

NM1 - 5

**MONITORING
REPORTS**

YEAR(S):

1980's



WALSH

ENGINEERING & PRODUCTION CORP.

Petroleum Engineering Consulting
Lease Management
Contract Pumping

3001 Northridge Drive
P.O. Drawer 419
Farmington, New Mexico 87401
(505) 327-4892

August 27, 1987

WJL
To: David B

Mr. William J. LeMay
Division Director
Energy & Minerals Department
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

REF: Basin Disposal, Inc.
Treatment of Disposal Pond
with BIO-GENESIS
On August 26, 1987

Dear Mr. LeMay:

Enclosed you will find the report concerning the above-referred-to treatment.

Very truly yours,

Ewell N. Walsh, P.E.
President

ENW:rr

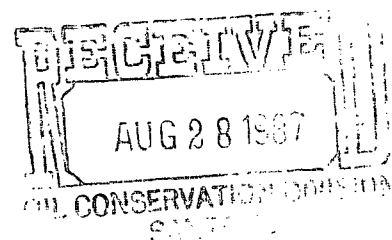
cc: Frank Chavez, OCD, Aztec, N.M.

Basin Disposal, Inc.

Mr. John Dean

Dr. Jordan Smith, Alpha Synetics, Chandler, Az.

Enclosures





BASIN DISPOSAL, INC.

TREATMENT NO. 8

8/26/87

Treat disposal pond with 100 gallons BIO-GENESIS. Treatment applied to pond by circulating through spray system.

The 100 gallons BIO-GENESIS proportioned into approximately 162,000 gallons of pond water during a 6.75 hour period. (Proportion 1 gallon BIO-GENESIS to approximately 1620 gallons of pond water).

Prior to treatment of pond the dissolved sulphides = 47 and ph = 8.5+.

The initial 75 gallons of BIO-GENESIS treatment was circulated through stations: (See attached for stations)

N, 16-20 and

S, 12-19

(Note: Deeper portion of pond)

The remaining 25 gallons of BIO-GENESIS was circulated through stations:

N, 8-10 and

S, 1-4 and

W, 7-10

(Note: Shallower portion of pond)

Circulation of pond for continuous 48 hours will be through stations:

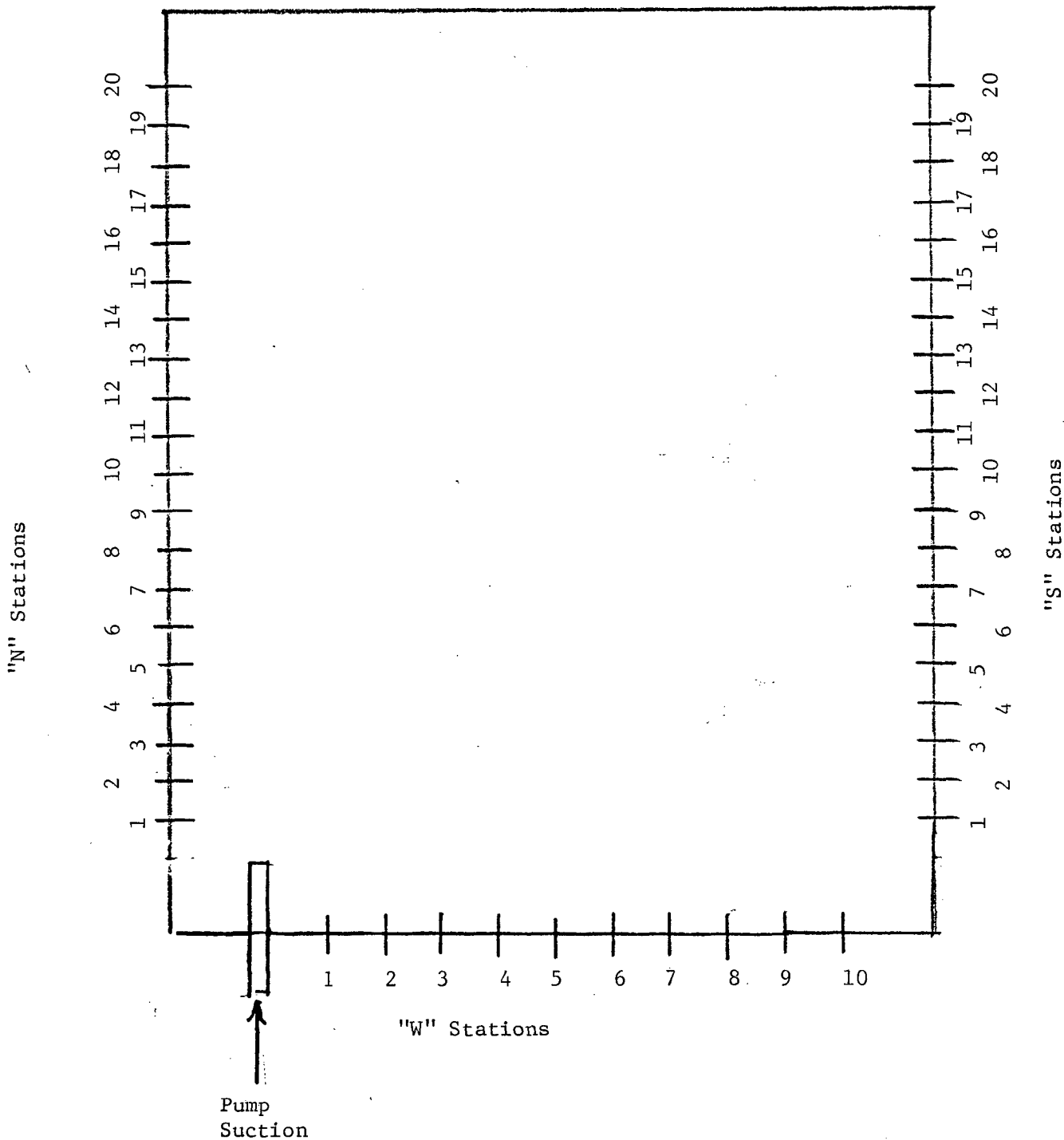
N, 16-19 and

S, 12-19

Use of spray system will commence, during daylight hours, after 48 hour circulation if normal operating conditions exist.

BASIN DISPOSAL, INC.

SPRAY SYSTEM STATIONS



8/26/87



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

GARREY CARRUTHERS
GOVERNOR

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

August 27, 1987

Mr. Jack Ward
325 Bergin Lane
Bloomfield, NM 87413

Re: Hydrogen Sulfide at Naaba-Ani School

Dear Mr. Ward:

There is very little probability that hydrogen sulfide gas from the Basin Disposers' pit will reach Naaba-Ani Elementary School.

The residents and businesses in the vicinity and school employees have not complained to this office about odors.

Given the local topography and distance between the pit and the school, diffusion of the H_2S and dilution in the air should eliminate the possibility of odors at the school.

Toxic effects of H_2S do not occur until it reaches a much higher level than that presently measured at the pit. However, persons can experience physical discomforts due to the odor at lower levels.

If you any questions, please contact this office.

Sincerely,

Frank T. Chavez
District Supervisor

FTC/dj

xc: File
Mr. Bill LeMay

RECEIVED
AUG 31 1987



WALSH

ENGINEERING & PRODUCTION CORP.

Petroleum Engineering Consulting
Lease Management
Contract Pumping

3001 Northridge Drive
P.O. Drawer 419
Farmington, New Mexico 87401
(505) 327-4892

August 24, 1987

Mr. William J. LeMay
Division Director
Energy & Minerals Department
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

REF: Produced Water and Drilling Fluid
Disposal Facility
San Juan County, New Mexico

Dear Mr. LeMay:

Pursuant to your letter of August 21, 1987, this is to advise you that the treatment, with BIO-GENESIS, of the disposal pond will commence August 26, 1987 at approximately 8:00 AM.

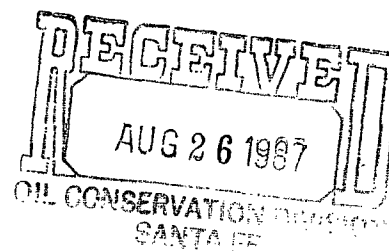
Mr. Dave Boyer and Mr. Frank Chavez were notified by telephone on this date, of the date and time that treatment will commence.

Very truly yours,

Ewell N. Walsh, P.E.
President

ENW:rr

cc: Frank Chavez, OCD, Aztec, N.M.
Basin Disposal, Inc.
Mr. John Dean



Carpenter and Goldberg, P. A.

Accidental Injury, Product Liability and Commercial Litigation

WILLIAM H. CARPENTER
JOSEPH GOLDBERG
DAYMON B. ELY

1600 UNIVERSITY BLVD., N. E., SUITE 8
ALBUQUERQUE, NEW MEXICO 87102-2124
(505) 243-1336

August 24, 1987

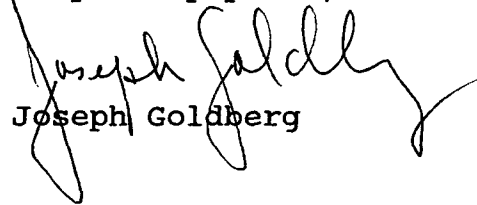
Mr. Dave Boyer
Oil Conservation Division
Energy & Minerals Department
P.O. Box 2088 - State Land Office Bldg.
Santa Fe, NM 87501

Re: Basin Disposal, Inc.

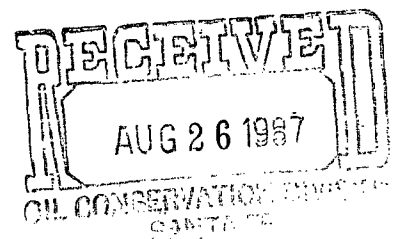
Dear Mr. Boyer:

Please consider this a request to be placed on your mailing list for copies of OCD correspondence to Basin Disposal, Inc., with respect to their produced water and drilling fluid disposal facility in San Juan County, beginning with your letter to Basin Disposal of August 20, 1987. We would also appreciate receiving a copy of the State Lab's analyses of sludge from the pits for June and July when you receive the reports. Further, if you could send us OCD's H2S monitoring reports after August 6, 1987, as they become available, it would be extremely helpful. Thank you for your assistance.

Very truly yours,


Joseph Goldberg

JG:ck
cc: F. Chester Miller, III, Esq.





STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

GARREY CARRUTHERS
GOVERNOR

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

August 24, 1987

Mr. Michael R. Hinson
Four Corners Good Samaritan Center
500 Care Lane
Aztec, NM 87410

Re: Basin Disposal, Inc.

Dear Mr. Hinson:

We have directed Basin Disposers to remove all of the free water from the mud disposal pits. Only dried semi-solid mud will be allowed in these pits.

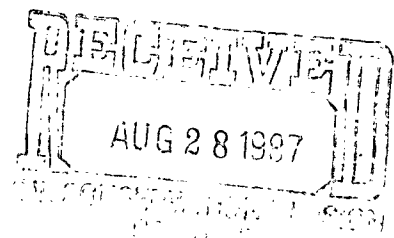
We have detected the seepage to a distance of 50 feet south of the fence and will monitor it periodically to see if it moves. Given the nature of the soils in the area and the lack of ground water, we don't foresee any environmental problems at this time. If you think that the seepage will cause problems with your future use of the land, you should contact Mr. John Dean with Basin Disposers and make arrangements with them.

Sincerely,

Frank T. Chavez
District Supervisor

FTC/dj

xc: File
Basin Disposal, Inc.
Dave Boyer





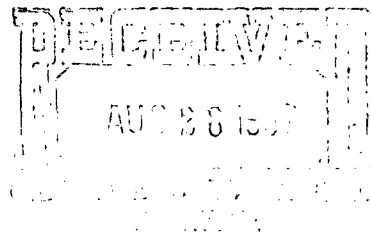
STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

GARREY CARRUTHERS
GOVERNOR

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

August 24, 1987

The Honorable Pete V. Domenici
10013 Dennis Chavez Federal Bldg.
500 Gold Avenue S.W.
Albuquerque, NM 87102



Re: Basin Disposal, Inc.

Dear Senator Dominici:

The "dump site" referred to in Mr. Scott's letter is actually a well designed plastic lined evaporation pond approved by this office. There are also 12 shallow unlined pits at the facility which are used for disposal of drilling muds. These shallow pits are not a source of hydrogen sulfide.

The owners of the pond have been fully cooperating with us and have hired a chemist, already spent over \$60,000 in chemical treatments, and at this writing are preparing to perform another expensive treatment.

After the first treatment, hydrogen sulfide levels dropped dramatically but have since increased to point where they are causing an odor although they are much lower than pre-treatment levels.

We have asked for and are receiving help from the office of the State Epidemiologist, the Office of Ground Water, the Air Quality Bureau, and the Toxic Waste Bureau.

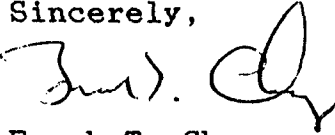
Our agency is not a health agency or air quality agency and we have been working as best we can under our limited mandate.

Rather than give you a day by day description of the work we performed, I have included with this letter copies of correspondence and reports.

The Honorable Pete V. Domenici
August 24, 1987
Page 2

If you need more information, do not hesitate to contact
this office.

Sincerely,

A handwritten signature in dark ink, appearing to read "Frank T. Chavez", written over the word "Sincerely,".

Frank T. Chavez
District Supervisor

xc: Basin Disposal
Mr. Bill LeMay, Santa Fe
Dave Boyer, Santa Fe
File



STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

August 21, 1987

Mr. Tim Payne
P.O. Box 305
Bloomfield, New Mexico 87431

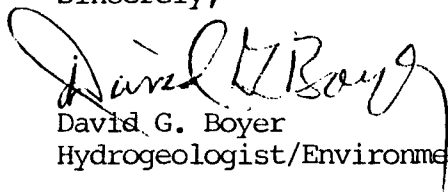
Dear Mr. Payne:

Your phone call of last Sunday night (August 16) was received on my home answering machine. I had left home Sunday afternoon to be on site for field work at 7 A.M. Monday. I attempted to return your phone call later in the week, but received no answer. I understand Frank Chavez of our Aztec office arrived at your home shortly after you called me and that you discussed the odor problem with him.

I'm sorry that you felt it necessary to call me long distance regarding the problem. As you well know, OCD has directed Basin Disposal to take whatever measures are needed to eliminate the problems you are having with strong hydrogen sulfide (H_2S) odors. They have until September 12 to provide OCD with a contingency plan to deal with the H_2S emissions. In the meantime they are adding chlorine to the pond and OCD is requiring them to perform day and night monitoring at locations around the pond at the fence line. Levels of H_2S at the south fence near your house have not exceeded 1 part per million (ppm) since the July 16 bleach treatment. OCD also monitors levels using a meter with a continuous strip recorder. OCD has not recorded a level above 0.5 ppm (the minimum the recorder can accurately record). The highest recorded level in homes in the area since the July treatment is 0.2 with a digital meter. Although the odor is strong and unpleasant, neither OCD nor the Environmental Improvement Division have documented information about health effects at these low levels.

I am truly sorry for the problems and inconvenience this situation has caused you and your neighbors. This facility was licensed to provide a method of disposal so that surface and ground water would not be contaminated. We certainly did not expect nor anticipate that a solution to one environmental problem had the potential to create another. However, we are committed to making sure that Basin Disposal rectifies the situation, and operates in a manner so as not to cause health or environmental problems to their neighbors.

Sincerely,

A handwritten signature in dark ink, appearing to read "David G. Boyer", is written over the typed name and title.

David G. Boyer
Hydrogeologist/Environmental Bureau Chief

DGB:cr

cc: W.J. LeMay, OCD Director
Frank Chavez, OCD-Aztec
Barbara Hargis, EID-Santa Fe
E.N. Walsh, Basin Disposal



STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

August 21, 1987

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Basin Disposal, Inc.
c/o Walsh Engineering
P.O. Drawer 419
Farmington, New Mexico 87401

RE: Produced Water and Drilling Fluid Disposal Facility San Juan County, New Mexico

Dear Mr. Walsh:

On August 19, 1987 a meeting was held in Santa Fe between the Oil Conservation Division, Environmental Improvement Division and you, as a representative of Basin Disposal. At this meeting you submitted a treatment plan to mitigate the H_2S emissions and its source from your evaporation pond. The proposed treatment consists of inoculating the pond with a biological system called Bio Genesis on a schedule recommended by the supplier. The treatment is intended to increase oxygen in the pond through algae growth.

During the meeting, concerns and reservations were stated by both the OCD and EID representatives about the effectiveness of such a treatment and the possibility of additional H_2S being formed and emitted. Close monitoring of the pond must be performed after the inoculation of the pond and during the growth of the biological system. Initial reproduction and growth will likely be at a very fast rate. As the system grows, the food supply available to support life will likely decrease, the ability of sunlight to penetrate the upper layers of the system diminish and the system begin to die. Decomposition of the residue can cause the formation of unwanted by-products. In a phone conversation with a representative of the supplier, he stated this scenario should not take place, however, you should beware of its possibility.

Additional concerns were the ability of the system to function in the current high pH of the pond, the high T.D.S. environment, the temperature of the pond and the effect of chlorine presently being added to the pond.

Each concern was addressed by the suppliers representative; however, no assurances were given to you that this treatment will be completely successful. If it is not successful, be aware that additional actions will need to be taken to mitigate the H_2S releases and source. The consensus of

the OCD, EID, EPA and various consultants (including yours) is that the H_2S is being created by bacteria in an anerobic environment. The way to stop the formation of H_2S is to transform the bottom of the pond from anerobic to aerobic thereby destroying these bacteria. Several methods have been suggested to accomplish this with mechanical aeration being preferred by this agency. Therefore if the biological treatment does not work, additional actions required must include the installation of a method to aerate the complete pond and to circulate fluids from the bottom, all the while maintaining the pond liner integrity. If such a system is necessary, Basin Disposal must submit plans and specifications to OCD for review prior to installation.

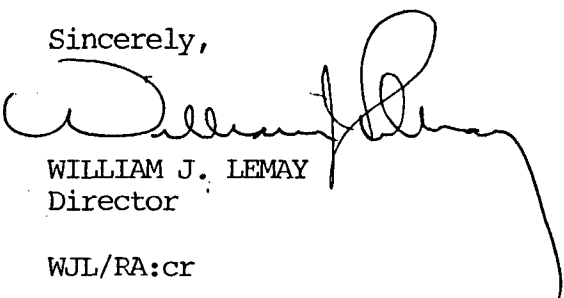
Based on the information submitted, the discussions in our meeting of August 19, 1987, the telephone conversation with Bio Genesis supplier and considering the above mentioned concerns, you are hereby authorized to treat the evaporation pond as presented in your proposal provided you comply with the following requirements:

1. Hourly monitoring for H_2S emissions beginning at the start of treatment.
2. Monitoring of the pond for any changes in dissolved sulfides and pH, and any for indicators of treatment progress as recommended by the Bio-Genesis supplier. Dissolved sulfides shall be tested daily, and pH obtained hourly after start of treatment.
3. Notification of the OCD prior to starting the treatment.
4. Treatment of the pond with caustic if pH drops below 7, and H_2S emissions are increasing. Alternatives to the use of caustic will be considered after consultation with the Bio-Genesis suppliers.
6. Prepare to offer the residents in the vicinity of the facility alternative lodging if conditions warrant.

All other conditions and restrictions previously placed on the facility and its operations remain in effect unless specifically altered above.

If there are any questions please contact David Boyer at (505) 827-5812 or Roger Anderson at (505) 827-5812.

Sincerely,



WILLIAM J. LEMAY
Director

WJL/RA:cr

cc: OCD- Aztec
Ron Conrad - EID
Barbara Hargis - EID

August 21, 1987

New Mexico Oil Conservation Division
Post Office Box 2088
Santa Fe, NM 87501

Please consider this as an objection to the drilling of an Injection Well by Basin Disposal, G Road 5046, Aztec, NM. This is, or was, a very pleasant community enjoying country living until Basin Disposal started their oil waste dump in our midst. We were told if they could not rid the site of Hydrogen Sulfide Gas, which they have not, they would drill an injection well to dispose of such. This well should be in some of the many acres of land in our county where it is not a residential area such as ours.

We would object to any person putting such a well down in this area but to have Basin Disposal, who has proved they disregard both the health and comfort of the residents nearby, would only make the pollution we now suffer from this company even worse.

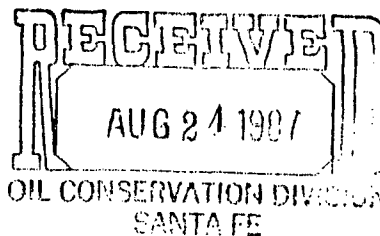
Irvin L. Litke
Irvin L. Litke

Doris L. Litke
Doris L. Litke

P.O. Box 518

#21 Road 4945

Bloomfield, NM 87413





Barbera

Environmental & Energy Services
Natural Gas Products Department

Conoco Inc.
P.O. Box 2197
Houston, TX 77252

RECEIVED

AUG 17 1987

August 14, 1987

AIR QUALITY BUREAU

Mr. J. David Duran
New Mexico Environmental Improvement Division
Air Quality Bureau
P. O. Box 968
Santa Fe, NM 87504

**Re: Progress Report
Amine Regenerator Vent Stack
Conoco Inc., San Juan Gas Plant**

Dear Mr. Duran:

As we reported by our letter of May 14, 1987, the vent gas from the amine treating system at the San Juan Gas Plant exceeds the allowable concentration of H_2S specified by New Mexico Air Quality Regulation 627. To resolve this difficulty, we have identified two possible alternatives to reduce emissions of H_2S to below the 10 ppm limitation.

Alternative 1: A new flare may be installed to totally combust the vent gas stream. This will provide total conversion of the H_2S in the vent gas stream to SO_2 .

Because of the SO_2 emissions which would result from the operation of this flare, it appears that our emissions permit may require a revision to include this new source. Approximately 2.0 pounds per hour (8.8 tons per year) of SO_2 emissions are calculated to result from the combustion of the H_2S in the vent gas stream.

Alternative 2: A "Sulfa-Check"(TM) absorption system may be installed to remove the H_2S from the vent stream, allowing the vent gas to be discharged directly to the atmosphere in compliance with NMAQR 627.

This absorption system has an advantage over the flare since it could be done without adding a source of SO_2 to the plant emissions inventory. We are currently investigating the operating experience of others using the system and considering the proper disposal alternatives for the absorbing solution.

We feel strongly that one of these two alternatives will be selected in the next 30 to 45 days. Either system should well satisfy the requirements of NMAQR 627.

We truly appreciate your patience as we work through these items. A new plant seems to always have a few "bugs" to work out. If you have any need for additional information or would like to discuss anything, please call me at (713) 293-1123.

Sincerely,

Rick McCalip

Rick McCalip
Coordinator



Copy to Bruce
Nicholson & Barber
file Conoco
San Juan Plant

Environmental & Energy Services
Natural Gas Products Department

Conoco Inc.
P.O. Box 2197
Houston, TX 77252

RECEIVED

MAY 21 1987

May 14, 1987

AIR QUALITY BUREAU

Mr. J. David Duran
New Mexico Environmental Improvement Division
Air Quality Bureau
P.O. Box 968
Santa Fe, NM 87504

**Re: Additional Permitting Issues
Conoco Inc., San Juan Gas Plant
Air Quality Permit 613**

Dear Mr. Duran:

Two issues remain to be resolved with the air emissions permit for the San Juan Gas Plant. Now that the emissions testing is completed for the turbines and the limitations have been adjusted, resolution of these remaining items should put us in good compliance status.

1. Permitting of Emergency/Stand-By Sources

On September 30 and October 9, 1986, letters were received by Conoco indicating intent by the NMEID to amend Permit 613 to include the diesel powered emergency generator and fire water pump. It does appear that a public notice was made of this revision, however we have not received any subsequent correspondence on the result of the public notice.

2. Amine Regenerator Vent Stack

An amine treating system is used at the San Juan Gas Plant to remove carbon dioxide from an ethane/propane product stream fractionated from recovered liquids. Carbon dioxide is extracted from the hydrocarbon stream, then released from the amine by heating. The carbon dioxide is then vented to atmosphere from the amine regenerator (still) vent stack.

During performance testing of the amine unit in April, we discovered that trace quantities of H_2S in the inlet gas are remaining in this ethane/propane stream and are being removed by the amine treater. Both inlet and product natural gas continue to meet pipeline specifications for H_2S content (less than 0.25 grains of H_2S per 100 cubic feet of gas). However, traces of H_2S removed from the 500 million cubic feet of processed natural gas become more significant when concentrated in only 3.6 million cubic feet per day of carbon dioxide in the vented gas.

The amine vent gas has been found to contain approximately 80 ppm by volume of H_2S . New Mexico Air Quality Regulation 627 appears applicable to this vent, and therefore, this vent gas must be passed through a device capable of oxidizing the hydrogen sulfide to sulfur dioxide.

We are investigating the appropriate disposition of this vent gas. The most likely option is to vent the gas into the plant flare system, however, we must review the design of the existing flare system and the ability of the flare burner tip to properly deal with the carbon dioxide without smoking. We estimate 90 days will be necessary to complete this study, and we will report our plans for achieving compliance with AQR 627 no later than August 15, 1987.

Our calculations indicate that 2.0 pounds per hour (8.8 tons per year) of SO_2 emissions will result from combustion of the H_2S from the vent stack. When the proper disposition is determined, a permit revision will be necessary to include these emissions.

If you need further information or would like to discuss these items, please call me at (713) 293-1123.

Sincerely,

Rick McCalip

Rick McCalip
Coordinator

/nl

Landfill odors cut, state officials say

By Adrienne Flynn
Staff writer

A Tempe landfill that had been putting up a big stink has been tamed, according to Department of Health Services inspectors.

"You have to get really close to the pond to get a real whiff," said Ti Canez, manager of the DHS central regional office. He said inspectors were at the landfill at First Street and Perry Lane Thursday and reported little of the rotten egg odor that permeated the north half of Tempe earlier this year.

"He couldn't detect any odor, even down at the pond," Canez said. "You have to trust the inspector's nostrils."

Dozens of complaints about the smell were received by DHS in February and March, but Canez said the office has not had any complaints in more than a month.

The smell was created when river water seeped through the First Street Landfill, carried organic debris and collected in a large pond. The organic refuse in the pond was slowly decayed by bacteria, which thrive in the absence of oxygen in the water. The more it decayed the more

hydrogen sulfide, a foul-smelling gas, it created.

Complaints brought the DHS to the scene. It ordered the landfill to stop accepting organic materials and to aerate the pond.

Aerators pumped oxygen into the pond and oxygen-producing chemicals were added to the water to choke off the odoriferous bacteria.

Three samples of the air near the landfill were taken May 3. One test showed 110 parts per billion of hydrogen sulfide, while the other two were negative.

"It's a real reduction from what we had before," Canez said, adding that tests March 27 showed 940 parts per billion of the gas.

Buildings in the area have been fitted with pumps to vent methane gas found earlier this year in underground pockets ringing the old First Street Landfill.

The DHS also has tested for what they call priority pollutants in the area. Tests for things such as trichloroethylene (TCE) turned up negative.



1976 EAST PIMA STREET
TEMPE, AZ. 85281 894-0613

KACHINA REDI-MIX

August 19, 1985

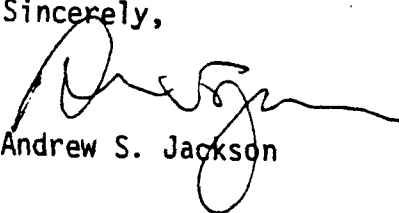
Don Organ
Bio Humanetics
201 S. Roosevelt
Chandler AZ 85224

Dear Don,

I am sure you know the problem at First Street Landfill is resolved. The water has receded and is no longer a problem. Not only did the odor go away, but once the algae took hold, the water cleared up where you could see bottom at 10 to 12 feet depths.

I want to express my appreciation for your help and product when we needed it. Thanks a million.

Sincerely,


Andrew S. Jackson

ASJ/jpb



**TOWN OF
GILBERT, ARIZONA**

Town Hall - 119 N. Gilbert Rd.
Gilbert, Arizona 85234

June 16, 1986

Bio Huma Netics
Donald G. Organ

Dear Don:

Prior to the addition of Bio Clean to the Town of Gilbert's wastewater oxidation ponds, ongoing construction at the treatment plant had disturbed the sludge bed in the primary oxidation pond. The sludge was disturbed to such an extent that the pond turned totally septic. This septic condition carried right on through to the two remaining oxidation ponds. With septic conditions comes septic odors.

We began treating the ponds with Bio Clean on January 29, 1986. Within three weeks time the odor was eliminated. By the middle of March we were getting good D.O. readings in the oxidation ponds.

I have also noticed that with the addition of Bio Clean the ponds recover at a much faster rate from an upset than before. This product has been very beneficial to the operation of the Town of Gilbert's wastewater treatment plant.

Sincerely,

Norman C. Hallman

Norman C. Hallman
Wastewater Superintendent

NCH/mm

BIG STINK SQUELCHED - Bio Huma Netics To The Rescue!

By Nick Quan

A landfill that has been producing a foul odor for four months has finally been capped using Bio-Clean, a product developed by Bio Huma Netics for use in sewage treatment plants.

Andy Jackson, owner of the First Street Landfill in Tempe, Arizona, said that the product, Bio-Clean has been successful in "getting algae growth and oxygen into the water," thereby eliminating the odor problem. This was after more than \$50,000 was spent by Jackson on treatments recommended by the State Department of Health Services. Treatments included installation of three aerators, sodium nitrate treatments, and the introduction of dry bacteria culture, all of which failed to eliminate the odor.

Late in December of 1984, river runoff formed a large pool of water in the landfill that apparently picked-up bacteria from an old adjacent City of Tempe landfill, said Jackson.

The old Tempe landfill was used as a dump more than a decade ago and covers about 20 acres.

"To my knowledge, there isn't anything buried in that hole that would cause such a stink," said Jackson. "The water definitely passed through the old landfill to get to the hole and where one has construction debris, the other has garbage."

Hydrogen sulfide gas produced in the pool by decaying organic waste penetrated north Tempe and surrounding areas. By January, DHS began receiving complaints about the smell at a rate of 100 a month, forcing the state agency to look into the matter, said Tibaldo Canez, manager of the department's central regional office of environmental health. "A lot of organic material is leached into the pond as the water comes through the old landfill," said Canez. "The pond is sensitive to an increased organic load."

Early in April, Don Organ of Bio Huma Netics, approached Jackson after reading a newspaper article on the odor problem. "You could hardly stand there, it stunk so bad," said Organ. "It wasn't until they started releasing water from the river that the water has seeped through the old landfill and carried the anaerobic (without free oxygen) biological system into this soup."

Organ explained that in a landfill containing concrete and steel, there is no biological system to break down. With garbage-cardboard, paper, plant residue, and table scraps trapped underground with moisture, anaerobic fermentation takes place, creating odors.

Organ immediately treated the pond with Bio-Clean to stabilize and detoxify the bacteria and increase its biological activity

in order to convert it from an anaerobic system to an aerobic system.

After a few weeks of treatment with Bio-Clean, there was only a very slight sulfur odor in the air, said Dr. Jordan Smith, director of research and development for Bio Huma Netics.

He said that Bio-Clean is a product that was created to increase the efficiency of a sewage system. The enzyme and biological products increases the rate of organic break down.

"We've demonstrated that we can increase the capacity of a sewage plant five times without changing the superstructure; we just add Bio-Clean.

"Engineers don't like that idea because that's going to put them out of a job. There wouldn't be a need for more tanks and digesters if every sewage treatment plant used Bio-Clean."

In the meantime, Jackson asked for financial assistance from the City of Tempe, but was rebuffed.

"I don't feel it's my sole responsibility to pay for something that is not my fault," said Jackson. "Nobody was more upset about the problem than I was. My office is here and in January the odor was horrendous. So far we've just been working on the problem rather than seeking blame. That may change now that the problem has been solved."

Landfill odor has grown, official says

Rising Salt River causing major setback for state

By JERRY HICKEY
Southeast Valley Bureau

TEMPE — The state Department of Health Services has experienced a major setback in its efforts to correct a foul odor at the First Street Landfill, an agency official said.

The odor from the landfill at 1976 E. Pima St. intensified this week because of releases of water into the Salt River, said Tibaldo Canez, manager of the department's central regional office of environmental health.

The landfill is near the bank of the Salt River on a Maricopa County island and is used as a dump for construction debris.

Salt River runoff water formed a pond in a pit in the landfill. Water seeping into the pond through refuse in the adjacent old Tempe Landfill caused the decay of organic-waste material, DHS officials said.

That resulted the odor that has wafted into north Tempe and south Scottsdale since early January. Owners of the First Street Landfill have been cooperating with the DHS to try to alleviate the odor.

"With the river fluctuating, it just makes our job that much harder," Canez said.

He said that the pond had risen substantially and this week was at its highest level since the agency started working on it.

However, Canez said one of the landfill operators told him Thursday that the situation had improved somewhat, and that the odor seemed to be abating.

DHS inspectors will check into that, Canez said.

Meanwhile, the Salt River Project had reduced water releases into the river Wednesday after a storm system moved out of the state.

Bacteria that thrive in an environment lacking oxygen have created gases, causing the odor, Canez said.

In January, the pond was treated with chemicals by Andy Jackson, owner of Kachina RediMix, and Joseph Urban, his partner in the operation of the first Street Landfill. A dike then was built to create two ponds of different size.

In early February, the DHS had two aerators installed to pump oxygen into the larger pond, which covers about 10 acres, Canez said. A third aerator began pumping oxygen into the pond in mid-February.

"With the rise in the river, there was more infiltration of water," Canez said. "A lot of organic material is leached into the pond as the water comes through the old landfill. The pond is sensitive to an increased organic load."

The smaller pond has been reduced to about an acre by the addition of fill material, Canez said.

He said that the landfill operators were having a private lab conduct tests at the large pond, but that the results wouldn't be available until next week. The DHS may try to speed up the process by having tests made through a Phoenix or state lab, he said.

The tests are to determine whether to use more aerators at the pond or to add nutrients to encourage the growth of aerobic bacteria, Canez said.

He said that it would not be feasible to try to clean the Tempe Landfill, which covers about 20 acres.

"It would be tremendously expensive," he said. "We're also talking about ownership changes there. It took years and years to fill it."

The Tempe Landfill, north of First Street and Price Road, was used as a dump by the city more than a decade ago.

Jackson has asked the city to pay part of the cost of trying to dispel the odor. He contends that the city is partly responsible because the problem apparently stems from the Tempe Landfill.

He and Urban say they have spent thousands of dollars in an effort to alleviate the odor.

Businesses in an industrial park just south of the pond have filed as many as 10 lawsuits against the partners, Urban recently told city officials.

City Attorney Dave Merkel has said he doesn't think the city can be held responsible because garbage also has been dumped in the area by other parties.

He has suggested that the Salt River Project might be considered responsible because it released water that infiltrated the landfill.

**WALSH**

ENGINEERING & PRODUCTION CORP.

Petroleum Engineering Consulting
Lease Management
Contract Pumping3001 Northridge Drive
P.O. Drawer 419
Farmington, New Mexico 87401
(505) 327-4892

August 21, 1987

Mr. William J. LeMay
Division Director
Energy & Minerals Department
Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

REF: Basin Disposal, Inc.
Water Disposal Pit
San Juan County, New Mexico

Dear Mr. LeMay:

On behalf of Basin Disposal, Inc., this is a request for approval to increase the maximum approved water level in the above-referred-to pit from an elevation of 5720.5 feet to 5721.0 feet. An increase of one half (1/2) foot.

The amount of free board remaining with an elevation of 5721.0 feet will be 1.0 feet.

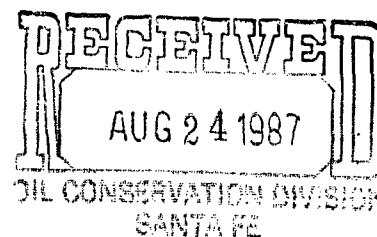
The calculated maximum wave height, with water level at the requested height, will be below the top of the berm with sufficient free board clearance.

Enclosed you will find Exhibits No. 1 and No. 2. Wave height was calculated at wind speeds of 50 mph (Exhibit No. 1) and 30 mph (Exhibit No. 2). Calculated wave height will not exceed the height of the berm.

Exhibit No. 3 is a copy of wind speed over a 5 year period as recorded at the N.M.S.U. Agricultural Science Center, South of Farmington, New Mexico. The information indicates that wind speeds are at a low point in the months of September and October with increase wind speeds in November.

From recorded information at the disposal pit site it is not anticipated that the winds will be above 30 mph during the 90 day period of September, October and November.

The purpose of this request is to allow continued operation of the disposal pit during the period of time necessary to obtain approval, drilling and completion of a disposal well.



Page 2

Mr. William J. LeMay

Approval is requested until continuous injection is commenced in the proposed injection well or a maximum of 90 days.

Thank you for your consideration and cooperation in this matter.

Very truly yours,



Ewell N. Walsh, P.E.
President

ENW:rr

cc: Frank Chavez, OCD, Aztec, New Mexico w/encl
Bain Disposal, Inc. w/encl
Mr. John Dean

Enclosures

EXHIBIT NO. 2

WAVE CALCULATION
(ALL REFERENCES-SHORE PROTECTION MANUAL)

WINDSPEED, $U_a =$ 30 M.P.H. : FETCH, $F =$ 410 FT. (AT 5721' ELEV.)

DEPTH OF WATER, $D(AVE) =$ 12.50 FEET SLOPE OF SIDE $= 3:1$

WAVE HEIGHT AND PERIOD.

FOR $D = 0.1$ TO 5.0 FT., Pg. 3-56, Fig. 3-27 (UPPER)

FOR $D = 5.1$ TO 10.0 FT., Pg. 3-57, Fig. 3-28 (UPPER)

WAVE HEIGHT, $H =$ 0.30 FEET *u/s*

PERIOD, $T =$ 0.7 SECONDS *a*

CALCULATE BREAKING WAVE HEIGHT, H_b (Pg. 7-7, Fig. 7-3)

$$\frac{H}{g \times T^2} = 0.0190 \quad g = 32.2$$

(Fig. 7-3) $\frac{H_b}{H} =$ 1.0 NOTE: UTILIZE ($m = 0.1$) FOR SLOPE OF
SIDE = 10:1 OR STEEPER.

$$H_b = H \times \frac{H_b}{H} = 0.3 \quad \text{u/s}$$

$$\frac{H_b}{g \times T^2} = 0.0190$$

Pg. 7-6, Fig. 7-2 (UTILIZING $m = 0.10(1:10)$)

$a = 1.6$ $a = \text{alpha, upper limit}$
 $b = 1.5$ $b = \text{beta, lower limit}$

BREAKING HEIGHT, ft, MAX. $= a \times H_b = 1.6 \times 0.3 = 0.48$

BREAKING HEIGHT, ft, MIN. $= b \times H_b = 1.5 \times 0.3 = 0.45$

COMMENTS:

$D = 12.50$ feet is average depth of water in pond.
(ELEVATION-5721')

NON-BREAKING WAVE FORCE AND MOMENTS
(ASSUMING A VERTICAL WALL)
(ALL REFERENCES SHORE PROTECTION MANUAL)

Pg. 7-161

$$\begin{aligned} X &= 1.0 \text{ (ASSUME SMOOTH WALL)} \\ H_i = H &= 0.3 \\ d &= 14.0 \text{ FEET} \\ T &= 0.70 \text{ SECONDS} \end{aligned}$$

$$\frac{H_i}{d} = \frac{0.3}{14.0} = 0.0214$$

$$\frac{H_i}{g \times T^2} = 0.0190 \quad g = 32.2$$

Pg. 7-164, Fig. 7-90

$$\frac{H_o}{H_i} = 0.38$$

$$H_o = \frac{H_o}{H_i} \times H_i = 0.114 \text{ FEET}$$

Pg. 7-161, Equations 7-73 and 7-74 and
Pg. 7-162, Fig. 7-88

HEIGHT OF CREST ABOVE BOTTOM

$$Y_c = d + H_o + \left(\frac{1+X}{2} \right) \times H_i = 14.41 \text{ FEET} \quad d = 14.0$$

(ELEV. - 5721.41') $H_o = 0.114$

$$\begin{aligned} X &= 1.0 \\ H_i &= 0.3 \end{aligned}$$

HEIGHT OF TROUGH ABOVE BOTTOM

$$Y_t = d + H_o - \left(\frac{1+X}{2} \right) \times H_i = 13.81 \text{ FEET}$$

(ELEV. - 5720.81')

COMMENTS:

d = 14.00 feet is at the east end or deepest portion
of the pond. (ELEVATION - 5721'). BERM HEIGHT = 15.00' (ELEV. - 5722')

NONBREAKING WAVE FORCE
(AT WAVE CREST)

Pg. 7-165, Fig. 7-91

$$\begin{array}{lcl} \frac{F_c}{w \times d^2} = 0.001 & \frac{H_i}{g \times T^2} = 0.0190 & \frac{H_i}{d} = 0.0214 \\ F_c = 0.001 \times w \times d^2 = 13.09 \text{ lb./ft} & w = 66.8 \text{ lbs./ft}^3 & d = 14.0 \text{ FEET} \end{array}$$

COMMENTS:

force is considered negligible.

BERM CALCULATIONS

MAXIMUM HEIGHT = 15 FEET
 TOP WIDTH = 12 FEET
 MAX. WATER DEPTH = 14 FEET
 (ON BERM)

INSIDE SLOPE = 3 : 1
 OUTSIDE SLOPE = 3 : 1

SOIL DENSITY = 100 Lbs./Ft.³
 FRICTION FACTOR = 0.4

STATIC PRESSURE - Lbs./Ft.²

WATER DEPTH - FT.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
DEPTH BELOW SURFACE - Ft.														
1	67	67	67	67	67	67	67	67	67	67	67	67	67	67
2	0	134	134	134	134	134	134	134	134	134	134	134	134	134
3	0	0	200	200	200	200	200	200	200	200	200	200	200	200
4	0	0	0	267	267	267	267	267	267	267	267	267	267	267
5	0	0	0	0	334	334	334	334	334	334	334	334	334	334
6	0	0	0	0	0	401	401	401	401	401	401	401	401	401
7	0	0	0	0	0	0	468	468	468	468	468	468	468	468
8	0	0	0	0	0	0	0	534	534	534	534	534	534	534
9	0	0	0	0	0	0	0	0	601	601	601	601	601	601
10	0	0	0	0	0	0	0	0	0	668	668	668	668	668
11	0	0	0	0	0	0	0	0	0	0	735	735	735	735
12	0	0	0	0	0	0	0	0	0	0	0	802	802	802
13	0	0	0	0	0	0	0	0	0	0	0	0	868	868
14	0	0	0	0	0	0	0	0	0	0	0	0	0	935
STATIC PRESSURE PER LINEAR FOOT - Lbs./Ft. = Fh	67	201	401	668	1002	1403	1871	2405	3006	3674	4409	5211	6079	7014

WEIGHT OF BERM PER LINEAR FOOT		SHEARING FORCE, F_s	
DEPTH FROM TOP OF BERM Ft.	Lbs.	DEPTH FROM TOP OF BERM Ft.	F_s
1	1500	1	600
2	3600	2	1440
3	6300	3	2520
4	9600	4	3840
5	13500	5	5400
6	18000	6	7200
7	23100	7	9240
8	28800	8	11520
9	35100	9	14040
10	42000	10	16800
11	49500	11	19800
12	57600	12	23040
13	66300	13	26520
14	75600	14	30240
15	85500	15	34200

NOTE: COMPACTION TESTS DURING CONSTRUCTION OF DISPOSAL PIT
 RESULTED IN SOIL DENSITY 100+ Lbs./Ft.³
 PAGE 7 OF 8

SAFETY FACTORS - F_s/F_R

WATER DEPTH - FT.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
BERM HEIGHT - Ft.														
1	8.96													
2	21.49	7.16												
3	37.61	12.54	6.28											
4	57.31	19.10	9.58	5.75										
5	80.60	26.87	13.47	8.08	5.39									
6	107.46	35.82	17.96	10.78	7.19	5.13								
7	137.91	45.97	23.04	13.83	9.22	6.59	4.94							
8	171.94	57.31	28.73	17.25	11.50	8.21	6.16	4.79						
9	209.55	69.85	35.01	21.02	14.01	10.01	7.50	5.84	4.67					
10	250.75	83.58	41.90	25.15	16.77	11.97	8.98	6.99	5.59	4.57				
11	295.52	98.51	49.38	29.64	19.76	14.11	10.58	8.23	6.59	5.39	4.49			
12	343.88	114.63	57.46	34.49	22.99	16.42	12.31	9.58	7.66	6.27	5.23	4.42		
13	395.82	131.94	66.13	39.70	26.47	18.90	14.17	11.03	8.82	7.22	6.01	5.09	4.36	
14	451.34	150.45	75.41	45.27	30.18	21.55	16.16	12.57	10.06	8.23	6.86	5.80	4.97	4.31
15	510.45	170.15	85.29	51.20	34.13	24.38	18.28	14.22	11.38	9.31	7.76	6.56	5.63	4.88

NOTE: TOP OF BERM - ELEVATION, 5722'.
 MAXIMUM WATER LEVEL - ELEVATION, 5721'

EXHIBIT NO... 3

Table 11. Five Year Wind Movement at 2 Heights, 1980 through 1984, NMSU Agricultural Science Center at Farmington

Month	Six Inches Above Evaporation Pan					Avg.	Miles per Day							Avg.
	1980	1981	1982	1983	1984	MPH	1980	1981	1982	1983	1984	MPH		
January	64	50	69	82	63	66	2.75	---	112	88	111	64	94	3.92
February	66	80	36	101	101	77	3.21	---	124	63	139	113	110	4.38
March	100	94	63	107	104	94	3.92	---	141	97	147	93	120	3.00
April	97	83	89	101	114	97	4.04	---	124	127	134	136	133	3.62
May	80	71	58	108	78	79	3.29	134	102	100	141	88	113	4.71
June	37	64	42	88	94	69	2.88	132	81	122	120	96	110	4.58
July	44	58	59	76	66	61	2.54	116	62	103	116	32	90	3.35
August	41	60	73	70	61	61	2.34	96	82	91	102	46	83	3.49
September	27	20	77	62	70	31	2.13	82	71	99	113	49	83	3.49
October	30	35	86	73	71	63	2.63	78	81	95	107	44	81	3.38
November	23	36	77	94	99	70	2.92	80	76	86	120	126	102	4.25
December	14	32	89	98	67	64	2.67	84	58	99	136	110	97	4.04

Wave calculations: Basin's request to increase pond level

I Wind speed = $U_A = 50 \text{ mph}$ (Basin used 30 mph)

Fetch = 410 ft

Depth = 12.5 ft

From Fig 3-28:

Wave height = $H = 0.45 \text{ ft}$

Period = $P = 0.9 \text{ Sec}$

II Breaking Wave Height = H_b

From Fig 7-3:
(use slope = 0.1)

$$\frac{H}{gT^2} = \frac{0.45}{(32.2)(0.9)^2} = 0.0172$$

$$\frac{H_b}{H} = 1 \quad \therefore H_b = H = 0.45 \text{ ft}$$

$$\frac{H_b}{gT^2} = 0.0172$$

From Fig 7-2:

$$\alpha \approx 1.75$$

$$\beta \approx 1.3$$

$$d_{\text{max}} = \alpha H_b = (1.75)(0.45) = 0.79 \text{ ft}$$

$$d_{\text{min}} = \beta H_b = (1.3)(0.45) = 0.585$$

III Freeboard

Requested level @ 5721.0

Berms @ ~ 5722'

∴ Freeboard level of 1.0 ft requested

Calculate Wave crest

H₂O depth @ Sec A-A', Fig 2, Basin Application

∴ @ H₂O level of 5721 → d = 14 ft

Assume smooth wall, X = 1.0

Base of pit ~ 5707

From Eq 7-73: $y_c = d + h_o + \frac{1+X}{2} (H_i)$

$$H_i = 0.45 \text{ ft}$$

$$\frac{H_i}{dT^2} = 0.0172$$

$$\frac{H_i}{d} = \frac{0.45}{14} = 0.32$$

From Fig 7-90: $\frac{h_o}{H_i} = 0.36$

$$h_o = (0.36) H_i = (0.36)(0.45) = 0.162$$

$$y_c = 14 + 0.162 + \left(\frac{1+1}{2}\right)(0.45)$$

$$y_c = 14.6 \approx 5721.6 \text{ ft elevation}$$

Berm is @ 5722 ∴ 0.4 ft of freeboard remaining
with 2x safety factor, - .2 ft of freeboard remaining
∴ the wave will top the berm

for maximum elevation of water level @ $U_A = 50 \text{ mph}$
with safety factor of 2.

$$y_c = 14.5 = d + 0.162 + \left(\frac{1+1}{2}\right)(0.45)$$

$$d = 14.5 - 0.162 - 0.45$$

$$d = 13.8$$

$$\text{freeboard} = 15 - 13.8 = 1.2 \text{ ft}$$

GOOD

SAMARITAN

FOUR CORNERS
GOOD SAMARITAN CENTER

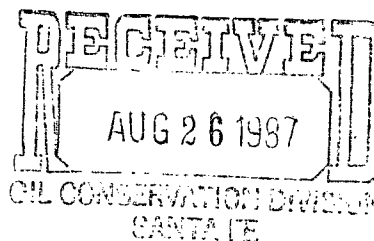
Dave Boyer

PH. 505-334-9445

500 CARE LANE AZTEC, NEW MEXICO 87410

August 20, 1987

Ernie Busch
District 3
Oil Conservation Division
1000 Rio Brazos Rd.
Aztec, NM 87410



Dear Mr. Busch:

This letter is a followup to my recent telephone conversation with you regarding problems at the Basin Chemical Company in Bloomfield.

As I indicated to you the Four Corners Good Samaritan Center in Aztec owns the land bordering the south side of Basin Chemical Company. It came to my attention that the Drilling Mud Pits are leaking onto our property, which by personal visit I confirmed myself.

My question to your office is multifaceted:

- (1) What is being done to stop the leakage?
- (2) What is being done to eliminate this from happening in the future?
- (3) What about any cleanup?
- (4) Is there any environmental concerns we need to be concerned about?

In closing, we are of course very concerned about this problem and request your assistance in remedying it. Your assistance is much appreciated.

Sincerely,

Michael R. Hinson

Michael R. Hinson
Administrator

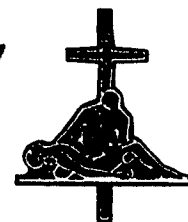
MRH/mf

RECEIVED

AUG 21 1987

OIL CON. DIV
DIST. 3

in CHRIST'S love,
everyone is someone





WALSH

ENGINEERING & PRODUCTION CORP.

Petroleum Engineering Consulting
Lease Management
Contract Pumping

3001 Northridge Drive
P.O. Drawer 419
Farmington, New Mexico 87401
(505) 327-4892

August 20, 1987

Mr. William J. LeMay
Division Director
Energy & Minerals Department
Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

REF: Basin Disposal, Inc.
Application for Proposed Salt Water
Disposal Well
Dated August 12, 1987

Dear Mr. LeMay:

Attached are two (2) copies of Affidavit of Publication concerning the proposed disposal well.

Please incorporate the attached copies into the above-referred-to application.

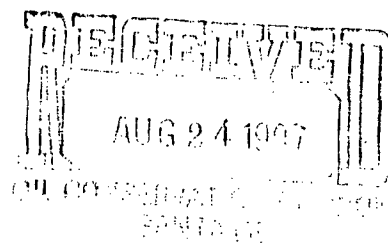
Very truly yours,

Ewell N. Walsh, P.E.
President

ENW:rr

cc: Frank Chavez, OCD, Aztec, N.M.
Basin Disposal, Inc.
John Dean
Allen Alexander, Meridian Oil, Inc.

Attachment



AFFIDAVIT OF PUBLICATION

No. 20549

STATE OF NEW MEXICO,
County of San Juan:

Betty Shipp being duly
sworn, says: That he is the National Ad Manager of
THE FARMINGTON DAILY TIMES, a daily newspaper of general circulation
published in English at Farmington, said county and state, and that the
hereto attached Legal Notice

was published in a regular and entire issue of the said FARMINGTON DAILY
TIMES, a daily newspaper duly qualified for the purpose within the
meaning of Chapter 167 of the 1937 Session Laws of the State of New
Mexico for One ~~consecutive~~ (days/weeks) on the same day as
follows:

First Publication Wednesday August 19, 1987

Second Publication _____

Third Publication _____

Fourth Publication _____

and that payment therefor in the amount of \$ 10.79
has been made.

Betty Shipp
Subscribed and sworn to before me this 19th day
of August, 1987.

J. Shanta
NOTARY PUBLIC, SAN JUAN COUNTY, NEW MEXICO

My Commission expires: June 23, 1990

Copy of Publication

NOTICE OF APPLICATION TO DRILL INJECTION WELL

1) The Applicant's name is
Basin Disposal, G Road 5046,
Aztec, New Mexico, (505)
632-8936, and the contact party
for the applicant is Ewell N. Walsh,
3001 Northridge Drive, Post Office
Drawer 419, Farmington, New
Mexico, 87401, (505) 327-4892.

2) The intended purpose of the
injection well is to dispose of pro-
duced salt waters; the exact loca-
tion of the injection well is 2207
feet from the North line, 1870 feet
from the West line of Section 3,
Township 29 North, Range 11
West, N.M.P.M., San Juan County,
New Mexico.

3) The formation name is the
Mesa Verde; the depth of the in-
terval is approximately 3800 feet
to 4900 feet. The expected max-
imum injection rates and pres-
sures will be determined by injec-
tivity tests, but will not exceed for-
mation fracture pressure.

4) Interested parties must file
objections or requests for hearing
with the New Mexico Oil Conserva-
tion Division, Post Office Box
2088, Santa Fe, New Mexico,
87501, within fifteen (15) days of
this notice.

Legal No. 20549 published in
the Farmington Daily Times, Farm-
ington, New Mexico on Wednes-
day, August 19, 1987.

OCD Mtg w/ Red Creek
Basin Disposal

8-19-87 Use Lyon 2 act. OCD Dir.

Roger Anderson
Barbara Hargis

pH control

H₂S in soln

H₂S coming in

Quant. of results

Lab. exper. to illus. success of treatment

- 1) What exper. proced. did lab. use to prove effectiveness of Bio-genesis? Data? Where is it?
- 2) How did lab. come up w/ treatment ^{numbers} of 1 gal / 100,000 gal. eff. & 1 gal / 5 tons of oil sludge
- 3) How does effectiveness vary w/ the pH?
How does Bio-Genesis Low pH?
- 4) How does TDS affect the activity of the bug?
- 5) How is company going to prove the effectiveness of the treatment method?
 - 1) bio-assay
 - 2) sampling methods to test effectiveness
- 6) Mechanism by which the Bio-Genesis works?
- 7) Will the addition of the bugs lower the pH and allow the release of H₂S from sulfides?
How effective are bugs at higher pH values?

Sulfides still in pond →

OVER

What are the limitations of the Sackeisen —

pH

temperature

aerobic vs anerobic

Chlorine

STATE OF
NEW MEXICO

OIL
CONSERVATION
DIVISION



MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal

Time

1130

Date

8/20/87

Originating Party

R. ANDERSON

(Returned Stones Call)

Other Parties

Tim Stones EPA Reg 6

214-655-2270

Subject

Basin Disposal

Discussion

Mr. Stones called to remind OCD that cold weather may turn pit over and cause additional H₂S problem. I said we were aware of this possibility and are attempting to remove H₂S prior to that time.

Conclusions or Agreements

Distribution

Signed



MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone☐ Personal

Time

1600

Date

8/19/87

Originating Party

Jim Stones

EPA Reg 6 214-655-2270

Subject

Basin Disposal

Other Parties

R. Anderson

Discussion

Mr. Stones called OCD to obtain information on the Basin H₂S emissions. I summarized the file and actions taken to date. He asked that he be informed of any new developments and offered ~~the District~~ ^{all} assistance EPA had in solving the problem. He agreed the H₂S is being produced in an anaerobic environment by bacteria and this condition must be ~~reversed~~ reversed to aerobic.

Conclusions or AgreementsDistribution

Signed

DISPOSAL POND

WATER ANALYSIS

August 17, 1987

WATER ANALYSIS REPORT

DATE: 8/17/87

PAGE: C220-93

TO: Basin Disposal

LAB NO.: 2503-1066



TECH, Inc.
333 East Main
Farmington
New Mexico
87401
505/327-3311

Sample From Holding Pond
.....

Date Sampled 8/17/87 Sampled
Time Sampled By R.W.

PARAMETER	mg/l	me/l
Acidity (CaCO ₃)		
Alkalinity (CaCO ₃)		
Bicarbonate	<u>3160</u>	<u>51.8</u>
Carbonate	<u>183</u>	<u>6.1</u>
Hydroxide		
Chloride	<u>13,500</u>	<u>382</u>
Chlorine, Free	<u>0</u>	
Total		
Fluoride		
Nitrogen, Total		
Nitrate (N)		
Ammonia (N)		
Phosphate, Ortho		
Total		
Sulfur, Sulfate	<u>1010</u>	<u>21.0</u>
Sulfide	<u>1.9 ± .5</u>	
BOD ₅		
COD		
Hardness (CaCO ₃)		<u>gr.</u>
Oil & Grease		
Oxygen, Dissolved		
Phenols		
Solids, Total		
Dissolved	<u>28,400</u>	
Suspended		
Settleable		<u>ml/l</u>
Conductivity		<u>umhos/cm</u>
pH	<u>8.74</u>	<u>units</u>
Turbidity		<u>NTU</u>

PARAMETER	mg/l	me/l
Arsenic		
Barium		
Boron		
Cadmium		
Calcium	<u>32.9</u>	<u>1.6</u>
Chromium, Hex		
Total		
Iron, Dissolved		
Total		
Lead		
Magnesium	<u>97.2</u>	<u>8.0</u>
Mercury		
Potassium		
Selenium		
Silver		
Sodium	<u>10400</u>	<u>451.3</u>

Date Received 8/17/87 Preserved? distilled Date Analyzed 8/17/87 Analyzed By HP Hamblen

REMARKS: Sulfide analysis on sample treated w H₃PO₄ + distilled prior to reaction with I₂.

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL.

TECH, Inc.



ALPHA SYNETICS

ANALYTICAL LABORATORIES

1 NORTH ROOSEVELT AVENUE
CHANDLER, ARIZONA 85226
602/961-1008

For: RED WALSH

Date: 8-14-87

Lab. No.:

Sample marking:

Sample: EFFLUENT AND SLUDGE

Received:

Submitted by: RED WALSH

REPORT OF LABORATORY ANALYSIS

RESULTS OF LABORATORY TESTING USING BIO-GENESIS:

SAMPLE ODOR CONTROLLED AT:

EFFLUENT - 1 PART PER MILLION
SLUDGE - 50 PARTS PER MILLION

RECOMMENDATIONS:

EFFLUENT : INITIAL INOCULATION OF 1 GALLON BIO-GENESIS PER 100,000 GALLONS OF EFFLUENT. CONTINUED TREATMENT OF INFLUENT AT 1 GALLON BIO-GENESIS PER MILLION GALLONS OF INFLUENT.

SLUDGE : INITIAL INOCULATION OF 1 GALLON BIO-GENESIS PER 5 TONS OF OIL SLUDGE. CONTINUED TREATMENT AT A RATE OF 1 GALLON BIO-GENESIS PER 10 TONS OF SLUDGE.

Respectfully submitted,

TREATMENT



BASIN DISPOSAL, INC.
PROPOSED DISPOSAL POND TREATMENT

TREATMENT

Recommended Treatment (As per Dr. Jordan Smith, BIO-HUMA_NETICS):

First Week (A)	100 gallons BIO-GENESIS
Second Week (B)	50 gallons BIO-GENESIS
Third Week (C)	25 gallons BIO-GENESIS
Fourth Week (D)	<u>10</u> gallons BIO-GENESIS
TOTAL 185 gallons	

(A) Treatment put into disposal pond, through spray circulating system, at rate of 2.50 gallons per 12.50 minutes. (8 hour total time - 192,000 gallons circulated) Circulation continued for 48 hours - additional 1,500,000 gallons. After 48 hours will start spray system.

(B) Adjustment in treatment volume as per determination of:

1. Biological Oxygen Demand.
2. Color of disposal pond water.
3. Odors.

NOTE: After initial inoculation the disposal pond color should change from black to brownish red (at this point the odors should disappear) to green (final result).

The disposal pond ph will probably be 6.5 to 7.5 (normal ph for product activity is 5.5).

Aeration other than by spray not recommended during first week of inoculation.

It has been determined by measurement that minimal or no sludge is present in bottom of disposal pond.

PRODUCT DESCRIPTION

PRODUCT DESCRIPTION



ENVIRONMENTAL CORRECTION AGENCY

A DIVISION OF BIO-HUMA-NETICS

TO WHOM IT MAY CONCERN:

E.C.A., a division of BIO HUMA NETICS, INC., formulates a number of environmentally important products.

ACTIVATOR 501: Used for odor control and increased aeration of municipal sanitation systems and other industrial waste sumps, which produce unpleasant odors.

MICATROL, & BIO GENESIS:

Products which must be custom formulated when complex chemicals are involved. After laboratory anylsis of the contaminated site, these products are formulated to solve the problem. Each site would have to be examined and custom formulations for that specific site would be required.

The size of the project site, the severity of contamination and the complexity of compounds involved, will determine the number of gallons and the number of treatments required to solve the problem.

If you need any more information regarding our products, please call us at the above phone number and we will be happy to assist you.

Sincerely,

Jordan Smith Ph.D



ENVIRONMENTAL CORRECTION AGENCY

A DIVISION OF BIO-HUMA-NETICS

B I O G E N E S I S

A blend of polymeric and polyhydroxol solutions impregnated with biological systems, buffering compounds, enzymatic catalysts and nutrient elements.

This product is designed to buffer toxic compounds and metals and to proliferate the reproduction of beneficial aerobic microbes for the natural and thorough break-down of organic compounds. The high ion exchange capacity of this product prevents the release of toxic and offensive gases caused by anerobic degradation so common in most decomposition systems.



ENVIRONMENTAL CORRECTION AGENCY

A DIVISION OF BIO-HUMA-NETICS

M I C A T R O L

A blend of polymeric and polyhydroxal organic solutions impregnated with enzymatic catylists, oxidizing agents, biological systems and buffering compounds.

This product acts as a chelating or complexing agent that buffers and detoxifies substances found in nature or are man made that may impare the health of man, animal, plant or beneficial microbes.



ENVIRONMENTAL CORRECTION AGENCY

A DIVISION OF BIO-HUMA-NETICS

TO WHOM IT MAY CONCERN:

RE: ACTIVATOR 501

The ENVIRONMENTAL CORRECTION AGENCY is proud to introduce a fine new product that when used according to Company recommendations, possesses unique properties of environmental importance.

The ENVIRONMENTAL CORRECTION AGENCY formulates and distributes a naturally occurring deposit of POLYMERIC and POLY-HYDROXOL compounds.

- * ENZYMATIC CATALYST, Plus microbial inoculation promotes microbial proliferation and organic solid breakdown.
- * CHEMICAL COMPLEXING AGENT: Buffers heavy metals and other toxic substances while promoting nutrient element availability for microbial proliferation.
- * ODOR CONTROL, from high oxygen carrying organic acids with a high ion-exchange capacity prohibiting the release of toxic and offensive gasses.

This fine product, like all of the E.C.A. products, is completely safe and non-toxic.

PRODUCT AVAILABILITY



PRODUCT AVAILABILITY

BID GENESIS

Product is in stock at warehouse, Chandler, Arizona.

Estimated time for delivery to Disposal Site - 2 to 3 days by
Commercial Truck Line.

TECHNICAL SUPPORT



BASIN DISPOSAL, INC.
PROPOSED DISPOSAL POND

TECHNICAL SUPPORT

BIO-HUMA-NETICS will have a person on site within one week to check results of first treatment and made recommendations for further treatment.

There personnel will be available at all times for consultation.

Personnel:

Dr. Jordan Smith

Don Organ

602 961-1220 OR

602 961-1008

OTHER RECOMMENDED TREATMENTS



Western Wellchems, Inc.

August 10, 1987

Mr. Red Walsh
Walsh Engineering and Production
3001 Northridge Drive
Farmington, NM 87499

Dear Red:

Attached are the results we obtained on the 95,000 barrel pit water evaluating the ability of our products to kill the sulfate reducing bacteria. A total of 40 different chemical solutions were evaluated for their ability to penetrate the sludge and kill all the sulfate reducing bacteria present in the sludge. The blank (no chemical added) and 5 chemical systems produced a culture that was too numerous to count (TNTC) and seven systems did not produce complete kills. Of the remaining 27 systems tested, the most cost effective system was adding 2 quarts of West/Treat 82 (surfactant) per 100 barrels of water to be treated and 0.33 gallons of West/Treat 881 (biocide) per 500 barrels of water to be treated. In order to achieve effective treatment the water should be pumped into the bottom of one of the 400 barrel storage tanks with the surfactant injected into the tank inlet stream and returned to the pond from the top of the tank with the biocide injected into the tank discharge stream. In order to maintain clean water, the surfactant and biocide should be added to each truck unloaded at a rate of West/Treat 82 at 2 quarts per 100 barrels and biocide at 0.33 gallons per 500 barrels. The biocide should be rotated on a monthly basis with West/Treat 882 used one month and West/Treat 830 used the alternate month.

2 minute
Retention
Time for
82 before
Add 881

The cost for these products are as follows:

West/Treat 881:	\$90.00
West/Treat 882:	\$35.00
West/Treat 830:	\$ 5.90
West/Treat 82:	\$12.25

All prices are per gallon delivered to your location in 55 gallon drums.

Although this treatment proved effective in the laboratory evaluation studies, there is no guarantee it will be effective in the actual system. The best treatment would be to drain the pit completely, clean out the sludge, and then begin a chemical program. This treatment system would be helped by the addition of an air compressor with an underwater distribution system to agitate the sludge bed, aerate the water, and oxidize the hydrogen sulfide. Air should be injected into the bottom of the pit on a cycle of 5 to 15 fifteen minutes per hour. Another aid at the time of the initial treatment that would improve the chances of success is to dump several 10 pound blocks of dry ice into the pit to provide mixing action.

We are confident this program has a good chance of working and the sludge bed will be cleared of sulfate reducing bacteria unless a hard calcium carbonate scale is present which will prevent the surfactant and biocide from contacting the bugs. Western Wellchems is well aware of the cost to you for this program and would not lightly recommend such a program.

A similar study was undertaken on the waters from the smaller pits and these results will be forth coming. A copy of the lab study is attached for your reference.

Sincerely yours,

A handwritten signature in cursive script that reads "Dave Moore".

Dave Moore
Lab Manager



Western Wellchems, Inc.

4746 Franklin St. • Denver, Colorado 80216 • (303) 296-3513 or 296-3514

WEST/TREAT 830

Generic Description

Bactericide; Blend of Sodium Dimethyldithiocarbamate and Disodium Bisdithiocarbamate

Product Description and Uses

West/Treat 830 is an effective microbiocide used to control the growth of fungi and bacteria in water based drilling fluids and production systems. In drilling fluid applications, it is useful in muds containing starches, xanthate gums, and wood sugars.

Application Methods and Quantities

West/Treat 830 is used at a rate of 1 to 2 gallons per 100 bbl. of mud. It can be diluted with water or added straight from the shipping container to the mud hopper or suction pump.

Typical Physical Properties

Form/Color	Lt. Green/Lt. Yellow Liquid
Wt./Gal.	9.80 lbs.
Freezing Point	- 40 °F

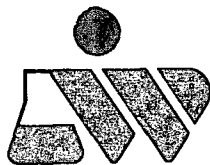
Shipping and Handling

West/Treat 830 is shipped in epoxy/phenolic lined 55 gallon drums or in bulk, F.O.B. Denver, Colorado.

When handling West/Treat 830, wear goggles or face shield, rubber gloves, and protective clothing. This product causes eye and skin irritation, and is harmful if swallowed. Avoid contamination of food and feedstuff. West/Treat 830 is toxic to fish and domestic animals; dispose of in a proper manner. If ingested or in prolonged contact with skin or eyes, obtain medical attention immediately.

A Material Safety Data Sheet outlining recommended safe handling of this product is available upon request.

The information contained herein is put forth on a basis of honesty and good business practice. However, there are no guarantees or warranties expressed beyond the information on the face thereof. Western Wellchems, Inc. will claim no liability in connection with recommendations based on these contents.



Western Wellchemicals, Inc.

4746 Franklin St. • Denver, Colorado 80216 • (303) 296-3513 or 296-3514

WEST/TREAT 82

Generic Description

Corrosion Inhibitor and Surfactant for Injection Systems

Product Description and Uses

West/Treat 82 is a combination of highly effective surface active agents and organic inhibitors specifically designed to provide protection from both corrosion and solids deposition. Plugging of filters, perforations, and the formation face is greatly reduced due to the high degree of interfacial activity exhibited by this product. West/Treat 82 is highly effective in controlling complex deposits of scale, hydrocarbons, iron sulfide, and other corrosion products. West/Treat 82 is highly soluble in both fresh water and heavy brine and may be used in oil well cleanups and acidizing.

Application Methods and Quantities

West/Treat 82 is best applied in water injection systems continuously at a concentration of 25-75 ppm. System cleanup should precede treatment. Results can be monitored by measuring filter cycle time, injection pressures, and filtered water quality.

Note: If measurable amounts of oxygen are present, examine optional product use (West/Treat 84).

Typical Physical Properties

Form/Color	Amber Liquid
Wt./Gal.	7.8 lbs.
Freezing Point	-40°F
Flash Point (TCC)	70°F

Shipping and Handling

West/Treat 82 is shipped in 55 gallon polyethylene drums or in bulk, F.O.B. Denver, Colorado.

When handling West/Treat products, care should be taken not to store or use near heat, sparks or open flame. Avoid contact with skin, eyes, or clothing. In case of contact, flush with large amounts of fresh water and obtain medical attention.

A Material Safety Data Sheet outlining recommended safe handling of this product is available upon request.

The information contained herein is put forth on a basis of honesty and good business practice. However, there are no guarantees or warranties expressed beyond the information on the face thereof. Western Wellchemicals, Inc. will claim no liability in connection with recommendations based on these contents.

WEST/TREAT 881

West/TREAT 881 is a water soluble microbicide consisting of a blend of methylene bis(thiocyanate) and 2-(Thiocyanomethylthio)benzothiazole. WEST/TREAT 881 contains 10 percent of each product. WEST/TREAT 881 is an effective microbicide used to control the growth of microbes and fungi in water and oil systems.

Application is by continuous injection, or batch treating. In most applications 1 quart of product per 500 bbls of water will provide complete protection from microbial growth and reproduction, however monitoring of treated water to determine the effectiveness of the treatment chemical is recommended to determine the exact dosage requirements.

TYPICAL PHYSICAL PROPERTIES

Form/Color:	Clear liquid
Density, lbs/gal:	8.75
Freezing point, deg F:	10
Flash point (TCC), deg F:	140

SHIPPING AND HANDLING

WEST/TREAT 881 is shipped in 55 steel drums or in bulk, FOB Denver, Colorado.

When handling WEST/TREAT 881 care should be taken to avoid all contact with skin, clothing, and eyes. In case of contact, flush affected area immediately with fresh water for 15 minutes and seek medical attention.

A Material Safety Data Sheet (MSDS) outlining recommended safe handling of this product is available on request.

All Western Wellchems products are free of halonagenated hydrocarbons and carbon disulfide.

The information contained herein is put forth on a basis of honesty and good business practice. However, there are no guarantees or warranties expressed or implied beyond the information on the face thereof. Western Wellchems, Inc. will claim no liability in connection with the recommendations based on these contents.

WEST/TREAT 882

West/TREAT 882 is a water soluble microbicide consisting of a blend of methylene bis(thiocyanate) and 2-(Thiocyanomethylthio)benzothiazole. WEST/TREAT 882 contains 2.50 percent of each product. WEST/TREAT 882 is an effective microbicide used to control the growth of microbes and fungi in water and oil systems.

Application is by continuous injection, or batch treating. In most applications 1 quart of product per 100 bbls of water will provide complete protection from microbial growth and reproduction, however monitoring of treated water to determine the effectiveness of the treatment chemical is recommended to determine the exact dosage requirements.

TYPICAL PHYSICAL PROPERTIES

Form/Color:	Clear liquid
Density, lbs/gal:	8.75
Freezing point, deg F:	10
Flash point (TCC), deg F:	140

SHIPPING AND HANDLING

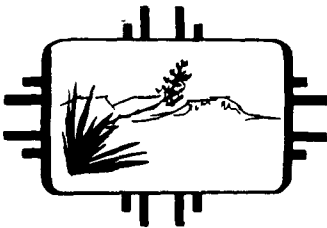
WEST/TREAT 882 is shipped in 55 steel drums or in bulk, FOB Denver, Colorado.

When handling WEST/TREAT 882 care should be taken to avoid all contact with skin, clothing, and eyes. In case of contact, flush affected area immediately with fresh water for 15 minutes and seek medical attention.

A Material Safety Data Sheet (MSDS) outlining recommended safe handling of this product is available on request.

All Western Wellchems products are free of halonagenated hydrocarbons and carbon disulfide.

The information contained herein is put forth on a basis of honesty and good business practice. However, there are no guarantees or warranties expressed or implied beyond the information on the face thereof. Western Wellchems, Inc. will claim no liability in connection with the recommendations based on these contents.



NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

ENVIRONMENTAL IMPROVEMENT DIVISION

Michael J. Burkhardt
Director

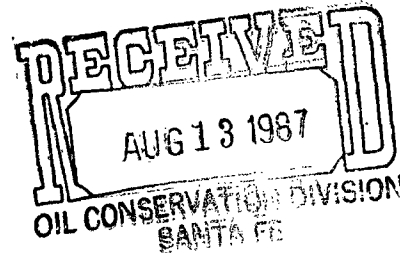
GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

August 11, 1987

David Boyer
Environmental Bureau Chief
Oil Conservation Division
Energy, Minerals & Natural Resources Dept.
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87501



Dear Mr. Boyer:

As you are aware, staff from the Environmental Improvement Division and the Office of Epidemiology visited Basin Disposal, Inc. near Farmington on July 30, 1987 to conduct a fact finding investigation of hydrogen sulfide emissions from their disposal pond and to provide technical support to the Oil Conservation Division (OCD).

It is our understanding that OCD began investigating complaints filed by residents living in the vicinity of Basin in early June of this year. These complaints concerned the emissions of chemical odors from the evaporation pond. Specifically, hydrogen sulfide has been measured in the ambient air on company property as well as in a residential area close by. The disposal pond, containing produced water and drilling fluids, was determined to be the source of the hydrogen sulfide.

Since that time OCD has required that Basin treat the pond to reduce the emissions. Records from Basin indicate that treatments were started on June 1, 1987 and have continued to date. These treatments consisted of the addition of sodium hydroxide to raise the pH of the contents of the pond and sodium hypochlorite to oxidize the sulfides. Additionally, the contents of each incoming truck are being checked for H₂S concentration prior to being accepted for disposal.

It was felt by OCD prior to EID's investigation that the continuing low-level emissions of H₂S from the pond were due to the sulfate-reducing bacteria in the sludge at the bottom of the pond.

During the course of the investigation, staff from EID took ambient air measurements around the periphery of the pond which were found to be at a concentration of one part-per-million and below, and took samples of pond contents as well as sludge from near the bottom. One of the samples taken from approximately five feet below the surface was acidified at the site, which resulted in H₂S emissions measured at 75 ppm. This would lead us to believe

David Boyer
August 11, 1987
Page 2

that there are sulfides remaining in the pond that have not been oxidized by the sodium hypochlorite. This could be caused by the difficulty of adequately mixing the contents of the pond with the oxidant, especially at the bottom, and the fact that hypochlorite reacts with many organic species besides the sulfide. Its addition to a solution containing sulfide and petroleum constituents will require more hypochlorite than would be necessary to oxidize the sulfides alone.

For this reason, EID would recommend that the pH of the pond, which OCD had required be raised to 9.5, be closely monitored to ensure that it does not drop resulting in further H_2S releases. Additionally, the monitoring instrument for H_2S being used by Basin personnel should be calibrated at least once daily, if not more often.

Additional preliminary findings showed a conductivity of 40,000 $\mu MHOS$ which indicates a high concentration of salts. This could lead to a density stratification so that the more dense fluids at the bottom of the pond may contain different H_2S values. Also, if H_2S is being produced in the anaerobic region (the slime and sludge) at the bottom of the pond, the H_2S would be more concentrated due to little or no agitation. Staff did take a sample of sludge and has requested an analysis for sulfate-reducing bacteria. Those results will be provided to you when they are available.

Before a long term solution can be reached, it would be EID's recommendation that Basin quantify what amount of sulfides, sulfate reducing bacteria, and sulfates are present in the pond to determine a total potential for H_2S in the pond. This would involve sampling at different depths and areas of the pond. One technique would be to take a rowboat out onto the pond utilizing appropriate personal protective equipment, and with a thief sampler get samples at specified depths including sludge.

Once the sulfide species concentration has been quantified, an appropriate treatment method can be devised to eliminate the problem. As was discussed with you and your staff as well as with company officials, the Division feels it is very important that Basin consult with an expert in this area before a treatment method is utilized. This will ensure that whatever method is decided upon will abate the problem once and for all. One method suggested by EID personnel at the site was for the company to look into the use of hydrogen peroxide as an oxidant.

It is our understanding that you have given Basin until September 12, 1987 to submit an H_2S contingency plan which is to include a long term method for checking incoming fluids for the presence of H_2S , for storage and treatment of fluids prior to disposal, as well as air monitoring methods for H_2S .

It is the position of EID that once a final treatment is applied to the pond to eliminate hydrogen sulfide emissions, that incoming fluids can be adequately treated to eliminate this problem in the future. Depending on the treatment

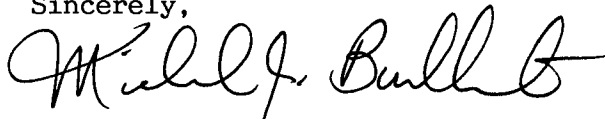
David Boyer
August 11, 1987
Page 3

utilized, it may be necessary to determine how much H_2S is in solution in those incoming fluids so that under or over-treatment does not occur. The hydrogen sulfide emissions should appropriately be controlled and prevented at the source and any ambient air monitoring done should be for back up purposes only, in the event a system should fail.

A representative from the Office of Epidemiology distributed questionnaires to residents living in proximity to Basin Disposal as well as to employees working in the vicinity. Information collected on these forms will be used to determine the extent and severity of any health effects being experienced by these individuals.

As was discussed with you, the Division would like to be kept informed of any further treatment to be used on the pond. Our staff is available to provide any technical support that OCD or Basin Disposal may require in helping to solve this problem. Your cooperation and that of Basin's owners and staff is greatly appreciated.

Sincerely,



Michael J. Burkhart
Director

MJB/bh/md

xc: Basin Disposal, Inc. c/o Walsh Engineering
Jerry Sandel, Aztec
William J. LeMay, Director, OCD

STATE OF
NEW MEXICO

OIL
CONSERVATION
DIVISION



MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone

☐ Personal

Time

1000

Date

8/10/87

Originating Party

Ted Saiz

15710-187 St. NE
Woodinville, Wash 98072

Other Parties

Lila Saiz

General Delivery, Bloomfield, N.M. 87413

Subject

H₂S gas emissions from Basin Disposal

Discussion

Ted Saiz called to voice complaints about H₂S gas coming from Basin Disposal. He has been visiting his mother Lila Saiz who lives on the south side of the evaporative pit. He says the sprayers have been on the whole week he has been visiting. He complained of sore throat and headaches. His wife who has contacts says that her eyes are very irritated. They said they called Frank Chavez in Aztec District office but said he was evasive about problems. They also said that they had not received the health questionnaire distributed by Epidemiology section of EID.

Conclusions or Agreements

I explained to Mr Saiz the nature of the problem and explained all of the remedial work done to alleviate H₂S gas emissions. I stated that I would send him copies of the health questionnaire for him, his wife and his mother Lila Saiz to be filled out and returned to the EID

Distribution

Signed

William Olson



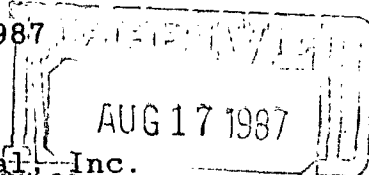
STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

GARREY CARRUTHERS
GOVERNOR

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

*TO
DAVE BOYER*

August 10, 1987



Basin Disposal, Inc.
P.O. Box 419
Farmington, NM 87401
OIL CONSERVATION DIVISION
AZTEC

Re: Spraying at the Disposal Pit

Dear Mr. Walsh:

Due to rising sulfide levels at the pit and continued levels of odors in the area, the use of the sprayers must cease, until the sulfide levels are further reduced. The sprayer system may be used to circulate treated water, if the sprayer heads are removed to prevent misting.

Sincerely,

Charles Johnson

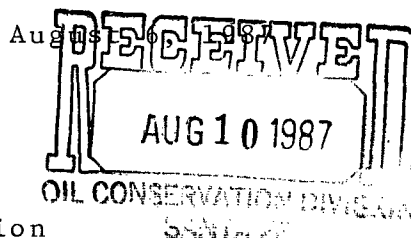
For
Frank T. Chavez
District Supervisor

FTC/dj

xc: Operator File

**WALSH**

ENGINEERING & PRODUCTION CORP.

Petroleum Engineering Consulting
Lease Management
Contract Pumping3001 Northridge Drive
P.O. Drawer 419
Farmington, New Mexico 87401
(505) 327-4892

Mr. Roger Anderson
N.M. Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87504-2088

REF: Lined Disposal Pits

Dear Roger:

During our last visit you mentioned some possible requirements for construction of disposal pits.

I believe your comment was:

- A. Require installation of some means to circulate or aerate the bottom of pit.
- B. Possible installation of lines during construction and lining of pit.

Careful consideration should be given to type of construction if lines in bottom of pit are to be considered as a requirement.

The main purpose of the lining, single or double, of a pit is to prevent contamination of soil, surface waters and sub-surface waters by water stored in a pit.

In order to have a proper installation to perform the above, the integrity of the lining material must be considered.

Each time a liner, or possibly both liners, is penetrated a situation exists for a spot to allow leakage.

Also during use of lines for purposes of circulating or aeration, there will be movement of the lines that could create a wear, or rubbing, of the lining material or even stress the lining material to the point of tearing or separation of lining material.



Page 2
Mr. Roger Anderson

Sometimes even the best ideas do not give feasible results. If operators, of disposal pits, are required to construct pits in such a manner that increases the probability of leakage, then pits may not be constructed.

Also from the environmental side the increased probability of leakage could create problems.

These are just some thoughts I wanted to pass on to you.

Very truly yours,

A handwritten signature in black ink, appearing to read 'E. Walsh', written over the typed name.

Ewell N. Walsh, P.E.
President

ENW:rr

(13511)
(130053)

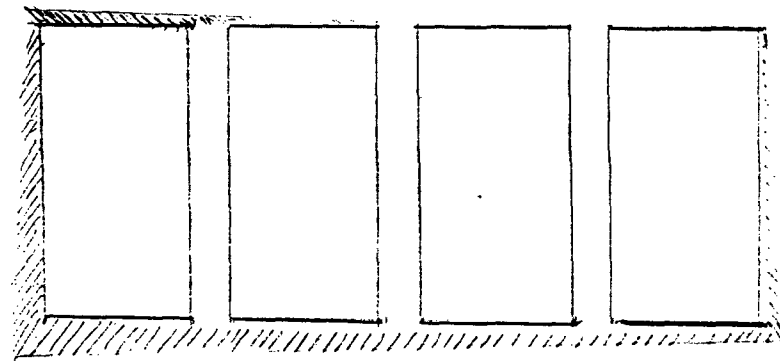
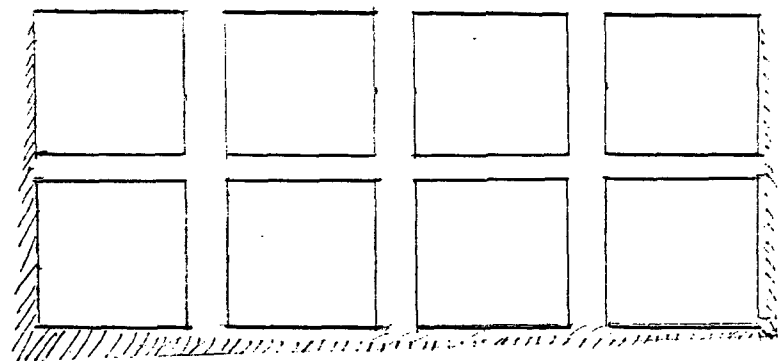
H₂S Readings (ppm)

time = 1345

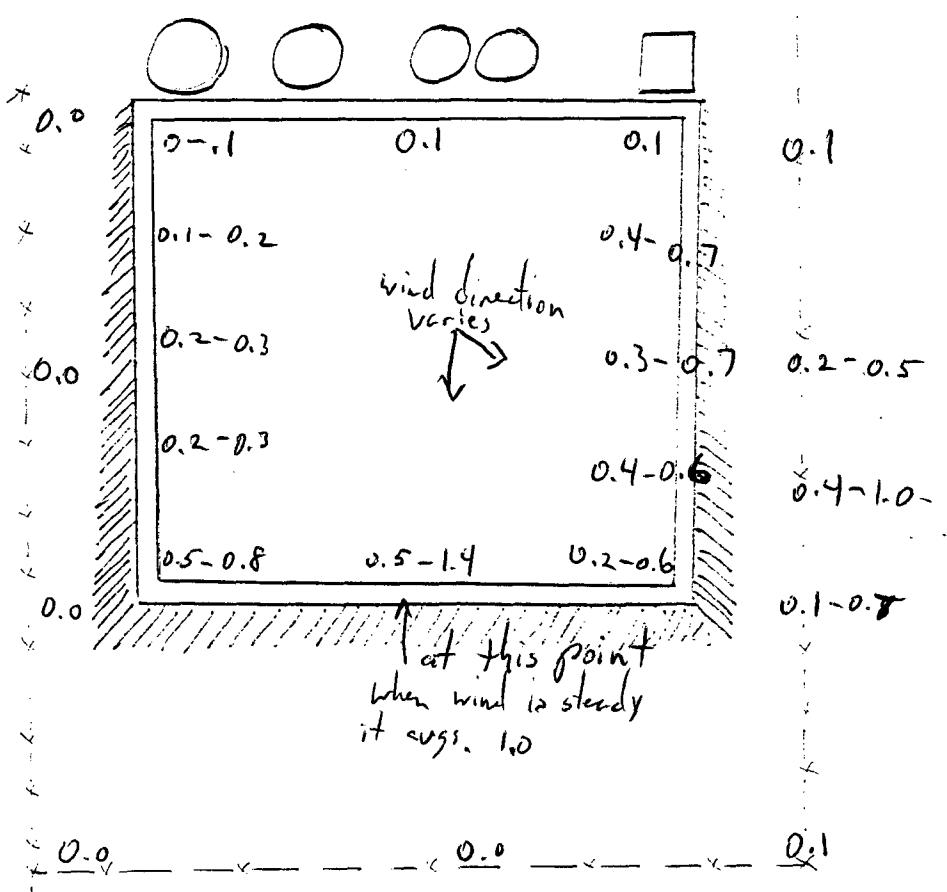
8/6/87

sprayers on

wind speed = 5-10 mph



Trailer



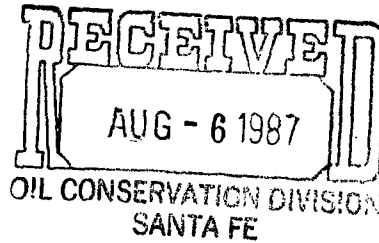
Environmental & Energy Services
Natural Gas Products Department



Conoco Inc.
P.O. Box 2197
Houston, TX 77252

*Fluid disposed
in Basins pond*

August 3, 1987



Roger C. Anderson
Oil Conservation Division
Energy and Minerals Department
State Land Office Building
P.O. Box 2088
Santa Fe, NM 87501-2088

Re: Wastewater Analyses
Conoco Inc., Natural Gas & Gas Products Department
San Juan Basin Gas Plant
Bloomfield, San Juan County

Dear Mr. Anderson:

Enclosed are the subject wastewater analyses which you requested in your telephone conversation with Terry Killian on July 23, 1987. The first samples shown were taken on December 11, 1986. The second analyses were taken in early July 1987 with an additional check made for sulfides.

If you have any questions or need additional information, please call me at (713) 293-1123.

Sincerely,

Rick McCalip

Rick McCalip
Coordinator

TLK/nl

TK-0798



**WESTERN
TECHNOLOGIES
INC.**

400 South Lorena Avenue
Farmington, New Mexico 87401
(505) 327-4966

LABORATORY REPORT

RECEIVED

Client Conoco, Inc. 30859
Post Office Box 3070
Bloomfield, NM 87413
Attn: Mr. Billy Thompson

JUL 10 87

ILAN GAS PLANT

Job No. _____
Lab./Invoice No. 31461658
Date of Report 12/22/86
Reviewed By D.A. Mader

Project San Juan Plant

Location Bloomfield, NM

Material/Specimen Water

Sampled By L. Veldman/WT Date 12/17/86

Source San Juan Plant Wastewater

Submitted By L. Veldman/WT Date 12/17/86

Test Procedure See Below

Authorized By Tony Dotson/Client Date 12/17/86

RESULTS

<u>ANALYTE</u>	<u>ANALYTICAL RESULTS</u>	<u>NOMINAL DETECTION LIMIT</u>
COD	36000 mg/l	2 mg/l
pH	7.01	0.01
TDS	42 mg/l	1 mg/l
Ca	10.6 mg/l	0.1 mg/l
Mg	0.71 mg/l	0.01 mg/l
Hardness	29 mg/l	5 mg/l
Oil & Grease	0.026 mg/l	0.1 mg/l
Phenols	5.5 mg/l	0.01 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," USEPA, SW 846, EMSL-Cincinnati, 1982.

Client (3)
Copies to: /cb



**WESTERN
TECHNOLOGIES
INC.**

400 South Lorena Avenue
Farmington, New Mexico 87401
(505) 327-4966

LABORATORY REPORT

Client

Conoco, Inc. 30859
Post Office Box 3070
Bloomfield, NM 87413
Attn: Mr. Billy Thompson

RECEIVED

JUL 10 87

SAN JUAN GAS PLANT

Job No.

Lab./Invoice No. 31461642

Date of Report 12/17/86

Reviewed By *G.A. Madrid*

Project San Juan Plant

Location Bloomfield, NM

Material/Specimen Water

Sampled By G. Madrid/WT

Date 12/11/86

Source San Juan Plant Wastewater

Submitted By G. Madrid/WT

Date 12/11/86

Test Procedure See Below

Authorized By Mitchell/Client

Date 12/11/86

RESULTS

<u>ANALYTE</u>	<u>ANALYTICAL RESULTS</u>	<u>NOMINAL DETECTION LIMIT</u>
TDS	176 mg/l	1 mg/l
COD	40320 mg/l	2 mg/l
pH	7.48	0.01
Oil & Grease	0.02 mg/l	0.1 mg/l

REFERENCE: "Test Methods for Evaluating Solid Waste,-Physical/Chemical Methods", USEPA, SW 846, EMSL-Cincinnati, 1982.

Copies to:

Client (3)
/cb

WESTERN TECHNOLOGIES

PROCESS WASTE WATER

COD	184568 mg/l
Oil/Grease	13.4 mg/l
Ph	4.69
TDS	100 mg/l
Phenols	4.7 mg/l
Sulfides	0

AMINE WASTE

318816 mg/l
47.7 mg/l
9.64
156184 mg/l - Oil Residue
less than 0.001 mg/l
0



MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal

Time 10:30 AM

Date 8/3/87

Originating Party

Other Parties

FRANK Clavey - O&H Tech

DAVE Boyer

Subject Weekend readings - Basin Disposal. H₂S problem

Discussion FRANK had a recorder at the site over the weekend on the access road. Peak readings were 0.2 - 0.5 ppm. Meter was in truck with partially closed windows. The truck was parked Thursday night at Payne's residence with three "spikes", the highest being 0.5 ppm

Conclusions or Agreements Will continue monitoring at night for awhile.

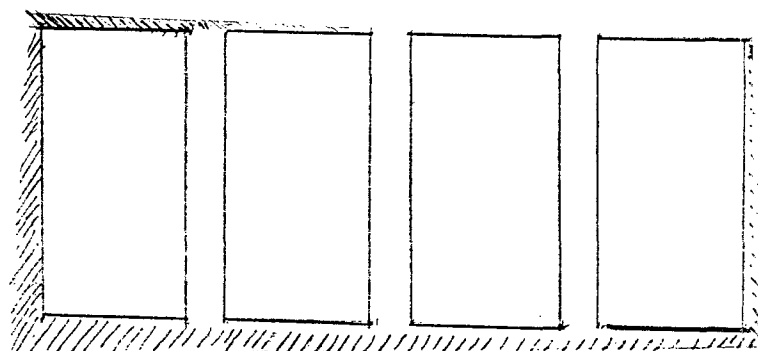
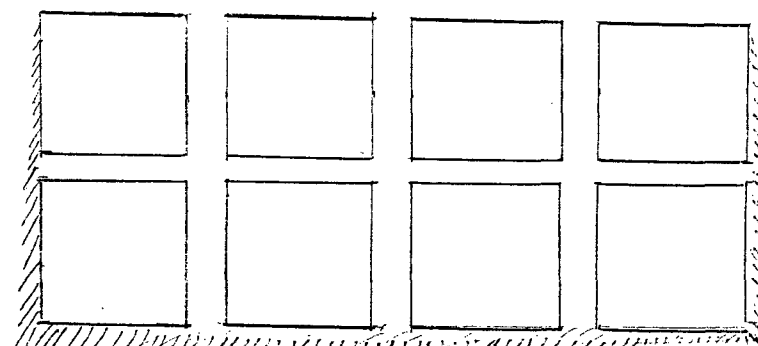
Distribution Basin File

Signed

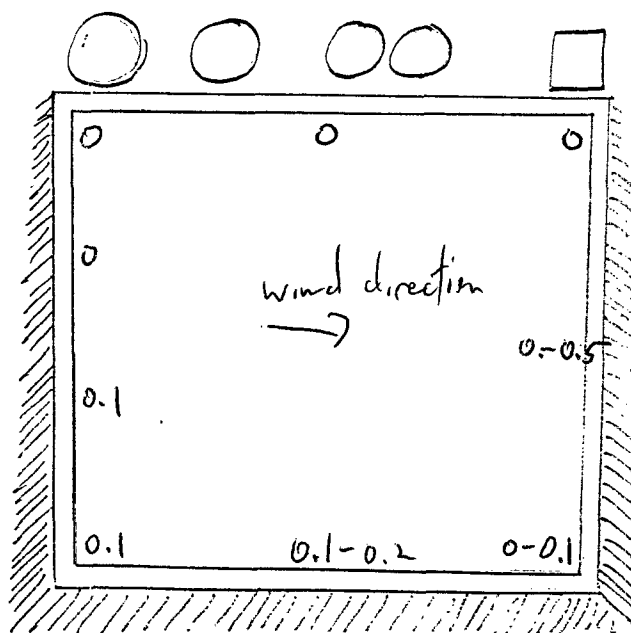
DAVE Boyer

Basin
Disposal

7/30/87
time = 1300



Trailer



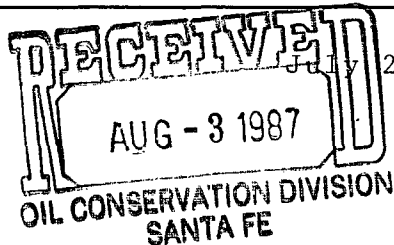
NOT TO SCALE



ENGINEERING & PRODUCTION CORP.

Petroleum Engineering Consulting
Lease Management
Contract Pumping

3001 Northridge Drive
P.O. Drawer 419
Farmington, New Mexico 87401
(505) 327-4892



July 29, 1987

William J. LeMay, Director
Energy & Minerals Department
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

REF: Basin Disposal, Inc.
Produced Water and Drilling Fluid
Disposal Facility,
San Juan County, New Mexico

Dear Mr. LeMay:

This is to advise you, as per your letter dated July 14, 1987, that a sign was erected at the facility on July 24, 1987.

Very truly yours,

Ewell N. Walsh, P.E.
President

ENW:rr

cc: Jerry Sandel
D. C. & David Turner



WALSH

ENGINEERING & PRODUCTION CORP.

Petroleum Engineering Consulting
Lease Management
Contract Pumping

3001 Northridge Drive
P.O. Drawer 419
Farmington, New Mexico 87401
[505] 327-4892

July 29, 1977

Mr. Roger Anderson
N.M. Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

REF: Basin Disposal, Inc.
Halliburton Reports of Treatments

Dear Roger:

Enclosed are the copies of treatment reports you requested.

If you have need of additional information, please do not hesitate to call me.

Very truly yours,

Ewell N. Walsh, P.E.
President

ENW:rr

cc: Frank Chavez, OCD Aztec, N.M.

cc: Jerry Sandel & D.C. Turner and David Turner

Enclosures

CUSTOMER

BASIC DISPOSAL

PAGE NO

JOB TYPE

Cichate Disposal Pit with Costic Soda DATE 7-7-87

7-7-87

FORM 2013 R-2

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	19.20							On Location
	19.30							Safety meeting
	19.45	4-5					200	Start Pumping Disposal H2O
	19.55	1/2	15				200	Start pumping Castic Soda
	20.10							Castic Soda Pumped
	20.15	6						Increase Pump Rate
	20.30		350					Shut Down
								Job Complete
7-882	1030							On location
	1405	5	118600					Start Pumping Thru Valve 1 st
	1500	5						Change To Valve 2 nd
	1530	5						" " 3 rd
	1600	5						" " 1 st
	1630	5						" " 2 nd
	1630	5						" " 3 rd
	1640							Shut Down Rig up 11-12
	1717	18				850		Pumping Valve #1
	1747	18				850		Pumping " #2 & 3
	1817	18				850		Pumping " #1 & 2
	1847	13				850		" " #2 & 3
	1943							Shut Down For Day
								7-9-87 (Castic in 115000 Gal.)
	0715	11				630		Start Pumping Valves 2 & 3
	0815	17				480		Valves 1 & 2
	0915	11				650		" 2 & 3
	1015	17				480		" 1 & 2
	1115	11				650		" 2 & 3
	1215	17				480		" 1 & 2
	1315	11				650		" 2 & 3
	1415	16				260		" 1 & 2
	1515	11				640		" 2 & 3
	1615	16				260		" 1 & 2
	1715	11				650		" 2 & 3
	1800							Shut Down & Released

WELL NO. Non Well LEASE Well TICKET NO. 408366
CUSTOMER Basin Disposal PAGE NO. 1
JOB TYPE Circulate Disposal Pit DATE 7-16-87

FORM 2013 R-2

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	0730	18				650		Pumping Through Valves 1 & 2
	0800	12				750		" " " 2 & 3
	0830	18				650		" " " 1 & 2
	0900	12				800		" " " 2 & 3
	0930	12						Changes Transports " "
	0935	18				750		Pumping Through " 1 & 2
	0938							Blew PVC Pipe at Valve #1
	0940	12				850		Pumping Through VAL 2 & 3
	1100							Repair line on Valve #1
	1105	18				750		Pumping Through Valves 1 & 2
	1130	12				850		" " " 2 & 3
	1200	18				750		" " " 1 & 2
	1220	13						Blew oil line on Pump - slowed Rate
	1230	12				890		Pumping Through Valves 2 & 3
	1300	12				500		" " " 1 & 2
	1330	12				790		" " " 2 & 3
	1336							Run out of Bleach in 213,700 Gal
	1400	12				500		Pumping Through Valves 1 & 2
	1406	18				850		oil line repaired increase Rate
	1430	12				890		Pumping Through Valves 2 & 3
	1500	18				750		" " " 1 & 2
	1530	12				850		" " " 2 & 3
	1600	18				790		" " " 1 & 2
	1630	12				860		" " " 2 & 3
	1700	18				760		" " " 1 & 2
	1730	12				870		" " " 2 & 3
	1800	18				740		" " " 1 & 2
	1830	12				860		" " " 2 & 3
	1900	18				750		" " " 1 & 2
	1930	12				860		" " " 2 & 3
	2000	18				750		" " " 1 & 2
	2030	12				860		start Pump Bleach
	2100	18				770		" " " 2 & 3
	2130	12				860		" " " 1 & 2
	2145	18				760		Bleach in shut down
								Bleach in 255,840 Gal.
								Pump Total 551,000 Gal.

TO BLEND BLEACH AT RATE OF
2000 gals. (48 Bbl's) PER HOUR
BLEACH PUMP RATE

PUMP RATE		BARRELS BRL. WATER		TOTAL VOLUME PUMPED - BBL'S. (42 gals.)									
BARRELS PER MINUTE	BARRELS PER HOUR	PER MINUTE	PER HOUR	1	2	3	4	5	6	7	8	9	10
10	600	0.80	48	600	1200	1800	2400	3000	3600	4200	4800	5400	6000
11	660	0.80	48	660	1320	1980	2640	3300	3960	4620	5280	5940	6600
12	720	0.80	48	720	1440	2160	2880	3600	4320	5040	5760	6480	7200
13	780	0.80	48	780	1560	2340	3120	3900	4680	5460	6240	7020	7800
14	840	0.80	48	840	1680	2520	3360	4200	5040	5880	6720	7560	8400
15	900	0.80	48	900	1800	2700	3600	4500	5400	6300	7200	8100	9000
16	960	0.80	48	960	1920	2880	3840	4800	5760	6720	7680	8640	9600
17	1020	0.80	48	1020	2040	3060	4080	5100	6120	7140	8160	9180	10200
18	1080	0.80	48	1080	2160	3240	4320	5400	6480	7560	8640	9720	10800
19	1140	0.80	48	1140	2280	3420	4560	5700	6840	7980	9120	10260	11400
20	1200	0.80	48	1200	2400	3600	4800	6000	7200	8400	9600	10800	12000

PUMP RATE

BARRELS PER MINUTE		TOTAL VOLUME PUMPED - GALLONS									
BARRELS PER MINUTE	BARRELS PER HOUR	1	2	3	4	5	6	7	8	9	10
10	600	25,200	50,400	75,600	100,800	126,000	151,200	176,400	201,600	226,800	252,000
11	660	27,720	55,440	83,160	110,880	138,600	166,320	194,040	221,760	249,480	277,200
12	720	30,240	60,480	90,720	120,960	151,200	181,440	211,680	241,920	272,160	302,400
13	780	32,760	65,520	98,280	131,040	163,800	196,560	229,320	262,080	294,840	327,600
14	840	35,280	70,560	105,840	141,120	176,400	211,680	246,960	282,240	317,520	352,800
15	900	37,800	75,600	113,400	151,200	189,000	226,800	264,600	302,400	340,200	378,000
16	960	40,320	80,640	120,960	161,280	201,600	241,920	282,240	322,560	362,880	403,200
17	1020	42,840	85,680	128,520	171,360	214,200	257,040	299,880	342,720	385,560	428,400
18	1080	45,360	90,720	136,080	181,440	226,800	272,160	317,520	362,880	408,240	453,600
19	1140	47,880	95,760	143,640	191,520	239,400	287,280	335,160	383,040	430,920	478,800
20	1200	50,400	100,800	151,200	201,600	252,000	302,400	352,800	403,200	453,600	504,000



WALSH

ENGINEERING & PRODUCTION CORP.

Petroleum Engineering Consulting
Lease Management
Contract Pumping

3001 Northridge Drive
P.O. Drawer 419
Farmington, New Mexico 87401
(505) 327-4892

July 29, 1987

Mr. Roger Anderson
Environmental Engineer Specialist 1
N.M. Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

REF: Basin Disposal, Inc.
Treatment Reports

Dear Roger:

Enclosed are copies of treatments utilized for the pond at the disposal site.

If you have need of additional information please do not hesitate to call me.

Very truly yours,

Ewell N. Walsh, P.E.
President

ENW:rr
cc: Frank Chavez, OCD, Aztec, N.M.
cc: Jerry Sandel & D. C. Turner and David Turner
Enclosure



BASIN DISPOSAL, INC.

TREATMENT NO. 1

7/1/87

Water truck, with 40 barrels (1680 gallons) water vacuum
10 barrels (540 gallons) 10.0% Bleach (Sodium Hypochloride)
into truck. Using yellow dog pump, spray mixture (2120 gallons)
over east and south surface of disposal pond.



BASIN DISPOSAL, INC.

TREATMENT NO. 2

7/3/87

Water truck with 30 barrels (1260 gallons) water vacuum
on 54 barrels (2916 gallons) 10.0% Bleach (Sodium Hypochloride).
Using yellow dog pump, spray mixture (4175 gallons) over north,
east and south surface of pond.



BASIN DISPOSAL, INC.

TREATMENT NO. 3

7/7/87

Rig up Halliburton pump truck to take water from pond and pump through discharge system from skimmer tanks. Blend in 15 barrels Caustic Soda (Sodium Hydroxide - 8,200 lbs.) in 75 barrels (3,150 gallons) pond water.



BASIN DISPOSAL, INC.

TREATMENT NO. 4

7/8/87

Treat disposal pond with 40 barrels Caustic Soda (Sodium Hydroxide-24,200 lbs.) in 2,738 barrels (115,000 gallons) pond water. Circulate pond for 2 hours. Circulate with spray system pump.

7/9/87

Circulate with Halliburton for 11.0 hours. Circulate with spray system pump for 10 hours. Total circulated volume 628,000 gallons.



BASIN DISPOSAL, INC.

TREATMENT NO. 5

7/16/87

Treat pond with 16,200 gallons 10.0% Bleach (Sodium Hypochloride). Pump equipment - Halliburton blender and V-12 twin pumper. Mix bleach with pond water. 16,200 gallons pond water. Pump total of 551,000 gallons pond water with Halliburton and 336,000 gallons pond water with spray system pump.



BASIN DISPOSAL, INC.

TREATMENT NO. 6

7/18/87

With water truck mix 25 lbs. HTH (65.0% Calcium Hypochloride) with 3,200 gallons pond water in truck and discharge into pond near suction for spray system pump. Circulate pond water with spray system pump. Water discharged to pond through several spray pipes without spray heads. Total loads treated - 20 loads, 64,000 gallons, 500 lbs. 65.0% Calcium Hypochloride. Circulate 240,000 gallons pond water with spray system pump.



BASIN DISPOSAL, INC.

TREATMENT NO. 7

7/19/87

With water truck mix 25 lbs. HTH (65.0% Calcium Hypochloride) with 3,200 gallons pond water in truck and discharge into pond near suction for spray system pump. Circulate pond water with spray system pump. Water discharged to pond through several spray pipes without spray heads. Total loads treated - 20 loads, 64,000 gallons, 500 lbs. 65.0% Calcium Hypochloride. Circulate 240,000 gallons pond water with spray system pump.



BASIN DISPOSAL, INC.

PREVENTIVE TREATMENT

7-27-87

Installation to inject 100% Bleach (Sodium Hypochloride) into spray system completed.

Spray system, with injection of Bleach, will be utilized to control Hydrogen Sulphide emissions from disposal pond.



ENGINEERING & PRODUCTION CORP.

Petroleum Engineering Consulting
Lease Management
Contract Pumping

3001 Northridge Drive
P.O. Drawer 419
Farmington, New Mexico 87401
(505) 327-4892



WJ
To: David B

August 12, 1987

RECEIVED

AUG 13 1987

OIL CONSERVATION DIVISION

Mr. William J. LeMay
Division Director
Energy & Minerals Department
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

REF: Basin Disposal, Inc.
Spray Operation

Dear Mr. LeMay:

Attached is a copy of instructions posted at the disposal pit site at 7:30 AM on August 12, 1987.

The instructions were prepared as per our telephone conversation of August 11, 1987.

Very truly yours,

Ewell N. Walsh, P.E.
President

ENW:rr

cc: Frank Chavez, OCD, Aztec, N.M.
Jerry Sandel
D. C. & David Turner

Enclosures

BASIN DISPOSAL, INC.

SPRAY OPERATION

EFFECTIVE AUGUST 12, 1987

1. TAKE MONITOR READINGS EVERY TWO HOURS (WITH SPRAY OR NO SPRAY).
2. DO NOT SPRAY WITH WINDS ABOVE 15 MILES PER HOUR.
3. PUT BLEACH IN SPRAY AT ALL TIMES WHILE SPRAYING.
4. SPRAY ONLY WHEN WINDS ARE FROM SOUTHWEST, SOUTHEAST OR SOUTH.
5. IF HAVE READING OF 0.2 ppm ON SOUTH FENCE, STATIONS K, L, M, AND N, TAKE READING ONE HOUR LATER AT K, L, M, AND N.

A. IF SECOND READING 0.2 OR ABOVE, SHUT DOWN SPRAY.

NOTE: SHUTDOWN SPRAY IF HAVE TWO READINGS, ONE HOUR
APART, OF 0.2 OR ABOVE ON SOUTH FENCE.

B. IF SECOND READING IS NOT 0.2 OR ABOVE, CONTINUE TO
SPRAY.

C. CHECK READINGS, ONE HOUR APART, AFTER SHUTDOWN SPRAY.

WHEN HAVE TWO READINGS, ONE HOUR APART, BELOW 0.2

START SPRAY IF WHEN DIRECTIONS ARE SO., SW. OR SE.

6. SHUT DOWN SPRAY IF HAVE 0.7 ppm AT ANY STATION FOR TWO.
READINGS, ONE HOUR APART.

7. DO NOT SPRAY AFTER 6:00 P.M.



Office of Epidemiology
Post Office Box 968
Santa Fe, New Mexico 87504-0968

(505) 827-0006

Harry F. Hull, M.D., State Epidemiologist

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

HYDROGEN SULFIDE HEALTH EFFECTS FACT SHEET

July 29, 1987

Millicent Eidson, Environmental Epidemiologist

People living near plants which give off hydrogen sulfide understandably experience concern about the health effects which may occur from the fumes. The Office of Epidemiology and the federal Agency for Toxic Substances and Disease Registry (ATSDR) have reviewed the available information on this subject.

Of people exposed to hydrogen sulfide, most are exposed at their jobs, and the symptoms associated with these high levels are well known. People who are exposed to hydrogen sulfide outside, for instance near their homes or places of recreational activity, are exposed to much lower doses. The resulting symptoms are less serious and thus more difficult to document as being caused by hydrogen sulfide, because they are also caused by many other diseases and exposures.

According to a Morbidity, Mortality Weekly Report (MMWR) summary (Aug. 22, 1986) these are the health effects which may result from inhaling hydrogen sulfide in different amounts. The levels in the air would have to be measured with special environmental sampling equipment.

250 ppm, prolonged exposure: fluid in the lungs
above 50 ppm, 1 hour: sudden eye redness, eye pain, tearing, becoming bothered by light, further damage to the eye
50 ppm, prolonged exposure: runny nose, inflamed throat and lungs
low concentrations (levels not specified): headache, fatigue, irritability, insomnia, eye and respiratory irritation, gastrointestinal disturbances
somewhat higher concentrations (levels not specified): affects central nervous system (part of the brain), causing excitement and dizziness
The lowest level which can be smelled is 0.13 ppm.

Another book discussed the fact that, even after very high doses of hydrogen sulfide resulting in severe symptoms, recovery is usually complete (the symptoms go away and no health effects remain). (Handbook of Toxic and Hazardous Chemicals, 1981, p. 383) In addition, the book mentions that serious health effects have not been documented to be related to long-term low level hydrogen sulfide exposure.

Any physicians who would like copies of these articles is welcome to contact us. Any person who wishes to avoid all symptoms from hydrogen sulfide should avoid being around it whenever they can smell it, since the literature appears to indicate that some symptoms can occur at low levels. These symptoms which occur at low levels, however, are not life-threatening and will disappear when the person leaves the area.

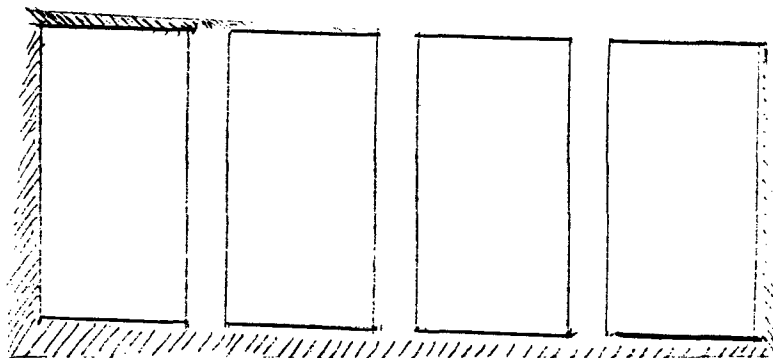
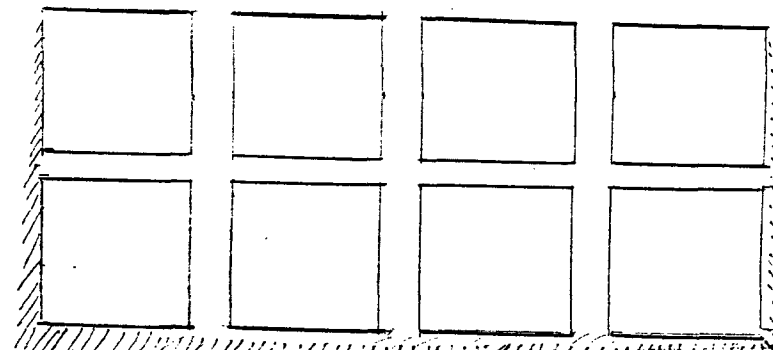
03511
080053

H₂S Readings (ppm)

7/29/87

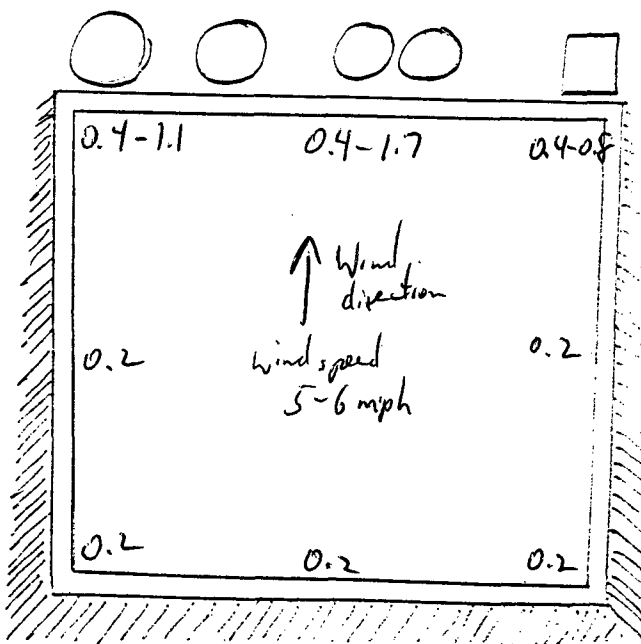
DO time = 1000

Readings by Olson, PCS
APR



Trailer

0.2-0.4





MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal

Time 10 AM

Date 7/20/87

Originating Party

Other Parties

Barbara Hargis EID AIR
827-0062 Quality

Dave Boyer OCB

Subject Basin Disposal - Update

Discussion

Barbara called to ask about current situation. She had received a call from Chris Shuey about the situation. I briefed her, and described what actions had been taken. I told her I thought this was an unusual situation and that it was not typical of these facilities. She said they were looking into possibility of monitoring to see if a rule is needed. I told her I hoped that additional regulation was not needed since these facilities were needed by OCB to dispose of oil wastewater. She stressed

Conclusions or Agreements

that EID wanted to avoid recurrence of a Lee Acres situation, and would work with OCB before going ahead with rule-making. I sent her copies of correspondence with Basin Disposal and the H2S rule.

Distribution

Basin Disposal file

Signed

David H. Boyer



MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal

Time 11:20 am

Date 7/27/87

Originating Party

Other Parties

Dave Boyer O&G

Red Walsh, Walsh Eng

Subject

Basin Disposal - Update

Discussion

Called Red to see what the situation was this morning. He said had one high reading (about 2ppm) at berm and 0.7 at NW fence line this am. Wind dispersing. Was setting up to add bleach to spray line and will fog at night to knock down H₂S. Test showed went from 0.4-0.6 down to 0.1 with this method when wind calm. Will be midweek before testing and decisions on bactericide are made.

Conclusions or Agreements

Suggested that if this* doesn't work, be prepared to offer housing to residents.

*Temporary measures

Distribution

Basin Disposal file

Signed

Larry G. Boyer



MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal

Time 1:30 pm

Date 1/27/87

Originating Party

Other Parties

Millie Eidson EID
Epidemiology 827-0006

David Boyer OCB

Subject Basin Disposal - Possible Epidemiology review

Discussion

Millie called to get update. Said that residents have gotten Joe Goldberg, former H&E secretary, as attorney. Dir. Harry Hull is now interested in pursuing interviews of residents if review of files warrants it.

Conclusions or Agreements

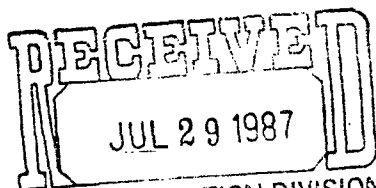
Told Millie file in Farmington this week so Roger can write up chronology. She asked for copy when done. Told her file is full of technical data and she should come review it. I will call her when chronology is complete.

Distribution

Basin Disposal File

Signed

David H. Boyer



July 23, 1987

David Boyer, Chief
Environmental Bureau
N.M. Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Dear Mr. Boyer:

In response to your request for reference information on the chronic health effects from human exposure to low level concentrations of hydrogen sulfide, a search was made of the following data bases:

1. the Hazardous Substances Data Bank, a toxicology data network operated by the National Library of Medicine, and
2. the Oil and Hazardous Material Technical Assistance Data System maintained by the Environmental Protection Agency.

While acute and subacute effects are widely identified, no reference information was indicated on human chronic, low level effects.

The computer based search was supplimented by a manual review of selected technical literature. Emphasis was placed on occupational exposure since it was felt that if chronic effects had been investigated and reported, workers would be the subgroup most likely studied. Again, chronic effects were not reported, or statements included as to the general lack of findings in this area.

A NIOSH document summarized an air pollution incident involving low concentrations of hydrogen sulfide. Symptoms reportedly were consistant with those normally found at higher levels. However, there was no indication of any followup study on the residual effects from the incident.

I hope the above information will be of assistance to you and if we may be of further service, you will feel free to contact us.

Sincerely yours,

George L. Pettigrew
George L. Pettigrew
Regional Representative, ATSDR

QIR

Boyer note on agency and address:

Agency for Toxic Substances and Disease Registry
U.S. public Health Service
C/O USEPA-Region VI, 6H-ES
1445 Ross Ave.
Dallas, Texas 75202
(214) 655-6726

MEMORANDUM

July 22, 1987

TO: Pat Hargis and other residents near Basin Disposal, Aztec, N.M.

FROM: Chris Shuey, Southwest Research and Information Center (P.O. Box 4524, Albuquerque, N.M., 87106, 505-262-1862)

RE: Regulatory information on Hydrogen Sulfide

In the short time I have had to research the subject of exposure to and control of hydrogen sulfide gas (H_2S), I have determined that the state Environmental Improvement Division should have the principal regulatory function in dealing with Basin Disposal's releases. I have summarized the regulatory information in this memorandum. For your information, I have obtained relevant health and exposure documents and made copies for community members. My suggestions regarding community organizing and political involvement will be discussed at this evening's community meeting.

RESPONSIBLE REGULATORY AGENCY: New Mexico Environmental Improvement Division, Air Quality Bureau

FACILITIES SUBJECT TO REGULATION: EID Issues permits and monitors compliances for existing and new sources of air pollution; hydrogen sulfide is a regulated air pollutant.

AMBIENT AIR QUALITY STANDARDS FOR HYDROGEN SULFIDE ADOPTED BY THE NEW MEXICO ENVIRONMENTAL IMPROVEMENT BOARD:

Statewide, except Permian Basin	0.01 ppm, 1-hr. ave. not to be exceed >1 time per year
Permian Basin, nonmetropolitan	0.1 ppm, .5-hr. ave.
Permian Basin, metropolitan areas	0.03 ppm, 1-hr. ave.

REGULATORY STANDARDS ADOPTED BY NMEIB FOR STATIONARY SOURCES:

Statewide -- H_2S emissions not to exceed 10 lbs./hr. or 25 tons/yr.

"Stationary source" defined as a building, facility or structure that emits or may emit an air pollutant.

AIR QUALITY PERMITTING STEPS UNDERTAKEN BY EID:

STEP 1 — Permits required for stationary sources that emit 10 lbs./hr. or 25 tons/yr. or more H_2S ; these emissions are called "trigger" amounts.

STEP 2 — A facility that emits H_2S in amounts greater than the "trigger" amounts must demonstrate that those emissions will not cause an ambient air quality standard (in this case, 0.01 ppm H_2S) to be exceeded outside the facility property.

MEMORANDUM

July 22, 1987

page 2

STEP 3 — If an ambient air quality standard is exceeded or likely to be exceeded, the facility must develop and use treatment technology appropriate to the air pollutant.

AUTHORITY OVER AIR EMISSIONS FROM BASIN DISPOSAL:

EID's Air Quality Bureau says Basin Disposal does not have an air quality permit. Bruce Nicholson, head of the Bureau's permit section, said quantifying BD's hydrogen sulfide releases "would be difficult."

EID air quality officials say they do not know why the Oil Conservation Division would have any legal authority to regulate air emissions from BD. Nicholson said he is sure OCD has no jurisdiction over air emissions from BD.

POSSIBLE REMEDIES TO THE HYDROGEN SULFIDE PROBLEM NEAR BASIN DISPOSAL:

1. EID Air Quality Bureau asks Basin Disposal to reevaluate its H₂S emissions inventory toward the goal of seeking a permit if one is shown to be needed.
2. EID Air Quality would look at developing a regulation for centralized produced water and oil field waste disposal facilities; this would require several years of air quality monitoring at such facilities prior to regulation development and promulgation by the state Environmental Improvement Board.
3. Report all exposure information and ambient air quality data to the U.S. EPA's Office of Environmental Health Assessment and use citizen and congressional pressures to have EPA conduct monitoring surveys at facilities like Basin Disposal.
4. BD should continue to apply the treatments that have recently reduced H₂S levels to below odor thresholds.

THE BOTTOM LINE:

EID Air Quality officials (Nicholson, permits, 827-0078; Cecilia Williams, air toxics, 827-0047; Barbara Hargis, legal/enforcement, 827-2863) say the "burden" is on EID, not OCD, to respond to the public health hazards associated with H₂S releases in and around BD's facility. All EID and EPA officials (Ms. Harriett Ammann, 915-541-4930) agree that 13 ppm and 20 ppm measured near Pat Hargis's home are levels that constitute significant public health threats and must be corrected immediately.

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION



GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

July 20, 1987

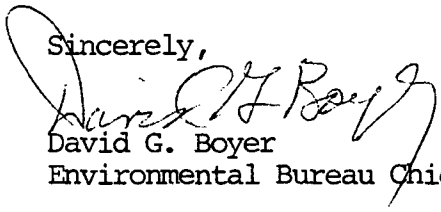
Mr. Chester F. Miller, III
Attorney-at-Law
300 West Arrington
Farmington, New Mexico 87401

RE: Basin Disposal

Dear Mr. Miller:

Attached are copies of recent correspondence between OCD and Basin Disposal regarding the recent H₂S incident and other matters. Also included is all the information in our files on H₂S toxicity, OSHA levels, etc.

Sincerely,


David G. Boyer
Environmental Bureau Chief

DGB/cr

Attachments

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION



GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

July 20, 1987

Mr. John A. Dean, Jr.
Attorney-at-Law
506 West Arrington
Farmington, New Mexico 87401

RE: Basin Disposal

Dear Mr. Dean:

Attached are copies of recent correspondence between OCD and Basin Disposal regarding the recent H₂S incident and other matters. Also included is all the information in our files on H₂S toxicity, OSHA levels, etc.

Sincerely,


David G. Boyer
Environmental Bureau Chief

DGB/cr

Attachments

cc: Perry Pearce, Montgomery & Andrews

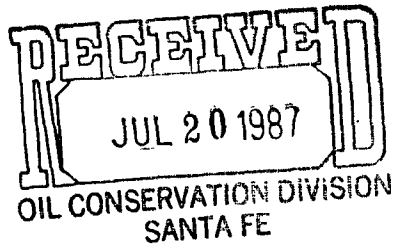


WALSH

ENGINEERING & PRODUCTION CORP.

Petroleum Engineering Consulting
Lease Management
Contract Pumping

3001 Northridge Drive
P.O. Drawer 419
Farmington, New Mexico 87401
(505) 327-4892



July 17, 1987

Mr. Roger Anderson
N.M. Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Dear Mr. Anderson:

Enclosed are the copies of readings you requested.

Please note that only readings on berm of pit were taken in day time and only readings at night were taken on highway and road to site.

Very truly yours,

Ewell N. Walsh, P.E.
President

ENW:rr

Enclosures

DATE _____

TIME _____

Spray-Yes _____

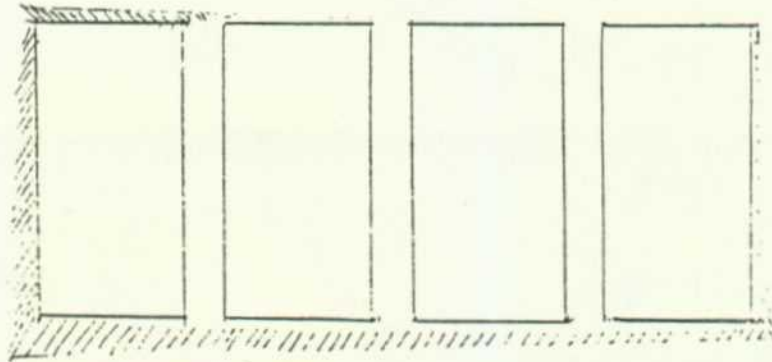
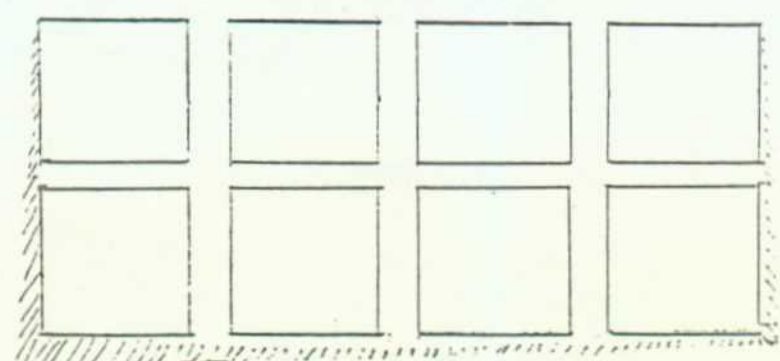
No _____

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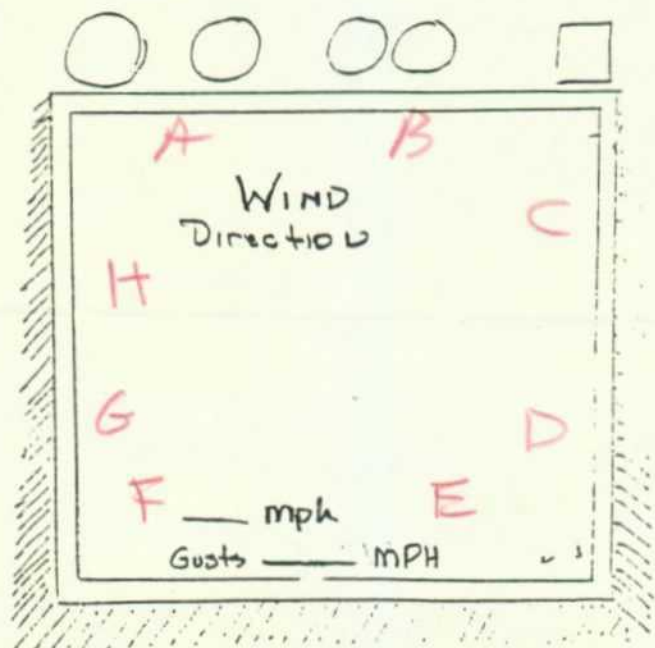
() - Bottom of BERM

[] - FENCE

< > - Other

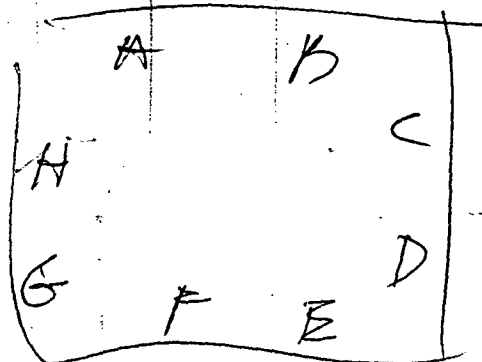


Trailer

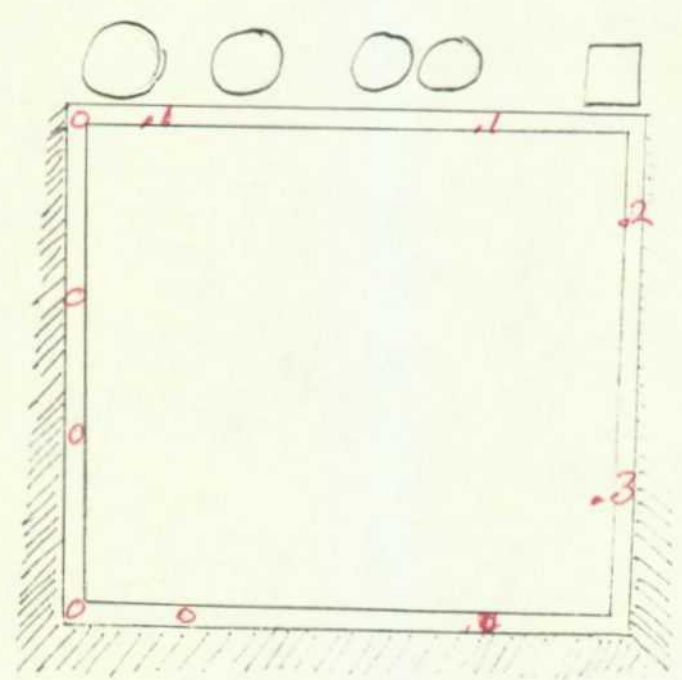
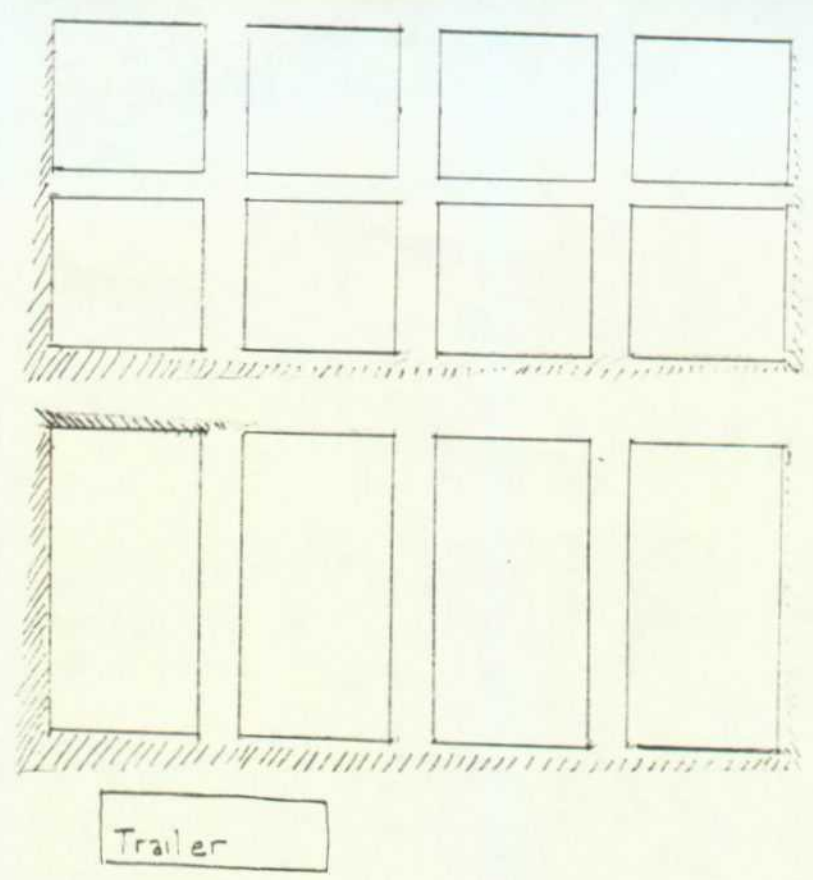


DATE	TIME	A	B	C	D	E	F	G	H	WIND
1/10	9:30 AM	0-3	0.4-3	0.3	0.5-2.7	0.4-0.8	0.4	4.2 0.4-0.7		S.E. 0
1/10	12:00 AM	0-3-5.0	0	1.5-4.0	2.0-19.0	2.0-12	0	0	0	S.W. 10-15
1/10	2:00 PM	0-5	0-5	0-5-2.0	3.0-13.0	2.0-6.0	3.0	6.0	0.5	S.W. 15-20
1/10	4:00 PM	0.5	0.5	1.0-4.5	3.5-8-5	3.0-9.0	3.5-7.5	1.5-2.0		S.W. 10-20
1/10	6:00 PM	0-2	0-2	0-2	2.5-8.0	3.0-9.0	5.0-	10.0	1.0	S.W. 15-20
1/11	8:00 AM	4.0	5.0	2.0	7.0	9.0	2.0	2.0	1.0	S.E. 0-5
1/11	10:00 AM	1.0	1.0	4-5	8-5	9.0	8.0	12.0	3.0	S.W. 5-10
1/11	12:00 AM	0	0	11.0	11.0	8.0	9.0	8.0	0	S.W. 5-10
1/11	2:00 PM	0	0	0	2.0-7.0	2.5-6.0	4.0-9.0	2.5-9.0	1.5-4.0	N.W. 10-20
1/11	4:00 PM	0	0	1.5-6.0	3.5-11.0	4.5-11.0	4.5-11.0	2.0	1.0	N.W. 10-20
1/11	6:00 PM	0	0	1.0-5.0	1.0-8.0	3.0-12.0	3.0-13.0	1.0	0	S.W. 10-15
1/12	8:00 AM	0	0	1.5-6.0	2.0-9.5	3.0-12.0	3.5-9.0	0-3.0	0.3.0	S.W. 0-5
1/12	10:00 AM	0	0	0-2.0	1.0-3.0	4.0-11.0	5.0-11.0	3.0-6.0	1.0-4.0	N.W. 10-15
1/12	12:00 AM	0	0	1.0-1.0	0-2.0	3.0-9.0	3.0-9.5	1.0-4.5	0	S.W. 15-20
1/12	2:00 PM	0	0	0-1.0	0-2.0	3.5-10.0	2.5-8.0	1.0-4.5	0-2.0	N.W. 15-20
1/12	4:00 PM	0	0	0-1.0	0-3.0	3.0-5.0	3.0-9.0	0-5.0	1.0-3.0	N.W. 15-25

0 0-00



Basin
Disposal



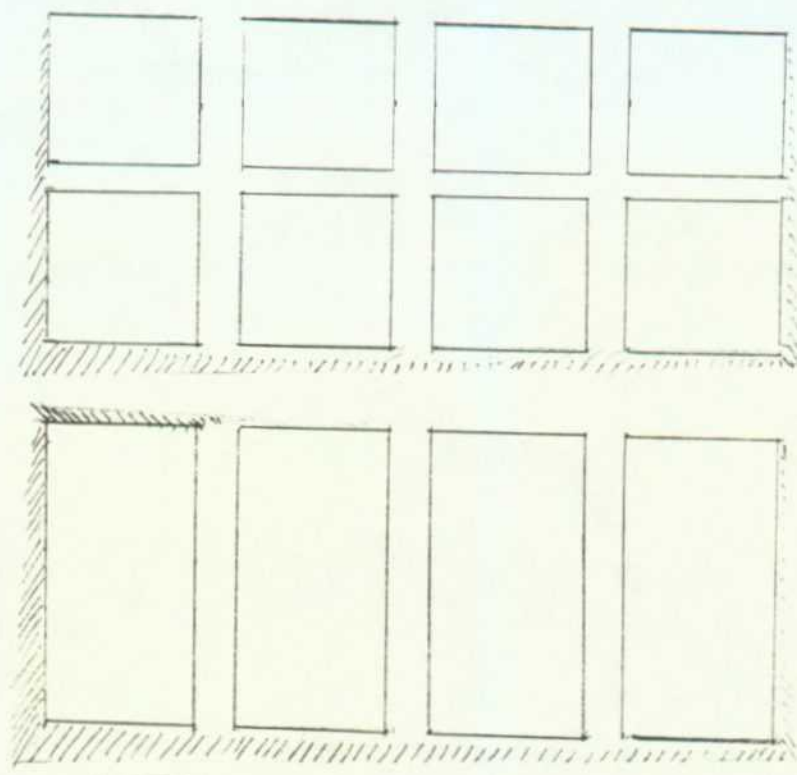
7/17/87 0900

Sprayers on
0 to 5 mph

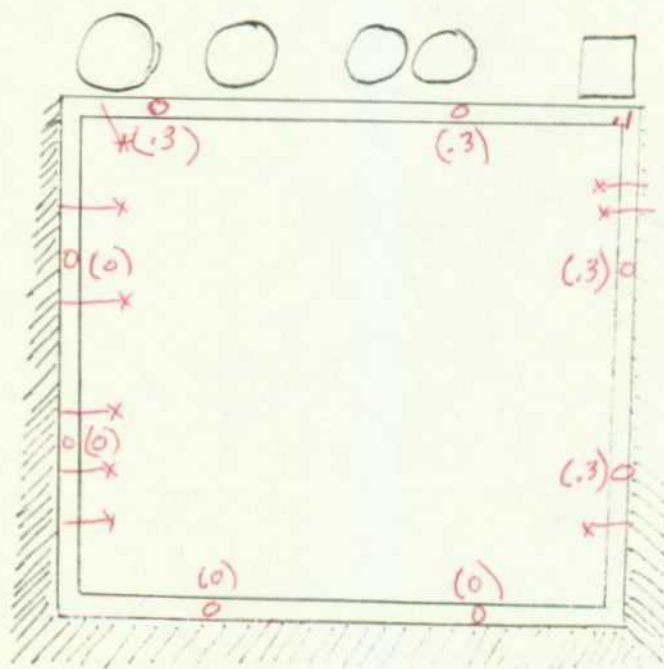


Readings by Olson, Oct 8
ARTS

Basin
Disposal



Trailer



7/17/87 0800

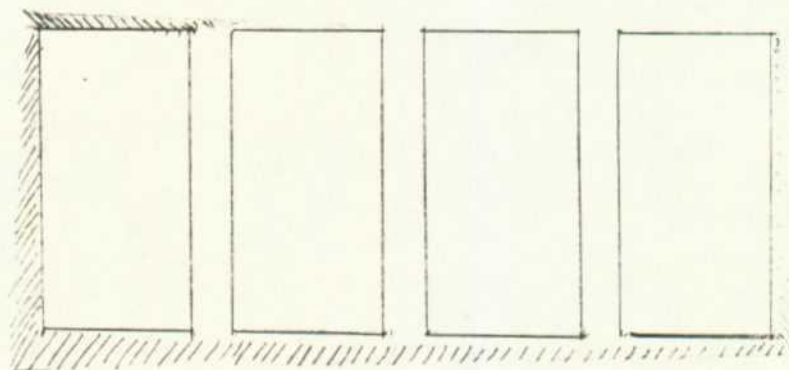
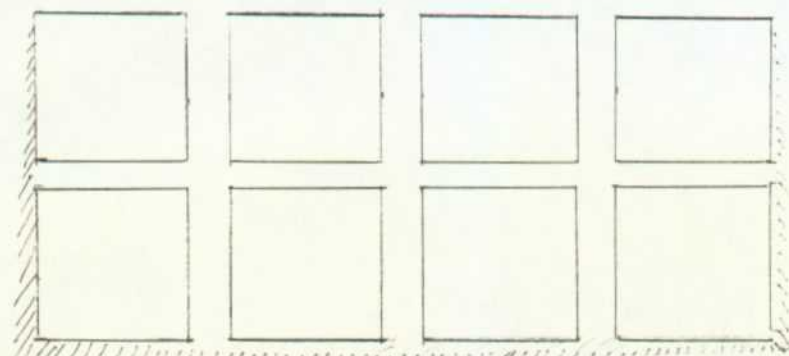
() WATER LEVEL

WIND 5mph

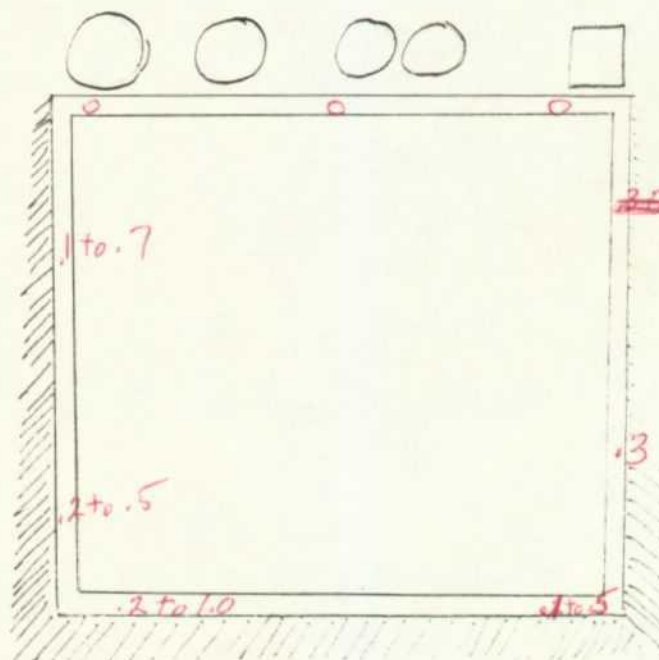


Readings by Olson/ocb
24/18

Basin
Disposal

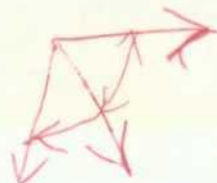


Trailer



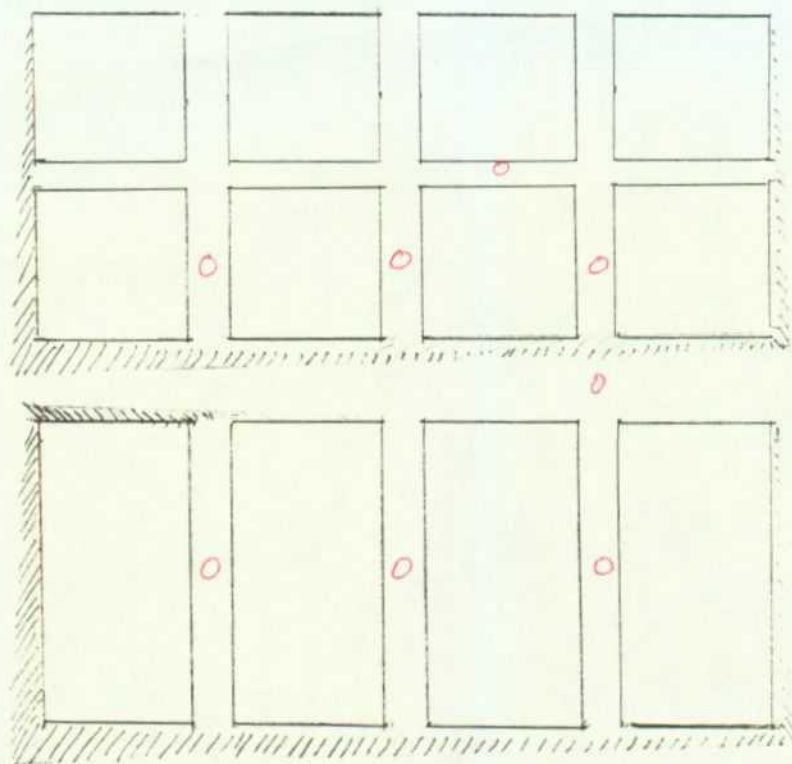
7/16/87 1320 hrs

WIND 10 to 15 mph

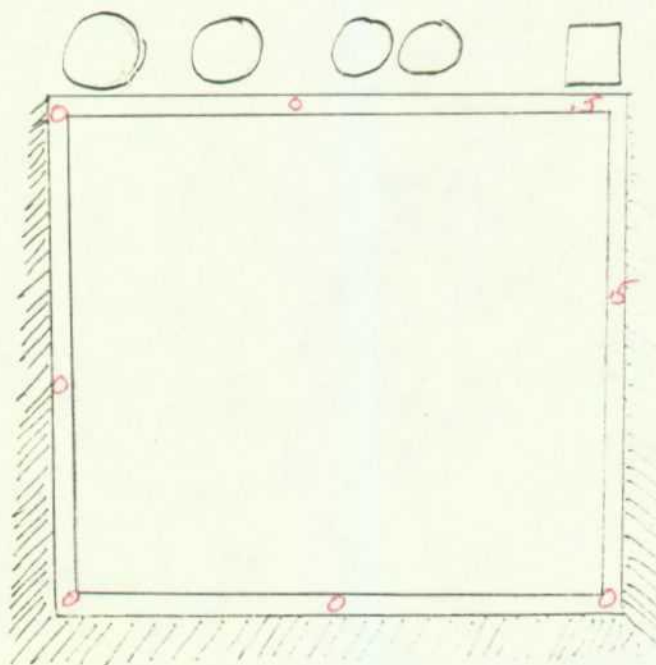


Readings by Olson, Oct 2/98

Basin
Disposal



Trailer

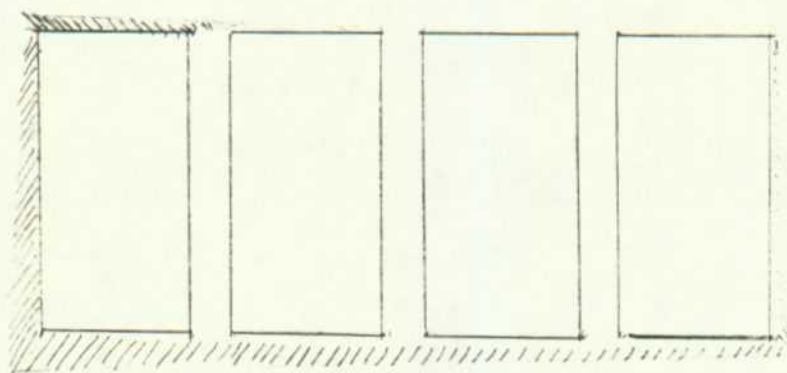
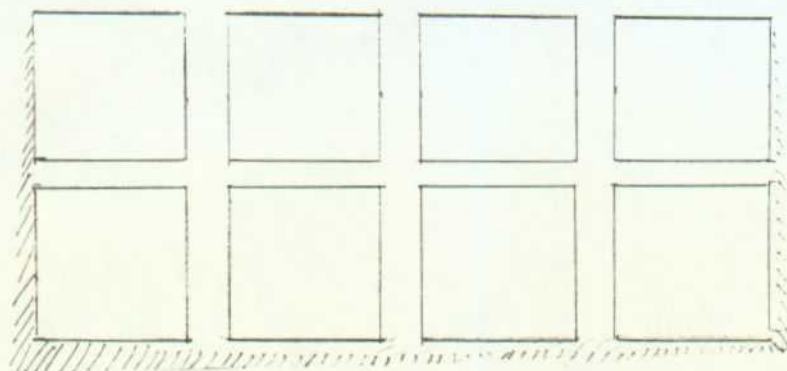


7/16/87 1100 hrs
DURING TREATMENT

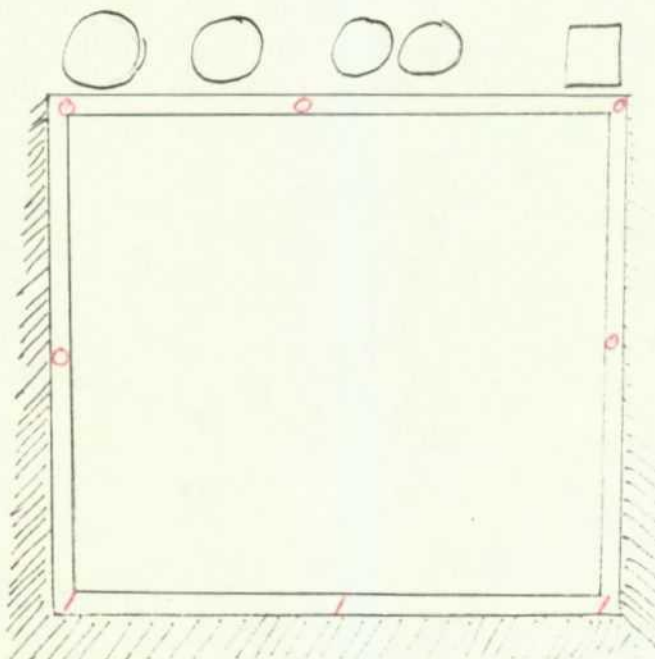
WIND < 5 MPH

→
Readings by Olson, Oct
1988

B3511
D80531



Trailer

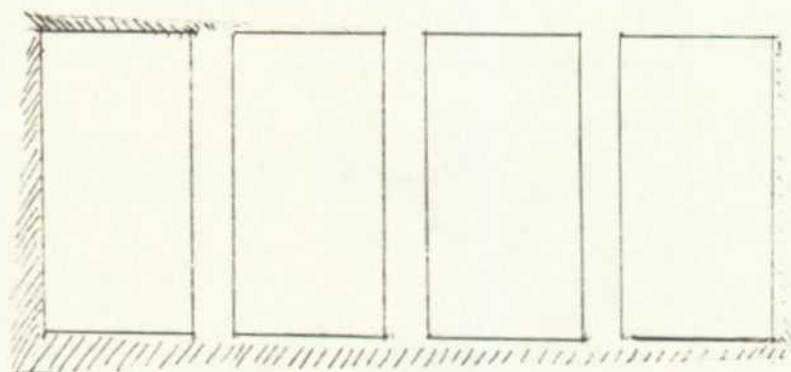
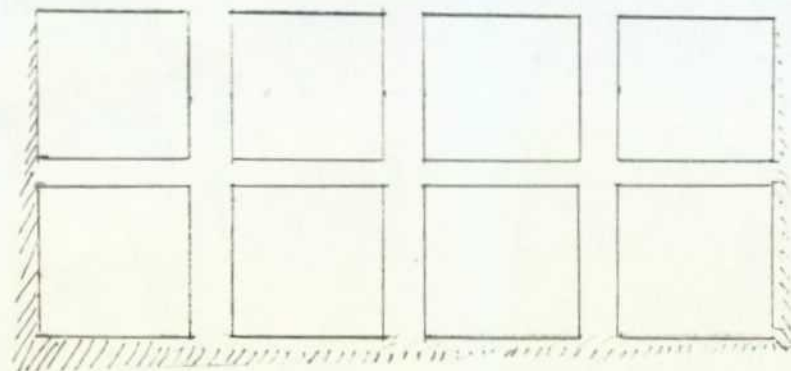


7/15/87 1600 hrs
photo Ionization
WIND 5-15 MPH



Readings by Olson, Oct
ASB

Basin
080053



Trailer

0



7/15/87 1600hrs

WIND 5-15 mph



Readings by Olson, Oct
1988

1.8

1.2

.9

TO BLEND BLEACH AT RATE OF
2000 gals. (48 Bbls) PER HOUR
BLEACH PUMP RATE

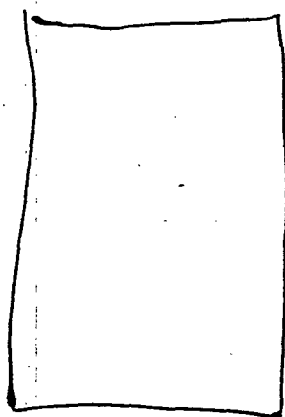
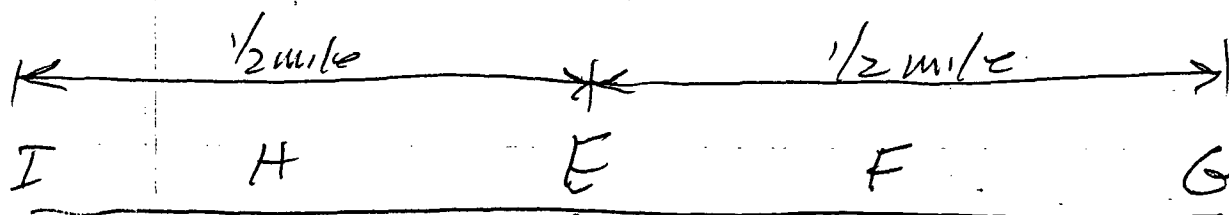
PUMP RATE		BARRELS PER HOUR		BARRELS PER HOUR		BARRELS PER HOUR		TOTAL VOLUME PUMPED - BLS. (42 gals.)	
MINUTE	PER HOUR	MINUTE	PER HOUR	MINUTE	PER HOUR	MINUTE	PER HOUR	1	2
10	600	0.80	48	12.50	600	1200	1800	2400	3000
11	660	0.80	48	13.75	660	1320	1980	2640	3300
12	720	0.80	48	15.00	720	1440	2160	2880	3600
13	780	0.80	48	16.25	780	1560	2340	3120	3900
14	840	0.80	48	17.50	840	1680	2520	3360	4200
15	900	0.80	48	18.75	900	1800	2700	3600	4500
16	960	0.80	48	20.00	960	1920	2880	3840	4800
17	1020	0.80	48	21.25	1020	2040	3060	4080	5100
18	1080	0.80	48	22.50	1080	2160	3240	4320	5400
19	1140	0.80	48	23.75	1140	2280	3420	4560	5700
20	1200	0.80	48	25.00	1200	2400	3600	4800	6000

← Hours

PUMP RATE

BARRELS PER HOUR		TOTAL VOLUME PUMPED - BALLONS	
MINUTE	PER HOUR	1	2
10	600	25,200	50,400
11	660	27,720	55,440
12	720	30,240	60,480
13	780	32,760	65,520
14	840	35,280	70,560
15	900	37,800	75,600
16	960	40,320	80,640
17	1020	42,840	85,680
18	1080	45,360	90,720
19	1140	47,880	95,760
20	1200	50,400	100,800

← Hours



D

C

B

A



July 4 10/87

Time	A	B	C	D	E	F	G	H	I	
8:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GROUND LEVEL
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	WAIST LEVEL
10:00 PM	3.0	7.0	7.0	2.0	0.5	0	0	0	0	
	1.0	6.0	5.0	1.5	0	0	0	0	0	
12:00	5.0	5.0	6.0	2.5	0	0	0	0	0	
MIDNIGHT	3.0	3.0	6.0	2.0	0	0	0	0	0	
2:00 AM	4.0	2.5	2.0	2.0	1.0	0	0	0	0	
	3.0	2.0	1.5	1.5	1.0	0	0	0	0	
4:00 AM	2.5	9.0	9.0	0	0	0	0	0	0	
	2.5	8.0	7.5	0	0	0	0	0	0	
6:00 AM	9.0	9.0	3.0	2.0	1.5	1.0	0.5	0	0	
	1.5	10.5	2.5	1.5	1.0	1.0	0.5	0	0	

July 4 11/1987

8:00 PM	0	0	0.5	0	0	0	0	0	0	GROUND LEVEL
	0	0	1.0	0.5	0	0	0	0	0	WAIST LEVEL
10:00 PM	0.5	1.0	7.0	0.5	0	0	0	0	0	GROUND LEVEL
	0.5	1.0	4.0	0.5	0	0	0	0	0	WAIST LEVEL
12:00 AM	1.5	2.0	6.0	2.5	1.5	1.0	0.5	0.5	0	GROUND LEVEL
	1.0	1.5	4.5	2.0	1.0	0.5	0.5	0	0	WAIST LEVEL
2:00 AM	2.0	2.5	2.0	3.0	0	0	0	1.0	0.5	GROUND LEVEL
	2.0	2.0	2.0	2.5	0	0	0	0.5	0.5	WAIST LEVEL
4:00 AM	1.5	2.0	2.0	2.0	2.5	0.5	0.5	1.0	1.0	GROUND LEVEL
	1.0	2.0	2.0	2.5	2.5	0.5	0.5	1.0	1.0	WAIST LEVEL
6:00 AM	1.0	0.6	0.6	0	0	0	0	0.5	0	GROUND LEVEL
	1.0	0.6	0.6	0	0	0	0	0.5	0	WAIST LEVEL



MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone

☐ Personal

Time

6:15 PM

Date

July 15, 1987

Originating Party

DAVE BOYER - OCT

Other Parties

Roger Anderson - OCT
(In Farmington) 325-5061

Subject

Basin Disposal - H₂S treatment

Discussion

I called Roger to inquire if he had talked to Dr. Hamlow regarding CN⁻ or SCN⁻ (cyanide species) being present in the pond water. If so chlorination could release cyanide gas. I asked him to take the following precautions before adding the NaOCl 10% solution:

- ① Consult with Dr. Hamlow about abundance of CN⁻ or SCN⁻ if present.
- ② Treat Tank with NaOCl and monitor cyanide gas ~~and~~ release ~~atmosphere~~ before adding fluids to pond.
- ③ In any event, have people in trailers out of area, and notify Adobe Construction Co. across Highway 44.
- ④ If possible have local ambulance or Fire dept. truck on scene with air packs
- ⑤ Be ready to call State Police to ask closure of Highway 44, if needed.
- ⑥ Notify #④ & ⑤ of our activities, in any event.

Conclusions or Agreements

Distribution

Basin Disposal file

Signed

Dave H Boyer



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

July 15, 1987

Ewell N. Walsh
Walsh Engineering and Production Corp.
Los Amigos Building
3001 Northridge Drive
P.O. Drawer 419
Farmington, NM 87499

Dear Mr. Walsh:

On July 13, 1987, during a meeting in Santa Fe between the OCD and the representatives of Basin Disposal, I informed you that I would send you copies of all H₂S measurements taken from July 8, 1987 through July 10, 1987 at the Basin Disposal facility. Enclosed you will find copies of all the H₂S measurements recorded.

Upon review of the H₂S measurements made each night by the Basin Disposal operator, I am confused as to which day these measurements correspond to. Do the Friday, July 10, 1987 measurements actually start on the evening of Thursday July 9 or on the evening of Friday, July 10? If the readings in question do not correspond to those of Thursday evening could you please send me a copy of those H₂S measurements taken on that date.

If you have any questions please call me at 827-5825.

Sincerely,

William Olson
Hydrologist/Environmental Bureau

WO/ag

xc: OCD - Aztec



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

July 14, 1987

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Basin Disposal, Inc.
c/o Walsh Engineering
P.O. Box 419
Farmington, New Mexico 87401

RE: Produced Water and Drilling Fluid Disposal Facility,
San Juan County, New Mexico.

Dear Mr. Walsh:

On July 8, 1987 you received a letter from this office dated July 7 containing actions you were to initiate immediately to reduce the hydrogen sulfide emissions from your facility. You were also informed that you will receive follow-up correspondence containing additional OCD requirements to remove the source of the H_2S and to prevent its reoccurrence. At the July 13 meeting in Santa Fe, we discussed these requirements with you, the Basin Disposal principals, and your attorney. As a result the following actions must be performed within the time frames indicated:

- 1) No fluids will be accepted for disposal at the facility until a tested and approved method of H_2S treatment has been initiated in the pond. Produced water can be accepted for disposal concurrently with the treatment of the pond only upon approval of the OCD, and provided these fluids are checked for H_2S content, compatibility with pond treatment and treated as necessary for disposal.
- 2) A sign will be erected on the facility in plain view of any person entering the facility informing them of the possibility of H_2S gas being present in concentrations that may be hazardous. The sign will be in place no later than July 24, 1987. Notify OCD of proposed language for the sign prior to posting.

- 3) The removal of the fluids from the mud pits will continue and be substantially completed within two weeks of the successful treatment of the pond for H_2S . All fluids shall be removed within four weeks of the successful treatment.
- 4) Transfer of fluids from the facility to a disposal well can continue.
- 5) A mud disposal plan will be submitted for review. The plan will address the methods to be employed to correct and eliminate the present seepage from the pits as well as the prevention of any potential seepage from the disposal of any additional muds. The plan must also address the disposal of any free water and/or oil that accumulates and pit closure and/or final disposition of the dried muds. Until an approval plan is in place drilling mud can be accepted for disposal if placed in steel tanks or steel mud pits only. The transfer of mud from the tanks to the unlined pits will be allowed after all the water has been removed from the unlined pits and when the approval of the District supervisor has been obtained. The District supervisor will allow the transfer only after he has determined that sufficient fluids have been removed from the muds such that they are semi-solid.
- 6) An H_2S contingency plan will be submitted for review to this office no later than September 12, 1987. The plan will contain, but is not limited to the following:
 - A) A long term method for checking incoming fluids for the presence of H_2S , and for storage and treatment as necessary prior to disposal in the pond. Retreatment of the pond may be necessary if this method does not control future H_2S levels in the pond.
 - B) A method for monitoring the levels of H_2S in the pond, on the facility and leaving the boundaries of the facility. Since the levels of H_2S are highest in the residential area in the evening and early morning hours, this plan should include a method for monitoring when the facility is unmanned.

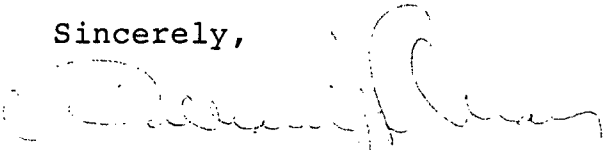
Page 3
Basin Disposal, Inc.

- C) Procedures for emergency notification of public safety personnel in the event of accidental release of health threatening concentrations of H₂S.
- D) Procedures for immediate notification of OCD personnel in the event of continual H₂S releases in excess of 1 ppm leaving the premises.

All other conditions and restrictions previously placed on the facility and its operations remain in effect unless specifically altered above.

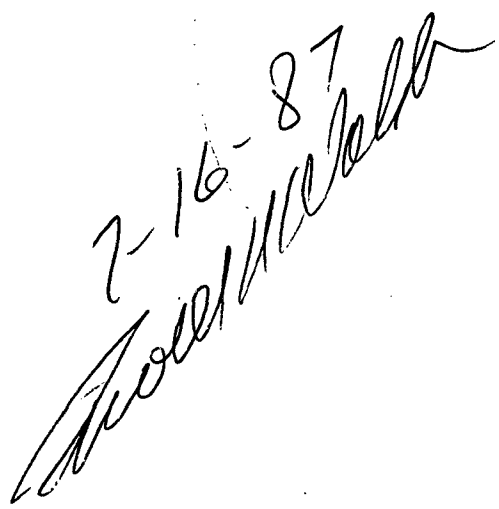
If there are any questions please contact David Boyer at (505) 827-5812 or Roger Anderson at (505) 827-5885.

Sincerely,


William J. LeMay
Director

WJL/RCA/ag

cc: OCD - Aztec

7-16-87


ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNORPOST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

July 14, 1987

CERTIFIED MAIL
RETURN RECEIPT REQUESTEDBasin Disposal, Inc.
c/o Walsh Engineering
P.O. Box 419
Farmington, New Mexico 87401RE: Produced Water and Drilling Fluid Disposal Facility,
San Juan County, New Mexico.

Dear Mr. Walsh:

On July 8, 1987 you received a letter from this office dated July 7 containing actions you were to initiate immediately to reduce the hydrogen sulfide emissions from your facility. You were also informed that you will receive follow-up correspondence containing additional OCD requirements to remove the source of the H₂S and to prevent its reoccurrence. At the July 13 meeting in Santa Fe, we discussed these requirements with you, the Basin Disposal principals, and your attorney. As a result the following actions must be performed within the time frames indicated:

- 1) No fluids will be accepted for disposal at the facility until a tested and approved method of H₂S treatment has been initiated in the pond. Produced water can be accepted for disposal concurrently with the treatment of the pond only upon approval of the OCD, and provided these fluids are checked for H₂S content, compatibility with pond treatment and treated as necessary for disposal.
- 2) A sign will be erected on the facility in plain view of any person entering the facility informing them of the possibility of H₂S gas being present in concentrations that may be hazardous. The sign will be in place no later than July 24, 1987. Notify OCD of proposed language for the sign prior to posting.

- 3) The removal of the fluids from the mud pits will continue and be substantially completed within two weeks of the successful treatment of the pond for H_2S . All fluids shall be removed within four weeks of the successful treatment.
- 4) Transfer of fluids from the facility to a disposal well can continue.
- 5) A mud disposal plan will be submitted for review. The plan will address the methods to be employed to correct and eliminate the present seepage from the pits as well as the prevention of any potential seepage from the disposal of any additional muds. The plan must also address the disposal of any free water and/or oil that accumulates and pit closure and/or final disposition of the dried muds. Until an approval plan is in place drilling mud can be accepted for disposal if placed in steel tanks or steel mud pits only. The transfer of mud from the tanks to the unlined pits will be allowed after all the water has been removed from the unlined pits and when the approval of the District supervisor has been obtained. The District supervisor will allow the transfer only after he has determined that sufficient fluids have been removed from the muds such that they are semi-solid.
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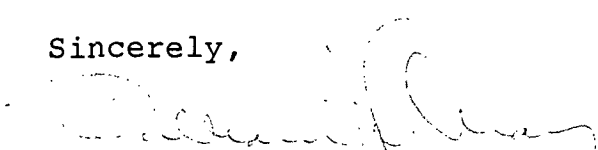
Page 3
Basin Disposal, Inc.

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- D) Procedures for immediate notification of OCD personnel in the event of continual H₂S releases in excess of 1 ppm leaving the premises.

All other conditions and restrictions previously placed on the facility and its operations remain in effect unless specifically altered above.

If there are any questions please contact David Boyer at (505) 827-5812 or Roger Anderson at (505) 827-5885.

Sincerely,



William J. LeMay
Director

WJL/RCA/ag

cc: OCD - Aztec

Meeting with Basin Disposal 7/13/87

Red Walsh
David Turner
Jerry Sandel
John Dean
Frank Chavey
Harlan Hamlow

Dave Boyer
Roger Anderson
Bill Olson

50,000
.005
100.000

144 bbl's
72/monthly

Red - Here to determine what to do,
what levels to treat, when to open.

^{Have said}
Roger - Can open when treatment working

54
300
16,200

4000 gals/truck

226 barrels to treat water
260 " to kill bacteria
300 barrels to provide residual

Letter of July 14 to Basin from O&D will
summarize agreements in meeting
and direct additional treatment.



MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal

Time 4:45

Date 7/13/87

Originating Party

Other Parties

Michelle Stinson

DAVID BOYER - O&S

Adobe Contractors, 632-1486

Subject Medical Incident, Basin Disposal

Discussion

3 persons, including two employees (Stinson*, Chuck Smith, Ernie Matto*) felt dizzy about 1:30 inside office with swamp cooler. Called O&S - Santa Fe at that time to complain of strong odor (Secretary took phone message). About 2 PM, Gary Sain arrived (a customer), stayed about 20 minutes and left office. Passed out at truck for about 10 minutes, awoke and called for help. Had trouble breathing and arm numbness. Called paramedics, Bloomfield unit responded, treated at scene with O₂. Declined ride to hospital, but passed out second time, and paramedics trans-

Conclusions or Agreements

ported to SJ City Regional. According to Ms Stinson, first notice of odor in early June. Caretakers, Mrs Mc Daniels, moving trailer this week because of kids being sick. (Called hospital 5:30 PM - Sain admitted ER 2:48 PM, discharged 3:45, mother info released). Called Basin 5:45 PM -

Distribution

Basin Disposal file
Bill LeMay
* Employees

Signed Readings 6-10 PM For 1-2 PM
David & Boyer

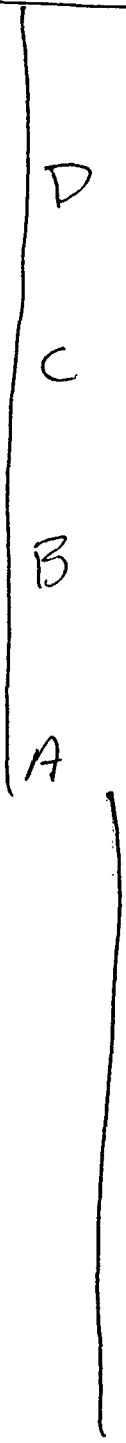
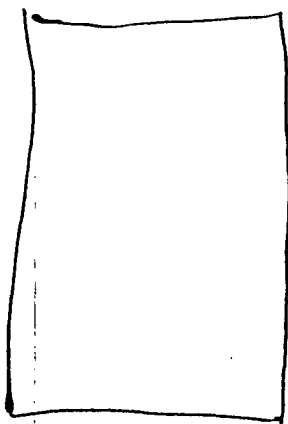
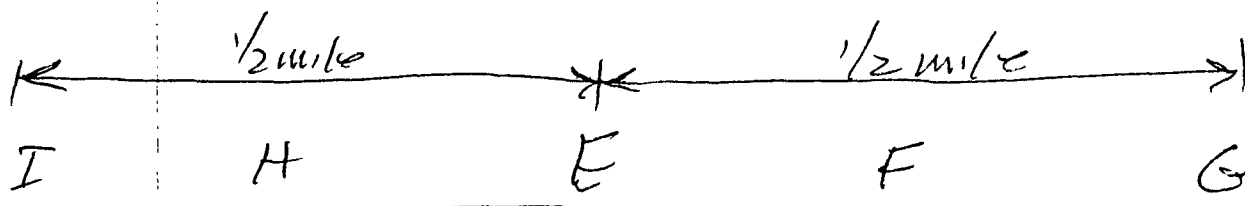
FRIDAY 10/89

Basin Disposal
Measurements.

Time	A	B	C	D	E	F	G	H	I	
8:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GROUND LEVEL
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	WAIST LEVEL
10:00 PM	3.0	7.0	7.0	2.0	0.5	0	0	0	0	
	1.0	6.0	5.0	1.5	0	0	0	0	0	
12:00	5.0	5.0	6.0	2.5	0	0	0	0	0	
MIDNIGHT	3.0	3.0	6.0	2.0	0	0	0	0	0	
2:00	4.0	2.5	2.0	2.0	1.0	0	0	0	0	
AM	3.0	2.0	1.5	1.5	1.0	0	0	0	0	
4:00	2.5	9.0	9.0	0	0	0	0	0	0	
AM	2.5	5.5	7.5	0	0	0	0	0	0	
6:00	9.0	9.0	3.0	2.0	1.5	1.0	0.5	0	0	
AM	10.5	10.5	2.5	1.0	1.5	1.0	0.5	0	0	

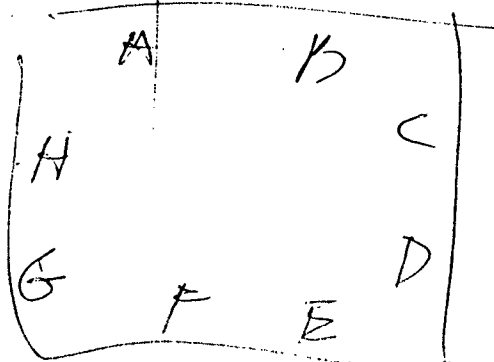
SAT 11/1987

8:00	0	0	0.5	0	0	0	0	0	0	GROUND LEVEL
PM	0	0	1.0	0.5	0	0	0	0	0	WAIST LEVEL
10:00	0.5	1.0	7.0	0.5	0	0	0	0	0	GROUND LEVEL
PM	0.5	1.0	4.0	0.5	0	0	0	0	0	WAIST LEVEL
12:00	1.5	2.0	6.0	2.5	1.5	1.0	0.5	0.5	0	GROUND LEVEL
MIDNIGHT	1.0	1.5	4.5	2.0	1.0	0.5	0.5	0	0	WAIST LEVEL
2:00	2.0	2.5	2.0	3.0	0	0	0	1.0	0.5	GROUND LEVEL
AM	2.0	2.0	2.0	2.5	0	0	0	0.5	0.5	WAIST LEVEL
4:00	1.5	2.0	2.0	2.0	2.5	0.5	0.5	1.0	1.0	GROUND LEVEL
AM	1.0	2.0	2.0	2.5	2.5	0.5	0.5	1.0	1.0	WAIST LEVEL
6:00	1.0	0.5	0.5	0	0	0	0	0.5	0	GROUND LEVEL
AM	1.0	0.5	0.5	0	0	0	0	0.5	0	WAIST LEVEL



DATE	TIME	A	B	C	D	E	F	G	H	WIND
7/10	9.30 AM	0-3	0.4-3	0.3	0.5-2.7	0.4-0.8	0.4	4.2 0.4-0.7	0.4	S.E. 0
7/10	12.00 AM	0.3-5.0	0	1.5-4.0	2.0-19.0	2.0-12 2.0-12	0	0	0	S.W. 10
7/10	2.00 PM	0.5	0.5	0.5-2.0	3.0-13.0	2.0-6.0	3.0	6.0	0.5	S.W. 15
7/10	4.00 PM	0.5	0.5	1.0-4.5	3.5-8.5	3.0-9.0	3.5-7.5	1.5-2.0	0.5	S.W. 10-12
7/10	6.00 PM	0-2	0-2	0-2	2.5-8.0	3.0-9.0	5.0	10.0	1.0	S.W. 15-20
7/11	8.00 AM	4.0	5.0	2.0	7.0	9.0	2.0	2.0	1.0	S.E. 0-5
7/11	10.00 AM	1.0	1.0	4-5	8.5	9.0	8.0	12.0	3.0	S.W. 5-10
7/11	12.00 AM	0	0	11.0	11.0	8.0	9.0	8.0	0	S.W. 5-10
7/11	2.00 PM	0	0	0	2.0-7.0	2.5-6.0	4.0-9.0	2.5-1.0 2.5-1.0	1.5-4.0	N.W. 10-12
7/11	4.00 PM	0	0	1.5-6.0	3.5-11.0	4.5-11.0	4.5-11.0	2.0	1.0	N.W. 10-12
7/11	6.00 PM	0	0	1.0-5.0	1.0-8.0	3.0-12.0	3.0-13.0	1.0	0	S.W. 10-15
7/12	8.00 AM	0	0	1.5-6.0	2.0-9.5	3.0-12.0	3.5-9.0	3.0-7.0	3.0	S.W. 0-5
7/12	10.00 AM	0	0	0-2.0	1.0-3.0	4.0-11.0	5.0-11.0	3.0-6.0	1.0-4.0	N.W. 10-12
7/12	12.00 AM	0	0	1.0-1.0	0-2.0	3.0-9.0	3.0-9.5	1.0-4.5	0	S.W. 15-20
7/12	2.00 PM	0	0	0-1.0	0-2.0	3.5-10.0	2.5-8.0	1.0-4.5	0-2.0	N.W. 15-20
7/12	4.00 PM	0	0	0-1.0	0-3.0	3.0-5.0	3.0-9.0	6.0-10.0	3.0	N.W. 15-20

0 0 0 0





MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal

Time 9 AM

Date 7/10/87

Originating Party

David Boyer - OCS

Other Parties

Millie Eidson - EIS
EPIDEMIOLOGY

Subject Basin Disposal - EPI Study

Discussion

Called to request that Epidemiology Section interview residents to document possible health effects of low level H₂S emissions on residents. Millie said impossible to establish a causal effect without a control group. Very little known about low level H₂S. Would have to research literature to determine background information before beginning study. This is not a high priority for EIS given other health issues right now. When I asked about just interviewing residents, she asked

Conclusions or Agreements

for what purpose? If to be used in lawsuit, attorney should arrange. She felt that state doing interviews would raise residents expectations unnecessarily. If ~~not~~ no agency handling, then they may need to be involved. Since OCS working toward solution, see no reason.

Distribution

Basin Disposal file
Frank Carey

Signed

David G. Boyer

(OVER)

To become involved for H_2S at these levels.
Suggested OCB do computer literature search itself.

Key words: Health Assessment
Risk Assessment
Health Effects
Low level exposure to H_2S

H_2S

Human Health Effects

limit data search to most recent work in past 8-10 years



MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal	Time 1:45	Date 7/10/87
Originating Party Red Walsh		Other Parties Danni Bailey
Subject Basin Disposal		

Discussion
Red said that no treatment on the pond would be performed today or over the weekend. Mr. Homlow was working on bench tests to eliminate the H_2S problem, that he is researching the use of bleach, carbonated lime^{hydrogen} peroxide, + combinations of them. Chemical companies have been contacted for prices + availability. Hopefully Tues or Wed, treatment can begin.

* Basin has no operable H_2S meter at this time; the one they do have does not give credible readings, compared to the one OCS is using.

Conclusions or Agreements
I told him that OCS required that they provide alternate housing for all potentially affected residents, including those E, SE, + S of the pit, and also Mrs. McDaniel, who could be contacted through Adobe Construction. This includes residents on the opposite side of the highway. He OCS strongly recommended that the facility be manned 24 HRS/day until the problem is resolved.

Distribution I also told him that the spec sheet for his H_2S meter stated it could take 20 seconds reaction time for a reading.

Danni Bailey

File
Boyer

COMPANY INSPECTION

NAME OF COMPANY: Basin DisposalLOCATION: North of Bloomfield, N.M.INSPECTION DATE: 7/8 - 7/10/87

REPORT: 7/8 : Arrived to observe addition of sodium hydroxide to the main evaporation pond in order to raise the pH to 9.5 to decrease the generation of H_2S gas from the pond. The caustic was added to the pond by using a blender truck with inlet lines in the northwest corner of the pond and discharge lines at the midpoints of the North, East and Southern berms. The caustic was blended at 10 parts water to 1 part sodium hydroxide before discharge to the pond. During the addition of sodium hydroxide the evaporative spraying system was turned on to facilitate mixing. The sprayers were shut off at 1700 hrs. because a shift in the wind direction was blowing H_2S gas toward the residences south of the pond. At 1730 hrs. a pump truck was hooked into the blender to increase the water circulation to 18 barrels/min. By 1900 hrs. all of the sodium hydroxide had been added to the pond and circulation of pond water ceased. H_2S measurements taken during the day can be found on the attached diagrams.

7/9 : In order to make sure complete mix of the sodium hydroxide and the pond occurred the pond water was circulated using the pump truck from 0700 to 1600 hrs. Using a composite sample of pond water taken from the 4 corners of the pond the pH was determined to be 9.13 at 0930 hrs. All pH measurements were made using a pH meter.

At 1200 hrs. I investigated a citizen complaint of illnesses due to the odor emanating from the pond at Basin Disposal. The complainant, Joanne McDaniels stated that her children were having recurring headaches, bloody noses, nausea and vomiting. Her trailer is located within the Adobe Construction yard approximately due east of Basin Disposal. She states that the smell is much worse in the late evening and early morning hours. H_2S gas readings were constant at 0.3 ppm during the interview.

At 1500 hrs. two pH measurements were made. One sample was taken from the pond and a pH of 9.1 was recorded. An alternate sample was taken from the blender truck. The sample from the blender represents water at the 3 foot level where the inlet lines are located. The pH of the blender sample was 9.15.

At 1930 hrs. the Paynes called to complain about the odor from Basin Disposal's pond. By the time I arrived the odor had subsided and H_2S gas was recorded at 0.2-0.3 ppm. The Payne family complained of headaches irritability and nausea. They stated that their horse had developed nose bleeds and that the horse would try to break down the fence when the smell was bad in the early morning. H_2S levels were recorded at 0.2-0.4 ppm within the Payne residence and at 0.2-1.0 ppm outside of the residence. H_2S readings were also taken around the Basin Disposal pond at the time of the complaint. A high of 20.2 ppm was observed on the berm surface. This reading was recorded on the down wind side of the

pond. All H_2S measurements taken can be found on the attached sheets.

7/10 : At 0200 hrs. the operator at Basin Disposal called to inform me that he recorded a peak H_2S reading of 12.0 ppm on the road outside the gate of the disposal facility. I informed him to take readings near the residential area and to inform me if he recorded consistent measurements above 10 ppm. No call was returned.

At 0600 hrs. made early morning H_2S measurements. H_2S measurements were again recorded at 1000 hrs.

The location of the extent of movement of the black zones, discovered during an earlier investigation of Basin Disposal, in the arroyo south of the unlined ponds was marked with a surveying stake for further reference. This location was also recorded on the H_2S measurement maps for 7/10/87 at 0630 hrs.

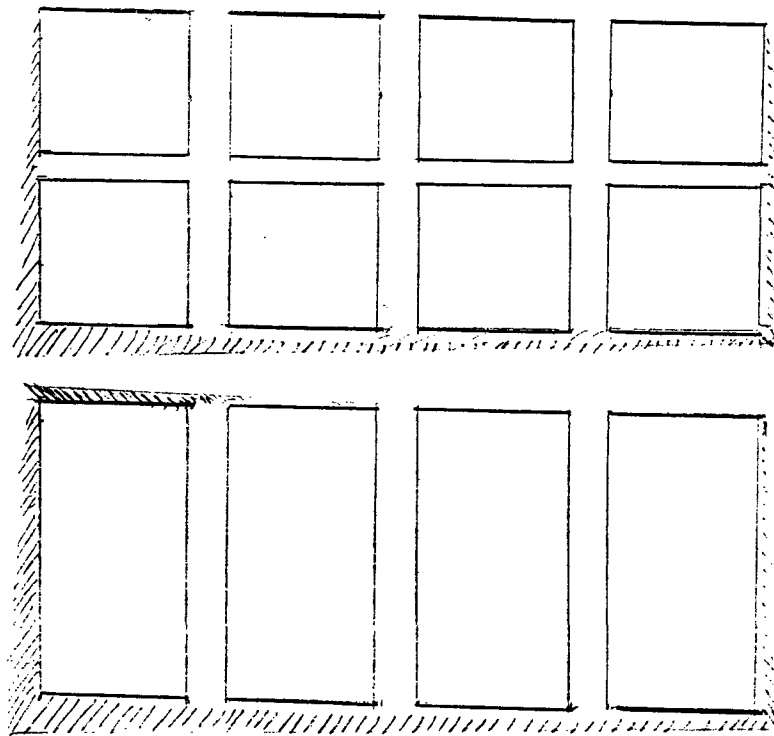
Basin?
Disposal

H₂S Readings (ppm)

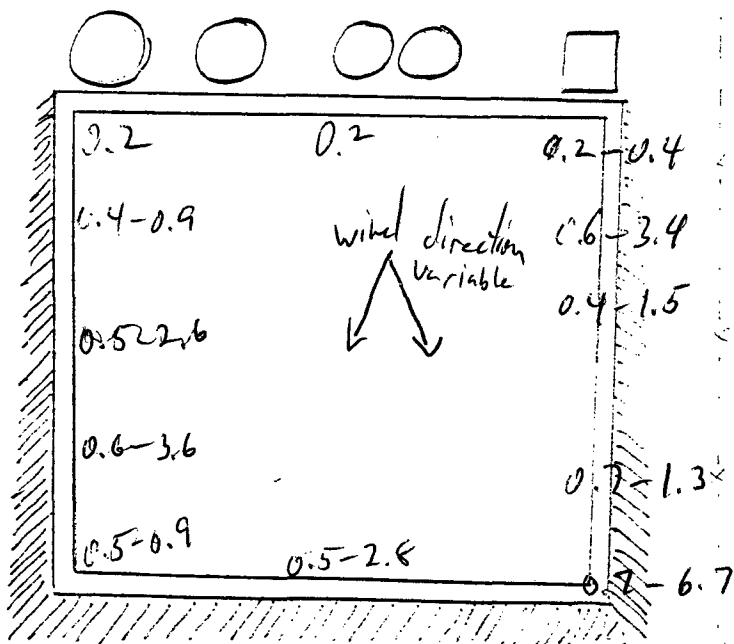
7/8/87

Time: 1530

Readings by Olson, Deb
AAG



Trailer



all readings taken on
top of berm with
sprayers on

NOT TO SCALE

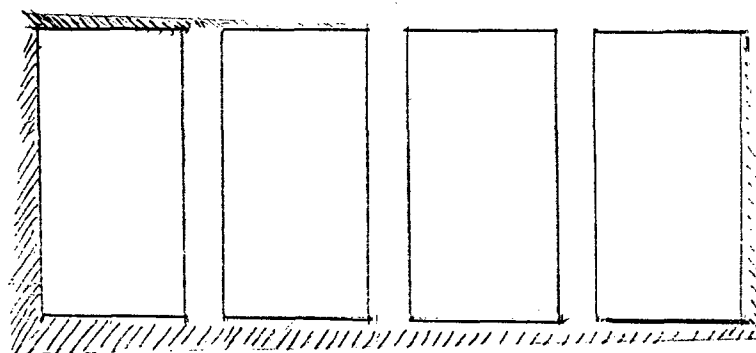
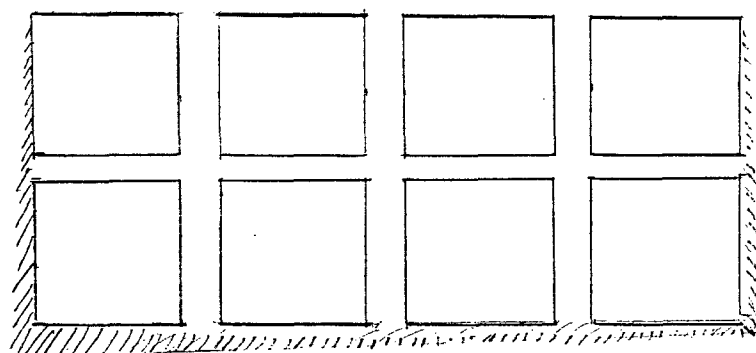
Basin
Disposal

H₂S Readings (ppm)

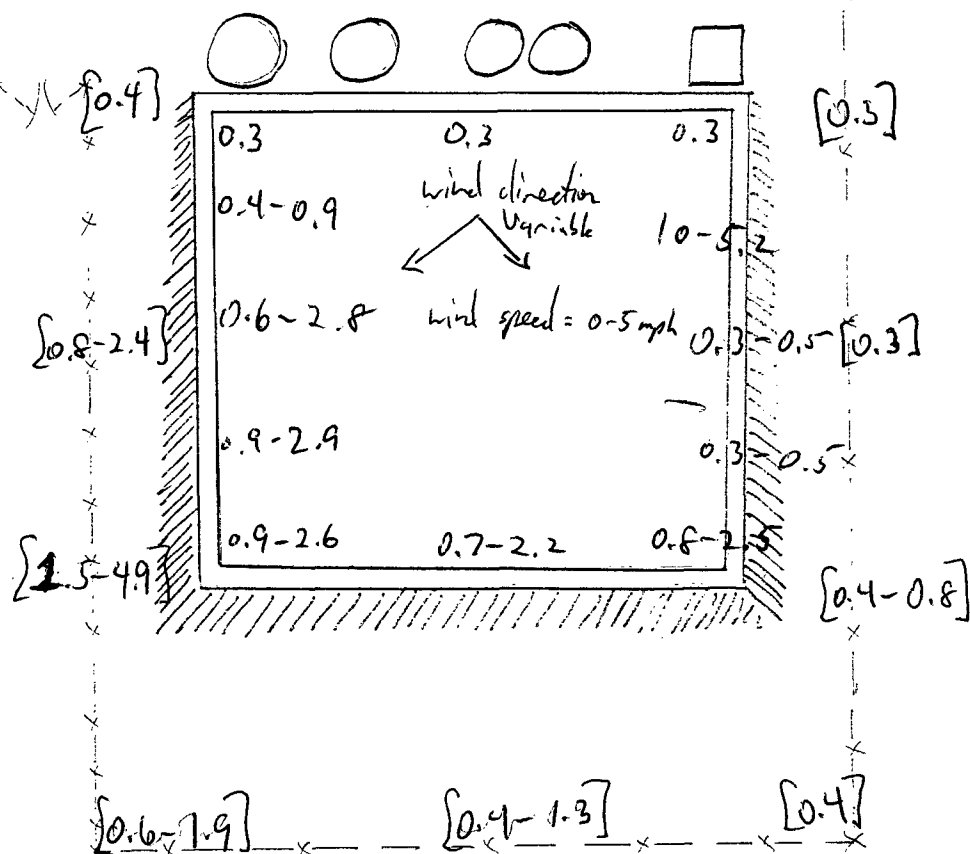
7/8/87

time = 1630

Readings by OLSEN, OLB
NFB



Trailer



NOT TO SCALE

Tenneco Well
Cornell B#4E

NW NW of sec 14 T29N 12W

Bill & Bob Allen #19 county rd 5377

100 55 gal drums within 50' of tank battery

get names of drums

drums from El Paso?

up past Kutz Station

take 2nd road to right after trailers due east

3/4 mile then turns due south @ 1/2 mile

Basin
Disposal

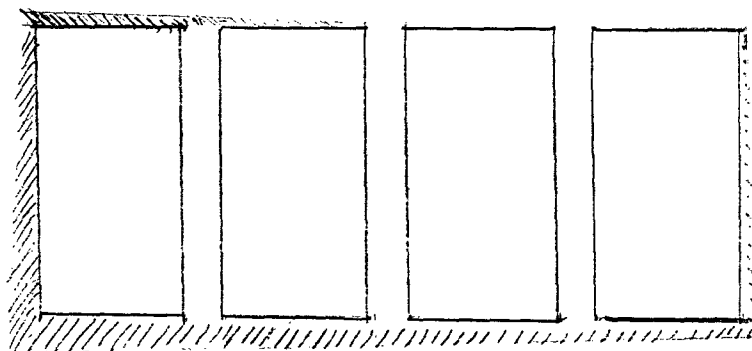
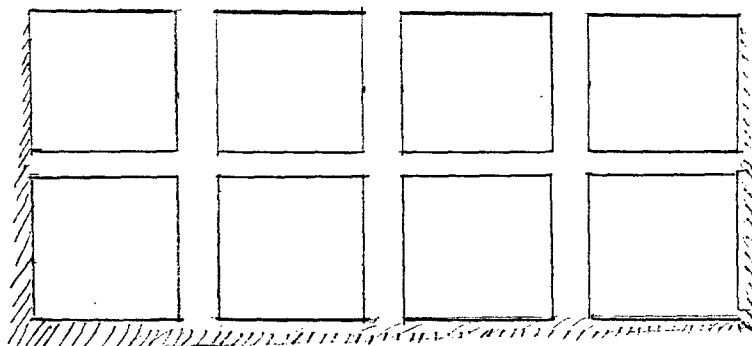
H₂S Readings (ppm)

7/9/87

time: 0900

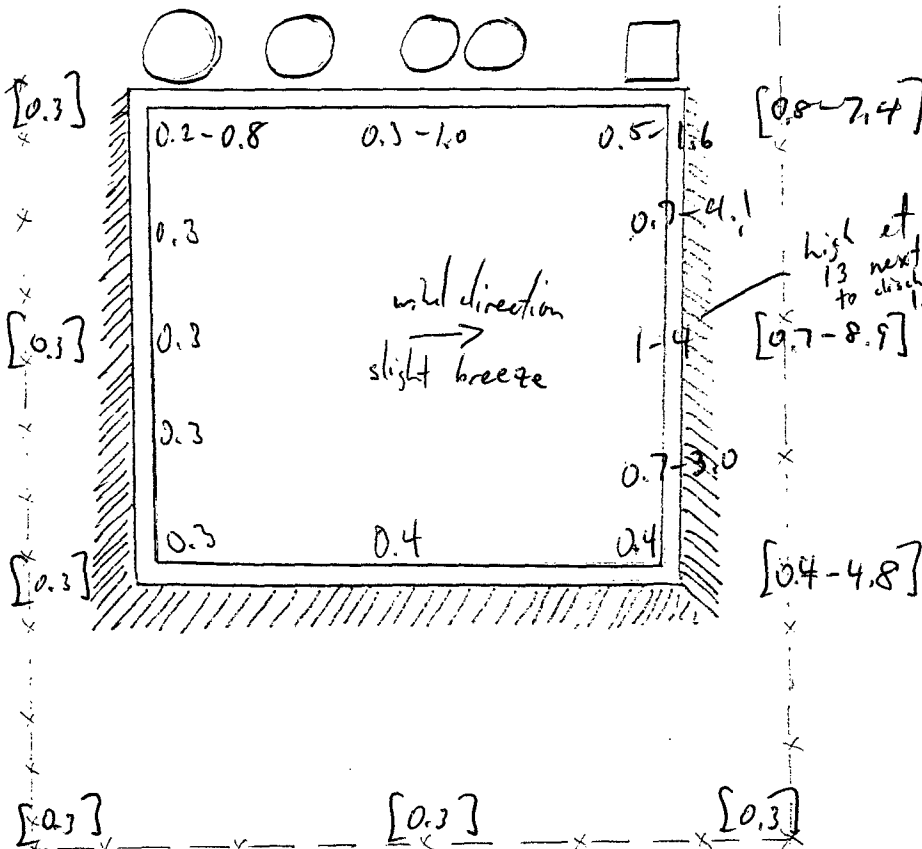
Readings by OLSON, OLS
RJB

sprayers off but
pumps circulating
water



Trailer

0.2-0.8 - at top of berm
[0.2] - fence line



NOT TO SCALE

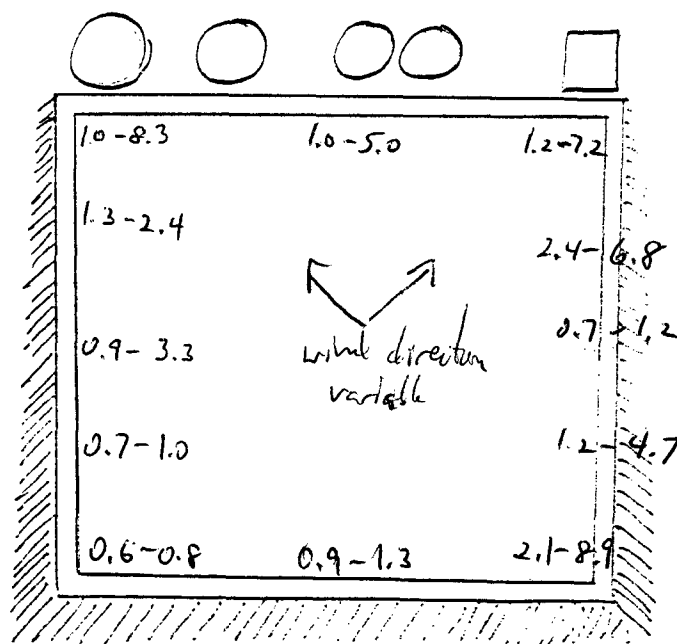
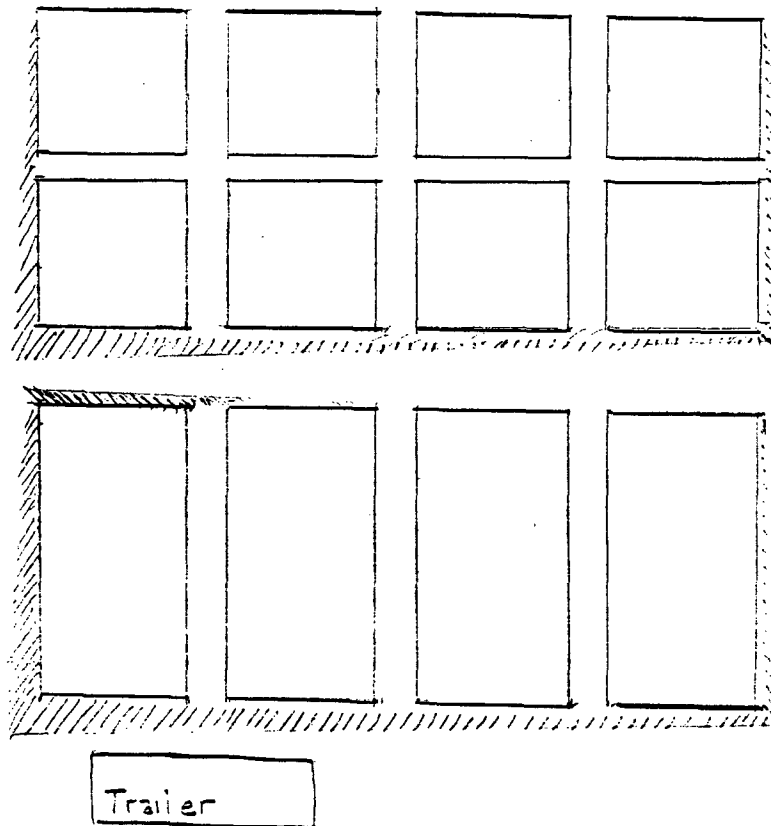
Basin
C-80053

H₂S Readings (ppm)

7/9/87

Time: 1330

Readings by Olson, DCS
RYS



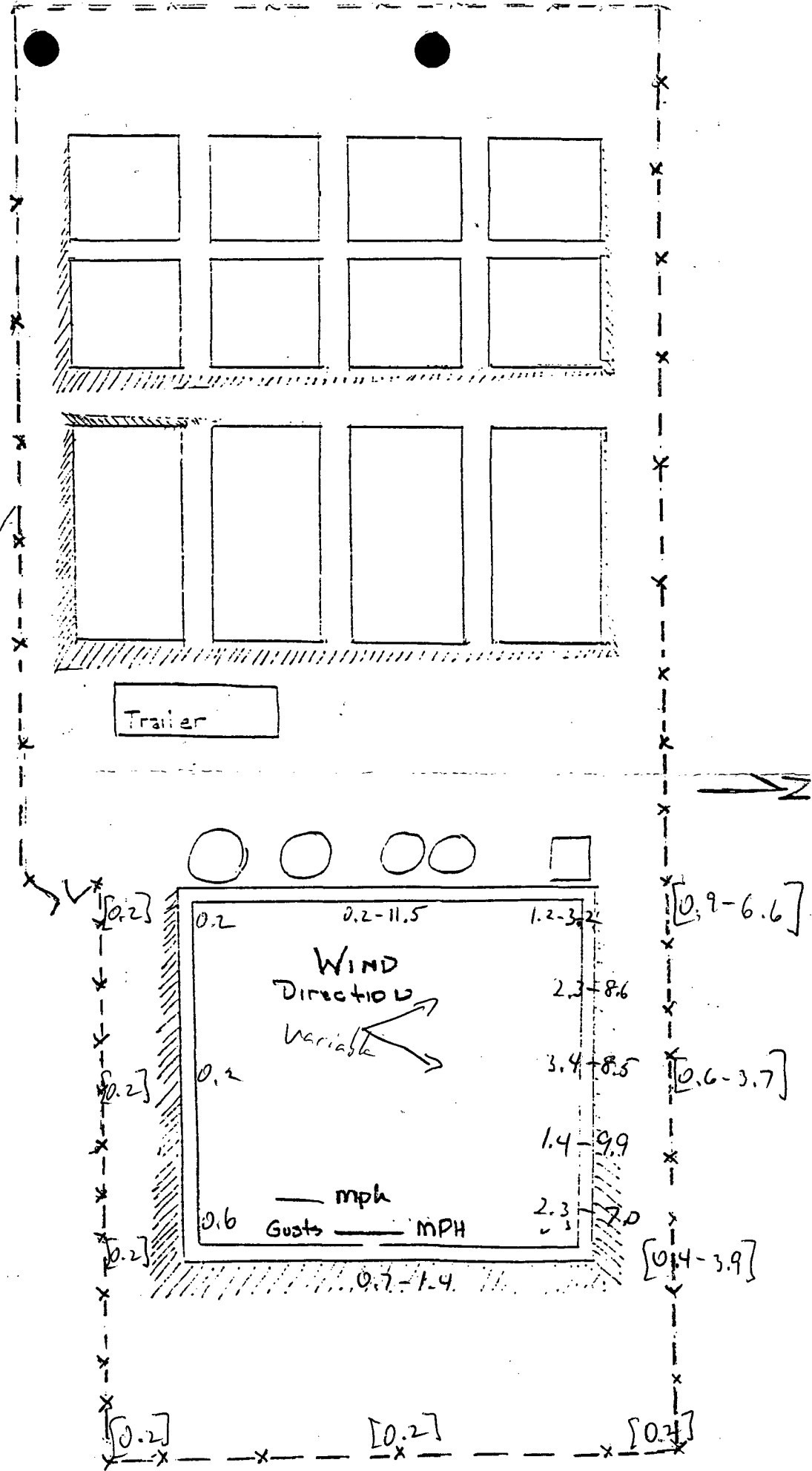
1.0-5.0 reading on horn beam
all readings taken with
sprayers off but pumps
are circulating water

7/9/87
 DATE
 1630
 TIME

Readings by Olson, acb
 ARK

Spray-YES
 No X

but pumps are
 circulating water



NONE - Top of Berm
 () - Bottom of Berm
 [] - Fence
 < > - Other

NOT TO SCALE

Basin
Troughs!

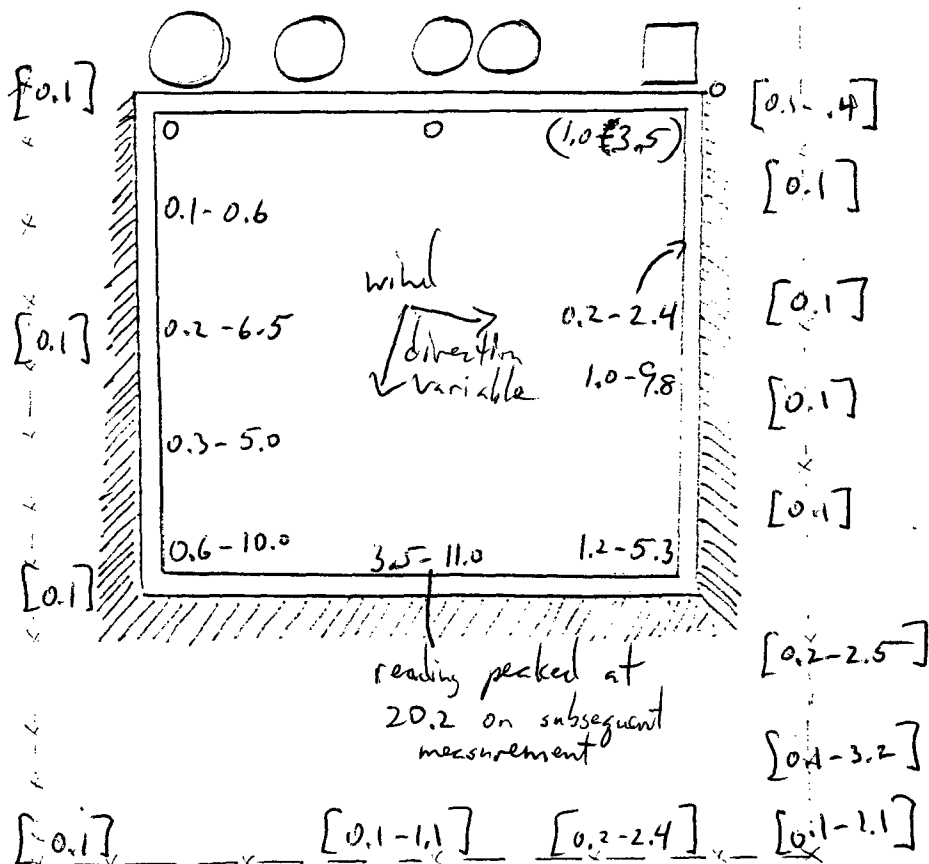
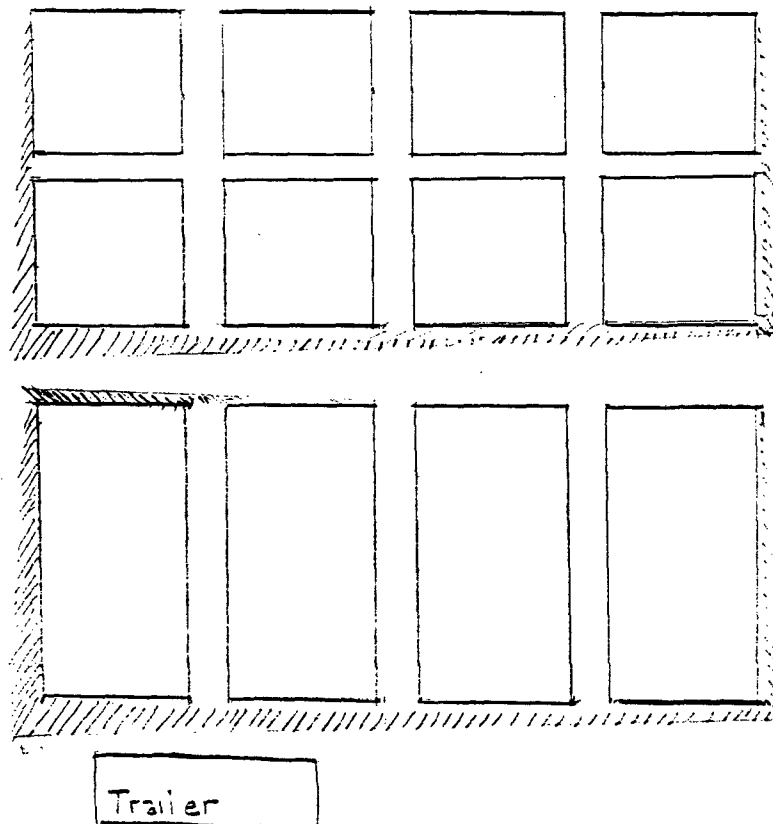
H₂S Readings (ppm)

fine = 2000

7/9/87

Readings Taken
By Olson, OCB

Sprayers off



0.1-0.6 - top of berm
[0.1] - fence line
(1.0-3.5) - at water surface

reading peaked at 20.2 on subsequent measurement

NOT TO SCALE

Basing
 130053

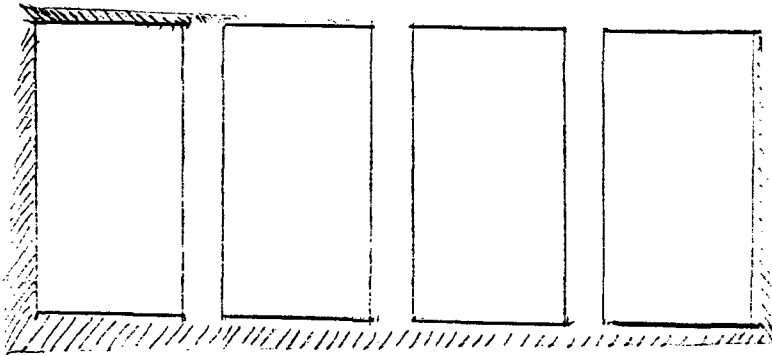
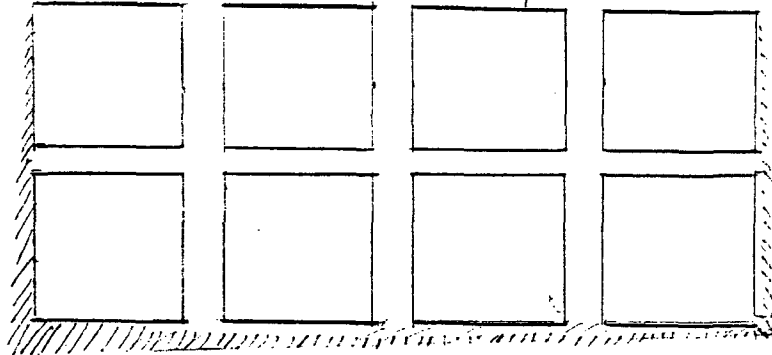
Has Readings (ppm)
 7/10/87

time = 0630

Readings taken by
 Olson & ~~Dr. R~~
 approx.

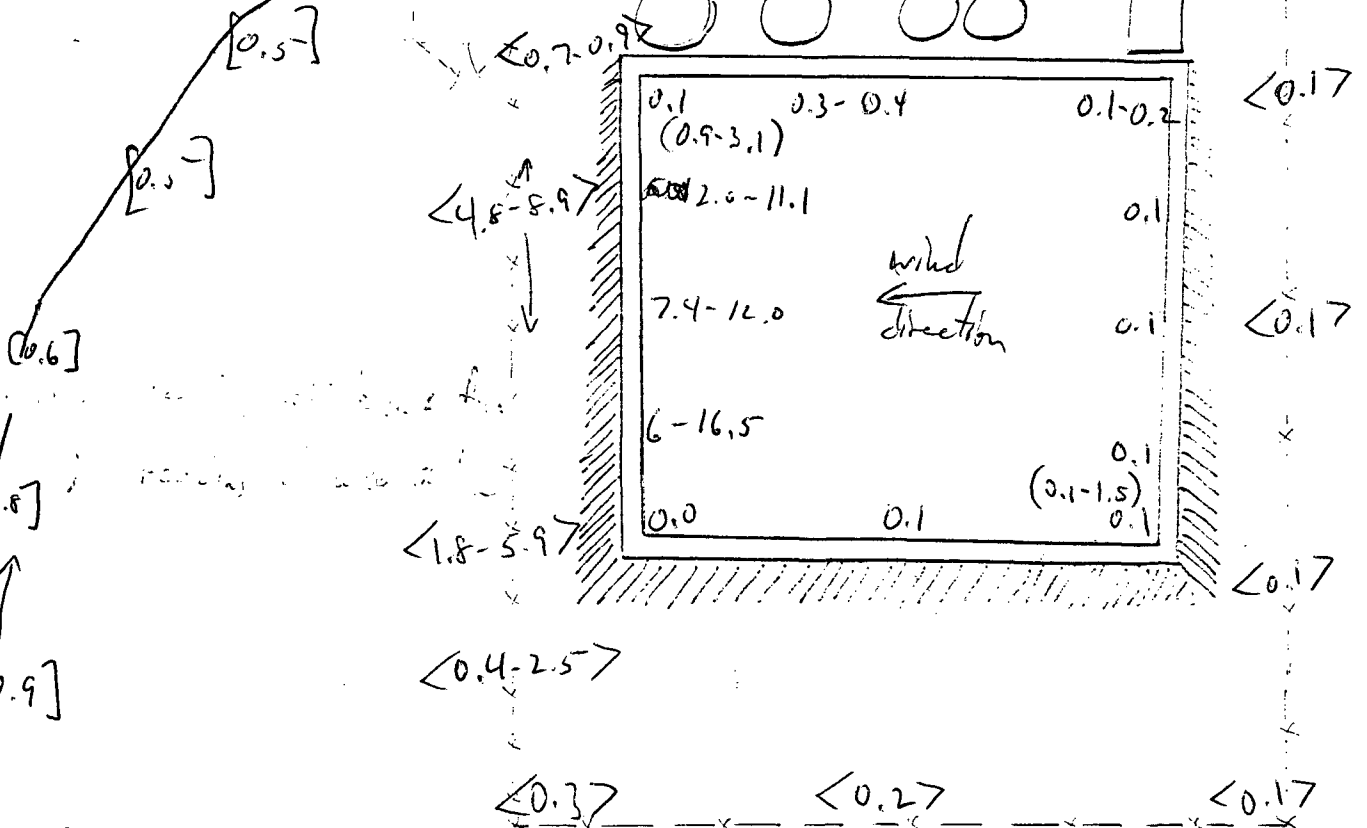
location of
 extent of black
 zones
 (marked on north
 side of arroyo)

0.1 - 0.3 = readings at berm surface
 (0.9 - 3.1) = " " water surface
 [0.5] = readings at arroyo
 < 0.1 > = " " fence line



Trailer

sprayers turned off



H₂S Reading (ppm)

9/10/87

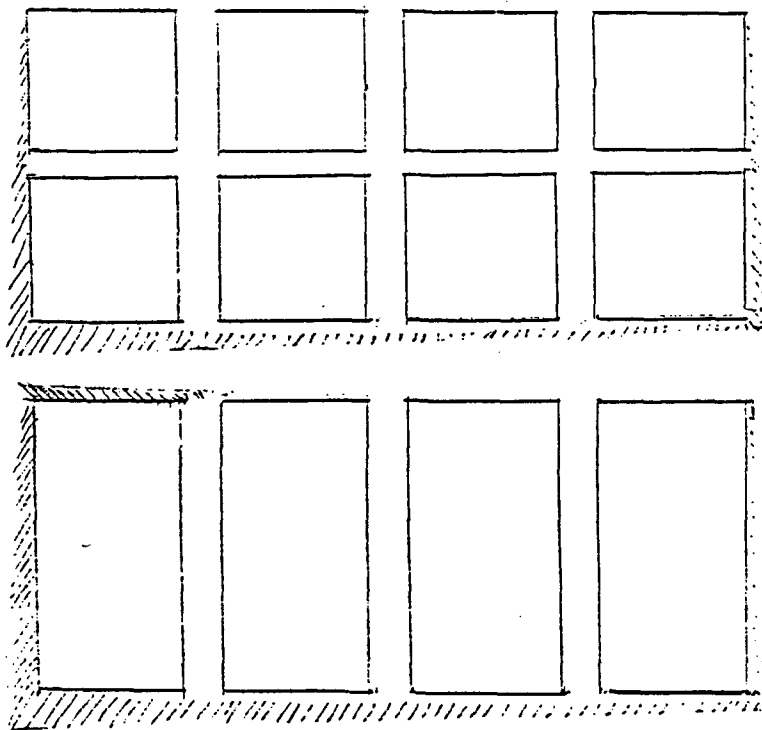
DATE

1000

TIME

Readings by
Olson OCB APPB

Spray-Yes _____
No ☒



Trailer



0.3 0.4-3.0 0.3

WIND

Direction

0.2-2.0

very slight

variable in about all directions

0.5-2.7

0.4-7.0

mph

0.4-4.8

Gusts _____ MPH

1.9-4.2

0.4

NONE - Top of BERM

() - Bottom of BERM

[] - FENCE

< > - Other

NOT TO SCALE



MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal

Time 2 PM

Date 7/8/87

Originating Party

Other Parties

David Boyer - OCS

Kevin Simpson, S.I.C. City
Fire Marshal 334-9481

Subject H₂S - Basin Disposal Problem

Discussion

I called Simpson to ask what readings he got at the residences Monday night (6/6). Readings at Hargis were 2 to 5 PPM (taken by Simpson himself using a Drager tube device) and a maximum of 10 ppm at Payne home (taken by another fireman).

Conclusions or Agreements

I told Simpson that pond was being treated by Basin Disp. on our orders and that we hope to have immediate H₂S problem alleviated with pH increase.

Distribution

Basin Disposal File

Signed

David H. Boyer

ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION



GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

July 7, 1987

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Basin Disposal, Inc.
c/o Walsh Engineering
P.O. Box 419
Farmington, NM 87401

RE: Produced Water and Drilling Fluid Disposal Facility,
San Juan County, New Mexico.

Dear Mr. Walsh:

This letter is to confirm the telephone conversation between you, as representative of Basin Disposal Inc., and Roger Anderson, Environmental Engineer for the Oil Conservation Division, on July 7, 1987. In that conversation you were informed of the elevated concentrations of Hydrogen Sulfide that were observed at the facility boundary (9.5 ppm) on the morning of July 7, 1986 and in the residential area south of the facility (5 to 10 ppm) on the evening of July 6, 1987. These measurements were independently confirmed.

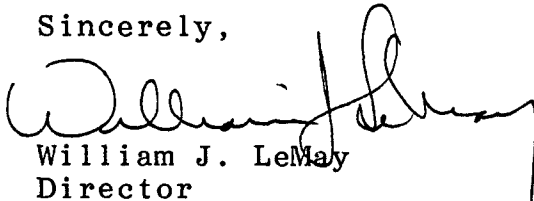
As a result of these observations and to protect the public safety you were informed of action you are to institute immediately. These actions are:

- 1) Effective 12:00 noon, July 7, 1987, cease accepting any fluids for disposal. Shipments currently in route will be allowed to be accepted until 6:00 pm July 7, 1987.
- 2) Immediately begin treatment of the lined pond to raise the pH to 9.5. If this cannot be accomplished in one day, be prepared to man and monitor the facility on a 24-hour basis for H₂S concentrations. If the concentration in the residential area exceeds 10 ppm be prepared to notify the proper authorities to evacuate the residents to a safe area if concentrations reach 20 ppm.

Page 2
Basin Disposal, Inc.
July 7, 1987

These required actions are an initial step to address the current problem. Additional treatment will be necessary to remove the H_2S and HS^- present, and additional actions to prevent re-occurrence will be required. Follow-up correspondence and telephone calls from this office will advise you of subsequent OCD requirements as may be needed to remedy the problem.

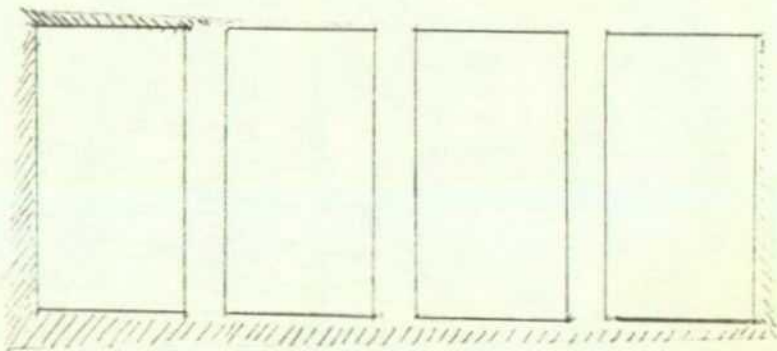
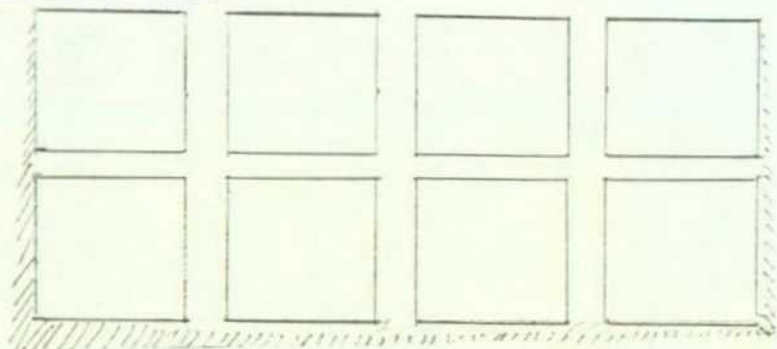
Sincerely,



William J. LeMay
Director

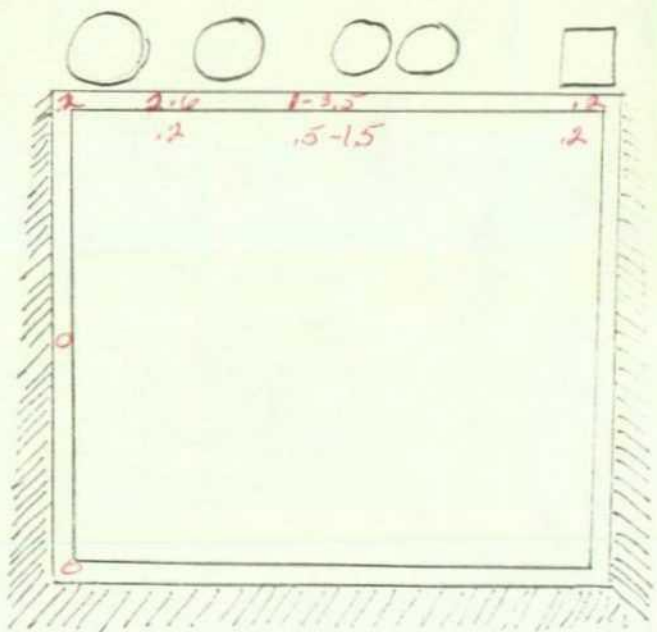
WJL/RA/ag

cc: Oil Conservation Division - Aztec



Trailer

.2 - .5

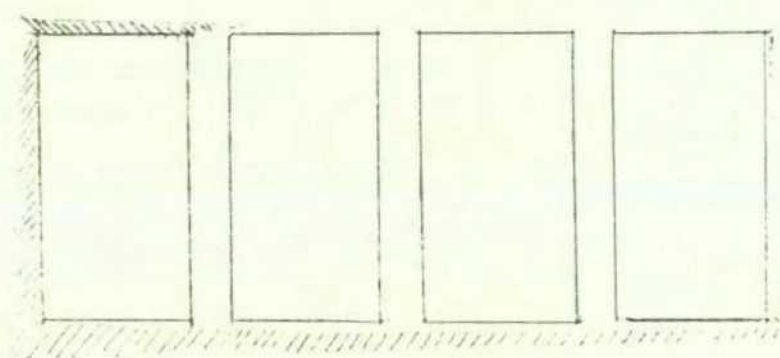
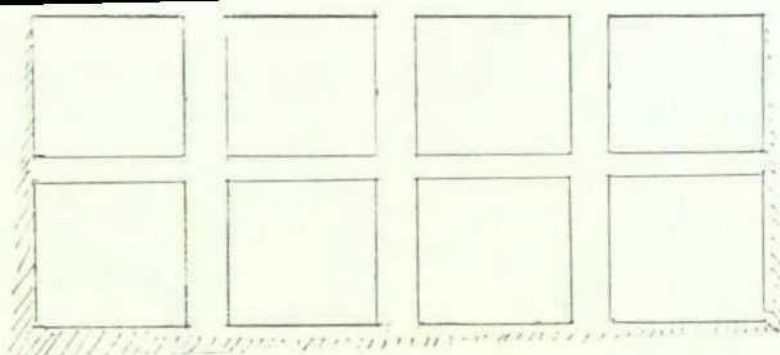


7/1/87 0930 hrs

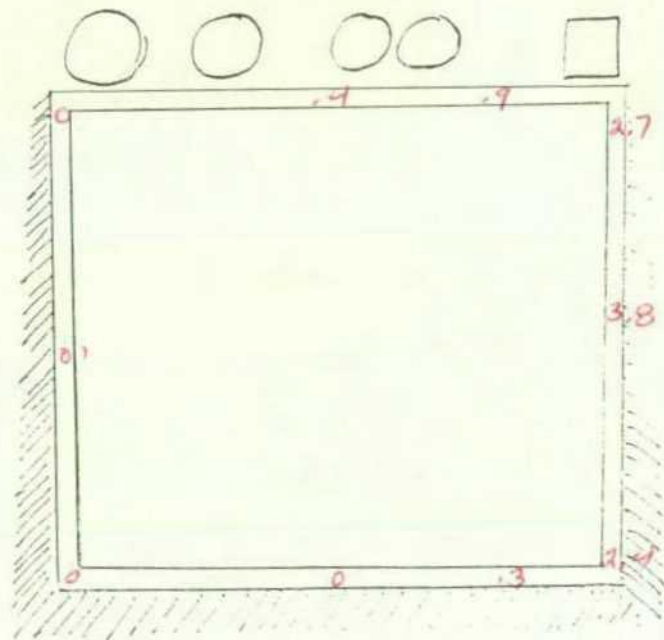
No SPRAY

Readings by Olsen/Anderson,
ocb, A&B





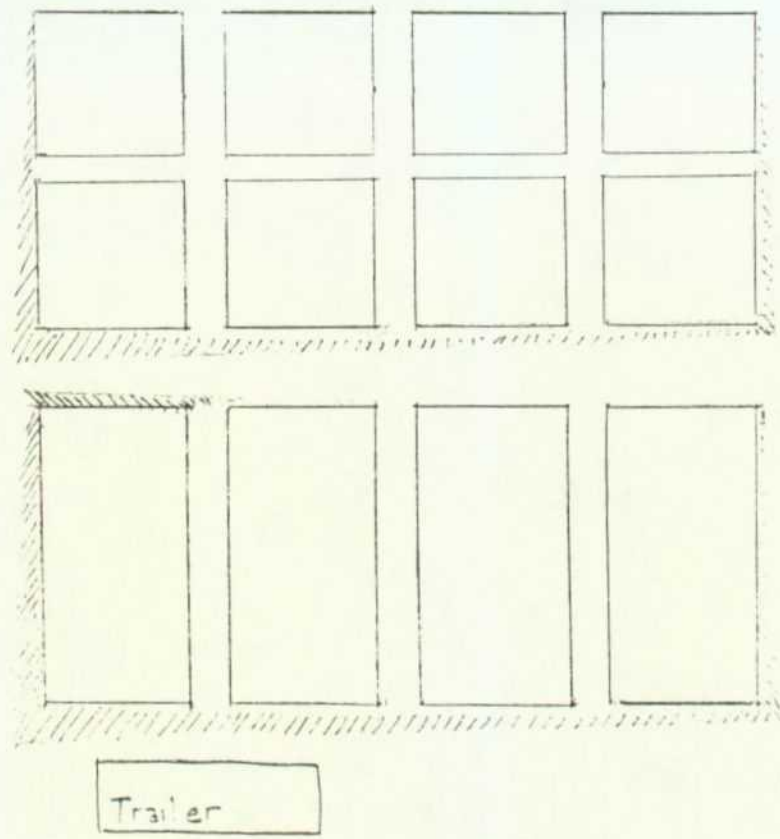
Trailer



7/1/87 1100hrs

wind $\rightarrow$ 45mph

Basin
Disposal



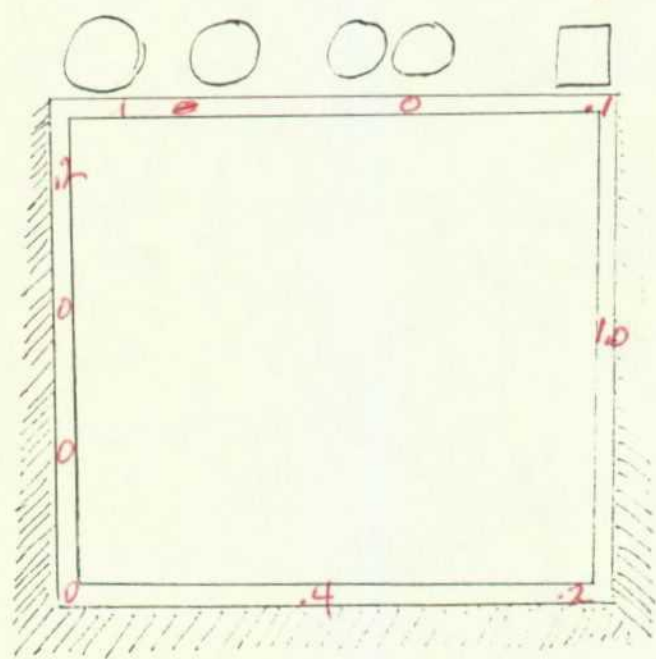
Readings by Olson, Anderson Oct 6
A. 1/3

7/1/87 1300 hrs

shifting winds

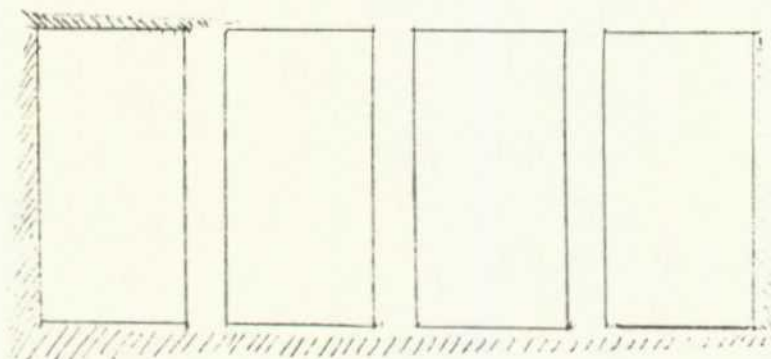
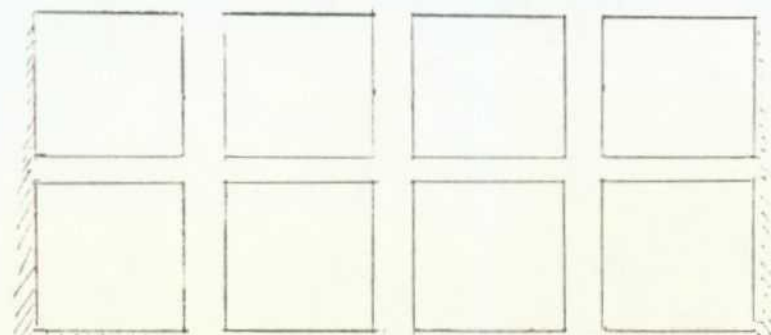
calm to gusts < 5 mph

Sprayers on

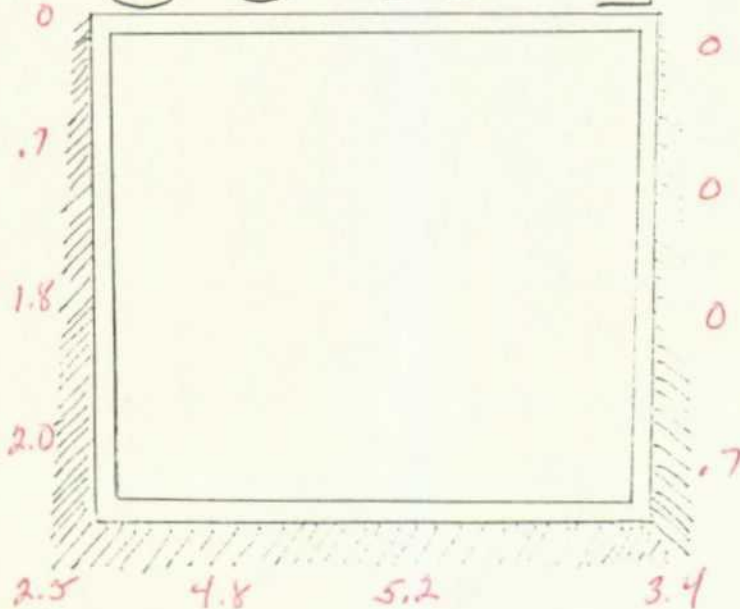


NOT TO SCALE

(335-1)
[unclear]



Trailer



7/1/87 1340

↓ 10 mph
Gusts to 15 mph

Sprayers on
Readings by Olson/Anderson, OCB
ATB