



WATER-RIGHT DOCKET

Buffalo National River

Docket No: 19

VILLIENES FARMSTEAD WELL #2

Supporting Hydro Data

05-21-1981: letter regarding development concept plans -- steel creek, lost valley, buffalo national river; may 21, 1981

RECEIVED
NATIONAL PARK SERVICE
WASHINGTON OFFICE

MAY 25 9 42 AM '81

D18(SWR)OM

MAY 21 1981

*Meq. file
Place file
in Buffalo Riv.
Wak Res. file
Cons. file*

Memorandum

To: Manager, Denver Service Center
Attention: Assistant Manager, Southeast/Southwest Team
Bob Buda, Chief, Branch of Design

From: Acting Associate Regional Director, Park Operations, SWR

Subject: Development Concept Plans - Steel Creek-Lost Valley,
Buffalo National River

In response to the U. S. Geological Survey's memorandum dated January 23, 1981 (copy enclosed), the production rates specified on page 71 of the Development Concept Plan for Steel Creek-Lost Valley at Buffalo National River were the driller's estimate based on "blow out" capacities.

Analyses of the driller's log suggest that water is entering the wells through secondary openings (fractures, joints, or solution channels) intercepted by the well. In all cases, the static water level measured was above the first reported zone which classifies the wells as non-flowing artesian types.

Field work, completed by representatives of the National Park Service in October 1977 and August 1980 including production test of the wells, shows the aquifers are limited (time-drawdown analysis) with the following estimated aquifer characteristics.

<u>Area</u>	<u>Specific Capacitance</u>	<u>Transmissivity</u>
Lost Valley	0.09	46.4
Villines Farmstead	0.43	286
Steel Creek X	0.40	500
Steel Creek (residence)	0.33	150(?)

Recovery (residual-drawdown) analyses indicate that recovery rate is fairly rapid suggesting that all wells will be capable of delivering the total quantity of water needs projected for each development area if each well is equipped with a high and low water cutoff electrical system.

Chemical analyses of waters indicate that minimum water treatment will be required.

2

In accordance with practice, all waters withdrawn from each well will be chlorinated. Bacteriological sampling will be maintained on a continuing basis and at a minimum frequency of one per month. Complete chemical analysis for each water source will be made once every 3 years.

Tables 1 and 2 provide some physical and aquifer characteristic measurements made on each well.

Should you have any questions, please contact Garland Moore of this office at FTS 476-1368.

/s/ Cloyd A. Kump

Enclosure

cc:

Supt., Buffalo w/c of enclosure

Chief, Water Resources Division WASO/497 (Attn: Vic Berte') w/c of enclosure



United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VA. 22092

JAN 23 1980

Memorandum

To: Superintendent, Buffalo National River, National Park Service
Harrison, Arkansas

Through: Assistant Secretary--Energy and Minerals

From: Director, Geological Survey

Subject: Review of proposal/assessment and development concept plan
for Steel Creek-Lost Valley, Buffalo National River, Arkansas

We have reviewed the subject document as requested in a notice of December 22 from the Regional Director.

The document should identify and describe the aquifers used--at least by type (e.g., confined, unconfined, or semi-confined; with intergranular or fracture permeability or with permeability resulting from dissolution of carbonate rock). It should address measures taken to ensure continuing good quality of drinking water for the visiting public (e.g., practices in locating and completing wells and periodic water analysis). Page 71 should specify whether the "flows" mentioned are natural (artesian) flows or pump capacities.

Hillary C. Oden

for H. William Menard

cc:
AS/EM (2)
Advance, NPS
Gen. Files, MS114, Reston
Dir. Chron.
RB
EGS:LBonham:mlc 1/19/81

018

TABLE 1

PHYSICAL DATA OF SELECTED WELLS

	Total Depth (ft) BSL	Diameter (in)	Length casing (ft)	Length grout (ft)
Lost Valley	?	6	?	?
Villines Farmstead	475	6	90	88
Steel Creek X	610	6	102	100
Steel Creek (residence)	477	6	108	106

TABLE 2

AQUIFER CHARACTERISTICS OF SELECTED WELLS

	Total Depth ^{a)} BSC (ft)	Static Water Level Depth		Land Surface ¹⁾ Elevation (ft) msl	Log ²⁾ on File	Analysis ²⁾ on File	Water Bearing Formation	Remarks ⁴⁾
		BTC (ft)	Date Measured					
Lost Valley	?	58.51 73.02	10/12/77 8/02/80	1140	-	X	Boone fm. (Missippian)	Production test 10/12/77 8/02/80
Villines Farmstead	475	93.06	8/05/80	1100	X	X	St. Peter SS, Everton fm. (Ordvician)	Production test 8/05/80
Steel Creek X	610	104.21	8/07/80	1140	X	X	St. Peter SS, Everton fm. (Ordvician)	Production test 8/07/80
Steel Creek (residence)	600	14.13	10/07/77	1010	X	X	St. Peter SS, Everton fm. (Ordvician)	Production test 10/07/77

1) Estimated from U. S. Geological Survey, PONCA quadrangle topographic map.

2) On file in Water Resources - National Park Service, Southwest Regional Office, Santa Fe, New Mexico.

3) Determined from preliminary geologic map by Bush.

4) Production test data on file in Water Resources - National Park Service, Southwest Regional Office, Santa Fe, New Mexico.

Other Supporting Information

Well #2

Drilled by: Harold King Well Drilling Company, Everton, Arkansas

Date drilled: 10/6/77

Project Supervisor: Garland Moore, Southwest Region, Water Resources

Location: Villines Farmsted, Buffalo National River

Driller's Log

<u>Depth</u>	<u>Description</u>
0'	Dirt and chunk rock
22'	Solid rock
28'	4' crack
32'	Solid rock
35'	Soft rock
36'	Solid rock
48'	Soft rock
75'	Mudie sand
77'	Solid rock
150'	White sand
190'	Light gray lime
208'	Gray sand
240'	Gray sand and brown lime
290'	Gray lime
380'	Dark gray lime
396'	Water 4 or 5 g.p.m. Alternate layers of lime
410'	Dark gray lime
440'	Light gray lime
453'	Water 100 g.p.m. plus

Maps and Miscellaneous Information

Number of Documents in Docket	7		
Documents Dated from	10/6/1977	to	5/21/1981
Docket Compiled:	2/10/2011		