

To: Austin Melcher, Washington State Department of Ecology, Water Resources Program
From: Nathan Rossman, Brittany Duarte, Chad Wiseman – HDR, Inc.
Date: October 25, 2019
Subject: Middle and Upper Skagit River Valley Hydrostratigraphy Characterization

Executive Summary

Water resources in the Skagit River basin are the subject of ongoing investigation, as the development of groundwater has the potential to impact regulated instream flows. The purpose of this study is to add to the understanding of the hydrostratigraphy in five specific areas of the Skagit River valley, and explore the degree to which aquifers may be disconnected from the Skagit River and its tributaries. The motivating study question is whether or not aquifers exist that are completely disconnected from surface water by fine-grained (low-permeability) bounding hydrostratigraphic units.

The methods employed include the production and interpretation of subsurface cross sections depicting sediment texture and hydrostratigraphic units based on well logs. The interpretation of the hydrostratigraphy and degree of hydraulic disconnection from surface water is informed by a review of the cross sections and the nature of the geology and aquifers in the basin from local hydrogeological investigation reports and scientific literature. This includes review of geologic maps and groundwater model results on streamflow captured by wells in the region and, more broadly, the theory of streamflow depletion and capture.

The cross sections developed for this study, and the literature review on the geology and hydrogeology of the Skagit River valley, indicate the occurrence of confined aquifers and low to moderate potential for disconnected aquifers mostly at depth (deep aquifers) or on the margins of the valley. Three sites show higher potential for aquifer bodies to be hydraulically disconnected from the Skagit River and its tributaries. The other two sites are found to have less fine-grained material and confining units, and are interpreted to have lower potential for the occurrence of disconnected aquifers. The findings elucidate the discontinuous and heterogeneous nature of the reworked glacio-fluvial sediments described in previous studies. Concerns arise from the findings and review of the scientific literature, which indicate that groundwater pumping has the potential to deplete surface water in the valley of the Skagit River, even if confining units are present. Additionally, pumping from the anticipated small number of localized fully-bounded aquifer bodies in the Skagit River basin can lead to aquifer depletion if they are truly disconnected from surface water, due to the lack of surface water available as a source of the pumped water. The timing of complete aquifer depletion in disconnected aquifers is unknown without further investigation, but it is generally known to be shortest where aquifers are the smallest and pumping rates are the highest.

1.0 Introduction

The Washington State Department of Ecology (Ecology) has authorized HDR, Inc. (HDR), under Master Contract C1700033, to assist in examining the hydrostratigraphy in five specific parts of the Skagit River valley. The purpose of this study is to add to the understanding of the hydrostratigraphy and explore the degree to which aquifers may be disconnected from the Skagit River and its tributaries. The motivating study question is whether or not aquifers exist that are completely disconnected from surface water by fine-grained (low-permeability) bounding hydrostratigraphic units. The study assessment covers five specific parts of the Skagit River valley within the middle and upper parts of the Skagit River basin between Grandy Creek and Marblemount, and in the Sauk River valley north of Darrington, within Water Resource Inventory Area 4 (WRIA4). The five areas of interest (sites) have been identified by Ecology as having potential to experience future groundwater development, variable lithology, high well density, and covering a large geographic area (see **Figure 1** for geographic setting and study sites).

The primary work product for this study includes cross sections with interpreted hydrostratigraphy depicting the spatial relationships between aquifers and low-permeability confining, or bounding, units. The classification of hydrostratigraphic units is based on lithologic (sediment texture) information from publically available well logs. The potential for specific aquifer bodies to be disconnected from surface waters is interpreted using the well logs reviewed, the developed cross sections, and review of supporting hydrogeologic investigation reports, groundwater modeling studies, and scientific literature.¹ Definitions of important terms associated with hydrogeology and streamflow depletion are provided below.

Hydrostratigraphy – The identification of mappable/distinct units on the basis of hydraulic properties that have considerable lateral extent and that also form a geologic framework. Commonly identified units are aquifers and confining units.

Aquifer – Water-bearing body/layer of permeable rock/sediment that transmits water to wells at economically feasible rates. Commonly silt, sand, gravel, or fractured bedrock.

Confining Unit – Essentially the opposite of an aquifer—a rock/sediment body/layer with permeability so low that water hardly moves through the unit. Commonly rich in clay.

Permeability – A measure of the ability of a porous material (rock/sediment) to allow movement of fluids. High permeability units (aquifers) will allow fluids to move rapidly through porous material, while low permeability units (confining units) allow fluid movement very slowly.

2.0 Skagit River Basin Instream Flow Rule

Ecology established the Skagit River basin Instream Resources Protection Program Rule (Washington Administrative Code [WAC] 173-503) on April 14, 2001, setting rules on minimum instream flow at River Mile 15.7. Ecology enacted a 2006 amendment to the instream flow rule

¹ In previous studies, HDR (2016, 2017) completed groundwater-flow modeling evaluations of potential streamflow depletion from pumping at various areas in the lower and middle Skagit River valley, largely downstream of the area investigated for this study (with one site being an area of overlap at the confluence of Grandy Creek with the Skagit River). Those prior study reports by HDR are dated July 6, 2016, and March 29, 2017, prepared for the Washington Water Trust, and Ecology, respectively.

reserving a specified quantity of water for out-of-stream uses (i.e., water uses other than instream flow). The Washington State Supreme Court *Swinomish v. Ecology* ruling on October 3, 2013, resulted in the finding that the 2006 water reservations are not allowed under the 2001 Skagit River instream flow rule. As a result of that decision, mitigation is necessary for streamflow depletion occurring from Skagit River basin water use beginning after 2001. Based on the Washington Supreme Court ruling and other administrative findings, Ecology has been developing mitigation for residences with wells developed after 2001 under the groundwater permit exemption.

Streamflow Depletion – A reduction in streamflow caused by groundwater pumping. The total amount of streamflow depletion equals the sum of the reductions in the outflow rate of groundwater from an aquifer (*captured groundwater discharge*) and increases in the inflow rate of streamflow to an aquifer (*induced infiltration of streamflow*). Although streamflow depletion refers specifically to streams, its use can include depletion (or capture) of flow in other surface-water features, including rivers, springs and lakes, and vegetation that taps groundwater.

3.0 Methods

The basic methodology includes selection and use of well logs to produce cross sections depicting sediment texture and correlated hydrostratigraphic units with interpretations between and beneath boreholes. The nature of the geology and aquifers in the valley discussed are informed through review of available information from local hydrogeological investigation reports, groundwater modeling studies, and scientific literature, including geologic maps of the region. The locations of the five areas of interest, identified by Ecology, are shown in **Figure 1**, including the surficial geology mapped by the Washington State Department of Natural Resources (WSDNR) and U.S. Geological Survey (USGS) (WSDNR 2016). The five areas of interest (sites) are referred to as follows:

Site #1 – Grandy Creek Confluence

Site #2 – Concrete, south of Lake Shannon

Site #3 – West of Rockport State Park

Site #4 – Cascade River Confluence, north of Marblemount

Site #5 – Sauk River, north of Darrington

The individual wells with logs used to construct the cross sections, and surrounding available wells, along with cross section lines, are illustrated in **Figure 2 through 6**. The five sites have been identified by Ecology because they cover a wide geographic area, and have the potential to experience future groundwater development, variable lithology and high well capacity based on a preliminary review of wells.

3.1 Data Collection

The primary datasets used for this study include the following:

- Wells with driller’s logs and location information obtained from the Washington State Well Log Report Viewer website (fortress.wa.gov/ecy/wellconstruction/map/wclswebMap/default.aspx)
- Geologic maps and descriptions of units from Ecology and WSDNR, and USGS (WSDNR 2016)

- Topographic data generated with LiDAR collected by Quantum Spatial for USGS, Glacier Peak LiDAR Project 2015, and Western Washington 3DEP LiDAR Project 2017 (lidarportal.dnr.wa.gov/#48.21003:-121.93451:9).

Apart from these data sources, much was gained from review of several hydrogeologic investigation reports, groundwater modeling studies and scientific literature in understanding the concept of, and potential for, streamflow depletion caused by groundwater development in general, and in the Skagit River valley. Those sources are cited in appropriate sections (or appendices). While several USGS wells were identified at the five sites, their associated well logs were not obtained or reviewed, as this was outside of the project scope.

3.2 Criteria for Selecting Cross Section Locations

Criteria were developed to select cross section lines at the five sites investigated. The first step involved the random survey review of a portion of well logs in the area of interest to focus on areas more likely to contain bounding confining units (high percentage of silt and clay) and/or containing deep wells. Second, up to three candidate section lines were identified and all the well logs lying on those lines were downloaded and reviewed. Third, a final section line was selected for each site as the one having the greatest potential to contain confining units or as the one containing the most information (i.e., number of wells and greatest depths). The final section line spans the greatest distance as compared to other candidate lines. Finally, well logs were transcribed into a spreadsheet, and some logs were removed because they were either shallower (where there are multiple wells in with the same coordinates), had deficient details in lithology, were illegible, or had no data.

Well locations were refined if possible, however, the wells were nearly ubiquitously mapped to the center of their associated Public Land Survey System (PLSS) quarter-quarter section. Addresses were available in some cases, but the wells fell outside of the quarter-quarter section, so the original locations were retained. Locating wells more precisely was not part of the scope of this project, as refining locations for the large numbers of wells in the large geographic extent of the study area would have been cost and time prohibitive. In areas where wells could not be located more precisely than the centroid of the PLSS quarter-quarter sections, several wells (usually three) were included in the development of the cross sections. In the case of more than three co-located wells, those wells with greater depths, more details in the logs, and those providing the most differences in lithology were selected, thereby allowing for inclusion of higher levels of heterogeneity to be depicted than the one well being represented.

Overall, the five sites contain a total of 934 wells, from which 349 well logs were reviewed (37.4 percent), 114 were transcribed to spreadsheets (12.2 percent), and 72 well logs were used for constructing cross sections (7.7 percent). The average depth of wells with transcribed logs equals 81.3 feet, while the average depth of wells in the areas of interest that were not transcribed equals 55.1 feet. Information regarding wells transcribed during the review process, including coordinates, land surface elevation, and depth to groundwater and screen interval are provided in **Appendix A**. The lithology/textural information transcribed from logs, as well as the generalized lithology (hydrostratigraphic units) classified from the logs, are provided in **Appendix B**. Wells logs used in the construction of the cross sections are presented in **Appendix C**. They are ordered by Site number (area of interest) and by point station number (based on Ecology ID, which has also been added to the well log documents for ease of reference).

3.3 Hydrostratigraphic Cross Section Preparation and Interpretation

The location of five final hydrostratigraphic cross sections, along with well locations, are presented in **Figures 2 through 6**. Lithology recorded on the logs was lumped together into six primary classes (hydrostratigraphic units or facies). These facies are ordered from highest to lowest estimated permeability, as follows:

- Sand & Gravel;
- Sand;
- Silt or Silty Sand;
- Clay, Sandy Clay, or Gravely Clay;
- Hard Pan; and
- Bedrock

Sand and gravel facies are generally considered aquifers, while the other facies are generally considered confining units. When designating the facies type, based on the logged sediment texture, it was assumed that the first recorded texture class was dominant. For instance, “sand and silt” was classified into the Sand unit, and “clay, sand and gravel” was classified into the Clay, Sandy Clay, or Gravely Clay unit. The clay described in the well logs often has accompanying sand and/or gravel, therefore it is likely that these unconsolidated deposits have highly variable permeability and storage properties. In some cases, the logs contained “glacial till,” or “till,” which was classified into the Clay, Sandy Clay, and Gravely Clay unit. Intervals logged as “top soil” were lumped into the facies type of the material found beneath it.

The top of casing elevations of the wells were estimated from LiDAR ground surface elevation data. The elevations of the hydrostratigraphic unit contacts and water table were estimated by subtracting the reported depth from the estimated top of casing elevation. Well screen intervals and reported groundwater levels were also recorded when provided on the logs. Additionally, the location of the Skagit River and its tributaries were included on the cross sections.

A relative ranking of the interpreted potential for hydraulically disconnected aquifers to be present was assigned and discussed at each of the five sites using the terms *low*, *moderate*, and *high*. Since groundwater flow is a three-dimensional (3-D) process, the use of cross sections for the basis of the interpretation restricts the findings to the qualitative relative ranking. No attempt was made to quantify the level of uncertainty associated with the rankings, but higher confidence is expected in areas where well density and depth are highest.

4.0 Results

The findings of the study are discussed below, beginning with a general description of the hydrogeology of the Skagit River valley, moving next to important discussion points from literature review on the concepts and theory of streamflow depletion and the source of water derived from wells, and finally detailing the hydrostratigraphy of each site and the potential for aquifers to exist that are hydraulically disconnected from surface water. The area geology, hydrogeology, and hydrostratigraphy is described in further detail in **Appendix D**, including hydrostratigraphic unit

extent and continuity for each site based on the developed cross sections and reviewed reports. In addition, **Appendix D** provides more detail, references and figures on the concepts and theory of streamflow depletion.

4.1 Hydrogeology Summary of the Skagit River Valley

Groundwater in the Skagit River valley occurs in the unconsolidated alluvial and glacial deposits in the main river valleys, and occurs in considerably lesser quantities in the bedrock of the mountain areas (Drost and Lombard 1978). Local-scale variability in the distribution of glacial depositional facies often results in the formation of spatially discontinuous units of varying thickness, and most units are not areally contiguous, with thicknesses that may vary considerably over short distances (Savoca et al. 2009). The groundwater-flow system of the Skagit River basin includes water entering the aquifers via recharge from precipitation or infiltration of tributaries at high elevations, which then moves primarily horizontally in the aquifers, traveling sub-parallel to the streams and rivers in a sinuous course or sub-vertically around or through confining units, before discharging to the Skagit River.

4.2 Streamflow Depletion and the Source of Water Derived From Wells

Groundwater systems are a continuum; therefore, pumped groundwater must be supplied by a) more water entering the groundwater system (increased recharge), b) less water leaving the system (decreased discharge), c) removal of water in storage, or d) some combination of these factors (Theis 1940). Equilibrium is reached only when pumping is balanced by capture (when drawdown of aquifer water levels, and removal of water in storage, stops). The dynamics of the groundwater systems are such that long periods of time are necessary before even an approximate equilibrium can be reached (Alley et al. 1999). Pumping may affect surface water directly via induced recharge, or by capture of groundwater that would otherwise discharge to surface water (as baseflow). The water captured from surface waters by wells is called “streamflow depletion,” and the proportion of the water pumped by a well that is captured from surface water is called the “capture fraction.” Capture fractions can be calculated for the depletion caused to individual surface water bodies from groundwater pumping at specific well locations (actual or hypothetical) using analytical solutions or numerical groundwater modeling. The effect of groundwater pumping on surface water resources has been described and modeled conceptually and mathematically by Barlow and Leake (2012), Bredehoeft (2002), Glover and Balmer (1954), Jenkins (1968), Leake et al. (2010), and Theis (1940), among others.

4.3 Streamflow Depletion in the Context of Connectivity and Confinement

Stream-aquifer hydraulic connections are made when aquifer materials with high-permeability have connected pathways to the stream, whether those pathways are largely horizontal, vertical, or require large distances be traversed. With respect to confining units, Barlow and Leake (2012) describe a common misconception of streamflow depletion: *pumping groundwater exclusively below a confining unit will eliminate the possibility of depletion of surface water connected to the underlying groundwater system*. Confining units may be laterally discontinuous or may form laterally extensive barriers separating adjacent aquifers. In most cases, confining units between wells and streams slow

the progression of depletion in comparison to equivalent aquifer systems without confining units. Despite this fact, Barlow and Leake (2012) make the following important statements with ramifications in the Skagit River basin:

It is not reasonable to expect that pumping beneath an extensive confining unit will eliminate depletion. Water does move vertically from one aquifer to another through confining units, and drawdown from pumping can propagate through confining units as well. [...] The argument that pumping beneath a confining unit eliminates the possibility of [stream] depletion implies that the pumped aquifer is without any vertical or lateral connection to aquifer material that is connected to surface water.

4.4 Hydrostratigraphic Cross Sections

This section describes the hydrostratigraphic units mapped in cross section, including an interpretation of the relative ranking of the degree of hydraulic disconnection between aquifers and surface water. The locations of five sites and final cross sections, along with well locations, are presented in **Figures 1 through 6**, while cross sections are illustrated in **Figures 7 through 11**.

Site #1 – Grandy Creek Confluence

Overall, the potential for hydraulically disconnected aquifers for this site is ranked as *moderate*. The evidence from previous studies suggests that a deeper aquifer is overlain by a thick confining unit that has the potential to hydraulically disconnect it from the Skagit River. However, the cross section constructed for this study (**Figure 7**) provides no definitive evidence of an extensive confining unit that would be capable of disconnecting groundwater from the Skagit River, and therefore such a confining condition cannot be extensive and some degree of connection between deep aquifers and the Skagit River or its tributaries may occur.

Site #2 – Concrete, south of Lake Shannon

Overall, the potential for hydraulically disconnected aquifers for this site is ranked as *moderate*. The cross section constructed for this study (**Figure 8**) provides evidence of an extensive confining unit, and potential for a deeper aquifer that may be confined, both of which raise the potential for disconnected aquifers. However, away from the cross section, particularly east and southeast of the cross section, well logs show less fine-grained materials, and in cross section the confining units near the Skagit River are relatively thin.

Site #3 – West of Rockport State Park

Overall, the potential for hydraulically disconnected aquifers for this site is ranked as *low to moderate*. The cross section constructed for this study (**Figure 9**), and review of other wells across the site, provide evidence for several confining units, raising the potential for disconnected aquifers. However, several of the wells reviewed do not penetrate any fine-grained (clay and silt) materials.

Site #4 – Cascade River Confluence, north of Marblemount

Overall, the potential for hydraulically disconnected aquifers for this site is ranked as *low to moderate*. In cross section the confining units appear to be largely discontinuous and to not completely surround any aquifer bodies, with the exception of alluvial fan deposits along the western margin of the valley (**Figure 10**). Facies are coarser, and less confining units exist near the Skagit River. There is the possibility that alluvial fan deposits on the margins of the site represent a disconnected aquifer, although the one neighboring deep well with lithology depicted as a Silt or Silty

Sand unit may allow groundwater flow at non-negligible rates, since silt or silty sand has higher permeability values than clay, and the log for that well (82436) describes there being some “gravel lenses.” Therefore, the cross section constructed for this study (**Figure 10**) provides evidence that confining or semi-confining units exist, but they are typically not strong barriers to flow due to relatively coarse material or limited extent.

Site #5 – Sauk River, north of Darrington

Overall, the potential for hydraulically disconnected aquifers for this site is ranked as *moderate*. The cross section constructed for this study (**Figure 11**), and review of other wells across the site, provide evidence for several confining or semi-confining units, raising the potential for disconnected aquifers. One confining unit that has the potential to confine a regional aquifer over a large area is the glacial till. However, several of the wells reviewed do not penetrate any fine-grained (clay and silt) materials, and the cross section depicts a lack of lateral continuity of confining units.

5.0 Discussion and Conclusions

The findings elucidate the discontinuous and heterogeneous nature of the reworked glacio-fluvial sediments of the Skagit River valley described in previous studies, indicating abrupt contrasts in reworked material texture. In the areas of interest, there is direct evidence of fine-grained, relatively low-permeability units present in the subsurface that can be classified as confining units, but overall their spatial coverage can largely be considered discontinuous, with the possibility of a few localized exceptions as noted at Sites #1, #2, and #5. At these three sites, confined aquifers exist, with the highest potential for aquifers that are completely surrounded by hydraulic barriers (completely disconnected aquifers). Most of these conditions occur over limited extents in relatively small and commonly deeper aquifers or along the margins of the valleys.

Connectivity between coarse-grained (aquifer) materials is generally the rule, rather than the exception, especially in river-valley settings where the aquifer material is deposited by flowing water (Fogg and Zhang 2016), as aquifers are 3-D by nature. The results of previous modeling investigations indicate that throughout almost all of the lower and middle Skagit River valley (in the areas modeled), between 5 and 100 percent of the streamflow depletion from groundwater pumping wells will be from the mainstem Skagit River, with the remaining percentages almost entirely coming from the tributaries to the Skagit River (HDR 2016, 2017). These percentages (capture fractions) reflect conditions once the new pumping has reached equilibrium.

As detailed in **Appendix D**, the scientific literature reveals how pumping impacts streams with extracted water first coming from aquifer storage, and quickly thereafter coming from capture from connected features, including streams. Even where confining units have been identified, if they are not laterally continuous or do not fully surround (or bound) an aquifer, pumping from aquifers beneath them can lead to some level of streamflow depletion. In fact, a 24-hour constant-rate pumping test performed on Darrington Well #3 at 450 gpm in the deeper confined aquifer revealed drawdown declined after about 160 minutes, indicating either a recharge boundary and/or a leaky condition, meaning that flows are sourced either from the nearby Sauk River or from the shallow aquifer through the confining unit above, or both (Aspect Consulting 2003). Furthermore, concerns regarding the sustained use of aquifers arise in instances with pumping of small aquifers completely disconnected from surface water, because pumping will exceed any potential streamflow capture, instead being sourced from storage in the aquifer, and ultimately declining groundwater levels will persist until the aquifer is depleted (Bredehoeft and Durbin 2009).

6.0 Limitations

The findings in this technical memorandum are intended to allow a comparative evaluation between sites and do not constitute a detailed evaluation or prediction of actual site conditions. The well logs are the primary information used in the assessment, yet the spatial coverage, details on depositional facies and hydraulic properties, depths logged, and in a majority of cases the well location accuracy are all limited. Additionally, the analysis does not focus on the representation of the hydrostratigraphy in 3-D, although review of logs and previous reports allowed for some extension of understanding laterally perpendicular to the cross sections presented. While information on the lithology from wells located away from the cross sections was reviewed (on a limited basis), the data from those is not depicted, or considered with the same level of detail as those used in the construction of the cross sections.

The results presented in this report are interpretations and must be used with caution. Use of this work product by others is at their own risk and the user assumes liability for its use. Any decisions that are made on the basis of this report are the responsibility of the owner. As with any scientific investigation, the findings depend on the available data and on information provided and published from other sources. While HDR has used its best efforts in preparing this technical memorandum, HDR has assumed that third party or client data is accurate, complete, reliable, and current.

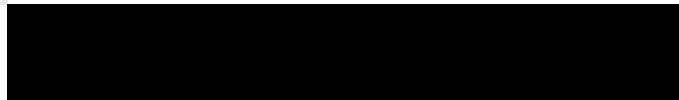
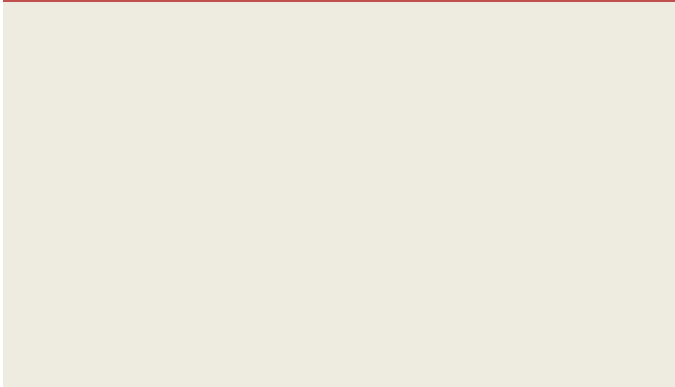
7.0 References

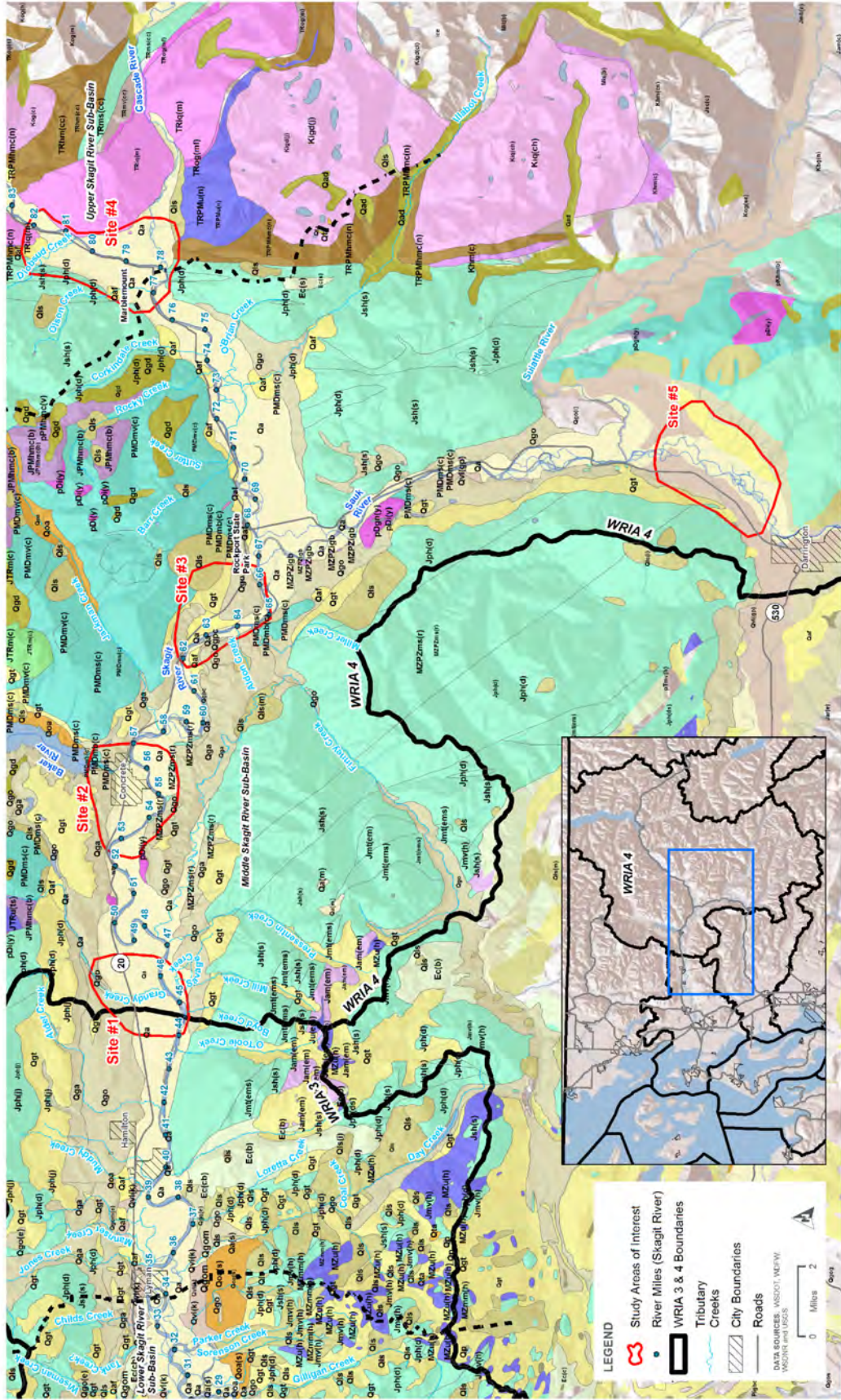
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Figures





MIDDLE AND UPPER SKAGIT RIVER HYDROSTRATIGRAPHY CHARACTERIZATION

FIGURE 1A. STUDY AREAS OF INTEREST AND 1:100K SCALE SURFICIAL GEOLOGY



FIGURE 1B. LEGEND FOR SKAGIT RIVER BASIN SURFICIAL GEOLOGY (1:100,000 SCALE)

MIDDLE AND UPPER SKAGIT RIVER HYDROSTRATIGRAPHY CHARACTERIZATION



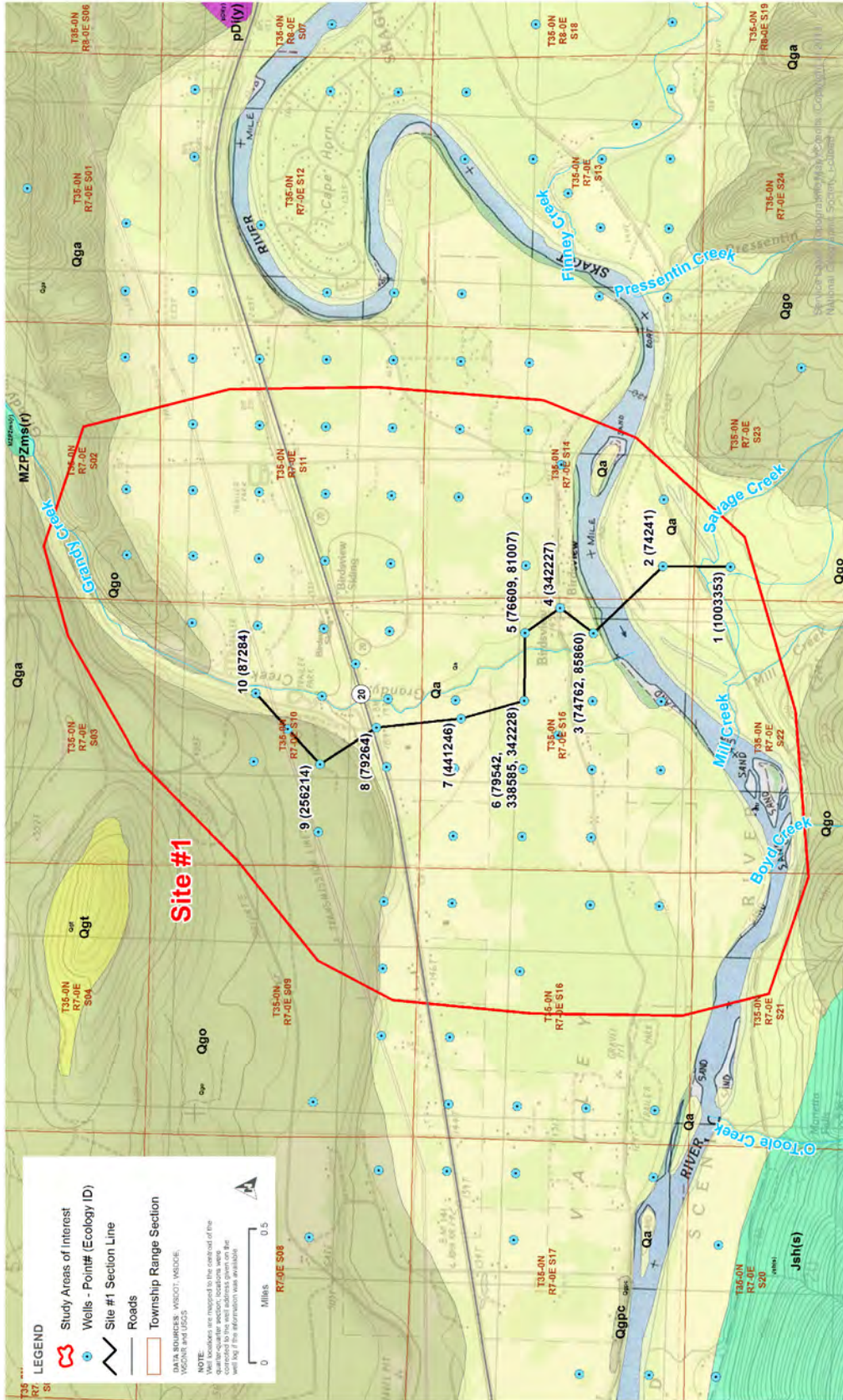


FIGURE 2. SITE #1 AREA OF INTEREST WITH AVAILABLE WELLS AND THE LOCATION OF CROSS-SECTION, SUFFICIAL GEOLOGY (1:100K SCALE) AND TOPOGRAPHY ARE ALSO SHOWN

MIDDLE AND UPPER SKAGIT RIVER HYDROSTRATIGRAPHY CHARACTERIZATION

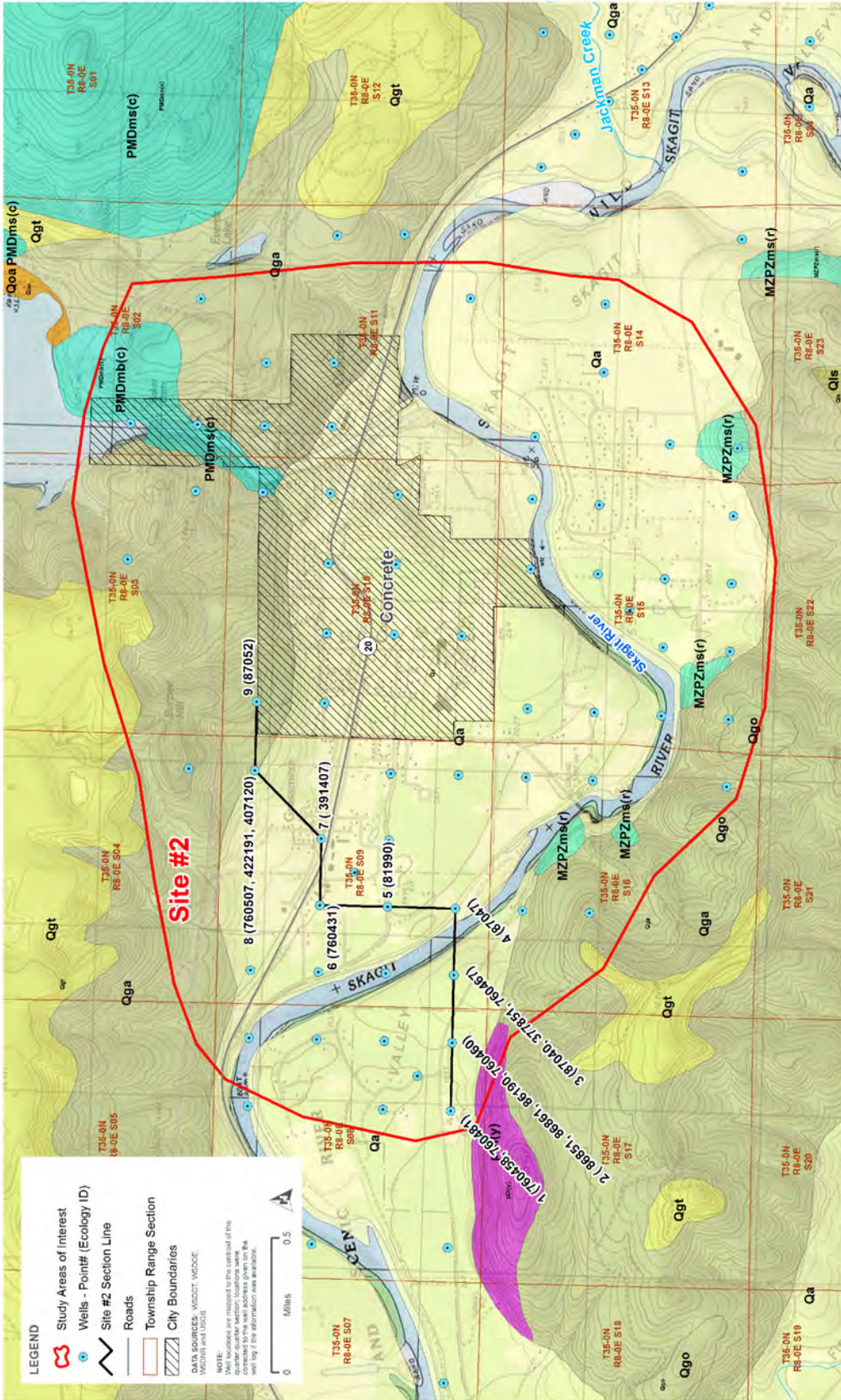


FIGURE 3. SITE #2 AREA OF INTEREST WITH AVAILABLE WELLS AND THE LOCATION OF CROSS-SECTION, SUFFICIAL GEOLOGY (1:100K SCALE) AND TOPOGRAPHY ARE ALSO SHOWN. MIDDLE AND UPPER SKAGIT RIVER HYDROSTRATIGRAPHY CHARACTERIZATION

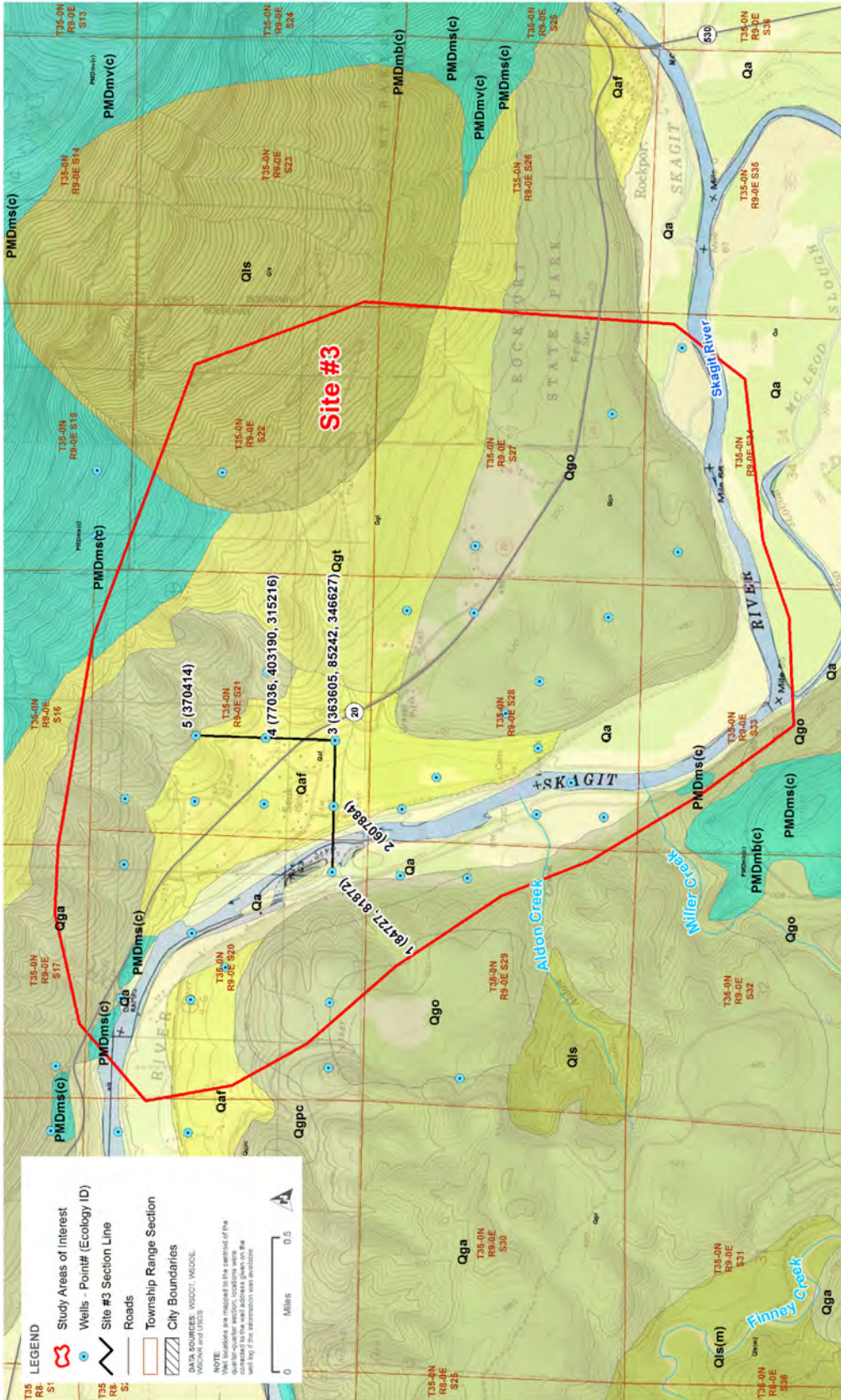


FIGURE 4. SITE #3 AREA OF INTEREST WITH AVAILABLE WELLS AND THE LOCATION OF CROSS-SECTION, SUFFICIAL GEOLOGY (1:100K SCALE) AND TOPOGRAPHY ARE ALSO SHOWN. MIDDLE AND UPPER SKAGIT RIVER HYDROSTRATIGRAPHY CHARACTERIZATION

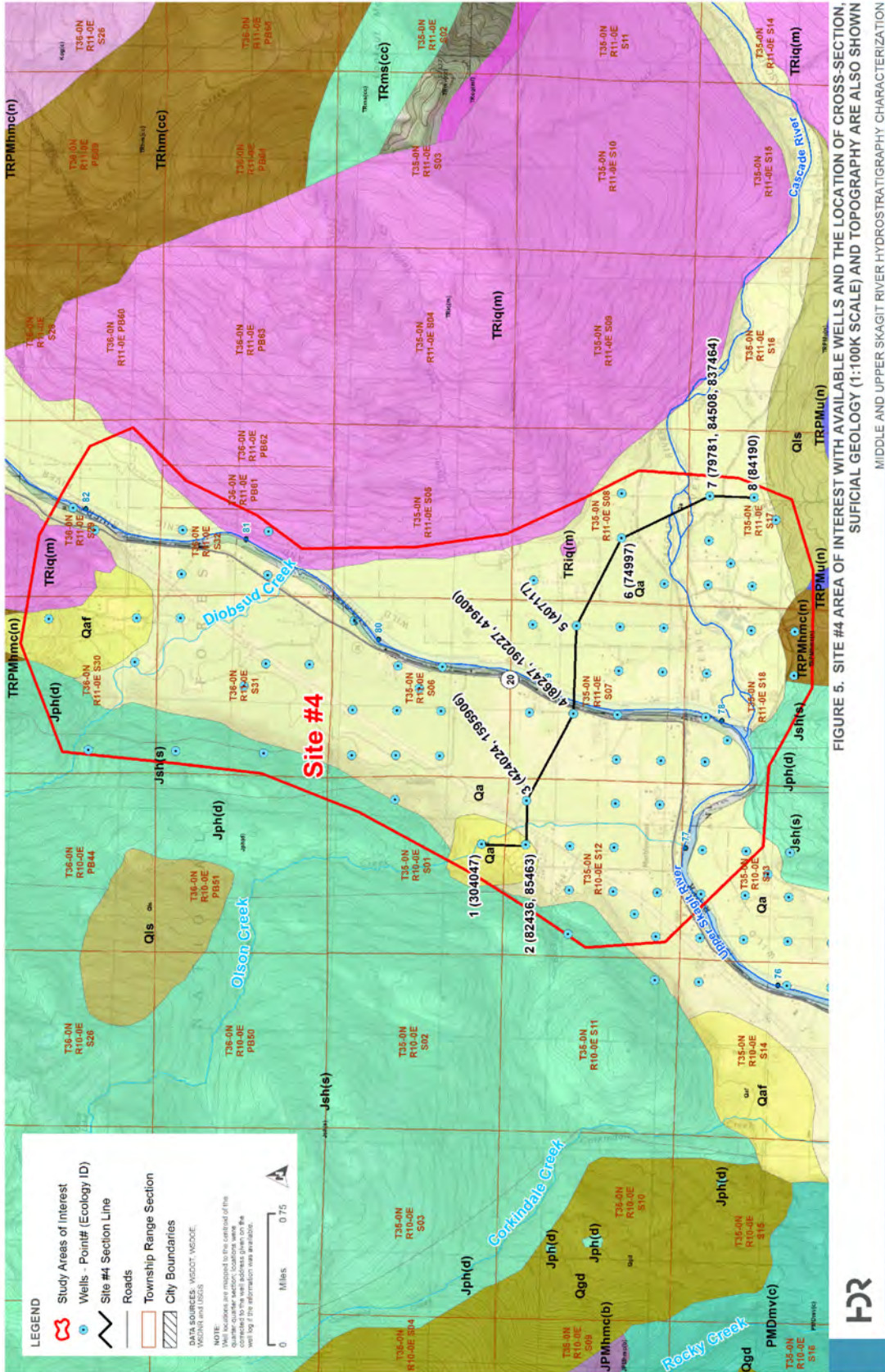


FIGURE 5. SITE #4 AREA OF INTEREST WITH AVAILABLE WELLS AND THE LOCATION OF CROSS-SECTION, SUFFICIAL GEOLOGY (1:100K SCALE) AND TOPOGRAPHY ARE ALSO SHOWN

MIDDLE AND UPPER SKAGIT RIVER HYDROSTRATIGRAPHY CHARACTERIZATION

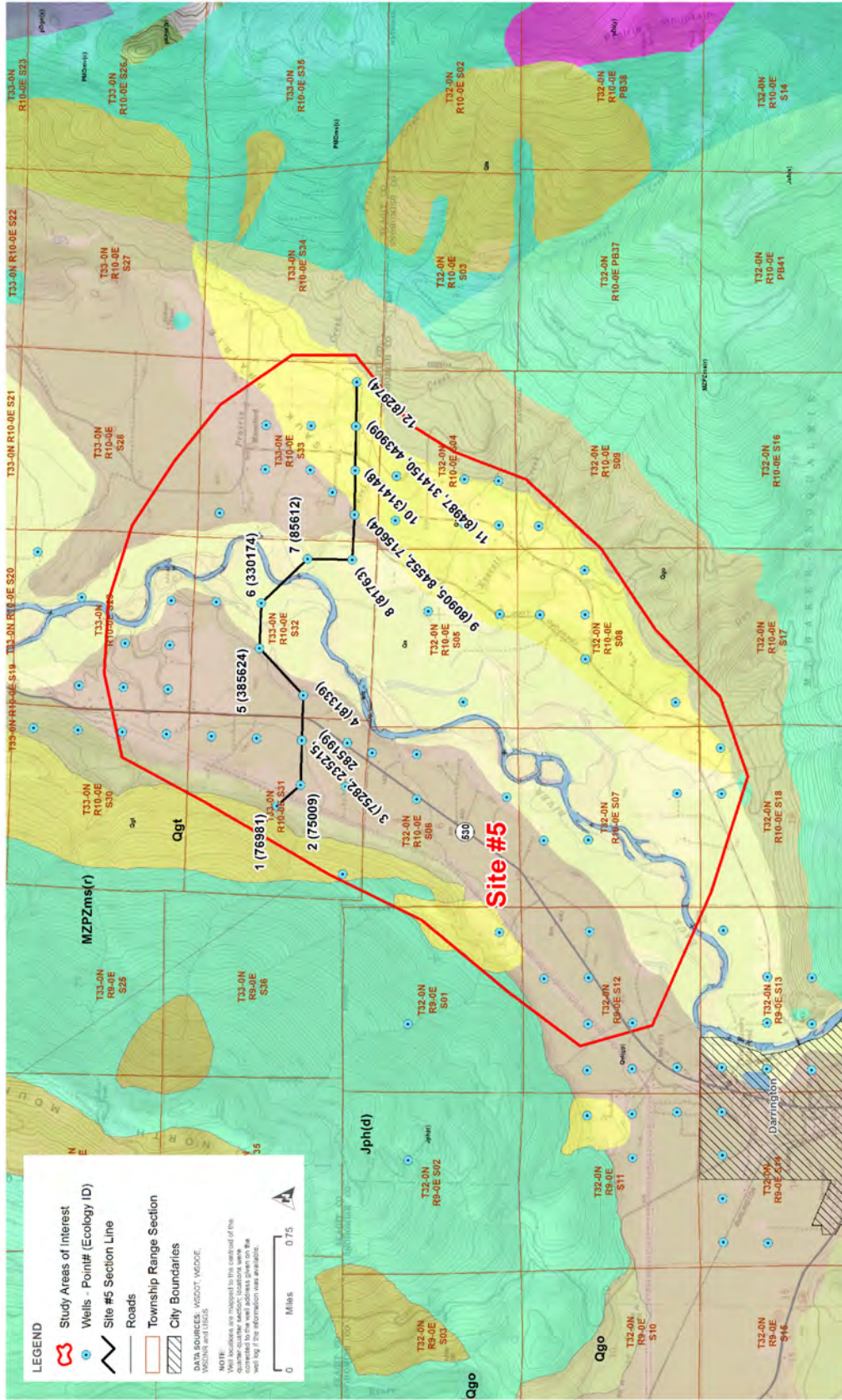
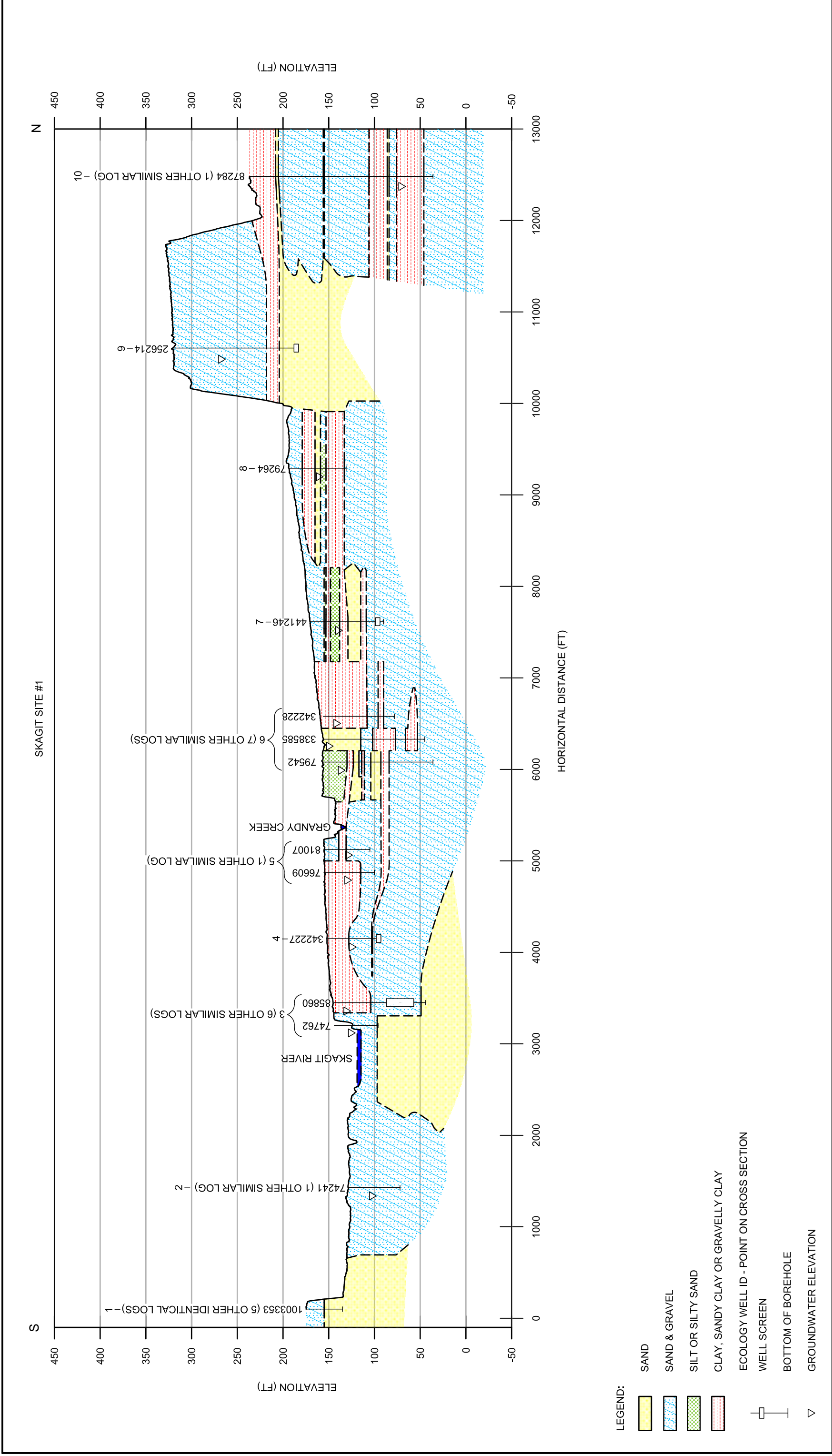


FIGURE 6. SITE #5 AREA OF INTEREST WITH AVAILABLE WELLS AND THE LOCATION OF CROSS-SECTION, SUFFICIAL GEOLOGY (1:100K SCALE) AND TOPOGRAPHY ARE ALSO SHOWN. MIDDLE AND UPPER SKAGIT RIVER HYDROSTRATIGRAPHY CHARACTERIZATION



SKAGIT SITE #1

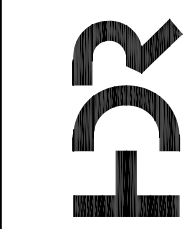
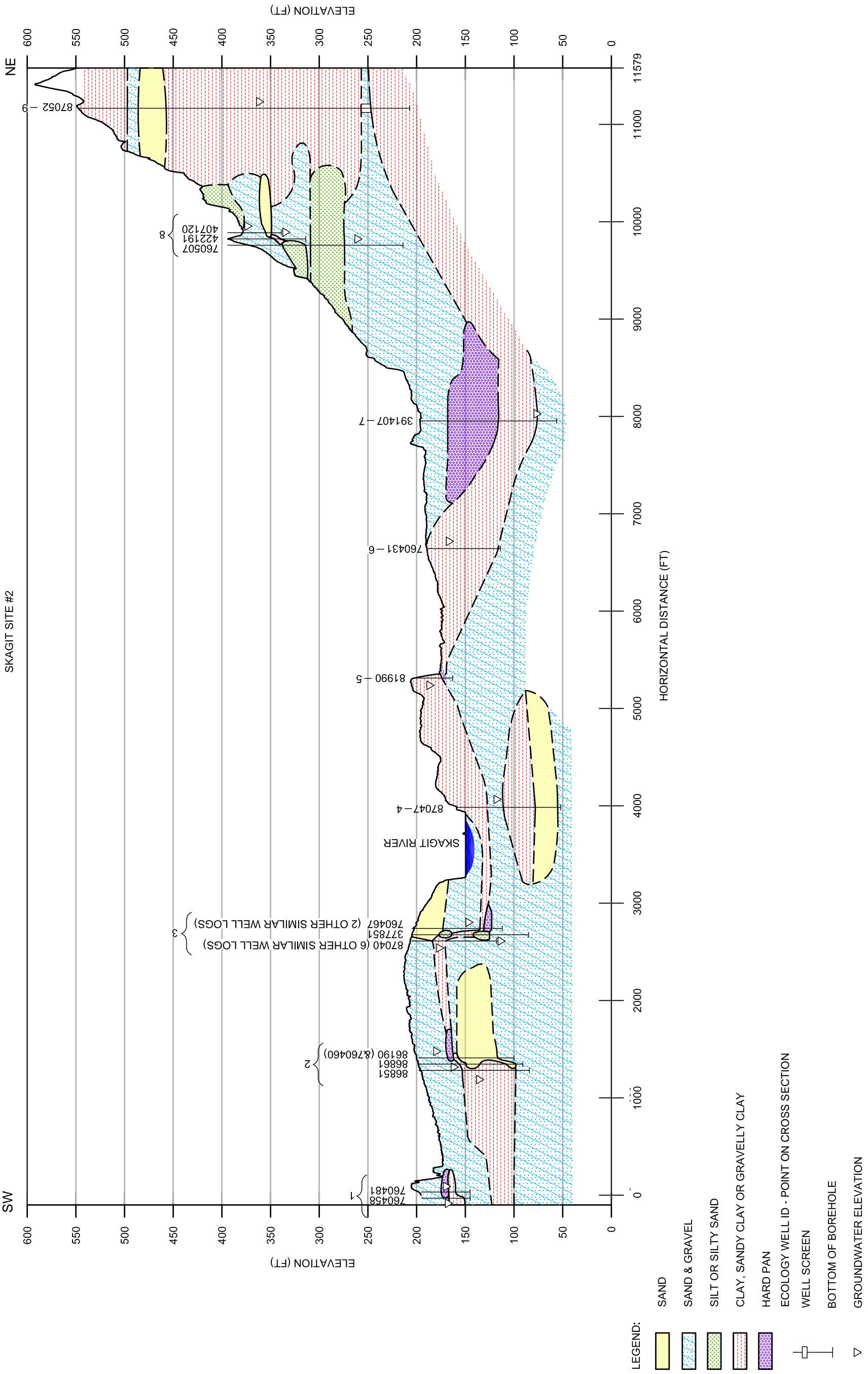


CROSS SECTION

DATE 07/10/2019

FIGURE 7

SKAGIT SITE #2



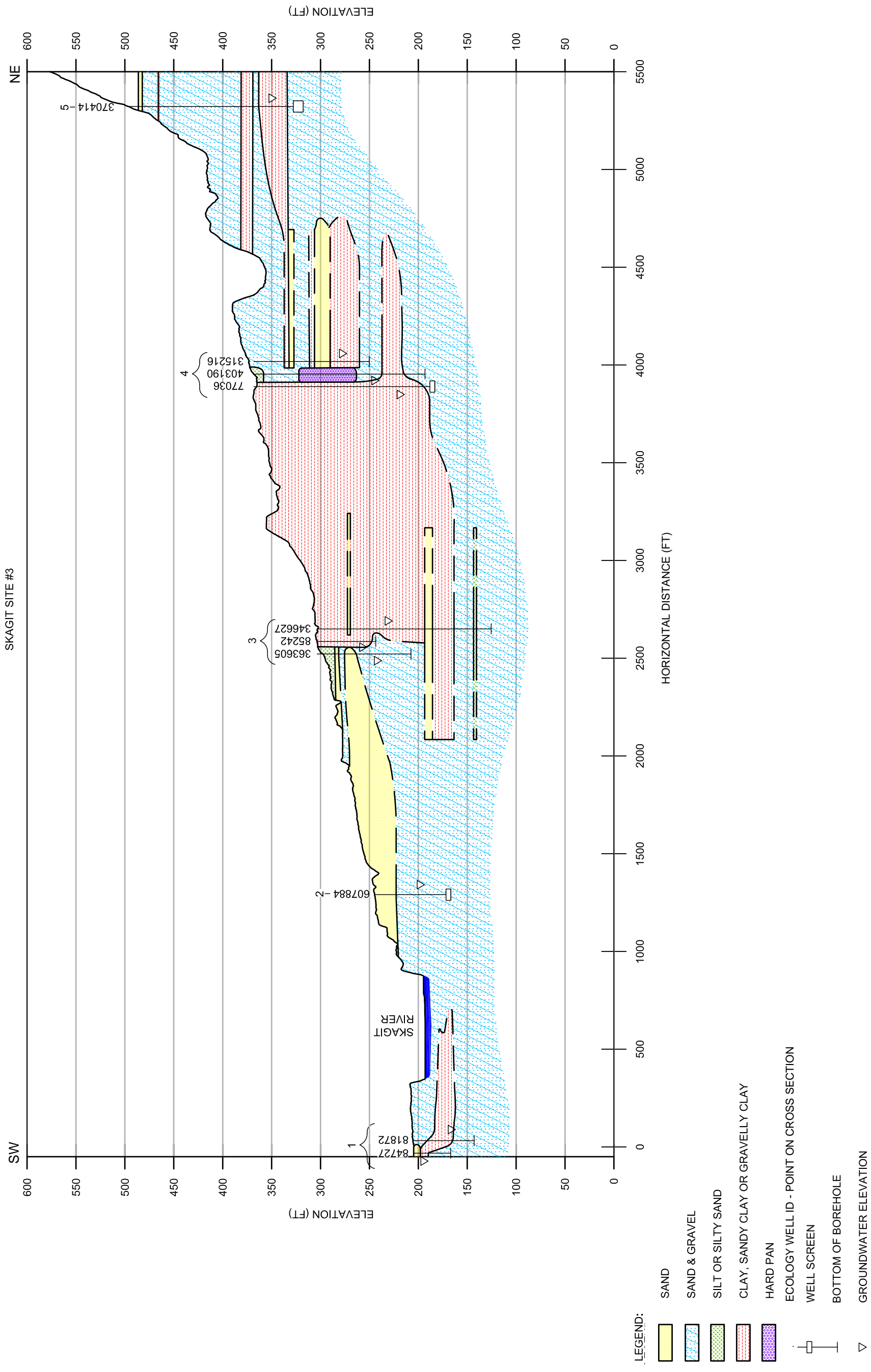
SKAGIT SITE #2

CROSS SECTION

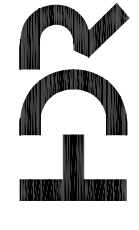
DATE 06/25/2019

FIGURE 8

SKAGIT SITE #3



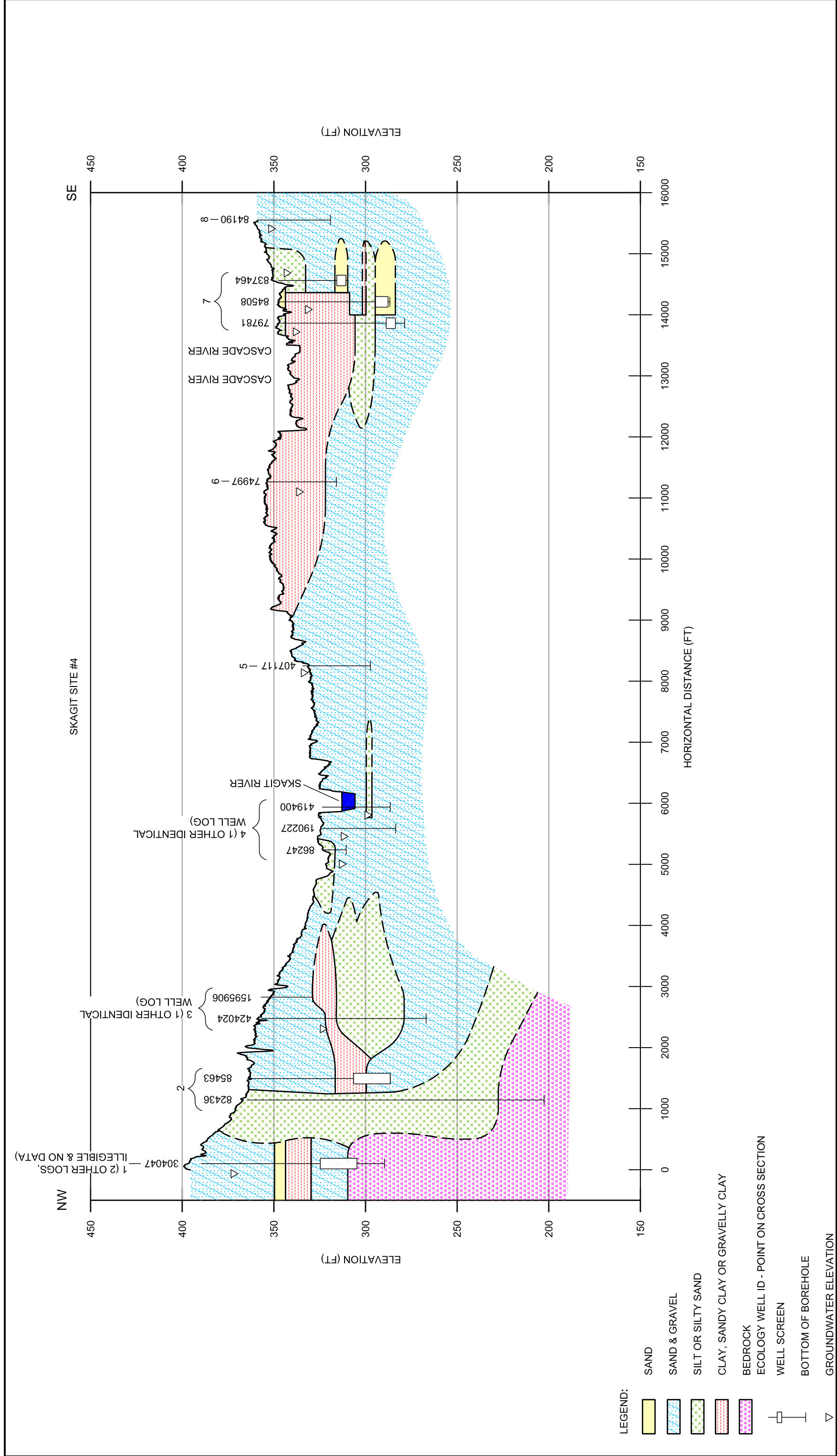
SKAGIT SITE #3



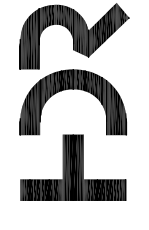
CROSS SECTION

DATE 06/25/2019

FIGURE 9



SKAGIT SITE #4

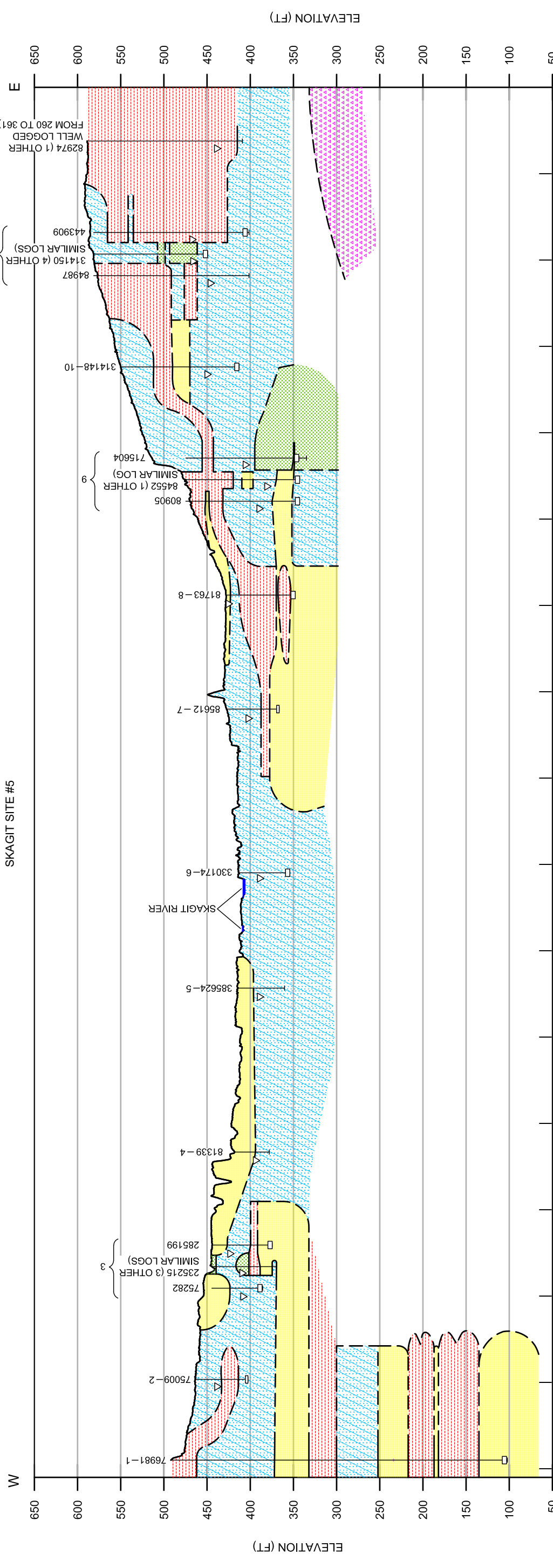


CROSS SECTION

DATE 06/25/2019

FIGURE 10

SKAGIT SITE #5



- LEGEND:
- SAND
 - SAND & GRAVEL
 - SILT OR SILTY SAND
 - CLAY, SANDY CLAY OR GRAVELLY CLAY
 - BEDROCK
- ECOLOGY WELL ID - POINT ON CROSS SECTION
 - WELL SCREEN
 - BOTTOM OF BOREHOLE
 - GROUNDWATER ELEVATION

SKAGIT SITE #5



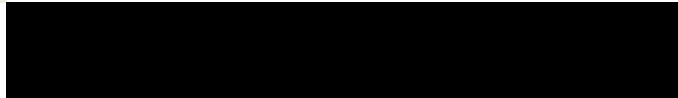
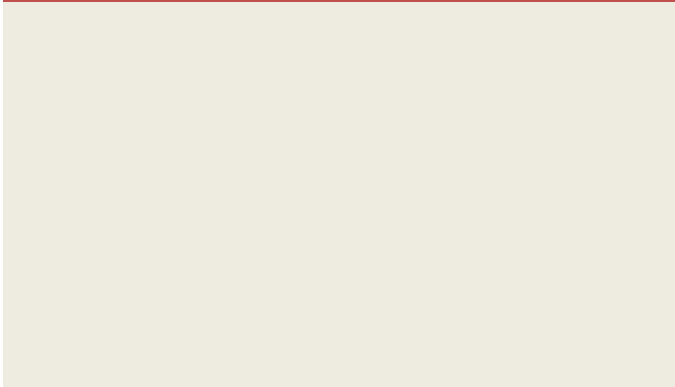
CROSS SECTION

DATE 06/25/2019

FIGURE 11



Appendix A
Transcribed Well Data
Summary Information



Ecology ID	Site #	Point on Cross Section	Drawn on Cross Section?	X Coordinate (State Plane)	Y Coordinate (State Plane)	Well Depth (ft bgs)	Well Diameter (in)	Ground Surface Elevation (ft)	Depth to Groundwater (ft bgs)	Groundwater Elevation (ft)	Screen Top Elevation (ft bgs)	Screen Bottom Elevation (ft bgs)
1003353	1	1	YES	1307534	1162722	40	4	175.11				
74241	1	2	YES	1307548	1164050	56	6	128.70	30.0	99		
74762	1	3a	YES	1306226	1165410	46	6	144.50	23.0	122		
85860	1	3b	YES	1306226	1165410	72	8	144.50	18.0	127	88	58
342227	1	4	YES	1306727	1166066	59	6	152.02	32.0	120	98	93
76609	1	5a	YES	1306231	1166754	47	6	155.38	30.0	125		
81007	1	5b	YES	1306231	1166754	50	6	155.38	31.0	124		
79542	1	6a	YES	1304899	1166773	60	6	156.08	23.4	133		
338585	1	6b	YES	1304899	1166773	110	6	156.08	10.5	146		
342228	1	6c	YES	1304899	1166773	78	6	156.08	19.0	137		
441246	1	7	YES	1304547	1168008	76	6	170.57	35.0	136	100	95
79264	1	8	YES	1304371	1169675	0	6	193.41	37.0	156		
256214	1	9	YES	1303660	1170781	138	6	321.57	58.0	264	188	183
87284	1	10	YES	1305046	1172045	200	6	236.30	169.7	67		
74606	1		NO	1307548	1164050	34	6	128.70	16.0	113		
78586	1		NO	1304991	1170743	123	8	210.45	43.0	167	92	87
405599	1		NO	1304899	1166773	56	6	156.08	34.0	122	51	56
86862	1		NO	1304899	1166773	58	6	156.08	15.5	141		
256216	1		NO	1304899	1166773	46	6	156.08	32.0	124		
304037	1		NO	1304899	1166773	58	6	156.08	19.0	137		
81039	1		NO	1304899	1166773	120	6	156.08	20.0	136		
86863	1		NO	1304899	1166773	60	6	156.08	14.0	142		
81365	1		NO	1305046	1172045	8	36	236.30	2.9	233		
468522	1		NO	1304899	1166773	60	6	156.08		156	55	60
1003361	1		NO	1307534	1162722	40	4	175.11				
1003417	1		NO	1307534	1162722	40	4	175.11				
1003613	1		NO	1307534	1162722	40	4	175.11				
1003488	1		NO	1307534	1162722	40	4	175.11				
1003499	1		NO	1307534	1162722	40	4	175.11				
760458	2	1a	YES	1326203	1169004	50	6	195.77	32.0	164		
760481	2	1b	YES	1326203	1169004	50	6	195.77	30.0	166		
86851	2	2a	YES	1327549	1168971	114	6	198.27	67.0	131		
86861	2	2b	YES	1327549	1168971	107	6	198.27	41.0	157		
86190	2	2c	YES	1327549	1168971	41	6	198.27	23.0	175		
87040	2	3a	YES	1328878	1168941	87		205.09	33.0	172		
377851	2	3b	YES	1328878	1168941	120	6	205.09	96.0	109		
760467	2	3c	YES	1328878	1168941	93	6	205.09	63.0	142		
87047	2	4	YES	1330189	1168910	106	6	158.88	45.0	114		
81990	2	5	YES	1330222	1170241	39	6	202.49	20.0	182		
760431	2	6	YES	1330253	1171570	75	6	189.54	27.0	163		
391407	2	7	YES	1331564	1171539	140	6	196.49	124.0	72		
760507	2	8a	YES	1332907	1172840	180	6	394.60	138.0	257		
422191	2	8b	YES	1332907	1172840	80	6	394.60	64.0	331		
407120	2	8c	YES	1332907	1172840	55	6	394.60	25.0	370		
87052	2	9	YES	1334249	1172806	0		547.51	190.0	358	258	248
760460	2		NO	1327549	1168971	98	6	198.27	23.0	175	75	81
86831	2		NO	1328878	1168941	93	6	205.09	63.0	142	93	93
640635	2		NO	1339696	1173972	50		351.08				
640639	2		NO	1339696	1173972	35		351.08			20	35
86830	2		NO	1327549	1168971	0		198.27	22.0	176	42	42
87039	2		NO	1328878	1168941	65		205.09	40.0	165	65	65
87041	2		NO	1328878	1168941	63		205.09	41.0	164	63	63
87043	2		NO	1328878	1168941	76		205.09	50.0	155	76	76
87044	2		NO	1328878	1168941	61		205.09	45.0	160	61	61
87045	2		NO	1328878	1168941	60	6	205.09	35.0	170	60	60
87046	2		NO	1328878	1168941	60	6	205.09	35.0	170	60	60
760471	2		NO	1327549	1168971	60	6	198.27	40.0	158	50	58

Ecology ID	Site #	Point on Cross Section	Drawn on Cross Section?	X Coordinate (State Plane)	Y Coordinate (State Plane)	Well Depth (ft bgs)	Well Diameter (in)	Ground Surface Elevation (ft)	Depth to Groundwater (ft bgs)	Groundwater Elevation (ft)	Screen Top Elevation (ft bgs)	Screen Bottom Elevation (ft bgs)
760492	2		NO	1328878	1168941	87	6	205.09	37.0	168	87	87
86175	2		NO	1327549	1168971	60	6	198.27	40.0	158	50	58
86834	2		NO	1326203	1169004	41	6	195.77	23.0	173	41	41
117726	2		NO	1342175	1173905	0		746.25				
775232	2		NO	1338391	1174006	42		586.94				
84727	3	1a	YES	1358901	1157655	38	6	204.92	15.0	190		
81872	3	1b	YES	1358901	1157655	62	6	204.92	43.0	162		
607884	3	2	YES	1360191	1157628	78	6	244.66	51.0	194	172	167
363605	3	3a	YES	1361486	1157598	96	6	303.49	66.0	237		
85242	3	3b	YES	1361486	1157598	60	6	303.49	51.0	252		
346627	3	3c	YES	1361486	1157598	178	6	303.49	77.0	226		
77036	3	4a	YES	1361532	1158965	185	6	368.16	154.0	214	188	183
403190	3	4b	YES	1361532	1158965	175	6	368.16	128.0	240		
315216	3	4c	YES	1361532	1158965	118	6	368.16	95.0	273		
370414	3	5	YES	1361576	1160333	178	6	496.20	151.0	345	328	318
304047	4	1	YES	1411075	1172218	100	6	389.64	20.0	370	325	305
82436	4	2a	YES	1411054	1170892	162	8	364.52				
85463	4	2b	YES	1411054	1170892	78	8	364.52	48.0	317	307	287
424024	4	3a	YES	1412382	1170869	90	6	356.92	36.0	321		
1595906	4	3b	YES	1412382	1170869	28	6	356.92				
86247	4	4a	YES	1414993	1169454	40	6	323.54	13.0	311		
190227	4	4b	YES	1414993	1169454	40	6	323.54	14.0	310		
419400	4	4c	YES	1414993	1169454	37	6	323.54	27.0	297		
407117	4	5	YES	1417644	1169367	36	6	333.32	2.0	331		
74997	4	6	YES	1420290	1168015	38	6	353.87	20.0	334		
79781	4	7a	YES	1421552	1165354	65	6	347.68	12.0	336	289	284
84508	4	7b	YES	1421552	1165354	60	6	347.68	18.7	329	295	288
837464	4	7c	YES	1421552	1165354	37	6	347.68	7.0	341	316	311
84190	4	8	YES	1421508	1164015	40	6	359.14	10.0	349		
1595915	4		NO	1412382	1170869	28	6	356.92				
76981	5	1	YES	1380816	1085385	389	6	492.07			108	103
75009	5	2	YES	1381440	1084689	61	6	463.62	30.0	434	406	403
75282	5	3a	YES	1382746	1084649	58	6	444.58	41.0	404	391	386
235215	5	3b	YES	1382746	1084649	75	6	444.58	40.0	405		
285199	5	3c	YES	1382746	1084649	20	6	444.58	26.0	419	380	375
81339	5	4	YES	1384072	1084607	40	6	417.99	29.0	389		
385624	5	5	YES	1385466	1085897	54	6	414.24	30.0	384		
330174	5	6	YES	1386801	1085849	59	6	413.18	29.0	384	359	354
85612	5	7	YES	1388111	1084479	61	6	427.50	30.0	397	369	366
81763	5	8	YES	1388090	1083158	80		427.89	7.4	420	353	348
80905	5	9a	YES	1389425	1083096	132	6	474.74	90.0	385	348	343
84552	5	9b	YES	1389425	1083096	132	6	474.74	99.0	376	348	343
715604	5	9c	YES	1389425	1083096	131	6	474.74	74.0	401	349	344
314148	5	10	YES	1390731	1083073	137	6	550.06	105.0	445	418	413
84987	5	11a	YES	1392038	1083050	180	6	581.46	140.0	441		
314150	5	11b	YES	1392038	1083050	132	6	581.46	120.0	461	454	449
443909	5	11c	YES	1392038	1083050	178	6	581.46	119.0	462	408	403
82974	5	12	YES	1393346	1083027	180	6	588.98	155.0	434		
314136	5		NO	1382746	1084649	58	6	444.58	25.0	420	53	58
1816836	5		NO	1393346	1083027	101	6	588.98	129.0	460		
76610	5		NO	1382746	1084649	58	6	444.58	24.0	421	53	58
90853	5		NO	1382746	1084649	60	6	444.58	40.0	405	55	60
81857	5		NO	1389425	1083096	133	6	474.74	82.0	393		
325835	5		NO	1392038	1083050	157	6	581.46	118.0	463	152	157
83700	5		NO	1392038	1083050	205	6	581.46	145.0	436	200	205
344931	5		NO	1392038	1083050	140	6	581.46	128.0	453		
86031	5		NO	1392038	1083050	193	6	581.46	160.0	421		



Appendix B

Transcribed Well Log
Lithology and Interpreted
Hydrostratigraphic Units

Ecology ID	Site #	Point on Cross Sections	Drawn on Cross Section?	Depth to Top of Unit (ft bgs)	Depth to Bottom of Unit (ft bgs)	Lithology on Well Log	Generalized Lithology Group (Hydrostratigraphic Unit)
1003353	1	1	YES	0	5	Till, gravely sand	Sand and Gravel
1003353	1	1	YES	5	20	Gravel with sand	Sand and Gravel
1003353	1	1	YES	20	40	Sandy, gravely, silt	Sand
74241	1	2	YES	0	39	Sand and gravel	Sand and Gravel
74241	1	2	YES	39	56	Water bearing gravel	Sand and Gravel
74762	1	3a	YES	0	25	Gravel	Sand and Gravel
74762	1	3a	YES	25	47	Gravel and water	Sand and Gravel
74762	1	3a	YES	47	48	Sand and clay	Sand
85860	1	3b	YES	0	40	Brown clay and gravel	Clay, Sand Clay, or Gravelly Clay
85860	1	3b	YES	40	95	water and gravel	Sand and Gravel
85860	1	3b	YES	95	100	water, fine sand and wood	Sand
342227	1	4	YES	0	2	Topsoil	Clay, Sand Clay, or Gravelly Clay
342227	1	4	YES	2	14	Brown clay and sand	Clay, Sand Clay, or Gravelly Clay
342227	1	4	YES	14	24	Brown clay sand and gravel	Clay, Sand Clay, or Gravelly Clay
342227	1	4	YES	24	42	gravel and sand	Sand and Gravel
342227	1	4	YES	42	49	gravel sand and water	Sand and Gravel
342227	1	4	YES	49	50	Brown clay	Clay, Sand Clay, or Gravelly Clay
342227	1	4	YES	50	59	Sand some gravel and water	Sand and Gravel
76609	1	5a	YES	0	20	Clay Brown	Clay, Sand Clay, or Gravelly Clay
76609	1	5a	YES	20	40	Clay mix with sand, brown	Clay, Sand Clay, or Gravelly Clay
76609	1	5a	YES	40	47	sand and gravel	Sand and Gravel
81007	1	5b	YES	0	16	Sand and gravel	Sand and Gravel
81007	1	5b	YES	10	24	Clay	Clay, Sandy Clay, or Gravelly Clay
81007	1	5b	YES	24	34	Sand and gravel with clay	Sand and Gravel
81007	1	5b	YES	34	40	Sand and gravel	Sand and Gravel
81007	1	5b	YES	40	50	Sand, gravel, and water	Sand and Gravel
79542	1	6a	YES	0	2	Top soil	Silt or Silty Sand
79542	1	6a	YES	2	26	Silt and sand	Silt or Silty Sand
79542	1	6a	YES	26	33	Clay	Clay, Sandy Clay, or Gravelly Clay
79542	1	6a	YES	33	39	Sand	Sand
79542	1	6a	YES	39	42	Sand and gravel	Sand and Gravel
79542	1	6a	YES	42	45	Clay	Clay, Sandy Clay, or Gravelly Clay
79542	1	6a	YES	45	52	Gravel, sand, and water	Sand and Gravel
79542	1	6a	YES	52	63	Sand and water	Sand
79542	1	6a	YES	63	72	Clay, sand and gravel	Clay, Sandy Clay, or Gravelly Clay
79542	1	6a	YES	72	80	Gravel, sand, and water	Sand and Gravel
79542	1	6a	YES	80	89	Gravel, sand, and clay	Sand and Gravel
79542	1	6a	YES	89	95	Gravel and sand	Sand and Gravel
79542	1	6a	YES	95	120	Gravel, sand, and clay	Sand and Gravel
338585	1	6b	YES	0	2	Top soil	Sand
338585	1	6b	YES	2	12	Sand and silt	Sand
338585	1	6b	YES	12	41	Sand, silt, clay	Sand
338585	1	6b	YES	41	54	Gravel and sand	Sand and Gravel
338585	1	6b	YES	54	79	Clay and gravel	Clay, Sandy Clay, or Gravelly Clay
338585	1	6b	YES	79	90	Gravel and sand	Sand and Gravel
338585	1	6b	YES	90	103	Clay and gravel	Clay, Sandy Clay, or Gravelly Clay
338585	1	6b	YES	103	111	Gravel and sand	Sand and Gravel
342228	1	6c	YES	0	4	Top soil	Clay, Sandy Clay, or Gravelly Clay
342228	1	6c	YES	4	36	Clay, sand and gravel	Clay, Sandy Clay, or Gravelly Clay
342228	1	6c	YES	36	48	Clay	Clay
342228	1	6c	YES	48	60	Sand, gravel, water	Sand and Gravel
342228	1	6c	YES	60	66	Clay, sand	Clay, Sandy Clay, or Gravelly Clay
342228	1	6c	YES	66	78	Sand, gravel, water	Sand and Gravel
441246	1	7	YES	0	1	Topsoil	Sand and Gravel
441246	1	7	YES	1	15	Brown sand gravel silt	Sand and Gravel
441246	1	7	YES	15	17	Brown silty sand seepage	Silt or Silty Sand
441246	1	7	YES	17	22	Brown clay	Clay, Sand Clay, or Gravelly Clay
441246	1	7	YES	22	32	Gray fine sand silt water	Silt or Silty Sand
441246	1	7	YES	32	41	gray clay wood	Clay, Sand Clay, or Gravelly Clay
441246	1	7	YES	41	55	gray sand wood water	Sand
441246	1	7	YES	55	61	tan clay sand	Clay, Sand Clay, or Gravelly Clay
441246	1	7	YES	61	76	brown gravel sand water	Sand and Gravel
441246	1	7	YES	76	80	brown gravel clay	Sand and Gravel

Ecology ID	Site #	Point on Cross Sections	Drawn on Cross Section?	Depth to Top of Unit (ft bgs)	Depth to Bottom of Unit (ft bgs)	Lithology on Well Log	Generalized Lithology Group (Hydrostratigraphic Unit)
79264	1	8	YES	1	14	sand and gravel	Sand and Gravel
79264	1	8	YES	14	28	Clay sand and gravel	Clay, Sand Clay, or Gravelly Clay
79264	1	8	YES	28	34	fine sand	Sand
79264	1	8	YES	34	40	Sand gravel and water	Sand and Gravel
79264	1	8	YES	40	60	Clay blue	Clay, Sand Clay, or Gravelly Clay
79264	1	8	YES	60	62	Sand gravel and water	Sand and Gravel
256214	1	9	YES	0	25	loose gravel and brown silty sand	Sand and Gravel
256214	1	9	YES	25	30	gravel and brown clay	Sand and Gravel
256214	1	9	YES	30	88	gravel sand and brown silt	Sand and Gravel
256214	1	9	YES	88	103	gravel sand and brown clay	Sand and Gravel
256214	1	9	YES	103	117	gray clay and gravel	Clay, Sand Clay, or Gravelly Clay
256214	1	9	YES	117	138.5	fine gray sand and water	Sand
87284	1	10	YES	1	28	Clay, sand and gravel	Clay, sand clay, or gravelly clay
87284	1	10	YES	28	31	Sand	Sand
87284	1	10	YES	31	80	Sand gravel	Sand and Gravel
87284	1	10	YES	80	81	sand gravel, clay mud	Clay, Sand Clay, or Gravelly Clay
87284	1	10	YES	81	110	Sand gravel	Sand and Gravel
87284	1	10	YES	110	130	sand gravel clay water	Sand and Gravel
87284	1	10	YES	130	150	Blue clay	Clay, sand clay, or gravelly clay
87284	1	10	YES	150	152	fine sand	Sand
87284	1	10	YES	152	160	sand gravel	Sand and Gravel
87284	1	10	YES	160	190	clay sand and gravel and water	Clay, Sand Clay, or Gravelly Clay
87284	1	10	YES	190	200	sand gravel water	Sand and Gravel
74606	1	-	NO	0	15	Sand	n/a
74606	1	-	NO	15	27	Sand and gravel	n/a
74606	1	-	NO	27	34.6	Sand, gravel, and water	n/a
78586	1	-	NO	0	16	gravel and boulders	n/a
78586	1	-	NO	16	46	clay, brown and small gravel	n/a
78586	1	-	NO	46	53	gravel and sand	n/a
78586	1	-	NO	53	58	Sand	n/a
78586	1	-	NO	58	60	Boulder	n/a
78586	1	-	NO	60	64	Gravel and sand	n/a
78586	1	-	NO	64	115	Clay, grey and gravel	n/a
78586	1	-	NO	115	118	Gravel, water bearing	n/a
78586	1	-	NO	118	126	Clay and gravel	n/a
405599	1	-	NO	0	2	Top soil	n/a
405599	1	-	NO	2	12	Silty sand and clay	n/a
405599	1	-	NO	12	25	Silt and gravel	n/a
405599	1	-	NO	25	40	Sand and silt	n/a
405599	1	-	NO	40	56	Sand and water	n/a
405599	1	-	NO	56	60	Clay, sand and gravel	n/a
86862	1	-	NO	0	2	Top soil	n/a
86862	1	-	NO	2	13	Silty sand	n/a
86862	1	-	NO	13	20	Silty sand	n/a
86862	1	-	NO	20	27	Clay and gravel	n/a
86862	1	-	NO	27	43	Sand, wood, and water	n/a
86862	1	-	NO	43	58.5	Gravel, sand, and water	n/a
256216	1	-	NO	0	14	Sandy clay	n/a
256216	1	-	NO	14	32	Sandy gravel	n/a
256216	1	-	NO	32	42	Sand, gravel, and water	n/a
256216	1	-	NO	42	46	Gravel, water	n/a
304037	1	-	NO	0	1	Top soil	n/a
304037	1	-	NO	1	10	Sand, gravel, and silt	n/a
304037	1	-	NO	10	18	Sand, gravel, and silt	n/a
304037	1	-	NO	18	34	Silt, sand, and clay	n/a
304037	1	-	NO	34	40	Silt, sand, wood, and seepage	n/a
304037	1	-	NO	40	45	Sand, water	n/a
304037	1	-	NO	45	57.5	Gravel, sand, and water	n/a

Ecology ID	Site #	Point on Cross Sections	Drawn on Cross Section?	Depth to Top of Unit (ft bgs)	Depth to Bottom of Unit (ft bgs)	Lithology on Well Log	Generalized Lithology Group (Hydrostratigraphic Unit)
81039	1	-	NO	0	30	Clay	n/a
81039	1	-	NO	30	40	Sand and gravel	n/a
81039	1	-	NO	40	58	Sand, gravel, and water	n/a
81039	1	-	NO	58	69	Clay	n/a
81039	1	-	NO	69	118	Clay, gravel, and water	n/a
81039	1	-	NO	118	120	Sand, gravel, and water	n/a
86863	1	-	NO	0	14	Top soil	n/a
86863	1	-	NO	14	21	Clay, mud, soupy	n/a
86863	1	-	NO	21	45	Clay, sand and gravel	n/a
86863	1	-	NO	45	60	Clay, sand, gravel, and water	n/a
81365	1	-	NO	0	10	Sandy gravel with cobbles	n/a
468522	1	-	NO	0	1	Top soil and gravel	n/a
468522	1	-	NO	1	6	Silty sand and gravel	n/a
468522	1	-	NO	6	15	Sand and silt	n/a
468522	1	-	NO	15	36	Silty sand and gravel	n/a
468522	1	-	NO	36	50	Sand, gravel, and water	n/a
468522	1	-	NO	50	60	Gravel, sand, and water	n/a
1003361	1	-	NO	0	5	Till, gravely sand	n/a
1003361	1	-	NO	5	20	Gravel with sand	n/a
1003361	1	-	NO	20	40	Sandy, gravely, silt	n/a
1003417	1	-	NO	0	5	Till, gravely sand	n/a
1003417	1	-	NO	5	20	Gravel with sand	n/a
1003417	1	-	NO	20	40	Sandy, gravely, silt	n/a
1003613	1	-	NO	0	5	Till, gravely sand	n/a
1003613	1	-	NO	5	20	Gravel with sand	n/a
1003613	1	-	NO	20	40	Sandy, gravely, silt	n/a
1003488	1	-	NO	0	5	Till, gravely sand	n/a
1003488	1	-	NO	5	20	Gravel with sand	n/a
1003488	1	-	NO	20	40	Sandy, gravely, silt	n/a
1003499	1	-	NO	0	5	Till, gravely sand	n/a
1003499	1	-	NO	5	20	Gravel with sand	n/a
1003499	1	-	NO	20	40	Sandy, gravely, silt	n/a
760458	2	1a	YES	0	30	Boulders and sand	Sand and Gravel
760458	2	1a	YES	30	44	Clay and sand	Clay, Sandy Clay, or Gravely Clay
760458	2	1a	YES	44	50	Sand, gravel, water	Sand and Gravel
760481	2	1b	YES	0	20	Sand, gravel, boulders	Sand and Gravel
760481	2	1b	YES	20	28	Hard pan	Hard Pan
760481	2	1b	YES	28	35	Clay, sand, gravel	Clay, Sandy Clay, or Gravely Clay
760481	2	1b	YES	35	50	Sand, gravel, water	Sand and Gravel
86851	2	2a	YES	0	45	Sand, gravel, boulders	Sand and Gravel
86851	2	2a	YES	45	61	Clay	Clay, Sandy Clay, or Gravely Clay
86851	2	2a	YES	61	100	Clay, sand, and gravel	Clay, Sandy Clay, or Gravely Clay
86851	2	2a	YES	100	114	Sand, gravel, water	Sand and Gravel
86861	2	2b	YES	0	4	Clay, sand, and gravel	Sand and Gravel
86861	2	2b	YES	4	41	Sand, gravel, and boulders	Sand and Gravel
86861	2	2b	YES	41	49	Blue clay	Clay, Sandy Clay, or Gravely Clay
86861	2	2b	YES	49	63	Blue gray fine sand	Sand
86861	2	2b	YES	63	90	Brown clay, fine sand	Clay, Sandy Clay, or Gravely Clay
86861	2	2b	YES	90	100	Course brown sand	Sand
86861	2	2b	YES	100	107	Sand, gravel, water	Sand and Gravel
86190	2	2c	YES	0	30	Clay, sand, and boulder	Sand and Gravel
86190	2	2c	YES	30	36	Hard pan	Hard Pan
86190	2	2c	YES	36	41	Sand, gravel, water	Sand and Gravel
86190	2	2c	YES	41	81	Heaving sand	Sand
86190	2	2c	YES	81	95	Heaving sand and gravel	Sand and Gravel
86190	2	2c	YES	95	98	Sand and gravel	Sand and Gravel
87040	2	3a	YES	0	10	Gravel	Sand and Gravel
87040	2	3a	YES	10	21	Sand gravel	Sand and Gravel
87040	2	3a	YES	21	35	Clay sand	Clay, Sandy Clay, or Gravely Clay
87040	2	3a	YES	35	60	Sand gravel	Sand and Gravel
87040	2	3a	YES	60	70	Water gravel	Sand and Gravel
87040	2	3a	YES	70	87	Gravel water	Sand and Gravel

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377851	2	3b	YES	0	28	Sand	Sand
377851	2	3b	YES	28	41	Silt, sand, gravel	Silt or Silty Sand
377851	2	3b	YES	41	63	Blue clay, fine sand	Clay, Sandy Clay, or Gravely Clay
377851	2	3b	YES	63	80	Silt, sand, gravel	Silt or Silty Sand
377851	2	3b	YES	80	87	Gravel, some silt, water	Sand and Gravel
377851	2	3b	YES	87	100	Sand, gravel, water	Sand and Gravel
377851	2	3b	YES	100	120	Sand and gravel	Sand and Gravel
760467	2	3c	YES	0	32	Sand	Sand
760467	2	3c	YES	32	70	Sand, gravel, clay	Sand and Gravel
760467	2	3c	YES	70	74	Brown clay, some water	Clay, Sandy Clay, or Gravely Clay
760467	2	3c	YES	74	82	Hard pan	Hard Pan
760467	2	3c	YES	82	90	Sand, gravel, clay	Sand and Gravel
760467	2	3c	YES	90	93	Sand, gravel, water	Sand and Gravel
87047	2	4	YES	0	31	Fine sand and clay	Clay, Sandy Clay, or Gravely Clay
87047	2	4	YES	31	47	Sand, gravel, boulders	Sand and Gravel
87047	2	4	YES	47	69	Clay	Clay, Sandy Clay, or Gravely Clay
87047	2	4	YES	69	80	Clay and fine sand	Clay, Sandy Clay, or Gravely Clay
87047	2	4	YES	80	100	Fine sand and water	Sand
87047	2	4	YES	100	103	Coarser sand and water	Sand
87047	2	4	YES	103	106	Sand, gravel, water	Sand and Gravel
81990	2	5	YES	0	28	Sandy clay	Clay, Sandy Clay, or Gravely Clay
81990	2	5	YES	28	32	Hard pan	Hard Pan
81990	2	5	YES	32	39	Compact gravel and water	Sand and Gravel
760431	2	6	YES	0	29	Clay	Clay, Sandy Clay, or Gravely Clay
760431	2	6	YES	29	42	Clay, sand, and gravel	Clay, Sandy Clay, or Gravely Clay
760431	2	6	YES	42	73	clay, sand, gravel, and water	Clay, Sandy Clay, or Gravely Clay
760431	2	6	YES	73	75	sand and gravel	Sand and Gravel
391407	2	7	YES	0	6	Top soil	Sand and Gravel
391407	2	7	YES	6	28	Silt, sand, gravel	Sand and Gravel
391407	2	7	YES	28	80	Hard pan	Hard Pan
391407	2	7	YES	80	120	Clay, sand, gravel, water	Clay, Sandy Clay, or Gravely Clay
391407	2	7	YES	120	140	Sand, gravel, water	Sand and Gravel
760507	2	8a	YES	0	10	Topsoil	Sand and Gravel
760507	2	8a	YES	10	56	Sand and gravel	Sand and Gravel
760507	2	8a	YES	56	80	Hard pan	Hard Pan
760507	2	8a	YES	80	85	Sand, gravel, some water	Sand and Gravel
760507	2	8a	YES	85	120	Silt, sand, gravel	Silt or Silty Sand
760507	2	8a	YES	120	125	Sand, gravel, some water	Sand and Gravel
760507	2	8a	YES	125	170	Sand and gravel	Sand and Gravel
760507	2	8a	YES	170	180	Sand, gravel, water	Sand and Gravel
422191	2	8b	YES	0	20	Silt, sand, gravel	Silt or Silty Sand
422191	2	8b	YES	20	48	Sand and gravel	Sand and Gravel
422191	2	8b	YES	48	54	Blue clay	Clay, Sandy Clay, or Gravely Clay
422191	2	8b	YES	54	68	Sand and gravel	Sand and Gravel
422191	2	8b	YES	68	80	Sand, gravel, water	Sand and Gravel
407120	2	8c	YES	0	23	Boulder and sand	Sand and Gravel
407120	2	8c	YES	23	39	Sand and gravel	Sand and Gravel
407120	2	8c	YES	39	45	Fine sand	Sand
407120	2	8c	YES	45	55	Sand, gravel, water	Sand and Gravel
87052	2	9	YES	0	10	Clay	Clay, Sandy Clay, or Gravely Clay
87052	2	9	YES	10	50	Clay, sand, gravel	Clay, Sandy Clay, or Gravely Clay
87052	2	9	YES	50	61	Sand and gravel	Sand and Gravel
87052	2	9	YES	61	90	Fine sand	Sand
87052	2	9	YES	90	290	Clay, sand, gravel	Clay, Sandy Clay, or Gravely Clay
87052	2	9	YES	290	300	Sand, gravel, water	Sand and Gravel
87052	2	9	YES	300	340	Clay, sand, gravel	Clay, Sandy Clay, or Gravely Clay
760460	2	-	NO	0	30	Clay, sand, boulder	n/a
760460	2	-	NO	30	36	Hard pan	n/a
760460	2	-	NO	36	41	Sand, gravel, water	n/a
760460	2	-	NO	41	81	Heavy sand	n/a
760460	2	-	NO	81	95	Heavy sand, gravel	n/a
760460	2	-	NO	95	98	Sand, gravel, water	n/a

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86831	2	-	NO	0	32	Sand	n/a
86831	2	-	NO	32	70	Sand, gravel, and clay	n/a
86831	2	-	NO	70	74	Brown clay	n/a
86831	2	-	NO	74	82	Water	n/a
86831	2	-	NO	82	90	Hard pan	n/a
86831	2	-	NO	90	93	Sand, gravel, water	n/a
640635	2	-	NO	0	15	Fill	n/a
640635	2	-	NO	15	25	Loose alluvium, brown cobbles	n/a
640635	2	-	NO	25	30	Clay, silty till	n/a
640635	2	-	NO	30	42	Tight till, brown, cobbles	n/a
640635	2	-	NO	42	50	Clay altered black shale	n/a
640639	2	-	NO	0	10	Fill	n/a
640639	2	-	NO	10	20	Loose soil, brown cobbles	n/a
640639	2	-	NO	20	24	Boulder	n/a
640639	2	-	NO	24	35	Till, small cobbles, clay	n/a
640639	2	-	NO	35	42.5	Weathered limestone	n/a
86830	2	-	NO	0	30	Gravel, clay, boulders	n/a
86830	2	-	NO	30	34	Sand, clay	n/a
86830	2	-	NO	34	42	Sand, gravel, water	n/a
87039	2	-	NO	0	20	Boulder	n/a
87039	2	-	NO	20	33	Clay	n/a
87039	2	-	NO	33	52	Clay, sand, and gravel	n/a
87039	2	-	NO	52	65	Sand, gravel, water	n/a
87041	2	-	NO	0	18	Boulder	n/a
87041	2	-	NO	18	27	Clay, sand, and gravel	n/a
87041	2	-	NO	27	31	Sand	n/a
87041	2	-	NO	31	47	Clay, sand, and gravel	n/a
87041	2	-	NO	47	63	Sand, gravel, water	n/a
87043	2	-	NO	0	22	Boulder	n/a
87043	2	-	NO	22	31	Clay, sand, and gravel	n/a
87043	2	-	NO	31	46	Blue clay	n/a
87043	2	-	NO	46	53	Clay, sand, and gravel	n/a
87043	2	-	NO	53	61	Fine sand	n/a
87043	2	-	NO	61	76	Sand, gravel, water	n/a
87044	2	-	NO	0	23	Boulder	n/a
87044	2	-	NO	23	41	Clay and fine sand	n/a
87044	2	-	NO	41	53	Blue clay	n/a
87044	2	-	NO	53	61	Sand, gravel, water	n/a
87045	2	-	NO	0	36	Sand, gravel, boulders	n/a
87045	2	-	NO	36	42	Clay and sand	n/a
87045	2	-	NO	42	55	Clay, sand, gravel	n/a
87045	2	-	NO	55	60	Sand, gravel, water	n/a
87046	2	-	NO	0	30	Sand, gravel, boulders	n/a
87046	2	-	NO	30	44	Clay and sand	n/a
87046	2	-	NO	44	56	Clay, sand, gravel	n/a
87046	2	-	NO	56	60	Sand, gravel, water	n/a
760471	2	-	NO	0	35	Boulder, sand, little clay	n/a
760471	2	-	NO	35	46	Sand and clay	n/a
760471	2	-	NO	46	60	Sand, gravel, water	n/a
760492	2	-	NO	0	3	Sand	n/a
760492	2	-	NO	3	40	Sand and gavel	n/a
760492	2	-	NO	41	43	Sand, clay, some water	n/a
760492	2	-	NO	43	80	Gray clay, sand	n/a
760492	2	-	NO	80	87	Clay, sand, gravel, water	n/a
86175	2	-	NO	0	35	Boulders, sand, and little clay	n/a
86175	2	-	NO	35	46	Sand and clay	n/a
86175	2	-	NO	46	60	Sand, gravel, water	n/a
86834	2	-	NO	0	30	Gravel and boulders	n/a
86834	2	-	NO	30	41	Sand, gravel, water	n/a
117726	2	-	NO	0	38.5	Clay	n/a
775232	2	-	NO	0	41.5	Sand and gravel	n/a

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84727	3	1a	YES	0	7	Brown sand and silt	Sand
84727	3	1a	YES	7	15	Brown Clay	Clay, Sandy Clay, or Gravelly Clay
84727	3	1a	YES	15	38	Sand, gravel, water	Sand and Gravel
81872	3	1b	YES	0	18	Sand, gravel, boulders	Sand and Gravel
81872	3	1b	YES	18	40	Blue Clay	Clay, Sandy Clay, or Gravelly Clay
81872	3	1b	YES	40	50	Sand and Gravel	Sand and Gravel
81872	3	1b	YES	50	62	Sand, gravel, water	Sand and Gravel
607884	3	2	YES	0	1	Top Soil	Sand
607884	3	2	YES	2	14	Brown sand clay	Sand
607884	3	2	YES	14	22	Gray Sand clay	Sand
607884	3	2	YES	22	53	Gray gravel	Sand and Gravel
607884	3	2	YES	53	62	Gray gravel, sand, water	Sand and Gravel
607884	3	2	YES	62	78	gravel, water	Sand and Gravel
363605	3	3a	YES	0	18	Silty top soil	Silt or Silty Sand
363605	3	3a	YES	18	22	Sand	Sand
363605	3	3a	YES	22	28	Sand and Gravel	Sand and Gravel
363605	3	3a	YES	28	40	Fine sand	Sand
363605	3	3a	YES	40	89	Sand, gravel, silt	Sand and Gravel with some silt or silty sand
363605	3	3a	YES	89	96	Sand, gravel, water	Sand and Gravel
85242	3	3b	YES	0	56	Brown Clay and gravel	Clay, Sandy Clay, or Gravelly Clay
85242	3	3b	YES	56	60	Water and gravel	Sand and Gravel
85242	3	3b	YES	60	60	Blue Clay	Clay, Sandy Clay, or Gravelly Clay
346627	3	3c	YES	0	24	Clay dark gray	Clay, Sandy Clay, or Gravelly Clay
346627	3	3c	YES	24	31	Clay blue	Clay, Sandy Clay, or Gravelly Clay
346627	3	3c	YES	31	34	Sand	Sand
346627	3	3c	YES	34	110	Clay blue	Clay, Sandy Clay, or Gravelly Clay
346627	3	3c	YES	110	118	Sand	Sand
346627	3	3c	YES	118	140	Clay brown	Clay, Sandy Clay, or Gravelly Clay
346627	3	3c	YES	140	160	Sand and Gravel	Sand and Gravel
346627	3	3c	YES	160	163	Silt gray	Silt or Silty Sand
346627	3	3c	YES	163	178	Sand, gravel, water	Sand and Gravel
77036	3	4a	YES	0	1	Top Soil	Clay, Sandy Clay, or Gravelly Clay
77036	3	4a	YES	1	30	Brown clay and gravel	Clay, Sandy Clay, or Gravelly Clay
77036	3	4a	YES	30	83	Brown sandy clay	Clay, Sandy Clay, or Gravelly Clay
77036	3	4a	YES	83	155	Brown clay and gravel	Clay, Sandy Clay, or Gravelly Clay
77036	3	4a	YES	155	175	Blue clay and gravel	Clay, Sandy Clay, or Gravelly Clay
77036	3	4a	YES	175	185	Water, gravel, sand	Sand and Gravel
403190	3	4b	YES	0	10	Silt sand	Silt or Silty Sand
403190	3	4b	YES	10	12	Boulder	Sand and Gravel
403190	3	4b	YES	12	46	Large gravel and Sand	Sand and Gravel
403190	3	4b	YES	46	105	Hard pan	Hard Pan
403190	3	4b	YES	105	131	Sand and Gravel	Sand and Gravel
403190	3	4b	YES	131	149	Clay Blue	Clay, Sandy Clay, or Gravelly Clay
403190	3	4b	YES	149	153	Clay Mud	Clay, Sandy Clay, or Gravelly Clay
403190	3	4b	YES	153	160	Water, real fine sand	Sand and Gravel
403190	3	4b	YES	160	175	Sand, gravel, water	Sand and Gravel
315216	3	4c	YES	0	6	Top Soil	Sand and Gravel
315216	3	4c	YES	6	31	Sand and Gravel	Sand and Gravel
315216	3	4c	YES	31	36	Clay	Clay, Sandy Clay, or Gravelly Clay
315216	3	4c	YES	36	41	Sand	Sand
315216	3	4c	YES	41	57	Sand and Gravel	Sand and Gravel
315216	3	4c	YES	57	62	Clay	Clay, Sandy Clay, or Gravelly Clay
315216	3	4c	YES	62	78	Sand	Sand
315216	3	4c	YES	78	108	Clay, sand, gravel	Clay, Sandy Clay, or Gravelly Clay
315216	3	4c	YES	108	118	Sand, gravel, water	Sand and Gravel

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370414	3	5	YES	0	4	Brown top soil, cobbles	Sand and Gravel
370414	3	5	YES	4	10	Brown gravel and sand	Sand and Gravel
370414	3	5	YES	10	14	Brown Sand	Sand
370414	3	5	YES	14	30	Brown gravel and sand	Sand and Gravel
370414	3	5	YES	30	31	Brown clay	Clay, Sandy Clay, or Gravely Clay
370414	3	5	YES	31	73	Brown gravel, clay, silt	Sand and Gravel
370414	3	5	YES	73	85	Gray gravel, clay, silt	Sand and Gravel
370414	3	5	YES	85	115	Brown gravel, clay, silty sand	Sand and Gravel
370414	3	5	YES	115	127	Gray clay, gravel, silty sand	Clay, Sandy Clay, or Gravely Clay
370414	3	5	YES	127	133	Brown gravel, sand, clay, silt	Sand and Gravel
370414	3	5	YES	133	142	Gray clay, gravel, silty sand	Clay, Sandy Clay, or Gravely Clay
370414	3	5	YES	142	153	Brown clay, gravel, silty sand	Clay, Sandy Clay, or Gravely Clay
370414	3	5	YES	153	162	Gray clay, gravel, silty sand	Clay, Sandy Clay, or Gravely Clay
370414	3	5	YES	162	178.5	Tan gravel, sand, fine sand, water	Sand and Gravel
304047	4	1	YES	0	40	Sand, gravel, clay	Sand and Gravel
304047	4	1	YES	40	46	sand	Sand
304047	4	1	YES	46	60	clay	Clay, Sandy Clay, or Gravely Clay
304047	4	1	YES	60	80	sand, water, gravel, clay	Sand and Gravel
304047	4	1	YES	80	100	shale, water	Bedrock (Shale)
82436	4	2a	YES	0	4	Top soil	Silt or Silty Sand
82436	4	2a	YES	4	28	Silt with gravel lenses	Silt or Silty Sand
82436	4	2a	YES	28	137	Silt with some gravel and sand all the way	Silt or Silty Sand
82436	4	2a	YES	137	162	Granite	Bedrock (Granite)
85463	4	2b	YES	0	37	Dirty sand and gravel	Sand and Gravel
85463	4	2b	YES	37	40	water, sand gravel	Sand and Gravel
85463	4	2b	YES	40	65	Brown clay and gravel	Clay, Sandy Clay, or Gravely Clay
85463	4	2b	YES	65	78	Gravel and water	Sand and Gravel
424024	4	3a	YES	0	6	Top soil	Sand and Gravel
424024	4	3a	YES	6	35	Sand, gravel	Sand and Gravel
424024	4	3a	YES	35	41	Clay Blue	Clay, Sandy Clay, or Gravely Clay
424024	4	3a	YES	41	78	Silt, Sand, and gravel	Silt or Silty Sand
424024	4	3a	YES	78	90	Sand, gravel, water	Sand and Gravel
1595906	4	3b	YES	0	5	Top soil	Sand and Gravel
1595906	4	3b	YES	5	28	Reddish/brown silty gravels into bedrock	Sand and Gravel
1595906	4	3b	YES	28	28	Bedrock	Bedrock (not identified)
86247	4	4a	YES	0	1	Top soil	Sand
86247	4	4a	YES	1	7	brown silty sand	Sand
86247	4	4a	YES	7	13	brown cobbles and sand	Sand and Gravel
86247	4	4a	YES	13	13	gravel and water	Sand and Gravel
190227	4	4b	YES	1	6	Top soil	Sand and Gravel
190227	4	4b	YES	6	30	Sand and Gravel	Sand and Gravel
190227	4	4b	YES	30	40	Sand and Gravel and Water	Sand and Gravel
419400	4	4c	YES	0	6	Top soil	Sand and Gravel
419400	4	4c	YES	6	24	Sand and gravel	Sand and Gravel
419400	4	4c	YES	23	27	silt	Silt or Silty Sand
419400	4	4c	YES	27	31	Sand and gravel	Sand and Gravel
419400	4	4c	YES	31	37	Sand, gravel, water	Sand and Gravel
407117	4	5	YES	0	6	Top soil	Sand and Gravel
407117	4	5	YES	6	23	Sand, gravel, silt	Sand and Gravel
407117	4	5	YES	23	30	Sand and gravel	Sand and Gravel
407117	4	5	YES	30	36	Sand, gravel, water	Sand and Gravel
74997	4	6	YES	0	3	Top soil	Clay, Sandy Clay, or Gravely Clay
74997	4	6	YES	3	32	Gravel and clay	Clay, Sandy Clay, or Gravely Clay
74997	4	6	YES	32	38	Water and gravel	Sand and Gravel
79781	4	7a	YES	0	4	Brown sandy loam	Silt or Silty Sand
79781	4	7a	YES	4	14	Gray cobbles and clay	Clay, Sandy Clay, or Gravely Clay
79781	4	7a	YES	14	24	cobbles and clay with seepage	Clay, Sandy Clay, or Gravely Clay
79781	4	7a	YES	24	40	Gravel, clay, and sand	Clay, Sandy Clay, or Gravely Clay
79781	4	7a	YES	40	42	Gravel, clay, and sand with seepage	Clay, Sandy Clay, or Gravely Clay
79781	4	7a	YES	42	53	Silt and sand	Silt or Silty Sand
79781	4	7a	YES	53	69	Sand with some gravel	Sand and Gravel

Ecology ID	Site #	Point on Cross Sections	Drawn on Cross Section?	Depth to Top of Unit (ft bgs)	Depth to Bottom of Unit (ft bgs)	Lithology on Well Log	Generalized Lithology Group (Hydrostratigraphic Unit)
84508	4	7b	YES	0	4	Sand, light brown	Sand
84508	4	7b	YES	4	15	Clay, gravel, and clay, gray	Clay, Sandy Clay, or Gravely Clay
84508	4	7b	YES	15	28	Clay, Gravel, and cobble, gray	Clay, Sandy Clay, or Gravely Clay
84508	4	7b	YES	28	39	Clay and sand (seepage), brown	Clay, Sandy Clay, or Gravely Clay
84508	4	7b	YES	39	46	gravel and sand (water), brown	Sand and Gravel
84508	4	7b	YES	46	48	Clay and silt (seepage), gray	Clay, Sandy Clay, or Gravely Clay
84508	4	7b	YES	48	53	Silt and sand, yellow-brown	Silt or Silty Sand
84508	4	7b	YES	53	61	sand (water), yellow brown	Sand
837464	4	7c	YES	0	1	Top soil	Silt or Silty Sand
837464	4	7c	YES	1	12	Brown silty sand some gravel	Silt or Silty Sand
837464	4	7c	YES	12	15	Brown silty sand, wood and water	Silt or Silty Sand
837464	4	7c	YES	15	26	Tan gravel sand water	Sand and Gravel
837464	4	7c	YES	26	29	Tan gravel silt water	Sand and Gravel
837464	4	7c	YES	29	31	Tan sand gravel water	Sand and Gravel
837464	4	7c	YES	31	38	Tan sand water	Sand
837464	4	7c	YES	38	38	Tan sand silt water	Sand and Gravel
84190	4	8	YES	0	20	Dirty sand and gravel	Sand and Gravel
84190	4	8	YES	20	40	Water and gravel	Sand and Gravel
1595915	4	-	NO	0	5	Top soil	n/a
1595915	4	-	NO	5	28	Reddish/brown silty gravels into bedrock	n/a
1595915	4	-	NO	28	28	Bedrock	n/a
76981	5	1	YES	0	30	Till	Clay, Sandy Clay, or Gravely Clay
76981	5	1	YES	30	120	Sand, gravel	Sand and Gravel
76981	5	1	YES	120	160	Sand	Sand
76981	5	1	YES	160	192	Clay, sandy	Clay, Sandy Clay, or Gravely Clay
76981	5	1	YES	192	240	Sand, gravel	Sand and Gravel
76981	5	1	YES	240	275	Sand	Sand
76981	5	1	YES	275	305	Clay, sandy	Clay, Sandy Clay, or Gravely Clay
76981	5	1	YES	305	310	Sand	Sand
76981	5	1	YES	310	357	Clay, sandy	Clay, Sandy Clay, or Gravely Clay
76981	5	1	YES	357	390	Sand, coarse	Sand
75009	5	2	YES	0	30	Sandy gravel	Sand and Gravel
75009	5	2	YES	30	50	Clay	Clay, Sandy Clay, or Gravely Clay
75009	5	2	YES	50	61	Sandy gravel	Sand and Gravel
75282	5	3a	YES	0	21	Sand	Sand
75282	5	3a	YES	21	59	Gravel, sand	Sand and Gravel
235215	5	3b	YES	0	5	Silt, sand, gravel	Silt or Silty Sand
235215	5	3b	YES	5	28	Sand, gravel	Sand and Gravel
235215	5	3b	YES	28	43	Silt, sand	Silt or Silty Sand
235215	5	3b	YES	43	56	Clay, sand, gravel	Clay, Sandy Clay, or Gravely Clay
235215	5	3b	YES	56	70	Sand water	Sand
235215	5	3b	YES	70	75	Sand, gravel, water	Sand and Gravel
285199	5	3c	YES	0	18	Sand	Sand
285199	5	3c	YES	18	45	Boulders and sand	Sand and Gravel
285199	5	3c	YES	45	53	Clay	Clay, Sandy Clay, or Gravely Clay
285199	5	3c	YES	53	70	Water bearing sand	Sand
81339	5	4	YES	0	24	Top soil	Sand
81339	5	4	YES	24	40	Sand and gravel	Sand and Gravel
385624	5	5	YES	0	18	Sand	Sand
385624	5	5	YES	18	54	Sand and gravel	Sand and Gravel
330174	5	6	YES	0	59	Sand and gravel	Sand and Gravel
85612	5	7	YES	0	40	Sand and gravel	Sand and Gravel
85612	5	7	YES	40	50	Clay	Clay, Sandy Clay, or Gravely Clay
85612	5	7	YES	50	61	Sand, water	Sand
81763	5	8	YES	0	5	Top soil	Sand
81763	5	8	YES	5	15	Sand, gravel	Sand and Gravel
81763	5	8	YES	15	58	Clay	Clay, Sandy Clay, or Gravely Clay
81763	5	8	YES	58	60	Sand	Sand
81763	5	8	YES	60	75	Clay	Clay, Sandy Clay, or Gravely Clay
81763	5	8	YES	75	80	Sand	Sand

Ecology ID	Site #	Point on Cross Sections	Drawn on Cross Section?	Depth to Top of Unit (ft bgs)	Depth to Bottom of Unit (ft bgs)	Lithology on Well Log	Generalized Lithology Group (Hydrostratigraphic Unit)
80905	5	9a	YES	0	23	Top soil	Clay, Sandy Clay, or Gravelly Clay
80905	5	9a	YES	23	27	Sand	Sand
80905	5	9a	YES	27	43	Clay	Clay, Sandy Clay, or Gravelly Clay
80905	5	9a	YES	43	100	Gravel with sand	Sand and Gravel
80905	5	9a	YES	100	123	Sand	Sand
80905	5	9a	YES	123	132	Sand with gravel	Sand and Gravel
84552	5	9b	YES	0	55	Top soil	Clay, Sandy Clay, or Gravelly Clay
84552	5	9b	YES	55	65	Sand and gravel	Sand and Gravel
84552	5	9b	YES	65	78	Sand	Sand
84552	5	9b	YES	78	105	Gravel	Sand and Gravel
84552	5	9b	YES	105	125	Sand	Sand
84552	5	9b	YES	125	132	Sand, gravel, water	Sand and Gravel
715604	5	9c	YES	0	19	Top soil	Sand and Gravel
715604	5	9c	YES	19	32	Clay	Clay, Sandy Clay, or Gravelly Clay
715604	5	9c	YES	32	80	Sand and gravel	Sand and Gravel
715604	5	9c	YES	80	125	Silty sand	Silt or Silty Sand
715604	5	9c	YES	125	132	Sand	Sand
715604	5	9c	YES	132	140	Silt, sand	Silt or Silty Sand
314148	5	10	YES	0	38	Silty sand and gravel	Sand and Gravel
314148	5	10	YES	38	60	Clay	Clay, Sandy Clay, or Gravelly Clay
314148	5	10	YES	60	80	Sand and clay	Sand
314148	5	10	YES	80	137	Sand and gravel	Sand and Gravel
84987	5	11a	YES	0	90	Top soil	Clay, Sandy Clay, or Gravelly Clay
84987	5	11a	YES	90	105	Sandy gravel	Sand and Gravel
84987	5	11a	YES	105	120	Sandy clay	Clay, Sandy Clay, or Gravelly Clay
84987	5	11a	YES	120	180	Gravel	Sand and Gravel
314150	5	11b	YES	0	74	Gravel	Sand and Gravel
314150	5	11b	YES	74	83	Silt	Silt or Silty Sand
314150	5	11b	YES	83	88	Gravel	Sand and Gravel
314150	5	11b	YES	88	120	Silt, gravel	Silt or Silty Sand
314150	5	11b	YES	120	132	Gravel	Sand and Gravel
443909	5	11c	YES	0	16	Gravel	Sand and Gravel
443909	5	11c	YES	16	40	Clay, sand, gravel	Clay, Sandy Clay, or Gravelly Clay
443909	5	11c	YES	40	46	Sand and gravel, some water	Sand and Gravel
443909	5	11c	YES	46	155	Clay with coarse sand	Clay, Sandy Clay, or Gravelly Clay
443909	5	11c	YES	155	180	Sand, gravel, water	Sand and Gravel
82974	5	12	YES	0	174	Clay and gravel	Clay, Sandy Clay, or Gravelly Clay
82974	5	12	YES	174	180	Gravel and water	Sand and Gravel
314136	5	-	NO	0	5	Top soil	n/a
314136	5	-	NO	5	12	Sand	n/a
314136	5	-	NO	12	42	Clay and gravel	n/a
314136	5	-	NO	42	58	Sand and water	n/a
1816836	5	-	NO	260	263	Shale with white quartz	n/a
1816836	5	-	NO	263	288	Shale	n/a
1816836	5	-	NO	288	290	Quartz and shale	n/a
1816836	5	-	NO	290	308	Shale	n/a
1816836	5	-	NO	308	314	Shale	n/a
1816836	5	-	NO	314	322	Shale	n/a
1816836	5	-	NO	322	361	Shale	n/a
76610	5	-	NO	0	0.5	Top soil	n/a
76610	5	-	NO	0.5	26	Sand and gravel	n/a
76610	5	-	NO	26	35	Clay	n/a
76610	5	-	NO	35	51	Gravel, some rocks, water	n/a
76610	5	-	NO	51	58	Sand	n/a
90853	5	-	NO	0	40	Sand	n/a
90853	5	-	NO	40	50	Gravel	n/a
90853	5	-	NO	50	60	Water sand	n/a
81857	5	-	NO	0	42	Clay	n/a
81857	5	-	NO	42	85	Clay, gravel	n/a
81857	5	-	NO	85	120	Sand	n/a
81857	5	-	NO	120	133	Gravel, sand, water	n/a

Ecology ID	Site #	Point on Cross Sections	Drawn on Cross Section?	Depth to Top of Unit (ft bgs)	Depth to Bottom of Unit (ft bgs)	Lithology on Well Log	Generalized Lithology Group (Hydrostratigraphic Unit)
325835	5	-	NO	0	11	Silty gravel	n/a
325835	5	-	NO	11	107	Gravel, sand, clay	n/a
325835	5	-	NO	107	150	Gravel, silt	n/a
325835	5	-	NO	150	160	Gravel, sand, and water	n/a
83700	5	-	NO	0	24	Conglomerate	n/a
83700	5	-	NO	24	56	Conglomerate	n/a
83700	5	-	NO	56	62	Gravel	n/a
83700	5	-	NO	62	86	Conglomerate	n/a
83700	5	-	NO	86	124	Conglomerate	n/a
83700	5	-	NO	124	138	Clay	n/a
83700	5	-	NO	138	164	Gravel and sand	n/a
83700	5	-	NO	164	165	Trace of water	n/a
83700	5	-	NO	165	180	Conglomerate	n/a
83700	5	-	NO	180	200	Conglomerate	n/a
83700	5	-	NO	200	204	Conglomerate	n/a
83700	5	-	NO	204	205	Water	n/a
344931	5	-	NO	0	8	Gravel	n/a
344931	5	-	NO	8	134	Glacial till	n/a
344931	5	-	NO	134	136	Sand and gravel	n/a
344931	5	-	NO	136	140	Glacial till	n/a
86031	5	-	NO	0	153	Clay and gravel	n/a
86031	5	-	NO	153	166	Clay and water	n/a
86031	5	-	NO	166	178	Clay and gravel	n/a
86031	5	-	NO	178	185	Clay	n/a
86031	5	-	NO	185	193	Gravel and water	n/a



Appendix C

Well Logs used to Develop
Hydrostratigraphic Cross
Sections

Please print, sign and return to the Department of Ecology

RESOURCE PROTECTION WELL REPORT

CURRENT Notice of Intent No. SE 52762

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission ("x" in box)

- Construction
- Decommission

Type of Well ("x" in box)

- Resource Protection
- Geotech Soil Boring

ORIGINAL INSTALLATION Notice of Intent Number:

Property Owner Weyerhaeuser Columbia timber lands

Consulting Firm Aspect

Site Address 5 Skagit Hwy near rd 18

Unique Ecology Well ID Tag No. _____

City Crescent County Skagit

WELL CONSTRUCTION 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.

Location NW 1/4-1/4 NW 1/4 Sec 23 Twn 35N R 7E

EWM or WWM

Lat/Long (s, l, r) still REQUIRED) Lat Deg - Min - Sec _____
Long Deg - Min - Sec _____

Tax Parcel No. _____

Cased or Uncased Diameter 3 7/8 Static Level N/A

Work/Decommission Start Date 9-26-14

Work/Decommission Completed Date 9-27-14

Driller Engineer Trainee Stratton Chris

Driller/Engineer/Trainee Signature Chris Stratton

Driller or Trainee License No. 2901

If trainee, licensed driller's Signature and License Number: _____

Construction Design

Well Data

Formation Description

	<p>Drilled 3 7/8 inch mud rotary hole to 40' pressure grouted thirty gallons bentonite grout from 40'-2' topped with 3/8 bentonite chips</p>	<p>0-5' Fill, road base, tan gravelly sand.</p> <p>5-20' med-LARGE gravels w/sand</p> <p>20'-40' tan, sandy, gravelly silt.</p>
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JAN 14 2015

**DEPT OF ECOLOGY
NWRO - WR**

The Department of Ecology does NOT warrant the Data and/or the Information on this Well Report

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

WATER WELL REPORT
STATE OF WASHINGTON

Application No
Permit No

(1) OWNER: Name Al Siebeck Address Route 1, box 165 Concrete, WA 98237
(2) LOCATION OF WELL: County Skagit Govt. Lot 4 SW 1/4 SW 1/4 Sec 14 T 35 N, R 7 W.M.
Bearing and distance from section or subdivision corner Block 21 & 22 of Bessemer AKA -Portion of Gov. Lot 4

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

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

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 56 ft. Depth of completed well 56 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6" Diam. from 0 ft. to 56 ft.
Threaded [] " Diam. from " ft. to " ft.
Welded [] " 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 [X] Size of gravel:
Gravel placed from " ft. to " ft.

Surface seal: Yes [X] No [] To what depth? " ft.
Material used in seal
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 Jacuzzi Bros.
Type Jet H.P. 1/2

(8) WATER LEVELS: Land-surface elevation above mean sea level " ft.
Static level 20' ft. below top of well Date
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.

Table with 4 columns: Time, Water Level, Time, Water Level. Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Date of test
Pump test 1.0 gal./min. with 12 ft. drawdown after " hrs.
Artesian flow g.p.m. Date
Temperature of water 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.

Table with 3 columns: MATERIAL, FROM, TO. Contains entries for Sand & Gravel (0-39) and Water Bearing Gravel (39-56).

Work started 7-20-77, 19 Completed 7-24-77, 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 DAHLMAN PUMP & DRILLING
(Person, firm, or corporation) (Type or print)

Address Box 422, Burlington, WA 98233

[Signed] R.C. Dahlman
(Well Driller)

License No. 0222(223-02) Date 8-12-81, 19

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

WATER WELL REPORT

Application No.

STATE OF WASHINGTON

Permit No.

(1) OWNER: Name Betty Wilde Address 874 Lusk Rd. Connet. Wa.
(2) LOCATION OF WELL: County Skagit NE 1/4 SE 1/4 Sec. 15 T 35 N. R 7 E 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)
New well [x] Method: Dug [] Bored []
Deepened [] Cable [] Driven []
Reconditioned [] Rotary [x] Jetted []

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 48 ft. Depth of completed well 44 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6" Diam. from 7.2 ft. to 44 ft.
Threaded [] " Diam. from ft. to ft.
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 [x] Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes [x] No [] To what depth? 18 ft.
Material used in seal sand/clay
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 Flint & Walling
Type Sub 10 gpm H.P. 1/2

(8) WATER LEVELS: Land-surface elevation
above mean sea level.
Static level 23 ft. below top of well Date 7-29-80
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 [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)

Table with 4 columns: Time, Water Level, Time, Water Level

Date of test
Pump test 60 gal./min. with ft. drawdown after 1 hrs.
Artesian flow g.p.m. Date
Temperature of water 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.

Table with 3 columns: MATERIAL, FROM, TO

Work started 7-29, 1980. Completed 7-29, 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 Hayes Well Drilling (Person, firm, or corporation) (Type or print)

Address 1413 Glory Rd. Bow, Wa.

[Signed] Alan Hayes (Well Driller)

License No. 178 Date 9-5, 1980

(USE ADDITIONAL SHEETS IF NECESSARY)

WATER WELL REPORT

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

Site: 1 Point: 3b

STATE OF WASHINGTON

Water Right Permit No.

(1) OWNER: Name Wildcat Steelhead Club Address Box 435 Sedro Woolley wa. 98204

(2) LOCATION OF WELL: County Skagit NE
T. 14 N. 11 W. Sec. 10 T. 35 N. R. 7 W. M.

(3) STREET ADDRESS OF WELL (or nearest address) Grandy Cr. Fish hatchery SE 15

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

(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 & gravel	0	40
water & Gravel	40	72
Water & fine Sand & Wood	75	100

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

(6) DIMENSIONS: Diameter of well 8 inches.
Diam. 10 feet. Depth of completed well 72 ft.

(8) CONSTRUCTION DETAILS:
 casing material: 8 Diam. from 0 ft. to 77 ft.
Wells: Diam. from _____ ft. to _____ ft.
Liner material: Diam. from _____ ft. to _____ ft.
Threaded: Diam. from _____ ft. to _____ ft.

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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.

Screening: Yes No
Material name Stainless
Type of screen _____ Model No. _____
Diam. _____ from 77 ft. to 83 ft.
Diam. _____ from 87 ft. to 92 ft.

Gravel packed: Yes No Size of gravel _____
Gravel packed from _____ ft. to _____ ft.
Surface seal: Yes No To what depth? 15 ft.
Material used in seal: BENTONITE
Did any strata contain undesirable water? Yes No
Type of water _____ Depth of strata _____
Method of sealing strata on _____

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

(8) WATER LEVEL: Land surface elevation _____ ft. above mean sea level
Static level: 15 ft. below top of well Date 1-19-90
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

Work started 1-9- 90 Completed 1-17- 90

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No If yes, by whom? Thedore Recker
Yield 150 gal./min. with 4.2 ft. drawdown after 30 hrs.

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 Dahlman Pump & Well Drilling Inc. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address P O Box 422 Burlington Wa. 98233
(Signed) Thedore Recker License No. 0023
(WELL DRILLER)
Contractor's Registration No. DAH1412310 Date 1-22- 90

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

Time	Water Level	Time	Water Level
<u>15 min</u>	<u>15 ft</u>		
<u>30 min</u>	<u>15 ft</u>		

Boiler test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Artisan 150 gal./min. with stem set at _____ ft. for _____ hrs.
Artisan flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes No

(USE ADDITIONAL SHEETS IF NECESSARY)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

ENTERED
73035

WATER WELL REPORT

Start Card No. W 116496
Unique Well I.D. # AAX549
Water Right Permit No.

STATE OF WASHINGTON

(1) OWNER: Name **HOWELL, KELLY** Address **39966 CAPE HORN ROAD CONCRETE, WA 98237-**

(2) LOCATION OF WELL: County **SKAGIT** - **SE 1/4 NE 1/4 Sec 15 T 35 N., R 7E W**

(2a) STREET ADDRESS OF WELL (or nearest address) **39966 CAPE HORN ROAD, CONCRETE**

(3) PROPOSED USE: **DOMESTIC** (10) WELL LOG **35-7E-15**

(4) TYPE OF WORK: Owner's Number of well
(If more than one)
NEW WELL Method: **ROTARY**

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 in formation.

(5) DIMENSIONS: Diameter of well **6** inches
Drilled **59** ft. Depth of completed well **59** ft.

MATERIAL	FROM	TO
TOPSOIL	0	2
BROWN CLAY & SAND	2	14
BROWN CLAY SAND & GRAVEL	14	24
GRAVEL & SAND	24	42
GRAVEL SAND & WATER	42	49
BROWN CLAY	49	50
SAND SOME GRAVEL & WATER	50	

(6) CONSTRUCTION DETAILS:
Casing installed: **6** " Dia. from **0** ft. to **54** ft.
WELDED " Dia. from ft. to ft.
" Dia. from ft. to ft.

WELL LOCATED ACCORDING TO SKAGIT COUNTY ORDINANCE #12.48

Perforations: **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**
Manufacturer's Name
Type **STAINLESS STEEL** Model No. **TELESCOPING**
Diam. **6** slot size **20** from **54** ft. to **59** ft.
Diam. slot size from ft. to ft.

Gravel packed: **NO** Size of gravel
Gravel placed from ft. to ft.

Surface seal: **YES** To what depth? **18** ft.
Material used in seal **BENTONITE**
Did any strata contain unusable water? **NO**
Type of water? Depth of strata ft.
Method of sealing strata off

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

Work started 10/11/99 Completed 10/11/99

(8) WATER LEVELS: Land-surface elevation above mean sea level ... ft.
Static level **32** ft. below top of well Date **10/11/99**
Artesian Pressure lbs. per square inch Date
Artesian water controlled by

(9) WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? If yes, by whom?
Yield: gal./min with ft. drawdown after hrs.

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.

Recovery data
Time Water Level Time Water Level Time Water Level

NAME **DAHLMAN PUMP & WELL DRILL**
(Person, firm, or corporation) (Type or print)

Date of test / /
Sailer test gal/min. ft. drawdown after hrs.
Air test 15+ gal/min. w/ stem set at **52** ft. for 1 hrs
Artesian flow g.p.s. Date
Temperature of water Was a chemical analysis made?

ADDRESS **PO BOX 422**
[SIGNED] *Brygh W. King* License No. **2043**
Contractor's Registration No. **DAHLMPPW1231C** Date **10/12/99**

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

WATER WELL REPORT

Start Card No. 35/7/15h

STATE OF WASHINGTON

Water Right Permit No.

(1) OWNER: Name Larry Naught Address

(2) LOCATION OF WELL: County Skagit County SE 1/4 NE 1/4 Sec 15 T. 35 N. R. 7 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) 3717 Cape Horn Rd Concrete

(3) PROPOSED USE: Domestic [x], 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 [], Rotary [], Bored [], Driven [], Jetted []

(5) DIMENSIONS: Diameter of well 6 inches. Drilled 50 feet. Depth of completed well 50 ft.

(6) CONSTRUCTION DETAILS: Casing installed: 6" Diam. from 1 ft. to 50 ft.

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

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

Gravel packed: Yes [], No [x]
Gravel placed from ft. to ft.
Surface seal: Yes [x], No [] To what depth? 18 ft.

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

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 31 ft. below top of well Date
Artesian pressure lbs. per square inch Date

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [x], No []
Yield: 10 gal./min. with 2 ft. drawdown after 1 hrs.

Bailer test 70 gal./min. with 3 1/2 ft. drawdown after 3 hrs.
Artest 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

Table with 3 columns: MATERIAL, FROM, TO. Handwritten entries include SAND GRAVEL, CLAY, SAND & GRAVEL WITH CLAY, SAND & GRAVEL, SAND GRAVEL & WATER.

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OCT 15 1992
DEPT. OF ECOLOGY

Well met all
County Regulation req

Work started 28 Sept 1992. Completed 30 Sept 1992

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards.

NAME Prince Well Drilling (PERSON, FIRM, OR CORPORATION)
Address 794 NE Cape Horn Rd West

(Signed) Wayne C. Prince License No. 1898
Contractor's Registration No. RWSCW009544 Date Sept 30 1992

(USE ADDITIONAL SHEETS IF NECESSARY)

The Department of Ecology does NOT Warrant the Data and/or the Information on this Well Report.

WATER WELL REPORT
STATE OF WASHINGTON

Start Card No. W28067
Water Right Permit No.

(1) OWNER: Name MATHEW, JEMMA Address 603-69 JAMIESON COURT NEW W. MINISTER, BC

(2) LOCATION OF WELL: County SKAGIT - SW 1/4 NE 1/4 Sec 15 T 35 N.. R 7E WM
(2a) STREET ADDRESS OF WELL (or nearest address) GRANDY CREEK

(3) PROPOSED USE: DOMESTIC (10) WELL LOG

(4) TYPE OF WORK: Owner's Number of well (If more than one) Method: ROTARY
NEW WELL

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 120 ft. Depth of completed well 60 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 Dia. from +2.6 ft. to 117.6 ft.
WELDED Dia. from ft. to ft.
Dia. from ft. to ft.

Perforations: YES
Type of perforator used AIR ROTARY PERF
SIZE of perforations 1/4 in. by 1 in.
160 perforations from 45 ft. to 55 ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: NO
Manufacturer's Name Type Model No.
Diam. slot size from ft. to ft.
Diam. slot size from ft. to ft.

Gravel packed: NO Size of gravel
Gravel placed from ft. to ft.

Surface seal: YES To what depth? 19 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? NO
Type of water? Depth of strata ft.
Method of sealing strata off

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

(8) WATER LEVELS: Land-surface elevation
Static level 23.4 ft. below top of well Date 08/19/93
Artesian Pressure lbs. per square inch Date
Artesian water controlled by

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

Recovery data
Time Water Level Time Water Level Time Water Level
Date of test 1/1
Bailer test gal./min. ft. drawdown after hrs.
Air test 10 gal./min. w/ stem set at 43 ft. for 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? YES

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 in formation.

MATERIAL	FROM	TO
TOPSOIL	0	2
BROWN SILT & SAND	2	26
GRAY CLAY	26	33
GRAY SAND	33	39
GRAY SAND & GRAVEL	39	42
GRAY CLAY	42	45
GRAY GRAVEL SAND & WATER	45	52
GRAY SAND & WATER	52	63
GRAY CLAY SAND & GRAVEL	63	72
GRAY GRAVEL SAND & WATER	72	80
GRAY GRAVEL SAND & CLAY	80	89
GRAY GRAVEL & SAND	89	95
GRAY GRAVEL SAND & CLAY	95	

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AUG 31 1993

DEPT. OF ECOLOGY

Work started 08/18/93 Completed 08/19/93

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 HAYES DRILLING, INC.
(Person, firm, or corporation) (Type or print)

ADDRESS 556 ERSBIG RD. BOW, WA

[SIGNED] Steve Hubert License No. 762

Contractor's Registration No. HAYESDI06J5 Date 08/26/93

WELL SITE MEETS ALL SIGHTING CRITERIA UNDER S.C.C. 12.48.090 AND WAC 173-160 BASED ON INFORMATION SUPPLIED BY THE OWNER OR OWNER'S AUTHORIZED REPRESENTATIVE.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

118067

WATER WELL REPORT

Original & 1st copy Ecology 2nd copy owner 3rd copy driller

Construction/Decommission (x in circle)

- Construction
- Decommission ORIGINAL CONSTRUCTION Notice of Intent Number _____

CURRENT Notice of Intent No W154310

Unique Ecology Well ID Tag No A00364

Water Right Permit No _____

Property Owner Name Norm Steward

Well Street Address Xx 8330 Emmanuel Ln

City Concrete County Skagit

Location SW 1/4 1/4 NE 1/4 Sec 15 Twn 35 R 7 or WWM

Lat/Long (s r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No _____

PROPOSED USE Domestic Industrial Municipal DeWater Irrigation Test Well Other

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

DIMENSIONS Diameter of well 6 1/2 inches drilled 11 1/2 ft Depth of completed well 11 1/2 ft

CONSTRUCTION DETAILS Casing Welded 6 Diam from +1 1/2 ft to 105 1/2 ft Installed Liner installed _____ Diam from _____ ft to _____ ft Threaded _____ Diam from _____ ft to _____ ft

Perforations Yes No Type of perforator used _____ SIZE of perfs _____ in by _____ in and no of perfs _____ from _____ ft to _____ ft

Screens Yes No K Pac Location 105 Manufacturer's Name Johns Type S/S Model No _____ Diam 5 Slot Size 10 from _____ ft to _____ ft

Gravel/Filter packed Yes No Size of gravel/sand _____ Materials placed from _____ ft to _____ ft

Surface Seal Yes No To what depth? 18 ft Materials used in seal Bentonite Did any strata contain unusable water? Yes No Type of water? _____ Depth of strata _____ Method of sealing strata off NATURAL CLAY

PUMP Manufacturer's Name _____ Type _____ HP _____

WATER LEVELS Land surface elevation above mean sea level _____ ft Static level 10 1/2 ft below top of well Date 14 AUG 02 Artesian pressure _____ lbs per square inch Date _____ Artesian water is controlled by _____ (cap valve etc)

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 Yield _____ gal/min with _____ ft drawdown after _____ hrs 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 _____ gal/min with _____ ft drawdown after _____ hrs Airtest +20 gal/min with stem set at 100 ft for _____ hrs Artesian flow _____ g p m Date _____ Temperature of water _____ Was a chemical analysis made? Yes No

CONSTRUCTION OR DECOMMISSION PROCEDURE Formation Describe by color character size of material and structure and the kind and nature of the material in each stratum penetrated with at least one entry for each change of information Indicate all water encountered (USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL	FROM	TO
Top Soil	0	2
Brown Sand + Silt	2	12
Grey sand Silt + CLAY	12	41
Gravel + Sand	41	54
Brown CLAY + Gravel	54	79
Gravel + Sand	79	90
Brown CLAY + Gravel	90	103
Gravel + Sand	103	111

Drilled in Compliance with SKL 12 48. Based on information supplied by owner Shay Halman

RECEIVED AUG 25 2002 DEPT OF ECOLOGY

Start Date 13 AUG 02 Completed Date 13 AUG 02

WELL CONSTRUCTION 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

Driller Engineer Trainee Name (Print) Halvorson Driller/Engineer/Trainee Signature Shay Halman Driller or Trainee License No 2480

Drilling Company AFFORDABLE WATER SYSTEMS Address 14021 Bradshaw Rd City State Zip MT VERNON WA

If trainee, licensed driller's Signature and License no _____

Contractor's Registration No AFFWSD187 Date 18 AUG 02

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

WATER WELL REPORT

ecology Original & 1st copy Ecology 2nd copy owner, 3rd copy driller

Construction/Decommission (x in circle)

- Construction
- Decommission **ORIGINAL CONSTRUCTION** Notice of Intent Number _____

CURRENT

Notice of Intent No W125871

Unique Ecology Well ID Tag No AGE 050

Water Right Permit No _____

Property Owner Name Joe Brashears

Well Street Address 8341 Emerald Ln

City Concord County Stag

Location SW 1/4 1/4 E 1/4 Sec 45 Twn 35 R 7 BWM or WWM

Lat/Long (s,t,r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No _____

PROPOSED USE Domestic Industrial Municipal
 DeWater Irrigation Test Well Other

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

DIMENSIONS Diameter of well 6 inches drilled _____ ft
 Depth of completed well 78 ft

CONSTRUCTION DETAILS

Casing Welded 6 Diam from -2 ft to 78 ft
 Installed Liner installed _____ Diam from _____ ft to _____ ft
 Threaded _____ Diam from _____ ft to _____ ft

Perforations Yes No

Type of perforator used _____
 SIZE of perfs _____ in by _____ in and no of perfs _____ from _____ ft to _____ ft

Screens Yes No K Pac Location _____
 Manufacturer's Name _____
 Type _____ Model No _____

Diam _____ Slot Size _____ from _____ ft to _____ ft
 Diam _____ Slot Size _____ from _____ ft to _____ ft

Gravel/Filter packed Yes No Size of gravel/sand _____
 Materials placed from _____ ft to _____ ft

Surface Seal Yes No To what depth? 18 ft
 Materials used in seal Benlate

Did any strata contain unusable water? Yes No
 Type of water? _____ Depth of strata _____
 Method of sealing strata off _____

PUMP Manufacturer's Name _____
 Type _____ HP _____

WATER LEVELS Land surface elevation above mean sea level _____ ft
 Static level 19 ft below top of well Date Aug 9
 Artesian pressure _____ lbs per square inch Date _____
 Artesian water is controlled by _____ (cap valve etc)

WELL TESTS Drawdown is amount water level is lowered below static level
 Was a pump test made? Yes No If yes by whom? _____

Yield 20 gal/min with 3 ft drawdown after 2 hrs
 Yield _____ gal/min with _____ ft drawdown after _____ hrs
 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 _____ gal/min with _____ ft drawdown after _____ hrs
 Artest _____ 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

CONSTRUCTION OR DECOMMISSION PROCEDURE
 Formation Describe by color character size of material and structure and the kind and nature of the material in each stratum penetrated with at least one entry for each change of information Indicate all water encountered (USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL	FROM	TO
Top Seal	1	4
Clay sand & gravel	4	36
Clay	36	48
Sand gravel water	48	66
Clay Seal	60	66
Sand gravel water	66	78

Well site next to street
 site on SC 1248 according to info provided by _____

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OCT 02 2002
DEPT OF ECOLOGY

Start Date Aug 9 Completed Date Aug 16 02

WELL CONSTRUCTION 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

Driller Engineer Trainee Name (Print) Wayne Prince Drilling Company Prince Well Drilling
 Driller/Engineer/Trainee Signature Wayne Prince Address 7940 NE Cypress Rd
 Driller or Trainee License No 2582 City, State, Zip Concord Wash 98237

If trainee, licensed driller's Signature and license no _____ Contractor's Registration No PRIN W 095624 Date Aug 23

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

Site: 1 Point: 7

Eco id: 441246

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

WATER WELL REPORT

Notice of Intent W246704
UNIQUE WELL I.D. # ALQ719

STATE OF WASHINGTON

Water Right Permit No. _____

(1) OWNER: Name Billi Gryphon C/O Coach Corral Address 377 Sth Burlington Blvd, Burlington, WA 98233
(2) LOCATION OF WELL: County skagit - SE 1/4 NW 1/4 Sec 15 T. 35 N., R. 7E W.M.
(2a) STREET ADDRESS OF WELL (or nearest address) 8179 Emmanuel Ln Concrete
TAX PARCEL NO. P42704

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

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

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 80 feet. Depth of completed well 76 ft.

(6) CONSTRUCTION DETAILS:
Casing Installed:
 Welded 6 " Diam. from +2 ft. to 72 ft.
 Liner installed _____ " Diam. from _____ ft. to _____ ft.
 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 K-Pac Location _____
Manufacturer's Name johnson
Type ss Model No. _____
Diam. 6 Slot size 20 from 71 ft. to 76 ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: Yes No Size of gravel/sand _____
Material 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
Type: submersible H.P. 3/4

(8) WATER LEVELS: Land-surface elevation _____ ft.
above mean sea level _____ ft.
Static level 35 ft. below top of well Date 5/8/2006
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? aquatech
Yield: 20 gal./min. with 5 ft. drawdown after 1 hrs.
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
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 5/10/2006
Bailer test 15 gal./min. with 2 ft. drawdown after 5 hrs.
Airstest 50 gal./min. with stem set at 73 ft. for 1 hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analyses made? Yes No

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION:
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

MATERIAL	FROM	TO
topsoil	0	1
brown sand gravel silt	1	15
brown silty sand seepage	15	17
brown clay	17	22
gray fine sand silt water	22	32
gray clay wood	32	41
gray sand wood water	41	55
tan clay sand	55	61
brown gravel sand water	61	76
brown gravel clay	76	

located in compliance with sec12-48 based on information supplied by owner.

06056

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MAY 24 2006
DEPT. OF ECOLOGY

Work Started 5/8/2006, 19. Completed 5/8/2006, 19

WELL CONSTRUCTION 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.

Type or Print Name Brannon Hopke License No. 1825
(Licensed Driller/Engineer)
Trainee Name _____ License No. _____
Drilling Company Aquatech Well Drilling & Pumps Inc
(Signed) [Signature] License No. 1825
(Licensed Driller/Engineer)

Address 2722 Butler Crk Rd SedroWoolley Wa 98284
Contractor's
Registration No. AQUATWD040K4 Date 5/11/2006, 19

(USE ADDITIONAL SHEETS IF NECESSARY)
Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-6600. The TDD number is (360) 407-6006.

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

WATER WELL REPORT

STATE OF WASHINGTON

Notice of Intent **W 128224**
UNIQUE WELL I.D. # **AFJ973**

Water Right Permit No.

(1) OWNER: Name **Port Gardner Timber** Address **P.O. Box 157, Stanwood, WA 98292**

(2) LOCATION OF WELL: County **Skagit** NE 1/4 SW 1/4 Sec 10 T. 35 N.R 7E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) **Off Baker Lake Road**

TAX PARCEL NO.

35-7E-10L

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

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

(5) DIMENSIONS: Diameter of well **6** inches.
Drilled **138.5** feet. Depth of completed well **138.5** ft.

(6) CONSTRUCTION DETAILS:
Casing installed:
 Welded **6** " Diam. from **0** ft. to **133.5** ft.
 Liner installed _____ " Diam. from _____ ft. to _____ ft.
 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 K-Pao Location _____
Manufacturer's Name _____
Type **stainless steel** Model No. **telescope**
Diam. **6** Slot size **10** from **133.5** ft. to **138.5** ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: Yes No Size of gravel/sand _____
Material 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 _____ ft.
above mean sea level _____ ft.
Static level **58** ft. below top of well Date **09/29/2000**
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.
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
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 _____

Flow test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Airtest **15** gal./min. with stem set at **132** ft. for **1** hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analyses made? Yes No

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION:
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

MATERIAL	FROM	TO
Loose gravel & brown silty sand	0	25
Gravel & brown clay	25	30
Gravel sand & brown silt	30	88
Gravel sand & brown clay	88	103
Gray clay & gravel	103	117
Fine gray sand & water	117	

Well located according to Skagit County Ordinance #12.48

RECEIVED

OCT 11 2000

DEPT OF ECOLOGY

Work Started **09/28/2000**, 19. Completed **09/29/2000**, 19

WELL CONSTRUCTION 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.

Type or Print Name **Ralph Riggles** License No. **2043**
(Licensed Driller/Engineer)

Trainee Name _____ License No. _____

Drilling Company **Dahlman Pump & Well Drilling Inc.**

(Signed) *Ralph Riggles* License No. _____
(Licensed Driller/Engineer)

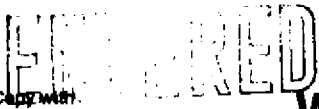
Address **P. O. Box 422, Burlington, WA 98233**

Contractor's Registration No. **DAHLMPW123LC** Date **10/02/2000**, 19

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-6600. The TDD number is (360) 407-6006.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.



WATER WELL REPORT

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

STATE OF WASHINGTON

Start Card No. W062203
UNIQUE WELL I.D. # AB0227
Water Right Permit No. 35/8E/8-R

(1) OWNER: Name Jim Cook Address 3253 Cemetery Rd Sedro Woolley

(2) LOCATION OF WELL: County Skaist SE 1/4 SE 1/4 Sec 8 T. 35 N. R. 8 W.M.

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

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

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

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 114 feet. Depth of completed well 114 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Diam. from 1 ft. to 114 ft.
Welded " Diam. from " ft. to " ft.
Liner installed " Diam. from " ft. to " ft.
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 _____
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 Benctone
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

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

(8) WATER LEVELS: Land-surface elevation _____ ft.
Static level 67 ft. below top of well Date May 25
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: 10 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 _____
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
Sand Gravel + Boulders	1	45
Clay	45	61
Clay Sand + Gravel	61	100
Sand gravel water	100	114

RECEIVED
JUN 06 1995
DEPT. OF ECOLOGY

*Well site must be sealed
set in SC 1248 according
to info provided by owner
WCB*

Work Started May 22 19. Completed May 25 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 Prince Well Drilling
(PERSON, FIRM OR CORPORATION) (TYPE OR PRINT)
Address 794 NE Cape Horn Concrete
(Signed) Wayne Prince License No. 1898
(WELL DRILLER)

Contractor's Registration No. PRINWDO95KY Date May 25 1995
(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

ENTERED

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W062205

UNIQUE WELL I.D. # 4BP 239

Water Right Permit No. 3S/SE/3-R

(1) OWNER: Name Jim Cook Address Cemetery Rd Hamilton West

(2) LOCATION OF WELL: County Skaagit SE 1/4 SE 1/4 Sec 8 T.35 N. R 8 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) South Skaagit Hwy Concrete West

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

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

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 107 feet. Depth of completed well 107 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Diam. from 2 ft. to 107 ft.
Welded " Diam. from _____ ft. to _____ ft.
Liner installed " Diam. from _____ ft. to _____ ft.
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 _____
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 Grundfos
Type: Submers H.P. 1/2

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 41 ft. below top of well Date _____
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: 10 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 _____
Bailer test 50 gal./min. with 10 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
Clay sand + gravel	1	4
Sand gravel + Boulders	4	41
Blue Clay	41	49
Blue Gray Fine Sand	49	63
Brownish Clay fine sand	63	90
Coarser sand Brown	90	100
Sand gravel + water	100	107

Well site met + standard out. MSC 1248 according to info provided by owner WRP

RECEIVED

AUG 22 1995

DEPT. OF ECOLOGY

Work Started Aug 7, 19. Completed Aug 9, 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 Prince Well Drilling
(PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 794 NE Cape Horn Concrete
(Signed) Wayne C Prince License No. 1898
(WELL DRILLER)

Contractor's Registration No. PRINENWOSKY Date Aug 14, 19 95

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-8006.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

ENTERED

Start Card No. 42105

WATER WELL REPORT

UNIQUE WELL I.D. # 4A4474

STATE OF WASHINGTON

Water Right Permit No.

This Original and First Copy with Department of Ecology Second Copy - Owner's Copy Third Copy - Driller's Copy

(1) OWNER: Name James Cook SR Address 3255 Hamden Rd Sedro Woolley

(2) LOCATION OF WELL: County Skagit SE 1/4 SE 1/4 Sec 8 T. 35 N. R. 8E W.M.

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

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

(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 41 feet. Depth of completed well 41 ft.

(6) CONSTRUCTION DETAILS: Casing installed: 6" Diam. from 1 ft. to 98 ft. Welded [] Liner installed [] Threaded []

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

Screens: Yes [] No [] Manufacturer's Name MC Donald Type Model No. Diam. Slot size 18 from 7.5 ft. to 81 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 & Cement Did any strata contain unusable water? Yes [] No []

(7) PUMP: Manufacturer's Name Grundfos Type Submer 10gpm H.P. 1/2

(8) WATER LEVELS: Land surface elevation above mean sea level ft. Static level 23 ft. below top of well Date June 9 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? Wayne Prince Yield: 10 gal./min. with 3 ft. drawdown after 2 hrs.

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

Date of test Test gal./min. with ft. drawdown after hrs. gal./min. with stem set at ft. for hrs. flow g.p.m. Date Use 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.

Table with columns MATERIAL, FROM, TO. Entries: Clay Sand + Boulder 1-30, Hard pan 30-36, Sand gravel + water 36-41, Heavy sand 41-81, Heavy sand + gravel 81-96, sand + gravel 96-98

RECEIVED

AUG - 1 1994

DEPT. OF ECOLOGY

Well site made standard set in SC 12-48 according to info provided by owner WCP

RECEIVED

AUG 01 1994

DEPT. OF ECOLOGY

Work Started June 6, 1994 Completed June 8, 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 Prince Well Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 794 NE Cape Horn Concrete

(Signed) Wayne C Prince License No. 1898 (WELL DRILLER)

Contractor's Registration No. PRINCW095W4 Date July 6, 1994

(USE ADDITIONAL SHEETS IF NECESSARY)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

ENTERED

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W0 63 080

UNIQUE WELL I.D. # AC 6 773

Water Right Permit No. 35-8E-9N

(1) OWNER: Name JAMES COOK Address 3255 Hamilton Cemetery Rd SedroWoolley

(2) LOCATION OF WELL: County Skagit SW 1/4 SW 1/4 Sec 9 T. 35 N. R 8 W.M.

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

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

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

(5) DIMENSIONS: Diameter of well _____ inches.
Drilled 6 feet. Depth of completed well 87 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 ft. Diam. from 1 ft. to 87 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 _____
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 Cement
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) PUMP: Manufacturer's Name Gemella
Type: Sanderson 10 g.p.m. H.P. 1/2

(8) WATER LEVELS: Land-surface elevation above mean sea level 28 ft.
Static level 33 ft. below top of well Date 6/10/96
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? Wayne Prince
Yield: 10 gal./min. with 2 ft. drawdown after 3 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
Gravel	1	10
SAND Gravel	10	21
Clay SAND	21	35
SAND Gravel	35	60
Water Gravel	60	70
Gravel water	70	87

Well site meets standard set in SC1248 according to info provided by owner Wap

RECEIVED

JUL 16 1996

DEPT. OF ECOLOGY

Work Started June 9 19. Completed June 9 19 96

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 Prince Well Drilling
(PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 794 NE Cape Horn Concrete
(Signed) Wayne Prince License No. 1898
(WELL DRILLER)

Contractor's Registration No. PRINCW095K4 Date 6/10 19 96

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.



WATER WELL REPORT

Original & 1st copy Ecology 2nd copy owner, 3rd copy - driller

Construction/Decommission (circle)

- Construction
- Decommission ORIGINAL CONSTRUCTION Notice of Intent Number 147801

CURRENT

Notice of Intent No W167466

Unique Ecology Well ID Tag No AKG 204

Water Right Permit No _____

Property Owner Name Low Rollers

Well Street Address Logston Lane

City Concrete County Skagit

Location SW 1/4- 1/4 SW 1/4 Sec 9 Twn 35 R 8 EWM circle or one WWM

Lat/Long (s,t,r still REQUIRED) Lat Deg _____ Lat Min/Sec _____

Long Deg _____ Long Min/Sec _____

Tax Parcel No _____

PROPOSED USE Domestic Industrial Municipal
 DeWater Irrigation Test Well Other _____

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

DIMENSIONS Diameter of well 6 inches drilled 120 ft
 Depth of completed well 120 ft

CONSTRUCTION DETAILS
 Casing Welded 6 Diam from 1 ft to 120 ft
 Installed Liner installed _____ Diam from _____ ft to _____ ft
 Threaded _____" Diam from _____ ft to _____ ft

Perforations Yes No
 Type of perforator used _____
 SIZE of perfs _____ in by _____ in and no of perfs _____ from _____ ft to _____ ft

Screens Yes No K-Pac Location _____
 Manufacturer's Name _____
 Type _____ Model No _____
 Diam _____ Slot Size _____ from _____ ft to _____ ft
 Diam _____ Slot Size _____ from _____ ft to _____ ft

Gravel/Filter packed Yes No Size of gravel/sand _____
 Materials placed from _____ ft to _____ ft

Surface Seal Yes No To what depth? 18 ft
 Materials used in seal Bentonite
 Did any strata contain unusable water? Yes No
 Type of water? _____ Depth of strata _____
 Method of sealing strata off _____

PUMP Manufacturer's Name Gould 109pm
 Type Submer HP 1/2

WATER LEVELS Land surface elevation above mean sea level _____ ft
 Static level 46 ft below top of well Date Feb 13
 Artesian pressure _____ lbs per square inch Date _____
 Artesian water is controlled by _____ (cap valve etc)

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
 Yield _____ gal/min with _____ ft drawdown after _____ hrs
 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 17 gal/min with 5 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

CONSTRUCTION OR DECOMMISSION PROCEDURE
 Formation Describe by color character, size of material and structure and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information Indicate all water encountered (USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL	FROM	TO
Sand	1	28
Silt Sand + gravel	28	41
Clay (Blue) Fine Sand	41	63
Silt Sand + Gravel	63	80
Less silts more Gravel	80	87
A little water Spgm		
Sand gravel + water	87	100
only come upon casing about 6 ft		
Sand + gravel	100	120

RECEIVED
 APR 22 2004
 DEPT OF ECOLOGY

Start Date Feb 12 Completed Date Feb 13

WELL CONSTRUCTION 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
 Driller Engineer Trainee Name (Print) Wayne C Prince Drilling Company Prince Well Drilling
 Driller/Engineer/Trainee Signature Wayne C Prince Address 7940 NE Cape Horn Rd
 Driller or Trainee License No 2582 City, State, Zip Concrete Wash 98237

If trainee, licensed driller's Signature and License no _____

Contractor's Registration No Pinewoodsky Date Feb 17 04
 Ecology is an Equal Opportunity Employer EGY 050-1 20 (Rev 4/01)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

431932



WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)

- Construction
- Decommission ORIGINAL INSTALLATION Notice of Intent Number _____

PROPOSED USE: Domestic Industrial Municipal
 DeWater Irrigation Test Well Other

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

DIMENSIONS: Diameter of well 6 inches, drilled 93 ft.
 Depth of completed well 93 ft.

CONSTRUCTION DETAILS
 Casing: Welded 6" Diam. from 1 ft. to 93 ft.
 Installed: Liner installed _____" Diam. from _____ ft. to _____ ft.
 Threaded _____" Diam. from _____ ft. to _____ ft.

Perforations: Yes No
 Type of perforator used _____
 Size of perfs _____ in. by _____ in. and no. of perfs _____ from _____ ft. to _____ ft.

Screens: Yes No K-Pac Location _____
 Manufacturer's Name _____
 Type _____ Model No. _____
 Diam. _____ Slot size _____ from _____ ft. to _____ ft.
 Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: Yes No Size of gravel/sand _____
 Materials placed from _____ ft. to _____ ft.

Surface Seal: Yes No To what depth? 20 ft. ft.
 Material used in seal bentonite & cement
 Did any strata contain unusable water? Yes No
 Type of water? _____ Depth of strata _____
 Method of sealing strata off _____

PUMP: Manufacturer's Name Grundfos
 Type: submersible H.P. 1/2

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
 Static level 63 ft. below top of well Date July 1
 Artesian pressure _____ lbs. per square inch Date _____
 Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
 Was a pump test made? Yes No If yes, by whom? Wayne Prince
 Yield: 10 gal./min. with 10 ft. drawdown after 2 hrs.
 Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
 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 _____
 Bailor test 22 gal./min. with 3 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

CURRENT

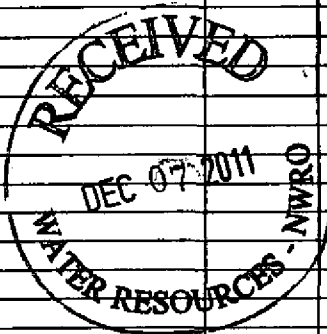
Notice of Intent No. W042108
 Unique Ecology Well ID Tag No. ABP202
 Water Right Permit No. _____
 Property Owner Name Don Payne
 Well Street Address South Skagit Hwy
 City Concrete County Skagit
 Location SW1/4-1/4 SW1/4 Sec 9 Twn 35 R 8 EWM circle or WWM one
 Lat/Long (s, t, r) _____ Lat Deg _____ Lat Min/Sec _____
 Still REQUIRED) Long Deg _____ Long Min/Sec _____
 Tax Parcel No. _____

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL	FROM	TO
sand	1 ft	32 ft
sand, gravel & clay	32 ft	70 ft
clay brown small amount water	70 ft	74 ft
hard pan	74 ft	82 ft
sand, gravel & clay	82 ft	90 ft
sand, gravel & water	90 ft	93 ft

Well site meets standards set in SC1248 according to information provided by owner.



Start Date July 1, 1994 Completed Date July 2, 1994

WELL CONSTRUCTION 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.

Driller Engineer Trainee Name (Print) Wayne Prince
 Driller/Engineer/Trainee Signature Wayne Prince
 Driller or trainee License No. 1898

Drilling Company Prince Well Drilling
 Address 7940 NE Cape Horn Rd
 City, State, Zip Concrete, Wash 98237
 Contractor's Registration No. Princwd095K4 Date July 20, 1994

IF TRAINEE,
 Driller's Licensed No. _____
 Driller's Signature _____

Ecology is an Equal Opportunity Employer.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

ENTERED WATER WELL REPORT

Start Card No. WU63092
UNIQUE WELL I.D.# ACG783

STATE OF WASHINGTON

Water Right Permit No. _____

(1) OWNER: Name Conrad Wikstrom Address 35-9E-9P

(2) LOCATION OF WELL: County Skagit SE 1/4 SW 1/4 Sec 9 T. 35 N. R. 8 W.M.

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

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

(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.

(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

MATERIAL	FROM	TO
Fin sand & clay	1	31
Sand gravel border	31	47
clay	47	69
clay & fine sand	69	80
Fine sand & water	80	100
course sand water	100	103
sand gravel & water	103	106

(5) DIMENSIONS: Diameter of well 4 inches.
Drilled 106 feet. Depth of completed well 106 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 4 ft. Diam. from 1 ft. to 106 ft.
Welded Liner installed 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.

Well site meets standard
sit in 90 12 48 according
to info provided by owner
WSP

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 ft.
Material used in seal _____
Did any strata contain unusable water? Yes No
Type of water? Artesian Depth of strata _____
Method of sealing strata off _____

RECEIVED

AUG 05 1996

DEPT. OF ECOLOGY

(7) PUMP: Manufacturer's Name Conrad PWS 105A7
Type: Submersible H.P. 1/2

Work Started July 10 19 96 Completed July 11 19 96

(8) WATER LEVELS: Land-surface elevation _____ ft.
Static level 45 ft. below top of well Date July 14
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

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.

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No If yes, by whom? WSP
Yield: 10 gal./min. with 15 ft. drawdown after 2 hrs.

NAME Prince Well Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 794 NE Cedar Hill Concrete
(Signed) Waynes Tom License No. 1898 (WELL DRILLER)

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

Contractor's Registration No. HINCW055146 Date July 16 19 96
(USE ADDITIONAL SHEETS IF NECESSARY)

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

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-8006.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

WATER WELL REPORT

STATE OF WASHINGTON

Water Right Permit No.

(1) OWNER: Name MIKE & MYLLI'S ADKINSON Address 3537 HWY 20 SEAS WADLEY, WA

(2) LOCATION OF WELL: County SKAGIT NE 1/4 SW 1/4 Sec 9 T 35 N. R. 8 E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) 4226 DALLES Rd CONCRETE, WA. 98237

(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 39 feet. Depth of completed well 39 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 406 Diam. from 0 ft to 39 ft
Welded 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 _____ Model No. _____
Type _____
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 Cement
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

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

(8) WATER LEVELS: Land surface elevation above mean sea level _____ ft.
Static level 20 ft below top of well Date _____
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.
Well Produces 540 gph at 35 FT.

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 15 ft drawdown after 1/2 hrs.
Airstest _____ 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
SANDY CLAY	0	28
REAL HARD HARD PAN	28	32
COMPACT GRAVEL + WATER	32	39

RECEIVED
MAY 12 1992
DEPT. OF ECOLOGY

Work started 7-1 1991 Completed 4-6 1991

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 C.F. Drilling Co (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 2428 N MORFORD Rd

(Signed) [Signature] License No. 0005
(WELL DRILLER)

Contractor's Registration No. 0006 Date 5-11 1992

(USE ADDITIONAL SHEETS IF NECESSARY)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

431907



WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)

Construction
Decommission ORIGINAL INSTALLATION Notice of Intent Number

PROPOSED USE: Domestic, Industrial, Municipal
TYPE OF WORK: New well, Reconditioned, Deepened
DIMENSIONS: Diameter of well 6 inches, drilled 75 ft.
Depth of completed well 75 ft.

CONSTRUCTION DETAILS
Casing: Welded 6" Diam. from 1 ft. to 75 ft.
Installed: Liner installed, Threaded

Perforations: Yes, No
Type of perforator used
SIZE of perfs. in. by in. and no. of perfs from ft. to ft.

Screens: Yes, No, K-Pac
Manufacturer's Name
Type
Diam. Slot size from ft. to ft.

Gravel/Filter packed: Yes, No
Materials placed from ft. to ft.

Surface Seal: Yes, No
Material used in seal bentonite
Did any strata contain unusable water?
Type of water? Depth of strata

PUMP: Manufacturer's Name
Type: H.P.

WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 27 ft ft. below top of well Date Aug 23
Artesian pressure lbs. per square inch Date

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes, No
Yield: 5 gal./min. with 0 ft. drawdown after hrs.
Recovery data (time taken as zero when pump turned off)
Date of test
Bailer test 60 gal./min. with 0 ft. drawdown after 2 hrs.

CURRENT

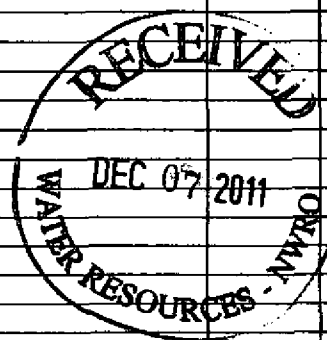
Notice of Intent No. W002282
Unique Ecology Well ID Tag No.
Water Right Permit No.
Property Owner Name Nathan Storms
Well Street Address 4240 Grassmere

City Concrete County Skagit
Location SE 1/4-1/4 NW 1/4 Sec 9 Twn 35 R 8
Lat/Long (s, t, r) Lat Deg Lat Min/Sec
Still REQUIRED Long Deg Long Min/Sec
Tax Parcel No.

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

Table with 3 columns: MATERIAL, FROM, TO. Entries include Clay, clay, sand, & gravel, clay, sand, gravel & water, sand and gravel.



Start Date July 17 Completed Date July 19, 1993

WELL CONSTRUCTION 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.

Driller Engineer Trainee Name (Print) Wayne Prince
Driller/Engineer/Trainee Signature
Driller or trainee License No. 1898

Drilling Company Prince Well Drilling
Address 7940 NE Cape Horn Rd
City, State, Zip Concrete, Wash 98237

If TRAINEE, Driller's Licensed No., Driller's Signature

Contractor's Registration No. Princwd095K4 Date July 20, 1993

Ecology is an Equal Opportunity Employer.

855
1658

WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)

- Construction
- Decommission ORIGINAL CONSTRUCTION Notice of Intent Number 158652

CURRENT

Notice of Intent No. W1675537

Unique Ecology Well ID Tag No. AKC 217

Water Right Permit No. _____

Property Owner Name Sean Thompson

Well Street Address 768 McDaniel Drive

City Concord County: Shasta

Location SW 1/4- 1/4 NE 1/4 Sec 9 Twn 35 R 8 EWM circle or one WWM

Lat/Long: (s,t,r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

PROPOSED USE: Domestic Industrial Municipal
 DeWater Irrigation Test Well Other

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

DIMENSIONS: Diameter of well 6 inches, drilled 140 ft.
Depth of completed well 140 ft.

CONSTRUCTION DETAILS
Casing Welded 6" Diam. from 1 ft. to 140 ft.
Installed: Liner installed _____" Diam. from _____ ft. to _____ ft.
 Threaded _____" Diam. from _____ ft. to _____ ft.

Perforations: Yes No
Type of perforator used _____
SIZE of perfs _____ in. by _____ in. and no. of perfs _____ from _____ ft. to _____ ft.

Screens: Yes No K-Pac Location _____
Manufacturer's Name _____
Type _____ Model No. _____
Diam. _____ Slot Size _____ from _____ ft. to _____ ft.
Diam. _____ Slot Size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: Yes No Size of gravel/sand _____
Materials placed from _____ ft. to _____ ft.

Surface Seal: Yes No To what depth? 18 ft
Materials used in seal Butylite
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

PUMP: Manufacturer's Name By Gould 1050m
Type: Sub. H.P. 3/4

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 124 ft. below top of well Date July 29
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? Yes No If yes, by whom? _____
Yield: 7 gal./min. with 6 ft. drawdown after 2 hrs.
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
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 _____ 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

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.
(USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
Top Soil	1	6
Soft Sand + gravel	6	28
Hard pan	28	80
Clay Sand + gravel	80	120
gravel water	80	120
water only come up in casing 8		
Sand gravel water	12	140

RECEIVED

AUG 31 2004

DEPT OF ECOLOGY

RECEIVED

NOV 10 2004

DEPT OF ECOLOGY

Start Date July 4 Completed Date July 29

WELL CONSTRUCTION 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.
 Driller Engineer Trainee Name (Print) Wayne Prince Drilling Company Prince Well Drilling
Driller/Engineer/Trainee Signature Wayne Prince Address 2940 NE Cape Horn Rd
Driller or Trainee License No. 2580 City, State, Zip Concord Wash 98257
Contractor's Registration No. Prm 005540 Date Aug 4 04
Ecology is an Equal Opportunity Employer. ECY 050-1-20 (Rev 4/01)

If trainee, licensed driller's Signature and License no. _____

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

431961



WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

CONSTRUCTION/Decommission ("x" in circle)

- Construction
Decommission ORIGINAL INSTALLATION Notice of Intent Number

PROPOSED USE: DeWater, Domestic, Industrial, Municipal, Irrigation, Test Well, Other. TYPE OF WORK: New well, Reconditioned, Deepened. DIMENSIONS: Diameter of well 6 inches, drilled 180 ft. CONSTRUCTION DETAILS: Casing, Liner installed, Perforations, Screens, Gravel/Filter packed, Surface Seal, PUMP: Manufacturer's Name, Type, WATER LEVELS, WELL TESTS.

CURRENT

Notice of Intent No. W222790

Unique Ecology Well ID Tag No. AKG288

Water Right Permit No.

Property Owner Name Debbie & Rudolph Skonard

Well Street Address Sled Run Drive

City Concrete County Skagit

Location NE 1/4-1/4 NN 1/4 Sec 9 Twn 35 R 8

Lat/Long (s, t, r) Lat Deg Lat Min/Sec

Still REQUIRED Long Deg Long Min/Sec

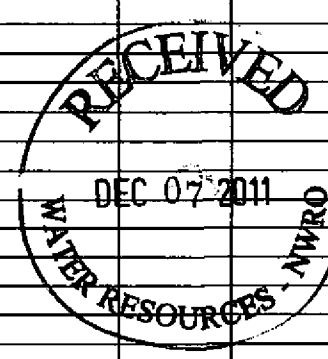
Tax Parcel No.

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY)

Table with columns: MATERIAL, FROM, TO. Rows include: topsoil, sand & gravel, hard pan, sand, gravel & some water, silt, sand & gravel, sand, gravel & some water, sand & gravel, sand, gravel & water.

Well site meets standards set in SC1248 according to information provided by owner.



Start Date Sept 10 Completed Date Sept 17, 2006

WELL CONSTRUCTION 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.

Driller/Engineer/Trainee Name (Print) Wayne Prince
Driller/Engineer/Trainee Signature Wayne Prince
Driller or trainee License No. 2788

Drilling Company Prince Well Drilling
Address 7940 NE Cape Horn Rd
City, State, Zip Concrete, Wash 98237

IF TRAINEE, Driller's Licensed No.
Driller's Signature

Contractor's Registration No. Princwd095K4 Date Sept 19, 2006

Ecology is an Equal Opportunity Employer.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle) 183663

Construction
 Decommission **ORIGINAL CONSTRUCTION Notice**
of Intent Number _____

PROPOSED USE: Domestic Industrial Municipal
 DeWater Irrigation Test Well Other _____

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

DIMENSIONS: Diameter of well 6 inches, drilled 80 ft.
Depth of completed well 80 ft.

CONSTRUCTION DETAILS
Casing Welded 6" Diam. from 1 ft. to 80 ft.
Installed: Liner installed _____" Diam. from _____ ft. to _____ ft.
 Threaded _____" Diam. from _____ ft. to _____ ft.

Perforations: Yes No
Type of perforator used _____
SIZE of perfs _____ in. by _____ in. and no. of perfs _____ from _____ ft. to _____ ft.

Screens: Yes No K-Pac Location _____
Manufacturer's Name _____
Type _____ Model No. _____
Diam. _____ Slot Size _____ from _____ ft. to _____ ft.
Diam. _____ Slot Size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: Yes No Size of gravel/sand _____
Materials placed from _____ ft. to _____ ft.

Surface Seal: Yes No To what depth? 18 ft
Materials used in seal Bentonite
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

PUMP: Manufacturer's Name Goolds
Type: Sub H.P. 3/4

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 64 ft. below top of well Date 9-22-05
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? Yes No If yes, by whom? _____
Yield: 10 gal./min. with 4 ft. drawdown after 2 hrs.
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
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
_____	_____	_____	_____
_____	_____	_____	_____

Date of test _____
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Airstest _____ 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

CURRENT Notice of Intent No. W182090

Unique Ecology Well ID Tag No. AKG 266

Water Right Permit No. _____

Property Owner Name Shawn Thompson

Well Street Address _____

City Concrete County: Spiegel

Location NE 1/4- 1/4 NE 1/4 Sec. 9 Twn. 35 R8 EWM circle or one WWM

Lat/Long: (s,t,r still REQUIRED) Lat Deg _____ Lat Min/Sec _____
Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.
(USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
<u>Silt Sand & gravel</u>	<u>1</u>	<u>20</u>
<u>2nd gravel</u>	<u>20</u>	<u>48</u>
<u>Clay Balen</u>	<u>48</u>	<u>54</u>
<u>Sand gravel</u>	<u>54</u>	<u>68</u>
<u>Sand gravel & water</u>	<u>68</u>	<u>80</u>

Well sat meets Standard
at 1248 according
to info provided by owner

RECEIVED

NOV 03 2005

DEPT OF ECOLOGY

Start Date 9-21-05 Completed Date 9-22-05

WELL CONSTRUCTION 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.

Driller Engineer Trainee Name (Print) Wayne Prince Drilling Company Prince Well Drilling
Driller/Engineer/Trainee Signature Wayne Prince Address 790 NE Cape Horn Rd
Driller or Trainee License No. 2788 City, State, Zip Concrete Wash 98237

If trainee, licensed driller's Signature and License no. _____

Contractor's Registration No. PNW009564 Date Oct 7 05

WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)

- Construction 172051
- Decommission ORIGINAL CONSTRUCTION Notice of Intent Number _____

PROPOSED USE: Domestic Industrial Municipal
 DeWater Irrigation Test Well Other

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

DIMENSIONS: Diameter of well 6 inches, drilled 55 ft.
 Depth of completed well 55 ft.

CONSTRUCTION DETAILS
 Casing Welded 6" Diam. from 2 ft. to 55 ft.
 Installed: Liner installed _____" Diam. from _____ ft. to _____ ft.
 Threaded _____" Diam. from _____ ft. to _____ ft.

Perforations: Yes No
 Type of perforator used _____
 SIZE of perfs _____ in. by _____ in. and no. of perfs _____ from _____ ft. to _____ ft.

Screens: Yes No K-Pac Location _____
 Manufacturer's Name _____
 Type _____ Model No. _____
 Diam. _____ Slot Size _____ from _____ ft. to _____ ft.
 Diam. _____ Slot Size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: Yes No Size of gravel/sand _____
 Materials placed from _____ ft. to _____ ft.

Surface Seal: Yes No To what depth? 18 ft
 Materials used in seal Best
 Did any strata contain unusable water? Yes No
 Type of water? _____ Depth of strata _____
 Method of sealing strata off _____

PUMP: Manufacturer's Name Gould
 Type: Submer H.P. 3/4

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
 Static level 25 ft. below top of well Date March 26
 Artesian pressure _____ lbs. per square inch Date _____
 Artesian water is controlled by _____ (cap, valve, etc.)

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

 Date of test _____
 Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
 Airstest _____ 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

CURRENT
 Notice of Intent No. 167501
 Unique Ecology Well ID Tag No. AKG 246
 Water Right Permit No. _____

Property Owner Name Johnny Fuzzell
 Well Street Address _____

City Concrete County Stagit
 Location NE 1/4- 1/4 NE 1/4 Sec 9 Twn 35 R 8 EWM circle or one

Lat/Long: (s,t,r still REQUIRED) Lat Deg _____ Lat Min/Sec _____
 Long Deg _____ Long Min/Sec _____
 Tax Parcel No. _____

CONSTRUCTION OR DECOMMISSION PROCEDURE
 Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.
 (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
Boulders + Sand	1	23
Sand + gravel	23	39
fine Sand	39	45
Sand gravel + water	45	55

RECEIVED
 MAY 17 2005
 DEPT OF ECOLOGY

RECEIVED
 APR 07 2005
 DEPT OF ECOLOGY

Well site meets Standard
 Set in SC.1248 according
 to info provided by owner

Start Date March 23 Completed Date March 26 05

WELL CONSTRUCTION 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.

Driller Engineer Trainee. Name (Print) Wayne Prince Drilling Company Prince Well Drilling
 Driller/Engineer/Trainee Signature Wayne Prince Address 7940 NE Cape Horn Rd
 Driller or Trainee License No. 2582 City, State, Zip Concrete Wash 98237

If trainee, licensed driller's Signature and License no. _____

Contractor's Registration No. PRINWD09554 Date April 3 05
 Ecology is an Equal Opportunity Employer. ECY 050-1-20 (Rev 4/01)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

ENTERED WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W 072952
 UNIQUE WELL I.D. # ACG 791
 Water Right Permit No. 35-8-10 D

(1) OWNER: Name Jaesen Meachen Address 769 Burpee Hill Rd Concrete

(2) LOCATION OF WELL: County Skagit NW 1/4 NW 1/4 Sec 10 T. 35 N. R. 8 W.M.

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

(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 Method: Dug Bored
 Deepened Cable Driven
 Reconditioned Rotary Jetted

(5) DIMENSIONS: Diameter of well _____ inches.
 Drilled _____ feet. Depth of completed well _____ feet.

(6) CONSTRUCTION DETAILS:
 Casing installed: 6 ft. Diam. from 1 ft. to 3 3/4 ft.
 Welded Liner installed Threaded
 Perforations: Yes No

Type of perforator used Star
 SIZE of perforations 1 in. by 4 in.
 _____ perforations from 290 ft. to 300 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 Grundfos
 Type: Submersible H.P. _____

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
 Static level 190 ft. below top of well Date _____
 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? W.P. Prince
 Yield: 6 gal./min. with 96 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 _____

Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
 Airstest _____ 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
Clay	1	10
Clay Sand & gravel	10	50
Sand & gravel	50	61
Fine Sand	61	90
Clay Sand & gravel	90	290
Sand & gravel with	290	300
Clay Sand & gravel	300	340

Well Site Meets Standard set in RC 1248 According to info provided by owner WRF

RECEIVED

SEP 09 1996

DEPT. OF ECOLOGY

Work Started Aug 1 19 _____ Completed Aug 10 1996

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 Prince Well Drilling
 (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
 Address 744 NE Cape Horn Concrete Wash
 (Signed) Wayne C. Prince License No. 1898
 (WELL DRILLER)

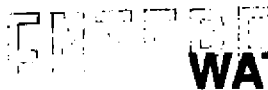
Contractor's Registration No. WAC0095K4 Date _____, 19 _____

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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



WATER WELL REPORT

STATE OF WASHINGTON

UNIQUE WELL I.D. #

Water Right Permit No.

35-9E-20R

(1) OWNER: Name STEVE DERNBACK Address 1224 SW Harbor Vista Circle OAK Harbor

(2) LOCATION OF WELL: County SKagit SE 1/4 SE 1/4 Sec 20 T. 35 N. R. 9 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) SNAWK River Hwy Concrete WA

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

(4) TYPE OF WORK: Owner's number of well (if more than one) 1
Abandoned [] New well [x] Method: Dug [] Bored []
Deepened [] Cable [] Driven []
Reconditioned [] Rotary [x] Jetted []

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

(6) CONSTRUCTION DETAILS: Casing installed: 6' + 1 1/2' Diam. from 1 1/2 ft. to 38 ft.
Welded [x] Liner installed [] Threaded []

Perforations: Yes [] No [x]
Type of perforator used
SIZE of perforations in. by in.
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 [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: Sub H.P. 1/2

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 15 ft. below top of well Date
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 gal./min. with ft. drawdown after hrs.
Airtest 20 + 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.

Table with columns: MATERIAL, FROM, TO. Entries: BROWN SAND + S. IT (0-7), BROWN CLAY (7-15), SAND + GRAVEL WATER (15-38)

Drilled in compliance with Sec 12.40
Based on information supplied by owner
Mig Halverson

RECEIVED

APR 22 1999

DEPT OF ECOLOGY

Work Started 1 MAR 98 19. Completed 1 MAR 98 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 AFFORDABLE WATER SYSTEMS
Address 1401 Bradshaw Rd Mt Vernon
(Signed) Mig Halverson License No. 1612

Contractor's Registration No. AFFDR WS 101 RJ Date 5 MAR 98 19.

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-8600. The TDD number is (206) 407-6006.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. [Redacted]

35/9/20F

Water Right Permit No.

(1) OWNER: Name Mark Brown Address 4782 Saukully Rd Concrete

(2) LOCATION OF WELL: County Skagit County SE 1/4 SE 1/4 Sec 20 T. 35 N. R. 9 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) 4782 Saukully Rd Concrete

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

(4) TYPE OF WORK: Abandoned New well Reconditioned Method: Dug Cable Rotary Bored Driven Jetted

(5) DIMENSIONS: Diameter of well 6 inches. Drilled 62 feet. Depth of completed well 62 ft.

(6) CONSTRUCTION DETAILS: Casing installed 6 inch diam. from 1 ft. to 62 ft. Screens: No

Gravel packed: No. Gravel placed from 0 ft. to 0 ft. Surface seal: Yes. Material used in seal Bentonite

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

(8) WATER LEVELS: Static level 43 ft. below top of well Date Jan 22. Artesian pressure 0 lbs. per square inch

(9) WELL TESTS: Was a pump test made? Yes. Yield: 10 gal./min. with 2 ft. drawdown after 3 hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Date of test
Baller test 30 gal./min. with 2 ft. drawdown after 2 hrs.

(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.

Table with columns: MATERIAL, FROM, TO. Entries: Sand Gravel + Boulders (1-18), Clay Blue (18-40), Sand + gravel (40-50), Sand + gravel water (50-60), Sand + gravel water (62-62)

RECEIVED
JAN 26 1993
DEPT. OF ECOLOGY

Work started Jan 21, 1993. Completed Jan 22, 1993

WELL CONSTRUCTOR CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards.

NAME Prince Well Drilling (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 794 NE Cape Horn CONCRETE
(Signed) Wayne Prince License No. 1898
Contractor's Registration No. PRINCEW009519 Date Jan 22, 1993

(USE ADDITIONAL SHEETS IF NECESSARY)



The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

Site: 3 Point: 2

File Original and First Copy with Department of Ecology

Second Copy - Owner's Copy
Third Copy - Driller's copy

351844

WATER WELL REPORT

STATE OF WASHINGTON

Eco ID: 607884

Notice of Intent **W268051**

UNIQUE WELL I.D. # **BAA535**

Water Right Permit No.

(1) OWNER: Name **Bob Taylor** Address **16706 Dunbar Rd, Mt. Vernon, WA 98273**

(2) LOCATION OF WELL: County **skagit** - SW 1/4 SW 1/4 Sec **21** T. **35** N., R. **9E** W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) **50007 Sauk Store Rd**

TAX PARCEL NO. **350921-006-0400**

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

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

(5) DIMENSIONS: Diameter of well **6** inches.
 Drilled **80** feet. Depth of completed well **78** ft.

(6) CONSTRUCTION DETAILS:
 Casing Installed: Welded **6** " Diam. from **+2** ft. to **75** ft.
 Liner installed " Diam. from _____ ft. to _____ ft.
 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 K-Pac Location **73**
 Manufacturer's Name **alloy**
 Type **ss** Model No. _____
 Diam. **6** Slot size **15** from **73** ft. to **78** ft.
 Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: Yes No Size of gravel/sand _____
 Material 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 **berkley**
 Type: **sub_10gpm** H.P. **3/4**

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
 Static level **51** ft. below top of well Date **7/28/2009**
 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? **aquatech7/30/**
 Yield: **18** gal./min. with **4.5** ft. drawdown after **1** hrs.
 Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
 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 **12** ft. drawdown after **1.5** hrs.
 Airtest _____ gal./min. with stem set at _____ ft. for _____ hrs.
 Artesian flow _____ g.p.m. Date _____
 Temperature of water _____ Was a chemical analyses made? Yes No

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION:
 Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

MATERIAL	FROM	TO
topsoil	0	1
brown sand clay	2	14
gray sand clay	14	22
gray gravel	22	53
gray gravel sand water	53	62
gravel water	62	78

Located in compliance with sec 12-48 based on information supplied by owner.

09141

RECEIVED

AUG 07 2009

Dept of Ecology

WR-NWRO

Work Started **7/28/2009**, 19. Completed **7/28/2009**, 19

WELL CONSTRUCTION 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.

Type or Print Name **Wayne Logsdon** License No. **2146**
 (Licensed Driller/Engineer)
 Trainee Name _____ License No. _____
 Drilling Company **Aquatech Well Drilling & Pumps Inc.**
 (Signed) *Wayne Logsdon* License No. **2146**
 (Licensed Driller/Engineer)
 Address **2675 Butler Crk Rd SedroWoolley Wa 98284**
 Contractor's Registration No. **AQUATWD040K4** Date **7/31/2009**, 19

(USE ADDITIONAL SHEETS IF NECESSARY)
 Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-6600. The TDD number is (360) 407-6006.

WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)

- Construction
- Decommission **ORIGINAL CONSTRUCTION Notice**
of Intent Number 134224

CURRENT

Notice of Intent No. W168101

Unique Ecology Well ID Tag No. AGE076

Water Right Permit No. _____

Property Owner Name Bucomb Aldridge

Well Street Address 50200 Sawk Store Rd

City Concrete County: Skagit

Location SE 1/4 1/4 SW 1/4 Sec 21 Twn 35 R 9 EWM circle or one WWM

Lat/Long: (s, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____

Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

PROPOSED USE: Domestic Industrial Municipal
 DeWater Irrigation Test Well Other _____

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

DIMENSIONS: Diameter of well 6 inches, drilled 96 ft.
Depth of completed well 96 ft

CONSTRUCTION DETAILS
Casing Welded 6 " Diam. from -2 ft to 96 ft.
Installed: Liner installed _____ " Diam. from _____ ft. to _____ ft.
 Threaded _____ " Diam. from _____ ft. to _____ ft.

Perforations: Yes No
Type of perforator used _____
SIZE of perfs _____ in by _____ in and no. of perfs _____ from _____ ft to _____ ft.

Screens: Yes No K-Pac Location _____
Manufacturer's Name _____
Type _____ Model No _____
Diam _____ Slot Size _____ from _____ ft to _____ ft
Diam _____ Slot Size _____ from _____ ft. to _____ ft

Gravel/Filter packed: Yes No Size of gravel/sand _____
Materials placed from _____ ft to _____ ft

Surface Seal: Yes No To what depth? 18 ft
Materials used in seal Bentonite
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

PUMP: Manufacturer's Name Grundfos
Type Submer HP 3/4

WATER LEVELS: Land-surface elevation above mean sea level _____ ft
Static level 66 ft below top of well Date MARCH, 28, 2003
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc)

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
Yield _____ gal/min with _____ ft drawdown after _____ hrs
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 _____
Bailler test 10 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

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information Indicate all water encountered (USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL	FROM	TO
Silty top soil	1	18
Sand	18	22
Sand + gravel	22	28
Fine sand	28	40
Sand, gravel + silt	40	89
Sand, gravel + water	89	96

Start Date 3-27-03 Completed Date 3-28-03

RECEIVED
JUN 23 2003
DEPT OF ECOLOGY

Well site meets standards set in S.C. 1248 according to info provided by owner.

WELL CONSTRUCTION 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.

Driller Engineer Trainee Name (Print) Wayne Prince Drilling Company Prince Well Drilling

Driller/Engineer/Trainee Signature Wayne Prince Address 7940 N.E. Cape Horn Rd

Driller or Trainee License No. 2582 City, State, Zip Concrete, WA 98237

Contractor's Registration No. WSD095K4 Date MARCH 31, 2003

Ecology is an Equal Opportunity Employer EGY 050-1-20 (Rev 4/01)

If trainee, licensed driller's Signature and License no. _____

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

JUN - 8 1994

ENTERED

WATER WELL REPORT

STATE OF WASHINGTON

DEPT. OF ECOLOGY

Start Card No. W 41368

Unique Well I.D. #

Water Right Permit No.

(1) OWNER: Name **ANDERSON, TOM** Address **P O BOX 339 CONCRETE, WA 98237-** **35/9/21P**
 (2) LOCATION OF WELL: County **SKAGIT**
 (2a) STREET ADDRESS OF WELL (or nearest address) **936 ADAMS, CONCRETE** - SE 1/4 SW 1/4 Sec 21 T 35 N., R 9 WM

(3) PROPOSED USE: **DOMESTIC**

(10) WELL LOG

(4) TYPE OF WORK: Owner's Number of well (If more than one) Method: **ROTARY**
NEW WELL

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 in formation.

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

MATERIAL	FROM	TO
BROWN CLAY & GRAVEL	0	56
WATER & GRAVEL	56	60
BLUE CLAY	60	

(6) CONSTRUCTION DETAILS:
 Casing installed: **6** " Dia. from **0** ft. to **60** ft.
WELDED " Dia. from ft. to ft.
 " Dia. from ft. to ft.

Perforations: **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: **NO**
 Manufacturer's Name
 Type Model No.
 Diam. slot size from ft. to ft.
 Diam. slot size from ft. to ft.

Gravel packed: **NO** Size of gravel
 Gravel placed from ft. to ft.

Surface seal: **YES** To what depth? **18** ft.
 Material used in seal **BENTONITE**
 Did any strata contain unusable water? **NO**
 Type of water? Depth of strata ft.
 Method of sealing strata off

Well Located According to Skagit County Ordinance 12.48

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

(8) WATER LEVELS: Land-surface elevation above mean sea level ... ft.
 Static level **51** ft. below top of well Date **06/01/94**
 Artesian Pressure lbs. per square inch Date
 Artesian water controlled by

Work started 06/01/94 Completed 06/01/94

(9) WELL TESTS: Drawdown is amount water level is lowered below static level.
 Was a pump test made? If yes, by whom?
 Yield: gal./min with ft. drawdown after hrs.

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 **DAHLMAN PUMP & WELL DRILL**
 (Person, firm, or corporation) (Type or print)

ADDRESS **PO BOX 422, BURLINGTON, WA**

(SIGNED) *Ralph W. Dahlman* License No. 2043

Contractor's Registration No. **DAHLMPW123LC** Date **06/03/94**

Recovery data
 Time Water Level Time Water Level Time Water Level

Date of test / /
 Bailer test gal/min. **7** ft. drawdown after hrs.
 Air test **4** gal/min. w/ stem set at **59** ft. for **1** hrs.
 Artesian flow g.p.m. Date
 Temperature of water Was a chemical analysis made?

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

WATER WELL REPORT

Original & 1st copy Ecology 2nd copy owner 3rd copy driller

Construction/Decommission (x in circle)

- Construction
- Decommission ORIGINAL CONSTRUCTION Notice of Intent Number _____

CURRENT

Notice of Intent No 125884

Unique Ecology Well ID Tag No AGE041

Water Right Permt No _____

Property Owner Name Tom Torrey

Well Street Address 50506 2nd St - 20

City Concrete County Skagit

Location SE 1/4 1/4 SW 1/4 Sec 21 Twn 35 R 9 EWM circle or one

Lat/Long (s, t, r still) Lat Deg _____ Lat Min/Sec _____

REQUIRED) Long Deg _____ Long Min/Sec _____

Tax Parcel No _____

PROPOSED USE Domestic Industrial Municipal
 DeWater Irrigation Test Well Other

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

DIMENSIONS Diameter of well 6 inches drilled 178 ft
 Depth of completed well 178 ft

CONSTRUCTION DETAILS
 Casing Welded 6 Diam from 2 ft to 178 ft
 Installed Liner installed _____ Diam from _____ ft to _____ ft
 Threaded _____ Diam from _____ ft to _____ ft

Perforations Yes No
 Type of perforator used _____
 SIZE of perfs _____ in by _____ in and no of perfs _____ from _____ ft to _____ ft

Screens Yes No K Pac Location _____
 Manufacturer's Name _____
 Type _____ Model No _____
 Diam _____ Slot Size _____ from _____ ft to _____ ft
 Diam _____ Slot Size _____ from _____ ft to _____ ft

Gravel/Filter packed Yes No Size of gravel/sand _____
 Materials placed from _____ ft to _____ ft

Surface Seal Yes No To what depth? 18 ft
 Materials used in seal Butyl
 Did any strata contain unusable water? Yes No
 Type of water? _____ Depth of strata _____
 Method of sealing strata off _____

PUMP Manufacturer's Name _____
 Type Coiled 10gm HP 3/4

WATER LEVELS Land surface elevation above mean sea level _____ ft
 Static level 77 ft below top of well Date May 2
 Artesian pressure _____ lbs per square inch Date _____
 Artesian water is controlled by _____ (cap valve etc)

WELL TESTS Drawdown is amount water level is lowered below static level
 Was a pump test made? Yes No If yes by whom?
 Yield 10 gal/min with 7 ft drawdown after 2 hrs
 Yield _____ gal/min with _____ ft drawdown after _____ hrs
 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 _____ gal/min with _____ ft drawdown after _____ hrs
 Artest _____ 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

CONSTRUCTION OR DECOMMISSION PROCEDURE
 Formation Describe by color character size of material and structure and the kind and nature of the material in each stratum penetrated with at least one entry for each change of information Indicate all water encountered (USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL	FROM	TO
Clay Dark Gray	1	24
Clay Blue	24	31
sand	31	34
Clay Blue	34	110
sand	110	118
Clay Brown	118	140
sand + gravel	140	160
silt grey	160	163
sand + gravel + water	163	178

RECEIVED
 MAY 10 2002
 DEPT OF ECOLOGY

Start Date April 30 Completed Date May 3 12

WELL CONSTRUCTION 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

Driller Engineer Trainee Name (Print) Wayne Prince
 Driller/Engineer/Trainee Signature Wayne Prince
 Driller or Trainee License No 2582
 Drilling Company Prince Well Drilling
 Address 7940 NE Cape Horn Rd
 City State Zip Concrete Wash 98237

If trainee, licensed driller's Signature and License no _____
 Contractor's Registration No Princwidorsky Date May 6 02

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

The Dep. The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

ENTERED

35/9/212

WATER WELL REPORT

Start Card No. W 18143
Unique Well I.D. #
Water Right Permit No.

STATE OF WASHINGTON

(1) OWNER: Name RAPP, DON Address 4861 HWY 20 CONCRETE, WA 98237-

(2) LOCATION OF WELL: County SKAGIT - NE 1/4 SW 1/4 Sec 21 T 35 N., R 9 WM
(2a) STREET ADDRESS OF WELL (or nearest address) 4861 HWY 20, CONCRETE

(3) PROPOSED USE: DOMESTIC / Group

(10) WELL LOG

(4) TYPE OF WORK: Owner's Number of well (If more than one) Method: ROTARY
NEW WELL

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 in formation.

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 185 ft. Depth of completed well 185 ft.

MATERIAL	FROM	TO
TOPSOIL	0	1
BROWN CLAY & GRAVEL	1	30
BROWN SANDY CLAY	30	83
BROWN CLAY & GRAVEL	83	155
BLUE CLAY & GRAVEL	155	175
WATER GRAVEL & SAND	175	

(6) CONSTRUCTION DETAILS:
Casing installed: 6 " Dia. from 0 ft. to 180 ft.
WELDED " Dia. from ft. to ft.
" Dia. from ft. to ft.

Perforations: 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
Manufacturer's Name Model No. TELESCOPING
Type STAINLESS STEEL
Diam. 6 slot size 30 from 180 ft. to 185 ft.
Diam. slot size from ft. to ft.

Gravel packed: NO Size of gravel
Gravel placed from ft. to ft.

Surface seal: YES To what depth? 18 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? NO
Type of water? Depth of strata ft.
Method of sealing strata off

Well Located According To Skagit County Ordinance # 12.48

RECEIVED

OCT 03 1994

DEPT. OF ECOLOGY

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

Work started 09/16/94 Completed 09/19/94

(8) WATER LEVELS: Land-surface elevation above mean sea level ... ft.
Static level 154 ft. below top of well Date 09/19/94
Artesian Pressure lbs. per square inch Date
Artesian water controlled by

(9) WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? If yes, by whom?
Yield: gal./min with ft. drawdown after hrs.

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.

Recovery data
Time Water Level Time Water Level Time Water Level

NAME DAHLMAN PUMP & WELL DRILL
(Person, firm, or corporation) (Type or print)

ADDRESS PO BOX 422, BURLINGTON, WA

Date of test / /
Bailer test gal./min. 21 ft. drawdown after hrs.
Air test 20+ gal./min. w/ stem set at ft. for 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made?

[SIGNED] *Ralph W. Priddy* license No. 2043

Contractor's Registration No. DAHLMWP123LC Date 09/22/94

WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller.

Construction/Decommission ("x" in circle)

Construction **168081**
 Decommission ORIGINAL CONSTRUCTION Notice of Intent Number

PROPOSED USE: Domestic Industrial Municipal
 DeWater Irrigation Test Well Other

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

DIMENSIONS: Diameter of well 6 inches, drilled 175 ft.
Depth of completed well 175 ft.

CONSTRUCTION DETAILS
Casing Welded 6" Diam. from -1 ft. to 175 ft.
Installed: Liner installed _____" Diam. from _____ ft. to _____ ft.
 Threaded _____" Diam. from _____ ft. to _____ ft.

Perforations: Yes No
Type of perforator used _____
SIZE of perfs _____ in. by _____ in. and no. of perfs _____ from _____ ft. to _____ ft.

Screens: Yes No K-Pac Location _____
Manufacturer's Name _____
Type _____ Model No. _____
Diam. _____ Slot Size _____ from _____ ft. to _____ ft.
Diam. _____ Slot Size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: Yes No Size of gravel/sand _____
Materials placed from _____ ft. to _____ ft.

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

PUMP: Manufacturer's Name Gould
Type: Sub m H.P. 3/4

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 128 ft. below top of well Date OCT 28
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? Yes No If yes, by whom?
Yield: 10 gal./min. with 5 ft. drawdown after 2 hrs.
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
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 _____ 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

WELL CONSTRUCTION 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.

Driller Engineer Trainee Name (Print) Wayne C Prince Drilling Company Prince Well Drilling
Driller/Engineer/Trainee Signature Wayne C Prince Address 7940 NE Cape Henry Rd
Driller or Trainee License No. 2582 City, State, Zip Concrete Wash 98237

If trainee, licensed driller's Signature and License no. _____

CURRENT Notice of Intent No. W167547
Unique Ecology Well ID Tag No. AKG 235
Water Right Permit No. _____

Property Owner Name Miki Kalkaski
Well Street Address _____

City Concrete County: Skagit

Location NE 1/4-1/4 SW 1/4 Sec 21 Twn 35 R 9 EWM circle or one WWM

Lat/Long: (s, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____
Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.
(USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
Silt Sand	1	10ft
Boulder	10	12
Large Gravel & Sand	12	46
Hard Pan	46	105
Sand & gravel	105	131
Clay Blue	131	149
Clay mud	149	153
Water Red fine sand	153	160
Sand gravel Water	160	175

Well Site meets standards set in SE 1248 according to info provided by owner

RECEIVED

FEB 17 2005

DEPT OF ECOLOGY

Start Date OCT 10 04 Completed Date OCT 28 04

Registration No. Princindrill, Inc. Oct 9 04
Ecology is an Equal Opportunity Employer. ECY 050-1-20 (Rev 4/01)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

100076

WATER WELL REPORT

STATE OF WASHINGTON

Notice of Intent W125852

UNIQUE WELL I.D # AGE026

Water Right Permit No 35-9E-21L

(1) OWNER: Name Alfred Brewer Address 9728 Sunk Connector Rd

(2) LOCATION OF WELL: County Skagit County NE 1/4 SW 1/4 Sec 21 T 35 N R 9 WM

(2a) STREET ADDRESS OF WELL: (or nearest address) Sam TAX PARCEL NO. P44 618

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

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

(5) DIMENSIONS: Diameter of well 6 inches Drilled 118 feet. Depth of completed well 118 ft

(6) CONSTRUCTION DETAILS Casing Installed: [] Welded [] Liner installed [] Threaded 6" Diam from -2 ft to 118 ft

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

Screens: [] Yes [X] No [] K-Pac Location Manufacturer's Name Type Model No Diam. Slot Size from ft to ft

Gravel/Filter packed: [] Yes [X] No [] Size of gravel/sand Material placed from ft to ft

Surface seal: [X] Yes [] No To what depth? 18 ft Material used in seal Bentonite Did any strata contain unusable water? [] Yes [] No

(7) PUMP: Manufacturer's Name Gould Type Subman HP 1/2

(8) WATER LEVELS: Land surface elevation above mean sea level Static level 9.5 ft. below top of well Date July 16 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? [X] Yes [] No Yield 10 gal/min with 3 ft drawdown after 2 hrs

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

Table with columns: MATERIAL, FROM, TO. Rows: Top Soil (1-6), Sand gravel (6-31), Clay (31-36), Sand (36-41), Sand gravel (41-57), Clay (57-62), Sand (62-78), Clay Sand gravel (78-108), sand gravel water (108-118)

Well Site meets Standard set in SC R48 according to info provided by owner

RECEIVED JUL 31 2001 DEPT OF ECOLOGY

Work Started July 16 01 Completed July 29 01

WELL CONSTRUCTION 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. Type or Print Name Wayne Prince License No 2582 (Licensed Driller/Engineer)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-6600. The TDD number is (360) 407-6006.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

100076

140412

7582



Water Well Report

Original - Ecology, 1st copy - owner, 2nd copy - driller

Construction/Decommission

- Construction
Decommission ORIGINAL INSTALLATION Notice of Intent Number

Current

Notice of Intent No. W153627

Unique Ecology Well ID Tag No. AKY 940

Water Right Permit No.

Property Owner Name Brooks, George

Well Street Address 50223 State Route 20

City Concrete County Skagit

Location SE 1/4-1/4 NW 1/4 Sec 21 Twn 35 R 9E EWM or WWM

Lat/Long (s, t, r) Lat Deg Lat Min/Sec

still REQUIRED) Long Deg Long Min/Sec

Tax Parcel No.

PROPOSED USE: DeWater, Domestic, Industrial, Municipal, etc. TYPE OF WORK: New well, Reconditioned, etc. DIMENSIONS: Diameter of well 6 inches, drilled 182 ft. CONSTRUCTION DETAILS: Casing, Installed, etc. PUMP: Grundfos, HP 1hp. WATER LEVELS: Static level 151 ft. WELL TESTS: Drawdown, yield, etc.

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information indicate all water encountered (USE ADDITIONAL SHEETS IF NECESSARY)

Table with columns: MATERIAL, FROM, TO. Rows include: Brown, Topsoil, Cobbles; Brown Gravel, Sand; Brown Sand; etc.

RECEIVED

OCT 24 2003

DEPARTMENT OF ECOLOGY WELL DRILLING UNIT

DEPT OF ECOLOGY FISCAL BUDGET 03 OCT 22 5:20

Start Date 10/02/03 Completed Date 10/06/03

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards.

Driller/Engineer/Trainee Name (Print) Mike McAdam Drilling Company Hayes Drilling, Inc Address 5696 Ershig Road City, State, Zip Bow, Wa 98232

If TRAINEE, Driller's Licensed No. Driller's Signature

Contractor's Registration No HAYESDI1065 Date 10/16/03 Ecology is an Equal Opportunity Employer

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

File Original with Department of Ecology
Second Copy - Owner's Copy
Third Copy - Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Notice of Intent W129841

UNIQUE WELL I.D.# AFG993

Water Right Permit No 35-10E-1Q

95884

(1) OWNER Name Porter WC Address 7279 RANGER STATION RD. MARBLEMOUNT, WA

(2) LOCATION OF WELL County Skagit SW 1/4 SE 1/4 Sec 1 T 35 NR 10 WWM

(2a) STREET ADDRESS OF WELL (or nearest address) 7279 RANGER STATION RD MARBLEMOUNT, WA

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

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

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

(6) CONSTRUCTION DETAILS
Casing Installed
 Welded 6" Diam from 1 ft to 100 ft
 Liner installed _____ Diam from _____ ft to _____ ft
 Threaded _____ Diam from _____ ft to _____ ft

Perforations Yes No
Type of perforator used STAR
SIZE of perforations 1/8 in by 3/4 in
perforations from 65 ft to 80 ft

Screens Yes No K-Pac Location _____
Manufacturer's Name _____
Type _____ Model No _____
Diam _____ Slot Size _____ from _____ ft to _____ ft
Diam _____ Slot Size _____ from _____ ft to _____ ft

Gravel/Filter packed Yes No Size of gravel/sand _____
Material 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 _____ HP _____

(8) WATER LEVELS Land-surface elevation above mean sea level _____ ft
Static level 20 ft below top of well Date 5/14/01
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 30 gal/min with _____ ft drawdown after 2 hrs
Yield _____ gal/min with _____ ft drawdown after _____ hrs
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 5-14-01
Bailer test 30 gal/min with _____ ft drawdown after _____ hrs
Airtest _____ gal/min with _____ ft drawdown after _____ hrs
Artesian flow _____ g p m Date _____
Temperature of water _____ Was a chemical analysis made? Yes No

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION
Formation Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information Indicate all water encountered

MATERIAL	FROM	TO
sand, gravel, clay	1	40
sand	40	46
clay	46	60
sand, water, gravel, clay	60	80
shale, water	80	100

WELL SITE MEETS STANDARD SET IN SC 8495 ACCORDING TO INFO PROVIDED BY OWNER

RECEIVED
JUN 04 2001
DEPT OF ECOLOGY

Work Started 5-14 01 Completed 5-18 01

WELL CONSTRUCTION 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
Type or Print Name Wayne C. Prince License No 2582
(Licensed Driller/Engineer)
Trainee Name _____ License No _____
Drilling Company Prince Well Drilling
(Signed) _____ License No 2582
(Licensed Driller/Engineer)
Address 7940 N.E. Cape Horn Rd Concrete, WA 98237
Contractors PRINC wd095K4 Date _____
Registration No _____

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer For special accommodation needs, contact the Water Resources Program at (360) 407-6600 The TDD number is (360) 407-6006

95884

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

(1) OWNER: Name National Park Service Address Marblemount, Wa

(2) LOCATION OF WELL: County SKAGIT NW 1/4 NE 1/4 Sec 12 T. 35 N., R. 10 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) 1
New well Method: Dug Bored
Deepened Cable Driven
Reconditioned Rotary Jetted

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 162 ft. Depth of completed well 162 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6 " Diam. from +2 ft. to 143-9 ft.
Threaded " Diam. from _____ ft. to _____ ft.
Welded " 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 _____
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? 20 ft.
Material used in seal Cement
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 _____ ft.
above mean sea level _____ ft.
Static level _____ ft. below top of well Date _____
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 _____
Air 16 gal./min. with _____ ft. drawdown after _____ 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	0	4
Silt w/gravel lenses	4	28
Silt w/some gravel & sand all the way	28	137
Granite	137	162

NOV 1 1982
DEPARTMENT OF ECOLOGY
NOV 17 1982
RECEIVED

Work started 8/16/82, 19_____ Completed 8/17/82, 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 Bartholomew Drilling, Inc.
(Person, firm, or corporation) (Type or print)
Address N. 11525 Nine Mile Rd., Nine Mile Falls,
Wa 99026
[Signed] Mary Bartholomew
(Well Driller)

License No. 0051 Date 11/10, 1982

(USE ADDITIONAL SHEETS IF NECESSARY)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

WATER WELL REPORT

Application No

STATE OF WASHINGTON

Permit No

(1) OWNER: Name USDI- North Cascades Natl. Park Address 800 State St. SW. 98284
(2) LOCATION OF WELL: County Skagit NW, NE 1/4 Sec 12 T. 35 N. R. 10 W.M.
Bearing and distance from section or subdivision corner Dist. Office- Marblemount

(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 8" inches.
Drilled 78' ft. Depth of completed well 78' ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8" Diam. from 0 ft. to 68 ft.
Threaded " Diam. from " ft. to " ft.
Welded " 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 Johnson Stainless
Manufacturer's Name Johnson Stainless
Type Model No.
Diam. 8" Slot size #40 from 68 ft. to 73 ft.
Diam. 8" Slot size #40 from 63 ft. to 78 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
Did any strata contain unusable water? Yes No
Type of water? Depth of strata.
Method of sealing strata off

(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
Dirty Sand & Gravel	0	37
Water, Sand & Gravel	37	40
Brown Clay & Gravel	40	65
Gravel & Water	65	78

RECEIVED
MAY 13 1985
DEPARTMENT OF ECOLOGY
NORTHWEST REGION

Work started 4-25, 1985. Completed 4-26, 1985

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 DAHLMAN PUMP & WELL DRILLING, INC.
(Person, firm, or corporation) (Type or print)

Address Box 422, Burlington, WA. 98233

[Signed] H Ken Fowler
(Well Driller)

License No. 1192 Date 5-2-85 19

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

(8) WATER LEVELS: Land-surface elevation 781 ft. above mean sea level.
Static level 48' ft. below top of well Date 4-26-85
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: 65 gal./min. with 1 ft. drawdown after 1 hrs.
" 65 " " 2 "

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
One Minute	back up to		Static		

Date of test 4-29-85
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes No

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

The Department of Ecology does NOT warrant the Data and/or the Information on this Well Report.



185134

WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)

- Construction
 Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

PROPOSED USE: Domestic Industrial Municipal
 DeWater Irrigation Test Well Other _____

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

DIMENSIONS: Diameter of well 6 inches, drilled 90 ft.
 Depth of completed well 90 ft.

CONSTRUCTION DETAILS
 Casing Welded 6" Diam. from 1 ft to 90 ft.
 Installed: Liner installed _____" Diam. from _____ ft. to _____ ft.
 Threaded _____" Diam. from _____ ft. to _____ ft.

Perforations: Yes No
 Type of perforator used _____
 SIZE of perfs _____ in. by _____ in. and no. of perfs _____ from _____ ft. to _____ ft.

Screens: Yes No K-Pac Location _____
 Manufacturer's Name _____
 Type _____ Model No. _____
 Diam. _____ Slot size _____ from _____ ft. to _____ ft.
 Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: Yes No Size of gravel/sand _____
 Materials 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 _____

PUMP: Manufacturer's Name Gould
 Type: 10 gpm submersible H.P. half

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
 Static level 36 ft. below top of well Date Sept 1
 Artesian pressure _____ lbs. per square inch Date _____
 Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
 Was a pump test made? Yes No If yes, by whom? Wayne Prince
 Yield: 10 gal./min. with 3 ft. drawdown after 2 hrs.
 Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
 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 60 gal./min. with 4 ft. drawdown after 1 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

CURRENT

Notice of Intent No. W246651
 Unique Ecology Well ID Tag No. AKG263
 Water Right Permit No. _____
 Property Owner Name Robert Humiston
 Well Street Address _____
 City Marblemount County Skagit
 Location NE 1/4-1/4 ne 1/4 Sec 12 Tw'n 35 R 10 circle or one
 Lat/Long (s, t, r) Lat Deg _____ Lat Min/Sec _____
 Still REQUIRED) Long Deg _____ Long Min/Sec _____
 Tax Parcel No. P45141

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
Topsoil	1	6
Sand, Gravel	6	35
Clay Blue	35	41
Silt, Sand and Gravel	41	78
Sand, Gravel & Water	78	90

RECEIVED
 SEP 09 2005
 DEPT OF ECOLOGY

Start Date Sept 1, 2005 Completed Date Sept 1, 2005

WELL CONSTRUCTION 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.

Driller Engineer Trainee Name (Print) Wayne Prince
 Driller/Engineer/Trainee Signature _____
 Driller or trainee License No. 2788

Drilling Company Prince Well Drilling
 Address 7940 NE Cape Horn Rd.
 City, State, Zip Concrete, WA 98237
 Contractor's
 Registration No. princw0095k4 Date September 1, 2005

IF TRAINEE,
 Driller's Licensed No. _____
 Driller's Signature _____

Ecology is an Equal Opportunity Employer.

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT

AE 35701

Notice of Intent No.

SE 57184

Construction/Decommission

Construction

Decommission ORIGINAL INSTALLATION Notice of Intent Number _____

Type of Well

Resource Protection

Geotechnical Soil Boring

Consulting Firm Black Mtn Cons.

Property Owner Luther Power

Site Address 703 Powerline Rd

City Marblemount County Skagit

Unique Ecology Well ID

Location 1/4 NE 1/4 NE Sec 12 Twn 35 R 10 or ^{EWM} _____

Tag No. B-1

WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards

Lat/Long (s,t,r Lat Deg _____ Lat Min/Sec _____

still Required) Long Deg _____ Long Min/Sec _____

Materials used and the information reported above are true to my best knowledge and belief

Tax Parcel No. _____

Driller Trainee Name (Print) ABE CAUSLAND

Cased or Uncased Diameter 6" Static Level _____

Driller/Trainee Signature ABE CAUSLAND

Work/Decommission Start Date 1-29-16

Driller/Trainee License No. 2861

Work/Decommission Completed Date 1-29-16

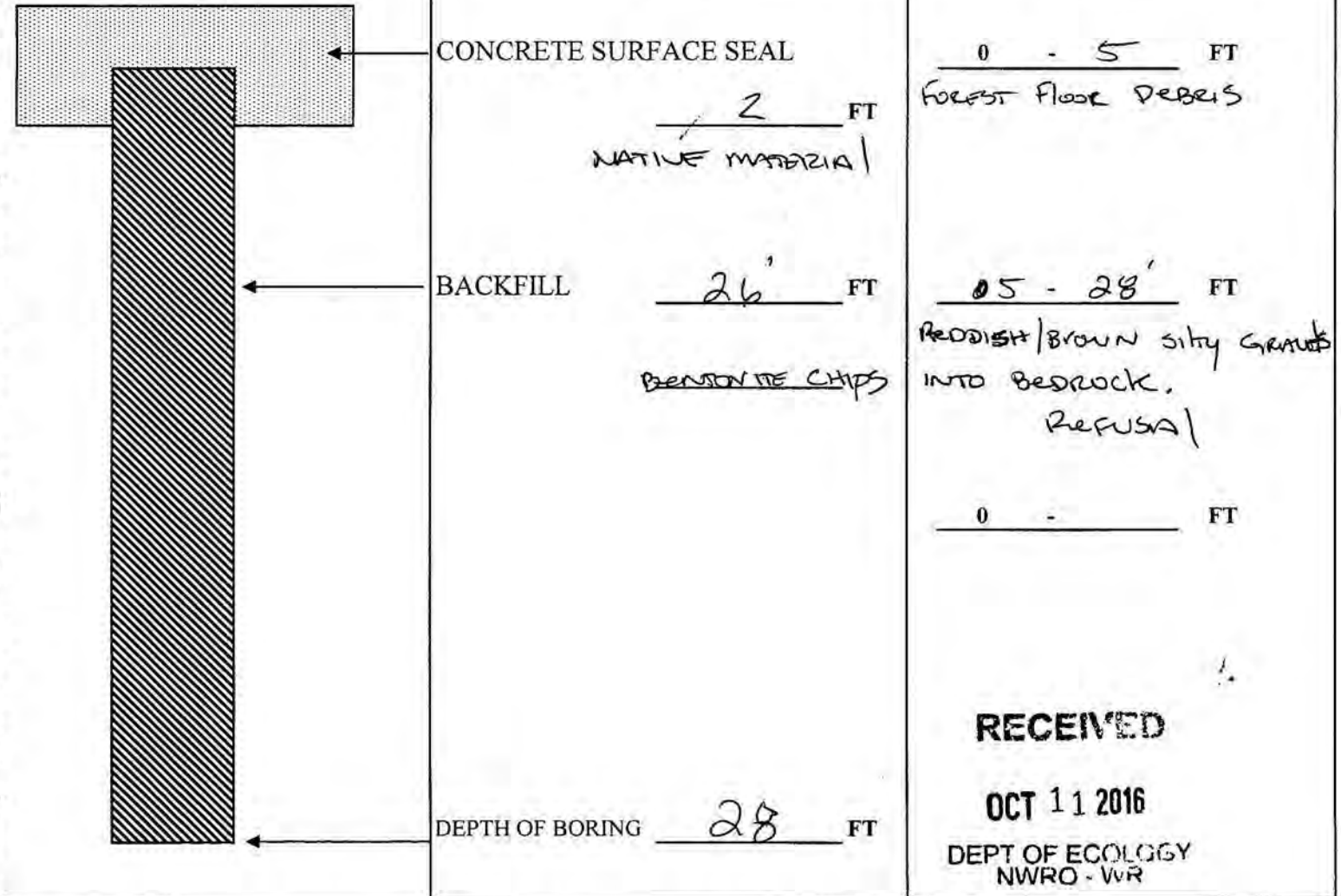
of trainee, licensed drillers'

Signature and License No. _____

Construction/Design

Well Data

Formation Description



The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report

ENTERED

WATER WELL REPORT

Start Card No. W 107059
Unique Well I.D. # AAK619
Water Right Permit No.

STATE OF WASHINGTON

(1) OWNER: Name WOLBER, THOMAS Address 901B 20TH STREET AMACORTES, WA 98221-

(2) LOCATION OF WELL: County SKAGIT - SE 1/4 NW 1/4 Sec 7 T 35 N., R 11E WM
(2a) STREET ADDRESS OF WELL (or nearest address) 60333 HWY 20, MARBLEMOUNT

(3) PROPOSED USE: DOMESTIC

(10) WELL LOG

35-11-7F

(4) TYPE OF WORK: Owner's Number of well (If more than one) Method: ROTARY
NEW WELL

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 in formation.

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

Table with columns MATERIAL, FROM, TO. Rows: TOPSOIL (0-1), BROWN SILTY SAND (1-7), GRAVEL COBBLES & SAND (7-13), GRAVEL SAND & WATER (13-13)

(6) CONSTRUCTION DETAILS: Casing installed: 6" Dia. from 0 ft. to 40 ft. WELDED " Dia. from " Dia. from

WELL LOCATED ACCORDING TO SKAGIT COUNTY ORDINANCE #12.48

RECEIVED

DEC 15 1998

DEPT OF ECOLOGY

Perforations: 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: NO
Manufacturer's Name
Type
Diam. slot size from ft. to ft.
Diam. slot size from ft. to ft.

Gravel packed: NO
Gravel placed from ft. to ft.

Surface seal: YES To what depth? 18 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? NO
Type of water? Depth of strata ft.
Method of sealing strata off

Work started 12/07/98 Completed 12/07/98

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

(8) WATER LEVELS: Land-surface elevation above mean sea level ... ft.
Static level 13 ft. below top of well Date 12/07/98
Artesian Pressure lbs. per square inch Date
Artesian water controlled by

(9) WELL TESTS: Drawdown is amount water level is lowered below static level.

Was a pump test made? . If yes, by whom?
Yield: gal./min with ft. drawdown after hrs.

Recovery data
Time Water Level Time Water Level Time Water Level

Date of test / /
Bailer test gal/min. ft. drawdown after hrs.

Air test 60 gal/min. w/ stem set at 38 ft. for 1 hrs.
Artesian flow g.p.m. Date

Temperature of water Was a chemical analysis made?

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 DAHLMAN PUMP & WELL DRILL
(Person, firm, or corporation) (Type or print)

ADDRESS PO BOX 422

[SIGNED] [Signature] License No. 2043

Contractor's
Registration No. DAHLMPW123LC Date 12/08/98

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

WATER WELL REPORT

STATE OF WASHINGTON

ENTERED Start Card No. W119203
UNIQUE WELL I.D. # ACS077
Water Right Permit No.

(1) OWNER: Name Howard Clark Address 60287 5th St NW Merkleman

(2) LOCATION OF WELL: County Skagit County SE 1/4 NW 1/4 Sec 7 T 35 N. R 11 WM.

(2a) STREET ADDRESS OF WELL (or nearest address) Same 35-11E-7F

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

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

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

(6) CONSTRUCTION DETAILS: Casing installed: 6" Diam from 0 ft to 40 ft
Welded [checked] Liner installed [] Threaded []

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

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

Gravel packed: Yes [] No [checked]
Gravel placed from ft to ft

Surface seal: Yes [] No [checked] To what depth? 15 ft
Material used in seal Bentonite
Did any strata contain unusable water? Yes [] No [checked]

(7) PUMP: Manufacturer's Name I/O
Type Submersible HP 1/2

(8) WATER LEVELS: Land-surface elevation above mean sea level ft
Static level 14 ft below top of well Date July 8
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 [checked] If yes, by whom?
Yield: 10 gal/min with 1 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
Bailer test gal./min with ft drawdown after hrs
Artest 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 [checked]

(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

Table with columns MATERIAL, FROM, TO. Entries include Top soil, Sand gravel, SAND gravel water.

Well site meets standard
Set on SL 1249 according
to memo provided by owner.

RECEIVED
RECEIVED
SEP 20 1999
JUL 21 1999
DEPT OF ECOLOGY
DEPT OF ECOLOGY

Work Started July 3 19 Completed July 8 19 99

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 Princewell Drilling
Address 7940 NE Capobianco Blvd Everett
(Signed) Wayne Quinn License No 1598

Contractor's Registration No Princewell Drilling Date July 12, 19 99
(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.



WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)

Construction **172054**
 Decommission ORIGINAL CONSTRUCTION Notice of Intent Number _____

PROPOSED USE: Domestic Industrial Municipal
 DeWater Irrigation Test Well Other

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

DIMENSIONS: Diameter of well 6 inches, drilled 40 ft.
Depth of completed well 36 ft.

CONSTRUCTION DETAILS
Casing Welded 6" Diam. from 1 ft. to 36 ft.
Installed: Liner installed _____" Diam. from _____ ft. to _____ ft.
 Threaded _____" Diam. from _____ ft. to _____ ft.

Perforations: Yes No
Type of perforator used _____
SIZE of perfs _____ in. by _____ in. and no. of perfs _____ from _____ ft. to _____ ft.

Screens: Yes No K-Pac Location _____
Manufacturer's Name _____
Type _____ Model No. _____
Diam. _____ Slot Size _____ from _____ ft. to _____ ft.
Diam. _____ Slot Size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: Yes No Size of gravel/sand _____
Materials placed from _____ ft. to _____ ft.

Surface Seal: Yes No To what depth? 18 ft
Materials used in seal Bentonite
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

PUMP: Manufacturer's Name Goulds
Type: Sub 10gpm H.P. 1/2

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 2 ft. below top of well Date Jan 18 05
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? Yes No If yes, by whom? Gerald Johnson
Yield: 12 gal./min. with 6 ft. drawdown after 2 hrs.
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
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

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

WELL CONSTRUCTION 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.

Driller Engineer Trainee Name (Print) Wayne C Prince
Driller/Engineer/Trainee Signature Wayne C Prince
Driller or Trainee License No. 2582

If trainee, licensed driller's Signature and License no. _____

CURRENT
Notice of Intent No. W167536
Unique Ecology Well ID Tag No. AKG 239
Water Right Permit No. _____

Property Owner Name Dawn Walters

Well Street Address _____

City Marble Mountain County: Skagit

Location SE 1/4- 1/4 NE 1/4 Sec 7 Twp 35 R 11 EWM circle or one WWM

Lat/Long: (s, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____
Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
<u> Top Soil </u>	<u> 1 </u>	<u> 6 </u>
<u> Sand gravel silt </u>	<u> 6 </u>	<u> 23 </u>
<u> Sand gravel </u>	<u> 23 </u>	<u> 29 </u>
<u> Sand gravel + water </u>	<u> 30 </u>	<u> 36 </u>

Well site meets Standard Set in SCR 48 according to info provided by owner

RECEIVED RECEIVED
MAY 17 2005 FEB 17 2005
DEPT OF ECOLOGY DEPT OF ECOLOGY

Start Date Feb 17 Completed Date Jan 18 05

Drilling Company Prince Well Drilling
Address 7940 NE Cape Horn Rd
City, State, Zip Concrete Wash 98237
Contractor's Registration No. P196W095K4 Date Feb 1 05
Ecology is an Equal Opportunity Employer. ECY 050-1-20 (Rev 4/01)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

WATER WELL REPORT

STATE OF WASHINGTON

Water Right Permit No

(1) OWNER: Name Jim Hunter Address 6010 S. Cascade Rd. - Darrington

(2) LOCATION OF WELL: County SKAGIT NW 1/4 NE 1/4 Sec 17 T. 35 N. R. 11E W.M.

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

(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 Bored Cable Driven Rotary Jetted

(5) DIMENSIONS: Diameter of well 6 inches. Drilled 69 feet. Depth of completed well 65'-9 3/4" ft.

(6) CONSTRUCTION DETAILS: Casing installed: 6 Diam. from 4 1/2 ft. to 58-6" ft. Welded Liner installed Threaded

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

Screens: Yes No Manufacturer's Name WESTCO Type Stainless Model No. Diam. 3 1/2 Slot size 12 from 59 ft. to 64 ft.

Gravel packed: Yes No Size of gravel Gravel placed from ft. to ft. Surface seal: Yes No To what depth? 23 ft. Material used in seal Bentonite

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

(8) WATER LEVELS: Land-surface elevation above mean sea level ft. Static level 12 ft. below top of well Date 5-30-91 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: 10 gal./min. with 34 ft. drawdown after 4 hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level) Table with columns: 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.

Table with columns: MATERIAL, FROM, TO. Entries: Silty loam brown 0 4; Cobbles & clay grey 4 14; Cobbles & clay (seepage) 14 24; gravel, clay & sand (compact) 24 40; silt & sand brown 40 42; sand w/ some gravel WATER 42 53; sand w/ some gravel WATER 53 69

RECEIVED JUN 10 1991 DEPT. OF ECOLOGY

Work started 5-28, 1991 Completed 5-30, 1991

WELL CONSTRUCTOR CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards.

NAME Carpenter Drill Co (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT) Address 2032 So Bay Rd Olympia (Signed) License No. 67 Contractor's Registration No. CARPEOCMB00 Date 5-31, 1991

(USE ADDITIONAL SHEETS IF NECESSARY)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

WATER WELL REPORT

STATE OF WASHINGTON

Water Right Permit No. _____

(1) OWNER: Name Shubert Hunter Address 6010 S. CASCADE RD.

(2) LOCATION OF WELL: County SKAGIT NW 1/4 NE 1/4 Sec 17 T. 35 N., R. 11E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) 6010 S. CASCADE RD - Marblemount, WA

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

(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.

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

MATERIAL	FROM	TO
Sand lt. brown	0	4
Clay, gravel & sand grey	4	15
Clay, gravel & cobble grey	15	28
Clay & sand (seepage) brown	28	39
Gravel & sand (water) brown	39	46
Clay & silt (seepage) grey	46	48
Silt & sand yellow-brown	48	53
Sand (water) yellow-brown	53	61

(5) DIMENSIONS: Diameter of well 6 inches.
 Drilled 61-0 feet. Depth of completed well 60-0 feet.

(6) CONSTRUCTION DETAILS:
 Casing installed: 6 " Diam. from +1 ft. to 53 ft.
 Welded Liner installed 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 WESCO
 Type stainless steel Model No. _____
 Diam. 5 7/8 Slot size 15 from 53 ft. to 60 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 GOULDS
 Type: Submersible H.P. 13

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
 Static level 18-8 ft. below top of well Date 10-26-89
 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: 20 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 _____
 Bailor 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

RECEIVED
 NOV 05 1989

DEPARTMENT OF ECOLOGY
 NORTHWEST REGION

Work started 10-23-89, 19 _____ Completed 10-26, 1989

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 CARPENTER DRILL CO.
 (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 2032 S. BAY RD. - Olympia

(Signed) Jimmy P. Carpenter License No. 067
 (WELL DRILLER)

Contractor's Registration No. CRP 14030 Date 10-26, 1989

(USE ADDITIONAL SHEETS IF NECESSARY)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

WATER WELL REPORT

STATE OF WASHINGTON

Application No.

Permit No.

(1) OWNER: Name Dick Haugen Address P.O. Box 93

(2) LOCATION OF WELL: County Island T. 1/4 N. 1/4 W.M. 1/4

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 6 inches.
Drilled 389 ft. Depth of completed well 389 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6" Diam. from 0 ft. to 384 ft.
Threaded " Diam. from ft. to ft.
Welded " 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 Standard Steel Model No.
Diam. 6" Slot size 1/4 from 384 ft. to 389 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 Beston 76
Did any strata contain unusable water? Yes No
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name Flint & Walling
Type Submersible H.P.

Returned to Driller 4/10/87

Please provide the information needed on the attached well report, (indicated by red checks), and return to this office. We need address completed, and legal filled out.
Thank you.

[Signature]
Resource Management

Date of test
Bailer test ft. drawdown after hrs.
Artesian flow gpm Date
Temperature 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
Till - Brown	0	30
Sand, Gravel - Dry - loose	30	120
Sand - Brown - Dry	120	160
Clay - Brown - sandy	160	178
Clay - Blue	178	185
Clay - Brown/Gray - Silty	185	192
Sand, Gravel - Brown	192	240
Sand, Brown - Dry	240	275
Clay, Brown, Silty	275	305
Sand, Brown, Dry	305	310
Clay, Brown, Silty	310	350
Clay - Brown - very fine, sandy	350	357
Seal - very fine, water bearing - Gray	357	364
Sand - same as above (a little coarse)	364	374
Sand - Gray - coarse - Heaved 3' for every 1' change of casing	374	390

Work started Sept 14, 1981 Completed Oct 1, 1981

WELL DRILLER'S STATEMENT:

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

ME Co. 56 Tool Well Drilling Co.
(Person, firm, or corporation) (Type or print)

Address 5716 - 17th Ave N.E. Seattle

[Signed] Jack W. Richardson
(Well Driller)

License No. 0852 Date Oct 1, 1981

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

WATER WELL REPORT

STATE OF WASHINGTON

Application No.

Permit No.

(1) OWNER: Name Bob Cook Address 640 Sawk Box 683 Dtn. WA
(2) LOCATION OF WELL: County skagit - NW 1/4 SE 1/4 Sec 31 T. 33 N. R. 10 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 6 1/2 inches.
Drilled 61 ft. Depth of completed well 61 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6" Diam. from 0 ft. to 58 ft.
Threaded " Diam. from ft. to ft.
Welded " 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.....
Type..... Model No.....
Diam. 5 Slot size 20 from 58 ft. to 61 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 Benonite
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 30 ft. below top of well Date Aug 22
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: gal./min. with ft. drawdown after hrs.
40 gal min " " " " " "

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.
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
Brown sandy GRAVEL	0	30
GRAY CLAY	31	50
sandy GRAVEL (water)	51	61

Work started Aug 20 19 79 Completed Aug 22 19 79

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 Andresso Drilling Co (Person, firm, or corporation) (Type or print)
Address 7912 204th NE Hel. WA
[Signed] E. Anderson (Well Driller)
License No 0771 Date Aug 22 19 79



The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

ENTERED

WATER WELL REPORT
STATE OF WASHINGTON

Start Card No. W062285
Water Right Permit No.

4803

(1) OWNER: Name BRADY, J./VANDERHARD, J. Address 17820 64TH DR NW STANWOOD, WA 98292-33/10E/31-J

(2) LOCATION OF WELL: County SNOHOMISH - NE 1/4 SE 1/4 Sec 31 T 33 N. R 10E WM
(2a) STREET ADDRESS OF WELL (or nearest address) 5279 GRANT RD

(3) PROPOSED USE: DOMESTIC (10) WELL LOG

(4) TYPE OF WORK: Owner's Number of well (If more than one) 1
NEW WELL Method: ROTARY

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 in formation.

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 59 ft. Depth of completed well 58.3 ft.

MATERIAL	FROM	TO
BROWN SAND	0	3
GRAY SAND	3	21
GRAY GRAVEL SAND	21	34
GRAY GRAVEL CLAY SAND	34	35
BROWN GRAVEL SAND	35	41
BROWN GRAVEL SAND & WATER	41	50
BROWN SAND GRAVEL & WATER	50	

(6) CONSTRUCTION DETAILS:
Casing installed: 6 Dia. from +2.5 ft. to 54 ft.
WELDED Dia. from ft. to ft.
Dia. from ft. to ft.

Perforations: 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
Manufacturer's Name HAGAOKA
Type STAINLESS STEEL Model No. KO
Diam. 6 slot size 18 from 53.3 ft. to 58.3 ft.
Diam. slot size from ft. to ft.

Gravel packed: NO
Gravel placed from ft. to ft. Size of gravel ft.

Surface seal: YES To what depth? 18 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? NO
Type of water? Depth of strata ft.
Method of sealing strata off

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

(8) WATER LEVELS: Land-surface elevation
above mean sea level ... ft.
Static level 41 ft. below top of well Date 08/31/95
Artesian Pressure lbs. per square inch Date
Artesian water controlled by

Work started 08/30/95 Completed 08/31/95

(9) WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? YES If yes, by whom? SIRILO SORIA
Yield: 37.5 gal./min with 2.9 ft. drawdown after 4 hrs.

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.

Recovery data

Time	Water Level	Time	Water Level	Time	Water Level
000.5	41.0	001.0	41.0	002.0	41.0

NAME HAYES DRILLING, INC.
(Person, firm, or corporation) (Type or print)

Date of test 09/05/95
Bailer test 15 gal/min. .5 ft. drawdown after 1 hrs.
Air test gal/min. w/ stem set at ft. for hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? YES

ADDRESS 556 ERSNIG RD. BOM, WA
[SIGNED] *Ray C. Hayes* License No. 2204
Contractor's
Registration No. HAYESDI106J5 Date 09/06/95

DEPT. OF ECOLOGY
SEP 14 1995
RECEIVED

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

WATER WELL REPORT

STATE OF WASHINGTON

(1) OWNER: Name John Weimer Address _____
(2) LOCATION OF WELL: County Skaagit NE 1/4 SE 1/4 Sec 31 T 33 N.R. 10 WM
(2a) STREET ADDRESS OF WELL: (or nearest address) Grant Rd Decorah, Washington
TAX PARCEL NO.: 33-10E-31J

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

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

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

MATERIAL	FROM	TO
Silt Sand gravel	1	3
Gravel	5	28
Silt Sand	28	40
Silt	40	43
Clay Sand gravel	43	56
Sand water	56	70
Gravel water	70	75

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 75 feet. Depth of completed well 75 ft.

(6) CONSTRUCTION DETAILS
Casing installed: Welded 6 ft. Diam. from 2 ft. to 75 ft.
 Liner installed _____ ft. to _____ ft.
 Threaded _____ ft. to _____ ft.

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

Screens: Yes No K-Pac Location _____
Manufacturer's Name _____
Type _____ Model No. _____
Diam. _____ Slot Size _____ from _____ ft. to _____ ft.
Diam. _____ Slot Size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: Yes No Size of gravel/sand _____
Material placed from _____ ft. to _____ ft.

Surface seal: Yes No To what depth? 18 ft.
Material used in seal Benlate
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 40 ft. below top of well Date April 13
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

Well site meets Standard
Set in sec 1248 according
to into prom. doc. of 2000

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APR 24 2000
NWWD - WUP
DEPT OF ECOLOGY

(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.
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
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)

Work Started April 13 00 completed April 14 00

Time	Water Level	Time	Water Level	Time	Water Level
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Date of test April 14 00
Bailer test 100 gal./min. with 9 ft. drawdown after 2 hrs.
Airtest _____ gal./min. with _____ ft. drawdown after _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes No

WELL CONSTRUCTION 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.
Type or Print Name Wayne Prine license No. 1890
(Licensed Driller/Engineer)
Trainee Name _____ License No. _____
Drilling Company Prince Well Drilling
(Signed) Wayne Prine license No. 1890
(Licensed Driller/Engineer)
Address 7940 NE Cape Horn Rd Concrete
Contractor's Registration No. PRINCWD09564 Date April 16 00

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

WATER WELL REPORT

STATE OF WASHINGTON

Application No.

Permit No.

(1) **OWNER:** Name *Ed Grant* Address *P.O. Box 464 Darrington Wa*

(2) **LOCATION OF WELL:** County *Spokane* - *NE 1/4 SE 1/4 Sec 31 T. 33 N. R. 10 E W.M.*
Bearing and distance from section or subdivision corner *E 1/2 of Section 31 Township 33 North*

(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 *6* inches.
Drilled *53* ft. Depth of completed well *20'* ft.

(6) **CONSTRUCTION DETAILS:**
Casing installed: *6*" Diam. from *1' above* ft. to *15* ft.
Threaded " Diam. from ... ft. to ... ft.
Welded " 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 *Standard* Model No. ...
Diam. *5 7/8* Slot size *12* from *65* ft. to *70* 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 *Cement*
Did any strata contain unusable water? Yes No
Type of water? Depth of strata ...
Method of sealing strata off ...

(7) **PUMP:** Manufacturer's Name *Sta Rite*
Type *Sub* HP *1/2*

(8) **WATER LEVELS:** Land-surface elevation above mean sea level... *500* ft.
Static level, *26* ft. below top of well Date ...
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 *35* 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
<i>Sand tan</i>	<i>0</i>	<i>18'</i>
<i>Boulders large + sand</i>	<i>18'</i>	<i>21'</i>
<i>Sand + Gravel tan</i>	<i>21'</i>	<i>45'</i>
<i>Sand tan, binder on</i>		
<i>Clay tan</i>	<i>45'</i>	<i>53'</i>
<i>Water bearing sand</i>	<i>53'</i>	<i>70'</i>

Work started *Sept 7, 1976* Completed *Sept 10, 1976*

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 *CAMANO WELL DRILLING*
(Person, firm, or corporation) (Type or print)

Address *P.O. Box 3032 STANWOOD WA*

[Signed] *Joseph Thumma*
(Well Driller)

License No. *0611* Date *Sept 10, 1976*

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

WATER WELL REPORT

STATE OF WASHINGTON

33/10/32.m

Water Right Permit No.

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

(1) OWNER: Name Lonnie Hudson Address 2377 E. Sauk Rd, Darrington, WA 98241

(2) LOCATION OF WELL: County Skagit NW SW Sec 32 T. 33 N. R. 10 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) 2381 SR 530, Darrington

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

(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	2'
Sand	2	24'
Sand & Gravel	24	33'
Water & Gravel	33	40'

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

(5) DIMENSIONS: Diameter of well 6 inches.
 Drilled 10 feet. Depth of completed well 40 ft.

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MAY 28 1992

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(6) CONSTRUCTION DETAILS:
 Casing installed: 6 " Diam. from 0 ft. to 40 ft.
 Welded " Diam. from _____ ft. to _____ ft.
 Liner installed " Diam. from _____ ft. to _____ ft.
 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 _____ Model No. _____
 Type _____
 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 Bestonite
 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 29 ft. below top of well Date 5-7-92
 Artesian pressure _____ lbs. per square inch Date _____
 Artesian water is controlled by _____ (Cap, valve, etc.)

Work started 5/7/92, 19. Completed 5/7/92, 19

(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.
 "

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

Address P. O. Box 422, Burlington, WA 98233

(Signed) Bruce M. Smith license No. 1810
 (WELL DRILLER)

Contractor's Registration No. DAHLMPW123LC Date May 8, 19 92

(USE ADDITIONAL SHEETS IF NECESSARY)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

CURRENT

W167487

Notice of Intent No.

Unique Ecology Well ID Tag No.

AKG 224

Water Right Permit No.

Property Owner Name

Jamca Baker

Well Street Address

23343 SR 530

City

Darrington

County

Alabama

Location

SE 1/4- 1/4 NW 1/4

Sec

30

Twn

33 R 10

EWM circle or one WWM

Lat/Long: (s,t,r still REQUIRED)

Lat Deg

Lat Min/Sec

Long Deg

Long Min/Sec

Tax Parcel No.

CONSTRUCTION OR DECOMMISSION PROCEDURE Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
Sand	1	18
SAND gravel	18	40
SAND gravel with	40	54
RECEIVED AUG 31 2004 DEPT OF ECOLOGY		

Start Date 8-10-04 Completed Date 8-11-04

PROPOSED USE: Domestic Industrial Municipal DeWater Irrigation Test Well Other

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

DIMENSIONS: Diameter of well 6 inches, drilled 54 ft. Depth of completed well 54 ft.

CONSTRUCTION DETAILS Casing Welded 6" Diam. from 2 ft. to 54 ft. Installed: Liner installed " Diam. from ft. to ft. Threaded " Diam. from ft. to ft.

Perforations: Yes No Type of perforator used SIZE of perfs in. by in. and no. of perfs from ft. to ft.

Screens: Yes No K-Pac Location Manufacturer's Name Type Model No. Diam. Slot Size from ft. to ft. Diam. Slot Size from ft. to ft.

Gravel/Filter packed: Yes No Size of gravel/sand Materials placed from ft. to ft.

Surface Seal: Yes No To what depth? 18 ft. Materials used in seal Bentont Did any strata contain unusable water? Yes No Type of water? Depth of strata Method of sealing strata off

PUMP: Manufacturer's Name Type: H.P.

WATER LEVELS: Land-surface elevation above mean sea level ft. Static level 30 ft. below top of well Date 8-11-04 Artesian pressure lbs. per square inch Date Artesian water is controlled by (cap, valve, etc.)

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) Date of test Bailer test 50 gal./min. with 10 ft. drawdown after 1 hrs. Airstest 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

WELL CONSTRUCTION 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.

Driller Engineer Trainee Name (Print) Wayne Prince Driller/Engineer/Trainee Signature Wayne C Prince Driller or Trainee License No. 2580

Drilling Company Prince Well Drilling Address 7940 NE Cape Horn Rd City, State, Zip Conover Wash 98237 Contractor's Registration No. PRINCWOES 8-11-04

If trainee, licensed driller's Signature and License no.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

AMENDED COPY

33-10E-326

67281

WATER WELL REPORT

Start Card No. W 103992

Unique Well I.D. # AAX570

Water Right Permit No.

STATE OF WASHINGTON

(1) OWNER: Name SELF, JUDY Address 23113 SR530 DARRINGTON, WA 98241-

(2) LOCATION OF WELL: County SKAGIT - SW 1/4 NE 1/4 Sec 32 T33 N., R 10E WM
(2a) STREET ADDRESS OF WELL (or nearest address) 23113 SR530, DARRINGTON

(3) PROPOSED USE: DOMESTIC

(10) WELL LOG

(4) TYPE OF WORK: Owner's Number of well (If more than one) Method: ROTARY

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 in formation.

(5) DIMENSIONS: Diameter of well 6 inches Drilled 59 ft. Depth of completed well 59 ft.

Table with columns MATERIAL, FROM, TO. Rows include BROWN SAND & GRAVEL, GRAY SAND & GRAVEL, GRAVEL & BROWN SAND, FINE BROWN SAND GRAVEL (LARGE) & WATER.

(6) CONSTRUCTION DETAILS: Casing installed: 6" Dia. from 0 ft. to 54 ft. WELDED " Dia. from ft. to ft. " Dia. from ft. to ft.

Perforations: NO Type of perforator used SIZE of perforations perforations from ft. to ft. perforations from ft. to ft. perforations from ft. to ft.

Screens: YES Manufacturer's Name Type STAINLESS STEEL Model No. TELESCOPING Diam. 6 slot size 10 from 54 ft. to 59 ft. Diam. slot size from ft. to ft.

Gravel packed: NO Size of gravel Gravel placed from ft. to ft.

Surface seal: YES To what depth? 18 ft. Material used in seal BENTONITE Did any strata contain unusable water? NO Type of water? Depth of strata ft. Method of sealing strata off

WELL LOCATED ACCORDING TO SKAGIT ORDINANCE #12.48

RECEIVED AUG 27 2001 DEPT OF ECOLOGY

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

(8) WATER LEVELS: Land-surface elevation above mean sea level ... ft. Static level 29 ft. below top of well Date 09/17/98 Artesian Pressure lbs. per square inch Date Artesian water controlled by

Work started 09/17/98 Completed 09/17/98

(9) WELL TESTS: Drawdown is amount water level is lowered below static level.

Was a pump test made? If yes, by whom? Yield: gal./min with ft. drawdown after hrs.

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.

Recovery data Time Water Level Time Water Level Time Water Level

NAME DAHLMAN PUMP & WELL DRILL (Person, firm, or corporation) (Type or print)

Date of test / / Bailer test gal/min. ft. drawdown after hrs.

ADDRESS PO BOX 422 [SIGNED] License No. 2043

Air test 25 gal/min. w/ stem set at 53 ft. for 1 hrs. Artesian flow g.p.m. Date

Contractor's Registration No. DAHLMPW123LC Date 09/18/98

Temperature of water Was a chemical analysis made?

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

WATER WELL REPORT

STATE OF WASHINGTON

Application No

Permit No

(1) OWNER: Name Virginia E Doty Address 2369 E SAUL RD DUN. WA 98241
(2) LOCATION OF WELL: County STAGIT — NE 1/4 SE 1/4 Sec 32 T. 33 N. R. 10 W.
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 6 inches.
Drilled 61 ft. Depth of completed well 61 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6" Diam. from 0 ft. to 58 ft.
Threaded " Diam. from ft. to ft.
Welded " 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.....
Type..... Model No.....
Diam. 5 Slot size 20 from 58 ft. to 61 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: SUBMERSIBLE H.P. 1

(8) WATER LEVELS: Land-surface elevation above mean sea level.....
Static level 30 ft. below top of well Date Aug 24
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: 30 gal./min. with ft. drawdown after hrs.
" 90 " " " " " " " " " " " "

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.
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
Brown SAND + Gravel	0	40
Brown GRAY CLAY	41	50
Brown SAND COARSE W/GRASS	51	61

Work started Aug 23, 19 79 Completed Aug 24, 19 79

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 Anderson Drilling Co
(Person, firm, or corporation) (Type or print)

Address 7412 204th NE Bel WA

[Signed] Elwyn Anderson
(Well Driller)

License No. 0771 Date Aug 24, 19 79

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

WATER WELL REPORT
 STATE OF WASHINGTON

Application No.

Permit No.

(1) **OWNER:** Name Mary Jack Address Puget Sound North
 (2) **LOCATION OF WELL:** County Skagit — SE ¼ SE ¼ Sec. 32 T. 33 N., R. 10 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 inches.
 Drilled ft. Depth of completed well ft.

(6) **CONSTRUCTION DETAILS:**
 Casing installed: 6 " Diam. from +1 ft. to 73 ft.
 Threaded 5 " Diam. from 70 ft. to 75 ft.
 Welded " 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 Model No.
 Diam. 6 Slot size 8 from 75 ft. to 80 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? 25 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 ft. above mean sea level.
 Static level 7'5" ft. below top of well Date 4-25-83
 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? Bartholomew
 Yield: 30 gal./min. with 32½ 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
 Air Index test 20 gal./min. with ft. drawdown after 1½ 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	0	1
Sand	1	5
Sand, gravel	5	15
Clay gray	15	58
Sand	58	60
Clay gray	60	75
Sand	75	80

Work started 4/6/83, 19..... Completed 4/6/83, 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 Bartholomew Drilling, Inc. (Person, firm, or corporation) (Type or print)

Address N. 11525 Nine Mile Rd., Nine Mile Falls, Wa 99026

[Signed] Amy Bartholomew (Well Driller)

License No. 0051 Date 5/11, 19 83

The Department of Ecology does NOT Warrant the Data and/or the Information on this Well Report.

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

WATER WELL REPORT

STATE OF WASHINGTON

Application No.

Permit No.

436-1435

(1) OWNER: Name L. Delvin Hooper Address Star Rte Box 28 Darrington

(2) LOCATION OF WELL: County SKAGIT - SW 1/4 SW 1/4 Sec. 33 T. 33 N. R. 18 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 6 inches.
Drilled 132 ft. Depth of completed well 132 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6" Diam. from 6' ft. to 124 ft.
Threaded " Diam. from _____ ft. to _____ ft.
Welded " 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 _____
Type HOWARD SMITH Model No. _____
Diam. 5.6 Slot size 18 from 121 ft. to 132 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 600 ft.
Static level 90 ft. below top of well Date _____
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 _____
Baller test 20 gal./min. with 0 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	0	3
CEMENTED CLAY GREEN	17	23
SAND BRN MED	23	27
CLAY BRN MED	27	33
CLAY GREEN W SAND BLUE FINE	33	43
GRAVEL MED W SAND BRN MED	43	100
SAND GREEN FINE W/ HEAVING	100	123
SAND GREEN MED W/GRAVEL FINE	123	132
WB		

RECEIVED

MAR 21 1979

DEPARTMENT OF ECOLOGY

3/3

3/10

Work started 3/3 1979 Completed 3/10 1979

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 B+B WELL DRILLING
(Person, firm, or corporation) (Type or print)

Address 5124E 180TH Tacoma WASH

[Signed] Ken H Blackman
(Well Driller)

License No. 790 Date 3/2 1979

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

(1) OWNER: Name Steve Green Address Star Road Box 278
(2) LOCATION OF WELL: County Shagit SW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 33 T. 33 N., R. 10 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 6 inches.
Drilled 132 ft. Depth of completed well 132 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6" Diam. from 0 ft. to 128 ft.
Threaded " Diam. from " ft. to " ft.
Welded " 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 Subsiding Model No.
Diam. 6 Slot size 20 from 127 ft. to 132 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 padding 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 Owners
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level..... ft.
Static level 99 ft. below top of well Date 5/10/77
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)

Date of test
Baller test 15 gal./min. with 0 ft. drawdown after 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes No

(10) WELL LOG: SW $\frac{1}{4}$; SW $\frac{1}{4}$ Sec 33 Twp 33N
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
<u>Dark brown Top soil</u>	<u>0</u>	<u>3</u>
<u>Brown clay</u>	<u>3</u>	<u>40</u>
<u>Soft brown Conglomerate</u>	<u>40</u>	<u>55</u>
<u>Brownish sand & gravel</u>	<u>55</u>	<u>65</u>
<u>Grey fine sand</u>	<u>65</u>	<u>78</u>
<u>Bayish gravel</u>	<u>78</u>	<u>105</u>
<u>Grey sand</u>	<u>105</u>	<u>125</u>
<u>Grey sand & gravel and water</u>	<u>125</u>	<u>132</u>

Work started 4/7 1977 Completed 5/10 1977

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 ATAJAX WELL DRILLING
(Person, firm, or corporation) (Type or print)

Address 24527-35th AVE NE, ARLINGTON

[Signed] Herman E Roche
(Well Driller)

License No. 0261 Date 5/24 1977

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.



407857

WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)

Construction

Decommission ORIGINAL INSTALLATION Notice of Intent Number _____

CURRENT Notice of Intent No. W260754

Unique Ecology Well ID Tag No. BLB 607

Water Right Permit No. NA

Property Owner Name DIANA WAGNER

Well Street Address 56089-Cimberland Blvd

City Darrington County SEAGIRT

Location Sub 1/4-1/4 Sec 33 Twn 33R 10E circle of WWM one

PROPOSED USE: Domestic Industrial Municipal DeWater Irrigation Test Well Other

TYPE OF WORK: Owner's number of well (if more than one) _____

New well Reconditioned Method: Dug Bored Driven Deepened Cable Rotary Jetted

DIMENSIONS: Diameter of well 6 inches, drilled 140 ft.

Depth of completed well 131 ft.

CONSTRUCTION DETAILS

Casing Welded 6" Diam. from 0 ft. to 126 ft.

Installed: Liner installed " Diam. from " ft. to " ft.

Threaded " Diam. from " ft. to " ft.

Perforations: Yes No

Type of perforator used _____

SIZE of perfs _____ in. by _____ in. and no. of perfs _____ from _____ ft. to _____ ft.

Screens: Yes No K-Pac Location 126

Manufacturer's Name Johnson

Type cont slot Model No. _____

Diam. Slot size 25 from 126 ft. to 131 ft.

Diam. Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: Yes No Size of gravel/sand _____ ft.

Materials placed from _____ ft. to _____ ft.

Surface Seal: Yes No To what depth? 18 ft.

Material used in seal Benarite

Did any strata contain unusable water? Yes No

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

PUMP: Manufacturer's Name S-class

Type: Sub 10 gpm H.P. 1

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.

Static level 74 ft. below top of well Date 3-16-11

Artesian pressure _____ lbs. per square inch Date _____

Artesian water is controlled by _____ (cap, valve, etc.)

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.

Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

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 _____ gal./min. with _____ ft. drawdown after _____ hrs.

Airtest 55 gal./min. with stem set at 130 ft. for 1.5 hrs.

Artesian flow _____ g.p.m. Date _____

Temperature of water _____ Was a chemical analysis made? Yes No

Lat/Long (s, t, r) Lat Deg _____ Lat Min/Sec _____

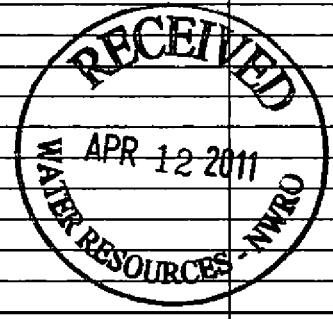
Still REQUIRED) Long Deg _____ Long Min/Sec _____

Tax Parcel No. 331033-3-004-03-07 P18917

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
Top soil	0	1
Silty sand & gravel	1	19
Blue clay	19	25
Brown clay	25	32
Dry sand & gravel	32	80
Silty sand	80	125
clean med to coarse sand	125	132
Silt sand	132	140



Start Date 3-16-11 Completed Date 3-16-11

WELL CONSTRUCTION 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.

Driller Engineer Trainee Name (Print) Paul Anderson

Driller/Engineer/Trainee Signature _____

Driller or trainee License No. 1367

Drilling Company Anderson Drilling LLC

Address 630-1453 DE NE

City, State, Zip CK Stevens WA 98258

Contractor's Registration No. AdedL94962 Date 3-16-11

If TRAINEE, Driller's Licensed No. _____

Driller's Signature _____

Ecology is an Equal Opportunity Employer.

46551

T33 R10E S33

D5552

ENTRANCE

WATER WELL REPORT
STATE OF WASHINGTON

Start Land No. W063393
Water Right Permit No.

(1) OWNER Name DRAPER, JOHN Address 5432 INMAN RD DARRINGTON, WA 98233-

(2) LOCATION OF WELL: County SKAGIT
(2a) STREET ADDRESS OF WELL (or nearest address) 5432 INMAN RD - SE 1/4 SW 1/4 Sec 33 T 10 N. R 3E WM

(3) PROPOSED USE DOMESTIC (10) WELL LOG 10-35-33A-110

(4) TYPE OF WORK NEW WELL Owner's Number of well (If more than one) 1 Method ROTARY
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 in formation

(5) DIMENSIONS Diameter of well 6 inches
Drilled 139 ft Depth of completed well 137 ft

(6) CONSTRUCTION DETAILS
Casing installed 6 Dia. from +2.5 ft to 133.5 ft
WELDED Dia. from ft to ft.
Dia. from ft. to ft

Perforations 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
Manufacturer's Name NAGAOKA
Type STAINLESS STEEL Model No.
Diam 6 slot size 10 from 132 ft to 137 ft
Diam slot size from ft to ft

Gravel packed NO Size of gravel
Gravel placed from ft to ft

Surface seal YES To what depth? 18 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? NO
Type of water? Depth of strata ft
Method of sealing strata off

(7) PUMP Manufacturer's Name FLINT & WALLING
Type SUBMERSIBLE 4.9 1

(8) WATER LEVELS Land-surface elevation
above mean sea level ft
Static level 105 ft below top of well Date 08/05/96
Artesian Pressure lbs per square inch Date
Artesian water controlled by

(9) WELL TESTS Drawdown is amount water level is lowered below static level.

Was a pump test made? YES If yes, by whom?
Yield 15 gal/min with 1.5 ft drawdown after 2 hrs

Recovery data
Time Water Level Time Water Level Time Water Level

Date of test
Bailer test 10 gal/min 5 ft drawdown after 1 hrs
Air test gal/min, w/ stem set at ft for hrs
Artesian flow gpm Date
Temperature of water Was a chemical analysis made? YES

MATERIAL FROM TO
GRAY SILTY SAND & GRAVEL 0 16
BROWN SAND GRAVELY 16 38
BROWN CLAY 38 56
GRAY CLAY & SOME GRAVEL 56 60
BROWN SAND & CLAY 60 80
BROWN SAND & GRAVEL 80 105
BROWN GRAVEL SAND & WATER 105

RECEIVED
AUG 15 1996
DEPT OF ECOLOGY

Work started 08/02/96 Completed 07/05/96

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 HAYES DRILLING, INC.
(Person, firm, or corporation) (Type or print)

ADDRESS 556 ERSHIG RD. BOW, WA

(SIGNED) *Ray E. Hayes* License No 2204

Contractor's Registration No HAYESDI106J5 Date 08/13/96

5539

WELL SITE MEETS ALL SIGHTING CRITERIA UNDER S.C.C.12.48.090 AND WAC 173-160
BASED ON INFORMATION SUPPLIED BY THE OWNER OR OWNER'S AUTHORIZED REPRESENTATIVE:

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

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

WATER WELL REPORT

STATE OF WASHINGTON

UNIQUE WELL I.D. #

Water Right Permit No.

(1) OWNER: Name TEM RUMSEY Address 5471 STURGEON RD.

(2) LOCATION OF WELL: County SKAGIT SW 1/4 SE 1/4 Sec 33 T 33N R 106W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) 5471 STURGEON RD. DARRINGTON WA. 98241

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

(4) TYPE OF WORK: Abandoned New well Deepened Reconditioned Method: Dug Cable Rotary Bored Driven Jetted

(5) DIMENSIONS: Diameter of well 6 inches. Drilled 180 feet. Depth of completed well 180 ft.

(6) CONSTRUCTION DETAILS: Casing installed 6" Diam. from +2 ft. to 180 ft. Welded Liner installed Threaded Perforations: Yes No Type of perforator used SIZE of perforations perforations from ft. to ft. Screens: Yes No Manufacturer's Name Type 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 Static level 140 ft. below top of well Date 11-12-93 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: 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

Baller test gal./min. with ft. drawdown after hrs. Airtest 30 gal./min. with stem set at 105 ft. for 1 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.

Table with columns MATERIAL, FROM, TO. Entries include GRAVELLY TOPSOIL - DK BRN, CLAY + GRAVEL - DK BRN, SANDY CLAY - BRN, CLAY - BRN w/ ORGANIC MATTER, CLAY - GREY, SANDY GRAVEL - BRN, BRN - SANDY CLAY, CLAY + GRAVEL BRN, GRAVEL - BRN, GRAVEL - BRN + H2O.

RECEIVED NOV 29 1993 DEPT. OF ECOLOGY

Work started 11-11-1993 Completed 11-12-1993

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 ARLINGTON WELL DRILLING (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 2740 53 AVENUE NE. ARL.

(Signed) R. P. [Signature] License No. 1668 (WELL DRILLER)

Contractor's Registration No. ARINW0116CF Date 11-22 1993

(USE ADDITIONAL SHEETS IF NECESSARY)



The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

54963

33-10-33 R

ENTERED

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

STATE OF WASHINGTON

Water Right Permit No

Start Card No W077734
UNIQUE WELL ID # ACO-015

(1) OWNER Name Lari Estes Address P.O Box 286 Darrington Wash. 98241

(2) LOCATION OF WELL County Skagit SE 1/4 SE 1/4 Sec 33 T 33N R 10 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) 5665 Sturgeon Road, Darrington, Wash

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

(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

(4) TYPE OF WORK (if more than one)
Abandoned New well Method Dug Bored
Deepened Cable Driven
Reconditioned Rotary Jetted

MATERIAL FROM TO

(5) DIMENSIONS Diameter of well: 6 inches
Drilled 132 feet Depth of completed well 132 ft

Brown Heavy Gravel 0 19

(6) CONSTRUCTION DETAILS
Casing installed 6 Diam from 0 ft to 20 ft
Welded Diam from ft to 132 ft
Liner installed Threaded Diam from ft to ft

Gravel Sand Brown silt 20 74

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

Dark Gray Silt 75 82

Screens Yes No
Manufacturer's Name Nagaoka
Type stainless Model No _____
Diam 4 Slot size .010 from 127 ft to 132 ft
Diam _____ Slot size _____ from _____ ft to _____ ft

Gray Heavy Gravel 83 87

Gravel packed Yes No Size of gravel _____
Gravel placed from _____ ft to _____ ft

Gray silt occ. Gravel 88 92

Surface seal Yes No To what depth? 19 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 _____

Gray silt Fine Sand 93 101

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

Gray silt gravel 102 105

(8) WATER LEVELS Land surface elevation above mean sea level _____ ft
Static level 120 ft below top of well Date _____
Artesian pressure _____ lbs per square inch Date _____
Artesian water is controlled by _____ (Cap valve etc)

Gray silt Heavy Gravel wet 106 119

Clean Gravel wet 120 132

(9) WELL TESTS Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No if yes by whom? MR Bills
Yield .25 gal/min with 10 ft drawdown after 2 hrs

clean Gravel wet 120 132

clean Gravel wet 120 132

clean Gravel wet 120 132

clean Gravel wet 120 132

clean Gravel wet 120 132

clean Gravel wet 120 132

clean Gravel wet 120 132

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

clean Gravel wet 120 132

clean Gravel wet 120 132

clean Gravel wet 120 132

Date of test _____
Bailer test _____ gal/min with _____ ft drawdown after _____ hrs
Artesian _____ gal/min with stem set at _____ ft for _____ hrs
Artesian flow _____ gpm Date _____
Temperature of water _____ Was a chemical analysis made? Yes No

clean Gravel wet 120 132

clean Gravel wet 120 132

clean Gravel wet 120 132

clean Gravel wet 120 132

clean Gravel wet 120 132

clean Gravel wet 120 132

clean Gravel wet 120 132

clean Gravel wet 120 132

clean Gravel wet 120 132

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 Mr Bills Well Dring/Pump SRVC (PERSON FIRM OR CORPORATION) (TYPE OF FIRM) 98223
Address 25619 Dahl Rd, Arlington Wash.
(Signed) Tom O'Brien License No 1953
Contractor's Registration No MRBILW0233ND Date 12-15-97
(USE ADDITIONAL SHEETS IF NECESSARY)
Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006

The Department of Ecology does NOT Warrant the Data and/or the Information on this Well Report.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.



WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle) **98431**
 Construction
 Decommission ORIGINAL INSTALLATION Notice of Intent Number _____

CURRENT
Notice of Intent No. W 207624
Unique Ecology Well ID Tag No. AHP-016
Water Right Permit No. _____
Property Owner Name EDIE FORD
Well Street Address 23733 SAUK PRAIRIE
City DARRINGTON County SKAGIT
Location SW 1/4-1/4 SE 1/4 Sec 33 Twn 31 R 10 EWM or WWM circle one
Lat/Long (s, t, r) Lat Deg _____ Lat Min/Sec _____
Still **REQUIRED** Long Deg _____ Long Min/Sec _____
Tax Parcel No. P# 18934

PROPOSED USE: Domestic Industrial Municipal
 DeWater Irrigation Test Well Other _____

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

DIMENSIONS: Diameter of well 6 inches, drilled 180 ft.
Depth of completed well 178 ft.

CONSTRUCTION DETAILS
Casing Welded 6" Diam. from 0 ft. to 173 ft.
Installed: Liner installed _____" Diam. from _____ ft. to _____ ft.
 Threaded _____" Diam. from _____ ft. to _____ ft.

Perforations: Yes No
Type of perforator used _____
SIZE of perfs _____ in. by _____ in. and no. of perfs _____ from _____ ft. to _____ ft.

Screens: Yes No K-Pac Location 172
Manufacturer's Name JOHNSON
Type STAINLESS Model No. _____
Diam. 6" Slot size .025 from 173 ft. to 178 ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: Yes No Size of gravel/sand _____ ft.
Materials 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 _____

PUMP: Manufacturer's Name F&W
Type: SUB. CONST. PRESSURE H.P. 1 1/2

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 119 ft. below top of well Date 5-17-06
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

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.
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
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 _____ gal./min. with _____ ft. drawdown after _____ hrs.
Airtest 90+ gal./min. with stem set at 172 ft. for 1 hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes No

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
<u>DARK BROWN GRAVEL</u>	<u>0</u>	<u>16</u>
<u>BROWN CLAY, SAND, GRAVEL</u>	<u>16</u>	<u>40</u>
<u>RED SAND & GRAVEL</u>	<u>40</u>	<u>46</u>
<u>SOME WATER</u>		
<u>GRAY CLAY w/ COARSE SAND</u>	<u>46</u>	<u>110</u>
<u>DARK GRAY CLAY</u>	<u>110</u>	<u>130</u>
<u>BROWN CLAY & GRAVEL</u>	<u>130</u>	<u>155</u>
<u>GRAY SAND & GRAVEL</u>	<u>155</u>	<u>180</u>
<u>WATER</u>		
<u>WELL SITE MEETS</u>		
<u>SAL. 12.48 ACCORDING TO</u>		
<u>INFORMATION SUPPLIED BY</u>		
<u>THE OWNER.</u>		
RECEIVED		
<u>JUN 13 2006</u>		
DEPT. OF ECOLOGY		
Start Date <u>5-16-06</u>	Completed Date <u>5-17-06</u>	

WELL CONSTRUCTION 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.

Driller Engineer Trainee Name (Print) DALE WESTBY
Driller/Engineer/Trainee Signature Dale Westby
Driller or trainee License No. 2711

Drilling Company ARLINGTON WELL DRILLING
Address 29121 SR 9 NE
City, State, Zip ARLINGTON, WA. 98223
Contractor's Registration No. ARLIND 9679LW Date 5-19-06

If TRAINEE,
Driller's Licensed No. _____
Driller's Signature _____

Ecology is an Equal Opportunity Employer.

File Original and First Copy with Department of Ecology

Second Copy—Owner's Copy Third Copy—Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Water Right Permit No.

(1) OWNER: Name Philip M Sergent % Pioneer Bank Address 17432 35th Ave N E Sp. 24 Arlington Wa.

(2) LOCATION OF WELL: County Skagit SE 1/4 SE 1/4 Sec 33 T 33 N. R. 10 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) 462 Sturgen Darrington Wa.

(3) PROPOSED USE: Domestic Industrial Municipal Irrigation DeWater Test Well 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 180 feet. Depth of completed well 180 ft.

(6) CONSTRUCTION DETAILS: Casing installed: 6 " Diam. from 0 ft. to 180 ft. Welded Liner installed Threaded

Perforations: Yes No Type of perforator used _____ SIZE of perforations _____ in. by _____ in.

Screens: Yes No Manufacturer's Name _____ Type _____ Model No _____

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

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

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft. Static level 155 ft. below top of well Date 9-15-87

(9) WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made? Yes No

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

Date of test _____

Bailer test _____ gal./min. with 10 ft. drawdown after _____ hrs. Airtest 156 gpm min. with stem set at 175 ft. for _____ hrs.

(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 & Gravel	0	150
Blue Clay & Gravel	150	165
Brown Clay & Water	165	174
Cleaner Gravel & Water	174	180

RECEIVED

OCT 30 1989

DEPARTMENT OF ECOLOGY
NORTHWEST REGION

Work started 9-15, 1989 completed 9-15, 1989

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 Dahlman Pump & Well Drilling Inc. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address P O Box 422, Burlington Wa. 98233

(Signed) Leo Rueder License No. 0623 (WELL DRILLER)

Contractor's Registration No. DAHLMPW123LC Date 9-18-, 1989

(USE ADDITIONAL SHEETS IF NECESSARY)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.



Appendix D

Expanded Discussion of
Streamflow Depletion and
Geology, Hydrogeology,
and Hydrostratigraphy of
the Skagit River Basin

1 Introduction

This appendix to the technical memorandum (memo), *Middle and Upper Skagit River Valley Hydrostratigraphy Characterization*, is intended to provide more detailed description and background on the hydrogeology, geology, and hydrostratigraphy of the Skagit River basin, and provide more details, references, and figures on the concepts and theory of streamflow depletion. The hydrostratigraphic unit extent and continuity for each site, based on the cross sections developed for this study and reviewed reports and geologic maps, is also described in further detail than discussed in the main body of the memo.

2 Hydrogeology Summary of the Skagit River Valley

Groundwater in the Skagit River valley occurs in the unconsolidated alluvial and glacial deposits in the main river valleys, and occurs in considerably lesser quantities in the bedrock of the mountain areas (Drost and Lombard 1978). Local-scale variability in the distribution of glacial depositional facies often results in the formation of spatially discontinuous units of varying thickness, and most units are not areally contiguous with thicknesses that may vary considerably over short distances (Savoca et al. 2009). The groundwater-flow system of the Skagit River basin includes water entering the aquifers via recharge from precipitation or infiltration of tributaries at high elevations, which then moves primarily horizontally in the aquifers, traveling sub-parallel to the streams and rivers in a sinuous course or sub-vertically around or through confining units, before discharging to the Skagit River.

3 Geology and Hydrogeology of the Areas of Interest

This section provides details from the reviewed literature sources providing a basis for understanding of the hydrogeology of the Skagit basin.

The primary geologic units in the region covering the areas of interest include Pleistocene glacial deposits of till, drift, outwash sand and gravel, remaining in higher areas on the sides of the valleys at higher altitudes. More recent Pleistocene and Holocene alluvium composed of stratified silt, sand and gravel are deposited in the center of the valley and near the river. The walls of the Skagit River valley and shallow bedrock near the valley walls consist of a complex assemblage of volcanic, metamorphic, igneous and sedimentary rocks (GeoEngineers 1998). The geologic units are described in reports and maps by Dragovich et al. (2002), Heller (1979), Lapen (2005), Mitsch (1979) and Tabor et al. (2003). The primary geologic units include:

- Alluvium (Qa; Qp): Holocene alluvium deposits (Qa) of well-stratified, and well-sorted gravel, gravelly sand, sand, and cobbly gravel with rare boulders. Holocene overbank deposits (Qp) of stratified sand, fine sandy silt, silt, silty clay, and minor peat.

- Alluvium (Qp): Mostly loose or soft to stiff, stratified sand, fine sandy silt, silt, silty clay, and minor peat.
- Alluvial fan deposits (Qaf): Holocene alluvial fan deposits consisting of silt, sand and gravel are present in areas where tributaries enter the Skagit River valley. Alluvial fans locally interfinger with alluvium or disconformably overlie glacial or volcanic deposits. Silt deposits are locally divided into unit Qaf_{si} along the distal portions of some large alluvial fan complexes.
- Landslide deposits (Qal): Landslide and mass wasting deposits of boulders, cobbles, and gravel in a soft sand, silt and (or) clay matrix, are located on the edges of the valley in places.
- Glacial outwash deposits (Qga; Qgo), Older Alluvium (Qoa), Glacial Drift (Qgd), Glacial Till (Qgt): Older glacial deposits of alluvium (sand and gravel) and recessional outwash (sand and gravel) are located along the north and south side of the valley in places. Glacial drift and till is usually mapped above the glacial sand and gravel alluvium and outwash deposits.
- Lahar deposits (Qvl): Volcanic lahar deposits composed of volcanic alluvium; medium- to coarse-grained sand and thick beds of gravelly sand and cobbly sandy gravel.

On the downstream end of the areas of interest, HDR (2017) reports that the recent (shallow) alluvium and deeper sand and gravel deposits form an unconfined aquifer that is present within most of the study area (middle Skagit River between Lyman and Concrete, Washington). Some fine-grained (low-permeability) silty sand or silt deposits are present but are mostly discontinuous and not extensive. The unconfined aquifer is characterized and discussed in the hydrogeology reports for some of the areas of interest of this study, including at the Grandy Creek Hatchery (Emcon Northwest 1992) and in the Marblemount area (GeoEngineers 1998, 2003). The Grandy Fish Hatchery report (Emcon Northwest 1992) indicates that a low-yielding deep confined aquifer is present that may not be in direct hydraulic connection with the Skagit River, and that the high-yielding shallow aquifer is in direct hydraulic connection with the Skagit River.

GeoEngineers (2003) reports that the aquifer in this area is bounded on the margins of the valley by relatively impermeable bedrock, and that the aquifer appears to have some degree of hydraulic continuity with the Skagit and Cascade Rivers. Semi-confining conditions are noted at the site of Production Well No. 1 near Marblemount due to the presence of low-permeability fine sand with silt lense with a thickness of 36 feet, underlain by water-bearing fine to medium sand with a thickness of at least 59 feet (GeoEngineers 2003). It is also stated in GeoEngineers (2003) that the semi-confined aquifer system likely discharges eventually into the Skagit River. A deep lacustrine silt to silty sand is present in some of the well logs, and is presented in cross section by Dragovich et al. (2002) in the Sauk River valley near Darrington. This unit may be locally considered as a confined aquifer since within it there are wells completed in water-bearing zones, and it overlies a unit locally mapped in cross sections as Older Alluvium (Qoa; described above).

Some of the glacial deposits (outwash deposits primarily) present on the sides of the valleys at higher elevation than the valley floor are likely to contain water-bearing strata, but the water table is at a low elevation, limiting the saturated thickness and potential use of these materials as aquifers. There are only a few groundwater supply wells in these deposits since these deposits are generally not water bearing (HDR 2017). Savoca et al. (2009) describe two glacial till confining units and a glaciolacustrine and distal outwash confining unit that are low-permeability and separate discontinuous bodies of alluvial and recessional outwash aquifers, acting as local groundwater-flow barriers.

Groundwater modeling performed in the basin and the direction of the hydraulic gradient based on groundwater levels from wells reveals that the Skagit River is a gaining river overall, and that nearly all stretches gain water as baseflow from groundwater (HDR 2016, 2017; Johnson and Savoca 2011). In addition, the hydraulic conductivity of the streambed materials for the Skagit River and its tributaries has been modeled to be high enough (similar order of magnitude, or same value, as aquifer materials) such that a relatively strong hydraulic connection with underlying aquifers exists (HDR 2016, 2017; Johnson and Savoca 2011).

4 Hydrostratigraphic Cross Sections of the Areas of Interest

This section describes the geologic units mapped in the vicinity of each of the five investigated sites, and continues site-by-site describing depths of wells and reported depth to groundwater for wells used in construction of the hydrostratigraphic cross sections. Descriptions of the hydrostratigraphy, including an interpretation of the relative ranking of hydraulic disconnection between aquifers and streams, follows. The locations of five sites and final cross sections, along with well locations, are presented in **Figures 1 through 6**, while cross sections are illustrated in **Figures 7 through 11** (of the main memo).

Site #1 – Grandy Creek Confluence

Geologic units mapped at a scale of 1:100,000 in the vicinity of this site include Alluvium (Qa) and Glacial outwash deposits (Qga; Qgo). Well depths (from wells used to construct the cross section) are typically shallow, averaging 85 feet deep, with a minimum of 40 feet and a maximum of 200 feet. The static (non-pumping) depth to groundwater averages 40 feet below ground surface, with a minimum of 10.5 feet, and a maximum of 170 feet.

There are several logged intervals comprised dominantly of fine-grained materials (clay and silt). These provide evidence of confining or semi-confining units covering portions of shallow aquifers, but they appear to be discontinuous and to not completely surround any aquifer bodies, even in cross section. Facies are coarser, and less confining units exist near and south of the Skagit River, with fine-grained materials becoming more pervasive to the north underlying Grandy Creek and terraces at higher elevations. The deeper aquifer (top at elevation of approximately 50 feet) appears to have the presence of a confining unit near the northern edge of the valley, but that unit may pinch out in the southern direction. Evidence from previously developed cross sections from the *Middle Skagit Valley Hydrogeologic Assessment* report (HDR 2017) indicates that the deeper aquifer is confined for some distance over parts of this site, but it is not clear how continuous the confining unit is since only one well penetrates aquifer material beneath a confining unit (west of Grandy Creek; cross section D-D' from HDR 2017), while the deepest well depicted on the east of Grandy Creek (cross section E-E' from HDR 2017) penetrates to an elevation of 50 feet and encounters sand and gravel. The Grandy Fish Hatchery report (Emcon Northwest 1992) indicates that a low-yielding deep aquifer is not in direct hydraulic connection with the Skagit River, and that the high-yielding shallow aquifer is in direct hydraulic connection with the Skagit River. However, the length of the pump test performed by Emcon Northwest (1992) was 24 hours, which may not have been long enough for the pumping to influence the Skagit River, and it was reported that the cone of depression caused by the pumping well was still expanding at the end of the test period.

Overall, the potential for hydraulically disconnected aquifers for this site is ranked as *moderate*. The evidence from previous studies suggests that a deeper aquifer is overlain by a thick confining unit that has the potential to hydraulically disconnect it from the Skagit River. However, the cross section constructed for this study provides no definitive evidence of an extensive confining unit that would be capable of disconnecting groundwater from the Skagit River, and thereby such a confining condition cannot be extensive and some degree of connection between deep aquifers and the Skagit River or its tributaries may occur. There is some evidence that Grandy Creek may be a losing stream (Emcon Northwest 1992) and the cross section we develop in this study indicates that the base of the creek may be at an elevation that correlates with a confining unit, thereby at least portions of Grandy Creek may not be influenced by well pumping.

Site #2 – Concrete, south of Lake Shannon

Geologic units mapped at a scale of 1:100,000 in the vicinity of this site include Alluvium (Qa) and Glacial outwash deposits (Qgo; Qga), with lesser portions of Glacial till (Qgt) and metasedimentary and intrusive bedrock units along the valley margins. Well depths (from wells used to construct the cross section) are typically shallow, averaging 108 feet deep, with a minimum of 39 feet and a maximum of 340 feet. The static (non-pumping) depth to groundwater averages 64 feet below ground surface, with a minimum of 20 feet, and a maximum of 190 feet.

There are several logged intervals comprised dominantly of fine-grained materials (clay and silt), with a higher fraction of coarse-grained materials (sand and gravel) within the eastern and southeastern parts of the site. The fine-grained materials (and depth to groundwater) provide evidence for confining or semi-confining units. In cross section the confining units appear to be largely continuous, but do not completely surround any aquifer bodies. Facies are coarser, and less confining layers exist, near the Skagit River, and especially south of the river, with lenses or beds of sand and gravel clearly interrupting silt and clay facies. Fine-grained materials are more prevalent to the north as the uplands are encountered on the margins of the valley. The deeper aquifer appears to have the presence of a confining unit near the northern edge of the valley that could be continuous for several thousand feet, extending southward at least as far as the Skagit River. Correlating such a confining unit that far is difficult due to limited depth of many of the wells. Additionally, the Skagit River appears to be underlain along the cross section by a thin (approximately 10 feet thick) clay unit.

Overall, the potential for hydraulically disconnected aquifers for this site is ranked as *moderate*. The cross section constructed for this study provides evidence of an extensive confining unit, and potential for a deeper aquifer that may be confined, both of which raise the potential for disconnected aquifers. However, away from the cross section, particularly east and southeast of the cross section, wells contain less fine-grained materials, and in cross section the confining units near the Skagit River are relatively thin.

Site #3 – West of Rockport State Park

Geologic units mapped at a scale of 1:100,000 in the vicinity of this site include Alluvium (Qa), Glacial outwash deposits (Qgo; Qga), and Alluvial fan deposits (Qaf), with lesser portions of Landslide deposits (Qal), Glacial till (Qgt) and metasedimentary bedrock units along the valley margins. Well depths (from wells used to construct the cross section) are typically shallow, with a few deeper wells, averaging 117 feet deep, with a minimum of 38 feet and a maximum of 185 feet. The static (non-pumping) depth to groundwater averages 83 feet below ground surface, with a minimum of 15 feet, and a maximum of 154 feet.

There are several logged intervals comprised dominantly of fine-grained materials (clay and silt), with a somewhat higher fraction of coarse-grained materials (sand and gravel) near, and especially beneath and immediately east, of the Skagit River. The fine-grained materials (and depth to groundwater) provide evidence for confining or semi-confining units. In cross section the confining units appear to be mostly discontinuous and do not completely surround any aquifer bodies. Facies are coarser, and less confining layers exist, near the Skagit River, with lenses or beds of sand and gravel clearly predominating. Fine-grained materials are more prevalent to the north and northeast, and to a lesser extent to the west, of the Skagit River as the uplands are encountered on the margins of the valley. Confined conditions appear to exist as fine-grained materials extend for at least 2,000 feet from northeast to southwest. Local confining conditions exist in the northeast that may largely act to bound aquifer bodies, but determining this is difficult and uncertain due to limited depth and density of the wells.

Overall, the potential for hydraulically disconnected aquifers for this site is ranked as *low to moderate*. The cross section constructed for this study, and review of other wells across the site, provides evidence for several confining units, raising the potential for disconnected aquifers. However, several of the wells reviewed do not penetrate any fine-grained (clay and silt) materials.

Site #4 – Cascade River Confluence, north of Marblemount

Geologic units mapped at a scale of 1:100,000 in the vicinity of this site include Alluvium (Qa) with lesser portions of Alluvial fan deposits (Qaf), Landslide deposits (Qal) and metamorphic bedrock units along the valley margins. Well depths (from wells used to construct the cross section) are typically shallow, averaging 59 feet deep, with a minimum of 13 feet and a maximum of 162 feet. The static (non-pumping) depth to groundwater averages 19 feet below ground surface, with a minimum of 2 feet, and a maximum of 48 feet.

There are several logged intervals comprised dominantly of fine-grained materials (clay and silt), especially along the margins of the valley and directly underlying the Cascade River. There is evidence for shallow bedrock on margins of the site. The fine-grained materials (and depth to groundwater) provide evidence for limited confining or semi-confining units. In cross section the confining units appear to be largely discontinuous and to not completely surround any aquifer bodies, with the exception of alluvial fan deposits along the western margin of the valley. Facies are coarser, and less confining layers exist, near the Skagit River. Well depths are mostly shallow, making it difficult to decipher the extent of confining units. Despite this, correlating such confining units across the valley does not appear to be borne out by the data.

Overall, the potential for hydraulically disconnected aquifers for this site is ranked as *low to moderate*. In cross section the confining units appear to be largely discontinuous and to not completely surround any aquifer bodies, with the exception of alluvial fan deposits along the western margin of the valley. Facies are coarser, and less confining units exist, near the Skagit River. There is the possibility that alluvial fan deposits on the margins of the site represent a disconnected aquifer, although the one neighboring deep well with lithology depicted as a Silt or Silty Sand unit may allow groundwater flow at non-negligible rates since silt or silty sand has higher permeability values than clay, and the log for that well (82436—see **Figure 10** of the main memo) describes there being some “gravel lenses.” Therefore, the cross section constructed for this study provides evidence that confining or semi-confining units exist, but they are typically not strong barriers to flow due to relatively coarse material or limited extent.

Site #5 – Sauk River, north of Darrington

Geologic units mapped at a scale of 1:100,000 in the vicinity of this site include Alluvium (Qa), Lahar deposits (Qvl), and Alluvial fan deposits (Qaf), with lesser portions of Glacial outwash deposits (Qgo), Glacial till (Qgt) and metamorphic bedrock units along the valley margins. Well depths (from wells used to construct the cross section) are generally shallow, with a few deeper wells, averaging 120 feet deep, with a minimum of 40 feet and a maximum of 200 feet. The static (non-pumping) depth to groundwater averages 68.5 feet below ground surface, with a minimum of 7.4 feet, and a maximum of 155 feet.

There are several logged intervals comprised dominantly of fine-grained materials (clay and silt), with a higher fraction of coarse-grained materials (sand and gravel) near and west of the Skagit River, with lenses or beds of sand and gravel clearly predominating. The fine-grained materials (and depth to groundwater) provide evidence for confining or semi-confining units demarcating the upper contact surfaces for at least three aquifers (all three aquifers only visible in one well, 76981—see **Figure 11** of the main memo). In cross section the confining units appear to be mostly discontinuous. In the uplands east of the Skagit River, fine-grained material exists, but a large portion of these units are in the unsaturated zone, so they do not act as confining units. Local confining conditions exist in deeper aquifers on the western margin of the valley that may largely act to bound aquifer bodies, but determining the overall lateral connection of the deep confining units and aquifers is difficult and uncertain due to limited depth and density of the wells. Aspect Consulting (2003) conducted a 24-hour constant-rate pumping test on Darrington Well #3 at 450 gpm in the deeper confined aquifer revealed drawdown declined after about 160 minutes, indicating either a recharge boundary and/or leaky condition, meaning flows sourced from either the nearby Sauk River or from the shallow aquifer through the confining unit above, or both.

The cross sections illustrated on the geologic map of the Darrington 7.5-minute Quadrangle by Dragovich et al. (2002) show a confined aquifer condition in which older Glacial outwash deposits (Qga) are buried by a relatively thick and continuous glacial till (Qgt). On the east side of the valley the base of the glacial till (Qgt) unit is found at an elevation of approximately 370 feet, and about 320 feet on the west side of the valley (see section C-C' of Dragovich et al., 2002), in the vicinity of the cross section developed for this study. This would indicate that the glacial till (Qgt) unit may be above the second (middle) aquifer shown between elevations of 220 and 300 feet. However, it is important to note that those cross sections presented by Dragovich et al. (2002) are located in and around Darrington, and only follow the valley margins near the area of interest.

Overall, the potential for hydraulically disconnected aquifers for this site is ranked as *moderate*. The cross section constructed for this study, and review of other wells across the site, provides evidence for several confining or semi-confining units, raising the potential for disconnected aquifers. One confining unit that has the potential to confine a regional aquifer over a large area is the glacial till (Qgt). However, several of the wells reviewed do not penetrate any fine-grained (clay and silt) materials, and the cross section depicts a lack of lateral continuity of confining units.

5 Streamflow Depletion Concepts and Theory

Groundwater pumping causes a decrease in the groundwater levels around a well as water is drawn from storage in the aquifer. The decrease in groundwater levels may affect surface water directly via induced recharge, or capture groundwater that would otherwise discharge to surface water (as

baseflow). The water captured from surface waters by wells is called “streamflow depletion,” and the proportion of the water pumped by a well that is captured from surface water is called the “capture fraction.” Capture fractions can be calculated for the depletion caused to individual surface water bodies from groundwater pumping at specific well locations (actual or hypothetical) using analytical solutions or numerical groundwater modeling. The effect of groundwater pumping on surface water resources has been described and modeled conceptually and mathematically by Barlow and Leake (2012), Bredehoeft (2002), Glover and Balmer (1954), Jenkins (1968), Leake et al. (2010), and Theis (1940), among others.

When groundwater is withdrawn from an aquifer by pumping, the abstraction must be supplied by (Theis 1940):

- More water entering the system (increased recharge);
- Less water leaving the system (decreased discharge);
- Removal of water in storage; or
- Some combination of the above three factors.

Figure 1 shows this concept with regard to the changes in the water budget brought about by groundwater pumping (after Alley et al. 1999).

While moving wells away from the stream tends to filter out annual fluctuations in pumping, a stream set-back regulation distance does nothing to change the total volume of stream depletion caused by pumping a well in an aquifer associated with a stream (Bredehoeft 2011). There are conditions in which water in storage in an aquifer can be “mined,” and the pumping drains the water in storage long before stream discharge is captured.

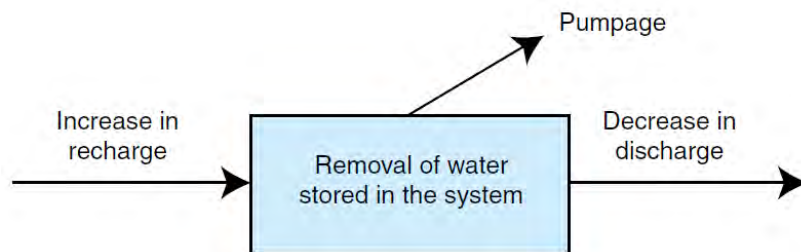


FIGURE 1. Changes in the Water Budget Brought about by Groundwater Pumping (after Alley et al. 1999).

This can be affected by the geometry of the system, including where the saturated thickness is small, or the pumped aquifer is disconnected from surface waters by low-permeability sediments/rocks. Furthermore, if groundwater pumping exceeds any potential capture, the system can never reach a new equilibrium, and groundwater levels will continue to decline until the system is depleted (Bredehoeft and Durbin 2009). The time response of the sources of water to a hypothetical pumping well is illustrated by the curves in **Figure 2**. For this example aquifer, the only sources of water to the well are groundwater releases from storage and streamflow depletion to a nearby stream (Barlow and Leake 2012). Other features can balance water to wells in addition to streams, such as lakes, springs, wetlands, and groundwater evapotranspiration areas. Thereby, these other features can also be depleted along with streamflow where present and connected with aquifers. **Figure 3** presents the model-computed time response of the sources of water to a well located near the San Pedro River, Arizona, including the reduction of discharge to plants via

evapotranspiration. This leads to discussions about sustainable groundwater development, which depends on the compensation of increased groundwater withdrawals by increased recharge and/or decreased discharge, and by this capture being acceptable to stakeholders. Generally, an adaptive management approach is needed to ensure the sustainable development of groundwater in most situations (Seward et al. 2006).

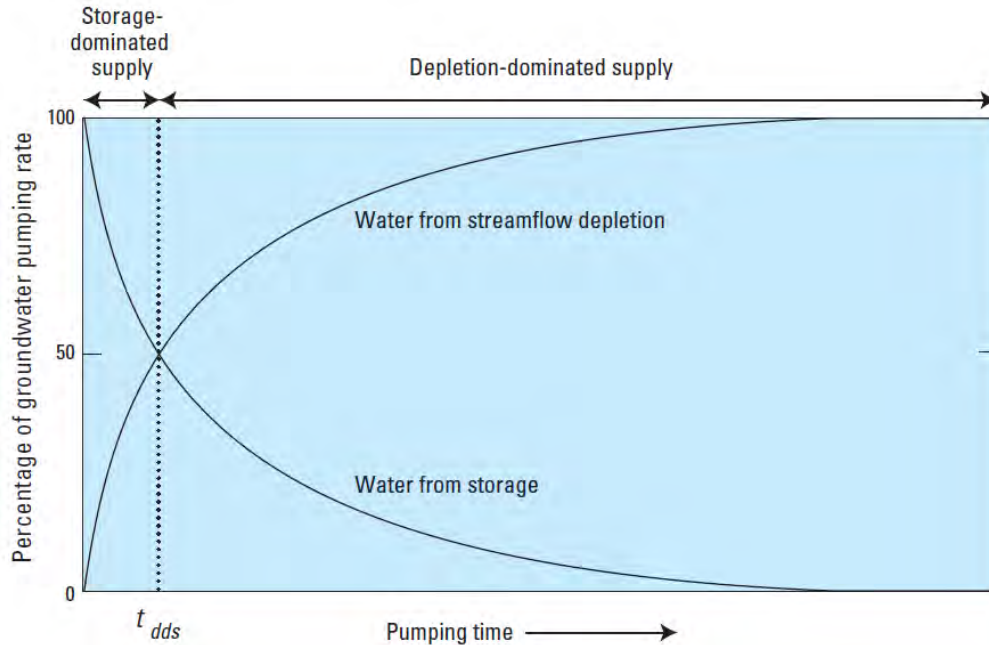


FIGURE 2. Relation of Storage Change and Streamflow Depletion through Time. Storage-dominated supply occurs initially as aquifer storage is reduced. Depletion-dominated supply occurs at time t_{dds} when more than half the pumping comes from streamflow depletion (after Barlow and Leake, 2012).

According to Seward et al. (2006), the consequences of capture when an aquifer system is subjected to development are:

- 1) Some groundwater must be removed from storage before the system can be brought back into equilibrium;
- 2) The time required to bring the system back into equilibrium depends on the rate at which discharge can be captured;
- 3) The rate at which discharge can be captured is a function of the characteristics of the aquifer system and the placement of pumping wells—spacing, distance to recharge zones, distance to discharge zones; and
- 4) Equilibrium is reached only when pumping is balanced by capture. The dynamics of the groundwater systems are such that long periods of time are necessary before even an approximate equilibrium can be reached (Alley et al. 1999).

The long response times to reach a new equilibrium, as simulated for the Sand Pedro River basin in Arizona (**Figure 3**), are a result of the distance of the well from the river (approximately 3 miles), the characteristics of the groundwater system, including its large areal extent, the thickness of the basin-fill sediments (aquifer facies), and the presence of a silt and clay confining unit (Barlow and Leake

2012). Notice that in **Figure 3** there remains a large portion of pumped water derived from streamflow depletion, despite there being a portion of water derived from evapotranspiration capture. Also, in the example presented in **Figure 3**, the system has not yet reached equilibrium after 100 years since initiation of pumping.

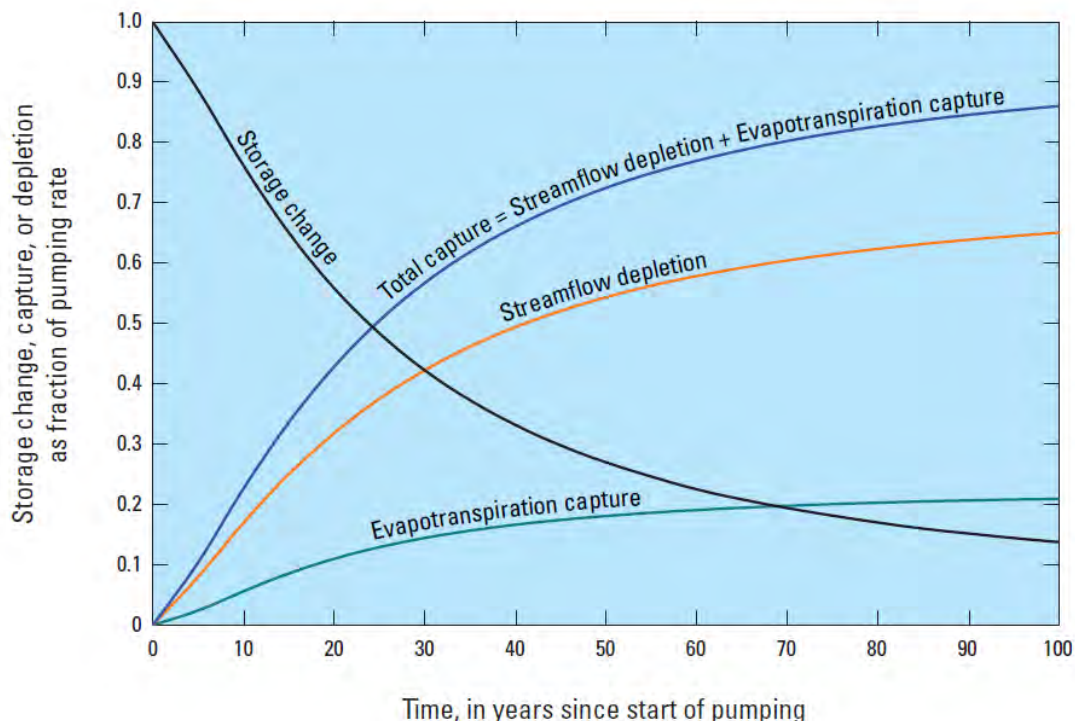
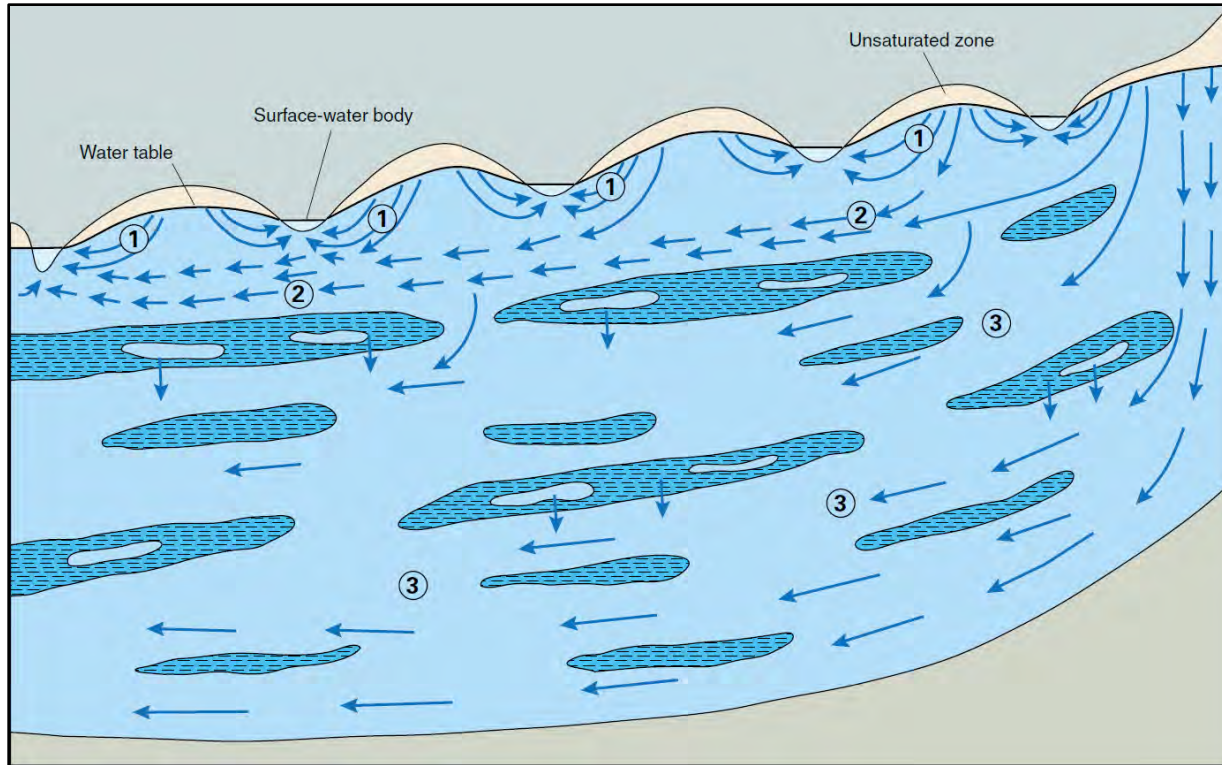


FIGURE 3. Model-Computed Streamflow Depletion, Evapotranspiration Capture, and Total Capture for a Hypothetical Well in the Upper San Pedro Basin, AZ (after Barlow and Leake 2012).

In this case, well pumping has lowered the water table enough to reduce evapotranspiration by phreatophytes, thereby capturing discharge that used to go to evapotranspiration, in addition to depleting streamflow.

Stream-aquifer hydraulic connections are made when aquifer material (high-permeability) have connected pathways to the stream, whether those pathways are largely horizontal, vertical, and require large distances be traversed (**Figure 4** provides a diagram of the conceptual situation). With respect to confining units, Barlow and Leake (2012) list a common misconception of streamflow depletion—pumping groundwater exclusively below a confining unit will eliminate the possibility of depletion of surface water connected to the underlying groundwater system. Barlow and Leake (2012) discuss and model simple synthetic cases covering the effects of confining units on depletion. Geologic features that act as conduits or barriers to groundwater flow can affect the timing of depletion from groundwater pumping and also can affect which streams are affected. In unconsolidated sediments, aquifer material generally consists of sand and gravel, and confining material consists of silt and clay. Confining units may be laterally discontinuous or they may form laterally extensive barriers that separate adjacent aquifers.



EXPLANATION	
	High hydraulic-conductivity aquifer
	Low hydraulic-conductivity confining unit
	Very low hydraulic-conductivity bedrock
	Direction of ground-water flow

FIGURE 4. A Regional Groundwater-Flow System at Different Scales and a Complex Hydrogeologic Framework with Semi-Confined Aquifers that Contain Lateral Pathways and Connections with Surface Water Bodies.

Note that hydraulic conductivity is synonymous with permeability (after Alley et al. 1999; modified from Sun 1986).

In most cases, confining units between wells and streams slow down the progression of depletion in comparison to equivalent aquifer systems without confining units. Despite this fact, Barlow and Leake (2012) make the following important statements with ramifications in the Skagit River basin:

It is not reasonable to expect that pumping beneath an extensive confining unit will eliminate depletion. Water does move vertically from one aquifer to another through confining units, and drawdown from pumping can propagate through confining units as well. Also, the effective storage coefficient in confined aquifers (beneath confining units) commonly is 2–4 order of magnitude less than in shallow unconfined aquifers with storage properties dominated by specific yield [drainable porosity]. Smaller storage coefficients result in faster lateral propagation of drawdown from pumping locations to distant edges of confining units or locations where drawdown can more easily propagate upward. The argument that pumping beneath a confining unit eliminates the possibility of [stream] depletion implies that the pumped aquifer is without any vertical or lateral connection to aquifer material that is connected to surface water.

Confining units and other geologic features are complexities that can affect the timing of depletion from groundwater pumping (and delay the full impacts of pumping on stream depletion). Where a clay layer lies beneath the river, the depletion is greatly slowed since the propagation of drawdown cannot reach the river until it has migrated around the edge of the clay layer. On the contrary, the existence of clay layers on the edges of the aquifer tends to speed up the stream depletion because it creates a confined aquifer zone that propagates the drawdown toward the river. As much as the work by Barlow and Leake (2012) can be described as theory, their findings must be taken into consideration in the context of the hydrogeologic framework of the Skagit River valley. Their simple hypothetical modeling cases shed light into what would be the expected effects of pumping from the large majority of areas in the Skagit River valley. For further reading on groundwater-surface water interactions in an example from the Puget Sound Lowland, Washington, refer to Alley et al. (1999), specifically to the section, *Effects of Ground-Water Development on Ground-Water Flow to and from Surface-Water Bodies*, and Box C.

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