B* - **Application for Compliance Order.**

Field personnel of the District or Bureau may apply to the Director for issuance of a CO. The application should be in writing and must be prepared with the assistance of OCD Legal. Depending on the circumstances, a hearing may be required before issuance. *See* Step 11B. The application should include a draft form of Order including the relief requested (such as compliance, remedial measures to be required and recommended penalties). Penalties include: (a) for violations arising of the Water Quality Act, the CO may require compliance immediately or within a specified time period, may assess a civil penalty of up to Fifteen Thousand Dollars ($15,000) per day of noncompliance, and/or suspend or terminate the relevant permit or, if a time period to comply is provided in an earlier CO, a subsequent CO may assess a civil penalty of twenty-five thousand dollars ($25,000) for each day of continued noncompliance and suspend or terminate the relevant permit; or (b) for violations arising out of the Oil and Gas Act, a CO may require compliance immediately or within a specified time period, may assess a civil penalty of up to One Thousand Dollars ($1,000) per violation, or One Thousand Dollars ($1,000) per day of continuing noncompliance, and/or suspend or terminate the relevant permit.

K.3. *Step 10B* - **Issuance of Compliance Order.**

The Director may issue the CO as appropriate.

K.4. *Step 11B* - **Determine Whether a Hearing Should be Scheduled.**

Any CO which is issued pursuant to the Water Quality Act becomes final unless, no later than thirty (30) days after being served, the person to whom the CO applies submits a written request to the Water Quality Control Commission for a public hearing. Once a CO is issued, District or Bureau staff should calendar the due date for such a request. If a request for hearing is served, District or Bureau staff should forward the request and all pertinent documentation to the WQCC for docketing. If no request is forthcoming, no hearing should be scheduled. Any CO which is applied for pursuant to the Oil and Gas Act shall be scheduled for a hearing before a hearing examiner or the Commission, as appropriate, before the CO is issued.

K.5. ***Step 12B*** **- Preparation for Hearing.**

If a hearing is scheduled, a copy of the District or Bureau file must be sent to OCD Legal. The file should include copies of any advisory or NOV that was issued, the CO and all supporting documentation. Notice appropriate to the situation should be served. If the violating party desires to negotiate concerning the CO and pending hearing, a continuance may be granted by the Hearing Examiner or the Commission, as appropriate, until the issues are resolved. OCD Legal shall inform the District or Bureau of evidence needed to present and witnesses needed for the hearing.

K.6. ***Step 13B*** **- Public Hearing.**

K.6.a. Under the Water Quality Act.

District or Bureau staff, supported by OCD Legal, shall present the matter to the WQCC. District or Bureau witnesses shall testify to the violation and subsequent course of events and, after the hearing, an appropriate order shall be issued and served.

K.6.b. Under the Oil and Gas Act.

A CO under the Oil and Gas Act shall be issued only after hearing. The person committing the violation(s) shall be given notice appropriate to the situation. During the hearing, District or Bureau witnesses, supported by OCD Legal, shall testify to the violation and subsequent course of events. Within a reasonable time following the hearing, an appropriate order shall be issued.

K.7. ***Step 14B*** **- Appeal *de novo*.**

If the matter was heard before a hearing examiner of OCD, the person to whom the Order pertains may file a request for a hearing *de novo* before the Oil Conservation Commission.

K.8. ***Step 15B*** **- Compliance Monitoring.**

After a CO has been issued and served, District or Bureau field personnel should monitor compliance with the terms of the order. If monitoring indicates that further action is needed, the District Supervisor or Bureau Chief will consult with the Director and OCD Legal on an appropriate course of action.

K.9. *Step 16* - **Appeal.**

K.9.a. Court of Appeals.

After issuance of an affirmance of a CO by the WQCC, the person aggrieved may appeal to the Court of Appeals.

K.9.b. District Court.

After a CO has been issued under the Oil and Gas Act and rehearing has been conducted or denied, an appeal to the District Court may be filed. The District Court may, upon application, stay further enforcement action pending its decision on the record. An appeal to appellate court(s) may follow.

K.9.c. Appeal - Department Secretary.

After a CO has been issued by the Oil Conservation Commission under the Oil and Gas Act and rehearing has been conducted or denied, the person to whom the Order pertains may appeal to the Secretary of the Department of Energy, Minerals and Natural Resources. The Secretary may conduct a hearing concerning whether the order or decision of the Oil Conservation Commission contravenes the public interest.

V. IMMEDIATE ACTION.

A. Emergencies and Response Action.

It is beyond the scope of this document to address emergency response, which is handled pursuant to OCD's emergency response procedures. However, should the need for immediate enforcement arise, emergency enforcement measures may be required which are described briefly below. In all cases requiring immediate enforcement measures, the District or Bureau should immediately notify the Director and OCD Legal of the situation and take appropriate emergency response measures to abate or mitigate the threat pursuant to established procedures.

B. Emergency Administrative Orders.

B.1. Rule 1202 Administrative Order.

If an emergency is found to exist that requires issuance of an order without a hearing, the OCD or OCC may promulgate an

emergency order pursuant to Rule 1202. An order issued pursuant to Rule 1202 shall remain in force no longer than fifteen (15) days from its effective date.

B.2. 72-Hour Orders Pursuant to the Water Quality Act.

If a pollution source or combination of sources poses an immediate and substantial danger to public health, a 72-hour emergency order may be issued by the Director or the OCC, as appropriate. If time permits, the District or Bureau may apply to the Director for such an Order, and OCD Legal may assist the District or Bureau with the application and a draft Order. An emergency order issued hereunder may be supplemented by an application to the district court for further orders.

C. Subsequent Actions.

After issuance and service of an emergency order, steps should be immediately taken by the District or Bureau to make the order permanent, if appropriate. Thus, the District or Bureau should immediately prepare a CO or an application for a hearing to show cause, or should coordinate with OCD Legal in an application to the District Court for further relief.

VI. SETTLEMENT.

Settlement may be undertaken at any time during the foregoing proceedings. The District Supervisor or Bureau Chief, in consultation with the Director, may agree to a settlement upon terms that are mutually agreeable and which safeguard the rights of relevant persons. If a formal settlement agreement is to be prepared, the District or Bureau may draft the document, with the assistance of OCD Legal. Field personnel of the District or Bureau shall monitor performance of the settlement agreement and report any subsequent violations to the Director and OCD Legal, who will take appropriate follow-up actions.

VII. PENALTIES.

A. Introduction.

It is beyond the scope of this document to detail all penalties that can be imposed upon violation of the Acts, rules or orders. Examples are listed below to assist Districts and Bureaus to prepare applications and orders. Choice of the penalty appropriate to the situation should be carefully considered and, when questions arise, consultation should be undertaken with the District Supervisor, Bureau Chief, the Director and OCD Legal.

B. Examples of Penalties.

B.1. Shut-in well.

For a producing oil or gas well, an effective remedy for a violation is to terminate production from the well, commonly referred to in the industry as "shutting-in" the well. An order to shut-in a well, unit or project may be issued in a NOV, a CO or following hearing on an Order to Show Cause, as appropriate. A shut-in order may order production halted, and may also withdraw transport authority. An order to shut-in a well, unit or project may also order transporters (e.g. gathering companies, pipeline companies, and surface transporters) not to take product from a well, unit or project.

B.2. Cancel Allowable - Terminate Production.

For an oil or gas well which is producing from a prorated oil or gas pool, an effective remedy for a violation is termination of the allowable and production pursuant to Rules 601-604. The oil or gas well allowable may be cancelled in a NOV, a CO or following a hearing on an Order to Show Cause, as appropriate. Subsequent orders may order production halted. Subsequent orders may also order transport authority revoked, and transporters (e.g. gathering companies, pipeline companies, and surface transporters) not to transport or take product from a well.

B.3 Plugging and Abandonment of Wells.

For an oil and gas well which is not producing, a remedy for a violation is an order directing the relevant person or persons to either temporarily abandon the well pursuant to the rules or permanently plug and abandon the well. An order to plug and abandon a non-producing well may be issued after hearing or in a CO. The Oil and Gas Reclamation Fund may be expended to permanently plug and abandon wells; however, such an order may be issued only after notice and hearing; therefore an Order to Show Cause is necessary to impose this penalty.

B.4. Permit Revocation/Water Quality Act.

For an oil and gas operator who holds a discharge permit pursuant to the Water Quality Act, a remedy for a violation is an order revoking the relevant permit (and other permits). An order revoking a discharge permit may be issued after hearing or in a CO.

B.5. Civil Penalty Assessment.

A civil penalty assessment in the amount of up to $1,000 *for each day* of violation may be assessed by OCD for violations of the Oil and Gas Act.). A civil penalty of up to $25,000 *per day of noncompliance* may be issued for violations of the Water Quality Act. An order imposing a civil penalty may be issued after hearing or in a CO. OCD Legal shall recover the amount of the assessment in District Court, if necessary.

B.6. Forfeiture of Financial Assurance.

For an oil and gas operator with financial assurance required by Rule 101, a remedy for violation is forfeiting the plugging and/or reclamation bond or making a draft on a letter of credit, generally upon failure of the operator to comply with an order to plug and abandon a well or properly reclaim a site. OCD Legal will collect the forfeited financial assurance.

B.7. Indemnity.

Where the costs of properly plugging exceed the amount recovered from the financial assurance under the preceding section, OCD Legal may institute proceedings to recover the unrecovered plugging costs from the relevant person.

B.8. Seizure and Sale.

Under rare circumstances, seizure and sale of illegal oil or gas that is produced or transported may be ordered. OCD Legal will initiate such a proceeding in District Court *in rem.*

B.9. Criminal penalties.

Under appropriate circumstances, criminal penalties for noncompliance with the acts and rules may be imposed. Where appropriate, OCD Legal and/or the Director may apply to the proper authorities for imposition of criminal penalties.

VIII. CAVEAT CONCERNING LEGAL EFFECT OF THESE GUIDELINES.

This document is intended to collect enforcement tools that presently exist in statutes, rules and orders, and to collect in written form processes which have been employed by the agency historically when faced with the need to enforce a statute, rule or order. This document is *not* intended to create new enforcement tools or to require a particular procedure to be used in any particular case; nor is it intended to create rights or responsibilities which are not otherwise set out in statutes, rules or orders.

ISSUED this ___ day of September, 2000.

THE OIL CONSERVATION DIVISION

By_____
Lori Wrotenbery, Director

PHOTO LOG B

7-12-2000

Information Provided by Leo Sims

#1

Oil Tanks - In Ground Sumps
Sec. 1 T22S, R37E-Lea Co. Depth to Ground Water 40-60 Ft.

#2

Oil Tanks - No Berms-Contaminated Soil
Sec. 1, T22S, R37E-Lea Co. Depth to Ground Water 40-60 Ft.

PHOTO LOG B

7-12-2000

Information Provided by Leo Sims

#3

Oil Tanks-Contaminated Soils-In Ground Sumps
Sec. 1, T22S. R37E-Lea Co.

#4

Oil Tanks-No Berms-Contaminated Soils-Leaking Valves
Sec. 12, T22S, R37E-Lea Co. Depth to Ground Water 40-60 Ft.

PHOTO LOG B

7-11-2000

Information Provided by Leo Sims

#5

Live Oil on Ground

Sec. 14, T22S, R37E-Lea Co. Depth to Ground Water 40-60 Ft.

#6

Covered Over Oil Pit

Sec. 12, T22S, R37E-Lea Co. Depth to Ground Water 40-60 Ft.

PHOTO LOG B

7-12-2000

Information Provided by Leo Sims

#7

Covered Over Oil Pit

Sec. 14, T22S, R37E-Lea Co. Depth to Ground Water 40-60 Ft.

#8

Oil Spill approximately 1 year old-adjacent to tank battery

Sec 24, T22S, R37E, Unit A-Lea Co. Depth to Ground Water approx. 60 Ft.

Note oil on water surfaces

PHOTO LOG B

7-12-2000

Information Provided by Leo Sims

#9

Oil Spill approximately 1 year old

Sec 24, T22S, R37E, Unit A-Lea Co. Depth to Ground Water approx. 60 Ft.

Note oil on water surfaces

#10

Covered Over Oil Pit

Sec. 24, T22S, R37E-Lea Co. Depth to Ground Water approx. 60 Ft.

PHOTO LOG B

7-12-2000

Information Provided by Leo Sims

#11

Covered Over Oil Pit

Sec. 24, T22S, R37E Depth to Ground Water appx. 60 Ft.

#12

Pipeline Leak

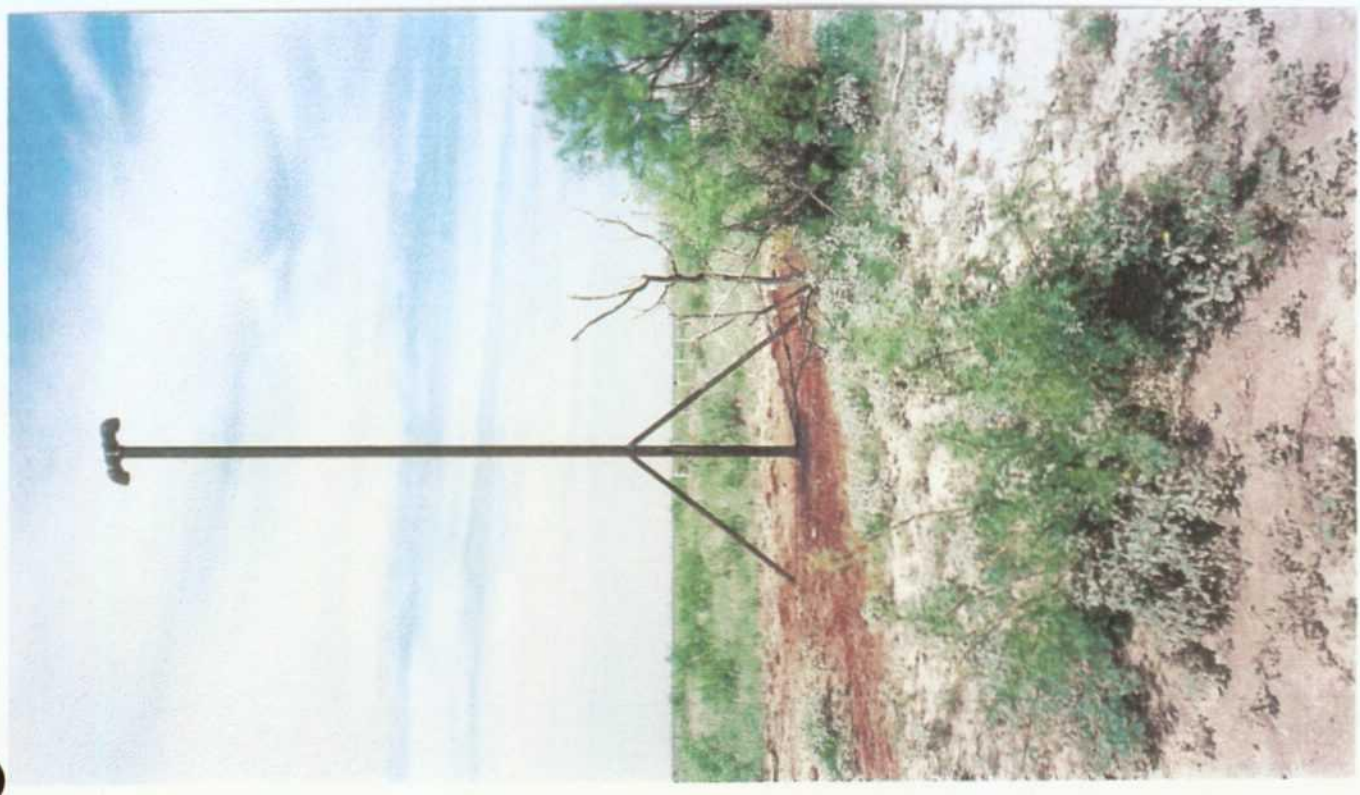
Sec. 30, T22S, R38E-Lea Co.

PHOTO LOG B

7-12-2000

Information Provided by Leo Sims

#13



Oil Separator Vent
Sec. 25, T22S, R37E -Lea Co.

#14

Tank Battery,Contaminated Soils, Abandoned Covered Oil Pit
Sec. 30, T22S, R37E

PHOTO LOG B

7-12-2000

Information Provided by Leo Sims

#15

Oil Tanks, Contaminated Soils, In Ground Sumps, Drainage into Monument Draw
Sec. 25, T22S, R37E-Lea Co.

#16

Abandoned Oil Pit, 1/2 mile West of Eunice, N.M
Over 15 Years Old

PHOTO LOG B

7-12-2000

#17

Abandoned Oil Pit, appx. 4 miles N.W. of Eunice, N.M.
Over 15 Years Old

#18

Open Pit-Contaminated Soil, South Side City of Lovington
Depth to Ground Water 70 Feet
Bob Carter - Lovington City Manager

PHOTO LOG B

7-12-2000

#19

Oil Pit
Sec. 1, T17S, R36E-Lea Co.

#20

Covered Over Oil Pit, 2 miles North of Lovington, NM
Depth to Ground Water 70 Feet
By Bob Carter - Lovington City Manager

PHOTO LOG B

7-12-2000

#21

Covered Over Oil Pit, 2 miles North of Lovington, NM
Depth to Ground Water 70 Ft.
By Bob Carter - Lovington City Manager

SUNDANCE SERVICES EUNICE NM

SUNDANCE SERVICES EUNICE NM