MEMORANDUM

CHECK
INFORMATON ____
FOR ACTION ____
PERMIT ____
OTHER ____

TO: Jim Lyerla

FROM: Linton Wildrick

SUBJECT: Wilson Creek Aquifer Test Results

DATE: May 30, 1979

State of Washington
Department of Ecology

On May 8 and 9, 1979 a drawdown-recovery aquifer test was carried out to investigate possible hydraulic interference between the David Stevens well (23N/29E-14C) and the Francis Johnson well (23/29E-12N). The Stevens well was pumped at a rate of approximately 1400 GPM (±100 GPM) for 23 hours. Possible interference effects were monitored in four (4) observation wells: the Johnson well (23N/29E-12N); David Stevens well (23N/29E-14J1); David Stevens well (23N/29E-23G); and Gary Gross well (23N/29E-13E). Figure I shows locations and distances between wells.

During the 23 hours of continuous pumping, no interference effects could be discerned in the observation wells. The lack of interference indicates that the observation wells are not open to the same aquifers as the pumped well. This result was not unexpected based on prior information taken from driller's logs and diagrammed in Figure II.

The pumped well (14C) is cased to a depth of 550 feet (1190 foot elevation) and water is being drawn only from aquifers located below a depth of 754 feet (986 foot elevation). Assuming flat-laying strata, none of the observation wells appear to share an aquifer with the pumped well. The aquifer test has confirmed that there are no shared aquifers and no interference with the Johnson well (23/29-12N).

Accurate water level measurements in the Gross well (23/29-13E) were hard to obtain during the test because of cascading water entering near the top of the well. However, the Gross well is only about 400 feet deep (no drilling records available) and it is reasonable to assume that this shallow aquifer is not shared with the pumped well because of the casing in the pumped well (see Figure II).

The David Stevens well (23N/29E-14J1) was used as an observation well during the test as a check on interference with the shallow, "water-table" aquifer. This well lies in an intermittent stream valley and is approximately 40 or 50 feet deep. The well was drilled nearly 30 years ago and has not shown any long-term water-level decline. The well lies in the same stream valley as Gary Gross' shallow (∿50 feet deep) domestic well which we were not able to monitor during the test. Mr. Gross had expressed concern about interference from the deep irrigation wells, but the aquifer test has demonstrated that there is no short-term

interference. In addition, there is no evidence for long-term lowering of the water-level in Gross' domestic well. Production from the well is poor (∿10 GPM) and because it is a "water-table" well, it will show marked fluctuation with seasonal changes in precipitation.

Although the Johnson well (23N/29E-12N) has been modified since their original complaint, the aquifer test was conclusive in demonstrating that there is no interference from the Stevens well (23N/29E-14C). The Johnson well was originally 318 feet deep. During attempts to deepen the well, the lower portion collapsed and the depth decreased to approximately 301 feet. The water level had also risen markedly after the redrilling. We suspected that the original producing aquifer had been sealed off, so we performed a "slug" test by adding water to the hole and found that the added water drained away in a short time. This indicated that the well remained open to the aquifer.

Although the aquifer test has settled the Johnson well interference question, there may be long-term water-level declines in the deeper aquifers as indicated by measurements of other nearby wells owned by Mr. Stevens. Unfortunately, these wells can only be measured by airline and therefore were not used in the aquifer test. It is possible that these wells might have mutual interference effects. We recommend continued periodic measurement of these wells along with measurements of the wells used in the aquifer test.

LW:cp

cc: Ted Olson
Peder Grimstad
Gene Wallace
Bruce Cameron

Township 23N, Range 29E

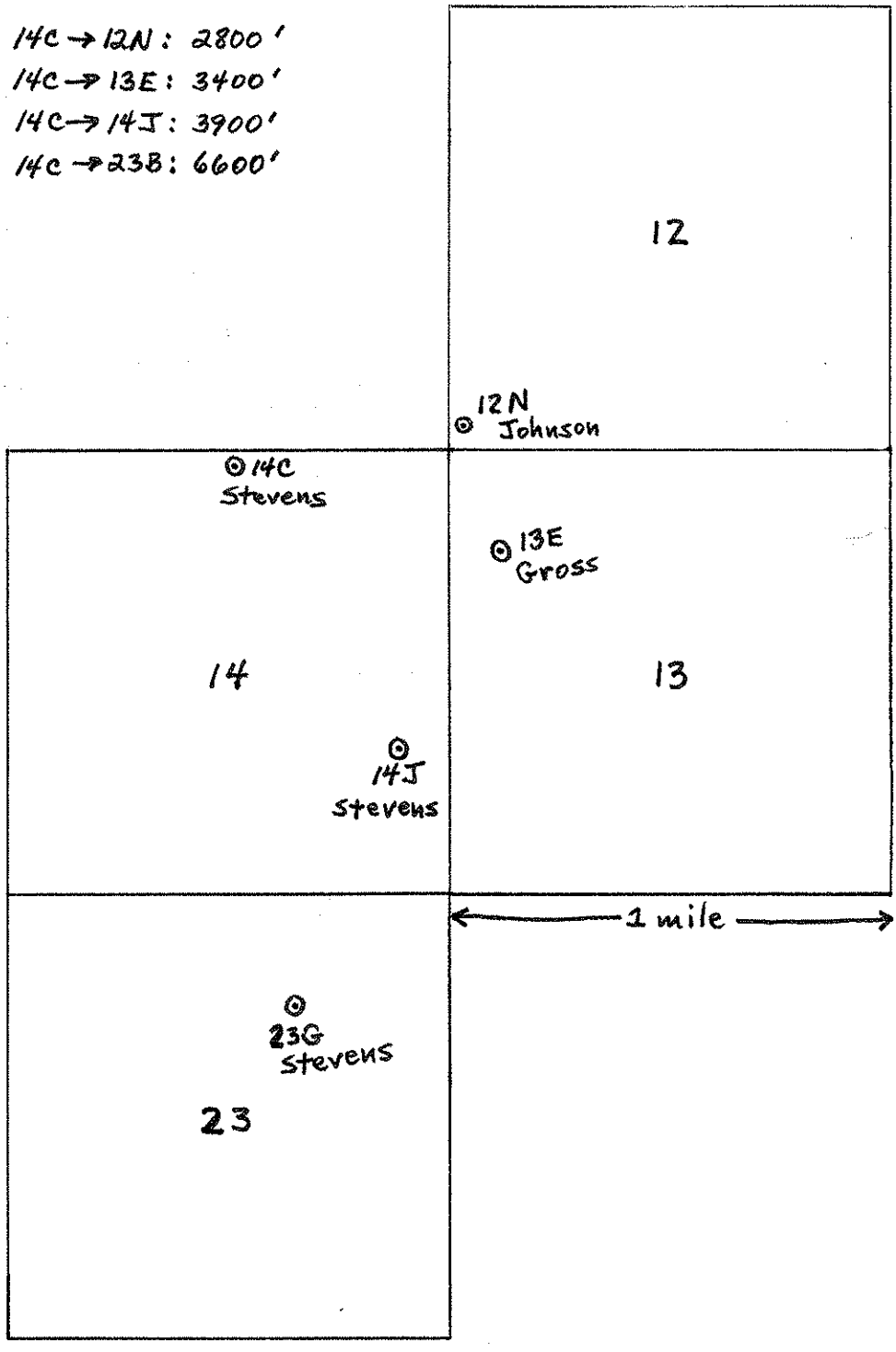
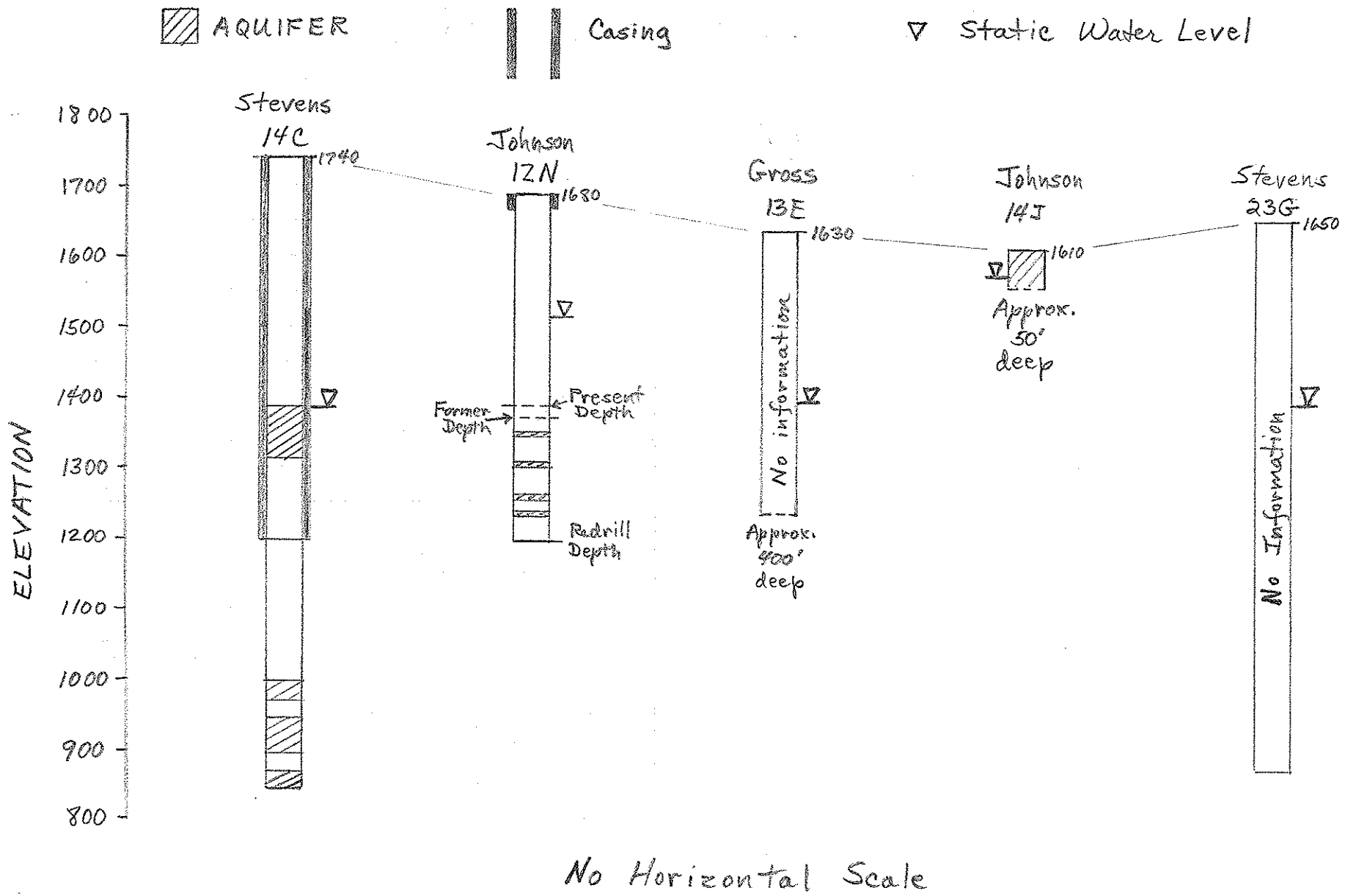
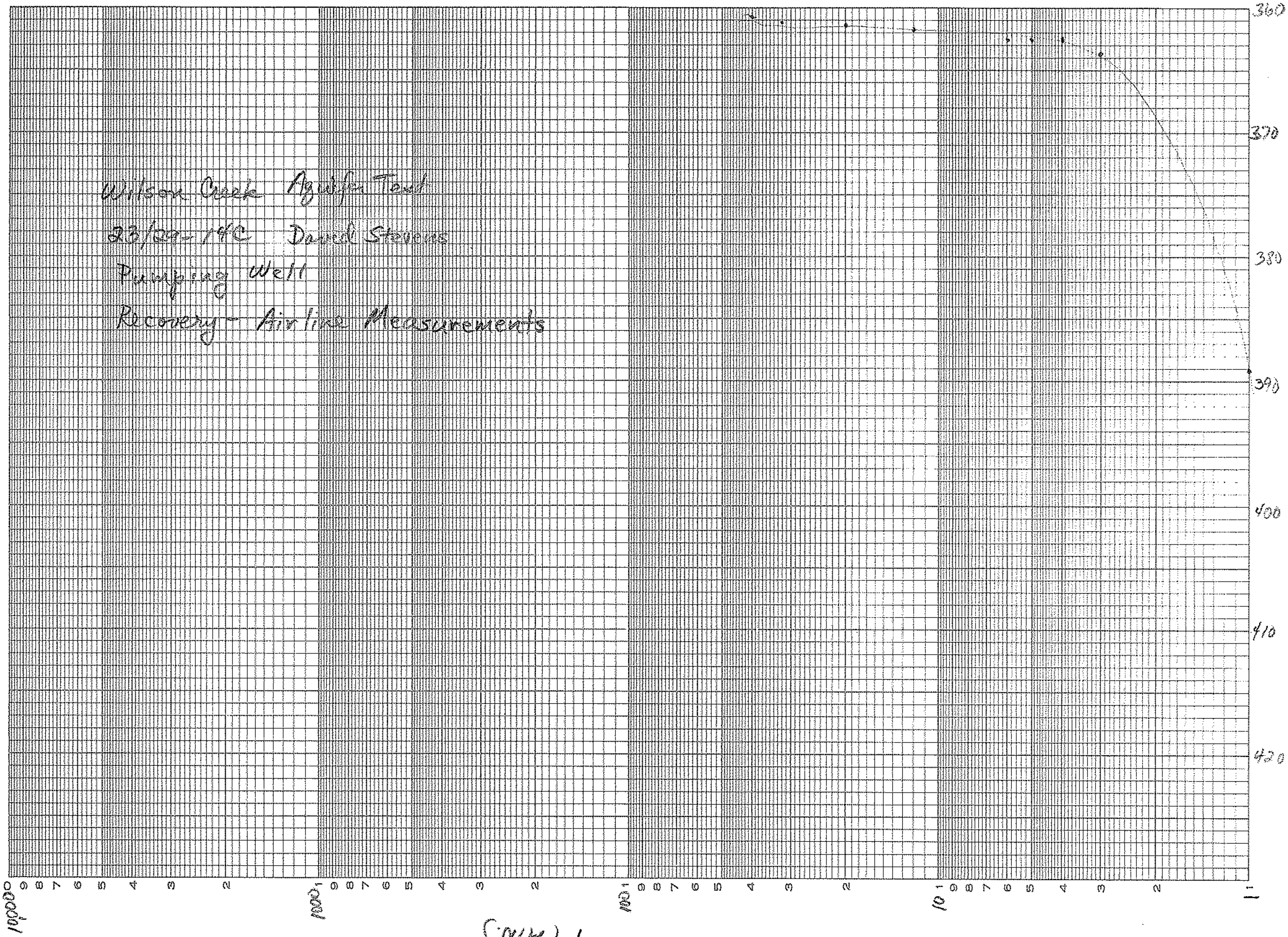


FIGURE I: LOCATIONS OF WELLS USED IN WILSON CREEK AQUIFER TEST

FIGURE II : WELL LOGS FOR WELLS USED IN WILSON CREEK AQUIFER TEST - CROSS SECTIONS





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OLYMPIA, WASHINGTON 98504

Pumped well
Circle to N = 800 gpm ± 10%
Circle to S = 650 gpm ± 10%
Minus 50-100 gpm within end

AQUIFER TEST

Sheet 1 of 2 pages

Owner David Stevens Location Wilson Creek Well No. 23E9-14C

Date 4-18-79 Meas. by LW, GSC, JJ Test _____ County Grant

Meas. point _____ Elev. Meas. Point 0.3' above LSD

Meas. equipment Air tank – Airline Pressure Gage Airline length 560'

DTW$_o$ 360.70 @ 1000 t_o 1030, 5-8-79 Q 1450 ± 10% r _____

Date	Hour	Water level			s	t	$\frac{1440r^2}{t}$	Remarks
		Heid	Wet	Depth (DTW)				
4-16-79	1730	363.6	3.45	360.15				E-Tape
4-17-79	1349	363.7	3.45	360.25				"
4-18-79	0840	363.7	3.45	360.25				"
5-8-79	1							
	1030	360.7	0.0	360.70	0	0		Started main pump
	1035	438.1	0.0	438.10	77.6	5		at 1030, Booster Pump
	1114	425.5				44		at 1040.
								E-tape stuck
	AIRLINE PSI						←	switched to Airline
	1443	62.25		416.2		253		→
	1500	62.25		416.2		270		
	1615	62.25		416.2		345		
	2250	58.25		425.4		740		
5-9-79	0915	61.0		419.1		1365		
	0920	67.5	Pump off	404.1		1370		0
	0921	74.0		389.1		1371		1
	0922	91.0		349.8 (?)		1372		2
	0923	85.0		363.6		1373		3
	0924	85.5		362.5		1374		4
	0925	85.5		362.5		1375		5
	0926	85.5		362.5		1376		6
	0932	85.8		361.8		1382		12
	0940	86.0		361.3		1390		20

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AQUIFER TEST

Owner David Stevens Location Wilson Creek Well No. 23/29-14C

Date 4-18-79 Meas. by LW, CSC, JJ Test _____ County Grant

Meas. point _____ Elev. Meas. Point 0.3' above LSD

Meas. equipment _____

DTW_o _____ t_o _____ Q _____ r _____

Date	Hour	Water level			s	t	$\frac{1440r^2}{t}$	Remarks
		Held	Wet	Depth (DTW)				
5-9-79	0952	36.1 est		36.1		1402		32
	1000	86.3				1410		40
	40							
	45							
	50							
	60							
	70							
	80							
	90							
	100							
	120							
	150							
	180							
	210							
	240							
	270							
	300							
	360							
	420							

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AQUIFER TEST

Sheet 1 of _____

Owner Gary Graves Location Wilson Creek Well No. 23/29-13E

Date 4-18-79 Meas. by _____ Test _____ County Grant

Meas. point _____ Elev. Meas. Point _____

Meas. equipment _____

DTW_o 237.00 t_o _____ Q _____ r _____

237.1 - 0.1 = 237.00 (other tape measured 237.5?)

Date	Hour	Water level			s	t	$\frac{1440r^2}{t}$	Remarks
		Held	Wet	Depth (DTW)				
4-17-79	1200	240.0	3.45	236.55				
5-7-79	1700	241.30	1.0116					Cascading Water made E-Tape reading difficult, then down hole side of black tape for reading
-79	0			0				
	5							
	10							
	15							
	20							
	25							
	30							
	35							
	40							
	45							
	50							
	60							
	70							
	80							
	90							
	100							
	120							
	150							
	180							
	210							

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OLYMPIA, WASHINGT[redacted] 9850

AQUIFER T[redacted]

Sheet ____ of ____

Owner *Gary Grove* Location ____ Well No. *23/29*

Date ____ Meas. by ____ Tes ____ County ____

Meas. point *TC* Elev. ____ [redacted]eas. Pt *above LSD*

Meas. equipment ____

DTW$_o$ ~~259.95~~ t$_o$ ____ Q ____ r ____

~~263.7 − 3.45 = 260.25 0.3~~ ~~257~~ *Bad reading*

Date	Hour	Water level: Held	Wet	Depth (DTW)	s	t	Remarks
4-17-79	1200	240.0	3.45	236.55			Measure from ... side of
5-7-79	1700	241.30	÷1.0116 = 238.53				tape, E-Tape
							meter will ...
~~5-8-79~~	~~1030~~	~~0~~	~~0~~	259.95	0	0	at 0.8 m...
	~~1032~~				−.35	Bad Re...	Beware of ... Shake
	1052				−.50		be sure ...
	1108				−.55		submerge...
	~~1145~~	~~241.55~~	~~3.25~~	~~237.80~~			...same ... tape have not ...
	1200	240.8	3.75	237.05	0	0	worn off ... each use.
	1340	241.0	"	237.25	approx −0.20		
	1540	241.0	"	237.25	−0.20		
	1715	241.5	"	237.75	−0.50		
	1930	241.5	"	237.75	−0.50		
	2245	241.46	"	237.71	−0.66		
5-9-79	0845	241.20	"	237.45	−0.30		

May be 1st good reading. Cascading water still a problem → (1200)

The problem with cascad[redacted]ing was these
measurements hard to get. The [redacted] data not be
considered accurate or concl[redacted]usion. The Steven
water-level recorder would hav[redacted]e worked

ECY 070-37

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AQUIFER TEST

Sheet 1 of _____

Owner Francis Johnson Location Wilson Creek Well No. 23/29-12N

Date 4-18-79 Meas. by LW, CSC, JJ Test _____ County Grant
Pump test measurements by Jim Lyerla

Meas. point Top of Concrete Elev. Meas. Point _____

Meas. equipment E-TAPE

DTW_o _____ t_o _____ Q _____ r _____

3-27-79, SWL = 272.6, 3-28-79, SW = 289.12

Date	Hour	Water level			s	t	$\frac{1440r^2}{t}$	Remarks
		Held	Wet	Depth (DTW)				
4-16-79	1700	273.5	3.45	270.15				E-Tape, drill hose in hole
5-7-79	1600	161,04÷	1.0116	159.12				
5-8-79	0936	160.33						
5-8-79	1030				0	0		
	1035				0			
	1040				0			
	1045				0			
	1050				0			
	1055				0			
	1100				0			
	1105				0			
	1110				0			
	1115				0			
	1120				0			
	1130				0			
	1140				0			
	1150				0			
	1200				0			
	1230				0			
	1300				0			
	1330				0			
	1400				0			
	1430				0			

5 MIN. INTERVALS

10 MIN. INTERVALS

30 MIN.

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AQUIFER TEST

Sheet 2 of _____

Owner Francis Johnson Location Wilson Creek Well No. 23/29-12N

Date 4-18-79 Meas. by LWQSC, JT Test _____ County Grant

Meas. point Top of Concrete Elev. Meas. Point _____

Meas. equipment E-tape

DTW$_o$ _____ t$_o$ _____ Q _____ r _____

Date	Hour	Water level			s	t	$\frac{1440r^2}{t}$	Remarks
		Held	Wet	Depth (DTW)				
	1500				0			
	1530				0			
	1600				0			
	1630				0			
	1700				0			
	1730				0			
	1911			up	.09			
	2243			up	.13			
	0835			up	.16			

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AQUIFER TEST

Sheet 1 of _____

Owner David Stevens Location _____ Well No. 23/29-23Q

Date _____ Meas. by _____ Test _____ County _____

Meas. point Hole in well cover Elev. Meas. Point 0.0 at LSD

Meas. equipment _____

DTW_o _____ t_o _____ Q _____ r _____

Date	Hour	Water level			s	t	$\frac{1440r^2}{t}$	Remarks
		Heid	Wet	Depth (DTW)				
4-17-79	1500	262.7	+1.0116	259.7?				Tape Eaten Bad reading
5-7-79	1500	268.6						
5-8-79	0908	269.15						
5-8-79	1041				0			
	11:00				0			
	11:16				0			
	12:48				0			
	14:12				0			
	15:38			down	.08			STORM MOVING IN WIND FAIRLY BRISK
	1630				.08			
	1824				.08			
	1930			up	.04			Storm moved out
	2258			down	.05			Comparable with other well except shallow well at Berna -
5-9-79	0855			down	.02			

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AQUIFER TEST

Sheet 2 of _____

Owner David Stevens Location Wilson Creek Well No. 23/29-23G

Date 4-18-79 Meas. by _____ Test _____ County Grant

Meas. point _____ Elev. Meas. Point 0.0 AT LSD

Meas. equipment E-TAPE

DTW_o _____ t_o _____ Q _____ r _____

Date	Hour	Water level			s	t	$\frac{1440r^2}{t}$	Remarks
		Held	Wet	Depth (DTW)				
4-18-79	0900			262.95				CENTER OF TAPE AT TOP OF CASING

EQY 070-37

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AQUIFER TEST

Sheet _____ of _____

Owner David Stevens Location Wilson Creek Well No. 23/29-14J2 shallow well

Date _____ Meas. by _____ Test _____ County Grant

Meas. point Top of wood hatch into bunker Elev. Meas. Point 1.0' above LSD

Meas. equipment E-Tape

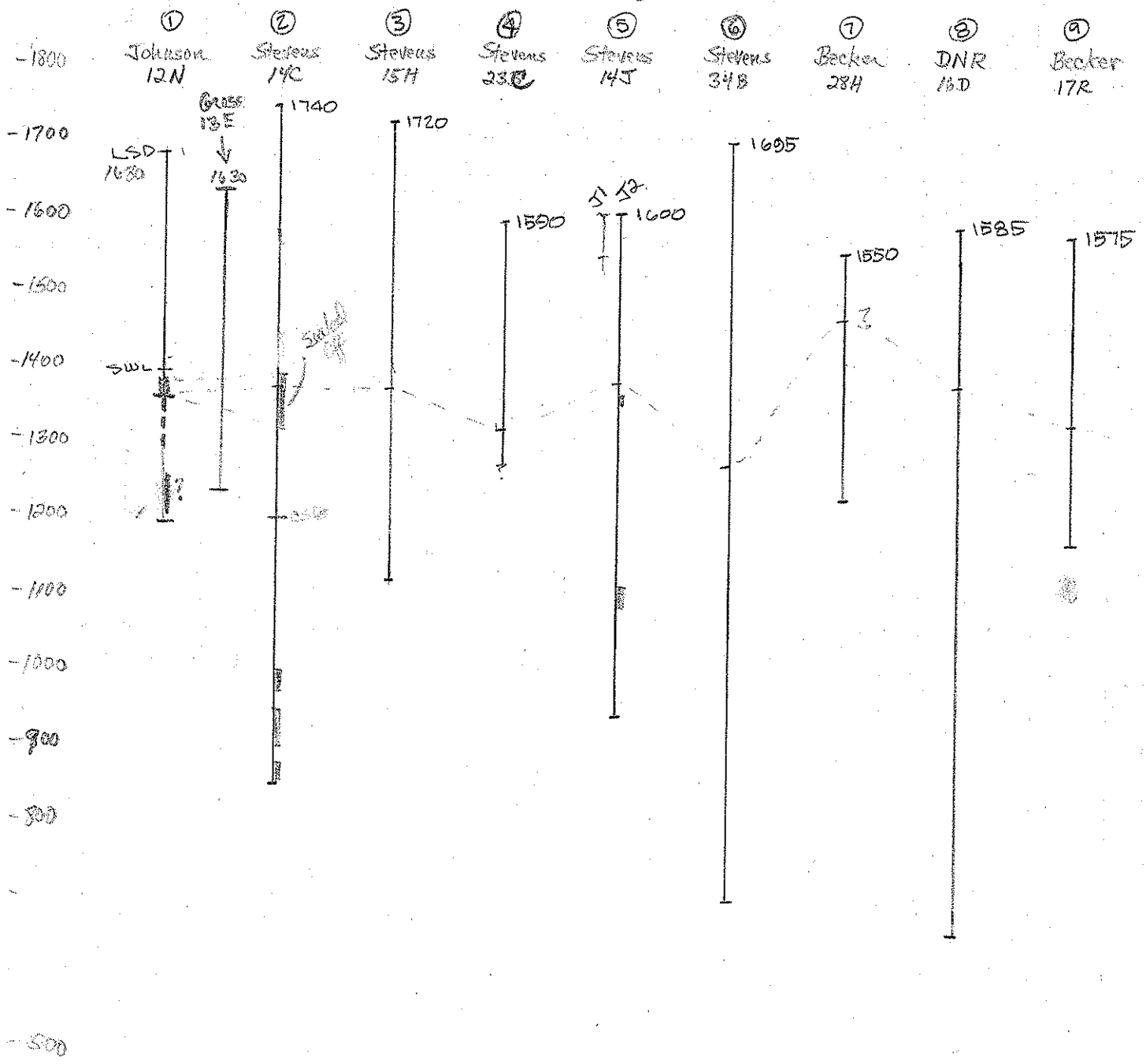
DTW_o 31.47 t_o _____ Q _____ r _____

32.47 @ MP - 1.0

Date	Hour	Water level			s	t	$\frac{1440r^2}{t}$	Remarks
		Heid	Wet	Depth (DTW)				
5-8-79	1000			0.0	0.0	0		
	1240				0.0			
	1404				0.01(?)			
	1530				0.0			
	1730				0.0			
	1915			down	0.05			- all other wells up due to barometric pressure this well is shallower & reacts differently.
	2234			down	0.05			
				down	0.1			

BCY 070-37

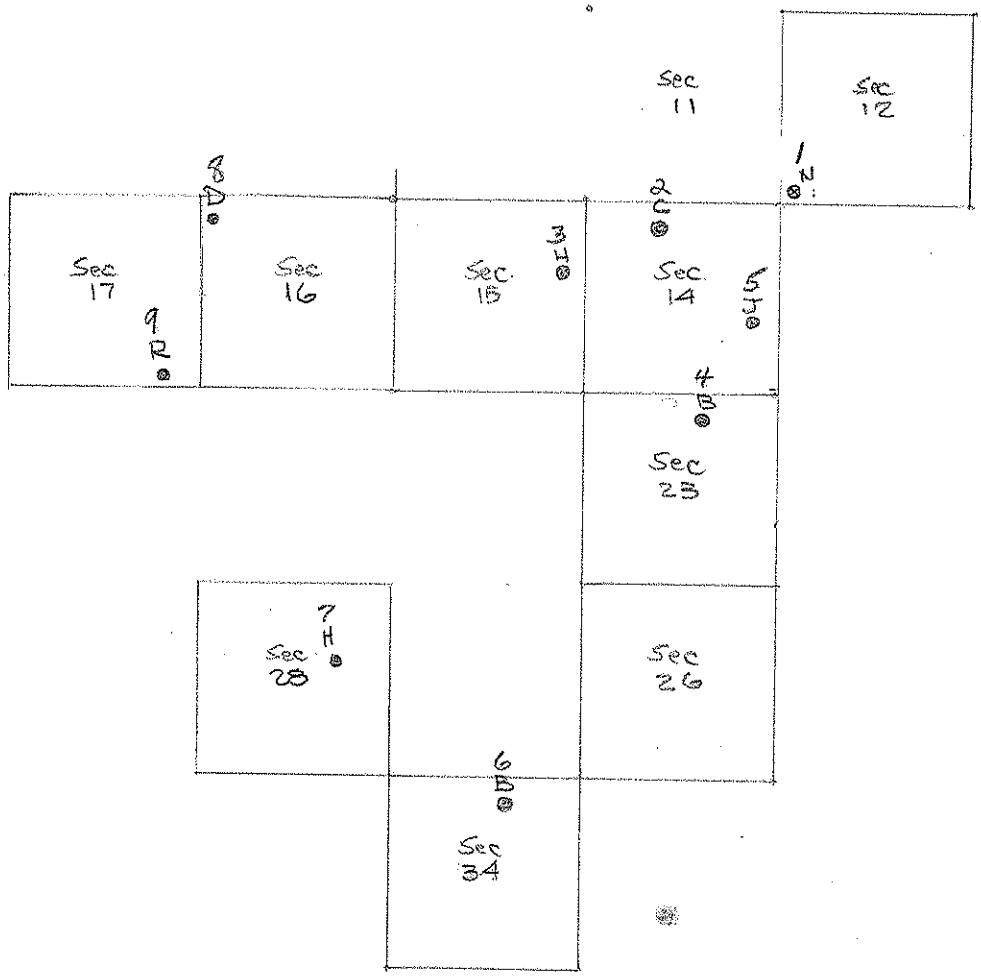
WILSON CREEK, GRANT COUNTY
(T23N, R29E)

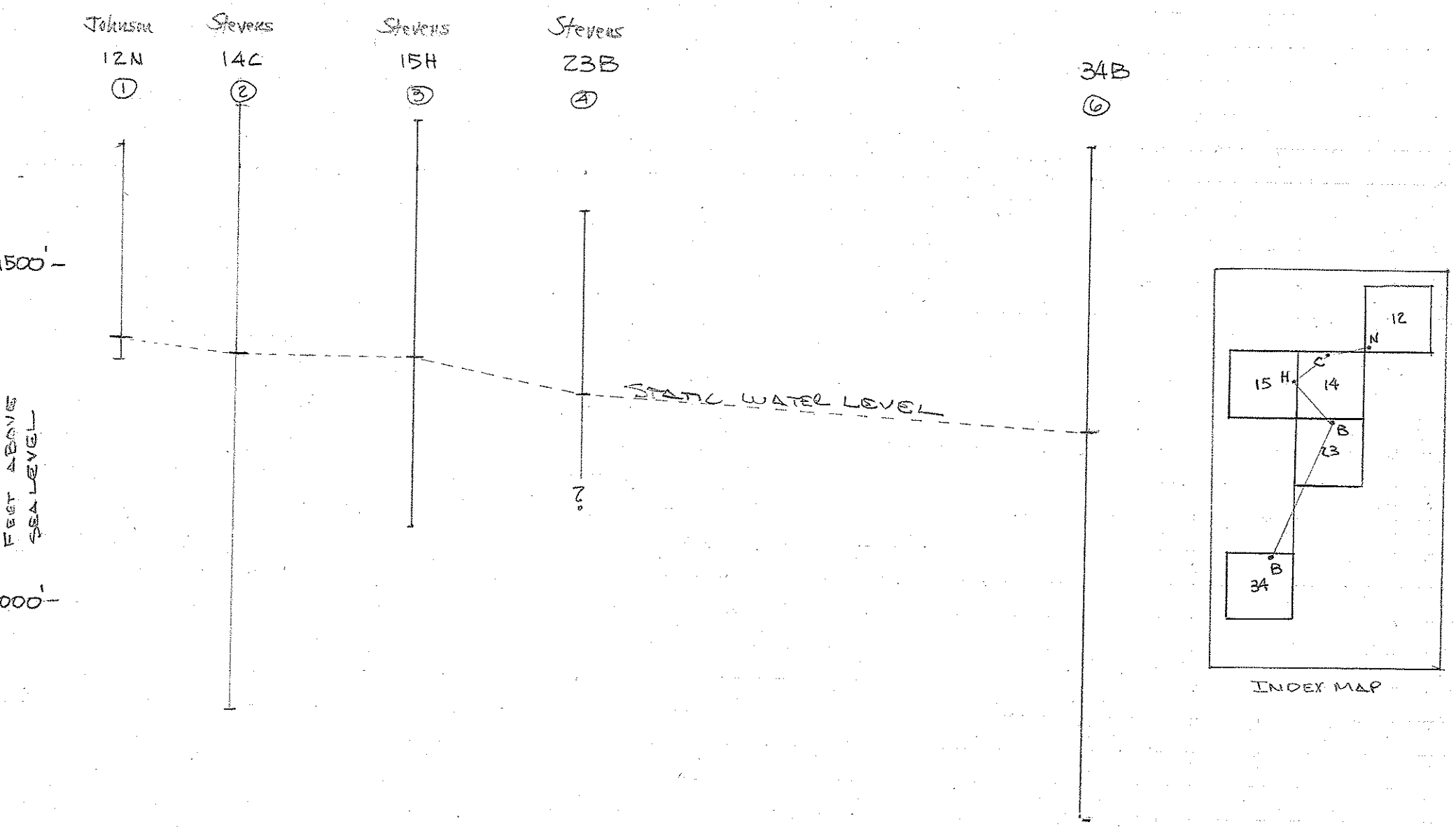


VERTICAL SCALE 1" ~ 200'

36

T. 23 N., R. 29 E., W.M.


Sec 11
Sec 12
F. JOHNSON WELL (12?)
1 N
2 C
8 D
Sec 17
Sec 16
Sec 15
3 G
Sec 14
5 J
9 R
4 B
Sec 23
7 H
Sec 18
Sec 26
6 E
Sec 34



WILSON CREEK
GRANT COUNTY, WA.
T. 23 N., R 29 E.
11-7-78

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