NM - 26

GENERAL CORRESPONDENCE

YEAR(S): 1985

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

50 YEARS
1935 - 1985

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

September 11, 1985

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. John M. Heller
P. O. Box 1507
Durango, Colorado 81302-1507

Dear Mr. Heller:

We have reviewed your application dated August 20, 1985 for your proposed lined pond to be located in Section 20, Township 27 North, Range 19 West, NMPM, San Juan County, New Mexico. To continue with the review process, the following information and/or details must be resolved.

1. Please submit a schematic drawing showing relevant dimensions (e.g. berm thickness), the methods of anchoring the liner(s), vents, the leak detection system, and berm slopes.

2. The drawing of the pit included in your August 20 submittal shows only one line for your leak detection system and no laterals. This will not be considered acceptable. Please consult the Guidelines sent to you on August 14, 1985.

3. Unless it can be shown, through a hydrologic and site survey of the area, that no groundwater is at risk in the area, and that the natural soils are impermeable enough to allow fluid to be gathered by the leak detection system should a leak occur, a double liner system will probably be required.

4. In our phone conversation of September 3, you mentioned that if the pond fills up with water, you will have it hauled away. Please detail such a contingency plan with the name of the hauler and the final disposal location of the water.

Please find attached a copy of OCD guidelines on the information needed by OCD for a lined pit permit. If you have any questions concerning this matter, please feel free to contact me at 827-5885.

Sincerely,

Philip L. Baca

Philip L. Baca
Environmental Engineer

cc: OCD-Aztec Office
R. L. Stamets

JOHN M. HELLER
REGISTERED ENGINEER
(Petroleum)

September 9, 1985

New Mexico Energy & Minerals Department
P. O. Box 2088
Santa Fe, New Mexico 87501
Attention: Mr. Philip Baca

Re: SERH, Inc.
Water Disposal
Beautiful Mountain Field
San Juan County, N. M.

Dear Mr. Baca:

I have taken a copy of the original sketch submitted on July 31, 1985 for obtaining approval for water disposal. On this sketch, I have penciled in the measurements and a change for the leak detection piping and how ORE, systems propose to anchor the pit liner.

Would you please look this over and advise if this will be satisfactory. If it is acceptable, then I will submit it in a more presentable manner for your files. If now acceptable, please indicate what needs to be changed for acceptance.

Very truly yours,

John M. Heller

Attach: Pit Sketch

P.O. Box 1507 • 633 Turner Drive • Durango, Colorado 81302-1507 • Office: (303) 247-0146 • Res: (303) 247-3846

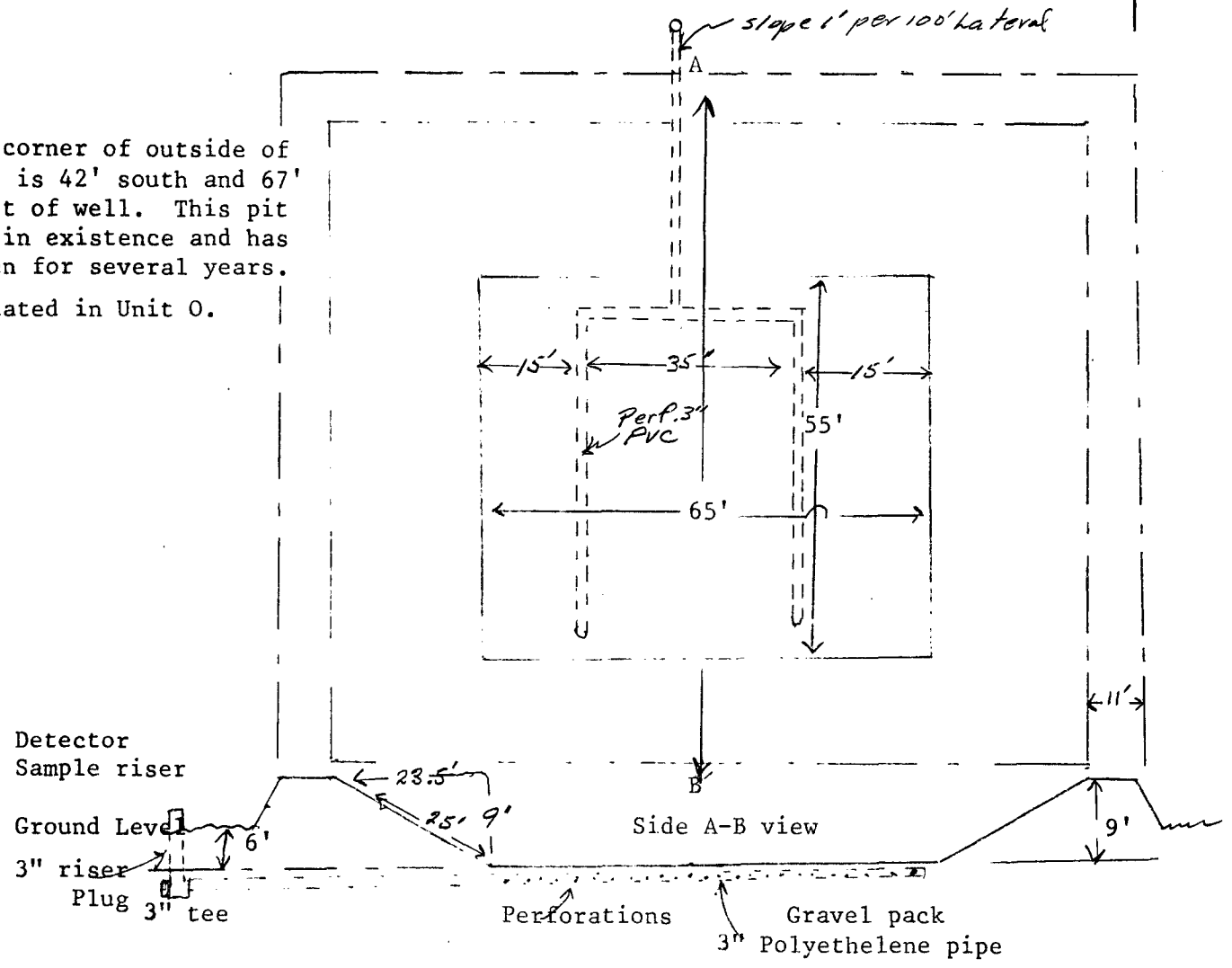
⊙ Navajo #1-20
1190' fSL; 2510' fEL
Sec. 20-27N-19W
San Juan Co., N. M.

S. E. R. H., Inc.
(Petroleum Energy Co.)
Water Disposal Pit Proposal
for temporary use in the
Beautiful Mountain field.

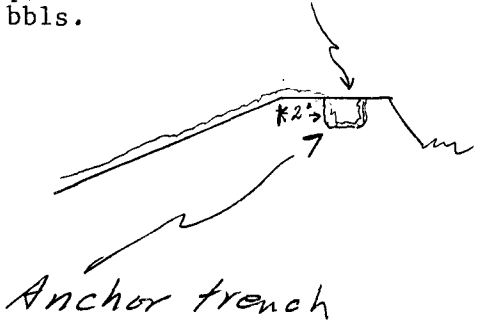
North

NE corner of outside of pit is 42' south and 67' east of well. This pit is in existence and has been for several years.

Located in Unit O.



Liner dimensions 136.5' X 127' 36 mil reinforced CPE material to be installed by ORE Systems, Farmington, New. Mexico. Anchored by cutting a trench 2' from inside top 18" deep and 18" or more wide and drop material in and cover. Estimated volume to ground level is 29,730 cft. or 5300 bbls.



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

50 YEARS
1935 - 1985

TONEY ANAYA
GOVERNOR

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

August 14, 1985

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. John M. Heller
P. O. Box 1507
Durango, Colorado 81302-1507

Dear Mr. Heller:

Attached please find OCD's guidelines for the design and installation of lined evaporation ponds and below grade tanks as per your request in our phone conversation of 8-14-85.

I have conducted a preliminary review of your proposed evaporation pond design and have concluded, based on mass balance calculations, that the pond does not have the required surface area to prevent an overflow situation based upon a discharge of 29 BPD to the pond. A summary of my calculated results is attached for your information. If you have any questions concerning the guidelines or your pond design, please feel free to contact me at 827-5885.

Sincerely,

PHILIP L. BACA
Environmental Engineer

cc: OCD-Aztec Office
R. L. Stamets

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

50 YEARS
1935 - 1985

TONEY ANAYA
GOVERNOR

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

October 18, 1985

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. J. M. Heller
P.O. Box 1507
Durango, CO 81302-1507

Re: Application for a Lined Pond
to be located in Unit O,
Section 20, Township 27 North,
Range 19 West, NMPM, San Juan
County, New Mexico

Dear Mr. Heller:

We have reviewed the plans and specifications in your application (WP-4) for the above-referenced lined evaporation pit. The design specifications submitted are acceptable and your application is hereby approved with the provisions that: a) the leak detection system design be modified to contain a non-perforated mainline running north-south, perforated laterals running east-west, and spaced as per the OCD "Guidelines"; and b) four vents are installed at mid-length of the berms to allow venting of any gases that may accumulate. It is my understanding that these provisions are acceptable to you as per your phone conversation of 10-7-85 with Mr. Philip Baca of the OCD. A copy of your schematic with the recommended changes shown in red is attached for your reference. A revised schematic is to be submitted to the OCD prior to installation of the leak detection system.

The approved application consists of the application dated August 20, 1985, and materials dated September 9, 1985, September 26, 1985, and September 27, 1985, submitted as supplements to your application.

Approval of this application allows for the disposal of produced water from the vulnerable area as outlined in Oil Conservation Commission Order No. 7940. Please be advised that the approval of this application does not relieve you of liability should your operation result in actual

pollution of surface or ground waters which may be actionable under laws and/or regulations.

There will be no routine monitoring requirements other than those outlined in your application. Any design change or increase in the design disposal rate (29 Bbl/day) shall be reported to the Division.

This approval does not take precedence over local zoning laws and is based on the premise that the ponds will receive only produced water and salt solutions (e.g., KCL solution) which are non-acidic. If in the future, you wish to dispose of other types of waste such as spent acid or septage, the OCD must be notified and prior approval obtained before such a practice commences.

The OCD District Office in Aztec shall be notified at least 24 hours in advance of primary and secondary liner installation to allow for the opportunity of an OCD representative to witness the installation.

On behalf of the staff of the Oil Conservation Division, I wish to thank you (and your staff and/or consultants) for your cooperation during this application review.

Sincerely,

R. L. STAMETS
Director

RLS/dp

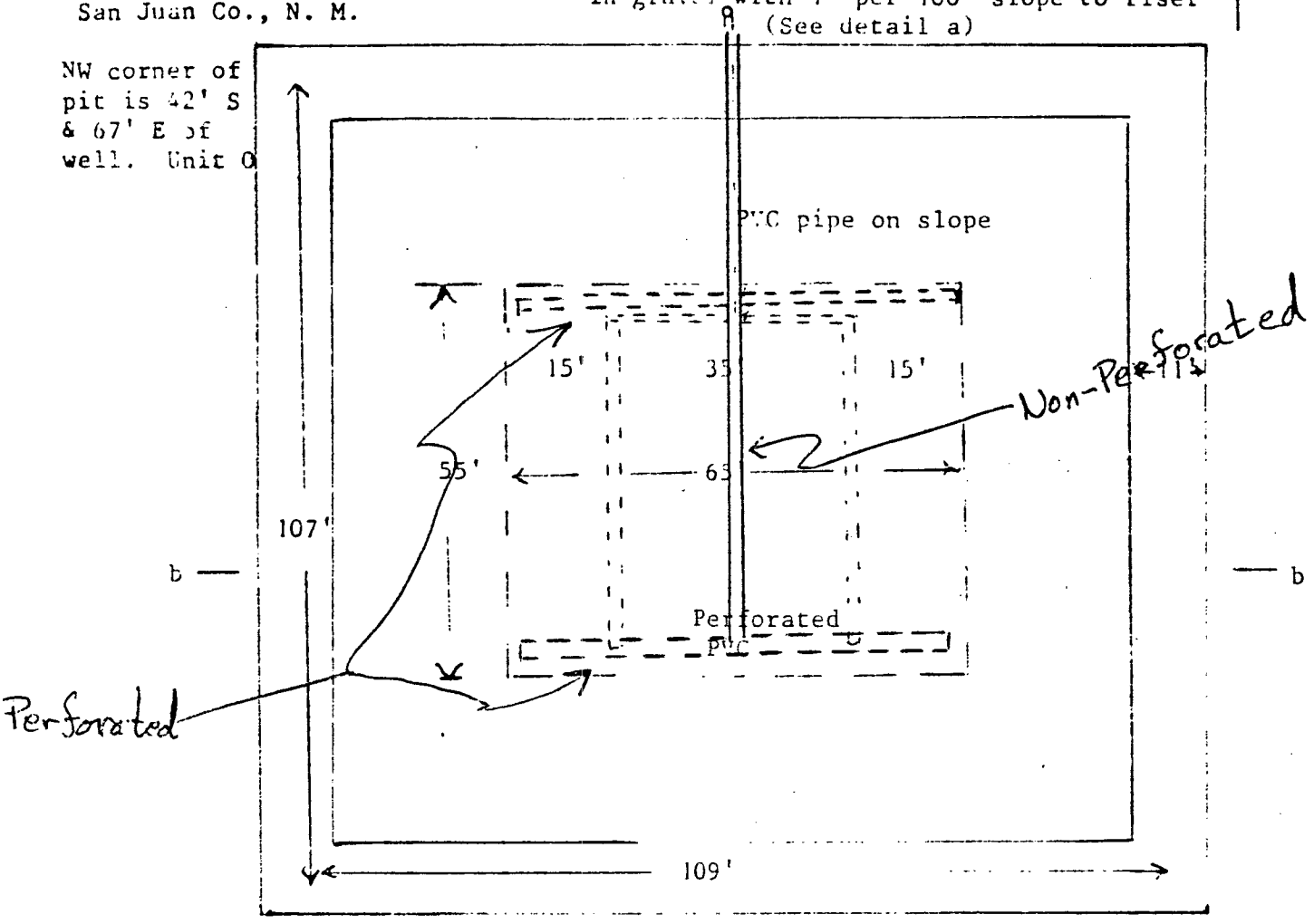
cc: OCD- Aztec Office

Navajo #1-20
1190' fSL; 2510' fEL
Sec. 20-27N-19W
San Juan Co., N. M.

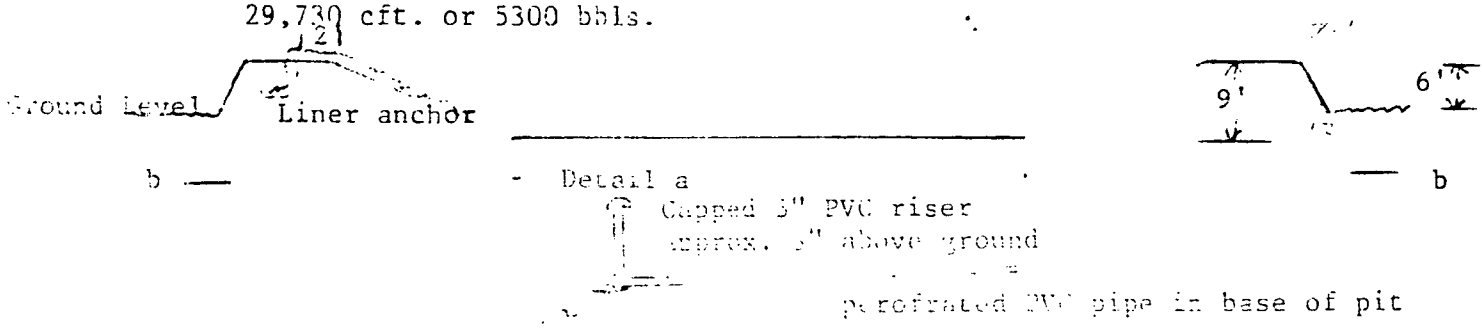
North

3" PVC pipe for monitoring to be placed in gravel with 1' per 100' slope to riser (See detail a)

NW corner of pit is 42' S & 67' E of well. Unit O



Liner dimensions 136.5' X 127' 36 mil reinforced CPE material to be installed by ORE Systems, Farmington, N. M.. Anchored in 18" X 18" trench 2' from inside top and covered. Estimated pit volume is 29,730 cft. or 5300 bbls.



Detail a

Capped 5" PVC riser
approx. 3" above ground

Perforated PVC pipe in base of pit

3" PVC

S. E. N. M., Inc.
Water Disposal Pit-Proposed
for temporary use in the
Beautiful Mountain Field.

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO

The OCD has received an application from S.E.R.H., Inc., Mr. J. M. Heller, Authorized Agent, P.O. Box 1507, Durango, Colorado, 81302-1507 for surface disposal of produced water from oil and gas production operations. The facility will be located in the S/2, SW/4, Section 20, Township 27 North, Range 19 West, NMPM, San Juan County, New Mexico. The pond located at the facility will have approximately 4000 square feet of evaporative surface area and will receive approximately 29 barrels per day of produced water. The pond will have a membrane liner with a leak detection system. The application will be reviewed by the OCD for compliance with rules for protection of fresh water and other applicable regulations, and will be approved if such requirements are met. Copies of the application may be reviewed at the OCD office in Aztec located at 1000 Rio Brazos Rd., or in Santa Fe at the State Land Office, 310 Old Santa Fe Trail, during normal business hours. Five days from the date of publication of this notice will be allowed before approval or denial of this application is given.

GIVEN Under the Seal of the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 9th day of October, 1985.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

R. L. STAMETS
Director

S E A L

Mailed to papers 10/11/85
Published 10/16/85

STATE OF NEW MEXICO

OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☑ Telephone ☐ Personal	Time 11 30	Date 10/7/85
Originating Party		Other Parties
P. Baca - OCD		John Heller - SERH

Subject: Lined Pond Application

Discussion: I asked Mr. Heller if it would be possible to alter the leak detection system in the following manner:
Install a non-perforated main running N-S in the middle of the pond and install perforated laterals running E-W and spaced as per OCD guidelines.
Mr. Heller stated he would ~~or~~ utilize this in his design.
I also told him about the need for an advertisement and that I would contact him on 10/9.

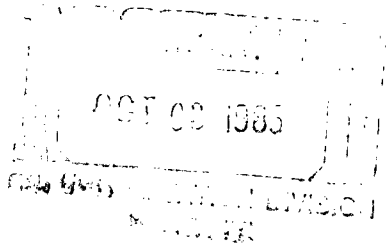
Conclusions or Agreements

Distribution

Signed P. L. Baca

JOHN M. HELLER
REGISTERED ENGINEER
(Petroleum)

September 27, 1985



Mr. Philip Baca
State of New Mexico
Energy and Minerals Department
Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: S. E. R. H., Inc.
Water Disposal Pit,
Beautiful Mountain Field
San Juan County, New Meixico

Dear Sir:

In our telephone conversations regarding the captioned pit application, you had asked me to state where we would haul and dispose of excess fluids and who the carrier would be. I failed to state this in the information mailed to you yesterday.

A new approved disposal pit has been opened and this facility approved for use, located three miles north of Bloomfield, N. M., Basin Disposal, Inc. We plan to use Shiprock Transport of Farmington, New Mexico to move the fluids. Should they be out of business at the time, we would select an approved carrier in New Mexico. We would also advise you of who this carrier would be.

Very truly yours,

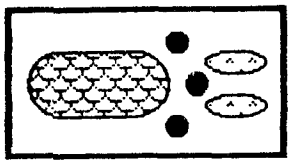
John M. Heller

John M. Heller

P.O. Box 1507 • 633 Turner Drive • Durango, Colorado 81302-1507 • Office: (303) 247-0146 • Res: (303) 247-3846

NEW MEXICO OIL CONSERVATION DIVISION
APPROVED DISPOSAL SITE

LOCATED 3 MILES NORTH OF BLOOMFIELD, NM
ON WEST SIDE OF NM HIGHWAY 44



BASIN DISPOSAL, INC.

PRODUCED WATER & DRILLING MUD DISPOSAL

P.O. BOX 100 AZTEC, NM 87410

September 23, 1985

Dear Sirs:

Please find enclosed a price schedule and an Insurance Certificate.

We plan to open the facility the first week of October. Hopefully, this facility will alleviate a major environmental problem in the San Juan Basin and we welcome an on-site inspection by any of your employees.

If you require any further information, please feel free to contact Sally or Jerry Sandel at 334-3013; D.C. or David Turner at 325-1845.

David C. Turner
Secretary-Treasurer

DCT/kw
(2) enclosures

FILE COPY

JOHN M. HELLER
REGISTERED ENGINEER
(Petroleum)

September 26, 1985

Mr. Philip Baca
State of New Mexico
Energy and Minerals Department
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: S. E. R. H., Inc.
Application for Disposal
Pit in Beautiful Mountain Field
San Juan County

Dear Sir:

I apologize for being so long in acknowledging your letter of September 11, 1985, regarding additional information on the captioned application.

Attached are copies of a revised sketch giving more detail on the installation being proposed for the pit that had previously been constructed. Also a sheet outlining the other detailed items that you had requested and an AFFIRMATION.

I have contacted Mr. Ernie Busch, Geologist, NMOCC at Aztec, and I believe he has contacted you regarding the geology underlying the pit area.

If there is anything else that is required, please advise and we will attempt to provide. If the sketch is not satisfactory, we will get a draftsman to furnish this. The one we have been using is out of town at this time.

Very truly yours,

John M. Heller

John M. Heller

Attachments - 2 each

P.O. Box 1507 • 633 Turner Drive • Durango, Colorado 81302-1507 • Office: (303) 247-0146 • Res: (303) 247-3846

APPLICATION FOR LINED EARTHEN WATER DISPOSAL PIT FOR S. E. R. H., INC. Beautiful Mountain Field, San Juan County, New Mexico. Wells situated in T26N and T27N, R19W.

A - Operator and responsible party. S. E. R. H., Inc., P. O. Box 312, Otis, Kansas 67565 is the proposed operator of this temporary waste water disposal pit. Wells producing water that this pit will serve are on Navajo Nation lands,; Navajo Leases #NOO-C-14-20-5157 and #NOO-C-14-20-5158. Telpehone number is AC 913 387-2281. General Manager - Mr. John Stiff.

B - Local agent is John Heller, Reg. Engineer, Durango, Colorado Telephone number is 303 247-0146 office and 247-3846 home. Residence at 2803 No. College Drive.

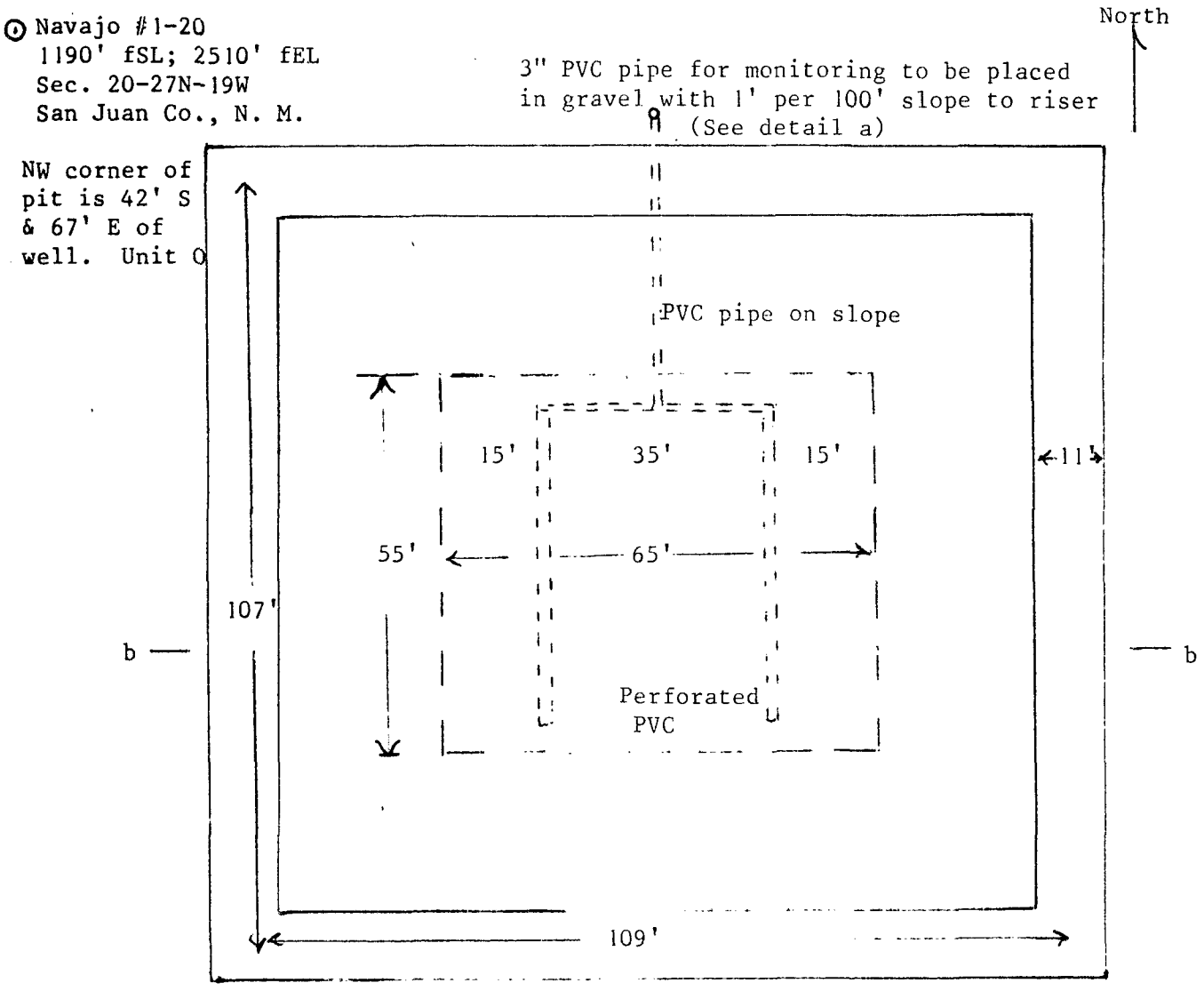
C - Location of Pit. - See attachments of Topography Exhibit and Pit Schematic.

D - Purposes of Pit - To receive waste water from producing inert gas wells and oil well in the Beautiful Mountain Field.

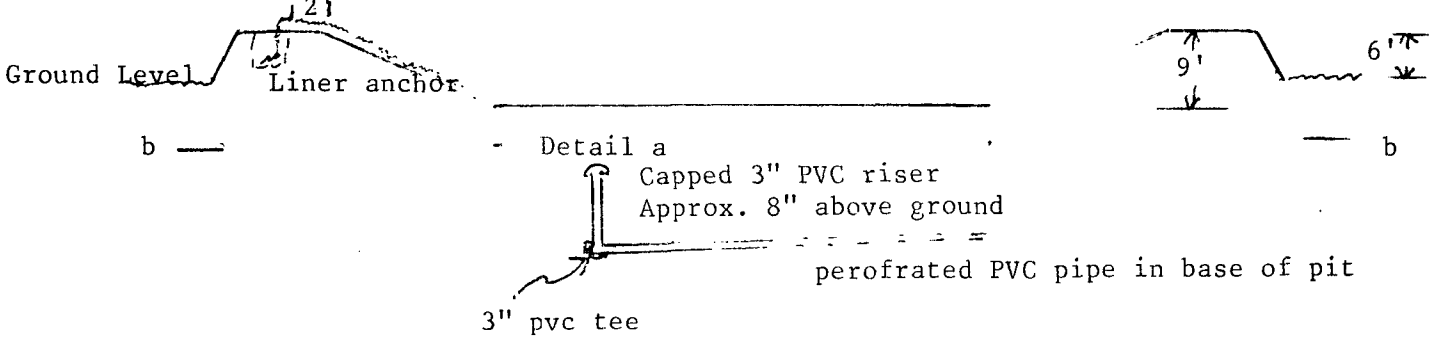
E - Copies of Application - Attached

F - Affirmation - Attached

⊙ Navajo #1-20
1190' fSL; 2510' fEL
Sec. 20-27N-19W
San Juan Co., N. M.



Liner dimensions 136.5' X 127' 36 mil reinforced CPE material to be installed by ORE Systems, Farmington, N. M.. Anchored in 18" X 18" trench 2' from inside top and covered. Estimated pit volume is 29,730 cft. or 5300 bbls.



S. E. R. H., Inc.
Water Disposal Pit-Proposed
for temporary use in the
Beautiful Mountain Field.

AFFIRMATION for Waste Water Disposal Pit: 0-20-27N-19W, NMPM
Beautiful Mountain Field
San Juan Co., New Mexico

"I hereby certify that I am familiar with the information contained in and with this application and that such information is true, accurate and complete to the best of my knowledge and belief."

John M. Heller

September 26, 1985

John M. Heller

Consultant for S. E. R. H., Inc.
N. M. Reg. #4361

Force Calculations For SERH Ponds –

Force Due To Wave Action (F_w) –

$$\frac{H_i}{gT^2} = 0.025 \qquad \frac{H_i}{d} = \frac{6.4}{8} = 0.05$$

From Fig. 7-91

$$\frac{F_w}{wd^2} \approx 0$$

Thus force due to wave action is negligible.

Force Due To Hydrostatic Pressure:

$$F_{HS} = \int_0^d \rho_w A \, d(d)$$

$A = d\,l$ where l = 1 Linear ft along bottom of dike

$$F_{HS} = \rho_w l \int_0^d [d]\, d(d)$$

$$F_{HS} = \frac{1}{2} \rho_w d^2 \qquad \rho_w \approx 66 \text{ lb/ft}^3$$

Shear Force Of Berm –

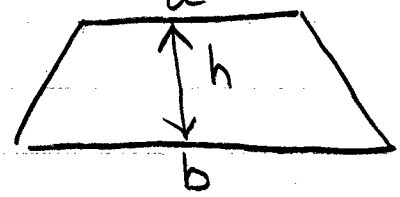
$$F_S = V_B \rho_S \mu_S$$

probably on low side

$\rho_s = 80 \frac{lb}{ft^3}$; $\mu_S = 0.4$

$$V_B = \left(\frac{a+b}{2}\right) h\, l$$

$l = 1$ ft



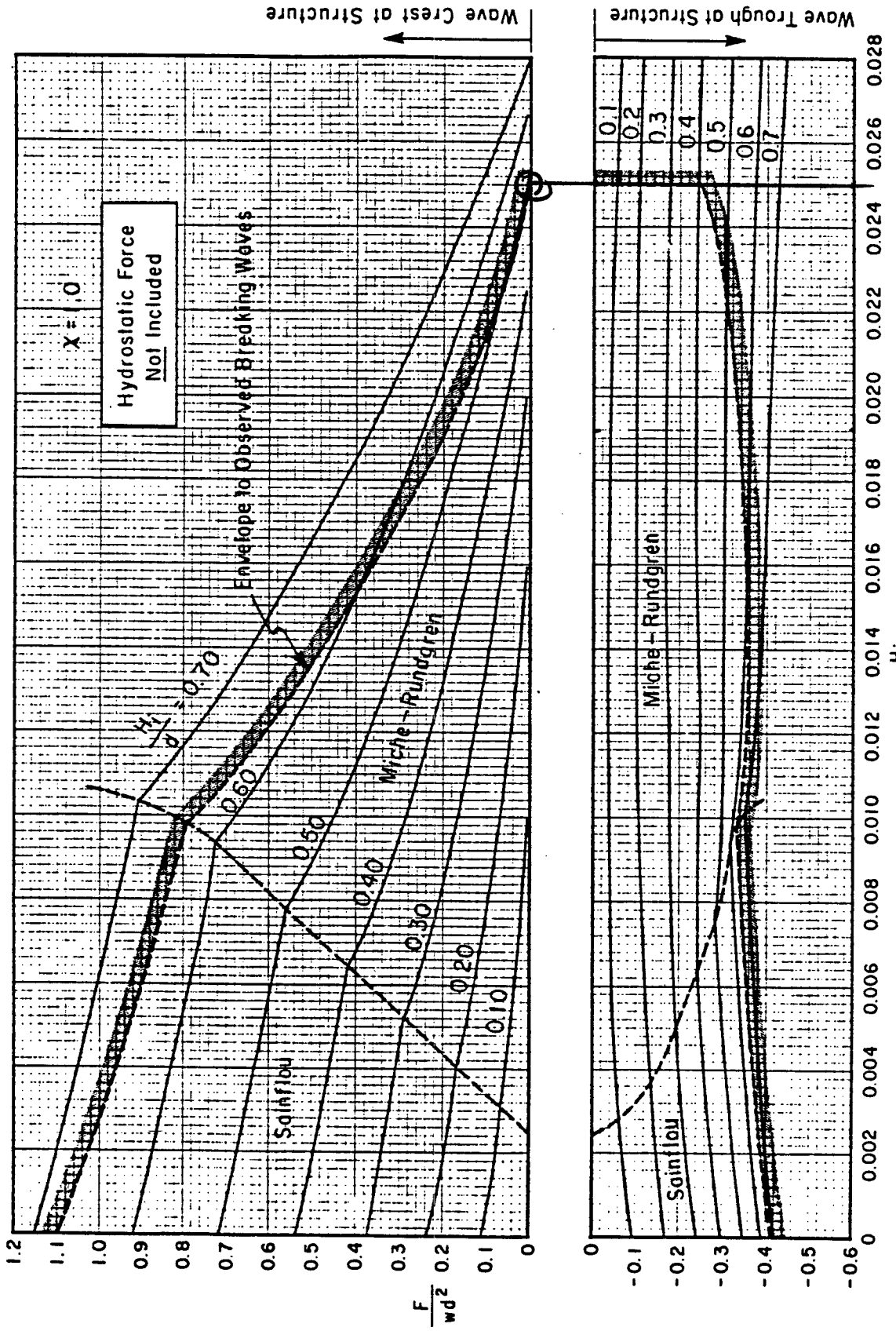


Figure 7-91. Nonbreaking wave forces; $\chi = 1.0$.

USE BERM OF LONGEST LENGTH (109 ft), THIS WILL GIVE SMALLEST VALUE OF V_B FOR THIS PARTICULAR CONFIGURATION AND THUS THE LOWEST POSSIBLE SAFETY FACTOR.

$a = 11$ ft

$b = 37$ ft   *33 ft correct*

$h = 9$ ft

$$V_B = \left(\frac{11+37}{2}\right) 9 (1) = 216 \text{ ft}^3$$

$$F_{HS} = \tfrac{1}{2}(66)(8)^2 = 2112 \text{ lbs/linear ft. of berm}$$

$$F_S = (216)(80)(0.4) = 6912$$

$$\text{SAFETY FACTOR} = \frac{F_S}{F_{HS}} = \frac{6912}{2112} = 3.3 \quad \underline{\text{OK}}$$

If SF < 2, determine outside berm slope, see [illegible] along H2O [illegible] at [illegible].

POND DESIGN FOR SERH

WAVE CALCULATIONS *

Wind Speed = U_A = 50 mph

Fetch = $(107^2 + 109^2)^{\frac{1}{2}}$ = 150 ft

Depth = 8 ft.

Slope of side = 2:1 (Actually more like 2.5:1)

I FIND WAVE HEIGHT AND PERIOD -

FROM Fig. 3-28

WAVE HEIGHT = H = 0.4 ft

PERIOD = T = 0.7 sec.

II FIND BREAKING WAVE HEIGHT

From Fig. 7-3 (Use Slope of 0.1)

$$\frac{H}{gT^2} = \frac{0.4}{32.2(0.7)^2} = 0.025$$

↑ gravity constant

$$\frac{H_b}{H} \approx 1.0$$

$H_b \approx H = 0.4$ ft

$$\frac{H_b}{gT^2} = 0.025$$

From Fig. 7-2

$\alpha \approx 2.0$

$\beta \approx 1.6$

} For Slope of 1 vert. ft. per 3 horiz. ft.

*REF. - U.S. ARMY CORPS. ENGNR. SHORE PROTECTION MANUAL

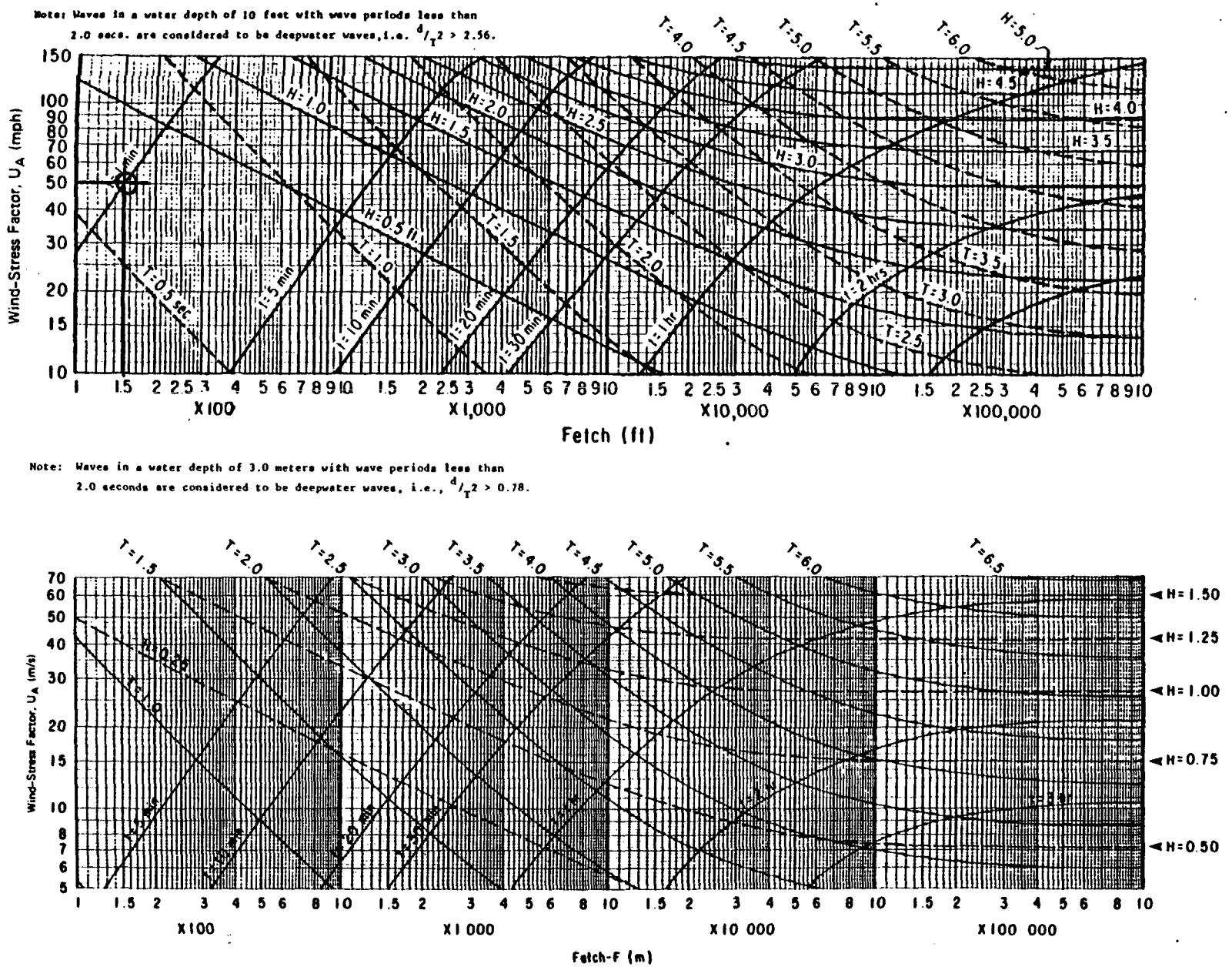


Figure 3-28. Forecasting curves for shallow-water waves; constant depths = 10 feet (upper graph) and 3.0 meters (lower graph).

2/7

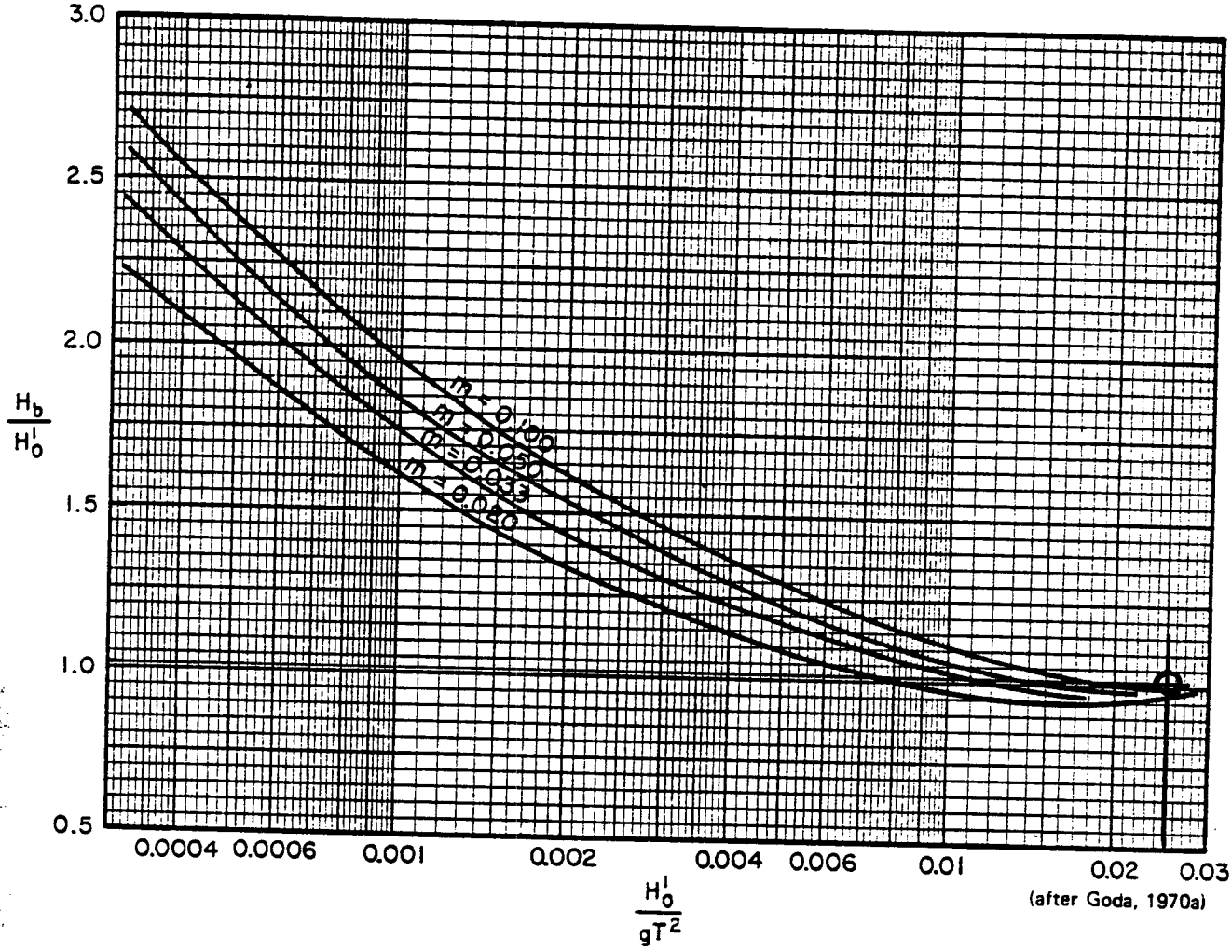


Figure 7-3. Breaker height index H_b/H_o' versus deepwater wave steepness H_o'/gT^2 .

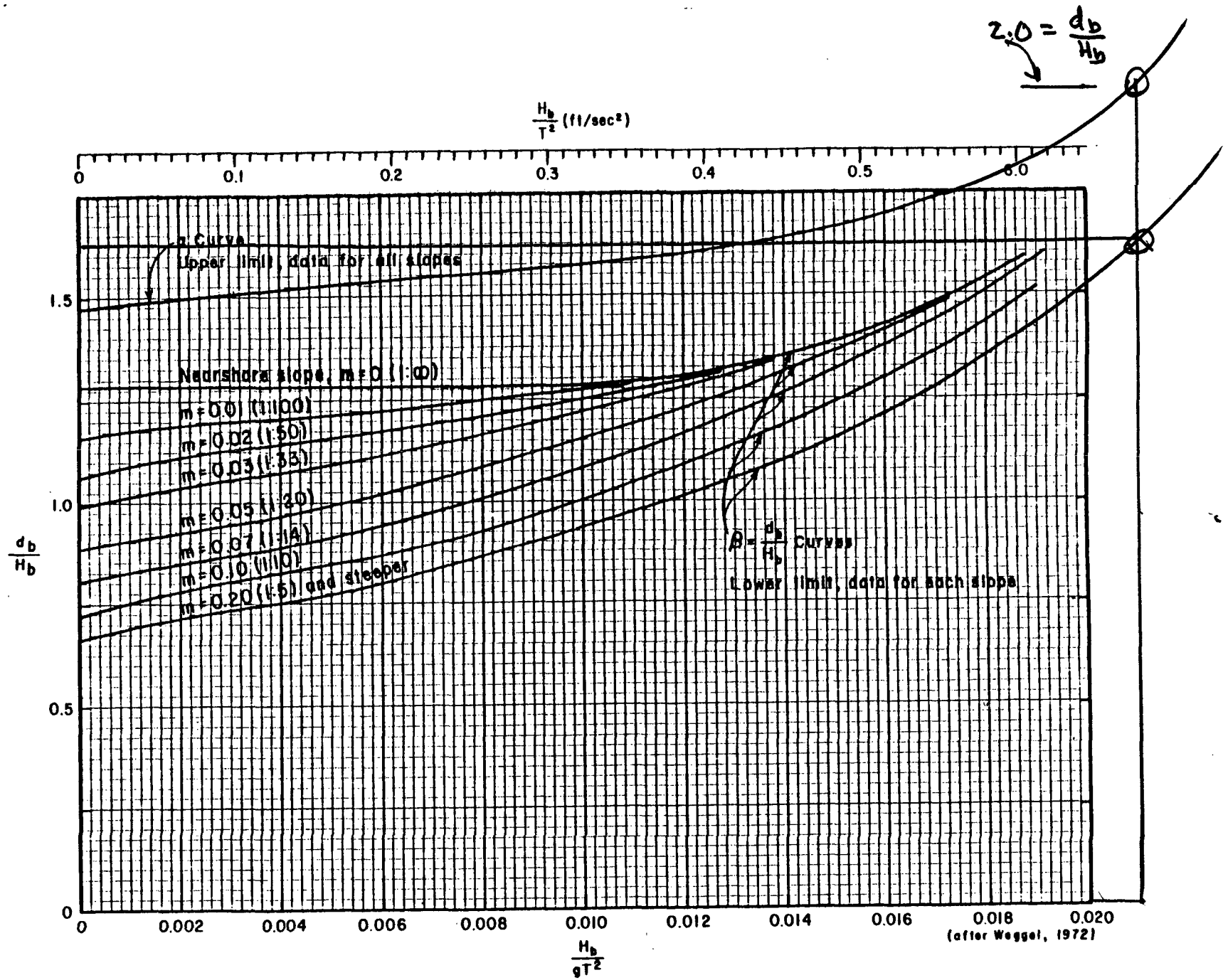


Figure 7-2. α and β versus H/gT^2.

$d_{BMAX} = \alpha H_b = 2.0(0.4) = 0.80$ ft
$d_{BMIN} = \beta H_b = 1.6(0.4) = 0.64$ ft

CONCLUSION: With a slope of 1 vertical foot per 3 horizontal feet breaking waves will occur at a dike toe depth range of 0.8 ft to 0.64 ft.

III FREEBOARD DETERMINATION

Find depth, d, at which overtopping would occur. Overtopping will occur with a wave crest and depth combination (y_c) of nine feet.

$$y_c = d + h_o + \left(\frac{1+\chi}{2}\right) H_i$$

Assume $\chi = 1.0$ (smooth surface)

$H_i = 0.4$ ft

$\frac{H_i}{gT^2} = 0.025$

From Fig 7-90 (Use deep water line*)

$\frac{h_o}{H_i} \approx 0.5$ $\quad h_o = 0.4(0.5) = 0.2$

$$d = y_c - h_o - \left(\frac{1+\chi}{2}\right) H_i$$

* Because $T < 1.4$ sec. Use deepwater waves See Fig. 3-28.

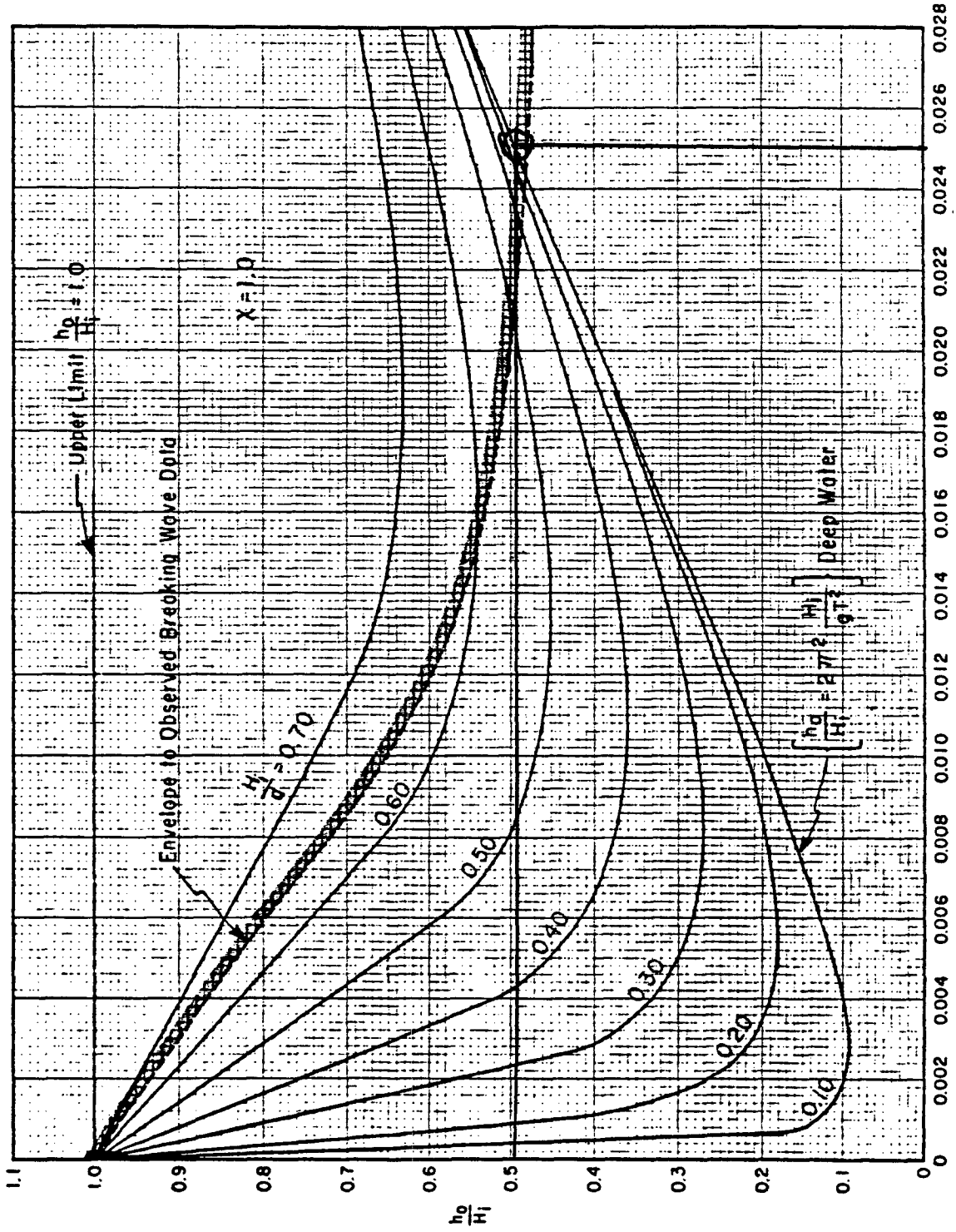


Figure 7-90. Nonbreaking waves; $\chi = 1.0$.

$$d = 9 - 0.2 - \left(\frac{1+1}{2}\right) 0.4 = 8.4 \text{ ft.}$$

CONCLUSION: At a depth of 8.4 ft., overtopping may occur, thus set max. depth at 8 ft. (Minimum freeboard of 1.0 ft.)

JOHN M. HELLER
REGISTERED ENGINEER
(Petroleum)

August 20, 1985

New Mexico Energy & Minerals Department
P. O. Box 2088
Sante Fe, New Mexico 87501
Attn: Mr. Philip L. Baca

Re: S. E. R. H., Inc.
Water Disposal
Beautiful Mountain Field
San Juan County, New Mexico

Gentlemen:

S. E. R. H., Inc. has recently assumed the operations of the captioned field with producing wells in the Permian Organ Rock, Pennsylvanian, Big Gap and Mississippian formations. There are two leases Navajo NOO-C-14-20-4157 comprising Sections 5, 6, & 7; T26N-R19W; Navajo NOO-C-14-20-5158 comprising Sections 31 & 32; T27N-R19W. There are also some wells that are under a Navajo Operating Agreement in this field. In total there are two Organ Rock producing wells - 2 BWPD; One Big Gap Pennsylvanian producing part time - 15 BWPD. There are five Mississippian wells producing a total 12 BWPD. Total is 29 BWPD. One well is currently shut-in due to high volumes of water, it is not planned to produce it until remedial work is done.

(1) Topography Map - See Attached.

(2) Water Analysis - Attached are copies of water analysis from representative wells from all three producing intervals.

(3) Evaporation Rate - For the area is estimated to be approximately 50" per year after allowance for precipitation.

(4) Periodic Disposal of Precipitated Solids - This is proposed as a temporary disposal facility - As other disposal methods are developed to permit the pit to dry and solid waste disposed of in an approved disposal site - Probably at Shiprock, N. M.

(5&6) Type of Pit Lining & Leak Detection System - See Attached.

The present pit that S. E. R. H., Inc. is proposing to line is constructed in the silty surface area covering the Graneros Shale. The Graneros appears to be right at the base of the present pit.

It is proposed to observe Leak Detection by drawing periodic water samples from the Detector Line to be installed per diagram. These samples will be obtained by inserting a 1" suction hose of a conventional fuel transfer pump and pulling out samples for analysis and comparing to pit storage samples.

P.O. Box 1507 • 633 Turner Drive • Durango, Colorado 81302-1507 • Office: (303) 247-0146 • Res: (303) 247-3846

It is recognized that the pit may not handle the calculated volume of water currently being produced. However, as previously mentioned - this is for temporary disposal until other means of disposal can be implemented.

Very truly yours,

John M. Heller

John M. Heller
Field Agent

CDS LABORATORIES

A DIVISION OF CASA DEL SOL, INC.

CDS LABS (303) 247-4220
75 Suttle Street
P. O. Box 2605
DURANGO, COLORADO 81301

SERH, INC.
ATTEN: JOHN HELLER
633 TURNER DRIVE
DURANGO, CO 81301

(303) 247-4220

JESUS

CDS ID # 3591

FIELD INFORMATION/DATA

Sample Description: Navajo #6-29 Miss.
L-29-27N-19W, San Juan CO. NM
Date Taken: _____ Time: _____
Date Received in Lab: 8/8/85
Date Completed: _____
QA Check: _____

Alkalinity		mg/L
Conductivity at 25°		umhos/cm
Dissolved Oxygen		mg/L
pH		units
Temperature		°C
Flow		

PHYSICAL PARAMETERS

Acidity		mg/L
Alkalinity		mg/L
Color		
Resistivity @ 25°C	12	ohm-cm
Dissolved Oxygen		mg/L
Hardness ($CaCO_3$)		mg/L
pH	4.81	units
Specific Gravity		mg/L
Temperature		°C
Total Combustables		mg/L
Total Dissolved Solids	135,000	mg/L
Total Solids		mg/L
Total Suspended Solids		mg/L
Turbidity (as FTU)		mg/L

TRACE METALS

otal Dissolved	mg/L
Aluminum	
Antimony	
Arsenic	
Barium	
Beryllium	
Boron	
Cadmium	
Calcium	
Chromium:	
Total	
+3 Form	
+4 Form	
Cobalt	
Copper	
Iron	
Lead	
Magnesium	
Manganese	
Mercury	
Molybdenum	
Nickel	
Phosphorus	
Potassium	
Selenium	
Silver	
Sodium	
Thallium	
Tin	
Uranium	
Vanadium	
Zinc	

CHEMICAL PARAMETERS

	mg/L
Bicarbonate	
BOD	
Carbonate	
Carbon Dioxide	
COD	
Chloride	73,600
Chlorine Demand	
Coliform	
Cyanide	
Fluoride	
MBAS	
Nitrogen:	
Ammonia	
Nitrate	
Nitrate/Nitrite	
Nitrite	
Total	
Phenols	
Phosphate	
Silica	
Sulfate	780
Sulfide	

RADIOMETRIC ANALYSIS

	pCi/L
Gross Alpha	
Gross Beta	
Radium 226	
Radium 228	

PESTICIDES

	pCi/L

HERBICIDES

	pCi/L

Dr. Joe Bowden Director

CDS LABORATORIES

A DIVISION OF CASA DEL SOL, INC.

CDS LABS (303) 247-4220
75 Suttle Street
P. O. Box 2605
DURANGO, COLORADO 81301

SERH, INC.
ATTEN: JOHN HELLER
633 TURNER DRIVE
DURANGO, CO 81301

(303) 247-4220

JESUS

CDS ID # 3589

FIELD INFORMATION/DATA

Sample Description: Navajo #2-32
Miss. 3-32-27N-19W San Juan Co. NM
Date Taken: _____ Time: _____
Date Received in Lab: 8/8/85
Date Completed: _____
QA Check: _____

Alkalinity		mg/L
Conductivity at 25°		umhos/cm
Dissolved Oxygen		mg/L
pH		units
Temperature		°C
Flow		

PHYSICAL PARAMETERS

Acidity		mg/L
Alkalinity		mg/L
Color		
Resistivity @ 23°C	20	ohm-cm
Dissolved Oxygen		mg/L
Hardness ($CaCO_3$)		mg/L
pH	6.05	units
Specific Gravity		mg/L
Temperature		°C
Total Combustables		mg/L
Total Dissolved Solids	54,200	mg/L
Total Solids		mg/L
Total Suspended Solids		mg/L
Turbidity (as FTU)		mg/L

TRACE METALS

otal Dissolved	mg/L
Aluminum	
Antimony	
Arsenic	
Barium	
Beryllium	
Boron	
Cadmium	
Calcium	
Chromium:	
Total	
+3 Form	
+4 Form	
Cobalt	
Copper	
Iron	
Lead	
Magnesium	
Manganese	
Mercury	
Molybdenum	
Nickel	
Phosphorus	
Potassium	
Selenium	
Silver	
Sodium	
Thallium	
Tin	
Uranium	
Vanadium	
Zinc	

CHEMICAL PARAMETERS

	mg/L
Bicarbonate	
BOD	
Carbonate	
Carbon Dioxide	
COD	
Chloride	28,900
Chlorine Demand	
Coliform	
Cyanide	
Fluoride	
MBAS	
Nitrogen:	
Ammonia	
Nitrate	
Nitrate/Nitrite	
Nitrite	
Total	
Phenols	
Phosphate	
Silica	
Sulfate	450
Sulfide	

RADIOMETRIC ANALYSIS

	pCi/L
Gross Alpha	
Gross Beta	
Radium 226	
Radium 228	

PESTICIDES

	pCi/L

HERBICIDES

	pCi/L

Dr. Joe Bowden Director

CDS LABORATORIES

A DIVISION OF CASA DEL SOL, INC.

CDS LABS (303) 247-4220
75 Suttle Street
P. O. Box 2605
DURANGO, COLORADO 81301

SERH, INC.
ATTEN: JOHN HELLER
633 TURNER DRIVE
DURANGO, CO 81301

(303) 247-4220

JESUS

CDS ID # 3588

FIELD INFORMATION/DATA

Sample Description: Navajo #2-S
Organ Rock L-5-26N-19W San Juan Co. NM
Date Taken: _____ Time: _____
Date Received in Lab: 8/8/85
Date Completed: _____
QA Check: _____

Alkalinity		mg/L
Conductivity at 25°		umhos/cm
Dissolved Oxygen		mg/L
pH		units
Temperature		°C
Flow		

PHYSICAL PARAMETERS

Acidity		mg/L
Alkalinity		mg/L
Color		
Resistivity @ 23°C	70	ohm-cm
Dissolved Oxygen		mg/L
Hardness ($CaCO_3$)		mg/L
pH	6.55	units
Specific Gravity		mg/L
Temperature		°C
Total Combustables		mg/L
Total Dissolved Solids	10,600	mg/L
Total Solids		mg/L
Total Suspended Solids		mg/L
Turbidity (as FTU)		mg/L

TRACE METALS

Total	Dissolved	mg/L
Aluminum		
Antimony		
Arsenic		
Barium		
Beryllium		
Boron		
Cadmium		
Calcium		
Chromium:		
Total		
+3 Form		
+4 Form		
Cobalt		
Copper		
Iron		
Lead		
Magnesium		
Manganese		
Mercury		
Molybdenum		
Nickel		
Phosphorus		
Potassium		
Selenium		
Silver		
Sodium		
Thallium		
Tin		
Uranium		
Vanadium		
Zinc		

CHEMICAL PARAMETERS

	mg/L
Bicarbonate	
BOD	
Carbonate	
Carbon Dioxide	
COD	
Chloride	4740
Chlorine Demand	
Coliform	
Cyanide	
Fluoride	
MBAS	
Nitrogen:	
Ammonia	
Nitrate	
Nitrate/Nitrite	
Nitrite	
Total	
Phenols	
Phosphate	
Silica	
Sulfate	1180
Sulfide	

RADIOMETRIC ANALYSIS

	pCi/L
Gross Alpha	
Gross Beta	
Radium 226	
Radium 228	

PESTICIDES

	pCi/L

HERBICIDES

	pCi/L

Sample contains 39% of a substance resembling a solvent in smell and action.

Dr. Joe Bowden Director

CDS LABORATORIES

A DIVISION OF CASA DEL SOL, INC.

CDS LABS (303) 247-4220
75 Suttle Street
P. O. Box 2605
DURANGO, COLORADO 81301

SERH, INC.
ATTEN: JOHN HELLER
633 TURNER DRIVE
DURANGO, CO 81301

(303) 247-4220

JESUS

CDS ID # 3590

FIELD INFORMATION/DATA

Sample Description: Navajo #3-29
Big Gap Penn. J-29-27N-19W San Juan CO. NM
Date Taken: _____ Time: _____
Date Received in Lab: 8/8/85
Date Completed: _____
QA Check: _____

Alkalinity		mg/L
Conductivity at 25°		umhos/cm
Dissolved Oxygen		mg/L
pH		units
Temperature		°C
Flow		

PHYSICAL PARAMETERS

Acidity		mg/L
Alkalinity		mg/L
Color		
Resistivity @ 23° C	15	ohm-cm
Dissolved Oxygen		mg/L
Hardness ($CaCO_3$)		mg/L
pH	5.65	units
Specific Gravity		mg/L
Temperature		°C
Total Combustables		mg/L
Total Dissolved Solids	81,000	mg/L
Total Solids		mg/L
Total Suspended Solids		mg/L
Turbidity (as FTU)		mg/L

TRACE METALS

otal Dissolved	mg/L
Aluminum	
Antimony	
Arsenic	
Barium	
Beryllium	
Boron	
Cadmium	
Calcium	
Chromium:	
Total	
+3 Form	
+4 Form	
Cobalt	
Copper	
Iron	
Lead	
Magnesium	
Manganese	
Mercury	
Molybdenum	
Nickel	
Phosphorus	
Potassium	
Selenium	
Silver	
Sodium	
Thallium	
Tin	
Uranium	
Vanadium	
Zinc	

CHEMICAL PARAMETERS

	mg/L
Bicarbonate	
BOD	
Carbonate	
Carbon Dioxide	
COD	
Chloride	42,200
Chlorine Demand	
Coliform	
Cyanide	
Fluoride	
MBAS	
Nitrogen:	
Ammonia	
Nitrate	
Nitrate/Nitrite	
Nitrite	
Total	
Phenols	
Phosphate	
Silica	
Sulfate	1380
Sulfide	

RADIOMETRIC ANALYSIS

	pCi/L
Gross Alpha	
Gross Beta	
Radium 226	
Radium 228	

PESTICIDES

	pCi/L

HERBICIDES

	pCi/L

Dr. Joe Bowden Director

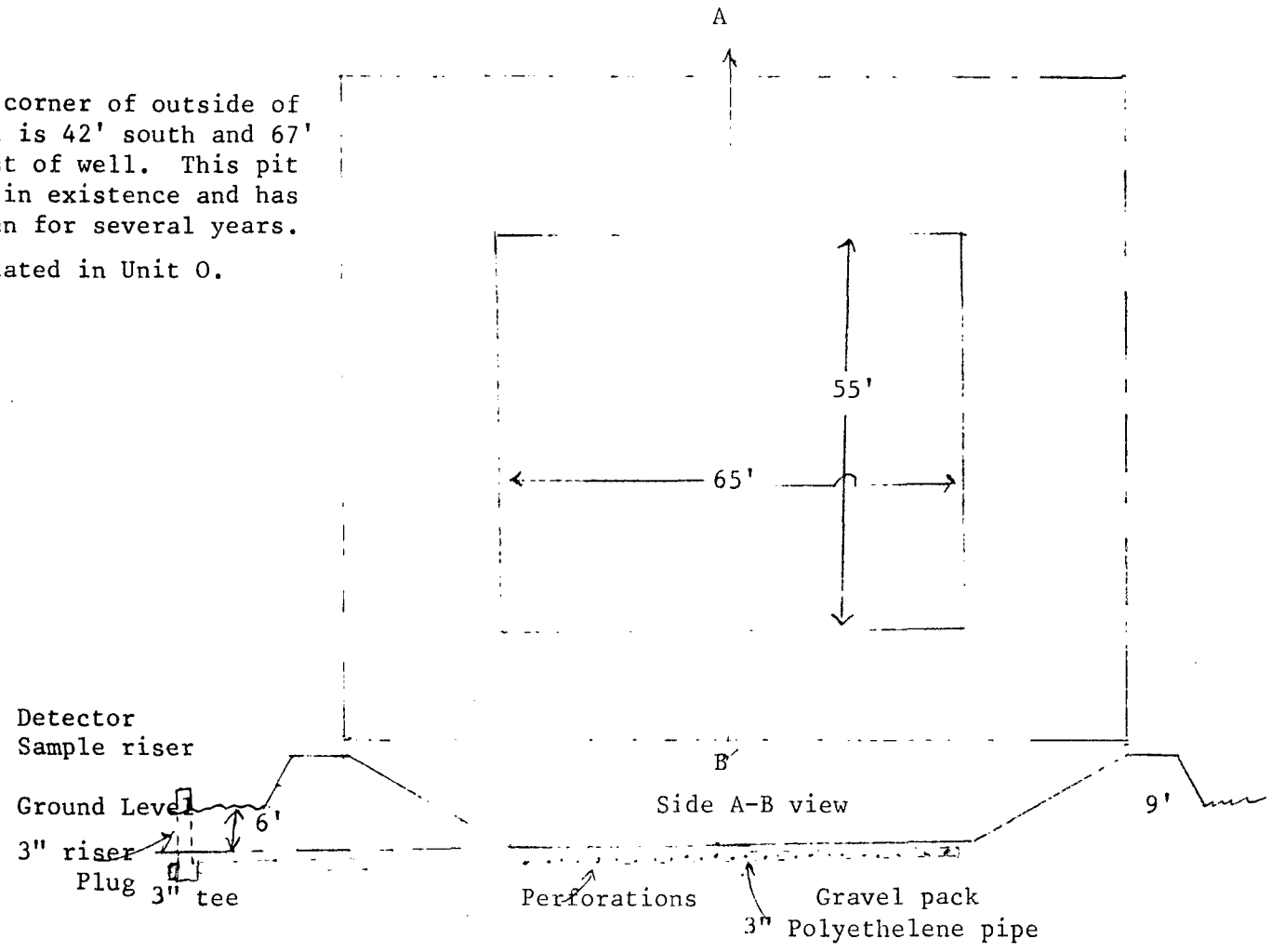
⊙ Navajo #1-20
1190' fSL; 2510' fEL
Sec. 20-27N-19W
San Juan Co., N. M.

S. E. R. H., Inc.
(Petroleum Energy Co.)
Water Disposal Pit Proposal
for temporary use in the
Beautiful Mountain field.

North

NE corner of outside of pit is 42' south and 67' east of well. This pit is in existence and has been for several years.

Located in Unit O.



Liner dimensions 136.5' X 127' 36 mil reinforced CPE material to be installed by ORE Systems, Farmington, New. Mexico.

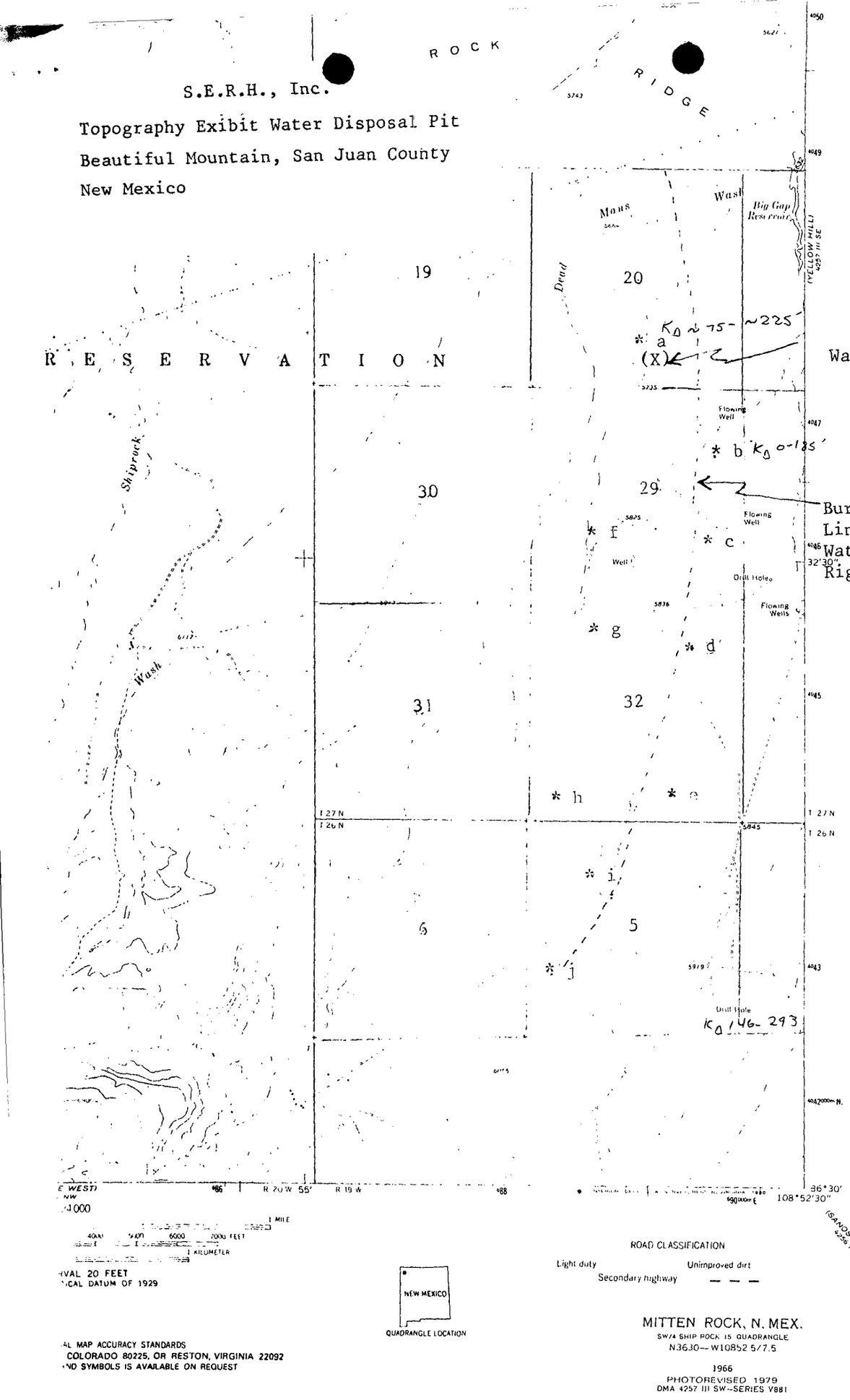
Estimated volume to ground level is 29,730 cft. or 5300 bbls.

S.E.R.H., Inc.

Topography Exibit Water Disposal Pit

Beautiful Mountain, San Juan County

New Mexico



All wells are on the Navajo Indian Reservation and are identified as S.E.R.H., Inc. Company - Operator: a - #1-20 SE/4 Sec. 20; b - #2-29 NE/4 Sec. 29; c - #3-29 SE/4 Sec. 29; d - #2-32 NE/4 Sec. 32; e - #1-32 SE/4 Sec.32; f - #6-29 SW/4 Sec. 29; g - Proposed #3-32; h - Proposed #4-32; i - #1-5 NW/4 Sec. 5-26N-19W; j - #2-5 SW/4 Sec. 5-26N-19W.

THE REPRODUCTION OF

THE

FOLLOWING

DOCUMENT (S)

CANNOT BE IMPROVED

DUE TO

THE CONDITION OF

THE ORIGINAL

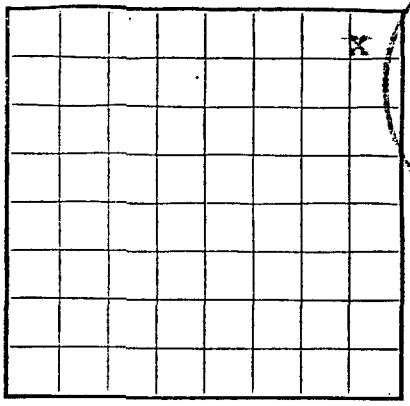
Form 9-330

Budget Bureau No. 42-R355.4.
Approval expires 12-31-60.

U. S. LAND OFFICE Navajo Tribal Con.
SERIAL NUMBER 14-20-603-507
LEASE OR PERMIT TO PROSPECT

RECEIVED
JUN 19 1963
OIL CON. COM.
DIST. 3

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



LOCATE WELL CORRECTLY

LOG OF OIL OR GAS WELL

Company El Paso Natural Gas Products Co. Address P. O. Box 1560, Farmington, New Mexico

Lessor or Tract Beautiful Mountain Field Wildcat State New Mexico

Well No. 1 Sec. 29 T. 27N R. 19W Meridian NMPM County San Juan

Location 660 ft. {N./S.} of N Line and 660 ft. {E./W.} of E Line of Section 29 Elevation 5744'
(Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed ORIGINAL SIGNED BY: JOHN J. STROJEK

Date June 14, 1963 Title Petroleum Engineer

The summary on this page is for the condition of the well at above date.

Commenced drilling April 15, 1963 Finished drilling April 23, 1963

OIL OR GAS SANDS OR ZONES

(Denote gas by G)

No. 1, from ____ to ____ No. 4, from ____ to ____

No. 2, from ____ to ____ No. 5, from ____ to ____

No. 3, from ____ to ____ No. 6, from ____ to ____

IMPORTANT WATER SANDS

No. 1, from 270 to 300 No. 3, from ____ to ____

No. 2, from 360 to 600 No. 4, from ____ to ____

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose
8-5/8"	23.0#	8 rd.	J-55	29'	None				Surf. Csg.

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
8-5/8"	31'	10	Back fill to surface		

MARK

FOLD

PLUGS AND ADAPTERS

Heaving plug—Material ____ Length ____ Depth set ____

Adapters—Material ____ Size ____

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out
		See "Well History"				

TOOLS USED

Rotary tools were used from 0 feet to 1305 feet, and from ____ feet to ____ feet

Cable tools were used from ____ feet to ____ feet, and from ____ feet to ____ feet

DATES

P & A April 23, 1963 Put to producing ____, 19____

The production for the first 24 hours was ____ barrels of fluid of which ____% was oil; ____% emulsion; ____% water; and ____% sediment. Gravity, °Bé. ____

If gas well, cu. ft. per 24 hours ____ Gallons gasoline per 1,000 cu. ft. of gas ____

Rock pressure, lbs. per sq. in. ____

EMPLOYEES

____, Driller ____, Driller

____, Driller ____, Driller

FORMATION RECORD

FROM—	TO—	TOTAL FEET	FORMATION
0	185	185	Dakota: Lt. to dk. gy. foss. carb. sl./calc. sl./silty ss. w/pyrite inclusion, thin sh. bands clay & shale breaks.
185	360	175	Morrison: Inbd. gn. brn. and red waxy sh. & fn. to cse. gr. sand.
360	645	285	Westwater: Mbr. Morrison
645	690	45	Recapture: Mbr. Morrison
690	1088	398	Salt Wash: Mbr. Morrison
1088	1228	140	Summerville fm.: Reddish-brn., sft., sdy. to shaly siltstone & white fn. to med. gr. round poorly consolidated ss.
1228	1240	12	Todilto ls.: Lt. to dk. gry., silty, laminated limestone.
1240	1294	54	Entrada ss.: White to orange, fn. to cse. gr. ss., red orange soft siltstone, red to brn. soft silty shale.
			TOPS ARE FROM ELECTRIC LOGS AND RADIOACTIVITY LOGS.

(OVER)

FORMATION RECORD—Continued

CONFIDENTIAL

-331
1963)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.
#14-20-0603-8534

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
Navajo

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Navajo Tract #381

9. WELL NO.
1

10. FIELD AND POOL, OR WILDCAT
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 5, 26N, 19W
Beautiful Mountain Area

12. COUNTY OR PARISH
San Juan

13. STATE
New Mexico

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

LL ☐ GAS WELL ☐ OTHER Wildcat

ME OF OPERATOR
ada Petroleum Corporation

DRESS OF OPERATOR
). Box 1469, Durango, Colorado

CATION OF WELL (Report location clearly and in accordance with any State requirements.* e also space 17 below.)
surface
ter of SE¼ of SE¼, 660' FSL & 660' FEL, Sec. 5, T-26N, W, San Juan County, New Mexico

RMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)
GR 5933', DF 5947', KB 5948'

Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
EST WATER SHUT-OFF	☐	PULL OR ALTER CASING	☐	WATER SHUT-OFF	☐	REPAIRING WELL	☐
RACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	☐	ALTERING CASING	☐
HOOT OR ACIDIZE	☐	ABANDON*	☐	SHOOTING OR ACIDIZING	☐	ABANDONMENT*	X
EPAIR WELL	☐	CHANGE PLANS	☐	(Other)			
Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

SCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.) *

65 - 6310' Total Depth: Plugged and Abandoned

Cement plugs spotted in well as follows:

80	sx.	cement	from	6250'	to	6050' - 200'	Plug
40	"	"	"	3830'	"	3730' - 100'	"
40	"	"	"	5430'	"	5330' - 100'	"
40	"	"	"	3100'	"	3000' - 100'	"
40	"	"	"	2150'	"	2050' - 100'	"
40	"	"	"	1050'	"	950' - 100'	"

Installed swage & 3" valve on top of 9-5/8" casing. The Navajo Tribe has taken over well for water. Hole has heavy rotary mud between plugs. Plugs spotted as recommended by Mr. John Ward, USGS, Farmington, New Mexico.

We will fill pits, level location and install Federal Dry Hole Marker as soon as rig is moved off of location. We will file logs as soon as received from Schlumberger

RECEIVED
MAY 2 1966
OIL CON. COM.
DIST. 3

CONFIDENTIAL

ereby certify that the foregoing is true and correct

GNED [signature] TITLE Field Clerk DATE 4/13/65

his space for Federal or State office use)

PROVED BY _____ TITLE _____ DATE _____

NDITIONS OF APPROVAL, IF ANY:

RECEIVED
APR 14 1965
U. S. GEOLOGICAL SURVEY
FARMINGTON, N. M.

*See Instructions on Reverse Side

INSTRUCTIONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 35.

Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Item 18: Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.

Items 22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.

Item 29: *"Sacks Cement":* Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool.

Item 33: Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

37. SUMMARY OF POROUS ZONES:
SHOW ALL IMPORTANT ZONES OF POROSITY AND CONTENTS THEREOF; CORED INTERVALS; AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
3/23/65 - DST #1 -			Tested from 4864' to 4964', Upper Hermosa Zone, 4 Hr. Test, 4-1/2" DP, No Water Cushion, 3/4" Btm. & 1" Top Opening In Tool. Opened tool, had a strong blow of air immediately and non-flammable gas. Gas vol. increased to 169 MCF Daily Rate in 30 Min., and decreased to 105 MCF Daily Rate in first hour and stayed @ 105 MCF for remainder of test. Closed tool for 90 Min. BHP. Pulled packers loose, recovered 280' (1.49 Bbls.) of gas cut drlg. mud, no show of oil or water. IHP 2692#, IFP 135#, FFP 108#, 10 Min. BHP 1868#, 20 Min. 2001#, 30 Min. 2308#, 40 Min. 2375#, 50 Min. 2415#, 60 Min. 2442#, 70 Min. 2482#, 80 Min. 2496#, 90 Min. 2509# & FHP 2692#.
3/27/65 - DST #2 -			Tested from 5375' to 5406', Hermosa Zone, 4 Hr. Test, 4-1/2" DP, No Water Cushion, 3/4" Btm. & 1" Top Opening In Tool. Opened tool, had a strong blow of air immediately and continued throughout test. Vol. too small to measure. Closed tool for 90 Min. BHP. Pulled packers loose, recovered 15' (.08 Bbls.) of drlg. mud, no show of oil, gas or water. IHP 2962#, IFP 5#, FFP 5#, 90 Min. BHP 11# and FHP 2962#.
			CONTINUED ON ATTACHED SHEET.

38. GEOLOGIC MARKERS

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
SCHLUMBERGER TOPS:		
Dakota	146'	
Morrison	293'	
Entrada	1374'	
Chinle	2091'	
Moenkopi	2870'	
DeChelly	3034'	
Organ Rock	3690'	
Upper Hermosa	4767'	
Paradox "C"	5397'	
Lower Hermosa	5664'	
Molas	5761'	
Mississippian	5781'	
Ouray	5924'	
Elbert	5964'	
McCracken	6111'	
Aneth	6234'	
Precambrian	6290'	

#3 - Tested fro
No Water Cushion
blow of air i
Gas to surfa
hrs., vol
of test
Recov
32

U.S. GOVERNMENT PRINTING OFFICE: 1963—O-683636

Form 9-330
(Rev. 5-63)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE* (See other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R355.5.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

5. LEASE DESIGNATION AND SERIAL NO.: NOO-C-14-20-2976

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: Navajo Tribal

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Navajo 20

9. WELL NO.: 1

10. FIELD AND POOL, OR WILDCAT: Jadon - Barker Creek

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: 20-27N-19W

1a. TYPE OF WELL: OIL WELL [X] GAS WELL [ ] DRY [ ] Other

b. TYPE OF COMPLETION: NEW WELL [X] WORK OVER [ ] DEEP-EN [ ] PLUG BACK [ ] DIFF. RESVR. [ ] Other

2. NAME OF OPERATOR: Bass Enterprises Production Co.

3. ADDRESS OF OPERATOR: Box 2131, Denver, Colorado 80201

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)*
At surface: 1190' FSL, 2510' FEL
At top prod. interval reported below
At total depth

14. PERMIT NO.: | DATE ISSUED: 6-19-78

12. COUNTY OR PARISH: San Juan | 13. STATE: New Mexico

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
10-11-78	10-29-78	12-19-78	5711' GL, 5720' KB	---

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
5670'	5626		→	0-TD	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*: 5589' to 5594.5 Barker Creek

25. WAS DIRECTIONAL SURVEY MADE: NO

26. TYPE ELECTRIC AND OTHER LOGS RUN: DILL, FDC-CNL, BHC

27. WAS WELL CORED: YES

28. CASING RECORD (*Report all strings set in well*)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	48#/ft	202	17-1/2"	200 sx	NONE
8-5/8"	24#/ft	1202	12-1/4"	700 sx	NONE
5-1/2"	14#/ft	5670	7-7/8"	400 sx	NONE

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2-3/8"	5602	---

31. PERFORATION RECORD (*Interval, size and number*)
5589-5594.5 (12 holes)

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
5589-5594.5	500 gallons 15% HCl
	3000 gallons 20% HCl

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (*Flowing, gas lift, pumping—size and type of pump*)	WELL STATUS (*Producing or shut-in*)
12-4-78	Pumping 1-1/2" top hold down	Producing

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
1-11-79	24	open	→	22	60	46	2727

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
0	0	→	22	60	46	48

34. DISPOSITION OF GAS (*Sold, used for fuel, vented, etc.*): Used for fuel, vent

TEST WITNESSED BY: Pumper

35. LIST OF ATTACHMENTS

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED [signature] TITLE Sr. Production Engineer DATE 1-23-79

RECEIVED
JAN 26 1979
OIL CON. COM.

*(See Instructions and Spaces for Additional Data on Reverse Side)

INSTRUCTIONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 35.

Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Item 18: Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.

Items 22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.

Item 29: *"Sacks Cement":* Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool.

Item 33: Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

37. SUMMARY OF POROUS ZONES:
SHOW ALL IMPORTANT ZONES OF POROSITY AND CONTENTS THEREOF; CORED INTERVALS; AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
			DST
Barker Creek	5571	5672	IF 15 min, ISI 120 min, FF 120 min FSI 240 min. Open tool with strong blow, close tool - still strong blow. Gas to surface 17 min. Open tool on ¼" choke After 15 min on ¼" choke 170 MCFD @ 100 psig After 30 min on ¼" choke 210 MCFD @ 125 psig After 45 min on ¼" choke 213 MCFD @ 130 psig Aft. 60 min on ¼" choke 240 MCFD @ 150 psig Aft. 75 min on ¼" choke 240 MCFD @ 150 psig Aft. 90 min on ¼" choke 260 MCFD @ 160 psig Aft 120 min on ¼" choke 260 MCFD @ 160 psig Rec 427' oil & gas, 183' HO&GC md (98% oil) 109' MSW, 153' SW, total rec - 872' IH 3038 FH 3038 IF 107-214 FF 187-562 ISI 2174 building FSI 1824 building
CORE:			
Barker Creek	5570	5622	

38. GEOLOGIC MARKERS

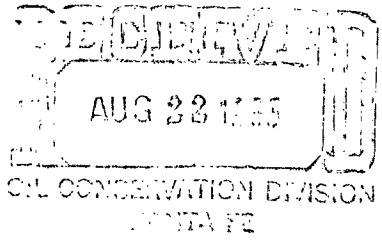
NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
Todilto		1286
Entrada		1300
Chinle		1800
DeChelly		2954
Organ Rock		3578
Supai Evap		4044
Hermosa		4998
Akah		5390
1st Barker Crk		5570
2nd Barker Crk		5620

U.S. GOVERNMENT PRINTING OFFICE: 1963—O-683636

GPO 680-147

JOHN M. HELLER
REGISTERED ENGINEER
(Petroleum)

August 20, 1985



Philip L. Baca
New Mexico Energy & Minerals
P. O. Box 2088
Sante Fe, New Mexico 87501

Dear Philip:

I appreciate you checking out the pit volumes and evaporation rates for the proposed pit on the Beautiful Mountain Field. I was at a loss for an evaporation rate. Thank you for the other data pertaining to the water pits for New Mexico.

We recognize that this pit will not adequately fulfill the field requirements but since it is already constructed it will serve the immediate needs, if permitted, until other disposal methods have been investigated.

Very truly yours,

John M. Heller

John M. Heller

P.O. Box 1507 • 633 Turner Drive • Durango, Colorado 81302-1507 • Office: (303) 247-0146 • Res: (303) 247-3846

EVAP. CALCULATIONS FOR SERO POND

DISCHARGE = 29 BPD = 1218 GPD

SURFACE AREA = 65' x 55' = 3575 ft²

APPROX. DEPTH = 9'

EVAPORATION & PRECIPITATION DATA FOR FARMINGTON AREA:

MONTH	EVAPORATION, IN.	PRECIPITATION, IN.
J	0.96	0.52
F	1.56	0.55
M	3.79	0.61
A	6.34	0.58
M	8.01	0.46
J	8.83	0.40
J	8.73	0.91
A	7.38	1.01
S	5.71	0.96
O	3.79	0.99
N	2.03	0.45
D	0.99	0.63

MONTHLY DISCHARGE, GAL.

J- 37,758
F- 34,104
M- 37,758
A- 36,540
M- 37,758
J- 36,540
J- 37,758
A- 37,758
S- 36,540
O- 37,758
N- 36,540
D- 37,758

YR. 1

MONTH	DEPTH AT END OF MO., FT.	
J	1.38	
F	2.57	
M	3.71	
A	4.60	
M	5.38	
J	6.05	
J	6.81	
A	7.69	
S	8.66	
O	9.83	← OVERFLOW!
N	11.0	
D	12.5	

CONCLUSION: POND NOT SIZED PROPERLY FOR USE AS AN EVAPORATION POND IF DISCHARGE IS 29 BPD.

Memo

From
FRANK T. CHAVEZ
District Supervisor

To Dave Boyer / Phil
Jami

From Frank 8/6 - Pit is located in recharge area outside of Vul Area SW of Shiprock.

Questions to decide -

(1) How long pit to be used

(2) If 6 months or greater do we want to do review?

(3) What should our policy be on lined (or unlined pits) outside vulnerable area for ~~com~~ non-individual pits (eg. should we review when submitted or just say we aren't yet involved out here?)

JOHN M. HELLER
REGISTERED ENGINEER
(Petroleum)

July 31, 1985

Bureau of Land Management
Fluid Minerals Section
Caller Service 4104
Farmington, New Mexico 87499

New Mexico Oil Conservation Comm.
1000 Rio Brazos Road
Aztec, New Mexico 87410

Gentlemen:

Re: Water Disposal Pit
O-20-27N-19W
San Juan County, New Mexico

Attached are copies of a Sundry Notice Form 9-331 regarding an INC Notice and a request to save an open pit and convert it to a lined waste water evaporative pit for temporary use until a more adequate waste water system can be made.

If approval can be obtained for utilizing this pit with a liner, it will take approximately two weeks get the material into the area and probably another two weeks to make the installation.

We are requesting a time extension and modification of the Incidence of Non-compliance.

S. E. R. H., Inc. is in the process of negotiating with Petroleum Energy, Inc. and the Navajo Nation to obtain the proper designations for the total operations of the Beautiful Mountain field that has been developed for the refining of helium gasses.

Designation of Operator will be filed in the near future on the balance of the leases where this has not been accomplished.

Very truly yours,

John M Heller

John M. Heller
Consultant for S. E. R. H., Inc.

P.O. Box 1507 • 633 Turner Drive • Durango, Colorado 81302-1507 • Office: (303) 247-0146 • Res: (303) 247-3846

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well ☐ gas well ☒ Helium other

2. NAME OF OPERATOR (Petroleum Energy Co.)
S. E. R. H., Inc.

3. ADDRESS OF OPERATOR
P. O. Box 312, Otis, Kansas 67565

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 1190' fSL; 2510' fEL SW/4 SE/4
AT TOP PROD. INTERVAL: Same Unit O
AT TOTAL DEPTH: Same

5. LEASE
Navajo Operating Agreement

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
Navajo

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Navajo 20

9. WELL NO.
1

10. FIELD OR WILDCAT NAME
Beautiful Mountain

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
20-27N-19W NMPM

12. COUNTY OR PARISH
San Juan

13. STATE
New Mexico

14. API NO.
?

15. ELEVATIONS (SHOW DF, KDB, AND WD)
5711' Gr.

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF	☐	☐
FRACTURE TREAT	☐	☐
SHOOT OR ACIDIZE	☐	☐
REPAIR WELL	☐	☐
PULL OR ALTER CASING	☐	☐
MULTIPLE COMPLETE	☐	☐
CHANGE ZONES	☐	☐
ABANDON*	☐	☐
(other) Disposal Pit	x	

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

RECEIVED
AUG 1 1985
OIL CON. DIV.
DIST. 3

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

This existing pit was dug several years ago when the well was re-entered to make a water disposal well. During the activity by Petroleum Energy Co. it was made into a Mississippian Helium bearing inert gas well. Also during the development of other adjacent wells in Secs. 28, 29, 32 of 27-19 and Sec. 5 of 26-19, a 3" polyethelene water line was strung and buried along with the 3" steel gas line that constitues a gathering system in the field.

On 7/1/85 a Notice of Incidents of Non-Compliance was issued on this open pit. It is requested that consideration be given to S. E. R. H., Inc. to line this pit and use for a temporary disposal evaporative pit until such time as a determination can be made for other disposal means for the Navajo Operating Agreement wells, those on Leases #NOO-C-14-20-4157 and #NOO-C-14-20-4158. Estimated daily water production is approx. 29 BPD for the 9 producing wells in the field. Proposed pit modification attached.

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED John M Heller TITLE Consultant DATE July 31, 1985
John M. Heller For S. E. R. H., Inc.

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

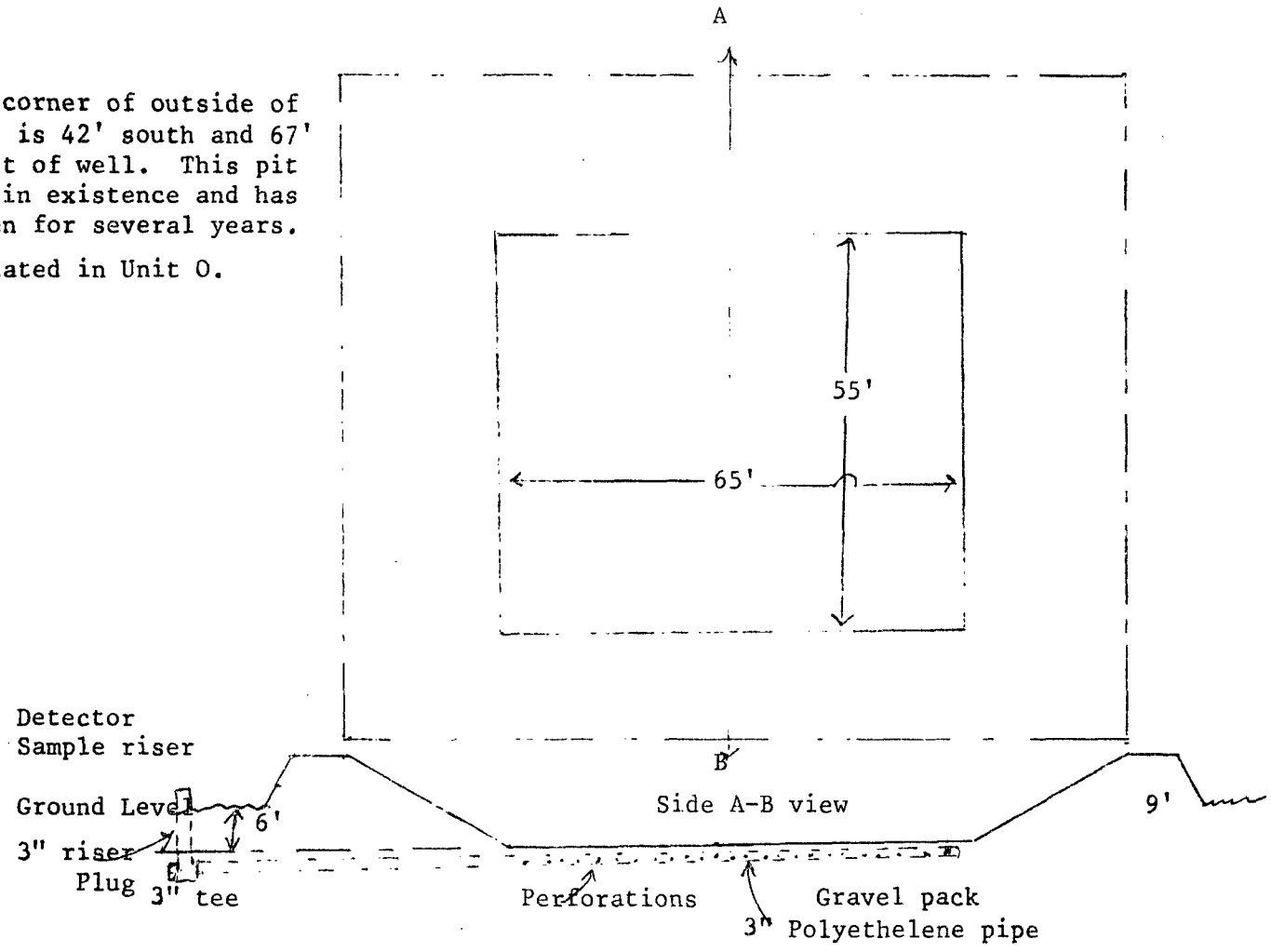
⊙ Navajo #1-20
1190' fSL; 2510' fEL
Sec. 20-27N-19W
San Juan Co., N. M.

S. E. R. H., Inc.
(Petroleum Energy Co.)
Water Disposal Pit Proposal
for temporary use in the
Beautiful Mountain field.

North

NE corner of outside of pit is 42' south and 67' east of well. This pit is in existence and has been for several years.

Located in Unit O.



Liner dimensions 136.5' X 127' 36 mil reinforced CPE material to be installed by ORE Systems, Farmington, New. Mexico.

Estimated volume to ground level is 29,730 cft. or 5300 bbls.

Form 3160-9
(June 1985)

P 003 195 674

Number _____

Page _____ of _____

Certified Mail-Return Receipt Requested

Hand Delivered, Received by

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
NOTICE OF INCIDENTS OF NONCOMPLIANCE

Identification
Lease Navajo Operating agreement
CA
Unit
PA

Bureau of Land Management Office: Cattle Service 4104	Operator: Petroleum Energy, Inc.
Address: Farmington, NM 87499	Address: P.O. Box 2121
Telephone: (505) 325-4572	Attention: Durango, CO 81301

Site Name	Township	Range	Meridian
	27N	19W	NMPM

Inspector	Date	Time (24-hour clock)
Mark Phillibes	7-1-85	11:00

THE FOLLOWING VIOLATION WAS FOUND BY BUREAU OF LAND MANAGEMENT INSPECTORS ON THE DATE AND AT THE SITE LISTED ABOVE.

¼ ¼ Sec.	Well or Facility Identification	Violation	Gravity of Violation
SWSE 20	#1-20	Open pit	Moderate
Corrective Action To Be Completed By	**Date Corrected**	**Assessment for Noncompliance**	**Assessment Reference**
8-5-85		$ none	43 CFR 3163.3 ( )

Remarks: Backfill, recontour, + reseed the reserve pit at #1-20. A 10'x10' pit may be used for water disposal and blowdown if you file an NTL-2B application and it is subsequently approved.

When violation is corrected, sign this notice and return to above address.

Company Representative Title ✓ Signature ✓ Date ✓

Company Comments _____

RECEIVED
AUG 1 – 1985
DIVISION OF OIL & GAS

WARNING

Incidents of Noncompliance correction and reporting time frames begin upon receipt of this Notice or 5 days after the date it is mailed, whichever is earlier. Each violation must be corrected within the prescribed time from receipt of this Notice and reported to the Bureau of Land Management office at the address shown above. Please note that you already may have been assessed for noncompliance (see amount under "Assessment for Noncompliance"). If you do not comply as noted above under "Corrective Action To Be Completed By," you may incur an additional assessment under (43 CFR 3163.3(a)) and may also incur Civil Penalties (43 CFR 3163.4). All self-certified corrections must be postmarked no later than the next business day after the prescribed time for correction. Failure to report corrections timely is subject to an additional assessment (43 CFR 3163.3(h)).

Section 109(d)(1) of the Federal Oil and Gas Royalty Management Act of 1982, as implemented by the applicable provisions of the operating regulations at Title 43 CFR 3162.4-1(b)(6)(ii), provides that any person who "knowingly or willfully" prepares, maintains, or submits false, inaccurate, or misleading reports, notices, affidavits, records, data, or other written information required by this part shall be liable for a civil penalty of up to $25,000 per violation for each day such violation continues, not to exceed a maximum of 20 days.

REVIEW AND APPEAL RIGHTS

A person charged with a violation may request a technical and procedural review of the Incidents of Noncompliance. This request must be filed within 10 working days of receipt of the Incidents of Noncompliance with the appropriate State Director (see 43 CFR 3165.3). The Incidents of Noncompliance and/or technical and procedural review decision may be appealed to the Office of Hearings and Appeals, Washington, D.C. (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

Signature of Bureau of Land Management Authorized Officer	Date	Time
Mark Phillibes	7-10-85	12:00

FOR OFFICE USE ONLY

Number	Date	Assessment	Penalty	Termination

Type of Inspection

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well ☐ gas well ☒ Helium other

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S. E. R. H., Inc.

3. ADDRESS OF OPERATOR
P. O. Box 312, Otis, Kansas 67565

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 1190' fSL; 2510' fEL SW/4 SE/4
AT TOP PROD. INTERVAL: Same Unit O
AT TOTAL DEPTH: Same

5. LEASE
Navajo Operating Agreement

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
Navajo

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Navajo 20

9. WELL NO.
1

10. FIELD OR WILDCAT NAME
Beautiful Mountain

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
20-27N-19W NMPM

12. COUNTY OR PARISH
San Juan

13. STATE
New Mexico

14. API NO.
?

15. ELEVATIONS (SHOW DF, KDB, AND WD)
5711' Gr.

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF	☐	☐
FRACTURE TREAT	☐	☐
SHOOT OR ACIDIZE	☐	☐
REPAIR WELL	☐	☐
PULL OR ALTER CASING	☐	☐
MULTIPLE COMPLETE	☐	☐
CHANGE ZONES	☐	☐
ABANDON*	☐	☐
(other) Disposal Pit	x	

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

RECEIVED
AUG 1 - 1985
OIL CON. DIV
DIST. 3

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

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On 7/1/85 a Notice of Incidents of Non-Compliance was issued on this open pit. It is requested that consideration be given to S. E. R. H., Inc. to line this pit and use for a temporary disposal evaporative pit until such time as a determination can be made for other disposal means for the Navajo Operating Agreement wells, those on Leases #NOO-C-14-20-4157 and #NOO-C-14-20-4158. Estimated daily water production is approx. 29 BPD for the 9 producing wells in the field. Proposed pit modification attached.

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED John M Heller TITLE Consultant DATE July 31, 1985
John M. Heller For S. E. R. H., Inc.

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

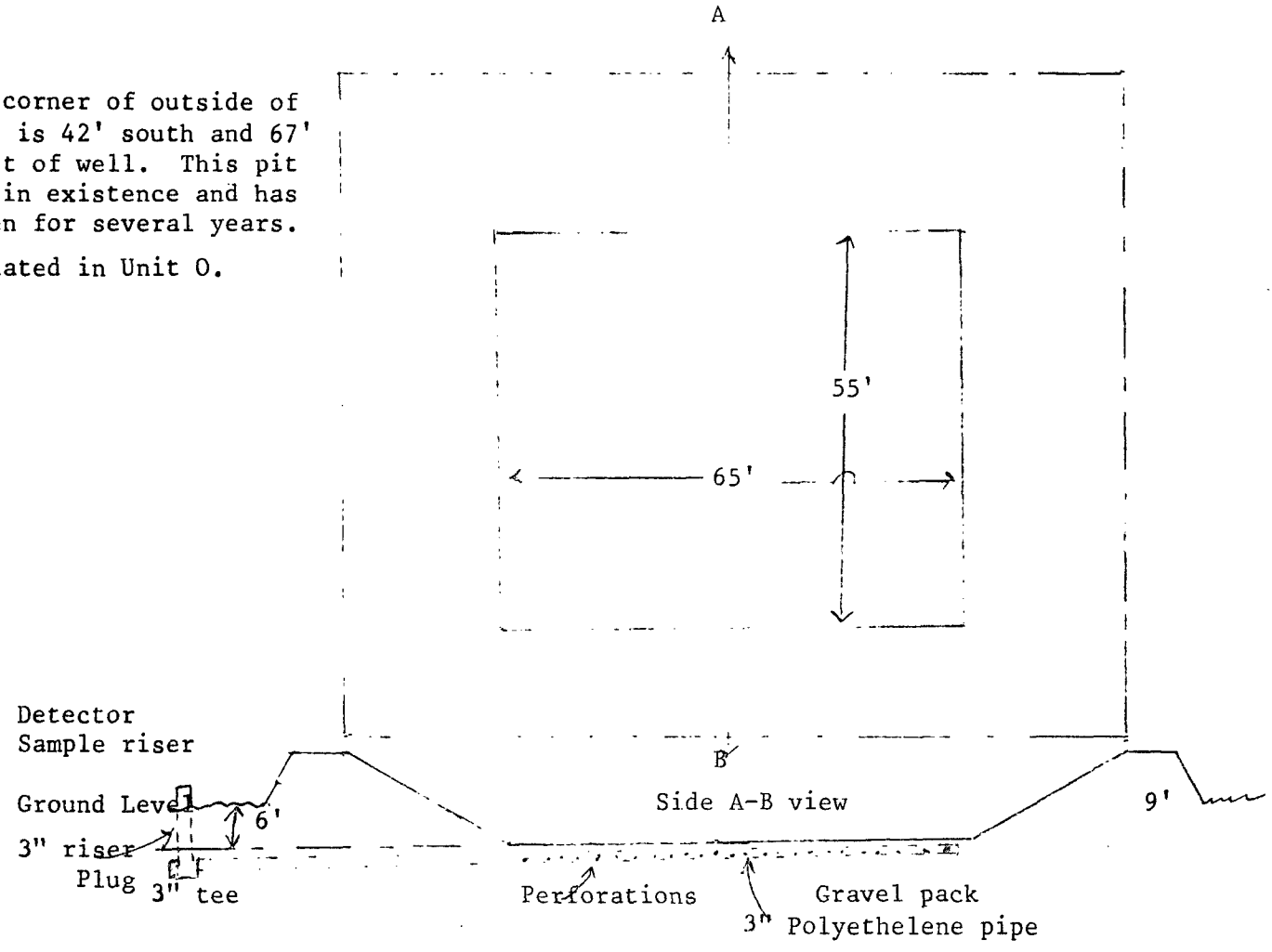
⊙ Navajo #1-20
1190' fSL; 2510' fEL
Sec. 20-27N-19W
San Juan Co., N. M.

S. E. R. H., Inc.
(Petroleum Energy Co.)
Water Disposal Pit Proposal
for temporary use in the
Beautiful Mountain field.

North

NE corner of outside of pit is 42' south and 67' east of well. This pit is in existence and has been for several years.

Located in Unit O.



Liner dimensions 136.5' X 127' 36 mil reinforced CPE material to be installed by ORE Systems, Farmington, New. Mexico.

Estimated volume to ground level is 29,730 cft. or 5300 bbls.

Form 3160-9
(June 1985)

P 003 195 674

Certified Mail-Return Receipt Requested

Hand Delivered, Received by

Number _____

Page _____ of _____

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
NOTICE OF INCIDENTS OF NONCOMPLIANCE

Identification
Lease Navajo Operating
CA agreement
Unit
PA

Bureau of Land Management Office: Caller Service 4104		Operator: Petroleum Energy, Inc.	
Address: Farmington, NM 87499		Address: P.O. Box 2121	
Telephone: (505) 325-4572		Attention: Durango, CO 81301	
Site Name	Township: 27N	Range: 19W	Meridian: NMPM
Inspector: Mark Philliber		Date: 7-1-85	Time (24-hour clock): 11:00

THE FOLLOWING VIOLATION WAS FOUND BY BUREAU OF LAND MANAGEMENT INSPECTORS ON THE DATE AND AT THE SITE LISTED ABOVE.

¼ ¼ Sec.	Well or Facility Identification	Violation	Gravity of Violation
SWSE 20	#1-20	Open pit	Moderate
Corrective Action To Be Completed By	✓ Date Corrected	Assessment for Noncompliance	Assessment Reference
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Remarks: Backfill, recontour, + reseed the reserve pit at #1-20. A 10'x10' pit may be used for water disposal and blowdown if you file an NTL-2B application and it is subsequently approved.

When violation is corrected, sign this notice and return to above address.

Company Representative Title ✓ Signature ✓ Date ✓

Company Comments _____

AUG 12 1985

DIV. OIL GAS & MINING

WARNING

Incidents of Noncompliance correction and reporting time frames begin upon receipt of this Notice or 5 days after the date it is mailed, whichever is earlier. Each violation must be corrected within the prescribed time from receipt of this Notice and reported to the Bureau of Land Management office at the address shown above. Please note that you already may have been assessed for noncompliance (see amount under "Assessment for Noncompliance"). If you do not comply as noted above under "Corrective Action To Be Completed By," you may incur an additional assessment under (43 CFR 3163.3(a)) and may also incur Civil Penalties (43 CFR 3163.4). All self-certified corrections must be postmarked no later than the next business day after the prescribed time for correction. Failure to report corrections timely is subject to an additional assessment (43 CFR 3163.3(h)).

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Signature of Bureau of Land Management Authorized Officer	Date	Time
Mark Philliber	7-10-85	12:00

FOR OFFICE USE ONLY

Number	Date	Assessment	Penalty	Termination

Type of Inspection