



**RH2 TECHNICAL**

# Memorandum

**Client:** City of Stanwood

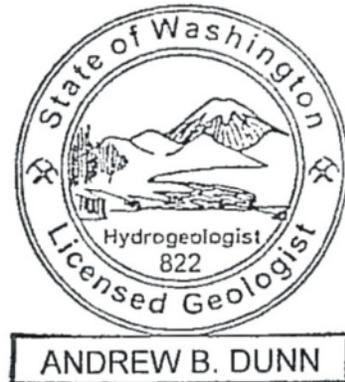
**Project:** Hatt Slough Springs Alternatives Analysis

**Project File:** STA 413.016.01.101      **Project Manager:** Bret Beaupain, P.E.

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**Subject:** Hydrogeologic Investigation

**Date:** June 14, 2013



## EXECUTIVE SUMMARY

Given the expense of maintaining access to Hatt Slough Springs, limited potential for increasing spring production above approximately 350 gallons per minute (gpm), and the probability that the Washington State Department of Health (DOH) will eventually classify the springs as groundwater under the influence of surface water (GWI), the City of Stanwood (City) should pursue the transfer of the Hatt Slough Springs water right to a new source of supply. Multiple source alternatives were evaluated, including: a groundwater well field on the upland to the south of the springs; a deep aquifer source in the Stillaguamish River basin; a shallow groundwater source in the Stillaguamish River basin; and transferring the point of withdrawal for the spring water right to the existing point of withdrawal at the Bryant Well site. This memo evaluates each alternative for potential benefits and risks. The two alternatives recommended for additional study include locating a well field on the upland south of the springs and locating a well field in the shallow valley aquifer.

## INTRODUCTION

The City's Hatt Slough Springs water right, Surface Water Certificate (SWC) 1164 (tracking No. S1-\*02432CWRIS) with a priority date of September 28, 1928, authorizes diversion of 2.5 cubic feet per second (cfs) for municipal water supply with no annual volume specified, which was common for surface water rights of that time. In recent years, the captured flow from Hatt Slough Springs has declined to approximately 250 gpm and the access road to the springs is periodically blocked by debris from landslides. **Figure 1** shows the location of Hatt Slough Springs.

The City relies upon this source for municipal supply and intends to protect and improve the availability of using this water right. At the City's request, RH2 Engineering, Inc., (RH2) performed an alternatives analysis to identify the risks and benefits of either rehabilitating the current spring source, including improving access to the site and protection from flooding and mass wasting, or transferring the water right to a new well location or existing facility such as the Bryant Well Field.

## **HYDROGEOLOGY**

The hydrogeology of the upland to the south of the springs (referred to as the Tulalip Plateau) has been described by the United States Geological Survey (USGS) (Frans and Kresch, 2004) and this memo uses similar terminology for consistency. The ground surface of the upland generally consists of glacial till (unit Qgt), which is considered an aquitard, underlain by Vashon advance outwash (unit Qva), which forms the primary aquifer tapped by wells on the Tulalip Plateau. Beneath the Vashon advance outwash aquifer is an aquitard referred to as the transitional beds (unit Qtb). Beneath the transitional beds, lies the undifferentiated-sediments unit (unit Qu). The undifferentiated sediments unit extends under the entire upland, but only crops out in the vicinity of Hatt Slough Springs (Frans and Kresch, 2004). The upper part of this unit consists mostly of coarse-grained material and is identified as an aquifer. The majority of the unit likely consists of a series of glacial and non-glacial deposits. The coarse-grained top of unit Qu is the source aquifer that supplies water to Hatt Slough Springs. In this memo, the coarse-grained aquifer at the top of unit Qu will be referred to as the Qu (upper) aquifer.

According to Jones (1996), the depth to bedrock in the vicinity of Hatt Slough Springs is 1,200 to 1,500 feet below ground surface. The only wells to reach bedrock in the area were drilled for the purposes of oil exploration.

**Table 1** includes the general layering of the hydrogeologic units and a description of the sediment included within them.

**Table 1. Hydrogeologic Units and their Characteristics (Modified from Frans and Kresch, 2004)**

Unit Name	Unit Symbol	Sediments	Aquifer or Aquitard
Vashon Glacial Till	Qvt	Compact, unsorted sand, gravel, and boulders, in a matrix of silt and clay. Some lenses of sand and gravel.	Aquitard
Vashon Advance Outwash	Qva	Well-bedded fine sand. Grades to sand and gravel. Some lenses of silt.	Aquifer
Transitional Beds	Qtb	Laminated sand to silty clay with lenses of sand and gravel.	Aquitard
Undifferentiated Sediments – Coarse-grained Upper Section	Qu (upper)	Sand and gravel.	Aquifer (Hatt Slough Springs)
Undifferentiated Sediments – Below Upper Section	Qu (lower)	Laminated fine-sand, silt, and clay with layers of sand and gravel.	Aquitard and unexplored
Tertiary Bedrock	Tb	Sandstone, siltstone, shale, and coal.	Aquitard

Frans and Kresch (2004) as well as Thomas, Wilkinson, and Embrey (1997) plotted potentiometric water level elevations for the Vashon advance outwash aquifer on the Tulalip Plateau. Groundwater flow based on these contours is generally out from the middle of the upland, which is located just north of Lake Goodwin, toward the marine shoreline on the west, Stillaguamish River Valley to the north, and Marysville Trough to the east. Since there is likely a vertical downward gradient and associated leakage from the advance outwash aquifer to the deeper aquifers beneath the plateau, including the Qu (upper) aquifer, it is anticipated that lateral groundwater flow directions will be similar in the Qu (upper) aquifer as well.

### Source of Spring Recharge

All water emanating from Hatt Slough Springs originates as precipitation falling on the Tulalip Plateau to the south and southeast of the springs. **Figure 2** shows an estimate of the potential zone of contribution for groundwater that could discharge at Hatt Slough Springs. The extent of the capture zone was approximated by considering groundwater flow direction in the Qu (upper) aquifer as determined from well logs, and groundwater potentiometric contours and flow directions for the Qva aquifer from Frans and Kresch (2004) and Thomas, Wilkinson, and Embrey (1997). The potential capture area is just under 2 square miles (1,260 acres) and extends to the southeast from the spring site toward the middle of

the Tulalip Plateau upland (**Figure 2**). Using this, and a long-term average annual rate of groundwater recharge of 12 inches (Frans and Kresch, 2004), the groundwater recharge over the capture area is equal to approximately 1,260 acre-feet per year (afy), which is an average of 1.74 cfs, or 781 gpm. Recharge is calculated based on infiltration past the rooting depth of vegetation and often to the uppermost aquifer, which is the Vashon advance outwash (Qva) over much of the potential zone of contribution. Some percentage of the recharge continues to migrate vertically to deeper units, such as the transitional beds (Qtb) and Qu (upper) aquifer.

A review of the water right record is informative for estimating the spring capacity. On October 21, 1929, the Stanwood Water Company (water right holder prior to City acquisition) submitted a Notice of Beginning of Construction form which said the purpose of the project “is conveying **all** the spring water to one gathering reservoir.” (emphasis added).

On January 31, 1939, the Stanwood Water Company submitted the following two forms:

- 1) Proof of Appropriation of Water saying the water was put to beneficial use. The quantity of water is not specified.
- 2) Notice of Complete Application of Water to a Beneficial Use. This form references the appropriation of 2.5 cfs and states that “45% of appropriation now being applied to use during summer months.”

Given that both forms were submitted on the same day, it is reasonable to conclude the City was diverting 45 percent of 2.5 cfs or 1.125 cfs (505 gpm) from the Hatt Slough Springs location.

Given that the Stanwood Water Company expressed the intent in 1929 to collect all of the water and, in 1939, reported that it had appropriated the water in the amount of 505 gpm, it seems reasonable to conclude this was the maximum capacity of Hatt Slough Springs. Copies of the referenced water right forms are contained in **Appendix A**.

To further bolster this argument, the USGS issued a report that noted that the reported discharge of Hatt Slough Springs in December 1946 was 500 gpm (Newcomb, 1952) (**Appendix B**).

Mr. Bill Beckman, former Public Works Director for the City, indicated that the five distinct springs forming the Hatt Slough Springs were rehabilitated in 1982. Prior to rehabilitation, the total captured flow was approximately 250 gpm (Beckman, personal communication, June 14, 2013). After rehabilitation, the total captured flow was a continuous 350 gpm (Beckman, personal communication, February 21, 2013). Ms. Gina Melander, City of Stanwood Water Treatment Operator, estimated that the discharge from the springs is consistent year-round and does not fluctuate on a seasonal basis (Melander, personal communication, February 19, 2013).

Historic estimates of Hatt Slough Springs actual peak discharge bracket the flow within a range of 350 gpm (circa 1982) (Mr. Bill Beckman, personal communication) to approximately 505 gpm (Water Right File for SWC 1164, 1939). This historic reported discharge rate represents from 45 to 65 percent of the estimated groundwater recharge within the capture area. Considering the high percentage of estimated groundwater recharge discharging to the springs, there is likely a connection between the Qva and Qu (upper)

aquifers south of the springs. This estimate also suggests that the water right instantaneous limit of 2.5 cfs (1,122 gpm) was likely never actually diverted and that it is an unrealistic goal for either Hatt Slough Springs rehabilitation or a new source of supply tapping the Qu (upper) aquifer upgradient of the springs. A more reasonable goal appears to be the peak historic reported rate of 505 gpm.

### **Rehabilitate Existing Springs**

The City may elect to improve the Hatt Spring collection system to capture the maximum possible discharge from the springs, up to the 2.5 cfs limit in its water right. SWC 1164 is a municipal purpose water right and the inchoate quantity (the amount between the maximum historic use and the full 2.5 cfs in the certificate) is not subject to relinquishment based on Revised Code of Washington (RCW) 90.14.140(2)(d) and is deemed in good standing by the municipal water law, RCW 90.03.330(3). However, this does not guarantee that the full 2.5 cfs is actually physically available, only that the City would have legal access to that water if it is physically available from the springs. The pursuit of maximizing the diversion rate from the springs under this water right would not require a water right change authorization from the Washington State Department of Ecology (Ecology) if the City continues to collect water from the springs or the hillside immediately adjacent to where the springs emanate.

Mr. Beckman indicated that rehabilitation of the spring collectors in 1982 resulted in an increased in captured flow from approximately 250 gpm, which is similar to the current captured flow, up to 350 gpm. Rehabilitation of the existing collection system would be expected to yield similar results if undertaken today. The springs discharge from a thin, approximately 20-foot-thick layer of sand above its contact with underlying silt. Tapping into this zone with additional vertical collectors is possible, but to effectively increase the collection rate, several collectors would have to be constructed on the steep slope where the springs discharge. The amount of available drawdown in a vertical collector would significantly limit flow into the well. Protecting each well from surface water infiltration to minimize contamination may be impractical. Horizontal borings into the spring discharge zone to install collectors has been attempted at other spring sites in the Puget Sound area, often with limited success. Without sufficient isolation and protection from surface water, spring collection systems are vulnerable to contamination and DOH may identify the existing and new collectors as GWI, which would require filtration and disinfection treatment similar to other sources of drinking water.

#### ***Risks:***

- DOH could eventually determine that the springs are GWI and require surface water treatment, even after redevelopment occurs.
- Access to the site would need to be maintained. Recurring landslides will likely periodically affect access without expensive slope stability mitigation measures.
- Redevelopment might only slightly increase the rate of spring collection above current conditions, possibly up to the rate they reported collecting in the 1940s (500 gpm), but more likely up to the rate collected in the early 1980s (350 gpm).

### **Other Source Alternatives**

Given the difficulties related to rehabilitating the springs, potential treatment requirements, and the potential for a minor increase in production capabilities, RH2 has reviewed four

potential alternatives for transfer and use of SWC 1164 to another source. The four source alternatives reviewed include:

1. A well or well field south of the springs on the upland tapping the Qu (upper) aquifer;
2. Well tapping an aquifer deeper than the Qu (upper) aquifer;
3. A shallow well or well field in the Stillaguamish River Valley; and
4. Increased production from the City's Bryant Well Field.

A fifth alternative, converting the Hatt Slough Springs from a spring source to a surface water source from the Stillaguamish River, is another legal and technically feasible alternative, but not considered due to the additional permitting and treatment analysis that was beyond this scope of work.

### **Alternative 1 – Creation of a Well Field to the South of Hatt Slough Springs on the Upland**

The area immediately south of Hatt Slough Springs (Section 5, Township 31 North, Range 4 East W.M) has been developed for residential use on 5-acre lots (**Figure 3**). Each lot in the area is served by its own private well and on-site septic system (**Appendix C**). RH2 correlated some of the water well reports to specific addresses or parcels of land, which allowed for more accurate location of the wells than using the quarter-quarter section information provided on well logs. A table summarizing the location, construction, and groundwater details wells reviewed as part of this study is contained in **Appendix D**. The majority of the wells drilled to the south of the springs, within Section 5 and the north half of Section 8, Township 31 North, Range 4 East W.M. tap the Qu (upper) aquifer, which is the same aquifer that eventually discharges to Hatt Slough Springs. Some wells are completed at a shallower depth in what is likely the Qva aquifer or transitional beds (Qtb). The bottom of most wells is above mean sea level. Many of the domestic wells were drilled less than 20 feet into the aquifer, without fully penetrating the aquifer before drilling was terminated and the well completed. Based on the well logs reviewed, it is anticipated that the Qu (upper) aquifer below this area ranges in thickness from 10 feet to at least 66 feet.

Transferring the Hatt Slough Springs point of withdrawal from the springs to an upland area well field would be relatively straight forward from a water right perspective since the existing and potential points of diversions or withdrawals would tap the same source of supply, the aquifer that is the source of water to Hatt Slough Springs. However, the potential transfer of the point of withdrawal up-gradient of the springs has the potential to impair the numerous permit-exempt residential wells that have been drilled into the same aquifer. Chapter 173-150 Washington Administrative Code (WAC) defines who can make a claim of impairment (owners of qualifying withdrawal facilities) and the standard used to define impairment of those facilities. A qualifying withdrawal facility is defined in the WAC as follows:

(8) *“Qualifying withdrawal facilities” means those withdrawal facilities which in the opinion of the department constitute a reasonable development of the aquifer. A reasonable development must satisfy the following requirements:*

(a) *The withdrawal facilities must be constructed in accordance with chapter 18.104 RCW (Water Well Construction Act) and chapter 173–160 WAC (Minimum standards*

*for construction and maintenance of water wells) and the water right permit provisions, if any, or the applicable state laws and the regulations of the department which were in effect at the time of construction of the facilities.*

- (b) The withdrawal facilities must have a depth of aquifer penetration which will allow the withdrawal of water from a reasonable or feasible pumping lift;*
- (c) The withdrawal facilities must be able to accommodate a reasonable variation in seasonal pumping water levels;*
- (d) The withdrawal facilities, including the pumping facilities, must be properly sized to the ability of the aquifer to produce water.*

Impairment is defined as follows:

**WAC 173-150-060 Impairment of water right.** *For the purposes of this chapter, a ground water right which pertains to qualifying withdrawal facilities, shall be deemed to be impaired whenever:*

- (1) There is an interruption or an interference in the availability of water to said facilities, or a contamination of such water, caused by the withdrawal of ground water by a junior water right holder or holders; and*
- (2) Significant modification is required to be made to said facilities in order to allow the senior ground water right to be exercised.*

Activation of a new well field in the upland area could impair existing wells by causing a decrease in water level in the wells below pump intakes. For the permit-exempt domestic wells found in the vicinity, significant modification, such as lowering a pump in an existing well would likely cost more than \$500, and considered a significant modification.

The most promising area identified for potential location of a well or well field is the western half of the undeveloped 40-acre parcel (Parcel Number 31040500400300) in the SW ¼ SE ¼, Section 5, or the two 10-acre parcels (Parcel Numbers 31040500302700 and 31040500300600) located adjacent to it to the west (**Figure 3**). These large undeveloped parcels would allow the City to gain some distance between the neighboring wells, even though it would still only be approximately 650 feet. Also, the Qu (upper) aquifer appears to be thicker in this area and higher water levels will allow for more available drawdown and potentially better production from each well. Just to the south of this parcel in Section 8, the water level elevation in the Qu (upper) aquifer is approximately 115 feet, which is much higher than the 80-foot water level elevation to the north of the parcel. Also, groundwater contours of the Qu (upper) aquifer water level indicate that groundwater flow converges from the south, east, and west in the vicinity of this area (**Figure 2**). A test well drilled in this area should extend to sea level (approximate depth of 300 feet) or to the bottom of the aquifer. If a well field were ultimately located in this area, a water supply pipeline and power supply would be constructed from the well field, west on 222<sup>nd</sup> Street NW and following that until it turns into 226<sup>th</sup> Street NW and meets with Marine Drive, and then north on Marine Drive to reach the location of the existing pipeline leading from the Hatt Slough Springs source (**Figure 3**). The total length of this new pipeline and powerline would be approximately 1.25 miles, with the ultimate length depending on the precise location of the well field.

The nearest neighboring well to this possible well location would be approximately 650 feet away. Due to this close distance, the anticipated interference drawdown was calculated based

on estimated aquifer properties including an aquifer storage coefficient of 0.1 and a transmissivity of 50,000 gallons per day per foot (gpd/ft), which is consistent with a 50-foot thick coarse to medium sand aquifer. The calculated interference drawdown when pumping the well at 505 gpm is shown in **Table 2**.

**Table 2. Approximate Interference Drawdown from Pumping at 505 gpm in a Neighboring Well Located 650 feet from the Production Well**

Pumping Duration (Days)	Interference Drawdown (ft)
1	0.1
7	1.3
30	2.8
180	4.82
365	5.65

The interference drawdown calculation is based on limited data. A test well will need to be drilled and additional testing will be needed to determine if the assumptions used in the calculation are reasonable.

While the springs are able to produce water continuously, it is anticipated that the pumping from a well or well field at this location would need to be cyclic to avoid overstressing the aquifer, which could lead to excessive drawdown not only at the pumping wells, but also at the neighboring wells. The true sustainable pumping rate will only be known after testing and long-term production and monitoring data are analyzed. However, for planning purposes, an assumption of 50-percent pumping operation would equal the physical ability to withdraw approximately 400 afy.

**Risks:**

- Transferring the springs point of withdrawal to an upland well field would require the City to go through the water right change process. The City would likely be able to transfer the historically used maximum withdrawals of 505 gpm and the associated year round annual volume of 808 afy.
- Multiple wells would likely be necessary to achieve the desired pumping rate from the relatively thin aquifer. The greatest potential from the upland area exists in Sections 5 and 8, where the aquifer is thickest and groundwater levels are highest.
- The high density of existing neighboring wells (approximately one well every 5 acres) creates the potential for impairment of those wells by the City production well or well field. Locating the well or wells as far away from neighboring wells would be required.
- Most of the neighboring wells do not appear to fully penetrate the aquifer. Consequently, operation of an upland area well field could cause groundwater levels to decline below their pump intakes, which may or may not be considered

- impairment but likely would cause hardship for the well owners.
- Property-owner permission for drilling a 300-foot-deep test well, and some pipeline or power easements may be required.
  - Land acquisition for the well field would be required.
  - Constructing an approximately 1.25-mile-long pipeline to connect the new well field location with the existing City infrastructure on Marine Drive would be required (**Figure 3**).

### **Alternative 2 – Tap an Aquifer Deeper than the Qu (upper) Aquifer**

The City could drill a well to attempt to tap an unutilized and unverified deeper aquifer south of the City, either on the upland to the south of the springs or in the Stillaguamish River Valley. Potable groundwater supplies existing in region, including the Bryant Well Field and the Cedarhome Well, which tap aquifers located below sea level (**Figure 1**). The Bryant Well is completed to a depth of approximately 150 feet below sea level and the bottom 200 feet of drilling encountered sand and gravel. The Bryant Well produces 1,200 gpm and is the primary water source for the City. The Cedarhome Well was drilled to a depth of approximately 360 feet below sea level. This well taps a thick (116 feet) fine sand aquifer. The fine-grained nature of the aquifer required that the well be completed with a gravel pack to prevent excessive sand production. The static water level in the well is near sea level, but the well can produce 600 gpm.

Elsewhere, deeper groundwater sources are sparsely distributed or limited in yield. On the upland, the Fandrich Well (**Figure 3** and **Appendix C**), located to the west of the springs, recorded an aquifer thickness of 31 feet for the Qu (upper) aquifer. This aquifer was underlain by at least 157 feet of soft gray clay at this location. This well is the only well on the upland that penetrated an appreciable distance below sea level (approximately 107 feet), and no deeper aquifer was encountered over that interval.

Within the Stillaguamish River Valley, one well (Henning Well) penetrated to an approximate depth of 383 feet below sea level (**Figure 4** and **Appendix E**). Unfortunately, this well did not encounter any suitable deep aquifer and was ultimately completed at a shallow depth. The description of the sediment encountered below a depth of 92 feet include blue clay, fine gray sand, blue silt clay, and blue-gray clay. None of the deeper sediments suggest an aquifer that is suitable for municipal production.

Approximately 7.5 miles west, on Camano Island, a well drilled by Ecology and USGS (TH-7) reached a depth of approximately 570 feet below sea level (**Appendix F**). The majority of the material encountered below sea level was described as clay, silt, and fine sand. The layers below sea level that included coarse sand up to medium gravel with no fine material were thin at 20 feet or less thick.

Any proposed deep well location would require the drilling of a test well to determine if there is a deep aquifer that could potentially be used for municipal supply at that particular location. A table summarizing the location, construction, and groundwater details for the upland and valley wells is contained in **Appendix D**.

**Risks:**

- Moving from the springs to wells will require the City to go through the water right change process, which will likely reduce the water right to historic use levels (505 gpm and 808 afy).
- If pumping from the deep aquifer causes impacts to surface water bodies, other than either the Hatt Slough Springs or the lower Stillaguamish River, mitigation of this effect will likely be necessary before the change could be approved.
- No productive deep wells are known to exist in the lower Stillaguamish River watershed, to the south of the City, which would have provided some indication of a regionally-extensive aquifer. However, there is a high likelihood of not encountering any significant coarse-grained layers that would be sufficient to supply a municipal production well.
- The least expensive location for drilling of the test well would be in or bordering the Stillaguamish River Floodplain since it is at a height of less than 20 feet above sea level. However, any attempts to site a production well there would be complicated by the potential for flooding of the site.
- Groundwater from deeper aquifers often requires additional treatment to remove dissolved minerals, such as iron and manganese.
- The potential for a deep aquifer to contain saline (connate) water or be susceptible to seawater intrusion under production scenarios can be higher if there is not sufficient freshwater head within the aquifer to cause groundwater to continuously flow through the aquifer.

**Alternative 3 – Shallow Well or Wellfield in the Stillaguamish River Valley**

Some wells drilled in the Stillaguamish River Valley are completed in a sand and gravel aquifer at a depth of less than 100 feet (**Figure 4** and **Appendix E**). This aquifer appears reasonably thick (30 + feet) and productive; for example, a well log records an flow test result of 300 gpm for 1 hour (Klesick Well in Section 32, Township 32N, Range 4 East, W.M.). If the well or wells could be located in close proximity to the existing pipeline leading from the springs to the City, a minor amount of infrastructure would need to be constructed to tie the wells into the larger distribution system (**Figure 4**).

**Risks:**

- Transferring the point of withdrawal of the springs to new shallow wells will require the City to go through the water right change process, which will likely reduce the water right to historic use levels (505 gpm and 808 afy).
- The relatively shallow aquifer in the lower Stillaguamish River Valley is likely heterogeneous and there is no guarantee that it will be found at any particular location.
- Shallow aquifers are often more prone to human induced contamination than deeper aquifers.
- Property acquisition or an easement agreement would need to be acquired to drill a test well.
- Any attempts to site a production well in the Stillaguamish River Valley would be complicated by the potential for flooding of the site.

- Water quality in the shallow aquifer is unknown. Samples could be collected from existing wells or from a test well.
- Over-pumping from the shallow valley aquifer might induce saline water into the aquifer.

#### **Alternative 4 – Increased Utilization of the Bryant Road Well Field**

A request could be made to transfer the point of withdrawal for the spring right to the site of existing City infrastructure, such as the Bryant Well Field, which lies less than 2.5 miles north of the springs (**Figure 1**). The City is currently in the process of drilling a replacement well at the Bryant Well Field to restore production at the well field. If additional water could be obtained from the well field in excess of the existing water rights for the well field (2,000 gpm and 2,400 afy), the spring water right could potentially be transferred to authorize that additional pumping. However, Ecology could view the springs and well field as not tapping the same body of public groundwater given the different geology encountered at each site.

There are additional risks, as identified below, in this transfer and attempting to increase utilization from this source.

#### **Risks:**

- Moving from the springs to wells will require the City to go through the water right change process. Diverting water from Hatt Slough Springs only reduces the flow of water in the lowermost reaches of the Stillaguamish River downstream of the site. Taking water from the Bryant Well Field would likely have an impact on flow in Church Creek, which has never been impacted by the utilization of the Hatt Slough Springs water right. Church Creek is effectively closed under Chapter 173-505 WAC, and no additional impacts can be allowed through a water right change. Therefore, impacts to Church Creek would need to be offset by mitigation in order for the transfer to be approved.
- Additional pumping from the Bryant Well Field might place too great a stress on the aquifer at that location, which could jeopardize this source.

#### **Protection of the Hatt Slough Springs Water Right**

This section presents the steps that need to be taken so that the Hatt Slough Springs water right can be protected from full or partial relinquishment, regardless of how the City decides to proceed. SWC 1164 had been used for municipal water supply purposes, as defined by RCW 90.03.015 until about a year ago when landsliding along the access road excluded heavy machinery access.

Municipal water rights are not subject to statutory relinquishment due to non-use, as provided in RWC 90.14.140(2)(d).

Ecology's Water Resources Program Policy 2030 (POL-2030), "2003 Municipal Water Law Interpretive and Policy Statement", revised on May 7, 2012, states the following with respect to RCW 90.03.015(3) & (4) DEFINITIONS of "Municipal Water Supplier" and "Municipal Water Supply Purposes":

*9. Ecology interprets the statute as requiring active compliance by conformance with the beneficial use*

*definitions in RCW 90.03.015(4). Examples of conformance with the definitions include but are not limited to the following:*

- a. Conformance with the definition occurs where a water right holder uses water for one or more of the categories of beneficial use included in the definition of a water right for municipal water supply purposes (e.g. the residential connection or nonresident population thresholds under RCW 90.03.015).*
- b. If the water right holder is a public water system participating in the water system planning process, then conformance with the definition occurs when the water right is identified as being held for existing customers, future growth or supply needs, standby/ reserve, backup or emergency, or other reasonable future use in a water system plan (WAC 246-290-100), project report (WAC 246-290-110), construction document (WAC 246-290-120), source approval (WAC 246-290-130), existing system as-built approval (WAC 246-290-140), or coordinated water system plan (WAC 246-293) as approved by the Department of Health, or a small water system management program (WAC 246-290-105) as required by the Department of Health.*

In order for this water right to maintain its status as a water right for municipal water supply purposes and be protected from relinquishment, the City either must continue to use the spring source to serve at least 15 residential connections, or the City must continue to identify SWC 1164 as a water right that will be needed to meet its existing or future demands in all future updates to its water system plan.

Another alternative that could have potentially been explored was to preserve the right and protect it from relinquishment was to temporarily donate the water right into Ecology's Trust Water Right Program; however, attempting to place the water right into the Trust Water Right Program to protect it from relinquishment is not advised. The amount of water eligible to be placed temporarily into the Trust Water Right Program is based on historical beneficial use (RCW 90.42.080(10) and (11)). As mentioned previously, the peak historic use appears to be 505 gpm and 808 afy. If the right was put into the Trust Water Rights Program, that is the extent that could be protected and the remaining inchoate (unused) portion of the right would be no longer available to the City.

The Municipal Water Law provides the strongest level of protection available for SWC 1164, without immediately limiting the extent of the water right as would be forced through a temporary donation to the Trust Water Rights Program.

## **CONCLUSIONS**

Benefits and risks associated with rehabilitation of the Hatt Slough Springs and each of the four alternatives are summarized in **Table 3**. After weighing the potential risks, RH2 recommends submittal of a water right change application to request to change the source of SWC 1164 from a diversion from Hatt Slough Springs to a well or well field located either on the upland, or within the Stillaguamish River Valley. Arrangements should be made with landowners and a test well should be drilled at the desired location to determine if a suitable aquifer exists, to perform aquifer testing, and to collect water quality samples.

Once a test well is drilled and the testing results are analyzed, the City can make a determination of whether it wishes to pursue the further development of this new water source as a substitute for the existing supply at Hatt Slough Springs.

Table 3. Alternative Analysis Summary

Alternative	Water Right Transfer Needed	Water Right Transfer Issues	Likely Maximum Pumping Rate and Limiting Factor	Likely Maximum Annual Volume and Limiting Factor	Test Well Needed? Depth?	Confidence Aquifer will be Encountered?	Does the Road to the Springs Need to be Repaired?	Additional Pipeline Infrastructure Needed	Potential for GWI Determination by DOH	Prone to Stillaguamish River Flood Damage or Overtopping?	New Property/Easement Acquisition Needed?
Rehabilitate Springs	No	NA	350 physical	565 physical	No	NA	Yes	None	High	Yes	Possibly
Upland Well Field	Yes	Potential for impairment of neighboring wells.	505 water right	400 physical	Yes 300 feet	High	No	1.25 miles	Low	No	Yes
Deep Aquifer	Yes	Possibly wider ranging impacts to surface water.	505 water right	815 water right	Yes 500 to 800 feet	Very Low	No	Depends on well location	Low	Depends on well location	Depends on well location
Valley Well Field	Yes	Risk of finding an aquifer with insufficient production or poor water quality.	505 water right	815 water right	Yes 100 feet	Medium	No	Depends on well location	Moderate	Yes	Yes
Bryant Well Field	Yes	Potential for Ecology to not view the well as tapping the same source of supply as the springs. Need to mitigate for impacts to Church Creek.	505 water right		No	NA	No	None	Low	No	No

## REFERENCES

Driscoll, F.G., 1995, *Groundwater and Wells*, Second Edition.

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## FIGURES

Figure 1 – Location Map

Figure 2 – Spring Source of Supply

Figure 3 – Upland Wells

Figure 4 – Valley Wells

## APPENDICES

Appendix A – Selected Water Right Documents

Appendix B – Excerpt from Newcomb (1952)

Appendix C – Upland Water Well Reports

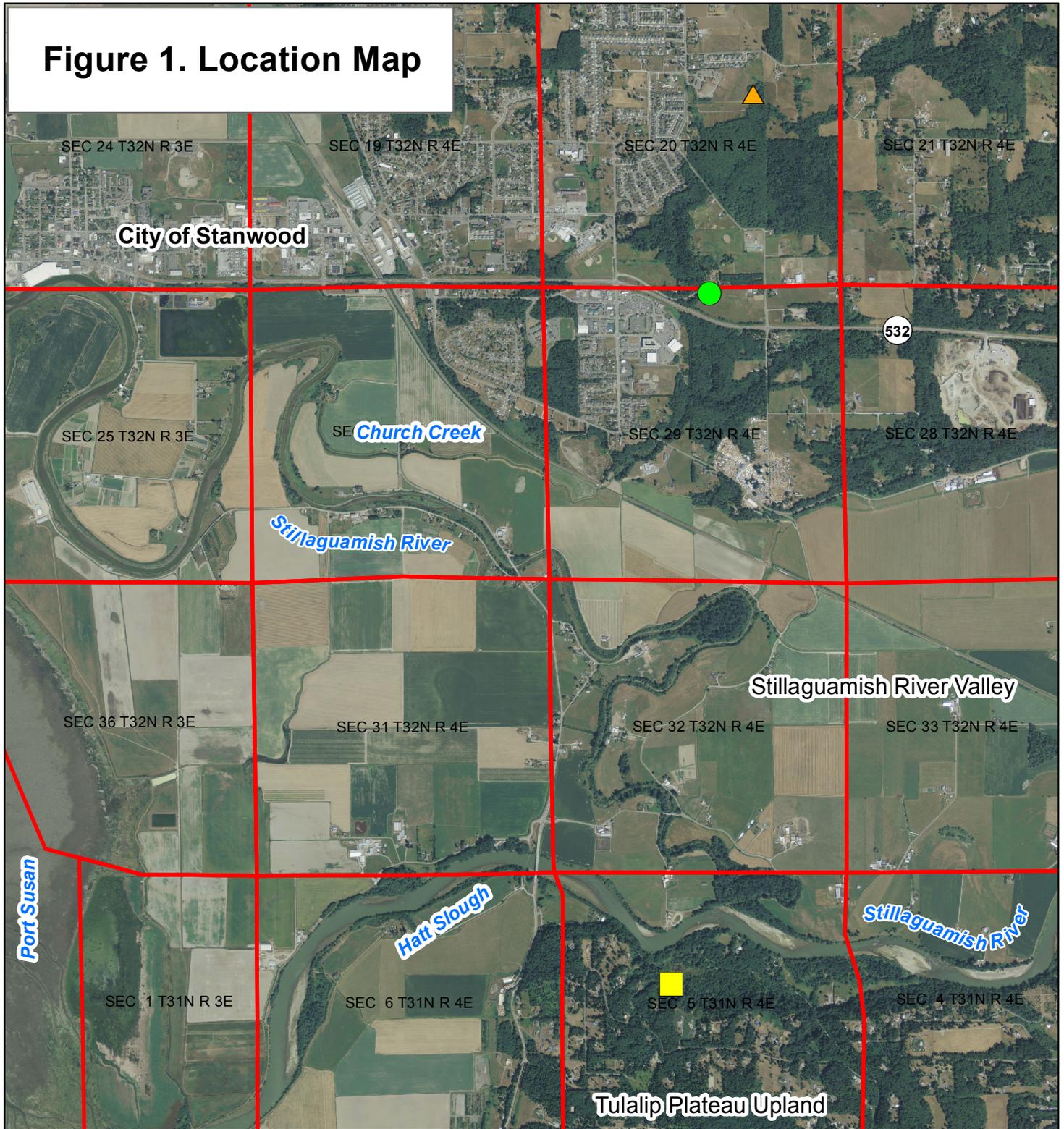
Appendix D – Summary Table of Water Well Report Details

Appendix E – Valley Water Well Reports

Appendix F – Other Water Well Reports

# *FIGURES*

# Figure 1. Location Map

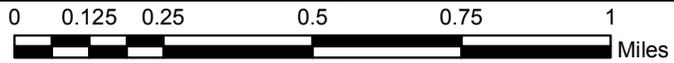
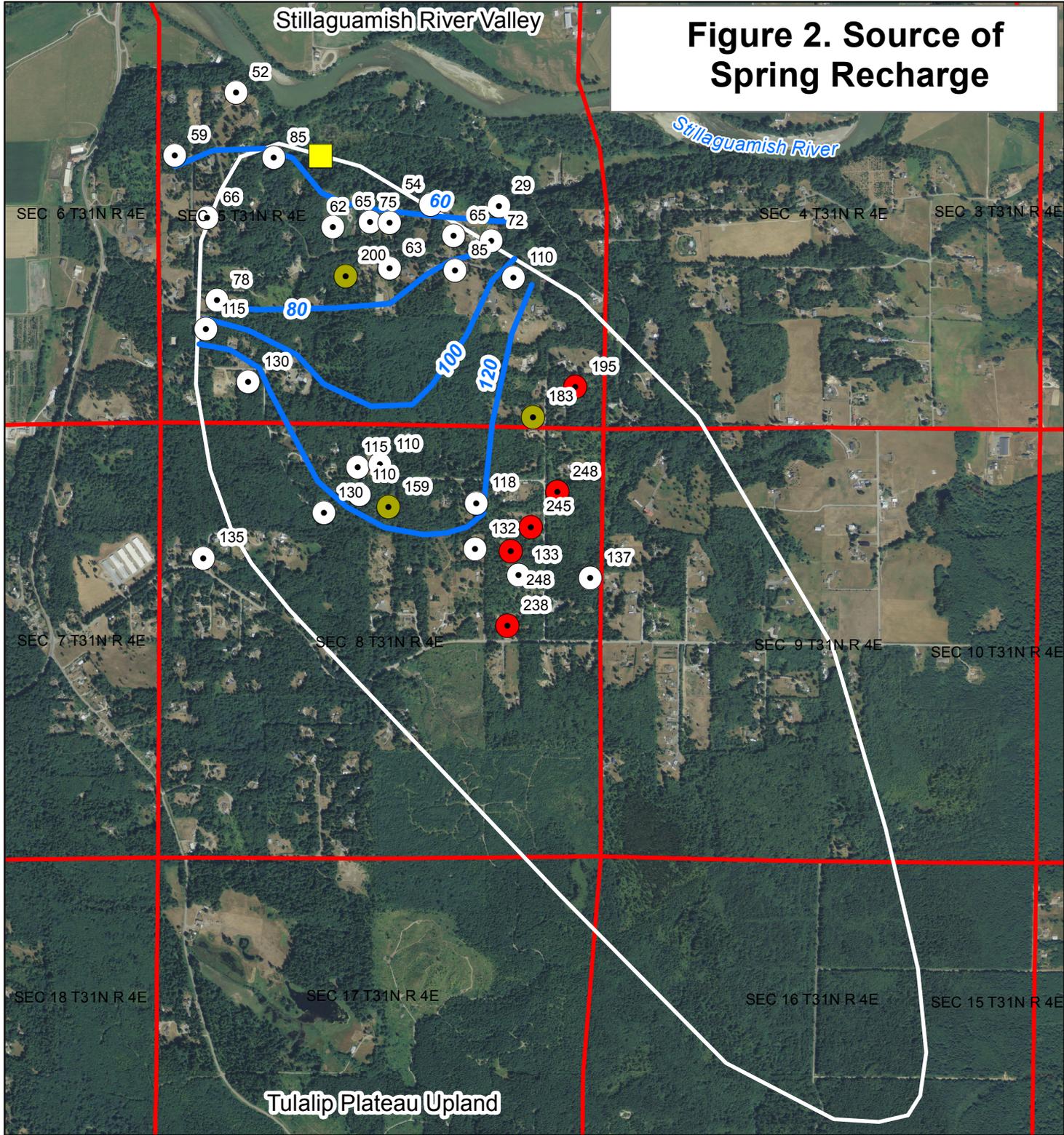


## Legend

- Bryant Well
- ▲ Cedarhome Well
- Hatt Slough Springs
- Sections



# Figure 2. Source of Spring Recharge

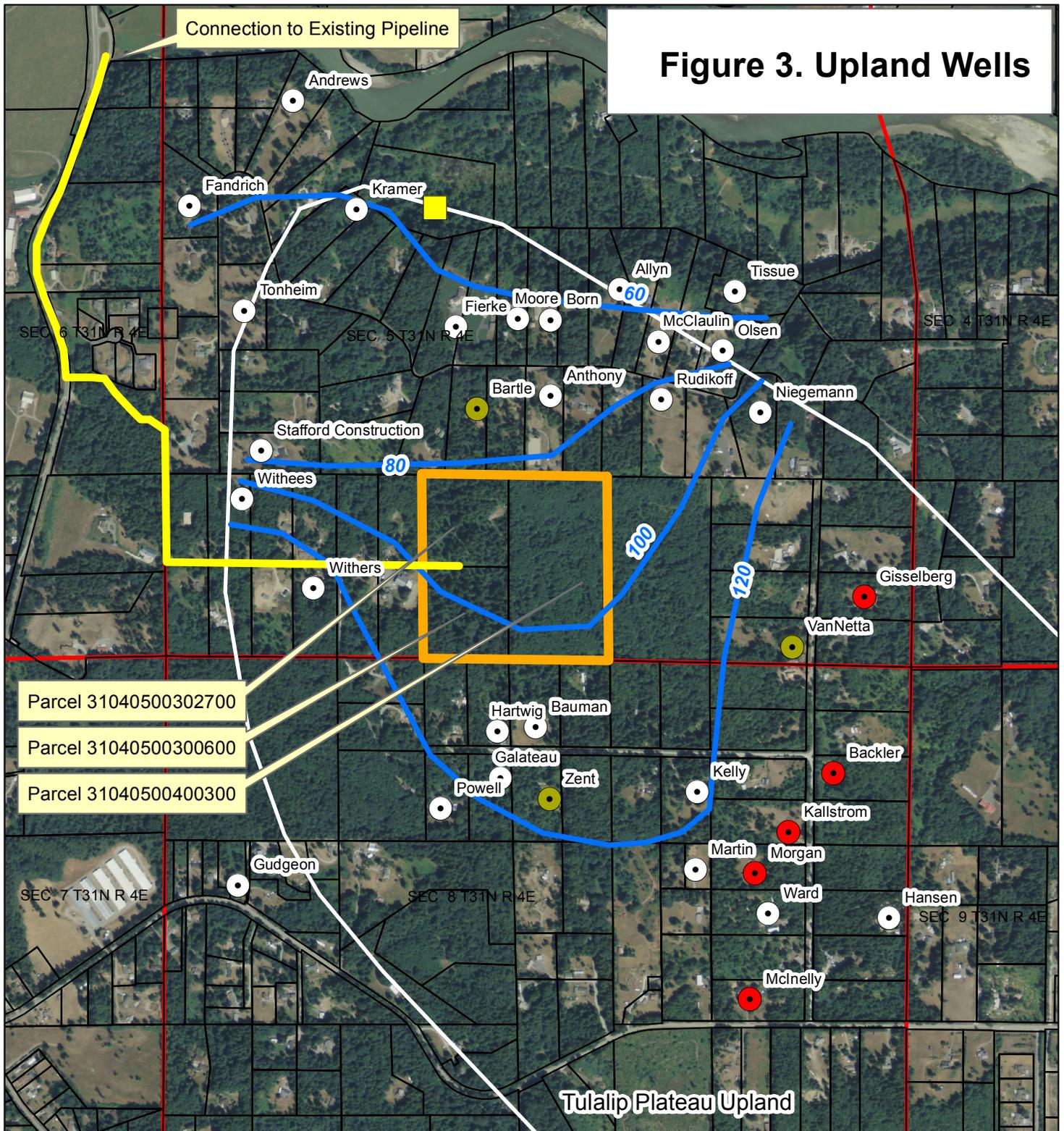


<b>Legend</b>		<b>Upland Wells</b>
Hatt Slough Springs - Qu (upper) aquifer	Qu (upper) Aquifer Water Level Elevation Contours (feet)	Qva
Approximate Springs Source Area	Sections	Qtb
		Qu (upper)

Approximate Groundwater Level Elevation (feet)  
 Based on Google Earth(TM)  
 Ground Surface Elevation and  
 Depth to Water from Water Well  
 Reports Displayed Next to Well



# Figure 3. Upland Wells



Parcel 31040500302700  
 Parcel 31040500300600  
 Parcel 31040500400300

Legend	
	Hatt Slough Springs - Qu (upper) aquifer
	Qu (upper) Aquifer Water Level Elevation Contours (feet)
	Possible Upland Pipeline Route
	Approximate Springs Source Area
	Parcels
	Sections
Upland Wells	
	Qva
	Qtb
	Qu (upper)

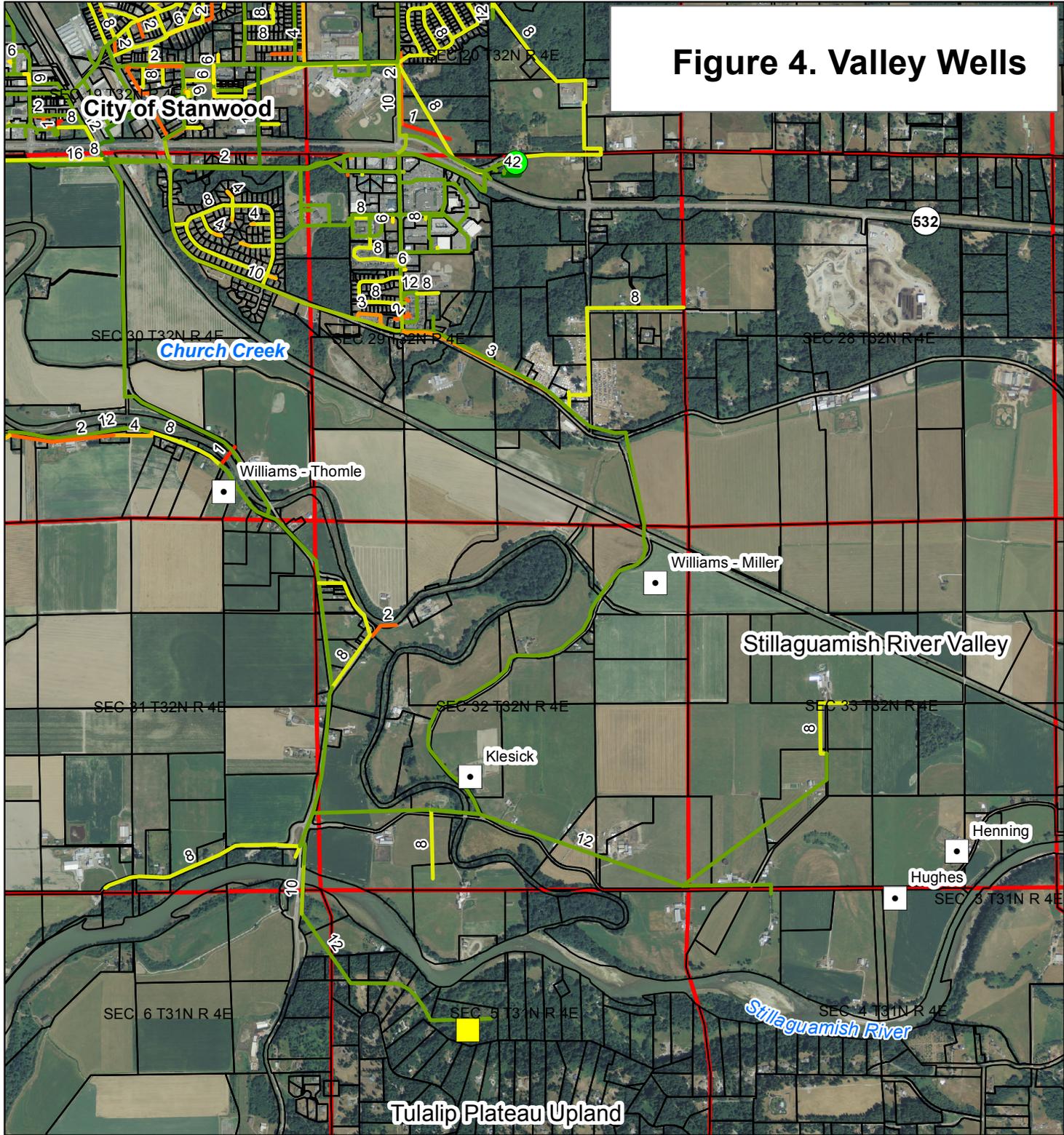
Name from water well report shown.

All wells located by either address or parcel number.

Not all wells shown.



Figure 4. Valley Wells



**Legend**

•	Valley Wells	<b>Nominal Pipe Diameter (inches)</b>	6
■	Hatt Slough Springs	42	4
●	Bryant Well	16	3
□	Parcels	12	2
□	Sections	10	1
		8	

Name from water well report shown.

All wells located by either address or parcel number.

Not all wells shown.



# *APPENDICES*

*Appendix A – Selected Water Rights  
Documents*

# Notice of Beginning of Construction



I, **STANWOOD WATER COMPANY**, the holder of Permit No. **254**, and Reservoir Permit No. \_\_\_\_\_, both issued by the Supervisor of Hydraulics of the State of Washington for the appropriation of **2.5** second-feet and the storage of \_\_\_\_\_ acre-feet of the unappropriated waters of \_\_\_\_\_ in accordance with the tenor of such permits and the limitations endorsed thereon by the Supervisor of Hydraulics, began the actual construction of the works described therein on the **21st** day of **October**, 19 **29**, being within the time limitation as fixed in said permit for the beginning of construction work.

The nature and the amount of the construction work already done is as follows: (This does not include preliminary investigation and reconnaissance.)

PER CENT COMPLETED:

Clearing **25** %; Material in place **none** %; Material on ground **none** %; Excavation **10** %;

Structure **none** %.

Any additional information which may tend to show good faith in the prosecution of the work.....

Clearing of ground and concentration of springs has been commenced with the idea is conveying all the spring water to one gathering reservoir.....

IN WITNESS WHEREOF, I have hereunto set my hand this **21st** day of **October**, 19**29**.....

**Stanwood Washington** (Present Address) **Stanwood Water Company** President  
By *[Signature]* (Signature of Applicant)

Application No. 2432

Permit No. 1234

COUNTY OF SNOHOMISH

## PROOF OF APPROPRIATION OF WATER

From Springs, tributary of Hat Slough

1. Name Stanwood Water Company
2. Postoffice address Stanwood, Washington
3. For what purpose is water used? municipal water supply
4. Did you begin the actual construction of the concentration of the springs ditch (or other distributing works described in said permit), on or before June 1 1929 (Yes)
5. Give the date of completion of such construction work June 1938
6. When was all the water completely applied to the proposed use? July 1938
7. The description of land given below corresponds to that found in your permit covering land to be irrigated, or, if for other purposes, the place of use. In the blank column on the right, headed "No. acres actually irrigated," fill in the number of acres you have irrigated in each of the tracts described.

Township	Range	Section	Forty-Acre Tract	No. Acres Described in Permit	No. Acres Actually Irrigated
No lands irrigated except sprinkling from municipal supply					
<u>Stanwood and East Stanwood and surrounding country</u>					
	<u>32 N</u>	<u>4 E</u>			
	<u>32</u>	<u>3</u>			



8. During what months is water beneficially used? through out the year
9. State the character of the soil and kind of crops raised \_\_\_\_\_
10. Does the map filed with your permit show correctly the location of diverting works and area of land where water is used? yes
11. If not, state wherein such map is in error. \_\_\_\_\_
12. If the dimensions of your ditch or dam do not correspond to those described in your permit and the plans and specifications now on file in the office of the State Supervisor of Hydraulics, state what changes have been made, giving dimensions of ditch (or other distributing works) \_\_\_\_\_
13. If water is used for power, mining, domestic, municipal, storage, manufacturing, or any other purpose than irrigation, give the extent and method of such use Water used for domestic and municipal supply

**STANWOOD WATER COMPANY**  
By C. W. Brokaw  
President

STATE OF WASHINGTON, }  
County of SNOHOMISH } ss.

I, C. W. Brokaw, being first duly sworn, depose and say that I have read the above and foregoing proof of appropriation of water; that I know the contents thereof; and that the facts therein stated are true.

IN WITNESS WHEREOF, I have hereunto set my hand this 30th day of JANUARY, 1939  
described and sworn to before me  
30th day of JANUARY 1939.

*Handwritten initials/signature*

Julia Kuntz  
NOTARY PUBLIC

C. W. Brokaw

# Notice of Complete Application of Water to a Beneficial Use

I, Stanwood Water Company

, holder of Permit No. 11823

issued by the State Supervisor of Hydraulics of Washington for the appropriation of 2.5 second-feet of the waters of springs tributary to Hat Slough, in accordance with the tenor of such permit and the limitations endorsed thereon by the State Supervisor of Hydraulics, completely applied the waters to a beneficial use on the 15th day of June, 1938, being within the time limitation as fixed in said permit or extended by the State Supervisor of Hydraulics for the complete application of water to a beneficial use.

If all water granted in the permit has not been fully applied to beneficial use, give amount used in percentage to the whole, so that subsequent appropriators may have notice. If permit is for irrigation use, state per cent of lands not now watered.

45% of appropriation now being applied to use during summer months

IN WITNESS WHEREOF, I have hereunto set my hand this 30 day of January, 1939

Stanwood, Washington

(Present Address)

STANWOOD WATER COMPANY

BY

*W. J. Stevens*

(Signature of Applicant)

President



*Appendix B – Excerpt from  
Newcomb (1952)*

130 GROUND-WATER RESOURCES OF SNOHOMISH COUNTY

TABLE 6.—Typical perennial springs in Snohomish County, Wash.  
[For location see pl. 1]

(1) Designation of spring	(2) Owner or occupant of property	(3) Popular name of spring	(4) Topographic situation	(5) Altitude above sea level (feet)	(6) Water-bearing material	(7) Ground-water occurrence	(8) Yield		(9) Use <sup>3</sup>	(10) Temperature (°F)	(11) Remarks
							A Gallons per minute <sup>2</sup>	B Date of measurement			
27/3-25F1	City of Edmonds	South Edmonds Springs.	S	220	Sand and gravel	Flow from sub-till beds.	55	Feb. 14, 1947	PS		Supplies water for southern part of Edmonds. One of several seeps; water has hardness of 55 and chloride content of 7 ppm.
27/4-26D1	O. B. Hergert		S	275	do	Seepage from sub-till beds.	5 e	Dec. 6, 1946	D, S		
27/5-18E1	R. O. Himple	Thrashers Corner Spring.	S	250	do	do	30-40	Feb. 14, 1947	D		Water has hardness of 35 and chloride content of 5 ppm.
27/5-20F1	Shinkle		S	250	Sand	do	75 r	Dec. 6, 1946	PS		
27/5-26F1	H. W. Flanagan	Pearl Springs	S	350	Sand and gravel	do	50 e	Dec. 13, 1946	D		Do.
27/5-28M1	Mrs. Lankow		S	250	do	do	200 e	Dec. 6, 1946	Fc	45r	
28/8-9G1	Sultan Water District.	Lake Sixteen Spring.	Op	675	Gravel	Drain from outwash-plain deposits.	5,600 r	Dec. 11, 1946	D, PS		
29/6-7C1	Arthur Bailey Estate.	Bailey Springs	S	375	Soil zone over till	Drain from side-hill soil.	5-50		PS		Supplies water for about 30 homes. Water has hardness of 50 and chloride content of 6 ppm; formerly source of city water supply. Used as public supply for six houses. Supplies water for 10 farm-houses. Owned and operated by 15 farmers. Owned by company of 20 farmers.
29/7-34E1	City of Monroe	Syke Springs	Uv	500	Sand and gravel	Drain from sub-till beds.	600 r	Dec. 11, 1946	None	46	
30/4-21G1	Ed Pool		S	40	Sand	do	45 r, m	Dec. 10, 1946	D		
30/5-11C1			S	300	Sand and gravel	do		Aug. 28, 1944	D, S		
30/5-11J1			S	300	do	do		do	D, S		
30/5-14A1	Nelson Creek Water Co.		S	300				Aug. 17, 1944	PS		
30/5-34H1	Snohomish County Department of Public Highways.		S	100	Alluvium		50 e	Aug. 28, 1944	D, S		

WELL AND SPRING RECORDS

30/6-11M1	Alfred Nelson				250	Gravel		Drain from out-wash-gravel train.	50 e	Dec. 7, 1946	D, S		Water has hardness of 50 and chloride content of 5 ppm.
30/6-11P1	O. C. Brenner				250	do		do	900 e	do	FC	51-55	Water has hardness of 40 and chloride content of 4 ppm.
31/4-5F1	Stanwood Water Co.	Hat Slough Springs			40	Sand and gravel		Drain from sub-till beds.	500 r	Dec. 12, 1946	PS		Water has hardness of 40 and chloride content of 6 ppm.
31/4-24N3	City of Marysville	Edwards Springs			260	do		do	950 r	Aug. 1, 1944	PS	50	Public supply for city of Marysville. See table 5 for chemical analysis of water.
31/5-11F2	F. W. Nettleship				50	do		Drain from out-wash-gravel train.	300 e	Aug. 14, 1944	D, Ind	48	Supplies creamery and service station. Water has hardness of 40 ppm.
31/5-11G1	Silvana Water District	Silvana Springs			150	do		Drain from sub-till beds.	200 e	Dec. 10, 1946	D, PS		Water has hardness of 95 and chloride content of 6 ppm.
31/5-34R1	Ed Nelson				115	Sand		Seepage from sub-till beds.	36 m	Aug. 31, 1944	D, S, Irr.	48	Water has hardness of 95 ppm.; reported to contain iron and sulfur.
32/3-12J1	Stanwood Water Co. (lessee)	Detting Crossing Springs			20	Sand and gravel		do	100 r	Dec. 12, 1946	D, PS		Developed for public supply by Stanwood Water District. Water has hardness of 60 and chloride content of 5 ppm.
32/6-29P1	C. M. Giebel				250	do		Drain from out-wash terraces.	250 e	Dec. 9, 1946	None		
32/6-31M1	Elmer W. Lohr				220	do		do	500 e	Aug. 14, 1944	None		Water has hardness of 35 ppm.

<sup>1</sup> S, Slope to Puget Sound or major valley; Op, outwash plain; Uv, upland valley of minor stream.

<sup>2</sup> e, Estimated; m, measured; r, reported.

<sup>3</sup> D, Domestic; S, stock; PS, public supply; FC, fish culture; Ind, industrial; Irr, irrigation.

*Appendix C – Upland Well Water  
Reports*

ENTERED

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

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W094046

UNIQUE WELL I.D. # AAX 803

Water Right Permit No. 31-4-5N

(1) OWNER: Name JOHN ALYN Address 6621 230th PLACE NW, STANWOOD

(2) LOCATION OF WELL: County SNOHOMISH SW 1/4 Sec 5 T. 31 N. R. 4E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) SAME Parcel # 31048500101700

(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) 1  
Abandoned [ ] New well [ ] Deepened [x] Reconditioned [ ] Method: Dug [ ] Cable [x] Rotary [ ] Bored [ ] Driven [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well 6 inches. Drilled 76 feet. Depth of completed well 325 ft.

(6) CONSTRUCTION DETAILS: Casing installed: 6" Diam. from 244 ft. to 274 ft. Welded [x] Liner installed [ ] Threaded [ ]

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

Screens: Yes [x] No [ ] Manufacturer's Name JOHNSON Type STAINLESS STEEL Model No TELESCOPE

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

Surface seal: Yes [x] No [ ] To what depth? UNKNOWN Material used in seal BENTONITE (SUNNY & CHIPS)

(7) PUMP: Manufacturer's Name FLINT & WALLING Type SUBMERSIBLE H.P. 3

(8) WATER LEVELS: Land surface elevation above mean sea level ft. Static level 276 ft. below top of well Date 6-8-98

(9) WELL TESTS: Drawdown is amount water level is lowered below static level Was a pump test made? Yes [ ] No [x]

Table with 5 columns: Time, Water Level, 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 Bailler test 10 gal./min. with 1 ft. drawdown after 1 hrs. Airtest gal./min. with stem set at 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.

Table with 3 columns: MATERIAL, FROM, TO. Entries include GRAY MEDIUM TO FINE SAND, GRAY CLAY w/ COARSE TO MED. SAND, GRAY/BROWN SILTY FINE SAND, TAN MEDIUM SAND, GRAY COARSE TO MEDIUM SAND w/ MED. GRAVEL LAYERS, GRAY MEDIUM TO COARSE SAND w/ GRAVEL.

Work Started 5-21-98 19. Completed 6-8-98 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 WOLFE MECHANICAL SERVICES (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT) Address 1821 BROADWAY #716 EVERETT (Signed) Al Butler (WELL DRILLER) License No. 0049

Contractor's Registration No. WOLFEMS1210R Date 6-9-98 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) 407-6600. The TDD number is (206) 407-6006.

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

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

31/04-05 A

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 Doug Andrews Address 7329 230th Pl NW - STANWOOD  
(2) LOCATION OF WELL: County SNOHOMISH - NE 1/4, NE 1/4 Sec 5 T. 31 N. R. 4 W.M.  
Bearing and distance from section or subdivision corner PARCEL # 31040500201700

(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 134 ft. Depth of completed well 134 ft.

(6) CONSTRUCTION DETAILS:  
Casing installed: 6" Diam. from 0 ft. to 150 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 STAINLESS Model No. \_\_\_\_\_  
Diam. 6 Slot size 10 from 150 ft. to 154 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 Butylite  
Did any strata contain unusable water? Yes  No   
Type of water? \_\_\_\_\_ Depth of strata \_\_\_\_\_  
Method of sealing strata off \_\_\_\_\_

(7) PUMP: Manufacturer's Name TAIT  
Type: SUB HP 1

(8) WATER LEVELS: Land-surface elevation \_\_\_\_\_ ft.  
Static level 143 ft. below top of well Date 10-2-79  
Artesian pressure \_\_\_\_\_ lbs. per square inch Date \_\_\_\_\_  
Artesian water is controlled by \_\_\_\_\_ (Cap, valve, etc.)

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

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

Time	Water Level	Time	Water Level	Time	Water Level

Date of test 10-2-79  
Bailer test 15+ gal./min. with 0 ft. drawdown after 2 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
Sandy Top Soil	0	2
Compact Sand	2	15
Sandy Hardpan	15	76
clay	76	85
hardpan	85	98
Brown clay	98	112
hardpan	112	132
Brown clay	132	137
Dry sand	137	149
Water Bearing Gravel	149	154

GS-195

DDW-143

WL dia ~ 52

Bottom dia ~ 41

Work started 9-26 1979 Completed 10-2 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: Everitt G. Smith  
(Person, firm, or corporation) (Type or print)

Address: 28926 27th Ave NW

[Signed] Everitt G. Smith  
(Well Driller)

License No. 187 Date Nov 25 1979



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

**WATER WELL REPORT**  
**STATE OF WASHINGTON**

31/04/05E

*Parcel #* 31040500301600  
6904 SILVANA TERRACE

Start Card No. 210417  
Water Right Permit No.

(1) OWNER: Erick Bartle ADDRESS: 28415 S. R. 9 N. E., Arlington 98223

(2) LOCATION OF WELL: County: SNOHOMISH SW 1/4 NW 1/4 Sec 05 T 31 N, R 04 WM  
(2a) STREET ADDRESS OF WELL (or nearest Address): LOT 25 230 TH ST. N. W. STANWOOD

(3) PROPOSED USE: X Domestic Industrial Municipal  
Irrigation TEST WELL Other....  
DeWater

(4) TYPE OF WORK: Owner' No of Well if more than one: 1  
Abandoned New Well..... X METHOD Dug... Bored.  
Deepened..... Cable. Driven  
Reconditioned Rotary X

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

(5) DIMENSIONS: Diameter of well 6 inches.  
Drilled 100.00 Feet Depth of completed well 100.00 Ft.

MATERIAL	FROM	TO
TOP SOIL	0	2
BROWN SAND	2	22
BROWN CLAY	22	24
GRAY CLAY	24	35
SAND	35	42
GRAY CLAY	42	50
SAND FINE	50	65

(6) CONSTRUCTION DETAILS:  
Casing Installed: 6 Diam From +1.5 Ft To 20 Ft  
Welded Diam From Ft To Ft  
Liner Inst X 4 1.2 Diam From 10 Ft To 70 Ft  
Threaded

CLAY	65	68
SAND BROWN VERY FINE	68	99
CLAY	99	100

Perforations: NO  
Types of perforator used  
Size of perforations Inches, by Inches  
Perforations from ft to  
Perforations from ft to  
Perforations from ft to

Screens: YES  
Manufacturer's Name: MONOFLEX  
Type: PVC Model No.  
Diam 4 Slot size 10 From 70 Ft To 100 Ft  
Diam 4 Slot size From Ft To Ft

Gravel packed: YES Size of gravel: 16  
Gravel placed from: 65 Ft To: 100 Ft

Surface seal: YES To What Depth?: 20 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: H.P.  
Type:

(8) WATER LEVELS? Above mean sea level  
Static Level 72 Ft. below top of well Date: 03/09/93  
Artesian pressure Lbs. per square inch Date: / /  
Artesian water is controlled by:

Work Started 03/09/93 Work Completed 03/10/93

(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.  
Yield: Gal/min. with Ft drawdown after Hrs.  
Yield: Gal/min. with Ft drawdown after Hrs.  
RECOVERY DATA  
Time Water Level Time Water Level Time Water Level

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 the best knowledge and belief.

Name: HIMEBAUGH DRILLING - BOYD HIMEBAUGH  
Address: 828 B PORTAGE STREET, ARLINGTON, WA 98223

Date of test / /  
Bailer Test 3 gal/min with 100 ft. drawdown after 3 Hrs  
Airtest gal/min with stem set at ft for Hrs  
Artesian flow G.P.M. Date / /  
Temperature of Water 49 Was a chemical analysis made?: NO

(Signed) *Boyd Himebaugh* License No 1877  
Contractors Registration  
No. HIMEBDO99CK Date 04/15/93

**RECEIVED**  
**APR 19 1993**  
DEPT. OF ECOLOGY  
GS - 272  
DTW = 72  
WL EW ~ 20  
Bottom EW ~ 172

31/4-5/F

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 Wm. Born Mail: 5510 132nd St. N.E. Marysville, 98270  
Address: 6733 230th Pl. N.W. Stanwood, 98292

(2) LOCATION OF WELL: County Snohomish - SE 1/4 NW 1/4 Sec 5 T 91 N. R. 4 W.M.  
Bearing and distance from section or subdivision corner Parcel # 31040500101500

(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 283' ft. Depth of completed well 283' ft.

(6) CONSTRUCTION DETAILS:  
Casing installed: 6" Diam. from 0 ft. to 283' 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? 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 .....  
Static level 250 ft. below top of well Date 3-20-83  
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? .....  
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 10 gal./min. with 1.0 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
Dirty sand and gravel	0	50
Brown clay and sand	50	170
Sand	170	223
Blue clay	223	235
Brown clay and gravel	235	245
Sand	245	260
Gravel	260	270
Water and gravel	270	283

GS ~ 325  
DTW = 250  
WL ELEV ~ 75  
Bottom ELEV ~ 42



MAY 9 1983

Work started Mar. 29, 1983. Completed Mar. 30, 1983

## 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 AND DRILLING  
(Person, firm, or corporation) (Type or print)

Address P.O. Box 422 Burlington, 98233

[Signed] Harold K Fowler  
(Well Driller)

License No. 1192 Date 41 Mar. 31, 1983

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

(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

Construction/Decommission ("x" in circle)  
 Construction Replacement 181861  
 Decommission ORIGINAL CONSTRUCTION Notice  
 of Intent Number W208451

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

**TYPE OF WORK:** Owner's number of well (if more than one) 2nd  
 New Well  Reconditioned Method:  Dug  Bored  Driven  
 Deepened  Cable  Rotary  Jetted

**DIMENSIONS:** Diameter of well 6" → 4" inches, drilled 300 ft.  
 Depth of completed well 141 ft.

**CONSTRUCTION DETAILS**  
 Casing  Welded 6 steel " Diam. from 1 ft. to 20 ft.  
 Installed:  Liner installed " Diam. from " ft. to " ft.  
 Threaded 4 " Diam. from 1 ft. to 141 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 Western  
 Type PVC Model No. \_\_\_\_\_  
 Diam. 4" Slot Size #10 from 131 ft. to 141 ft.  
 Diam. \_\_\_\_\_ Slot Size \_\_\_\_\_ from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

Gravel/Filter packed:  Yes  No  Size of gravel/sand 3/8  
 Materials placed from 130 ft. to 141 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-7gpm Model H.P. 1/2 #

**WATER LEVELS:** Land-surface elevation above mean sea level \_\_\_\_\_ ft.  
 Static level 134 ft. below top of well Date 8-12-05  
 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? Bills Pumps  
 Yield: 10 gal./min. with 2 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  
FAST RECOVERY  
 Date of test 8-12-05  
 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

CURRENT Notice of Intent No. W208451  
 Unique Ecology Well ID Tag No. AGN421  
 Water Right Permit No. \_\_\_\_\_

Property Owner Name Darrell & Heather Fandrich  
 Well Street Address 7411 Silvana Terrace Rd  
 City STANWOOD County: SNOW  
 Location NW 1/4- 1/4 NW 1/4 Sec 05 Twn 31 R 04  EWM  circle or one WWM  
 Lat/Long: \_\_\_\_\_ Lat Deg \_\_\_\_\_ Lat Min/Sec \_\_\_\_\_  
 (s, t, r still REQUIRED) Long Deg \_\_\_\_\_ Long Min/Sec \_\_\_\_\_  
 Tax Parcel No. 31040500201800

**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	
BROWN SANDY DIOT	0	5	TILL
BROWN SAND Med-FINE	5	12	Qva
BROWN Silt	12	104	FINE
GRAY CLAY	104	112	MOIST
BROWN SAND - with GRAVEL	112	143	
GRAY CLAY - soft	143	300	FINE

**RECEIVED**  
 AUG 31 2005  
 DEPARTMENT OF ECOLOGY  
 WELL DRILLING UNIT  
 GS ~ 193  
 DTW = 134  
 WL DW ~ 59  
 Bottom DW = 50 ft. from surface  
 - 107 ft. from top of well  
 Start Date 8-2-05 Completed Date 8-8-05

**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) William R Bever 3rd Drilling Company Mr. Bills Well Drilling  
 Driller/Engineer/Trainee Signature William R Bever Address 25619 Dahl Rd  
 Driller or Trainee License No. 2448 City, State, Zip Orlington WA 98223  
 If trainee, licensed driller's Signature and License no. WRCB 2448 Contractor's Registration No. MRBWA9255 Date 8-8-05  
 Ecology is an Equal Opportunity Employer. ECY 050-1-20 (Rev 4/01)

# WATER WELL REPORT

314E-5F

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

Construction/Decommission ("x" in circle) **173996**  
 Construction  
 Decommission ORIGINAL CONSTRUCTION Notice of Intent Number \_\_\_\_\_

CURRENT Notice of Intent No. W184712  
 Unique Ecology Well ID Tag No. AHP-067  
 Water Right Permit No. \_\_\_\_\_

Property Owner Name JASON FIERKE

PROPOSED USE:  Domestic  Industrial  Municipal  
 DeWater  Irrigation  Test Well  Other

Well Street Address 6915 SYLVANNA TERRACE RD.

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

City STANWOOD County: SNOHOMISH

Location SE 1/4- 1/4 NW 1/4 Sec 05 Twn 31 R04 <sup>(EWN)</sup> circle or one WWM

DIMENSIONS: Diameter of well 6 inches, drilled 288 ft.  
 Depth of completed well 279 ft.

Lat/Long: (s, l, r still REQUIRED) Lat Deg \_\_\_\_\_ Lat Min/Sec \_\_\_\_\_  
 Long Deg \_\_\_\_\_ Long Min/Sec \_\_\_\_\_

Tax Parcel No. 310405 002 02700

CONSTRUCTION DETAILS  
 Casing  Welded 6 " Diam. from 0 ft. to 274 ft.  
 Installed:  Liner installed \_\_\_\_\_ " Diam. from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
 Threaded \_\_\_\_\_ " Diam. from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

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.)

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

MATERIAL	FROM	TO
BROWN SANDY LOAM	0	3
BROWN HARDPAN	3	45
GRAY HARDPAN	45	120

Screens:  Yes  No  K-Pac Location 273-274  
 Manufacturer's Name ALLOY  
 Type STAINLESS WIREWOUND Model No. \_\_\_\_\_  
 Diam. 5 Slot Size .020 from 274 ft. to 279 ft.  
 Diam. \_\_\_\_\_ Slot Size \_\_\_\_\_ from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

TAN CEMENTED SAND (HARD)	120	160
DRY SAND & GRAVEL (HARD)	160	186
TAN SANDY CLAY	186	196

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

DARK BROWN PEAT & GRAY CLAY	196	200
GRAY CLAY, SAND, WOOD	200	223
GRAY CLAY & WOOD	223	245

Surface Seal:  Yes  No To what depth? 19 ft.  
 Materials used in seal BEYONITE  
 Did any strata contain unusable water?  Yes  No  
 Type of water? \_\_\_\_\_ Depth of strata \_\_\_\_\_  
 Method of sealing strata off \_\_\_\_\_

SOFT GRAY CLAY	245	256
COARSE SAND, GRAVEL, WATER	256	280

PUMP: Manufacturer's Name GOULDS  
 Type: SUB H.P. 1 1/2

WATER LEVELS: Land-surface elevation above mean sea level \_\_\_\_\_ ft.  
 Static level 238 ft. below top of well Date 5-22-05  
 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: \_\_\_\_\_ 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 25+ gal./min. with stem set at 276 ft. for 1 hrs.  
 Artesian flow \_\_\_\_\_ g.p.m. Date \_\_\_\_\_  
 Temperature of water \_\_\_\_\_ Was a chemical analysis made?  Yes  No

RECEIVED  
 JUN 3 2005  
 DEPT OF ECOLOGY  
 Start Date 5-19-05 Completed Date 5-22-05

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) DALE WESTBY  
 Driller/Engineer/Trainee Signature Dale Westby  
 Driller or Trainee License No. 27117

Drilling Company ARLINGTON WELL DRILLING  
 Address 29121 ST. RT. 9 NE  
 City, State, Zip ARLINGTON WA 98223

If trainee, licensed driller's Signature and License no. Dale Westby 1668

Contractor's Registration No. ARLINDR0602 Date 5-26-05  
 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.



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 Information  
UNIQUE WELL I.D. # W114342  
A77125  
Water Right Permit No. 330

(1) OWNER: Name Les Kramer Address same

(2) LOCATION OF WELL: County Snoh SE 1/4 NN 1/4 Sec 5 T 31 N.R. 4 WM

(2a) STREET ADDRESS OF WELL: (or nearest address) 7233 Silvan Terrace Road  
TAX PARCEL NO.: 31040560202300 31-4E-5F

(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 169 feet. Depth of completed well 169 ft.

(6) CONSTRUCTION DETAILS  
Casing Installed:  
 Welded 6 " Diam. from 1 ft. to 169 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.

Screens:  Yes  No  K-Pac Location 162  
Manufacturer's Name \_\_\_\_\_  
Type stainless steel Model No. \_\_\_\_\_  
Diam. 6 Slot Size 016 from 163 ft. to 168 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? 20 ft.  
Material used in seal Bentinite  
Did any strata contain unusable water?  Yes  No  
Type of water? \_\_\_\_\_ Depth of strata \_\_\_\_\_  
Method of sealing strata off \_\_\_\_\_

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

(8) WATER LEVELS: Land-surface elevation above mean sea level \_\_\_\_\_ ft.  
Static level 140 ft. below top of well Date 1227  
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 \_\_\_\_\_  
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  
\_\_\_\_\_  
Date of test 1227 00  
Bailey test 10 gal./min. with 10 ft. drawdown after 1 hrs.  
Airtest \_\_\_\_\_ gal./min. with \_\_\_\_\_ ft. drawdown after \_\_\_\_\_ hrs.  
Artesian flow \_\_\_\_\_ g.p.m. Date 1227 00  
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
Light Brown Sandy	0	2
tan sand soft	2	15
Firm tan sand with small peab gravel	15	35
tan silty sand to tan clay layer 2'	35	75
clean pea gravel to coarse sand	75	74
gray silt to clay with burn dirt	74	102
orange clay layer	102	103
gray clay to silty sand and gravel	103	140
central sand and gravel firm	140	146
Large gravel 12" 3'	146	156
small coarse sand mix with gravel layer	156	169
Brown clay	169	

GS ~ 225  
DNV = 140  
W Level ~ 85  
Bottom row ~ 56  
Work Started 115 00 Completed 125 00

**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 David Rutledge License No. 1297  
(Licensed Driller/Engineer)

Trainee Name \_\_\_\_\_ License No. \_\_\_\_\_  
Drilling Company AD Drilling and Digging Inc  
(Signed) David Rutledge License No. \_\_\_\_\_  
(Licensed Driller/Engineer)

Address 22813 60th Drive N. WA  
Contractor's Registration No. A1DRIN05627 Date 2 10 00

(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

31-4E 5H

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

Construction/Decommission (circle) 148798

Construction  
 Decommission ORIGINAL CONSTRUCTION Notice of Intent Number \_\_\_\_\_

CURRENT Notice of Intent No W120941  
 Unique Ecology Well ID Tag No AGK7166  
 Water Right Permit No \_\_\_\_\_

Property Owner Name STANLEY McMULLIN  
 Well Street Address 6519 SILVANA TERRACE Rd.  
 City STANWOOD County SMITHSON  
 Location SE 1/4 1/4 NE 1/4 Sec 5 Twn 31 R 4 <sup>WWM</sup> circle or one WWM  
 Lat/Long (s,t,r still) Lat Deg \_\_\_\_\_ Lat Min/Sec \_\_\_\_\_  
 REQUIRED) Long Deg \_\_\_\_\_ Long Min/Sec \_\_\_\_\_  
 Tax Parcel No 31040500101900

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 340 ft  
 Depth of completed well 339 ft

CONSTRUCTION DETAILS  
 Casing  Welded 6 Diam from +2 ft to 329 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 NAGOKA  
 Type STAINLESS STEEL Model No \_\_\_\_\_  
 Diam 5 5/8 Slot Size 12 from 329 ft to 339 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 \_\_\_\_\_  
 Type \_\_\_\_\_ HP

WATER LEVELS Land-surface elevation above mean sea level \_\_\_\_\_ ft  
 Static level 285 ft below top of well Date 4-20-04  
 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  
 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 15+ gal/min with stem set at 339 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 Indicate all water encountered (USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL	FROM	TO	
TOPSOIL	0	2	
HARDPAN	2	28	TW
SAND & GRAVEL	28	51	
SAND	51	54	Qva
SAND & GRAVEL	54	65	
TAN SAND	65	138	
TAN CLAY	138	141	
GREY CLAY	141	165	FNE
SAND	165	214	
SAND & GRAVEL	214	275	COARSE
GREY CLAY	275	282	
PEAT	282	286	FNE
SAND & GRAVEL	286	291	
SAND	291	306	
SAND & GRAVEL	306	310	SLT +
SAND	310	318	ADVERSE
SAND GRAVEL WATER	318	340	

GS ~ 350  
 btm = 285  
 WDW ~ 65  
 MAY 05 2004  
 DEPT OF ECOLOGY  
 Btm EW ~ 10  
 Start Date 4-15-04 Completed Date 4-20-04

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) JOE NUNES Drilling Company CAMANO WELL DRILLING  
 Driller/Engineer/Trainee Signature Joseph Nunes Address PO BOX 432  
 Driller or Trainee License No 0611 City, State Zip STANWOOD WA 98292  
 Contractor's CAMANO WDI 146 RE 4-21-04  
 Registration No \_\_\_\_\_ Date \_\_\_\_\_  
 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.

If trainee, licensed driller's Signature and License no \_\_\_\_\_



6431

# ENTERED

## WATER WELL REPORT STATE OF WASHINGTON

# 31-4-5 M

Start Card No. W10047  
Water Right Permit No.

(1) OWNER: Name NIEGEMANN, BILL Address 1048 N VISTA DEL MONTE CAMANO IS, WA 98292-

(2) LOCATION OF WELL: County SNOHOMISH 6302 ? - NW 1/4 SW 1/4 Sec 5 T 31 N., R 4E WM  
(2a) STREET ADDRESS OF WELL (or nearest address) SILVANA CREST PARCEL # 31040500401200

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

(4) TYPE OF WORK: NEW WELL  
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: Drilled 278 ft. Diameter of well 6 inches Depth of completed well 274.5 ft.

(6) CONSTRUCTION DETAILS: Casing installed: 6" Dia. from +2 ft. to 270 ft. WELDED " Dia. from ft. to ft. " Dia. from ft. to ft.

MATERIAL	FROM	TO	
TOPSOIL	0	1	
BROWN CLAY	1	8	
BROWN SAND SILT & GRAVEL	8	23	TM
BROWN GRAVEL SILT & SAND	23	45	
BROWN GRAVEL & SAND	45	61	Qva
BROWN SAND & GRAVEL	61	164	
GRAY CLAY & SAND	164	170	
BROWN SAND & SILT	170	173	FINE
GRAY CLAY & SAND	173	175	
BROWN SAND & SILT	175	199	
BROWN SAND	199	208	
BROWN SAND & GRAVEL	208	249	
BROWN SAND & SAND	249	254	Ashton
BROWN SAND GRAVEL & WATER	254	270	
GRAY CLAY	270	270.5	
BROWN SAND GRAVEL & WATER	270.5	275	76"
BROWN SAND SILT & GRAVEL & WATER	275		

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 15 from 269.5 ft. to 274.5 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

GS ~ 360  
DTW = 250  
WLEW ~ 140  
BOTTOM ELEW ~ 85

(7) PUMP: Manufacturer's Name FLINT & WALLING Type SUBMERSIBLE H.P. 1.5

Work started 02/18/98 Completed 02/25/98

(8) WATER LEVELS: Land-surface elevation above mean sea level ... ft.  
Static level 249.7 ft. below top of well Date 02/26/98  
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? YES If yes, by whom? HAYES DRILLING  
Yield: 13.6 gal./min with 7.65 ft. drawdown after 2 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 HAYES DRILLING, INC.  
(Person, firm, or corporation) (Type or print)

Date of test  
Bailer test 10 gal/min. 1 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. BOW, WA  
[SIGNED] Ryan Wilthorn License No. 2190

Contractor's Registration No. HAYESDI106J5 Date 02/27/98

6333

RECEIVED  
MAR 6 - 1998  
WR  
DEPT OF ECOLOGY

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) 168368  
 Construction  
 Decommission ORIGINAL CONSTRUCTION Notice of Intent Number W184711

7510 SILVANA TERRACE

CURRENT Notice of Intent No. W184711  
 Unique Ecology Well ID Tag No. AHE096  
 Water Right Permit No. \_\_\_\_\_

Property Owner Name Kevin Stafford Construction  
 Well Street Address XXXX 74th AVE N.W SILV. TERRACE

City Stanwood County: SNOHOMISH  
 Location SW 1/4- 1/4 SW 1/4 Sec 5 Twn 31N R 4  EWM circle or one

Lat/Long: (s,t,r still REQUIRED) Lat Deg \_\_\_\_\_ Lat Min/Sec \_\_\_\_\_  
 Long Deg \_\_\_\_\_ Long Min/Sec \_\_\_\_\_  
 Tax Parcel No. 310405-003-012-00

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" → 4" inches, drilled 184 ft.  
 Depth of completed well 184 ft.

CONSTRUCTION DETAILS  
 Casing  Welded steel 6 " Diam. from 1 ft. to 20 ft.  
 Installed:  Liner installed " Diam. from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
 Threaded 4 " Diam. from -10 1/2 ft. to 184 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 WESTERN  
 Type PVC Model No. \_\_\_\_\_  
 Diam. 4" Slot Size #15 from 177 ft. to 182 ft.  
 Diam. 4" Slot Size #12 from 165 ft. to 177 ft.

Gravel/Filter packed:  Yes  No  Size of gravel/sand 6-9  
 Materials placed from 160 ft. to 184 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 Webtrol  
 Type: sub. H.P. 1

WATER LEVELS: Land-surface elevation above mean sea level \_\_\_\_\_ ft.  
 Static level 142 ft. below top of well Date 2-24-05  
 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? Mr. Bills PUMPS  
 Yield: 15 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  
FAST Recovery - GOOD WELL  
 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
BROWN SANDY DIRT	0	1
HARD GRAY CLAY	1	3
BROWN SAND-Cobbles	3	5
BROWN silty SAND	5	10
BROWN SAND	10	15
GRAY SAND-silt	15	17
GRAVEL & Brown silt	17	20
L-Brown silty SAND	20	35
GRAVEL-BROWN silty SAND	35	112
IRON FILL GRAVEL-silt	112	126
DARK BROWN CLAY	126	128
FINE GRAY SAND	128	130
GRAY CLAY	130	135
med-course gray SAND	135	151
C-SAND & GRAVEL H2O	151	184

RECEIVED  
 MAR 04 2005  
 DEPARTMENT OF ECOLOGY  
 WELL DRILLING UNIT  
65 ~ 220  
DNW - 142  
WLOW - 78  
BOTTOM EW ~ 36

Start Date 2-22-05 Completed Date 2-24-05

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) William R Bever III Drilling Company Mr. Bills PUMP & Well INC.  
 Driller/Engineer/Trainee Signature William R Bever 3rd Address 25619-DAHL Rd  
 Driller or Trainee License No. 2448 City, State, Zip ARLINGTON, WA - 98223

If trainee, licensed driller's Signature and License no. \_\_\_\_\_ Contractor's Registration No. MRBILPW97005 Date 2-24-05  
 Ecology is an Equal Opportunity Employer. ECY 050-1-20 (Rev 4/01)

FOR PUMP OR WELL SERVICE CALL 360 435-3334

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.

31-4E-5E



# WATER WELL REPORT

Original & 1<sup>st</sup> copy - Ecology, 2<sup>nd</sup> copy - owner, 3<sup>rd</sup> copy - driller

Construction/Decommission ("X" in circle) 279972  
 Construction  
 Decommission ORIGINAL INSTALLATION  
 Notice of Intent Number \_\_\_\_\_

<b>PROPOSED USE:</b> <input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Industrial <input type="checkbox"/> Municipal <input type="checkbox"/> DeWater <input type="checkbox"/> Irrigation <input type="checkbox"/> Test Well <input type="checkbox"/> Other																									
<b>TYPE OF WORK:</b> Owner's number of well (if more than one) <input checked="" type="checkbox"/> New well <input type="checkbox"/> Reconditioned Method: <input type="checkbox"/> Dug <input type="checkbox"/> Bored <input type="checkbox"/> Driven <input type="checkbox"/> Deepened <input type="checkbox"/> Cable <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Jetted																									
<b>DIMENSIONS:</b> Diameter of well <u>6</u> inches, drilled <u>201</u> ft. Depth of completed well <u>197.5</u> ft.																									
<b>CONSTRUCTION DETAILS</b> Casing <input checked="" type="checkbox"/> Welded <u>6</u> " Diam. from <u>+1.5</u> ft. to <u>193</u> ft. Installed: <input type="checkbox"/> Liner installed _____ " Diam. from _____ ft. to _____ ft. <input type="checkbox"/> Threaded _____ " Diam. From _____ ft. to _____ ft.																									
<b>Perforations:</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type of perforator used _____ SIZE of perfs _____ in. by _____ in. and no. of perfs from _____ ft. to _____ ft.																									
<b>Screens:</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> K-Pac Location <u>192</u> Manufacturer's Name _____ Type _____ Model No. _____ Diam. <u>5</u> Slot size <u>10</u> from <u>192</u> ft. to <u>197.5</u> ft. Diam. _____ Slot size _____ from _____ ft. to _____ ft.																									
<b>Gravel/Filter packed:</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Size of gravel/sand _____ Materials placed from _____ ft. to _____ ft.																									
<b>Surface Seal:</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No To what depth? <u>18</u> ft. Material used in seal <u>Bentonite</u> Did any strata contain unusable water? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type of water? _____ Depth of strata _____ Method of sealing strata off _____																									
<b>PUMP:</b> Manufacturer's Name <u>Goulds</u> Type: <u>sub</u> H.P. <u>1</u>																									
<b>WATER LEVELS:</b> Land-surface elevation above mean sea level _____ ft. Static level <u>181</u> ft. below top of well Date: <u>27 OCT 07</u> Artesian pressure _____ lbs. per square inch Date _____ Artesian water is controlled by _____ (cap, valve, etc.)																									
<b>WELL TESTS:</b> Drawdown is amount water level is lowered below static level Was a pump test made? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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) <table border="1"> <thead> <tr> <th>Time</th> <th>Water Level</th> <th>Time</th> <th>Water Level</th> <th>Time</th> <th>Water Level</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> Date of test _____ Bailer Test _____ gal./min. with _____ ft. drawdown after _____ hrs. Airtest <u>18+</u> gal./min. with stem set at <u>190</u> ft. for <u>18+</u> hrs. Artesian flow _____ g.p.m. Date _____ Temperature of water _____ Was a chemical analysis made? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Time	Water Level	Time	Water Level	Time	Water Level																		
Time	Water Level	Time	Water Level	Time	Water Level																				

## CURRENT

Notice of Intent No. W252236  
 Unique Ecology Well ID Tag No. APR858  
 Water Right Permit No. \_\_\_\_\_  
 Property Owner Name Glen Tissue  
 Well Street Address 6301 Silvana Terrace Rd.  
 City Stanwood County Snohomish  
 Location sw 1/4-1/4 nw 1/4 Sec 5 Twn 31 R 4 EWM  Check  
 (s, t, r Still REQUIRED) WWM  One  
 Lat/Long Lat Deg \_\_\_\_\_ Lat Min/Sec \_\_\_\_\_  
 Long Deg \_\_\_\_\_ Long Min/Sec \_\_\_\_\_  
 Tax Parcel No. (Required) 31040500101200

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
Brown clay sand gravel	1	5
Tan sand silt	5	18
Tan/brown sand silt some gravel	18	47
Brown clay sand silt	47	87
Grey sand large	87	113
Brown sand	113	127
Fine grey sand	127	128
Dark brown sand	128	130
Tan sand	130	150
Brown clay	150	153
Grey sand gravel silt	153	162
Loose pea gravel	162	182
Grey sand some gravel	182	201
CS ~ 210		
DTW = 181		
UL ELEV ~ 29		
<b>RECEIVED</b>		
NOV 01 2007		
DEPT. OF ECOLOGY		
Bottom ELEV ~ 9		
Start Date <u>25 OCT 07</u> Completed Date <u>27 OCT 07</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) Halvorson Drilling Company Affordable Water Systems  
 Driller/Engineer/Trainee Signature [Signature] Address 14021 Bradshaw Rd. 360-652-7445  
 Driller or trainee License No. 1617 City, State, Zip Mt. Vernon, Wa, 98273  
 IF TRAINEE: Driller's License No: \_\_\_\_\_ Contractor's Registration No. afforws945ra Date 30 OCT 07  
 Driller's Signature: \_\_\_\_\_



# ENTERED

## WATER WELL REPORT STATE OF WASHINGTON

31/4/5R

Start Card No. W043654  
Unique Well I.D.# AAW300  
Water Right Permit No.

VAN NATTA Parcel # 00464300000800

(1) OWNER: DELBERT VANNETTA ADDRESS: 1203 GRAND AVE., Everett 98201

(2) LOCATION OF WELL: County: SNOHOMISH SE 1/4 SE 1/4 Sec 05 T 31 N, R 04 WM  
(2a) STREET ADDRESS OF WELL (or nearest Address): 22020 62 AVE N. E. STANWOOD WA 98292

(3) PROPOSED USE:  Domestic  Industrial  Municipal  
 Irrigation  TEST WELL  Other....  
 DeWater

(4) TYPE OF WORK: Abandoned  Owner' No of Well if more than one: 1  
New Well.....  METHOD Dug... Bored.  
Deepened..... Cable. Driven  
Reconditioned Rotary X

(5) DIMENSIONS: Diameter of well 6 inches.  
Drilled 275.00 Feet Depth of completed well 275.00 Ft.

(6) CONSTRUCTION DETAILS:  
Casing Installed: 6 Diam From +2.0 Ft To 150 Ft  
Welded Diam From Ft To Ft  
Liner Inst X 4 Diam From 0 Ft To 245 Ft  
Threaded

Perforations: NO  
Types of perforator used  
Size of perforations Inches, by Inches  
Perforations from ft to  
Perforations from ft to  
Perforations from ft to

Screens: YES  
Manufacturer's Name: WESTERN  
Type: PVC Model No.  
Diam 4 Slot size 10 From 245 Ft To 275 Ft  
Diam 4 Slot size From Ft To Ft

Gravel packed: YES Size of gravel: 8-12  
Gravel placed from: 220 Ft To: 275 Ft

Surface seal: YES To What Depth?: 220 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: H.P.  
Type:

(8) WATER LEVELS? Above mean sea level  
Static Level 207 Ft. below top of well Date: 08/01/94  
Artesian pressure Lbs. per square inch Date: / /  
Artesian water is 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.  
Yield: Gal/min. with Ft drawdown after Hrs.  
Yield: Gal/min. with Ft drawdown after Hrs.  
RECOVERY DATA  
Time Water Level Time Water Level Time Water Level

Date of test / /  
Bailer Test 7+ gal/min with 30 ft. drawdown after 3 Hrs  
Airstest NA gal/min with stem set at ft for Hrs  
Artesian flow G.P.M. Date / /  
Temperature of Water 42 Was a chemical analysis made?: NO

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION:  
Formation: Describe by color, character, size of material and show thickness of aquifers and the kind of 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 VERY FINE CLAYEY	2	50
CLAY WITH 25 % FINE TO COARSE SAND	50	60
CLAY SILTY SANDY BROWN	60	145
CLAY BROWN	145	147
CLAY BLUE	147	150
SAND VERY FINE BROWN TO BLUISH	150	160
SAND MEDIUM TO COARSE	160	275
CLAY	275	

GS ~ 390  
DTW = 207  
WL EVER ~ 183  
Bottom ever ~ 115  
RECEIVED  
SEP 6 1994  
DEPT. OF ECOLOGY

Work Started 07/21/94 Work Completed 08/01/94

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 the best knowledge and belief.

Name: HIMEBAUGH DRILLING - BOYD HIMEBAUGH  
Address: 828 B PORTAGE STREET, ARLINGTON, WA 98223  
(Signed) *Boyd Himebaugh* License No 1877  
Contractors Registration No. HIMEBD099CK Date 08/06/94

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) 189591  
 Construction  
 Decommission ORIGINAL CONSTRUCTION Notice of Intent Number W208459

**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 1/4" inches, drilled 292 ft.  
 Depth of completed well 279 ft.

**CONSTRUCTION DETAILS**  
 Casing  Welded 6" Diam. from +1 ft. to 90 ft.  
 Installed:  Liner installed \_\_\_\_\_" Diam. from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
 Threaded 4" Diam. from -15 1/2 ft. to 279 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 N/A  
 Manufacturer's Name Western  
 Type PVC Model No. \_\_\_\_\_  
 Diam. 4 Slot Size #12 from 260 ft. to 279 ft.  
 Diam. \_\_\_\_\_ Slot Size \_\_\_\_\_ from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

**Gravel/Filter packed:**  Yes  No  Size of gravel/sand 6-9  
 Materials placed from 255 ft. to 279 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 \_\_\_\_\_ H<sub>2</sub>O  
 Method of sealing strata off \_\_\_\_\_

**PUMP:** Manufacturer's Name Temp - Test PUMP FEW  
 Type: FEW sub. H.P. 1 Med

**WATER LEVELS:** Land-surface elevation above mean sea level \_\_\_\_\_ ft.  
 Static level 268 ft. below top of well Date 1-10-06  
 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? Driller  
 Yield: 5 gal./min. with 0 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 1-10-06  
 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

CURRENT Notice of Intent No. W208459  
 Unique Ecology Well ID Tag No. AHE073  
 Water Right Permit No. \_\_\_\_\_

Property Owner Name Darren Hansen  
 Well Street Address 21417 - 62nd Ave NW  
 City Arlington County: SNOHOMISH  
 Location NE 1/4 - 1/4 NE 1/4 Sec 8 Twn 31 R 4 <sup>EWM</sup> <sup>circle</sup> or one WWM  
 Lat/Long: Lat Deg \_\_\_\_\_ Lat Min/Sec \_\_\_\_\_  
 (s,t,r still REQUIRED) Long Deg 4 Long Min/Sec \_\_\_\_\_  
 Tax Parcel No. 0046200000300

**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
BROWN TOPSOIL w/ cobbles	0	1
BROWN SILTY SAND & GRAVEL	1	5
BROWN SAND & SILT	5	15
BROWN SAND & Pea GRAVEL	15	25
GRAVEL & cobbles	25	41
GRAVEL & coarse SAND-GRAY	41	79
Med-Fine BROWN SAND	79	90
BROWN silt & SAND	90	189
DARK BROWN HARD CLAY	189	201
GRAY silt SAND	201	238
Med gray & black SAND	238	254
H2O cobbles-gravel H2O	254	281
HARD GRAY CLAY	281	292
GS ~ 397		
DNW = 260		
WL elev ~ 137		
RECEIVED		
JAN 30 2006		
DEPARTMENT OF ECOLOGY WELL DRILLING UNIT		
Bottom elev ~ 105		

Start Date Nov. 18, 2005 Completed Date JAN 10, 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) William R Bever 3rd Drilling Company Mr. Bills Pump & Well Inc.  
 Driller/Engineer/Trainee Signature William R Bever III Address 25619 - Dahl Rd  
 Driller or Trainee License No. 2448 City, State, Zip Arlington, WA - 98223  
 Contractor's Registration No. MRBILPW97205 Date 1-10-06  
 Ecology is an Equal Opportunity Employer. ECY 050-1-20 (Rev 4/01)

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

31-4E8C

# WATER WELL REPORT

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

Construction/Decommission (x in circle) **149798**  
 Construction  
 Decommission ORIGINAL CONSTRUCTION Notice of Intent Number \_\_\_\_\_

CURRENT Notice of Intent No W120947  
Unique Ecology Well ID Tag No AGK768  
Water Right Permit No \_\_\_\_\_  
Property Owner Name WES HARTWIG

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

Well Street Address 6811-218th SE NW  
City STANWOOD County SNOHOMISH  
Location NE 1/4 1/4 NW 1/4 Sec 8 Twn 31 R 4  EWM or one WWM

DIMENSIONS Diameter of well 6 inches drilled 320 ft  
Depth of completed well 316 ft

Lat/Long (s,t,r still) Lat Deg \_\_\_\_\_ Lat Min/Sec \_\_\_\_\_  
REQUIRED) Long Deg \_\_\_\_\_ Long Min/Sec \_\_\_\_\_  
Tax Parcel No 0046420001500

CONSTRUCTION DETAILS  
Casing  Welded 6 Diam from +2 ft to 306 ft  
Installed  Liner installed \_\_\_\_\_ Diam from \_\_\_\_\_ ft to \_\_\_\_\_ ft  
 Threaded \_\_\_\_\_ Diam from \_\_\_\_\_ ft to \_\_\_\_\_ ft

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)

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

MATERIAL	FROM	TO
TOPSOIL	0	2
GREY HARD PAN	2	16
SAND & GRAVEL	16	63
SAND	63	78
SAND & GRAVEL	78	84
SAND	84	156
GREY CLAY	156	162
SAND	162	193
SAND & GRAVEL	193	236
GREY CLAY	236	248
FINE SAND w/ WOODY	248	252
TAN CLAY	252	276
SAND & GRAVEL	276	280
SAND WOOD WATER	280	290
SAND GRAVEL WATER	290	320

Screens  Yes  No  K Pac Location \_\_\_\_\_  
Manufacturer's Name NABOAKA  
Type STAINLESS STEEL Model No \_\_\_\_\_  
Diam 5/8 Slot Size 14 from 306 ft to 311 ft  
Diam \_\_\_\_\_ Slot Size 12 from 311 ft to 316 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 HP 3

WATER LEVELS Land surface elevation above mean sea level \_\_\_\_\_ ft  
Static level 252 ft below top of well Date 5-6-04  
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  
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 50 gal/min with stem set at 316 ft for 1 hrs  
Artesian flow \_\_\_\_\_ gpm Date \_\_\_\_\_  
Temperature of water \_\_\_\_\_ Was a chemical analysis made?  Yes  No

GS-367  
DTW = 252  
RECEIVED  
WLEVEN-115  
MAY 27 2004  
DEPT OF ECOLOGY  
Bottom EW - 47  
Start Date 5-3-04 Completed Date 5-6-04

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) JOSEPH NUNES Drilling Company CAMANO Well Drilling  
Driller/Engineer/Trainee Signature Joseph Nunes Address PO Box 432  
Driller or Trainee License No 0611 City, State, Zip STANWOOD WA 98292  
Contractor CAMANO W0146RZ Registration No \_\_\_\_\_ Date 5-6-04  
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.

46+1







31-4E-8G

# WATER WELL REPORT

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

Construction/Decommission ("x" in circle) 168013  
 Construction  
 Decommission ORIGINAL CONSTRUCTION Notice of Intent Number W 167365

CURRENT Notice of Intent No. W 167365  
Unique Ecology Well ID Tag No. AGF 493  
Water Right Permit No. \_\_\_\_\_

Property Owner Name Chris McInelly  
Well Street Address 6319 Happy Hollow Rd.

City Stanwood County: 98292  
Location SW 1/4 - 1/4 NE 1/4 Sec 8 Twn 31 R 4  circle or one WWM

Lat/Long: Lat Deg \_\_\_\_\_ Lat Min/Sec \_\_\_\_\_  
(s,t,r still REQUIRED) Long Deg \_\_\_\_\_ Long Min/Sec \_\_\_\_\_  
Tax Parcel No. 00464200002800

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 200 ft.  
Depth of completed well 180 ft.

CONSTRUCTION DETAILS  
Casing  Welded 6" Diam. from +15 ft. to 185 ft.  
Installed:  Liner installed 4" Diam. from -10 ft. to 160 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 Western  
Type PVC Model No. \_\_\_\_\_  
Diam. 4 Slot Size 15 from 160 ft. to 180 ft.  
Diam. \_\_\_\_\_ Slot Size \_\_\_\_\_ from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

Gravel/Filter packed:  Yes  No  Size of gravel 8/12  
Materials placed from 180 ft. to 135 ft.

Surface Seal:  Yes  No To what depth? 18.5 ft.  
Materials used in seal Bestseal  
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: Submersible H.P. 1

WATER LEVELS: Land-surface elevation above mean sea level \_\_\_\_\_ ft.  
Static level 155 ft. below top of well Date 11-3-04  
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.  
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 10 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
Top Soil	0	2
Brown silt	2	35
Dry Sand & Gravel	35	120
Sand & Clay	120	145
Brown clay	145	160
Dry Sand & Gravel	160	165
Gravel water	165	185
Blue clay	185	200
GS ~ 393		
DIN = 155		
WL Elev ~ 238		
<b>RECEIVED</b>		
FEB 24 2005		
DEPT OF ECOLOGY		
Bottom Elev ~ 193		

Start Date 10-29-04 Completed Date 11-5-04

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) Todd Johnson  
Driller/Engineer/Trainee Signature \_\_\_\_\_  
Driller or Trainee License No. 2382

Drilling Company North Sound Drilling  
Address 266 N Camano Ridge Rd  
City, State, Zip Camano Is WA 98222  
Contractor's North 50 #3344  
Registration No. \_\_\_\_\_ Date 11-10-04

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.



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 **137453**  
 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 320 ft  
 Depth of completed well 320 ft

**CONSTRUCTION DETAILS**  
 Casing  Welded 6 " Diam from +2 ft to 310 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 NABOKA  
 Type STAINLESS Model No. \_\_\_\_\_  
 Diam. 5 5/8 Slot Size 12 from 310 ft to 315 ft  
 Diam. 5 5/8 Slot Size 14 from 315 ft to 320 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 N/A  
 Type: \_\_\_\_\_ H.P. \_\_\_\_\_

**WATER LEVELS:** Land-surface elevation above mean sea level \_\_\_\_\_ ft  
 Static level 236 ft below top of well Date 8-12-03  
 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  
 Arrest 100 gal/min with stem set at 320 ft for 1 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) JOE MUNES  
 Driller/Engineer/Trainee Signature Joseph Munes  
 Driller or Trainee License No. 0611  
 If trainee, licensed driller's Signature and License no. \_\_\_\_\_

CURRENT  
 Notice of Intent No. W120998  
 Unique Ecology Well ID Tag No. AGK 749  
 Water Right Permit No. \_\_\_\_\_

Property Owner Name STEVEN POWELL  
 Well Street Address 7012-218th St.

City STANWOOD County: SNOWHOMISH  
 Location NE 1/4- 1/4 NW 1/4 Sec. 8 Twn 31 R 4  EWM circle or one WWM  
 Lat/Long: Lat Deg \_\_\_\_\_ Lat Min/Sec \_\_\_\_\_  
 (s,t,r still REQUIRED) Long Deg \_\_\_\_\_ Long Min/Sec \_\_\_\_\_  
 Tax Parcel No. 60464200001700

**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
GRAVEL SAND SOIL	0	6
TAN SAND GRAVEL	6	9
GREY SAND GRAVEL CLAY SAND	9	48
TAN CLAY	48	145
SAND	145	155
SAND GRAVEL	155	183
GRAVEL SAND	183	196
SAND	196	203
SAND GRAVEL	203	209
GREY CLAY	209	235
GREY SANDY CLAY	235	242
SAND	242	245
GREY CLAY SAND GRAVEL	245	268
SAND	268	280
FINE SAND WATER	280	285
SAND WOOD WATER	285	290
SAND GRAVEL WATER	290	308
	308	320

GS-366  
 DW = 236  
 RECEIVED  
 AUG 22 2003  
 DEPT OF ECOLOGY  
 WL ELEV ~ 130  
 Bottom Elev ~ 46  
 Start Date 8-6-03 Completed Date 8-12-03

Drilling Company CAMANO WELL DRILLING  
 Address PO BOX 432  
 City, State, Zip STANWOOD WA 98292  
 Contractor's Registration No. CAMANO 14622 Date 8-14-03  
 Ecology is an Equal Opportunity Employer ECY 050-1-20 (Rev 4/01)

40+ F  
 AQUIF

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

31-4E-84

# WATER WELL REPORT

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

Construction/Decommission ("x" in circle) 178245  
 Construction  
 Decommission ORIGINAL CONSTRUCTION Notice of Intent Number \_\_\_\_\_

CURRENT Notice of Intent No. W172416  
 Unique Ecology Well ID Tag No. AHP-068  
 Water Right Permit No. \_\_\_\_\_

Property Owner Name Jim WARD  
 Well Street Address 21414 62nd AVE NE  
 City STAN WOOD County: SNOHOMISH  
 Location SE 1/4- 1/4 NE 1/4 Sec 8 Twn 31 R 04  EWM circle or one WWM  
 Lat/Long: Lat Deg \_\_\_\_\_ Lat Min/Sec \_\_\_\_\_  
 (s,t,r still REQUIRED) Long Deg \_\_\_\_\_ Long Min/Sec \_\_\_\_\_  
 Tax Parcel No. 004 642 0000 2600

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 295 ft.  
 Depth of completed well 295 ft.

CONSTRUCTION DETAILS  
 Casing  Welded 6" Diam. from 0 ft. to 292 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 289  
 Manufacturer's Name ALLOY  
 Type STAINLESS Model No. \_\_\_\_\_  
 Diam. 6" Slot Size 030 from 290 ft. to 295 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 H.P. 1/2

WATER LEVELS: Land-surface elevation above mean sea level \_\_\_\_\_ ft.  
 Static level 265 ft. below top of well Date 6-15-05  
 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: \_\_\_\_\_ 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 10 gal./min. with stem set at 290 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. Indicate all water encountered.  
 (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
TOP SOIL	0	1
TAN SAND GRAVEL	1	3
FIR ROOT		
TAN HARD PAN	3	12
GRAY CLAY & GRAVEL	12	86
TAN SAND W/CLAY LENSES	86	148
CEMENTED SAND & GRAVEL	148	295
WATER	295	
G-1-40 398		
DTW = 265		
WL ELEV ~ <del>136</del> 133		
<b>RECEIVED</b>		
JUL 25 2005		
DEPT OF ECOLOGY		
Bottom ELEV ~ <del>103</del> 103		

Start Date 6-9-05 Completed Date 6-14-05

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) DALE WESTBY Drilling Company ARLINGTON WELL DRILLING  
 Driller/Engineer/Trainee Signature Dale Westby Address 29121 SR9 NE  
 Driller or Trainee License No. 27117 City, State, Zip ARLINGTON WA 98223

If trainee, licensed driller's Signature and License no. Dale Westby 1668

Contractor's Registration No. ARLINW0969W Date 6-20-05



*Appendix D – Summary Table of  
Water Well Report Details*

Last Name	Parcel	Address	STR	GS Elev (ft)	DTW (ft)	Depth to Bottom (ft)	WL Elev (ft)	Bottom Elev (ft)	Aquifer Saturated Thickness (ft)	Airtest (gpm)	Bailer (gpm)	Drawdown (ft)	SC (gpm/ft)	Aquifer
Allyn	31040500101700	6621 Silvana Terrace	05-31N-04E	330	276	325	54	5	> 37		10	1	10.00	Qu (upper)
Andrews	31040500201700	7329 Silvana Terrace	05-31N-04E	195	143	154	52	41	> 11		15	0	High	Qu (upper)
Anthony	31040500400700	6730 Silvana Terrace	05-31N-04E	330	267	294	63	36	> 27		14	4	3.50	Qu (upper)
Bartle	31040500301600	6904 Silvana Terrace	05-31N-04E	272	72	100	200	172	31		3	28	0.11	Qtb
Born	31040500101500	6733 Silvana Terrace	05-31N-04E	325	250	283	75	42	> 33		10	10	1.00	Qu (upper)
Fandrich	31040500201800	7411 Silvana Terrace	05-31N-04E	193	134	300	59	-107	31		10	2	5.00	Qu (upper)
Fierke	31040500202700	6915 Silvana Terrace	05-31N-04E	300	238	280	62	20	> 24	25				Qu (upper)
Gisselberg	00464300000200	22121 62nd AVE NW	05-31N-04E	386	191	282	195	104	> 67	9				Qva
Kramer	31040500202300	7233 Silvana Terrace	05-31N-04E	225	140	169	85	56	23		10	10	1.00	Qu (upper)
McClaulin	31040500101900	6519 Silvana Terrace	05-31N-04E	350	285	340	65	10	> 56	15				Qu (upper)
Moore	31040500101400	6815 Silvana Terrace	05-31N-04E	310	245	269	65	41	> 6		8	18	0.44	Qu (upper)
Niegemann	31040500401200	6302 Silvana Terrace	05-31N-04E	360	250	275	110	85	25		10	1	10.00	Qu (upper)
Olsen	31040500400100	6311 Silvana Terrace	05-31N-04E	360	288	338	72	22	> 26	20				Qu (upper)
Rudikoff	31040500401000	6422 Silvana Terrace	05-31N-04E	370	285	330	85	40	13	20				Qu (upper)
Stafford Construction	31040500301200	7510 Silvana Terrace	05-31N-04E	220	142	184	78	36	> 42		15	6	2.50	Qu (upper)
Tissue	31040500101200	6301 Silvana Terrace	05-31N-04E	210	181	201	29	9	> 39	18				Qu (upper)
Tonheim	31040500300800	7420 Silvana Terrace	05-31N-04E	198	132	154	66	44	> 22		25	1	25.00	Qu (upper)
VanNetta	00464300000800	22020 62nd AVE NW	05-31N-04E	390	207	275	183	115	68		7	30	0.23	Qtb
Withees	31040500301900	7419 222nd ST NW	05-31N-04E	215	100	155	115	60	> 15	20				Qu (upper)
Withers	31040500302400	7214 222nd ST NW	05-31N-04E	250	120	180	130	70	> 20	30				Qu (upper)
Backler	00464200000600	21719 62nd AVE NW	08-31N-04E	403	155	189	248	214	> 29		15	2	7.50	Qva
Bauman	00464200001400	6717 218th ST NW	08-31N-04E	361	251	317	110	44	> 66	50				Qu (upper)
Galateau	00464200001800	6820 218th ST NW	08-31N-04E	361	251	318	110	43	> 23	20				Qu (upper)
Gudgeon	31040800200700	7409 Happy Hollow RD	08-31N-04E	239	104	160	135	79	> 47		15	0	High	Qu (upper)
Hansen	00464200000300	21417 62nd AVE NW	08-31N-04E	397	260	292	137	105	21		5	0	High	Qu (upper)
Hartwig	00464200001500	6811 218th ST NW	08-31N-04E	367	252	320	115	47	> 46	50				Qu (upper)
Hughes	31040400100300	5112 Norman RD	08-31N-04E	24	17	60	7	-36	> 13	60				Qa
Kallstrom	00464200002400	21618 62nd AVE NW	08-31N-04E	400	155	197	245	203	42		16	0	High	Qva
Kelly	00464200002200	6418 218th ST NW	08-31N-04E	388	270	310	118	78	> 26	30				Qu (upper)
Martin	31040800100700	6403 Happy Hollow RD	08-31N-04E	388	256	282	132	106	> 26		10	5	2.00	Qu (upper)
McInelly	00464200002800	6319 Happy Hollow RD	08-31N-04E	393	155	200	238	193	30		10	10	1.00	Qva
Morgan	00464200002500	21510 62nd AVE NW	08-31N-04E	399	151	184	248	215	24		16	0	High	Qva
Powell	00464200001700	7012 218th ST NW	08-31N-04E	366	236	320	130	46	> 40	100				Qu (upper)
Ward	00464200002600	21414 62nd AVE NW	08-31N-04E	398	265	295	133	103	?	10				Qu (upper)
Zent	00464200001900	6718 218th ST NW	08-31N-04E	369	210	256	159	113	> 46		15	0	High	Qtb
Williams - Thomle	32043100100600	7920 Thomle RD	31-32N-04E	14	4	48	10	-34	> 24		30	0	High	Qa
Klesick	32043200300100	24101 Miller RD	32-32N-04E	14	13	79	1	-65	> 29	300				Qa
Williams - Miller	32043200100200	Miller RD	32-32N-04E	14	9	62	5	-48	> 34		15	2	7.50	Qa
Henning	32043300400500	4811 Norman RD	33-32N-04E	24	12	407	12	-383	37	35				Qa

STR = Section-Township-Range

GS = Ground Surface

Elev = Elevation

ft = Feet

DTW = Depth to Water

WL = Water Level

gpm = Gallons per minute

SC = Specific Capacity

*Appendix E – Valley Water Well  
Reports*

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

32/1/33Q

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.                     

STATE OF WASHINGTON

Water Right Permit No.                     

(1) OWNER: Name CLIFF HENNING Address 4811 NORMAN Rd. Stanwood, Wa.

(2) LOCATION OF WELL: County SNO SW 1/4 SE 1/4 Sec 33 T. 32 N. R. 4E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) SAME AS ABOVE PARCEL # 32043300400500

(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
Brown sand	0	18
Blue sandy clay	18	55
Sand & gravel	55	92
Blue clay	92	147
Fine gray sand	147	162
Blue silt clay	162	385
Blue-gray clay	385	407

(5) DIMENSIONS: Diameter of well 6 inches.  
 Drilled 407 feet. Depth of completed well 190 ft.

(6) CONSTRUCTION DETAILS:  
 Casing installed:  Welded  Threaded  
 6" Diam. from 12 ft. to 401 ft.  
 Perforations: Yes  No   
 Type of perforator used AIR (HOLT)  
 SIZE of perforations 1/4" in. by 1/4" in.  
240 perforations from 70 ft. to 85 ft.

GS ~ 24  
DTW = 12  
WLOW ~ 12

**RECEIVED**

**OCT 16 1992**

DEPT. OF ECOLOGY

Bottom elev ~ -383

Screens: Yes  No   
 Manufacturer's Name                      Model No.                       
 Diam.                      Slot size                      from                      ft. to                      ft.  
 Gravel packed: Yes  No  Size of gravel                       
 Surface seal: Yes  No  To what depth? 18 ft.  
 Material used in seal Dentonite & puddling clay  
 Did any strata contain unusable water? Yes  No   
 Type of water? Silty Depth of strata 152  
 Method of sealing strata off Casing

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

(8) WATER LEVELS: Land surface elevation above mean sea level                      ft.  
 Static level 12 ft. below top of well Date 9/25/92  
 Artesian pressure                      lbs. per square inch Date                       
 Artesian water is controlled by                      (Cap, valve, etc.)

Work started 9/22/92 Completed 10/8/92

(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

**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 Watkins Well Drilling Co.  
 (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 556 N SUNSET DC CAMANO IS. WA.

(Signed) Ken Watkins License No. 0516  
 (WELL DRILLER)

Contractor's Registration No. Watkins 13424 Date 10/14/1992

(USE ADDITIONAL SHEETS IF NECESSARY)





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



# 384567 WATER WELL REPORT

Original & 1<sup>st</sup> copy - Ecology, 2<sup>nd</sup> copy - owner, 3<sup>rd</sup> copy - driller

32-4E-32A

**Construction/Decommission ("x" in circle)**

- Construction  
 Decommission ORIGINAL INSTALLATION Notice of Intent Number \_\_\_\_\_

**CURRENT**  
 Notice of Intent No. W 217160  
 Unique Ecology Well ID Tag No. BBA 235  
 Water Right Permit No. \_\_\_\_\_  
 Property Owner Name Richard Williams  
 Well Street Address xxx Miller Rd  
 City Stanwood County Snohomish  
 Location NE 1/4-1/4 NE 1/4 Sec 32 Twn 32 R04E WWD circle one  
 Lat/Long (s, t, r) Lat Deg \_\_\_\_\_ Lat Min/Sec \_\_\_\_\_  
 Still **REQUIRED**) Long Deg \_\_\_\_\_ Long Min/Sec \_\_\_\_\_  
 Tax Parcel No. 3204 3200 100 200

<b>PROPOSED USE:</b>	
<input checked="" type="checkbox"/> Domestic <input type="checkbox"/> DeWater	<input type="checkbox"/> Industrial <input type="checkbox"/> Irrigation <input type="checkbox"/> Test Well
<input type="checkbox"/> Municipal <input type="checkbox"/> Other	
<b>TYPE OF WORK:</b> Owner's number of well (if more than one) _____	
<input checked="" type="checkbox"/> New well <input type="checkbox"/> Reconditioned <input type="checkbox"/> Deepened	Method: <input type="checkbox"/> Dug <input type="checkbox"/> Bored <input type="checkbox"/> Driven <input checked="" type="checkbox"/> Cable <input type="checkbox"/> Rotary <input type="checkbox"/> Jetted
<b>DIMENSIONS:</b> Diameter of well <u>8</u> inches, drilled <u>62</u> ft. Depth of completed well <u>62</u> ft.	
<b>CONSTRUCTION DETAILS</b>	
Casing <input checked="" type="checkbox"/> Welded <u>8</u> " Diam from <u>+2</u> ft to <u>57</u> ft	Installed: <input type="checkbox"/> Liner installed _____" Diam. from _____ ft. to _____ ft. <input type="checkbox"/> Threaded _____" Diam. from _____ ft. to _____ ft.
Perforations: <input type="checkbox"/> Yes <input type="checkbox"/> No Type of perforator used _____ SIZE of perf's _____ in. by _____ in. and no. of perf's from _____ ft. to _____ ft.	
Screens: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> K-Pac Location <u>SS</u> Manufacturer's Name <u>Hiloy</u> Type <u>S, 57001</u> Model No. _____ Diam. <u>5</u> Slot size <u>20</u> from <u>57</u> ft to <u>62</u> ft. Diam. _____ Slot size _____ from _____ ft. to _____ ft.	
Gravel/Filter packed: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Size of gravel/sand _____ Materials placed from _____ ft. to _____ ft.	
Surface Seal: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No To what depth? <u>18</u> ft. Material used in seal <u>BENONITE</u> Did any strata contain unusable water? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Type of water? _____ Depth of strata _____ Method of sealing strata off _____	
<b>PUMP:</b> Manufacturer's Name _____ Type: _____ H.P. _____	
<b>WATER LEVELS:</b> Land surface elevation above mean sea level _____ ft. Static level <u>9</u> ft. below top of well Date <u>7-30-10</u> Artesian pressure _____ lbs. per square inch Date _____ Artesian water is controlled by _____ (cap. valve, etc.)	
<b>WELL TESTS:</b> Drawdown is amount water level is lowered below static level Was a pump test made? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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 _____ _____ _____ Date of test _____ Bailer test <u>15</u> gal./min. with <u>2</u> ft. drawdown after <u>2</u> 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? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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
clay	0	28
Dry Gravel	28	36
water sand-gravel	36	62
GS-14		
DTW = 9		
WL elev ~ 5		
Bottom elev ~ -48		
RECEIVED DEPARTMENT OF ECOLOGY		
SEP 08 2010		
WATER RESOURCES PROGRAM NWRO		
Start Date <u>7-29-10</u>	Completed Date <u>7-30-10</u>	

FINE  
AFTER

**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) GENE HITT  
 Driller/Engineer/Trainee Signature Gene Hitt  
 Driller or trainee License No. 0186  
 IF TRAINEE,  
 Driller's Licensed No. \_\_\_\_\_  
 Driller's Signature \_\_\_\_\_

Drilling Company GENES Well Drilling  
 Address 5115 268TH ST. NW  
 City, State, Zip Stanwood, WA 98292  
 Contractor's  
 Registration No. GENES WD 934RD Date 8-28-10  
 Ecology is an Equal Opportunity Employer.

32-4E-31B

# WATER WELL REPORT

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

Construction/Decommission ("x" in circle)  
 Construction 151884  
 Decommission ORIGINAL CONSTRUCTION Notice of Intent Number

CURRENT Notice of Intent No. W 175670

Unique Ecology Well ID Tag No. AB0976

Water Right Permit No. #32043000401200

Property Owner Name Richard Williams

Well Street Address 7920 Thomle Rd.

City Stanwood County: Snohomish

Location NW 1/4 1/4 NE 1/4 Sec. 31 Twn 32N R 4E EWM circle or one WWM

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

Tax Parcel No. 32043100100600

PROPOSED USE:  Domestic  Industrial  Municipal  Other LARGE Residential  
 DeWater  Irrigation  Test Well

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 8 inches, drilled 48 ft.  
Depth of completed well 48 ft.

CONSTRUCTION DETAILS  
Casing  Welded 8" Diam. from +1 ft to 29 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 27  
Manufacturer's Name Alloy  
Type S. STEEL Model No. \_\_\_\_\_  
Diam. 5 Slot Size 20 from 28 ft to 33 ft.  
Diam. 5 Slot Size 40 from 33 ft. to 48 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  
Materials used in seal BENONITE  
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 0 ft.  
Static level 4 ft. below top of well Date 5-26-04  
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.  
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 30 gal./min. with 0 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

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	0	22
SAND	22	37
SAND-GRAVEL	37	48
GS ~ 14		
DDW = 4		
WL EWM ~ 10		
<b>RECEIVED</b>		
JUL 21 2004		
DEPT OF ECOLOGY		
BOTTOM EWM ~ -34		
Start Date <u>5-23-04</u>	Completed Date <u>5-26-04</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) Gene Hitt  
Driller/Engineer/Trainee Signature Gene Hitt  
Driller or Trainee License No. 0186

Drilling Company GENES Well Drilling  
Address 5115 268th St. N.W.  
City, State, Zip Stanwood, WA. 98292  
Contractor's Registration No. GENESWOODRICE Date 5-28-04  
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.

*Appendix F – Other Water Well  
Reports*

BRYANT Well

STATE OF WASHINGTON  
DEPARTMENT OF CONSERVATION  
AND DEVELOPMENT

WELL LOG

No. Appl. 741

Date January 19 48

Cert. 615-A

Record by F C Yett

Source Driller's Record

Location State of WASHINGTON

County Snohomish

Area \_\_\_\_\_

Map \_\_\_\_\_

NW  $\frac{1}{4}$  NE  $\frac{1}{4}$  sec 29 T 32 N R 4 E W

DIAGRAM OF SECTION

Drilling Co N. C Janssen Drilling & Mfg. Co.

Address 9407 E Marginal Way, Seattle

Method of Drilling \_\_\_\_\_ Date Jan. 19 48

Owner Stanwood Water Co

Address Stanwood, Wash

Land surface datum \_\_\_\_\_ ft above  
below \_\_\_\_\_

CORRECTION	MATERIAL	THICKNESS (feet)	DEPTH (feet)
------------	----------	------------------	--------------

(Transcribe driller's terminology literally but paraphrase as necessary in parentheses. If material water bearing so state and record static level if reported. Give depths in feet below land surface datum unless otherwise indicated. Correlate with stratigraphic column if feasible. Following log of materials list all casing perforations screens etc.)

	Clay	50	50
	Coarse sand & water bearing gravel	200	250
	Pump Test.		
	Dim. 250' x 24"		
	SWL 40' DD. 15'		
	Yield. 1200 g.p.m.		
	Casing 24" dia 3/8 wall from 0 to 30'		
	20" dia. 1/2" wall from 0 to 80'		
	17" dia. 3/8 wall from 80 to 130'		
	12" dia. 3/8" wall from 130 to 250'		
	Perforations		
	Casing per horizontal beveled perf.		
	from 50' to 245' 12 rows per ft. on 20"		
	10 rows per ft on 17" 8 rows per ft 12"		

Turn up \_\_\_\_\_

Sheet \_\_\_\_\_ of \_\_\_\_\_ sheets

GS ~ 100

DW = 40

WL elev ~ 60

Bottom elev ~ -150

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.

CEDARHAME WELL

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. W16254

UNIQUE WELL I.D. # ABU 299

Water Right Permit No. 32-4E-20ft

(1) OWNER: Name City of Stanwood Address 10220 270th N.W.

(2) LOCATION OF WELL: County Snohomish SE 1/4 NE 1/4 Sec 20 T. 32 N. R. 4 E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) South of 284th

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

(4) TYPE OF WORK: Owner's number of well (if more than one) \_\_\_\_\_  
Abandoned  New well  Method: Dug  Bored  JUN  
Deepened  Cable  Driven  1995  
Reconditioned  Rotary  5/30/95

(5) DIMENSIONS: Diameter of well 12 inches.  
Drilled 495 feet. Depth of completed well 481 ft.

(6) CONSTRUCTION DETAILS:  
Casing installed: 20 Diam. from 0 ft. to 18 ft.  
Welded  16 Diam. from 0 ft. to 330 ft.  
Liner installed  12 Diam. from 0 ft. to 495 ft.  
Threaded

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

Screens: Yes  No   
Manufacturer's Name cook  
Type stainless wire wrap Model No. \_\_\_\_\_  
8 Diam. 20 Slot size from 381 ft. to 411 ft.  
8 Diam. 20 Slot size from 446 ft. to 476 ft.

Gravel packed: Yes  No  Size of gravel colorado 8-12  
Gravel placed from 481 ft. to 367 ft.

Surface seal: Yes  No  To what depth? 40 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 130 ft. below top of well Date 5/30/95  
Artesian pressure \_\_\_\_\_ lbs. per square inch Date \_\_\_\_\_  
Artesian water is controlled by \_\_\_\_\_ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level  
Was a pump test made? Yes  No  If yes, by whom? \_\_\_\_\_  
Yield: 500 gal./min. with 124 ft. drawdown after 1 hrs.  
" 500 " 127.6 " 7.7 "  
" 500 " 128.8 " 24 "  
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  
10 min 146 \_\_\_\_\_ \_\_\_\_\_  
30 min 138 \_\_\_\_\_ \_\_\_\_\_  
120 133 \_\_\_\_\_ \_\_\_\_\_  
Date of test \_\_\_\_\_  
Bailer test 45 gal./min. with 8 ft. drawdown after 30 min.  
Airtest \_\_\_\_\_ gal./min. with stem set at \_\_\_\_\_ ft. for \_\_\_\_\_ hrs.  
Artesian flow \_\_\_\_\_ g.p.m. Date \_\_\_\_\_  
Temperature of water 11.9 Was a chemical analysis made? Yes  No

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

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

MATERIAL	FROM	TO
top soil	0	1
blue gray brown clay	1	16
blue clay	16	26
blue clay some guts.	26	47
interbedded layers silty guts and water bearing guts.	47	106
silt bound guts.	106	117
clean loose water bearing guts.	117	123
silt bound guts.	123	151
gray clay	151	173
silt bound guts.	173	209
blue gray clay	209	239
silt bound guts.	239	242
silt bound guts with water bearing layers	242	264
gray clay	264	269
fine silty sand water bearing	269	284
hard sand silt no water	284	305
silty sand & guts. water bearing	305	323
hard sandy silt	323	330
gray clay	330	362
gray silt some guts.	362	373
gray fine dirty sand water bearing	373	489
gray hard sticky clay	489	495
GS ~ 135		
DTW = 130		
WL elev - 5		
Bottom elev ~ -360		
Work Started <u>3/2/95</u> Completed <u>5/30</u> 19 <u>95</u>		

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 Hott Drilling Inc. (PERSON, FIRM OR CORPORATION) (TYPE OR PRINT)  
Address 10621 Todd Rd. E.  
(Signed) Tony Johnson License No. 1094 (WELL DRILLER)  
Contractor's Registration No. Hatti #0870J Date 5/31 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

**WATER WELL REPORT**  
STATE OF WASHINGTON

Application No. \_\_\_\_\_

Permit No. \_\_\_\_\_

D O E # 7

(1) OWNER: Name Dept. of Ecology Address Hall Stop Pkall, Olympia 98501

(2) LOCATION OF WELL: County Island County SW 1/4 NE 1/4 Sec 25 T. 32 N. R. 2E W.M.

Bearing and distance from section or subdivision corner WAINES RIDGE CIRCLE

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

(4) TYPE OF WORK: Owner's number of well (if more than one) # 7  
New well  Method: Dug  Bored   
Deepened  Cable  Driven   
Reconditioned  Rotary  Jetted

(5) DIMENSIONS: Diameter of well 8 inches.  
Drilled 1000 ft. Depth of completed well 1000 ft.

(6) CONSTRUCTION DETAILS:  
Casing installed: 8 " Diam. from 405 ft. to 419 1/2 ft.  
Threaded  8 " Diam. from 405 ft. to 1000 ft.  
Welded  " Diam. from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

Perforations: Yes  No  See USGS report  
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  See USGS report  
Manufacturer's Name \_\_\_\_\_  
Type \_\_\_\_\_ Model No. \_\_\_\_\_  
Diam. \_\_\_\_\_ Slot size \_\_\_\_\_ from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
Diam. \_\_\_\_\_ Slot size \_\_\_\_\_ from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

Gravel packed: Yes  No  See USGS report  
Gravel placed from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

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

(7) PUMP: Manufacturer's Name N/A HP N/A  
Type: \_\_\_\_\_ HP \_\_\_\_\_

(8) WATER LEVELS: Land-surface elevation above mean sea level \_\_\_\_\_ ft.  
Static level See USGS report 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  
See USGS report  
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.  
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
Brn silty sandy grav. rocks	0	8
Brn silty sandy gravel	8	30
Clean med sand some fine grav	30	80
Brn silty sand some gravel	80	105
Brn silty grav & silt	105	120
Brn silt	120	130
Blue silty clay	130	185
Blue silt	185	195
Coarse blue silty sand water	195	200
Blue silt	200	220
Blue clay	220	240
Blue silt some gravel	240	250
Blue gravel some silt	250	255
Blue coarse grav. some sand	255	265
Blue silty gravel	265	280
Coarse gravel water	280	285
Gray silty gravel	285	290
Gray silty clay	290	300
Gray sandy gravel water	300	310
Gray till	310	380
Gray siltstone with fract. sandstone lenses	380	620
Gray sand fine to med	620	640
Gray soft clay	640	830
Coarse gray sand	830	850
Finegray sand	850	860
Gray silt	860	900
Hard siltstone clay lenses	900	990
Med to fine grav with coarse to fine sand water	990	995
Med to fine sand silty grav	995	1000

GS ~ 430  
Bottom Elevation ~ -570  
Work started 1-11, 1983. Completed 11-17, 1983

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 OLKE DRILLING COMPANY  
(Person, firm, or corporation) (Type or print)  
Address 701-41st Ave NE, Puyallup 98371

(Signed) Roger Olke  
(Well Driller)

License No. 0379 Date 2-15, 19 84