GW - 32

GENERAL CORRESPONDENCE

YEAR(S):
1989 → 1986

GIANT REFINING CO.

OIL CONSERVATION DIVISION
RECEIVED
'89 OCT 30 AM 11 06

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

October 23, 1989

David Boyer
Oil Conservation Division
POB 2088
Land Office Bld.
Santa Fe, NM 87501

RE: Giant Industries Discharge Permit GW-32 Analalytical Data

Dear Mr. Boyer:

Attached is a summary of ground water data and pond sampling data from our Ciniza Refinery since 1985. We have consolidated all available data from both the monitoring wells and biological waste water treatment system into chronilogical tables for your convenience. If you wish to review the original laboratory data sheets, please contact John Stokes.

It has been a pleasure working with both you and your staff, and I'd like to extend my best regards for the future.

Sincerely,

Bob McClenahan Jr.
Environmental Coordinator
Giant Refinery

cc: John Stokes
Kim Bullerdick

May 9, 1989

GIANT REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

RECEIVED
MAY 11 1989
OIL CONSERVATION DIV.
SANTA FE

Jack Elvinger
Bureau Chief
Hazardous Waste Bureau
NMEID
1190 St. Francis Dr.
Santa Fe, NM 87504

RE: Giant's Ciniza Refinery Permit #NMD000333211-2

Dear Mr. Ellvinger:

Per Giant's Hazardous Waste Operating Permit, Attachment H, we are hereby identifying an existing well to monitor the Sonsela aquifer, which is upgradient of all refinery operations and is unaffected by our Facility, as used in said attachment.

The well Giant proposes to utilize was installed during the same period as the point of compliance wells around the Land Treatment Area (MW Series) by the same contractor, Dames and Moore, and is of similar construction. This well has been designated as OW-11.

Attached is a copy of the original boring, site map location, and historic water quality data.

If you have any questions regarding this matter, please contact Bob McClenahan of my staff.

Sincerely,

John J. Stokes
Refinery Manager

JJS:ds

cc: Janie Hernandez, EPA Region VI
David Boyer, NMOCD
Bob McClenahan
Kim Bullerdick

Attachments

BORING OW-11

SURFACE ELEVATION: ~~6923~~ 6923 FEET
Date Completed 12/30/80
Coordinates, 1365 N, 1455 W

DEPTH IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: LIQUID LIMIT (%)	ATTERBERG LIMITS: PLASTICITY INDEX (%)	STRENGTH TEST DATA: TYPE OF TEST	STRENGTH TEST DATA: NORMAL OR CONFINING PRESSURE (PSF)	STRENGTH TEST DATA: SHEAR STRENGTH (PSF)	STRENGTH TEST DATA: DEVIATOR STRESS (PSF)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)
0									
10									
20									
30									
40									
50									
60									
70									
80									
90									
100									
110									
120									
130									
140									
150									
160									

LABORATORY TEST DATA

GRAVEL

PENETRATION RATE MINUTES/FOOT	SYMBOLS	DESCRIPTION
1.6	SM	TRIASSIC PERIOD CHINLE FORMATION REDDISH BROWN SILTY FINE SAND, SOFT, HIGHLY WEATHERED
		GRADES WITH GRAVEL-SIZED FRAGMENTS OF FINE SANDSTONE AND LIMESTONE FROM 7 FEET
1.4	SHALE	13 FEET: SHALE, GRAY, SILTY, WITH OCCASIONAL THIN INTERBEDS OF WHITE SANDSTONE, SOFT, FRESH
2.4		GRADES WITH REDDISH BROWN SANDSTONE INTERBEDS FROM 20 FEET
3.0		
6.5		GRADES WITH LAYER OF WHITE, FINE-GRAINED SANDSTONE FROM 23 TO 24 FEET
2.4		
12.5	SS	30 FEET: SANDSTONE, WHITE, FINE-GRAINED, WITH GRAVEL-SIZED FRAGMENTS OF CHERT, OCCASIONAL THIN INTERBEDS OF REDDISH BROWN FINE-GRAINED SANDSTONE, THINLY BEDDED, HARD, FRESH
4.4		
5.5		
4.0	SHALE	40 FEET: SHALE, GRAY TO PURPLE, SILTY AND SANDY, SOFT, FRESH
3.1		GRADES WITH SOME SAND FROM 47 FEET
4.3		GRADES GRAY AND HARD FROM 50 TO 55 FEET
5.0		
8.0		GRADES WHITE TO LIGHT GRAY FROM 55 FEET, SOFT
2.5		
3.3		
4.0		
2.3		
3.6		GRADES PURPLE FROM 68 FEET
2.3		
4.3		GRADES GRAY FROM 78 FEET
4.5		
2.7		
3.0		
3.5		
4.0		GRADES WITH OCCASIONAL THIN INTERBEDS OF LIMESTONE AND GRAVEL-SIZED FRAGMENTS OF CHERT FROM 92 FEET
4.3		
3.5		
3.3		
4.5		
2.7		GRADES REDDISH BROWN FROM 103 FEET
4.5		
2.0		GRADES GRAY AND HARD FROM 110 FEET
6.5		
5.0		GRADES SOFT WITH NO INTERBEDS FROM 114 FEET
2.3		
2.3		GRADES PURPLISH GRAY FROM 117 FEET
2.7		
3.0		
2.2		
2.3		
2.2		
2.7		GRADES GRAY FROM 140 FEET
3.3		
2.7		
2.2		

BORING COMPLETED AT 150.0 FEET ON 12/30/80.
4-INCH PVC PIEZOMETER INSTALLED WITH PERFORATIONS FROM 43.0 TO 65.0 FEET.
GRAVEL PLACED FROM 35.0 TO 65.0 FEET AND BORING SEALED WITH BENTONITE AND CEMENT TO SURFACE.
GROUND WATER LEVEL MEASURED AT 20.2 FEET BELOW GROUND ON 1/5/81.
Bottom of casing 65.73'

LOG OF BORINGS

DAMES & MOORE

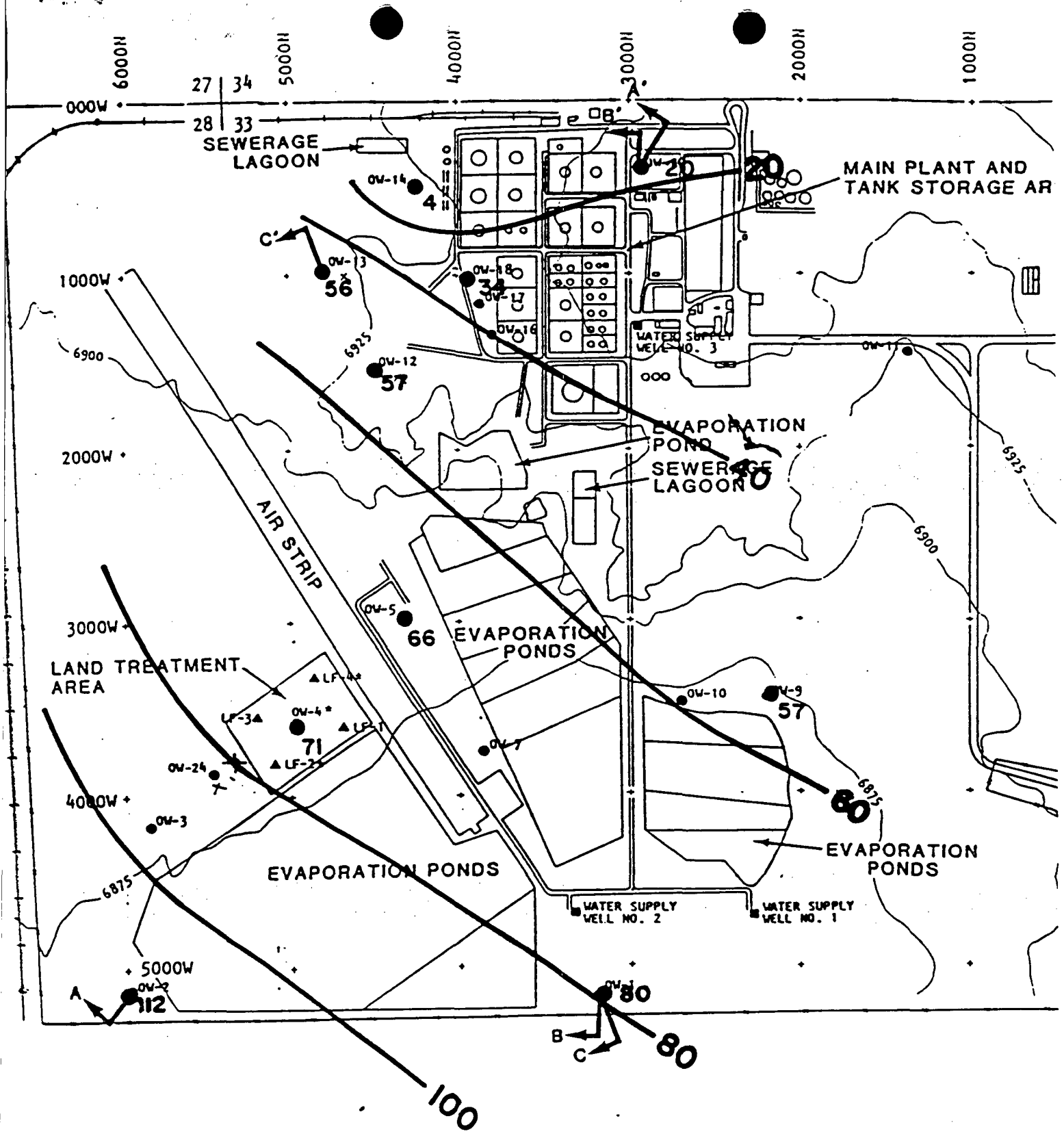


FIGURE 3-4

Approx. ARTESIAN HEAD OF SONSELA AQUIFER

OW-11 INORGANIC CHEMICAL DATA

PARAMETER (g/l)	DATE 1/6/81	6/26/81	9/81	1/24/89
Nitrate (as N)	1.8			
Cyanate	<0.1			
Arsenic	<0.01			
Barium			0.3	
Cadmium			<0.001	
Calcium	11			
Chromium	0.003	0.003	0.003	
Iron	0.3			
Lead	0.002	0.004	0.021	
Manganese	0.03			
Mercury			<0.0004	
Selenium	<0.01			
Sodium	380			
Chloride	88			114
Fluoride	0.20	0.086	0.09	
Sulfate			<0.01	
Carbonate				<2
Bicarbonate				454
TDS	935			986
E.C. (mhos	1500			1665
pH (S.U.)	7.8			8.23

GIANT
REFINING COMPANY

ROUTE 3, BOX 7 • GALLUP, NEW MEXICO 87301
(505) 722-3833 • TWX 910-981-0504

December 22, 1988

David G. Boyer
Environmental Chief
N.M.O.C.D.
P.O. BOX 2088
Santa Fe, New Mexico 87501

RE: Leak at Giant's Ciniza Refinery

Dear Mr. Boyer,

Attached is the spill report for the recent leak at our refinery.

If you have any questions, please feel free to contact me at 722-3833.

Sincerely,

Bob McClenahan Jr.
Environmental Coordinator
Giant Refining Co.

BMJ/ac

cc: John J. Stokes
Kim Bullerdick

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

NOTIFICATION OF FIRE, BREAKS, SPILLS, LEAKS, AND BLOWOUTS

NAME OF OPERATOR Giant Refining Co.					ADDRESS Rt. 3, Box 7, Gallup, New Mexico 87301		
REPORT OF	FIRE	BREAK	SPILL	LEAK X	BLOWOUT	OTHER*	
TYPE OF FACILITY	DRLG WELL	PROD WELL	TANK BTTY	PIPE LINE	GASO PLNT	OIL RFY X	OTHER* RF
NAME OF FACILITY Giant's Ciniza Refinery GW-32							
LOCATION OF FACILITY (QUARTER/QUARTER SECTION OR FOOTAGE DESCRIPTION)				SEC.	TWP.	RGE.	COUNTY McKinley
DISTANCE AND DIRECTION FROM NEAREST TOWN OR PROMINENT LANDMARK 17 miles east of Gallup on I-40							
DATE AND HOUR OF OCCURENCE 12/9/88 AM				DATE AND HOUR OF DISCOVERY 6:00 AM, 12/9/88			
WAS IMMEDIATE NOTICE GIVEN?	YES X	NO	NOT REQUIRED	IF YES, TO WHOM David Boyer			
BY WHOM Bob McClenahan Jr.				DATE AND HOUR 12/9/88 PM			
TYPE OF FLUID LOST Refined Petroleum Product, Jet-A				QUANTITY OF LOSS Appx.28 BO BW		VOLUME RECOVERED Appx.25BO BW	
DID ANY FLUIDS REACH A WATERCOURSE?	YES	NO X	QUANTITY				

IF YES, DESCRIBE FULLY**

3/0

DESCRIBE CAUSE OF PROBLEM AND REMEDIAL ACTION TAKEN**
A pump bleeder valve vibrated open. The valve was closed and then plugged. It is our normal practice to use a plug in bleeder and sample lines.

DESCRIBE AREA AFFECTED AND CLEANUP ACTION TAKEN** A 50 ft. section of pipe way ditch, between the maintenance shops and the tank farm was affected. The Jet-A was contained between 3 concrete pipe supports and was floating on some standing water. The Jet-A and water were recovered using an air driving pump and discharged to the API seperator for recovery.

DESCRIPTION OF AREA	FARMING	GRAZING	URBAN	OTHER* Refinery Property			
SURFACE CONDITIONS	SANDY	SANDY LOAM	CLAY X	ROCKY	WET	DRY	SNOW

DESCRIBE GENERAL CONDITIONS PREVAILING (TEMPERATURE, PRECIPITATION, ETC.)**

Cool weather, a few days after a snow.

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

SIGNED RJ McClenahan TITLE Environmental Coord. DATE 12/22/88

*SPECIFY **ATTACH ADDITIONAL SHEETS IF NECESSARY

GIANT REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505
722-3833

May 26, 1988

Roger Anderson
NMOCD
P.O. Box 2088
State Land Office Bldg.
Santa Fe, NM 87501

RE: Giant Refining Ciniza Discharge, GW-32

Dear Mr. Anderson:

As we discussed earlier, Giant will be using enhanced evaporation (spray nozzles) at our ponds on a temporary basis. This is being done to lower the water levels in our evaporation ponds so that some additional dike work can be completed this year.

The sprays consist of six Rainbird Model 105CS sprinklers. They are set on the dike between pond #2 and #3, and spray easterly into pond #2. The water being sprayed is from pond #2 and is being pumped by a diesel driven pump at approximately 1500 GPM. The approximate location of the system can be seen on the attached map.

If you have any questions regarding this matter, please feel free to call me.

Sincerely,

Robert L. McClenahan, Jr.
Environmental Coordinator
Giant Refining Company

RLM:ds

Attachments

cc: Carl Shook
Kim Bullerdick

Please Read Completely Before Operating 105C Rain Gun®

RAIN BIRD
P.O. BOX 37, GLENDORA, CALIFORNIA 91740

Instructions for Operation of 105C Rain Gun

The 105C Rain Gun is factory adjusted and, in most cases, is ready for use after completing these three steps.

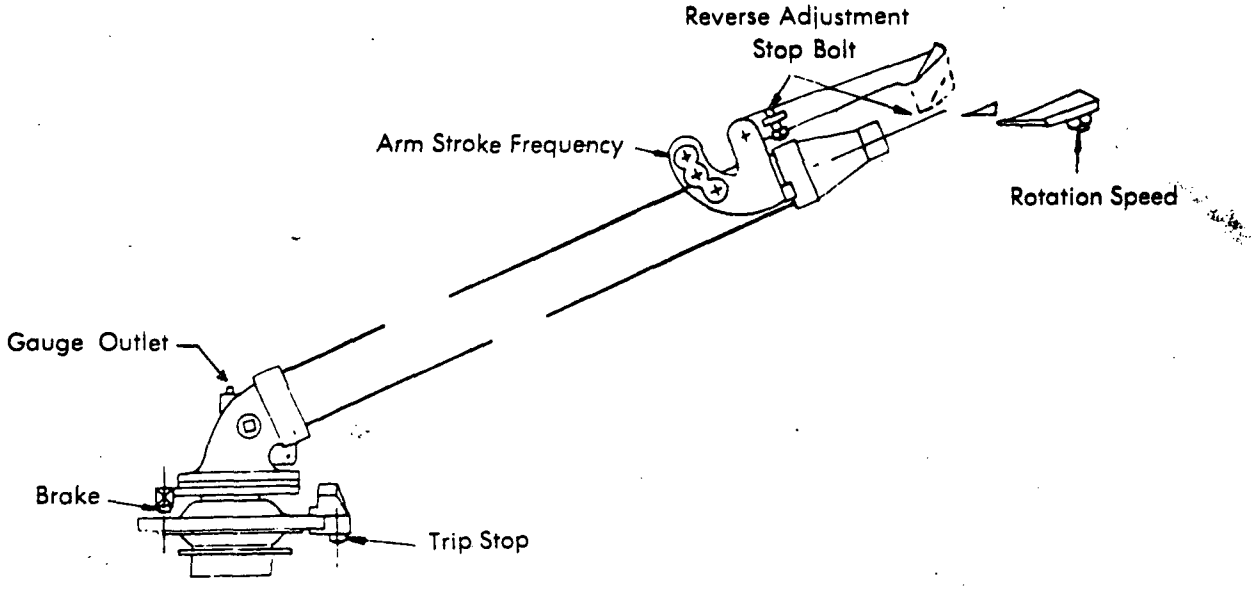
1. Select the nozzle size best suited for your application and install. Performances for the various sizes are listed in the chart on reverse side.
2. Mount the 105C on a threaded (3" or 3½"-8 NPT) riser, tightening it securely to prevent accidental unthreading of the sprinkler in operation, or, if you ordered flange mount, seat the gasket, and bolt the sprinkler in place with the six cap screws and nuts provided.
3. Adjust the part-circle trip stops for desired arc of operation. The forward (longer) stop should be located to the right of the range tube when looking at the back of the elbow along the range tube in direction of water flow, and the reverse (shorter) stop to the left.

WARNING: The 105C has a rapid reverse. When the sprinkler is operating, STAND CLEAR!

Adjustments

Patented adjustments are provided so the 105C Rain Gun may be "Tailored" to your exact requirements, depending on field conditions.

A. Rotation speed. The forward spoon has four numbered and detented settings in order to vary the time of rotation and the drive strength of the spoon. To adjust the spoon, loosen the flange nut, relocate spoon to desired position (1 = slow; 4 = fast) and tighten nut. The spoon should be set for strong enough drive to assure tripping of the part-circle mechanism and for uphill drive on non-vertical risers.



B. Arm stroke frequency. The pendulum has three settings marked "A", "B", and "C". To adjust the pendulum, loosen the flange nut, reposition and tighten nut. Position "A" gives long, lazy strokes and position "C" gives short, choppy strokes. For maximum distance of throw and most uniform water distribution, Position "A" is recommended. For increased stream break-up, the pendulum may be adjusted toward position "C".

C. Reverse time and force. The length of time and force of the reverse swing of the 105C Rain Gun is adjustable by raising or lowering the reverse spoon stop bolt. Slightly higher settings will decrease the reverse time and slightly lower will increase reverse time. Jam nut must be locked securely after adjustments.

D. Brake (Hillside coasting). In order to assuure even rotation on non-vertical risers, the brake should be adjusted accordingly. The amount of braking is increased by raising or decreased by lowering the three brake spring adjusting nuts.

Your 105C Rain Gun may be used as a full circle sprinkler by (1) adjusting the reverse arm stop bolt downward four full turns to prevent accidental engagement of the reverse spoon and (2) removing the forward and reverse stops. CAUTION: STEP (1) MUST BE PERFORMED FIRST FOR THE SAKE OF SAFETY.

Lubrication

Proper lubrication will assure long and satisfactory performance. Lubricate all grease fittings before and after each irrigation season or every six months, using Mobilgrease Special or equal. Under severe operating conditions, lubrications should be performed more often.

Performance — 23° Trajectory 105C Rain Gun®

STRAIGHT BORE

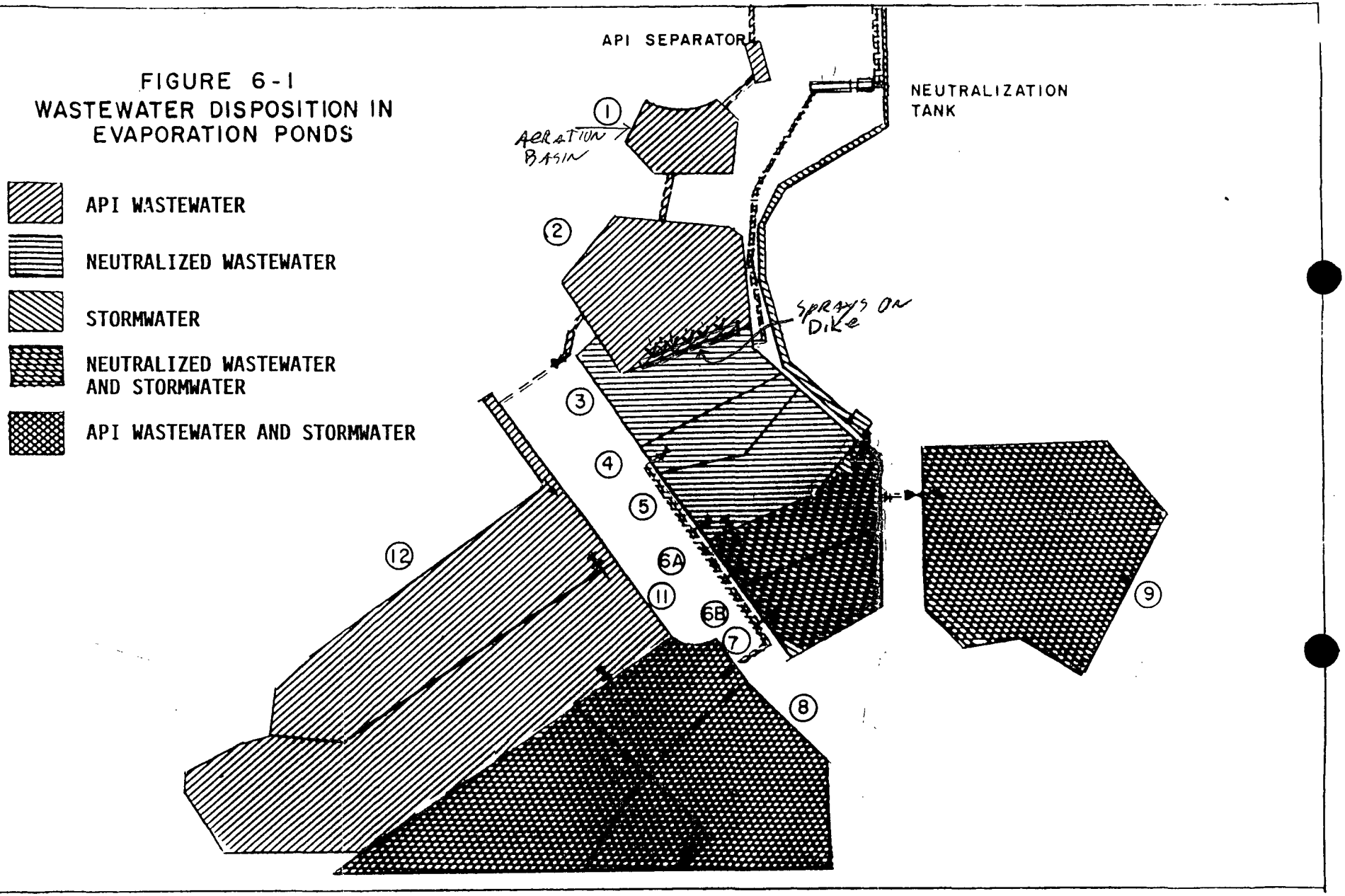
Elbow Pressure	.69		.79		.89		.99		1.09		1.19		1.29	
	Dia.	GPM	Dia.	GPM	Dia.	GPM	Dia.	GPM	Dia.	GPM	Dia.	GPM	Dia.	GPM
60	269	110	292	142	313	185	329	226	348	275	366	331	385	390
70	281	118	304	154	324	199	347	245	363	295	381	354	400	418
80	291	127	316	164	336	214	357	263	375	315	395	374	414	447
90	300	136	325	177	347	227	367	276	390	336	410	400	427	475
100	310	142	334	185	357	235	377	290	400	352	420	422	440	500
110	320	150	342	195	365	249	386	305	410	372	430	444	450	525
120	330	157	351	202	375	262	395	323	420	392	440	465	460	550

RING ORIFICE

Elbow Pressure	.87		.99		1.10		1.20		1.29		1.38		1.45	
	Dia.	GPM	Dia.	GPM	Dia.	GPM	Dia.	GPM	Dia.	GPM	Dia.	GPM	Dia.	GPM
60	264	110	284	142	300	185	318	226	335	275	352	324	365	385
70	275	118	295	154	314	200	332	243	350	295	367	353	383	418
80	285	127	306	164	326	213	345	263	364	315	383	374	398	447
90	295	136	315	175	337	227	358	276	378	336	396	400	414	475
100	305	142	326	185	348	238	371	290	390	352	409	422	425	500
110	315	150	335	195	357	250	382	305	402	372	421	441	438	525
120	322	157	344	202	366	259	392	323	412	392	431	465	450	550

Save this instruction sheet for future use.

FIGURE 6-1
WASTEWATER DISPOSITION IN
EVAPORATION PONDS



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

June 10, 1987

Mr. R.L. McClenahan, Jr.
Environmental Coordinator
Giant Refining Company
Route 3, Box 7
Gallup, NM 87301

RE: Discharge Plan (GW-32) Modification

The modification to previously approved groundwater discharge plan (GW-32) for the Giant Ciniza Refinery located in Sections 28 and 33 of Township 15 North, Range 15 West, NMPM, McKinley County, New Mexico, is hereby approved. The modification consists of the application dated December 12, 1986, and materials dated March 5, 1987 and June 4, 1987, submitted as supplements. The discharge plan (GW-32) was approved August 1, 1986.

The application for modification was submitted pursuant to WQCC Regulation 3-107.C and is approved pursuant to WQCC Regulation 3-109. Please be advised that the approval of this modification does not relieve you of liability should your operation result in actual pollution of surface or ground waters which may be actionable under other laws and/or regulations.

There will be no routine monitoring or reporting requirements other than those mentioned in the plan and modification.

Please note that Section 3-104 of the regulations requires that "When a plan has been approved, discharges must be consistent with the terms and conditions of the plan." Pursuant to

Section 3-107.C. you are required to notify the Director of any facility expansion, production increase or process modification that would result in any significant modification in the discharge of water contaminants.

Sincerely,

William J. LeMay
Director

WJL/RA/ag

xc: OCD-Aztec

GIANT
REFINING COMPANY
ROUTE 3, BOX 7 • GALLUP, NEW MEXICO 87301
(505) 722-3833 • TWX 910-981-0504

June 4, 1987

Mr. Roger Anderson
Environmental Engineer
NMOCD
P.O. Box 2088
Land Office Bld.
Santa Fe, N.M. 87501

RE: Discharge plan GW-32 modification

Dear Mr. Anderson:

Regarding your letter of March 11, requesting clarification on several points to the proposed addition of the Travel Center on our existing discharge plan, the following information should be beneficial:

1. There are two (2) waste water systems at the Truck Service Building. The first is for general waste water and it flows through a septic tank prior to entering the main sewer system. The second is a closed loop system for the truck washing bay. This stream is the one that flows through the sand bed before being recycled. The mud and other material that is filtered out by the sand, along with a small amount of sand, will be scraped off periodically and disposed of in a local land fill. Potenually, it could be disposed of on site if a suitable location can be found.

2. The Travel Center has contracted with Safety Kleen for the use and reclimation of the degreasing solvent.

3. The SPCC plan is being prepaired and will be sent to your office upon completion.

4. Both diesel and gasoline are to be stored on-site in underground storage tanks (UST). Additionally, both bulk lube oil and used oil will be stored in UST. Their UST's were all installed as per EPA's interim guidence and have been registered with the E.I.D. It should be noted however, that even though the used oil tank has been installed using interim guidence, it is not currently, nor is it preposed to be regulated under the UST regulations.

I hope that this has adiquately answered your questions. Please call me if I can be of any further assistance.

Sincerely,

Robert McClenahan
Environmental Coordinator

cc: OCD - Aztec
Dick Erwin

RM/ac

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

May 6, 1987

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

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Ms. Carol Boughton
Water Management Department
The Navajo Nation
Window Rock, Arizona 86515

RE: Discharge Plan Modification (GW-32)
Giant Refining Company
Ciniza Refinery

Dear Ms. Boughton:

On February 24, 1987, the Oil Conservation Division replied (enclosed) to your February 13, 1987, inquiry of the above referenced discharge plan modification. In this reply we supplied additional information and attempted to answer your concerns. Yours was the only inquiry received regarding the plan modification.

The review of the modification is nearing completion and, as we have received no further correspondence from your office, we will consider your concerns answered and the scheduling of a public hearing is not anticipated. If you have further concerns for the Director to consider please notify us in writing within ten (10) days of receipt of this letter stating specific issues. The staff of the Oil Conservation Division will assist you in any way possible in answering them. You are again invited to visit the Santa Fe office and review the complete discharge plan, and discuss your questions with staff.

If you have any questions or if I can be of any assistance please do not hesitate to call me at (505) 827-5885.

Sincerely,

Roger C. Anderson
Environmental Engineer

RCA/cr

xc: OCD - Aztec
R.L. McClenahan Jr. - Giant Industries

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

March 11, 1987

GARREY CARRUTHERS
GOVERNOR

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

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. R. L. McClenahan, Jr.
Environmental Coordinator
Giant Refining Company
Route 3, Box 7
Gallup, New Mexico 87301

Re: Discharge Plan GW-32 Modification

Dear Mr. McClenahan:

We have received your response to the January 9, 1987, OCD letter. The additional information provided requires the following clarifications:

(1) The waste water from the Truck Service Building is prefiltered through a sand bed. What is the disposition of the sand?

(2) You state a degreaser, such as TCE, is to be used in truck washing. Disposal in the sewer system of halogenated hydrocarbons may subject you to additional RCRA requirements which may not be your intention. What will be the final disposition of spent solvents?

(3) When the SPCC plan for the facility is completed, please provide a copy for inclusion in the file and addition to the discharge plan.

(4) If the only fuel line between the refinery is a diesel line, how and where will the gasoline be stored? If underground tanks are to be used they will have to be registered with EID under the UST regulations. If tanks are to be placed above ground please supply the location, tank specifications, piping specifications and containment specifications in the event of spills, leaks or fires.

As you are aware, the Navajo Nation has registered their concerns with this office on the proposed modification. The OCD has responded to those concerns and is waiting on their assessment of our response.

If there are any questions, please do not hesitate to call me at (505) 827-5885.

Sincerely,

Roger C. Anderson
Environmental Engineer

RCA/et

xc: Oil Conservation Division - Aztec

P 612 458 525

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to Giant Refining Company R. O. MCCLENAHAN, JR	
Street and No. Route 3 Box 7	
P.O., State and ZIP Code Gallup, NM 87301	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date	

PS Form 3800, Feb. 1982

☆ U.S.G.P.O. 1983-403-517

GIANT
REFINING COMPANY

ROUTE 3, BOX 7 • GALLUP, NEW MEXICO 87301
(505) 722-3833 • TWX 910-981-0504

March 5, 1987

Mr. Rodger C. Anderson
Environmental Engineer
NMOCD
P.O. Box 2088
Land Office Building
Santa Fe, NM 87501

RE: Discharge Plan GW-32

Dear Mr. Anderson:

This letter is in response to your January 9, 1987, letter requesting additional information on Giant's new Travel Center and it's inclusion into the current discharge plan, GW-32. The additional information is provided by a point by point answer to your requests.

1. Enclosed are site maps of the facility. Plate 4 shows the sewer lay-out, including the flow direction, septic tank location and lift station. The waste water flows and sources are as follows:

   Truck Service Building - 2000 gallon septic tank, approx. 5,000 GPD, sanitary, truck maintenance, truck washings (prefiltered through a sand bed).

   Diesel Sales Building - 2000 gallon septic tank, approx. 6,000 GPD, sanitary, snack bar, trench drain.

   Main Building - 2-2000 gallon tanks in series, approx. 38,000 GPD, sanitary, restaurant (Food wastes), showers, laundry.

   R.V. Dump Station - 2000 gallon tank, approx. 1400 GPD, sanitary and general refuse.

2. Specific MSD sheets are not yet available. We plan on using a degreaser, such as TCE and a detergent for truck washings. These sheets will be forwarded to your office when they become available.

3. Both the diesel island and the gasoline fueling area are to be covered and a drain to catch small spills is installed under the diesel area canopy. The small amount of diesel spilled during normal refueling operations will routinely be washed into these drains and flushed to the sewer system. As can be seen in Plate 2, most storm water will be diverted away from the drain. The gasoline sales area does not have localized provisions for containing spills. The flow paths away from this area are such that several hundred gallons of gasoline can be contained on the asphalt area by sand bagging the curb drain points. These points are noted on Plate 3 with an asterisk. Any catastrophic spills, at either the diesel or gasoline areas will be contained at the refinery road, as noted on Plate 1. This will be done by covering the culvert inlets under the road with dirt. A front end loader is available at the refinery for this emergency situation. The recoverable hydrocarbons will then be taken to the refinery for reclamation as slop oil.

4. The only fuel line between the refinery and the travel center is a 6" fiberglass diesel line, which is buried. The flow will be controlled at the travel center by on-site personnel using an auto shut-off meter. Accounting cross checks will be performed on a daily (5 days/week) basis to reconcile tank gaugings at the refinery's marketing tank to the travel center meter.

5. A detailed spill contingency plan will be on file at the travel center based upon the spill control explanation provided in point 3.

6. All solid wastes will be disposed of off site, at a yet to be negotiated county land fill. The type of solid wastes anticipated are; general refuse, food wastes and tire carcasses.

I hope that these explanations adequately answered your questions. Please give me a call if you have any additional questions at (505) 722-3833.

Sincerely,

R.L. McClenahan, Jr.
Environmental Coordinator

RLM:ds

Enclosures

cc: Trent Thomas
OCD - Aztec, NM

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

February 24, 1987

GARREY CARRUTHERS
GOVERNOR

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

Certified Mail
Return Receipt Requested

Ms. Carol Boughton
Water Management Department
The Navajo Nation
Window Rock, Arizona 86515

Re: Discharge Plan Modification (GW-32)
Giant Refining Company
Ciniza Refinery

Dear Ms. Boughton:

Your letter dated February 13, 1987 requesting further information on the above referenced discharge plan has been referred to me for reply. A copy of the letter is attached. Some of your concerns were the same concerns the BIA had during the review for the original Giant discharge plan. I am enclosing a copy of the BIA letter of May 9, 1986, the OCD answer of July 22, 1986, and the discharge plan approval dated August 1, 1986, with a revised monitoring schedule.

The addition of the proposed Travel Center will add up to 50,400 GPD of sanitary wastes to the 170,000 GPD of refining wastes. The Travel center waste will consist mainly of domestic type waste and will be discharged to the aeration basin for biodegradation prior to discharge to the evaporation ponds. The design calculations for the aeration basin and evaporation ponds are enclosed.

We believe the addition of the sanitary wastes from the Travel Center to the waste stream, along with the construction of the aeration basin, will not place undue burden on the evaporation pond system. In fact routing the relatively good quality travel center waste to the aeration basin for treatment will improve the overall quality of the refinery waste discharged to the ponds. We will continue to review the refinery reports and monitoring results to ensure compliance with the plan.

The complete discharge plan along with the extensive OCD sampling results are on file in our Santa Fe office and are open for public review. You are welcome to come in and review them anytime during normal business hours.

I hope this information, your review of our files and our evaluation address your concerns to your satisfaction and can eliminate the need for a public hearing. If you have any questions or if I can be of any further assistance please do not hesitate to call me at (505) 827-5885.

Sincerely,

Roger C. Anderson
Environmental Engineer

RCA/et

ENCL:

xc: Oil Conservation Division - Aztec
Robert McClenahan, Jr., Giant Industries

P 612 458 631

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to MS. ~~CAROL BOUCHTON~~	
Street and No. The Navajo Nation	
P.O., State and ZIP Code Window Rock, Arizona 86515	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date	

☆ U.S.G.P.O. 1983-403-517

PS Form 3800, Feb. 1982

THE NAVAJO NATION
WINDOW ROCK, NAVAJO NATION (ARIZONA) 86515

PETER MacDONALD
CHAIRMAN, NAVAJO TRIBAL COUNCIL

JOHNNY R. THOMPSON
VICE CHAIRMAN, NAVAJO TRIBAL COUNCIL

February 13, 1987

Director of the Oil Conservation Division
State Land Office Building
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

SUBJECT: (GW-32) GIANT REFINING COMPANY REQUEST FOR DISCHARGE PLAN MODIFICATION

Gentlemen:

Navajo Nation Department of Water Management requests that they be provided with further information concerning the proposed request for discharge plan modification. Please provide us with the following information.

1. chemical characterization of the commingled waste stream,

2. efficiency of biological treatment,

3. total volume being discharged including refinery waste and wastewater from the Travel Center, and

4. method of disposal, eg. pits, lined ponds, lagoons, etc., and design features of the disposal site.

The Navajo Nation is concerned with the quality of these discharges, since they may contain trace organics and heavy metals. While the water quality locally ranges from 800 mg/l to 1100 mg/l TDS, it is also important to note that these aquifers provide the only water source in that area. Contamination by organics, heavy metals, or any other contaminant which causes degradation beyond the ambient conditions is not justified.

Please consider this a request for public hearing based upon concern for potential water quality degradation in an area with already limited water resources.

Sincerely,

DIVISION OF WATER RESOURCES

Carol J. Boughton

Carol Boughton, Hydrogeologist
Water Management Department

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

Ecological Services
Suite D, 3530 Pan American Highway NE
Albuquerque, New Mexico 87107

February 5, 1987

Mr. Charles Roybal, Acting Director
Oil Conservation Division
State of New Mexico
State Land Office Building
P. O. Box 2088
Santa Fe, New Mexico 87504-2088

Dear Mr. Roybal:

We have reviewed the following proposed discharge plans and have not identified any resource issues of concern to our agency; GW-6, El Paso Natural Gas Company, Washington Ranch Storage Project, Eddy County, New Mexico; GW-41, Burgett Greenhouse, Hidalgo County, Animas, New Mexico, and GW-32, Grant Refining Company, McKinley County, Gallup, New Mexico.

These comments represent the views of the Fish and Wildlife Service. Thank you for the opportunity to review the proposed plans. If you have any questions concerning our comments please contact Tom O'Brien at (505) 883-7877 or FTS 474-7877.

Sincerely yours,

John C. Peterson
Field Supervisor

cc:
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
Director, New Mexico Health and Environment Department, Environmental Improvement Division, Santa Fe, New Mexico
Regional Administrator, Environmental Protection Agency, Dallas, Texas
Regional Director, FWS, FWE, Albuquerque, New Mexico

Affidavit of Publication

LEGAL NOTICE

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

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission regulations, the following proposed discharge plan modification has been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

(GW-32) Giant Refining Company, Carl D. Shook, Vice President, Refining Operations, Route 3, Box 7, Gallup, New Mexico 87301 has submitted an application for modification of its previously approved discharge plan for the Ciniza Refinery. The modification proposes to commingle wastewater generated at the new Travel Center, located adjacent to the refinery, with refinery waste. The Commingled waste will be treated biologically at the refinery's aeration basin. The Travel Center will discharge approximately 50,400 gallons per day of waste water generated from four general locations: the truck service area, the truck fuel center, the R.V. dump station, and the main building which houses restaurants, showers and restroom facilities. The uppermost ground water likely to be affected by refinery discharges is in thin, localized land lenses at depths of 30 to 65 feet, with a total dissolved solids concentration of approximately 1100 mg/l. The uppermost ground water at the site known to be areally extensive is the Sonsela Sandstone at depths from 20 to 140 feet, with a total dissolved solids concentration of approximately 800 mg/l. Ground water in localized sands and the Sonsela is confined under artesian conditions.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and a public hearing may be requested by an interested person. Requests for public hearing shall set forth the reasons why a hearing should be held. a hearing will be held if the Director determines there is significant public interest.
If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing.

GIVEN Under the Seal of the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 5th day of January, 1987. to be published on or before January 14, 1987

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
CHARLES ROYBAL
ACTING DIRECTOR

legal #013515 Published in The Gallup Independent Monday January 12, 1987

STATE OF NEW MEXICO,
) ss
COUNTY OF McKINLEY

Cecilia Paiz being duly sworn upon oath, deposes and says:

As Legal Clerk of the Gallup Independent, a newspaper published in and having a general circulation in McKinley County, New Mexico, and in the City of Gallup, therein: that this affiant makes this affidavit based upon personal knowledge of the facts herein sworn to. That the publication, a copy of which is hereto attached was published in said newspaper during the period and time of publication and said notice was published in the newspaper proper, and not in a supplement thereof,

for one time, the first publication being on the 12 day of January, 19 87 the

second publication being on the _____ day of

_____, 19_____ the third publication

on the _____ day of _____, 19_____.

and the last publication being on the _____ day of

_____, 19_____.

That such newspaper, in which such notice or advertisement was published, is now and has been at all times material hereto, duly qualified for such purpose, and to publish legal notices and advertisements within the meaning of Chapter 12, of the statutes of the State of New Mexico, 1941 compilation.

Cecilia Paiz
Affiant.

Sworn and subscribed to before me this 17 day of January, A.D., 19 87.

Margaret M. Pelochak
Notary Public.

My commission expires

8-27-89

BUTLER'S

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

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Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and a public hearing may be requested by an interested person. Requests for public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest.

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GIVEN Under the Seal of the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 5th day of January, 1987. To be published on or before January 14, 1987.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
s/Charlie E. Roybal
Acting Director

Journal, January 12, 1987

RECEIVED
JAN 14 1987
OIL CONSERVATION DIVISION
SANTA FE

STATE OF NEW MEXICO }
County of Bernalillo } ss

THOMAS J. SMITHSON

..... being duly sworn declares and says that he is NATL ADV. MGR. of the **Albuquerque Journal,** and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made or assessed as court costs; that the notice, a copy of which is hereto attached, was published in said paper in the regular daily edition,

for ..... 1 ..... times, the first publication being on the ..... 12 ..... day of ..... January ..... ,198 7 ....., and the subsequent consecutive publications on ..... ,198.....

Thomas J. Smithson

Sworn and subscribed to before me, a Notary Public in and for the County of Bernalillo and State of New Mexico, this ..12... day of ..January..... ,198...7

SEAL
NOTARY PUBLIC - STATE OF NEW MEXICO
Public Filed with Secretary of State
Commission Expires 4-18-90

PRICE 24.95

Statement to come at end of month.

ACCOUNT NUMBER ..... C 80932

EDJ-15 (R-2/86)

Giant Industries To Build Headquarters in Arizona

Giant Industries Inc., which has an oil refinery near Gallup, has acquired 25 acres in Scottsdale, Ariz., for a new corporate headquarters, said company president James E. Acridge.

Acridge said the company would construct a 50,000-square-foot building that will house about 100 Giant employees. The remainder of the building, expected to be completed in April 1988, will be available for lease, he said. Additional office space and a shopping center will be developed later, he said.

Giant, an integrated gasoline refiner and marketer with approximate annual sales of $250 million, employs about 400 people in Arizona, New Mexico and Colorado. It also operates a chain of service stations and convenience food stores in Arizona and New Mexico.

The Gallup area refinery produces 20,000 barrels daily of gasoline, diesel and jet fuels.

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

January 9, 1987

GARREY CARRUTHERS
GOVERNOR

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

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Bob McClenahan, Jr.
Environmental Coordinator
Giant Refining Company
Route 3, Box 7
Gallup, New Mexico 87301

RE: MODIFICATION TO DISCHARGE PLAN GW-32

Dear Mr. McClenahan:

The OCD has received the proposed addition to GW-32 dated December 12, 1986. The addition proposes to commingle wastewater generated from the new Travel Center with refinery waste. The commingled waste will be treated biologically at the new aeration basin.

As stated in the original approval letter, discharges must be consistent with the terms and conditions of the discharge plan and any act or modification that significantly alters the type or volume of discharge must be submitted as a modification to that plan. Therefore, this addition will be considered an application for such modification, and will be reviewed by the Environmental Bureau staff and public notice issued immediately.

Based on initial review, the addition appears approvable; however, some additional information will be necessary to complete review. It was stated in the application that waste streams will be generated at four general locations. Please supply the following:

1. A waste water schematic diagram similar to Plates 4 and 5 in the approved plan showing sources of waste entering the septic tank. For each source indicate the anticipated volume and type of waste water (e.g., toilets, showers, restaurant, truck washing, truck maintenance, etc.)

2. Supply MSD sheets for chemicals used in the truck maintenance and washing facility.

3. Will the fueling stations be curbed to contain spills or leaks? If curbed, where do they drain to?

4. Will fuel lines from the refinery to the truck stop be above or below ground? How will their integrity be assured?

5. Please supply a contingency plan for any spills or leaks within the boundaries of the Travel Center.

6. What will be the disposition of any solid waste generated?

If there are any questions, please do not hesitate to call me at (505) 827-5885.

Sincerely,

Roger Anderson

ROGER C. ANDERSON
Environmental Engineer

RCA:dp

cc: OCD-Aztec

NOTICE OF PUBLICATION

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

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STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

Acting Director

S E A L

GIANT
REFINING COMPANY

ROUTE 3, BOX 7 ◦ GALLUP, NEW MEXICO 87301
(505) 722-3833 ◦ TWX 910-981-0504

December 12, 1986

Richard L. Stamets
Director
NMOCD
P.O. Box 2088
Land Office Building
Santa Fe, NM 87501

RE: Addition to Giant's Ciniza Refinery Discharge Plan, GW-32

Dear Mr. Stamets:

As your staff is aware, Giant is building a new Travel Center near our Refinery. We would like to use the new Aeration Basin for biological treatment of the waste water generated from that facility. Enclosed are some pertinent data related to this proposed addition.

The facility is scheduled to commence operations in May of 1987. Waste streams will be generated at four general locations: the truck service area, the truck fuel center, the R.V. dump station, and the main building, which houses restaurants, showers and restroom facilities. Each of these sources will run through at least one 2,000 gallon septic tank for solids and grease removal, in addition to some biological treatment. The waste water will gravity flow from the septic tanks to a lift station. The lift station is designed to pump the water to the Parchell flume at the inlet of the aeration basin (pond #1). The system is designed to gravity flow to pond #9, in case of mechanical problems. (See attached sewer layout for details).

The designed flow from the Travel Center is 35 GPM (50,400 GPD), at a BOD_5 value of 200 mg/1. This will result in 85 pounds per day of BOD being treated. The refinery organic load was calculated to be 700 mg/1 BOD at 117,800 GPD, or 690 #/day BOD. The total anticipated load to the basin therefore is 775 #/day at 168,200 GPD. The aeration equipment (See Appendix A attached) is designed to provide oxygen for up to 1500 #/day of BOD and result in an annualize average evaporation rate of 16,300 GPD (11.3 GPM). The net increase in water to our evaporation ponds would be 34,100 GPD. Utilizing the equations from Table 6-1 (enclosed) of our Discharge plan application report, the total yearly discharge would increase by 12.4 million gallons (MG), for a total of-

71.2 MG/yr (218.6 AF/yr). Using the calculated pond evaporation capacity of 228.6 AF/yr, results in a conservative pan evaporation rate capacity of 105%. It should be noted that by lake evaporation rates, the pond's capacity is calculated to be 156%. However, due to the marginal amount of calculated excess capacity, several water conservation projects are being considered.

I hope this provides you with adequate information on this proposed change. If you have any questions, please don't hesitate to call me.

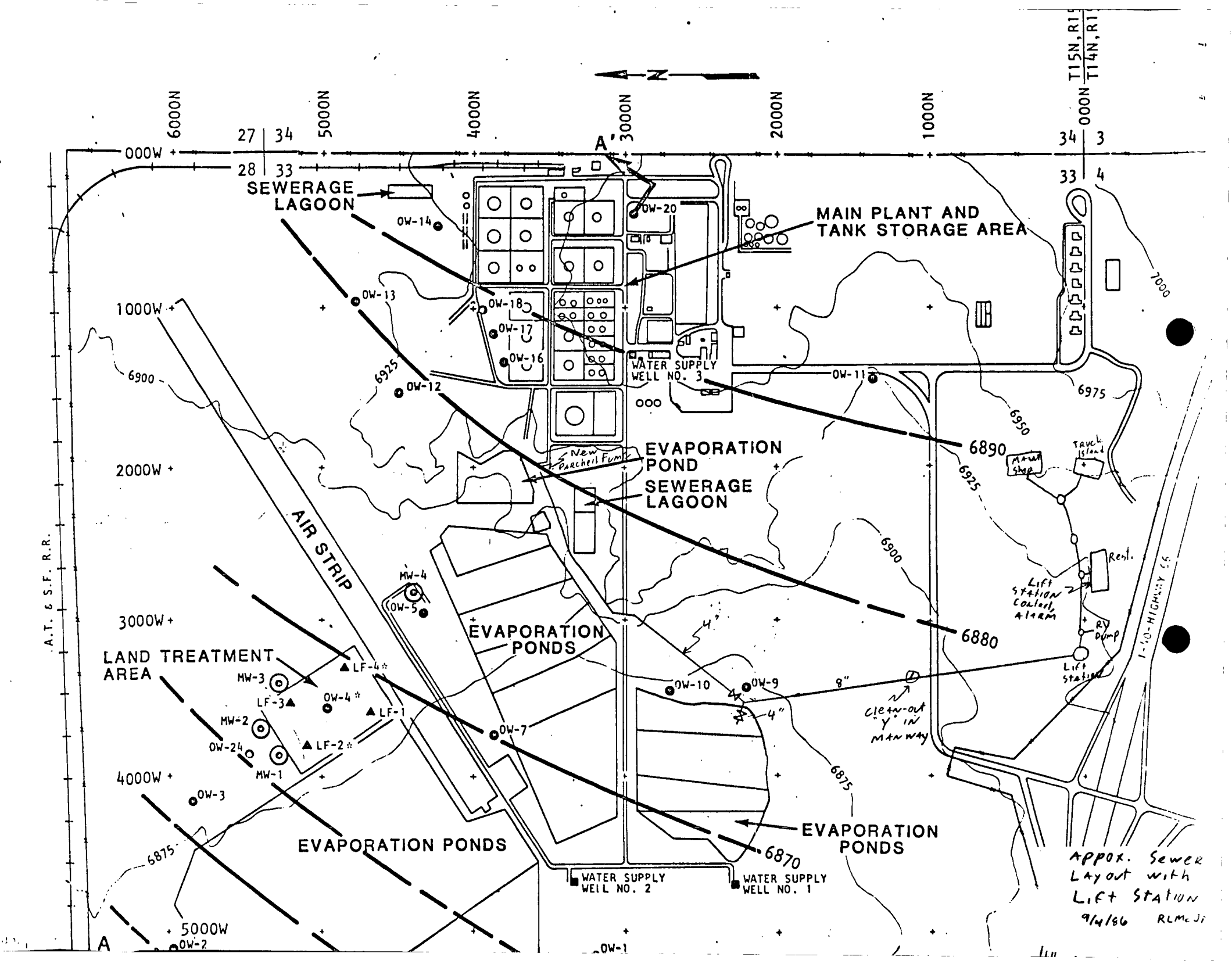
Sincerely,

Bob McClenahan, Jr.
Environmental Coordinator
Giant Refining Company

RLM:ds

Enclosures

cc: Carl Shook
Trent Thomas, Geoscience Consultants, Ltd.
Carlos Guerra, Giant Industries
Frank Chavez, OCD, Aztec, NM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SEWERAGE LAGOON
MAIN PLANT AND TANK STORAGE AREA
WATER SUPPLY WELL NO. 3
EVAPORATION POND
SEWERAGE LAGOON
AIR STRIP
EVAPORATION PONDS
LAND TREATMENT AREA
EVAPORATION PONDS
EVAPORATION PONDS
WATER SUPPLY WELL NO. 2
WATER SUPPLY WELL NO. 1
A.T. & S.F. R.R.
I-40-HIGHWAY 66
New Parcheil Fum
Truck Island
Main Shop
Rest.
Lift Station Control Alarm
RV Dump
Lift Station
Clean-out Y in Manway
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4"
4"
OW-1
OW-2
OW-3
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OW-16
OW-17
OW-18
OW-20
OW-24
MW-1
MW-2
MW-3
MW-4
LF-1
LF-2
LF-3
LF-4
6870
6875
6880
6890
6900
6925
6950
6975
7000
Approx. Sewer Layout with Lift Station
9/4/86 RLMcJr

TABLE 6-1

WATER BALANCE FOR EVAPORATION PONDS

MONTH	PRECIP. (IN.)	PAN EVAP. (IN.)	DIFFERENCE (IN.)
Jan	.56	.38	+.18
Feb	.50	.50	0.00
Mar	.61	.84	-.23
Apr	.43	2.05	-1.62
May	.43	3.82	-3.39
June	.52	5.81	-5.29
July	1.83	7.11	-5.28
Aug	1.65	5.92	-4.27
Sep	.99	3.89	-2.90
Oct	1.17	2.03	-.86
Nov	.62	.70	-.08
Dec	.68	.39	+.29
	9.99	33.44	-23.45

Average discharge = 161,000 gallons/day

Yearly Discharge = 365 days x 161,000 gallons/day = 58,765,000 gallons/year

58,765,000 gallons/year x 1 Acre-Foot/325,742 gallons = 180.4 AF/year

Net Pond Evaporation = 23.45 in/year = 1.954 ft/year

Pond Evaporative Capacity = 117 Acres x 1.954 ft/year = 228.6 AF/year

Relative Capacity = $\frac{228.6 \text{ AF/year}}{180.4 \text{ AF/year}}$ = 127%

RECEIVED AUG 1 4 1986

SIDESLOPES = 2:1
TOP OF DIKE = 10'

SLUDGE POND VOLUMETRICS
TRIAL #3
JULY 18 1986

CELL	DRAIN POINT ELEV	BOTTOM ELEV	SPILL ELEV	BOTTOM ELEV AREA (SF)	TOP OF POND CONTOUR AREA (SF)	TOP OF FREEBOARD CONTOUR AREA (SF)	POND VOLUME (CF)	FREEBOARD VOLUME (CF)	TOTAL CELL VOLUME (CF)
1	92.0	93.0	100.0	10,521	14,694	16,770	68,297 (0.51MG)	31,464	99,761
2	86.0	87.0	96.0	12,141	18,410	20,754	112,998 (0.85MG)	39,164	152,162
3	85.0	86.0	96.0	34,402	48,631	51,753	349,933	100,384	450,317
					VOLUME TOTALS:		531,228	171,012	702,240

Appendix A

The following biokinetic data for refinery wastewaters are taken from Reference #1:

a. BOD Removal Rate Coefficient, (K_e) = 0.0004 to 0.0009 L/mg-hr

b. Sludge Synthesis Coefficient, (Y) = 0.35-0.46 lbs. Sludge/lb. BOD_r-day

c. O_2 Demand for Synthesis, (a') = 0.91-1.06

d. O_2 Demand for Endogenous Respiration, (b') = 0.16-0.21

Since the above data are based on a bench scale experimental study in the laboratory, 20°C (68°F) temperature will be assumed.

Cell #1: Lagoon Temperature: 24°C* (Summer)

Lagoon Temperature: 13.5°C* (Winter)

*REFER TO COMPUTER PRINTOUT FOR COOLING CALCULATIONS.

Correct BOD Removal Rate Coefficient, K_e for temperature,

$$K_{e_{T°C}} = K_{e_{20°C}} \times 1.04^{(T-20°C)}$$

$$= 0.00065 \text{ L/mg-hr (Avg.)} \times 1.04^{25-20}$$

$$= 0.0008 \text{ L/mg-hr (Summer)}$$

$$= 0.019 \text{ L/mg-day}$$

$$K_{e_{winter}} = 0.00065 \text{ L/mg-hr} \times 1.04^{13.5-20}$$

$$= 0.0005 \text{ L/mg-day}$$

$$= 0.012 \text{ L/mg-day}$$

Basin Volume = 0.51 MG

REFER TO COMPUTER PRINTOUT TRIAL ERROR MLVSS v BODr
NOTE: Summer conditions control.

BOD_5 removal = 714 mg/l - 70 mg/l = 644 mg/l

lbs BOD_5 removed = 644 mg/l (8.34) 0.252 MGD

$$= 1353 \frac{\text{lbs}}{\text{day}}$$

Maximum O_2 Demand = a' (BOD removal) + b' (lbs MLVSS)

lbs MLVSS = 245 mg/l x 0.5 MG x 8.34

= 1022 lbs MLVSS

$$\text{lbs } O_2 = 1.06 \frac{\text{lbs } O_2}{\text{lb } BOD_r} (1353 \text{ lbs } \frac{BOD}{\text{day}}) + 0.21 \frac{1}{\text{day}} (1022 \text{ lbs})$$

$$= 1649 \text{ lbs } \frac{O_2}{\text{day}}$$

= 70 lbs/hr

REFER TO COMPUTER PRINTOUT FOR FIELD O_2 TRANSFER RATE CALCULATIONS.

Three (3) - 15HP Aqua Jet aerators with anti-erosion assemblies in Cell #1 are recommended.

Cell #2:

Lagoon Temperature = 22.3°C* (Summer)

Lagoon Temperature = 4.9°C* (Winter)

*REFER TO COMPUTER PRINTOUT FOR COOLING CALCULATIONS

Basin Volume = 0.85 MG

Summer:

REFER TO COMPUTER PRINTOUT TRIAL ERROR MLVSS vs BOD_r.

BOD_5 removal = 70 mg/l - 6 mg/l = 64 mg/l

lbs BOD_5 removed = 64 mg/l (8.34) 0.252 MGD

= 135 lbs/day

Winter:

BOD_5 removal = 109 mg/l - 12 mg/l = 97 mg/l

lbs BOD_5 removed = 97 mg/l (8.34) 0.252 MGD

= 204 lbs/day

Winter removal requires largest oxygen supply.

lbs MLVSS = 248 mg/l x 0.85 MG x 8.34

= 1758 lbs MLVSS

$$\text{lbs } O_2 = 1.06 \frac{\text{lbs } O_2}{\text{lb } BOD_5} \left(204 \frac{\text{lbs}}{\text{day}}\right) + 0.21 \frac{1}{\text{day}} \left(1758 \frac{\text{lbs}}{\text{day}}\right)$$

$$= 585 \frac{\text{lbs } O_2}{\text{day}}$$

$$= 24 \frac{\text{lbs } O_2}{\text{hr}}$$

REFER TO COMPUTER PRINTOUT FOR FTR CALCULATIONS.

Two (2) - 15 HP Aqua-Jet aerators with anti-erosion assemblies in Cell #2 are recommended.

NOTE: An effluent TSS level of ≈ 300 mg/l should be expected. If this level of discharge is not acceptable, a settling pond (2-3 days) will be required.

Also using two - 15 HP aerators in Cell #2 should produce an effluent D.O. level of about 5 mg/l based on the information given. Refer to computer printout.

Reference:

1. Ronald L. Dickenson; John T. Giboney; "Stabilization of Refinery Wastewaters with the Activated Sludge Process: Determination of Design Parameters"; A paper presented at 25th Industrial Waste Conference at the Purdue University, Lafayette, Indiana, May 1970.

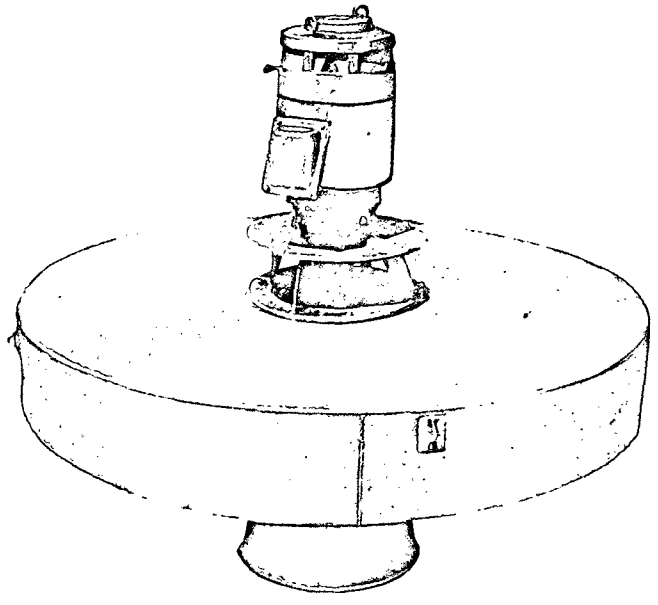
SEC/sp
10/22/86

Aqua-Jet surface aerators

Over fourteen years of reliable service experience

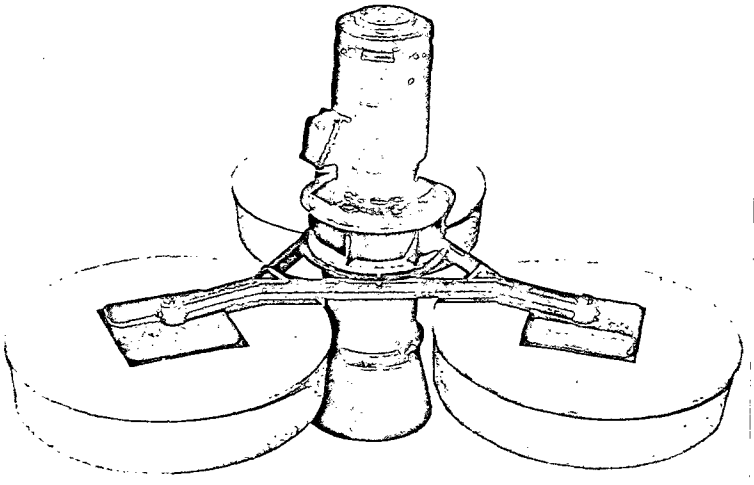
The Aqua-Jet aerator offers an economical approach to wastewater treatment where a supplementary source of oxygen is required to maintain the biological treatment reaction.

Aqua-Jet aerators are designed for use in industrial and municipal wastewater treatment. Major applications of the Aqua-Jet aerator include activated sludge processes, extended aeration, aerated lagoons, sludge digester conversion, volatile gas stripping, mixing or blending ponds and tanks, algae control and fish farm pond aeration.

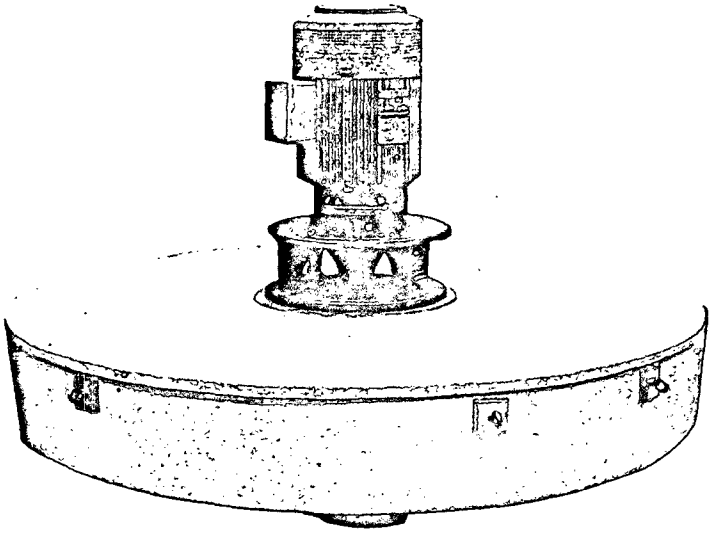


The proper selection of an aerator is based primarily on the unit's efficiency in terms of oxygen transfer, mixing capability, and flexibility. Operational flexibility allows the equipment to handle wide fluctuations in hydraulic loads, and the variables encountered in the composition and concentration of untreated wastewater.

The Aqua-Jet aerator incorporates design features which optimize mixing, oxygen transfer, and hydraulic efficiency. The diffusion head design changes the direction of the fluid, flowing at a high velocity, from vertical to horizontal with minimum friction loss, providing proper balance of velocity and volume, with the low profile discharge transferring maximum kinetic energy. This feature of the Aqua-Jet aerator dilutes and blends influent wastewater with partially treated material and maintains uniform dispersion of microorganisms in biological treatment.



In addition these aerators can be used to up-grade existing municipal diffused aeration treatment plants by providing a supplementary oxygen source. Mixing efficiency increases as the power to volume ratio of the aeration basin is increased. By selectively locating the aerators in each basin, the wastewater is sufficiently reduced by taking advantage of tapered aeration. Another good example of the economy and versatility of the Aqua-Jet aerator.



PROJECT: GIANT REFINERY DATE: October 27, 1986

SUBJECT: EVAPORATION CALCULATIONS BY: Tom Jablonski

The evaporation rate(E)(grams/sq. meter per day) of a surface aeration basin can be estimated by the following formula (reference 1):

$$E = [392(X)^{-0.1} \times Vw + \frac{0}{A}] \times [0.302\, e^{.0604 \times Ta} \times (Tw-Ta) + (1 + \frac{fa}{100}) \times 5 \times e^{.0604 \times Ta}]$$

Where:

X = characteristic length of the evaporation basin (meters)

$= (\text{basin area})^{0.5}$ = 37 m. cell 1 and 41 m. cell 2

Vw = wind velocity (m/sec.) reference 2

= 3.6 m/s January and 4.1 m/s July

0 = air flow rate through aerator spray (cubic meters per sec)

= 0.5 x N x F x Vw

where:

N = number of aerators = 3 for cell 1 and 2 for cell 2

F = aerator spray cross sectional area (square meters)

= 2.34 square meters for 15 HP Aqua Jet aerator

therefore:

	cell 1	cell 2
July 0 =	.5 x 3 x 2.34 x 4.1 = 14.4 c.m.s.	.5 x 2 x 2.34 x 4.1 = 9.6 c.m.s.
Jan 0 =	.5 x 3 x 2.34 x 3.6 = 12.6 c.m.s	.5 x 2 x 2.34 x 3.6 = 8.4 c.m.s

A = surface area of tank (square meters)

= 1366 s.m. cell 1 and 1711 s.m. cell 2

	Jan	July
Ta = air temperature (deg. C)	-1.7	21.5
fa = relative humidity (%)	55 %	43 %
Tw = water temperature (deg. C) From Calculations dated 10/22/86		
cell 1	13.5	24.0
cell 2	4.9	22.3

CELL 1 EVAPORATION RATE

January

$$E = [392(37)^{-0.1} \times 3.6 + \frac{12.6}{1366}] \times [0.302\, e^{.0604 \times -1.7} \times (13.5 + 1.7) + (1 + .55) \times 5 \times e^{.0604 \times -1.7}]$$

$$= 983.5 \times [.302(.9024)(15.2) + 1.55(5)(.9024)]$$
$$= 983.5(4.14 + 6.99)$$
$$= 10950 \text{ g/sq. m / day} \times 1366 \text{ sq. m} / 3778 \text{ g/gal}$$
$$= 3959 \text{ gal/day}$$

July

$$E = [392(37)^{-0.1} \times 4.1 + \frac{14.4}{1366}] \times 0.302\, e^{.0604 \times 21.5} \times (24-21.5) + 1.43 \times 5 \times e^{.0604 \times 21.5}$$

$$= 1120 \times [.302(3.66)(2.5) + 1.43(5)(3.66)]$$
$$= 1120(2.76 + 26.1)$$
$$= 32{,}323 \text{ g/s.m./day} \times 1366 \text{ s.m.} / 3778 \text{ g/gal}$$
$$= 11690 \text{ gal/day}$$

CELL 2 EVAPORATION RATE

January

$$E = [392(41)^{-0.1} \times 3.6 + \frac{8.4}{1711}] \times [0.302\, e^{.0604 \times -1.7} \times (4.9 + 1.7) + (1 + .55) \times 5 \times e^{.0604 \times -1.7}]$$

$$= 973.4 \times [.302(.9024)(6.6) + 1.55(5)(.9024)]$$
$$= 973.4(1.80 + 6.99)$$
$$= 8556 \text{ g/s.m./day} \times 1711 \text{ s.m.} / 3778 \text{ g/gal}$$
$$= 3875 \text{ gal/day}$$

OK

July

$$E = [392(41)^{-0.1} \times 4.1 + \frac{9.6}{1711}] \times [0.302\, e^{.0604 \times 21.5} \times (22.3 - 21.5) + (1 + .43) \times 5 \times e^{.0604 \times 21.5}]$$

$$= 1109 \times [.302(3.664)(0.8) + 1.43(5)(3.664)]$$
$$= 1109(.885 + 26.2)$$
$$= 30040 \text{ g/s.m./day} \times 1711 \text{ s.m.} / 3778 \text{ g/gal}$$
$$= 13604 \text{ gal/day}$$

OK

NOTE: Due to lack of data for verification the accuracy of this model is unknown.

References:

1. Vladimir Novotny, "Evaporation and Heat Balance in Surface Aerated Basins", Paper presented at 74th National Meeting and 7th Petroleum and Petrochemical Exposition, New Orleans, LA, March 11-15, 1973

2. Gale Research Company, "Weather of U.S. Cities", Vol 1, 1981

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

November 6, 1986

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

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Robert L. McClenahan, Jr.
Environmental Coordinator
Giant Refining Company
Route 3, Box 7
Gallup, New Mexico 87301

RE: MONITORING SCHEDULE FOR CINIZA REFINERY, GW-32

Dear Mr. McClenahan:

In response to your requests in Giant's letter of October 13, 1986, the following minor changes to the Discharge Plan Monitoring and Reporting Schedule are approved.

1. Flow measurement of API wastewater at the entrance to Pond #1 and outlet from Pond #2. Flow of the neutralization stream will also be measured.

2. MW-Series monitor wells sampled April and October (instead of January and July) for required RCRA constituents.

3. MW-Series monitor wells sampled October, 1986; April, 1987; thence anually beginning October, 1987 for required discharge plan contaminants.

4. Annual January sampling of SMW and required OW wells for required discharge plan contaminants.

A revised Monitoring and Reporting Schedule based on your letter is enclosed. If you have any questions on the revised schedule, please let me know. I can be reached by telephone at 827-5812.

Sincerely,

David G. Boyer

DAVID G. BOYER
Hydrogeologist/Environmental Bureau Chief

DGB:dp

Enc.

cc: Alberto Gutierrez, Geoscience Consultants, Ltd.
Carlos Guerra, Giant Industries
Frank Chavez, OCD-Aztec

CINIZA REFINERY

Monitoring and Reporting Schedule

The schedule below summarizes the routine monitoring and reporting agreed to be performed by Giant as part of the discharge plan for the Ciniza Refinery (GW-32). While this summary is meant to be inclusive, if any differences occur between the schedule presented here and presented in the discharge plan, the discharge plan (including subsequent correspondence) is the controlling document.

Monitoring	Sampling Parameters	Reporting Frequency	Discharge Plan Reference
API separator effluent quarterly at the entrance to Pond #1 and outlet from Pond #2 for four consecutive quarters, thence bi-annually coincidentally with high-flow periods. Neutralization stream measured on same schedule.	Flow rate of discharge	Quarterly reports during first year on same schedule as RCRA results to NMEID; annual thereafter with submittal to OCD within 30 days of receipt and verification.	Giant's response to OCD comments, p. 11, dated 2/3/86; p. 2, Giant's letter dated 4/30/86; p. 4, Giant's letter dated 6/26/86; Giant's letter dated 10/13/86.
Aerated lagoon input for four quarters, thence annually.	BOD	Same as above	p. 2, Giant's letter dated 4/30/86; and p. 4, Giant's letter dated 6/26/86
Evaporation ponds inspected monthly for freeboard, fluid levels, and seepage. Inspection also after 10-year precipitation event (1.8"/24 hrs.) as measured at refinery.	None	None. Refinery records kept on monthly inspections, and on precipitation events exceeding 1.8" per 24 hrs.	p. 3, Giant's letter dated 4/30/86; and p. 4, Giant's letter dated 6/26/86
MW-Series monitor wells sampled April and October, as per RCRA. SMW-Series sampled for four consecutive quarters, thence January and July, as per RCRA.	RCRA constituents as approved by EID (including conductivity, TOC, TOX, and pH)	Copies of RCRA MW and SMW results sent to OCD on same as to NMEID.	Giant's response to OCD comments, p. 11, dated 2/3/86; p. 3, Giant's letter dated 4/3/86; Giant's letter dated 10/13/86.
MW-Series monitor wells sampled October, 1986, and April, 1987, thence annually beginning October, 1987, at time of RCRA sampling.	sodium, potassium, calcium, magnesium, chloride, sulfate, carbonate-bicarbonate, TDS, pH, and conductance	Submit 1986 results with January 1987 results by March 1, 1987. Thereafter annual results submitted within 30 days of analysis receipt verification.	Giant's response to OCD comments, p. 11, dated 2/3/86; p. 3, Giant's letter dated 4/3/86; p. 4, Giant's letter dated 6/26/86; Giant's letter dated 10/13/86.
SMW-Series monitor wells sampled April and July 1986, January, 1987, thence annually in January at time of RCRA sampling.	sodium, potassium, calcium, magnesium, chloride, sulfate, carbonate-bicarbonate, TDS, pH, conductance, and volatile aromatic hydrocarbons (BTX)	Same as immediately above	Same as immediately above
Monitor Wells OW1, OW2 and OW3, sampled annually in January.	Same as immediately above	Submitted within 30 days of analysis receipt and verification	p. 3, Giant's letter dated 4/3/86; p. 4, Giant's letter dated 6/26/86; Giant's letter dated 10/13/86

Revised 11/4/86
OCD/DGB

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

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

November 3, 1986

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Carl Shook, Vice President
Refining Operations
Giant Refining Company
Route 3, Box 7
Gallup, New Mexico 87301

RE: GW-32 AERATION BASIN DESIGN

Dear Mr. Shook:

The OCD has received and evaluated the above-referenced basin design contained in your correspondence dated August 28, 1986, and received September 2, 1986. A field inspection and sampling trip was conducted on October 9, 1986, by OCD staff members. At that time, verbal approval was given to proceed with the selection of contractors and initiate excavation. This letter will serve to verify that approval.

A sample of the seep on the east side of the proposed lagoon was taken, and although only preliminary results have been issued (enclosed), it does not have the same characteristics as the fluid taken from OW-12. However, since the slope of the formations indicate movement of fluids from the plant area toward the ponds, the water from the seep should be routed to one of the evaporation ponds rather than discharged to grade.

Contrary to Geoscience Consultant's conclusion that there has been no significant migration of hazardous constituents from Pond 1, it is obvious from the analyses of soil samples from 2, 4, 6 and 8 feet depths that there has been vertical migration and concentration of certain constituents, particularly xylenes and napthalene. However, due to the depth to ground water and the nature of the overburden, we feel that attenuation will obviate any significant movement of contaminants to protectable ground water.

Based on the observations and condition above and review of the designs and specifications submitted, the proposed design is acceptable.

If you have any questions, please do not hesitate to contact me at the above address or by phone at (505) 827-5885.

Sincerely,

Roger Anderson

ROGER C. ANDERSON
Environmental Engineer

RCA:dp

cc: OCD-Aztec

GIANT
REFINING COMPANY

ROUTE 3, BOX 7 ◦ GALLUP, NEW MEXICO 87301
(505) 722-3833 ◦ TWX 910-981-0551

October 13, 1986

Mr. David B. Boyer
Environmental Bureau Chief
New Mexico Oil Conservation Division
P.O. Box 2088
State Land Office Bldg.
Santa Fe, NM 87501-2088

RE: Monitoring Schedule for GW-32

Dear Mr. Boyer:

As per our phone conversation of October 10, this letter is to clarify a couple of points in our monitoring and reporting schedule.

The first is in regards to the flow measurements of waste water from the API Separator. The flow measurement point proposed is the new Parshall flume to pond #1 (the new Aeration Basin), which includes the overflow of both wiers of the API. Additional flow that may go to this pond in the future would be the effluent from the new Travel Center. As discussed, if we decide to treat this water in our new Aeration Basin, a letter detailing the waste stream and treatment expected will be submitted for your approval. Additionally, the flow out of pond #2 will be measured. This will provide an equalized flow value after biological treatment and before the bulk of the evaporation ponds.

The other point involves the sampling dates of our MW series monitor wells. The schedule suggests that we collect these samples in January and July, when in fact these wells are sampled in April and October, with the data submitted to both the NMEID and EPA in January.

We request that the annual sampling of the MW series wells for the discharge permit to be done in October, with April's semi-annual results also being forwarded to your office. As stated in the schedule, both the SMW and OW wells will be sampled as requested, in January. This will provide staggered sampling which will increase the likelihood of early detection, should contamination occur. Additionally, we fully intend to supply your office with all data gathered for RCRA monitoring, so that you will be fully apprised of the ground water situation at our facility.

We appreciate your prompt response to this request.

Sincerely,

Bob McClenahan Jr.

Robert L. McClenahan, Jr.
Environmental Coordinator
Giant Refining Company

RLM:ds

cc: Carl D. Shook, Giant Refining Co.
Alberto Gutierrez, Geoscience Consultants, Ltd.
Carlos Guerra, Giant Industries
Frank Chales, OCD, Aztec, NM

Dave Boyer OCD

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1201 ELM STREET
DALLAS, TEXAS 75270

August 29, 1986

Mr. Peter Pache, Manager
Hazardous Waste Section
Groundwater and Hazardous Waste Bureau
Environmental Improvement Division
New Mexico Health and Environment Department
P.O. Box 968
Santa Fe, New Mexico 87504-0968

Re: Visit by Contractor Personnel for File Reviews for RCRA Facility Assessments

Dear Mr. Pache:

I want to confirm the arrangements discussed by Marcus Sides and Boyd Hamilton for one of our contractors to review the files on three facilities in conjunction with RCRA Facility Assessments being conducted for EPA Region VI.

Ms. Deborah English of Black and Veatch will arrive at your offices on Wed. Sept 10 ~~Monday~~, September ~~8~~, 1986, to begin the file review. She will rent a copying machine to make any necessary copies. We would appreciate your making available to her all pertinent files (RCRA, CERCLA, air, groundwater) on the following facilities: Giant Refinery (NMD000333211), Climax Chemical (NMD990753931), and Bloomfield Refinery (NMD089416416).

Please feel free to call me at (214) 767-2647 if you have any questions.

Sincerely yours,

Thomas D. Clark
Regional Program Manager

cc: Deborah English
Black and Veatch

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

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

August 25, 1986

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Carl Shook, Vice Pres.
Refining Operations
Giant Refining Co.
Route 3, Box 7
Gallup, New Mexico 87301

RE: EVAPORATION POND DIKES FOR GW-32

Dear Mr. Shook:

Mr. Boyer has referred your letter of August 5, 1986, concerning the soil evaluation and analyses around your evaporation ponds to me for engineering evaluation. This information and the designs contained in your June 26, 1986 correspondence were used in determinations of wave height and freeboard requirements (calculations attached). From these determinations, your proposed modifications are acceptable. A minimum freeboard level of 24" will be maintained. Please notify the OCD when construction is scheduled to commence.

If you have any questions, please contact me at the above address or by phone at (505) 827-5885.

Sincerely,

Roger C Anderson

ROGER C. ANDERSON
Environmental Engineer

cc: OCD - Aztec

RCA:dp

POND DESIGN FOR GIANT CINIZA REFINERY

FETCH: POND 11 = 1931 ft
POND 7 = 1931 ft
POND 6 = 1369 ft
POND 9 = 1388 ft

USE POND 11 FOR CALCULATIONS

I ASSUME AVERAGE DEPTH (D) ≤ 10 ft
ASSUME SIDE SLOPE (M) = 3:1
USE FETCH = 2000 ft
USE WIND SPEED (U_A) = 50 mph

FROM FIG 3-28

WAVE HEIGHT = H = 0.9 ft
PERIOD = T = 1.4 SEC

II CALCULATE BREAKING WAVE HEIGHT
USE SLOPE = 0.1

FROM Fig 7-3

$$\frac{H}{gT^2} = \frac{0.9}{(32.2)(1.4)^2} = 0.0143$$

$$\frac{H_b}{H} = 1.1 \quad \therefore \quad H_b = 1.1H = .99$$

$$\frac{H_b}{gT^2} = \frac{.99}{(32.2)(1.4)^2} = 0.0157$$

From Fig 7-2

$\alpha = 1.675$

$\beta = 1.275$

$d_{B\,max} = 1.675\,(0.9) = 1.50$

$d_{B\,min} = 1.125\,(0.9) = 1.12$

III FREEBOARD CONSIDERATIONS

DESIGN FREEBOARD OF 24 INCHES

d = FSH = DEPTH OF WATER

USE $x = 1.0$ ← SMOOTH WALL ⇒ WORST CASE

$y_c = d + h_0 + \frac{1+x}{2} H$

$H = 0.9$ $\qquad \frac{H}{gT^2} = 0.0143$ $\qquad \frac{H}{d} = \frac{.9}{8} = .1125$

From Fig 7-9a

$\frac{h_0}{H} = 0.285$

$h_0 = 0.285\,H = (0.285)\,0.9 = 0.256$

$y_c = 8 + 0.256 + \frac{1+1}{2}(0.9) = 9.156$ ft

IF DS10 WE STILL HAVE ~0.85 ft OF FREEBOARD ∴ OVERTOPPING AT THIS DIR. IS NOT ANTICIPATED

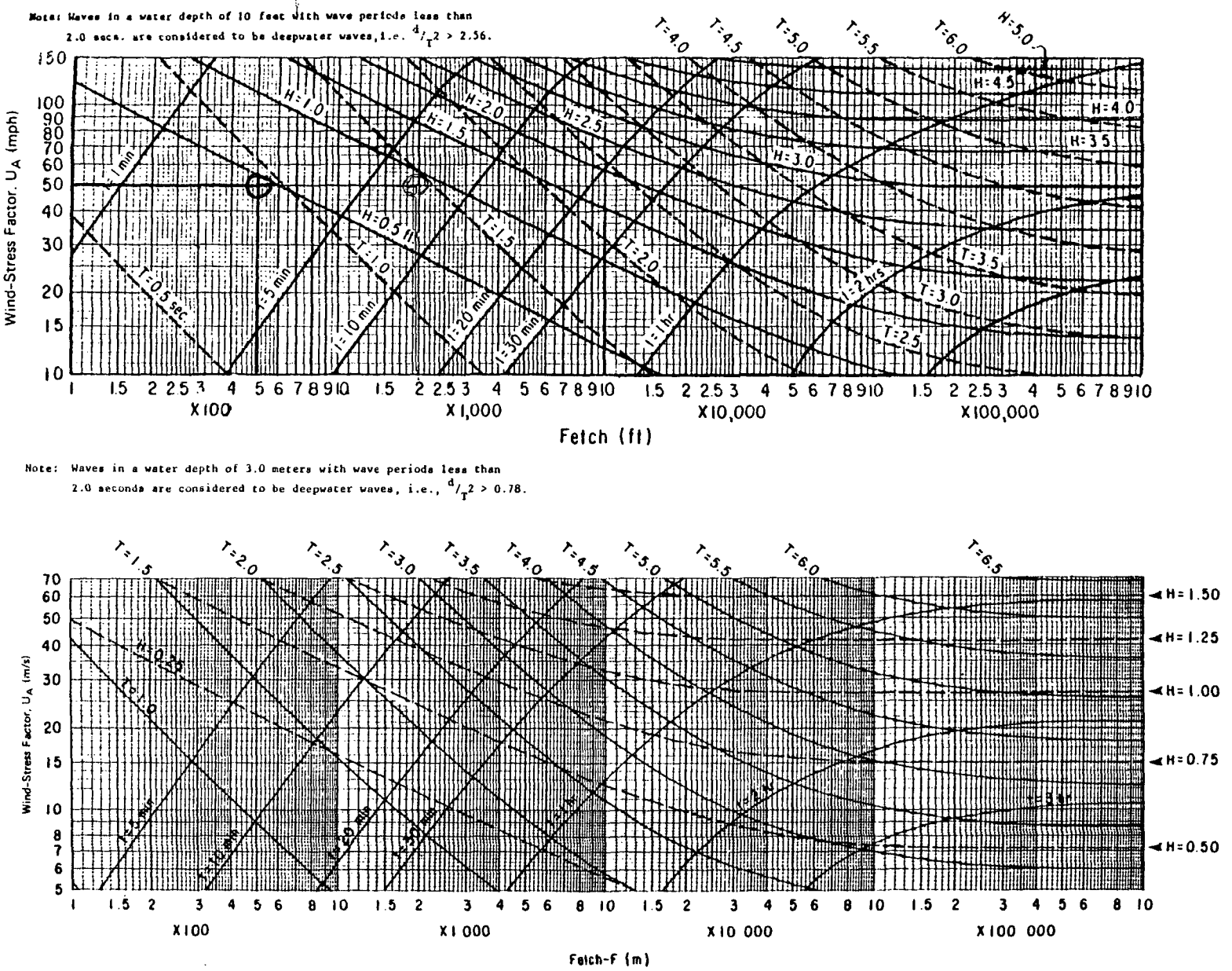


Figure 3-28. Forecasting curves for shallow-water waves; constant depths = 10 feet (upper graph) and 3.0 meters (lower graph).

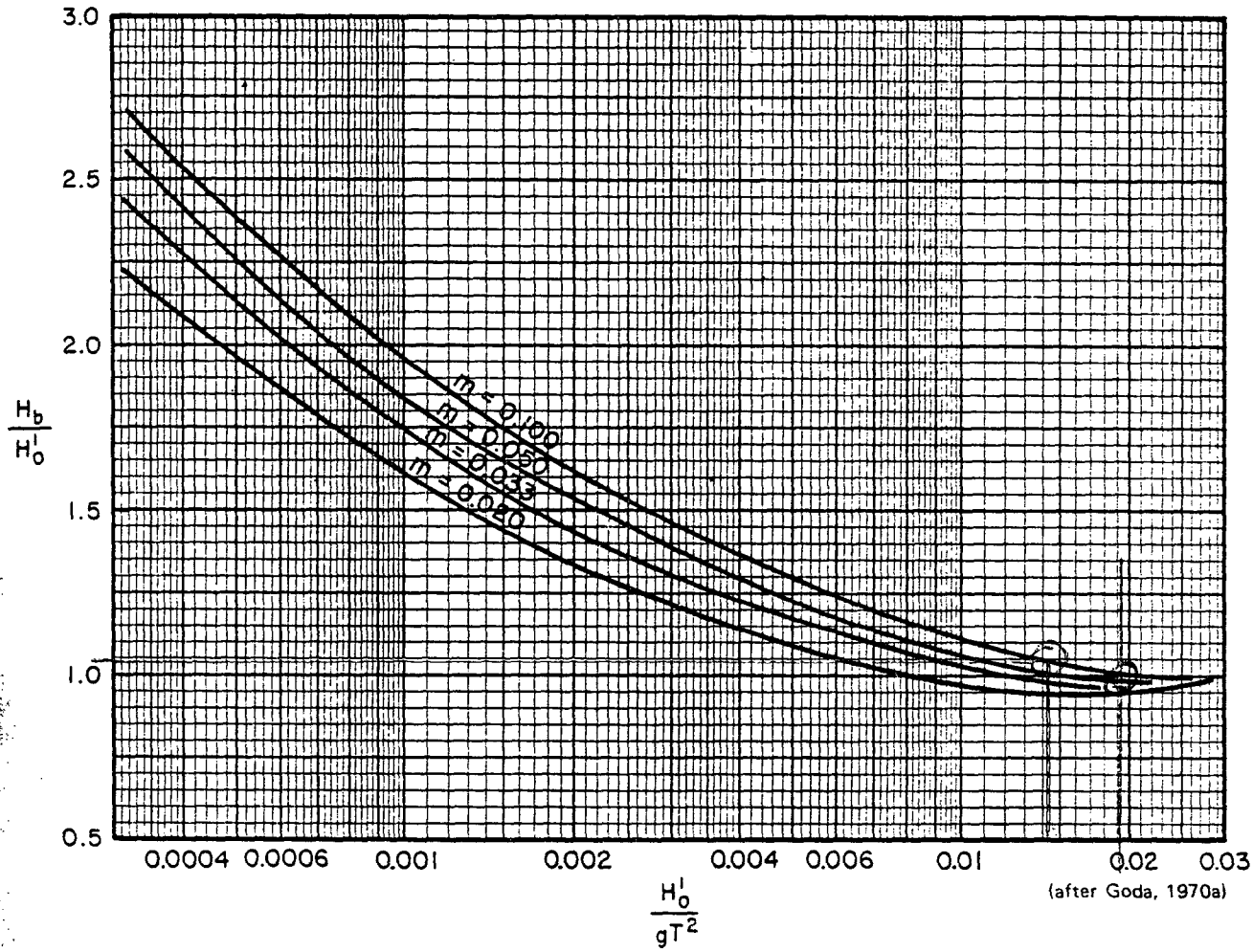


Figure 7-3. Breaker height index H_b/H_o' versus deepwater wave steepness H_o'/gT^2 .

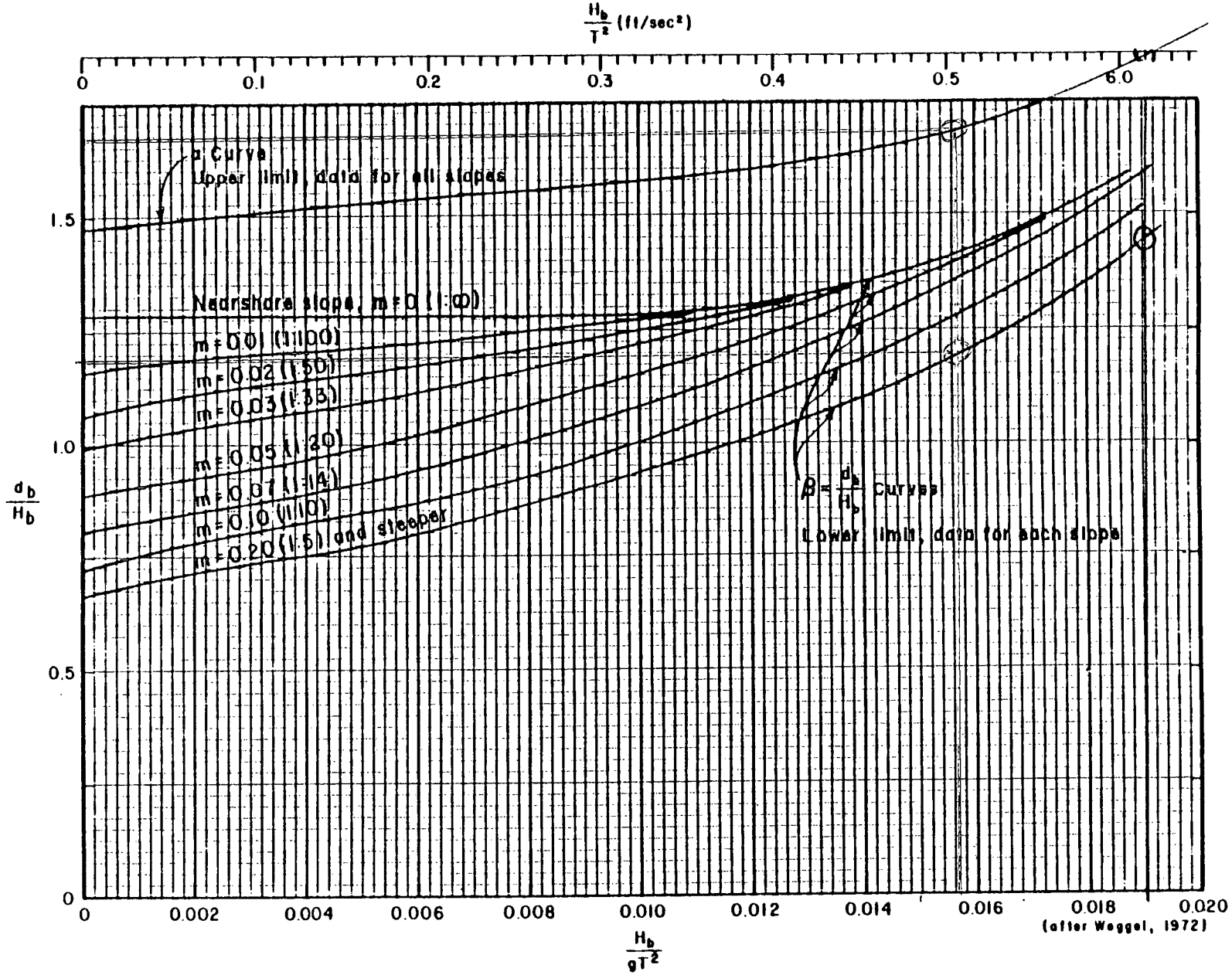


Figure 7-2. α and β versus H/gT^2.

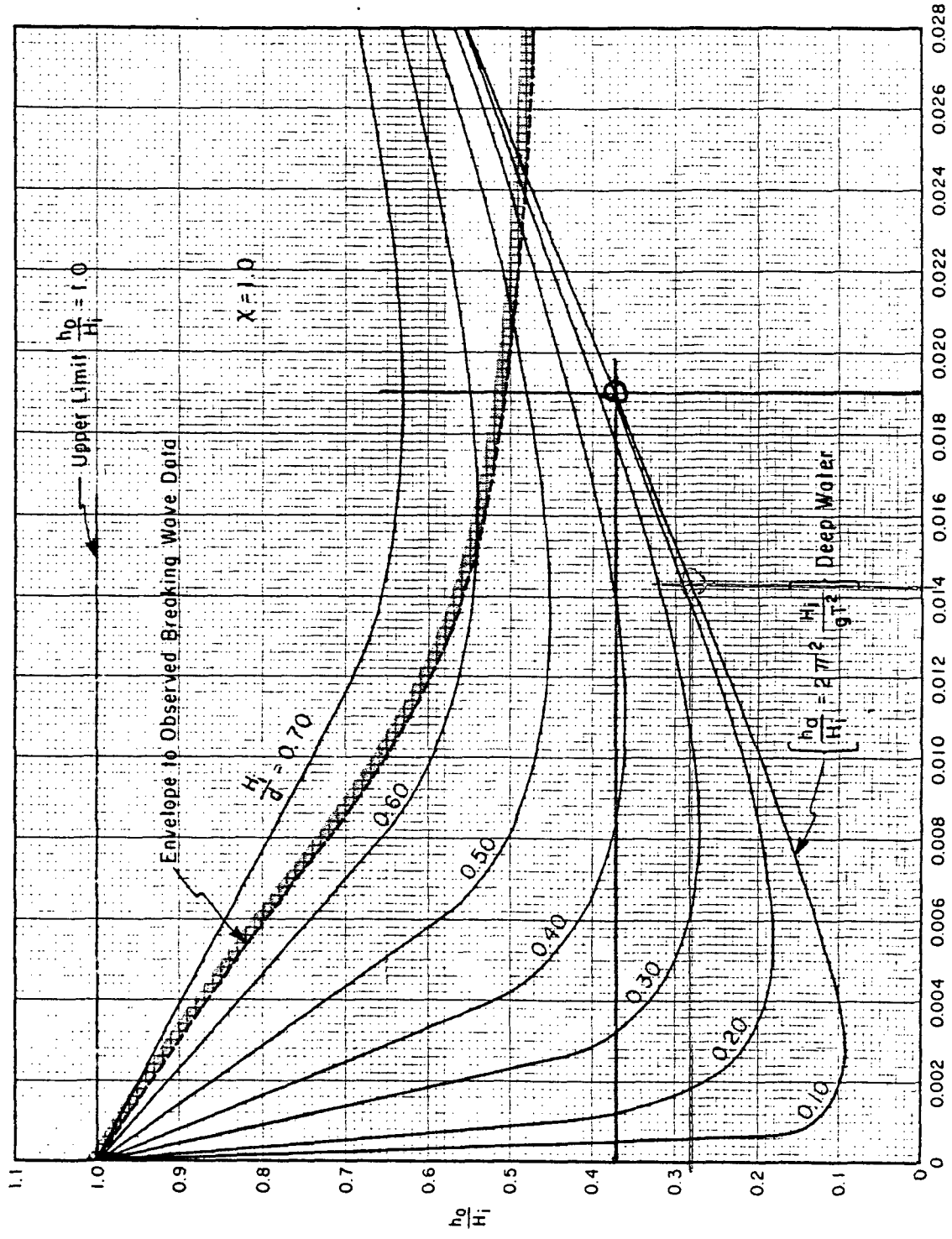


Figure 7-90. Nonbreaking waves; $\chi = 1.0$.

GIANT
REFINING COMPANY

ROUTE 3, BOX 7 • GALLUP, NEW MEXICO 87301
(505) 722-3833 • TWX 910-981-0504

AUG - 6 1986

August 5, 1986

Mr. David B. Boyer
Environmental Bureau Chief
New Mexico Oil Conservation Division
P.O. Box 2088
State Land Office Bldg.
Santa Fe, NM 87501-2088

RE: Evaporation Pond Dikes for GW-32

Dear Mr. Boyer:

We will be starting the dike work soon around the evaporation ponds as stated in our correspondence regarding the Discharge Plan. Fox Consulting Engineers and Geologists has done soil evaluation and analyses work around evaporation ponds No. 1 and NO. 2 as well as the Travel Center location. These soils are typical of that at the dikes around evaporation ponds No. 6, 7, 8 and 9 which are to be repaired or rebuilt.

The soil evaluation indicates that adequate compaction can be obtained during construction by running over each layer with a roller or dozer. We plan to construct the above dikes wide enough to drive on for inspection.

The Fox compaction test results are attached and also a summary of Fox's pertinent test data. Also attached is the Compaction specification section from the Fox Report dated July 22, 1986. A minimum freeboard level of 24" will be provided in the construction. If there are any questions on this information, please call.

Yours very truly,

Carl D Shook

Carl D. Shook

CDS:ds

cc: File
Carlos Guerra, Esq., Giant Industries
Bob McClenahan

Attachments

SUMMARY OF LABORATORY TEST DATA

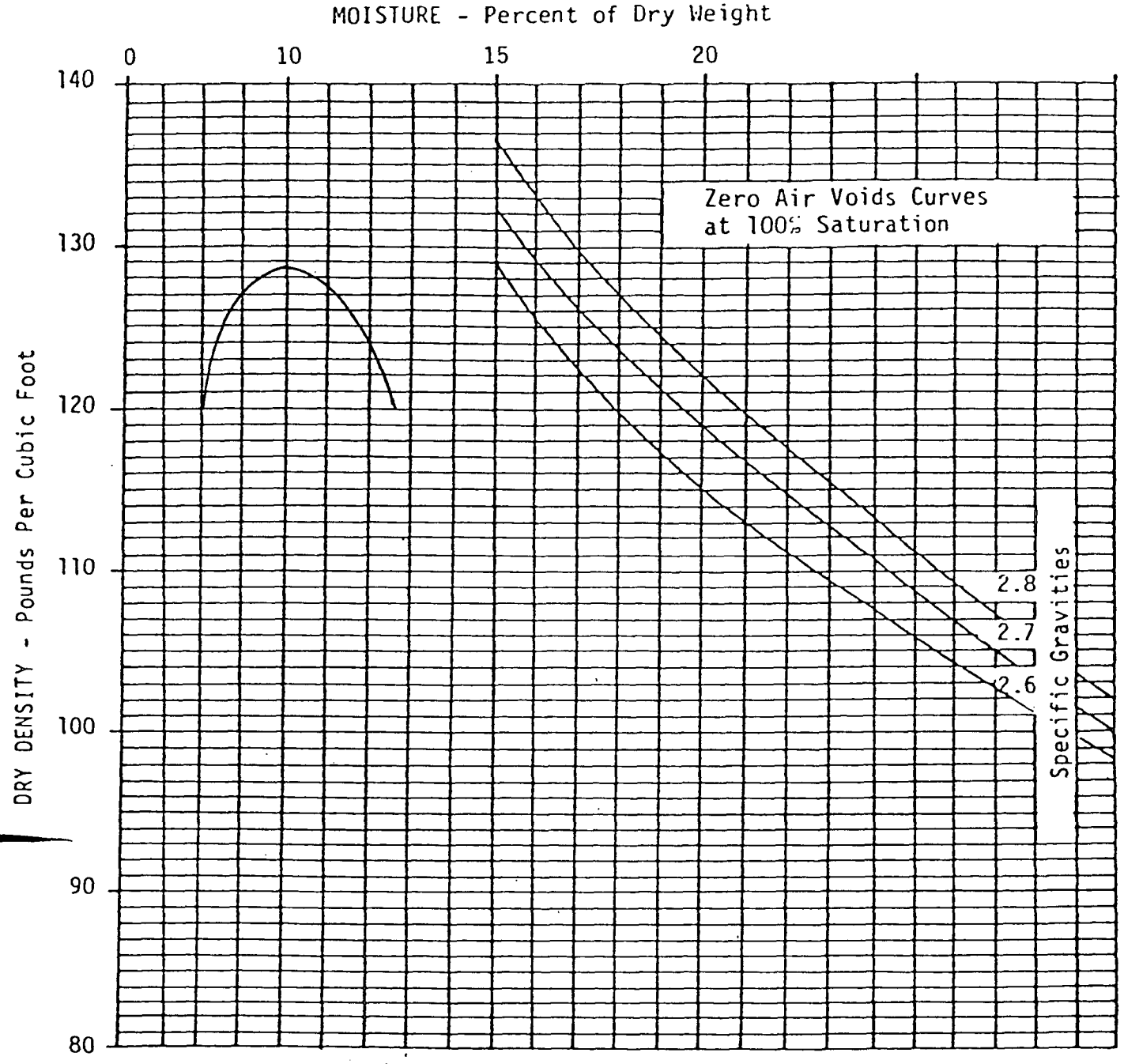
Test Hole No.	Depth of Sample (ft)	Natural Dry Density (pcf)	Natural Moisture Content (%)	Atterberg Limits LL	PI	Sieve Analysis % Passing 3/4"	1/2"	3/8"	No.4	No.10	No.40	No.80	No.200	Soil Description
1	1	109	9.2	29	14	-	100	98	93	86	75	57	39	very clayey SAND (SC)
1	4	102	4.9	26	8	100	93	90	71	63	51	35	22	clayey SAND (SC)
1	8	110	14.9	31	11	-	-	100	99	99	97	87	66	sandy CLAY (CL)
2	2	110	4.0	32	14	-	-	-	-	100	97	70	36	clayey SAND (SC)
2	6	111	17.8	32	15	-	-	100	96	88	78	62	42	very clayey SAND (SC)
2	9	95	24.4	36	13	-	-	-	100	98	96	89	61	sandy CLAY (CL)
3	1	105	13.9	-	-	-	100	95	81	71	58	39	23	clayey SAND (SC)
3	4	112	14.5	28	11	-	-	100	80	69	57	39	24	clayey SAND (SC)
Bulk Sample				28	10	100	96	95	92	87	81	64	41	very clayey SAND (SC)

Job No: 0118980
Date: 7/22/86
Table: 1

FOX Consulting Engineers and Geologists

F.M. FOX & ASSOCIATES, INC.
3412 BRYN MAWR DRIVE, N.E
ALBUQUERQUE, NEW MEXICO 87107
(505) 345-3681 — FMFOX

COMPACTION TEST RESULTS



Maximum Dry Density (pcf) 128.7
Optimum Moisture Content (%) 10.0
Amount of Material Finer Than #200 Sieve 41%
Atterberg Limits: LL 28 PL 18 PI 10
Sample Description: very clayey SAND (SC)
From: combined materials from test holes 1 and 2
Compaction Test Procedure: ASTM D-1557, Method C

NOTE:
NV indicates No Value
NP indicates Non Plastic

compaction.

7.2.1 Moisture Content Tests. Moisture content tests of samples shall be performed in accordance with ASTM D 2216 or D 3017. Results of moisture content tests shall be compared to optimum moisture content of the material to verify conformance with specification moisture control requirements prior to placement of the next layer of fill materials.

7.2.2 Laboratory Compaction Tests. Laboratory compaction tests to determine optimum moisture content and maximum density characteristics of representative samples of fill materials shall be in accordance with ASTM D 1557. Gradation and Atterberg Limits tests shall be performed on each laboratory compaction test sample.

8. COMPACTION.

8.1 Equipment. Compaction equipment shall consist of towed or self-propelled, static or vibratory, sheepsfoot or segmented steel wheeled compactors. All compaction equipment shall be properly maintained and shall be of sufficient size and weight so as to obtain the specified compaction with a reasonable number of passes, and shall be approved by the Engineer. The use of equipment causing rutting of the fill surface shall be discontinued.

8.1.1 Power Tampers. Compaction of material, in areas where it is impracticable to use equipment as provided above, shall be performed by the use of approved power tampers.

8.2 Fill Material. After a layer of fill material has been dumped and spread, it shall be disced, if required, to break up and blend the fill materials, unless discing, as specified under paragraph 7, is performed to obtain uniform moisture distribution. Discing shall be performed with a heavy disc plow, or other approved means, to the full depth of the layer. If one pass of the disc does not accomplish the breaking up and blending of the materials, additional passes of the disc may be required, but in no case will more than three passes of the disc on any one layer be required for this purpose.

When the moisture content and the condition of the layer is satisfactory, the lift shall be compacted to a minimum of 90% and to a maximum of 95% of maximum density as determined by ASTM D-1557.

The Contractor shall be required to add moisture in the borrow areas, if, in the opinion of the Engineer, the proper and uniform moisture content cannot be obtained by adding moisture on the fill surface. Portions of the fill which are not accessible to the roller shall be placed in four (4) inch layers, loose

measurement, and compacted with power tampers to a degree equal to that obtained on the other portions of the compacted fill by rolling as specified. Dumping, spreading, sprinkling, and compacting may be performed at the same time at different points along a section when there is sufficient area to permit these operations to proceed simultaneously. When, in the prosecution of the work, excavation precedes fill to such an extent that the materials excavated cannot be placed directly in the embankment, such materials shall be stockpiled at approved locations adjacent to the work until their use is authorized. No additional payment will be made for such stockpiling, nor for the reloading and hauling of this material to its final position.

9. UNCOMPACTED FILL. Material to be disposed of in the required uncompacted fill areas shall be placed in the areas indicated on the drawings, or otherwise required. The fill shall be dumped and spread in horizontal layers not to exceed (12) inches in thickness. Compaction other than that obtained by the controlled movement of the hauling and spreading equipment over the area will not be required.

10. SLIDES. In the event of slides in any part of the embankment prior to final acceptance of the work, the Contractor shall remove material from the slide area as directed, and shall rebuild such portion of the embankment. In case it is determined that the slide was caused through the fault of the Contractor, the removal and disposal of material and the rebuilding of the embankment shall be performed without cost to the Owner; the work will be paid for at the applicable contract unit prices for excavation common and compacted fill or backfill.

11. FIELD DENSITY AND LABORATORY COMPACTION TESTS.

11.1 Sampling and Testing. Sampling and testing of each principal type of material shall be the responsibility of the Engineer or his representative.

11.2 Moisture-Density Determination. Tests for the determination of maximum density and optimum moisture shall be performed in accordance with the requirements of ASTM D-1557. The above testing shall include Atterberg Limits, Mechanical Analysis and Specific Gravity, if requested by the Engineer. A moisture-density determination test will be performed for each principal type of material, or combination of materials encountered or utilized.

11.3 Density Control. Density shall be controlled in the field in accordance with ASTM D-1556, or by approved nuclear devices in accordance with ASTM D-2922 and D-3017. A minimum of one test shall be made for each 1,000 square yards, or less, for each layer. Deficiencies in construction shall be corrected by the Contractor at no additional cost to the Owner.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

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

August 1, 1986

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Carl Shook, Vice President
Refining Operations
Giant Refining Company
Route 3, Box 7
Gallup, New Mexico 87301

RE: GROUNDWATER DISCHARGE PLAN FOR CINIZA REFINERY (GW-32)

Dear Mr. Shook:

The groundwater discharge plan (GW-32) for Giant Ciniza Refinery located in Sections 28 and 33 of Township 15 North, Range 15 West, (NMPM) McKinley County, New Mexico, is hereby approved. The approved discharge plan consists of the plan dated November 25, 1985, and the materials dated February 3, 1986; April 30, 1986; June 26, 1986; and July 30, 1986, submitted as supplements to the discharge plan.

The discharge plan was submitted pursuant to Section 3-106 of the N.M. Water Quality Control Commission Regulations. It is approved pursuant to Section 3-109. Please note subsections 3-109.E. and 3-109.F., which provide for possible future amendment of the plan. Please be advised that the approval of this Plan does not relieve you of liability should your operation result in actual pollution of surface or groundwaters which may be actionable under other laws and/or regulations.

The monitoring and reporting shall be specified in the discharge plan and supplements thereto. These requirements are summarized on the attached sheet. Any inadvertent omissions from this summary of a discharge plan monitoring or reporting requirement shall not relieve you of responsibility for compliance with that requirement.

Please note that Section 3-104 of the regulations requires that "When a plan has been approved, discharges must be consistent with the terms and conditions of the plan." Pursuant to Section 3-107.C. you are required to notify the director of any facility expansion, production increase, or process modification that would result in any significant modification in the discharge of water contaminants.

Please be aware that in this discharge plan you have made commitments which are legally enforceable under the New Mexico Water Quality Act. These include constructing all aspects of your installation as designed, and

completely fulfilling all monitoring commitments on schedule. You are susceptible to fines should you not fulfill these obligations.

Pursuant to subsection 3-109.G.4., this plan approval is for a period of five (5) years. This approval will expire August 1, 1991, and you should submit an application for new approval in ample time before that date.

On behalf of the staff of the Oil Conservation Division, I wish to thank you, your staff, and consultants for cooperation during this discharge plan review.

Sincerely,

R. L. STAMETS
Director

RLS:DGB:dp

Attachment

cc: Carlos Guerra, Giant Industries
Alberto Gutierrez, Geoscience Consultants
W. Perry Pearce, Montgomery and Andrews
Peter Pache, NMEID

CINIZA REFINERY

Monitoring and Reporting Schedule

The schedule below summarizes the routine monitoring and reporting agreed to be performed by Giant as part of the discharge plan for the Ciniza Refinery (GW-32). While this summary is meant to be inclusive, if any differences occur between the schedule presented here and presented in the discharge plan, the discharge plan (including subsequent correspondence) is the controlling document.

Monitoring	Sampling Parameters	Reporting Frequency	Discharge Plan Reference
API separator effluent quarterly at the two Weir locations for four consecutive quarters, thence bi-annually coincidentally with high-flow periods. Neutralization stream measured on same schedule.	Flow rate of discharge	Quarterly reports during first year on same schedule as RCRA results to NMEID; annual thereafter with submittal to OCD within 30 days of receipt and verification.	Giant's response to OCD comments, p. 11, dated 2/3/86; p. 2, Giant's letter dated 4/30/86; p. 4, Giant's letter dated 6/26/86
Aerated lagoon input for four quarters, thence annually.	BOD	Same as above	p. 2, Giant's letter dated 4/30/86; and p. 4, Giant's letter dated 6/26/86
Evaporation ponds inspected monthly for freeboard, fluid levels, and seepage. Inspection also after 10-year precipitation event (1.8"/24 hrs.) as measured at refinery.	None	None. Refinery records kept on monthly inspections, and on precipitation events exceeding 1.8" per 24 hrs.	p. 3, Giant's letter dated 4/30/86; and p. 4, Giant's letter dated 6/26/86
MW-Series monitor wells sampled January and July, as per RCRA. SMW-Series sampled for four consecutive quarters, thence January and July, as per RCRA.	All approved RCRA (including contuctivity , TOC, TOX, and pH)	Copies of RCRA MW and SMW results sent to OCD on same as to NMEID.	Giant's response to OCD comments, p. 11, dated 2/3/86; p. 3, Giant's letter dated 4/3/86
MW-Series monitor wells July, 1986 and January 1987, thence annually at time of RCRA sampling.	sodium, potassium, calcium, magnesium, chloride, sulfate, carbonate-bicarbonate, TDS, pH, and conductance	Submit 1986 results with January 1987 results by March 1, 1987. Thereafter annual results submitted within 30 days of analysis receipt verification.	Giant's response to OCD comments, p. 11, dated 2/3/86; p. 3, Giant's letter dated 4/3/86; p. 4, Giant's letter dated 6/26/86
SMW-Series monitor wells April and July, 1986, January, 1987, thence annually at time of RCRA sampling	sodium, potassium, calcium, magnesium, chloride, sulfate, carbonate-bicarbonate, TDS, pH, conductance, and volatile aromatic hydrocarbons (BTX)	Same as immediately above	Same as immediately above
Monitor Wells OW1, OW2 and OW3, sampled annually	Same as immediately above	Submitted within 30 days of analysis receipt and verification	p. 3, Giant's letter dated 4/3/86; p. 4 Giant's letter dated 6/26/86

GIANT
REFINING COMPANY
ROUTE 3, BOX 7 • GALLUP, NEW MEXICO 87301
(505) 722-3833 • TWX 910-981-0504

JUL 31 1986

OIL CONSERVATION DIVISION
SANTA FE

July 30, 1986

Mr. David B. Boyer
Environmental Bureau Chief
New Mexico Oil Conservation Division
P.O. Box 2088
State Land Office Bldg.
Santa Fe, NM 87501-2088

RE: Approval Request for GW-32

Dear Mr. Boyer:

We have received your letter of July 18, with your discussion and summary of the resolution of outstanding issues for approval of the Discharge Plan for our Ciniza Refinery (GW-32). We concur and will abide by each of the points in your letter. With respect to your comment on the proposed stormwater dam behind the main office (6a), Giant will construct a small dam with a spillway capable of containing spills and runoff from the 10 year event. The spillway will provide a mechanism for larger events to overtop the dam without washing it out. The existing ditch will be widened to provide sufficient volume to contain the 10 year event.

Soil tests on materials compaction standards and minimum freeboard levels pond dike modification will be submitted to OCD 30 days prior to initiating dike modification.

We look forward to receiving approval for GW-32 prior to August 1, 1986, as per our telephone conversation today.

Yours very truly,
GIANT REFINING COMPANY

Carl D. Shook

Carl D. Shook
Vice President Refining Operations

CDS:ds

cc: Carlos Guerra, Esq., Giant Industries, Inc.
Bob McClenahan, Giant Refining Company

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

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

July 22, 1986

Acting Assistant Area Director
Navajo Area Office
USDI - Bureau of Indian Affairs
P. O. Box M
Window Rock, Arizona 86515

RE: ENVIRONMENTAL QUALITY; DISCHARGE PLAN APPLICATION, GIANT REFINING CO., CINIZA REFINERY

Dear Sir:

Your letter of May 9, 1986, to R. L. Stamets, Director, New Mexico Oil Conservation Division, regarding the above discharge plan application has been referred to me for a reply. A copy of the letter is attached. This reply was delayed until our concerns on spills and seepage at the refinery were adequately addressed by the company. These concerns include some of those that were expressed in your letter. I will address your concerns and the resolution of the issues below.

In addition to the information provided by the company, the OCD undertook an extensive sampling effort to ascertain present conditions, including seepage, at the disposal pond area. We also inspected the refinery to ensure the facility had adequate provisions to contain any spills. Upon completion of the inspection, and review of the sampling results, the company was asked to make modifications to its facility to better protect the environment, on and off the site. The company has agreed, as a condition of permit approval, to make these modifications.

Seepage Control

The OCD evaluated geologic information available from the many refinery monitoring wells and concluded that the first aquifer that could be impacted, the Sonsela Sandstone, is adequately protected by very low permeability clays and shales. The Sonsela is further protected due to water being under artesian pressure, and water movement, if any, would be vertically upward into the ponds. This upward gradient was observed in all the monitoring wells completed in the Sonsela with some wells having water levels at or above the ground surface.

The waste water does contain at least some of the constituents mentioned in your letter. Not all those listed were analyzed by OCD. However, Giant is modifying its first pond to provide treatment for many, if not all, of the listed compounds before discharge to the other ponds. Therefore, the composition of materials in the large evaporation ponds will mainly be

chloride and sulfate inorganic salts, although at high concentrations. To ensure that the ponds do not impact the aquifer, the OCD is requiring that Ciniza regularly sample some of the existing Sonsela monitoring wells for salts and organic contaminants.

Spills and Stormwater Discharge

OCD inspection of the ponds and dikes revealed that some ponds had inadequate diking to prevent some horizontal seepage of pond fluids. We were also concerned about the possibility of failure of some dikes if pond levels are exceedingly high or in the event of prolonged and heavy rainfall. Consequently, repair, rebuilding, and strengthening of approximately 50% of the dikes is being required by OCD. Giant has committed to completing these dike modifications by spring of 1987. At that time, the ponds will also be protected from arroyo flooding due to runoff from areas south of Highway I-40.

The OCD was also concerned that spills and stormwater from the process areas could reach the arroyos and leave the property. Consequently, Giant agreed to modify or construct berms and catchments in the process areas to contain all expected spills, and stormwater from all but the most severe storms. This will prevent refinery contaminants from leaving the property. These modifications will be completed before the end of this year.

The concerns expressed in your May 9, 1986, letter were similar to those of the OCD. Our review of the discharge plan application began in November, 1985, and included many other facets of the refinery operation, and effluent disposal. We believe that the proposed plan, including continued use of the unlined evaporation ponds (with modifications), will provide ground and surface water protection for adjacent lands and water resources. In addition, the OCD will review refinery reports and monitoring results to ensure compliance with the plan after approval.

If you have any questions, please contact me at the above address or by phone at (505) 827-5812.

Sincerely,

David G. Boyer

DAVID G. BOYER
Hydrogeologist/Environmental Bureau Chief

DGB:dp

Enc.

cc: Aztec District Office
R. L. Stamets

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS

Navajo Area Office
Post Office Box M
Window Rock, Arizona 86515

IN REPLY REFER TO:

Environmental Quality

MAY - 9 1986

R. L. Stamets, Director
New Mexico Oil Conservation Division
State Land Office Building
P. O. Box 2088
Santa Fe, New Mexico 87504-2088

Re: Discharge Plan Application, Giant Refining Co., Ciniza Refinery

Dear Mr. Stamets:

The proposed discharge plan has been reviewed by our Branches of Land Operations and Environmental Quality Services. We offer the following comments:

We would appreciate assurance that leaching or spilling will not occur so as to affect the Indian lands and water resources in the area.

There is a possibility that the waste water may contain some of the following compounds which are detrimental to human and animal life:

Benzene	Butene
Tolouene	Ethylene
Zylene	Propoline
Thiophen	

If such compounds exist is the waste-water, it should not be allowed to return to the aquifer.

Perhaps consideration could be given to lining the disposal ponds to prevent leaching.

The location of the facilities appear to be erroneously described (S/4 Section 28 and N 3/4 of Section. .).

Sincerely,

Acting Assistant Area Director

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

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

July 18, 1986

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Carl Shook, Vice President
Refining Operations
Giant Refining Company
Route 3, Box 7
Gallup, New Mexico 87301

RE: GROUND WATER DISCHARGE PLAN FOR CINIZA REFINERY (GW-32), RESOLUTION OF FINAL OUTSTANDING ISSUES

Dear Mr. Shook:

I have received your letter of June 26 containing responses to my letter of May 16, 1986. With only several exceptions, the responses were adequate and resolved all but a few of the remaining issues. Upon review of the information in the letter, I contacted Alberto Gutierrez of GCL on July 10, to clarify several points and to discuss the remaining points at issue. There was agreement reached by telephone on these points, and they are presented in this letter for Giant's review and concurrence. If Giant concurs with the outcome of the OCD-GCL discussions, then discharge plan approval will be forthcoming prior to expiration on August 1 of temporary discharge authorization.

Points Discussed with GCL

1. Sewage Commingling - The discharge plan as submitted does not address proposed truck stop discharges, and will need to be amended if sewage effluent is to be commingled with refinery effluent in the ponds. Based on current information, approval of such an amendment would be likely pending review of engineering information. GCL agreed to submit such an amendment if the sewage is to be commingled.

2. Contingency Plan for Non-RCRA Spills and Sudden Releases from Evaporation Ponds - With the exception of the threshold spill volume to be reported, the general contingency plans presented in the letter are acceptable for these spills and releases. There is no need to refer to WQCC Regulation 1-203 for action to be taken in the event of any possible future occurrences. The purpose of an approved contingency plan as part of the discharge plan is to spell out beforehand what actions will be taken, and alleviate the need to refer to Section 1-203.

In this case, the general contingency commitments presented on pages 2 and 3 of your letter are adequate.

The proposed threshold reporting value of 200 barrels of non-RCRA liquids (mainly crude and refined product) is too high to be acceptable to OCD. An alternative value of 200 gallons (or about five (5) barrels) was suggested to GCL. A second alternative acceptable to us are threshold reporting values of five barrels (210 gallons) of crude oil, refined product, acids and other chemicals, and 25 barrels for produced water.

3. Aeration Lagoon VOA Analyses - No VOA analyses of input fluids to the lined lagoon will be necessary under the discharge plan.

4. Evaporation Pond Inspection - OCD requests that the 10-year precipitation event be measured at the refinery rather than at the National Weather Service Station at Gallup. Several inexpensive rain gauges are available commercially. For example, any of those shown on the accompanying sheet that have a funnel or large open top are acceptable. GCL agreed with our request. The 24-hour period would begin at the onset of rainfall. No records need to be kept unless the 24-hour precipitation of 1.8" is exceeded.

5. Monitoring Schedule - A draft schedule for routine monitoring and reporting is attached. The information was compiled from your previous discharge plan submittals.

6. Containment of Spills and Contaminated Stormwater Runoff -

   a. The proposed stormwater dam for the ditch east of the main office is unacceptable because the siphon pipe will allow dissolved contaminants to flow to the arroyo. An alternative accepted by GCL is to design the catchment to contain all spills, and stormwater runoff up to the 10-year event of 1.8 inches.

   b. It was agreed that the existing berm north of the railroad rack lagoon would extend far enough to the west to catch stormwater from the north tank farm and liquid gas storage areas. It was also agreed that any runoff from the process area that could exit to the north arroyo via the ditch on the east side of the railroad loading area would be diverted. (This is the same ditch currently receiving cooling tower overflows.)

   c. The status of discharges from the secondary separator was clarified by GCL. Upon completion of dike modifications, all effluent from that separator will be received by Pond #6.

One final point, not discussed with GCL, is that Giant is requested to commit to provide information to OCD on the materials and recompaction standards to be used to modify the pond dikes and what minimum freeboard level will be maintained in the ponds. This material should be submitted for review no later than 30-days prior to the anticipated starting date of the work.

Upon receipt by OCD of Giant's concurrence with the agreements and requests presented in this letter, OCD will issue discharge plan approval.

The expected date of discharge plan approval is about one year from the date OCD required that Giant submit a plan. For a large existing industrial facility with a number of effluent sources and surface discharges, this time period for permitting is not excessive. Other existing facilities have required up to several years to permit. The relatively recent design of the refinery and its location in an area where natural hydrologic and geologic conditions provide groundwater protection from approved surface disposal activities allowed for plan review to proceed quickly once the necessary physical and chemical data became available to OCD. This data included information provided by Giant, and data from OCD sampling.

If you have any questions regarding this letter, please contact me at the above address or by phone at 827-5812.

Sincerely,

DAVID G. BOYER
Hydrogeologist/Environmental Bureau Chief

DGB:dp

Enc.

cc: R. L. Stamets, OCD Director
Frank Chavez, OCD, Aztec
Carlos Guerra, Giant Industries
Alberto Gutierrez, Geoscience Consultants
W. Perry Pearce, Montgomery & Andrews

Draft 7/86

CINIZA REFINERY

Monitoring and Reporting Schedule

The schedule below summarizes the routine monitoring and reporting agreed to be performed by Giant as part of the discharge plan for the Ciniza Refinery (GW-32). While this summary is meant to be inclusive, if any differences occur between the schedule presented here and presented in the discharge plan, the discharge plan (including subsequent correspondence) is the controlling document.

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MW-Series monitor wells sampled January and July, as per RCRA. SMW-Series sampled for four consecutive quarters, thence January and July, as per RCRA.	All approved RCRA (including contuctivity , TOC, TOX, and pH)	Copies of RCRA MW and SMW results sent to OCD on same as to NMEID.	Giant's response to OCD comments, p. 11, dated 2/3/86; p. 3, Giant's letter dated 4/3/86
MW-Series monitor wells July, 1986 and January 1987, thence annually at time of RCRA sampling.	sodium, potassium, calcium, magnesium, chloride, sulfate, carbonate-bicarbonate, TDS, pH, and conductance	Submit 1986 results with January 1987 results by March 1, 1987. Thereafter annual results submitted within 30 days of analysis receipt verification.	Giant's response to OCD comments, p. 11, dated 2/3/86; p. 3, Giant's letter dated 4/3/86; p. 4, Giant's letter dated 6/26/86
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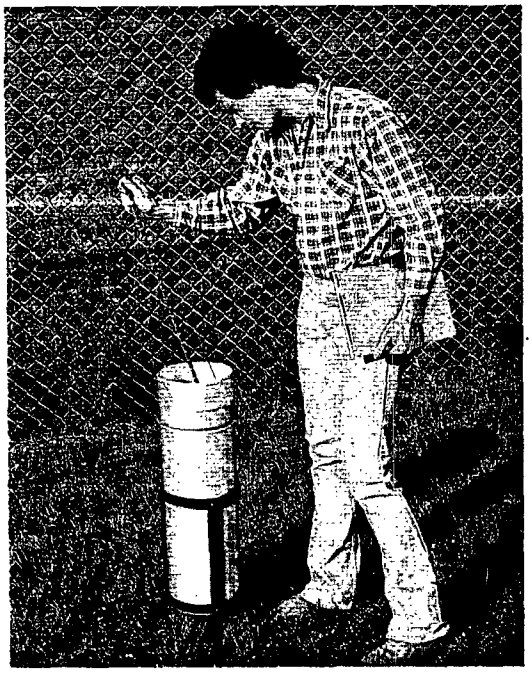
Monitor Wells OW1, OW2 and OW3, sampled annually	Same as immediately above	Submitted within 30 days of analysis receipt and verification	p. 3, Giant's letter dated 4/3/86; p. 4 Giant's letter dated 6/26/86

Rain Gauges

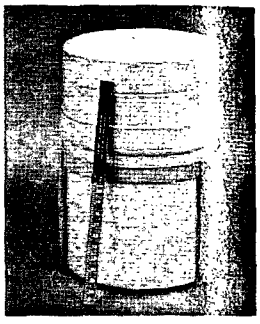


U.S. Weather Bureau Rain and Snow Gauge

For professional rain fall measurements. Accumulates up to 26" of rain fall with a measuring accuracy of 0.01 inches. The knife-edged funnel (top portion of gauge) collects and delivers rain fall into the copper "receiver". The funnel-receiver ratio is 10:1, so that 1" of rain delivers 10" of water into the receiver. Receiver capacity is 20" (2" of rain fall) and any excess overflows into the outer chamber where it can be measured after the quantity in the receiver has been removed.

89018	Gauge w/o tripod. Sh. Wt. 20 lbs.	**$185.00**
89019	Tripod support for Gauge.	**55.45**
89020	Repl. measuring stick.	**9.85**

Forester Rain Gauge



This all aluminum rain gauge has a total capacity of 7" and measures to 100ths of an inch. It consists of a receiver, overflow cylinder, measuring cup and stick. Gauge is 7¾" dia. x 10" high. USFS Specifications No. 5100-451B. Sh. Wt. 5 lbs.

89048	Gauge w/o support	**$70.00**
89049	Repl. measuring stick	**8.70**
89114	Support for mounting gauge on post	**26.95**

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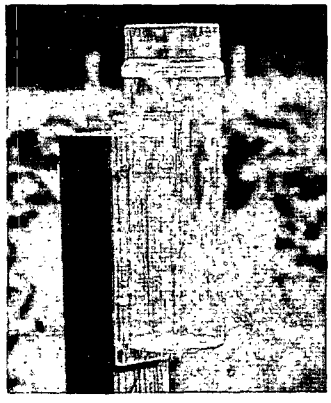
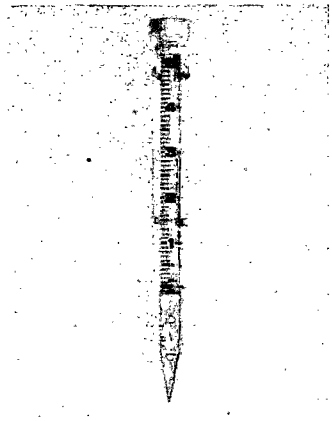


All Weather Rain Gauge

Made to U.S. Weather Bureau spec. Collects rain in top, funnels it to removable inner tube graduated in English or metric. Overflow chamber catches excess for later measurement. Rugged butyrate plastic. Mounting bracket, 1-yr. rainfall record included. Sh. wt. 2-¼ lbs.

88991	Capacity 11" x 1/100"	**$23.50**
88994	Capacity 27.9 cm x2 mm	**29.85**



Far View Rain Gauge

Rain & Sprinkler Gauge

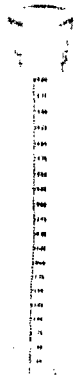
For lawn, garden, nursery or general use; 5" capacity with 1/10" graduations. Magnifier funnel makes accumulation easily read from a distance! Mounted on a 16" sharpened steel frame, push it into the ground in your lawn, garden, or field as a rain or sprinkler gauge. Mounts also on a post.

88990 Sh. wt. ¾ lb. **$7.15**

Tru-Check Direct-Reading Rain Gauge

Graduated one side from 1/100" to 6", other side from 1/10 mm to 150 mm. Easy to read and permanently marked graduations. Heavy weather resistant plastic. Length - 13". Aluminum mounting bracket included.

89011 Sh. Wt. ¾ lb. **$6.00**



Taylor See-Thru Rain Gauge

Accurate and inexpensive. For nurserymen, gardeners, ranchers, farmers, and homeowners. Tenite butyrate plastic will not crack or become brittle with age. Capacity is 5" by .05".

89068 Sh. Wt. 1 lb. **$9.50**

RainWise®

A Completely Automatic Electronic Rain Gauge

The RainWise Electronic Measuring System measures each 10th or 100th inch of rainfall ... signals to remote indicator ... then empties itself. Never needs draining.

Indicator shows up to 99.99 inches of rainfall. May be located up to 100' away (60' cable included) on desk or table top.

Battery Powered - 9 volt "transistor" battery (not included).

Re-Set Button - accumulate total inches of rainfall over any period you choose. Pushing the re-set button starts a new period of counting. There is no need to empty or check the outdoor collector.

88992	Measures to 1/10''. 60' cable. Sh. Wt. 1¾ lbs.	**$64.50**
88993	Measures to 1/100''. 60' cable. Sh. Wt. 3 lbs.	**81.10**

"What You Need, When You Need It," For More Than 35 Years.

Forestry Suppliers, Inc.

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Post Office Box 8397 — Jackson, Mississippi 39204-0397
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Jackson, Mississippi, U.S.A.

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You must be completely satisfied. If for any reason you are not pleased with your purchase, write or call us immediately. We assure you a prompt settlement to your satisfaction.

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Figures separate in file DGB

June 26, 1986

Mr. David G. Boyer
Environmental Bureau Chief
NMOCD
P.O. Box 2088
Santa Fe, NM 87501-2088

RE: Final Resolution of NMOCD Comments on Ground Water Discharge Plan for Ciniza Refinery (GW-32)

Dear Mr. Boyer:

This letter contains the responses to your final comments and requests for additional information required for final approval of GW-32.

Plans and Specifications for Aerated Lagoon

The complete plans and specifications for the aerated lagoon will be submitted to NMOCD by August 30, 1986. The lagoon is scheduled for construction in late summer or early fall of this year, so Giant will submit the plan and specifications for the lagoon as soon as they are available. It is our understanding that this will not cause a delay in discharge plan approval since the end result of this modification will be an improvement of the quality of effluent that is eventually discharged to the evaporation ponds.

Waste Management System and Contingency Plans

The proposed plan for flood protection of the evaporation ponds and the plan for remedial action on the dikes to stop any potential seepage are presented below. In addition, proposed modifications to prevent off-site drainage of spills or leaks from facilities east of the cooling tower, adjacent to the office, to the north of the refinery area and in the truck loading area are also included.

Flood Protection for Evaporation Ponds

Calculation of flood discharges from 50 and 100-year storms show that, in a 100-year storm, a flow of 3000 cubic feet per second (CFS) may be anticipated in the area of pond #9. The figure of 3000 CFS is, however, strongly dependent upon soil-moisture conditions. Under "average" moisture conditions, the 3000 CFS flow is reasonable, but very dry conditions could reduce this to approximately 1000 CFS. Alternatively, very wet and antecedent soil conditions could increase peak flow. For any value of peak flow, the total flow will be 500 to 600 Acre-feet.

Under "worst case" conditions, (very wet soils) the 50 or 25-year storm could produce flows equal to the 100-year storm's flow under "average" conditions. For this reason, we propose to construct earthwork flood control structures to protect Pond #9 and adjacent ponds (6, 7 and 8) from the "average" 100-year flood. All flooding calculations were Mr.

developed using the SCS method for calculating peak discharge rates for small watersheds (1985).

Using the SCS method and a channel width of 500 feet in the area of the pond (no well defined channel exists see Figure 1) and a 2% slope the calculated depth of waterflow is:

$$\frac{3000 \text{ cubic feet}}{\text{sec}} \times \frac{1}{500 \text{ feet}} \times \frac{\text{sec}}{1.5 \text{ ft}} = 4 \text{ feet}$$

GCL engineers have prepared a conceptual design for a structure to protect the area around Pond #9. Figure 1 shows the plan of the structure. The structure is essentially a raised berm which will replace the existing dike at Pond #9 and extend as shown on Figure 1. The crest of the proposed dike will be 4 feet above grade to insure adequate flood protection.

After NMOCD approval of this conceptual design (discharge plan approval) Giant will perform a survey of the area for final design and construction staking (60 days after discharge plan approval). Final design drawings will be submitted to NMOCD for approval within 120 days after discharge plan approval. Construction of the control structure is scheduled for spring of 1981, after NMOCD approval of final design drawings.

Correction of Seepage from Evaporation Ponds

The dike areas outlined on Figure 1 which showed some signs of seepage will be repaired by widening and raising the dike to dimensions of approximately 10' in width and 4' high and compacted to prevent seepage. This has been already been done on approximately 50% of the dikes in other areas around the evaporation ponds. The dikes in these areas are used as roadways for inspection as will be the case where the dike modifications shown on Figure 1 are performed in order to correct seepage problems. This method of dike repair has a demonstrated capacity to prevent seepage as observed by NMOCD during inspection of the wider dikes. These dike modifications will be completed by the Spring of 1987.

Contingency Plan for Non-RCRA Spills

Non-RCRA spills within the facility will generally consist primarily of crude oil or refined products. The nature and volume of each spill will vary significantly, and a detailed contingency plan to cope with any potential failure is not practical. Outlined below is a simplified contingency plan to deal with non-RCRA spills. If required by NMOCD, a detailed contingency plan can be prepared under the provisions of 1-203 of the Water Quality Control Commission Regulations for any significant spill, when and if such a spill should occur.

After determining the chemical nature and volume of any non-RCRA spill, Giant will immediately contain the spill using appropriate earth-moving

equipment. Any free standing liquids will be removed by the vacuum truck and recycled or disposed of in the API sewer. Any non-recoverable fluids will be collected with an appropriate sorbent material and disposed of as required by appropriate regulations.

Unintentional releases in the process area flow into the API sewer, the API separator and will be treated in the aerated lagoon currently being designed by Giant. Unplanned releases in the process area are not considered spills since the concrete flooring in the process area and the API drains insure that these releases will be directed to the sewer and appropriately treated in the aerated lagoon.

Giant will report to NMOCD the chemical nature, volume and location of any spill in excess of 200 barrels of liquid. The procedures outlined above will be employed to contain these spills and insure proper treatment of released fluids.

Sudden Releases from Evaporation Ponds

Giant has considered your April 7 and May 16, 1986 comments regarding a contingency plan for dealing with sudden releases of fluids due to rupture and or overflows of the evaporation pond. A detailed contingency plan to cope with a sudden release from the evaporation ponds is not possible. It is apparent from the property boundaries and topography, that any sudden release from the evaporation ponds may have the potential to migrate off-site and may flow into watercourses near the facility. If a sudden release should occur, Giant will report the release and immediately take appropriate steps to mitigate any possible deterioration of water quality which could result from such a release. For this purpose, Giant maintains earth moving equipment on the site that would be utilized in an immediate attempt to contain or divert any catastrophic release into an existing evaporation pond. Giant will notify NMOCD of any such release pursuant to 1-203 and immediately respond to mitigate environmental damage.

Giant is committed to periodic inspection of the berms to minimize the potential for sudden releases. An unplanned release could occur due to natural forces such as earthquakes and floods. In cases such as these, Giant will take all possible steps to minimize the migration of any release from the facility. Earth moving equipment is on-site and capable of building catchment areas. Where practical vacuum trucks and pumps can be used to remove standing water which may exist outside of the evaporation ponds after a sudden release.

Monitoring and Reporting

1. Giant believes that GC scans for VOA's on input to the lined aerated lagoon are unnecessary and excessive since the unit is a lined process unit and the purpose for BOD input/output analyses is to assure that the biological treatment objective (60% BOD reduction) in the lagoon is being achieved.

2. The evaporation ponds will be inspected after major storms for potential dike erosion and loss of freeboard. This visual inspection will be facilitated by the modification of the dikes to permit inspection by driving around the ponds on top of or adjacent to the pond dikes. For purposes of triggering these inspections, a major storm shall be defined as the 10 year precipitation event (1.8" in 24 hrs see Figure 2) as reported by the national weather service from their station at the Gallup Airport.

3. As requested by NMOCD, Giant will perform a VOA scan on samples from the SMW wells on the same schedule as proposed for the selected WQCC parameters (potassium, calcium, magnesium, carbonate-bicarbonate and TDS). This schedule consists of analyzing these parameters for the next two sampling quarters and annually thereafter.

4. Results of annual sampling and analysis will be submitted to NMOCD within 30 days of receipt and verification of results.

Other Issues

1. Giant agrees to continue to investigate any potential existing contamination due to past practices under Section 1-203A of WQCC regulations when requested by NMOCD. This will allow review and approval of the discharge plan without waiting for the results of and decisions regarding any contamination investigation.

2. NMOCD expressed concern regarding the fate of potential leaks or spills that have the potential to be transported off site from 5 areas:

    (1) small drainage ditch located east of the office
    (2) plant runoff towards the north in the vicinity of the railroad rack lagoon
    (3) runoff from truck loading area through culvert in existing dike
    (4) runoff from tank farm on south side of refinery (formerly asphalt tanks)
    (5) runoff from cooling tower overflows and airborne drift

Giant has developed the following plans to prevent the transport of any spilled materials or contaminated stormwater runoff from discharging to surface water. These plans and commitments are summarized below:

1. Stormwater ditch that flows towards south, located east of the main office
This ditch, which is approximately 30-36" deep, receives only occasional stormwater runoff which could carry some oily materials from minor spills in the south refinery area. In order to prevent flows down this ditch to the arroyo to the south, Giant will construct a small (30-36" high) dam across this ditch, approximately 25 yards south of the main office. An underflow siphon pipe (similar to outflow pipes on septic tanks) will allow clean storm water to flow to the arroyo and retain oily material that will be picked up by vacuum truck and discharged to the API sewer. This modification will be completed by the end of 1986.

2. Plant runoff towards the north in the vicinity of the railroad rack lagoon
Stormwater runoff from the north side of the plant is largely contained within individual bermed tank areas along the north side of the refinery; however, some stormwater may occasionally flow towards the north between the east refinery area and the railroad track. This runoff usually consists only of storm water that may have some natural suspended sediment from flowing over unpaved areas. In order to resolve NMOCD's concern over these flows (potentially containing hydrocarbons from small surface spills), Giant will repair the existing berm that is located north of the railroad rack lagoon thus containing rainfall/runoff events and preventing overland flow to the north. This berm is 18-24" high and extends east-west across the swale north and west of the railroad rack lagoon. The repairs and grading on this berm (shown on Figure 1) will be completed by the end of 1986.

3. Runoff from truck loading area through culvert in existing dike
Any spills that occur within the truck loading area are typically contained by the existing dike around the facility. NMOCD expressed concern that spills could escape through an existing drainage culvert in that dike prior to recovery of such spills. In order to address this concern, Giant will remove the culvert in question and repair the dike so that any spill in the truck loading area will be completely contained until removed by vacuum truck. This modification will be complete by the end of 1986.

4. Runoff from tank farm on south side of refinery (formerly asphalt tanks
Runoff from the tank farm on the south side of the refinery formerly went to the asphalt pit area. Giant is building a dike around the entire southern tank farm that will be capable of containing small or large spills and any contaminated storm

water until they can be removed by vacuum truck. This will prevent any runoff towards the south from this area that could enter surface water. This construction will be complete by the end of 1986.

5. Runoff from cooling tower overflows and airborne drift
The small discharge observed by NMOCD east of the cooling tower on their April 15 inspection was due to small overflows in the southeast corner of the cooling tower basin and airborne drift from the top of the cooling tower. In order to prevent these occasional discharges to grade, Giant will construct a rectangular berm east of the cooling tower (approximately 12" high) to contain and evaporate any of these infrequent discharges. This modification will be completed by the end of 1986.

The plans described above address all of NMOCD's concerns regarding the potential for stormwater contaminated by small leaks or spills to enter any surface water courses.

Additionally, final engineering design of the proposed aerated lagoon to treat oily wastewater is nearly complete. This summer, Giant will begin construction of the proposed treatment unit. The operation of the aerated lagoon will improve the quality of effluent discharged to the evaporation ponds.

Giant looks forward to discharge plan approval prior to any need for additional extensions of time.

Very truly yours,

Carl Shook

Carl Shook
Vice President Refining Operations

CS/AAG/ls/GIANT/BOYER008.LTR

Enclosures

cc: Carlos A. Guerra, Esq., Giant Industries Inc.
Alberto A. Gutierrez, GCL

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

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(505) 827-5800

May 16, 1986

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Carl D. Shook
Vice President, Refining Operations
Giant Ciniza Refinery
Route 3, Box 7
Gallup, N.M. 87301

RE: GROUND WATER DISCHARGE PLAN FOR CINIZA REFINERY (GW-32)

Dear Mr. Shook:

I have received your letter of April 30, 1986, which responded to the comments made in my letter of April 7, 1986, and to the concerns expressed by me during my visit on April 15-16, 1986. Many of these issues were resolved by your letter, but several remain to be settled. The submittal in June and July of the remaining technical information should assist in this.

Before fully reading the closing paragraph of your letter, I had contacted Geoscience on May 12 regarding clarification of some technical points. I apologize if this has caused any problem. I discussed these points with Geoscience's Jim Hunter and Randy Hicks, and this letter informs you of the status of the remaining issues. I understand, of course, that any comments made by them that would result in action or work by Giant will need to be reviewed and approved by you. Nonetheless, significant progress was made in resolving these issues. These are listed below:

Waste Management System and Contingency Plans

1. Even though the neutralization tank appeared to be deteriorated, it may, in fact, be intact. The gravel on the sides and bottom and the ragged edges gave the appearance of no bottom. When the effluent from the secondary separator, which is fed by the open ditch adjacent to the neutralization tank, is diverted to an evaporation pond, any leaks in the tank that reach the ditch will also be diverted to the pond and not result in discharge to adjacent property. However, all leaks should be repaired as quickly as possible to allow the neutralization tank to perform its design function. Your responses on pages 1 and 2 of your letter resolve the matter.

2. You have agreed to provide us with drainage, flood protection,

and pond modification plans to us by July 31, 1984. The contingency plans will be submitted about June 30. The most important elements of the plant drainage plans should be containment of spills or leaks so that they do not reach arroyos or drainages that leave the property. I discussed several suggestions for doing this with Geoscience. Until we receive the above plans and modifications, we cannot proceed with the final review in this area.

Monitoring and Reporting

Giant's responses are satisfactory except that clarification is needed for the following:

1. OCD requests that a scan for volatile aromatic hydrocarbons be run for the aerated-lagoon input on the same schedule as for BOD.

2. The evaporation ponds should be inspected after major storms for erosion, freeboard, etc. If Giant wishes to define a "major storm" as a one, two or five year precipitation event, provide rainfall data for each of the storms, indicate which storm event is desired to be considered the "major storm", and describe how the event is to be measured.

3. We request that a scan for volatile aromatic hydrocarbons be run for the SMW wells on the same schedule that you propose for water chemistry parameters.

4. OCD requests that results from the annual samples be submitted to OCD within 30 days after receipt of the results. This will alleviate a long wait if the samples from OW or other wells are taken many months before the EID/RCRA report is due.

We will submit a draft monitoring and reporting summary incorporating all discharge plan requirements and agreements for your review prior to final approval.

OTHER ISSUES

1. I suggested to Geoscience that we separate the issues of ground water contamination due to past practices from the current disposal activities, and proposed a mechanism to accomplish this. A statement from Giant agreeing to continue to investigate apparent existing contamination, and to comply with Section 1-203.A. of the Water Quality Control Commission Regulations should suffice. Geoscience has prepared a similar statement for another client. This separation will allow completion of discharge plan review without waiting for further information to be received, and for decisions to be made regarding the contamination investigation.

2. The anticipated date for OCD receipt of the drainage plans

and modifications, and repair plans for the existing evaporation pond system is July 31, 1986. The date the current extension to discharge without an approved discharge plan expires is August 1, 1986. Since the OCD will need some time to review these plans for adequacy, submittal of the plans by June 30 will alleviate Giant asking for an additional extension of time, or OCD approving a discharge plan on August 1, with the condition that the engineering plans be modified by Giant if OCD finds them inadequate. If these plans are received by June 30, OCD will provide quick review and turnaround. If any clarifications are then needed, they can be discussed and resolved before the August 1 deadline.

We have not received all our analyses back for the March and April samplings. I will be sending you copies when they are received. Enclosed is a copy of a "public comment" received May 14, from the BIA.

I want to thank you again for the assistance of you and your staff during my visit of April 15-16.

Sincerely,

DAVID G. BOYER
Hydrogeologist/Environmental
Bureau Chief

DGB:dp

cc: R. L. Stamets, Director, OCD
Frank Chavez, OCD, Aztec
Carlos Guerra, Giant Industries
Alberto Gutierrez, Geoscience Consultants
W. Perry Pearce, Montgomery & Andrews

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
Navajo Area Office
Post Office Box M
Window Rock, Arizona 86515

IN REPLY REFER TO:

Environmental Quality

MAY - 9 1986

R. L. Stamets, Director
New Mexico Oil Conservation Division
State Land Office Building
P. O. Box 2088
Santa Fe, New Mexico 87504-2088

Re: Discharge Plan Application, Giant Refining Co., Ciniza Refinery

Dear Mr. Stamets:

The proposed discharge plan has been reviewed by our Branches of Land Operations and Environmental Quality Services. We offer the following comments:

We would appreciate assurance that leaching or spilling will not occur so as to affect the Indian lands and water resources in the area.

There is a possibility that the waste water may contain some of the following compounds which are detrimental to human and animal life:

Benzene	Butene
Tolouene	Ethylene
Zylene	Propoline
Thiophen	

If such compounds exist is the waste-water, it should not be allowed to return to the aquifer.

Perhaps consideration could be given to lining the disposal ponds to prevent leaching.

The location of the facilities appear to be erroneously described (S/4 Section 28 and N 3/4 of Section.).

Sincerely,

Acting Assistant Area Director

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS

Navajo Area Office
Post Office Box M
Window Rock, Arizona 86515

IN REPLY REFER TO:

Environmental Quality

MAY - 9 1986

R. L. Stamets, Director
New Mexico Oil Conservation Division
State Land Office Building
P. O. Box 2088
Santa Fe, New Mexico 87504-2088

Re: Discharge Plan Application, Giant Refining Co., Ciniza Refinery

Dear Mr. Stamets:

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The location of the facilities appear to be erroneously described (S/4 Section 28 and N 3/4 of Section.).

Sincerely,

Acting Assistant Area Director

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April 30, 1986

Mr. David Boyer
Environmental Bureau Chief
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

RE: April 7, 1986 Letter Concerning Giant Industries, Inc. Ciniza Refinery Discharge Plan (GW-32)

Dear Mr. Boyer:

Giant Industries, Inc. has prepared this response to the comments of your April 7, 1986, letter. To assure the speedy approval of GW-32, Giant is making the required commitments requested by NMOCD and answering your remaining questions regarding the Ciniza Refinery. Other matters discussed during your April 15-16, 1986 visit to the Ciniza Refinery are also addressed. Our responses follow the same order as the points raised in your letter.

Physical Environment

1. The flood protection plan is currently in preparation, and should be available to NMOCD on or before May 31, 1986. The drainage plan for the proposed Travel Center has just recently become available allowing us to proceed with this task.

Process Description

1. The change from chromate to non-chromate treatment for the cooling towers will be completed at the end of 1986.

Waste Management System

1. A re-examination of the Neutralization Tank indicates that the bottom is intact and that no significant leaks are present. The nearby ditch (located west of the neutralization tank) was not receiving seepage but rather had water and ground moisture in it from a storm sewer that empties into the ditch from an area just to the south and east. This drainage crosses under the road located south of the neutralization tank through dual 8" culverts. In addition, some of the observed moisture was from the melt of the snowfall that occurred on the week of the March inspection. If any leaks in the Neutralization Tank are noted in the future, they will be repaired in a timely manner.

2. The secondary phase separator will be cleaned, inspected and repaired as necessary, on or before June 30, 1986.

3. Excavation of the underground tanks are now complete. No visibly contaminated soil was noted, and the tanks are in very good condition. Removal of the tanks will be completed on or before May 8, 1986.

4. Giant and GCL engineers are currently studying these areas of concern in order to prepare a drainage plan which will prevent spills or leaks from off-property migration. We anticipate completion of this study, and submission of a drainage-control plan to NMOCD in about 90 days (by July 31, 1986).

5. See response #4 (above)

6. Giant intends to dike the inactive asphalt-tank area to control steam condensate and storm water in this area thus removing the need for the asphalt pit. The asphalt pit will be closed following the drainage control modifications.

7. Giant plans to repair all seeping dikes, and to modify the evaporation ponds as necessary to retain effluent from the secondary separator. A detailed plan and schedule for these modifications will be submitted to NMOCD in about 90 days (by July 31, 1986).

8. As noted in 7 (above), Giant is committed to making necessary repairs to all dikes and berms, within the time-frame submitted with the plans as detailed above.

Monitoring and Reporting

1. Giant proposes quarterly monitoring for 4 consecutive quarters to identify any seasonal variations in discharge. Following the 4 consecutive quarters, Giant will monitor the weir on a biannual basis on dates co-incident with any high-flow periods identified in the quarterly monitoring. Annual report will be submitted according to the same schedule as NMEID reports on RCRA sampling. Quarterly reports will be submitted during the first year, and annual reports thereafter.

2. Giant proposes to monitor the aerated-lagoon input on a quarterly basis for BOD. After 4 consecutive quarters, Giant will monitor BOD on an annual basis. Reporting will follow the NMEID schedule.

50 YEARS

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

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SANTA FE, NEW MEXICO 87501
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April 7, 1986

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Carl D. Shook
Refinery Manager
Ciniza Refinery
Route 3, Box 7
Gallup, N.M. 87301

RE: DISCHARGE PLAN FOR GIANT INDUSTRIES, CINIZA REFINERY (GW-32)

Dear Mr. Shook:

The Oil Conservation Division received on February 5, 1986, Giant's responses to our comments of January 24 regarding the Ciniza discharge plan. The response was dated February 3, 1986. The information provided, coupled with our site visit and sampling on March 5 and 6, 1986, answered many of the important issues raised in my January 24 letter. The site visits, especially, provided us with first-hand information on the operation and discharges. On behalf of the Division, I want to thank you, Robert Anderson, and other members of your staff for the hospitality and cooperation shown during the visit.

Comments on Site Hydrogeology

The major concern in our January 24 letter was adequate demonstration of the ability of the naturally occurring earth materials to contain the liquid effluents and prevent their migration to a place of water use. The purpose of our sampling the OW wells was to verify the presence or lack of contamination in shallow completion wells closest to the evaporation ponds, and if found, to evaluate its significance with respect to nearby usable groundwater. The sampling found one well definitely contaminated (OW-5, high conductivity), and two others suspected of having organic contamination (OW-14 and OW-17, strong aromatic hydrocarbon odor). No odors or high conductivities were found in any other wells sampled. As no sample results of any type have been reported yet from our State laboratory, neither the presence of organic contamination in wells 14 and 17, nor its absence in the other wells can be confirmed.

Jami Bailey, a geologist on my staff, evaluated the stratigraphic information provided in the discharge plan. Her analysis (attached to this letter) concludes that the Chinle channel and floodplain cemented sands

above the Sonsela have limited lateral extent, and are less than ten feet in thickness with generally low permeability.

Additionally, our review of available stratigraphic information from wells OW-1, OW-2, OW-3, and the SMW/SMX borings indicates that no sands are present close to the surface, or outcrop under ponds 7, 8, 11, and 12. If such sands had been present, additional work likely would have been needed to define their extent and impact off Ciniza property to the west. This conclusion may be re-evaluated if contamination is found in these OW wells.

Our site reconnaissance found a flow of water at about 8 gpm off the property in the area between OW-1 and pond 8. The source of this water was a swampy area to the south of pond 9. Conductivity measurements showed it to be from a different source than pond 9 or any of the other waste water sources. Measurement of water levels in OW-1 and OW-9 indicates artesian head near or above the ground surface. Near OW-9, the Sonsela is about 20 feet from the surface and is likely the discharge source. Therefore, the upward potentiometric gradient provides another source of protection for the Sonsela.

Ms. Bailey's analysis shows that some shallow sands are projected to outcrop under ponds 2 through 6. It is likely that fluids enter these sands and migrate downdip. This appears to be the source of fluids in well OW-5 which is screened in the upper 25 feet. OW-7, adjacent to pond 5, does not show contamination since completion is from 50 to 70 feet. Ms. Bailey's analysis indicates that wells SMW 1, 2 and 3 are completed in the same sand (#3) projected to outcrop under the ponds. If so, the elevated conductivities in those wells may be due to pond seepage and not natural causes. Likewise, since wells SMW 4, 5 and 6 are indicated to be completed in a different sand (#4), no elevated conductivities would be expected. Sampling of the SMW series wells for general water chemistry parameters should assist in verification of this hypothesis. This sampling is scheduled to be performed April 15-16 concurrently with the quarterly RCRA sampling.

Sampling of wells OW 12, 13, 14, 16 and 17 is also scheduled for those dates. Stratigraphic information in this area is less extensive and conclusions as to the relationships between the various sandstone beds are more tenuous. Examination of the water quality data will be useful in determining whether additional investigation needs to be considered in this area.

In summary, I am satisfied (pending review of our water quality analyses) that additional subsurface studies are not necessary in the area of the evaporation ponds (#1-12). The OCD is continuing to study the available information in the area by the Railroad Lagoon, and is awaiting results as to the type and quantity of hydrocarbons in the water.

The comments and requests for additional discharge plan commitments listed below result from review of your February 3 submittal and from deficiencies

noted during our site visit. While these items have to be addressed prior to discharge plan approval, a reasonable timetable for scheduling completion of jobs that require construction or expenditures will be acceptable.

Physical Environment

1. The flood protection plan that was to be submitted to OCD by April 1, has not yet been received. (See additional comments in Waste Management Section.)

Process Description

1. It was stated during the site visit that a switch to phosphates from chromates in cooling tower water was planned. What is the anticipated date?

Waste Management System

1. Examination of the Neutralization Tank revealed that there was no intact bottom. It appeared that water was seeping through the ground to the nearby open ditch that leads to the secondary separator. Ciniza needs to provide a schedule for the repair or replacement of the tank.

2. Examination of the secondary oil/water separator adjacent to pond 6 shows that it is clogged and needs maintenance or repair to be effective. Provide a schedule for completion of necessary work on the unit, and for additional periodic inspection and cleanout.

3. The abandoned underground storage tanks need to be removed when heavy equipment is available on site. Provide a date by which this can be accomplished.

4. The OCD is concerned about runoff from the south portion of the process area in the vicinity of the old asphalt plant, office, and loading area. Some or all of this runoff would move to the arroyo near well OW-11 and discharge to the west into the swamp area by pond 9 and thence off property. In the event of major spills or leaks in that area, how is discharge to the arroyo prevented?

5. The OCD is similarly concerned about runoff to the north from the product storage area towards the Rio Puerco. This area will be re-visited on April 15-16.

6. Is the asphalt pit still necessary? If not, it should be dried out, covered and mounded. If not needed, will Ciniza commit to closure of the pit, and provide a date for its completion?

7. Now that issues of seepage to groundwater have been resolved, the greatest area of concern relating to the use of the evaporation ponds is their structural integrity. During the site visit, seepage was seen emanating from the south and west side of pond 6, and the north side of pond 9. Evidence of past seepage was also seen from the south side of pond 8. Brine or salt deposited from evaporation of the fluid was present in all these areas, which drain to the ditch leaving the property along the southern side on pond 8. Salt deposits were also seen in this ditch. In the event of pond failure or heavy runoff, this salt will leave the property and cause surface damage on adjacent property, and may enter the Rio Puerco, a tributary to the Colorado River. Salt in the ditch indicates that such discharges off property have occurred in the past. Also, non-oil discharges from the secondary oil/water separator flow along the south end of pond 6 and exit the property via the same ditch. If such industrial effluents do discharge to the river, however infrequently, a Federal EPA-NPDES permit may be necessary. Because such discharges can cause surface damage on adjacent property, and enter protected surface waters, Giant is requested as part of its discharge plan to commit to strengthening the berms on the above ponds and on any others that may be seeping (See also Comment #8). Further, you are asked to commit to divert or contain such runoff so that salts, brines, and non-oil fluids from the secondary oil/water separator do not leave the property, and to provide plans and specifications and a timetable if you agree to perform such modifications.

8. There is evidence that similar seepage has occurred along the west side of ponds 7 and 8. Examination of the open, shallow iron standpipes (possibly previously used as peizometers) on the south side of pond 8 and west side of ponds 7 and 8 showed fluids. Similar examination of the standpipes on the west side of pond 11 and north side of ponds 11 and 12 where berm compaction has been accomplished due to road building showed that no fluids were observed. If failure of either ponds 7 or 8 occurred, fluids greatly exceeding 10,000 mg/l total dissolved solids would immediately discharge off the property causing surface damage, and could enter the Rio Puerco. Therefore, you are requested to commit to strengthening the berms, and provide the methods to be used and a timeframe for completion.

Monitoring and Reporting Plan

The OCD has reviewed the proposed Giant Ciniza monitoring plan and suggests modifications that will better meet OCD's requirements for ground water protection. Although results of the March sampling have not yet been received, and the joint OCD-Giant sampling of the SMW wells has not yet taken place, the plan summarized below should suffice for OCD purposes pending our review of the sampling results.

1. Weir measurements by Giant on a quarterly* basis pursuant to methods listed on page 11 of the 2/3/86 Giant response to OCD comments.

2. Sampling and analysis, on a quarterly basis, of effluents input to proposed aerated lagoon, analyzing for TDS, TOC, and volatile aromatic hydrocarbons (BTX using EPA screening methods or by GC/MS).

3. Sampling and analysis (for the parameters above) of the final effluent to the ponds, also on a quarterly* basis.

4. Inspection of all evaporation ponds for fluid levels, freeboard and surface seepage on a monthly basis, and following any major storms.

5. Sampling and analysis of ground water samples from the monitoring wells, according to the schedule oulined in Giant's Part B application, and transmittal of the results to NM OCD on the same schedule as submitted to EID.

6. In addition to the RCRA Part B analyses, sampling of the SMW-series wells for general water chemistry parameters** and volatile aromatic hydrocarbons (BTX) at the time of the RCRA sampling. Submittal of the results to NMOCD on the same schedule as RCRA results are submitted to NMEID.

7. In addition to the RCRA wells, annual sampling and analysis of wells OW1, OW2, and OW3 for general water chemistry parameters**, and volatile aromatic hydrocarbons (BTX). Reporting of results annually. (Note: Additional wells may need to be sampled upon our review of the pending OCD analyses. A final schedule will be prepared and discussed with Ciniza prior to final plan approval.)

*After the completion of four quarters of sampling, this sampling can be conducted once every six months if Ciniza so chooses.

**These include sodium, potassium, calcium, magnesium, chloride, sulfate, carbonate-bicarbonate, TDS and field pH and conductivity.

Contingency Plans

1. The RCRA-Part B application does not address non-RCRA spills. Prepare and provide contingency plans for dealing with "sudden" and "non-sudden releases" from crude and refined product storage areas, and storage areas for process chemicals such as acids, caustics and additives.

2. Prepare and submit a contingency plan for dealing with any sudden release of fluids due to rupture and/or overflow of the ponds.

Included in the plans should be immediate action taken by refinery staff to divert fluids so that, as much as possible, they do not move to the Rio Puerco or to adjoining properties.

Basis for Approval

With the exception of the deficiencies listed above, and the need for OCD to examine carefully our sampling results (especially in wells near the Railroad Lagoon) the discharge plan is approvable and public notice has been issued. Therefore, it is hoped that agreement can be reached on the remaining issues before expiration of the extension of time granted for discharge plan approval.

If you have any questions, please contact me or any member of my staff at 827-5812.

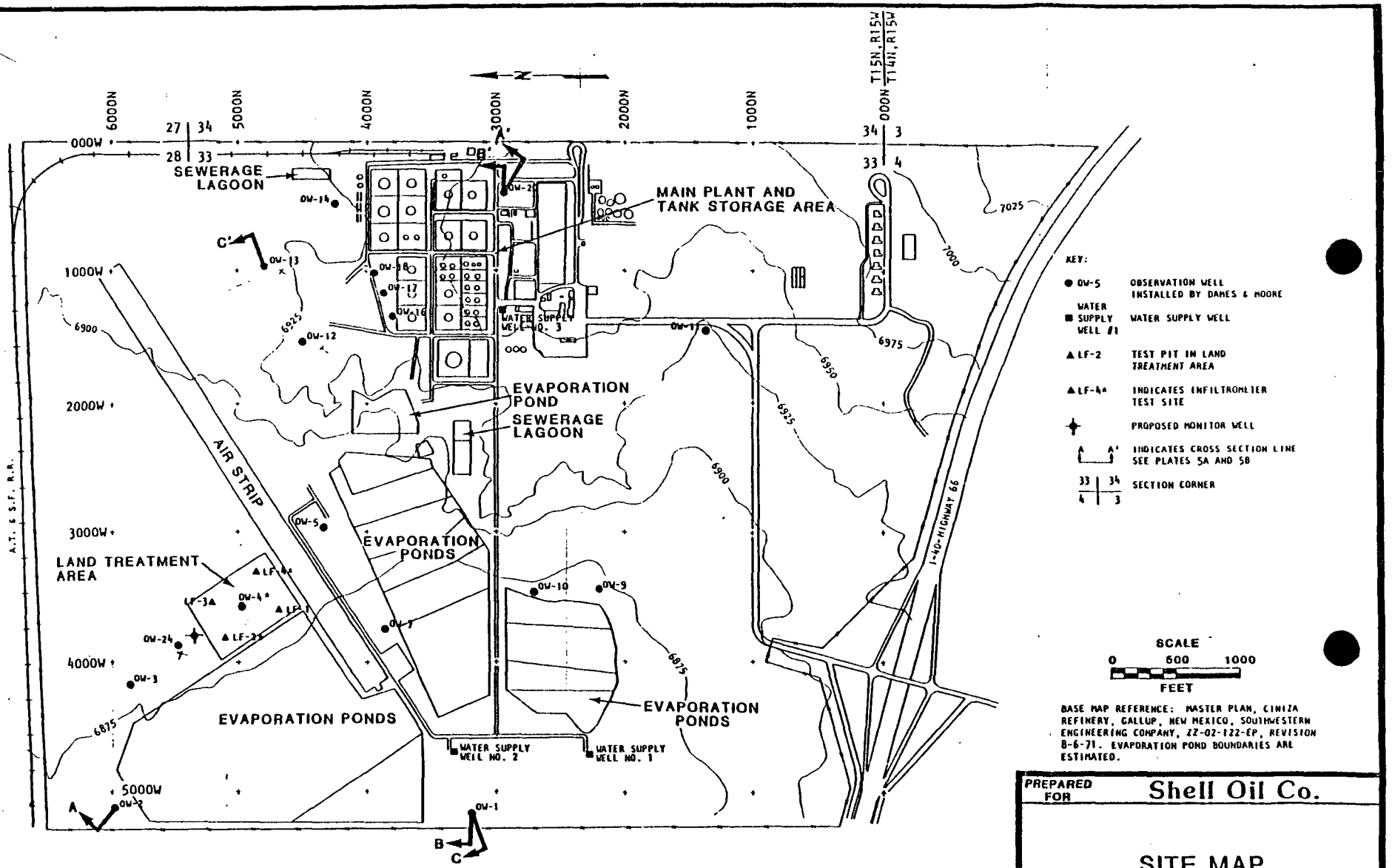
Sincerely,

DAVID G. BOYER
Environmental Bureau Chief

DGB:dp

Enclosure

cc: R. L. Stamets, Director, OCD
Frank Chavez, OCD Aztec Field Office
Ann Claassen, NMEID Hazardous Waste
Carlos Guerra, Giant Industries
Alberto Gutierrez, Geoscience Consultants
W. Perry Pearce, Montgomery & Andrews



KEY:

- ● OW-5 — OBSERVATION WELL INSTALLED BY DAMES & MOORE
- ■ WATER SUPPLY WELL #1 — WATER SUPPLY WELL
- ▲ LF-2 — TEST PIT IN LAND TREATMENT AREA
- ▲ LF-4* — INDICATES INFILTROMETER TEST SITE
- ✦ — PROPOSED MONITOR WELL
- A — A' — INDICATES CROSS SECTION LINE SEE PLATES 5A AND 5B
- 33 | 34 / 4 | 3 — SECTION CORNER

SCALE
0 600 1000
FEET

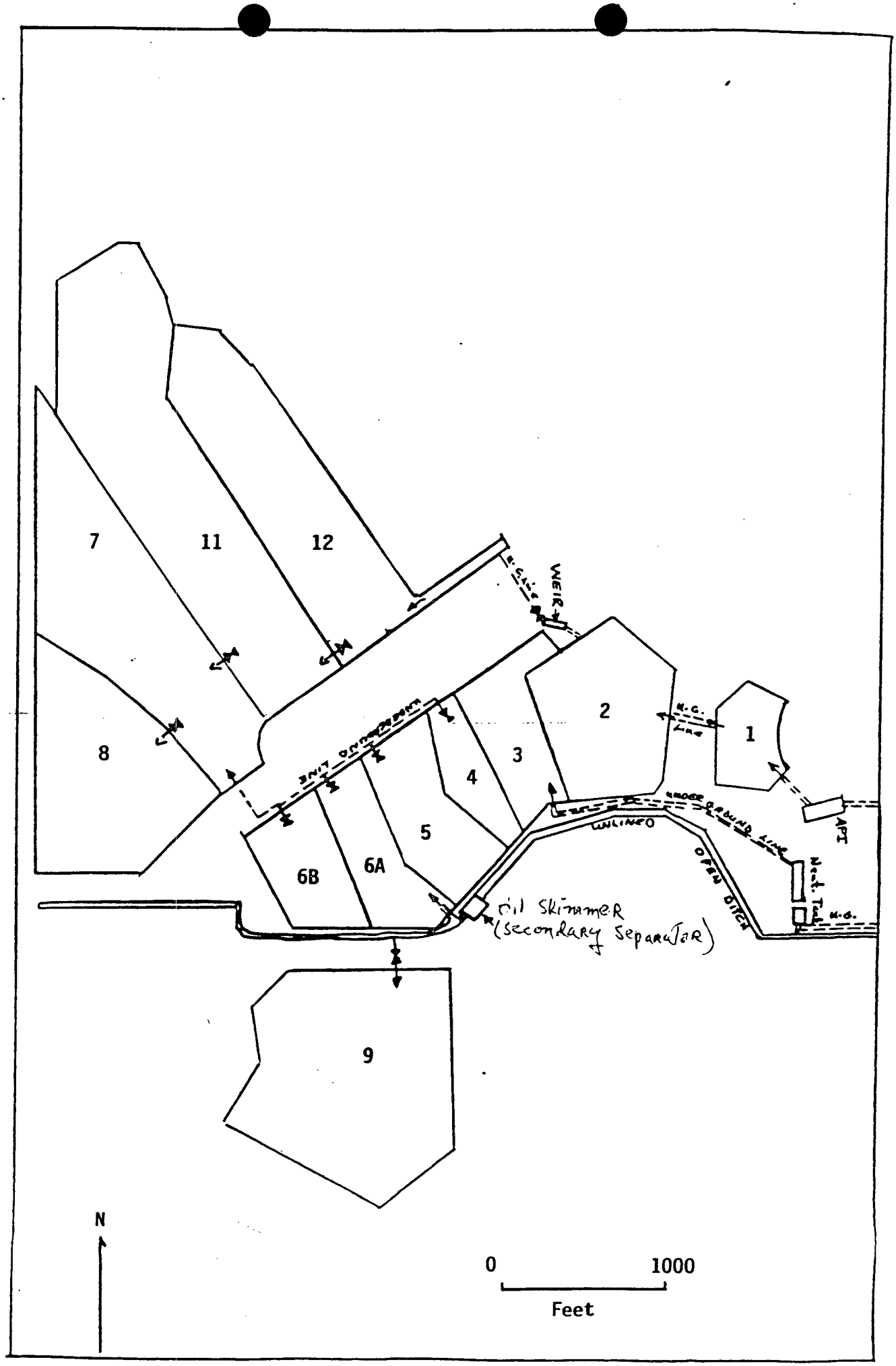
BASE MAP REFERENCE: MASTER PLAN, CINIZA REFINERY, GALLUP, NEW MEXICO, SOUTHWESTERN ENGINEERING COMPANY, ZZ-02-122-EP, REVISION 8-6-71. EVAPORATION POND BOUNDARIES ARE ESTIMATED.

PREPARED FOR Shell Oil Co.

SITE MAP

BY Dames & Moore

Plate 1


7
11
12
8
2
1
3
4
5
6B
6A
9
WEIR
N.G. Line
APT
OPEN DITCH
Oil Skimmer
(secondary separator)
N
0
1000
Feet

LEGAL NOTICE

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

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following proposed discharge plan has been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

(GW-32) Giant Refining Company, Carl D. Shook, Refinery Manager, Route 3, Box 7, Gallup, New Mexico 87301, has submitted a discharge plan application for the Ciniza Refinery, located 17 miles east of Gallup, New Mexico on U.S. Highway 40. The refinery and associated waste-management facilities are located in the s/4 of Section 28 and the N ¾ of Section 33 Township 15 North, Range 15 West (NMPM), McKinley County, New Mexico. The refinery withdraws process and domestic-use water from 3 artesian wells completed in the Permian San Andres Formation, and discharges approximately 161,000 gallons per day of process and non-process wastewater. The wastewater, with an approximate concentration of 2000 to 3000 mg/l total dissolved solids, is dicharged to 11 unlined evaporation ponds with a total of 117 acres of capacity. These ponds are constructed in and of the shales of the upper Chinle Formation, which have a permeability of less than six inches per year. The uppermost ground water is likely to be affected by refinery discharges is in thin localized sand lenses at depths of 30 to 65 feet, with a total dissolved solids concentration of approximately 1100 mg/l. The uppermost ground water at the site known to be areally extensive is the Sonsela Sandstone at depths from 20 to 140 feet, with at total dissolved solids concentration of approximately 800 mg/l. Ground water in localized snads and the sonsela is confined under artesian conditions.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and a public hearing may be requested by an interested person. Requests for public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on information submitted at the hearing.

GIVEN Under the Seal of the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 21st day of March, 1986. To be published or or before March 31, 1986

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
R.L. STAMETS
DIRECTOR

Legal #012584 Publsiehed in The Gallup Independent Saturday March 29, 1986

Affidavit of Publication

STATE OF NEW MEXICO,)
) ss
COUNTY OF McKINLEY)

Cecilia Paiz being duly sworn upon oath, deposes and says:

As Legal Clerk of the Gallup Independent, a newspaper published in and having a general circulation in McKinley County, New Mexico, and in the City of Gallup, therein: that this affiant makes this affidavit based upon personal knowledge of the facts herein sworn to. That the publication, a copy of which is hereto attached was published in said newspaper during the period and time of publication and said notice was published in the newspaper proper, and not in a supplement thereof,

for one time, the first publication being on the 29 day of March, 19 86 the second publication being on the _____ day of _____, 19____ the third publication on the _____ day of _____, 19____.

and the last publication being on the _____ day of _____, 19____.

That such newspaper, in which such notice or advertisement was published, is now and has been at all times material hereto, duly qualified for such purpose, and to publish legal notices and advertisements within the meaning of Chapter 12, of the statutes of the State of New Mexico, 1941 compilation.

Cecilia Paiz
Affiant.

Sworn and subscribed to before me this 29 day of March, A.D., 19 86

Margaret M Pabochak
Notary Public.

My commission expires

8-27-89

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following proposed discharge plan has been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505)827-5800.

(GW-32) Giant Refining Company, Carl D. Shook, Refinery Manager, Route 3, Box 7, Gallup, New Mexico 87301, has submitted a discharge application for the Ciniza Refinery located 17 miles east of Gallup, New Mexico on U.S. Highway 40. The discharge and associated waste-disposal facilities are located in portions of Section 28 and the N¾ of Section 33, Township 15 North, Range 16 West (NMPM), McKinley County, New Mexico. The refinery processes domestic-use water. Upon completion of the Formation Water Treatment Facility, approximately 7100 mg/l will be discharged to a pipeline operated by Aqua Incorporated for final disposal via OCD-approved

STATE OF NEW MEXICO }
County of Bernalillo } ss

APR 4 1986

DIVISION

THOMAS J. SMITHSON

..... being duly sworn declares and says that he is **NAT'L ADV. MGR.** of the **Albuquerque Journal**, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made or assessed as court costs; that the notice, a copy of which is hereto attached, was published in said paper in the regular daily edition,

for ..... 1 ..... times, the first publication being on the ..... 3 ..... day

of ..... April ..... ,198..6...., and the subsequent consecutive

publications on ..... ,198.....

..... Howard J. Smithson .....

Sworn and subscribed to before me, a Notary Public in and for the County of Bernalillo and State of New Mexico, this ..... 3 ..... day of ..... April ..... ,198....

PRICE 67.63

Statement to come at end of month.

ACCOUNT NUMBER ..... C 80932 .....

OFFICIAL SEAL
Signature: Vickie J. Blasi
VICKIE J. BLASI
NOTARY PUBLIC-NEW MEXICO
Notary Bond Filed with Secretary of State
My Commission Expires: 5/3/89

EDJ-15 (R-2/86)

formerly Getty Eunice Processing Plant
Anderson Manager, Natural Gas
Plants Division. P.O. Box 1650,
Tulsa, Oklahoma 74102, proposes to
renew the previously approved dis-
charge plan at its facility located in the
NE/4 SE/4 of Section 28, Township
21 South, Range 37 East (NMPM),
Lea County, New Mexico. Approxi-
mately 24,300 gallons per day of
process, boiler, and cooling tower
water, with a total dissolved content
of approximately 7100 mg/l will be
discharged to a pipeline operated by
Aqua Incorporated for final
via OCD-approved

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

April 2, 1986

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Carl D. Shook
Giant Refining Company
Rt. 3, Box 7
Gallup, N.M. 87301

RE: DISCHARGE PLAN GW-32
GIANT REFINING CO., CINIZA

Dear Mr. Shook:

We have received your letter dated March 31, 1986, requesting a 120-day extension to discharge without an approved discharge plan. This extension was requested to allow sufficient time for sampling and analysis of selected monitoring and observation wells and the exchange of comments. The Oil Conservation Division's final comments on your February 3, 1986 submittal are in preparation and will be forwarded on or before April 7, 1986.

Pursuant to Section 3-106.A. of the New Mexico Water Quality Control Commission Regulations and for good cause shown, Giant is hereby granted an extension and approval until August 1, 1986, or until discharge plan approval, whichever is earlier, to discharge without an approved discharge plan. This extension is granted to allow for additional sampling, completion of the discharge plan review by the OCD, exchange of comments and submittal of clarifying information, if needed. Also, public notice has been issued, and if a public hearing is needed on the proposed discharge plan, an additional extension will be granted consistent with the timeframe of any public hearing.

If you have any questions or comments, please feel free to contact Roger Anderson at (505) 827-5885 or Dave Boyer at (505) 827-5812.

Sincerely,

R. L. STAMETS
Director

RLS:RCA:dp

cc: Carlos Guerra, Giant Industries, Inc.
Alberto A. Gutierrez, Geoscience Cons. Ltd.
Perry Pearce, Montgomery and Andrews
OCD, Aztec

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Field Supervisor
Ecological Services, USFWS
Post Office Box 4487
Albuquerque, New Mexico 87196

March 31, 1986

Mr. R. L. Stamets, Director
Oil Conseration Division
State of New Mexico
State Land Office Building
P. O. Box 2088
Santa Fe, New Mexico 87504-2088

Dear Mr. Stamets:

This letter responds to the public notice dated March 31, 1986 for proposed discharge plans submitted to your division. We have reviewed the following plans and have not identified any resource issues of concern to our agency. Renewal of these plans should not have a significant impact upon plants, fish, shellfish or wildlife resources of New Mexico.

(GW-2) Phillips 66 Natural Gas Co. Buckeye Plant, Lea County, New Mexico
(GW-3) Texaco Producing Inc. Eunice No. 1, Lea County, New Mexico
(GW-4) Texaco Producing Inc. Eunice No. 2, Lea County, New Mexico
(GW-5) Warren Petroleum Company, Eunice Gas Processing Plant, Lea County, New Mexico
(GW-32) Giant Refinery Company; Ciniza Refinery, Gallup, McKinley County, New Mexico

These comments represent the views of the Fish and Wildlife Service. Thank you for the opportunity to review and comment on the proposed plans. If you have any questions concrning our comments please contact Tom O'Brien at (505) 766-3966 or FTS 474-3966.

Sincerely yours,

John C. Peterson
Field Supervisor

cc:
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
Director, New Mexico Health and Environment Department, Environmental Improvement Division, Santa Fe, New Mexico
Regional Administrator, Environmental Protection Agency, Dallas, Texas
Regional Director, FWS, Habitat Resources, Albuquerque, New Mexico

GIANT
REFINING COMPANY

ROUTE 3, BOX 7 • GALLUP, NEW MEXICO 87301
(505) 722-3833 • TWX 910-981-0604

March 31, 1986

Mr. Richard Stamets
Director
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87501

RE: Clarification of February 3, 1986 Request to Discharge Without an Approved Plan

Dear Mr. Stamets:

Giant Refining Company (Giant) would like to clarify our previous request to discharge without an approved plan (February 3, 1985). Giant requests a 120-day period (to commence on or about April 1, 1986) to discharge wastewater without an approved discharge plan. Giant believes that there is good cause for the requested extension, based on the following:

- Mr. David Boyer of your staff has requested sampling of selected monitoring and observation wells. Giant and NMOCD agreed to sample these wells in mid-April, 1986
- There is no evidence that refinery operations will result in any contamination of ground water with foreseeable future use
- Giant has engaged in a co-operative, good-faith effort to provide NMOCD with site specific data. Giant is in compliance with all applicable NMOCD regulations, and has responded to all previous requests for data and information in a timely manner
- It is our understanding that NMOCD presently has all the data required for discharge plan evaluation with the exception of data from the mid-April well sampling program.

Although, at NMOCD's suggestion, Giant is requesting a 120-day extension, we sincerely hope that all outstanding questions can be resolved and that GW-32 can be approved in a shorter time period. If you have any questions concerning this request, please contact me at our Gallup, New Mexico office.

Very truly yours,
GIANT REFINING COMPANY

Carl D. Shook
Refinery Manager

CDS/ls/GIANT/SHOOK/SHOOK016.LTR

cc: Carlos Guerra, Giant Industries, Inc.
Alberto A. Gutierrez, Geoscience Consultants, Ltd.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
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50 YEARS
1935 - 1985

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

March 27, 1986

MEMORANDUM

TO: DAVID BOYER, ENVIRONMENTAL BUREAU CHIEF

FROM: JAMI BAILEY, FIELD REPRESENTATIVE II JB

SUBJECT: GIANT CINIZA REFINERY STRATIGRAPHY

The Giant Ciniza refinery is located on the southwestern edge of the San Juan Basin on the northern flank of the Zuni uplift. Massive Jurassic Entrada and Todilto bluffs are visible to the north of the property.

The refinery is situated on Triassic Chinle sediments consisting of continental red silty clays and shales interbedded with floodplain and channel sands. The channel sands are gradational with shales at their margins, and the limited number of control wells in the land treatment area indicates that typical channel sands are present in the upper 70 feet in that area. Limited lateral extent is indicated, with an unknown longitudinal extent.

Four channel and floodplain sands have been identified above the Sonsela Sandstone, the uppermost recognized aquifer of the area. These channels appear to trend northeast-southwest through the land treatment area. Figures 1 and 2 are cross sections based on well logs; A-A' and B-B' may be drawn perpendicular to the trend of the sands, while C-C' may be subparallel to the trend. The upper two sands (colored green and red on the cross sections) are thin and dry, while the lower two sands (colored blue and yellow) have thicknesses ranging from one foot to ten feet. These sands are not uniformly water bearing.

The sands are separated by silty clays and shales, and extensive fluid communication betwen the sands would not be expected. The drillers log for SMW1 indicates a damp 7' capillary fringe in sandy clay above Sand #3 (blue colored on cross-sections), but SMX7 indicates only a 2' moist capillary fringe.

Number 3 sand (blue) is projected to outcrop under evaporation ponds 2, 3,4, and 5. It should be pointed out that the projection was based on well sample descriptions, bed thicknesses, underlying lithology, and water occurrence. The presence of pertrified wood described in several OW series wells could not be used as a basis for correlation. Regional dip, based on Sonsela Sandstone elevation calculations, was a minor consideration in the projection because regional dip does not appear to affect to the same


A
A'
B
B'
C
C'
D
D'
LAND TREATMENT UNIT
EVAPORATION PONDS
EVAPORATION PONDS
EXPLANATION

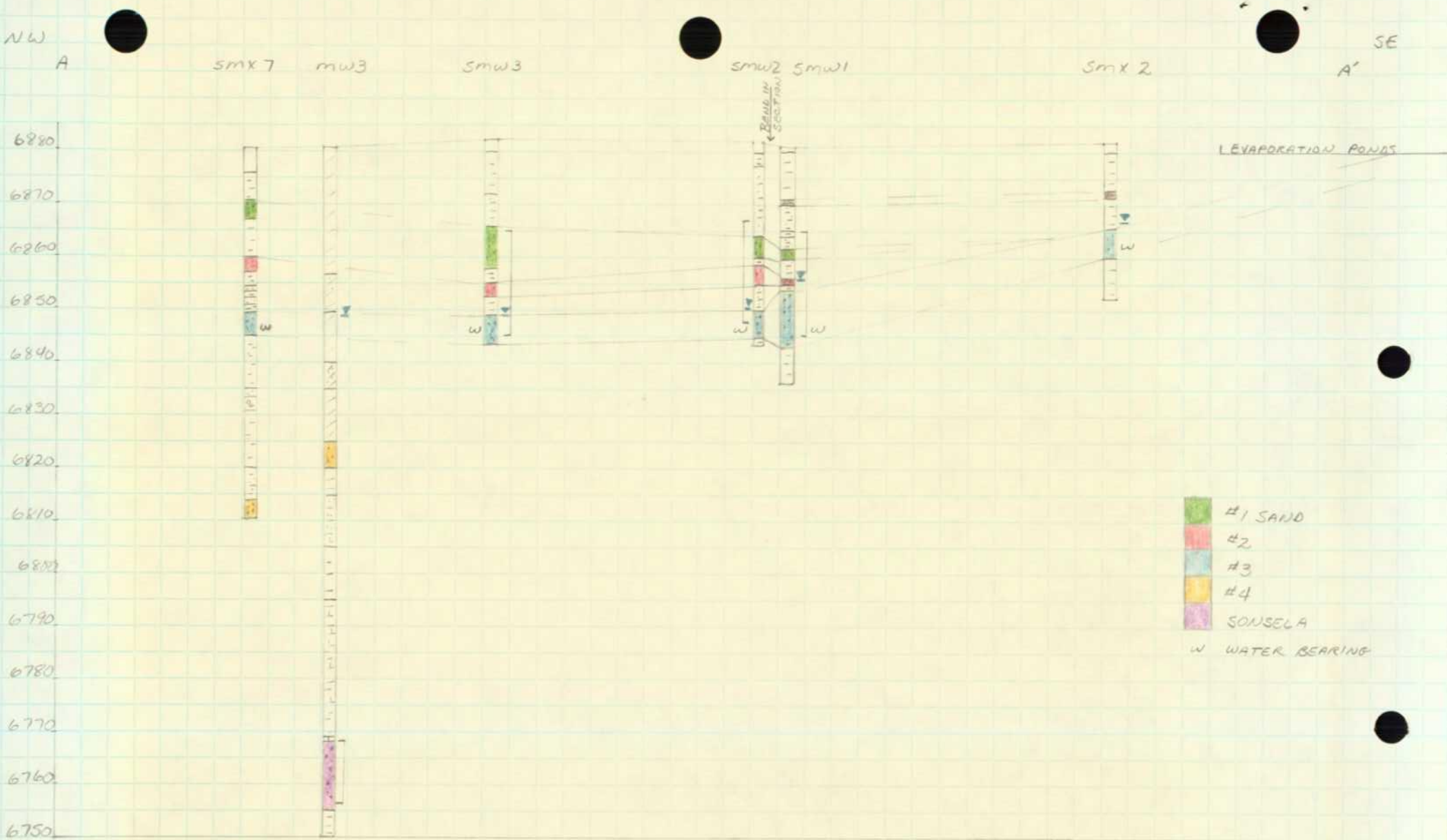


FIGURE 1

CROSS SECTION A-A'

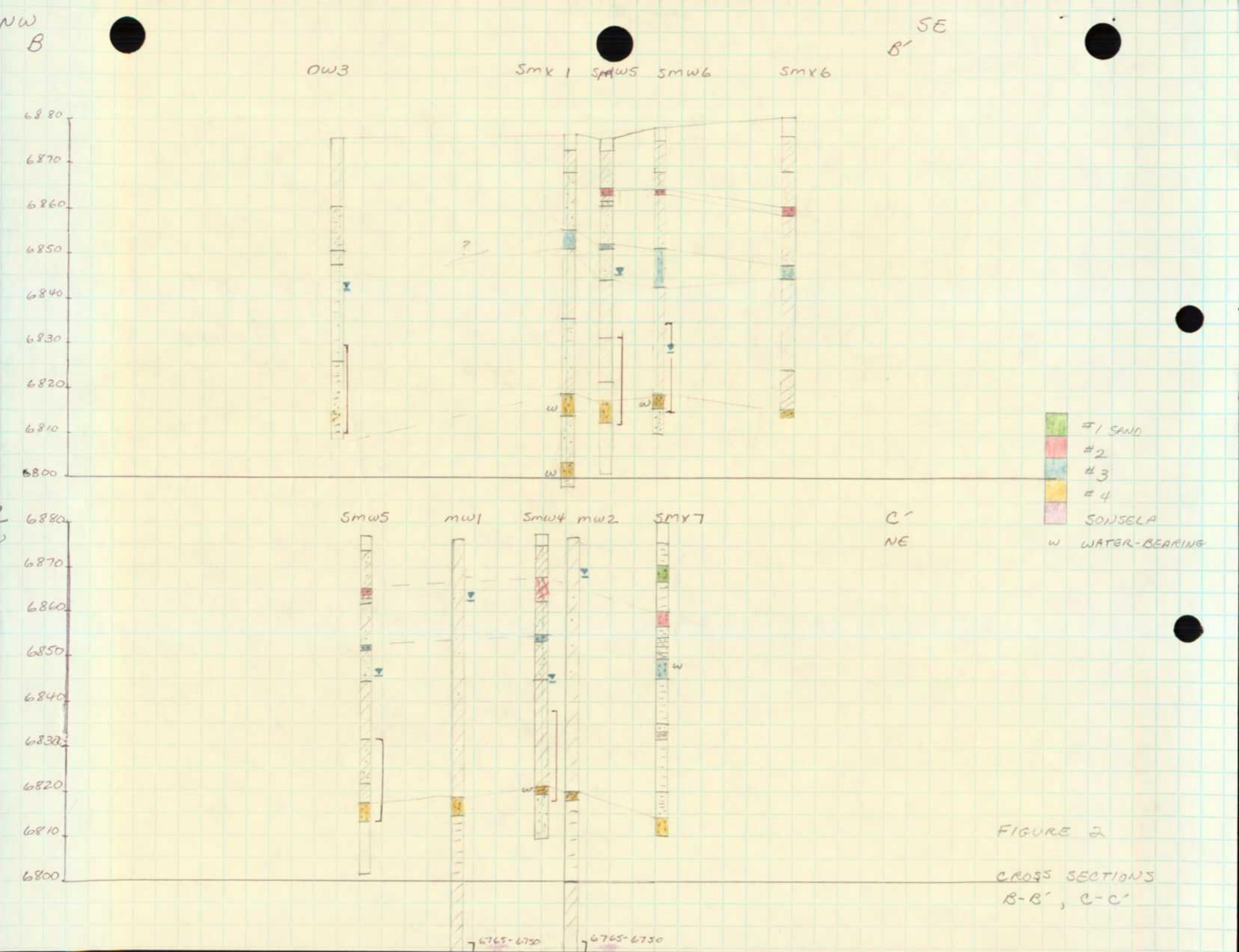


FIGURE 2

CROSS SECTIONS
B-B', C-C'

degree these upper sands in this limited area. Well SMX2, the key well for determining outcropping, was a shallow well with only 30' total depth. The well did not penetrate beds below the #3 sand, found in other wells at an elevation between 6855-6845.

The following wells encountered water on the #3 sand:

	Sand Thickness	Elevation
SMW1	10'	6853-6843
SMW2	5'	6850-6845
SMW3	4'	6850-6846
SMX2	6'	6866-6860
SMX4	6.5'	6857-6850
SMX7	4'	6846-6842

Sand #4 (colored yellow), although not as well defined or described in the MW and OW Series wells as in the SMX and SMW Series, is found at an elevation of 6815-6821 throughout the area. A lower sand tongue of this deposit was encountered only in SMX1. This sand was described as a pinkish-purple, slightly sandy (fine) clay in MW1, MW2, and MW3, but as a very fine to fine grained, medium red brown poorly sorted sand with a clay matrix and clayey at the base in the SMW Wells. Where continuous boring wells were drilled, the average thickness of the sand was 4'.

The following wells encountered water in the #4 sand:

Sand Thickness		Elevation		Elevation
SMX1	5'	6815	OW2	6813 (Sand not well defined; W.L. 31')
SMW4	3' W.L. 33'	6817	OW3	6821 (Sand not well defined; W.L. 34')
SMW5	5' W.L. 31'	6817	OW7	6817 (Sand not defined; W.L. 6')
SMW6	2' W.L. 52	6815		

The Sonsela Sandstone is described in the drillers logs as variegated brown to light gray in color and containing minor amounts of clay, chert, and limestone. The formation strikes N52E to N46E, dipping northwest with a 2.5-3% slope. Figure 3 is a contour map of the top of the Sonsela Sandstone. This exhibits a greater regional dip than the sand deposits above it. The thickness is variable, ranging from 39' in OW12 to 10' in OW11. The Sonsela is thickened in the area from OW10 (29') to OW12 (39') to OW13 (25'). The sand thins to 15' in the land treatment area to the northwest and to 10' in OW 11 to the southeast.

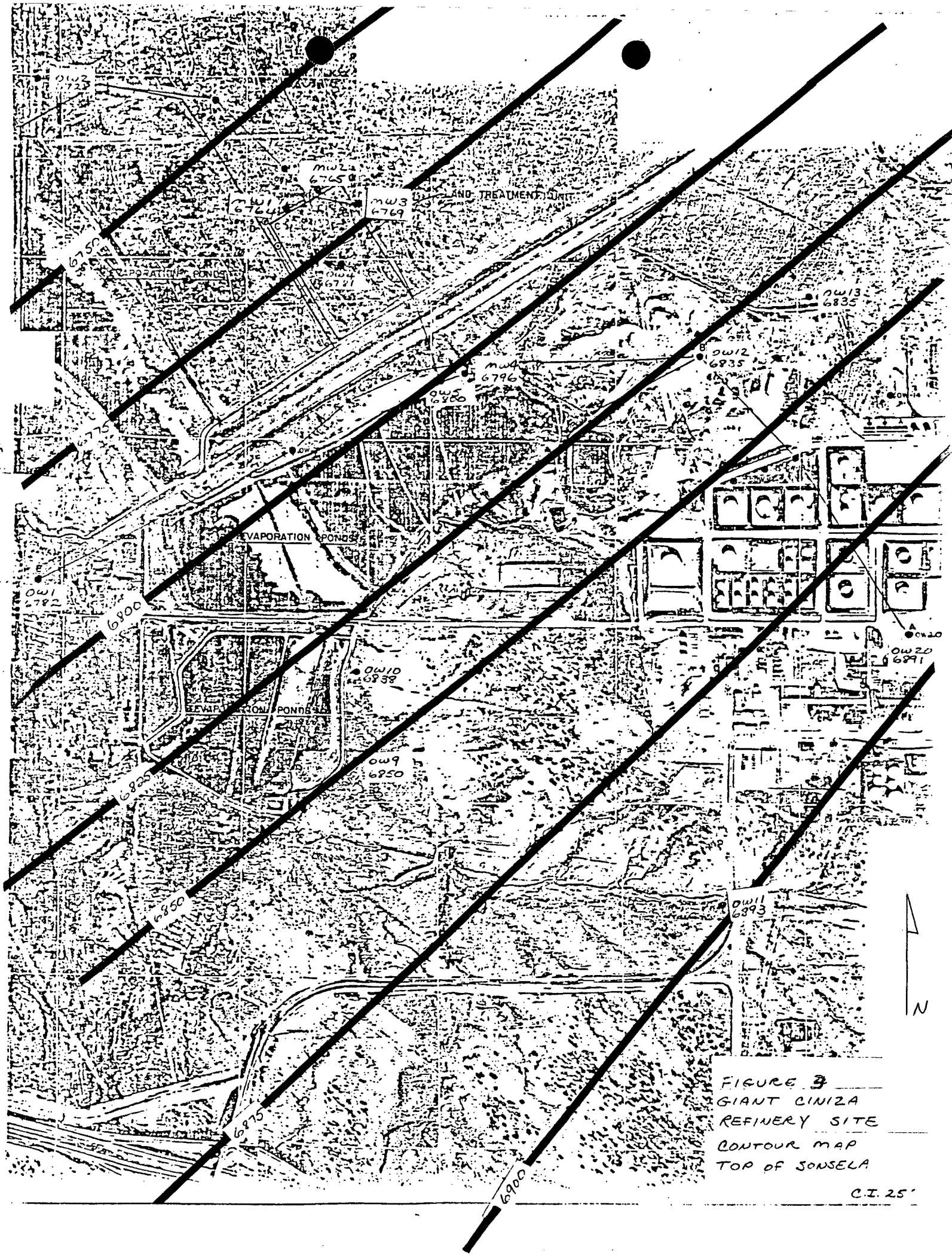


FIGURE 3
GIANT CINIZA
REFINERY SITE
CONTOUR MAP
TOP OF SONSELA

C.I. 25'

SMX3 and SMX5, the closest wells to the northwest, are very shallow wells that do not penetrate sand #4. The closest wells to the southeast are OW16, OW17, and OW18, and they were drilled to a total depth above the Sonsela. The upper sands of OW16, OW17, and OW18 do not appear to correlate with any sands seen in other wells; OW14, OW16, and OW17 were completed above sand #1.

Cross section D-D, Figure 4, is on a northwest-southeast line and shows the thickening of the Sonsela in the vicinity of OW 12 and OW 13. The top of the Sonsela is interbedded with reddish brown sandy mudstone in these two wells and was encountered 15' above the calculated elevation using the regional strike and dip. Calculations of expected Sonsela elevations for other wells were within 3-5 feet of actual penetration depth.

The contact of a known aquifer with a northwest dip at a greater angle than the overlying sands and with a recharge zone to the southeast may be considered as a source of fluid found in #4 sand. Analyses of samples from wells completed in #4 may confirm the Sonsela as the source of the water.

The following wells penetrated the Sonsela sand:

Well	Thickness	Comments	Sonsela Elevation
OW1	12'		6782
OW2	20'		6728
OW4	2'+	T.D. in top 2'	6781
OW5	10'+	T.D. in top 10'	6800
OW9	23'		6850
OW10	29'		6838
OW11	10'	Completed in sandy shale below Sonsela	6893
OW12	39'		6835
OW13	25'		6835
OW20	12'	Completed in shale and mudstone above Sonsela	6891

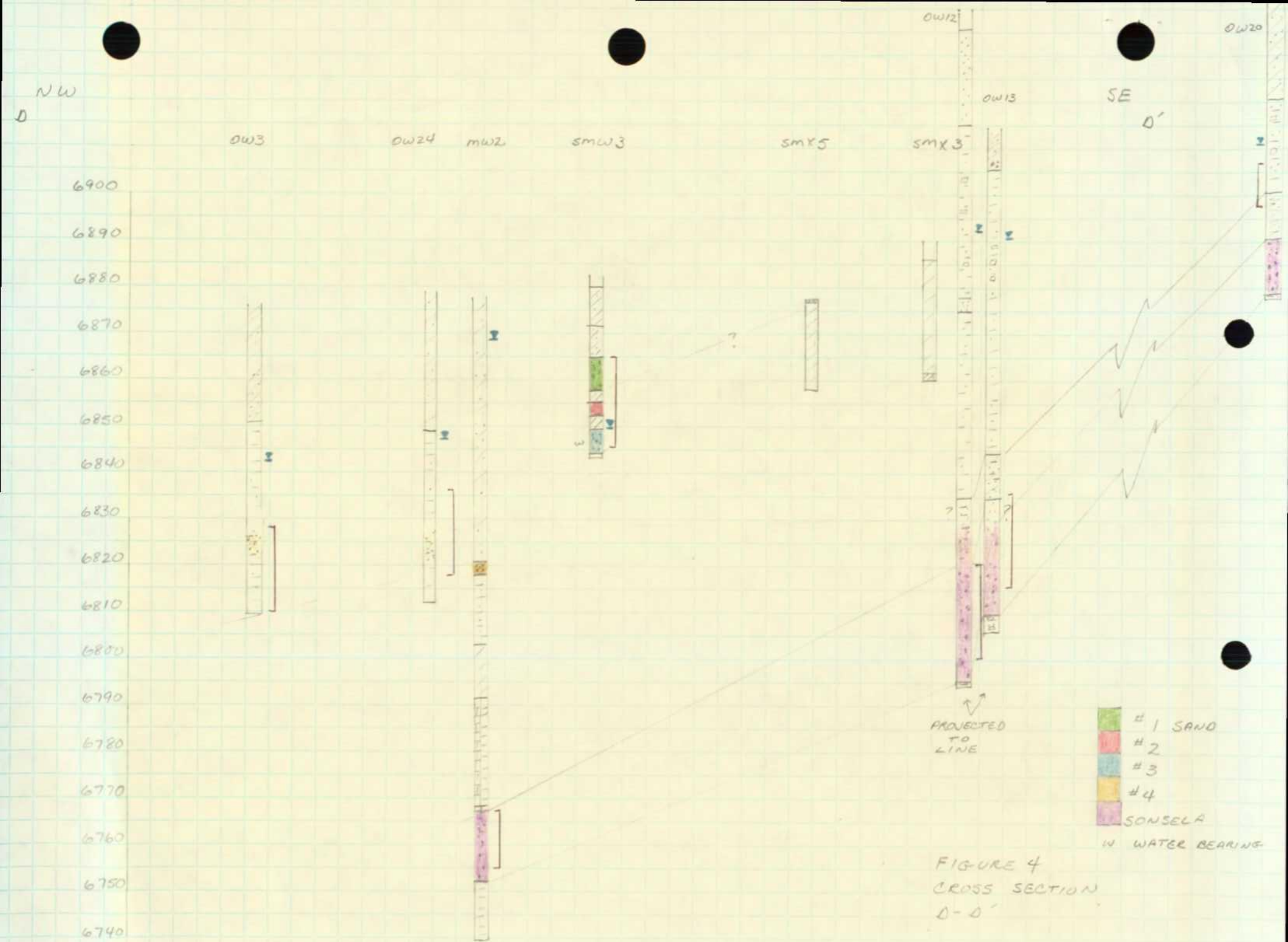


FIGURE 4
CROSS SECTION
D - D'

MW1	15'		6764
MW2	15'		6765
MW3	15'		6769
MW4	27'	Includes 2' shale bed	6796

Conclusions

1. Channel and floodplain sands located above the Sonsela in the vicinity of the Ciniza refinery have a limited cross sectional extent and an unknown longitudinal extent.

2. These sands have a lesser dip to the northwest than the underlying Sonsela sand.

3. #3 and #4 sands are water bearing in part, but thicknesses vary from 1' to 10' and permeability is generally very low.

4. Contact between the Sonsela sand and #4 sand may occur to the southeast, and this contact may be the source of fluid found in #4 sand.

5. #3 sand appears to outcrop under evaporation ponds 2, 3, 4, and 5. This outcropping may be the source of fluid found in this sand.

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

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following proposed discharge plan has been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, P. O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

(GW-32) Giant Refining Company, Carl D. Shook, Refinery Manager, Route 3, Box 7, Gallup, New Mexico 87301, has submitted a discharge plan application for the Ciniza Refinery, located 17 miles east of Gallup, New Mexico on U.S. Highway 40. The refinery and associated waste-management facilities are located in the S/4 of Section 28 and the N 3/4 of Section 33 of Township 15 North, Range 15 West (NMPM), McKinley County, New Mexico. The refinery withdraws process and domestic-use water from 3 artesian wells completed in the Permian San Andres Formation, and discharges approximately 161,000 gallons per day of process and non-process wastewater. The wastewater, with an approximate concentration of 2000 to 3000 mg/l total dissolved solids, is discharged to 11 unlined evaporation ponds with a total of 117 acres of capacity. These ponds are constructed in and of the shales of the upper Chinle Formation, which have a permeability of less than six inches per year. The uppermost ground water likely to be affected by refinery discharges is

in thin localized sand lenses at depths of 30 to 65 feet, with a total dissolved solids concentration of approximately 1100 mg/l. The uppermost ground water at the site known to be areally extensive is the Sonsela Sandstone at depths from 20 to 140 feet, with a total dissolved solids concentration of approximately 800 mg/l. Ground water in localized sands and the Sonsela is confined under artesian conditions.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and a public hearing may be requested by an interested person. Requests for public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing.

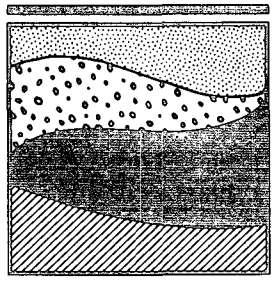
GIVEN Under the Seal of the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 21st day of March, 1986. To be published on or before March 31, 1986.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

R. L. STAMETS
Director

S E A L

Geoscience Consultants, Ltd.



February 11, 1986

Mr. David Boyer
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501-2088

RE: Site Visit, Giant Ciniza Refinery

Dear Mr. Boyer:

In response to our telephone conversation of this morning, I have contacted Giant Industries, Inc. (Giant) regarding your proposed site visit on March 5-7, 1986 and preliminary meeting on February 27 or 28, 1986. Giant agrees that March 5-7 is an acceptable time for the proposed site visit. Due to scheduling conflicts, Giant has suggested a telephone conference on February 28 in lieu of a meeting.

As we discussed, NMOCD wishes to collect samples of waste streams and ground water from selected sites and wells at the refinery, and NMOCD will provide Giant with a list of the wells which NMOCD wishes to sample. It will be necessary for NMOCD to make their own arrangements for purging of the wells prior to sampling.

In addition to the list of wells, it would be helpful for NMOCD to provide a preliminary list of any documents or records which they wish to inspect. More specific NMOCD requests can be discussed during the February 28, 1986 telephone conference.

With your list of proposed wells and effluent-streams, please provide a list of all suggested sample sites and analytical parameters. Giant and GCL wish to split samples with NMOCD, and must prepare suitable containers and preservatives for these splits.

Headquarters
500 Copper Avenue N.W., Suite 325
Albuquerque, New Mexico 87102
(505) 842-0001

Washington Area Office
5513 Twin Knolls Rd., Suite 216
Columbia, Maryland 21045
(301) 596-3760

Please contact me, or Mr. Alberto Gutierrez, early in the week of February 24, 1986 so that we may set a specific time for our telephone conference. If you have any further questions or requests, please contact me at our Albuquerque office.

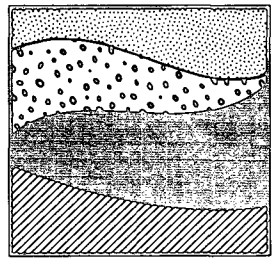
Very truly yours,
GEOSCIENCE CONSULTANTS, LTD.

James C. Hunter
Senior Hydrogeologist

JCH/pe/BOYER002.LTR

cc Carl D. Shook, Giant Refining Company
Carlos Guerra, Giant Industries, Inc.

Geoscience
Consultants, Ltd.



February 3, 1986

Mr. David Boyer
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

RE: Response to Comments, Giant Ciniza Refinery Discharge Plan (GW-32)

Dear Mr. Boyer:

On August 5, 1985 Giant Industries, Inc. (Giant) received written notification that a discharge plan was required by NMOCD for the Ciniza Refinery. On November 26, 1985 Giant filed the proposed discharge plan with NMOCD. Pursuant to 3-106.A of the WQCC Regulations Giant's Ciniza Refinery may discharge without an approved plan until April 2, 1986 (if August 6 is considered day 1).

It is our understanding that NMOCD has not published the required public notice pursuant to WQCC Regulation 3-108. The Ciniza discharge plan cannot be approved until 30 days after publication. A draft public notice is included with our submission to expedite the public notice and participation process.

We believe that the original submission and the attached document, which responds to your January 24, 1986 comments, contains all the information required for the Director to approve GW-32. According to 3-109, the latest possible decision date for discharge plan approval is sixty days after receipt of this document (about April 6th). However, if NMOCD cannot approve the discharge plan prior to April 1, 1986, please contact Mr. Carl Shook (Giant) and me in writing. Our complete response to your request for additional data within 9 days of receipt of your comments and the excellent compliance record of the Ciniza Facility demonstrates good cause for approval of an extension if such an extension is required for

Headquarters
500 Copper Avenue N.W., Suite 325
Albuquerque, New Mexico 87102
(505) 842-0001

Washington Area Office
5513 Twin Knolls Rd., Suite 216
Columbia, Maryland 21045
(301) 596-3760

NMOCD to fully review the relevant information, make a site visit and approve the plan by April 1, 1986.

Giant has provided this prompt response in an attempt to avoid the necessity of an extension. This response should serve as a request to discharge without an approved plan for the minimum time required by NMOCD to approve the plan. This response follows the same format as your letter.

Please notify us immediately if additional information is required. In addition, Giant encourages NMOCD staff to make a site visit as promptly as possible to help OCD staff and the Director in familiarization with the site and associated waste management and in monitoring practices.

Yours very truly,
GEOSCIENCE CONSULTANTS, LTD.

Alberto A. Gutierrez
President

AAG/pe/BOYER001.LTR/GIANT

Enclosures

cc Carl D. Shook, Refinery Manager
Carlos A. Guerra, General Counsel
Earl Blanchard, Vice President

February 3, 1986

To be published on or before February 10, 1986

Public Notice

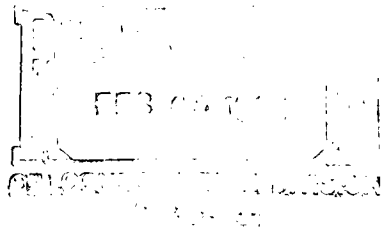
New Mexico Oil Conservation Division

Notice is hereby given that, pursuant to New Mexico Water Quality Control Commission Regulations, the following proposed discharge plan has been submitted to the Director of the New Mexico Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico, 87504-2088, telephone (505) 827-5800.

(GW-32) Giant Refining Company, Route 3, Box 7, Gallup, New Mexico 87301, has submitted a discharge plan application for the Ciniza Refinery, located 17 miles east of Gallup, New Mexico on U.S. Highway 40. The refinery and associated waste-management facilities are located in Sections 28 and 33 of T. 15 N., R. 15 W. The refinery withdraws process and domestic-use water from 3 artesian wells completed in the Permian San Andres Formation, and discharges approximately 161,000 gallons per day of process and non-process wastewater. The wastewater, with an average TDS of 2000 to 3000 mg/l, is discharged to 11 unlined evaporation ponds with a total of 117 acres of capacity. These ponds are constructed in and of the shales of the upper Chinle Formation, which have a permeability of less than 1.6×10^{-8} ft/second.

The uppermost ground water likely to be affected by refinery discharges is at a depth of 30 to 65 feet, and has an average TDS of approximately 2240 mg/l. This ground water is confined under artesian conditions in a localized sand lens which does not extend beyond the refinery property.

E:\GIANT\DPNOTICE.DOC



RESPONSE TO
JANUARY 24, 1986 NMOCD COMMENTS
DISCHARGE PLAN (GW-32)
FOR GIANT REFINING COMPANY
CINIZA REFINERY

February 3, 1986

Submitted to:

DAVID BOYER
NEW MEXICO OIL CONSERVATION DIVISION
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87501

Prepared for:

GIANT REFINING COMPANY
Route 3, Box 7
Gallup, New Mexico 87301

Prepared by:

Geoscience Consultants, Ltd.
500 Copper Avenue, NW, Suite 325
Albuquerque, New Mexico 87102

File Copy

ATTACHMENTS A-1, A-2, AND A-3

REPLY TO NMOCD COMMENTS RE:
DISCHARGE PLAN APPLICATION (GW-32)
GIANT CINIZA REFINERY

File Copy.
Submitted 2/3/86

ATTACHMENT B-1

GROUND WATER AND SOILS INVESTIGATION

CINIZA REFINERY

NEAR GALLUP, NEW MEXICO

FOR SHELL OIL COMPANY

Dames & Moore

File Copy
Submitted February 3, 1982

ATTACHMENT B-2

GROUND-WATER MONITORING PLAN
CINIZA REFINERY
NEAR GALLUP, NEW MEXICO
FOR SHELL OIL COMPANY

Dames & Moore

Job. No. 00216-244
November 24, 1981

ATTACHMENTS B-3 AND B-4

REPLY TO NMOCD COMMENTS RE:
DISCHARGE PLAN APPLICATION (GW-32)
GIANT REFINING COMPANY CINIZA REFINERY

ATTACHMENT B-5
INVENTORY OF SOLID WASTE MANAGEMENT UNITS

June 14, 1985

NMD000333211

Prepared for:

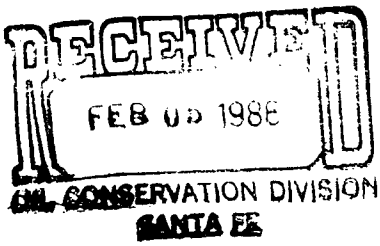
Giant Refinery Company
A Division of Giant Industries, Inc.
Ciniza Refinery
Gallup, New Mexico 87301

Prepared by:

Geoscience Consultants, Ltd.
500 Copper Avenue, NW
Albuquerque, New Mexico 87102

ATTACHMENTS B-6 AND B-7

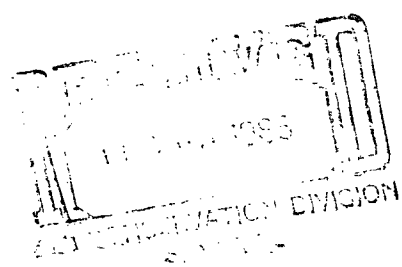
REPLY TO NMOCD COMMENTS RE:
DISCHARGE PLAN APPLICATION (GW-32)
GIANT CINIZA REFINERY



ATTACHMENT B-6

ATTACHMENTS C, D AND E

REPLY TO NMOCD COMMENTS RE:
DISCHARGE PLAN APPLICATION (GW-32)
GIANT CINIZA REFINERY



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

January 24, 1986

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Carl D. Shook
Refinery Manager
Ciniza Refinery
Route 3, Box 7
Gallup, New Mexico 87301

Re: Discharge Plan (GW-32), for Giant Refining Company, Ciniza Refinery

Dear Mr Shook:

The OCD received on November, 26, 1985, the application for discharge plan approval for the Ciniza Refinery. Staff of the OCD Environmental Bureau have completed review of the material submitted and find that additional material, including some referenced in the application, needs to be provided for the review to continue. These materials are identified later in this letter. In addition, comments and clarification questions on the material that was submitted are also included. The comments and requests for information will generally correspond to the outline of the discharge plan application with some general comments preceding specific inquiries.

For future submittals, provide three copies of typed material, plates and blueprints, so that copies can be provided for our field office and made available for public review. Also provide two additional copies of Plates 1 through 5 that were submitted with this discharge plan application.

General Comments

The refinery has about 117 acres of unlined evaporation ponds that receive approximately 161,000 gallons per day of refinery waste water, including contact waste streams containing free hydrocarbons, and non-contact waste from boilers, cooling waters, drains, etc. The waste streams contain differing types of water

contaminants in varying quantities (Table 5.3, p. 43). Many of these exceed Water Quality Control Commission (WQCC) standards for ground water. Many waste streams and the contaminants in them are not regulated under RCRA requirements, but are still toxic or can otherwise render water unusable. In fact, because of the large volume and mobility of the non-RCRA fluid wastes, they have the potential to cause more environmental damage to fresh water than do the RCRA wastes. However, the application mainly addressed itself to RCRA sites and procedures, and does not provide sufficient information to allow evaluation under the WQCC Regulations.

Since large volumes of waste water are discharged, it is fortuitous that the refinery, and especially the evaporation ponds, are underlain by the outcrops of the Petrified Forest Member of the Chinle formation. These materials are generally fine grained siltstone, claystones, and shales, but localized sand bodies are also present (p.7). Information on the location, extent, and amount of continuity (or discontinuity) of these localized sands has not been provided except for some data on the Ciniza Sand. Large amounts of subsurface data generated as part of an earlier Dames and Moore report were not submitted. Only logs of exploration/monitor wells drilled in 1985 were provided. No ground water quality information of any type was provided except for reference to total dissolved solids (TDS) content of the Sonsela and Ciniza Sands. This precludes any evaluation of what "background" quality might be, and prevents comparision of ground water quality with that of the various effluent sources.

The potentiometric surface for both the Sonsela Sand and the Ciniza Sand dips to the Northwest. Down gradient from ponds 5 through 12 and the railroad lagoon no subsurface geologic, hydrologic, or water quality data were provided, nor were any monitoring wells proposed in those areas. The discovery of the Ciniza Sand implies that other localized sand outcrops exist that may be conduits for waste movement. Whether such sands, if present, are discontinuous also must be addressed. Without this information and that mentioned above the plan can not be considered for approval.

Any unlined pits, drains, sumps, ditches and "discharges to grade" within the refinery process area also will need to be addressed as part of the application. Outcrops of material similar to the Ciniza Sand may occur in the process areas. Also, the Sonsela Sand aquifer is shown to outcrop just southeast of the main plant and tank storage area (figure 4-6, p.17). If sand stringers are present in this area of thin overburden, fluid movement downward to the Sonsela could occur. If all such process and intermediate effluent collection and conveyance units are, or were to be lined, extensive hydrologic study in the main plant and tank area would not be necessary, unless major spills of crude or refined product have occurred that remain in the subsurface.

Physical Environment

1. Submit the Dames and Moore reports entitled "Ground Water and Soil Investigation, Ciniza Refinery near Gallup, New Mexico", March, 1981 and "Ground-Water Monitoring Plan, Ciniza Refinery near Gallup, New Mexico" November, 1981. If either of these reports or parts thereof are considered proprietary, indicate which sections contain information entitled to protection pursuant to Section 74-6-12.B. of the Water Quality Act. These reports apparently contain data on soils, ground water occurrence, water quality, observation well placement, etc. that are essential to OCD's review.

2.(p.16) The Sonsela Sandstone Bed is said to be 70 to 140 feet beneath the refinery. Figure 4-6 shows it at 20-110 feet. Clarify the discrepancy.

3.(p.18, 21) The information provided does not show the Ciniza Sand pinching out the northwest of SMX-1 and SMW-4; also, another saturated water sand is shown 11 feet below the Ciniza Sand in hole SMX-7.

4.(p. 20) Provide available water quality information on the six (6) Ciniza Sand wells.

6.(p.20) Provide information on location, depth, and installation dates of the "exploratory piezometers."

7.(p. 23) Where is MW-1 located?

8.(p. 31) What is the time-frame for selection, design, and construction of the flood protection measures for pond #9? Provide design plans and specifications to OCD for review and comment prior to construction.

9. Who are property owners to the east and west, and to the north of the AT & SF railroad?

Process Description

1. Revise Plates 4 and 5 to show the location of all "contact" and "non-contact" processes described in section 5.2 through 5.4. For the waste stream conveyances and beginning at the process units, indicate which underground pipes are under gravity or pressurized, and which ditches, sumps or other collection points are lined or unlined. Show on the plates the location and content of any buried underground tanks.

2.(p. 43) Provide analyses (including dates of sampling) for purgeable aromatic hydrocarbons for the effluent sources listed in Table 5-3.

3.(p. 44) Is any stream condensate produced and discharged as part of the flare system? Is there a flare pit?

Waste Management System

1.(p. 49) Indicate on Plates 4 and 5 the locations of the underdrains between ponds 2 and 12; and from ponds 4, 5, 6A, and 6B, to pond 9 and to ponds 7 and 8.

2.(p. 39) Does the neutralization tank discharge through a weir to Pond 3? Whare are other flow measurement devices located?

3.(p. 51, 53) The water balance for the ponds is incorrect in that pan evaporation needs to be multiplied by a coefficient of 0.7 to estimate pond evaporation. This will change the relative capacity from 127% to 73%. Were precipitation and evaporation averages used in the calculation, or were the values used from just one year of observation? If not averages, what was the year of observation? If a precipitation average of 12 inches per year (p. 3) is used together with a lake evaporation average of 50 inches per year, the relative capacity is 205% of load. However, to ensure adequate winter capacity, monthly totals should be calculated and a safety factor added.

4.(p. 53) When is a decision to be made on the proposed aerated lagoon, and what construction dates are anticipated?

Monitoring and Reporting Plan

1. (p. 54) Indicate the location and provide information on the construction and completion of the monitoring wells referred to as "MW".

2. (p. 54) Provide the "MW" water quality analyses.

3. (p.54) Indicate location, type, and sampling frequency of all waste water effluents measured to determine the quantity of discharge.

4. (p 54) Provide the RCRA schedule for sampling and analysis of ground water constituents from the monitoring wells. OCD comment on the adequacy and frequency of the program for OCD monitoring purposes will be reserved until the water quality information requested is received and reviewed.

5.(p. 55) Provide information on any past spills, leaks, or product releases that are currently impacting soils or ground water at the site. Include date, volumes, affected areas and ground water, and recovery action taken.

Contingency Plans

1.(p. 56) Provide a copy of the Part B application Contingency Plan for accidental spills filed with USEPA and NMEID.

2.(p. 56) Section 6.11, Pg. 52, indicates daily inspection of ponds and berms; Section 8.0, Pg.. 56, indicates monthly inspection of ponds and berms. Clarify what is proposed.

3.(p. 56) Spills should also be reported to OCD.

Basis for Approval

1.(p. 58) Questions about many of the points presented in this section are discussed earlier in this letter. One point to be made is that maximum RCRA seepage is 10^{-7} cm/sec (not 10^{-7} ft/sec). Both clay shales sampled have permeabilities that exceed the English unit maximum RCRA value of 3.3×10^{-8} ft/sec. They do not exceed the WQCC value of 1.6×10^{-9} ft/sec. However, the WQCC value is applicable only if the discharge plan otherwise demonstrates that a "hazard to public health" does not exist (see WQCC Regulation 3-109.C).

Closing Comment

Within the next sixty days, we expect to be in contact with your office to schedule a site visit and permitting inspection. Several Environmental Bureau staff members and possibly our Director are expected to attend. Some sampling of effluents and ground water will be performed. You are also reminded that your approval to discharge without an approved discharge plan expires April 1, 1986; to discharge beyond that date you must have requested and received a "good cause" extension of time. This will be granted provided progress is being made on the discharge plan application. Before that date you should consult with us regarding a schedule for submittal of the necessary requested information.

If you have any questions regarding these comments, or the discharge plan approval process, please contact me at the above address or by phone at 827-5812.

Sincerely,

David G Boyer

DAVID G. BOYER
Environmental Bureau Chief

DGB/dp

cc: R. L. Stamets - Director OCD
Frank Chavez - OCD Aztec Field Office
Ann Claassen - NMEID Hazardous Waste
Carlos Guerra - Giant Industries
Alberto Gutierrez - Goescience Consultants
W. Perry Pearce - Montgomery & Andrews

GIANT
REFINING COMPANY

ROUTE 3, BOX 7 • GALLUP, NEW MEXICO 87301
(505) 722-3833 • TWX 910-981-0504

November 25, 1985

Mr. Richard L. Stamets
Director
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

RE: Discharge Plan Application, Giant Refining Company, Ciniza Refinery

Dear Mr. Stamets:

Giant Refining Company is pleased to submit the "Discharge Plan Application for Giant Refining Company, Ciniza Refinery, Gallup, New Mexico." This application has been prepared pursuant to sections 3-104 and 3-106 of the WQCC Regulations, and in response to your notification of July 31, 1985.

If you have any questions regarding this submission, please feel free to contact me at the refinery address. Copies of all questions or comments should be forwarded to Mr. Alberto A. Gutierrez of Geoscience Consultants, Ltd. in Albuquerque.

Very truly yours,
GIANT REFINING COMPANY

Carl D. Shook
by R.C. Anderson
Carl D. Shook
Vice President Refining Operations

Enclosure

CDS:ds

cc: Carlos Guerra, Giant Industries, Inc.
Alberto A. Gutierrez, Geoscience Consultants, Ltd.

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

July 31, 1985

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Carl D. Shook
Refinery Manager
Giant Refining Co.
Route 3, Box 7
Gallup, New Mexico 87301

Re: Discharge Plan Requirement
for Ciniza Refinery

Dear Mr. Shook:

Under the provisions of the Water Quality Control Commission (WQCC), you are hereby notified that the filing of a discharge plan for your existing Ciniza refinery located in Section 33, Township 15 North, Range 15 West, NMPM, McKinley County, New Mexico, is required.

This notification of discharge plan requirement is pursuant to Sections 3-104 and 3-106 of the WQCC regulations. The discharge plan defined in Section 1-101.P of the WQCC Regulations should cover all discharges of effluent or leachate at the plant site or adjacent to the plant site. A copy of the regulations is enclosed for your convenience. Also enclosed is a copy of an OCD guide to the preparation of discharge plans for gas processing plants. Four copies of your discharge plan should be submitted for review purposes.

Section 3-106.A. of the regulations requires a submittal of the discharge plan within 120 days of receipt of this notice unless an extension of this time period is sought and approved for good cause. Section 3-106.A. also allows the discharge to continue without an approved discharge plan until 240 days after written notification by the director that a discharge plan is required. An extension of this time may be sought and approved for good cause.

If there are any questions on this matter, please feel free to contact Phil Baca at 827-5884, or Dave Boyer at 827-5812, as they have the assigned responsibility for review of all discharge plans.

Sincerely,

R. L. STAMETS
Director

RLS/PB/fd
enc.

cc: OCD - Aztec
Carlos Guerra, Giant Industries
Randall Hicks, Geoscience Consultants

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

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

January 17, 1985

Mr. Carl D. Shook,
Refinery Manager
Giant Refining Company
Route 3, Box 7
Gallup, NM 87301

Re: Discharge Plan
Requirement for Ciniza
Refinery

Dear Mr. Shook:

This letter will provide follow-up information requested at our January 9, 1985, meeting. At this time the OCD is not requesting that a discharge plan be submitted for Giant's Ciniza Refinery near Gallup. The newly established Environmental Bureau is continuing to evaluate previously requested discharge plans and does not plan to request new submittals until the backlog has been lessened. We expect this to occur sometime late this spring or early summer. At that time we expect to formally notify Giant of the need for a discharge plan submittal for the Ciniza facility.

When notification is made and pursuant to WQCC Regulation 3-106.A., Ciniza will have 120 days to submit a discharge plan for review and will be allowed to operate without an approved discharge plan for 240 days from date of notification. Both dates may be extended by the Director for good cause. If needed, good cause in this instance would be a schedule for development and implementation of a wastewater management plan similar to the one provided in your December 21, 1984 letter. Any schedule proposed in the future should allow for sixty (60) days OCD response time to your submittals.

If you have any further questions, please contact me at the above address or by phone at 827-5812.

Sincerely,

DAVID G. BOYER
Chief, Environmental Bureau

cc: Carlos Guerra, Giant Industries
Randall Hicks, Geoscience Consultants

GIANT
REFINING COMPANY

ROUTE 3, BOX 7 • GALLUP, NEW MEXICO 87301
(505) 722-3833 • TWX 910-981-0504

December 21, 1984

Mr. Richard Stamets
Director
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

RE: Giant Refining Company, Ciniza Refinery: Discharge Plan Compliance Schedule

Dear Mr. Stamets:

Enclosed is a schedule which Giant Refining Company proposes to follow in order to provide the NM Oil Conservation Division with a complete discharge plan by August 12, 1985. A discharge plan for the Ciniza Refinery has not yet been requested by NMOCD and the operations are presently in full compliance with all WQCC Regulations. However, we wish to voluntarily submit a plan pursuant to the enclosed schedule outline in order to keep Giant in compliance during the period required to obtain an approved plan.

The schedule was based upon a compliance schedule previously approved by NMOCD. We are certain that this submission shows "good cause" and that the NMOCD can provide Giant with written assurance that future discharges will be in full compliance with the WQCC regulations provided that all appropriate schedule deadlines are met as per agreement between NMOCD and Giant Refining Company.

We would like to request a meeting with your staff on December 28, 1984 to discuss this submittal and answer any questions regarding the schedule or outline. If this date is inconvenient due to the holidays please let me know, if necessary we will reschedule.

We request that all correspondence regarding this proposed schedule and associated discarge plan requirements be copied to our corporate counsel:

Mr. Carlos Guerra
General Counsel
Giant Industries, Inc.
7227 North 16th Street
Phoenix, Arizona 85020

and to our consultants:

Geoscience Consultants, Ltd.
500 Copper Avenue NW
Copper Square 220
Albuquerque, New Mexico 87102

ATTN: Mr. Randall Hicks

Thank you very much for your attention to this matter.

Sincerely,
GIANT REFINING COMPANY

Carl D. Shook
Refinery Manager

CDS/jg

Enclosure

SCHEDULE FOR DEVELOPMENT AND
IMPLEMENTATION OF WASTEWATER MANAGEMENT PLAN
PURSUANT TO WQCC REGULATIONS
GIANT REFINERY, CINIZA, NEW MEXICO

DATE	ACTION ITEM
December 21, 1984	Giant submits schedule of compliance and the preliminary discharge plan outline.
December 28, 1984	Meet with NMOCD to finalize schedule of compliance pursuant to justification.
March 4, 1985	Giant submits detailed report on geohydrology and process description to OCD.
No later than May 6, 1985	Giant receives comments from OCD on March 4, 1985 submission.
June 3, 1985	Giant submits report on effluent flow and chemical characteristics of waste streams which will be regulated by the NMOCD discharge plan.
No later than July 1, 1985	Giant receives comments from NMOCD on June 3, 1985 submission.
August 12, 1985	Giant submits final wastewater management plan to NMOCD for review. Plan includes any required redesign of waste management system and response to NMOCD comments on previous submissions.
No later than August 21, 1985	Publication of Public Notice by NMOCD.
September 21, 1985	Public comment period expires.
No later than October 21, 1985	Giant receives any comments of NMOCD on final discharge plan.

December 21, 1985	Giant responds to NMOCD comments.
January 6, 1986	OCD decision on discharge plan approval.
Date as provided by approved discharge plan	Giant submits plans and specifications for any new construction for waste management system. Construction of any facilities begins pursuant to schedule in approved plan.

This schedule of compliance depends on prompt NMOCD response to Giant's timely submissions. Delays in receipt or specificity of NMOCD comments may result in delays in subsequent submissions from Giant to NMOCD.

SHELL OIL COMPANY
STAR ROUTE 3 BOX 7
GALLUP, NEW MEXICO 87301

CINIZA REFINERY

March 2, 1979

Mr. Eddie Seay
Oil Conservation Division
P. O. Box 1980
Hobbs, New Mexico 88240

Dear Mr. Seay:

Attached you will find the information requested regarding Pits, Ponds, and Lagoons associated with operation at the Ciniza Refinery. We have provided available chemical analysis of water effluent to the evaporation ponds, and our best estimate of volume.

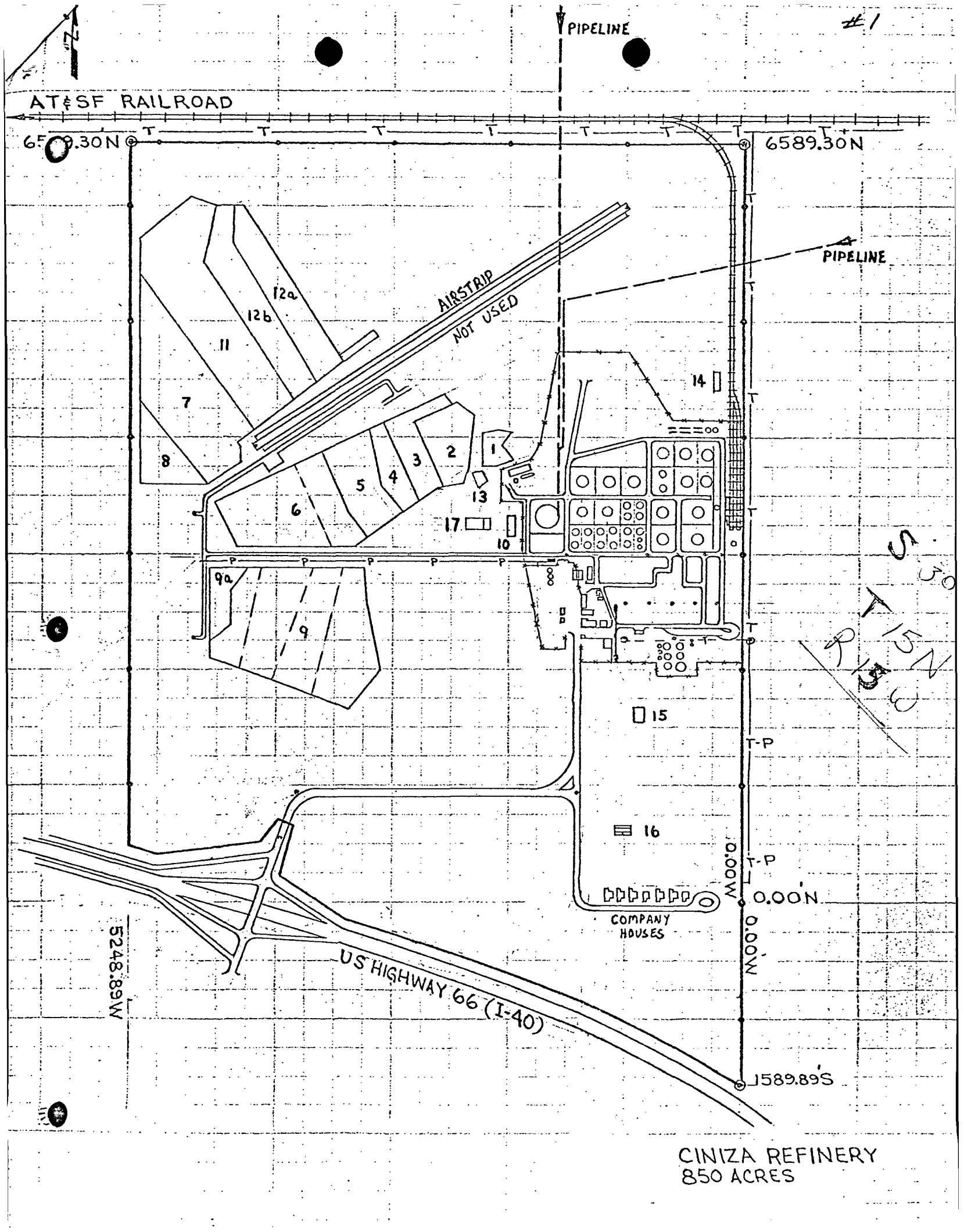
We hope this information will supply your needs. If further data is required, please let us know.

C.D. Shook
Superintendent Operations

Attachments

CDS/jg

Posted
3/7/79
EWS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PIPELINE
AT&SF RAILROAD
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AIRSTRIP
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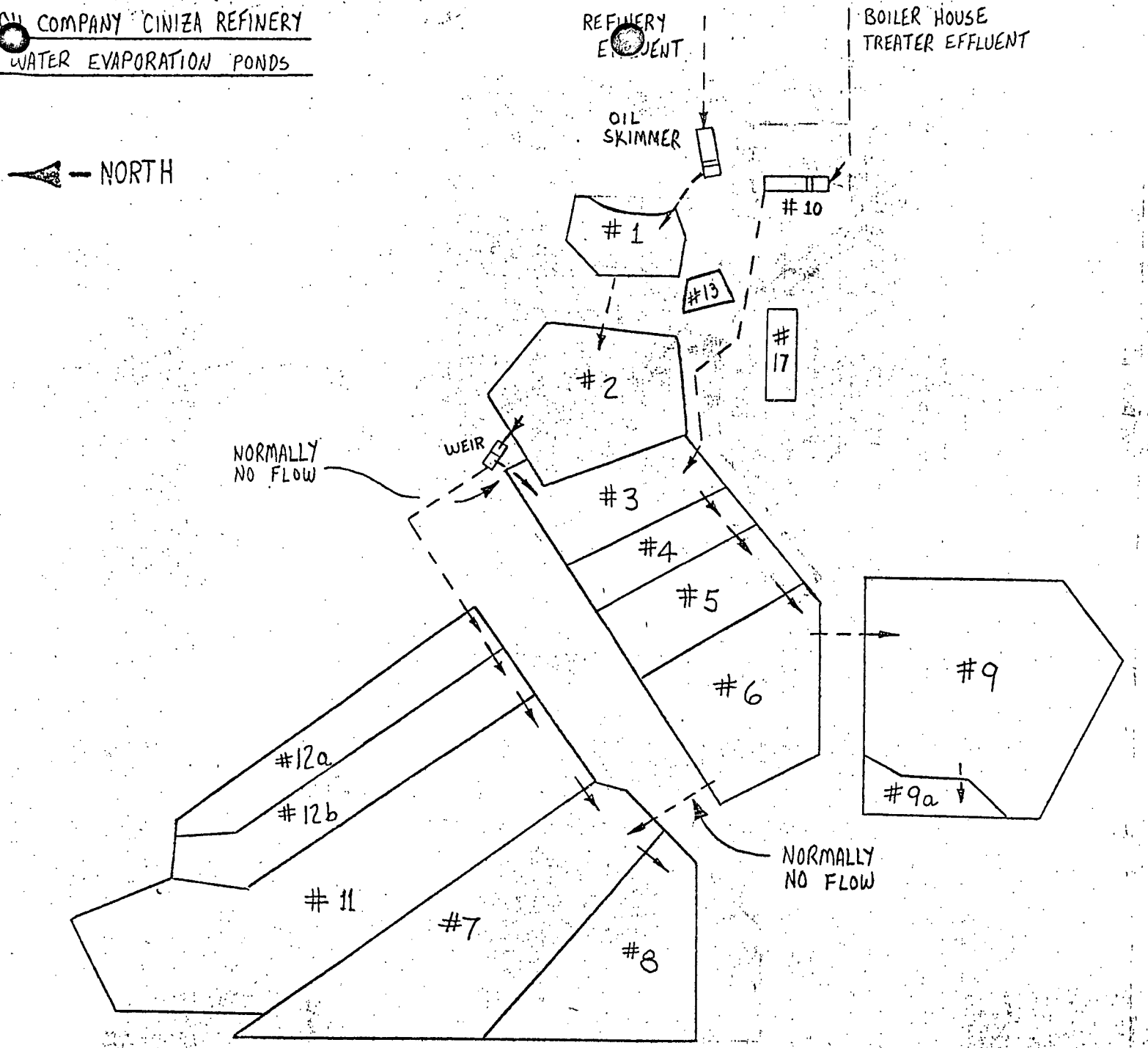
12a
12b
11
7
8
6
5
4
3
2
1
13
17
10
14
9a
9
15
16
T-P
0.00W
0.00N
0.00W
COMPANY
HOUSES
5248.89W
US HIGHWAY 66 (I-40)
589.89S
S 30
A 15N
R 34 W
CINIZA REFINERY
850 ACRES

SHELL OIL COMPANY CINIZA REFINERY

WASTE WATER EVAPORATION PONDS



MSM 3/1/79

#2

#3

CINIZA REFINERY POND DATA

POND NUMBER	SERVICE	ESTIMATED ACREAGE	APPROXIMATE DEPTH	LINING	APPROXIMATE DIMENSIONS
1.	Refinery Effluent	1.8	3'	None	220' x 360'
2.	Refinery Effluent	4.9	10'		425' x 500'
3	Boiler House/ Treater Effluent	4.3	3'		310' x 600'
4	Boiler House/ Treater Effluent	2.2	3'		150' x 650'
5	Boiler House/ Treater Effluent	6.6	3'		385' x 750'
6	Boiler House/ Treater Effluent	13.3	3'		725' x 800'
7	Refinery Effluent	20.0	3'		620' x 1400'
8	Refinery Effluent	10.7	3'		580' x 800'
9	Boiler House/ Treater Effluent	19.7	3'		780' x 1100'
10	Boiler House/ Treater Effluent	0.06	3'		10' x 250'
11	Refinery Effluent	19.0	3'		415' x 2000'
12 a	Refinery Effluent	5.2	3'		135' x 1680'
12 b	Refinery Effluent	7.0	3'		180' x 1700'
13	Oil Skimmer Sludge/ Pond 1/	0.3	3'		100' x 125'
14	Rail Rack Lagoon 2/	0.3	3'		50' x 250'
15	Office Sanitary Lagoon 3/	0.1	3'		60' x 60'
16	Company Houses/ Sanitary Lagoon 3/	0.5	3'		150' x 150'
17	Sanitary Ponding for Lab, Change House, Shops 3/	1.0	3'		100' x 450'

NOTES:

1. Pond 13 contains sludge from occasional oil skimmer clean-out. Material from this pond is periodically disposed of by tilling into soil on the Refinery property. ~ 15 Ton/Yr
2. This Lagoon (oil) is periodically vacuumed out and transferred to the Oil Recovery Skimmer. Rough estimate about 10 BBL oil/Yr.
3. These ponds contain sewage from Refinery Sanitary Facilities.

7-1 (3-44)
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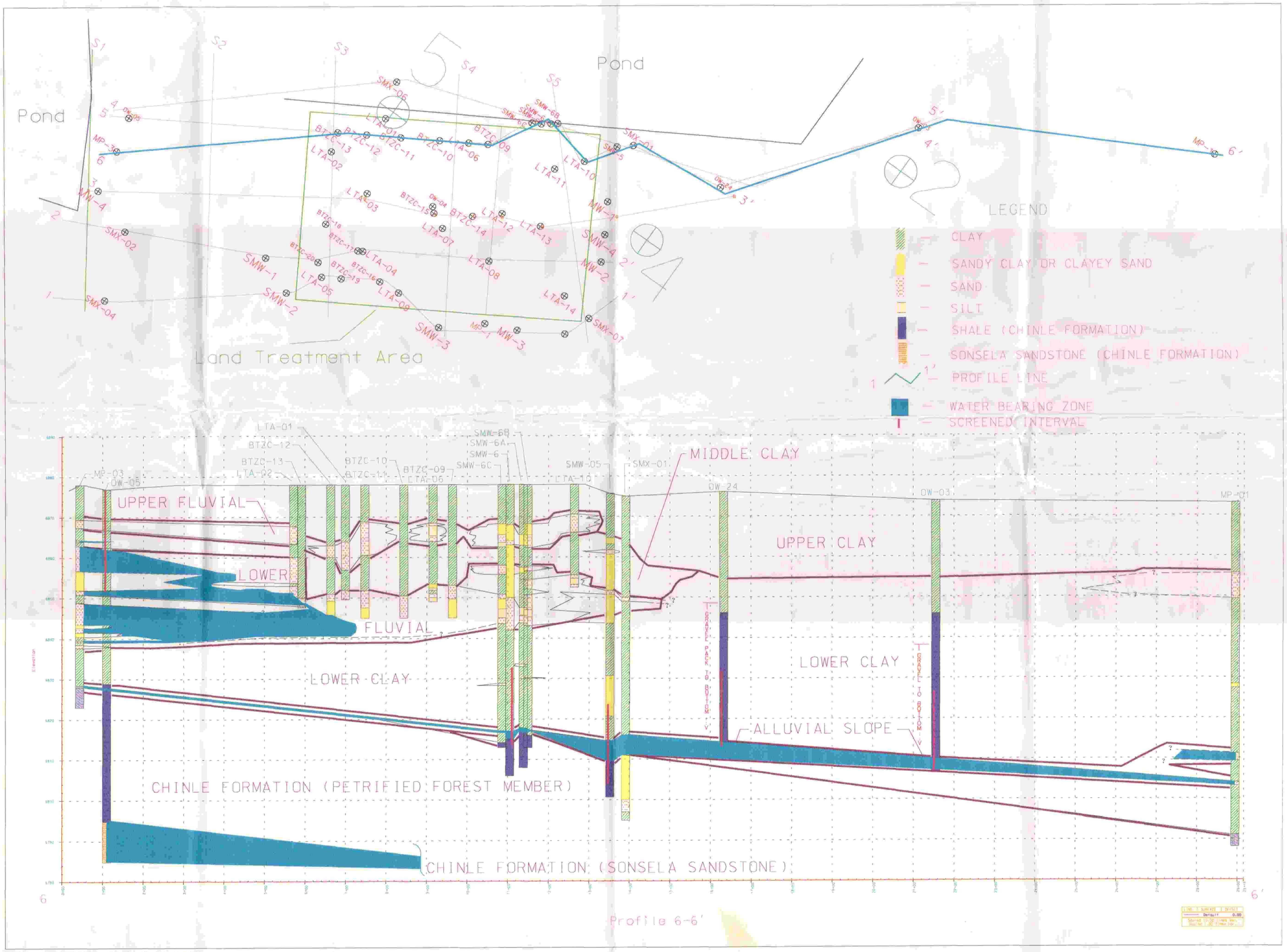
CINIZA REFINERY WATER ANALYSIS

SAMPLED - 12/14/76

TEST	TEST RESULTS (mg/l) WELL WATER	OIL SKIMMER OVERFLOW	POND 2 OVERFLOW	POND 3 OVERFLOW
ALUMINUM	<.1	1.0	.10	10.4 *
ARSENIC	.03	.05	.03	.07
BARIUM	.30	.50	<.10	2.3 *
BORON	.20	.30	.20	.20
CADMIUM	<.001	<.001	<.001	<.001
CALCIUM	199.0	31.8	17.5	1090.0
CHLORIDE	39.8	93.6	1010.0	3970.0
CHLORINE	<.01	<.01	<.01	<.01
CHROMIUM	.002	.70	.35	.18
COBALT	<.001	.008	.009	<.001
COPPER	.002	.001	.002	.019
CYANIDE	.07	38.4 *	3.58	1.06
FLUORIDE	.27	35.9	155.0	13.2
IRON	.143	1.77	.177 *	3.40
LEAD	<.001	.005	.004	.012
LITHIUM	.020	.035	.060	.070
MANGANESE	.006	.06	.50	3.10
MERCURY	<.0004	.0009	<.0004	<.0004
MOLYBDENUM	.001	.003	<.001	<.001
NICKEL	<.01	.02	.03	.07
NITRATE	<.10	<.10	<.10	<.10
NITRITE	<.10	<.10	.10	<.10
NITROGEN, AMMONIUM	.49	292.0	265.0	64.2
NITROGEN, TOTAL	3.47	610.0	597.0	134.0
OXYGEN, DISSOLVED	6.20	<1.0	5.2	7.8
pH	7.90	9.19	7.99	2.23
PHENOLS	<.001	<.001	<.001	<.001
SELENIUM	<.01	.06	.06	<.01
SULFATE	408.0	970.0	1394.0	869.0
SULFITE	.70	214.0	15.9	.90
TOTAL DISSOLVED SOLIDS	944.0	1575.0	3377.0	15258.0
VANADIUM	.01	.02	.07	.08
ZINC	.005	.106	.028	.306
OIL 1/	—	41.0	—	—
FLOW (GPM)	—	~50.0		~25.0

NOTES- * - INDICATES QUESTIONABLE RESULTS
1 - OIL CONCENTRATION CALCULATED

WATER ANALYSIS PERFORMED BY - CONTROLS FOR ENVIRONMENTAL POLLUTION INC.
SANTA FE, N.M.



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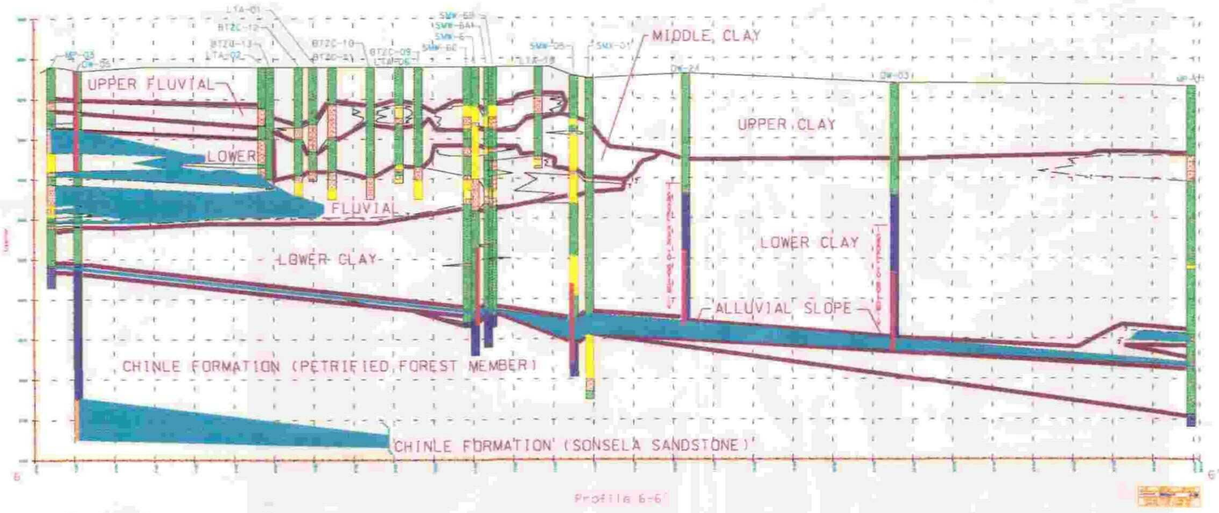

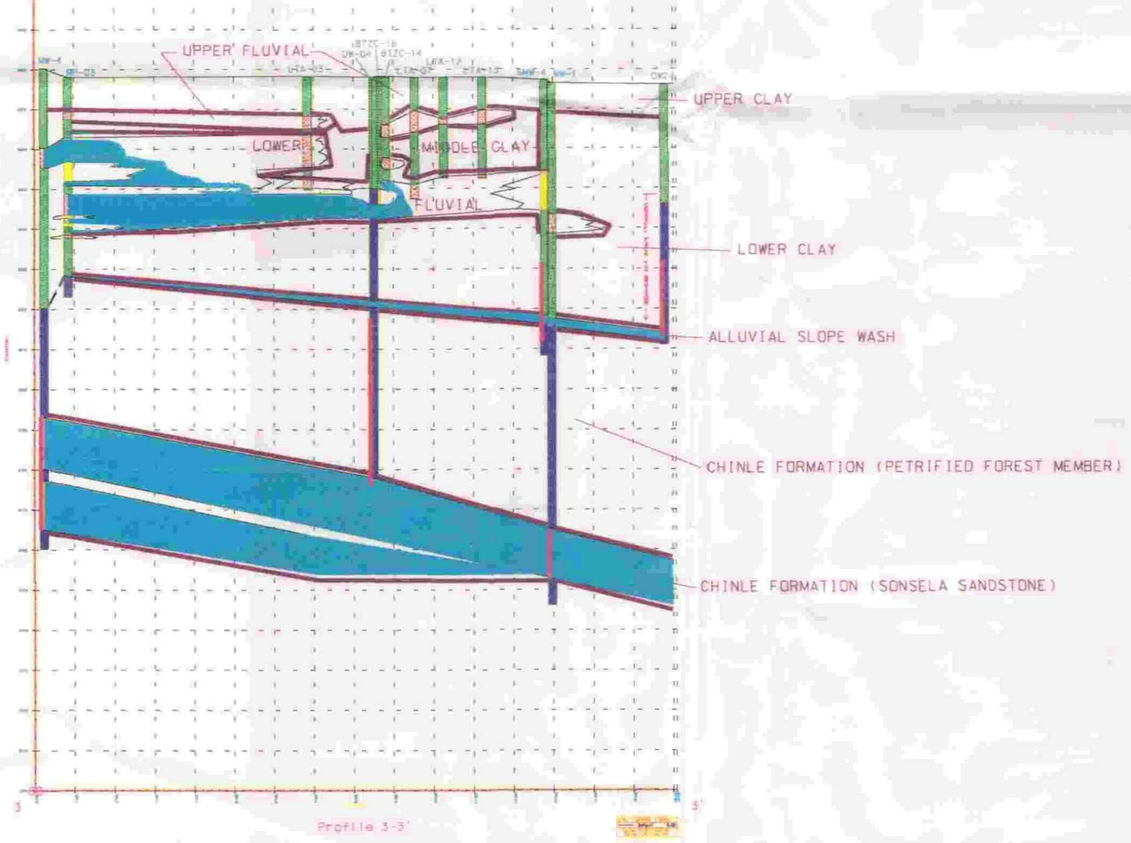

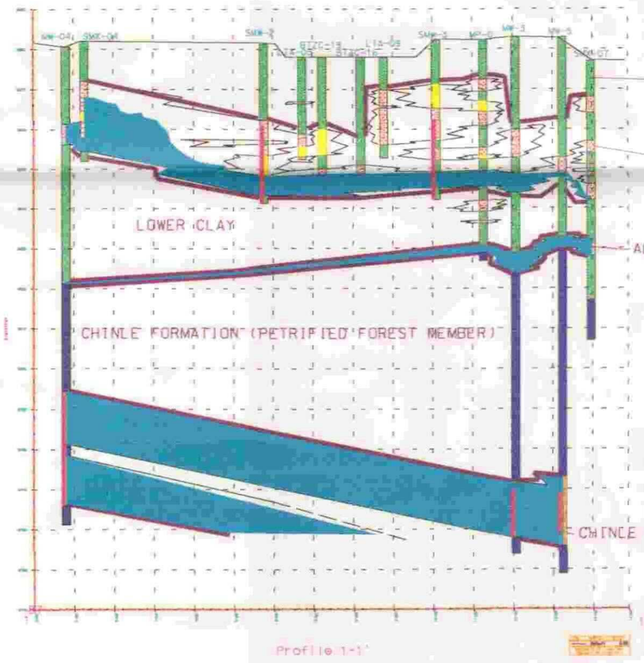

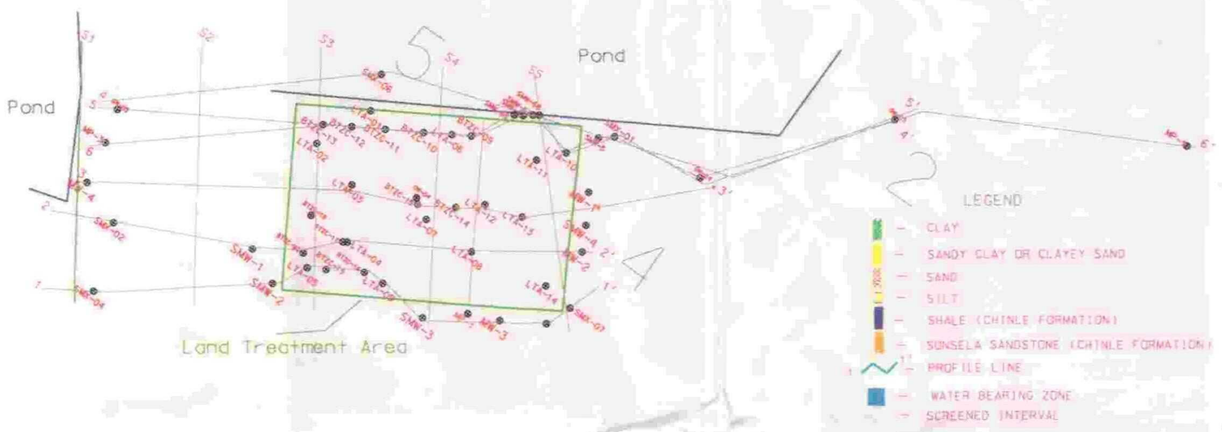

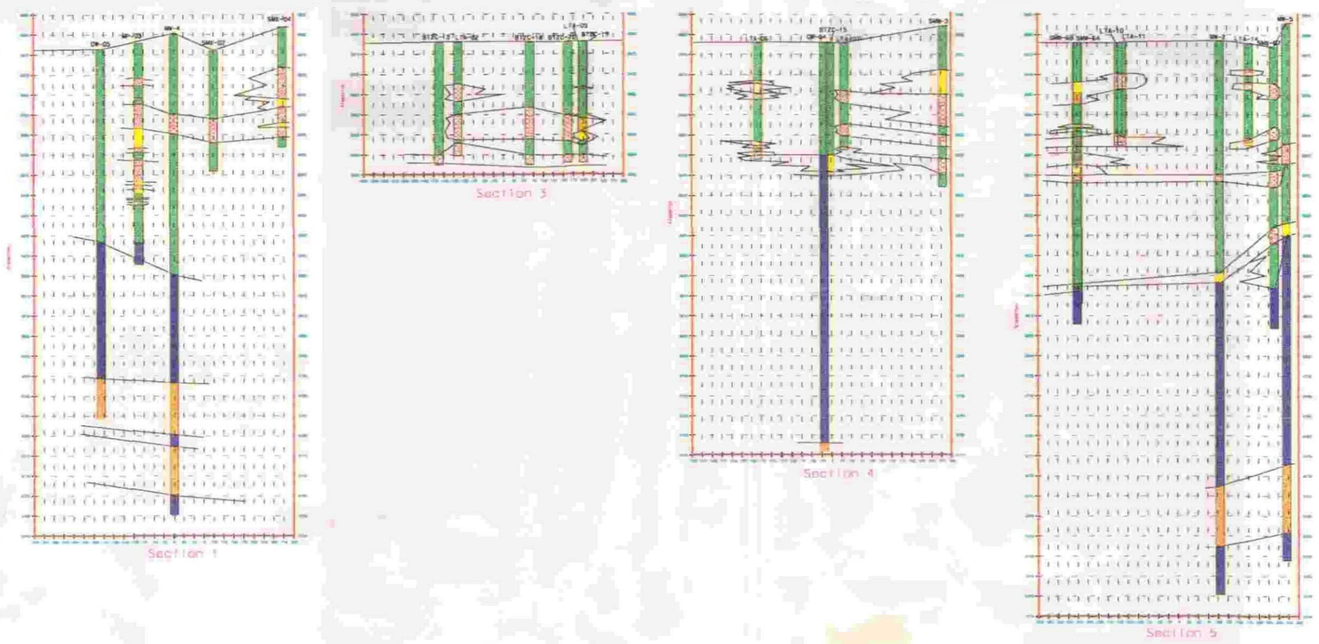

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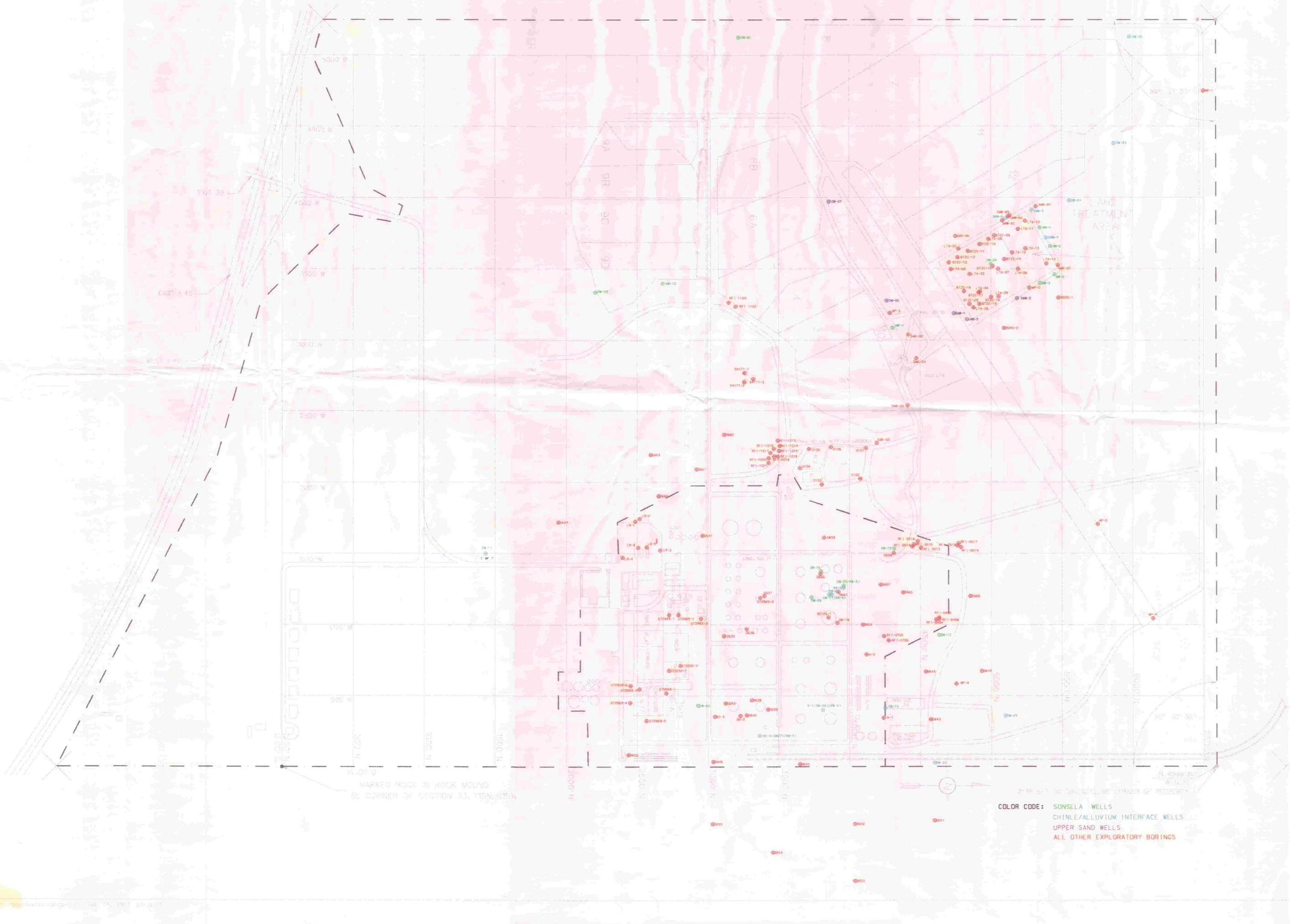
MARKED ROCK IN ROCK MOUND
SE CORNER OF SECTION 33, T15N, R16W
COLOR CODE:
SONSELA WELLS
CHINLE/ALLUVIUM INTERFACE WELLS
UPPER SAND WELLS
ALL OTHER EXPLORATORY BORINGS