



STATE OF WASHINGTON
FINAL
REPORT OF EXAMINATION
FOR WATER RIGHT APPLICATION

WR Doc ID 6802694

PRIORITY DATE	WATER RIGHT APPLICATION NUMBER
January 24, 2020	G2-30759

NAME AND MAILING ADDRESS	SITE ADDRESS (IF DIFFERENT)
YMCA of Greater Seattle 909 4 th Ave Seattle, WA 98104	

Total Rate and Quantity Authorized for Withdrawal

WITHDRAWAL RATE (gpm)	ANNUAL QUANTITY (ac-ft/yr)
100	17.75

gpm = Gallons per Minute; ac-ft/yr = Acre-feet per Year

Purpose(s)

PURPOSE	WITHDRAWAL RATE (gpm)		ANNUAL QUANTITY (ac-ft/yr)		PERIOD OF USE
	ADDITIVE	NON-ADDITIVE	ADDITIVE	NON-ADDITIVE	
Domestic Supply	100		16		1/1 – 12/31
Irrigation		100	1.75		5/15 – 9/15

IRRIGATED ACRES		PUBLIC WATER SYSTEM INFORMATION	
ADDITIVE	NON-ADDITIVE	WATER SYSTEM NAME and ID	CONNECTIONS
1		TBD	TBD

SPECIAL REMARKS:

Because of the capital costs and complex funding strategies for a camp of this scale, Camp Mineral Lake will be phased over a period of up to 20 years. The proposed buildout schedule is presented in Table 2.

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Lewis	Groundwater	N/A	11

SOURCE NAME	PARCEL	WELL TAG	TOWNSHIP	RANGE	SECTION	QQ Q	LATITUDE	LONGITUDE
Well 1	038931011002	BBN 866	14 N	05 E	04	NW NE	46.731884	-122.178019
Well 2	038931011002	TBD	14 N	05 E	04	NW NE	TBD	TBD
Well 3	TBD	TBD	14 N	05 E	05	S ½ NW	TBD	TBD

QQ Q = Quarter Quarter

Datum: NAD83/WGS84

Place of Use

LEGAL DESCRIPTION OF THE AUTHORIZED PLACE OF USE

LOTS 1 THROUGH 33, INCLUSIVE OF TRACTS A, B and C of SEGREGATION SURVEY, RECORDED JUNE 7, 2012, UNDER AUDITOR'S FILE No. 3379875, IN VOLUME 28 OF SURVEYS, PAGE 219, AS AMENDED BY SURVEY RECORDED JUNE 22, 2012 UNDER AUDITOR'S FILE NO. 3380676 IN VOLUME 28 OF SURVEYS, PAGE 224, RECORDS OF LEWIS COUNTY, WASHINGTON, BEING LOCATED WITHIN SECTIONS 2, 3, 4 AND 10, TOWNSHIP 14 NORTH, RANGE 5 EAST, W.M., AND SECTIONS 26, 27, 28, 33, 34 and 35, TOWNSHIP 15 NORTH, RANGE 5 EAST, W.M., LEWIS COUNTY, WASHINGTON.

Proposed Works

Well 1 (BBN-866) is 249 feet deep and is completed in a fractured bedrock aquifer. A 6-inch-diameter steel casing extends from the surface to 54 feet below ground surface (bgs). A 4-inch-diameter PVC liner was installed from 29 to 249 feet bgs with perforations between 239 and 249 feet bgs.

Development Schedule

BEGIN PROJECT BY THIS DATE	COMPLETE PROJECT BY THIS DATE	PUT WATER TO FULL USE BY THIS DATE
Started	September 1, 2032	September 1, 2042

Attention: These dates represent deadlines that must be met or risk cancellation of this authorization. Submittal of formal documentation for each stage is required. Extensions may be requested.

Measurement of Water

HOW OFTEN MUST WATER USE BE MEASURED AND RECORDED?	Monthly
HOW OFTEN MUST WATER USE DATA BE REPORTED TO ECOLOGY?	Annually by January 31
WHAT QUANTITY SHOULD BE REPORTED?	Total annual quantity in acre-feet
WHAT RATE SHOULD BE REPORTED?	Annual peak rate of withdrawal in gpm

Provisions

Progress Reports

The permittee is required to provide Ecology progress reports every five (5) years beginning November 1, 2022. Progress reports will consist of describing efforts made on project in the previous five (5) year period and if the project is progressing on schedule. Any changes in point of contact must also be updated.

Measurements, Monitoring, Metering, and Reporting

An approved measuring device must 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", chapter 173-173 WAC, which 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 (Ecology) for modifications to some of the requirements.

Water allocations for domestic supply and irrigation will need to be metered separately.

Recorded water use data shall be submitted electronically by January 31 each year. To set up an Internet reporting account, contact the Southwest Regional Office. If you do not have Internet access, you can still submit hard copies by contacting the Southwest Regional Office for forms to submit your water use data.

Proof of Appropriation

Consistent with the development schedule given in this report (unless extended by Ecology), the water right holder must file a Notice of Proof of Appropriation (PA) of Water with Ecology. The PA documents the project is complete and all the water needed has been put to full beneficial use (perfected). In order to verify the extent of water use under this permit, an inspection of water use is typically required, known as a “proof exam”.

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 Fact and Order

Upon reviewing the investigator’s report, I find all facts, relevant and material to the subject application, have been thoroughly investigated.

Therefore, I ORDER **APPROVAL** of Application No. G2-30759, 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 to 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
<p>Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503</p>	<p>Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608</p>

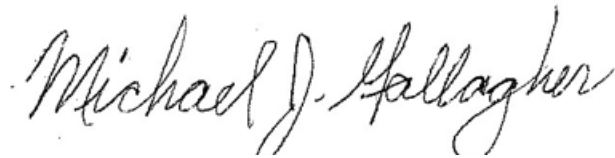
Pollution Control Hearings Board
1111 Israel RD SW, Ste 301
Tumwater, WA 98501

Pollution Control Hearings Board
PO Box 40903
Olympia, WA 98504-0903

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>.

Authorizing Signature

Signed at Olympia, Washington, this 8th day of November, 2021.



Michael J. Gallagher, Section Manager
Water Resources Program/Southwest Regional Office
Department of Ecology

INVESTIGATOR'S REPORT

Water Right Application No.: G2-30759 (YMCA of Greater Seattle)

Investigator: Jill Van Hulle, Aspect Consulting, CWRE

Reviewed by: Tammy Hall, Department of Ecology, LH.G.

BACKGROUND

This report serves as the written findings of fact concerning Water Right Application Number G2-30759. This application was filed by the YMCA of Seattle for the water supply needs of a new camp located at Mineral Lake in Lewis County, Washington. A site map of the camp and proposed point of withdrawal are shown on Figure 1.

Table 1. Summary of Requested Water Right

Applicant Name	YMCA of Greater Seattle
Priority Date	January 24, 2020
County	Lewis
WRIA	11
Water Source	3 Wells
Place of Use	LOTS 1 THROUGH 33, INCLUSIVE OF TRACTS A, B and C of SEGREGATION SURVEY, RECORDED JUNE 7, 2012, UNDER AUDITOR'S FILE No. 3379875, IN VOLUME 28 OF SURVEYS, PAGE 219, AS AMENDED BY SURVEY RECORDED JUNE 22, 2012 UNDER AUDITOR'S FILE NO. 3380676 IN VOLUME 28 OF SURVEYS, PAGE 224, RECORDS OF LEWIS COUNTY, WASHINGTON, BEING LOCATED WITHIN SECTIONS 2, 3, 4 AND 10, TOWNSHIP 14 NORTH, RANGE 5 EAST, W.M., AND SECTIONS 26, 27, 28, 33, 34 and 35, TOWNSHIP 15 NORTH, RANGE 5 EAST, W.M., LEWIS COUNTY, WASHINGTON.

Purpose	Instantaneous Rate (gpm)	Annual Quantity (ac-ft/yr)	Begin Season	End Season
Domestic Multiple	100	16	Continuous	
Irrigation of 1 acre	100 (non-additive)	1.75	04/01	10/31

Source Name	Parcel	Well Tag	Township	Range	Section	QQ Q	Latitude	Longitude
Well No. 1	038931011002	BBN 866	14 N	05 E	04	NW NE	46.731884	-122.178019
Well No. 2	TBD	TBD	14 N	05 E	03	S ½ NW	TBD	TBD

WRIA = Water Resource Inventory Area; gpm = Gallons per Minute; ac-ft/yr = Acre-feet per Year; QQ Q = Quarter Quarter

Datum: NAD83/WGS84

Cost Reimbursement

This application is being processed under a cost reimbursement agreement between the applicant and the Department of Ecology. This report has been prepared by Aspect Consulting, LLC (Aspect) and reviewed by Tammy Hall with the Department of Ecology's Water Resources Program.

INVESTIGATION

The applicant, Greater Seattle YMCA, proposes to develop and operate a year-round youth and family camp on the property. The camp will be part of the Greater Seattle YMCA's regional youth and family

camp system. Camp Mineral Lake will allow the YMCA to expand the region and population that it can serve. The YMCA regional youth and family camps serve individuals and families from all backgrounds and walks of life living in Western Washington.

In consideration of this application, Aspect Consulting reviewed available documents and public information pertaining to the applicant's site conditions, and the potential effect on existing water right holders and proposed minimum instream flows. This included review of the information submitted by the applicant and pertinent Ecology records including well logs, water rights records, and well construction and design documents. Aspect also conducted a site visit in February 2020 and pumping test of Well No. 1 in March 2020.

Proposed Use and Basis of Water Demand

The YMCA of Seattle plans to develop a new camp facility on properties adjacent to Mineral Lake. The property is currently owned by the Forecastle Timber Company and under contract to the YMCA to purchase and protect. The YMCA proposes to develop several hundred acres of pristine forestland into an educational facility.

Mineral Lake is located near the Mount Rainier National Park in Lewis County, just south of the Pierce County border. The site is forested, quite steep in areas, and surrounds the lake on three sides. The YMCA's plans for development of the Project are in the preliminary stages, but water is vital, and we anticipate the following key parameters:

- Approximately 100 buildings, including cabins, 3 single-family dwellings, a lodge, classroom buildings, maintenance shed, etc.
- Capacity to serve up to 20,000 campers a year.
- Limited irrigation for small play and assembly areas – if needed.
- Estimated “peak” water usage of 49,500 gallons per day.
- Approximate 20-year timeline for development of camp.

Site Description

The subject property is located in north-central Lewis County, generally to the northeast of the town of Mineral and to the east of Mineral Hill Road. The property is comprised of several parcels and encompasses approximately 2,118 acres. The property extends around the northeastern half of Mineral Lake and has approximately 9,500 feet of lake frontage. The northern portion of the property extends along the Nisqually River and has approximately 5,100 feet of river frontage. A portion of the Nisqually River flows through the northern part of the property. The eastern portion of the property extends along Mineral Creek and has approximately 2,500 feet of creek frontage. A portion of the Nisqually River flows through the northern part of the property.

In addition to these waterbodies, the subject property is characterized by a steep ridge that runs generally east-west through the northern half of the property. The ridge rises from an elevation of approximately 1,770 feet along Mineral Lake to approximately 2,600 feet at the top of the ridge. Steep slopes are associated with the ridge and other geologic formations on the property.

Several non-fish bearing streams flow from the top of the ridge through a series of drainages. These streams flow variously into Mineral Lake, the Nisqually River, Mineral Creek and East Creek. As several of the streams flow into Mineral Lake and the Nisqually River on the property, they become fish bearing.

Mineral Lake is situated within the drainage of the Nisqually River, WRIA 11. Inflow to the lake is via an unnamed tributary that enters the lake on the north end and is believed to be perennial. Outflow from the lake occurs via an unnamed channel which is regulated by flashboards (*Data on Selected Lakes in Washington, Part 3*). Water drains to the south entering Roundtop Creek which makes a steep turn to the north to join Mineral Creek. Mineral Creek is a tributary to the Nisqually River.

Based on our preliminary review, Mineral Creek and other tributaries to the Nisqually are not closed to new appropriations under WAC 173-511, however the basin is subject to instream flows and accordingly we understand that tributary water is part of the watershed. Mineral Creek enters the main stem of the Nisqually River several miles downstream of the USGS gauge at National, which is only gauge on the Nisqually River above Alder Lake. Minimum Instream Flows for the Upper Nisqually River are set by WAC at the National Gauge and range between 300 to 650 cfs. In comparison the mean flow of the river at the National gauge fluctuates between 429 cfs to 1,050 cfs, we further note that Nisqually River flows during the camp’s primary period of operation (May to September) is generally well above minimum instream flows.

Water System Description

An existing well (Well 1) will be used for water supply in the early development of the camp. The well is in the NW ¼ NE ¼ Section 4, Township 14 N., Range 5 E.W.M (Ecology ID BBN-866; see Figure 1). Based on review of the Ecology well log, the well is 249 feet deep and interpreted to be completed in a fractured bedrock aquifer. A 6-inch-diameter steel casing extends from the surface to 54 feet below ground surface (bgs). A 4-inch-diameter PVC liner was installed from 29 to 249 feet bgs with perforations between 239 and 249 feet bgs. The static water level was reported at 26 ft bgs at the time of completion in June 2010.

Proposed Use

The applicant intends to develop a water system that can supply the YMCA’s domestic needs.

A Group A community water system will be developed for the camp. Based upon existing water use at other regional camps, daily usage could be up to 49,500 gallons per day on a peak day. Significant efforts will be made through design and construction of the camp buildings and facilities to reduce water usage well below that level. Fire sprinklers will be required in some of the buildings based upon assembly and transient congregate living facility occupancies, and a water storage tank will be constructed to provide sufficient fire flows and durations.

Because of the capital costs and complex funding strategies for a camp of this scale, Camp Mineral Lake will be phased over a period of up to 20 years. The buildings and physical improvements for Camp Mineral Lake will be clustered in the flat areas to the south of the ridge and to the north and northeast of Mineral Lake.

The plan is to develop the camp in three phases, the latter two of which will be constructed in increments or sub-phases. The phasing plan is summarized in Table 2 below:

Table 2. Summary of Phased Camp Expansion

Phase	Years	Camp Program Description	Participants Annually	Design and Development Actions
1	2021-2021	• Primitive camping	128 campers	• Develop Master Plan

		<ul style="list-style-type: none"> • “Building camp” with youth building primitive structures 		<ul style="list-style-type: none"> • Obtain land use approval and permits • Construct site improvements to support primitive camping
2	2022-2027	<ul style="list-style-type: none"> • Primitive camping • “Building camp” with youth building primitive structures 	2023: 723, increasing to 2,002 campers by 2028	<ul style="list-style-type: none"> • Refine Master Plan • Program development • Phased construction of infrastructure for permanent camp facilities • Phased construction of recreational facilities, including dock, trails, rope course, and fields
3	2027-2040	<ul style="list-style-type: none"> • Expansion of camp programs to full capacity as permanent facilities are developed 	14,000 campers	<ul style="list-style-type: none"> • Phased construction of lodges, cabins, activity buildings, staff housing and utility buildings

Water use will primarily be for domestic purposes with limited seasonal irrigation occurring on 1 acre. At full buildout, the camp will include:

- A dining lodge capable of serving up to 500 people. The lodge will include a kitchen, food preparation and storage area, toilets, and laundry facilities.
- Group handwashing stations
- Staff housing consisting of 12-15 two person bunkrooms, communal kitchen/living area and shared bathrooms
- A waterfront area with toilets, showers, and office space
- A range of camper housing options (including small individual cabins, tent areas, and traditional camp-style bunkhouses)

Projected water use for the camp assumes a peak visitor capacity of 1,100 campers and staff each year, divided roughly between the needs of the youth and family camps:

- Youth Camp will support up to 500 heads at peak season – 400 campers + 100 staff.
- Family Camp will support up to 600 heads at peak season – 525 campers + 75 staff.

Anticipated monthly visitor and water use projections are summarized in Table 3 below for a full buildout scenario. Water use calculations assume 45 gallons per day (gpd) per person.

Table 3. Monthly Visitor and Water Use Projections

Month	Family Camp		Youth Camp		Total		
	People/Day	Water Use (GPD)	People/Day	Water Use (GPD)	People/Day	Water Use (GPD)	Water Use Gal/Month ¹
January	Closed	-	Closed	-	Closed	-	
February	Closed	-	Closed	-	Closed	-	
March	30	1350	Closed	-	30	1350	16200
April	30	1350	Closed	-	30	1350	16200
May	300	13500	250	11250	550	24750	297000
June	600	27000	500	22500	1100	49500	1485000
July	600	27000	500	22500	1100	49500	1534500

August	600	27000	500	22500	1100	49500	1534500
September	300	13500	250	11250	550	24750	297000
October	30	1350	Closed	-	30	1350	16200
November	30	1350	Closed	-	30	1350	16200
December	Closed	-	Closed	-	Closed	-	-
Total (ac-ft/year)							16

¹This calculation assumes that the camp is occupied 12 days per month during non-peak months (i.e. March, April, May, September, October, and November)

In addition to the 16 ac-ft needed for domestic supply, the YMCA is also requesting 1.75 ac-ft/year for seasonal irrigation of one acre of lawn. This request is intended to be very minimal and limited to setting up sprinklers in areas that get a lot of foot traffic or spaced that are used as assembly area. In total, 17.75 ac-ft/year will be needed to support camp operations at full buildout.

The applicant is advised that the final certificate may be reduced based on actual water use patterns.

Hydrologic Setting

Mineral Lake is located within the heavily forested foothills of Water Resources Inventory Area (WRIA) 11, approximately 20 miles southwest of Mount Rainier. The lake is positioned upstream of Alder Dam on the Nisqually River, which was completed in 1945 to impound flows for recreation and hydroelectric production. Development is generally sparse with small settlements are located at Mineral and at Paradise Estates, with a large number of the homes used for seasonal or vacation purposes.

The Nisqually Watershed has two primary broad geological structures and, as a result, two types of streams. The first, located in the Ohop, Mashel and Upper Nisqually sub-basins in the upper part of WRIA 11, consists of hills, low mountains and Mount Rainier underlain primarily by bedrock. Moisture-rich masses from the Pacific Ocean and orographic effects result in heavy precipitation on the western side of Mount Rainier. In most years even the lower elevations of these uplands receive snow, with significant snow accumulations in upper elevations. Annual precipitation ranges from 3-8 feet, with snowfall ranging from approximately 5-30 feet, depending on elevation (National Oceanic and Atmospheric Administration, 2011). Maximum snow depths are generally reached by early March (Czuba et al., 2012). Conversely, summer months are characterized by warm, dry weather.

Tributaries to the upper Nisqually are primarily high elevation, snow melt dominated streams. The river itself originates from the Nisqually Glacier on the southern side of Mount Rainier. Surface water is primarily sourced by snow melt and groundwater from fractured volcanic and quaternary unconsolidated sediment aquifers that fill the lowlands between volcanic ridges. Streams in the upper watershed can flow with high volume and velocity, especially following rain on snow events.

The United State Geological Survey (USGS) maintains several flow gauges along the Nisqually River and one on Mineral Creek, an outflow tributary from Mineral Lake to the Nisqually River. Flows on Mineral Creek are flashy and rise dramatically following winter and spring snow and rain events but are generally highest in the spring following snowmelt and lowest during summer baseflow.

The second broad geological area is west of the Eatonville/Route 161 line and includes almost all of the Thurston County portion of the watershed and parts of Pierce County. This is the area of the county that was impacted by the Continental glaciers, commencing over 100,000 years ago until the most recent Vashon Stage of the Fraser Glaciation began approximately 15,000 years ago. As the glaciers advanced

and then retreated, many times over thousands of years, they left geological layers of alternating outwash sand and gravel, and layers of thick glacial till and other low-hydraulic conductivity. The sand and gravel layers contain water and these layers are generally referred to as aquifers. The glacial till layers wholly or partially confine portions of the aquifers. However, there is typically some degree of hydraulic connection (continuity) between the aquifers. These deposits differ dramatically in composition and thickness in each of the sub-basins, resulting in some areas with prolific supplies of groundwater while others have minimal supply.

Hydrogeologic Evaluation

The geology and streamflows of various Nisqually sub-basins have been described in detail in the 2003 Watershed Plan and numerous other studies (Golder, 2003; Pringle, 2008). Aspect reviewed available studies, well logs, cross-sections, geologic maps, and geologic reports of Lewis County to develop a conceptual hydrogeologic model. An existing well on the YMCA property was also tested by Aspect in March 2020 to further evaluate aquifer characteristics and limitations.

Geologic Setting and Units

The geology of the Upper Nisqually sub-basin is volcanic in origin, containing the remnants of ancient volcanoes. Volcanic ridges composed of tertiary andesite and basalt flows surround the lake, while quaternary glacial deposits fill the lowland between ridges. The YMCA's camp is located within Lewis County's portion of the Upper Nisqually sub-basin and is primarily characterized by forestry land uses.

Within the study area, two principal aquifer systems were identified and are described further below.

Bedrock (Mva)

Bedrock of the Upper-Nisqually is dominated by Miocene aged volcanics, primarily composed of andesitic and basaltic flows, intermixed with flow breccias. Bedrock is exposed at ground surface on ridges surrounding the lake. The depth to bedrock at the YMCA's proposed well, located generally on the northwest corner of the lake, is estimated to be approximately 35 feet below ground surface, overlain by glacial sediments.

Bedrock is typically described in well logs as "crumbly" or "fractured" likely due to its age and extensive tectonic deformation. Wells completed in bedrock where not exposed at the surface typically demonstrate static water levels above the top of the aquifer, indicating locally confined conditions.

Quaternary Glacial Deposits (Qap)

Quaternary glacial sediment deposits fill the lowlands surrounding the lake and ridges. These deposits typically consist of till (a low permeability unit consisting of sands and gravels suspended in a silty matrix) and outwash sands and gravels. The YMCA well penetrates approximately 35 feet of unconsolidated deposits before reaching bedrock.

Many domestic wells on the western flank of the lake, closer to the town of Mineral, are completed in these shallow deposits.

Groundwater Flow Direction and Recharge

Bedrock and unconsolidated sediment aquifers are both recharged by percolation of precipitation and snowmelt. Near the lake, groundwater flows radially inward toward the lake where it discharges. Ridges

surrounding the lake likely act as groundwater divides, directing groundwater flow to discharge directly to the Nisqually or one of its tributaries.

ANALYSIS

Under Washington State law (RCW 90.03.290), each of the following four criteria must be met for an application for a new water right permit to be approved:

- Water must be available for appropriation.
- Water withdrawal and use must not cause impairment of existing water rights.
- The proposed water use must be beneficial.
- Water use must not be detrimental to the public interest (public welfare).

Water Availability

For any new appropriation, water must be both physically and legally available.

Physical Availability

For water to be physically available for appropriation, water must be present in quantities and quality and on a sufficiently frequent basis to provide a reasonably reliable source for the requested beneficial use or uses. An analysis of physical availability is required for both surface water and groundwater applications.

The existing YMCA well was tested in March 2020 by an Aspect hydrogeologist to estimate aquifer parameters and assess well efficiency. Analysis of testing data was used to determine physical availability of water for beneficial use. The Cooper-Jacob method (1946) was used to analyze drawdown data from the final step of the pumping test. Aquifer transmissivity was estimated to be about 310 square feet per day (ft²/d), which is consistent with the lithology described in the well log.

Estimated water levels during long-term continuous pumping at the test well were predicted by incorporating estimated aquifer parameters into a Theis analysis (Krusemann and de Ridder, 2001). The predicted drawdown for the test well assumes that the well screen remains fully saturated and that pump assemblies are not installed within the screened interval in a manner that restricts flow. The drawdown from pumping at 40 gpm is predicted to be approximately 79 feet which places the pumping level around 100 feet bgs. This leaves approximately 100 feet of head above the assumed pump intake, suggesting that the well had additional capacity not utilized during the step-rate test. However, pumping this additional capacity may be limited by the 4-inch diameter liner in the well restricting the size of pump that may be installed.

For the primary Phase 1 buildout of the camp, the YMCA assumes water will be required for 400 campers and 100 staff members for a total of 500 people. If an average demand of 45 gpd is assumed per person, a total of 22,500 gallons will be needed each day.

The existing well can support pumping of at least 40 gpm, which if pumped for 12 hours each day, will provide sufficient supply for the Phase 1 buildout. We note however that the existing well includes a smaller diameter liner, which may limit the pump choices. If the existing well's construction problems restrict its usability, the YMCA may elect to drill a second well near the first well. This well will be added to this permit administratively through filing a Showing of Compliance.

Given the challenges of the steep terrain and the YMCA's desire to develop separate areas for the family and youth camp areas, a third well will be constructed for the youth camp area located generally in the S

½ of the NW ¼ of Section 3 and adjacent to Mineral Lake. Spacing the wells out over the large project site will improve redundancy.

Legal Availability

To meet the legal availability test, the proposed appropriation may not withdraw and use water that is already “spoken for,” such as water from sources that are protected by administrative rule or court order.

The project site is in WRIA 11 of the Nisqually River drainage basin. Under the provisions of WAC 173-511, instream flows have been established at various control points in the watershed to regulate and protect instream flows. The instream flows established in this chapter are based on the recommendations of the WRIA planning unit; consultation with the Departments of Fish and Wildlife, Agriculture, and Community, Trade, and Economic Development (now the Department of Commerce); and public input received during the rule-making process. The planning unit recommended these instream flow levels by unanimous vote.

Minimum instream flow regulations have been established in WRIA 11 by Ecology under the Instream Resource Protection Program (IRPP) and are described in Chapter 173-511 of the Washington Administrative Code (WAC). Instream Flows and closures in the Nisqually Watershed have a priority date of February 1981, when they were adopted as administrative rule.

Flow regulations in WRIA 11 consist of minimum instream flow levels and sub-basin closures to further consumptive use. In WAC 173-511, instream flow levels were set for four segments of the Nisqually River, each with a specific flow control or measuring site (above Alder reservoir, below the LaGrande Powerhouse, the bypass reach and below the Centralia Powerhouse) and for the Mashel River, measured at the USGS gauge on the Mashel River. Additional minimum instream flow requirements are in place year-round for the bypass reach, the reach below LaGrande Powerhouse, and the reach below the LaGrande Dam, established by the Federal Energy Regulatory Commission (FERC) as license requirements for the Tacoma Public Utilities Nisqually Hydroelectric Project and the City of Centralia’s Yelm Hydroelectric Project.

In addition to these minimum flows, 20 tributaries and lakes and two segments of the Nisqually mainstem have been closed, at least seasonally, to further allocation.

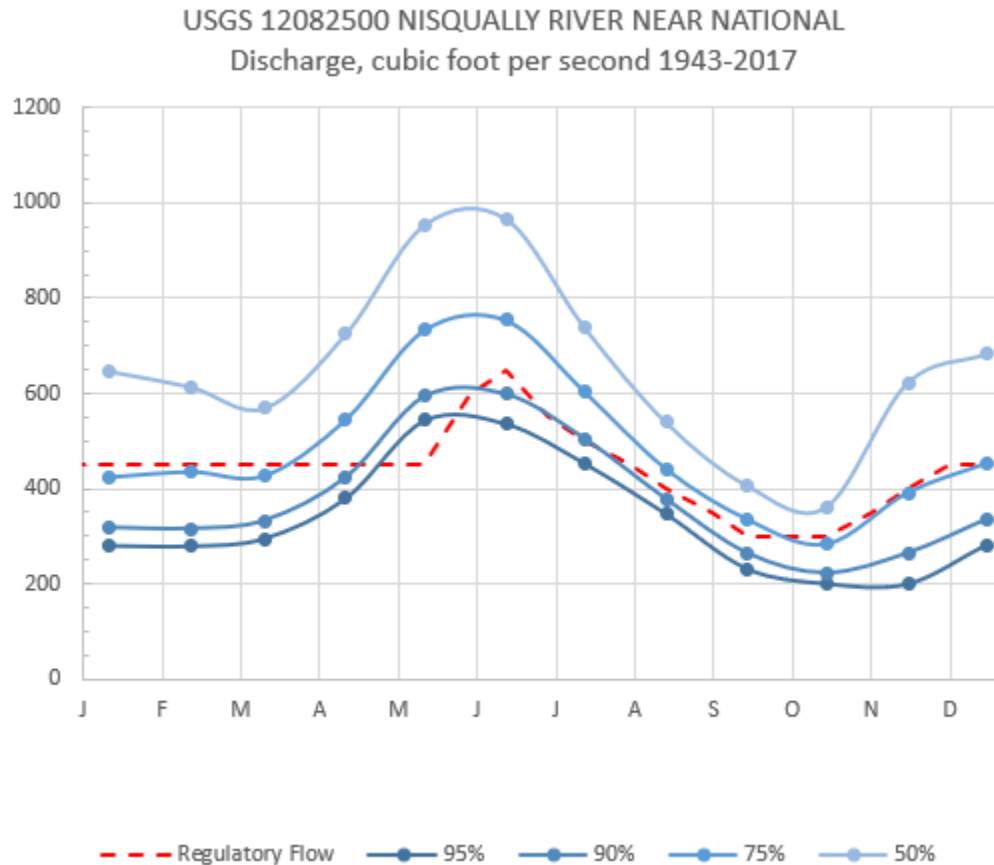
Much of the Nisqually Watershed is administratively closed to new water appropriation due to the establishment of instream flows under WAC 173-511-030 and closures established under WAC 173-511-040. The Nisqually River segment above Tacoma’s hydroelectric project and tributaries to that segment (the Upper Nisqually sub-basin of this plan) were not closed to further appropriation by the IRPP. Instead the 1981 IRPP established instream minimum flows for the Upper Nisqually River but did not close it for future surface water appropriations.

The IRPP placed no explicit restriction on future groundwater withdrawals. Because regulatory instream flows are set on the upper reach of the Nisqually, any new future permit-exempt well use or water right appropriation would be subject to interruption in the case that actual flows fall below regulatory flows.

The YMCA’s project is located such that any impacts it would have on the Nisqually River would occur at a point below the Mineral gage and above Alder Lake. Figure 2 below is useful in that it depicts a river

system where instream flows tend to be highest during the summer months when water use at the camp will be the highest. *Note that the National gauge is located over three miles upstream from the confluence of Mineral Creek and the Nisqually River, and thus does not depict instream flow conditions downstream of the gauge. There are several tributaries that enter the Nisqually between the National gauge and Mineral Creek that increase flow in the mainstem, the largest of which is Reese Creek. Flow are expected to be significantly higher near the project site.*

Figure 2. USGS Nisqually River Gauge (12082500)



Below Alder Lake at USGS gauge 12086500 (La Grande, WA station) flows are reliably met by the TPU’s releases. This is due to TPU requirement to manage the discharge of water from Alder Lake into the middle reaches of the Nisqually River.

Impairment

In analyzing impairment, Ecology must make a determination as to whether existing water rights, including adopted instream flows, may be impaired by the withdrawal and proposed use. The analysis will predict impacts that may occur if the proposed change is authorized. There are three concepts that must be considered when making this determination. These concepts are defined as follows:

1. Impairment is an adverse impact on the physical availability of water for a beneficial use that is entitled to protection (i.e., water rights that are both senior and junior in priority to the right the applicant seeks to change).
2. Qualifying groundwater withdrawal facilities are defined as those wells which in the opinion of Ecology are adequately constructed. An adequately constructed well is one that (a) is constructed in compliance with well construction requirements; (b) fully penetrates the saturated thickness of an aquifer or withdraws water from a reasonable and feasible pumping lift (WAC-173-150); (c) the withdrawal facilities must be able to accommodate a reasonable variation in seasonal pumping levels; and (d) the withdrawal facilities including pumping facilities must be properly sized to the ability of the aquifer to produce water.
3. Well interference may occur when several wells penetrate and withdraw groundwater from the same aquifer. Each pumping well creates a drawdown cone. When several wells pump from the same aquifer, well density, aquifer characteristics, and pumping demand may result in individual drawdown cones that intersect and form a composite drawdown cone. At any point in an aquifer, the composite drawdown caused by pumping wells will be greatly influenced by the transmissivity (T) of the aquifer and the storage coefficient (s). In aquifers with high Ts, composite drawdown will generally be much less than in aquifers with similar properties but with low Ts. Transmissivity is related to hydraulic conductivity (K) and the saturated thickness (b) of an aquifer by the relationship $T=Kb$.

At full buildout, the camp would require a maximum withdrawal of 100 gpm or an annual volume of 17.75 ac-ft/year (which equates to an average annual pumping rate of 11 gpm). To determine the magnitude of potential well interference to other users within the fractured bedrock aquifer, a Theis (1935) distance-drawdown analytical model was used. The following estimated aquifer parameters were applied:

- Aquifer transmissivity (T) is 310 square feet per day; this is estimated from pumping test data
- The aquifer storage coefficient is 0.00001; this is estimated from textbook values and is well within the typical range for fractured bedrock
- A recharge boundary is assumed to exist 1,000 feet southeast of the existing YMCA well where the bedrock outcrops at the lake; this boundary was modeled for this investigation using image well analysis of the Theis (1935) equation, as described by Ferris et al. (1962).

The output from the analytical model for one year of continuous pumping at the annual authorization requested in the subject applications are summarized in Table 4 for an array of distances away from the YMCA well (distances are considered in a direction opposite the recharge boundary for conservatism). The table also summarizes the impacts from 10 days of pumping the proposed instantaneous (Q_i) authority at the well. Although it is unlikely that the right would simultaneously exercise the maximum Q_i at the well for 10 consecutive days due to infrastructure limitations, the analysis was conducted to demonstrate that impacts from pumping the maximum Q_i should not prohibit water right processing. Results from this analysis suggest that up to approximately 17.3 feet of drawdown could occur to nearby users (however, no users were identified within 1,000 feet of the well).

Table 4. Predicted Aquifer Drawdown from Pumping Proposed Water Right Quantities

Pumping Rate (gpm)	Distance from the Well (feet) ¹			
	500	1,000	2,500	4,000
11 gpm ²	2.4	1.7	0.9	0.6

¹Results consider increasing distance in a direction away from the recharge boundary assumed at Mineral Lake.

²Average annual pumping rate needed to satisfy the requested Qi; model predicts drawdown after 1 year of pumping.

³Proposed instantaneous water right capacity after 10 days of pumping.

Table 5 summarizes water well logs in Ecology’s database that were identified within about 4,000 feet of the well and completed in the bedrock aquifer (shallower wells or wells completed in the sand and gravel were excluded under the assumption that they tap the overlying unconsolidated aquifer). The closest known well known to exist near the proposed well under the subject application is located approximately 400 southwest. Like the proposed well, this well is also owned by Mineral Lake Forest, LLC and is within YMCA property (Well Log ID BBN865). The well is not operated and currently serves as a monitoring well. Because no other wells are known to exist within about 1,000 feet of the well, interference from the proposed request is expected to be less than 2 feet as drawdown within the bedrock aquifer is expected to diminish with increased distance away from the well. Based on the available water columns determined for nearby wells, no impairment is reasonably expected to occur from approval of the proposed request.

Table 5. Well Construction Details for Nearby Water Wells

Well Log ID	Owner	Static Water Level (feet bgs)	Upper Open Interval (feet bgs)	Well Depth (feet bgs)	Available Water Column (feet)
N/A	Joseph Krolczyk	38	95	125	57
AKB482	Michael Heinz	17	145	175	128
BBN865	Mineral Lake Forest LLC	+2 (ags)	97	160	99
N/A	Dennis Christianson	13	115	175	102
ABE766	Donavan Larson	52	Unknown	300	Unknown
BJM726	Emil Markovitch	6	40	150	34
N/A	Ernest Dresher	128	138	180	10
N/A	Jack Vanning	60	79	400	19
N/A	Lester Panush	Unknown	115	180	Unknown

The closest surface water regulated under chapter 173-511 WAC is the Nisqually River, but the closure only applies to the reaches and control points downstream from Alder Dam. Therefore, no impairment to surface water is reasonably likely to occur from approval of the changes requested by the YMCA’s current request.

Beneficial Use

The proposed appropriation must be for a beneficial use of water. Domestic supply is considered a beneficial use of water under RCW 90.54.020(1).

Public Interest

The withdrawal and associated use must not be detrimental to the public interest. At a minimum, the following are considered when making this assessment.

Notification to the Washington Department of Fish and Wildlife

Per RCW 90.03.280 and 77.57.020, Ecology must give notice to the Washington Department of Fish and Wildlife (WDFW) of applications to divert, withdraw, use, or store water.

WDFW was provided notice of this water right application and on March 12, 2021, Steve Boessow of WDFW responded in a letter to Ecology that stated that based on impacts to fish and wildlife that they did not object to the issuance of this permit. Mr. Boessow, however indicated that the project needed to also be consistent with the findings of the 2018 Streamflow Restoration Act, and recommended direct consultation with the Nisqually Tribe.

State Environmental Policy Act (SEPA)

Under chapter 197-11 WAC, a water right application is subject to a SEPA threshold determination (i.e., an evaluation of whether there will be significant adverse environmental impacts) if any of the following conditions are met:

- It is a surface water right application for more than 1 cfs, unless that project is for agricultural irrigation, in which case the threshold is increased to 50 cfs, so long as that irrigation project will not receive public subsidies;
- It is a groundwater right application for more than 2,250 gpm;
- It is an application that, in combination with other water right applications for the same project, collectively exceed the amounts above;
- 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);
- 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.

This requested withdrawal is less than the categorical exemption provided in the SEPA regulation thus this water right request does not trigger a threshold determination.

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 Chronicle on March 16th and 23rd, 2021.

Other Public Interest Concerns

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 wellbeing. 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 wellbeing of the state and its citizens.

On August 17, 2021 the Nisqually Indian Tribe provided comments to Ecology expressing their support of this project and expressing their finding that the project is consistent with the watershed planning recommendations. Specifically:

“The Nisqually Indian Tribe supports the development of an education youth camp AND we find that this project is consistent with the WRIA 11 Watershed Management Plan (adopted in October 2003) and the development of the subsequent Plan Addendum. The main objective of both planning documents share is to “develop a comprehensive strategy for balancing competing demands for water, while at the same time preserving and enhancing the future integrity of the watershed.” The scope of the 2003 Plan was focused on examining and presenting recommendations on five key issues: growth and land use, groundwater resources and supply, water rights, instream flow and surface/groundwater continuity, and water quality., and in 2018, the Washington State Legislature, acting in ESSB 6091, mandated that the Nisqually Planning Unit acting under authority of RCW 90.82, must update the Nisqually Watershed Management Plan to address future permit-exempt domestic groundwater withdrawals, potential impacts of these withdrawals on minimum streamflows and other senior water rights, and develop mitigation strategies as deemed appropriate by the Planning Unit.”

The Tribe’s support is based on the following elements:

- The Instream Flow Protection Plan for the Nisqually Watershed (WAC 173-511-050) provides that future groundwater withdrawal proposals will not be affected by this chapter unless it is verified that such withdrawal would clearly have an adverse impact upon the surface water system contrary to the intent and objectives of this chapter.
- We have reviewed this project and do not believe that the project conflicts with the stated intent of WAC 173-11. Groundwater and surface water in this region on the watershed are not closely coupled and based on the previous hydrogeological work that was done to characterize the Upper Nisqually Watershed there will be no direct impacts to surface water in Mineral Lake, or it’s tributary Mineral Creek.
- The YMCA’s project is largely non-consumptive, and is already proposed to use less water than comparable residential development of the property. Water will be used for domestic needs only, and will be returned to the hydraulic system either via septic systems or a potentially more advanced treatment methods regardless we understand that domestic supply is usually less than 10% consumptive and represents flows of only a few gallons per minute.
- Mineral Creek and other tributaries to the Nisqually River above Alder Lake are not closed to new appropriations under WAC 173-511, and the Watershed Plan does not recommend the regulation of water upstream from Alder Lake unless there is a direct impact to habitat being proposed.
- Flows below the Alder Lake reservoir are managed by Tacoma Public Utilities so as to maintain instream flows in the Nisqually River’s mainstem. We see no potential scenario where the YMCA’s limited used of deep groundwater will have adverse impacts on surface flows in the watershed.

The Watershed Planning Groups addendum, which was adopted in February of 2019 included a suite of mitigative options that have been proposed as mechanisms to offset the consumptive portion of water

use. While the plan addendum is specific to the requirement to offset impacts caused from permit-exempt wells, it also serves as an outline for the types of projects that has been vetted by Ecology as acceptable to offset impacts to instream flows. These same “tools” may be useful in the structuring of mitigation for the effect that Park’s well might have on surface water in the Nisqually River Watershed.

These tools include:

1. Hydraulic modeling that accounts for planned preservation of mature forest
2. Shifts in targeted production zones for existing public water systems
3. Habitat restoration that results in favorable changes to groundwater – surface water interactions
4. Water right acquisition
5. The Tribe has been working closely with the YMCA on option to preserve and maximize the potentially 1,000 acres that will ultimately be incorporated in the new camp. Given the fact pattern surrounding the camp project, coupled with the interest of the Nisqually Tribe and larger planning group, we feel that taken as a whole, changes to forest management ie. allowing this property to return to a mature forest, will have passive benefits that more than outweigh the project’s minor water use.
6. Our research, which is based on the USGS’s Visualizing Ecosystem Land Management Assessments (VELMA) ecohydrological model, shows that in the Nisqually watershed that each forested acre that is left unharvested can mitigate 0.13 acre-feet per year of streamflow deficit. The ramification of this work is that by permanently protecting just 154 acres of forest, the entire 20 acre-feet of total camp water demand will be offset. This calculation is highly conservative however, because most of camp’s water use will be non-consumptive with 90 percent of total withdrawals being returned to the shallow groundwater system where it is more likely to provide direct flow augmentation.

In short, the Nisqually Tribe likes this project and supports the issuance of a permit to the YMCA to allow them to carry out this important work. We have found in the protection of our resources there is no better way to foster the support of future generations than to expose them as children to the wonders to nature.

Therefore, this proposed appropriation is not detrimental to the public interest.

Conclusions

I find that:

- Water is physically and legally available.
- The appropriation will not impair existing rights.
- The proposed domestic supply is a beneficial use.
- Approval of this application will not be detrimental to the public interest.

RECOMMENDATIONS

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

Recommended Quantities, Purpose of Use, and Project Location

The rate and quantity of water recommended are maximum limits. The permit holder may only withdraw water at a rate and quantity within the specified limits that are reasonable and beneficial:

Table 6. Recommended Limits and Location

Maximum Instantaneous Rate (gpm)	100
Maximum Annual Quantity (ac-ft/yr)	17.75
Purpose(s) of Use	Domestic Supply and Irrigation
Point of Withdrawal	NE ¼, NE ¼, Section 04, Township 14 North, Range 05 E.W.M.
Place of Use	LOTS 1 THROUGH 33, INCLUSIVE OF TRACTS A, B and C of SEGREGATION SURVEY, RECORDED JUNE 7, 2012, UNDER AUDITOR'S FILE No. 3379875, IN VOLUME 28 OF SURVEYS, PAGE 219, AS AMENDED BY SURVEY RECORDED JUNE 22, 2012 UNDER AUDITOR'S FILE NO. 3380676 IN VOLUME 28 OF SURVEYS, PAGE 224, RECORDS OF LEWIS COUNTY, WASHINGTON, BEING LOCATED WITHIN SECTIONS 2, 3, 4 AND 10, TOWNSHIP 14 NORTH, RANGE 5 EAST, W.M., AND SECTIONS 26, 27, 28, 33, 34 and 35, TOWNSHIP 15 NORTH, RANGE 5 EAST, W.M., LEWIS COUNTY, WASHINGTON.

Jill E. Van Hulle

November 8, 2021

Jill Van Hulle, Aspect Consulting

Date

Matthew M. Lewis



November 8, 2021

MATTHEW M. LEWIS

Mathew Lewis, Aspect Consulting

Date



November 8, 2021

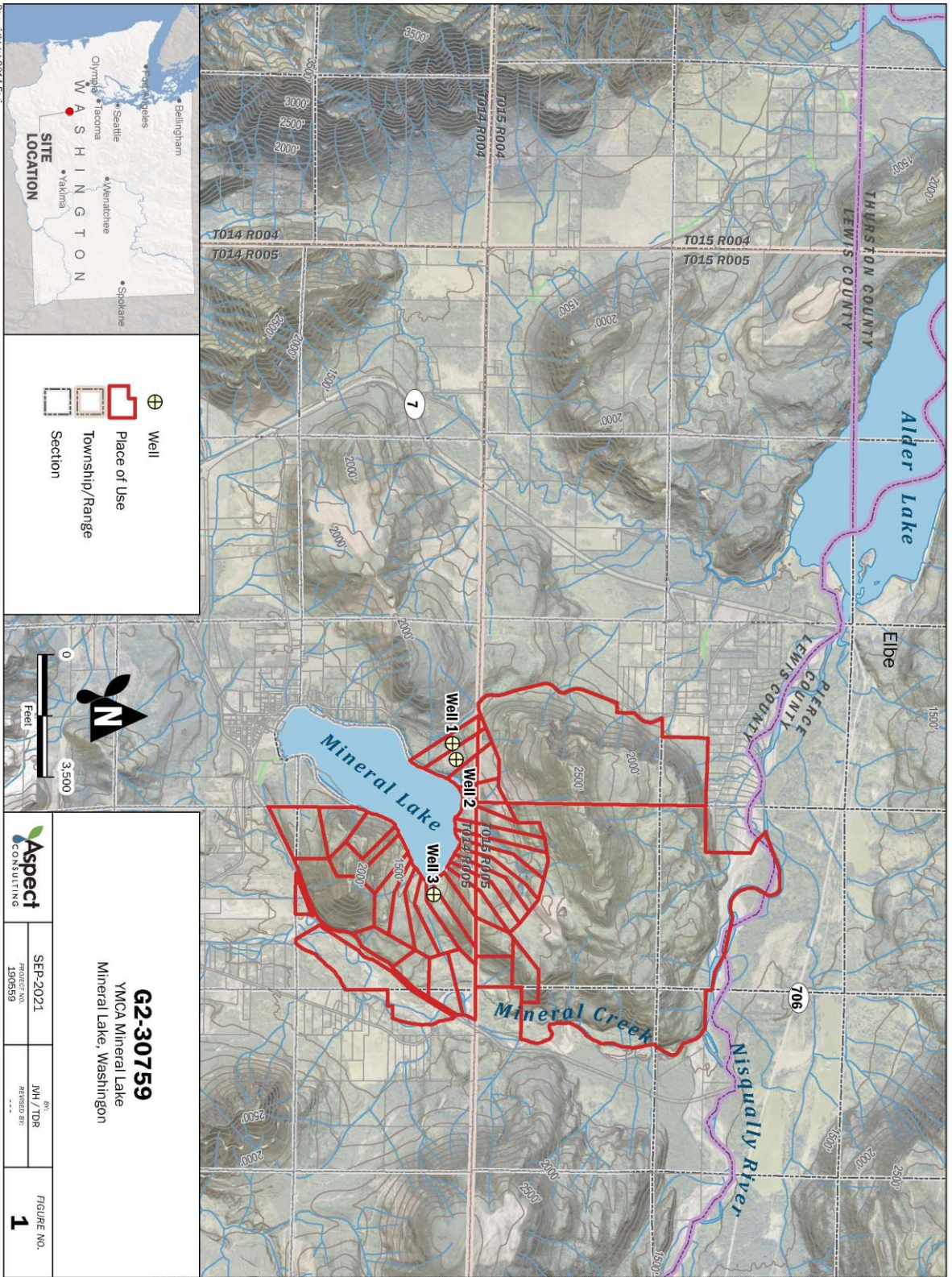
Tammy Hall, Department of Ecology

Date

To request ADA accommodation including materials in a format for the visually impaired, call Ecology Water Resources Program at 360-407-6872. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.

References

- Cooper, H.H. and C.E. Jacob, 1946, A Generalized Graphical Method for Evaluating Formation Constants and Summarizing Wellfield History, Am. Geophys. Union Trans., Vol. 27, pp 526-534.
- Czuba, J.A., Olsen, T.D., Czuba, C.R., Magirl, C.S., and Gish, C.C., 2012, Changes in sediment volume in Alder Lake, Nisqually River Basin, Washington, 1945–2011: U.S. Geological Survey Open-File Report 2012–1068, 30 p.
- Ferris, J.G., D.B. Knowles, R.H. Brown and R.W. Stallman, 1962. Theory of aquifer tests, U.S. Geological Survey Water-Supply Paper 1536 E, 174p
- Kruseman, G.P., and N.A. de Ridder, 2001, Analysis and Evaluation of Pumping Test Data, ILRI Publication 47, 2nd addition, ISBN 90 70754 207.K-D, 2000.
- National Oceanic and Atmospheric Administration, 2011, Climate of Washington: Western Regional Climate Center website accessed October 5, 2011, at <http://www.wrcc.dri.edu/narratives/WASHINGTON.htm>.
- Theis, C.V., 1935. The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage, Am. Geophys. Union Trans., vol. 16, pp. 519-524.



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