File NR G1-27465
WR Doc ID 2284655

DEPARTMENT OF
ECOLOGY
State of Washington

State of Washington
REPORT OF EXAMINATION
FOR WATER RIGHT APPLICATION

PRIORITY DATE
5/9/1994

WATER RIGHT NUMBER
G1-27465

MAILING ADDRESS
DERBY DOWNS & JUANITA BAY INC
10445 SECRETARIAT LANE N.E.
BAINBRIDGE ISLAND WA 98110

SITE ADDRESS (IF DIFFERENT)

Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AF/YR)
73	GPM	11.2

Purpose

PURPOSE	WITHDRAWAL OR DIVERSION RATE ADDITIVE	WITHDRAWAL OR DIVERSION RATE NON-ADDITIVE	UNITS	ANNUAL QUANTITY (AF/YR) ADDITIVE	ANNUAL QUANTITY (AF/YR) NON-ADDITIVE	PERIOD OF USE (mm/dd)
Community Domestic Supply	73		GPM	11.2		01/01 - 12/31

REMARKS

The water quantities allocated (73 gpm and 11.2 af/yr) were established as beneficial use through three exempt wells. Applicant began such use prior to State of Washington Department of Ecology v. Campbell & Gwinn et al (WA Supreme Court Docket No. 70279-9).

IRRIGATED ACRES ADDITIVE	IRRIGATED ACRES NON-ADDITIVE	PUBLIC WATER SYSTEM INFORMATION WATER SYSTEM ID	PUBLIC WATER SYSTEM INFORMATION CONNECTIONS
0	0	07009 and 07010	12

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
KITSAP	GROUNDWATER		15-KITSAP

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWP	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
Well #1	5081-000-015-004	ABP985	25N	02E	15	NESW	47.65556	-122.53433
Well #2	5081-000-015-004	ABP823	25N	02E	15	NESW	47.65556	-122.53433

Datum: NAD83/WGS84

Place of Use (See Attached Map – Attachment 1)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

The place of use (POU) for this water right is Lot 1 through 16, inclusive, and Tracts A through G (Common Areas) and NE Triple Crown Drive, Citation Court and Affirmed Lane, all as shown on the Plat of Derby Downs PUD, according to Plat recorded in Volume 25 of Plats, pages 107 and 108, records of Kitsap County.

Proposed Works

The points of withdrawal (POW) are two wells about ten feet apart at the location noted above. Each well originally served a separate system of six connections. The two systems will be unified into a single system serving 12 connections, still from the two wells. In the future, the other four lots in the plat may be added to the water system. A well house with pump control and water treatment equipment is on-site and will be maintained. The water system is described in more detail in the Association's water system plan.

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
Begun	December 31, 2014	December 31, 2014

Measurement of Water Use

How often must water use be measured?	Monthly
How often must water use data be reported to Ecology?	Upon Request by Ecology
What volume should be reported?	Total Annual Volume
What rate should be reported?	Annual Peak Rate of Withdrawal (gpm or cfs)

Provisions

Prohibition of Future Drilling of Wells under Water Rights Exemption

Customers served by the Derby Downs water system shall be barred from installing individual or group-domestic water wells that are exempt from permitting under RCW 90.44.050. The home owner's association shall provide Ecology with a copy of a Declaration of Covenants, Conditions, and Restrictions or association by-laws showing a restriction to that effect. Any subsequent modification to the relevant sections of the declaration or by-laws shall be also reported to Ecology.

Wells, Well Logs and Well Construction Standards

All wells constructed in the state shall meet the construction requirements of WAC 173-160 titled "Minimum Standards for the Construction and Maintenance of Wells" and RCW 18.104 titled "Water Well Construction". Any well which is unusable, abandoned, or whose use has been permanently discontinued, or which is in such disrepair that its continued use is impractical or is an environmental, safety or public health hazard shall be decommissioned.

All wells shall be tagged with a Department of Ecology unique well identification number. If you have an existing well and it does not have a tag, please contact the well-drilling coordinator at the regional Department of Ecology office issuing this decision. This tag shall remain attached to the well. If you are

required to submit water measuring reports, reference this tag number.

Installation and maintenance of an access port as described in WAC 173-160- 291(3) is required.

Measurements, Monitoring, Metering and Reporting
An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", WAC 173-173.

WAC 173-173 describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition the Department of Ecology for modifications to some of the requirements.

Department of Health Requirements
Prior to any new construction or alterations of a public water supply system, the State Board of Health rules require public water supply owners to obtain written approval from the Office of Drinking Water of the Washington State Department of Health. Please contact the Office of Drinking Water at Southwest Drinking Water Operations, 243 Israel Road S.E., PO Box 47823, Tumwater, WA 98504-7823, (360) 236-3030.

Water Use Efficiency
The water right holder is required to maintain efficient water delivery systems and use of up-to-date water conservation practices consistent with RCW 90.03.005.

Proof of Appropriation
In the present application the water quantities have already been perfected through beneficial use since the wells were completed in late 1990's. However the project will not be considered completed until the proposed mitigation plan and all provisions have been fully implemented.

Upon completion of the provisions, the applicant shall file a completion of construction form, which shall be accompanied by a report detailing the completion of the proposed mitigation plan and implementation of all provisions. This report will be considered the equivalent of a Proof of Appropriation.

Upon receipt and acceptance of the report, Ecology shall issue a certificate of groundwater right.

Schedule and Inspections
Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the project location, and to inspect at reasonable times, records of water use, wells, diversions, measuring devices and associated distribution systems for compliance with water law.

Findings of Facts

Upon reviewing the investigator's report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I concur with the investigator that water is available from the source in question; that there will be no impairment of existing rights; that the purpose(s) of use are beneficial; and that there will be no detriment to the public interest.

Therefore, I ORDER approval of Application No. G1-27465, subject to existing rights and the provisions specified above.

Your Right To Appeal

You have a right to appeal this Order to the Pollution Control Hearings Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of the Order.

File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.

- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.
- You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel RD SW Ste 301 Tumwater, WA 98501	**Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

Signed at Bellevue, Washington, this 28 day of January, 2014.

Jacqueline Klug, Section Manager
Water Resources Program, NWRO

For additional information visit the Environmental Hearings Office Website: http://www.eho.wa.gov. To find laws and agency rules visit the Washington State Legislature Website: http://www1.leg.wa.gov/CodeReviser.

INVESTIGATOR'S REPORT
Application for Water Right -- Derby Downs & Juanity Bay Inc
Water Right Control Number G1-27465
Burt Clothier, Robinson Noble Inc.

BACKGROUND

This report serves as the written findings of fact concerning Water Right Application Number G1-27465.

Cost Reimbursement

This application is being processed under a cost reimbursement agreement between the applicant the Department of Ecology. This report has been prepared by Robinson Noble, Inc.

Project Description

Derby Downs is a residential community located in east-central Bainbridge Island, approximately half a mile west of State Route 305 and Murden Cove. The community is comprised of 16 lots and common areas on 40 acres. Fifteen of the lots are currently developed.

This application was filed with the intent of merging two water systems that each served part of the community into a single system.

Table 1 Summary of Requested Water Right

Applicant Name:	Derby Downs & Juanity Bay Inc
Date of Application:	5/9/1994
Place of Use	The place of use (POU) for this water right is Lot 1 through 16, inclusive, and Tracts A through G (Common Areas) and NE Triple Crown Drive, Citation Court and Affirmed Lane, all as shown on the Plat of Derby Downs PUD, according to Plat recorded in Volume 25 of Plats, pages 107 and 108, records of Kitsap County

County	Waterbody	Tributary To	WRIA
Kitsap	Groundwater		15-Kitsap

Purpose	Rate	Unit	Ac-ft/yr	Begin Season	End Season
Domestic multiple	73	GPM	11.2	01/01	12/31

Source Name	Parcel	Well Tag	Twp	Rng	Sec	QQ Q	Latitude	Longitude
Well #1	5081-000-015-004	ABP985	25N	02E	15	NESW	47.65556	-122.53433
Well #2	5081-000-015-004	ABP823	25N	02E	15	NESW	47.65556	-122.53433

CFS = Cubic Feet per Second; Ac-ft/yr = Acre-feet per year; Sec. = Section; QQ Q = Quarter-quarter of a section; WRIA = Water Resource Inventory Area; E.W.M. = East of the Willamette Meridian; Datum: NAD83/WGS84.

Legal Requirements for Approval of Appropriation of Water

Public Notice

RCW 90.03.280 requires that notice of a water right application be published once a week, for two consecutive weeks, in a newspaper of general circulation in the county or counties where the water is to be stored, diverted and used. Notice of this application was published in the Bainbridge Island Review on March 22, 2013 and March 29, 2013

State Environmental Policy Act (SEPA)

A water right application is subject to a SEPA threshold determination (i.e., an evaluation whether there are likely to be significant adverse environmental impacts) if any one of the following conditions are met.

(a) It is a surface water right application for more than 1 cubic foot per second, unless that project is for agricultural irrigation, in which case the threshold is increased to 50 cubic feet per second, so long as that irrigation project will not receive public subsidies;
(b) It is a groundwater right application for more than 2,250 gallons per minute;
(c) It is an application that, in combination with other water right applications for the same project, collectively exceed the amounts above;
(d) It is a part of a larger proposal that is subject to SEPA for other reasons (e.g., the need to obtain other permits that are not exempt from SEPA);
(e) It is part of a series of exempt actions that, together, trigger the need to do a threshold determination, as defined under WAC 197-11-305.

Because this application does not meet any of these conditions, it is categorically exempt from SEPA and a threshold determination is not required.

INVESTIGATION

Geology and Hydrogeologic Setting

Derby Downs exists on the side and top of an elongated, north-south trending hill west of Murden Cove on the east-central portion of Bainbridge Island (Attachment 1). The hillside drops rapidly eastward in elevation from the Derby Downs well site, at approximately 160 feet above sea level, to less than 50 feet elevation about 1,000 feet east of the wells. West of Derby Downs, there is a shallow valley, before another hillside rises above 340 feet in elevation approximately 3,000 feet from the wells.

The geology of the northern portion of Bainbridge Island is described on the USGS Scientific Investigations Map 3181, *Geologic Map of the Suquamish 7.5' Quadrangle and Part of the Seattle North 7.5' x 15' Quadrangle, Kitsap County, Washington* (Haugerud and Troost, 2011). The surface geology is dominated by the sediments of the Pleistocene- age Vashon Glaciation, in particular, Vashon till. The glacial till is the surface unit on the hilltop that contains the Derby Downs plat. On the lowland east of the plat, there are more recent alluvium and wetland deposits. Scattered, small, isolated pockets of

wetland deposits also occur northwest and southwest of Derby Downs in the shallow valley described above. On the east-facing hillside, in the northern portion of the plat as well as further north, undifferentiated pre-Vashon-age deposits (Qpv) are exposed. West of the plat, on the east-facing hillside of the western hill, the sediments have been tentatively mapped as beds of University Point (Qup) – a variably compacted fluvial sand and gravel with interbedded silt and peat, believed to be from an Olympic Mountains source (Haugerud and Troost, 2011). Though not exposed near Derby Downs, Haugerud and Troost (2011) name Vashon advance outwash deposits as the Esperance Sand member (Qve).

The hydrogeology of Bainbridge Island was recently described by Frans, Bachmann, Sumioka, and Olsen of the USGS in their 2011 report *Conceptual Model and Numerical Simulation of the Groundwater-Flow System of Bainbridge Island, Washington.* They provide a conceptual model which divides the geologic units into series of hydrogeologic units comprised of aquifers and confining units. Boundaries of the hydrogeologic units were based upon the surface geology, land surface elevations, and lithologic information from over 400 well logs. Frans and others (2011) describe the Vashon till as the Vashon till confining unit (Qvt) and the Qve as the Vashon advance aquifer (Qva). Hydrostratigraphically below the Qva is the upper confining unit (QC1), which in places has a thin aquifer, the permeable interbeds (QC1pi), embedded within it. Beneath the QC1 is the sea-level aquifer (QA1), which in turn is bottomed by the middle confining unit (QC2). They describe several deeper confining units and aquifers which are not germane to this investigation.

Frans and others (2011) describe the Qvt as a "very compact mix of sand and gravel in a clay matrix" and the Qva as consisting of "well-sorted sand, or sand and gravel with lenses of silt and clay." The QC1 is described as a thick and widespread low-permeability unit consisting of Vashon-age glaciolacustrine silt and clay (Lawton Clay) and underlying interglacial deposits. The QA1 is also widespread. It is composed of mostly glacial sand and gravel with silt interbeds. Frans and others (2011) note that the sea-level aquifer can occur significantly below sea level, and the term "sea-level aquifer" has been used for consistency with previous reports.

We obtained 95 well logs from the USGS, on which they had marked their hydrostratigraphic interpretations, for the area surrounding Derby Downs (Figure 1). The USGS also supplied a spreadsheet giving location, elevation, and other information for the wells. We used this information and well logs, in conjunction with cross sections and extent and thickness maps from Frans and other (2011), to determine which hydrostratigraphic units are important to this water rights investigation.

Figure 1: Well Location Map

The Qvt forms a confining layer present at the surface at the location of the Derby Downs wells, but is absent downhill to the east. Our interpretation of the well logs of the Derby Downs wells show a Qvt thickness of approximately 65 to 90 feet at the wellfield (Wells 1 and 2) and 110 feet at a third well at the development (Well AAB977; labeled Well 0 above, owned by George Filler and originally proposed in the water right application as a point of withdrawal, but later removed when the application was advertised). As described above, the uppermost aquifer on this portion of the island is the Qva. Frans

and others (2011) map the aquifer as missing at the Derby Downs wellfield, but present at Well AAB977 (although close to the mapped contact). Our interpretation of the well logs agrees with this. The well log for Well AAB977 shows a 21-foot thick water-bearing unit at a depth of 110 to 131 feet below ground. The well logs for Wells 1 and 2 do not show a water-bearing unit near this depth. Based on Frans and others (2011) Qva map, the aquifer is widely present west of Derby Downs, but absent underneath most the Derby Downs plat and further east.

The upper confining unit, QC1, is expressed on the Derby Downs well logs as a 90- to 150-foot thick unit consisting of clay, gravelly clay, and silty sand and gravel. Based on their well logs, the Derby Downs wells are completed in the sea-level aquifer (QA1), which is reported on the logs as coarse sand and gravel that may be silty. The logs indicated that none of the wells apparently were drilled to the bottom of the QA1 aquifer.

A map of Qva water levels from August 2007 (Frans and others 2011) shows that west of Derby Downs, the water levels in the Qva are 100 to 150 feet above sea level (msl). It also shows a north-south trending divide that separates eastern groundwater flow (toward Derby Downs) from western flow. Frans and others (2011) state that where the aquifer intersects the land surface, groundwater from the Qva discharges to surface-water bodies. Therefore, it is very likely that some discharge from the Qva occurs in the western Derby Downs area, where the aquifer intersects the surface. This likely provides baseflow to the unnamed Murden Cove creek. Frans and others (2011) also note that the vertical flow gradient in the Qva is generally downward in the interior areas.

Water level elevations, based on mapping by Frans and others (2011), in the QA1 aquifer near Derby Downs are 25 to 125 feet msl with one exception, which we believe is an error. (They show one well with a Qva water level elevation of 177 feet msl. We have reviewed the well log for this well and other nearby wells. We believe this elevation is the result of either a water-level measurement error. Based on the elevation given for the well by the USGS, the static water level elevation at construction was only 86 feet msl – a value that fits much better with the other Qva wells in the area). Construction water level elevations for the two current Derby Downs wells were 26 and 22 feet msl. The radial pattern formed by the QA1 potentiometric surface, as shown by Frans and others (2011), indicates the aquifer largely discharges to salt water. The horizontal flow direction in the Derby Downs area is eastward toward Puget Sound. Vertical gradients are downward in the interior and upward near the coast.

Recharge to both aquifers is largely from the deep percolation of precipitation, and to a lesser extent from septic return flow (Frans and others, 2011). Where the Qva is present, as in the western Derby Downs area, downward leakage from the Qva recharges the QA1. Where it is absent, like in the eastern Derby Downs area, precipitation provides "direct" recharge (through the QC1) to the QA1.

While the Qva does provide recharge to the QA1, pumping from the QA1 will not induce additional leakage out of the Qva in the Derby Downs area. This is because the Qva is perched in this portion of the island. Ignoring the well with the erroneous water level discussed above, the well logs for the Derby Downs area show the Qva is perched. Derby Downs third well (15M1) is a good example. As described, the base of the Qva in the well is at a depth of 131 feet. The top of the QA1 is at a depth of 222 feet, and the well is completed with a well screen from 246 to 256 feet. The construction water level in the well was at a depth of 153.5 feet. This is below the base of the Qva, indicating a perched condition for the Qva. Well logs for other wells in the area that the USGS considers finished in the QA1 show similar relationships.

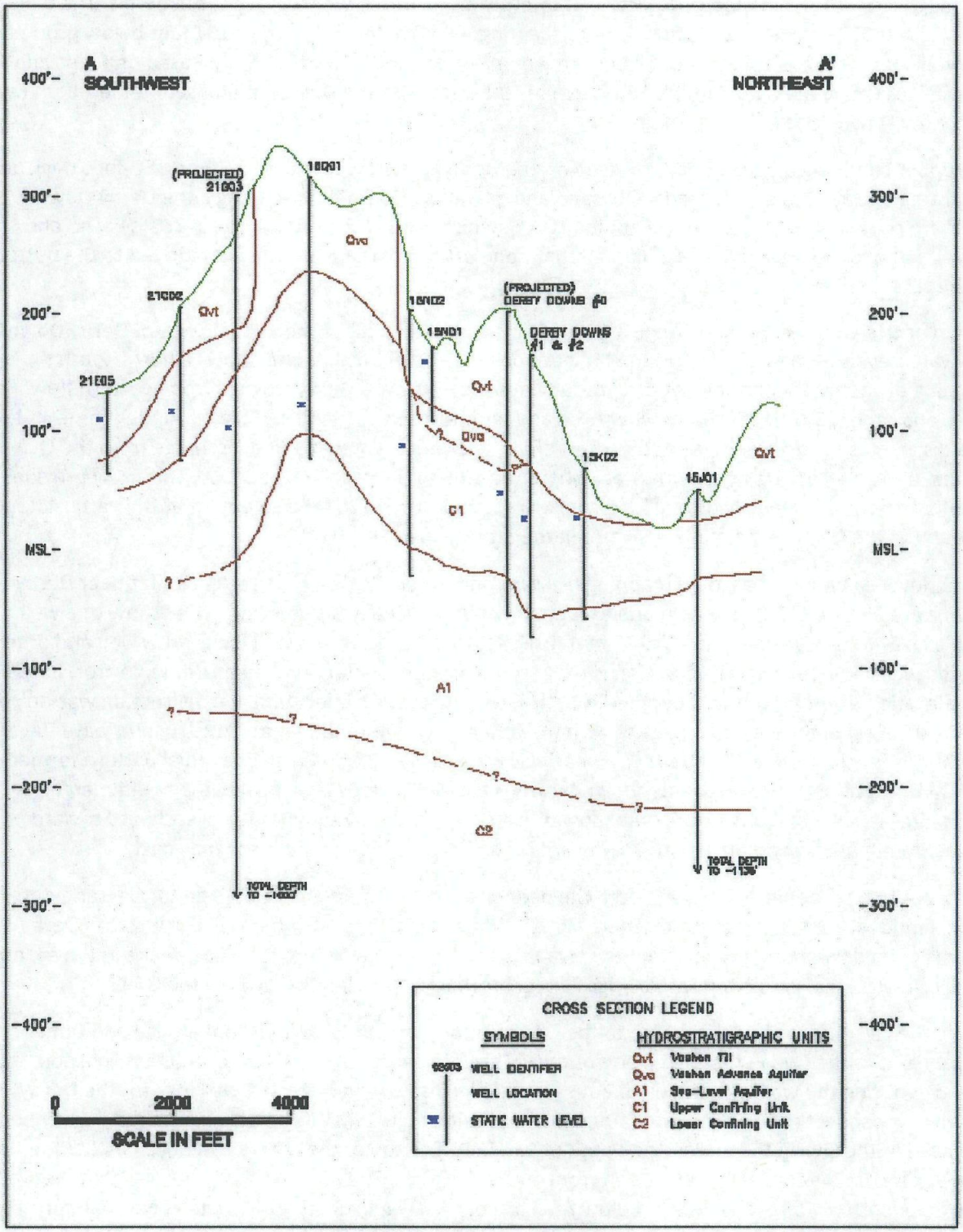


Figure 2: Hydrostratigraphic cross section

Using the well logs, we created a cross section through the area that shows the relationship (Figure 2). The cross section was made using well logs and hydrostratigraphic contacts provided by the USGS, to which the Derby Downs wells were added, with our interpretation for hydrostratigraphic contacts. Water levels presented are time of construction static levels.

With the water level elevation of the QA1 significantly below land surface, except near the coast, production from the QA1 will not induce leakage from local streams except potentially near their mouths. The unnamed Murden Cove creek, near Derby Downs, has an elevation of over 100 feet msl. As stated, the QA1 water level elevation at the Derby Downs wellfield is approximately 25 feet msl. Therefore, the majority of creek reaches are also perched relative to the sea-level aquifer. Only the reach of the creek near its mouth, where the creek elevation is below approximately 25 feet in elevation, is not perched relative to the QA1. Thus, this small section of creek is the only reach that has the possibility of being impacted (through induced leakage) from pumping of the Derby Downs wells.

Site Visits

An initial site visit was conducted on December 4, 2012, by Robinson Noble Principal Hydrogeologist Burt G. Clothier. We met with Todd Krause, P.E., of Northwest Water Systems the system operator for the water system. We visually inspected the wellheads for Wells 1 and 2, the pump house and attendant equipment, and briefly discussed the system's operation to confirm the details of the application. We also accomplished a cursory drive through of the neighborhood to better understand the physical setting and topographic relationships.

A second site visit was accomplished on September 27, 2013, by Robinson Noble Senior Hydrogeologist Jim Hay along with Derby Downs representatives J.D. Stahl and Dick Smith. This visit was to investigate the surface water drainages between the well site and the stormwater holding facility along NW Wardwell Road to look for mitigation opportunities. The outfall from an artificial pond neighboring the well location runs downhill to the east, crosses Triple Crown Dr., and enters the stormwater retention pond just west of Wardwell Road. The upper portion of this course runs between and along the margin of lawns. The immediate channel area is minimally maintained, although Mr. Stahl indicated numerous alders and small cedars had been removed for aesthetic reasons. Other water-tolerant vegetation (including planted cattails) are present growing in clayey, organic rich soils that appeared to overlie glacial till. We walked the full course of the channel, taking photos of sediments where we could expose them. Weathered till was intermittently evident throughout. Roughly halfway to Triple Crown Dr., the slope steepens and enters mature forest. With less vegetation and muck, the weathered glacial till is more apparent but the channel is less well defined (and may be a losing reach). Immediately southwest of Triple Crown Dr., water was seen emerging from the till (perhaps 2 to 4 gpm), running a few feet downhill to a culvert, and passing beneath the road. On the other side, the channel runs over to the retention pond, which appears to be an excavation in the till. It does not appear that stream flow is consistent and perennial in the swale running from pond all the way to the retention pond outfall, in part because there is some volume of dead storage in the pond below the level of the outfall.

Water leaving the retention pond via the outfall and manhole structure flows downhill along a short, constructed drainage to a culvert beneath Wardwell Road, beyond which it flows along the forest floor to the east. Wetland vegetation (western skunk cabbage) was observed as the channel flows eastwards

onto private property. We believe this water quickly merges with the saturated sediments or ponded water in the southwest corner of the larger wetland area. The wetland appears to be in direct continuity with, and tributary to, the northern fork of the un-named creek that flows into Murden Cove.

Proposed Use and Basis of Water Demand

The original application requested an instantaneous quantity of 150 gpm for community domestic supply to supply 22 lots and 26 residential connections. The requested instantaneous quantity, as modified by the advertisement, is now 73 gpm. According to the Phase I assessment for application G1-27465, completed by Northwest Water Systems, Inc., the intended use also includes stock watering since Derby Downs is an equestrian community. The engineer's design does not include a reservoir; therefore, the requested instantaneous quantity appears consistent with presumed water use for this size community with the additional need for stock watering.

The original application requested annual allocation is 10 acre-feet per year (ac-ft/yr), which was changed to 11.2 ac-ft/yr by the advertisement. Currently, the Derby Downs plat is served by two wells (Wells 1 and 2), each connected to a six-home Class B water system. The Phase 1 assessment (Northwest Water Systems, 2012) indicates meter records for these two wells are available since the summer of 2002 and that water usage over the time period has been relatively consistent. During the time period, Well 1 has had an average annual withdrawal of 5.58 ac-ft/yr while Well 2 averages 6.93 ac-ft/yr. Therefore, the historic annual withdrawal is approximately 12.51 ac-ft/yr. However, the final withdrawal available for appropriation is limited by the statutory cap of 5,000 gpd per well. Therefore, the annual quantity requested is 11.2 ac-ft/yr. Currently, one of the wells provides water to a Class B system that serves Lots 11, 12, 13, 14, 15 and 16, the other serves Lots 2, 3, 4, 7, 8 and 9. Lots 5 and 6 are currently served by a separate, 2-party well. Lot 10 is currently served by a single domestic well. Lot 1 is undeveloped.

The above water use data is for 12 lots and 12 residential connections, with each using approximately 0.835 ac-ft/yr (equivalent to an annual average of 745 gpd). This seems appropriate for the size of lots involved with the additional stock watering. The original application was for 22 lots and 26 residential connections. Based upon the current water data, it appears the requested annual allocation is not sufficient to support the proposed number of lots and connections at the historic use level established for the current two Class B systems. The application was modified by the advertisement, which asked for the water to serve the entire plat, which consists of 16 lots and common areas. Based on the historic use, 16 lots should require approximately 13.36 ac-ft/yr, which also is more than the requested allocation. However, the engineer for the applicant states that with conservation, the applicant can serve the full 16 lots and common areas with the requested allocation. With the requested allocation, when all 16 lots are connected to the water system, there will be 0.7 ac-ft/yr available to each lot. This is equivalent to an annual average rate of 625 gpd.

Other Rights Appurtenant to the Place of Use

Apparently there are no other listed water rights for the place of use. However, the Phase I report (Northwest Water Systems, 2012) indicates there are five wells currently on the Derby Downs plat. It states, in addition to the two Class B wells that are the subject of the proposed appropriation, there is a

single two-party well and two single-party wells. While we did locate five Water Well Reports for wells at the plat, one of the wells has been decommissioned. Additionally, Todd Krause with Northwest Water Systems informed us that currently, other than the Derby Downs wells, only two other wells are on the property .These two additional wells are exempt under RCW 99.44.050 and have established rights.

Lots 5 and 6 of the Derby Downs plat are currently served by a single well with the well tag AAB977 drilled in 1993. This well was originally listed as a point of withdrawal on the application, but was later removed as a point of withdrawal. Lot 10 is served by a well with the well tag of AEK704 drilled in 1999.

Robinson Noble reviewed the claims on record for Section 15 of Township 25 N Range 2 East. None were located on the Derby Downs plat.

Additional Consultations

Robinson Noble sent an email on April 17, 2013 to Mr. Steve Boessow of the Washington State Department of Fish and Wildlife (WDFW) to determine if WDFW had any issues or concerns regarding the proposed application. No response was received from WDFW as of November 15, 2013.

Impairment Considerations

Impairment is an adverse impact on the physical availability of water for a beneficial use that is entitled to protection. A water right application may not be approved if it would:

- Interrupt or interfere with the availability of water to an adequately constructed groundwater withdrawal facility of an existing right. An adequately constructed groundwater withdrawal facility is one that (a) is constructed in compliance with well construction requirements and (b) fully penetrates the saturated zone of an aquifer or withdraws water from a reasonable and feasible pumping lift.
- Interrupt or interfere with the availability of water at the authorized point of diversion of a surface water right. A surface water right conditioned with instream flows may be impaired if a proposed use or change would cause the flow of the stream to fall to or below the instream flow more frequently or for a longer duration than was previously the case.
- Interrupt or interfere with the flow of water allocated by rule, water rights, or court decree to instream flows.
- Degrade the water quality of the source to the point that the water is unsuitable for beneficial use by existing users (e.g., via sea water intrusion).

Because the two existing Class B systems currently produce water, no impairment will occur if the water right is approved for an amount that does not exceed the current withdrawal and usage rates from the two systems. In that case, both the amount of water produced and the points of withdrawal will remain the same as the current situation. Further, the historic use of the wells has not produced any evidence of sea water intrusion or any other loss of water quality. As long as the production does not exceed the historic level, the potential for it causing sea water intrusion is extremely low.

Increasing the annual withdrawal, beyond that currently produced, to the requested amount should not impair the availability of water to any nearby adequately constructed groundwater withdrawal facilities

of existing rates. There is no record of impairment to other water rights holders by the current withdrawals. Well records indicate the aquifer has an adequate supply to provide for this small additional withdrawal without impairment; this is supported by the results of well and aquifer testing at the Derby Downs wells.

However, increasing the annual withdrawal, beyond that currently produced, to the requested rate will cause a small amount of leakage out of the unnamed creek flowing into Murden Cove, which is closed to further consumptive appropriation (as detailed in the next section). Though the aquifer supplying the wells does not directly discharge to the creek, at the lowest reaches of the creek (approximately below elevation 25 feet), the aquifer does provide a minor amount of water to the creek through upward leakage through the overlying confining layer (QC1). This small amount of leakage would be incrementally decreased by increasing the annual withdrawal of the Derby Downs wells above the current rate.

Water Availability

For water to be available for appropriation, it must be both physically and legally available.

Physical availability

For water to be physically available for appropriation there must be ground or surface water present in quantities and quality and on a sufficiently frequent basis to provide a reasonably reliable source for the requested beneficial use or uses.

The historic use of the wells, as well as information available on the aquifer's properties and extent, provide ample evidence that water is physically available for appropriation. A well test was conducted on Well 2 in May 2013. Well 1 was used as an observation well. The results of this test indicate the two wells and aquifer are fully capable of producing the requested rates.

Legal availability

Legal availability refers to whether a surface water basin or sub-basin has been closed to further consumptive use through legislative action or administrative rule. The unnamed Murden Cove creek is closed year-round to further consumptive appropriation by the Instream Resources Protection Program rule, WAC 173-515 (listed in WAC 175-151-040 as stream #434 – unnamed stream and tributaries, tributary to Murden Cove).

The Derby Downs plat is within the sub-basin of this small creek. Though the hydrogeologic setting is such that the aquifer from which the Derby Downs wells produce is not directly hydraulically connected to the creek, production from the aquifer will cause small reduction in the amount of the groundwater contribution to the streamflow. Thus, new groundwater appropriations are legally prohibited from this basin without offsetting mitigation.

In this case, prior use of the wells as Class B systems has established a prior appropriation. While together, the two Class B systems historically produced 73 gpm and 11.2 ac-ft/yr, not all of these withdrawals are allowed by RCW 90.44.050 for certification of rights established by exemption. Well records indicate Well 1 has had an annual withdrawal of 4.96 ac-ft/yr and Well 2 a withdrawal of 5.06 ac-ft/yr. In the recent well test, Well 2 was pumped at 30 gpm. However, according to the Phase 1

report, Well 2 has a yield of 60 gpm. The Water Well Report for the well also reports a yield of 60 gpm. Therefore, using Well 2 as a source established by exemption through RCW 90.44.050, 60 gpm and 5.06 ac-ft/yr are treated as perfected and physically available. The remaining requested quantities (13 gpm and 6.14 ac-ft/yr) have not been perfected but are known to be physically available. The total quantities of 73 gpm and 11.2 ac-ft/yr need to be shown to be legally available by mitigation.

RCW 90.44.050 states that when an exempt well owner seeks to have their right recognized through issuance of a certificate, that such a certificate is obtained in the same manner and under the same requirements as required for groundwater appropriations in excess of 5,000 gallons per day. RCW 90.44.050 is used here to create a new right of 60 gpm and 5.06 af-yr. The remaining 13 gpm and 6.14 ac-ft/yr must be allocated under RCW 90.44.060. Two sections of the groundwater code are therefore used to create the full allocation of 73 gpm and 11.2 ac-ft/yr.

Legal water availability still needs to be addressed in light of the limitations imposed by the closure of the unnamed Murden Cove stream per WAC 173-515-040 and as moderated by the exemptions to the rule in WAC 173-515-050 and WAC 173-515-070, rather than as they might have existed when the right was vested.

The relevant section of the WRIA 15 Instream Flow Rule, WAC 173-515-040, states that the un-named stream flowing into Murden Cove is closed to further appropriation, but that this closure was not made due to a lack of water availability, but for the more general "preservation and protection of instream resources." The rule in WAC 173-515-050 states that groundwater appropriations will not be affected by the closure "unless it is determined that such withdrawal would clearly have an adverse impact upon the surface water system."

The standard of impact from WAC 173-515-050 is that withdrawals from wells associated with the proposed 73 gpm, 11.2 ac-ft/yr appropriation must have a clearly adverse impact on the stream that is regulated. These two wells have been in operation continuously since 1996 serving the needs of the Derby Downs community producing roughly the same quantities of water in each year, albeit at a slightly smaller annual quantity than requested. During that time there have been no reports of damage to stream function in either the upper reaches of the stream, where pumping impacts are not expected due to the perched nature of the hydraulic of the un-named stream, nor in the lower reaches of the stream where a small impact is expected based on the potential for pumping induced leakage.

To address the potential for an adverse impact to the flows of the unnamed stream, an analysis of the recent well testing was made. Northwest Water Systems conducted the pump test using Well 2 as the pumped well. Well 1was used as an observation well. An hour before the test, neither well was pumping, and both pumps were set to the off position to prevent them from turning on prior to the test. Water levels were measured in Well 2 with an electric-tape sounder, with occasional measurements by a sonic sounder (prior to the test, the two sounders showed a difference in water level of between 0.45 and 0.68 feet, with the sonic sounder giving deeper readings). Well 1 was measured with a sonic sounder. The wells are 15 feet apart.

The wells were monitored (with the pumps off) for 65 minutes prior to the start of the test. During this pre-test period, the water level in Well 2 rose 0.08 feet indicating a recovering water level from an

earlier pumping event. The water level in Well 1 was steady (within the accuracy of the sonic sounder – typically one to two inches). Prior to the test, the static water levels were at depths of 136.84 feet in Well 2 and 137.4 feet in Well 1 below their respective measuring points.

Well 2 was started at a rate of approximately 30 gpm. According to Northwest Water Systems, the average production rate during the test was 29.8 gpm. Well 2 was pumped for 120 minutes and turned off. During that time period, the water level in Well 2 drew down 3.78 feet. Well 1 had a drawdown of 2.2 feet.

Following pump shutdown, recovering water levels were monitored in both wells for 120 minutes. At the end of this time period, the water level in Well 2 as at 137.02, or 0.18 feet below the pre-test static water level. The water level in Well 1 was at 137.6 feet, 0.2 feet lower than the pre-test level.

We plotted the drawdown and recovery data and analyzed it to determine the aquifer transmissivity and storage coefficient. We used the Cooper and Jacob modified non-equilibrium equation for the analysis. Using the drawdown data, the pumping well indicated an aquifer transmissivity of 10,100 gpd/ft and the observation well data a transmissivity of 11,000 gpd/ft and a storage coefficient of 0.0015. Calculated drawdowns from the recovery data were somewhat higher (17,500 gpd/ft in the pumped well and 19,700 gpd/ft in the observation well).

To provide a conservative estimate (overestimation) of the potential impact of Derby Downs well production on the un-named Murden Cove stream, we used the aquifer parameter data to make a simple model. We assigned the model an aquifer transmissivity of 10,500 gpd/ft and a storage coefficient of 0.0015. A single well was used to represent the two Derby Downs wells. No recharge was applied to the model. Two scenarios were run, one with the well pumping at the requested Qi of 73 gpm for one day and the other with the requested Qa of 11.2 ac-ft/yr (equivalent to 7.0 gpm) for one year. For the one-day scenario, the model indicates the cone of depression reaches approximately 4,600 feet from the well. In the line of direction from the wells to the creek, it is unlikely the cone of depression extends much further, as the center of Murden Cove is approximately 6,000 feet distant from the wells.

Because the creek is perched relative to the QA1aquifer, the only reach potentially affected by the pumping of the Derby Downs wells is near the creek mouth where the streambed elevation is below approximately 20 to 25 feet. This reach starts approximately 2,000 feet east of the Derby Downs wells. The mouth of the creek is approximately 3,500 feet from the wells. Modeled drawdowns beneath the creek through this potentially impacted reach are shown below.

Modeled Drawdowns	One day pumping at 73 gpm	One year pumping at 7 gpm
Drawdown at pumping well	13.70 feet	1.31 feet
Drawdown at creek elevation 25 feet	0.16 feet	0.40 feet
Drawdown at creek elevation 0 feet	0.01 feet	0.31 feet

The one day radius of influence at 73 gpm is 4,600 feet, thus the cone of depression has an area of approximately 2.4 square miles. The impacted reach of the stream is approximately 2,000 feet long (approximately the distance from the mouth to a creek elevation of 25 feet). If the creek width is 50 feet, the area of potential impact is approximately 100,000 square feet, or 0.004 square miles. This represents 0.17 percent of the cone of depression area.

Assuming every spot within the cone of depression provides an equal amount of inflow to the well (a very poor assumption; areas near the well contribute a much higher proportion than those far away), one can a make a conservative upper estimate of the potential impact of water leaking out of the creek due to the pumping of the wells. Based on the above, at one day's pumping at 73 gpm, the upper estimate of leakage out of the creek is 0.12 gpm. At one year's pumping at 7 gpm, the upper estimate of leakage out of the creek is 0.01 gpm.

In reality, the actual leakage values will be much less. This can be stated with confidence because: 1) the method used assumes leakage is uniform throughout the cone of depression area; in actuality, it is much greater closer to the well; 2) the model ignores the effect of recharge, which will lessen drawdowns; 3) the affected stream reach is likely much thinner than the assumed 50 feet; and 4) the model ignores the effect of a nearby constant-head boundary (Puget Sound), which will limit the amount of drawdown.

While the estimated leakage values are small and may be difficult to measure in the field, Ecology's response to case law regarding stream flow impacts (*Postuma v. Pollution Control Hearings Board, et al.*) is that water is not considered legally available where surface water impacts are found and the watershed is closed, unless a suitable mitigation plan is offered by the applicant to offset the defined impacts.

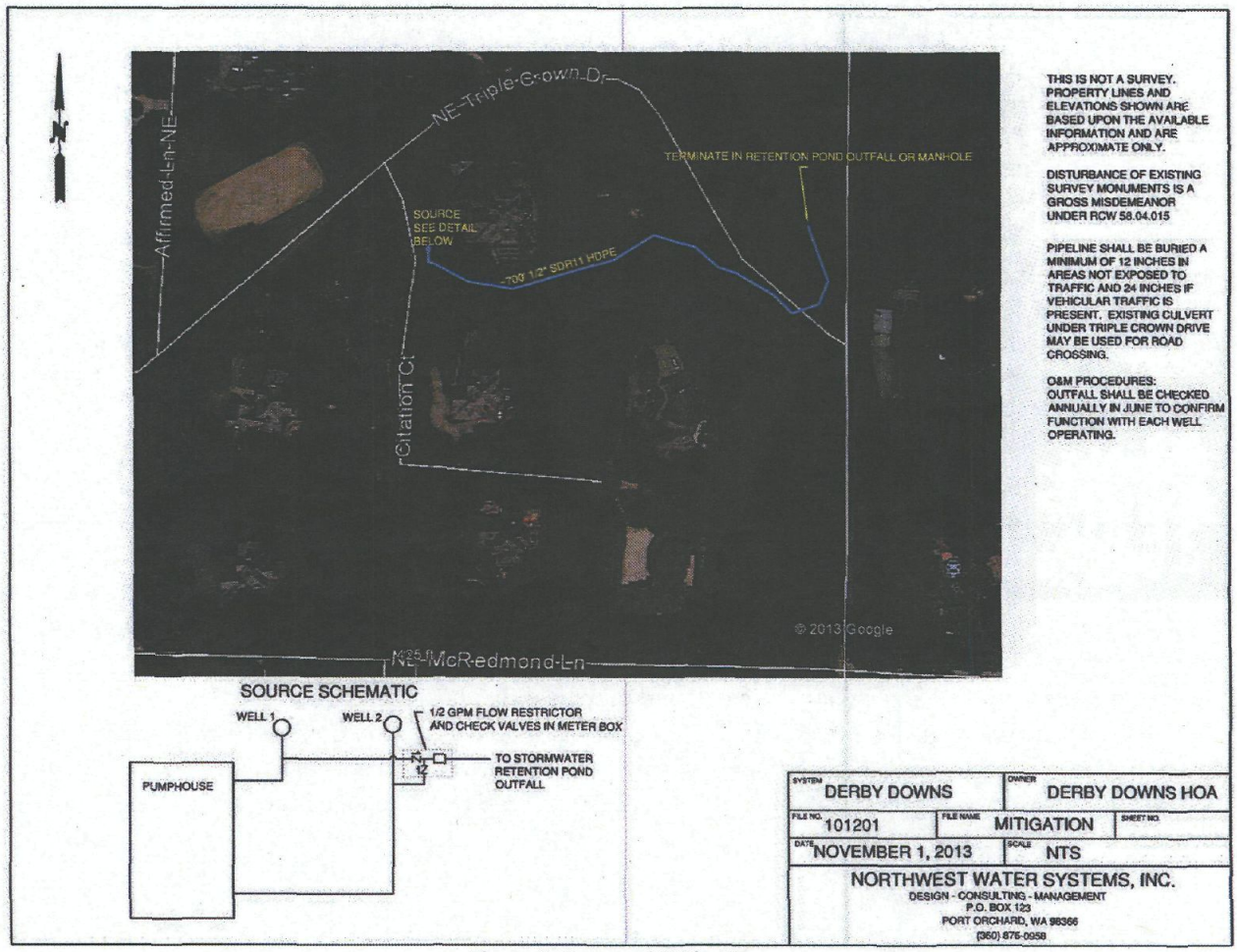


Figure 3: Proposed Mitigation

The applicant has proposed the following mitigation:

- The water system will install a dedicated distribution line from the wellheads to deliver water into the stormwater retention pond outfall located approximately 200 feet north of the intersection of Triple Crown Drive and NE Wardwell Road. The stormwater outfall drains to a wetland feature to the east which feeds the unnamed creek system.
- Mitigation pumping of ½ gpm will be per well.
- The distribution line shall be plumbed from each wellhead with a check valve isolating it from the rest of the system. Each well will be plumbed with an independent flow restrictor that will deliver ½ gpm to the mitigation distribution line whenever that well is pumping.
- The distribution line will be free of valves or obstructions so that mitigation water is delivered to the stormwater outfall anytime one or both wells are pumping. It will be inspected annually for proper performance.

With this mitigation in place, replacement water amounting to at least 8 times the estimated leakage impact will be delivered to the wetland area feeding the unnamed stream upstream of the modeled impact location. This will overcome the impacts defined above and therefore water is legally available.

Beneficial Use

The proposed use of water is defined in statute as a beneficial use (RCW 90.54.020(1)).

Public Interest Considerations

RCW 90.03.290 requires that a proposed appropriation not be detrimental to the public interest.

RCW 90.54 (Water Resources Act of 1971) provides the most comprehensive list of legislative policies that guide the consolidation of public interest in the allocation of water. These policies generally require a balancing of the state's natural resources and values with the state's economic well-being. Specifically, the policies require allocation of water in a manner that preserves instream resources, protects the quality of water, provides adequate and safe supplies of water to serve public need, and makes water available to support the economic well-being of the state and its citizens. Therefore, this proposed appropriation is not detrimental to the public interest.

Consideration of Protests and Comments

No protests were filed against this application.

Conclusions

Based on the above analysis and a review of the relevant sections of the groundwater code found in RCW 90.44.050 and RCW 90.44.060 the author reaches the following conclusions :

- The water is physically and legally available for appropriation subject to compliance with the defined mitigation plan;
- The water will serve a beneficial use, is not detrimental to the public interest, and will not cause impairment of existing rights;
- The well production will not negatively impact surface water flows; and
- There is no potential for saltwater intrusion.

RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that this request for a water right be approved in the amounts and within the limitations listed below and subject to the provisions listed above

Purpose of Use and Authorized Quantities

The amount of water recommended is a maximum limit and the water user may only use that amount of water within the specified limit that is reasonable and beneficial:

73 gpm
11.2 acre-feet per year
Community Domestic Supply

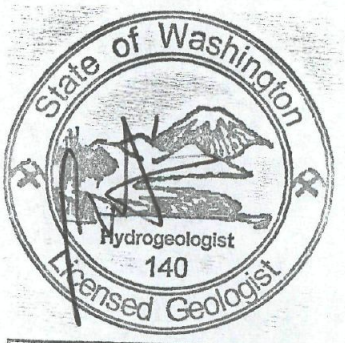
Point of Withdrawal

NE¼, SW¼, Section 15, Township 25 North, Range 02 E.W.M.

Place of Use

Lots 1 through 16, inclusive, and Tracts A through G (Common Areas) and NE Triple Crown Drive, Citation Court and Affirmed Lane, all as shown on the Plat of Derby Downs PUD.

Required Mitigation
One-half of one gpm will be supplied to the stormwater retention pond outfall immediately above NE Wardwell Road whenever either of the wells is in use, in the manner described above.



BURT G. CLOTHIER

Report By: _____ Date: 1-16-14

Burt G. Clothier L.HG. – Robinson Noble

State of Washington
Hydrogeologist
952
Licensed Geologist

DOUGLAS H. WOOD

Reviewed By: Douglas H. Wood Date: Jan 22, 2014
Douglas H. Wood L.HG. – Department of Ecology

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Selected References

Frans, L.M., Bachmann, M.P., Sumioka, S.S. and Olsen, T.D., 2011, *Conceptual Model and Numerical Simulation of the Groundwater-Flow System of Bainbridge Island, Washington*: U.S. Geological Survey Scientific Investigations Report 2011-5021, 96 p., 1 plate

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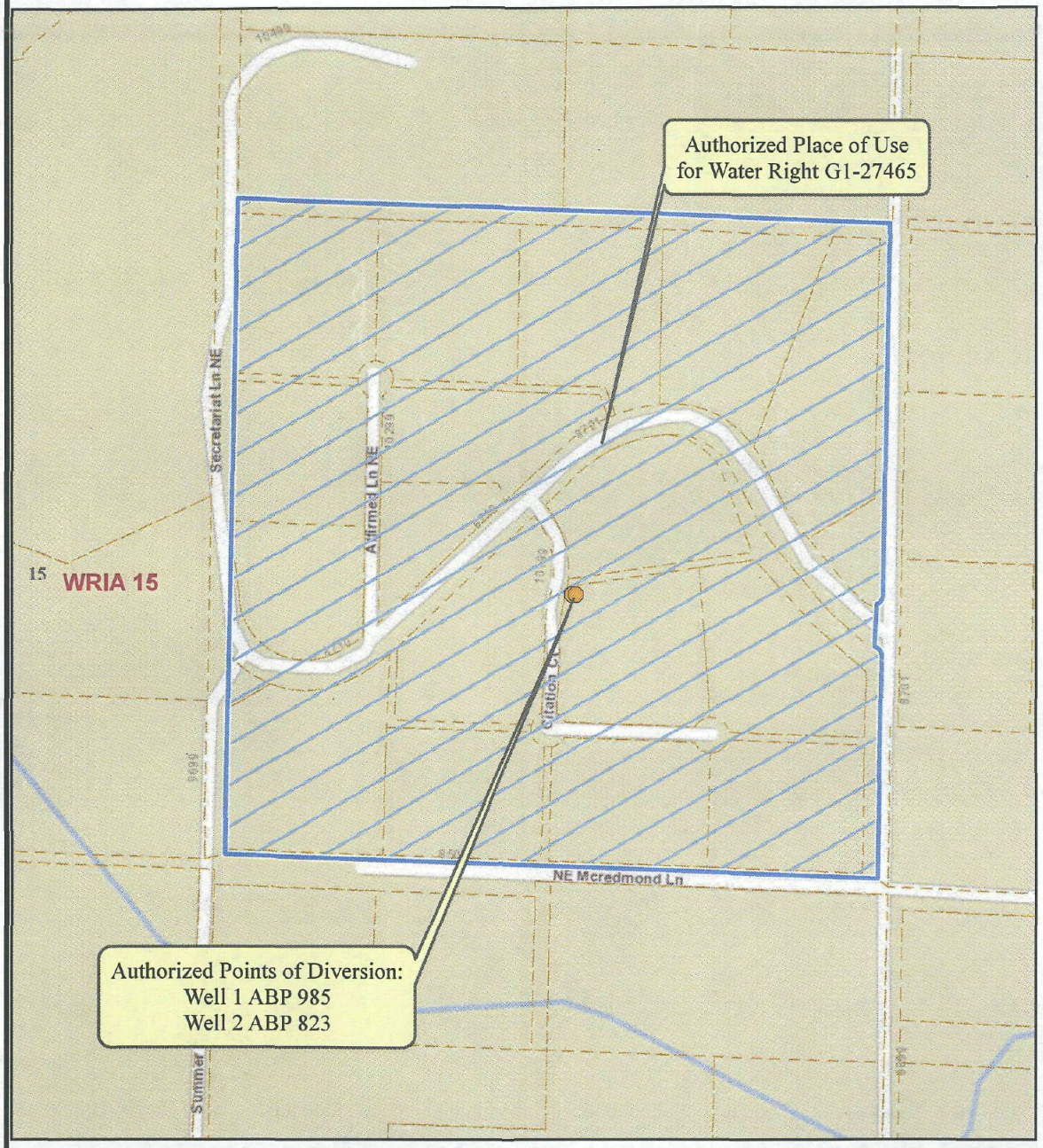
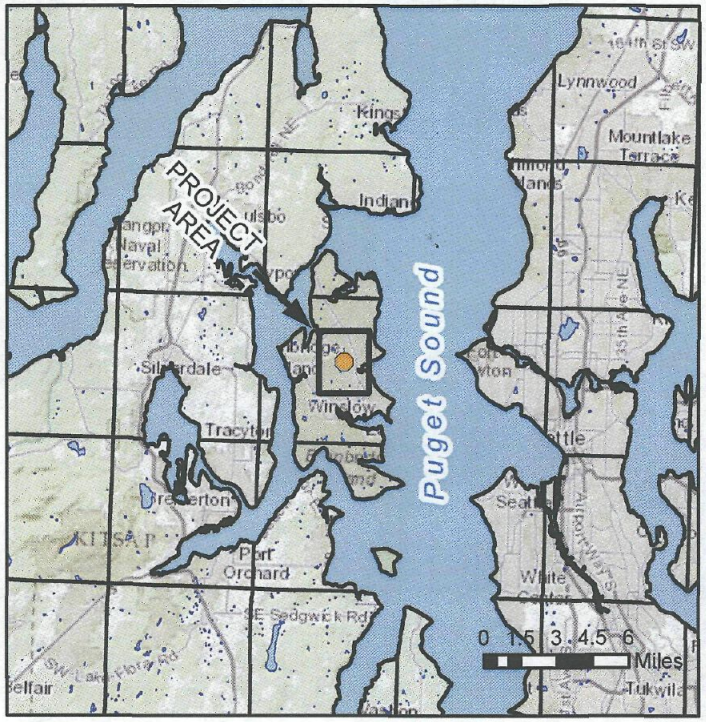
Northwest Water Systems, Inc., revised 2012, *Phase I Assessment for the Derby Downs Community Water Right Application G1-27465*: prepared for the Derby Downs HOA by Todd Krause, P.E., Northwest Water Systems, Inc., 10 p.

Northwest Water Systems, Inc. Letter to Mr. Doug Wood, Department of Ecology, *Derby Downs Water Right Application G-127465 Proposed Mitigation*, dated June 12, 2013.

Northwest Water Systems, Inc. Letter to Mr. Doug Wood, Department of Ecology, *Derby Downs Water Right Application G-127465 Proposed Mitigation Amendment*, dated November 1, 2013.

Derby Downs & Juanita Bay Inc
Water Right G1-27465
Section 15 T25N R02E W.M.
WRIA 15 - Kitsap County





Legend

- Authorized Place of Use
- Authorized Point of Withdrawal
- County Boundary
- Water Body
- Parcels
- Townships
- Sections

0 100 200 400 600 800 1,000 Feet

DEPARTMENT OF ECOLOGY State of Washington

Map Date: 11/18/2013

Place of use and point(s) of diversion/withdrawal are as defined on the cover sheet under the headings, LOCATION OF DIVERSION/WITHDRAWAL'and 'LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED.'

ATTACHMENT 1