



WATER-RIGHT DOCKET

Fort Union National Monument

Docket No: 1

WELL

Preliminary Docket Information

00-00-0000: fort union docket no. 1 index

PORT UNION Docket No. 1

Index

Tentative Contents

1. Map of Water System (to be supplied if needed).
2. Well driller's log.
3. Pump test of August 21, 1957.
4. Sample log from Geological Survey (to be supplied by Mr. Kell).
5. Letter of November 12, 1957, to Mr. Kell from Acting District Engineer, Ground Water Branch, Geological Survey (to be supplied by Mr. Kell).
6. Owners Declaration

Area: Fort Union NM Docket #1
Title of Docket: Well Supply

1. Record of Test Pumping, August 21, 1957
- 1(a). Sample Log of Well 18.19.3.434 - completion date, August 22, 1957.
2. Completion Report of Construction Project, date January 19, 1959
3. Completion Report of Construction Project, date October 28, 1959
4. Well Log, Fort Union Well, Started November 1, 1958 and Completed March 24, 1959, drilled by The Red Top Drilling Company
5. Declaration of Owner of Underground Water Right, dated January 8, 1960
6. Analytical Statement, Lab No. 51345, dated March 18, 1963
7. Analytical Statement, Lab No. 54092, dated April 6, 1964
8. U.S. Geological Survey Analytical Notes, Lab No. 067001, dated May 8, 1965
9. Ground Water Analysis, Lab No. 059198, dated April 1, 1966
10. Ground Water Analysis, Lab No. 061447, dated April 17, 1967
11. USGS Chemical Analysis, Lab No. 063337, dated February 26, 1968
12. Memorandum to Superintendent, Fort Union National Monument, from Hydraulic Engineer, Water Resources, PSN-SWR, dated 4/22/74, transmitting Drawdown Data on Well No. 1.

Fort Union National Monument
Water Right Docket #1
Outline of Assembly - Correspondence

1. Letter to Mr. John E. Kell, Regional Chief of Lands, from William E. Hale, USGS, dated 11/12/57.
2. Memo from Chief, Water REsources Section, WASO, to Regional Director, Region Three, dated January 6, 1958.
3. Memo from Chief, Water Resources Section, to Regional Director, Region Three, dated 10/16/59.
4. Memo from Chief, Water Resources Section, to Regional Director, Region Three, dated 12/8/59.
5. Memo from Acting Regional Director, Region Three, to Director dated 8/11/61.
6. Memo from Assistant Regional Director, Resource Planning, SWR, to Director dated 4/24/63.
7. Memo from Acting Assistant Regional Director, Operations, SWR, to Superintendent, Fort Union, dated 4/10/64.
8. Memo from Assistant regional Director, Operations, SWR, to Superintendent, Fort Union, dated 8/29/64.
9. Memo from Assistant Regional Director, Operations, SWR, to Superintendent, Fort Union, dated 7/19/65.
10. Memo from Hydraulic Engineer, SSC, Santa Fe, to Chief, Branch of Water Resources, WASO, dated 6/1/66.
11. Memo from Hydraulic Engineer, SSC, Santa Fe, to Superintendent, Fort Union, dated 11/8/66.
12. Memo from Chief, Water Resources Section, Office of Land Acquisition and Water Resources, WSC, to Director, NPS, Attn.: Chief, Div. of Water Resources, dated 10/20/70.
13. Memo from Superintendent, FOUN, to Director, SWR, dated 10/30/70.
14. Memo from Acting Asst. Director, Park Support Services, to Superintendent, Fort Union, dated 12/9/70.
15. Memo from Superintendent, FOUN, to Director, SWR, Attn.: Engineer Ronald Cotton, dated 12/15/70.
16. Memo from Acting Supervisor of Maintenance, SWRO, to Superintendent, Fort Union, dated 12/31/70.
17. Memo from Acting Superintendent, Fort Union, to Director, SWR, dated 2/6/73.

Declaration No. Misc. 1-MA-5 Book _____ Date received January 8, 1960

United States of America
National Park Service

BY: Thomas J. Allen
Regional Director

Subscribed and sworn to before me this Eighth day of January, A.D. 19⁶⁰

My commission expires February 24, 1963 John A. Diehl
Notary Public

STATEMENT

1. Name of water right owner United States of America - National Park Service
of Fort Union National Monument
County of Mora, State of New Mexico
2. Source of water supply Artesian
(state whether artesian or shallow water basin)
located in Coyote Creek Valley near Watrous, New Mexico
(name of underground stream, valley, artesian basin, etc.)
3. The well is located in the SE $\frac{1}{4}$, SW $\frac{1}{4}$, SE $\frac{1}{4}$
of section 3, Township 19N, Range 18E, N.M.P.M.
on land owned by National Park Service
4. Description of well: date drilled August 1957 driller Red Top Drilling Co. depth 325 feet.
diameter (outside) of casing 8-5/8 inches; original flow 50 gal. per min.;
present flow 50 gal. per min.; maximum pumping lift 360 feet;
make and type of pump Red Jacket - submersible

make, type, horsepower, etc., of power plant Electricity from R.E.A., limited to
5 H.P.

Fractional or percentage interest claimed in well 100%

5. Quantity of water appropriated and beneficially used when fully developed will require
(feet depth or acre feet per acre)
approximately 50,000 g.p.d. for domestic and irrigation purposes.
6. Acreage actually irrigated and with water right (see Item 8) acres,
located and described as follows (describe only lands actually irrigated):

Subdivision	Sec.	Twp.	Range	Acres Irrigated	Owner
STATE ENGINEER OFFICE					STATE ENGINEER OFFICE
DISTRICT I					DISTRICT I
ALBUQUERQUE, N. MEX.					ALBUQUERQUE, N. MEX.

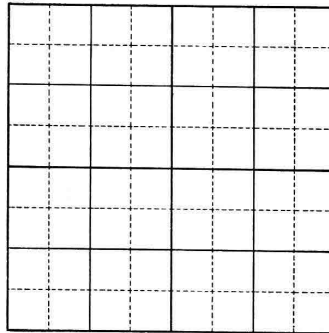
(Note: location of well and acreage actually irrigated must be shown on plat on reverse side.)

7. Water was first applied to beneficial use August 23, 1957 and since that time has been used fully and continuously on all of the above described lands or for the above described purposes except as follows: _____

8. Additional statements or explanations Water to be used for lawns, trees and shrubs around residences and visitor center.

Locate well and areas actually irrigated as accurately as possible on following plat:

Section **3**, Township **19N**, Range **18E** (**UNSURVEYED**)
N. M. P. M.



INSTRUCTIONS

Declaration shall be executed (preferably typewritten) in triplicate and must be accompanied by a \$1.00 filing fee. Each of triplicate copies must be properly signed and attested.

A separate declaration must be filed for each well in use.

All blanks shall be filled out fully. Required information which cannot be sworn to by declarant shall be supplied by affidavit of person or persons familiar with the facts and shall be submitted herewith.

Secs. 1-3. Complete all blanks.

Sec. 4. Fill out all blanks applicable as fully as possible.

Sec. 5. Irrigation use shall be stated in feet depth or acre feet of water per acre applied on the land. If used for domestic, municipal, or other purposes, state total quantity in acre feet used annually.

Sec. 6. Describe only the acreage actually irrigated. When necessary to clearly define irrigated acreages, describe to nearest $2\frac{1}{2}$ acre subdivision. If located on unsurveyed lands, describe by legal subdivision "as projected" from the nearest government survey corners, or describe by metes and bounds and tie survey to some permanent, easily-located natural object.

Sec. 7. Explain and give dates as nearly as possible of any years when all or part of acreage claimed was not irrigated.

Sec. 8. If well irrigates or supplies supplemental water to any other land than that described above, or if land is also irrigated from any other source, explain under this section. Give any other data necessary to fully describe water right.

If additional space is necessary, use a separate sheet or sheets and attach securely hereto.

Supporting Hydro Data

(17)

G.W. _____ Account 20NP
 Type Analysis A-1, no Fe sol'n. USGS CHEMICAL ANALYSIS Project 34
 State New Mexico County Mora Location NW from Watrous, 8 miles
 Latitude-Longitude _____ Well No. 19N, 18E, 3, 400 Date Collected 2-26-68
 Owner US Gov't., DI, NPS, Fort Union Nat'l. Mon., Watrous, Date Drilled 8-28-57 8" domestic Source water Depth (ft) 325' Diam. (in) _____
 Specific Conductance, micromhos at 25°C 534
 pH..... 7.8 Temp. (°C) 10
 Hardness as CaCO₃:
 Total, mg/L 84
 Noncarbonate, mg/L. 0
 Color.. 4 Sodium-adsorption ratio..... 4.4
 %Na.... 70 Tons per acre ft... _____
 Density, g/ml at 20°C _____
 W.B.F. Blue sandy shale
 Producing Intervals _____
 W.L. 85' below top of casing
 Sampled after Pumping (Time) about 3 days
 Yield _____
 Point of Collection Visitor Center
 Appearance Clear
 Use Public Supply
 Collected by Carmen Segura
 Remarks:
 Chemist RL, BR Checked By EFW
SWH, EP
 Date Completed 3-21-68
 Date Transmitted _____
 Laboratory No. 63337

Concentrations in milligrams per liter (mg/L)

Silica (SiO₂)..... 13 Bicarbonate (HCO₃)..... 280
 Calcium (Ca)..... 20 Carbonate (CO₃)..... 0
 Magnesium (Mg)..... 8.3 Sulfate (SO₄)..... 31
 Sodium (Na)..... 93 Chloride (Cl)..... 17
 Potassium (K)..... 2.3 Fluoride (F)..... 0.6
 Na+K (Calculated)..... _____ Nitrate (NO₃)..... 0.1
 Dissolved Iron (Fe).... _____ Boron (B)..... 0.13
 Total Iron (Fe)..... 0.27 Dissolved Solids:
 Sum of Constituents..... 323
 Residue on Evaporation at 180°C..... 314

Provisional records, subject to revision.

Geological Survey

Experimental qw-gw (1966)

UNITED STATES DEPARTMENT OF THE INTERIOR

Ground Water Analysis

Water Resources Division

State N.MEX. 36 County MORA M.O Latitude 31 1 5 7 1 Longitude 10 4 1 7 6 7 Seq. No. 19 Date coll. 04 17 67

Local well No. 19 N. 18 E. 3400 Owner Fort Union Natl. Mon. Collected by CARMEN SEGURA Lab. Anal. A-1 + Tot + Fe Project No. 20 APPS-C

WBFB BLUE SANDY SHALE Appearance Wc CLEAR Wa Lab. No. 161447 Sampling depth 13 2 5 Type PUMPED

K x 10 ⁶		ppm		epm		ppm		epm	
23.6	T	3484	R	KCl	607	571	5	7	1
pH		7.7		Temperature °F		50		5.0	
SiO ₂		5.2		Abs		235		1.2	
Ca		1.83		50 ml		1.8		0.90	
Mg		8.3		50 ml		8.3		0.68	
Subtotal cations (Ca, Mg)		15.8		Na		10.5		4.48	
K		22.3		50 ml		2.2		0.06	
Subtotal cations (Ca, Mg, Na, K)		6.12		HCO ₃		15.30		5.02	
CO ₃		0		50 ml		0		0.00	
SO ₄		4.0		10 ml		4.0		0.83	
Cl		1.1		25 ml		1.1		0.31	
Mg · AgNO ₃		0.55		Source of data		79		Card Q	
F		1.31		10 ml		1.31		0.6	
NO ₃		0.08		10 ml		0.08		0.01	
PO ₄		0.1		Abs		0.1		0.00	
HPO ₄		0.1		H ₂ PO ₄		0.1		0.00	
Total anions		6.19		B		1.32		0.15	
Al		0.15		10 ml		0.15		0.01	
Abs (Al + Fe)		0.01		Remarks and explanation on other side					
Fe		1.24		Total		25		0.01	
Dissol.		25		Mn		0.01		0.01	
Cu		0.01		Total		46		49	
Pb		0.01		Dissol.		46		49	
Zn		0.01		Cu		50		52	
Subtotal cations (Al, Fe, Mn, Cu, Pb, Zn)		0.01		Pb		53		54	
Subtotal cations (Ca, Mg, Na, K)		0.01		Zn		55		57	
Total cations		0.01		Subtotal cations (Al, Fe, Mn, Cu, Pb, Zn)		0.01		0.01	
Dissolved solids		345		Subtotal cations (Ca, Mg, Na, K)		0.01		0.01	
Residue at 180°		200		Total cations		0.01		0.01	
Dish No.		X-19		Dissolved solids		200		345	
Calculated		54.10		Residue at 180°		200		345	
Hardness		50		Dish No.		X-19		54.10	
Ca, Mg		12.95		Calculated		54.10		345	
Noncarbonate		9.00		Hardness		50		79	
Color		3		Ca, Mg		12.95		70	
Card R		80		Noncarbonate		9.00		74	

Provisional records, subject to

r61447

State	County	Lat.	Long.	Seq. No.	Date	Samp. depth	c
Remarks: DD = 8/28/57 WL 85' BELOW T.C. PPD 3 DAYS PC = VISITOR CENTER USE: DOM.							
Br _____ ml				26 28		Radiochemical	
I _____ ml				29 31		Alpha (pc/l) 55 57	
Alk. as CaCO ₃				32 35		Beta (pc/l) 58 60	
Free CO ₂				36 38		Ra (pc/l) 61 63	
SAR				39 41		U (ug/l) 64 66	
RSC				42 44		Other data (67-79) ^e	
Organics							
MBAS (ABS) _____ ml				45 47			
				48 50			
				51 54			
a Master card A (21-34) b Master card A (52-66) c Type: 1. Pumped 4. Spigot 2. Bucket 5. Bailer 3. Forest 6. Special d Source of data: 1. USGS 5. Industrial 2. UPHS 6. Private 3. State Health 7. National 4. State						e Indicate constituent and card color Card S 80 S	

National records, subject to revision

Geological Survey

Experimental form: gw-gw (1966)

UNITED STATES DEPARTMENT OF THE INTERIOR

Ground Water Analysis

Water resources Division

State N. Mex. 316 County Mora M10 Latitude 31 54 3 Longitude 10 11 18 Seq. No. 19 Date coll. 04 01 66

NW from Watrous (8 miles) SE 1 sec. 3 T19N R18E
Local well No. 19.18.3.400 Owner b. USDI, NPS, Ft. Union Collected by N.J. Bleser Lab. Anal. A-1 + ~~61F~~ Project No. NPS
Nat'l Mon., Watrous, NM Adm. Asst. -Fe soln

WBF Blue sandy shale Appearance Wc Clear Wa Lab. No. 059198 Sampling depth 26 29 Type C

Kx106 23.3 T 3501 R KC1645 (543) 1 5 4 3		ppm		epm		ppm		epm	
pH 8.0 8.0 Temperature °F 50.0 est. 50°		SO ₄ 0.00 ml (32) 3.2 0.67		Fe f 1.90 2.5 ml 0.02		Total 42 45			
S ₂ 1.21 10 ml 1.2		f 1.66 0.00 7.68 7.68 1.59		Total 42 45		Dissol. ml Abs			
Abs 241 42 44		Cl 50 ml (14) 1.4		Mn f 46 49		Dissol. ml Abs			
Ca 1.66 50 ml 0.00 1.66 0.85		Mg · AgNO ₃ 1.47 0.00 1.47 1.41		Cu ml 50 52		Pb ml 53 54			
Mg 7.2 50 53 0.59		Source of data d 79 Card Q 80 Q		Zn ml 55 57		Subtotal cations (Al, Fe, Mn, Cu, Pb, Zn).....			
Subtotal cations (Ca, Mg)..... 1.44		F 10 ml Abs 1.349 0.5 0.03		Subtotal cations (Ca, Mg, Na, K).....		Total cations.....			
Na 6.1R 102 1.02 4.44		NO ₃ 11.6 10 ml Abs 0.02 0.0 0.00		Dissolved solids 51.5398 (32) 3.2 1		Residue at 180° 50.77100 ml 58 63			
Subtotal cations (Ca, Mg, Na, K)..... 5.94		PO ₄ f Abs 33 35		Dish No. 20 33 3.3 1		Calculated 64 69			
HCO ₃ 14.60 50 ml 0.00 14.60		HPO ₄ % H ₂ PO ₄ %		Hardness 36.60		Ca, Mg 3.00 50 ml 7.2 7.2			
CO ₂ 50 ml 0.00		Total anions..... 5.88		Noncarbonate 0 74 77		Color 78-79 5 Card R 80 R			
Remarks and explanation on other side									

Provisional records subject to revision

C 59198

State	County	Lat.	Long.	Seq. No.	Date	Samp. depth	c
Remarks: Source: 8" domestic wtr. DD: 8/28/57 Depth: 325' WL: static 85' below top of casing Sampled after pumping: estimated 2 days Yield: est. 50 GM pump (estimate) PC: Visitor Center Use: Dom., Ps							
Br _____ ml				26	28	Radiochemical	
				55	57	Alpha (pc/l)	
I _____ ml				29	31	Beta (pc/l)	
				58	60		
Alk. as CaCO ₃				32	35	Ra (pc/l)	
				61	63		
Free CO ₂				36	38	U (ug/l)	
				64	66		
SAR				39	41	Other data (67-79) ^e	
				5.2			
RSC				42	44		
Organics							
MBAS (ABS) _____ ml				45	47		
				48	50		
				51	54		
a Master card A (21-34) b Master card A (52-66) c Type: 1. Pumped 4. Spigot 2. Bucket 5. Bailer 3. Forest 6. Special d Source of data: 1. USGS 5. Industrial 2. UPHS 6. Private 3. State Health 7. Educational 4. State				e Indicate constituent and card columns. Card S			
				80	S		

MAY 26 1966

JOE O'NEILL

E. F. WILLIAMS

Checked by

Checked by

Date began

Date transmitted

Field by

Verified

G.W. Type Analysis A-1 U.S. GEOLOGICAL SURVEY ANALYTICAL NOTES Project NPS Collector N.J. Bleser
 State New Mexico County Mora City (at or near) Fort Union National Monument; NW from Watrous, N.M., 8 mi Adm. Asst.
 Latitude-Longitude _____ Well No. 19.18 E 3. 400 Date Collected May 8, 1965
 Owner U.S. Government, Department of Interior, National Park Service Date Drilled Aug. 27, 1957 Cased to _____ Depth (ft) 325 Diam. (in) _____

pH 8.1 8.1 Temp (°F) _____
 Hardness as CaCO₃ (69) 69
 Total _____
 Noncarbonate 0 0
 Color (5) 5 S.A.R. 5.5 5.5
 % Na (76) 76 T/ft (0.45) 0.45
 Density (g/ml) _____
 W.B.F. Blue sandy shale
 Producing Intervals _____
 W.L. 85 ft, static below top of casing
 Sampled after Pumping (Time) 3 days (est.)
 Yield 50 gpm, pump, est.
 Point of Collection Visitor center
 Appearance Clear
 Use Domestic
 Remarks: Source: 8" well for domestic water
 Chemist KO Checked By J/EK
 Date Completed JUN 7 1965
 Date Transmitted _____
 Laboratory No. 667001

Spec. Cond. (micromhos at 25°C): T <u>23.6</u> R KCl <u>3.43</u> R Sample <u>627</u> <u>(558)</u> <u>555</u>			
	PPM	EPM	
Silica f <u>50.8</u> vol <u>10</u> <u>(12)</u> <u>12</u>			
o.d. <u>0.235</u>			
Calcium <u>2.47</u> EPM TH <u>1.38</u>			
o.d. <u>0.84</u>			
vol <u>50</u> <u>1.63</u> <u>(16)</u> <u>16</u> <u>0.80</u>			
Magnesium <u>11.25</u>			
o.d. <u>7.80</u>			
vol <u>50</u> <u>3.45</u> <u>(7.1)</u> <u>7.1</u> <u>0.58</u>			
Sodium vol <u>25-50</u>			
o.d. <u>61.3</u>			
vol <u>50</u> <u>52.4</u> <u>(105)</u> <u>105</u> <u>4.57</u>			
Potassium vol <u>25-50</u>			
o.d. <u>12.2</u>			
vol <u>50</u> <u>1.22 x 2</u> <u>(2.4)</u> <u>2.4</u> <u>0.06</u>			
Na+K (Calculated)			
Iron f <u>1.92</u> vol <u>25</u>			
In sol.: o.d. _____			
Total: o.d. <u>0.006</u> <u>(0.01)</u> <u>0.01</u>			
TOTAL CATIONS		<u>6.01</u>	
Bicarbonate <u>15.30</u>			
o.d. <u>3.35</u>			
vol <u>50</u> <u>14.95</u> <u>(299)</u> <u>299</u> <u>4.90</u>			
Carbonate <u>0</u> <u>0</u> <u>0.00</u>			
Sulfate <u>1.81</u>			
o.d. <u>0.00</u>			
vol <u>10</u> <u>1.81</u> <u>(35)</u> <u>35</u> <u>0.73</u>			
Chloride <u>2.75</u>			
o.d. <u>1.30</u>			
vol <u>100</u> <u>2.44</u> <u>(12)</u> <u>12</u> <u>0.34</u>			
AgNO ₃ <u>0.5</u> <u>2.95</u>			
Fluoride vol <u>10</u>			
o.d. <u>1.30</u> <u>(0.7)</u> <u>0.7</u> <u>0.04</u>			
Nitrate f <u>11.5</u> vol <u>10</u>			
o.d. <u>0.00</u> <u>(0.0)</u> <u>0.0</u> <u>0.00</u>			
Boron f <u>1.61</u> vol <u>1</u>			
o.d. <u>0.125</u> <u>(0.20)</u> <u>0.20</u>			
Sum of Constituents <u>(337)</u> <u>337</u>			
Residue on Evaporation at 180°C			
vol <u>50</u> <u>58.17</u> <u>(334)</u> <u>334</u>			
dish <u>1.19</u> <u>6.5798</u> <u>REKUN (O.V.)</u>			
TOTAL ANIONS		<u>6.01</u>	

Provisional records, subject to it.

FORM 9-1367 (9-1960)
U. S. DEPT. OF INTERIOR
GEOLOGICAL SURVEY

ANALYTICAL STATEMENT - GW

COUNTY Mora 79' 53'

19N.18E.3.400 NPS LAB NO. 54092

Location Ft. Union Nat'l. Mon. Date of collection Apr. 6, 1964

ument, NW from Watrous, N.M. Ignition Loss Color 1

SE 1/4 sec. 3 T19N R18E Dissolved Solids: 356

Source (type of well) 8" domestic wtr. Residue at 180°C 351

Owner U.S. Gov't., Dept. of the Interior, NPS Calculated (Sum) 0.48

Date dril 8/27/57 Cased to ft Hardness as CaCO₃ 70

Depth 325' Diam 0 Non-carbonate Hardness 0

Blue sandy shale I No 77 SAE 5.7 pH 8.1

static 85' below top Specific Conductance 570

Water level Static of casing. (microhmohm at 25°C)

Yield 50 gpm (xxx est) pump

Pt of coll. Visitor center *No more than 3 days est.

Appearance Clear

Temp (°F) 50 Use Ps

Collector N. J. Bleser

Chemist LJA

Date completed May 12, 1964

Checked by RLL

	ppm	ppm
SiO ₂		12
Fe (total)		0.05
Ca	0.80	16
Mg	0.60	7.3
Na	4.78	110
K	0.06	2.2
Na+K	6.24	
HCO ₃	5.13	313
CO ₃	0.00	0
SO ₄	0.81	39
Cl	0.28	10
F	0.03	0.6
NO ₃	0.00	0.0
	6.25	B 0.16

Date transmitted NPS & NMGW Provisional records, subject to revision.

481-4-30-63

Southwest Region
Santa Fe, New Mexico

L54
FOUN

APR 24 1963

Memorandum

To: Director

From: Assistant Regional Director, Resource Planning

Subject: Water Analysis of Water at Fort Union National Monument

Enclosed is a copy of a water analysis made by the U. S. Geological Survey of waters taken from the well at Fort Union.

We have placed a copy of this analysis in our Docket No. 1 and by copies of this memorandum are sending them to WODC and Superintendent, Fort Union, for insertion in their dockets.

Leslie P. ~~Anderson~~

In duplicate ✓

Enclosure

cc: WODC (2), w/enc.
Superintendent, Fort Union, w/enc.

FORM 9-1367 (9-1560)

U. S. DEPT. OF INTERIOR

GEOLOGICAL SURVEY

Field No. Well

No. Ft. Union

PS

ANALYTICAL STATEMENT - GW

COUNTY

MORA

LAB NO.

51345

Location Watrous (NW from)

Date of collection March 18, 1963

N. Mex. SE 1/4 sec. 3 T19N

Ignition Loss Color 1

R18E.

Dissolved Solids: SiO₂ 12

Source (type of well) 8" Domestic water

Residue at 180°C 319

Owner Dept. Int. Nat'l. Park Sv.

Calculated (Sum) 322

Ft. Union Nat'l. Mon.

Tons per Acre Foot 0.43

Watrous, N.M.

Date dtd 8/27/57

Depth 325'

var Blue sandy shale

Water level 85' below top of casing

Sampled after pumping hrs

Yield 50 GPM (meas or est) pump est.

Pt of coll Laundry tub Residence No. 1

Appearance Clear

Temp (°F) 48 Use Public supply

Collector Homer Hastings- Sup't.

Chemist Lewis J. Alary

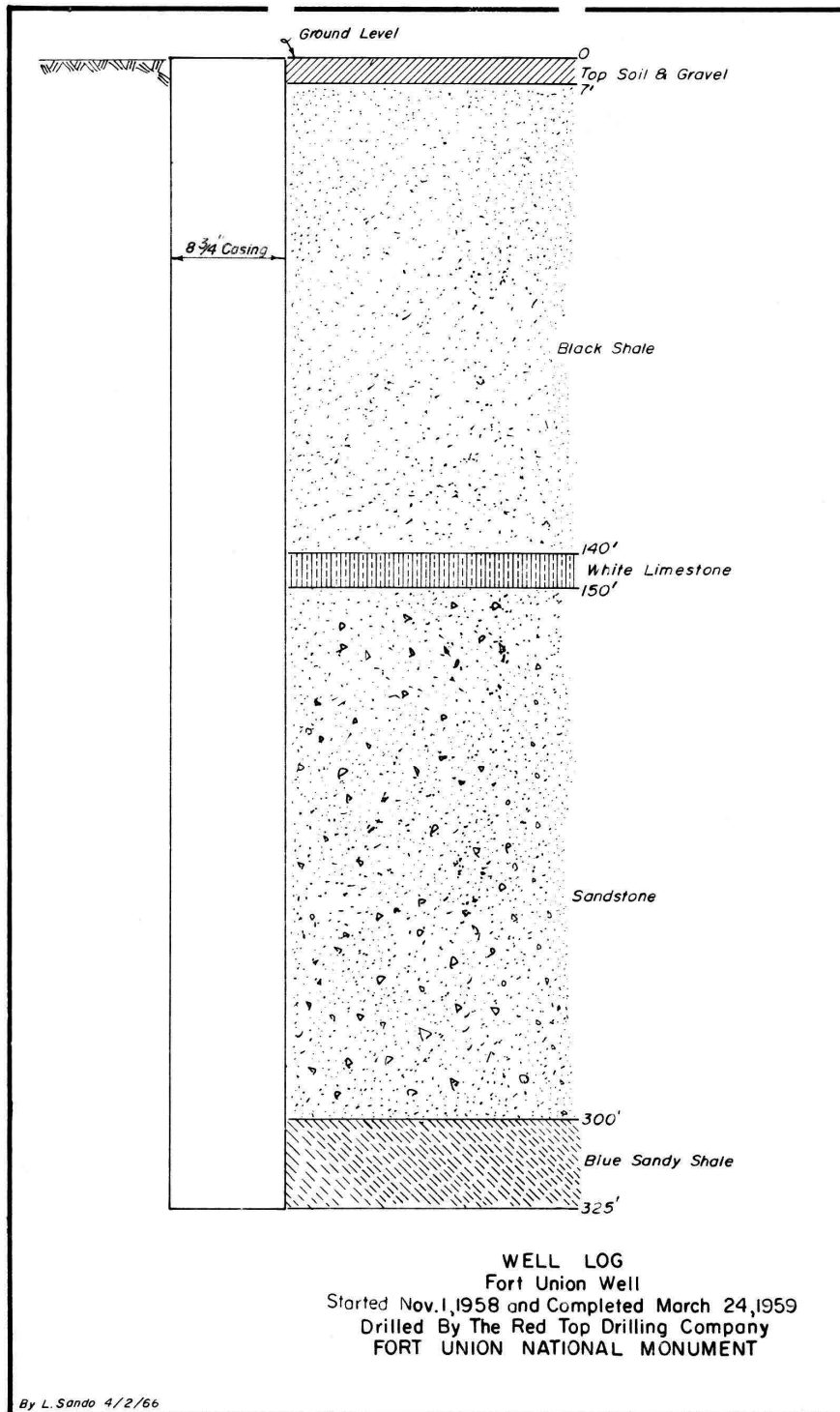
Date completed 4/5/63

Checked by E.F. Williams

Date transmitted APR 19 1963

4 NPS NMGW

	ppm	ppm
SiO ₂		12
Fe		
Tot Fe	0.03	0.08
Co	0.60	12
Mg	0.30	3.0
Na	4.74	109
K	0.05	1.8
Na + K	5.69	
HCO ₃	4.67	285
CO ₃	0.00	0
SO ₄	0.52	25
Cl	0.51	18
F	0.04	0.7
NO ₃	0.00	0.1
B	5.74	0.15



W K C
L-54
115029

**Region Three
Santa Fe, New Mexico**

Memorandum

To: Director
From: Regional Chief of Lands
**Subject: Log of Well and Record of Test Pumping, Fort Union
National Monument**

The well at Fort Union has been completed at a final depth of 325 feet and cased to a depth of 165 feet with 8-3/4" D. Casing.

A pump test was made August 21 and the well produced 50 G.P.M. without drawdown from 1:00 P.M. to 5:00 P.M.

Copies of the Log and records of the pump test are attached.

JOHN E. KELL

John E. Kell
Regional Chief of Lands

In duplicate ✓

Attachments

**Copy to: Superintendent, Fort Union
USGS, Albuquerque**

FOUND

RECORD OF TEST PUMPING
Water Well located at Fort Union National Monument

LOG OF WATER WELL

Fort Union National Monument

RED TOP DRILLING CO.
LAS VEGAS, NEW MEXICO

July 17, to August 22, 1957

Drillers:

Luciano Ulibarri
Phillip Tapia

Date	From	To	Description of Formation	WATER				Date	From	To	Description of Formation	WATER			
				G.P.M.	TASTE	ODOR	WATER LEVEL					G.P.M.	TASTE	ODOR	WATER LEVEL
	0	7	Feet Top Soil & Gravel						165	170	Sandstone				
	7	20	Feet Black Shale						170	180	Sandstone				
	20	30	Black Shale						180	190	Sandstone				
	30	40	Black Shale	10					190	200	Sandstone				
	40	50	Black Shale						200	210	Sandstone				
	50	60	Black Shale						220	230	Sandstone				
	60	70	Black Shale						230	240	Sandstone				
	70	80	Black Shale	20					240	250	Sandstone				
	80	90	Black Shale						250	260	Sandstone				
	90	100	Black Shale						260	270	Sandstone				
	110	120	Black Shale						270	280	Sandstone				
	120	130	Black Shale						280	290	Sandstone				
	130	140	Black Shale						290	300	Sandstone				
	140	150	White Limestone						300	310	Blue Sandy Shale				
	150	160	Sandstone						310	320	Blue Sandy Shale				
	160	165	Sandstone						320	325	Blue Sandy Shale				

Remarks: Began to encounter more water Gradual increase in water as we went down.

* *

SAMPLE LOG
WELL 18.19.3.434
Mora County, New Mexico

Owner: National Park Service
Fort Union National Monument

Date Completed: August 22, 1957

Depth: 325 ft.

Casing: 8-3/4 ft. to 165 ft.

Water level: 85 ft.*

Yield: 50 gpm

Samples described by W. D. Purtyman

<u>Description</u>	<u>Thickness (ft)</u>	<u>Depth (ft)</u>
Alluvium	8	8
Shale, dark gray, calcareous; minor amount of sandstone, Light gray, very fine to medium, subrounded to angular quartz	14	20
Shale, dark gray, calcareous	30	50
Shale, dark gray, calcareous; trace of pyrite	10	60
Shale, dark gray, calcareous	40	100
Shale, dark gray, calcareous, trace of pyrite; minor amount of quartz, very fine to medium, rounded to subangular, frosted	20	120
Shale, dark gray; minor amount of very fine to medium, rounded to subrounded, frosted quartz; trace of pyrite	20	140
Shale, dark gray; minor amount of quartz, very fine to medium, subrounded, frosted	10	150
Sandstone, white, very fine to fine, subrounded to subangular, frosted quartz; minor amount of shale, dark gray, calcareous	15	165

SAMPLE LOG (Continued)
WELL 18.19.3.434

<u>Description</u>	<u>Thickness (ft)</u>	<u>Depth (ft)</u>
Sandstone, white, very fine to medium, subrounded to angular, frosted; minor amount of feldspar	5	170
Sandstone, white, very fine to medium, subrounded to angular, frosted; minor amount of silty limestone, grayish orange pink; trace of feldspar	10	180
Sandstone, white, very fine to medium, rounded to angular, frosted quartz; minor amount of feldspar	10	190
Sandstone, white, very fine to fine, rounded to angular, frosted quartz; minor amount of feldspar	40	230
Sandstone, white, very fine to medium, subrounded to angular quartz; minor amount of feldspar	20	250
Sandstone, white, very fine to medium, subrounded to angular quartz; minor amount of feldspar; trace of shale, greenish gray; trace of pyrite	20	270
Sandstone, white, very fine to medium, rounded to subangular, frosted quartz; minor amount of feldspar; trace of shale, greenish gray; trace of pyrite intergrown in quartz	10	280
Sandstone, white, fine to medium, rounded to subangular, frosted quartz; minor amount of shale, greenish gray; minor amount of feldspar; trace of pyrite	20	300
Shale, greenish gray; sandstone, white, very fine to medium, rounded to subrounded, frosted quartz; traces of pyrite and feldspar	20	320
*Prior to pumping test, water first encountered at 40+ ft., and rose to within 10-15 feet of surface.		

Other Supporting Information

with Right
cutoff #1

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

L54

Memorandum

To: Superintendent, Fort Union National Monument
From: Hydraulic Engineer, Water Resources, PSN-SWR
Subject: Well No. 1, Fort Union National Monument

PURPOSE: To test pump Headquarter's well for the Maintenance Division
in order to set cutoff electrodes at proper depth above pump.

VISITORS: Richard Rougemont, Engineering Aid
Albert Duran, Engineering Draftsman
Clyde Acquero, Engineering Technician
Garland Moore, Hydraulic Engineer

TEST PUMPING:

Basic data of existing pump assembly (maintenance file).

Depth of Bore	325 feet
Diameter of Well	8 5/8 inches (O.D.)
Depth of Pump	250 feet
Perforations	No data

Test pumping was designed accordingly to allow for maximum drawdown to 240 feet BTC with measured flow through a meter. A safety factor of 10 feet of water was provided. Attached is drawdown and recovery data measurements made before pump froze when drawdown reached 240 feet BTC.

RESULTS:

The results of the test itself was inconclusive as a stabilizing level was never reached. In comparing the results with the step drawdown test made in 1957 after the well was completed, two significant bits of information can be concluded.

1. The water table lowered from 85 feet BTC (8/21/57) to 91.7 feet BTC (3/29/74).

2. The drawdown for 50 gpm is now in excess of 240 feet. The 1957 step drawdown test showed the water level stabilized at 220 feet BTC.

The changing characteristics of well performance may be due to:

- a) Incrustation of perforations resulting in excessive well entrance head losses.
- b) General reduction in available water throughout the entire region.

If 2b is the reason, deepening the hole to allow additional water is the only solution.

It is more likely that 2a is the real culprit which will require the following maintenance.

- 1. Test pump well to obtain pre-maintenance hydraulic characteristics of well.
- 2. Pour acid -- recommend using VOP Johnson's Nu-Wall pelletized chemicals -- in well. Recommend using minimum nine pounds of tablets in well since we don't know how many feet of the well is perforated. Wait 12-24 hours. Pump water to waste until waste water is clear.
- 3. Test pump well to obtain post-maintenance hydraulic characteristics of well.

Estimated cost for total job, if we don't freeze the pump, is placed at \$200.00.

Enclosed is memorandum by Richard Rougemont who witnessed and measured the reinstallation of the pump by Red Top Drilling Company on April 1, 1974. It is recommended that the information be accurately recorded in all files (park and region) to prevent a recurrence of our previous mishap.

/s/ Garland Moore

Garland Moore

Enclosures

cc:
Chief of Maintenance, MRM-WASO, Attn: Vic Berte'
Associate Regional Director, M-SWR, Attn: Curt Townsend
✓FSN-SWR

GMoore:ba 4/19/74

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

TO : The File

DATE: April 1, 1974

FROM : Engineering Aid, Water Resources, PSN-SWR

SUBJECT: Gather Information on Fort Union Well

Upon arrival at Fort Union April 1, the well proceedings were discussed with Superintendent Ross Hopkins. He informed me that a new pump was being installed. I went over to the well site and talked with the Maintenance Foreman Archuletta and the pump installer. A static water level test was run several times to come up with 90 ft. SWL. We then proceeded to measure total depth of hole and come up with 318'7" from top of casing to bottom.

The driller informed me the electrode wiring was tangled at 80 ft. The driller placed the new pump with old motor, after checking it out, to a depth of 231 ft. The electrodes were placed at 225 ft. and 151 ft. The test on electrodes checked out as working OK. The 12 joints of 2" pipe were visually inspected and found to be satisfactory.

The total length of pump and motor is 7'10". The pump model number is 40P4J2-9, Code J73. The motor model number is MP4J28, 230 v, 295 amp, SL71. After completing my work, I returned to Santa Fe. A copy of the driller's record will be sent to our office via Mr. Archuletta.

Sta-Rite

Richard P. Rougemont

Richard P. Rougemont



Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

TEST WELL NO. 1, Fort Union National Monument

DATE: March 29, 1974 WELL CONSTR: Red Top Drilling Company

WEATHER: Windy SWL 91'7" : Moore, et al.

DRAWDOWN DATA

Clock Time	t	t'	t/t'	Measured Drawdown (BTC)	Q (gpm)	Drawdown (ft)	Q/DS	Remarks
10:00	0			91.6	Avg. 60	0		1,116,100
	1			100.4	Avg. 60	8.10	7.4	
	3.8			119.4	Avg. 60	27.10	2.2	
	5			126.3	Avg. 60	34.9	1.7	1,116,400
	6			131.0	Avg. 60	38.6	1.6	
	10			147.6	Avg. 60	56.0	1.1	1,116,700
	15			163.3	Avg. 50	71.9	0.7	1,116,950
								495 micromhos @ 58°F
	20			176.3	Avg. 50	84.9	0.6	1,117,200
	30			184.0	Avg. 50	92.6	0.5	1,117,700
10:44	44			-	Avg. 46			1,118,340
Test was temporarily stopped due to hang up of testing equipment inside casing.								
11:00	0			116.2	Avg. 50	24.8	2.0	1,118,340
	1			124.3	Avg. 50	32.9	1.5	
	2			130.9	Avg. 50	39.3	1.3	1,118,440
	3			137.0	Avg. 53	45.6	1.2	
	4			142.3	Avg. 53	50.9	1.0	
11:05	5			147.3	Avg. 53	55.9	0.9	1,118,600
	6			-	Avg. 57			-
	7			-	Avg. 57			-
	8			-	Avg. 57			-
	9			-	Avg. 57			1,118,881
	10			-	Avg. 57			1,118,886
	19			194.4	Avg. 49	102.10	0.5	1,119,340
	20			196.8	Avg. 49	105.2	0.5	1,119,380
	22			-	Avg. 50			1,119,470
	23			202.3	Avg. 50	110.09	0.5	
	24			204.2	Avg. 50	112.8	0.4	
	25			205.6	Avg. 50	114.0	0.4	1,119,630
11:26	26			206.7	Avg. 70	115.1	0.6	
	27			207.8	Avg. 70	116.2	0.6	1,119,770
	28			210.1	Avg. 44	118.7	0.4	
	29			210.3	Avg. 44	118.9	0.4	

DRAWDOWN DATA

Clock Time	t	t'	t/t'	Measured Drawdown (BTC)	Q (gpm)	Drawdown (ft)	Q/DS	Remarks
11:30	30			211.3	Avg. 44	119.9	0.4	
	31			212.4	Avg. 44	120.10	0.4	
11:32	32			213.4	Avg. 44	121.10	0.4	
	33			214.3	Avg. 44	122.9	0.4	
	34			215.1	Avg. 44	123.7	0.4	
	35			216.0	Avg. 44	124.6	0.4	1,120,120
	36			216.9	Avg. 46	125.3	0.4	
	37			217.6	Avg. 46	126.0	0.4	
	38			218.2	Avg. 46	126.8	0.4	
	39			219.2	Avg. 46	127.8	0.4	
	40.7			220.0	Avg. 46	128.6	0.4	1,120,350
	45			224.9	Avg. 48	133.3	0.4	1,120,590
	50			225.5	Avg. 48	133.11	0.4	1,120,830
	55			227.8	Avg. 44	136.2	0.3	1,121,050
12:00	60			229.8	Avg. 44	138.2	0.3	1,121,290
	70			232.4	Avg. 53	140.10	0.4	1,121,760
	80			234.3	Avg. 46	142.9	0.3	1,122,220
	90			235.1	Avg. 45	143.7	0.3	1,122,670
12:40	100			236.3	Avg. 45	144.9	0.3	1,123,130
	110			237.5	Avg. 44	145.11	0.3	
1:00	120			238.2	Avg. 44	146.8	0.3	1,124,000
1:18	138				Avg. 23			1,124,680

RECOVERY DATA

<u>Clock</u> <u>Time</u>	<u>t</u>	<u>t'</u>	<u>t/t'</u>	<u>Measured</u> <u>Drawdown</u>	<u>Residual</u> <u>Drawdown</u>	<u>Recovery</u> <u>(S-S') ft.</u>	<u>Remarks</u>
1:18	0			193.2			
1:19.5	1.5			182.1			
1:21.5	2.5			172.0			
1:24	5.0			162.5			
1:26	7.0			157.8			
1:28	9.0			153.2			
1:29.8	10.8			150.0			
1:32	13.0			146.0			Snag
1:34.5	15.5			143.3			
1:36	17.0			139.5			
1:38	19.0			136.6			
1:40	21.0			134.2			
1:42	23.0			131.8			
1:45	26.0			128.8			
1:50	31.0			124.1			
1:55	36.0			120.6			
2:15	56.0			111.8			
2:45	86.0			106.0			
3:07	108.0			103.3			



IN REPLY REFER TO:

154

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
Fort Union National Monument
Watrous, New Mexico 87753

February 6, 1973

RECEIVED	CT 2/9/73
ASST. DIR.	
ADM. ASST.	
CHIEF OF BUREAU	
CHIEF OF DISTRICT	
CHIEF OF FIELD	
CHIEF OF INVESTIGATION	
CHIEF OF LEGAL COUNSEL	
CHIEF OF PLANNING	
CHIEF OF PUBLIC AFFAIRS	
CHIEF OF RECREATION	
CHIEF OF RESOURCE MANAGEMENT	
CHIEF OF SAFETY	
CHIEF OF TRAVEL	
CHIEF OF UTILITIES	
CHIEF OF WILDLIFE	
CHIEF OF WILDERNESS	
CHIEF OF ZONING	

Memorandum

To: Director, Southwest Region
From: Acting Superintendent, Fort Union
Subject: Water Use

Fort Union has only one water system, a well, which provides our total water supply.

The daily average number of people using this system in 1972 was as follows:

<u>MONTH</u>	<u>USE</u>
Jan.	18.2
Feb.	18.7
Mar.	20.4
Apr.	20.9
May	21.1
June	25.3
July	27.7
Aug.	29.1
Sept.	23.0
Oct.	20.9
Nov.	18.3
Dec.	18.5
	<u>262.1</u>

Theresa Fulgenzi
Theresa Fulgenzi

LS4 Form

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

L54-SM

DEC -9 1970

Signature & Date	
RD	
ARD	
SA	
DP	
G	
PM	
A	
2	S
1	SM
3	MAIL

Memorandum

To: Superintendent, Fort Union
From: Acting Assistant Director, Park Support Services
Subject: Water rights use monitoring

At the present time there is some question as to whether or not the National Park Service should record water use to justify water rights. The question of water rights justification has been raised many times. The whole matter is now being studied in the Washington Office. Pending outcome of that study, we suggest a system of estimated use be conducted and recorded.

The planning procedures to be met prior to development for the flowing spring are as stated in your October 30 memorandum. However, the date for the planning is still a year or more away. We suggest that considerations and justifications for developing the spring be put into a Master Plan suspense file and maintained in your office. Undoubtedly other matters will develop that can be referenced the same way. A metered primary water system may also be pertinent to a final development plan.

We recommend that no reservoir or meter installations be made until a final position is taken on the matter. We will be glad to assist in setting up a system for water use estimation. Please contact Ronald Cotten in this regard.

Ela

cc:
SM w/c inc.

RDP:mlb - 12/8/70

L54
Fann



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
Fort Union National Monument
Watrous, New Mexico 87753

IN REPLY REFER TO:

154 - SM
(X) D22

October 30, 1970

Memorandum

To: Director, SWR
From: Superintendent, FOUN
Subject: Water Rights and Use

Mr. Fitch's memo of October 7, 1970 suggests "that we keep official records of water use, including visitor use, resident requirements, irrigation, and others". This we cannot do since we have no meters and several would be required to provide accurate data. At the Visitor Center, for example, water is used in the drinking fountains and restrooms for visitor benefit and outside, the lawns and landscaping must be irrigated.

If a meter was installed in the two-inch line where it leaves the well, use for the entire monument could be recorded.

As reported on the Water Resource Proposal submitted to the RO on September 1, 1970, there is a flowing spring between Residence No. 2 and the Sewer Lagoon. This according to crude measurements produces about 3/4 gal. per minute which has been piped into Manhole No. 1 as shown in sheet 8 of Drawing NM-FTU-2010. In a recent conversation in the RO with Engineer Wm. Fields he suggested preparation of a PCP covering a sump in which the water could be collected and then pumped into a trailer tank for distribution. I recommend the sump be underground and have inside measurements of at least 8' x 12' x 6' deep. It was considered desirable by former Regional Engineer Phillip Wohlbrandt but was not entered on a Master or Development Plan. According to current planning procedure, it should be shown on a General Development Plan and covered by a Design Directive before a PCP is prepared. In my memo of September 25, 1970, P22, I raised an unanswered question about the status of our General Development Plan. Please advise on how to get the water collection sump covered by the necessary procedure preceeding a PCP.

Homer F. Hastings
Homer F. Hastings

HH/tf

154
Zoon

RECEIVED				
NPS OFFICE OF THE SUPERINTENDENT				
NOV 2 - 1970				
	Action	Info	Initial	Date
D				
A/D				
AA				
AC				
C				
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S				
Files				

NATIONAL PARK SERVICE
Fort Union National Monument
Watrous, New Mexico 87753

IN REPLY REFER TO:

L54 - SM
(X) D22

December 15, 1970

Memorandum

To: Director, SWR
Attention: Engineer Ronald Cotton

From: Superintendent, FOUN

Subject: Water Rights Use Monitoring

The following is in response to Mr. Ela's memo of December 9, suggesting that a system of estimated water use be conducted and recorded. Mr. Cotton may have access to tables which show the average water usage for a family of two with an added figure for each child. Considerations should be given or perhaps a separate table used for families with an automatic washing machine since this significantly effects the amount of water used.

We also note Mr. Ela's suggestion that we develop considerations and justifications for using the spring south of Res. No. 2. Since we now have an adequate system supplied by a pumped well, I assume the justifications for developing the spring are primarily to establish a legal right of use. Therefore, would the following justification on a PGP be sufficient?

Water from a flowing spring was encountered when the trench for the sewer line was excavated from the residential area to the sewer lagoon. This spring produces approximately 3/4 gallons per minute. During the growing season, water from our drilled well must be hauled at least every two weeks to sustain the growth of more than six hundred trees and shrubs planted for landscaping. By catching the spring water, which wastes into the sewer lagoon, in a sump and conveying it to the point of usage in a water trailer, some monetary saving may be accomplished.

Furthermore, this could serve as a stand-by system in the event the main system failed for a prolonged period.

RECEIVED
NPS SOUTHWEST REGIONAL OFFICE
DEC 17 1970

Action	Infor	Initial	Date
D			
A D			
MA			
O E			
C			
A			
S			
Filer			

L 54
7.

Please provide instructions on how to develop a system for water use estimation. Four types of usage are involved:

1. In the quarters for domestic purposes.
2. Outside the quarters where employees water trees, grass, and shrubs with a hose.
3. Irrigation by hose of the trees and shrubs and lawns at the Visitor Center.
4. Water hauled in a water tank for trees and shrubs beyond the reach of a hose at the sewer lagoon, outside the fenced areas at the quarters, trees on the Parade Ground, and trees ~~are~~ to be planted for screening the 50,000 gallon water storage tank.


Homer F. Hastings

HH/tf



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
WESTERN SERVICE CENTER
450 GOLDEN GATE AVENUE, BOX 36025
SAN FRANCISCO, CALIFORNIA 94102

612 10-26-70
RECEIVED
NATIONAL PARK SERVICE
WASHINGTON FIELD
Oct 23 9 22 AM '70

IN REPLY REFER TO:

L54 (WSC)LWW
FOUN - WR Docket
#1
MW

October 20, 1970

Memorandum

To: Director, National Park Service
Attention: Chief, Division of Water Resources

From: Chief, Water Resources Section, Office of Land Acquisition
and Water Resources, WSC

Subject: Transmittal of correspondence regarding water rights at
Fort Union National Monument

As discussed with Mr. E. Reed, of your office, the enclosed correspondence is submitted for your information and files.

Your attention is called to the last paragraph of the October 7, 1970, memorandum, in that it appears to somewhat define water rights policy.

Any comments you might have on this matter would be appreciated.

Gerard S. Witucki
Gerard S. Witucki

Enclosures

Memo, dtd 1/6/58
Memo, dtd 9/24/70
Memo, dtd 10/7/70

FOUN

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

L54-SH

OCT 7 - 1970

Memorandum

To: Superintendent, Fort Union
From: Assistant Director, Park Support Services
Subject: Water rights

In your memorandum of September 24 you discussed the water rights in your area.

The question about the artesian well was raised by Mr. Dunn's memorandum of January 6, 1958, because Fort Union is in an open basin and unless water in a well is under artesian pressure there is no need under State law to file a Declaration of Ownership or an Appropriative Water Right application.

By legal definition the well is artesian. An artesian well does not have to be a flowing well. It only has to have sufficient pressure to raise the level of the water from one stratum to another. Therefore on January 8, 1960, this office filed a Declaration of Owner of Underground Water Right with the State Engineer of New Mexico. At that time it was Park Service policy to follow all State laws pertaining to water rights.

Even under present policy, since the lands in Fort Union were not withdrawn from the Public Domain, you are required to follow State law. In line with that, it is advisable that we keep official records of water use, including visitor use, resident requirements, irrigation, and others. This is not necessary under State law; however, it is good business to know what our water uses are.

/s/ Monte E. Fitch

cc:
Field Solicitor
Director, WSC (2)

*See in
154000 LHM
you/10/10/70*

Port Union National Monument
Watrous, New Mexico 87753

D5039

September 24, 1970

Memorandum

To: Director, SWR
From: Superintendent, POUN
Subject: Water Rights

RECEIVED		
WATER		
OCT 15 1970		
NO.	INITIALS	DATE
WTOCKI, G.		
CHAVEZ, D.		
REMARKS		
<i>My letter to Director re memo from Superintendent of St. Louis, Mo. M.B.</i>		

Enclosed is a photocopy of a memorandum of January 6, 1958 from A. van V. Dunn concerning Water Right Docket No. 1, Port Union. This raises a question about whether our well is artesian. The answer is no, but it is as indicated in the last paragraph of Mr. Dunn's memorandum. The well was drilled by the Red Top Drilling Company of Las Vegas, New Mexico with Marvin Isabel the owner and manager. By telephone he was contacted on September 23, 1970 and he reported that at both the 30 and 240 foot levels, the well was artesian to the extent that water rose above the level at which it was encountered but at no time did it overflow the top of the well.

Before former Regional Engineer Phillip Wohlbrandt retired, about 1965, he advised that the fact we use the water in the Visitor Center, in the quarters, and for irrigation should be made a matter of official record but I find no indication this was done. What action is necessary to accomplish this?

Homer F. Hastings

Enclosure

HM/tf

Photocopy to Western Service Center, Water Resource Section, Attn: Marie Kennedy on 10/12/70 as per instructions received by telephone from Marie Kennedy.

D5033-L

754

January 6, 1958

Memorandum

To: Regional Director, Region Three
From: Chief, Water Resources Section
Subject: Water Right Docket No. 1, Fort Union

Attached is your folder for the subject docket, with table of tentative contents, and items 2 and 3 therein listed. We have supplied items 4 and 5 from attachments with memorandum of December 20, 1957, from Mr. Kell.

We are distributing similar folders to the Superintendent and WODC. We note that Mr. Kell sent a copy of his memorandum of December 20, 1957, to the Superintendent but none to WODC. It is requested that both offices be supplied with items 4 and 5, whether from the attachments with Mr. Kell's memorandum, or by further duplication.

If this is an artesian well, as suggested, we should file an appropriate water right application with supporting map of the size and in compliance with the state regulations. In that case item 1 will be replaced with one to be attached to the unlisted application.

Before we decide on the procedure, I seem to need some clarification of conditions. I interpret the two logs to mean that artesian water was first encountered at 40 feet, but that that water was sealed off. Water was next encountered at a depth of about 240 feet which increased in quantity as the drilling progressed, and that that water rose through impervious sandstone and the sealed casing to 85 feet below the surface, and is the water to be used.

SIGNED

A. van V. Dunn
Chief, Water Resources Section

Attachment - Docket No. 1

Copy to: Superintendent, Fort Union, w/c attachment - Docket No. 1
Chief, WODC, w/c attachment - Docket No. 1

WESTERN OFFICE	
DESIGN & CONSTRUCTION	
JAN 10 1958	
CHIEF	
ADMIN. ASST.	
PERSONNEL	
PLANS & PROJ.	
SAFETY	
ARCHITECT	
ENGINEER	
LAND ACQ.	
RECORDS	
ACTION 17	

Region Three
Santa Fe, New Mexico

LSH
FOUN

AUG 11 1961

W O D C
AUG 14 '61
CHF
ADM
PERS
P & P
ARCH
ENGR
L. A.
SPEC
CONT
SFTY
ACTION TAKEN - DATE

Memorandum

To: Director

From: Acting Regional Director

Subject: Declaration of Owner of Underground Water Right,
Docket No. 1, Fort Union National Monument

Attached is a copy of a Declaration of Owner of Underground Water Right filed by this office January 8, 1960 with the State Engineer's Office, Santa Fe, New Mexico. This Declaration was referred to the District One Office in Albuquerque and was accepted and approved at 8:28 a.m., July 13, 1961 with a priority of August 1957. The Declaration number is Misc. 1-MA-5.

We have inserted this in our Docket No. 1, Fort Union, and with copies of this memorandum are sending copies to Chief, WODC, and Superintendent, Fort Union for placing in Docket No. 1 maintained in those offices.

(SIGNED)

George W. Miller
Acting Regional Director

In duplicate

Attachment

Copy to: Chief, WODC (2) w/attachment
Supt., Fort Union w/attachment

12



STATE OF NEW MEXICO

STATE ENGINEER OFFICE

ALBUQUERQUE

7/13/61

S. E. REYNOLDS
STATE ENGINEER

ADDRESS CORRESPONDENCE TO:
P. O. BOX 3266

2436 SAN MATEO, N.E.

ALBUQUERQUE, N. M.

NPS REGION THREE OFFICE

JUL 20 1961

REG. DIR.	
ASST. R.D.	
ADMIN.	
OPERATIONS	OK 7/20
RANGER ACT.	
INTERP.	
RECREATION	OK 7/20
SOLICITOR	
X Fields	
FILES	

File: Misc.-1-MA-5

United States of America
National Park Service
Fort Union National Monument
Mora, New Mexico

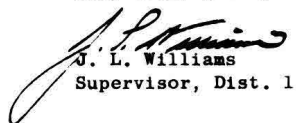
Attention: Mr. Thomas J. Allen

Dear Mr. Allen:

Enclosed is copy of Declaration of Owner of Underground Water Right,
in the name of the United States of America National Park Service,
which has been accepted for filing and given the number Misc.-1-MA-5.

Please refer to this number in all future correspondence concern-
ing this Declaration.

Very truly yours,


J. L. Williams
Supervisor, Dist. 1

mt
encl: Declaration
cc: Santa Fe

L 54 Form

WFO 70-174
(Rev. 8-56)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

COMPLETION REPORT OF CONSTRUCTION PROJECT

*See Memo
12/8/59*

REGION Three	AREA Port Union National Monument	COUNTY Mora	STATE New Mexico
PROJECT OR JOB TITLE Gravity Water System, Storage Tank and Distribution Lines			PCP NO. U-1-1
LOCATION IN AREA Visitor Center to Reservoir		MASTER PLAN NO.	BUILDING NO. XXXXXX
WORKING DRAWING NO. AND TITLE NM-PTU-2008 - Water System Extension			
APPROPRIATION TITLE AND SYMBOL 14X1035			WORK ORDER NO. B-2
CONTRACT NO. 14-10-333-853		DATE WORK STARTED Nov. 1, 1958	DATE WORK COMPLETED March 3, 1959
NAME OF CONTRACTOR Lyster Construction Company		ADDRESS 1329 4th St., Las Vegas, New Mexico	

COST ANALYSIS

CONSTRUCTION ITEMS	QTY.	UNIT COST IN PLACE	TOTAL COST IN PLACE
1. Reservoir, 50,000 gallon, steel	1	7,030.00	7,030.00
2. Pipe, 6", Asbestos Cement	4,479 LF	2.35	10,525.65
3. Pipe, 4", Cast Iron	258 "	2.65	683.70
4. Gate Valve, 6", and box	2	80.90	161.80
5. Gate Valve, 4", and box	1	61.50	61.50
6. Fire Hydrant, 4"	1	192.00	192.00
7. Cable, Control, Electric	6,406 LF	.82	5,252.92
8. House, Hose	3	438.00	1,314.00
9. Day Labor Portion			453.15
(SEE REVERSE SIDE FOR PFO CLEARANCE)			
TOTAL			25,674.72

SUMMARY OF EXPENDITURES

PERSONAL SERVICES 11.48	EQUIPMENT	Construction Costs	MATERIALS AND SUPPLIES 25,674.72
OTHER 25,663.24		Plus PS & S Costs 17.51	1,495.64
		Total Project Costs	30,170.36

CHANGE ORDERS

ORIGINAL CONTRACT AMOUNT 24,615.32	FIRST Overruns 4,06.25	SECOND	THIRD
FINAL CONTRACT AMOUNT 25,221.57	FOURTH	FIFTH	SIXTH

THIS PROJECT OR JOB HAS BEEN COMPLETED IN ACCORDANCE WITH
APPROVED DRAWINGS, SPECIFICATIONS, AUTHORIZED CHANGES

SUBMITTED BY (Name and title) <i>Homer E. Hastings, Supt.</i>	DATE 10/28/59
APPROVED BY (Name and title) <i>Homer E. Hastings, Supt.</i>	DATE 10/28/59

(ATTACH NARRATIVE STATEMENT, PHOTOGRAPHS, AND AS BUILT DRAWINGS TO THIS FORM.)

Completion Report

Gravity Water System,
Storage Tank and
Distribution Lines

Fort Union National Monument

Project No. (PCP No. U-1-1)

Account No. B-2

Drawing No. NM-FTU-2008

Contract No. 14-10-333-453

The contract was awarded to the Lyster Construction Company, 1329 4th St., Las Vegas, New Mexico and was covered by Purchase Order No. 33-142A. The first day of the contract period was November 1, 1958 with 90 calendar days allowed for completion by January 29, 1959. Due to inclement weather, work was suspended by Stop Order No. 1, December 24, 1958. Work was resumed by Resume Work Order No. 1 dated January 12, 1959 and the final completion time was extended to February 17, 1959. Adverse weather required the stopping of all work on February 2, 1959 by Stop Order No. 2. The project continued under Resume Work Order No. 2 dated February 17, 1959 and the final completion date was extended to March 3, 1959.

The contractor was required to accomplish the following:

1. Provide and install a 50,000 gallon steel reservoir.
2. Provide and lay 4,470 lin. Ft. 6-inch asbestos cement pipe and fittings.
3. Provide and lay 120 lin. ft. 4-inch cast iron pipe.
4. Provide and install two 6-inch gate valves in main line, one near the Visitor Center and one near the storage tank.
5. Provide and install two 4-inch valves, one in drain line near storage tank and one in line near fire hydrant.
6. Provide and install one standard fire hydrant.

-2-

7. Provide and install 6,406 lin. ft. electric control cable with fittings and switches between pump house and storage tank.

8. Construct in place three hose houses as specified.

Final inspection was made by Regional Engineer Philip H. Wohlbrandt, Superintendent Homer F. Hastings and Contractor Louis Lyster on February 25 and acceptance of the project was recommended pending the completion of three items which were listed in Mr. Wohlbrandt's memorandum of March 24, 1959 to the Regional Director. These were reported as complete and final payment in full was recommended in a memorandum of March 20, 1959 to the Regional Director.

See attached pictures showing the complete and usable facility which was received.


Homer F. Hastings
Superintendent

Attachment:

Form 10-559
 Rev. 1-5-58

U. S. DEPARTMENT OF THE INTERIOR - NATIONAL PARK SERVICE

FIXED PROPERTY RECORD

DESCRIPTION OF PROPERTY (Include reference to the location within the Park, how the asset was acquired, name of contractor, etc.)

UTILITIES:

Water System, Account 332.1 - System consisted of drilling and casing of well with 8-5/8" O.D. casing to 325 feet and construction of a pump house, electric pump, pressure tank and a water system to convey water through a 6-inch cement asbestos pipe to three residential buildings, two standard fireplugs, and extended 1930 lineal feet to the Visitor Center Area. The 6-inch cement asbestos pipe was installed at an average depth of 4 feet and galvanized steel pipe was used for connections to the residences and Visitor Center. (CONT

Location of Property in Area: Residential, Utility and Headquarters Areas (New Mexico)

How Asset Acquired: Appropriated Funds

Name of Contractor: Red Top Drilling Company and Starr & Cummins

Contract No.: 14-10-333-217 and 14-10-333-263

Completion Report Approval Date: January 23, 1959

Line	DATE	REFERENCE		QUANTITY			COST		
		Journal Vou.	Other	Unit	No. of Units	Accumulated Total	Direct Costs	Indirect Costs	Accumulated Costs
1	6/15/59	33-241		each	1 system	1 system	\$18,614.00	\$2,551.98	\$21,165.98
2	9/3/59	33-60						303.41	21,469.39
3	11/16/64	33-182	Addition				294.18		21,763.57
4									
5									

G.I. Acct.	General Classification	Sub-Classification	Region	State	Park or Office
N 220.7	UTILITIES	WATER SYSTEM	Three	New Mexico	FOUN

50,000 gal storage
 x

Water from the well is pumped direct into a 1,000 gallon pressure tank. Account 331.1
 Costs represented herein consist of providing water to the House Trailer

add, increase in accordance with JV33-182,^{11/14/64} and receiving report, no number, 10/29/64,
168' of 3/4" galvanized pipe and fittings, one 3/4" globe valve, one stop-and-waste valve,
riser and hose bib. Line runs from south corner of Visitor Center to center of parking
island. Materials \$47.22, day labor, \$246.96, total cost \$294.18.

Form 10-174
(Rev. 9-56)UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
COMPLETION REPORT OF CONSTRUCTION PROJECT

REGION Three	AREA Fort Union National Monument	COUNTY Mora	STATE New Mexico
PROJECT OR JOB TITLE Water System			PCP NO. U-1
LOCATION IN AREA Residential, Utility and Headquarters Area		MASTER PLAN NO.	BUILDING NO.
WORKING DRAWING NO. AND TITLE NM-FTU-2004-A, Proposed Water System <i>See ltr. 10-16-59</i>			
APPROPRIATION TITLE AND SYMBOL 14X1035			WORK ORDER NO. 332.1
CONTRACT NO. 14-10-333-217 and 14-10-333-263		DATE WORK STARTED 12/3/57	DATE WORK COMPLETED 2/58
NAME OF CONTRACTOR Starr & Cummins and Red Top Drilling Co.		ADDRESS 6712 Elwood Dr., N.W. Albuquerque, N. M. Las Vegas, New Mexico	

COST ANALYSIS

CONSTRUCTION ITEMS	QTY	UNIT COST IN PLACE	TOTAL COST IN PLACE
RED TOP DRILLING COMPANY			
Drilling and casing of well with 8-5/8" O.D. casing	168 ft.	11.40/ft.	1,915.20 ✓
Extend well casing to 300 ft., with 8-5/8" O.D. casing	132 ft.	5.15/ft.	679.80 ✓
Running a test of the well	10 hrs.	50.00/hr.	500.00 ✓
Sealing surface water at 50 ft. level	1 Job		225.00 ✓
Perforation of additional 20 ft. well casing	20 ft.	2.00/ft.	40.00 ✓
Placing casing, mud packing, taking water sample, removing casing, then perforating casing and replacing.	1 Job		200.00 ✓
Extend drilling of the well from 300 ft. to 325 ft.	25 ft.	5.15/ft.	128.75 ✓ 3,688.75 ✓
STARR & CUMMINS			
Cement asbestos pipe, 6"	957 ft.	3.00	2,871.00 ✓
(Continued on reverse)			
TOTAL			18,602.67 ✓

SUMMARY OF EXPENDITURES

PERSONAL SERVICES	EQUIPMENT	MATERIALS AND SUPPLIES
OTHER \$18,602.67	SEE REVERSE SIDE FOR FFO CLEARANCE	
CHANGE ORDERS		
ORIGINAL CONTRACT AMOUNT \$3,725.00 (*)	FIRST 240.00 (*)	SECOND 128.75 (*)
\$15,043.62 (**)	51.70 (**)	THIRD Underruns 405.00 (*)
FINAL CONTRACT AMOUNT	FOURTH	FIFTH Underruns 369.40 (**)
		SIXTH

THIS PROJECT OR JOB HAS BEEN COMPLETED IN ACCORDANCE WITH
APPROVED DRAWINGS, SPECIFICATIONS, AUTHORIZED CHANGES

SUBMITTED BY (Name and title) <i>John H. Hastings</i>	DATE <i>Jan. 19, 1959</i>
APPROVED BY (Name and title)	DATE

(ATTACH NARRATIVE STATEMENT, PHOTOGRAPHS, AND "AS BUILT" DRAWINGS TO THIS FORM)

(*) - Contract 14-10-333-217

(**) - Contract 14-10-333-263

GPO 914176

Pipe to fire plugs, 4"	78 ft.	3.00/ft.	234.00 ✓
Cement Asbestos pipe, 6"	886 ft.	2.60/ft.	4,888.00 ✓
Steel pipe, 2"	156 ft.	2.20/ft.	189.60 ✓
Steel pipe, 1-1/2"	123 ft.	1.00/ft.	123.00 ✓
Steel pipe, 1"	483 ft.	1.00/ft.	483.00 ✓
Fire Hydrants	2 ea.	250.00/ea.	500.00 ✓
Tee, 1-1/2" x 1" x 1"	1 ea.		5.00 ✓
Valves, and boxes, 1"	5 ea.	30.00/ea.	150.00 ✓
Elbows, 1"	2 ea.	3.00/ea.	6.00 ✓
Pump House	1 ea.		5,269.62 ✓
Change roof design on pump house from concrete to wood, raise walls 6" in the back and give the roof a minimum of 6" slope from north to south. In lieu of installing 2-1/2" galv. pipe from pump to pressure tank, install 2" galv. pipe. Furnish and install 2" galv. drain pipe from pump house pit to daylight. (Change Order No. 1)			
			<u>51.70</u> ✓
			14,725.92

Facilitating services

188.00

Total (Both contracts and facilitating services)

18,602.67 ✓

FIELD FINANCE OFFICE CLEARANCE:

Robert L. Giles
 Robert L. Giles,
 Regional Accountant
 January 23, 1959

Completion Report

Water System	Fort Union National Monument
Project No. U-1	Account No. 332.1
Drawing No. NM-FTU-2004A	Contract No. 14-10-333-263
	Contract No. 14-10-333-217

This report, Account No. 332.1, covers the drilling and casing of a well and the construction of a water pressure system in and from the residential area to and ending at the Visitor Center.

Invitation for bids for drilling and casing of the well in the Residential Area were opened June 19, 1957, at Santa Fe, New Mexico. The Red Top Drilling Company of Las Vegas, New Mexico, being the low bidder, was awarded the contract. The contract was signed by Marvin Isbel on June 25.

Bids for the construction of the water system were opened November 8, 1957, and the contract was awarded to Starr and Cummins of Albuquerque, New Mexico, the lowest of seven bidders.

Drilling and Casing Well
Contract No. 14-10-333-217

The contractor was notified on July 12, 1957, to proceed with the work as specified in the contract. The contractor acknowledged receipt of "Notice to Proceed" on July 16, 1957, and started drilling the next day. Please note attached log of the well showing that the Dakota Sandstone was encountered at approximately 160 feet. Drilling was continued to a depth of 190 feet and halted on July 25, when the well was thought to be producing sufficient water, although water was first found at a depth of 40 feet. At the 78-foot level additional water was encountered. Bailing tests for about 30 minutes duration showed the well to have a capacity of approximately 60 gallons per minute.

The U. S. Geological Survey recommended sealing off the water from the 40-foot level, thinking it would be contaminated. They also recommended a temporary seal at the 165-foot level, and testing the flow from the lower 25 feet. A test was made and the well proved to be dry. The casing was then pulled and perforated at the 70 to 100-foot levels and also the 145 to 155-foot levels. The water at the 40-foot level was also sealed off, using 15 sacks of cement in this one job.

From all indications it was estimated the well would produce 45 gallons of water per minute. A large pump was brought in for a final test. After a short time the volume was checked at only 3 gallons per minute.

This made it necessary to resume drilling and it was so ordered. Inasmuch as the drill rig had been removed on July 30, it was brought back and drilling was resumed on August 12.

Up to this date three extra days had been added to the contractor's time for removing casing, perforating casing, replacing and sealing. This work was authorized in Change Order No. 1.

Inasmuch as it was thought the well had been completed, a request for an extension of 13 days time was considered advisable. A thirteen-day extension was approved. This extension made the new completion date to be August 31, 1957.

Change Order No. 2 called for extending the drilling of the well below the 300-foot level, to a depth of 325 feet. An allowance of 12 additional days were approved for Change Order No. 2, making the new completion date to be September 12, 1957.

Good progress was made after drilling was resumed on August 12 and no difficulties were encountered.

The well was completed August 22, 1958, and the final test showed a sustained flow of 50 gallons per minute at the 220-foot level.

In a letter to the Director August 26, the Chief of Operations stated that the well was considered adequate for present and future development for quite a few years.

The driller had therefore completed his assignment and acceptance was recommended.

Construction of Water System
Contract No. 14-10-333-263

The contract period began December 3, 1957, with the contract to be completed March 22, 1958. This was later revised to March 26, 1958, because of revisions in the contract.

The contract covered construction of a pump house, pressure tank and a water system to convey water through a 6-inch cement asbestos pipe to three residential buildings, two standard fireplugs, and extended 1930 lin. feet to the Visitor Center area. Water was carried from a well drilled previously under Contract No. 14-10-333-217. A drain was connected to the sewer system, by which the water system can be drained.

Good weather prevailed at the beginning of the project and continued through December and January, but turned foul in February and March.

As the contract progressed it was modified by Change Orders as follows:

- No. 1 - Change the roof design on the pump house from concrete to wood, raise the walls six (6) inches in the back and give the roof a minimum of 6-inch slope from north to south. Furnish and install heavy plank door.

In lieu of installing 2½-inch galvanized pipe from the pump to the pressure tank as provided in the contract, install 2-inch galvanized pipe. The Government will be allowed a credit on this item.

Furnish and install 2-inch galvanized drain pipe from pump house pit to daylight.

(Change Orders 2 and 3 applied to the Sewer System only.)

- No. 4 - In lieu of furnishing and installing the underground cable from the pump house to the meter as provided in your contract, furnish and install 1½-inch pipe conduit and 3 heavily insulated No. 4 wires.

The 6-inch cement asbestos pipe was installed at an average depth of 4 feet and was manufactured by the John Mansville Company.

Galvanized steel pipe was used for the connections to the residences and Visitor Center.

The pump size was limited by the use of a 5 horsepower motor, being the largest permitted by the REA Power Company. The pump was a

Red Jacket Submersible, 4¹/₂ GPM series, made by the Red Jacket Manufacturing Company.

Water from the well is pumped direct into a 1,000-gallon pressure tank. The pump is automatic and set to start operating when pressure reaches 40 lbs. and to kick out when pressure reaches 52 lbs.

The water system was reported complete and tested in February. The project was accepted in March 1958.



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
WASHINGTON 25, D. C.

IN REPLY REFER TO:
D5039-L FOUN

RECEIVED	
NPS 1-10-1958	
JAN 10 1958	
REG. DIR.	
ASST. R.D.	
ADMIN.	
OPERATIONS	
INTERP.	
RECREATION	
FORESTRY	
SOLICITOR	
FILES	

January 6, 1958

Memorandum

To: Regional Director, Region Three
From: Chief, Water Resources Section
Subject: Water Right Docket No. 1, Fort Union

Attached is your folder for the subject docket, with table of tentative contents, and items 2 and 3 therein listed. We have supplied items 4 and 5 from attachments with memorandum of December 20, 1957, from Mr. Kell.

We are distributing similar folders to the Superintendent and WODC. We note that Mr. Kell sent a copy of his memorandum of December 20, 1957, to the Superintendent but none to WODC. It is requested that both offices be supplied with items 4 and 5, whether from the attachments with Mr. Kell's memorandum, or by further duplication.

If this is an artesian well, as suggested, we should file an appropriate water right application with supporting map of the size and in compliance with the state regulations. In that case item 1 will be replaced with one to be attached to the unlisted application.

Before we decide on the procedure, I seem to need some clarification of conditions. I interpret the two logs to mean that artesian water was first encountered at 40 feet, but that that water was sealed off. Water was next encountered at a depth of about 240 feet which increased in quantity as the drilling progressed, and that that water rose through impervious sandstone and the sealed casing to 85 feet below the surface, and is the water to be used.

A. van V. Dunn
A. van V. Dunn
Chief, Water Resources Section

Attachment - Docket No. 1

Copy to: Superintendent, Fort Union, w/c attachment - Docket No. 1
Chief, WODC, w/c attachment - Docket No. 1

W. L. Dunn
154-L

January 23, 1957

Memorandum

To: Regional Director, Region Three
From: Chief, Water Resources Section
Subject: Report, "Occurrence and Quality of ground water in the Fort Union area, Mora County, New Mexico", by I. J. Winograd

Attached are copies of the letter of January 17 by which the subject report was transmitted to this office by the Acting Director, Geological Survey, and prints of Figures 2 and Supplement 1 on which we have projected the approximate Monument boundaries and Section A-B from Figure 1.

We note that copies of the report have been made available to you and the Superintendent, but none has been supplied for WODC who should be interested. We assume that you will arrange for the further distribution.

The prints of Figure 2 and Supplement 1 are to show how the data in the report might be made more specifically applicable to the Park Service needs. Figure 2, with Monument boundaries added, would facilitate well drilling specifications. Supplement 1, with Section A-B added, would provide a better base for the water right map when the tie to well site and outline of proposed developed area are added in compliance with our memorandum of November 13, 1956. Mr. Winograd might supply prints with more refined projection of our added data, and should be requested to show such data on drawings for the Gran Quivira, and other future reports.

A. van V. Dunn
Chief, Water Resources Section

Attachments 3

Copy to: Superintendent, Fort Union, with 3 attachments
Western Office of Design and Construction, with 3 attachments
Mr. Dunn, with 3 attachments

AvVDunn:lct



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

WR Copy
IN REPLY REFER TO:
4053 0001

JAN 17 1957

Memorandum

To: Director, National Park Service
From: Director, Geological Survey
Subject: Report, "Occurrence and Quality of ground water in the
Fort Union area, Mora County, N. Mex.," by I. J. Winograd.

I am sending you herewith one copy of the subject report, which was prepared at the request of the National Park Service. This report has been approved for release to the Park Service and, contingent on clearance by your agency, to the open file. Therefore, it will be appreciated if you will inform this office whether the Park Service has any objection to public release of the report.

Copies of this report have been sent to Mr. David H. Canfield, Regional Chief of Operations, National Park Service, Santa Fe, N. Mex.: and to Mr. Kittridge Wing, Fort Union National Monument, Watrous, N. Mex.

Arthur N. Baker
Director

Enclosure

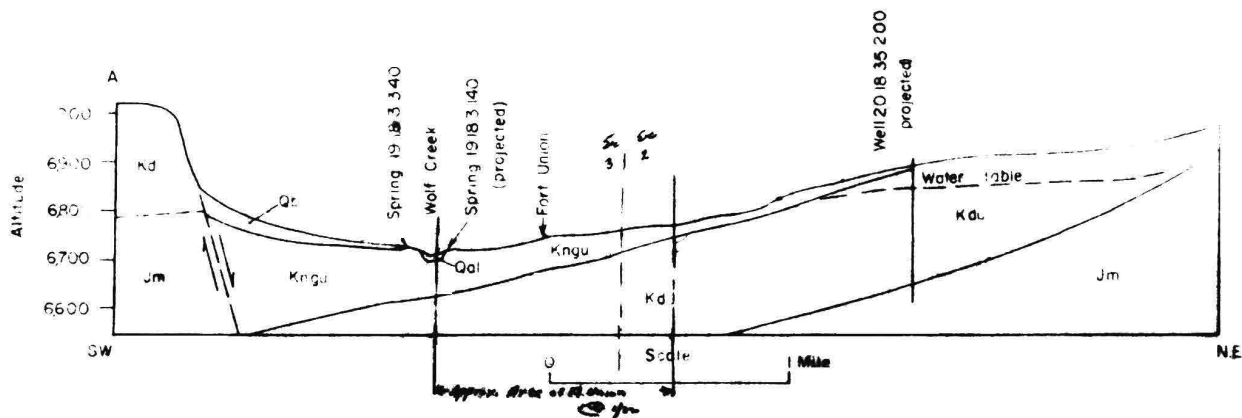
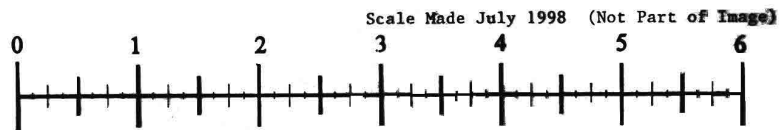
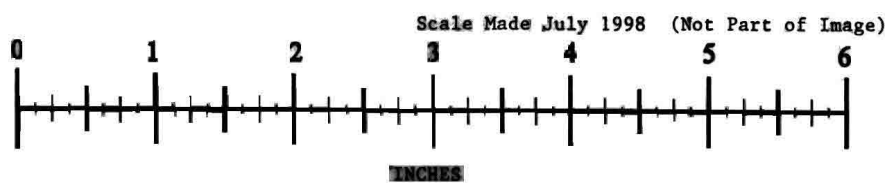


Figure 2.—Geologic section (SW-NE) across Wolf Creek valley, Fort Union area, Mora County, N. Mex. For identification of symbols see figure 1.





WR Copy
L54 @ J.

Region Three
Santa Fe, New Mexico

Memorandum

To: Director
From: Regional Chief of Operations
Subject: Groundwater Studies, U.S. Geological Survey, Fort Union

Your memorandum of November 13 suggests certain ties from the proposed well site to a corner on the monument boundary plus an outline of the areas that are to be developed.

This information will be furnished when the well is actually drilled. As you probably know, funds for the well at Fort Union were transferred to Grand Canyon, and it will probably be 1958 before we can let the contract to drill the well.

According to Mr. Barton and Mr. Kell, who have checked with representatives of the State Engineer's Office, the Fort Union is not in any declared basin at the present time. However, the State Engineer representatives suggested that we would still be wise to make a formal filing after the well is drilled and have the data on record. This is in accordance with what you have suggested in earlier correspondence.

We have learned that a Manual of Rules and Regulations of the State Engineer was issued for 1953 and have asked that a copy be mailed to you. This one is for surface waters and we understand another is to be published on underground waters. We requested to be placed on their mailing list for the latter also.

David H. Canfield
Regional Chief of Operations

In duplicate ✓

Copy to: Supt., Fort Union

COPY

UNITED STATES
DEPARTMENT OF THE INTERIOR
Geological Survey
P. O. Box 302, University Station
Albuquerque, New Mexico

D5039

August 6, 1956

Mr. David H. Canfield, Regional Chief of Operations
Department of the Interior
National Park Service
Santa Fe, New Mexico

Dear Mr. Canfield:

On July 25 and 26, 1956, Mr. I. J. Winograd made a brief reconnaissance of the Fort Union area in the company of Ranger Kittredge Wing. Many of the wells and springs in the area were measured and water samples were collected for chemical analyses. A memorandum treating the occurrence of ground water at some length is being prepared by Mr. Winograd and will be sent to you when approved by Washington for release to the open file. This letter summarizes the data given to Mr. Kell on his visit to this office on Thursday, August 2, 1956.

The chief water-bearing formation in the area is the Dakota sandstone of upper Cretaceous age, which yields a somewhat hard but potable water to all the stock wells and several springs. The Dakota is upfaulted and composes the escarpment which borders Wolf Creek valley on the west, and is also exposed east of the valley on the periphery of the Turkey Mountains. Beneath Fort Union and most of the Wolf Creek valley, the Dakota dips gently westward and is overlain by younger shaly strata of the Pierre, Niobrara, and Benton formations. These shale strata are less pervious than the Dakota sandstone and confine the water within the sandstone, creating artesian pressure. This pressure is directly evidenced in the 3-foot head of water in the spring at the Andrew Marshal home and indirectly by the similarity in chemical composition between the water derived from wells drilled into the Dakota and water from springs which appear to emerge from the shales. Apparently, upward leakage of water from the Dakota occurs along the fault zone forming the sandstone escarpment which borders the valley on the west, and along fractures in the overlying shales, and feeds the springs in the valley, and also provides the seepage into Wolf Creek.

A well drilled at the fort will have to penetrate from 75 to 150 feet of the shaly Pierre, Niobrara, and Benton formations, prior to reaching the Dakota sandstone. The water in the Dakota will be under artesian pressure and will rise into the casing above the top of the sandstone. The well may possibly flow. The Dakota sandstone should be penetrated at least 50 and possibly 100 feet depending upon the amount of rise of the water level. The maximum depth of the well will therefore be in the order of 250 feet. It is suggested that the casing set opposite the shales be cemented at the

top of the sandstone to prevent dissipation of the head of the water in the sandstone. This could be done by telescoping the casing; that is, setting a large-diameter unperforated casing opposite the shales and a smaller-diameter casing from the surface down into the Dakota.

The quality of the water in the Dakota sandstone is good in this area, but somewhat hard. The yield of the well will probably exceed 5gpm though possibly not by natural flow.

It would be to your advantage to require the driller to keep an accurate log of the materials penetrated and a record of the amount of casing inserted into the hole. The driller should also be required to keep samples of the cuttings removed from the well; a sample should be taken every 10 feet, bagged, and labeled. We would appreciate your saving these samples for our examination. You may want to submit a sample of the water from the well to the Mora County Department or Board of Health for a bacterial analysis.

Very truly yours,

C. S. Conover
District Engineer-GW

DLB-L *WR cgy*

May 17, 1956

Memorandum

To: Regional Director, Region Three
From: Chief, Water Resources Section
Subject: Preliminary Print, S.W. Corner Parcel No. 1, Fort Union
Topography, Fort Union National Monument

Returned herewith is one print of the subject map which Mr. Bill sent in duplicate with his memorandum of May 8, and will be discussed later in the memorandum.

Mr. Trujillo's drafting work is excellent. However, the particular drawing is the type which should be prepared under P&S funds before either water system design, or water right map and claim are prepared. It appears, however, that the water supply and sewer system are scheduled for 1957 construction, and plans are not ready.

The source of supply is to be underground water. If the source is to be water in a well defined channel or basin, or under artesian pressure, an appropriative right is needed. If there are no defined limits to the aquifer, an appropriative filing should be made only if the State Engineer has declared it has reasonably ascertainable boundaries or is a "critical groundwater basin".

It appears that the Union Land and Grazing Company, had to drill 300 feet to reach water, at an unspecified site near Parcel No. 1 of the Monument, but you have some reason to expect water at a depth of 50' to 80' at point 75 feet northerly from the boundary line between corners 1 and 2. There is some chance, however, that the site at the proposed Utility Area, and an alternative site may have to be tried near corner 2, where flooding might cause pollution by infiltration.

We have not been advised as to the extent of geological study which has been made. A check should be made to determine whether the Monument area is within any groundwater basin which has been declared by the State Engineer. We should also find out what Mr. Conover of the Geological Survey might be able to contribute as to the depth to water and whether such water is in a confined basin or artesian aquifer, if such information has not already been obtained from a geologist. An impervious stratum above the water should prevent pollution even at the alternative site. We could probably allot as much as \$100 from M&P funds (Account 140.3 (143.2)) during 1956, or somewhat more on July 1, if that would be sufficient for any water resources investigation which is still needed.

We should prepare a docket with records of the water development whether a filing is made with the State Engineer at this time or not. The contract should provide for well log and pump test in accordance with Standard Specifications for Deep Wells, (pamphlet 4A.1 by American Water Works Association, of which you have a copy). Attached are six copies of the Form 9-255, which should be used if the licensed well driller does not use a form provided by the State Engineer. Five copies of any such record are needed for four dockets and the Geological Survey.

Presumably you have a copy of the State Engineer's Manual of Rules and Regulations governing the appropriation and use of water. Part VI, pages 23-32 of our 1951 edition describes the required water right map, and title form and engineer's statements are outlined on pages 28-32. The attached drawing leaves little space for the title, statements, and a key map which seems essential in this case. It also gives contours which are needless and confusing on a water right map, and lacks projected section subdivisions, water system, and developed areas which are needed. It is suggested that a new tracing be prepared for water rights after buildings, pipelines, and reservoir are added. The required parts of the map can be pantographed to smaller scale, or the water right map can be made in two sheets, with key map and statements on sheet 2.

I have shown an approximate key map, graphically; and projected section lines on main drawing, with some computations. Proposed well falls in NW $\frac{1}{4}$ NE $\frac{1}{4}$ on main drawing, and in NE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 10, on key, and I have not attempted to reconcile the work. The water right map should show section lines, Coyote Creek, lines for intermittent streams to show gully drainage to Coyote Creek, and we should know to what larger stream Coyote Creek is tributary. It should also show as much Monument boundary as possible, and proposed developments. If there is to be irrigation, the areas should be cross hatched with acreage in each 40 acres given. Incidentally, I do not have a draftsman at the moment, and all possible work should be done in field until we get replacement, but we will prepare statements and applications when data is supplied.

If we are to file an application with the State Engineer, the required hydraulic properties are given in the aforesaid statements of the Manual. You will also note that the State Engineer requires that some statements be signed by an engineer or surveyor, who should be the one who designs the water system. A federal engineer does not have to be licensed or registered.

We will have to know depth and diameter of well bore and casing, proposed pump capacity and size of power unit; the ultimate number of permanent employees, and day and overnight visitors. Pump and reservoir capacities for ultimate needs should be given, even though not provided now.

A. van V. Dunn
Chief, Water Resources Section

Attachments 2
Copy to: Superintendent, Fort Union
Western Office of Design and Construction

Copy to: Mr. P. Miller
Mr. Langley
Mr. Dunn

AvVDunn:lct

Number of Documents in Docket	61		
Documents Dated from	5/17/1956	to	4/1/1974
Docket Compiled:	3/22/2011		