



WATER-RIGHT DOCKET

Chamizal National Memorial

Docket No: 1

CHAMIZAL WELLS

Preliminary Docket Information

00-00-0000: cover docket information: chamizal national memorial

WATER DOCKET INFORMATION

A R E A CHAMIZAL NATIONAL MEMORIAL

DOCKET NO. 1

APPLICATION NO.

PERMIT NO.

CERTIFICATE NO.

TITLE OF DOCKET CHAMIZAL WELLS

PRIORITY

REMARKS:

D24

Chief of Maintenance, Southwest Region

Chief of Maintenance, Chamizal

Irrigation System

Inadequate forethought on the needs of the irrigation system at Chamizal National Memorial becomes more apparent daily. This system is installed is inadequate for the Memorial grounds.

The following problems and recommendations for their correction are submitted for your perusal.

1. Well #4 supplies water gallonage, but lacks sufficient pressure to operate 3 sections at the same time. Sandmaster restricts pressure, I suggest that a concrete box 20' x 20' x 20' be installed in the ground in front of the well pump. This box will hold approximately 60,000 gallons of water. A conical base would handle sand settlement. A small trash pump would remove sand from the box. At Well #3, which is not in use because of salinity, there is a 40 HP pump and motor which could be utilized as a pressure pump to feed system at approximately 140 PSI pressure. This would allow adequate pressure to operate 5 sections at once with a sound operating pressure without initial pressure obstructions.
2. Replace outdated RC8 section control clocks. I suggest that the 7-year old RC8 control clocks be replaced with the new solid state RC-8A clock, and water each section for 1/2 hour. With the evaporation and transpiration in El Paso, a large portion of water evaporates into the air, which should go to the ground. The new RC-8A clock can be programmed for a 1-hour cycle. Although this clock was not available 7 years ago, we have 3 on hand from cyclic maintenance and can tell the difference in those areas where we have installed the new clock.
3. We now must irrigate 7 days per week, 24 hours per day. I suggest that if funding for these changes can be found, we can irrigate the turf between 2:00 a.m. and 7:00 a.m. This is the recommended time for irrigating fescue turf to hold down turf diseases and pest. Also, with constant watering, we defeat our fertilizer program, because we wash most of our fertilizer past the root zone. Also, we lose much benefit of nitrogen with our current watering because it tends to evaporate into the air with constant continual watering and never allow the Memorial turf to achieve its proper color and texture. Based on Royce Lamburt's

System was designed to operate max. 3 sections at 1 time

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(x) D54 Cham

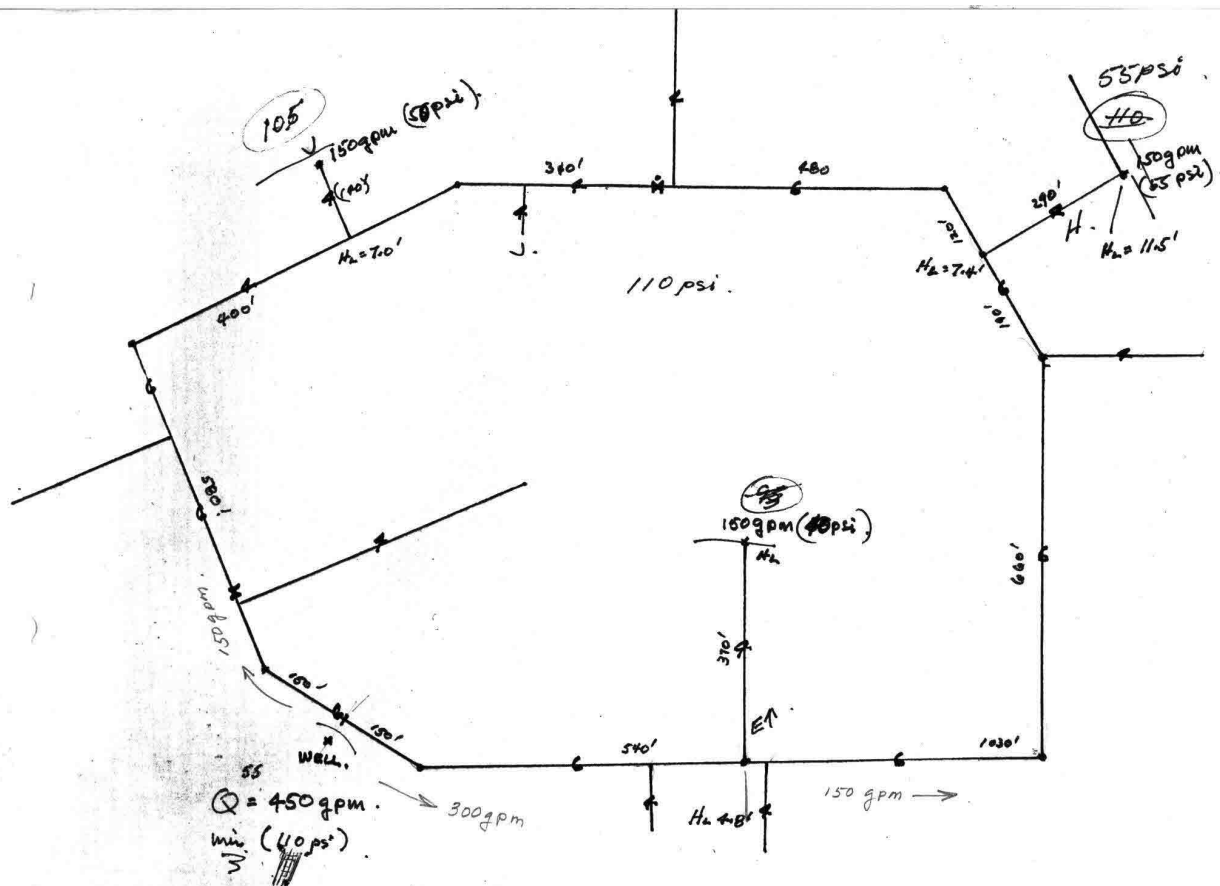
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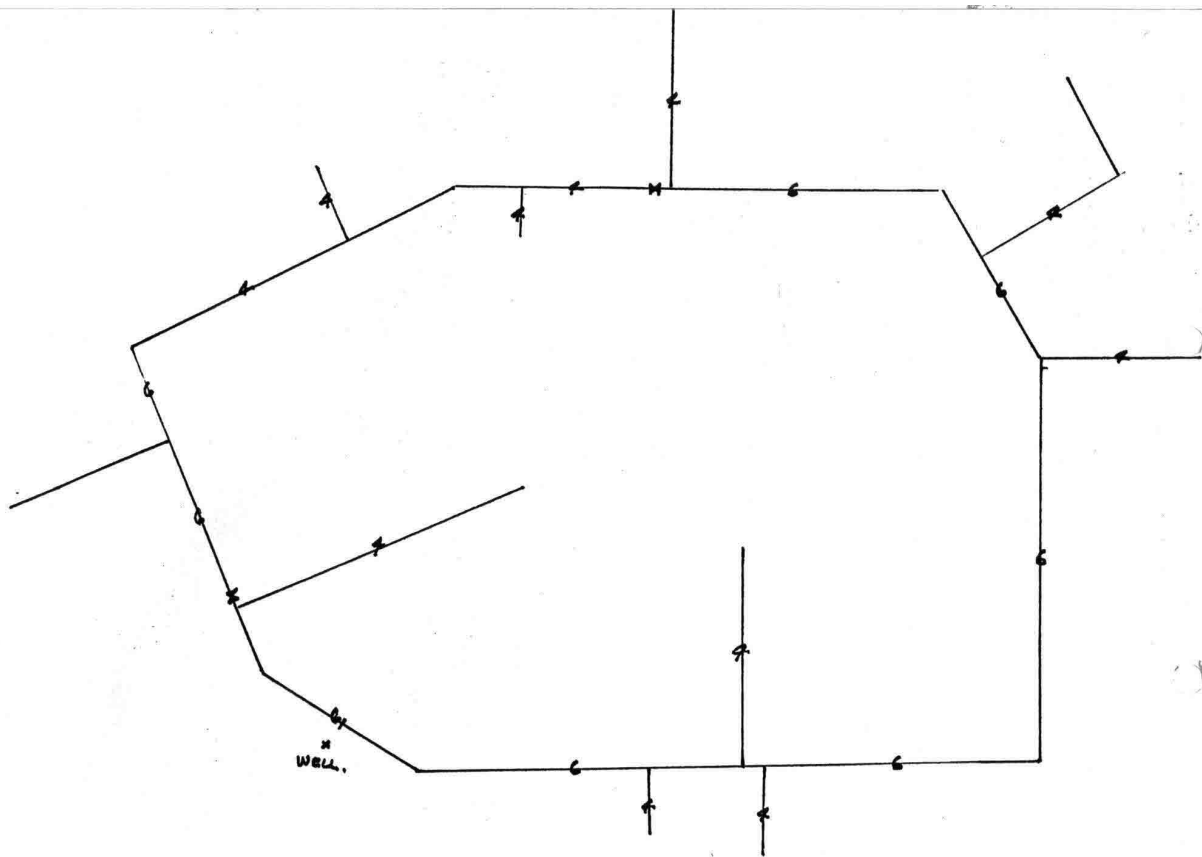
recommendations, our yearly turf irrigation and fertilization program exceeds \$10,000.00 per year. I believe this cost could be greatly reduced if the above suggestions are considered by your professional staff for implementation. The clocks could and should be installed immediately with the other modifications being done during December and January, during our dormant season.

I have spoken with Dusty Aughenbaugh, Bob Pozel and Gary Moore. Realizing how busy they must be, I felt compelled to notify you by way of this memo.

Robert E. Hockman

cc: ✓ Assoc. Reg. Dir., Park Operations





COLE DRILLING CO.

9516 GAILLOCH - EL PASO, TEXAS 79925
 OFFICE PHONE: 591-0503 YARD PHONE 859-9889

INVOICE N° 1428DATE AUGUST 8, 1974

SOLD TO UNITED STATES DEPARTMENT of INTERIOR
NATIONAL PARK SERVICE
SOUTHWEST REGION
P. O. BOX 728
SANTA FE, NEW MEXICO 87501

SHIPMENT LOCATION: CHAMIZAL
NATIONAL PARK, EL PASO, TEXAS

YOUR ORDER NO. 77415		OUR ORDER NO. JAMES M. COLE		SALESMAN	
DATE SHIPPED		SHIPPED VIA		F.O.B.	TERMS
QUANTITY ORDERED	QUANTITY SHIPPED	STOCK NUMBER/DESCRIPTION		PRICE	PER AMOUNT
5/31/74	6HRS.	PUMPING		25 00	hr \$150 00
6/1/74	6HRS.			25 00	hr \$150 00
6/6/74	6HRS.			25 00	hr \$150 00
6/7/74	6HRS.			25 00	hr \$150 00
6/9/74	8HRS.			25 00	hr \$200 00
6/10/74	4HRS.			25 00	hr \$100 00
6/11/74	24HRS.			25 00	hr \$600 00
	60HRS.	TOTAL PUMPING TIME			\$1500 00
		INSTALL AND PULL PUMP			\$400 00
		BUILD WATER RESERVOIR			\$400 00
		TOTAL AMOUNT DUE			\$2300 00

*100%
Warrant of*

*Cleared.
Hank Jones
Aug 12, 1974.*

RECEIVED
AUG 12 1974
FINANCE
SWRO

TRIPLICATE

CHAMIZAL NATIONAL MEMORIAL
IRRIGATION WATER WELL #4

Chamizal NM is located within the City Artesian Area, in which the best quality water is sandwiched between two saline aquifers. The upper aquifer, located in the alluvium, is primarily Rio Grande water, which is highly mineralized (TDS 1,400-2,000 mg/l). Water levels in this zone has been declining from 1951 to 1965. Since 1965 the water levels have risen about 20 to 25 feet. This rise is accounted for by a decrease in pumping by El Paso. All aquifers are hydraulically connected.

Water of acceptable water quality (TDS 400-500 mg/l) is found in the Hueco Bolson sediments located at an estimated depths varying from 400 to 700 feet below land surface at Chamizal. The City of El Paso obtains a portion of their total water supply from this aquifer.

Underlying the Hueco Bolson sediments is a saline aquifer with TDS reportedly increasing from 1,000 to more than 3,000 mg/l.

Water Budget

Estimated water budget of Hueco Bolson sediments (City Artesian Area) as determined by the USGS, Texas, is as follows:

Storage	- 0.7×10^6 a.f.
Avg. Yearly Withdrawal	- 0.03×10^6 af/year
Avg. El Paso	- 0.009×10^6 af/year
Ciudad Juarez	- 0.018×10^6 af/year
Industry	- 0.006×10^6 af/year
Avg. Yearly Recharge	- 0.01×10^6 af/year
Avg. Yearly Leakage	- 0.02×10^6 af/year
Recharge	

Water Use

Trends in water use (1963-1969) from the City Artesian Area.

El Paso: Trend is decreasing from 0.011×10^6 a.f. (1964) to 0.007×10^6 a.f. (1969) - avg. 0.009×10^6 af/year. Increase dependence has been transferred to the Bolson sediments found in the Mesa area.

Ciudad Juarez: Trend has increased from 0.016×10^6 af/year (1963) to 0.022×10^6 af/year (1969).

Industrial: It has remained fairly steady with an average of 0.006×10^6 af/year.

Irrigation: No usage from 1963-1969.

Previous Water Investigations

Three wells have been drilled in the same general area. First two wells were drilled in 1967 but developed sand problems and were backfilled after completion of a replacement well in 1970.

Well #3 (replacement well) is 160 feet deep, 12 inches (ID) with perforations from 105 to 155 feet below top of casing. The upper 100 feet is double cased with 20 inches (ID) pipe and grouted. The lower portion from 100-160 feet is gravel packed.

Well was test pumped and is capable of producing 528 gpm.

Analysis of the test pumping data for Irrigation Well #3 indicates that the apparent transmissivity of the aquifer is 50,000 gallons per day per foot with a specific capacitance of 10.6 gpm per foot of drawdown. Comparison of depth to water table suggests that water in the alluvium and lower zones are cross-connected - 34 ft. BTC in production and observation well.

The cone of depression (theoretically) after 300 minutes continuous pumping at an average Q of 575 gpm extends to little more than 10,000 feet from the well. This withdrawal rate may interfere with some 24 wells on the U.S. side alone. The reverse is equally true. (See Table 1 and Figures 1-3 inclusive.)

Water quality for Irrigation Well #3 has been further degraded as evidenced by the increase in TDS from 1454 ppm (4/1/70) to 2044 mg/l (3/27/74) (See Tables 2 and 3). Cause of the degradation is probably the result of concrete lining of the Rio Grande River which has restricted recharge to the shallow groundwater table.

Irrigation Well #4 is located in the southwest corner of the memorial. The well was constructed in accordance with the attached as shown in Figure 4.

The electric log (Figure 5) was the principal tool employed in the selection of placing the mill slot perforations coupled with driller's log (Table 4) and water chemistry data results (Tables 6-9).

Analysis of the test pumping data indicates that the apparent transmissivity of the aquifer is 52,000 gallons per day per foot with a specific capacitance of 13.3 gpm per foot of drawdown (Table 5, Figures 6 and 7).

Two probable grout joints exist at depth 40 and 377 feet below ground level as a result of interruption of grouting procedure. The upper grout joint is the result of bridging when the grout was dumped into the annular space between the borehole and the casing (See Figure 4).

Sieve analysis of the gravel pack and the sand passing during the development process (Avg. Q=750 gpm) is predicted to produce 0.4 ml of sand per 1000 gallons of water with maximum size sand particles of 0.25 mm (diameter).

CHAMIZAL WELL NO. 4

CONTRACTOR: Cole Drilling Co., El Paso, Texas

PRECONSTRUCTION CONFERENCE: Held on March 19, 1974

TEST HOLE: 800 Ft. (BGL) Drilled March 20-23, 1974

Driller's Log - See Attached

Water samples collected by military method at the following depths (BGL): 714-734 Ft., 483-504 Ft., 441-461 Ft., and 230-250 Ft.

A separate water sample was collected from Well #3. Water zone 100-160 Ft. (BGL). Water chemistry data - see attached. Entire hole was electric logged by crew from El Paso Water Utilities (Mr. Oscar Estrada, Plant Superintendent) with a hand operated Johnson-Keck DR-61 Electrical Logging System.

PRODUCTION HOLE: 20 Ft. North of Test Hole

Borehole was constructed in three successive stages.

- a) A 30" (ID) to 18' BGL cased and grouted in place.
- b) A 12" (ID) pilot hole to 535 Ft. (BGL).
- c) Reamed to 28" (ID) from 18 Ft. to 535 Ft. (BGL).

Date of Operation: May 6-May 16, 1974

Casing. The following string of butt-weld 12" (ID) black steel casing was installed (wall thickness 0.375").

- a) 5 l.f. stub pipe
- b) 103 l.f. of mill slot pipe (68 slots) 1.f. - 0.1" x 2.75"
- c) 427 l.f. blank well casing

All welding was performed by Wyler Industrial Works, El Paso, Texas (Alfred Perez, David Munoz are certified welders).

Date of Operation: May 17, 1974

Gravel Pack. River Run Houston silicate sands with an effective size (10%) of 2.2 millimeters (coarse sand), mean particle size of 3.3 millimeters (coarse sand) and a uniformity coefficient (40%/90%) of 1.25 was placed in hole (see attached Gradation - Bureau of Reclamation). Gravel pack was hand shoveled from 535 Ft. to 408 Ft. BTC. Installed 3" ID (GIP) from surface to 420 Ft. BGL (see figure 8 Sieve Analysis).

Date of Operation: May 18, 1974

Grout. 55 cy of grout (Formula 12:1:Unknown) was supplied by Vowell Construction, El Paso, Texas. Grout was installed in two stages.

May 18, 1974. 15 cy of grout was dumped into annular space. 3 cy of grout rejected as it was beginning to set. Upper 5-45 Ft. BTC was bridged. Operations were halted because of sloppy grouting method. Gravel pack chute pipe - 3" ID galvanized pipe from surface to 420 Ft. BGL was installed by contractor. Grout had apparently settled from 408 Ft. to 377 Ft. BTC. Grout plug was redrilled with 7 7/8" bit and circulated to clean out hole.

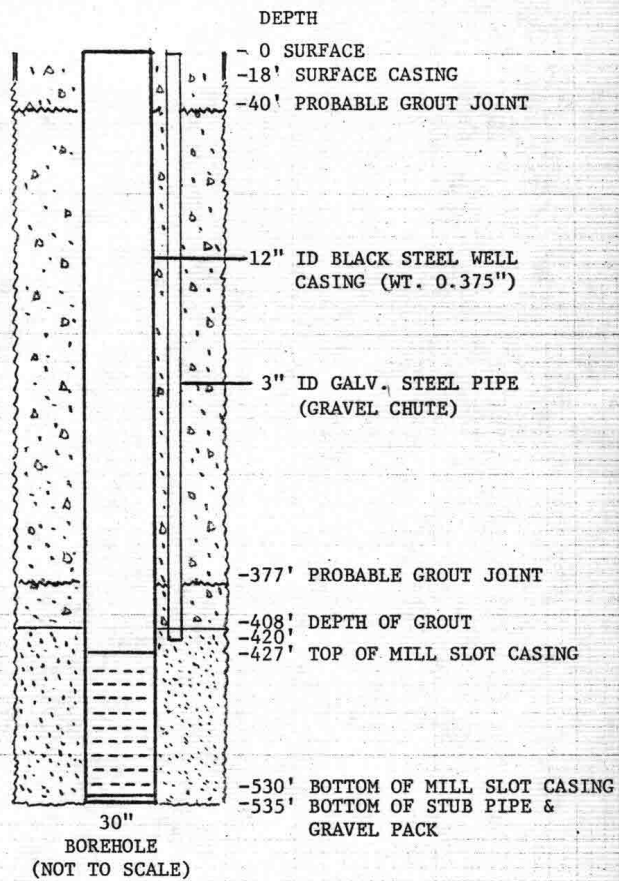
May 22, 1974. Remaining portion of grout was installed by tremie method (40 cy). Pumping unit was May no Pump Type CDO, Serial No. A 8502-2, Engine - Wisconsin, Model ITJD, Spec. 329528 and Serial No. 5025878. Static water level was 96 Ft. (BTC) before and after all grouting operation. Grout set for 48 hours before any development work.

DEVELOPMENT: Contractor developed well for 36 hours by the surge and pump method at an average $Q=750$ gpm. Initially sand produced was 55.0 ml/1000 gallons. Final reading 0.9 ml/1000 gallons as measured with an Imhoff Cone. Conductance of discharge water was initially 750 micromhos (74°F). Final reading 650 micromhos (70°F). Surging temporarily increased sand load to an estimated 300 ml/1000 gallons.

Excess water was stored in a make shift holding tank on the ground.

Sand produced possessed the following characteristics: effective size (10%) 0.13 mm (fine sand), mean particle size 0.30 mm (fine sand), and uniformity coefficient $(40\%/90\%)=2.46$. (See figure 8 Sieve Analysis.)

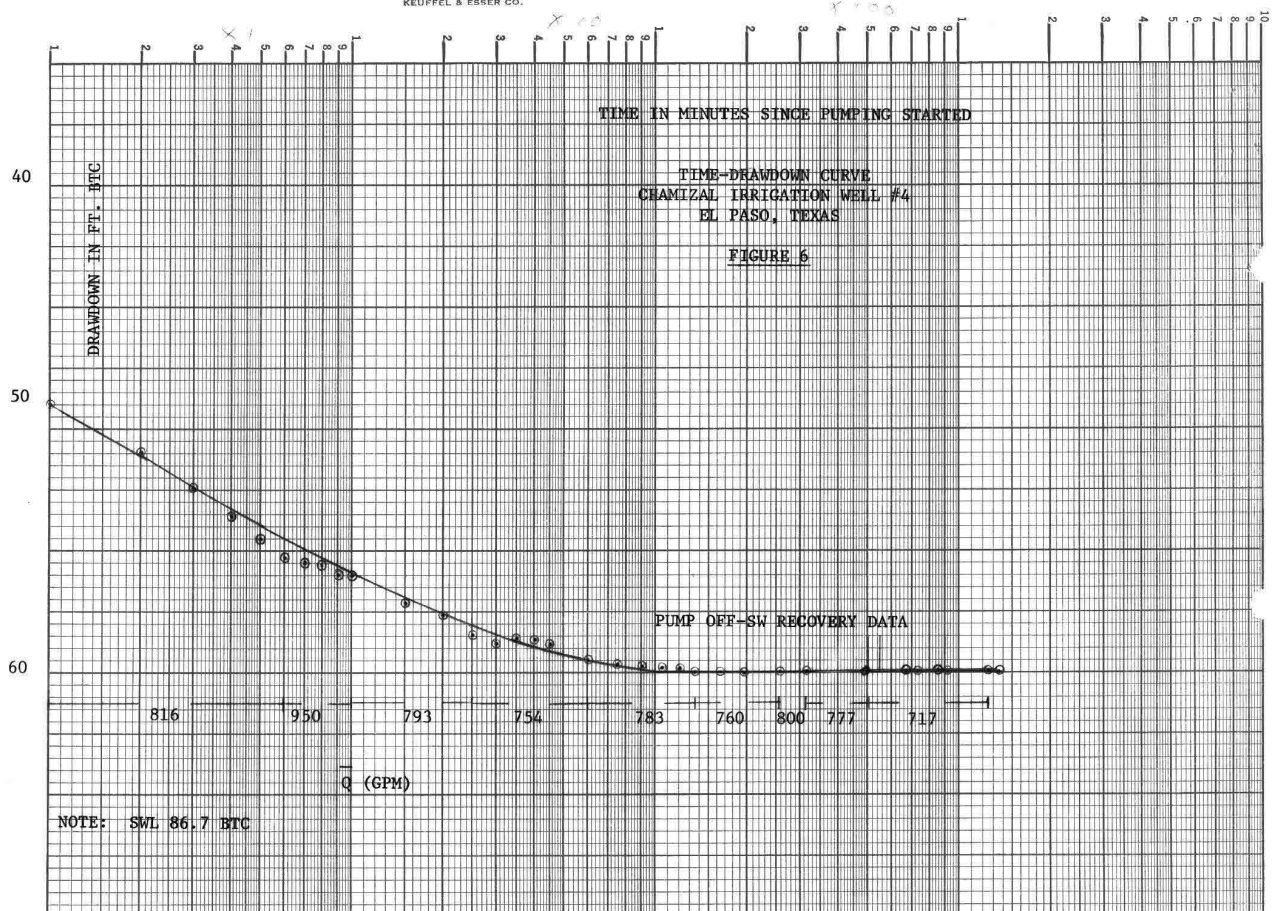
TEST PUMPING: See attached drawdown and recovery data. Note - after nearly 23 hours of test pumping, the storage area dike broke and flooded the nearby highway. Traffic was stuck before being detoured. El Paso Maintenance Crews were called out to clean up approximately 1,000.000 gallons of water and sand were deposited on the roadway (see figures 5 and 6).

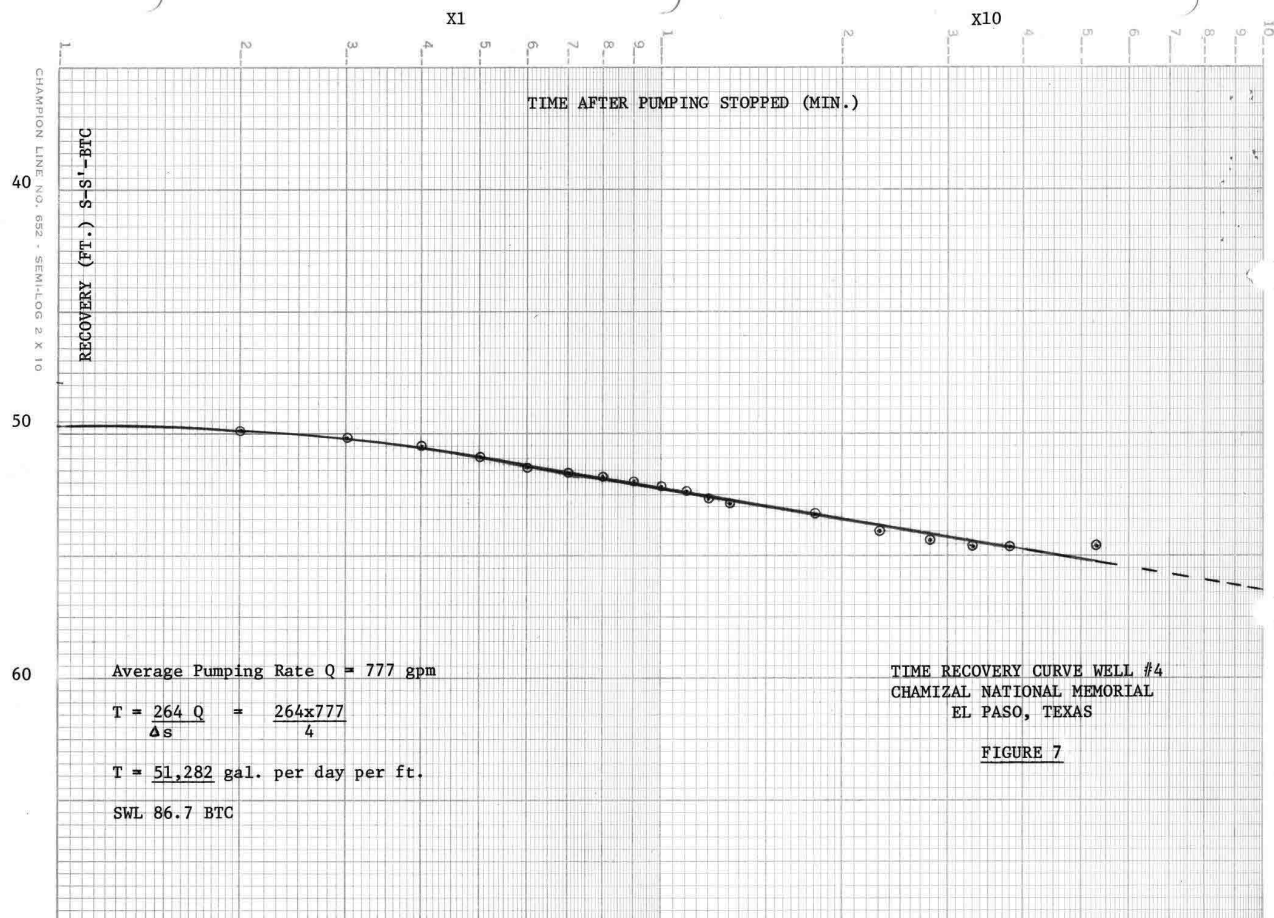


CHAMIZAL NATIONAL MEMORIAL
IRRIGATION WELL #4

FIGURE 4

SEMI-LOGARITHMIC 46 6013
4 CYCLES X 70 DIVISIONS MADE IN U.S.A.
KEUFFEL & ESSER CO.





DESIGNED BY Rich CHECKED BY _____ DATE 7-8-74

Well #4 Chamizal

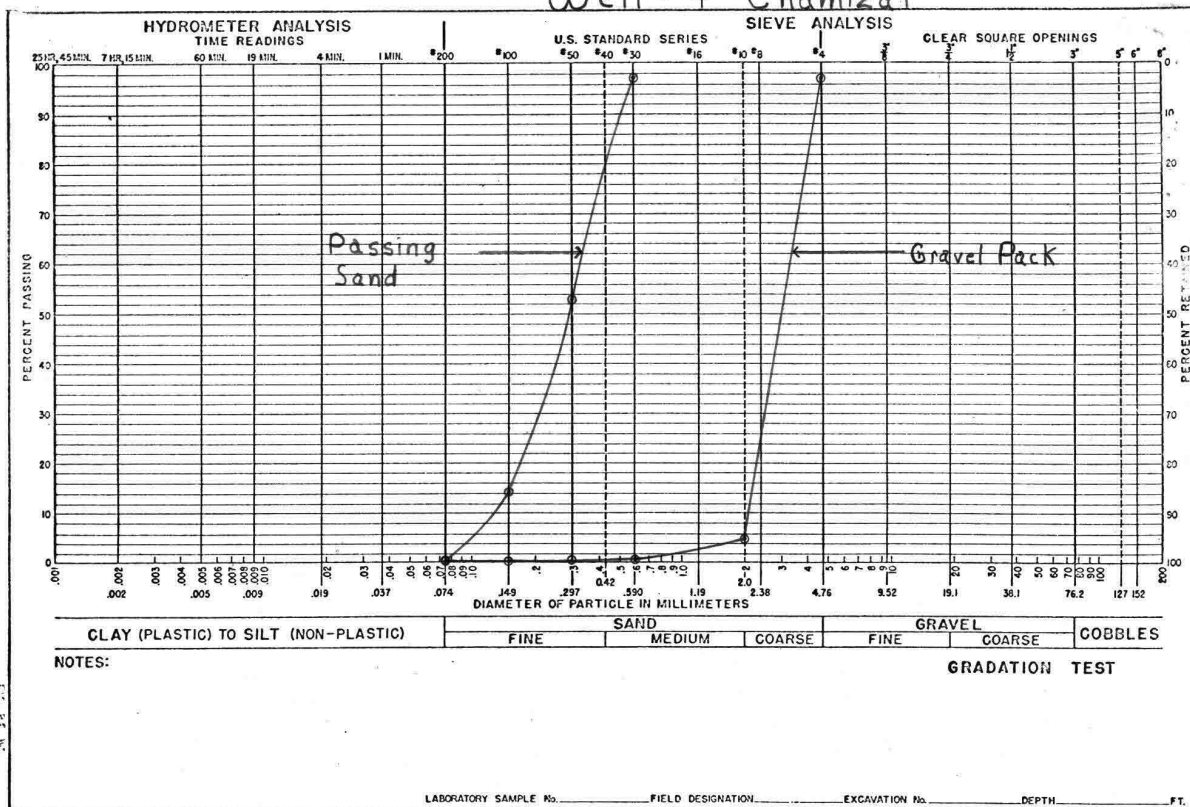


FIGURE 8

FIGURE 8A
SIEVE ANALYSIS

Job Irrigation Well #4 at Chamizal
 Type of Sample Sand coming out of well in the water.
 Source of Sample Cole Drilling Co., El Paso, Texas by Test Pump
 Sample Collected By Richard Rougemont Date _____
 Applicable Specification To check for sand collector box
 Weight of Sample Tested 15.303

Sieve Size	Weight Retained	Weight Passing	Analysis Result % Passing	Specified Amount Aggregate Passing (%)
30				
0.0234	.4 oz.	14.9 oz.	97.4%	
50				
0.0116	6.8 oz.	8.1 oz.	53%	
100				
0.0058	5.9 oz.	2.2 oz.	14.4%	
200				
0.0029	1.6 oz.	0.6 oz.	.4%	
Pan	.6 oz.	0		

Remarks:

Sieve Analysis By Richard Rougemont Date 7/8/74
National Park Service
Southwest Regional Office
P.O. Box 728
Santa Fe, New Mexico 87501

FIGURE 8B
SIEVE ANALYSIS

Job Irrigation Well #4 at Chamizal
 Type of Sample Gravel Pack for Well Screen Packing
 Source of Sample Cole Drilling Co., El Paso, Texas
 Sample Collected By Richard Rougemont Date 3/23/74
 Applicable Specification Well Screen Packing
 Weight of Sample Tested 2 lb. 3.5 oz.

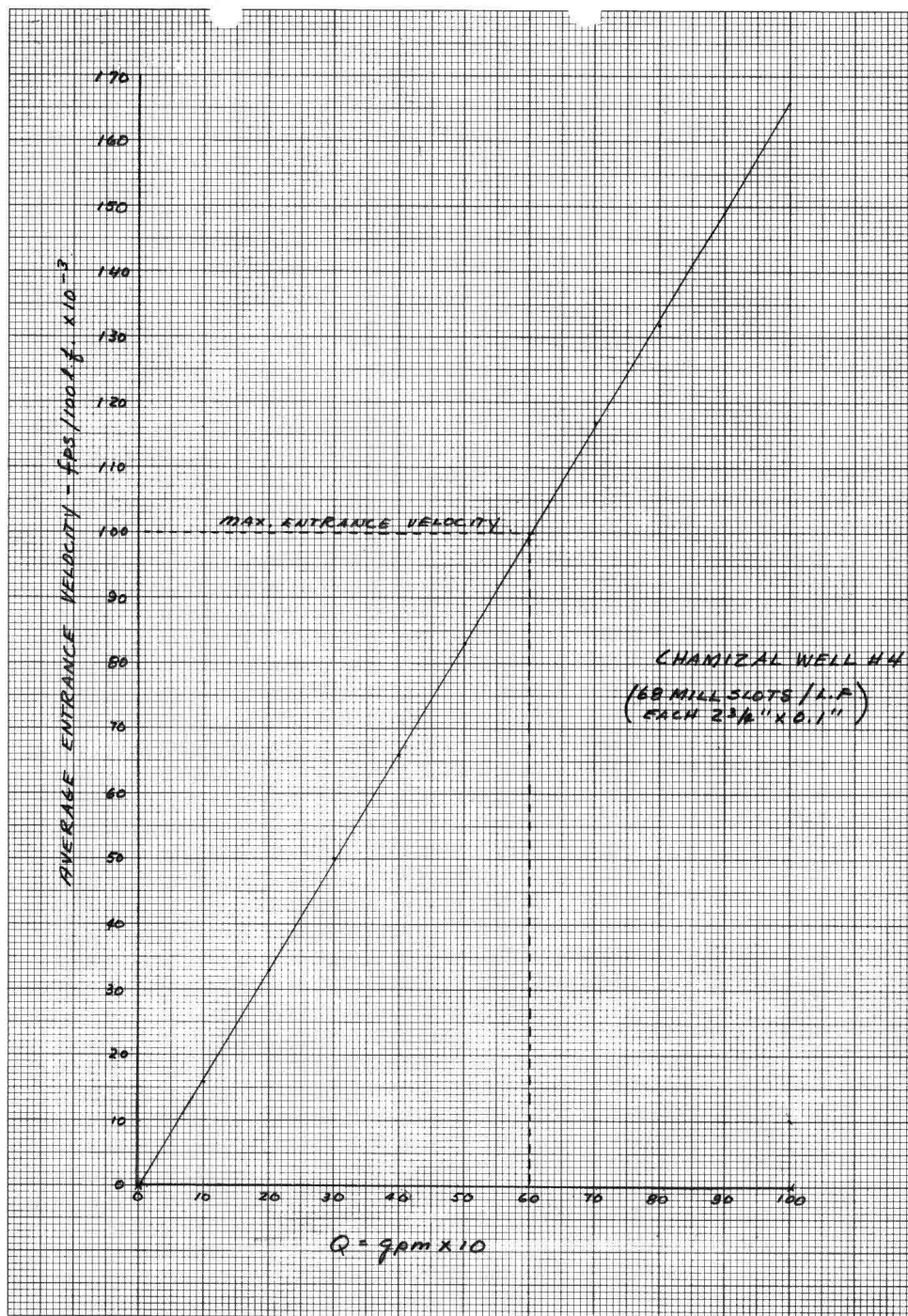
Sieve Size	Weight Retained	Weight Passing	Analysis Result % Passing	Specified Amount Aggregate Passing (%)
4				
.185	1 oz.	2 lb. 2.5 oz.	97.2%	
10				
.0787	2 lb. 7 oz.	1.8 oz.	5%	
30				
.0234	1.4 oz.	0.4 oz.	1.1%	
50				
.0116	0.1 oz.	0.3 oz.	0.8%	
100				
.0058	0.1 oz.	0.2 oz.	0.6%	
200				
.0029	0.1 oz.	0.1 oz.	0.3%	
Pan	0.1 oz.	0		

Remarks:

Sieve Analysis By Richard Rougemont Date 7/8/74
 National Park Service
 Southwest Regional Office
 P.O. Box 728
 Santa Fe, New Mexico 87501

AQUABEE
MADE IN USA

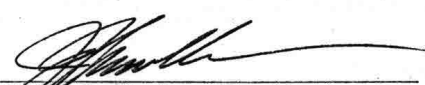
DRAWING PAPER NO. 1280-104
TRACING PAPER NO. 1227-104
CROSS SECTION-10X10 TO 1/4 INCH



CUSTOMER National Park f Vice
 ATTENTION Gary Moore
 ADDRESS P. O. Box 728
 CITY Santa Fe, New Mexico 87501
 INVOICE NO. 404010
 Chamizal NM, Well #3, Depth Sampled 100-160 Ft.

TABLE 3

REPORT OF ANALYSIS

SAMPLES RECEIVED	03-27-74	CUSTOMER ORDER NUMBER																																						
TYPE OF ANALYSIS Water Quality Analysis - Date Collected: 03-27-74 - 1 Sample - # 5																																								
<table> <thead> <tr> <th>Analysis</th> <th>mg/l</th> </tr> </thead> <tbody> <tr> <td>Alkalinity Total (as CaCO_3)</td> <td>0.1</td> </tr> <tr> <td>(Bicarbonate(as CaCO_3)=Alk, Total-Alk, "P")</td> <td>25.6</td> </tr> <tr> <td>Calcium, Ca</td> <td>181.5</td> </tr> <tr> <td>Chloride, Cl</td> <td>500.5</td> </tr> <tr> <td>Fluoride, F</td> <td>0.5</td> </tr> <tr> <td>Hardness, EDTA (as CaCO_3)</td> <td>981.0</td> </tr> <tr> <td>Iron, Fe</td> <td>0.03</td> </tr> <tr> <td>Magnesium, Mg</td> <td>63.5</td> </tr> <tr> <td>Manganese, Mn</td> <td>0.29</td> </tr> <tr> <td>Nitrogen, Nitrate (as N)</td> <td>0.2</td> </tr> <tr> <td>pH</td> <td>7.91 pH unit</td> </tr> <tr> <td>Phosphorus, Total (as P)</td> <td>0.84</td> </tr> <tr> <td>Potassium, K</td> <td>17.0</td> </tr> <tr> <td>Silica, SiO_2</td> <td>69.0</td> </tr> <tr> <td>Sodium, Na</td> <td>19.6</td> </tr> <tr> <td>Solids, Dissolved</td> <td>2044</td> </tr> <tr> <td>Sulfate, SO_4</td> <td>402</td> </tr> <tr> <td>Color</td> <td>4 color units</td> </tr> </tbody> </table>			Analysis	mg/l	Alkalinity Total (as CaCO_3)	0.1	(Bicarbonate(as CaCO_3)=Alk, Total-Alk, "P")	25.6	Calcium, Ca	181.5	Chloride, Cl	500.5	Fluoride, F	0.5	Hardness, EDTA (as CaCO_3)	981.0	Iron, Fe	0.03	Magnesium, Mg	63.5	Manganese, Mn	0.29	Nitrogen, Nitrate (as N)	0.2	pH	7.91 pH unit	Phosphorus, Total (as P)	0.84	Potassium, K	17.0	Silica, SiO_2	69.0	Sodium, Na	19.6	Solids, Dissolved	2044	Sulfate, SO_4	402	Color	4 color units
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APPROVED BY  James J. Mueller, President 04-08-74 PAGE 1 OF 1 PAGE																																								



Controls for Environmental Pollution, Inc.

1925 Rosina • P. O. Box 5351 • Santa Fe, New Mexico 87501 • Telephone 505/982-9841

COLE DRILLING CO.

601 delhi

el paso, tx

859-9889

Well: **GHAMTZAL**Driller: **PAT RODRIQUEZ**

Owner: _____

Date Drilled: **MARCH 20, 1974**

Location of Well: _____

From (Ft.)	To (Ft.)	Description of Formation	WELL COMPLETION		From	To
0	2	CLAY	Well Casing	_____	_____	_____
2	14	SAND	Well Screen	_____	_____	_____
14	20	CLAY	Well Casing	_____	_____	_____
20	23	SAND	Well Cemented	_____	_____	_____
23	40	CLAY	Gravel	_____	_____	_____
40	46	SAND	Gravel Chute	_____	_____	_____
46	66	GRAVEL	Draw Down Line	_____	_____	_____
66	78	GRAVEL/CLAY	Surface Casing	_____	_____	_____
78	90	CLAY	Surface Cemented	_____	_____	_____
90	100	GRAVEL	WATER SAMPLES From To Sample No. 1 <u>714</u> <u>735</u> No. 2 <u>483</u> <u>504</u> No. 3 <u>441</u> <u>461</u> No. 4 <u>230</u> <u>251</u> No. 5 _____			
100	120	CLAY/GRAVEL				
120	132	GRAVEL				
132	140	CLAY/GRAVEL				
140	162	GRAVEL/CLAY				
162	175	CLAY	STATIC LEVEL Feet from Surface _____ WELL LOG Diameter _____ Depth _____ Test Hole _____ Well Hole _____			
175	185	SAND/CLAY				
185	210	SAND				
210	225	CLAY				
225	230	SAND				
230	250	CLAY	PUMPING TEST Yield _____ GPM with _____ Feet Drawn Down REMARKS: _____ _____ _____ _____			
250	264	SAND				
264	290	CLAY				
290	310	CLAY/GRAVEL				
310	320	CLAY				
320	330	CLAY				
330	339	CLAY/SAND				
339	342	CLAY				
342	350	SAND				
350	354	CLAY/SAND				
354	370	SAND				
370	392	SAND/CLAY				
392	408	CLAY/SAND/GRAVEL				
408	412	CLAY				
412	418	SAND				
418	424	CLAY/GRAVEL				
424	434	SAND/CLAY				
434	440	SAND				
440	460	SAND/CLAY				
460	484	SAND				
484	490	CLAY/GRAVEL				
490	501	CLAY/SAND				
501	512	CLAY/GRAVEL				
512	526	CLAY				
526	535	SAND/CLAY				
535	559	SAND				
559	570	CLAY/GRAVEL				
570	576	CLAY				
576	584	SAND/CLAY				

COLE DRILLING CO.

601 delhi

el paso, tx

859-9889

DRILLER'S LOG

Well: _____

Driller: _____

Owner: _____

Date Drilled: _____

Location of Well: _____

From (Ft.)	To (Ft.)	Description of Formation	WELL COMPLETION		From	To
584	600	CLAY/GRAVEL/SAND	Well Casing	_____	_____	_____
600	613	SAND/CLAY	Well Screen	_____	_____	_____
613	634	CLAY/SAND	Well Casing	_____	_____	_____
634	644	CLAY	Well Cemented	_____	_____	_____
644	664	CLAY/SAND/GRAVEL	Gravel	_____	_____	_____
664	686	CLAY	Gravel Chute	_____	_____	_____
686	700	CLAY/GRAVEL	Draw Down Line	_____	_____	_____
700	715	CLAY	Surface Casing	_____	_____	_____
715	731	CLAY/SAND	Surface Cemented	_____	_____	_____
731	770	CLAY/GRAVEL	WATER SAMPLES			
770	790	CLAY	Sample No. 1	From	To	_____
790	800	CLAY/SAND	No. 2	_____	_____	_____
800	808	CLAY	No. 3	_____	_____	_____
			No. 4	_____	_____	_____
			No. 5	_____	_____	_____
			STATIC LEVEL			
			Feet from Surface	_____		
			WELL LOG			
			Diameter	_____		
			Test Hole	_____		
			Well Hole	_____		
			PUMPING TEST			
			Yield	_____	GPM with	_____
					Feet Drawn Down	_____
			REMARKS: _____			



TABLE 4
DRILLER'S LOG

Pg #1

Well: Chemical

Driller: _____

Owner: _____

Date Drilled: 3-20-74

Location of Well: _____

From (Ft.)	To (Ft.)	Description of Formation	WELL COMPLETION		From	To
0	2	CLAY	Well Casing	_____	_____	_____
2	14	SAND	Well Screen	_____	_____	_____
14	20	CLAY	Well Casing	_____	_____	_____
20	23	SAND	Well Cemented	_____	_____	_____
23	40	CLAY	Gravel	_____	_____	_____
40	46	SAND	Gravel Chute	_____	_____	_____
46	66	GRAVEL	Draw Down Line	_____	_____	_____
66	78	GRAVEL / CLAY	Surface Casing	_____	_____	_____
78	90	CLAY	Surface Cemented	_____	_____	_____
90	100	GRAVEL	WATER SAMPLES From To Sample No. 1 <u>714</u> <u>735</u> No. 2 <u>483</u> <u>509</u> No. 3 <u>441</u> <u>461</u> No. 4 <u>230</u> <u>251</u> No. 5 _____			
100	120	CLAY / GRAVEL	STATIC LEVEL			
120	132	GRAVEL	Feet from Surface _____			
132	190	CLAY / GRAVEL	WELL LOG			
190	162	GRAVEL / CLAY	Diameter _____ Depth _____			
162	175	CLAY	Test Hole _____			
175	185	SAND / CLAY	Well Hole _____			
185	210	SAND	PUMPING TEST			
210	225	CLAY (HARD)	Yield _____ GPM with _____ Feet Drawn Down			
225	230	SAND	REMARKS: _____			
230	250	CLAY	_____			
250	264	SAND	_____			
264	290	CLAY	_____			
290	310	CLAY / GRAVEL	_____			
310	320	CLAY	_____			
320	330	CLAY	_____			
330	339	CLAY + SAND	_____			
339	342	CLAY	_____			
342	350	SAND	_____			
350	354	CLAY / SAND	_____			
354	370	SAND	_____			
370	392	SAND & CLAY	_____			
392	408	CLAY / SAND / GRAVEL	_____			
408	412	CLAY	_____			
412	418	SAND	_____			
418	424	CLAY / GRAVEL	_____			
424	434	SAND / CLAY	_____			
434	440	SAND	_____			
440	460	SAND / CLAY	_____			
460	484	SAND	_____			
484	490	CLAY / GRAVEL	_____			
490	501	CLAY + SAND	_____			
501	512	CLAY + GRAVEL	_____			
512	526	CLAY	_____			
526	535	SAND & CLAY	_____			
535	559	SAND	_____			
559	570	CLAY + GRAVEL	_____			
570	576	CLAY	_____			
576	584	SAND & CLAY	_____			

DRILLER'S LOG

pg #2

Well: CHAMIZAL

Driller: _____

Owner: _____

Date Drilled: 3-20-74

Location of Well: _____

From (Ft.)	To (Ft.)	Description of Formation	WELL COMPLETION		From	To
584	600	CLAY / GRAVEL / SAND	Well Casing	_____	_____	_____
600	613	SAND & CLAY	Well Screen	_____	_____	_____
613	634	CLAY & SAND	Well Casing	_____	_____	_____
634	644	CLAY	Well Cemented	_____	_____	_____
644	664	CLAY & SAND / GRAVEL	Gravel	_____	_____	_____
664	686	CLAY	Gravel Chute	_____	_____	_____
686	700	CLAY & GRAVEL	Draw Down Line	_____	_____	_____
700	715	CLAY	Surface Casing	_____	_____	_____
715	731	CLAY & SAND	Surface Cemented	_____	_____	_____
731	770	CLAY & GRAVEL	WATER SAMPLES			
770	790	CLAY	Sample No. 1	From	To	
790	800	CLAY & SAND	No. 2	_____	_____	
800	808	CLAY	No. 3	_____	_____	
			No. 4	_____	_____	
			No. 5	_____	_____	
			STATIC LEVEL			
			Feet from Surface	_____		
			WELL LOG			
			Diameter	Depth		
			Test Hole	_____	_____	
			Well Hole	_____	_____	
			PUMPING TEST			
			Yield	_____ GPM with	_____ Feet Drawn Down	
			REMARKS: _____			

DRAWDOWN DATA

Clock Time	t	t'	t/t'	Measured Drawdown (BTC)	Q (gpm)	Drawdown (ft)	Q/ IS	Remarks
18:00	675			146.7		60.0		1,248,539E Obtained Original DD
21:00	855			146.7		60.0		
24:00	1035			146.7		60.0		
05:30	1365			146.7		60.0	Pump Off	1,638,000 (This reading given by phone from Cole.) 1000 gal=0.9 ML of Sand Turbidity=19 Color=30

M-Scope Inoperative-No Recovery Data

CHAMIZAL WELL #4

RECOVERY DATA

Clock (PM) Time	t	t'	t/t'	Measured Drawdown	Residual Drawdown	Recovery (S-S') ft.	Remarks
15:07	502	0		146.7			Pump Off
15:08	503	1	503	97.2	10.5	49.5	
15:09	504	2	252	96.8	10.1	49.9	
15:10	505	3	168	96.5	9.8	50.2	
15:11	506	4	126	96.2	9.5	50.5	
15:12	507	5	101	95.8	9.1	50.9	
15:13	508	6	84.7	95.3	8.6	51.4	
15:14	509	7	72.7	95.1	8.4	51.6	
15:15	510	8	63.8	94.9	8.2	51.8	
15:16	511	9	56.8	94.7	8.0	52.0	
15:17	512	10	51.2	94.5	7.8	52.2	
15:18	513	11	46.6	94.3	7.6	52.4	
15:19	514	12	42.8	94.1	7.4	52.6	
15:20	515	13	39.6	93.9	7.2	52.8	
15:25	520	18	28.9	93.4	6.7	53.3	
15:30	525	23	22.8	92.7	6.0	54.0	
15:35	530	28	18.9	92.3	5.6	54.4	
15:40	535	33	16.2	92.1	5.4	54.6	
15:45	540	38	14.2	92.1	5.4	54.6	
16:00	555	53	10.5	92.1	5.4	54.6	Pump On

Note: Residual drawdown is computed from SWL-86.7 BTC.

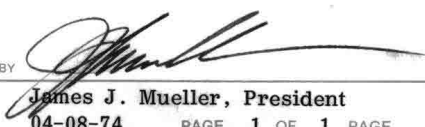
CUSTOMER National Park Service
 ATTENTION Gary Moore
 ADDRESS P. O. Box 728
 CITY Santa Fe, New Mexico 87501
 INVOICE NO. 404010

TABLE 6

REPORT OF ANALYSIS

Chamizal NM, Well #4, Depth Sampled 714-735 Ft.

SAMPLES RECEIVED	03-27-74	CUSTOMER ORDER NUMBER
TYPE OF ANALYSIS Water Quality Analysis - Date Collected: 03-27-74 - 1 Sample - #1		
<u>Analysis</u>	<u>mg/l</u>	
Alkalinity Total (as CaCO_3)	0.1	
(Bicarbonate(as CaCO_3)=Alk, Total-Alk, "P")	19.5	
Calcium, Ca	30.8	
Chloride, Cl	108.1	
Fluoride, F	0.7	
Hardness, EDTA (as CaCO_3)	155.0	
Iron, Fe	0.26	
Magnesium, Mg	13.3	
Manganese, Mn	0.04	
Nitrogen, Nitrate (as N)	1.1	
pH	7.92 pH unit	
Phosphorus, Total (as P)	0.90	
Potassium, K	3.40	
Silica, SiO_2	20.0	
Sodium, Na	96.7	
Solids, Dissolved	676	
Sulfate, SO_4	124	
Color	3 color units	

APPROVED BY 
 James J. Mueller, President
 04-08-74 PAGE 1 OF 1 PAGE



Controls for Environmental Pollution, Inc.

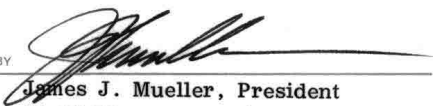
1925 Rosina • P. O. Box 5351 • Santa Fe, New Mexico 87501 • Telephone 505/982-9841

CUSTOMER National Park Service
 ATTENTION Gary Moore
 ADDRESS P. O. Box 728
 CITY Santa Fe, New Mexico 87501
 INVOICE NO. 404010

TABLE 7

REPORT OF ANALYSIS

Chamizal NM, Well #4, Depth Sampled 483-504 Ft.

SAMPLES RECEIVED	03-27-74	CUSTOMER ORDER NUMBER
TYPE OF ANALYSIS Water Quality Analysis - Date Collected: 03-27-74 - 1 Sample - #2		
<u>Analysis</u>	<u>mg/l</u>	
Alkalinity Total (as CaCO_3)	0.1	
(Bicarbonate(as CaCO_3)=Alk, Total-Alk, "P")	13.8	
Calcium, Ca	35.9	
Chloride, Cl	130.3	
Fluoride, F	0.6	
Hardness, EDTA (as CaCO_3)	198.0	
Iron, Fe	0.10	
Magnesium, Mg	17.7	
Manganese, Mn	0.06	
Nitrogen, Nitrate (as N)	0.6	
pH	7.79 pH unit	
Phosphorus, Total (as P)	0.69	
Potassium, K	5.60	
Silica, SiO_2	21.0	
Sodium, Na	87.0	
Solids, Dissolved	630	
Sulfate, SO_4	107	
Color	2 color units	
APPROVED BY  James J. Mueller, President 04-08-74 PAGE 1 OF 1 PAGE		



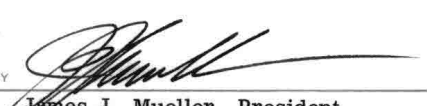
Controls for Environmental Pollution, Inc.

1925 Rosina • P. O. Box 5351 • Santa Fe, New Mexico 87501 • Telephone 505/982-9841

CUSTOMER National Park Service
 ATTENTION Gary Moore
 ADDRESS P. O. Box 728
 CITY Santa Fe, New Mexico 87501
 INVOICE NO. 404010
 Chamizal NM, Well #4, Depth Sampled 441-461 Ft.

TABLE 8

REPORT OF ANALYSIS

SAMPLES RECEIVED	03-27-74	CUSTOMER ORDER NUMBER
TYPE OF ANALYSIS Water Quality Analysis - Date Collected: 03-27-74 - 1 Sample - #3		
<u>Analysis</u>	<u>mg/l</u>	
Alkalinity Total (as CaCO_3)	0.1	
(Bicarbonate(as CaCO_3)=Alk, Total-Alk, "P")	13.1	
Calcium, Ca	32.3	
Chloride, Cl	141.9	
Fluoride, F	0.6	
Hardness, EDTA (as CaCO_3)	178.2	
Iron, Fe	0.07	
Magnesium, Mg	15.0	
Manganese, Mn	0.05	
Nitrogen, Nitrate (as N)	1.5	
pH	7.88 pH unit	
Phosphorus, Total (as P)	0.74	
Potassium, K	3.40	
Silica, SiO_2	21.0	
Sodium, Na	84.5	
Solids, Dissolved	586	
Sulfate, SO_4	86	
Color	2 color units	
APPROVED BY  James J. Mueller, President 04-08-74 PAGE 1 OF 1 PAGE		



Controls for Environmental Pollution, Inc.

1925 Rosina • P. O. Box 5351 • Santa Fe, New Mexico 87501 • Telephone 505/982-9841

CUSTOMER National Park Service
 ATTENTION Gary Moore
 ADDRESS P. O. Box 728
 CITY Santa Fe, New Mexico 87501
 INVOICE NO. 404010
 Chamizal NM, Well #4, Depth Sampled 230-251 Ft.

TABLE 9

REPORT OF ANALYSIS

SAMPLES RECEIVED 03-27-74

CUSTOMER ORDER NUMBER

TYPE OF ANALYSIS Water Quality Analysis - Date Collected: 03-27-74 - 1 Sample - #4

<u>Analysis</u>	<u>mg/l</u>
Alkalinity Total (as CaCO_3)	0.1
(Bicarbonate(as CaCO_3)=Alk, Total-Alk, "P")	15.8
Calcium, Ca	97.0
Chloride, Cl	244.1
Fluoride, F	0.6
Hardness, EDTA (as CaCO_3)	388.8
Iron, Fe	0.05
Magnesium, Mg	32.9
Manganese, Mn	0.11
Nitrogen, Nitrate (as N)	1.8
pH	7.80 pH unit
Phosphorus, Total (as P)	0.83
Potassium, K	15.7
Silica, SiO_2	145
Sodium, Na	98.2
Solids, Dissolved	1078
Sulfate, SO_4	196
Color	11 color units

APPROVED BY

James J. Mueller, President

04-08-74

PAGE 1 OF 1' PAGE



Controls for Environmental Pollution, Inc.

1925 Rosina • P. O. Box 5351 • Santa Fe, New Mexico 87501 • Telephone 505/982-9841

CHAMIZAL NATIONAL MEMORIAL
620 Southwest National Bank Building
300 East Main Drive
El Paso, Texas 79901

April 16, 1975

Mr. Donald E. White
Water Resources Division
U.S. Geological Survey
P.O. Box 4198
El Paso, Texas 79914

Dear Mr. White:

We are pleased to give you our approval to drill and perform the necessary recurring tests on a well on land of the Chamizal National Memorial under terms of your letter of April 10 and the agreement you enclosed. I have signed the agreement this date and returned to you, enclosed. Please furnish us with a copy upon execution. We left the date in the opening paragraph for you to fill in.

We believe it will be to mutual advantage if the casing were cut below ground level and a water meter box flush with the surface is provided. We suggest this to preclude acts of vandalism and, also, because we have not finish graded the SW corner of the Memorial. At present, a large amount of borrow soil is stock piled in the vicinity and eventually heavy equipment will need to operate around your well site. This may mean that next fall sometime, we may need to extend the casing upward somewhat to meet the final grade. Other than that we see no operational problem.

Our regional hydrologist has asked us to confirm with you his privilege to measure the well on occasion of his visits here to correlate the levels in our new well. We advised him we thought you would be agreeable.

When you are ready to start drilling activities on the Memorial please contact Robert Hockman, our Facility Manager. Bob will be happy to coordinate his projects with you and to provide any assistance he can.

Sincerely yours,

Franklin G. Smith
Superintendent

Enclosure

cc: Regional Director, SWRO

RECEIVED			
NPS SOUTHWEST REGIONAL OFFICE			
APR 23 1975			
	Approved	Initials	Date
D			
DD			
A			
AM			
PS			
PA			
OE			
EC			
2	MP		
Files			

L54
Cham

9-1483 (Rev.)
Jan. 1970

AGREEMENT FOR INSTALLATION, MAINTENANCE AND USE
OF A TEST HOLE AND/OR OBSERVATION WELL ON PRIVATE
OR Government PROPERTY

THIS AGREEMENT is entered into this _____ day of _____, 19____, by and between _____, hereinafter called "Licensor", and the United States of America, by and through the Geological Survey, U.S. Department of the Interior, hereinafter called "Licensee", pursuant to the Act of December 24, 1942, as amended (43 U.S.C. sec. 36 b).

WITNESSETH:

1. Licensor, for and in consideration of the faithful performance by Licensee of all covenants and conditions herein contained and payment of the amount hereinafter provided, hereby consents and agrees to the excavation, installation, maintenance, and exclusive use of (describe physical characteristics of hole and/or well, maintenance facilities, and purposes of excavation, use and maintenance) observation well for sole purpose of collecting water-

level data. Drilled to 150 ft depth and cased with 4 inch plastic casing and screen

hereinafter collectively referred to as "Structure," by the Licensee upon and over the property of the Licensor as described in Paragraph 2 hereof, and the Licensor grants the right of ingress to and egress from the said Structure and property described herein for the purpose stated herein.

This test hole is an opening which extends into the earth and is produced by drilling or augering methods.

This observation well is a hole which extends into the earth and is produced by drilling or augering, which may or may not be cased or screened, and exists solely for the purpose of obtaining geologic and hydrologic information.

2. The said Structure shall be located on the property of Licensor as shown on attached drawing and further described as follows: (site location) approximately 100 ft from southwest corner of Chamizal
National Park, and at least 50 ft from existing Park well No. 4

3. Excavation and/or installation of said structure shall begin within 60 days or a mutually agreeable time after the effective date of this agreement. The said Structure and appurtenances thereof shall be excavated, installed and maintained in a good, safe, diligent and workmanlike manner.

4. The said Structure and appurtenances and all equipment and tools for the maintenance and use thereof placed in or upon said described property shall remain the property of the Licensee and shall be removed, filled and/or plugged, etc., by the Licensee at its own cost and expense within a reasonable time after the expiration of this agreement or any renewal thereof. Upon removal, filling and/or plugging, etc. of said Structure and appurtenances the Licensee shall restore said described property to as nearly as possible the same state and condition existing prior to the excavation, and/or installation of said Structure and its appurtenances.

5. The Licensee agrees to cooperate, to the extent allowed by law, in the submittal of all claims for alleged loss, injuries, or damages to persons or property arising from the acts of Licensee's employees, acting within the scope of their employment, in the excavation, installation, use, maintenance, and/or removal of said Structure, appurtenances, equipment and tools pursuant to the Federal Tort Claims Act (28 U.S.C., 2671 et seq.).

6. As consideration for the rights and privileges granted herein, the Licensee shall pay to the Licensor the sum of \$ -0- upon presentation of bill therefor, subject to the availability of appropriations by the Congress.

(2)

7. This agreement shall become effective on the day and year first above written, and shall continue in full force and effect until terminated by Licensee at any time on 30 days written notice.

8. No Member of or Delegate to Congress or Resident Commissioner after his election or appointment, either before or after he has qualified and during his continuance in office, and no officer, agent, or employee of the Government, shall be admitted to any share of this agreement, or to any benefit arising therefrom, but this provision shall not be constructed to extend to this agreement if made with a corporation for its general benefit.

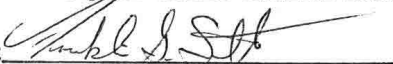
9. The Licensor warrants that he has not employed any person to solicit or secure this contract upon any agreement for a commission, percentage, brokerage, or contingent fee. Breach of this warranty shall give the Licensee the right to terminate the agreement, or, in its discretion, to deduct from the agreement amount or consideration the amount of such commission, percentage, brokerage, or contingent fees. This warranty shall not apply to commissions payable by Licensor upon agreements secured or made through bona fide established commercial or selling agencies maintained by the Licensor for the purpose of securing business.

10. This agreement shall inure to the benefit of and be binding upon the successors, assigns, and transferees of the parties hereto, including successors of the Licensee in control of the project or the portion thereof affected by this agreement.

IN WITNESS WHEREOF, the parties have caused these presents to be executed the day and year first above written.

LICENSOR: Mr. Frank Smith
Superintendent Chamizal National Park

NAME



ADDRESS 620 Southwest National Bank Bldg.

El Paso, Texas 79901

LICENSEE:

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY:

By _____

Title _____

APPROVED:

By _____

Administrative Officer,
Water Resources Division

RECEIVED
NATIONAL PARK SERVICE
BARTON SPRING OFFICE
APR 17 8 29 AM '75

D5039-MM

APR 15 1975

Memorandum

To: Superintendent, Chamisal
From: Hydraulic Engineer, Southwest Region
Subject: Specifications for Replacement Pump, Well #4

This memorandum confirms a telephone conversation made this date to Facility Manager Bob Hockman of your staff.

The pump must meet the following operating conditions:

- | | |
|----------------------------------|---|
| 1. Inner diameter of well casing | 12" black steel (0.375") |
| 2. Well depth | 12" to 535 ft.; 427-530 ft.
millslot (2-3/4"x0.1") |
| 3. Static water level | 87 ft. below top of casing |
| 4. Drawdown at (500 gpm) | 50 ft. |
| 5. Pumping level | 137 ft. below top of casing |
| 6. Discharge pressure (100 psi) | 231 ft. |
| 7. Total pumping head | 368 ft. |
| 8. Pump capacity | 450 gpm. |
| 9. Quality of water | Non-corrosive.
Sand 0.9 ml/1000 gallons
effective size 0.13 mm
mean particle size 0.30 mm
uniformity coefficient 2.46 |
| 10. Current available | 230/480 volts, 3 phase, 60 cycles. |

In accordance with instructions received from Barney Scharn, at least 3 quotes must be obtained on Standard Form 18 (March 1971).

Please keep this office advised on your proposed action and notify us if we can be of any further assistance.

WATER IS PRECIOUS - USE IT - DON'T ABUSE IT

(SIGNED)
Garland Moore

~~Chief of Natural Resources, WASO (Attention: Vic Berte')~~
Chief of Maintenance, WASO

Chief, Division of Cont. & Property Mgmt.
Programs, SWP, Attn: Jim French
PSN-SWR

cc: Chief of Maintenance, NRM-WASO, Attn: Vic Berte, w/c encl.
Dir., DSC, Attn: Bob Budz
Assoc. Reg. Dir., M-SWR
Assoc. Reg. Dir., PS-SWR

GMoore:ba 4/10/74

L54

Memorandum

To: Superintendent, Chamizal National Memorial
From: Hydraulic Engineer, Water Resources, PSN-SWR
Subject: Irrigation Well No. 4 Chemical Analysis

In reviewing the enclosed results of chemical analysis, the following summary is presented.

	Well No. 4				Well No. 3
Depth Sampled					
Parameter mg/l	714-735	483-504	441-461	230-251	100-160
Total Dissolved Solids	676	630	586	1078	2044
Calcium	30.8	35.9	32.3	97.0	181.5
Magnesium	13.3	17.7	15.0	32.9	63.5
Sodium	96.7	87.0	84.5	98.2	19.6 ^{1/}
SAR (graph estimate)	3.7	2.9	3.6	2.22 ^{1/}	0.32 ^{1/}
DA Classification	C3-S1	C3-S1	C3-S1	C3-S1	C4-S1

1/ Analysis of chloride concentration is questionable.

2/ New Mexico State University, Agricultural Experiment Station, states that with high-carbonate waters SAR is probably unsatisfactory as an indicator for irrigation water.

Based on the above the original design of the well to be drilled, outlined in my memorandum, same subject, is satisfactory and will be completed accordingly.

A quick check of the changes in water quality in Well No. 3, since its construction in 1970, shows further degradation. Total dissolved solids increased from 1454 mg/l (1970) to 2044 mg/l (1974). Cause of degradation is probably the result of concrete lining of the Rio Grande River which has restricted recharge to the shallow groundwater table.

Please file the enclosed in Water Right Docket #1, Chamizal NM.

BOURBON AND WATER DO MIX

/s/ Garland Moore

Garland Moore

Enclosures

Filed in Docket #1

Southwest Region
P. O. Box 728
Santa Fe, New Mexico 87501

APR 10 1974

#20 4/15/74
Sketch:
Please file
APR 12 8:00 AM '74
enclosed analysis
in Chamizal
W.R. Docket #1
with notation that
they were received
with BW Reg memo
dated 4/10/74.
File memo in
Chamizal Water
Right Reg. Cons. file.

Division of Contracting and Property Management, April 3, 1974
Southwest Region

Hydraulic Engineer, Water Resources, PSN-SWR

Irrigation Well, Well No. 4, Chamizal

As a follow-up to our memorandum dated February 20, 1974, the test well has been completed.

Cole Drilling Company began drilling operations on March 20, 1974. The 800 ft. - 7 7/8-inch diameter test hole was completed on March 22. Four water samples were collected from water bearing sand formations determined by electric and driller's logs.

<u>Water Sample</u> <u>Depth (BKL) Ft.</u>	<u>Conductance</u> <u>(Micromhos)</u>	<u>Temperature (°F)</u>
100-160	2500	66
230-251	1400	70
441-461	980	68
483-504	815	66
714-735	826	58

Based on the above analysis, the best waters with an estimated total dissolved solids varies from 495 to 535 mg/l. This value is in the neighborhood of drinking water quality. All samples are being analyzed by Controls for Environmental Pollutions, Inc. in Santa Fe. Results are expected in by this Friday.

Preliminary design of production well is now envisioned to be 510 feet deep. Casing will be 12" (I.D.) with the lower portion mill slotted 1/10" wide x 2½" long, 68 slots per lineal foot (400 to 510 feet). The well is to be gravel packed from 390 to 510 feet and grouted from surface to 390 feet.

Sieve analysis of gravel pack material shows only five percent passing the 1/10" slot width.

Cost to date:

Move in/out costs	50%	\$ 375.00
Drill 800' test hole	\$4.90 l.f.	3,920.00
Collect 4 Water Samples	\$300.00 ea.	<u>1,200.00</u>
Total to Date		\$5,495.00

Shut " in
Please file in
Chemical
Water Right
Bench

Driller will resume operations about the end of April. More to come on water quality, pump selection, and hookup to existing irrigation system.

/s/ Garland Moore

Garland Moore

cc:
✓ Chief of Maintenance, MRM-WASO
Attn: Vic Berte
Dir., DSC, Attn: Bob Budz
Assoc. Reg. Dir., M-SWR
Assoc. Reg. Dir., Professional Services
Supt., Chamizal, Attn: Henry Apodaca et al.
Programs, SWR, Attn: Jim French
PSN-SWR

GMoore:ba 4/3/74

RECEIVED
NATIONAL PARK SERVICE
WASH. D.C. 20540

JAN 7 7 53 PM '74

mm
Southwest Region
P. O. Box 728
Santa Fe, New Mexico 87501

LS4

JAN 4 1974

*Shills: file in
Please Chamizal Water
Rights General,
Dir*

Mr. Walter R. Meyer
U. S. Geological Survey
El Paso, Texas 79900

Dear Mr. Meyer:

Many thanks for the report. It sure came in handy. In looking over the record for the well at Chamizal NM, I noticed that apparently your office has not been informed that a replacement well has been drilled. V-189 has been backfilled and abandoned. The new well was drilled by Layne Texas in 1970 to the same specifications and design as V-189. A copy of the chemical analysis is enclosed.

Thanks again.

Sincerely yours,

(SIGNED)

Garland Moore
Hydraulic Engineer

Enclosure

cc:
Chief of Maintenance, MRM-WASO
Supt., Chamizal NM
Associate Regional Director, M-SWR
PSN-SWR

GMoore:ba 1/3/74

ARTA CHANTZAL NM			
SOURCE WELL #1	at 41 FT.	at 95 FT.	Abandoned after drilling in 1970
DATE	23-6-67	23-6-67	
Silica (SiO ₂)	50	40	
Iron (Fe)	0.15	0.10	
Manganese (Mn)			
Calcium (Ca)	284	186	
Magnesium (Mg)	48	99	
Sodium (Na)	320	200	
Potassium (K)			
Bicarbonate (HCO ₃)	273	205	
Carbonate (CO ₃)	0	0	
Sulfate (SO ₄)	643	417	
Chloride (Cl)	550	340	
Fluoride (F)			
Nitrate (NO ₃)			
Dissolved Solids:			
Calculated			
Residue on evaporation at 180°C	2005	1465	
Hardness as Ca CO ₃	627	580	
Non-carbonate hardness			
Percent Sodium % Na			
Sodium Adsorption Ratio			
Specific Conductance			
Unhos @ 25°C			
Th	7.6	7.6	
Coron			



United States Department of the Interior

NATIONAL PARK SERVICE
WASHINGTON, D.C. 20240

IN REPLY REFER TO:

L54-MW

May 27, 1970

Memorandum

To: Director, Western Service Center
Attention: Gerard S. Witucki

From: Chief, Division of Water Resources

Subject: Abandoned well at Chamizal

Thank you for sending us a copy of the May 5 daily summary of "Construction Supervision and Maintenance," with the information concerning the new Chamizal well. Please collect the necessary data, and prepare a water right docket with copies for this office and the Superintendent.

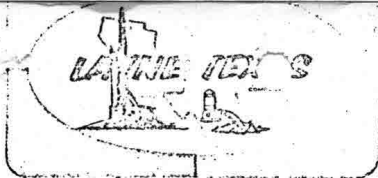
We do not know the basis for the decision to fill in the abandoned well, but before such a decision, consideration should be given to use as an observation well, for water-level records or analyses of possible changes in water quality. Generally, a well can be protected from vandalism and prevented from becoming a hazard to visitors or an esthetic eyesore at little expense, especially as compared to the cost of drilling the well in the first place. Further, the well is available as a supply well if needed. In the future, consideration should be given to conversion to an observation well before any decision is made to fill a well.


Manuel Morris

cc:
Director, Southwest Region (2)

WESTERN SERVICE CENTER
MAY 28 1970
DIRECTOR, WSC
CHIEF, ED&P
CHIEF, ADM. SVC.
CHIEF, CS&M
CHIEF, LAND & WATER RIGHTS
CHIEF, HIST. & HIST. ARCHITEC.
CHIEF, PRGMS. MANAGEMENT

XAS
ND
HE
EST



5440 DONIPHAN AVE O. BOX 12036
EL PASO, TEXAS 79912
A/C 915 584-1114

WATER SUPPLY & DRILLING
SERVICE & MAINTENANCE

April 20, 1970

T. N. O'Kelley Company
P.O. Box 10078
El Paso, Texas 79991

Re: Completion Report
Chamizal National Park Well No. 23

Gentlemen:

Enclosed are copies of the water analysis on the re-
ferred job.

Please include them in the completion reports we sent
you last week.

Very truly yours,

R. C. Semple, Jr.
R. C. Semple, Jr.
West Texas District Manager

RCSjr
w

encl:

EL PASO, TEXAS

AND SEWER SYSTEM

WATER ANALYSIS DATA SHEET

TABLE 2

T. N. O'Kelley

Plant Sample

Well Number

2

Location

Chemizal National Park

SAMPLE NUMBER	1	2	3	4	5	6
DEPTH	110-150'					
SAMPLE COLLECTED	4/1/70					
RECEIVED AT LABORATORY	4/1/70					
ANALYSIS COMPLETED	4/7/70					
pH	7.53					
EC $\times 10^3 @ 25^\circ$						
TASTE AND ODOR						
SODIUM PER CENT OF TOTAL CATIONS	40%					

PARTS PER MILLION

TOTAL DISSOLVED SOLIDS	1454					
PHENOL ALKALINITY AS CaCO_3	0					
TOTAL ALKALINITY AS CaCO_3	202					
TOTAL HARDNESS AS CaCO_3	796					
CHLORIDES	315					
SULFATES	534					
CALCIUM	226					
MAGNESIUM	56					
TOTAL IRON	.02					
FLUORIDES	.37					
SODIUM & POTASSIUM (CALC. AS NA)	187					
SILICA, SiO_2	15					

THEORETICAL COMBINATIONS

Phosphate as PO_4	0.04					
Manganese	0.0					
Nitrate as NO_3	0.0					
Nitrate as NO_2	0.0					

Remarks

C. Gracie

Analyst

FORM 1005-0850

T. M. O'KELLY
CHAMIZAL PARK
EL PASO, TEXAS
WELL NO. 23



P. O. BOX 9469 • 5402 LAWNDAL • HOUSTON, TEXAS 77011 • 713-923-7603

April 17, 1970

T. M. O'Kelly Company
P. O. Box 10078
El Paso, Texas 79991

COMPLETION DATA - CHAMAZIL PARK - WATER WELL NO. *13*

Gentlemen:

We are pleased to enclose four copies of the completion data for the subject water well drilled in Chamazil Park. Each folder contains pertinent information on the well log material schedule, production test and pump record.

If we can supply additional information, please let us know.

Sincerely,

A handwritten signature in dark ink, appearing to read "Wally Claypool", is written over the typed name.

Wally Claypool

LAYNE TEXAS COMPANY

WC/et.

cc: Mr. Dick Semple - El Paso office

Encls.

T. N. O'KELLEY COMPANY

P. O. Box 10078 • Phone 778-5441

El Paso, Texas 79991

WSC

Date: May 7 1970

To: NATIONAL PARK SERVICE

RE: CHAMIZAL NATIONAL MEMORIAL

Gentlemen:

☐ We enclose 4 copies of submittal literature and/or data on:

ITEM

SPECIFICATION NO.

WATER ANALYSIS ON WELL AT CHAMIZAL
NATIONAL MEMORIAL

as manufactured by _____

and which we propose to furnish and install on this project.

☐ These have been rejected by the Architects or Engineers for the reasons indicated.

☐ Resubmittal with indicated correction or information is required immediately. Please furnish _____ copies for such purpose.

☐ These have been approved, as submitted, by the Architects or Engineers. Please proceed to furnish to us as indicated by our Order No. _____, Your No. _____. Please acknowledge, indicating shipping date and information.

☐ Other: _____

Yours very truly,

T. N. O'KELLEY COMPANY

By: Jack Moore

LAYNE TEXAS COMPANY

HOUSTON - DALLAS

WATER WELL TEST

 REPORT NO. 8347
 S. O. 2325-69
 PAGE 1 of 3
 FILE NO. 3429
 DATE 4/9/70

CUSTOMER LOCATION TEST FOR T. N. O'Kelly LOCATION OF WELL Chamizal Park SURVEY FIELD COUNTY El Paso STATE Texas DESCRIPTION OF LAND MARKS 300' N.W. of Cordova Bridge				WELL DATA NAME WELL WELL NO. 2 ELEVATION DATUM WELL SIZE 20" x 12-3/4" x 30" UR TOTAL DEPTH 160' TOP SCREEN 111-151' GRAVEL WELL Yes STRAIGHT WELL TYPE SCREEN S.S. Shutters #7 TEMPERATURE OF WATER WATER CONDITION Clear-no sand				
WATER MEASURING DEVICE ORIFICE SIZE 6"x5" LENGTH 4' OTHER				TEST PUMP DATA DEPTH SETTING TOP OF BOWL LENGTH AIR LINE 4' SIZE TYPE BOWL NO. STAGES LENGTH BOWL SUCTION LT.				
SAND CONTENT 0 OZ. PER 100 GAL ACTIVE STATIC HEAD AFTER PUMP STOPPED 1/5 MIN. 40'5" FT. 20 MIN. 36'3" FT. 10 MIN. 38'2" FT. 25 MIN. 35'7" FT. 15 MIN. 37'1" FT. 30 MIN. 34'11" FT. S.L. before start 30'3"				WATER SAMPLE TAKEN NO. SAMPLES BACTERIOLOGICAL SAMPLE TAKEN DRAWDOWN SPECIFIC CAPACITY				
DATE HOUR	AIR LINE GAGE	PUMPING LEVEL	DISCH. PRESS	HEAD ON ORIFICE INCHES	GPM	RPM	OPERATOR	REMARKS
3/30/70	- Started	test	at 8:00	A.M.				Old Well #1 - 34' A.G.
8:02 1/2		74'6"		22.5	578			
8:04		74'11"		22.5	578			
8:06		76'6"		22.5	578			
8:07		76'11"		22.5	578			
8:08		77'6"		22.5	578			
8:09		78'5"		22.5	578			
8:10		78'7"		22.5	578			Clear-T. sand
8:15		80'9"		22.5	578			Pump RPM 2400
8:20		81'5"		22.5	578			
8:25		81'8"		22-3/4	581			
8:30		82'1"		23	584			Well #1 - 44' A.G.
8:45		82'4"		22.5	578			
9:00		82'9"		22.5	578			Clear-no sand
9:15		82'10"		22.5	578			
9:30		83'		22.5	578			Well #1 - 47' A.G.
9:45		83'4"		22.5	578			Pump RPM 2400
10:00		83'5"		22.5	578			
10:30		83'9"		22.5	578			Well #1 - 48' A.G.
11:00		84'2"		22.5	578			
11:30		84'6"		22-3/4	581			Clear-no sand.
12:00 N		84'9"		23	584			
1:00 PM		85'		23	584			Slowed motor, Well #1-49' A.G.
2:00		84'8"		22-1/4	575			Pump RPM 2395
3:00		84'9"		22-1/4	575			
4:00		84'11"		22-1/4	575			Well #1 - 49' A.G.

OBSERVERS

FOR OWNER

Victor Matus

FOR LAYNE TEXAS CO.

Test of Water Well No. 2 for
T. N. O'Kelly
Chamizal Park
El Paso County, Texas

Report No. 8347
S.O. 2325-69
Page 2 of 3
File 3429
Date 4/9/70

Date Hour	Pumping Level	Head on Orifice Inches	GPM	Remarks
3/30/70				
5:00 PM	85'	22.5	578	
6:00	85'1"	22.5	578	Well #1 - 49' A.G.
7:00	85'2"	22.5	578	Clear-no sand
8:00	85'2"	22.5	578	Well #1 - 49' A.G.
9:00	85'2"	22.5	578	
10:00	85'2"	22.5	578	
11:00	85'2"	22.5	578	Well #1 - 49' A.G.
12:00 M	85'2"	22.5	578	
3/31/70				
1:00 AM	85'2"	22.5	578	
2:00	85'2"	22.5	578	Well #1 - 49' A.G.
3:00	85'2"	22.5	578	
4:00	85'2"	22.5	578	
5:00	85'2"	22-1/4	575	
6:00	85'2"	22-1/4	575	Well #1 - 49' A.G.
7:00	85'3"	22-1/4	575	Clear - no sand
8:00	85'2"	22	572	
9:00	85'1"	21-3/4	569	
10:00	85'1"	22	572	Well #1 - 49' A.G.
11:00	85'2"	22.5	578	Water sample
12:00 N	85'3"	22.5	578	
1:00 PM	85'3"	22.5	578	Well #1 - 49' A.G.
2:00	85'4"	22.5	578	
3:00	85'4"	22-1/4	575	Clear-no sand
4:00	85'5"	22.5	578	Well #1 - 49' A.G.
5:00	85'5"	22.5	578	
6:00	85'5"	22.5	578	
7:00	85'5"	22.5	578	Well #1 - 49' A.G.
8:00	85'4"	22.5	578	
9:00	85'1"	22	572	
10:00	85'1"	21-3/4	569	Well #1 - 49' A.G.
11:00	85'1"	21-3/4	569	
12:00 M	85'1"	21-3/4	569	
4/1/70				
1:00 AM	85'1"	21-3/4	569	
2:00	85'1"	21-3/4	569	
3:00	85'1"	21-3/4	569	Well #1 - 49' A.G.
4:00	85'1"	21-3/4	569	
5:00	85'1"	21-3/4	569	
6:00	85'1"	22-1/4	575	Well #1 - 49' A.G.
7:00	85'1"	22-1/4	575	Clear - no sand
8:00	85	22	572	Pump off
RECOVERY 4/1/70				
8:01 AM	45'6"			Well #1 - 38' A.G.
8:02	42'11"			Well #1 - 37' A.G.
8:03	42'3"			Well #1 - 36 1/2' A.G.
8:04	41'			Well #1 - 36' A.G.
8:05	40'5"			Well #1 - 36' A.G.
8:06	40'			Well #1 - 35 1/2' A.G.
8:07	39'7"			Well #1 - 35 1/2' A.G.
8:08	39'			Well #1 - 35' A.G.

Test of Water Well No. 2 for
T. N. O'Kelly
Chamizal Park
El Paso County, Texas

Report No. 8347
S.O. 2325-69
Page 3 of 3
File 3429
Date 4/9/70

Date	Water Level	Remarks
Hour		
RECOVERY CONTINUED - 4/1/70		
8:09 AM	38'-9"	Well #1 - 35' A.G.
8:10	38'-2"	Well #1 - 35' A.G.
8:15	37'-1"	Well #1 - 35' A.G.
8:20	36'-3"	Well #1 - 34½' A.G.
8:25	35'-7"	
8:30	34'-11"	
8:45	34'-3"	
9:00	33'-11"	
9:15	33'-8"	
9:30	33'-5"	
9:45	33'-1"	
10:00	32'-11"	
10:30	32'-10"	
11:00	32'-3½"	
11:30	32'-2"	
12:00 N	32'-1-1/2"	
4:20 PM	31'-8"	

Victor Matus, Driller

LAYNE TEXAS COMPANY

THE LAYNE TEXAS COMPANY, LTD.

HOUSTON

-

DALLAS

MATERIAL SETTING

REPORT NO. 8346
 S. O. 2325-70
 PAGE 1 OF 1
 FILE NO. 3429
 DATE 4/3/70

CUSTOMER LOCATION		WELL DATA	
FOR	T. N. O'Kelly	NAME WELL	WELL NO. 2
LOCATION WELL	Chamizal Park	ELEVATION	DATUM
SURVEY	FIELD	TYPE WELL	Gravel-wall
COUNTY	El Paso	SURFACE CASING CEMENTED	Yes NO. SACKS 78
STATE	Texas	SIZE HOLE UNDERREAMED	30" DEPTH 160'
OTHER LAND MARKS	300' N.W. of Cordova Bridge	GRAVEL TYPE	112-113 NO. CU. YDS. 15
		TYPE SCREEN	S.S. Shutter GAGE #7
		DRILLER	V. Matus RIG NO. 6
		OTHER	H. Thompson

DEPTH	LENGTH	SIZE, KIND, WEIGHT MATERIAL	SKETCH
+1'		20" O.D. surface casing 52.73#	
+1'		12-3/4" O.D. blank liner 49.56#	
0		Surface	
101'	100'	20" O.D. surface casing 52.73#	
111'	110'	12-3/4" O.D. blank liner 49.56#	
151'	40'	12-3/4" O.D. S.S. shutter screen #7 ga.	
160'	9'	12-3/4" O.D. blank liner 49.56#	
Total depth 160'			

FORM NO. 28

LAYNE TEXAS COMPANY,

HOUSTON

DALLAS

WELL LOG

REPORT NO. 8345
 S. O. 2325-70
 PAGE 1 of 1
 FILE NO. 3429
 DATE 4/2/70

CUSTOMER LOCATION		WELL DATA	
FOR	T. N. O'Kelly	NAME WELL	WELL NO. 2
LOCATION WELL	Chamizel Park	ELEVATION	DATUM
SURVEY	FIELD	RT C GR	
COUNTY	El Paso	TEST HOLE SIZE	15" TD 160'
STATE	Texas	DATE STARTED DRILLING	3-18-70
OTHER LAND MARKS	300' N.W. of Cordova Bridge	DATE FINISHED DRILLING	3-18-70
		DRILLER	V.E. Matus
		RIG NO.	6
		TYPE MUD	Gel
		NO. SACKS	15
		ELECTRIC LOG	TYPE
		SURVEY	TYPE
		OTHER driller:	H. Thompson

DEPTH STRATA	EACH STRATUM	DESCRIPTION FORMATION	SAMPLES		
			DEPTH	TYPE	NUMBER
0		Surface			
4	4	Top soil			
21	17	Clay & sand streaks			
97	76	Large & small gravel, sand & clay breaks			
113	16	Sand & sandy clay streaks			
138	25	Sand			
145	7	Sand & few clay breaks			
157	12	Sand			
160	3	Clay			
Total depth 160 ft.					

TABLE 1

CHAMIZAL NATIONAL MEMORIAL
WELL NO. 3Date: March 30, 1970 - April 1, 1970
Observer: Layne Texas Company, Victor Matus

<u>Clock Time (Hr.)</u>	<u>Pumping Time (Min.)</u>	<u>Q (gpm)</u>	<u>Depth To Water</u>	<u>Draw Down (Ft.)</u>	<u>Spec. Cap.</u>	<u>Remarks</u>
0800	0	-	30.8	0	-	SWL. Pump on. Well #1 - 34' A.G.*
	2.5	578	74.5	43.7	13.2	
	4		74.9	44.1	13.1	
	6		76.5	45.7	12.6	
	7		76.9	46.1	12.5	
	8		77.5	46.7	12.4	
	9		78.4	47.6	12.1	
	10		78.6	47.8	12.1	Clear T. Sand
	15		80.8	50.0	11.6	Pump RPM 2400
	20	578	81.4	50.6	11.4	
	25	581	81.8	51.0	11.4	
	30	584	82.1	51.3	11.4	Well #1 - 44' A.G.
	45	578	82.3	51.5	11.4	
	60		82.8	52.0	11.1	Clear, no sand
	75		82.9	52.1	11.1	
	90		83.0	52.2	11.1	Well #1 - 47' A.G.
	105		83.3	52.5	11.0	
	120		83.4	52.6	11.0	
	150		83.8	53.0	10.9	Well #1 - 48' A.G.
	180	578	84.2	53.4	10.8	
1130	210	581	84.5	53.7	10.8	Clear, no sand
	240	584	84.8	54.0	10.8	
1300	300	584	85.0	54.2	10.8	Well #1 - 49' A.G.
	360	575	84.7	53.9	10.7	
	420	575	84.8	54.0	10.7	
1600	480	575	84.9	54.1	10.7	Well #1 - 49' A.G.
	540	578	85.0	54.2	10.7	
	600	578	85.1	54.3	10.6	Well #1 - 49' A.G.
	1020	578	85.1	54.3	10.6	Well #1 - 49' A.G.
0600	1380	575	85.1	54.3	10.6	Well #1 - 49' A.G.
1000	1620	572	85.1	54.3	10.6	Well #1 - 49' A.G.
1700	2040	578	85.4	54.6	10.6	Well #1 - 49' A.G.
2400	2460	569	85.1	54.3	10.5	Well #1 - 49' A.G.
0800	2880	572	85.0	54.2	10.6	Well #1 - 49' A.G.

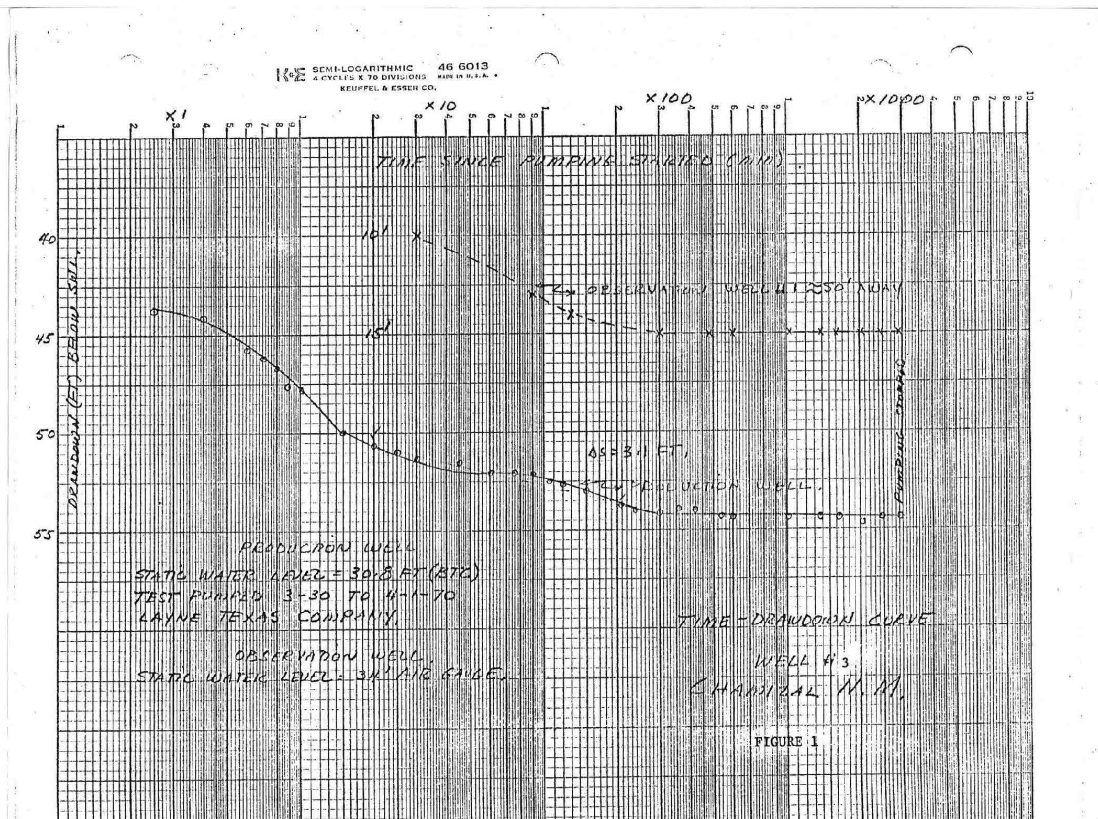
*Air Gauge

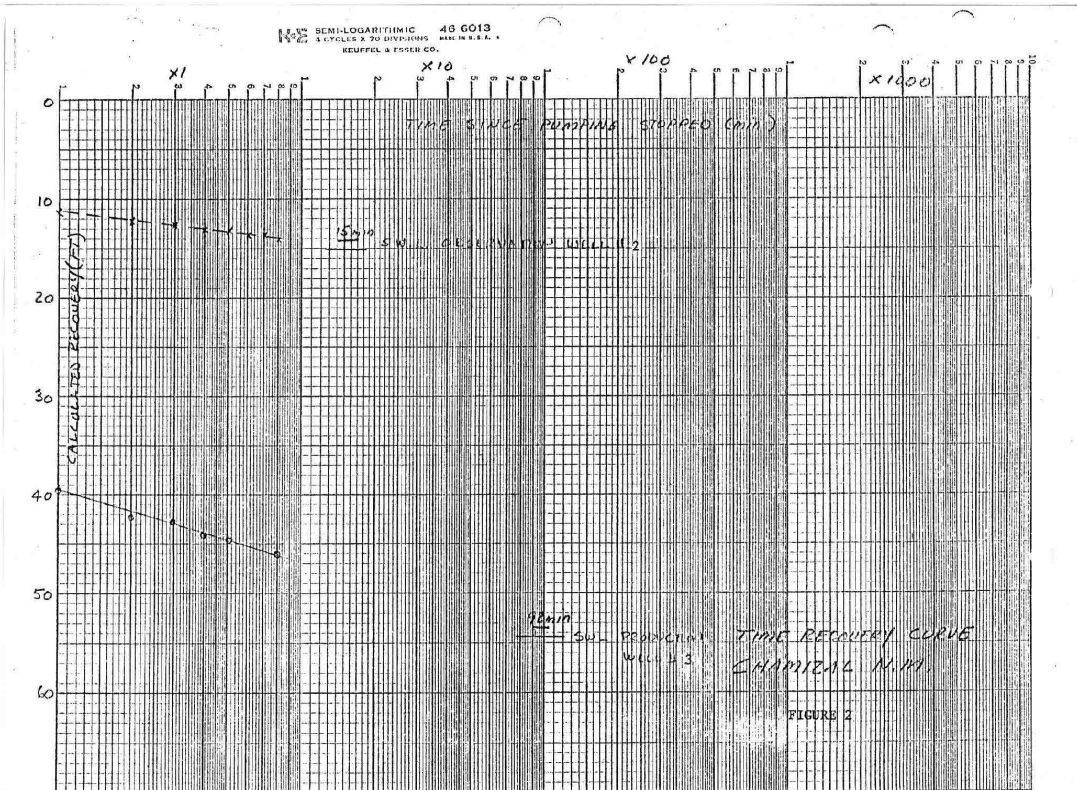
CHAMIZAL NATIONAL MEMORIAL
WELL NO. 3

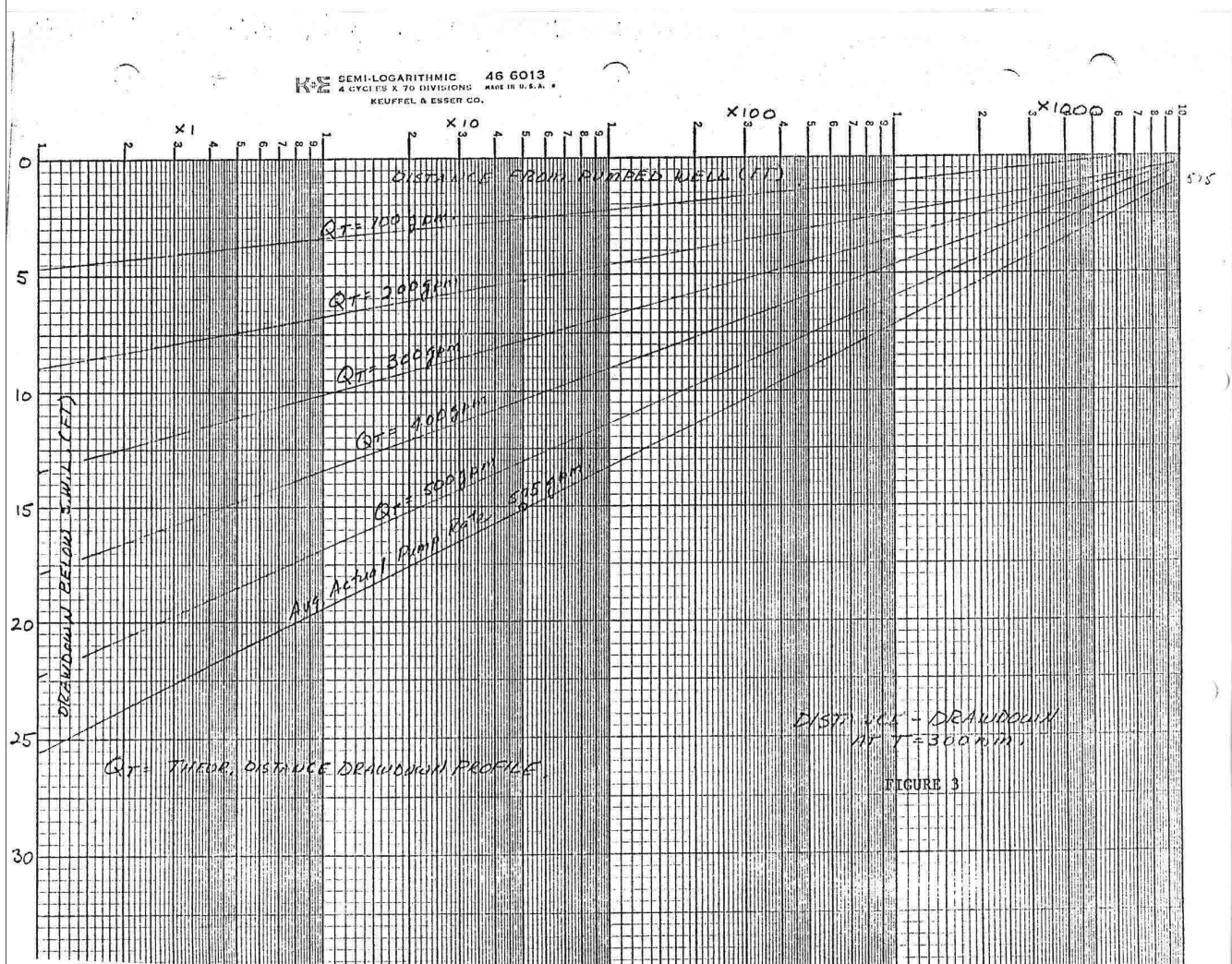
Recovery Data

Date: April 1, 1970

<u>Pumping Time (Min.)</u>	<u>Time Pump Stopped (Min.)</u>	<u>t/ t'</u>	<u>Depth To Water</u>	<u>Recovery (Ft.)</u>	<u>Well #1 A.G.</u>
2880	0	-	85.0	0	49'
2881	1	2881	45.5	39.5	38
2882	2	1441	42.9	42.1	37
2883	3	961	42.3	42.7	36.5
2884	4	721	41.0	44.0	36
2885	5	577	40.4	44.6	36
2886	6	481	40.0	45.0	35.5
2887	7	412	39.6	45.4	35.5
2888	8	361	39.0	46.0	35







Have

Chamizal

El Paso, Texas

Contracting Officer, National Park Service
Western Service Center
450 Golden Gate Avenue, Box 36025
San Francisco, California 94102

Dear Sir:

Adjustment of the amount of compensation under Contract No. 14-10-7-971-
227 and the time required for its performance by reason of Change Order
No. 2 is satisfactory and is hereby accepted.

(Firm) F.W. O'Kelley Co.
(By) John C. Fung
(Title) Project Manager
(Date) Feb 27, 1970

FINDINGS OF FACT

Change Order No. 2, Contract No. 14-10-7-971-227, Chamizal NM

A part of this contract provides for the installation of a water pumping station, including a well pump to be installed in a well completed by another contractor about one year before this contract was awarded.

Subsequent to the installation of the pump and completion of other items, including grading, installation of an irrigation system, and eventual seeding for grass, the well began to produce water containing large amounts of sand which is detrimental to the operation of an irrigation system. Under the terms of the contract, the contractor is required to maintain the grass until it reaches a height of 4".

The well, while adequate in capacity, has caused many difficulties due to the content of sand in the water pumped. The rotary pop up sprinkler heads have been sticking due to the sand, causing erosion in newly planted grass. The jamming of the rotary sprinkler heads has already created a critical situation.

A change order was issued on January 28, 1970 in an effort to correct the sand problem, by attempting to redevelop the existing well. Continued use of the well since then has indicated that the well, while possibly somewhat improved, still produces far more sand than the irrigation system can stand.

Conditions are such at this time that it is imperative that immediate steps be taken to correct the problem or face the loss of the new grass, and a claim from the contractor due to the extra manhours required for its maintenance. The seeding alone represents an investment in excess of \$14,000 in contract payments.

It is now impossible to use the existing well any longer without risk of severe damage to the irrigation system, and a new well is the most promising answer to the problem. Arrangements have been made with the City of El Paso to connect into the city water main on a temporary basis to allow sufficient time for accomplishment of the change order work. Use of city water on a permanent basis for irrigation has been discarded as excessively costly.

The proposed work involves items that can be accomplished by the contractor already on the site at a savings to the Government. It would not be practicable to allow another contractor or an additional contractor work on the same site.

The work proposed can also be accomplished by the contractor already on the site in a considerably shorter time than if advertised as a separate project, and haste is necessary for survival of the new grass.

It is considered to be in the best interests of the Government to have the work accomplished as the change order provides.

SIGNED

Donald S. Marley
Chief, Branch of Contract Administration,
and Contracting Officer

D52(WSC)APC

February 20, 1970

CHANGE ORDER NO. 2

T. N. O'Kelley Company
P. O. Box 10078
El Paso, Texas 79991

Gentlemen:

In accordance with the provisions of Article 57, Changes, of the General Provisions of your Contract No. 14-10-7-971-227 dated June 30, 1969, for Grading, Irrigation and Utilities, Chamizal National Memorial, Texas, you are hereby directed to furnish all necessary labor, materials, supplies and equipment and perform the following additional work:

1. Drill a new water well as follows:

a. General. The work to be done under this item shall consist of the drilling, casing, screening, developing and testing of one water well, as designated under Paragraph C, and all other incidentals to complete the work in accordance with the terms hereof.

b. Kind and Quality of Material. All material used in the well shall be in accordance with the standards of the American Petroleum Institute and the latest specification of the American Society for Testing Materials and the American Welding Society, as they may apply to the several materials used in accordance with this specification. The material shall be new and of the best grade and quality. When two or more articles of the same material or equipment are required, the articles of such kind shall be standard catalog products of a single manufacturer unless authority is obtained from the Contracting Officer to use different materials or equipment.

c. Specific Diameter, Depth and Quantity Conditions. The well to be constructed hereunder shall be located approximately 90 feet southerly from the existing well as directed by the Contracting Officer.

The following diameters, depth and quantities of material shall apply:

- (1) Number of wells - 1.
- (2) Outer or upper casing size diameter (O.D.) 20 in. Wt/ft. 59 lbs.

(3) Screen liner size, upper and lower section (diam. O.D.)
12-3/4 in. Wt/ft. 37 lbs.

(4) Screen liner size (diam. O.D.) 12-3/4 in. Wt/ft. 31 lbs.

(5) Diameter, underreamed hole 30 inches.

(6) Lap of screen liner in outer or upper casing 110 feet.

(7) Screen material (kind) - Armco Iron.
Total length - 40 feet.

(8) Production Guarantee, 450 G.P.M.

d. Well. The well shall be drilled at a location designated by the Contracting Officer, and to obtain a total water supply of a sustained flow of 450 gallons per minute. The hole shall be straight and true within the usual tolerances for wells of this size and depth.

(1) Depth. The finished depth shall be 160 feet.

(2) Casing - Outer or Upper. The well shall be cased with standard weight pipe from the ground surface to the top of the shallowest water-bearing sand to be screened. This upper or outer casing shall be seamless or lapweld pipe, depending on availability, with welded or tight thread and coupled connections. The lower end of this casing string shall be equipped with a suitable steel guide and cementing shoe.

(3) Cementing. As soon as the casing string in the well is set to the proper depth, it shall be cemented in place with a sufficient quantity of Portland cement and additives necessary to completely fill the annulus between the outside of the casing and the well bore from casing shoe back to the surface. This cementing shall be done in accordance with standard practice for cementing oil and water wells.

(4) Underreaming. After the cement has been permitted to set for a period of 24 hours around the casing in the well, the cement plug shall be drilled and that portion of the well between the lower end of the casing and its bottom shall be underreamed to the diameter specified under paragraph c.(5) through the water-bearing sands. The underreaming shall be done by use of the Baker, or equal, hydraulically expanded underreamer and in such manner as will assure the specified diameter throughout that portion of the hole between the lower end of the casing and its bottom, except a minimum five (5) feet of hole into the impervious stratum underlying the lower water-bearing sand, which five feet of hole shall be three (3) inches larger than the internal diameter of the screen liner and shall act as a means of centering the lower end of the screen liner in the underreamed hole.

(5) The well shall be cased with a screen liner from a point ten feet from the bottom of the well to a point 50 feet from the bottom of well. The screen liner shall be new steel pipe of the diameter and weight specified under paragraph c.(7) and set opposite clay or shale strata with sections of Layne screen set opposite water-bearing sands. The minimum length of screen shall be equal to the thickness of all water-bearing sand penetrated in that portion of the well below the bottom of the outer or upper casing, provided, however, that unless additional payment is provided, the Contractor will not be required to set more than 40 lineal feet of screen in the well. 12" casing shall extend from the bottom of the screen to the bottom of the well, and from the top of the screen to the top of the well. The lower end of the 12" pipe shall be set into the pilot hole below the underreamed hole and shall be closed with a back pressure valve and that portion extending through the underreamed section shall be fitted with suitable centering guides to hold it concentric with the underreamed hole.

(6) Gravel Pack. After the screen liner is set in the hole, the annular space between the outside of the screen liner and the underreamed hole shall be completely filled with a specially selected, washed and screened gravel filter. The special gravel used to form the gravel filter around the screen liner shall be conveyed from the hydraulic gravelling machine to a point of deposit in the well. As the annular space on the outside of the screen liner is filled, the gravelling tube shall be gradually raised so as to maintain the bottom of the gravelling tube near the point of deposit at all times. The gravelling procedure shall continue until the gravel pack reaches a point approximately 80 feet above the top of the uppermost screen, or within five feet of the top of lap.

The gravel used by the Contractor to form the filter in the well around the screen liner shall be specially selected, washed and screened and without sharp edges. The gravel must be free of dirt, trash, clay or other foreign substances. Crushed gravel shall not be used.

(7) Development. The well shall be continually washed while the gravel pack is being placed in the annular space on the outside of the screen liner. Immediately upon completion of the gravelling, the well shall be thoroughly developed by means of washing, agitating and pumping until the gravel pack and water sands are stabilized, until the water well is made to produce the maximum quantity of water with the minimum lowering of water level and until it becomes evident that the drilling fluid is removed from the face of the sand and the gravel pack. At such time, a preliminary test with the Contractor's test pump shall be made to determine the operating characteristics of the well.

e. Well Production and Other Guarantees.

(1) Production. The well shall be guaranteed to produce as follows:

450 gallons per minute when operating after development for a period of 48 hours with flow readings and depths to water level taken at each hour in the presence of the Contracting Officer's representative.

The Contractor shall furnish all equipment, materials and labor necessary for the development and production test of the well.

(2) Sand Content. The Contractor further guarantees the average sand content of the water from the well will not exceed one (1) ounce per 100 gallons of water pumped. It is understood that some sand may be produced on starting, and no measurements of sand content of the water will be made prior to the expiration of one (1) hour following starting of the pump.

(3) Defective Work or Materials. It is further understood and agreed that if the work or any part hereof, or any material brought on the ground for use in the work or selected for same, shall be considered by the Contracting Officer as unsuitable or not in conformity with the specifications, then the Contractor shall, after receipt of written notice from the Contracting Officer, forthwith remove such material and rebuild or otherwise remedy such work so that it shall be in full accordance with this contract.

(4) Period of Guarantee. The Contractor further agrees that the work covered by this agreement to be free of defects in workmanship and materials for a period of one (1) year from date of completion.

f. Detailed Well Data.

(1) At the end of each working shift a written report shall be prepared, showing in detail the progress made during that shift, and such other information as may be required to ascertain the progress being made by the Contractor. This report shall be signed by the driller or the Contractor's duly authorized representative and, if requested, a copy will be delivered to the Contracting Officer or his duly authorized representative.

(2) After the well is completed, the Contractor shall furnish, in duplicate, a complete graphic and written log of the well showing the formations encountered, the thickness, the location of all material settings, the static level, the pumping level, and other necessary information as may be required to properly complete the records of the well. Such records shall also include a chemical analysis from water from the completed well.

g. Field Conditions. The Contractor shall provide all tools, derricks, engines, motors and other machines and equipment of whatever description that is necessary to expedite the construction and completion of the well in a workmanlike manner.

The Contractor shall furnish all casing material and screen as required to complete well.

The Government will furnish water without cost for the drilling operations, but the Contractor must provide the necessary piping to the well site.

The Contractor will dispose of the water used in the developing and production test of the well.

The Government will furnish the site for the well with sufficient room for drilling operations, storage of the Contractor's materials, and all rights of ingress and egress to the work.

The Contractor shall have an experienced foreman or driller constantly in charge of the work at the well at all times when work is underway.

h. Cleaning Up Site. Before final payment is made, the Contractor shall remove from the site, without expense to the Government all rubbish, unused material, and temporary structures used by him in carrying on the work, and shall fill slush pits or other excavations made by him, and fine-grade the location or remove any excess soil material occasioned by the drilling of the well.

2. Relocate the existing water pumping station at the site of the new well complete and ready for use, including all necessary plumbing, mechanical and electrical extensions as follows:

- a. Relocate Pump Station Enclosure.
- b. Extend Control Cable.
- c. Install 3" G.S. Pipe for draining sand extractor with 3" check valve.
- d. Install double 3" PVC electrical conduit from existing pull box to enclosure.
- e. Reinstall control center within pumping station enclosure.
- f. Install approximately 130 feet of 6" C.I. Pipe from pumping station to existing mains.
- g. Relocate existing sprinkler heads.

3. Install a sand separator device similar or equal to Lavel Sand Master as manufactured by A.V. Electronics, Inc., Fresno, California, as follows:

- a. General. The sand separator extractor shall be a centrifugal type, installed within the pump station enclosure, capable of removing 95 percent of plus #200 mesh (74 microns) sand.

b. Design. The unit shall be designed and constructed of fabricated steel in a manner so that sand and other particles contained in the water will be separated in the vortex action imparted by the centrifugal force of the tangential flow.

c. Pressure Drop. The pressure drop through the sand separator shall not exceed 10 pounds per square inch of maximum rated capacity.

d. Equipment.

(1) The unit shall have a 6" inlet and a 6" outlet. It shall have a tangential feed inlet in the upper portion, a de-sanded water outlet, and a drain opening for periodic removal of the collected sand.

(2) Inlet and outlet shall be flanged. Construction shall meet ASME code specifications for 125# maximum working pressure.

(3) Shell material shall be 3/16 inches minimum thickness, Type A-455. Head material shall be 3/16 inches S.E. A-285-C.

(4) Unit shall be painted with one coat of primer and two coats of Forest Green Rustoleum.

(5) The unit shall be equipped with an automatic Sand Purge Control with 2-inch valve and timer for fully automatic operation, and a separate 2" gate valve for manual blowoff.

e. The extractor shall be sized to handle a minimum flow of 400 GPM and a maximum flow of 700 GPM.

4. Connect the 8-inch main from the City of El Paso water supply to the 6-inch main as indicated on the attached drawing.

5. Repair all erosion near and adjacent to the sprinkler heads.

6. Flush the entire water system, including all laterals completely free of sand.

All of the above work shall be performed as stated herein, as shown on the attached drawings, in accordance with the applicable provisions of the contract drawings and specifications and as directed by the Contracting Officer.

As the work is not included in the Contract Bid Schedule, you will be compensated therefor in accordance with Article 34, Paragraph (a)(1) of the specifications for Items 1, 2, 3 and 4 above, and with Article 34, Paragraph (a)(2) for Items 5 and 6 above.

In order to effect payment to you the Contract Bid Schedule is modified as follows:

Item No.	Orig. Est. Quan.	Rev. Est. Quan.	Item	Unit Price	Orig. Amount	Amt. of Increase or (Decrease)	Rev. Amount
<u>SCHEDULE I</u>							
1.	122,000	112,872	Cu. Yds., Embankment	\$0.65	\$79,300.00	-(\$5,933.20)	\$73,366.80
2.	8,540	6,340	Units, Water	0.79	6,746.60	-(1,738.00)	5,008.60
3.	14,000	26,358	Cu. Yds., Topsoil	0.65	9,100.00	8,032.70	17,132.70
7.	2,000	0	Tons, Cobble Paving	13.13	26,260.00	-(26,260.00)	0.00
8.	2,200	1,793	Units, Seeding	7.88	17,336.00	-(3,207.16)	14,128.84
9.			Force Account Work		5,000.00	-(5,000.00)	0.00
Work Order 10-7-69							
	4,670	3,670	Cu. Yds., Manure Spreading	0.50	0	1,835.00	1,835.00
Work Order 12-11-69							
	4,670		Cu. Yds., Manure Screening	0.37		1,727.90	1,727.90
*10.		160	Hrs., Foreman	5.35		856.00	856.00
*11.		320	Hrs., Laborers	2.17 $\frac{1}{2}$		696.00	696.00
*12.		160	Hrs., Pickup Truck	1.00		160.00	160.00
*13.		20	Day, Rental of Hoses	3.00		60.00	60.00
*14.			Fixed Fee 15%			265.80	265.80
*15.			Health, Welfare and Insurance 12%			186.24	186.24
<u>SCHEDULE II</u>							
1.	2,840	2,775	L.F., 6" AC Pipe	3.76	10,678.40	-(244.40)	10,434.00
2.	4,550	4,491	L.F., 4" AC Pipe	3.08	14,014.00	-(181.72)	13,832.28
3.	1,000	1,011	L.F., 2 $\frac{1}{2}$ " PVC Pipe	1.33	1,330.00	14.63	1,344.63
4.	6,600	6,929	L.F., 2" PVC Pipe	1.20	7,920.00	394.80	8,314.80
5.	5,500	5,435	L.F., 1 $\frac{1}{2}$ " PVC Pipe	1.07	5,835.00	-(69.55)	5,815.45
6.	5,300	5,321	L.F., 1 $\frac{1}{4}$ " PVC Pipe	0.89	4,717.00	18.69	4,735.69
7.	6,300	6,273	L.F., 1" PVC Pipe	0.87	5,481.00	-(23.49)	5,457.51
19.	4,100	4,956	L.F., 600V 3C No. 14	0.43	1,763.00	368.08	2,131.08
20.	24,000	24,500	L.F., 600V 1C No. 14	0.16	3,840.00	80.00	3,920.00
21.	10	1	Ea., Marker Posts	21.67	216.70	-(195.03)	21.67
22.			Force Account Work		5,000.00	-(5,000.00)	0.00
Work Order 9-8-69							
	65		L.F., 6" C.I. Pipe	5.73		372.45	372.45
	4		Ea., 45° 6" C.I. Bends	50.00		200.00	200.00
	130		L.F., 1" PVC Conduit	0.42		54.60	54.60
	65		L.F., Conc. Encase	3.00		195.00	195.00

Item No.	Orig. Est. Quan.	Rev. Est. Quan.	Item	Unit Price	Orig. Amount	Amt. of Increase or (Decrease)	Rev. Amount
Work Order 12-11-69							
1			Ea., 6" Ck. Valve	\$168.19		\$168.19	\$168.19
L.S.			Realign Pump	L.S.		34.33	34.33
23.	L.S.		Well Reconst.			1,750.00	1,750.00
24.	1		Ea., Rotary Head #41	33.64		33.64	33.64
25.	1		Ea., Rotary Head #47	33.64		33.64	33.64
*26.		L.S.	Drill Well & Install Pump	L.S.		9,700.00	9,700.00
*27.		L.S.	Relocate Pumping Station	L.S.		4,611.00	4,611.00
*28.		L.S.	Connect System to City Main	L.S.		861.00	861.00
*29.		L.S.	Install Sand Separator			2,857.00	2,857.00

SCHEDULE III

2.	1,200	1,190	L.F., 8" VC Pipe	3.11	3,732.00	-(31.10)	3,700.90
4.	12	8	L.F., Extra Depth	45.00	540.00	-(180.00)	360.00
5.	3	1	Ea., Marker Posts	21.67	65.01	(43.34)	21.67
7.	200	249	L.F., 3" PVC	4.10	820.00	200.90	1,020.90
9.			Force Account Work		1,000.00	-(1,000.00)	0

Work Order

10-31-69

243

L.F., 3"PVC

1.47

357.21

357.21

Work Order

12-11-69

L.S.

Trench Drop

L.S.

273.15

273.15

Dual Manhole Inlet

L.S.

105.00

105.00

Net Decrease - Change Order No. 2

(\$12,604.04)

*Indicates new item.

This Change Order No. 2 results in a decrease of \$12,604.04 in the contract amount. The revised contract amount is accordingly established as follows:

Original Amount of Contract	\$279,168.61
Change Order No. 1 - No Change	0.00
Change Order No. 2 - Decrease	(12,604.04)
Revised Amount of Contract	\$266,564.57

An allowance of forty-five (45) additional calendar days will be made on account of the extra work involved and the contract expiration date is accordingly changed from February 17, 1970 to April 3, 1970.

It is understood and agreed that the parties to the contract, by affixing signatures, one hereto and the other on the attached statement of acceptance, accept this Change Order No. 2 as a supplemental agreement.

Sincerely yours,

SIGNED

Donald S. Marley
Chief, Branch of Contract Administration,
and Contracting Officer

Enclosures (5)

LAYNE & BOWLER,

DATE
RELEASED

9-3-69

M1149
(S400)SER
NUMBER

C5027

ASSEMBLY BILL OF MATERIALS

PUMP
NUMBER

615412

PAGE

LINE	REQ. FOR ONE	TOTAL NO. REQ.	PART NO. SYMBOL NO.	PART DESCRIPTION	DRAWING NUMBER	MAT'L		
1	1	1	AD 6 6	Adapter	5379	CI		
2	1	1	5RK3	Discharge Nozzle OPEN PORTS O.L. DO NOT CONNECT	6135	CI		
3	1	Inc	Non sprl	Dis. Noz. Bush 1-7/8 " X 1-1/2 " X 5/8 "		BR		
4	1	1	3L123LB	Main Bearing Box	A5251	BR		
5	2	Inc	# 288	Seals	3233-2			
6	1	1	Layne	Pump Bowl Name Plate		BR		
7	2	Inc		1/4" x 5/16" Rd. Hd. Machine Screws		BR		
8	0			Nipple Toe " X "		SH		
9	1	1		1-1/2 " Protector TIOE	L1815	SH		
10	1	1	5RK16	Suction Nozzle	A668	CI		
11	1	1	SB 154	Suc. Noz. Bush-Drill. " X " X "	A249	BR		
12	1	1	SC 149	Sand Guard	6264	BR		
13	1	1		1/4" x 1/4" Soc. Hd. Cup Point Set Screw Loc-We		RS		
14	1	Inc		1" x 1/4" Spl. Set Screw		SH		
15	1	0	F 328	Shaft Coupling	2817	SH		
16	1	1	5RK6T	Top Intermediate	6266	CI		
17	1	Inc		1-7/8 " X 1-1/2" X 6 " Bush for Top Int.		BR		
18	5	5	5RK6	Intermediates	6238	CI		
19	5	Inc		1-7/8 " X 1-1/2" X 3 " X Bush for Int.		BR		
20	6	6	CR 21	Wear Rings	3346	BR		
21	6	6	5RK171	Impeller P.D. Trim 7.250"	5972	BR		
22	6	6	C150	Collets	5684	BR		
23	1	1	5801 - 6	Impeller Shaft For " — Stages	5801	RS		
				" X .Thd. " — Thds.				
24	1	1		Assemble 10 " RK HC 6 St Bowl—Enamelled				
25	0			" Pipe Plugs		CI		
26	1	1	50 212D	Deflector	B/P	RB		
27								
28								
29								

ASSEMBLY DESCRIPTION: Lateral (5/8) (9-1/2) "

Std. Bowl 10" RK HC Shaft Const. 18 "

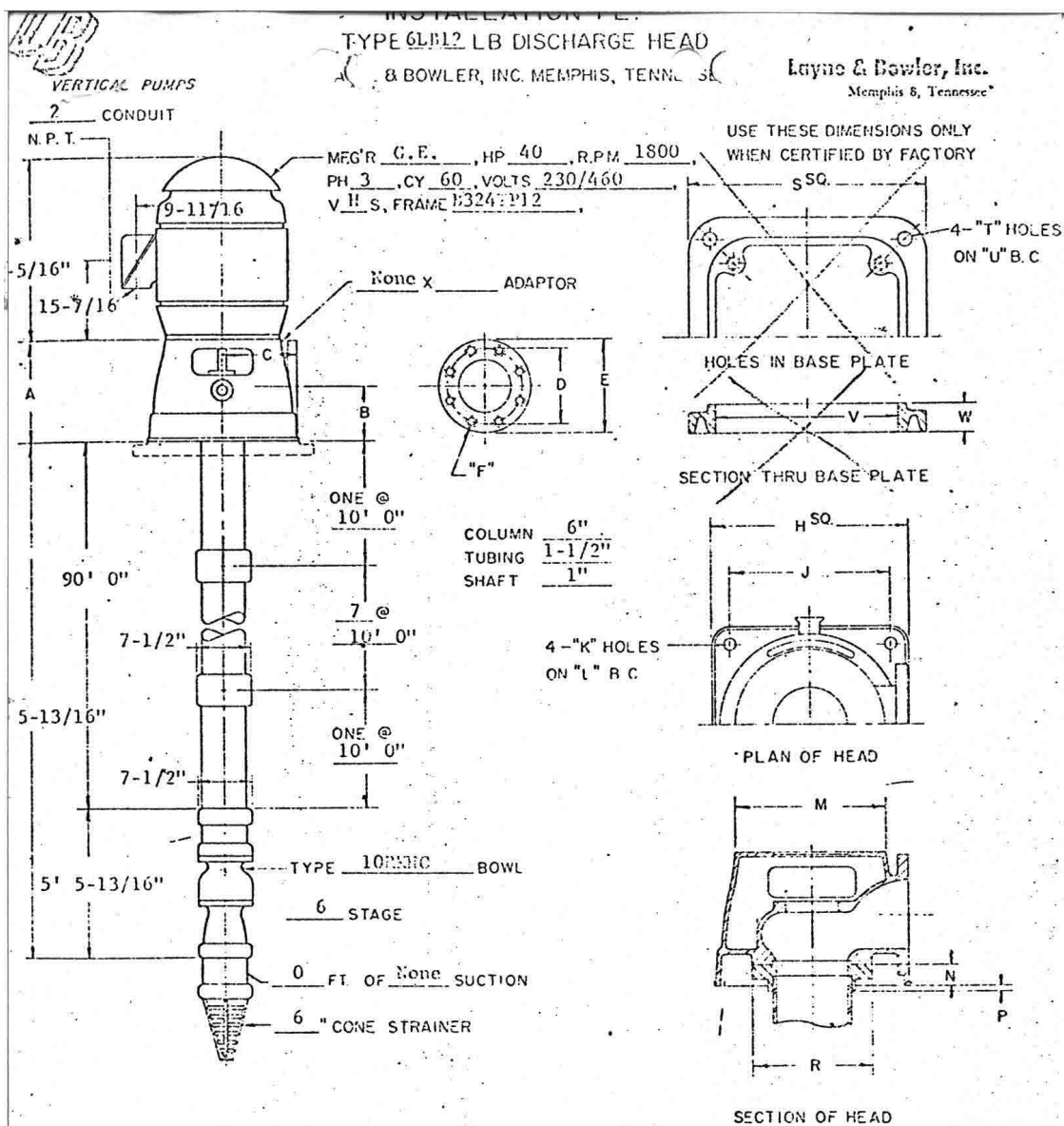
O.L. or XXXX Tubing Const. 9 "

6 " X 1 " X 1-1/2" X 6 " Conn.

☐ MACHINE SHOP☐ STORE ROOM☐ COSTS DEPT.☐ SHIPPING☐ ACCOUNTING☐ PROD. CONTROL☐ ORDER DEPT.☐

PBS NO.

PAGE



CUSTOMER: Chamizal Zone National Park
 LOCATION: El Paso, Texas
 FOR APPROVAL: _____
 CERTIFIED: _____

YOUR NO: _____
 OUR NO: _____
 PUMP NO: _____
 DATE: _____

G.P.M. 450
 T.D.H. 234
 R.P.M. 1750
 B.H.P. 33.5

TYPE HEAD	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	
6LB10	13	6 3/8	7 7/8	9 1/2	11	8-3/4 TAPS	14 1/8	10 1/2	13 1/8	14 1/8	10 1/2	2 1/2	2 1/2	3 1/8	11	17	7 1/8	19 1/8	14 1/8	3
6LB17	15 1/8	5	11	11 1/4	13 1/2	8-3/4 TAPS	22 5/8	17	14	24	17	2 1/2	2 1/2	3 1/8	13 1/2	25 1/2	7 1/8	33 1/8	20 1/8	2
6LB17	19	10	11 1/8	14 1/4	16	12-3/4 TAPS	22 1/8	17	15	24	17	2 1/2	2 1/2	3 1/8	16	24 1/2	7 1/8	30 1/8	20 1/8	2
6LB20	23	12	13 1/2	17	19	14-3/4 TAPS	22 1/8	20	17	28 1/2	20	2 1/2	2 1/2	3 1/8	19	30 1/2	7 1/8	36 1/8	20 1/8	2



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
FEDERAL BUILDING
300 EAST 8TH STREET
AUSTIN, TEXAS 78701
March 11, 1969

Memorandum

To: Mr. Gerard S. Witucki, Supervisory Hydrologist, Office
Land and Water Rights, NPS, San Francisco, California

From: Trigg Twichell, District Chief, Water Resources Division,
Austin, Texas

Subject: Supervision and Testing of Chamizal Well No. 1

At the request of the National Park Service, the U.S. Geological Survey supervised the drilling and testing of a production well at Chamizal National Monument. The following is a brief summary of the work performed.

Chamizal well no. 1, 195 feet from Chamizal test well no. 2 (drilled by the Park Service in 1967), was drilled in July 1968 to a depth of 160 feet. Sixteen-inch surface casing was installed to a depth of 100 feet, and the surface casing was cemented to seal off the water in the upper 100 feet of the well. Twelve-inch casing was set to a depth of 160 feet, the lower 60 feet of which was mill slotted. The driller's log of the well is attached.

The well was bailed for 6 hours, and a sample of water was collected. The results of the analysis are attached; the water is moderately low in sulfate and chloride, and apparently is suitable for irrigation of lawns, shrubs, and trees, particularly as it will be applied to a sandy and well-drained soil.

Testing of the well began on Aug. 1, 1968, and measurements of water level were made in both the pumped well and test well no. 2. The discharge was measured by a 4-inch orifice plate in a 6-inch pipe, and to reduce the possibility of leakage of water back to the aquifer, the discharged water was piped to a point 600 feet from the well. The plot of the drawdown and recovery of the water levels in the two wells is attached.

The well was pumped at 400 gpm (gallons per minute) for 24 hours. At the end of this period, the water level had been lowered nearly 38 feet, which represents a specific capacity of about 10.5 gpm per foot of drawdown.

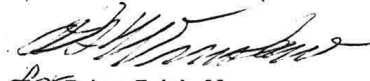
File Copy

COPY TO	WASO, NCSSC	DATE	3/19/69
FOR YOUR	SOUTHWEST REGION		
	☒ INFORMATION	☐ ACTION	
OFFICE OF LAND & WATER RIGHTS, SSC			

Mr. Witucki - page 2

A water sample collected after 20 hours of pumping was sand free and was slightly less mineralized than that collected after 6 hours of bailing (analysis attached).

It would appear from these data that you should encounter no difficulty in obtaining 400 gpm of water from Chamizal well no. 1. It also seems unlikely that the more highly mineralized water in the upper part of the aquifer would enter the well and cause a significant deterioration of the water in the screened section. Samples of water collected in 1967 at several depth intervals in test hole no. 2 revealed that the water in the upper part of the aquifer is separated from the producing zone (100 to 160 feet) by a fairly thick section of sand containing water that, if anything, is slightly less mineralized than that pumped from the well.


Trigg Twichell
District Chief

Attachments

ERL:lk

Driller's Log of Chamizal Well No. 1

	<u>Feet</u>
Soil-----	0 - 4
Sand-----	4 - 12
Gravel-----	12 - 17
Clay-----	17 - 28
Sand-----	28 - 33
Clay and sand-----	33 - 34
Fine gravel-----	34 - 36
Boulders-----	36 - 93
Gravel, sand, and clay-----	93 - 112
Fine gravel and sand-----	112 - 116
Boulders and sand-----	116 - 125
Clay and gravel-----	125 - 136
Sand and clay-----	136 - 144
Gravel and sand-----	144 - 149
Sand and clay-----	149 - 160

Geological Survey

UNITED STATES DEPARTMENT OF THE INTERIOR
Ground Water Analysis

CALL ED LEGGATT FOR INFO. ON TYPE

State: Texas County: El Paso Well No. 115580

Local Well No. 49-13-814 Location El Paso, Texas National Park Service Irrigation

Owner: National Park Service Date drilled: 7/20/68 Depth: 160 WBF 1 Prod. intervals 105 to 155 pumping 59.65 ft below
 Sampled after pumping 20 hrs. Yield 400 GPM Ft. of col. dis. pipe Appearance clear Use Irr. Collector W. Meyer

Specific conductance (micromhos at 25°C) 1130.0

pH 7.6 Temp. °F 77

mg/l

Silica (SiO₂) 2.9

Aluminum (Al) 0.1 mg/l

Iron (Fe) 0.1 mg/l

Manganese (Mn) 0.1 mg/l

Calcium (Ca) 103 mg/l

Magnesium (Mg) 30 mg/l

Sodium (Na) 177 mg/l

Sodium + Potassium 10 mg/l

Potassium (K) 10 mg/l

Bicarbonate (HCO₃) 212 mg/l

Carbonate (CO₃) 70 mg/l

Sulfate (SO₄) 238 mg/l

Chloride (Cl) 162 mg/l

Fluoride (F) 0.6 mg/l

Nitrate (NO₃) 0.3 mg/l

Nitrite (NO₂) 0.1 mg/l

Phosphate (PO₄) 0.9 mg/l

Boron (B) 0.1 mg/l

Dissolved solids: 0.1 mg/l

Hardness as CaCO₃ 0.1 mg/l

Noncarbonate 0.1 mg/l

Color 0.1 mg/l

Bromide (Br) 0.1 mg/l

Iodide (I) 0.1 mg/l

Alk. as CaCO₃ 0.1 mg/l

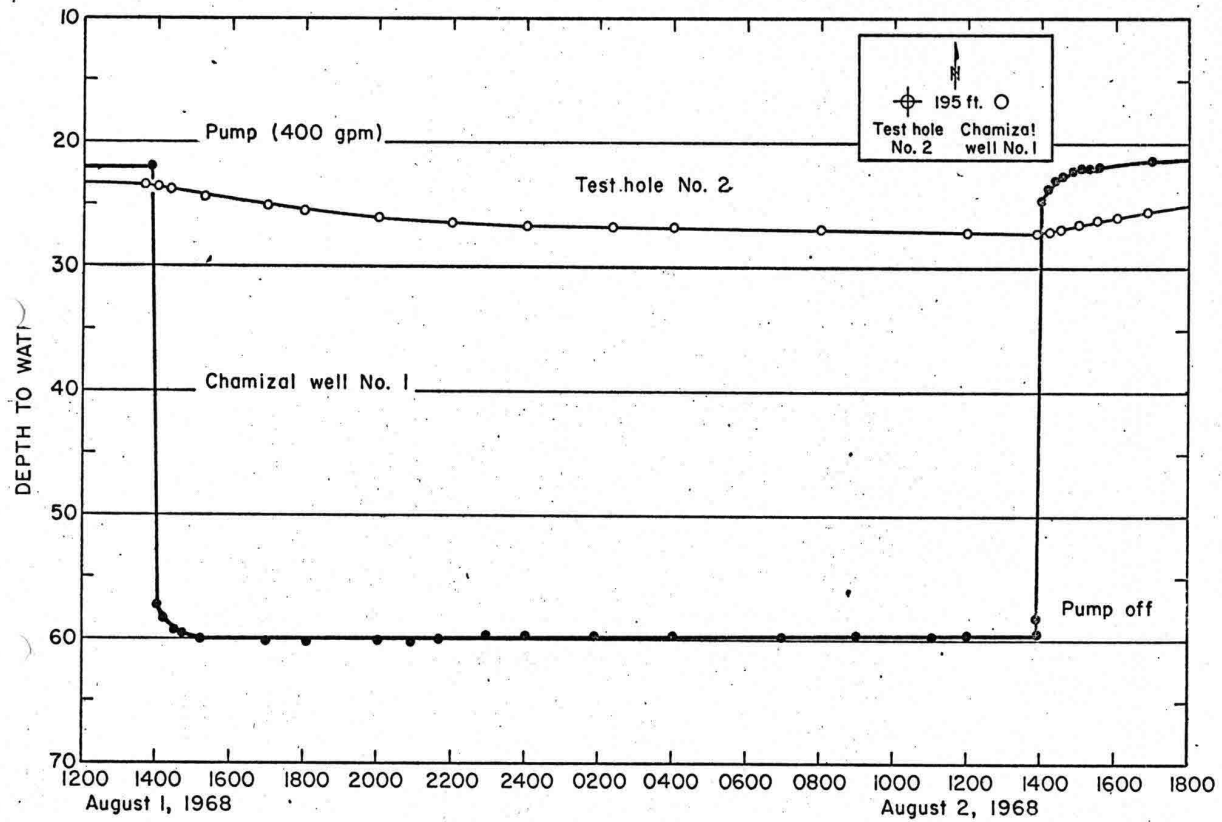
%Na 39 SAR 2.5 RSC 0.1

MBAS 0.1 NO₂ 0.1

Analyst EMC Checked by AA
 Date begun AUG 12 1968 Completed AUG 1

SAR -- Sodium adsorption ratio
 RSC -- Residual sodium carbonate
 MBAS - Methylene blue active substance (detergents)

Geological Survey		UNITED STATES DEPARTMENT OF THE INTERIOR Ground Water Analysis				Water Resources Austin, Texas	
115270		Latitude		Longitude		Date	
State: Texas	County: El Paso	Well No.	314854	1062704	Seq. No.	19	Date: 072268
Local Well No. 49-1834 Location Chamizal, Park Well #1 195' SE of Test #2 El Paso, Texas		Date drilled: 7-17-68	Depth: 160	WBF 105-155	Prod. intervals 105-155	Water level	
Sample after pumping 6 hrs. Yield		GPH Ft. of coll. at Bailer	Appearance sltly. cloudy		Use: Irr.	Collector Mr. Wheeler	
Specific conductance (micromhos at 25°C).....		11480		Bicarbonate (HCO ₃).....		1196	
pH.....		7.8		Temp. °F.....		111	
Silica (SiO ₂).....		mg/l		Carbonate (CO ₃).....		70	
Aluminum (Al).....		mg/l		Sulfate (SO ₄).....		1274	
Iron (Fe).....		mg/l		Chloride (Cl).....		1200	
Manganese (Mn).....		mg/l		Fluoride (F).....		11	
Calcium (Ca).....		mg/l		Nitrate (NO ₃).....		111	
Magnesium (Mg).....		mg/l		Nitrite (NO ₂).....		mg/l	
Sodium (Na).....		mg/l		Phosphate (PO ₄).....		mg/l	
Sodium + Potassium.....		mg/l		Dissolved solids:		Determined	
Calc.		mg/l		Hardness as CaCO ₃		Total...	
				Noncarbonate...			
				Color.....		T	
				Bromide (Br).....		T	
				Iodide (I).....		T	
				Alk. as CaCO ₃		T	
				CO ₂		T	
				%Na....		SAR... T	
				RSC...		T	
				MBAS... T		NO ₂ ... T	
				Analyst DAVID M DELGADO		Checked by C. A. 1	
				Date begun JUL 20 1968		Completed AUG 2 1	
				SAR -- Sodium adsorption ratio			
				RSC -- Residual sodium carbonate			
				MBAS - Methylene blue active substance (detergents)			



Pumping test on well No. 1 - Chamizal National Monument, El Paso, Texas

FILE CODE:

L54 LWSSC

CHAM USGS

MESSAGE MEMO

DATE 8/9/68

and 8/12/68

ACTG

X

CHIEF

ASST CHIEF REALTY

CHIEF APPRAISER

HYDR. ENG.

X

INFORMATIONAL

TAKE ACTION

PREPARE REPLY

X

FILE

SUBJECT: PHONE (X)

VISIT ()

CORRESPONDENCE ()

FROM: Ed Leggat, USGS, Austin

G. S. Witucki, Actg Supv.

TO: G.S.Witucki, Actg Supv.

Ed. Leggat, USGS, Austin

TOPIC: Summary of pump test at Chamizal

Mr. Leggat called to give a short summary of the pump test which is as follows:

Gallons per minute - 400 (sand free)
 Hours pumped - 24
 Specific capacity - 10.6 gpm per ft of drawdown

Chemical analysis - 200 ppm chloride
 270 ppm sulfate

Can pump at 450 gpm without any problem.

Will send memorandum as soon as all data is compiled.

Called Mr. Leggat on 8/12 to be sure he felt the 450 gpm sustained pumping rate was reliable. Leggat said it was. He also said that he would check the last sample as to chemical analysis as soon as practicable.

Mr. Leggat called later to say that the chloride analysis of the sample after 20 hours of pumping was 162 ppm - is less than the above analysis.

cc:

Chief, Branch of Water Resources, WASO

Chief, DCSSC

RECOMMENDED ACTION:

BY:

G. S. WITUCKI



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
WASHINGTON, D.C. 20240

IN REPLY REFER TO:

D22-PA

April 9, 1968

Memorandum

To: Chief, Division of Land and Water Rights
From: Acting Chief, Division of Program Analysis and Appraisal
Subject: Funds for Chamizal National Memorial

This is to confirm verbal discussions concerning the need to provide approximately \$6,000 from Land and Water Rights' funds for the purpose of drilling and installing a well at Chamizal National Memorial. Funds have been programmed and budgeted for the 1969 FY for the purpose of installing the basic utilities. Advanced planning funds have been authorized, upon request of the Department, to enable the Design and Construction Office to move ahead with this project.

It is understood that in addition to test information that has already been provided by your office, additional information concerning exact quantity and quality of water available for the irrigation system is necessary which can be provided through the actual construction of a workable well. In order that the design can proceed based upon accurate well information, will you please make adequate funding available for this Chamizal National Memorial project.

This procedure should be considered as a special case, wherein the actual producing well is necessary ahead of development funds in order that planning can proceed. Accordingly, although initially funded with Water Rights' funds, this should be on a reimbursable basis. This reimbursement will also facilitate the keeping of adequate cost records on this area where a congressional limitation has been imposed. Thank you for your cooperation.

George A. Swann

FILE CODEM E S S A G E M E M OL54 LWSSC CHAM *USGS*DATE April 8, 1968

<u>X</u>	CHIEF	<i>epk</i>	
<u>X</u>	ASST. CHIEF REALTY	<i>W.</i>	
	STAFF ASSISTANT		<u>X</u> INFORMATIONAL
	CHIEF APPRAISER		TAKE ACTION
	HYDR. ENGINEER		PREPARE REPLY
	-----		PLEASE PHONE
<u>X</u>	FILE		

SUBJECT: PHONE (X) VISIT () CORRESPONDENCE ()

FROM: Ed Leggat, USGS, Austin Tex. TO: WEFields, Supv. Hydr. Engr

TOPIC:

Mr. Ed Leggat, USGS in Austin, called concerning the possibility of USGS evaluating well data and supervising the pump test for the test well at Chamizal. Mr. Leggat said that he would have to personally supervise the pump testing but he would have his district representative in El Paso pick up the cuttings of the drilling. The cost of this service will be \$1,000. I told him I would send him a letter of authority to proceed immediately upon obtaining written verification from the Washington Office.

cc: Chief, Branch of Water Resources, WASO

RECOMMENDED ACTION:

BY

William E. Fields
William E. Fields

FILE CODE500000
CHAMMESSAGE MEMODATE April 4, 1968

_____ CHIEF
 _____ ASST. CHIEF REALTY
 _____ STAFF ASSISTANT
 _____ CHIEF APPRAISER
 _____ HYDR. ENGINEER
 _____ *W. Reed*
 _____ *Roberts*
 _____ FILE

_____ INFORMATIONAL
 _____ TAKE ACTION
 _____ PREPARE REPLY
 _____ PLEASE PHONE

SUBJECT: PHONE () VISIT () CORRESPONDENCE ()

FROM: Mr. Reed & Mr. BerteTO: Richard K. WeaverWASOLWSSC

TOPIC: Chamizal Treaty National Memorial (proposed well) and funding for 1967 FY Carryover.

Mr. Reed indicated that Ed Blair had called him about Chamizal. He said to go ahead and draw up specifications for the project and have the USGS supervise the drilling. However he also felt that the International Boundary Commission should offer to do the supervision--.

Mr. Reed said to have the USGS look over the specifications before printing. Also wants to know what the supervision costs will consist of. Is it to be taken out of the \$6000 ?. Would like us to call them tomorrow Friday April 5, 1968.

Vic Berte wanted to know more about our 1967 FY funding as we had earlier called Mr. Reed and indicated the final costs of Glen Canyon and Canyonlands. The results of our conversation revealed that we will end up \$300 in the hole in the 67 FY carryover and that funds from 68 will have to be allotted for this deficit.

Summary as follows:

Canyonlands	Excess	\$775
Rocky Mountain USGS	"	\$3050
" " Park	"	854

RECOMMENDED ACTION: \$4679 Total difference from March 14, memoGlen Canyon overobligation -X79
4978

Others data. Last Allotmt. 194,270.56
 67 FY. Current A + B 207,052.00
 Money being reallocated 68 45,132.44
 446,455.00 total 67 FY.
 less 68 Rollotmt 45,132.44 401,322.56 - 67

DEPARTMENT, AGENCY, OR B'
National Park Serv Office of Land and Water Rights
 LOCATION OF PROJECT (CITY OR OTHER DESCRIPTION)
Chamizal Treaty National Memorial
 STATE **Texas** COUNTY **El Paso**
 DESCRIPTION OF WORK:
Construction of water well

DECISION NO. **15198**
 DATE OF DECISION
3-18-68
 EXPIRES
7-16-68
 SUPERSEDES DECISION NO.

	Basic Hourly Rate	Fringe Benefits Payments				
		H & W	Pensions	Vacation	App. TR.	Others
Asbestos workers.....						
Boilermakers.....						
Boilermakers' helpers.....						
Bricklayers.....						
☒ Carpenters.....	\$2.50					
Cement masons.....						
Electricians.....						
Glassmen.....						
Ironworkers, structural and ornamental.....						
Ironworkers, reinforcing.....						
Laborers.....						
☒ Laborers.....	1.60					
Air tool op. (jackhammer, vibrator).....						
Mortar mixers.....						
☒ Pipelayers (concrete & clay).....	2.25					
Plasterers' tenders.....						
Lathers.....						
Marble & tile setters, terrazzo workers.....						
Marble, tile & terrazzo helpers.....						
Painters, brush.....						
Painters, structural steel.....						
Pladivemen.....						
Plasterers.....						
Plumbers.....						
Roofers.....						
Sheet metal workers.....						
Soft floor layers.....						
Steamfitters.....						
☒ Welders.....	3.25					
☒ Truck drivers Single axle, light.....	1.50					
☒ " " Single axle, heavy.....	1.85					
☒ Driller operator.....	2.00					
☒ Driller operators helper.....	1.60					
Power equipment operators.....						

BASIC HOURLY RATES			
Air compressors.....	Hoists.....	Rollers.....	
Bulldozers.....	Mixers.....	Scrapers.....	
Cranes, derricks, draglines.....	Oilers.....	Shovels.....	
Distributors.....	Pladivemen.....	Tractors.....	
Excavating machines.....	Pumps.....	Trenching machines.....	
Flumes.....			
Graders.....			

U.S. GOVERNMENT PRINTING OFFICE: 1963-O-739-410
 603-1-577

RECEIVED
 MAR 14 10 06 AM '68
 NATIONAL PARK SERVICE
 CHAMIZAL TREATY NATIONAL MEMORIAL



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

SAN FRANCISCO PLANNING AND SERVICE CENTER
450 GOLDEN GATE AVENUE, BOX 36025
SAN FRANCISCO, CALIFORNIA 94102

IN REPLY REFER TO:

D5039
C/R D22

February 28, 1968

Memorandum

To: Chief, Office of Land and Water Rights, SSC
Attn: Supervisory Hydraulic Engineer

From: Acting Chief, Design and Construction, SSC

Subject: Test Well, Chamizal

As you are probably aware, the formal land transfer ceremony between the presidents of the United States and Mexico was performed in October of last year. The 54 odd acres comprising the Chamizal National Memorial are now the property of the United States, and a National Park Service office has been established in El Paso, Texas, to administer this new area.

Physical development of the Chamizal area is currently programmed to begin during Fiscal Year 1969. Recent information received indicates that an attempt may be made to complete the entire development prior to May 5, 1969. If this schedule should prevail our design timetable will be advanced considerably to provide issuance of plans and specifications as soon after July 1 as possible.

In this connection we need positive information as to the quantity and quality of water available for irrigation prior to beginning design of the irrigation system.

Your office drilled two 2-inch test holes during June 1967 on Cordova Island, immediately adjacent to the east boundary of the Chamizal area. The driller's log and chemical analyses of water obtained were forwarded to this office on July 28 by copy of Supervisory Hydraulic Engineer Fields' memorandum to Chief, Division of Land and Water Rights, WASO. Mr. Fields' memorandum suggested that your office proceed with a large diameter bore to substantiate test results obtained on the 2-inch test holes. We agree, and hope that the well can be drilled in April of this year. We have discussed

the location of the permanent well with Mr. Fields and concluded that it should be reasonably near the south (No. 2) test hole and inside the Chamizal area and north of the city's pumping plant. We hope to obtain a well that will yield 400 gpm constant draw.

If this office can assist the early accomplishment of the well, please notify us.


P. E. Smith

cc:
Regional Director, Southwest
Supt., Fort Davis
Supt., Chamizal

254
CHAM

TRIP REPORT -- LW SSC

Chamizal National Memorial

By: William E. Fields
Supervisory Hydraulic Engineer

Inclusive Dates
of Travel: 2/8--9, 1968

The afternoon of February 8th and the morning of the 9th, I spent in the Chamizal area at the request of Mr. Ralph Stratton, D&C Office. I stopped off enroute from Big Bend to San Francisco, primarily to pick out a site for a test well. Mr. Stratton advises me that sufficient amount of money may be forthcoming on June 1st to put in the water and utility system, and would like to know as soon as possible whether or not we can get 400 gpm of good quality water for irrigation. Last June, this office financed a small bore test drilling program on IBC land adjacent to our property. Two holes were drilled and tested with air. Since that time, the USGS has been conducting studies for the International Boundary Commission. I talked with Mr. Davis of the El Paso USGS office and Mr. Ed Leggat of the Austin, Texas office. They have promised us the results of the survey but are not willing at this time to make any predictions.

Our studies indicate that in most places we will be able to obtain 300 to 400 gpm; however, the chemical quality in some of the holes may be poor. My recommendation is that we drill at least a 24-inch well in the location near the proposed maintenance area. I am reasonably sure that we can obtain the volume needed but a close watch will have to be made of the chemical quality as it varies considerably throughout the area. No definite decision on financing has yet been made, but it is my opinion we should attempt to ask D&C to furnish the funds for the well and we will supply supervision and testing.

(Sgd) William E. Fields

cc: Regional Director, SW Region
Chief, D&C
Superintendent, Fort Davis
Chief, Branch of Water Resources, WASO

CHH
TRIP REPORT - LW SSC

To Big Bend N.P. and El Paso, Texas

By: William E. Fields

Inclusive Dates
of Travel: October 10-13, 1967

On October 10, I was in El Paso with Ed Leggat of the Texas USGS discussing the possibility of irrigation water at Chamizal National Memorial and
On October 11 and 12, Mr. Leggat and I were in Big Bend National Park.

The International Boundary Commission is now having the USGS make an extensive geologic and hydrologic study of the area around Chamizal. We will be furnished the results of their findings and this will save us the cost of an extensive report there.

At Big Bend we met with Supt. Peterson and Chief Ranger Roy Allen of the Park, Dick Reeves of the USGS and Mr. Cromer who is the driller of the test wells now under construction. They completed the ninth test hole while I was there and we correlated data from bail tests and electric logs, and decided to case and pump test wells #1, 2 and 6.

Prior to my visit, there has been some misunderstanding by the contractor on some of the meanings of words in the contract. Supt. Peterson has done a fine job in representing the U.S. in upholding the terms of the contract but the driller was still attempting to read things into the specs that aren't there. I explained in detail to him what was intended by the specs and when I left, I think everyone was in agreement. We also located the sites for test holes 10 and 11 while I was there.

(Sgd) William E. Fields

cc: Chief, Branch of Water Resources, WASO

L54 LWSSC

AMIS, B. SANF, CHAM

TRIP REPORT LW SSC

By: William E. Fields

Inclusive Dates

of Travel: September 6, 1967

On September 6th, I met with Mr. Ed Leggat and Richard Reeves of the USGS in Austin, Texas, concerning the 1967-1968 fiscal year programs. The Amistad report has already been presented and is in the process of being reviewed by this office prior to release to the open file. We have also received the Sanford Reservoir preliminary report for Blue East, Blue West and Bugbee site. I also discovered the International Boundaries Commission is making extensive geological studies, including test wells, in the Chamizal area. The results will be forwarded to us upon release and may save us the expense and time of further investigation.

Prior to my field trip to the area, I had discussed with the Superintendent and USGS, the progress of test wells at Big Bend by telephone. Mr. Cromer, the sub-contractor, is the type who tries to read things into the specifications which will save him time and money, but are contrary to the intent. Dick Reeves, Superintendent Peterson, and I have all stood firm in demanding results as required by the specifications. I had gone to Austin with the idea that perhaps I would make a side trip to Big Bend with Mr. Leggat and Mr. Reeves in order to have a firm understanding with the driller as to what we expect. I discovered after my arrival in Austin, that the driller has "shaped up" a little, and is now working on the 5th test hole, having satisfactorily completed three of the first four. Even though we are behind schedule, test drilling at Big Bend seems to be proceeding satisfactorily at least for the present. Mr. Leggat discovered that he could not take the time to go to Big Bend because of a special commitment. However, Superintendent Peterson requested that I do my best to get there at an early date. When I left Austin, I informed Mr. Reeves that I would try to be at Big Bend on Monday, September 11th. Because of the difficulty in arranging transportation and because of the need of more pressing business, I returned to San Francisco rather than make the trip at this time. I plan to go sometime in October, at which time, Mr. Reeves feels the test drilling will be at an advanced stage and future plans for the completion of the appraisal study in the area can be made. I will be in touch with him by telephone and confirm a definite date later.

(Sgd) William E. Fields

cc: Chief, Branch of Water Resources, WASO

L54 LWSSC

July 28, 1967

Memorandum

To: Chief, Division of Land and Water Rights, WASO
Attention: Chief, Branch of Water Resources

From: Supervisory Hydraulic Engineer, SSC

Subject: Driller's Log and Chemical Analyses of Water - Two Test Holes
at Chamizal Treaty National Memorial

Enclosed are copies of the driller's log for each of the two holes drilled by Wheeler Drilling Company in June in the subject area. We have also enclosed chemical analyses of the water taken from various levels in the two wells.

You will note Well No. 1 was drilled to a depth of 105 feet, and Well No. 2 to a depth of 157 feet. In Well No. 1, water was encountered at 40 feet and again at 92 feet. In Well No. 2, water was encountered at 40 feet, 92 feet, and 147 feet. You will note that the water at 40 feet level is of much poorer quality than the water at the deeper levels. Tests with air indicate that Well No. 2 can be pumped at 400 to 500 gpm but as you know these type of tests are questionable. The information obtained by drilling these two test wells has been submitted verbally to the Design and Construction park planners and is considered adequate for their needs at the present time. However, the suggestion has been made that as soon as the Chamizal Treaty land becomes the property of the United States we should proceed with a large diameter bore which should attempt to seal off the saline water in the upper aquifer. We can then adequately test for quality and quantity before a final decision is made as to the number of wells needed. By copies of this memorandum, we are sending the logs and chemical analyses to Supervisory Hydraulic Engineer Ed Blair, Design and Construction, Western Service Center, the Regional Director, Southwest Region, and Superintendent, Fort Davis National Historic Site for their information.

(Sgt) William E. Fields

William E. Fields

L54 Cham

Enclosures

cc: Ed Blair, D&C, Western Service Center (w/enc.)
Regional Director, SWR (w/enc.)
Supt., Ft. Davis NHS (w/enc.)

Leon Siegel, B.S., M.S., P.E.
Manager

2315 Myrtle Ave.
Dial 532-3831

EL PASO TESTING LABORATORIES

Chemical and Physical Analyses
Consulting Engineers
P. O. Box 1565
El Paso, Texas 79948

Lab. No. 31132.....

REPORT SHEET

Rec. Date 6/23/67.....
Reported: 6/26/67

TO Wheeler Drilling Co.
Mr. K.C. Wheeler
7744 North Loop
El Paso, Texas

NATURE OF ANALYSIS: 2 water samples rec:6/23/67 on Well #1 at 41' and 95'
for complete chemical analysis as follows:

	Well #1 41'	Well #1 95'
pH	7.6	7.6
Total Solids	2005 p.p.m.	1465 p.p.m.
Silica	50 p.p.m.	40 p.p.m.
Alumina	7 p.p.m.	7 p.p.m.
Iron	0.15 p.p.m.	0.10 p.p.m.
Calcium Oxide	284 p.p.m.	186 p.p.m.
Magnesium Oxide	48 p.p.m.	99 p.p.m.
Sodium Oxide	320 p.p.m.	200 p.p.m.
Carbonates	nil	nil
Hydroxides	nil	nil
Bicarbonates	273 p.p.m.	205 p.p.m.
Chlorides	550 p.p.m.	340 p.p.m.
Sulfates	643 p.p.m.	417 p.p.m.
Total Hardness as Calcium Carbonate	627 p.p.m.	580 p.p.m.

RESPECTFULLY SUBMITTED,

EL PASO TESTING LABORATORIES

Leon Siegel
Leon Siegel

Leon Siegel, B.S., M.S., P.E.
Manager

2315 Myrtle Ave.
Dial 532-3831

EL PASO TESTING LABORATORIES

Chemical and Physical Analyses
Consulting Engineers
P. O. Box 1565
El Paso, Texas 79948

Lab. No. 31132

REPORT SHEET

Rec. Date 6/23/67
Reported: 6/26/67

TO
Wheeler Drilling Co.
Mr. K.C. Wheeler
7744 North Loop
El Paso, Texas

NATURE OF ANALYSIS: 3 water samples rec: 6/23/67 on Well #2 at 151', 40' and 92'
for complete chemical analysis as follows:

	Well #2 151'	Well #2 40'	Well #2 92'
pH	7.6	7.6	7.6
Total Solids	575 p.p.m.	3050 p.p.m.	540 p.p.m.
Silica	20 p.p.m.	55 p.p.m.	20 p.p.m.
Alumina	5 p.p.m.	11 p.p.m.	5 p.p.m.
Iron	0.05 p.p.m.	0.10 p.p.m.	0.05 p.p.m.
Calcium Oxide	69 p.p.m.	441 p.p.m.	105 p.p.m.
Magnesium Oxide	24 p.p.m.	137 p.p.m.	nil
Sodium Oxide	220 p.p.m.	630 p.p.m.	180 p.p.m.
Carbonates	nil	nil	nil
Hydroxides	nil	nil	nil
Bicarbonates	205 p.p.m.	322 p.p.m.	195 p.p.m.
Chlorides	120 p.p.m.	760 p.p.m.	130 p.p.m.
Sulfates	120 p.p.m.	824 p.p.m.	102 p.p.m.
Total Hardness as Calcium Carbonate)	183 p.p.m.	1103 p.p.m.	105 p.p.m.

RESPECTFULLY SUBMITTED,

EL PASO TESTING LABORATORIES

Leon Siegel Leon Siegel

File original copy with Texas Water Commission P. O. Box 2311, Capitol Station Austin 11, Texas	State of Texas DRILLERS LOG AND WELL DATA REPORT	For use by TWC only Well No. _____ Located on map _____ By _____ Date _____ Map no. _____
--	--	---

1) Well Owner: UNITED STATES DEPT. OF THE INTERIOR City _____ State _____

2) Land Owner: SAME Name _____ City _____ State _____

3) Intended use: Industrial ☐ Municipal ☐ Irrigation ☐ Other TEST (Draw or RFD) _____

4) Location of well: County EL PASO Labor _____ League _____ Abstract No. _____

NE 1 NW 1 SE 1 SW 1 of Section _____ Block No. _____ Survey _____

NC.1 Test hole in chemical treaty National Memorial

miles in _____ direction _____

from _____ Town _____

Sketch map of well location with distances from two section or survey lines, and to landmarks, roads, and creeks.

DRILLERS LOG OF WELL

Method of drilling: AIR Diameter of hole 4" in. Date drilled JUNE 20, 1967

All measurements made from _____ ft. above ground level.

From (ft)	To (ft)	Description and color of formation material	From (ft)	To (ft)	Description and color of formation material
0	4	SILT	73	90	SAND & GRAVEL
4	26	SAND	90	105	SAND-GRAVEL 92' water test
26	28	CLAY SAND			
28	37	SAND			
37	52	SAND GRAVEL 40' water test			
52	63	SAND			
63	70	SAND & GRAVEL			
70	73	SAND			

(Use continuation sheets if necessary)

COMPLETION DATA

COMPLETION	CASING	SCREEN
Straight wall ☐ Under reamed ☐ Gravel packed ☐ Open hole ☐ Other _____	Type: Old ☐ New ☐ Cemented from _____ ft. to _____ ft. Diameter (inches) _____ Setting _____ from (ft) _____ to (ft) _____	Type _____ Perforated ☐ Slotted ☐ Diameter (inches) _____ Setting _____ from (ft) _____ to (ft) _____

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

K.C. Wheeler K.C. WHEELER DRILLING CO. Reg. No. _____
Signature Company Name

Please attach electric log, chemical analysis, and other pertinent information if available.

If well was tested by your company or if you installed the permanent pump please complete the following:

WATER LEVEL AND PUMP DATA

Static water level <u>21'</u> ft. below <u>GROUND</u>	Pump type _____ Designed pumping rate _____ gpm ☐ sph ☐ Type power unit _____ Horsepower _____ Depth to bowl, cylinder, jet, etc., _____ ft. below pump base.
--	---

Pumping level		
feet	hours	gpm

Name of contractor testing well or installing permanent pump if other than your company: _____

C-34 (62-4)

File original copy with Texas Water Commission P. O. Box 2311, Capitol Station Austin 11, Texas	State of Texas DRILLERS LOG AND WELL DATA REPORT	For use by TWC only Well No. _____ Located on map _____ By _____ Date _____ Map no. _____
--	--	---

1) Well Owner: _____

2) Land Owner: _____

3) Intended use: Industrial ☐ Municipal ☐ Irrigation ☐ Other _____

4) Location of well: County _____ Labor _____ League _____ Abstract No. _____

NE 1/4 NW 1/4 SW 1/4 SE 1/4 of Section _____ Block No. _____ Survey _____
 (Circle as many as are known)

_____ miles in _____ direction
 from _____

Sketch map of well location with distances from two section
 or survey lines, and to landmarks, roads, and creeks.

DRILLERS LOG OF WELL

Method of drilling: _____ Diameter of hole _____ in. Date drilled _____

All measurements made from _____ ft. above ground level.

From (ft)	To (ft)	Description and color of formation material	From (ft)	To (ft)	Description and color of formation material
0	5	SAND	79	84	SAND
5	10	SAND	84	130	1.00 S. & L. SAND 92' water test
10	15	SAND	131	157	0.25 S. & L. SAND 147' water test
15	20	SAND			
20	25	SAND			
25	50	1.00 S. & L. SAND 92' water test			
50	72	SAND			
72	74	1.00 S. & L. SAND			

(Use continuation sheets if necessary)

COMPLETION DATA

COMPLETION		CASING		SCREEN	
Straight wall ☐ Under reamed ☐ Gravel packed ☐ Open hole ☐ Other _____		Type: Old ☐ New ☐ Cemented from _____ ft. to _____ ft. Diameter (inches) _____ Setting from (ft) _____ to (ft) _____		Type _____ Perforated ☐ Slotted ☐ Diameter (inches) _____ Setting from (ft) _____ to (ft) _____	

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

Signature _____ Company Name _____ Reg. No. _____

Please attach electric log, chemical analysis, and other pertinent information if available.

If well was tested by your company or if you installed the permanent pump please complete the following:

WATER LEVEL AND PUMP DATA

Static water level _____ ft. below _____			Pump type _____
Pumping level feet hours gpm			Designed pumping rate _____ gpm ☐ gph ☐
Type power unit _____			Horsepower _____
Depth to bowl, cylinder, jet, etc., _____ ft. below pump base.			

Name of contractor testing well or installing permanent pump if other than your company: _____

C-34 (62-4)

L-54 LWSSC

June 26, 1967

CHAM - General

ph
Weaver

Morris
Morris

Miller
Miller

Mr. K. C. Wheeler
K. C. Wheeler Drilling Company
408 Carey
El Paso, Texas 70015

Dear Mr. Wheeler:

This letter will confirm the instructions given to you at our offices in San Francisco on June 20, 1967, regarding the drilling work you are performing at Chamizal Treaty National Memorial. In accordance with the prices verbally quoted by you, drill an additional 50 feet of hole and install thereon a 2½" pipe at the cost of \$5.00 per foot, complete for \$250.00, and install 100 feet of 2½" pipe with a cap at its upper end at the cost of \$1.00 per foot, complete for \$100.00. Total cost of this additional work for which you are authorized to bill us, is \$350.00

Sincerely yours,

(Sgd.) Manuel Morris
Supervisory Hydraulic Engineer

cc: Chief, Branch of Water Resources, WASO
Regional Director, SWR
Superintendent, Chamizal Treaty NM
Finance - WR

cc. Weaver

RWeaver:MMorris:mlk 6/22/67

L54^{celw} CHAM

June 6, 1967

u2
FIELDS
KORNELIS

Mr. L. C. Wheeler
408 Carey Place
El Paso, Texas 79915

Dear Mr. Wheeler:

Enclosed is Purchase Order No.973-308 for the drilling of the small bores near Chamizal National Historic Site.

Would you please check with Mr. William Walker, principal engineer of the International Boundary and Water Commission in your city? He will instruct you as to where he would like the wells to be drilled. Upon completion of the project, you may bill this office in accordance with instructions on the reverse side of the purchase order.

Sincerely yours,

William E. Fields
Supervisory Hydraulic Engineer

Enclosures

cc: Chief, Branch of Water Resources, WASO

WEFields:mlk

DEPARTMENT, AGENCY

National Park Service, Office of Land and Water Rights

LOCATION OF PROJECT (CITY OR OTHER DESCRIPTION)

Chamizal Treaty National Memorial

STATE

Texas

COUNTY

El Paso

DESCRIPTION OF WORK:

Construction of water well

 NO. **15453**
 DATE OF DECISION **5-16-67**
 EXPIRES **9-13-67**
 SUPERSEDES DECISION NO.

	Basic Hourly Rate	Fringe Benefits Payments				
		H & W	Pensions	Vacation	App. TR.	Others
Aulston workers.....						
Bailmakers.....						
Bailmaker's helpers.....						
Bricklayers.....						
Carpenters.....						
Cement masons.....						
☒ Electricians.....	\$4.60					
Glassers.....						
Ironworkers, structural and ornamental.....						
Ironworkers, reinforcing.....						
Laborers.....						
☒ Laborers.....	1.60					
Air tool op. (jackhammer, vibrator).....						
Mason tenders.....						
Mortar mixers.....						
☒ Pipelayers (concrete & clay).....	2.25					
Plasterers' tenders.....						
Lathers.....						
Marble & tile setters, terrazzo workers.....						
Marble, tile & terrazzo helpers.....						
Painters, brush.....						
Painters, structural steel.....						
Piledrivers.....						
Plasterers.....						
Plumbers.....						
Roofers.....						
Sheet metal workers.....						
Soft floor layers.....						
Steamfitters.....						
☒ Welders—Rate for craft.....	1.50					
☒ Truck drivers, single axle, light.....	2.00					
" " tandem axle or semitrailer.....	2.00					
" " towboy.....	2.00					
Water well drillers helper.....	1.60					
Water well drillers.....	2.00					
Power equipment operators.....						
BASIC HOURLY RATES						
Air compressors.....		Molds.....		Rollers.....		
Bulldozers.....		Mixers.....		Scrapers.....		
Cranes, derricks, draglines.....		Oilers.....		Shovels.....		
Distributors.....		Piledrivers.....		Tractors.....		
Finishing machines.....		Pumps.....		Trenching machines.....		
Firemen.....						
Graders.....						

U.S. GOVERNMENT PRINTING OFFICE: 1961-O-738-410

203-377

WPA-CRM

SAN FRANCISCO PLANNING AND SERVICE CENTER
Office of Land and Water Rights
450 Golden Gate Avenue, Box 56053
San Francisco, California 94102

Memorandum

To: Field Solicitor
From: Acting Supervisory Hydraulic Engineer
Subject: Water Rights--Chemical National Memorial Project

The National Park Service Planning Team has requested this office to drill a test well within the Chemical National Memorial boundaries for the purpose of irrigating approximately forty acres.

During our telephone conversation of March 29, I expressed concern because this area lies within the drainage area which is affected by the Texas and New Mexico v. Colorado law suit. I have checked with the legal council for the State Water Commission in Austin, Texas, who informs us that there is no ground water law in the state of Texas for irrigation; that we can drill an irrigation well and irrigate any amount of acreage without any type of application or filing with their department.

If there is any other question that arises, I will notify you immediately.

WILLIAM E. FIELDS

William E. Fields

WEL-LW
10 APR 1967

cc: Regional Director, Southwest Region
Superintendent of Fort Davis

SP-CHM

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Office of Land and Water Rights
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William E. Fields

med-LW
10 APR 1967

cc: Regional Director, Southwest Region
Superintendent of Fort Davis

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COPY TO <u>Bill Filds</u>		DATE <u>March 22, 1967</u>
FOR YOUR	☒ INFORMATION	☐ ACTION
OFFICE OF LAND & WATER RIGHTS, SSC		

*Bill Filds is working
on this - will input
into next of 3-27-67.
BLL*

Memorandum

To: Regional Director, Southwest Region

From: Acting Chief, DCSSC

Subject: Chamizal National Memorial Project

Following receipt of your memorandum of February 8 we have examined the present status of the Chamizal project. As I am sure you know, the Master Plan which was submitted for approval October 6, 1966, has not yet been approved. This plan is also considered to be the developed area plan. Also, the projects previously programmed in the 1968 fiscal year have now been re-programmed for FY 1969.

We note from Mr. Smith's memorandum of January 4, 1967, certain questions regarding availability of adequate irrigation water. This would have direct influence on the implementation of the Master Plan and design concept as presently envisioned. Since your memorandum did not mention the request, by the city of El Paso, for right-of-way for the storm drain and pumping plant, we assume no decision has been reached.

We are presently working with the office of Land and Water Rights in determining answers regarding legal aspects of ground water in the area. When the afore-mentioned points in question are resolved, we will proceed with preliminary studies for utilities, roads and basic structures as proposed by your memorandum.

SIGNED

P.E. Smith

cc:
Supt., Fort Davis
Chief, Resource Planning
Chief, Land and Water Rights

Docket Information

Number of Documents in Docket 100

Documents Dated from 3/22/1967 to 3/25/1979

Docket Compiled: 2/2/2011