Washington State Department of Ecology
Technical Memorandum

The High Rock Aquifer Break

of

October 1993

by

Dave Garland[1]
and
Jerry Liszak[2]

[1]Water Quality Program
[2]Shorelands and Water Resources Program
Washington State Department of Ecology
Northwest Regional Office
Bellevue, Washington 98008-5442

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Background

A unique example of unexpected hydrologic impacts from sand and gravel mining occurred in late 1993 at a mine near Monroe, Washington. Cadman (Rock), Inc. has operated its rock quarry and sand and gravel mine near High Rock Road since 1984. The mine is situated on the east wall of the Snoqualmie River valley near its confluence with the Skykomish River valley. The sloping mine site is bounded on the west by State Road 203 and is approximately 2.5 miles south of the City of Monroe.

The purpose of this paper is to report the chronology of events relating to the High Rock Aquifer break, to document water level and springflow measurements taken by Washington State Department of Ecology (Ecology), and to assess impacts of the break on the aquifer and local wells and springs.

Local Geology

Geology at the sand/gravel mining area is mapped as sand-dominated recessional outwash deposits with an ice-contact morainal embankment to the west (Booth, 1990). The area has been configured by a series of glaciations. Glacial and non-glacial deposits overlie relatively shallow bedrock of volcanic and sedimentary origin. The geologic units in the study area, from youngest to oldest, consist of:

Recent Alluvim (Qal)
Vashon Ice-Margin Deposits (Qvim)
Vashon Recessional Outwash (Qvr)
Vashon Recessional Sand (Qvrs)
Vashon Till (Qvt)
Transitional Beds (Qtb)
Tertiary Bedrock (Tbr)

Recent Alluvium fills the Snoqualmie/Skykomish River Valley to the west. Vashon Recessional Outwash mantles the hillside and is underlain by Vashon Till and Transitional Beds of silt and clay. These units pinch out to the east and at higher elevations where bedrock is exposed.

Vashon Recessional Outwash deposits in the High Rock area range from about 50 to 100 feet thick and can be differentiated into Vashon Recessional Sand (Qvrs), a well sorted sand or sand and gravel layer which ranges from about 10 to 50 feet thick (Figure 2), and Vashon Recessional Outwash (Qvr), consisting of silty sand with well sorted sandy lenses which as a whole creates a semi-confining layer over the saturated Qvrs sub-unit. These units pinch out to the east against bedrock, and are truncated on the west near the edge of the valley by Vashon Ice-Margin Deposits (Qvim), where a tongue of ice must have persisted during deglaciation and plastered debris to laterally confine the Vashon Recessional Outwash. Vashon Till (Qvt) underlies the Vashon Recessional Outwash deposits and outcrops in the western portion of the mine site. Transitional Beds (Qtb), which are lacustrine deposits from early Vashon advance, are also found at the surface along the contact between the valley alluvium (Qal) and the Vashon Recessional Outwash deposits, and in the subsurface between the Vashon deposits and Tertiary Bedrock.

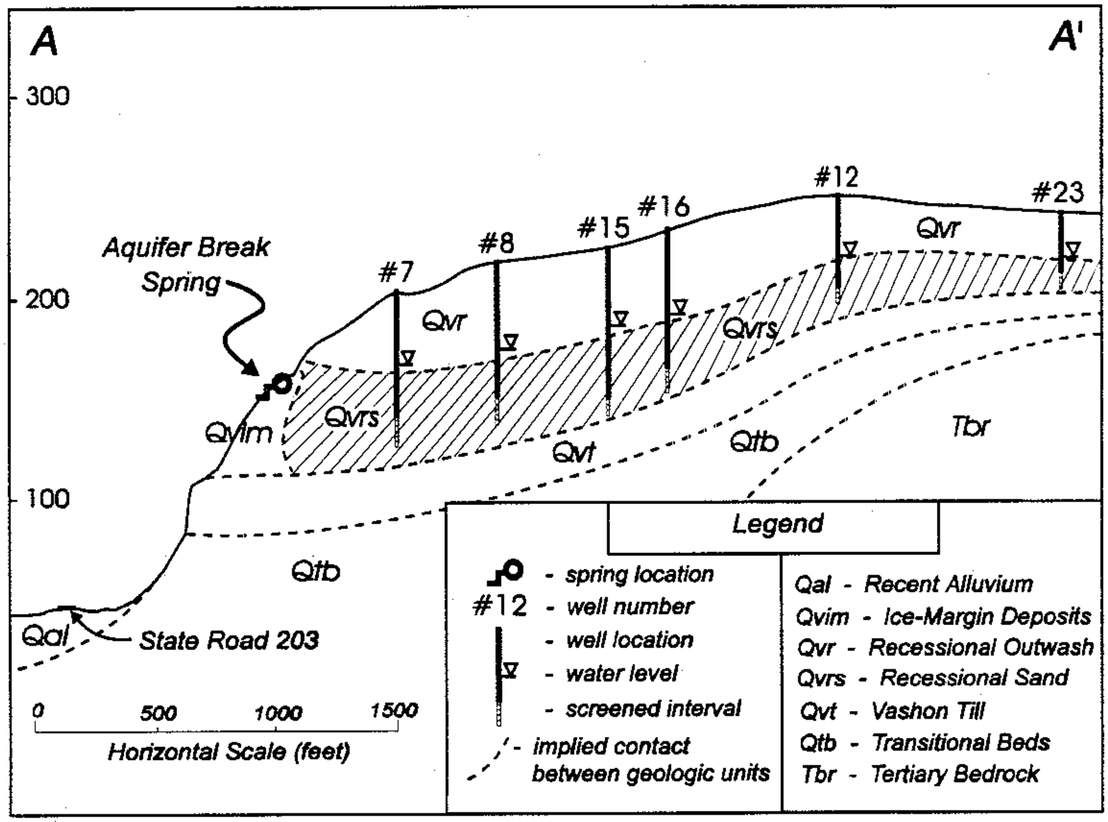

Figure 2. *Generalized High Rock geologic cross section A-A'.*

The High Rock Aquifer

The material which makes up the High Rock aquifer is primarily Vashon Recessional Sand (Qvrs) deposited on a valley terrace, and covers an area of approximately one-half square mile. The aquifer is semi-confined over most of its area, exhibiting both confined and unconfined conditions in some wells (Hart Crowser, 1994a). The land surface elevation of the High Rock Aquifer terrace ranges from 200 to 240 feet above sea level whereas the nearest portion of the Snoqualmie Valley to the west is at elevation 40 feet above sea level. Aquifer recharge is by infiltration of precipitation and by surface water runoff from higher elevation areas to the east. The aquifer supplies water to numerous domestic wells and springs in the vicinity of High Rock Road. Locations of wells and springs in the High Rock area are shown in Figure 3.

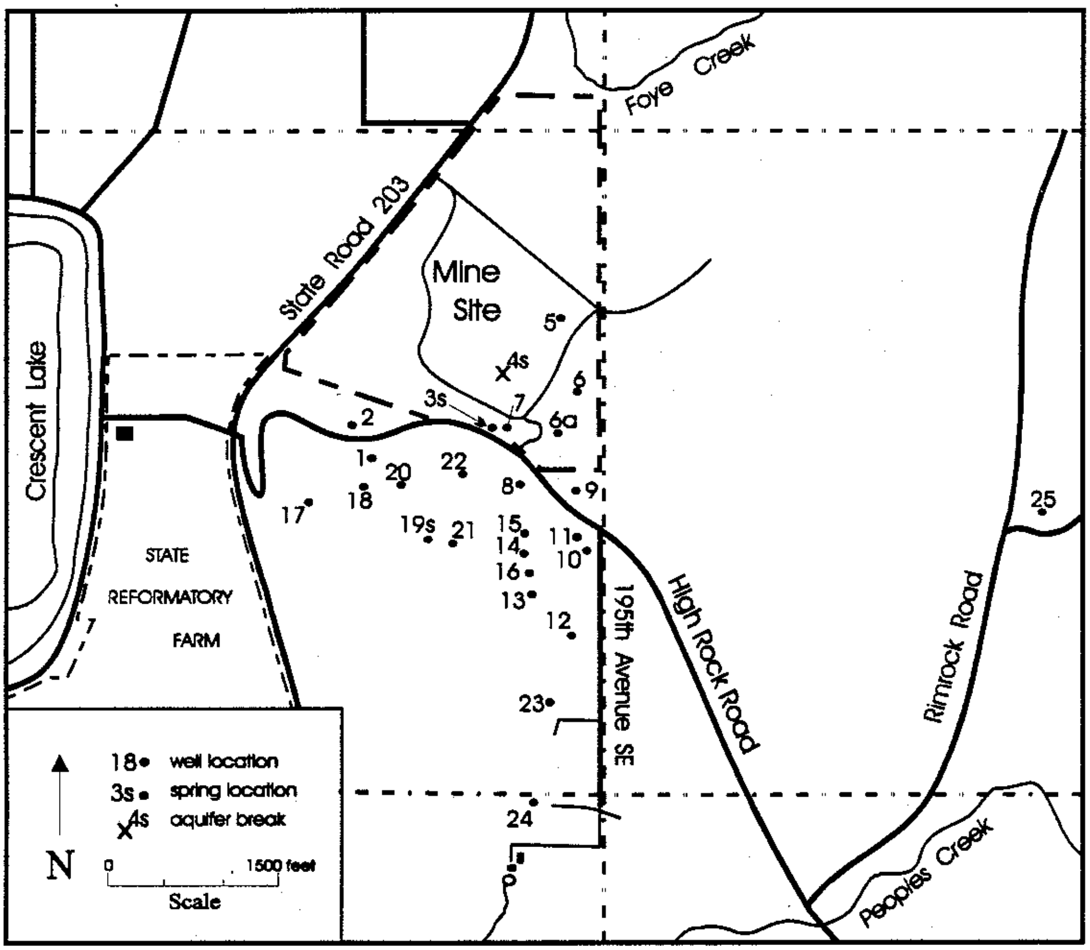

***Figure 3.** Location of wells and springs near High Rock Road.*

Prior to the aquifer break, there were 13 wells drafting the High Rock Aquifer within three-fourths of a mile from the break area. Three natural springs emanated from the aquifer which provided domestic supply, water supply for a dairy, irrigation water, and streamflows. Two of the springs were eliminated by dewatering from the break, and the Broad spring (Spring #19s in Figure 3 and Table 1) was reduced in average discharge. There are now 17 wells in the aquifer ranging in depth from 15 to 104 feet. Data for wells and springs are shown in Table 1, and available water well reports are contained in Appendix A.

Map No.	Well / Spring	Location	Well ID #	Elevation	Well dimensions
1	King	27/6 - 24G02	AAE 757	184.32	6" X 44'
2	Poulos	27/6 - 24G03	ABC 820	122.08	6" X 258'
3s	Roselli cistern	27/6 - 24Hs	*	189.26	datum = PTS 5 Mroe (67.28)
4s	Aquifer break spring	27/6 - 24Hs	*	170.07	surveyed on Nov 8, 1993
5	Crusher well	27/6 - 24H02	*	~ 220	6" X 61'
6	old Shop well	27/6 - 24H01	AAE 758	230.49	6" X 59'
6a	new Shop well	27/6 - 24H05	ABC 861		6" X 69'
7	Rock well	27/6 - 24H03	AAE 770	222.97	8" X 83'
8	Bishop	27/6 - 24H04	ABC 851	230.21	6" X 80'
9	Bernstein	27/6 - 24J01	AAE 781	287.20	6" X 63'
10	Urbaniak	27/6 - 24J02	AAE 771	270.07	6" X 52'
11	Hornibrook	27/6 - 24J03	AAE 759	263.33	6" X 104'
12	Ferm	27/6 - 24J04	AAE 760	258.69	6" X 57'
13	old Cain domestic	27/6 - 24J05	destroyed	242.64	6" X 42'
14	old Cain rental	27/6 - 24J06	destroyed	236.90	6" X 46'
15	new Cain rental	27/6 - 24J07	ABC 852	237.07	6" X 90'
16	new Cain domestic	27/6 - 24J08	ABC 855	243.11	6" X 80'
17	Baum	27/6 - 24K01	AAE 762	173.28	5" X 272'
18	Davis	27/6 - 24K04	ABC 854		6" X 95'
19s	Broad spring	27/6 - 24Ks	*	199.26	nr Well #21
20	Broad well	27/6 - 24K05	ABC 858		6" X 60'
21	domestic well	27/6 - 24K02	*	215.07	6" X 38'
22	Wilkinson	27/6 - 24K03	AAE 772	226.81	6" X 88'
23	Ribary	27/6 - 24R02	AAE 764	239.13	6" X 35'
24	Barchenger	27/6 - 25A01	*	209.99	3' X 15'
25	Rimrock well	27/7 - 19K01	AAE 765	~ 600	6" X 496'

***Table 1**. Data on wells and springs in the High Rock Road area.*

The Aquifer Break

On Friday, October 29, 1993, workmen operating heavy equipment in the southern half of the mine site were cleaning up material which had sloughed to the base of a sand and gravel slope. In the process of working on the slope, fine sandy silt deposits were breached which were acting as a confining layer for the High Rock Aquifer. Discharge from the breach increased rapidly causing significant disturbance and erosion in the breach area. At 5:30 pm Friday, discharge had increased to the point that it needed to be diverted away from sawdust piles and the gravel wash plant below (Whiteman & Shearer, 1993).

The initial flow from the break had an estimated discharge of 2,000 gpm on Friday evening and Saturday morning. By Saturday evening October 30, the discharge had reduced to an estimated 1,000 gpm. The break discharge continued to diminish to around 500-750 gpm by Monday, November 1st, and was measured at just under 400 gpm on Monday, November 8. In March 1994, a rectangular weir was installed below the break area to monitor the spring discharge. Since March 1994, the discharge has fluctuated between 195 and 353 gpm with an average discharge of 270 gpm. A combined plot of estimates and measurements of the aquifer break spring discharge is given in Figure 4.

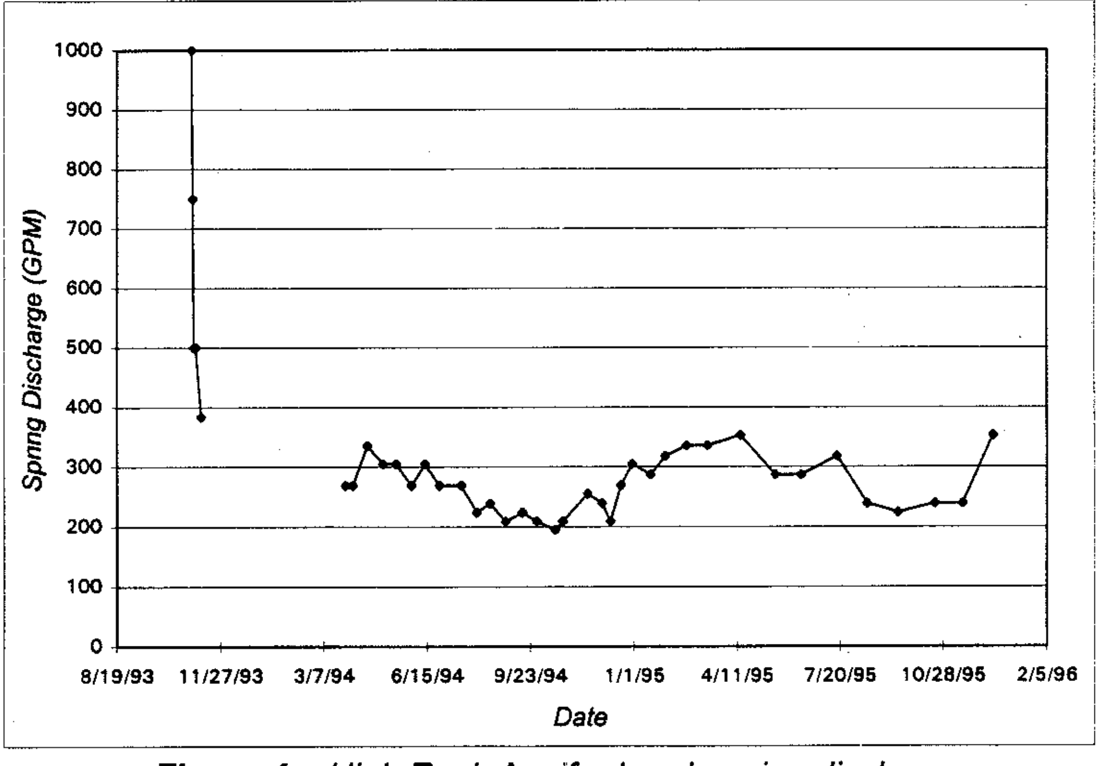

Figure 4. *High Rock Aquifer break spring discharge.*

The initial flow from the aquifer break caused significant erosion at and immediately below the break area. An estimated 25,000 cubic yards of material eroded and washed downhill from the aquifer break causing sedimentation in a stream, wetlands, adjacent private property and lake (Crescent Lake). The aquifer break created an hydraulically excavated area about 80 feet wide by 210 feet long and approximately 60 feet deep (Minard, 1994). While discharge from the aquifer break was still high, mine operators contained a considerable amount of the eroded sand and silt in the mine settling pond system below the break area. In the weeks following the break, the mine placed culverts, rip rap, filter fabric, and graded and seeded the break area to control erosion and direct the streamflow originating in the break area (Hart Crowser, 1994b).

Impacts on Local Wells and Springs

Water levels in 15 wells drafting the High Rock Aquifer were monitored at least monthly for two years following the aquifer break. Water level measurements are tabulated in Appendix B. Hydrographs for wells near the break show a rapid decline in water levels during the first 100 days following the aquifer break. Beginning about 120 days after the break, or about March, 1994, most High Rock Aquifer wells began to demonstrate new equilibrium levels and continued to produce new steady state hydrographs with normal seasonal fluctuations (Figures 5-8). As a result of the aquifer drain, water levels in wells near the break have permanently declined to new, lower average water level positions.

The first impact to a water supply from the aquifer break was to a community spring (Spring #3s in Figure 3), located about 500 feet from the break. The spring-fed cistern and gravity system served as the water source for seven homes including a dairy farm located on the Snoqualmie Valley floor in an area locally known as the Tualco Valley. The spring discharge ceased within twenty four hours of the break and has not resumed flowing since the break. An elevation survey showed the community spring was 19 feet higher than the aquifer break. A new 'Rock' well (Well #7 in Figure 3) was constructed on mine property near the dry spring about 500 feet from the break to replace the spring supply source. The Rock well was drilled 122 feet and was completed at a depth of 83 feet on November 8, 1993. Water level elevations in the new Rock well are about 15 feet lower than the dry spring. The Rock well is now serving the homes and dairy farm under a Temporary Use Permit issued by Ecology on November 15, 1993.

Another spring source serving a single domestic water supply began to have trouble as aquifer water levels reached new seasonal lows. Water supply problems were reported in the Bishop spring, approximately 900 feet from the aquifer break, beginning in July 1994. The Bishop spring replacement well (Well #8 in Figure 3) was completed on July 21, 1994 to a depth of 80 feet and is located about 800 feet from the aquifer break. Since its construction, water-level fluctuations in Well #8 have closely coincided with fluctuations in Wilkinson (Well #22) and the Rock well (Figure 5).

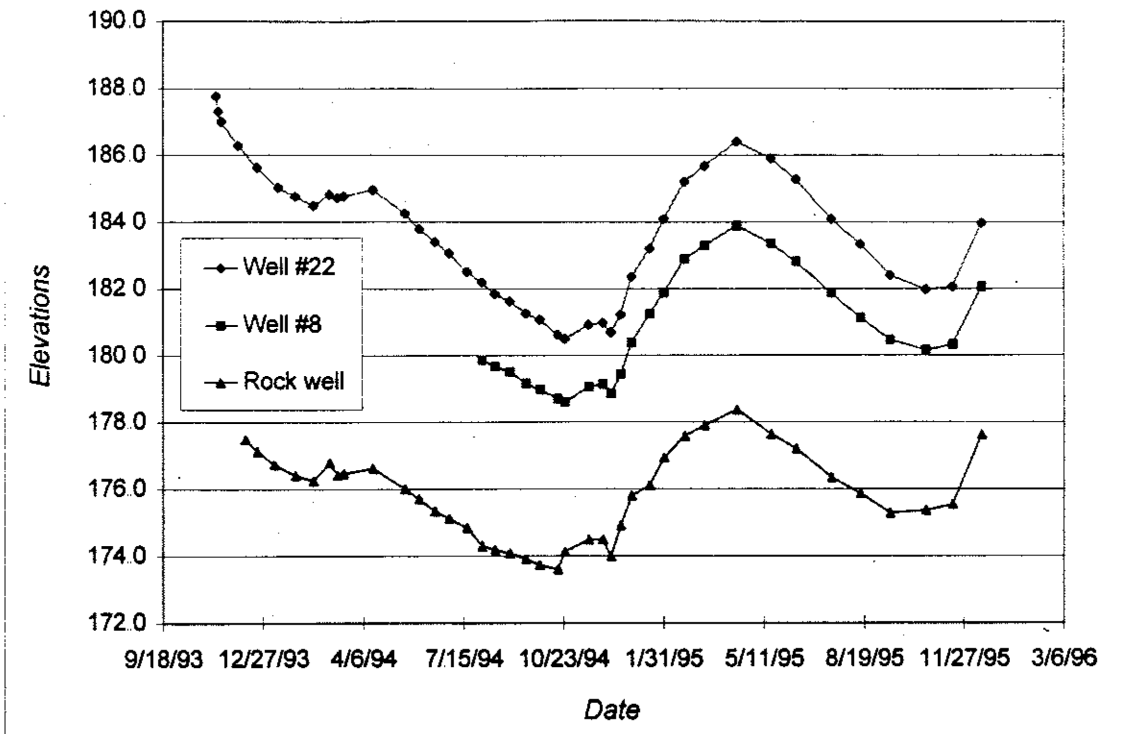

Figure 5. *Hydrographs for wells in the High Rock Aquifer. (wells located within 1,000 feet of the aquifer break)*

The first domestic well affected by the break was the Cain rental well (Well #14), located about 1,400 feet south of the aquifer break. Well #14 was 46 feet deep and completed near the top of the recessional sand portion of the High Rock Aquifer. Owners of Well #14 reported that the well ran out of water on December 5, 1993. Well renovation and pump lowering were attempted in Well #14, but the well performed intermittently until a 90-foot deep replacement well (Well #15, Table 1) was completed by the mine operator on July 28, 1994. The depth and water level in Well #15 indicate that the old rental well did not fully penetrate the aquifer. Well #15 penetrated the aquifer an additional 44 feet beyond the bottom of Well #14. Water-level elevations in Well #14 were consistently four feet higher than in Well #15, indicating a downward vertical hydraulic gradient in the aquifer at Well #15. A second well at the same property, (Cain domestic), was replaced by the mine operator on September 15, 1994. The new Cain domestic well (Well #16) is 80 feet deep and completed in a sand zone of the High Rock Aquifer. Water levels in Well #15 and in nearby Well #16 respond similarly to seasonal variations in aquifer storage (Figure 6).

An important natural spring flowing from the High Rock Aquifer is located about 1,500 feet southeast of the aquifer break. The Broad spring (Spring #19s in Figure 3) is the beginning of a small perennial stream which flows along High Rock Road toward the Snoqualmie Valley. The spring provides water for two domestic supplies, a fish pond, and summer irrigation for four property owners in the High Rock area. Average water levels in wells near Spring #19s dropped eight to fifteen feet as a result of the aquifer break (Figure 6 and Table 2). Since spring discharges are directly related to nearby ground water levels, the water level drop in the aquifer near Spring #19s indicates that the average discharge of the spring has permanently declined as a result of the aquifer break. Two wells were constructed by the mine operator to supplement the domestic water supplies that were relying on Spring #19s. The Davis well (Well #18) was contructed on August 16, 1994 to a depth of 95 feet. The Broad well (Well #20) was drilled on September 28, 1994 to a depth of 60 feet.

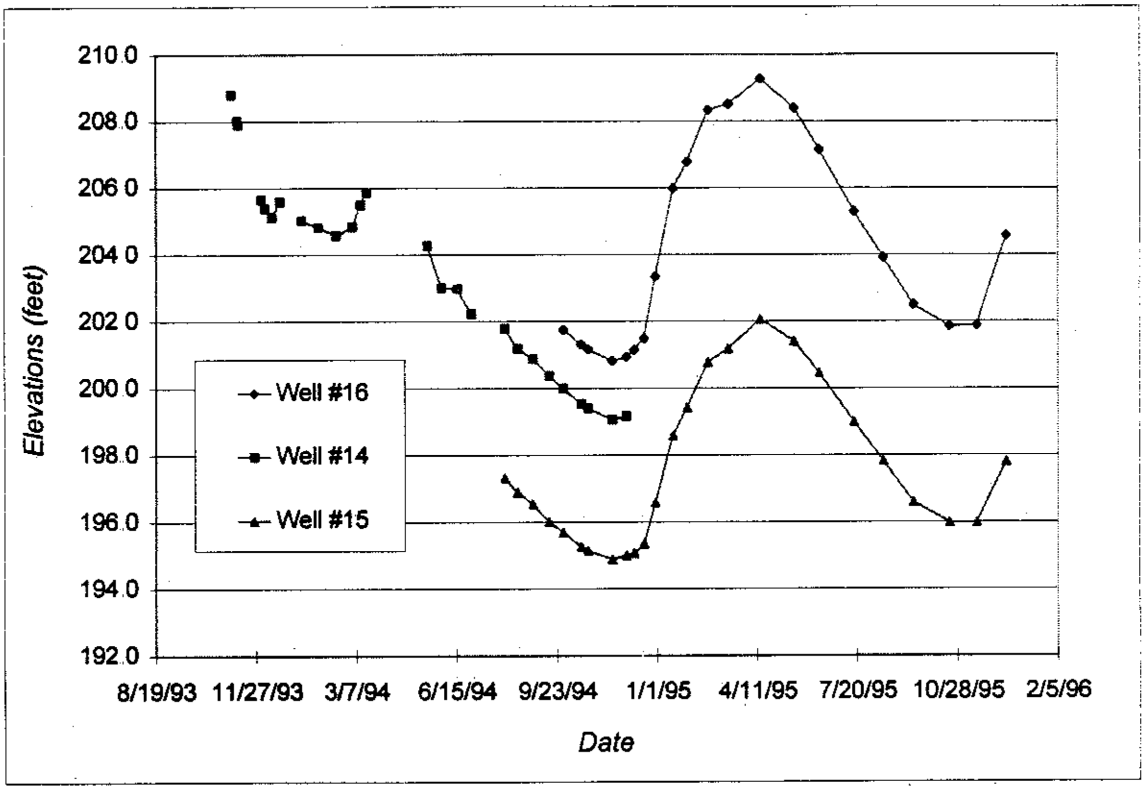

Figure 6. *Hydrographs for wells in the High Rock Aquifer. (wells located within 1,600 feet of the aquifer break)*

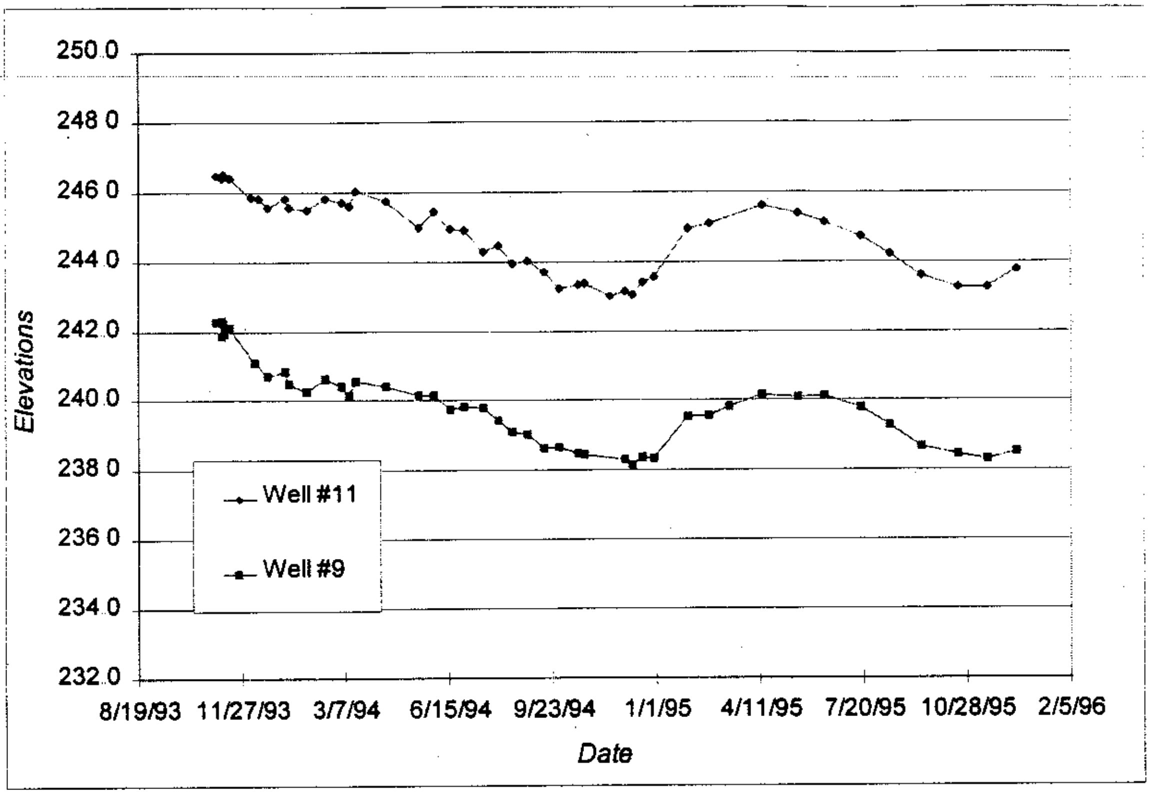

Figure 7. *Hydrographs for wells in the High Rock Aquifer.*

Water levels in Wells #9 and #11, located 1,400 and 1,600 feet from the break respectively, showed somewhat erratic but declining trends during the first 100 days following the break (Figure 7). Water levels in Wells #9 and #11 are the highest elevation water levels measured in the High Rock Aquifer wells, but had a seasonal range of only four to five feet. The hydrographs show a slightly steeper rate of decline during November and December, 1993, than during the normal, seasonal water level recession.

Water levels in wells further from the aquifer break, (beyond 1,900 feet), dropped less than four feet (Well #10, Figure 8) in the 100 days following the break. These wells showed earlier recharge effect from precipitation, indicating that significant recharge to the High Rock Aquifer occurs near 195th Avenue SE and High Rock Road. Persistent wetlands and roadside streams near the intersection of 195th Avenue SE and High Rock Road indicate that significant aquifer recharge occurs from infiltration of surface runoff in this area. A water level measurement taken in Well #10 on November 2, 1993, shortly following the aquifer break, was exceeded in elevation by water level measurements taken from March through May 1994, and again between February and May 1995.

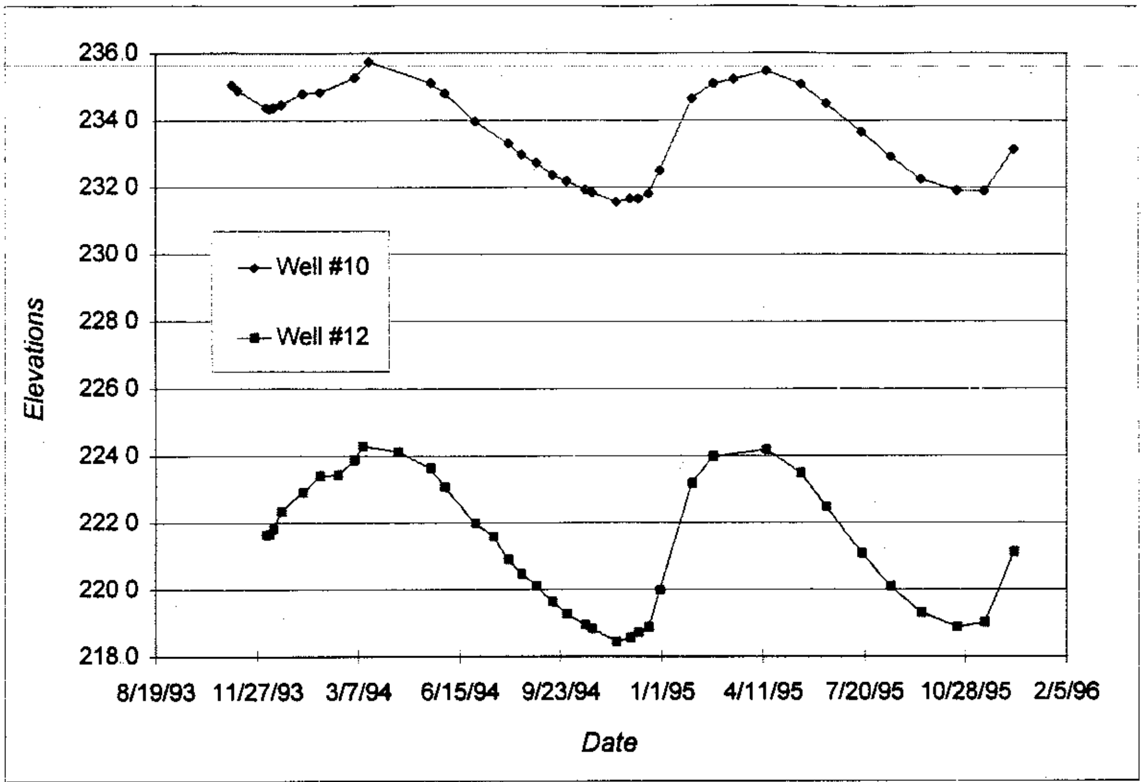

***Figure 8.** Hydrographs for wells in the High Rock Aquifer.*
(Wells located beyond 1,600 feet from aquifer break)

At the time of the break, the area of the aquifer near the break was drafted by 11 domestic wells, two industrial wells, and three springs. Some of the affected wells were deep enough and had high enough capacities to sustain the aquifer dewatering without harm. Data collected in High Rock Aquifer wells over the two years since the break indicate that water levels stabilized at new equilibrium levels within the first 120 days following the incident. Normal steady state water levels in the High Rock Aquifer appear to fluctuate seasonally over a range from four to eight feet.

Precipitation and Recharge

The High Rock Aquifer is recharged by direct precipitation and by infiltration of surface water runoff from higher elevation areas to the east. Significant wetland areas at the eastern edge of the aquifer near 195th Avenue SE become flooded each fall and winter and contribute recharge to the aquifer. The relatively high elevation water levels and early recharge responses in Wells #9-12 also indicate that the 195th Avenue wetlands contribute significant recharge to the High Rock Aquifer.

Monroe precipitation data are collected at the State Reformatory and are published by the U. S. Department of Commerce in Annual Climatological Data Summaries (NOAA, 1994-95). Monthly rainfall measured at Monroe between June 1993 and March 1995 is plotted with average monthly rainfall at Monroe in Figure 9. Monthly averages for rainfall at Monroe are based on National Weather Bureau data collected from 1951 to 1980 (NOAA, 1982).

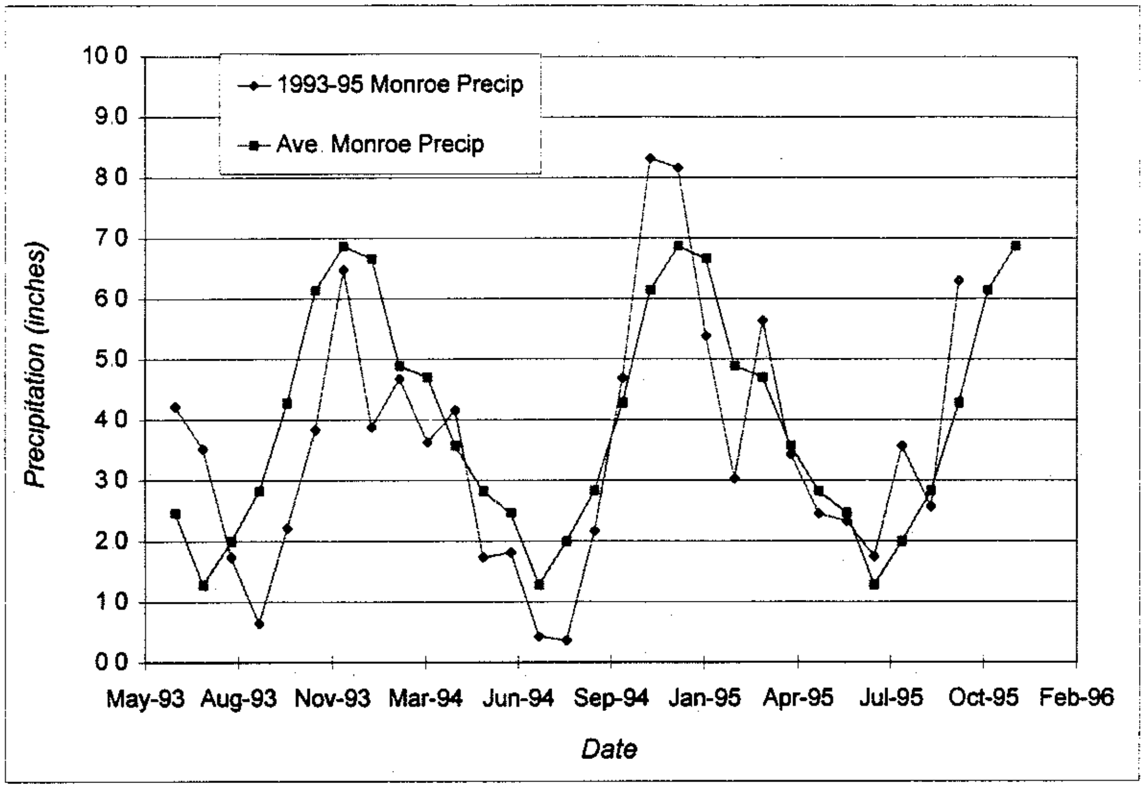

Figure 9. *Total monthly rainfall at Monroe, Washington.*

As shown in Figure 9, precipitation during the monitoring period from 1993 to 1995 followed the general pattern for average precipitation at Monroe. The aquifer break occurred at a time when precipitation was increasing, reaching a peak monthly precipitation following the break of 6.48 inches for December, 1993. Rainfall was greater in winter of 1994 than winter of 1993 with above average rainfall of over eight inches in November and December, 1994.

The relationship between average Monroe rainfall and water level response in the High Rock Aquifer is illustrated in Figure 10. Water level data for Well #22 was adjusted in order to allow comparison of water levels and rainfall data on the same scale. The adjusted water levels are compared with the four month moving average rainfall at Monroe from April 1993 to April 1995 (Figure 10).

The shape of the well hydrograph is similar to the graph of four month moving average of Monroe rainfall, except for the first four months of ground water measurements. The deviation of the well hydrograph from the general shape of the average precipitation curve during November 1993 through March 1994 indicates the aquifer was adjusting to the new drain caused by the aquifer break.

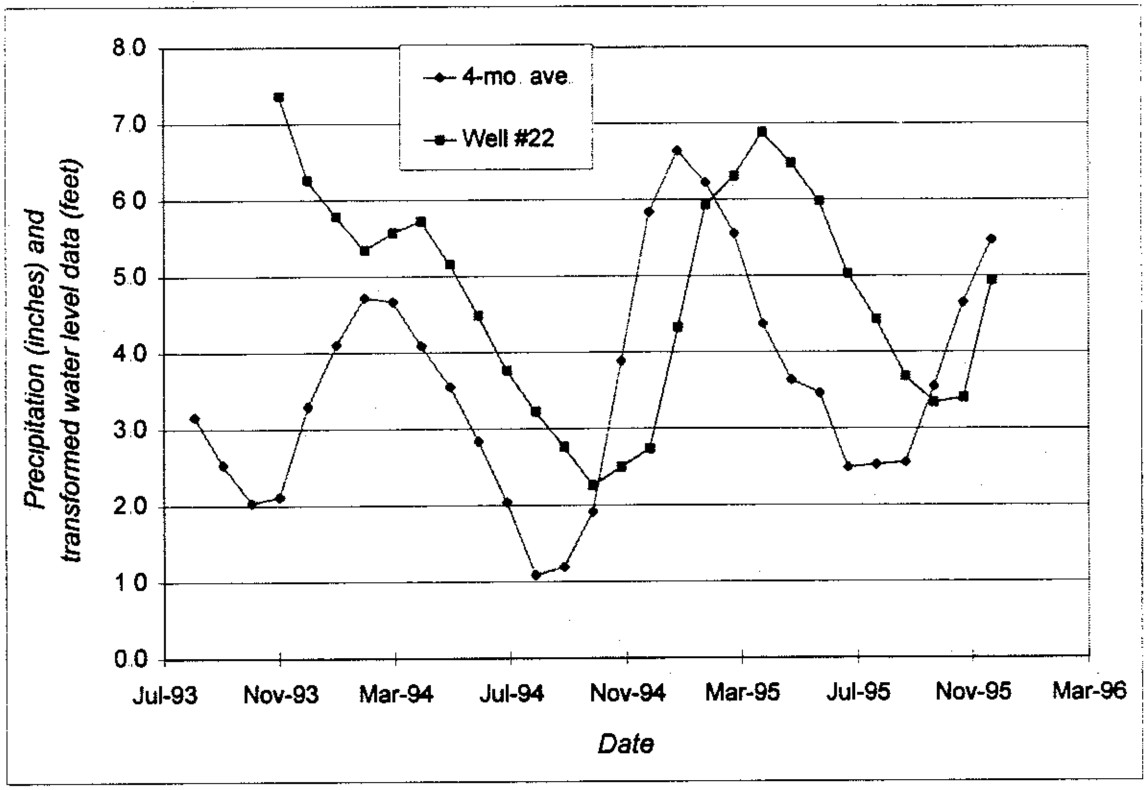

***Figure 10**. Four month moving average Monroe rainfall and water levels in Well #22.*

Water levels in most High Rock Aquifer wells were declining from November 1993 through February 1994; presumably from the dewatering effects of the break. In March 1994, water levels in most wells showed a marked recharge effect. This suggests that either the aquifer adjustment to dewatering from the break was complete, or that winter recharge effect overwhelmed the effect of the drain. After April, 1994, water levels in most High Rock wells trended downward after the typical pattern of receding summer well hydrographs. Water levels demonstrated another precipitation recharge effect lasting from October 1994 to March 1995. The timing of rainfall and associated aquifer recharge effects indicates that the delay between peak rainfall and maximum springtime ground water levels is about two to three months. The peak amounts of fall and winter rainfall from year to year indicate the relative height of springtime ground water levels.

Aquifer Drainage Estimate

Two methods were used to estimate how much dewatering or permanent water level decline occurred as a result of the aquifer drain. For wells with available drillers reports, original static water levels(SWL's) measured at the time of well construction were compared to water levels measured during the two years of monitoring following the aquifer break. The difference between the original static, and water levels measured since the break during the same month as the month of well construction, yielded the apparent water level drop at each well. There were six High Rock Aquifer wells for which original static water levels were available. Five wells used for historical water level comparison are shown in Table 2, along with distances from the aquifer break and estimates of water level drop in each well.

Well No.	Well Location	distance from break	apparent drop from well log SWL's
6	27/6 - 24H01	700	19.0
22	27/6 - 24K03	1000	15.0
14	27/6 - 24J06	1400	11.8
13	27/6 - 24J05	1800	7.8
23	27/6 - 24R02	2900	2.6

Table 2. *Analysis of water level drop near the High Rock Aquifer break.*

The apparent water level declines are estimates based on comparisons between historical water level measurements. The five wells used for historical water level comparison were drilled from 1979 to 1992. Climatic trends, which may have caused differences in aquifer storage between 1979 and 1993, were not taken into account in the water level comparisons. When plotted with respect to distance from the aquifer break, the amount of apparent water level drop in five High Rock Aquifer wells form a nearly straight line as shown in Figure 11. The plot in Figure 11 indicates the amount of aquifer dewatering relative to distance from the aquifer break. Extension of the plot to the location of the aquifer break indicates that the water level drop in the immediate area of the break was approximately 24 to 28 feet. Comparison of the original static water level in Well #23 (17 feet in April, 1991), with recent April measurements in the well of 19.67 feet(1994) and 19.58 feet(1995), indicates that the amount of aquifer dewatering beyond one-half mile south of the break was less than three feet.

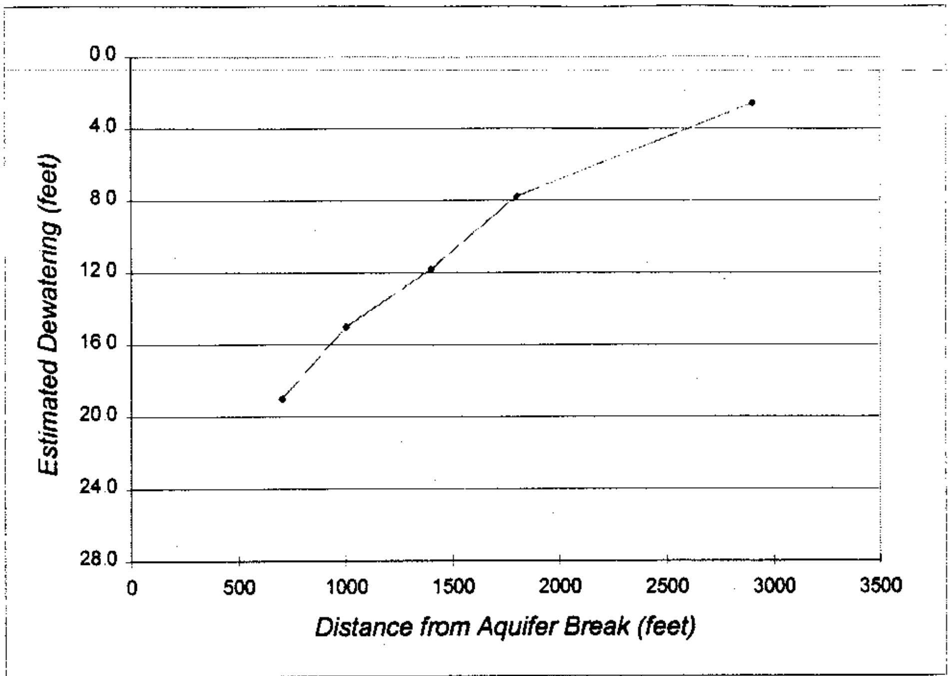

Figure 11. *Apparent water level drop vs. distance from the High Rock Aquifer break.*

A second method used to estimate dewatering from the break involved comparison of actual water levels during the 120 days following the break with estimated water levels derived from precipitation data and hydrograph responses established after the break. Under normal conditions, water levels would be rising from late fall into spring. The effect of the aquifer break caused sudden water level declines in the aquifer starting October 29, 1993. Following the break, water levels in wells near the break expressed the combined effect of the aquifer break dewatering and the normally rising hydrograph. For most wells in the aquifer, the drainage effect overwhelmed the fall/winter recharge effect, resulting in dropping water levels for about four months following the break. In order to estimate dewatering in several of the High Rock Aquifer wells, estimated water levels were extrapolated from the 1994-95 water level responses to precipitation and the general hydrograph shape established during the two years of monitoring since the break. The estimated hydrograph extends from the new equilibrium hydrograph back to the date of the aquifer break and estimates aquifer behavior as if the break occurred one year earlier. The estimated water levels yield rough estimates of hydrograph shape prior to the break. The differences between actual water level measurements and the hypothetical hydrograph give estimates of the dewatering effect imposed by the aquifer break.

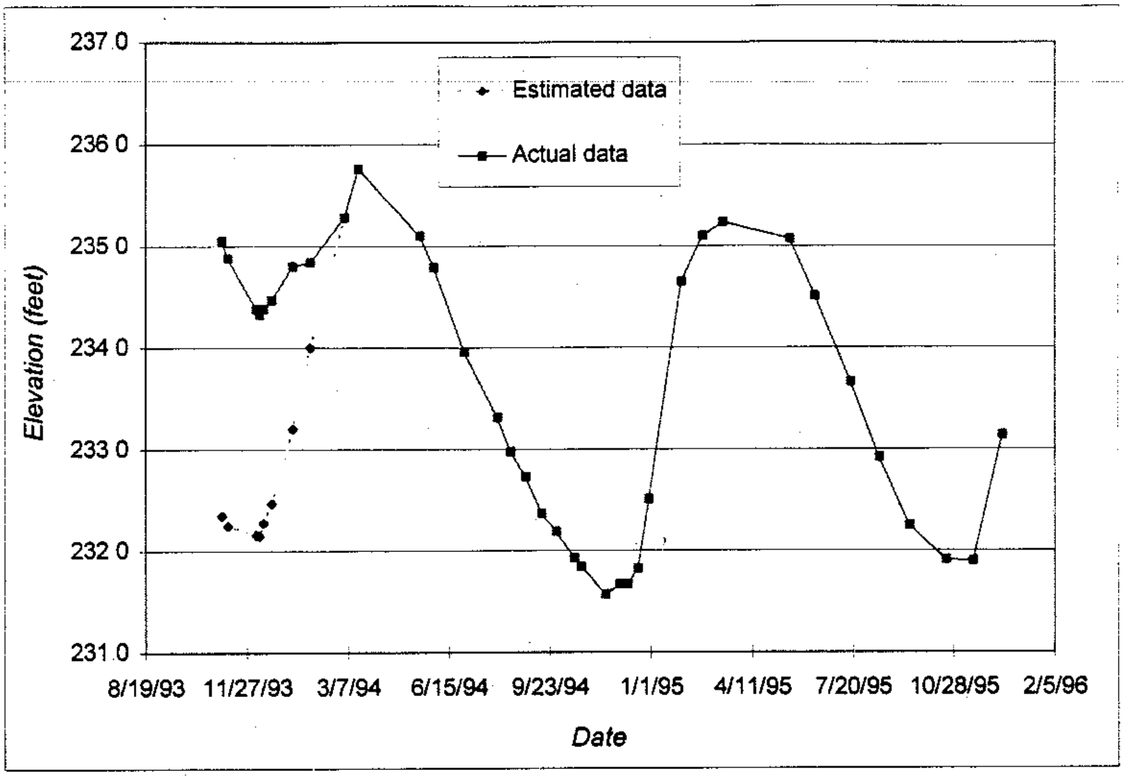

***Figure 12.** Actual and estimated hydrograph shapes for Well #10 following the High Rock Aquifer break.*

The actual and hypothetical hydrographs for Well #10 are shown in Figure 12. The hypothetical hydrograph estimates the shape of the hydrograph between the time of the break and the March 1994 recharge effect. The deviation of actual measurements from the hypothetical hydrograph at the time of the aquifer break approximates the total amount of dewatering at the well. The analysis indicates that the drainage effect at Well #10 is about 2.7 feet. Since Well #10 is approximately 2000 feet from the aquifer break, the amount of expected water level drop based on Figure 11 would be six or seven feet. However, because significant High Rock Aquifer recharge occurs near Well #10, impacts of the aquifer break in Wells #9, #10, #11 and #12 were moderated by aquifer recharge effects.

Water level data collected over the last two years indicates that the aquifer break drainage took place over a period of about 120 days until early March 1994, when the dewatering effect of the break was apparently complete. The estimated overall drainage effect from the aquifer break is an average six foot water level drop over an aquifer area of about 160 acres. Assuming an average porosity of 15 percent, the estimated volume of permanent aquifer dewatering due to the break is 144 acre-feet of water or 47 million gallons.

Conclusions

- Hydrologic impacts associated with the High Rock Aquifer break include erosion and sedimentation damage to wetlands and neighboring property, water level drop in local wells, decrease in discharge of springs and reduced streamflows.

- The mine operator responsible for the High Rock Aquifer break has constructed one community water supply well and five single domestic water supply wells in response to break related water supply impacts.

- Ground water monitoring results from the High Rock Aquifer indicate that aquifer storage has stabilized and water levels in wells are exhibiting normal seasonal fluctuations at new equilibrium levels.

- The estimated volume of aquifer dewatering is 144 acre-feet of water (47 million gallons). The affected area of the aquifer was drafted by 11 domestic wells, two industrial wells, and three springs at the time of the break.

Recommendations

- Mine operators should identify local water systems and determine their respective sources of water. Ground water monitoring is strongly recommended where local water supply wells or springs exist near a mining site. Mine operators should install and periodically monitor observation wells sited between mining areas and local water supply sources.

- Horizontal excavation into terrace slopes should be avoided without hydrogeologic or geotechnical supervision. Mine consultants should identify "critical hydrogeologic areas" where special precautions are required for mine related work.

- If and when future sudden aquifer drainages occur from any cause, Ecology should provide independent monitoring and evaluation of the hydrologic impacts.

References

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Appendix A

Well Reports

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

(1) WATER WELL REPORT

STATE OF WASHINGTON

Start Card No [redacted]

Water Right Permit No. 276.24K

OWNER: Name Jim Easterly Address 195th & Hi Rock Rd.

(2) LOCATION OF WELL: County Snohomish NE¼ NW ¼ SE ¼ Sec. 24 T. 27 N., R. 6 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) 195th & Hi Rock Rd

(3) PROPOSED USE: ☒ Domestic ☐ Irrigation ☐ DeWater Industrial ☐ Test Well ☐ Municipal ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned ☐ New well ☒ Deepened ☐ Reconditioned ☐ Method: Dug ☐ Cable ☒ Rotary ☐ Bored ☐ Driven ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 45 feet. Depth of completed well 44 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6⅝" Diam. from +1 ft. to 38 ft.
Welded ☒ " Diam. from ft. to ft.
Liner installed ☐ " Diam. from ft. to ft.
Threaded ☐

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Cook
Type Model No.
Diam. 5½ Slot size .018 from 39 ft. to 44 ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name Ø
Type: Ø H.P. Ø

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level Flowing ft. below top of well Date 3/12/92
Artesian pressure 0 to 1 lbs. per square inch Date 3/12/92
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom?
Yield: 15 gal./min. with 30 ft. drawdown after 4 hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
30 min	15'				
1 hr	5.5'				
2 hrs	flowing				

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Airtest gal./min. with stem set at ft. for hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Top soil - brown sand	0	8
Gray clay, sand & gravel	8	35
Corse sand & fine gravel lots of water	35	45

Screen assembly
4'6" 5½" pipe extention and K-packer
5'2" .018 Cook sand screen
9'8" over all length

RECEIVED
APR 6 1992
DEPT. OF ECOLOGY

Work started 3/9/92, 19 . Completed 3/12 92

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Mike Herman (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address P.O. Box 296 Monroe, WA 98272
(Signed) Francis D. Parr (WELL DRILLER) License No. 1627
Contractor's Registration No. AAA PUWO152N9 Date 3-28 1992

(USE ADDITIONAL SHEETS IF NECESSARY)

27/24/6eG Start Card No. W10073

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

(2) WATER WELL REPORT

STATE OF WASHINGTON

UNIQUE WELL I.D. # ABC 820

Water Right Permit No. 27/6/24 G

OWNER: Name Mark Povlos Address 18805 High Rock

(2) LOCATION OF WELL: County Snohomish SW 1/4 NE 1/4 Sec 24 27 N., R. 6E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) SAME

(3) PROPOSED USE: [X] Domestic [ ] Irrigation [ ] DeWater [ ] Industrial [ ] Test Well [ ] Municipal [ ] Other

(4) TYPE OF WORK: Owner's number of well (If more than one) 3
Abandoned [ ] New well [X] Deepened [ ] Reconditioned [ ]
Method: Dug [ ] Cable [X] Rotary [ ] Bored [ ] Driven [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 258 feet. Depth of completed well 258 ft.

(6) CONSTRUCTION DETAILS:
Casing Installed: 6" Diam. from +1 ft. to 250 ft.
Welded [X] " Diam. from ft. to ft.
Liner installed [ ] " Diam. from ft. to ft.
Threaded [ ]

Perforations: Yes [ ] No [X]
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes [X] No [ ]
Manufacturer's Name Huss
Type stainless Model No.
Diam. 5 Slot size 17 from 250 ft. to 258 ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes [ ] No [X] Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes [X] No [ ] ~~To what depth?~~ 18' ft.
Material used in seal Bentonite Clay
Did any strata contain unusable water? Yes [ ] No [ ]
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level 98 ft.
Static level 76 ft. below top of well Date 3-2-94
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [X] No [ ] If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test 10 gal./min. with 100 ft. drawdown after 2 hrs.
Airtest gal./min. with stem set at ft. for hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Sand	0	14'
Blue Clay	14'	255'
sand gravel	255	256'
Clay	258	265'

Work Started 1-30-94 Completed 3-2 1994

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME IKA Enterprises & Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 21203 - 195 Th SE Monroe
(Signed) [signature] (WELL DRILLER) License No. 1806
Contractor's Registration No. IKA EN01011D Date 3-6 1994

(USE ADDITIONAL SHEETS IF NECESSARY)

ECL 050-1-20 (2/93)

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

ENTERED (6a)

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 17644
UNIQUE WELL I.D. # 861
Water Right Permit No. 27/6E/24/K

(1) OWNER: Name Cadman Address Hi Rock Rd Monroe, WA. 98272

(2) LOCATION OF WELL: County Snohomish NW 1/4 SE 1/4 Sec 24 T 27 N, R 6 E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) above

(3) PROPOSED USE: ☐ Domestic ☐ Irrigation ☐ DeWater Industrial ☒ Test Well ☐ Municipal ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (If more than one) ______
Abandoned ☐ New well ☒ Deepened ☐ Reconditioned ☐ Method: Dug ☐ Cable ☒ Rotary ☐ Bored ☐ Driven ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8 inches.
Drilled 100 feet. Depth of completed well 69 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6-5/8" Diam. from +1 ft. to 59 ft.
Welded ☒ ______" Diam. from ______ ft. to ______ ft.
Liner installed ☐ ______" Diam. from ______ ft. to ______ ft.
Threaded ☐

Perforations: Yes ☐ No ☒
Type of perforator used ______
SIZE of perforations ______ in. by ______ in.
______ perforations from ______ ft. to ______ ft.
______ perforations from ______ ft. to ______ ft.
______ perforations from ______ ft. to ______ ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Halliburton
Type Wire wrap Model No. ______
Diam. 7½ Slot size .020 from 59 ft. to 64 ft.
Diam. 7½ Slot size .020 from 64 ft. to 69 ft.

Gravel packed: Yes ☐ No ☒ Size of gravel ______
Gravel placed from ______ ft. to ______ ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? ______ Depth of strata ______
Method of sealing strata off ______

(7) PUMP: Manufacturer's Name Goulds 10GS05412
Type: Submersible H.P. ½

(8) WATER LEVELS: Land-surface elevation above mean sea level ______ ft.
Static level 52 ft. below top of well Date 2/11/95
Artesian pressure ______ lbs. per square inch Date ______
Artesian water is controlled by ______ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? AAA
Yield: 6 gal./min. with 46 ft. drawdown after 4 hrs hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
0	98				
15 min	52				

Date of test 2-18-95
Bailer test 6 gal./min. with 15 ft. drawdown after 1 hrs.
Airtest ______ gal./min. with stem set at ______ ft. for ______ hrs.
Artesian flow ______ g.p.m. Date 2/11/95
Temperature of water ______ Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
~~Brown sandy soil~~	~~0~~	~~10~~
Brown till-clay, sand & lots of gravel	10	48
Brown till - clay, sand and some small gravel - some water	48	60
Gray clay	60	100

SCREEN ASSEMBLY
2' 0" Pipe extention & K-Packer
5' 4" .020 Halliburton Sand Screen
5' 4" .020 Halliburton Sand Screen

12' 8" Overall length

Pump Set 98'

RECEIVED
MAR 14 1995
DEPT. OF ECOLOGY

Work Started 1/31/95, 19. Completed 2/11/95, 19

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME AAA Pump & Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address P.O. Box 296 Monroe, WA. 98272
(Signed) Francis D. [signature] (WELL DRILLER) License No. 1629
Contractor's Registration No. AAAPUWD152N9 Date 3-10, 1995

(USE ADDITIONAL SHEETS IF NECESSARY)

ECL 050-1-20 (2/93)

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

ENTERED

WATER WELL REPORT

(7)

STATE OF WASHINGTON

Start Card No. 10302

UNIQUE WELL I.D. #

Water Right Permit No. 27/6E/24 H

(1) OWNER: Name CADMAN INC Address P.O. Box 538

(2) LOCATION OF WELL: County SNOHOMISH — SE NW 1/4 NE SE 1/4 Sec 24 T 27N N., R 6E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address)

(3) PROPOSED USE: ☒ Domestic ☐ Irrigation ☐ DeWater Industrial ☐ Test Well ☐ Municipal ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (If more than one)
Abandoned ☐ New well ☒ Deepened ☐ Reconditioned ☐ Method: Dug ☐ Cable ☐ Rotary ☒ Bored ☐ Driven ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8 inches.
Drilled 122.5 feet. Depth of completed well 83' ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8" Diam. from +3 ft. to 67 ft.
Welded ☐ " Diam. from ft. to ft.
Liner installed ☐
Threaded ☐ " Diam. from ft. to ft.

Perforations: Yes ☐ No ☐
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☒ No ☐
Manufacturer's Name JOHNSON
Type STAINLESS STEEL Model No.
Diam 7 5/8 Slot size .080 from 67 ft. to 83 ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☐ Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 20 ft.
Material used in seal Bentonite CHIPS
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 41 ft. below top of well Date 11-8-93
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom?
Yield: 300 gal./min. with 19 ft. drawdown after 2 1 hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Airtest gal./min. with stem set at ft. for hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Silty SANDY GRAVEL	0	8
SAND	8	11
Moist to wet SANDY GRAVEL	11	22
wet Brown to Grey silty	22	
to very silty fine sand		55
wet Brown silty Gravel	55	
w/fine to coarse sand		67
GRAVEL	67	73
SANDY GRAVEL to GRAVELLY	73	
SAND		81
wet Brown fine to coarse SAND	81	92
wet Gray Very sandy silt	92	102
to very silty SAND		
Wet Brown Gravelly very silty Sand to sandy Gravel	102	110
HARD DAMP Gray slightly Gravelly silt	110	122.5

RECEIVED
DEC 12 1994
DEPT OF ECOLOGY

Work Started 11-3, 19 . Completed 11-8, 1993

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Holt Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 10621 Todd Rd E, Puyallup
(Signed) Steve [signature] (WELL DRILLER) License No 1888
Contractor's Registration No HOLTTT*0870J Date 11-9, 1993

(USE ADDITIONAL SHEETS IF NECESSARY)

ECL 050-1-20 (2/93)

27/6/24 K

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

(8) WATER WELL REPORT

STATE OF WASHINGTON

Start Card No 17612

I.D.# ABC851

Water Right Permit No. ______

(Mrs. Bishop)

(1) OWNER: Name Bill Davis Address ~~18132 Hi Rock Rd Monroe WA 982~~

(2) LOCATION OF WELL: County Snohomish NW ¼ SE ¼ Sec 24 T 27 N R 6 E W.M.

(2a) STREET ADDDRESS OF WELL (or nearest address) Above

(3) PROPOSED USE: [X] Domestic [ ] Irrigation [ ] DeWater Industrial [ ] Test Well [ ] Municipal [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well (If more than one) ______
Abandoned [ ] New well [X] Deepened [ ] Reconditioned [ ]
Method: Dug [ ] Cable [XX] Rotary [ ] Bored [ ] Driven [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 85 feet. Depth of completed well 80 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6-5/8" Diam. from +1 ft. to 64 ft.
Welded [X] ______ " Diam. from ______ ft. to ______ ft.
Liner installed [ ]
Threaded [ ] ______ " Diam. from ______ ft. to ______ ft.

Perforations: Yes [ ] No [XX]
Type of perforator used ______
SIZE of perforations ______ in. by ______ in.
______ perforations from ______ ft. to ______ ft.
______ perforations from ______ ft. to ______ ft.
______ perforations from ______ ft. to ______ ft.

Screens: Yes [XX] No [ ]
Manufacturer's Name Howard Johnson
Type ______ Model No. ______
Diam. 5½ Slot size .018 from 65 ft. to 70 ft.
Diam. 5½ Slot size .018 from 70 ft. to 75 ft.

Gravel packed: Yes [ ] No [X] Size of gravel ______
Gravel placed from ______ ft. to ______ ft.

Surface seal: Yes [X] No [ ] To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes [ ] No [X]
Type of water? ______ Depth of strata ______
Method of sealing strata off ______

(7) PUMP: Manufacturer's Name Goulds
Type: Submersible H.P. ½

(8) WATER LEVELS: Land-surface elevation above mean sea level ______ ft.
Static level 50 ft. below top of well Date 7/21/94
Artesian pressure ______ lbs. per square inch Date ______
Artesian water is controlled by ______ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [X] No [ ] If yes, by whom? AAA
Yield: 15 gal./min. with 0 ft. drawdown after 4 hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
0	50				

Date of test 7-22-94
Bailer test 30 gal./min. with 0 to 1 drawdown after 1 hrs.
Airtest ______ gal./min. with stem set at ______ ft. for ______ hrs.
Artesian flow ______ g.p.m. Date 7/21/94
Temperature of water ______ Was a chemical analysis made? Yes [X] No [ ]

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Top Soil	0	5
Brown clay sand & gravel	5	34
Brown cemented gravel	34	60
Gray sand - (medium) some brown clay. Lots of water	60	75
Gray sand (fine) some browy clay drills open hole - some water	75	80
Gray sand (medium) some brown clay water in this	80	85

RECEIVED
AUG 24 1994
DEPT. OF ECOLOGY

SCREEN ASSEMBLY:

2' 0" 5½" pipe and K-Packer
5' 3" .018 Howard Johnson sand screen
5' 3" .018 Howard Johnson sand screen
5' 0" 5½" tail pipe and bail bottom
17' 6" Overall length

Work started 7/14/94, 19 . Completed 7/21/94, 19

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME AAA Pump & Well Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address P.O. Box 296 Monroe, WA 98272
(Signed) [signature] (WELL DRILLER) License No. 1629
Contractor's Registration No. AAAPUWD152N9 Date Aug-8 1994

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20 (10/87) -1329-

Allen / Bernd

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

(9) WATER WELL REPORT

Start Card No. 48130

Bernstein Well

STATE OF WASHINGTON

Water Right Permit No. ____

(1) OWNER: Name Mike Allen Address 19409 High Rock Rd

(2) LOCATION OF WELL: County ~~King~~ Snohomish NE ¼ SE ¼ Sec 24 T 27 N., R 6E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) 19409 High Rock Rd

(3) PROPOSED USE: [X] Domestic [ ] Irrigation [ ] DeWater Industrial [ ] Test Well [ ] Municipal [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned [ ] New well [X] Deepened [ ] Reconditioned [ ]
Method: Dug [ ] Cable [X] Rotary [ ] Bored [ ] Driven [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 63 feet. Depth of completed well 63 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6" Diam. from +1½ ft. to 58 ft.
Welded [X] ____" Diam. from ____ ft. to ____ ft.
Liner installed [ ] ____" Diam. from ____ ft. to ____ ft.
Threaded [ ]

Perforations: Yes [ ] No [X]
Type of perforator used ____
SIZE of perforations ____ in. by ____ in.
____ perforations from ____ ft. to ____ ft.
____ perforations from ____ ft. to ____ ft.
____ perforations from ____ ft. to ____ ft.

Screens: Yes [X] No [ ]
Manufacturer's Name Johnson
Type Stainless steel Model No. ____
Diam. 6 Slot size 10 from 58 ft. to 63 ft.
Diam. ____ Slot size ____ from ____ ft. to ____ ft.

Gravel packed: Yes [ ] No [X] Size of gravel ____
Gravel placed from ____ ft. to ____ ft.

Surface seal: Yes [X] No [ ] To what depth? 20 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes [ ] No [X]
Type of water? NA Depth of strata ____
Method of sealing strata off ____

(7) PUMP: Manufacturer's Name N/A
Type: ____ H.P. ____

(8) WATER LEVELS: Land-surface elevation above mean sea level ~~287~~ ft.
Static level 43 ft. below top of well Date 7-9-93
Artesian pressure ____ lbs. per square inch Date ____
Artesian water is controlled by ____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [X] If yes, by whom? ____
Yield: ____ gal./min. with ____ ft. drawdown after ____ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test ____
Bailer test 45 gal./min. with 4 ft. drawdown after 2 hrs.
Airtest ____ gal./min. with stem set at ____ ft. for ____ hrs.
Artesian flow ____ g.p.m. Date ____
Temperature of water ____ Was a chemical analysis made? Yes [ ] No [X]

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Brown Clay with Sand	0	17
Gray Silty Clay	17	26
Brown Clay with Fine Sand	26	58
Gray Fine Sand	58	63
Blue Clay	63	→

Work started June 30 '93, 19__. Completed July 9 '93, 19__

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Burns Drilling Co. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 158 Dayton Ct NE Renton
(Signed) [signature] (WELL DRILLER) License No. 0690
Contractor's Registration No. Burnsdd 121KP Date Aug 16, 93 19__

(USE ADDITIONAL SHEETS IF NECESSARY)

27/06-24K

Application No

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

(13) WATER WELL REPORT
STATE OF WASHINGTON

Permit No.

(1) OWNER: Name LARRY E. ROSS Address 19204 High Rock Rd. Monroe, Wa. 98

(2) LOCATION OF WELL: County Snohomish — NW ¼ SE ¼ Sec. 24 T. 27 N. R. 6E W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic [x] Industrial [ ] Municipal [ ] Irrigation [ ] Test Well [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well (if more than one) 7916
New well [x] Deepened [ ] Reconditioned [ ]
Method: Dug [ ] Cable [ ] Rotary [x] Bored [ ] Driven [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 42 ft. Depth of completed well 42 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 5/8 Diam. from +1 ft. to 41 ft.
Diam. from ft. to ft.
Threaded [ ] Welded [x] Diam. from ft. to ft.

Perforations: Yes [ ] No [x]
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes [ ] No [x]
Manufacturer's Name
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes [ ] No [ ] Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes [x] No [ ] To what depth? 18 ft.
Material used in seal bentonite
Did any strata contain unusable water? Yes [ ] No [x]
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level 260 ft.
Static level 31 ft. below top of well Date 9/23/79
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [x] If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
AIR Bailer test 10 gal./min. with 10 ft. drawdown after 1 hrs.
Artesian flow g.p.m. Date
Temperature of water 52 Was a chemical analysis made? Yes [ ] No [x]

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Soil brown	0	2
Cemented gravel	2	23
Clay gray	23	27
Cemented gravel	27	42

RECEIVED
OCT 24 1979
DEPT. OF ECOLOGY

Work started 9/22/79 19 Completed 9/23/79 19

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME JANNSEN WELL DRILLING (Person, firm, or corporation) (Type or print)

Address 430 West Ave. Arlington, Wa. 9

[Signed] David Jannsen (Well Driller)

License No. 0748 Date 10/10/79 19

(USE ADDITIONAL SHEETS IF NECESSARY)

27/06-24K

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

(14) **WATER WELL REPORT**
STATE OF WASHINGTON

Application No
Permit No.

(1) OWNER: Name DORIS VICTOR Address 19202 High Rock Rd. Monroe, Wa 982

(2) LOCATION OF WELL: County Snohomish NW ¼ SE ¼ Sec 24 T 27 N R 6E W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☒ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) 7919
New well ☒ Deepened ☐ Reconditioned ☐
Method: Dug ☐ Cable ☐ Rotary ☒ Bored ☐ Driven ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 46 ft. Depth of completed well 46 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 5/8" Diam. from +1 ft. to 41 ft.
Diam. from ft. to ft.
Diam. from ft. to ft.
Threaded ☐ Welded ☒

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type stainless Model No
Diam. 6" Slot size 12 from 41 ft. to 46 ft.
lead packer Diam. 6" Slot size blank from 39 ft. to 41 ft.

Gravel packed: Yes ☐ No ☒ Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level 260 ft.
Static level 26 ft. below top of well Date 9/24/79
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test 5 gal./min. with 15 ft. drawdown after 1 hrs.
Artesian flow g.p.m. Date
Temperature of water 52 Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:
Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO
Soil brown	0	1
Clay brown sandy	1	11
Clay brown gravel streaks	11	24
Gravel and sand streaks	24	38
Sand gray brown med fine (water bearing)	38	46

RECEIVED
OCT 24 1979
DEPT. OF ECOLOGY

Work started 9/23/79, 19 Completed 9/24/79, 19

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME JANNSEN WELL DRILLING (Person, firm, or corporation) (Type or print)
Address 430 West Ave. Arlington, Wa 9822

[Signed] Rick Wallert (Well Driller)

License No. 1060 Date 10/10/79, 19

USE ADDITIONAL SHEETS IF NECESSARY

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

(15) WATER WELL REPORT

27/6/24K

STATE OF WASHINGTON

Start Card No 17629

I.D.# ABC 852

Water Right Permit No

(1) OWNER: Name Richard Cain Rental   Address 19204 Hi Rock Rd Monroe, WA 98272

(2) LOCATION OF WELL: County Snohomish   NW ¼ SE ¼ Sec 24 T 27 N R 6 E W.M.

(2a) STREET ADDDRESS OF WELL (or nearest address) Above

(3) PROPOSED USE: [X] Domestic [ ] Irrigation [ ] DeWater Industrial [ ] Test Well [ ] Municipal [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned [ ] New well [X] Deepened [ ] Reconditioned [ ]
Method: Dug [ ] Cable [X] Rotary [ ] Bored [ ] Driven [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 100 feet. Depth of completed well 90 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6-5/8" Diam from +1 ft to 79 ft
Welded [ ] " Diam from ft to ft
Liner installed [ ] " Diam. from ft to ft
Threaded [ ]

Perforations: Yes [ ] No [X]
Type of perforator used
SIZE of perforations in by in
perforations from ft to ft
perforations from ft to ft
perforations from ft to ft

Screens: Yes [X] No [ ]
Manufacturer's Name xxxxxxxxx Howard Johnson
Type Model No
Diam 5½ Slot size .012 from 80 ft to 85 ft
Diam 5½ Slot size .012 from 85 ft to 90 ft

Gravel packed: Yes [ ] No [XXX] Size of gravel
Gravel placed from ft to ft

Surface seal: Yes [XX] No [ ] To what depth? 20 ft
Material used in seal Bentonite
Did any strata contain unusable water? Yes [ ] No [XX]
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name Goulds
Type: Submersible H.P. 1/2

(8) WATER LEVELS: Land-surface elevation above mean sea level ft
Static level 38 ft below top of well Date 7/28/94
Artesian pressure lbs per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [X] No [ ] If yes, by whom? AAA
Yield: 15 gal./min. with 21 ft. drawdown after 4 hrs
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
0	59'				
5 min	38				

Date of test
Bailer test 15 gal./min. with 18 ft. drawdown after 1 hrs.
Airtest gal./min. with stem set at ft. for hrs
Artesian flow g.p.m. Date 7/28/94
Temperature of water Was a chemical analysis made? Yes [X] No [ ]

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Top soil - brown clay, sand and gravel	0	10
Brown clay, sand and lots of gravel	10	25
Brown caly, sand, pea gravel	25	43
Medium gray sand and water - clean very little clay	43	70
Medium gray sand and some small gravel - clean. Very little clay	70	92
Gray clay - no water	92	95
Gray clay, silt & sand - has some water	95	100
Pull casing back to 90', letting bottom of well fill up, before setting screens.		
SCREEN ASSEMBLY:		
2' 0" 5½" pipe and K-Packer		
5' 3" .012 Howard Johnson Sand Screen		
5' 3" .012 Howard Johnson Sand Screen		
12' 6" Overall length		

RECEIVED
AUG 24 1994
DEPT. OF ECOLOGY

Work started 7/22/94, 19. Completed 7/28/94, 19

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME AAA Pump & Well Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address P.O. Box 296 Monroe, WA 98272
(Signed) [signature] (WELL DRILLER) License No 1629
Contractor's Registration No AAA PUWDIS2A9 Date 8-8 1994

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20 (10/87) -1329-

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

(16) WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 17628
UNIQUE WELL I D # [redacted] 855
Water Right Permit No. ____

(1) OWNER: Name Richard Cain Address 19204 Hi Rock Monroe WA 98272

(2) LOCATION OF WELL: County Snohomish NW 1/4 SE 1/4 Sec 24 T 27 N R 6 E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) above

(3) PROPOSED USE: XX Domestic ☐ Irrigation ☐ DeWater ☐ Industrial ☐ Test Well ☐ Municipal ☐ Other

(4) TYPE OF WORK: Owner's number of well (If more than one) ____
Abandoned ☐ New well XX Deepened ☐ Reconditioned ☐
Method: Dug ☐ Cable XX Rotary ☐ Bored ☐ Driven ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 90 feet Depth of completed well 80 ft

(6) CONSTRUCTION DETAILS:
Casing installed: 6-5/8" Diam from +1 ft to 69 ft
Welded ☒ Liner installed ☐ Threaded ☐ ____" Diam from ____ ft to ____ ft
____" Diam from ____ ft to ____ ft

Perforations: Yes ☐ No ☒
Type of perforator used ____
SIZE of perforations ____ in by ____ in
____ perforations from ____ ft to ____ ft
____ perforations from ____ ft to ____ ft
____ perforations from ____ ft to ____ ft

Screens: Yes XX No ☐
Manufacturer's Name Halliburton
Type wire wrap Model No. ____
Diam 5½ Slot size .018 from 70 ft to 80 ft
Diam ____ Slot size ____ from ____ ft to ____ ft

Gravel packed: Yes ☐ No XX Size of gravel ____
Gravel placed from ____ ft to ____ ft

Surface seal: Yes ☒ No ☐ To what depth? 20 ft
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? ____ Depth of strata ____
Method of sealing strata off ____

(7) PUMP: Manufacturer's Name Goulds
Type: Submersible H.P. ½

(8) WATER LEVELS: Land-surface elevation above mean sea level ____ ft.
Static level 40 ft. below top of well Date 9/15/94
Artesian pressure ____ lbs. per square inch Date ____
Artesian water is controlled by ____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom? AAA
Yield: 15 gal./min with 0 ft. drawdown after 4 hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
0	40				

Date of test 10-12-94
Bailer test 30 gal./min. with 10 ft. drawdown after 1 hrs.
Airtest ____ gal./min. with stem set at ____ ft. for ____ hrs.
Artesian flow ____ g.p.m. Date 9/15/94
Temperature of water ____ Was a chemical analysis made? Yes ☒ No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Top soil - Brown clay, sand and gravel	0	15
Sand & gravel - some brown clay	10	43
Sand & small gravel - water	43	67
Sand - medium - water	67	80
Sand - gray - fine (would need .010 screen to use)	80	90
Pull casing back to 80'.		
SCREEN ASSEMBLY		
4'10" 5½" pipe & K-packers extention		
10'2" .018 slot sand screens		
15' Overall length		

RECEIVED
OCT 24 1994
DEPT. OF ECOLOGY

Work Started 9/7/94, 19. Completed 9/15/94, 19

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME AAA Pump & Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address P.O. Box 296 Monroe, WA 98272
(Signed) [signature] (WELL DRILLER) License No 1629
Contractor's Registration No. AAAPUWD152N9 Date 10-10, 1994

(USE ADDITIONAL SHEETS IF NECESSARY)

ECL 050-1-20 (2/93)

27/06-24K

File Copy with Ecology — Owner's Copy — Driller's Copy

BAUM

(17) WATER WELL REPORT
STATE OF WASHINGTON

Application No
Permit No.

(1) OWNER: Name John Pitzinger Address 18724 High Rock Road Monroe W

(2) LOCATION OF WELL: County Snohomish NW ¼ — NW ¼ SE ¼ Sec 24 T 27 N., R 06 W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☒ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one)
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 5 inches
Drilled 272 ft Depth of completed well 272 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 10 " Diam from 0 ft. to 4 ft.
Threaded ☐ 6 " Diam from 1 ft. to 150 ft.
Welded ☒ 5 " Diam. from 1½ ft. to 253 ft.

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☐ No ☒
Manufacturer's Name
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level. ft.
Static level 60 ft. below top of well Date 15 Feb 80
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test 20 gal./min. with 120 ft. drawdown after 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG:

Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO
Top soil surface		3
Glacial till	3	20
Dry gravel	20	26
Clay, various colors and		
textures	26	272
abd beyond		
Exact water bearing level undetermined, but accumulated in last fifty feet or so.		
Limited production well which must be pumped intermitently.		
Low water protective device on pump is highly recommended.		

Work started 21 sept, 19 79 Completed 15 Feb 19 80

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Fields Well Drilling (Person, firm, or corporation) (Type or print)

Address 8811 193th SE Snohomish

[Signed] (signature) (Well Driller)

License No. 0584 Date 18 Mar 1980

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

(18) WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 17630

UNIQUE WELL I.D. # [redacted]

Water Right Permit No. ↖ 854

(1) **OWNER:** Name Bill Davis Address 18132 Hi Rock Rd Monroe, WA 98272

(2) **LOCATION OF WELL:** County Snohomish NW 1/4 SE 1/4 Sec 24 T. 28 N., R. 6 E W.M.

(2a) **STREET ADDRESS OF WELL** (or nearest address) above

(3) **PROPOSED USE:** [X] Domestic [ ] Irrigation [ ] DeWater [ ] Industrial [ ] Test Well [ ] Municipal [ ] Other

(4) **TYPE OF WORK:** Owner's number of well (If more than one) ____
[ ] Abandoned [X] New well [ ] Deepened [ ] Reconditioned
Method: [ ] Dug [ ] Bored [X] Cable [ ] Driven [ ] Rotary [ ] Jetted

(5) **DIMENSIONS:** Diameter of well 6 inches
Drilled 95 feet Depth of completed well 95 ft

(6) **CONSTRUCTION DETAILS:**
Casing installed: 6-5/8" Diam. from +3 ft. to 45 ft.
[X] Welded
[X] Liner installed 4-1/2" PVC Diam. from 16½ ft. to 95 ft.
[ ] Threaded ____ Diam. from ____ ft. to ____ ft.

Perforations: Yes [ ] No [X]
Type of perforator used ____
SIZE of perforations ____ in. by ____ in.
____ perforations from ____ ft. to ____ ft.
____ perforations from ____ ft. to ____ ft.
____ perforations from ____ ft. to ____ ft.

Screens: Yes [X] No [ ]
Manufacturer's Name Johnson
Type PVC Wire Wound Model No. ____
Diam. 4½ Slot size .020 from 45 ft. to 95 ft.
Diam. ____ Slot size ____ from ____ ft. to ____ ft.

Gravel packed: Yes [ ] No [X] Size of gravel ____
Gravel placed from ____ ft. to ____ ft.

Surface seal: Yes [X] No [ ] To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes [ ] No [X]
Type of water? ____ Depth of strata ____
Method of sealing strata off ____

(7) **PUMP:** Manufacturer's Name Goulds
Type: Submersible H.P. 3/4

(8) **WATER LEVELS:** Land-surface elevation above mean sea level ____ ft.
Static level 5½ ft. below top of well Date 8-16-94
Artesian pressure ____ lbs. per square inch Date ____
Artesian water is controlled by ____ (Cap, valve, etc.)

(9) **WELL TESTS:** Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [X] No [ ] If yes, by whom? AAA
Yield: 2½ gal./min. with 87 ft. drawdown after 4 hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
0	87				
30 min	31				
4 min	6'				

Date of test 9-5-94
Bailer test 7 gal./min. with 80 ft. drawdown after 1 hrs.
Airtest ____ gal./min. with stem set at ____ ft. for ____ hrs.
Artesian flow ____ g.p.m. Date 8-16-94
Temperature of water ____ Was a chemical analysis made? Yes [X] No [ ]

(10) **WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION**

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Top soil - brown	0	5
Gray clay, sand and some gravel	5	21
Gray clay and gravel	21	35
Gray clay, sand and some gravel	35	55
Have trace of water 35 to 40'.		
Gray clay, sand and gravel - water	55	95
Well stands open from 45'.		

RECEIVED
SEP 15 1994
DEPT. OF ECOLOGY

Work Started 8-11-94, 19__ Completed 8-16-94, 19__

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME AAA Pump & Well Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address P.O. Box 296 Monroe, WA 98272

(Signed) Francis D. [signature] (WELL DRILLER) License No. 1629

Contractor's Registration No. AAAPUWD152N9 Date 9-5 1994

(USE ADDITIONAL SHEETS IF NECESSARY)

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

(20) WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 17635
UNIQUE WELL I.D. # 858
Water Right Permit No. ______

(1) OWNER: Name Don ~~Allen~~ BROAd Address ~~19200 Hi Rock Road Monroe WA. 98272~~

LOCATION OF WELL: County Snohomish NW 1/4 SE 1/4 Sec 24 T 27 N. R 6E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) above

(3) PROPOSED USE: [X] Domestic [ ] Irrigation [ ] DeWater [ ] Industrial [ ] Test Well [ ] Municipal [ ] Other

(4) TYPE OF WORK: Owner's number of well (If more than one) ______
Abandoned [ ] New well XX Deepened [ ] Reconditioned [ ]
Method: Dug [ ] Cable [X] Rotary [ ] Bored [ ] Driven [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 65 feet. Depth of completed well 60 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6-5/8" Diam. from +1 ft. to 50 ft.
Welded XX
Liner installed [ ] ______" Diam. from ______ ft. to ______ ft.
Threaded [ ] ______" Diam. from ______ ft. to ______ ft.

Perforations: Yes [ ] No XX
Type of perforator used ______
SIZE of perforations ______ in. by ______ in.
______ perforations from ______ ft. to ______ ft.
______ perforations from ______ ft. to ______ ft.
______ perforations from ______ ft. to ______ ft.

Screens: Yes XX No [ ]
Manufacturer's Name Halliburton
Type ______ Model No. ______
Diam. 5½ Slot size .018 from 50 ft. to 60 ft.
Diam. ______ Slot size ______ from ______ ft. to ______ ft.

Gravel packed: Yes [ ] No [X] Size of gravel ______
Gravel placed from ______ ft. to ______ ft.

Surface seal: Yes [X] No [ ] To what depth? 20 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes [ ] No XX
Type of water? ______ Depth of strata ______
Method of sealing strata off ______

(7) PUMP: Manufacturer's Name Goulds
Type: Submersible H.P. 3/4

(8) WATER LEVELS: Land-surface elevation above mean sea level ______ ft.
Static level 27 ft. below top of well Date 9/28/94
Artesian pressure ______ lbs. per square inch Date ______
Artesian water is controlled by ______ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [X] No [ ] If yes, by whom? AAA
Yield: 3 gal./min. with 20 ft. drawdown after 4 hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
0	47				
15 MIN	27'				

Date of test OCT-10-94
Bailer test 3 gal./min. with 30 ft. drawdown after 1 hrs.
Airtest ______ gal./min. with stem set at ______ ft. for ______ hrs.
Artesian flow ______ g.p.m. Date 9/28/94
Temperature of water ______ Was a chemical analysis made? Yes [X] No [ ]

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Sand and some clay - drills open hole	0	32
Brown clay - some sand	32	35
Sand & gray clay - some small gravel - water	35	45
Gray sand and some clay - some small gravel - water	45	60
Gray clay & silt - no water	60	65
SCREEN ASSEMBLY		
2' 3" 5½" pipe & K-packer-extention		
10' 6" .018 sand screens		
12'9" Overall length		
Pump Set 47'		

RECEIVED
OCT 24 1994
DEPT. OF ECOLOGY

Work Started 9/24/94, 19. Completed 9/28/94, 19

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME AAA Pump & Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address P.O. Box 296 Monroe, WA. 98272
(Signed) Francis D Paning (WELL DRILLER) License No. 1629
Contractor's Registration No. AAAPUWD152N9 Date OCT-15, 1994

(USE ADDITIONAL SHEETS IF NECESSARY)

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

(21) WATER WELL REPORT

STATE OF WASHINGTON

Start Card No 27/6-24K 01365?

Water Right Permit No

(1) OWNER: Name Address 13305 NE 171 WOODINVILLE WN

(2) LOCATION OF WELL: County SNOHOMISH NW ¼ SE ¼ Sec 24 T 27 N R 6 W.M.

(2a) STREET ADDDRESS OF WELL (or nearest address)

(3) PROPOSED USE: ✓ Domestic ☐ Irrigation ☐ DeWater ☐ Industrial ☐ Test Well ☐ Municipal ☐ Other

(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned ☐ New well ✓ Deepened ☐ Reconditioned ☐
Method: Dug ☐ Cable ✓ Rotary ☐ Bored ☐ Driven ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 40 feet. Depth of completed well 38 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Diam from +1 ft to 33 ft
Welded ☒ " Diam from ft to ft
Liner installed ☐ " Diam. from ft. to ft.
Threaded ☐

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations in by in
perforations from ft to ft
perforations from ft to ft
perforations from ft. to ft.

Screens: Yes ☒ No ☐
Manufacturer's Name JOHNSON
Type TELESCOPE Model No.
Diam 6 Slot size 014 from 33 ft to 38 ft
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft
Material used in seal BENTONITE
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name RED JACKET
Type: SUBMERSIBLE H.P. ½

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 7 ft below top of well Date 7-20-90
Artesian pressure lbs per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? Yes ☒ No ☐ If yes by whom? DRILLER
Yield: 20 gal./min with 4 ft drawdown after 2 hrs
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test 7-20-90
Bailer test gal./min with ft drawdown after hrs
Airtest gal./min with stem set at ft for hrs
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☒

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
BROWN SANDY SILT SOME GRAVEL	0	26
BROWN SANDY GRAVEL H2O HEAVING BADLY	26	38
GRAY TILL	38	40

RECEIVED
JUL 26 1990
DEPT. OF ECOLOGY

Work started 7-14, 1990 Completed 7-16, 1990

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME MORCK DRILLING (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address P.O. BOX 1650 DUVALL

(Signed) [signature] License No 1534
(WELL DRILLER)

Contractor's Registration No MORCKD*137PT Date 7-24, 1990

(USE ADDITIONAL SHEETS IF NECESSARY)

GL

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

(22) WATER WELL REPORT

RECEIVED

STATE OF WASHINGTON

Start Card No [redacted]

Water Right Permit No 27/6/24K

Wilkinson

(1) OWNER: Name [redacted]INSON Address Hi Rock LK. Forest Rd Monroe

(2) LOCATION OF WELL: County Snohomish NE¼ NW ¼ SE ¼ Sec 24 T 27 N., R 6 W.M.

DEPT OF ECOLOGY

(2a) STREET ADDDRESS OF WELL (or nearest address)

(3) PROPOSED USE: [X] Domestic [ ] Irrigation [ ] DeWater [ ] Industrial [ ] Test Well [ ] Municipal [ ] Other

(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned [ ] New well [X] Deepened [ ] Reconditioned [ ]
Method: Dug [ ] Cable [X] Rotary [ ] Bored [ ] Driven [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 88 feet. Depth of completed well 88 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 5/8" Diam from +1 ft to 80 ft
Welded [X] " Diam from ___ ft to ___ ft
Liner installed [ ]
Threaded [ ] " Diam from ___ ft to ___ ft

Perforations: Yes [ ] No [X]
Type of perforator used
SIZE of perforations ___ in by ___ in
___ perforations from ___ ft to ___ ft
___ perforations from ___ ft to ___ ft
___ perforations from ___ ft to ___ ft

Screens: Yes [X] No [ ]
Manufacturer's Name Cook
Type ___ Model No ___
Diam 5" Slot size .010 from 80 ft to 88 ft
Diam ___ Slot size ___ from ___ ft to ___ ft

Gravel packed: Yes [ ] No [X] Size of gravel
Gravel placed from ___ ft to ___ ft

Surface seal: Yes [X] No [ ] To what depth? 18 ft
Material used in seal Bentonite
Did any strata contain unusable water? Yes [ ] No [X]
Type of water? ___ Depth of strata ___
Method of sealing strata off

(7) PUMP: Manufacturer's Name Grundfos
Type Submersible H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level ___ ft
Static level 23 ft below top of well Date 5/2/92
Artesian pressure ___ lbs per square inch Date ___
Artesian water is controlled by ___ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [X] No [ ] If yes, by whom?
Yield: 2 gal/min with 60 ft drawdown after 4 hrs

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
0	85'				
5	31.5'				
10	Static				

Date of test
Bailer test 2 gal/min with 50 ft drawdown after 2 hrs
Airtest ___ gal/min with stem set at ___ ft for ___ hrs
Artesian flow ___ g.p.m. Date 5/2/92
Temperature of water ___ Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Brown clay & sand	0	14
Gray clay & sand - trace of water at 35	14	80
Gray clay, fine sand & silt water	80	85
Gray clay	85	88

Pump set 85'
Well Depth 88'
2 GPm after 4 hrs
with 60' drawdown

Work started 4/29 1992 Completed 5/2 1992

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME AAA Pump & Drilling & Filtration (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address P.O. Box 296 Monroe, WA 98272

(Signed) Francis D Penney (WELL DRILLER) License No 1629
Contractor's Registration No AAAPUWD952N9 Date 5-12 1992

(USE ADDITIONAL SHEETS IF NECESSARY)

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

(23) WATER WELL REPORT

STATE OF WASHINGTON

27/6E/24
Start Card No 043328

Water Right Permit No ______

(1) OWNER: Name Gottlieb RiBaey Address 3252 Picadilly Court Pleasanton Cal

(2) LOCATION OF WELL: County Snohomish SW ¼ SC ¼ Sec 24 T 27N N., R 6 W.M.

(2a) STREET ADDDRESS OF WELL (or nearest address) 213XX 195 S.E. Monroe, WA. 98272

(3) PROPOSED USE: [X] Domestic [ ] Irrigation [ ] DeWater Industrial [ ] Test Well [ ] Municipal [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well (if more than one) ______
Abandoned [ ] New well [X] Deepened [ ] Reconditioned [ ] Method: Dug [ ] Cable XX Rotary [ ] Bored [ ] Driven [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 35 feet. Depth of completed well 35 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6-5/8" Diam from +1 ft. to 24 ft.
Welded [X] ______" Diam from ______ ft. to ______ ft.
Liner installed [ ]
Threaded [ ] ______" Diam. from ______ ft. to ______ ft.

Perforations: Yes [ ] No [X]
Type of perforator used ______
SIZE of perforations ______ in. by ______ in.
______ perforations from ______ ft. to ______ ft.
______ perforations from ______ ft. to ______ ft.
______ perforations from ______ ft. to ______ ft.

Screens: Yes XX No [ ]
Manufacturer's Name Johnson
Type ______ Model No. ______
Diam 5½" Slot size .020 from 24 ft. to 29 ft.
Diam. ______ Slot size ______ from ______ ft. to ______ ft.

Gravel packed: Yes [ ] No [X] Size of gravel ______
Gravel placed from ______ ft. to ______ ft.

Surface seal: Yes XX No [ ] To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes [ ] No XX
Type of water? ______ Depth of strata ______
Method of sealing strata off ______

(7) PUMP: Manufacturer's Name Grundfos
Type: 16S07-8 Submersible H.P. 3/4

(8) WATER LEVELS: Land-surface elevation above mean sea level ______ ft.
Static level 17 ft. below top of well Date 4-26-91
Artesian pressure ______ lbs. per square inch Date 4-26-91
Artesian water is controlled by ______ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [X] No [ ] If yes, by whom? AAA
Yield: 15 gal./min. with 0 ft. drawdown after 4 hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
0	17				

Date of test 4-26-91
Bailer test 20 gal./min. with 2 ft. drawdown after 1 hrs.
Airtest ______ gal./min. with stem set at ______ ft. for ______ hrs.
Artesian flow ______ g.p.m. Date 4-26-91
Temperature of water ______ Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure and show thickness of aquifers and the kind and nature of the material in each stratum penetrated with at least one entry for each change of information.

MATERIAL	FROM	TO
Top Soil	0	1
Brown Clay & Sand	1	9
Brown clay, Sand & gravel	9	18
Brown clay, sand & gravel-water	18	34
Gray clay	34	35

Screen Assembly

5'10" .020 Johnson Sand Screen and K-packer
5'8" 5½" pipe tail pipe below scree

RECEIVED MAY 28 1991 DEPT. OF ECOLOGY

RECEIVED MAY 17 1991 DEPT. OF ECOLOGY

Work started 3-23-91 19. Completed 4-26-91 19

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME AAA Pump & Drilling (PERSON, FIRM OR CORPORATION) (TYPE OR PRINT)
Address P.O. Box 296 Monroe, Wash. 98272
(Signed) Francis D. Tansey (WELL DRILLER) License No 1629
Contractor's Registration No AAA PUMPD152N9 Date 4-30 1991

(USE ADDITIONAL SHEETS IF NECESSARY)

27/07-19K

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy Rod Lovelis

(25) **WATER WELL REPORT** Rimrock
STATE OF WASHINGTON

Application No. ______
Permit No. ______

(1) **OWNER:** Name Heatherwood Service Inc Address 20601 Rimrock Rd. S.E., Maltby 98272

(2) **LOCATION OF WELL:** County Snohomish NW ¼ SE ¼ Sec 19 T 27 N R 7 W.M.
Bearing and distance from section or subdivision corner Tract 22 of survey recorded Aud. # 7701130257 Snohomish

(3) **PROPOSED USE:** Domestic ☐ Industrial ☐ Municipal ☒ Irrigation ☐ Test Well ☐ Other ☐

(4) **TYPE OF WORK:** Owner's number of well (if more than one) ______
New well ☒ Deepened ☐ Reconditioned ☐
Method: Dug ☐ Cable ☐ Rotary ☒ Bored ☐ Driven ☐ Jetted ☐

(5) **DIMENSIONS:** Diameter of well 6 & 8 inches
Drilled 500 ft. Depth of completed well 496 ft.

(6) **CONSTRUCTION DETAILS:**
Casing installed: 8" Diam. from 0 ft. to 20 ft.
Threaded ☐ 6" Diam. from 0 ft. to 496 ft.
Welded ☒ ______" Diam. from ______ ft. to ______ ft.

Perforations: Yes ☒ No ☐
Type of perforator used torch
SIZE of perforations 1/4 in. by 3 in.
40 perforations from 100 ft. to 480 ft.
______ perforations from ______ ft. to ______ ft.
______ perforations from ______ ft. to ______ ft.

Screens: Yes ☐ No ☒
Manufacturer's Name ______
Type ______ Model No. ______
Diam. ______ Slot size ______ from ______ ft. to ______ ft.
Diam. ______ Slot size ______ from ______ ft. to ______ ft.

Gravel packed: Yes ☐ No ☒ Size of gravel: ______
Gravel placed from ______ ft. to ______ ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal puddling clay
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? ______ Depth of strata ______
Method of sealing strata off ______

(7) **PUMP:** Manufacturer's Name ______
Type: ______ H.P. ______

(8) **WATER LEVELS:** Land-surface elevation above mean sea level ______ ft.
Static level 52 ft. below top of well Date 3/31/80
Artesian pressure ______ lbs. per square inch Date ______
Artesian water is controlled by ______ (Cap, valve, etc.)

(9) **WELL TESTS:** Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom? ______
Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test ______
Bailer test 30 gal./min. with 408 ft. drawdown after 5 hrs.
Artesian flow ______ g.p.m. Date ______
Temperature of water ______ Was a chemical analysis made? Yes ☐ No ☒

(10) **WELL LOG:**
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Surface	0	3
Brown hardpan	3	10
Brown decayed rock	10	16
White solid rock	16	180
Gray solid rock	180	350
Purple & Black rock-water	350	420
Black rock-seepage	420	500

APR 30

Work started 3/18, 1980. Completed 3/31, 1980

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Johnson Drilling Co. Inc (Person, firm, or corporation) (Type or print)
Address 19415 108th Ave SE Renton 98
[Signed] Brad Johnson (Well Driller)
License No. 0233 Date 3/31, 1980

Appendix B

Ground Water Levels

Water Levels in Wells near Cadman/High Rock Road, Monroe

Date = 12/18/95

WELL	DATE	Depth to Water	Measured by	Log ?	Remarks
Cadman spring		h(ft)	Meas. by	Q(gpm)	
weir	10/29/93		est.	2000	
	10/30/93		est	1000	
	10/31/93		est	750	
27/6 - 24Gs	11/1/93		est	500	
	11/3/93		est.	500	
	11/8/93		Ecology	384	
	1/16/94				
	3/28/94	0.25	CD	269	
	4/4/94	0.25	CD	269	
	4/18/94	0 29	CD	336	
	5/3/94	0.27	CD	305	
	5/16/94	0.27	CD	305	
	5/31/94	0.25	CD	269	
	6/13/94	0.27	CD	305	
	6/27/94	0 25	CD	269	
	7/18/94	0.25	CD	269	
	8/2/94	0.22	Ecology	224	
	8/15/94	0.23	Ecology	239	
	8/30/94	0.21	Ecology	209	
	9/15/94	0.22	Ecology	224	
	9/29/94	0.21	Ecology	209	
	10/17/94	0.20	Ecology	195	
	10/24/94	0.21	Ecology	209	
	11/17/94	0.24	Ecology	255	
	12/1/94	0.23	Ecology	239	
	12/9/94	0.21	Ecology	209	
	12/19/94	0.25	Ecology	269	
	12/30/94	0.27	Ecology	305	
	1/17/95	0.26	Ecology	287	
	1/31/95	0.28	Ecology	318	
	2/21/95	0.29	Ecology	336	
	3/13/95	0.29	Ecology	336	
	4/14/95	0.30	Ecology	353	
	5/18/95	0.26	Ecology	287	
	6/12/95	0.26	Ecology	287	
	7/17/95	0.28	Ecology	318	
	8/15/95	0.23	Ecology	239	
	9/14/95	0.22	Ecology	224	
	10/20/95	0.23	Ecology	239	
	11/16/95	0.23	Ecology	239	
	12/15/95	0.30	Ecology	353	

King well	12/13/93	7.35	Ecology	yes
44' deep	12/21/93	flowing	Ecology	
	1/7/94	3.81	r Ecol	
27/6 - 24G02	1/11/94	flowing	Ecology	
	1/28/94	flowing	Ecology	
#AAE 757	2/15/94	flowing	Ecology	
	3/3/94	flowing	Ecology	
	3/11/94	flowing	Ecology	
	3/17/94	flowing	Ecology	
	4/15/94	flowing	Ecology	
	5/17/94	flowing	Ecology	
	5/31/94	flowing	Ecology	
	6/16/94	flowing	Ecology	
	6/30/94	flowing	Ecology	
	7/18/94	not flowing	Ecology	
	8/2/94	1.90	r Ecol.	
	8/15/94	2 58	Ecology	
	8/30/94	2 70	Ecology	
	9/15/94	5 89	Ecology	
	9/29/94	5.83	Ecology	
	10/17/94	5.82	Ecology	
	10/24/94	5.69	Ecology	
	11/17/94	4.93	Ecology	
	12/1/94	4.90	Ecology	
	12/9/94	5.55	r Ecol.	
	12/19/94	4.50	Ecology	
	12/30/94	3.82	Ecology	
	1/17/95	3.10	Ecology	
	1/31/95	2.73	Ecology	
	2/21/95	3.07	Ecology	
	3/13/95	3.10	Ecology	
	4/14/95	2.13	Ecology	
	5/18/95	2.67	Ecology	
	6/12/95	3.48	Ecology	
	7/17/95	5.26	Ecology	
	8/15/95	6.17	Ecology	
	9/14/95	6.71	Ecology	
	10/20/95	6.48	Ecology	
	11/16/95	5.25	Ecology	
	12/15/95	3.82	Ecology	

Poulos	7/18/94	15.47	Ecology	
new well	8/2/94	16.01	Ecology	
258' deep	8/15/94	16.02	Ecology	
	8/30/94	15.73	Ecology	
27/6 - 24G03	9/15/94	15.21	Ecology	
	9/29/94	15.09	Ecology	
Well ID#ABC 820	10/17/94	15.31	Ecology	
	10/24/94	15.50	Ecology	
	11/17/94	15.14	Ecology	
	12/1/94	15.25	Ecology	
	12/9/94	15.33	Ecology	
	12/19/94	15.62	Ecology	
	12/30/94	15.30	Ecology	
	1/17/95	14.22	Ecology	
	1/31/95	14.24	Ecology	
	2/21/95	14.25	Ecology	
	3/13/95	14.33	Ecology	
	4/14/95	14.74	Ecology	
	5/18/95	14.58	Ecology	
	6/12/95	15.34	Ecology	
	7/17/95	16.00	Ecology	
	8/15/95	15.79	Ecology	
	9/14/95	14.96	Ecology	
	10/20/95	15.15	Ecology	
	11/16/95	14.58	Ecology	
	12/15/95	15.49	Ecology	
Poulos spring	7/18/94	~0.5	Ecology	meas. from access port (18 abv. concrete floor)
cistern	8/2/94	1.48	Ecology	" "
	8/15/94	0.61	Ecology	" "
	8/30/94	0.57	Ecology	" "
	9/15/94	0.50	Ecology	" "
	9/29/94	0.56	Ecology	" "
	10/17/94	0.50	Ecology	" "
	10/24/94	0.51	Ecology	" "
Poulos dug well	8/15/94	13.42	Ecology	
3' X 46' deep				

Cadman				
'Rock Well'	12/9/93	45.48	Ecology	yes
83' deep	12/21/93	45.84	Ecology	
	1/7/94	46.24	Ecology	
pumping dd=2 61'	1/28/94	46.56	Ecology	
	2/15/94	46.72	Ecology	
27/6 - 24H03	3/3/94	46.17	Ecology	
	3/11/94	46.55	e Ecol	
#AAE 770	3/17/94	46.50	Ecology	
	4/15/94	46.35	Ecology	
	5/17/94	46.96	Ecology	
	5/31/94	47.26	e Ecol	
	6/16/94	47.63	CD	
	6/30/94	47 85	Ecology	
	7/18/94	48.13	Ecology	
	8/2/94	48.67	Ecology	
	8/15/94	48.78	Ecology	
	8/30/94	48 89	Ecology	
	9/15/94	49.06	Ecology	
	9/29/94	49.24	Ecology	
	10/17/94	49.37	Ecology	
	10/24/94	48.83	CD	
	11/17/94	48.47	Ecology	
	12/1/94	48.48	Ecology	
	12/9/94	48.94	Ecology	
	12/19/94	48.05	Ecology	
	12/30/94	47.16	Ecology	
	1/17/95	46.85	Ecology	
	1/31/95	46.04	Ecology	
	2/21/95	45 39	Ecology	
	3/13/95	45.07	Ecology	
	4/14/95	44.60	Ecology	
	5/18/95	45.34	Ecology	
	6/12/95	45.77	Ecology	
	7/17/95	46.63	Ecology	
	8/15/95	47.10	Ecology	
	9/14/95	47.68	Ecology	
	10/20/95	47.60	Ecology	
	11/16/95	47.42	Ecology	
	12/15/95	45.34	Ecology	

Bishop/Davis	8/2/94	50.35	Ecology	yes
new well	8/15/94	50.54	Ecology	
85' deep	8/30/94	50.71	Ecology	
	9/15/94	51.06	Ecology	
27/6 - 24H04	9/29/94	51.25	Ecology	
	10/17/94	51 52	Ecology	
Well ID#ABC 851	10/24/94	51 63	Ecology	
	11/17/94	51.15	Ecology	
	12/1/94	51.08	Ecology	
	12/9/94	51.36	Ecology	
	12/19/94	50.78	Ecology	
	12/30/94	49.83	Ecology	
	1/17/95	48.96	Ecology	
	1/31/95	48 33	Ecology	
	2/21/95	47.33	Ecology	
	3/13/95	46 91	Ecology	
	4/14/95	46.32	Ecology	
	5/18/95	46.85	Ecology	
	6/12/95	47 40	Ecology	
	7/17/95	48.34	Ecology	
	8/15/95	49.08	Ecology	
	9/14/95	49.75	Ecology	
	10/20/95	50.05	Ecology	
	11/16/95	49.88	Ecology	
	12/15/95	48.15	Ecology	

Ferm	12/6/93	37.05	Ecology	no
sounded 57' deep	12/9/93	37 03	Ecology	
	12/13/93	36 87	Ecology	
27/6 - 24J04	12/21/93	36 34	Ecology	
	1/11/94	35.78	Ecology	
#AAE 760	1/28/94	35.28	Ecology	
	2/15/94	35.25	Ecology	
	3/3/94	34.81	Ecology	
	3/11/94	34.40	Ecology	
	4/15/94	34 57	Ecology	
	5/17/94	35.05	Ecology	
	5/31/94	35.62	Ecology	
	6/30/94	36.70	Ecology	
	7/18/94	37.10	Ecology	
	8/2/94	37 78	Ecology	
	8/15/94	38 21	Ecology	
	8/30/94	38.58	Ecology	
	9/15/94	39.06	Ecology	
	9/29/94	39.42	Ecology	
	10/17/94	39.75	Ecology	
	10/24/94	39.86	Ecology	
	11/17/94	40 25	Ecology	
	12/1/94	40.13	Ecology	
	12/9/94	39.97	Ecology	
	12/19/94	39.80	Ecology	
	12/30/94	38.71	Ecology	
	1/31/95	35.51	Ecology	
	2/21/95	34.71	Ecology	
	4/14/95	34.51	Ecology	started - 25' correction
	5/18/95	35.20	Ecology	
	6/12/95	36.21	Ecology	
	7/17/95	37.61	Ecology	
	8/15/95	38.60	Ecology	
	9/14/95	39.38	Ecology	
	10/20/95	39.81	Ecology	
	11/16/95	39.67	Ecology	
	12/15/95	37.57	Ecology	

Bernstein	11/1/93	44.94	HC	no
	11/7/93	44.90	HC	
27/6 - 24J01	11/8/93	45.34	HC	
	11/9/93	44.96	HC, Ecology	
63' deep	11/10/93	45.24	HC	
	11/15/93	45.12	HC	
#AAE 781	12/9/93	46.08	Ecology	
	12/21/93	46.50	Ecology	
	1/7/94	46.33	Ecology	
	1/11/94	46.71	Ecology	
	1/28/94	46.93	Ecology	
	2/15/94	46.55	Ecology	
	3/3/94	46.79	Ecology	
	3/11/94	47.03	Ecology	
	3/17/94	46.63	Ecology	
	4/15/94	46.77	Ecology	
	5/17/94	47.04	Ecology	
	5/31/94	47.05	Ecology	
	6/16/94	47.44	Ecology	
	6/30/94	47.37	Ecology	
	7/18/94	47.42	Ecology	
	8/2/94	47.78	Ecology	
	8/15/94	48.11	Ecology	
	8/30/94	48.17	Ecology	
	9/15/94	48.58	Ecology	
	9/29/94	48.53	Ecology	
	10/17/94	48.73	Ecology	
	10/24/94	48.76	Ecology	
	11/17/94	50.54	r Ecology	
	12/1/94	48.91	Ecology	
	12/9/94	49.06	Ecology	
	12/19/94	48.83	Ecology	
	12/30/94	48.85	Ecology	
	1/31/95	47.66	Ecology	
	2/21/95	47.61	Ecology	
	3/13/95	47.36	Ecology	
	4/14/95	47.02	Ecology	
	5/18/95	47.11	Ecology	
	6/12/95	47.06	Ecology	
	7/17/95	47.41	Ecology	
	8/15/95	47.93	Ecology	
	9/14/95	48.54	Ecology	
	10/20/95	48.76	Ecology	
	11/16/95	48.91	Ecology	
	12/15/95	48.67	Ecology	

Urbaniak	11/2/93	35.02	HC	no
52' deep	11/8/93	35.19	HC	
	12/6/93	35.69	Ecology	
27/6 - 24J02	12/9/93	35.74	Ecology	
	12/13/93	35.69	Ecology	
#AAE 771	12/21/93	35.60	Ecology	
	1/11/94	35.27	Ecology	
	1/28/94	35.23	Ecology	
	3/3/94	34.79	Ecology	
	3/17/94	34.31	Ecology	
	5/17/94	34.97	Ecology	
	5/31/94	35.28	Ecology	
	6/30/94	36.11	Ecology	
	8/2/94	36.76	Ecology	
	8/15/94	37.09	Ecology	
	8/30/94	37.34	Ecology	
	9/15/94	37.70	Ecology	
	9/29/94	37.88	Ecology	
	10/17/94	38.14	Ecology	
	10/24/94	38.23	Ecology	
	11/17/94	38.50	Ecology	
	12/1/94	38.40	Ecology	
	12/9/94	38.40	Ecology	
	12/19/94	38.25	Ecology	
	12/30/94	37.56	Ecology	
	1/31/95	35.42	Ecology	
	2/21/95	34.97	Ecology	
	3/13/95	34.84	Ecology	
	4/14/95	34.60	Ecology	
	5/18/95	35.00	Ecology	
	6/12/95	35.56	Ecology	
	7/17/95	36.41	Ecology	
	8/15/95	37.15	Ecology	
	9/14/95	37.82	Ecology	
	10/20/95	38.16	Ecology	
	11/16/95	38.17	Ecology	
	12/15/95	36.93	Ecology	
old Cain domestic	11/2/93	33.05	HC	yes
	11/8/93	33.49	HC	
27/6 - 24J05	12/6/93	35.22	HC	
	6/30/94	36.45	Ecology	
	7/18/94	36.82	Ecology	
	8/2/94	37.54	Ecology	
	8/15/94	37.90	Ecology	
	8/30/94	38.21	Ecology	
	9/29/94	38.82	Ecology	
	10/17/94	39.10	Ecology	
	11/17/94	39.37	Ecology	
	12/1/94	39.26	Ecology	

Hornibrook	11/1/93	16.85	HC	no
	11/8/93	16.93	HC	
27/6 - 24J03	11/9/93	16.81	Ecology	
	11/15/93	16.95	HC	
#AAE 759	12/6/93	17.50	Ecology	
	12/13/93	17.51	Ecology	
	12/21/93	17.79	Ecology	
	1/7/94	17.52	Ecology	
	1/11/94	17.76	Ecology	
	1/28/94	17.84	Ecology	
	2/15/94	17.52	Ecology	
	3/3/94	17.64	Ecology	
	3/11/94	17.75	Ecology	
	3/17/94	17.30	Ecology	
	4/15/94	17.60	Ecology	
	5/17/94	18.36	r Ecol.	
	5/31/94	17.90	Ecology	
	6/16/94	18.39	r Ecol.	
	6/30/94	18.44	Ecology	
	7/18/94	19.04	Ecology	
	8/2/94	18.88	Ecology	
	8/15/94	19.38	r Ecol.	
	8/30/94	19.32	Ecology	
	9/15/94	19.64	Ecology	
	9/29/94	20.11	r Ecol.	
	10/17/94	19.99	r Ecol.	
	10/24/94	19.96	Ecology	
	11/17/94	20.31	Ecology	
	12/1/94	20.18	Ecology	
	12/9/94	20.30	Ecology	
	12/19/94	19.94	Ecology	
	12/30/94	19.77	Ecology	
	1/31/95	18.38	Ecology	
	2/21/95	18.24	Ecology	
	3/13/95	19.80	r Ecol.	
	4/14/95	17.74	Ecology	
	5/18/95	17.97	Ecology	
	6/12/95	18.23	r Ecol.	
	7/17/95	18.61	Ecology	
	8/15/95	19.13	Ecology	
	9/14/95	19.75	Ecology	
	10/20/95	20.06	Ecology	
	11/16/95	20.06	Ecology	
	12/15/95	19.55	r Ecol.	

new Cain domestic	9/29/94	41.36	Ecology	yes	
85' deep	10/17/94	41.80	Ecology		
	10/24/94	41.95	Ecology		
27/6 - 24J08	11/17/94	42.29	Ecology		
	12/1/94	42.17	Ecology		
Well ID#ABC 855	12/9/94	41.96	Ecology		
	12/19/94	41.62	Ecology		
	12/30/94	39.77	Ecology		
	1/17/95	37.13	Ecology		
	1/31/95	36.33	Ecology		
	2/21/95	34.78	Ecology		
	3/13/95	34.61	Ecology		
	4/14/95	33.84	Ecology		
	5/18/95	34.71	Ecology		
	6/12/95	35.97	Ecology		
	7/17/95	37.81	Ecology		
	8/15/95	39.20	Ecology		
	9/14/95	40.61	Ecology		
	10/20/95	41.26	Ecology		
	11/16/95	41.23	Ecology		
	12/15/95	38.53	Ecology		
old Cain rental	11/2/93	28.10	HC	yes	
46' deep	11/8/93	28.88	HC		
	11/9/93	29.00	r Ecol.		
27/6 - 24J06	12/2/93	31.25	HC		
	12/6/93	31.51	HC, Ecol.		
	12/13/93	31.78	r Ecol.		riser tube installed (+ 87 to water)
	12/21/93	31.31	Ecology		corr. for tube (- 87 for wl blw TOC)
	1/11/94	31.87	r Ecol.		" " "
	1/28/94	32.08	r Ecol.		" " "
	2/15/94	32.32	Ecology		" " "
	3/3/94	32.06	r Ecol		" " "
	3/11/94	31.40	Ecology		" " "
	3/17/94	31.04	Ecology		" " "
	5/17/94	32.63	r Ecol		" " "
	5/31/94	33.89	r Ecol.		" " "
	6/16/94	33.93	r Ecol.		" " "
	6/30/94	34.68	e Ecol		" " "
	7/18/94	dry	Ecology		" " "
	8/2/94	35.11	Ecology		" " "
	8/15/94	34.85	r Ecol.		" " "
	8/30/94	36.02	Ecology		" " "
	9/15/94	36.53	Ecology		" " "
	9/29/94	36.91	Ecology		" " "
	10/17/94	37.37	Ecology		" " "
	10/24/94	37.51	Ecology		" " "
	11/17/94	37.84	Ecology		" " "
	12/1/94	37.73	Ecology		" " "
	12/19/94	destroyed			

new Cain rental	8/2/94	39.75		Ecology	yes
100' deep	8/15/94	40.17		Ecology	
	8/30/94	40.53		Ecology	
27/6 - 24J07	9/15/94	41.06		Ecology	
	9/29/94	41.38		Ecology	
Well ID#ABC 852	10/17/94	41.80		Ecology	
	10/24/94	41.92		Ecology	
	11/17/94	42.19		Ecology	
	12/1/94	42.06		Ecology	
	12/9/94	42.00		Ecology	
	12/19/94	41.72		Ecology	
	12/30/94	40.48		Ecology	
	1/17/95	38.48		Ecology	
	1/31/95	37.64		Ecology	
	2/21/95	36.29		Ecology	
	3/13/95	35.89		Ecology	
	4/14/95	35.00		Ecology	
	5/18/95	35.67		Ecology	
	6/12/95	36.61		Ecology	
	7/17/95	38.07		Ecology	
	8/15/95	39.24		Ecology	
	9/14/95	40.47		Ecology	
	10/20/95	41.08		Ecology	
	11/16/95	41.08		Ecology	
	12/15/95	39.26		Ecology	

Baum	1/11/94	78.76	r	Ecol	yes
272' deep	1/28/94	80.29	r	Ecol	
#AAE 762	2/15/94	74.22	r	Ecol	
27/6 - 24K01	3/11/94	84.25	r	Ecol	
	4/15/94		p	Ecol	
	6/16/94		r	Ecol	
	8/15/94	77.77	r	Ecol	
	10/17/94		p	Ecol	
	7/17/95	100.00	r	Ecol	

Rimrock Well	11/11/93	96.25		HC	yes
	11/15/93	94.70		HC	
#AAE 765	12/2/93	88.65		HC	
27/7 - 19K01	1/11/94	78.31		Ecology	
	4/15/94	63.23		Ecology	
	5/17/94	59.85		Ecology	
	6/30/94	>90 feet		Ecology	
	8/2/94	>90 feet		Ecology	
	7/15/95	144.86	r	Ecology	

Well #21	11/2/93	10.21	HC	yes
38' deep	11/8/93	10.75	HC	
	11/9/93	10.82	HC, Ecol.	
27/6 - 24K02	11/10/93	10.92	HC	
	11/12/93	11.07	HC	
	11/15/93	11.35	HC	
	11/24/93	12.19	HC	
	11/30/93	12.49	HC	
	12/2/93	12.52	HC	
	12/9/93	12.74	Ecology	
	12/13/93	12.77	Ecology	
	12/21/93	12.74	Ecology	
	1/11/94	13.22	Ecology	
	1/28/94	13.54	Ecology	
	2/15/94	13.84	Ecology	
	3/3/94	13.74	Ecology	
	3/11/94	13.46	Ecology	
	3/17/94	13.27	Ecology	
	4/15/94	13.40	Ecology	
	5/17/94	13.90	Ecology	
	5/31/94	14.22	Ecology	
	6/16/94	14.93	Ecology	
	6/30/94	15.15	Ecology	
	7/18/94	15.67	Ecology	
	8/2/94	16.23	Ecology	
	8/15/94	16.64	Ecology	
	8/30/94	17.11	Ecology	
	9/15/94	17.58	Ecology	
	9/29/94	17.94	Ecology	
	10/17/94	18.39	Ecology	
	10/24/94	18.56	Ecology	
	11/17/94	18.88	Ecology	
	12/1/94	18.82	Ecology	
	12/9/94	18.62	Ecology	
	12/19/94	18.42	Ecology	
	12/30/94	17.21	Ecology	
	1/17/95	15.41	Ecology	
	1/31/95	14.54	Ecology	
	2/21/95	12.99	Ecology	
	3/13/95	12.45	Ecology	
	4/14/95	11.66	Ecology	
	5/18/95	12.08	Ecology	
	6/12/95	12.98	Ecology	
	7/17/95	14.43	Ecology	
	8/15/95	15.59	Ecology	
	9/14/95	16.71	Ecology	
	10/20/95	17.73	Ecology	
	11/16/95	17.79	Ecology	
	12/15/95	16.06	Ecology	

Wilkinson	11/10/93	39.05	HC	yes
unused well	11/11/93	40.64	HC	
88' deep	11/12/93	39 50	HC	
	11/15/93	39.80	HC	
	12/2/93	40.52	HC	
27/6 - 24K03	12/21/93	41.18	Ecology	
	1/11/94	41.78	Ecology	
Well ID#AAE 772	1/28/94	42.05	Ecology	
	2/15/94	42.32	Ecology	
	3/3/94	41.99	Ecology	
	3/11/94	42.10	Ecology	
	3/17/94	42.04	Ecology	
	4/15/94	41 85	Ecology	
	5/17/94	42.56	Ecology	
	5/31/94	43.02	Ecology	
	6/16/94	43 40	Ecology	
	6/30/94	43.74	Ecology	
	7/18/94	44.30	Ecology	
	8/2/94	44 62	Ecology	
	8/15/94	44.97	Ecology	
	8/30/94	45.19	Ecology	
	9/15/94	45.55	Ecology	
	9/29/94	45.73	Ecology	
	10/17/94	46.18	Ecology	
	10/24/94	46.31	Ecology	
	11/17/94	45.88	Ecology	
	12/1/94	45.83	Ecology	
	12/9/94	46.12	Ecology	
	12/19/94	45.58	Ecology	
	12/30/94	44.45	Ecology	
	1/17/95	43.60	Ecology	
	1/31/95	42.71	Ecology	
	2/21/95	41.59	Ecology	
	3/13/95	41.12	Ecology	
	4/14/95	40.40	Ecology	
	5/18/95	40.91	Ecology	
	6/12/95	41.53	Ecology	
	7/17/95	42.72	Ecology	
	8/15/95	43.47	Ecology	
	9/14/95	44.40	Ecology	
	10/20/95	44.83	Ecology	
	11/16/95	44.75	Ecology	
	12/15/95	42.83	Ecology	

Ribary	12/9/93	20.46	Ecology	yes
35' deep	12/13/93	17.59	Ecology	
	12/21/93	18.72	Ecology	
	1/28/94	19.90	Ecology	
27/6 - 24R02	2/15/94	20.32	Ecology	
	3/3/94	18.96	Ecology	
Well ID#AAE 764	3/11/94	18.76	Ecology	
	3/17/94	19.07	Ecology	
	4/15/94	19.67	Ecology	
	5/17/94	20.45	Ecology	
	5/31/94	21.03	Ecology	
	6/30/94	22.25	Ecology	
	7/18/94	22.77	Ecology	
	8/2/94	23.06	Ecology	
	8/15/94	22.94	Ecology	
	8/30/94	23.05	Ecology	
	9/15/94	22.96	Ecology	
	9/29/94	23.03	Ecology	
	10/17/94	23.08	Ecology	
	10/24/94	23.02	Ecology	
	11/17/94	20.38	Ecology	
	12/1/94	20.24	Ecology	
	12/9/94	20.66	Ecology	
	12/19/94	19.43	Ecology	
	12/30/94	17.99	Ecology	
	1/17/95	19.51	Ecology	
	1/31/95	19.51	Ecology	
	2/21/95	19.24	Ecology	
	3/13/95	19.51	Ecology	
	4/14/95	19.58	Ecology	
	5/18/95	20.45	Ecology	
	6/12/95	21.67	Ecology	
	7/17/95	22.57	Ecology	
	8/15/95	22.65	Ecology	
	9/14/95	22.83	Ecology	
	10/20/95	21.94	Ecology	
	11/16/95	20.42	Ecology	
	12/15/95	18.33	Ecology	
Barchenger	10/24/94	13.47	Ecology	
15' deep	11/17/94	10.47	Ecology	
27/6 - 25A01				

CD : Cadman
HC : HartCrowser
r : recovering water level
p : well pumping
e: static estimated from pumping dd